

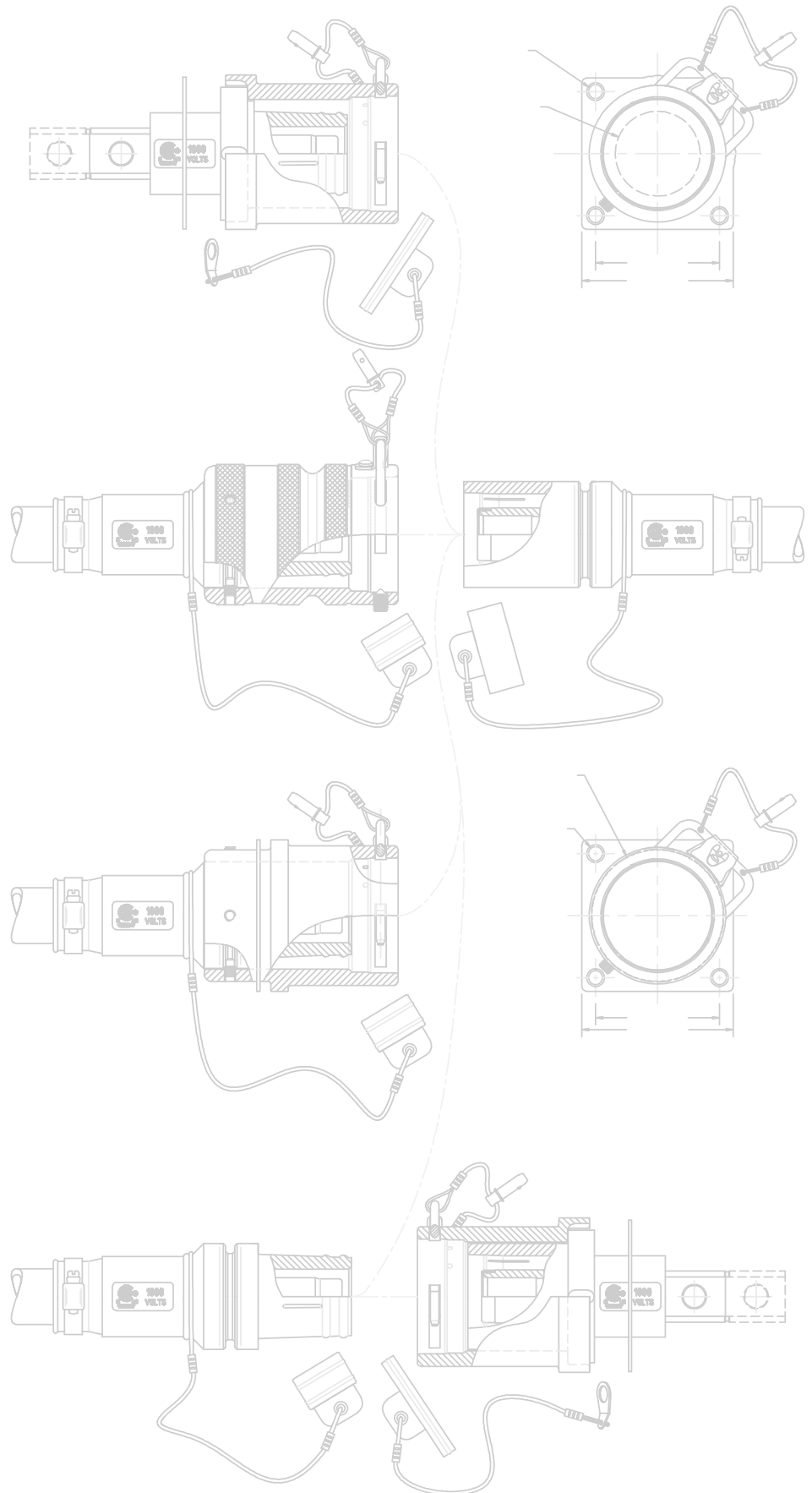


***R49/R24**SERIES*

C O N N E C T O R S Y S T E M



PRODUCT GUIDE



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4	Product Overview
5	Features Spotlight
6	Code Logic
7	Enhanced Strain Relief (ESR)
8	R49 Panel Mount Receptacle Female Assembly
9	R49 Panel Mount Receptacle Male Assembly
10	R49 Cable Mount Receptacle
11	R49 Bulkhead Mount Receptacle
12	R49 Cable Mounted Plug Male
13	R49 Cable Mounted Plug Female
14	R24 Panel Mount Receptacle Female Assembly
15	R24 Panel Mount Receptacle Male Assembly
16	R24 Cable Mount Receptacle Shell
17	R24 Bulkhead Mount Receptacle Shell
18	R24 Cable Mounted Plug Male
19	R24 Cable Mounted Plug Female
20	Assembly Options
21	Assembly Instructions

R49 & R24 SERIES

TABLE OF CONTENTS

PRODUCT OVERVIEW

DESCRIPTION & DESIGN FEATURES

Applications

R49 & R24 series connectors can be used wherever high amperage connection of AC or DC power is required. Typical applications are the connection of power from generator sets to Switchgear or SCR houses. Traction motors, mud pumps, drawworks, rotary tables, cement pumps and top drives.

Electrical Integrity

R49 & R24 series connectors are designed to run at full rated load and complement the latest drilling cable electrical ratings.

Operator Safety

The inherent design of the connectors is such that the electrical contacts are shrouded by the Rubber insulations and the male (power side) has a dead front end to protect operators from shock hazard. Connectors are rated @1000 VAC or DC current with the ability to withstand intermittent surges up to 1300 amps.

Phase Identification

Connectors are color coded to provide easy circuit identification. Colored insulations for both AC and DC circuit. Color coding prevents reverse phasing or cross polarization of DC circuits. Receptacle housings are also color coded to further assist the identification of phases.

AMPACITY RAIINGS IN 40°C AMBIENT

Cable Size	90°C	125°C
4/0 AWG (107mm ²)	364 Amps	451 Amps
313 MCM (159mm ²)	513 Amps	636 Amps
373 MCM (189mm ²)	548 Amps	669 Amps
444 MCM (225mm ²)	642 Amps	796 Amps
535 MCM (271mm ²)	724 Amps	898 Amps
646 MCM (327mm ²)	814 Amps	1009 Amps
777 MCM (394mm ²)	916 Amps	1135 Amps

INGRESS PROTECTION

Connectors are designed to provide weatheproof service in a variety of demanding environments. The insulations are resistant to oil, mud, sea water and petroleum products found in the drilling industry. Correctly assembled, the connectors provide safe, trouble free operation in the most extreme working conditions. Certified by CSA.

CONFIGURATIONS

R49 & R24 series connectors are available in all configurations male and female connectors. Typical configurations are shown below:

Power Side	Equipment Side	Use
Male Receptacle Panel Mount	Female Plug	AC or DC Output side of panel
Inline Male Receptacle	Female Plug	Inline cable to cable connections
Male Plug Cable Mounted	Female Panel Mount Receptacle	AC power to switch-gear

Termination

Termination method is crimp on cable mounted plugs and receptacles and bus bar termination is provided on panel mounted receptacles. The rubber insulations can be bonded to the cables by vulcanization. Vulcanizers are available on request.

Type P Cables

R49 & R24 series connectors are designed to work in conjunction with the latest generation of Type P drilling cables, per IEEE 45. Cable accommodations are 4/0 AWG (107mm²) to 777 MCM (394mm²)

Mounting Data

R49 & R24 Series connectors are designed specifically with the requirements of the drilling industry in mind. A space saving design allows the mounting of receptacles in very close proximity to each other. This allows operators to reduce the overall space requirement on switch gear and SCR drives. See 'Assembly Instructions' for mounting dimensions

Temperature Ratings

The connectors are designed to operate in both extremes of cold and high temperature applications. The Insulations are designed to withstand the very low temperatures found in Artic conditions, in addition to being able to run at full rated load in high ambient temperatures.

Installation

The simple design of the R49 & R24 series, allows the connectors to be mated and unmated without the use of tools.

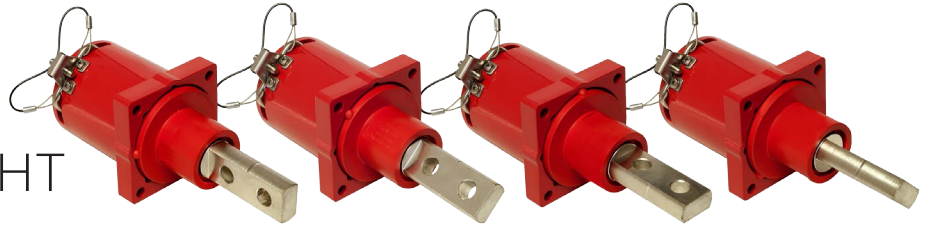
MATERIALS

Receptacle Housings: Oil, Alkaline, UV, and weather resistant, Color coded polyester TGIC powder coating over copper-free aluminum alloy

Contacts: Tin-plated copper alloy

Insulations: Synthetic Rubber

R49 & 24 SERIES FEATURES SPOTLIGHT



All Rubber Insulators

- Made from industry leading Toso-CSM
- Color coded for quick phase identification
- Resistant to oil, mud, sea water and petroleum products
- Excellent durability against UV and Ozone exposure
- Provide weatherproof service in a variety of demanding environments
- Rubber has “Self-Lubricating” technology
- Low propensity to chalk
- Molded axial air release grooves

Cable Mount Insulators

- Supplied with stainless steel hose clips
- Hard anodized retention ring

NEW Enhanced Strain Relief (ESR)

R49 & R24 incorporate an extension of the retention ring enabling the use of basketweave strain relief system (patent pending). [More info on page 7](#)



Busbar Contacts

- Can be supplied with either one or two bolt holes

All Contact

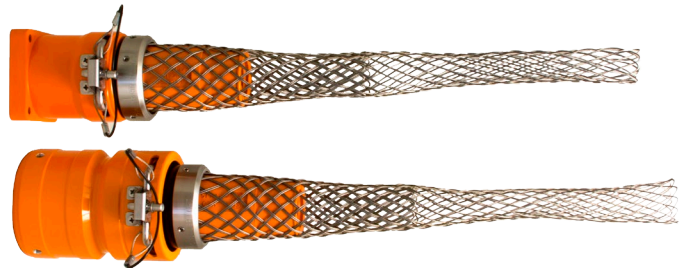
- Tin Plated Copper
- Dual flat/bright plating to reduce galling and decrease mating force
- R24's feature RADSOK® contacts for high conductivity, excellent heat dissipation, and low mating force

Male & Female Contact

- Dead front Delrin® Ring

Crimp Contacts

- Heavy duty stainless steel spring locking band with six locking times
- Crimp buckets to accept 4/0 AWG to 777 MCM cable



Cable Mount Insulators

- Supplied with stainless steel hose clips
- Hard anodized retention ring

All Housings

- TGIC Polyester Powder coated aluminum alloy
- Color coded for quick phase identification
- Resistant to oil, mud, sea water and petroleum products
- Excellent durability against UV and Ozone exposure
- Stainless steel hasp and retention mechanism
- Retained hasp
- Snap action to retain hasp in either engaged or disengaged position
- Hasp bracket has hole to accommodate standard OSHA compliant lock
- Set screw for locking plug in position

Panel Mount Housing

- Four alignment keyways in flange allow busbar to be set at 45 degree intervals
- Retained hasp set at 45 degrees

Coupling Housing

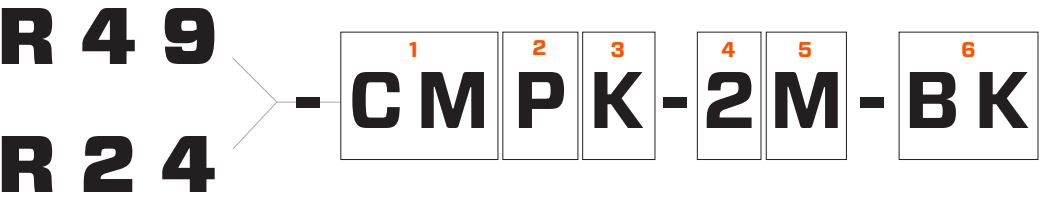
- To connect two 'inline' Cable Mount Plugs
- OD. Groove to accept 'U' bolt for mounting

Bulkhead Housing

- To connect two 'inline' Cable Mount Plugs through a bulkhead



R49/24 CODE LOGIC



Complete Connector Includes:
Shell; Dust Cover; Contact; Cable Clamp / Gasket, as required.

1 LOCATION

- CM Cable Mounted
- PM Panel Mounted
- BM Bulkhead Mounted

2 LOCATION

- P Plug
- R Receptacle

3 STRAIN RELIEF

- K Enhanced Strain Relief
- Omit for no ESR

4 WIRE/CONTACT CODE

- Panel Mounted**
- 1 Single Bolt Hole
 - 2 Two Bolt Holes
- Cable Mounted**
- 4/0 4/0 AWG (107mm²)
 - 3 313 MCM (159mm²)
 - 373 373 MCM (189mm²)
 - 4 444 MCM (227mm²)
 - 5 535 MCM (273mm²)
 - 6 646 MCM (326mm²)
 - 7 777 MCM (394mm²)

5 CONTACT GENDER

- M Male Pin
- F Female Socket

6 COLOR CODE

- R Red
- BK Black
- W White
- G Green
- Y Yellow
- OR Orange
- BL Blue
- BR Brown
- GY Gray
- P Purple
- Omit for no color

ENHANCED STRAIN RELIEF (ESR) SYSTEM FOR R49 & R24 SERIES



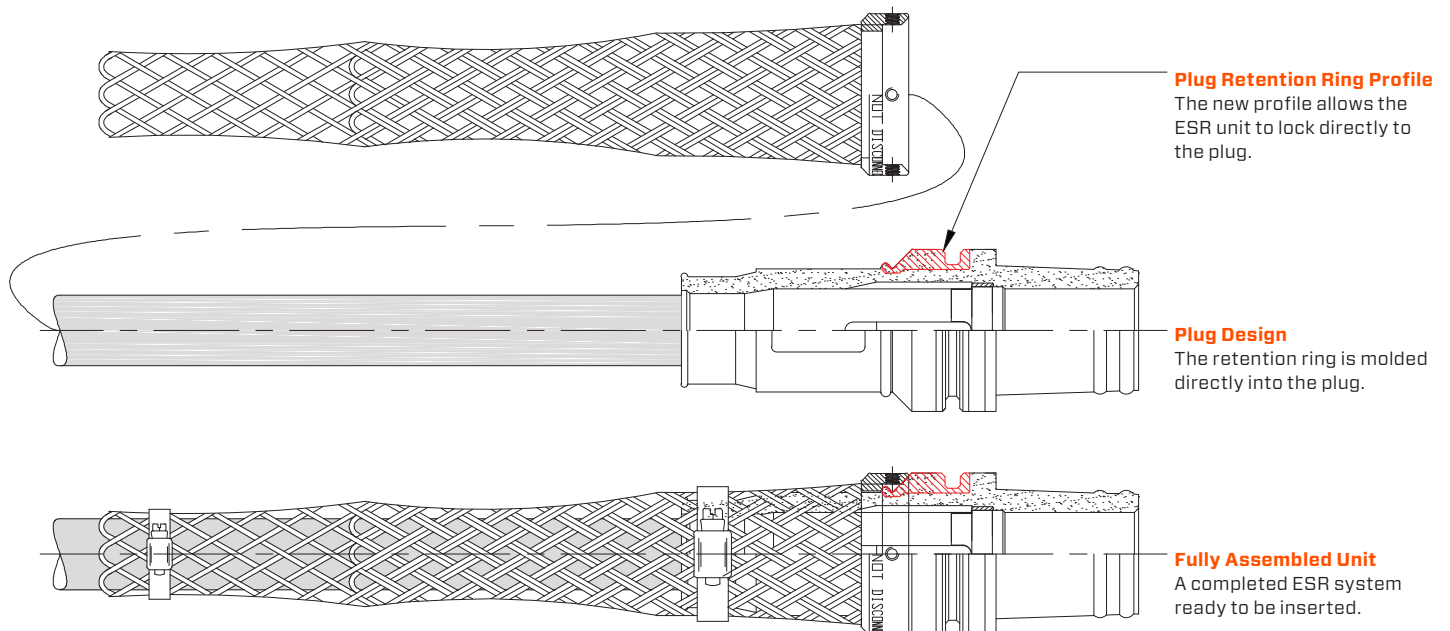
The R49 & R24 series now feature a unique enhanced strain relief system (ESR) previously not available on any other rubber connector.

The heart of the ESR system lies with the newly redesigned plug retention ring. The basketweave grip secures directly with the cable and plug by locking on the retention ring. Once the hasp is engaged, the ESR distributes strain along the entire assembly, from cable to panel.

This comprehensive solution combats the extreme weight and environmental demands that modern equipment require. The redesigned ESR plug is 100% compatible with traditional R49 and R24 receptacles.

Enhanced Strain Relief

The new integrated retention ring and basketweave grip.



R49 PANEL MOUNT RECEPTACLE FEMALE ASSEMBLY

EXAMPLE PART NUMBER: R49-PMR-XF-XX

CONTACT CODE

COLOR CODE

MATERIALS

Receptacle Housing

Oil, Alkaline, UV, and weather resistant, Color coded polyester TGIC powder coating over aluminum

Receptacle Body

Oil, Alkaline & UV resistant, flame retarding color coded, self-lubricating synthetic rubber

HASP Assembly

316 Stainless Steel

Hasp Lanyard

Non conductive PVC coated stainless steel wire rope, black with zinc plated copper crimps

Contact

Tin plated copper

Contact Safe Front End

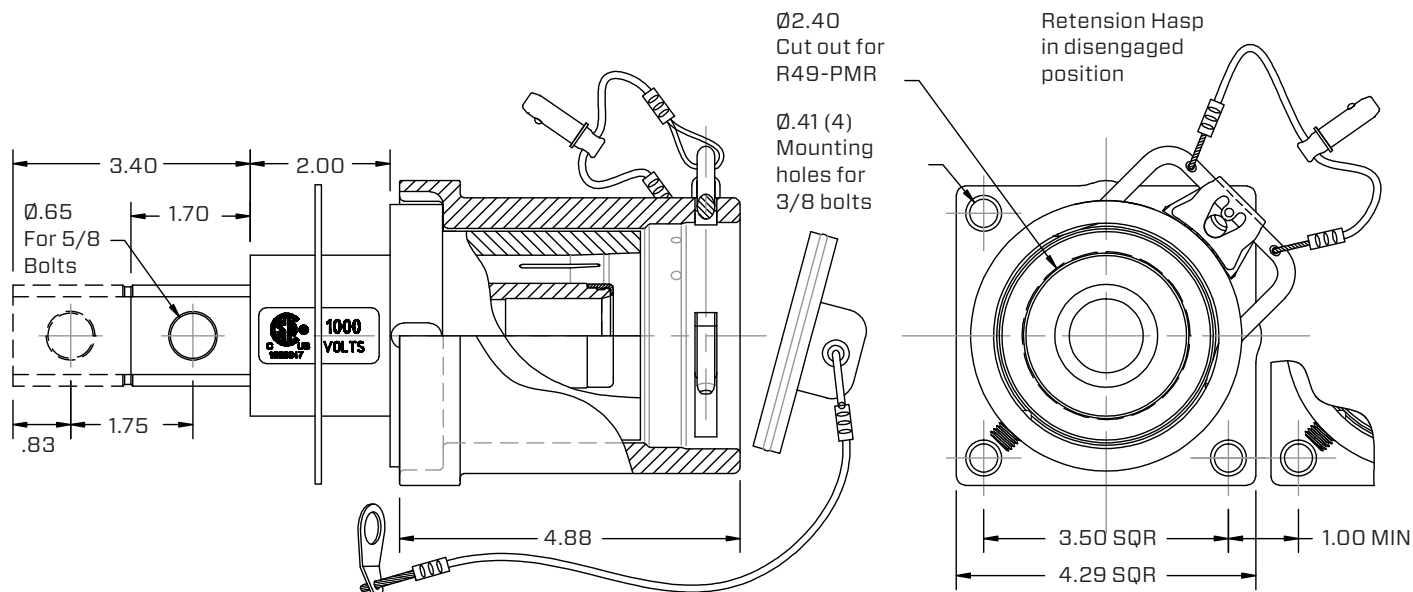
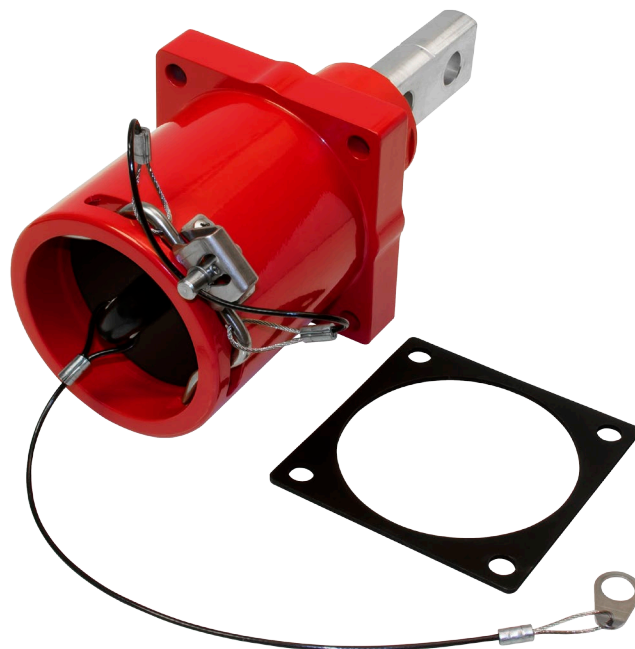
Black Insulator

Gasket

Neoprene, black

Cover

Buna-N rubber



R49 PANEL MOUNT RECEPTACLE

MALE ASSEMBLY

EXAMPLE PART NUMBER: R49-PMR-XM-XX

CONTACT CODE _____
COLOR CODE _____

MATERIALS

Receptacle Housing

Oil, Alkaline, UV, and weather resistant, Color coded polyester TGIC powder coating over aluminum

Receptacle Body

Oil, Alkaline & UV resistant, flame retarding color coded, self-lubricating synthetic rubber

HASP Assembly

316 Stainless Steel

Hasp Lanyard

Non conductive PVC coated stainless steel wire rope, black with zinc plated copper crimps

Contact

Tin plated copper

Contact Safe Front End

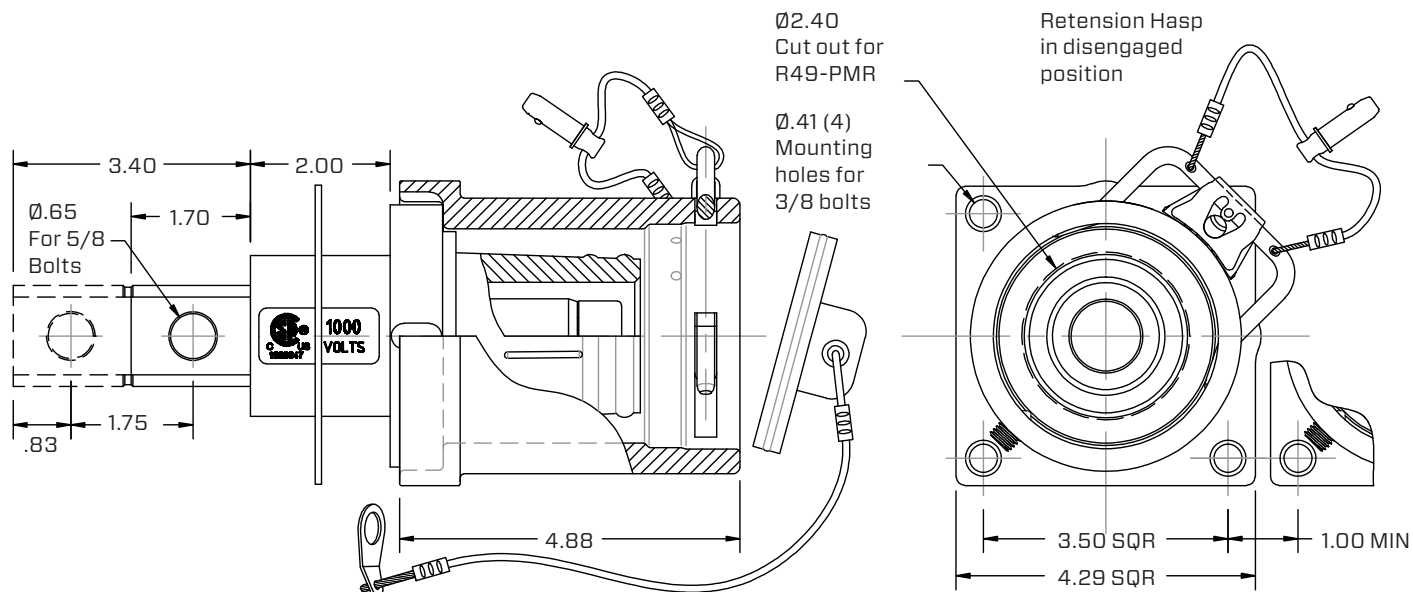
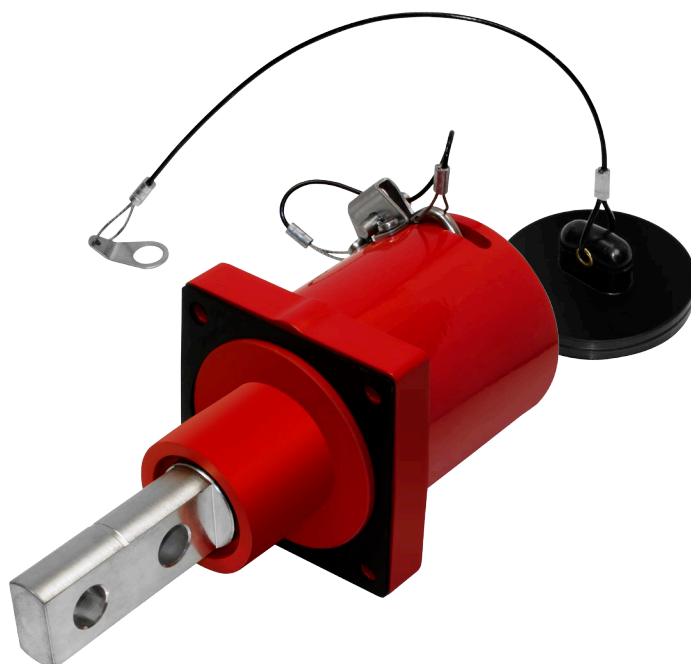
Black Insulator

Gasket

Neoprene, black

Cover

Buna-N rubber



R49 CABLE MOUNT RECEPTACLE SHELL

EXAMPLE PART NUMBER: R49-CMR-XX

COLOR CODE _____

MATERIALS

Lanyard

Non-conductive PVC coated stainless steel wire rope, black with zinc plated copper crimps

Coupler Body

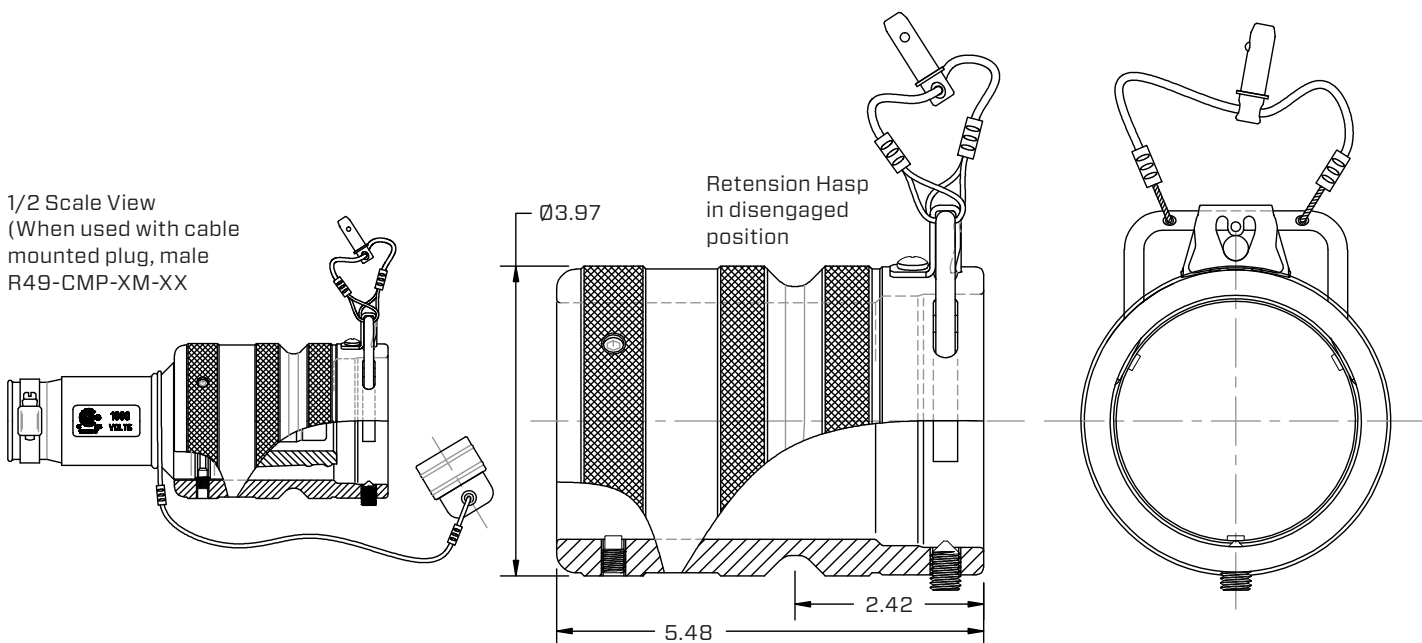
Oil, Alkaline, UV, and weather resistant, Color coded polyester TGIC powder coated

Hasp Assembly

316 Stainless Steel



1/2 Scale View
(When used with cable
mounted plug, male
R49-CMP-XM-XX)



R49 BULKHEAD MOUNT RECEPTACLE SHELL

EXAMPLE PART NUMBER: R49-BMR-XX

COLOR CODE _____

MATERIALS

Retaining Cord

Non-conductive PVC coated stainless steel wire rope, black with zinc plated copper crimps

Coupler Body

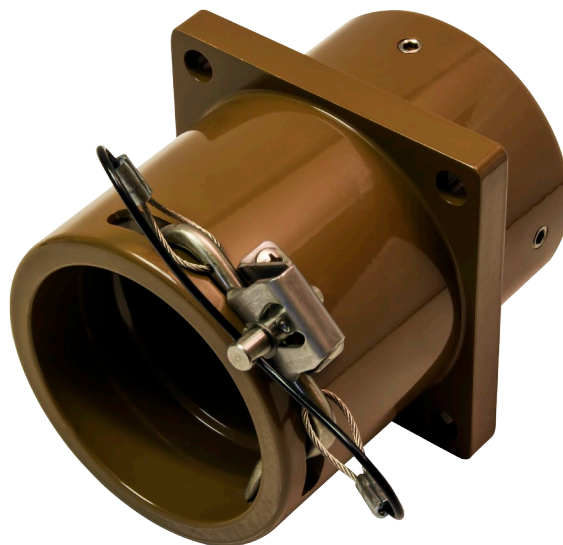
Oil, Alkaline, UV, and weather resistant, Color coded polyester TGIC powder coating

Hasp Assembly

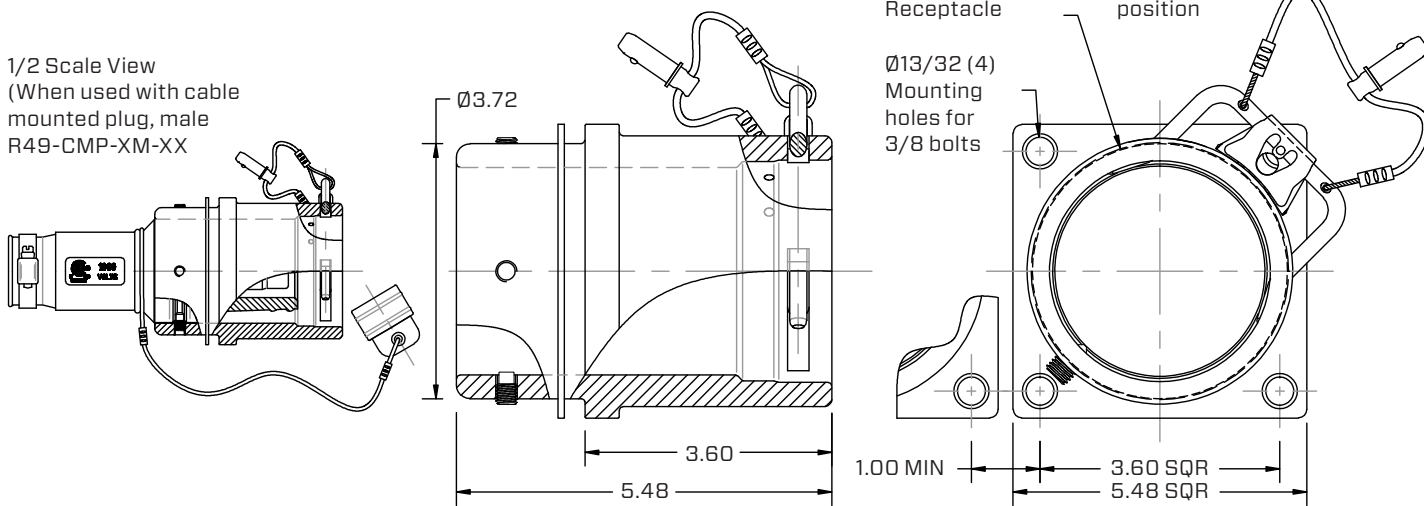
316 Stainless Steel

Gasket

Neoprene, black



1/2 Scale View
(When used with cable
mounted plug, male
R49-CMP-XM-XX)



R49 CABLE MOUNTED PLUG

MALE

EXAMPLE PART NUMBER: R49-CMP-XM-XX

CONTACT CODE _____
COLOR CODE _____

MATERIALS

Plug Body

Oil, Alkaline & UV resistant,
flame retarding color coded
synthetic rubber

Cable Clamp

316 Stainless Steel
worm gear

Plug Retention Ring

Hardcoated Aluminium

Environment Cover

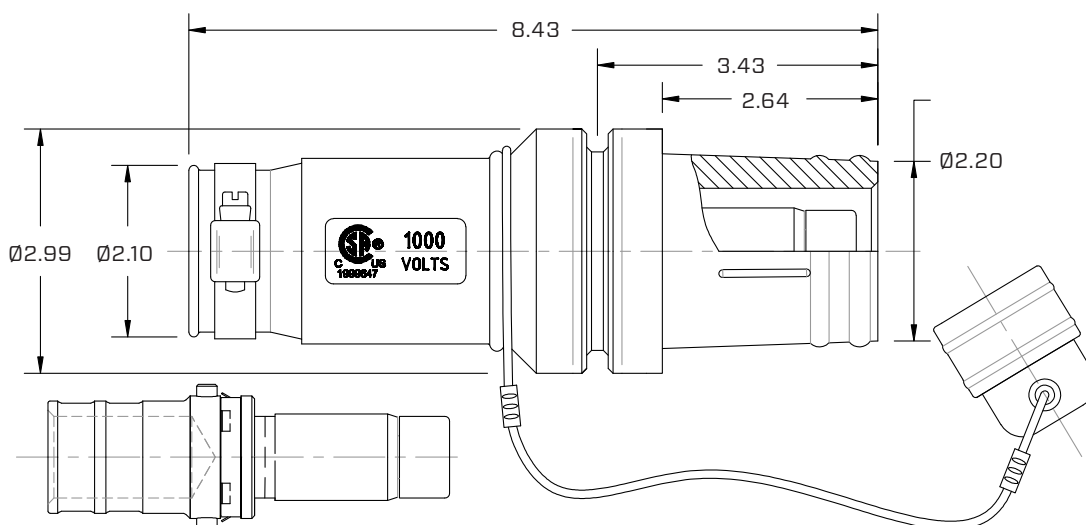
Oil, Alaline & UV resistant,
flame retarding black
synthetic rubber

Lanyard

Non-conductive PVC
coated stainless steel wire
rope, black with zinc plated
copper crimps

Contact

Tin (flat) plated copper



R49 CABLE MOUNTED PLUG FEMALE

EXAMPLE PART NUMBER: R49-CMP-XF-XX

CONTACT CODE _____
COLOR CODE _____

MATERIALS

Plug Body

Oil, Alkaline & UV resistant,
flame retarding color coded
synthetic rubber

Cable Clamp

316 Stainless Steel
worm gear

Plug Retention Ring

Hardcoated Aluminium

Environment Cover

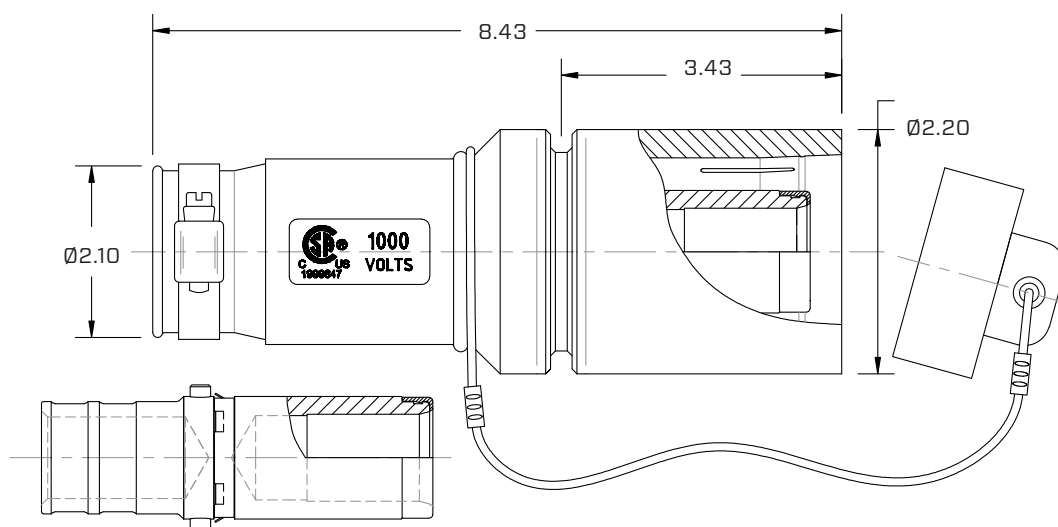
Oil, Alaline & UV resistant,
flame retarding black
synthetic rubber

Lanyard

Non-conductive PVC
coated stainless steel wire
rope, black with zinc plated
copper crimps

Contact

Tin (bright) plated copper



R24 PANEL MOUNT RECEPTACLE FEMALE ASSEMBLY

EXAMPLE PART NUMBER: R24-PMR-XF-XX

CONTACT CODE _____
COLOR CODE _____

MATERIALS

Receptacle Housing

Oil, Alkaline, UV, and weather resistant, Color coded polyester TGIC powder coating over aluminum

Receptacle Body

Oil, Alkaline & UV resistant, flame retarding color coded, self-lubricating synthetic rubber

HASP Assembly

316 Stainless Steel

Hasp Lanyard

Non conductive PVC coated stainless steel wire rope, black with zinc plated copper crimps

Contact

Silver plated copper
RADSOK® available soon

Contact Safe Front End

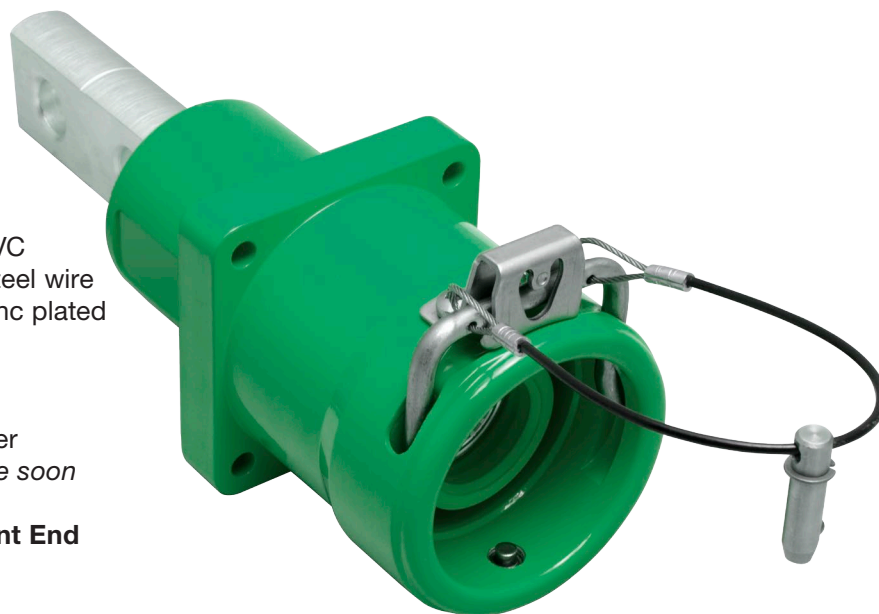
Black Insulator

Gasket

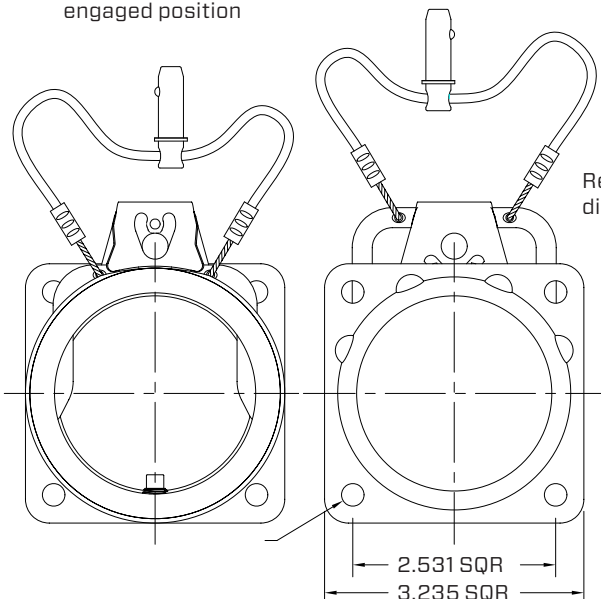
Neoprene, black

Cover

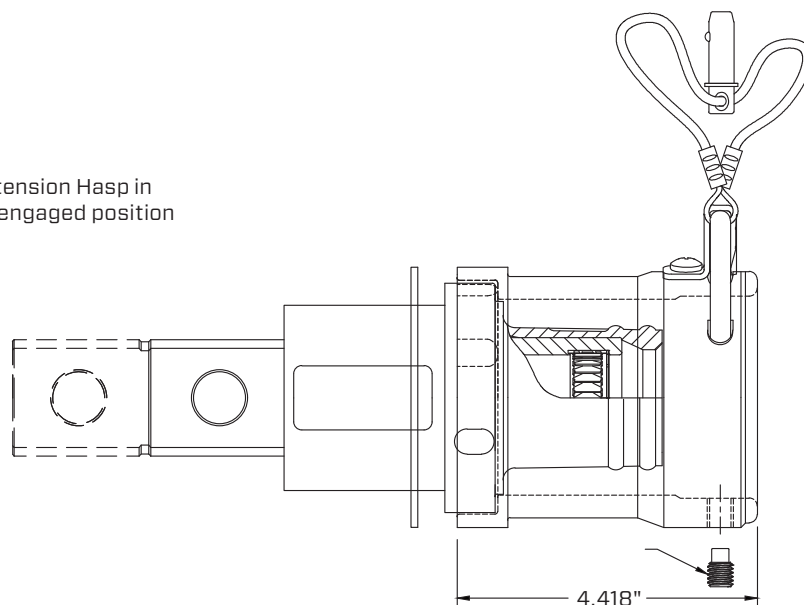
Buna-N rubber



Retention Hasp in engaged position



Retention Hasp in disengaged position



R24 PANEL MOUNT RECEPTACLE

MALE ASSEMBLY

EXAMPLE PART NUMBER: R24-PMR-XM-XX

CONTACT CODE _____
COLOR CODE _____

MATERIALS

Receptacle Housing

Oil, Alkaline, UV, and weather resistant, Color coded polyester TGIC powder coating over aluminum

Receptacle Body

Oil, Alkaline & UV resistant, flame retarding color coded, self-lubricating synthetic rubber

HASP Assembly

316 Stainless Steel

Hasp Lanyard

Non conductive PVC coated stainless steel wire rope, black with zinc plated copper crimps

Contact

Silver plated copper

Contact Safe Front End

Black Insulator

Gasket

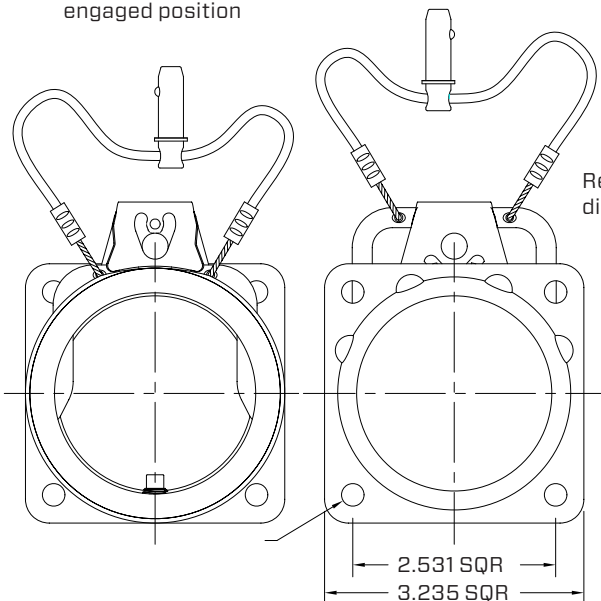
Neoprene, black

Cover

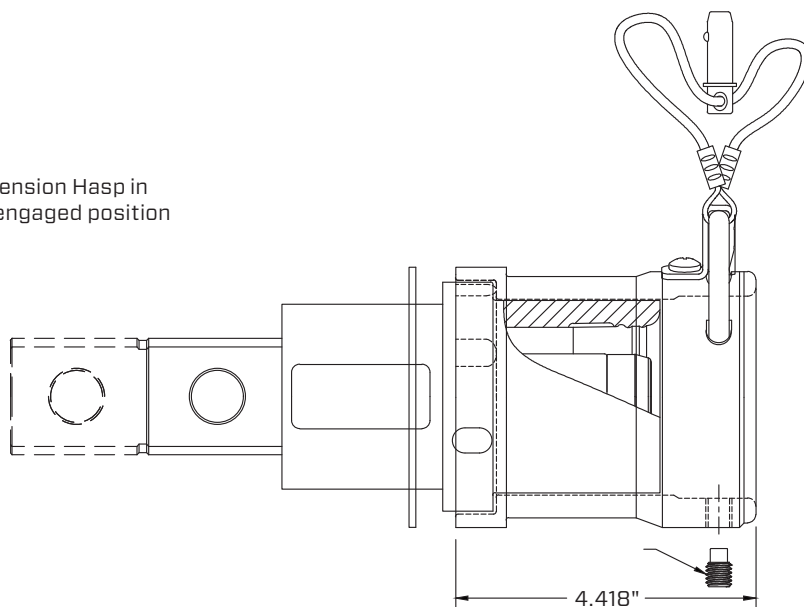
Buna-N rubber



Retention Hasp in engaged position



Retention Hasp in disengaged position



R24 CABLE MOUNT RECEPTACLE SHELL

EXAMPLE PART NUMBER: R24-CMR-XX
COLOR CODE _____

MATERIALS

Lanyard

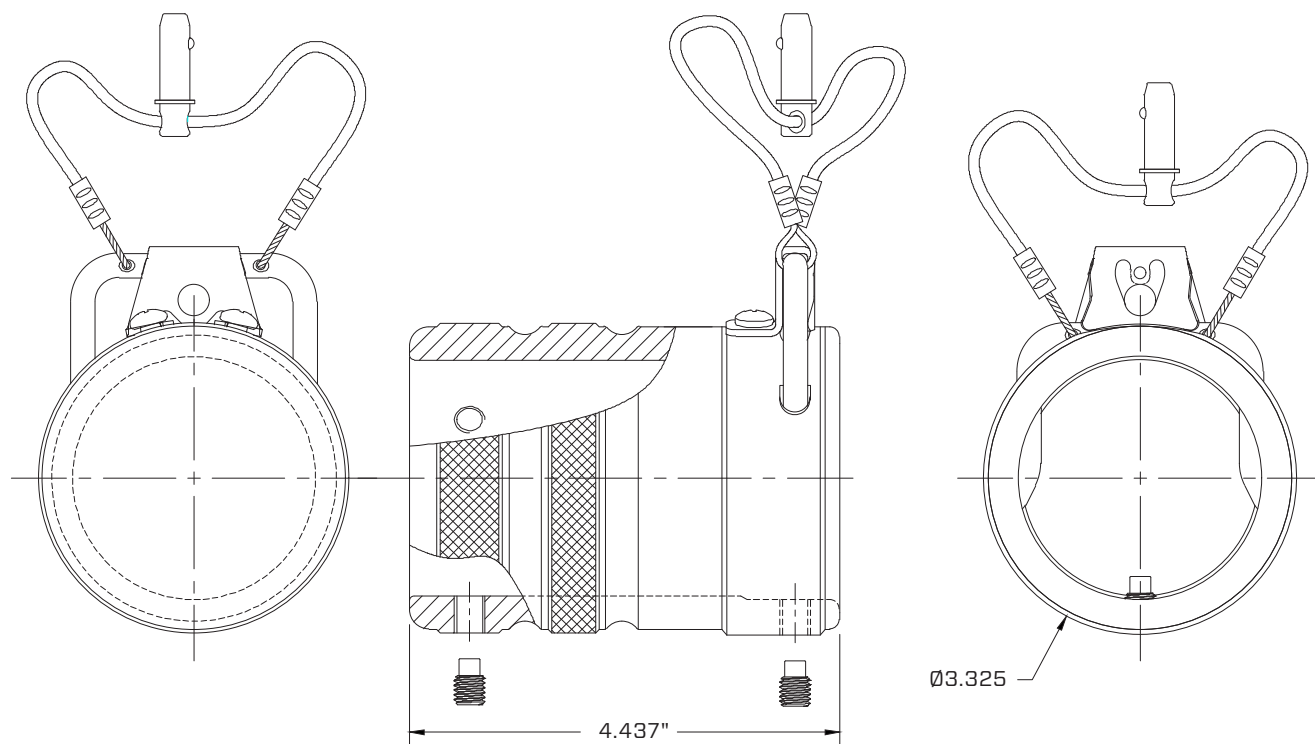
Non-conductive PVC coated stainless steel wire rope, black with zinc plated copper crimps

Coupler Body

Oil, Alkaline, UV, and weather resistant, Color coded polyester TGIC powder coated

Hasp Assembly

316 Stainless Steel



R24 BULKHEAD MOUNT RECEPTACLE SHELL

EXAMPLE PART NUMBER: R24-BMR-XX
COLOR CODE _____

MATERIALS

Retaining Cord

Non-conductive PVC coated stainless steel wire rope, black with zinc plated copper crimps

Hasp Assembly

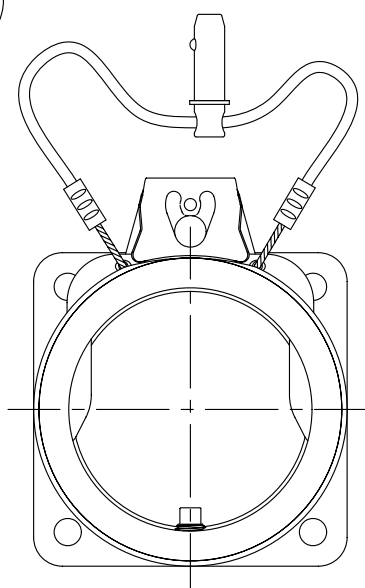
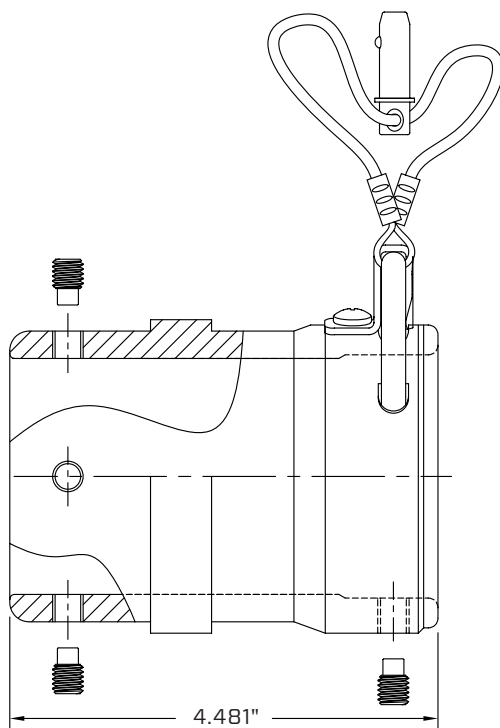
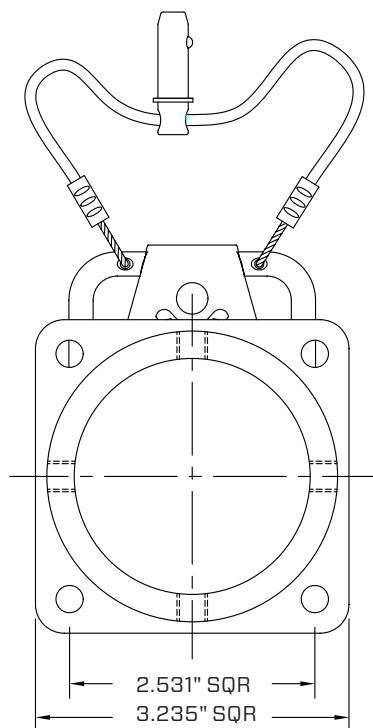
316 Stainless Steel

Coupler Body

Oil, Alkaline, UV, and weather resistant, Color coded polyester TGIC powder coating

Gasket

Neoprene, black



R24 CABLE MOUNTED PLUG

MALE

EXAMPLE PART NUMBER: R24-CMP-XM-XX
CONTACT CODE _____
COLOR CODE _____

MATERIALS

Plug Body
Oil, Alkaline & UV resistant,
flame retarding color coded
synthetic rubber

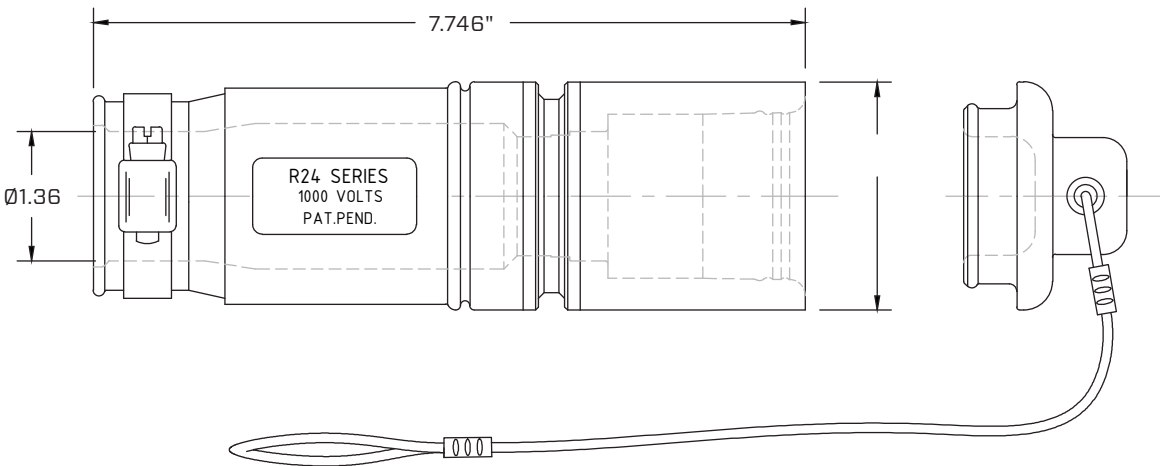
Cable Clamp
316 Stainless Steel
worm gear

Plug Retention Ring
Hardcoated Aluminium

Environment Cover
Oil, Alaline & UV resistant,
flame retarding black
synthetic rubber

Lanyard
Non-conductive PVC
coated stainless steel wire
rope, black with zinc plated
copper crimps

Contact
Tin (flat) plated copper



R24 CABLE MOUNTED PLUG

FEMALE

EXAMPLE PART NUMBER: R24-CMP-XF-XX
CONTACT CODE _____
COLOR CODE _____

MATERIALS

Plug Body

Oil, Alkaline & UV resistant,
flame retarding color coded
synthetic rubber

Cable Clamp

316 Stainless Steel
worm gear

Plug Retention Ring

Hardcoated Aluminium

Environment Cover

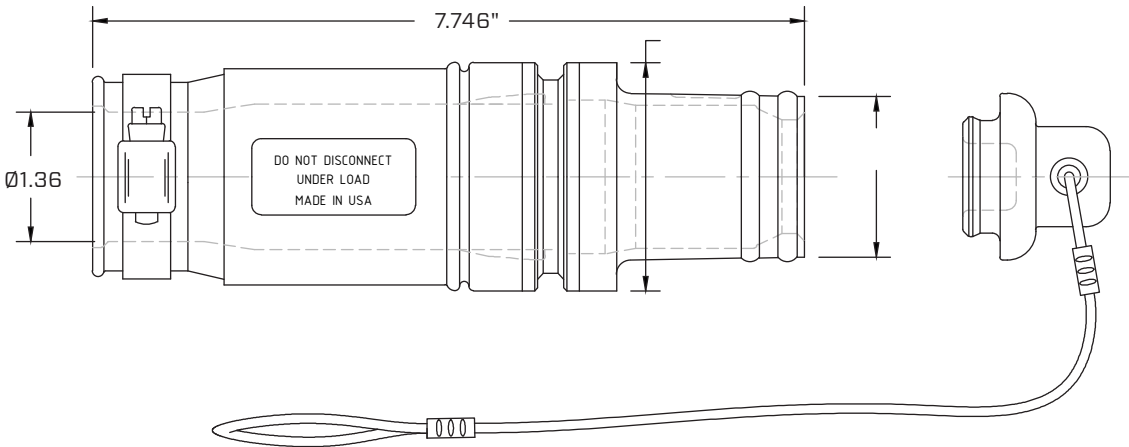
Oil, Alaline & UV resistant,
flame retarding black
synthetic rubber

Lanyard

Non-conductive PVC
coated stainless steel wire
rope, black with zinc plated
copper crimps

Contact

Tin (bright) plated copper



ASSEMBLY OPTIONS FOR R49 & 24 SERIES

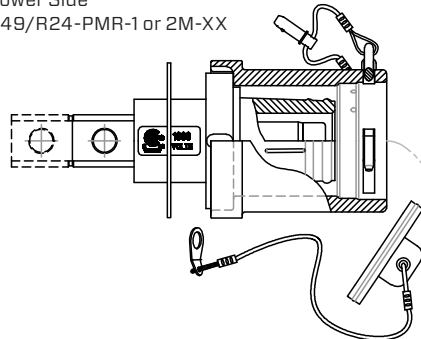
Application

R49 and R24 Series connectors have been designed to safely distribute 1135 Amps at 1000 Volt AC or DC power. These connectors are rated for 1135 Amps continuous operation at 110°C. Connectors are not designed for disconnection under load.

Male Receptacle, inline Receptacle, or Male Connector are used on power side circuit for connection to portable cable. Female Connector or Receptacle are used on machine or motor side of circuit for connection to portable cable. Male and Female Contacts are sized to match cable size and must be ordered for specific cable size.

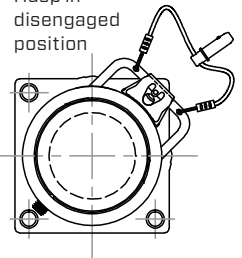
Contacts may be attached to cable by crimping dies and equipment, copper cable only.

Panel Mount Receptacle
1 or 2 Hole Bus Bar - Male
Power Side
R49/R24-PMR-1 or 2M-XX



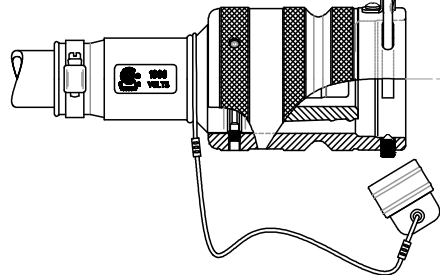
Ø13/32 (4)
Mounting
Holes For
3/8 Bolts

Retention
Hasp in
disengaged
position

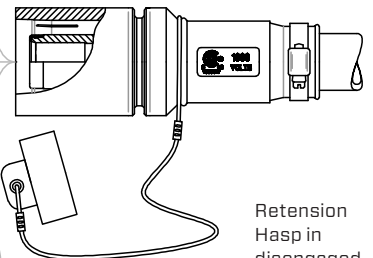


Ø2.40 Cut
out for
panel mount
receptacle

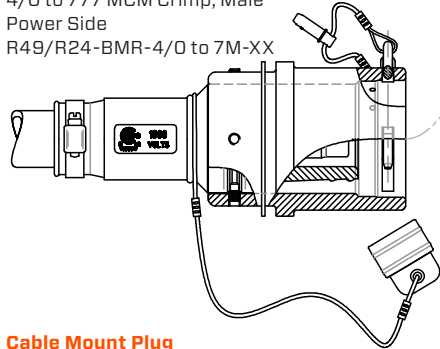
Cable Mount Receptacle
4/0 to 777 MCM Crimp, Male
Power Side
R49/R24-CMR-4/0 to 7M-XX



Cable Mount Plug
4/0 to 777 MCM Crimp, Female
Machine Side
R49/R24-CMP-4/0 to 7F-XX

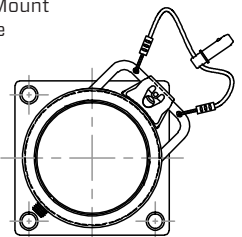


Bulkhead Mount Receptacle
4/0 to 777 MCM Crimp, Male
Power Side
R49/R24-BMR-4/0 to 7M-XX



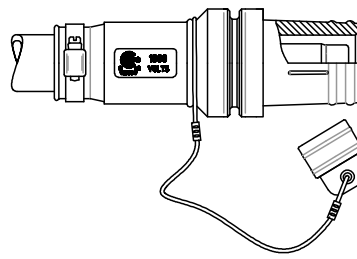
Ø3.75 Cut out for
Bulkhead Mount
Receptacle

Retention
Hasp in
disengaged
position

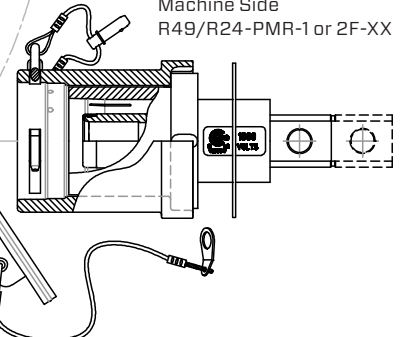


Ø13/32 (4)
Mounting
holes for
3/8 Bolts

Cable Mount Plug
4/0 to 777 MCM Crimp, Male
Power Side
R49/R24-CMP-3 to 7M-XX



Panel Mounted Receptacle
1 or 2 Hole Bus Bar - Female
Machine Side
R49/R24-PMR-1 or 2F-XX



ASSEMBLY INSTRUCTIONS

FOR R49 & 24 SERIES

Crimp Method

- A Cut cable to length
- B Strip cable jacket and binders back by 1-7/8" (48mm)
- C Attach contact by crimping to cable, making 2 crimps on the undercut portions of the contact. See charts below for the correct sized crimping tools.

Solder Method

- A Cut cable to length
- B Strip cable jacket and binders back by 1-7/8" (48mm)
- C Attach contact by soldering, using Rosin Flux and 40 – 60 solder. Do not use excessive heat or contact will be distorted and protective plating will be damaged

Pin Alignment

Each contact has two contact retention pins. These pins are to be aligned with the 'U' slots in the Contact Retention ring inside the insulator.

To aid assembly, the internal 'U' slots line up with the two lables on the outside of the insulator. When inserted correctly, the retaining spring locks behind the Contact Retention ring to hold contact in position.

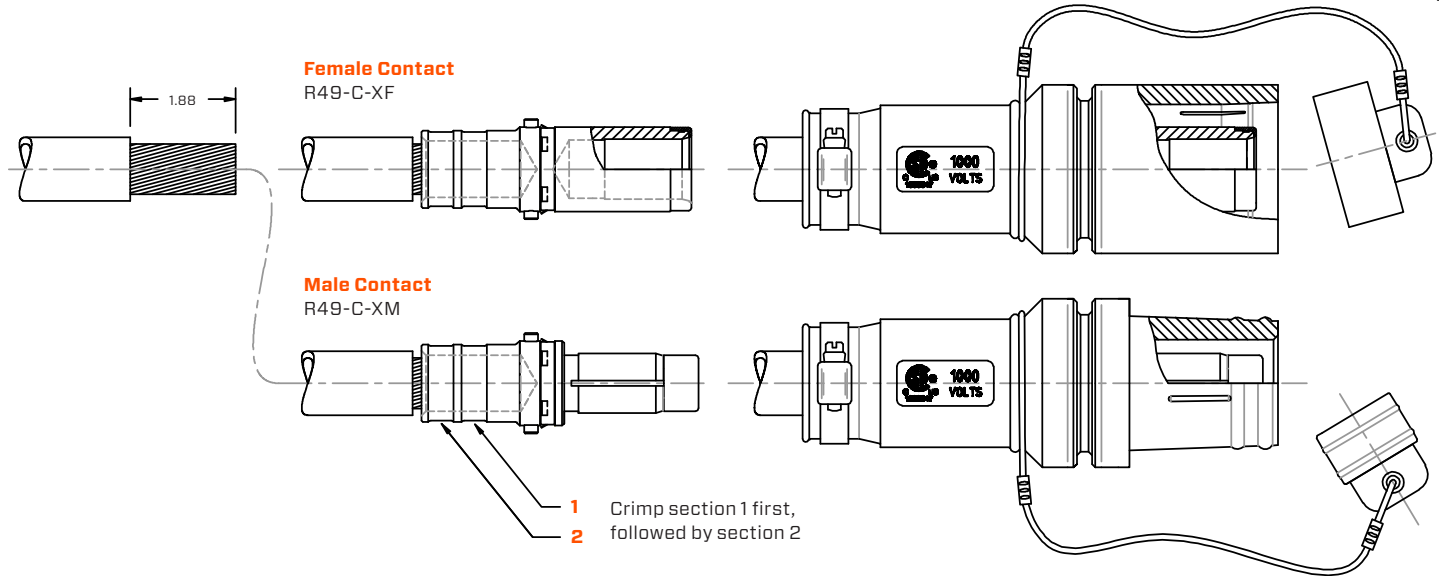
With the contact secure, tighten hose clip to seal the rear of connector.

THOMAS & BETTS 13642PF

Cable Size MCM	Hydraulic Die Catalog Number	Head Die Code
4/0 & 313	11744	76H
444 & 373	11748	99H
535	11749	106H
646	11753	115H
777	11753	115H

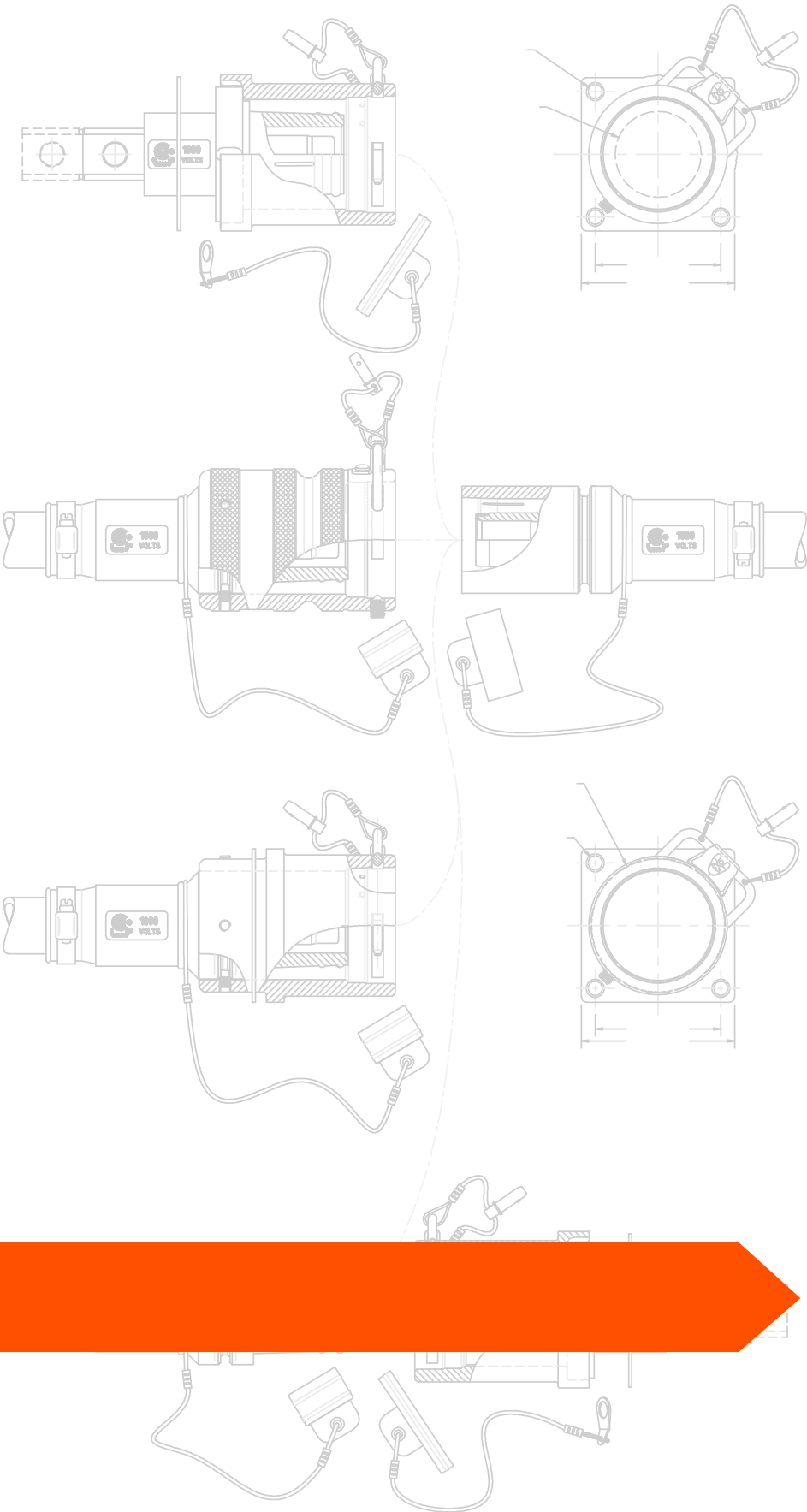
THOMAS & BETTS TBM15I (REPLACES TBM15PF)

Cable Size MCM	Hydraulic Die Catalog Number	Head Die Code
4/0 & 313	15512	76H
444 & 373	15505	99H
535	15515	106H
646	11504	115H
777	11504	115H





FOR MORE INFORMATION



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