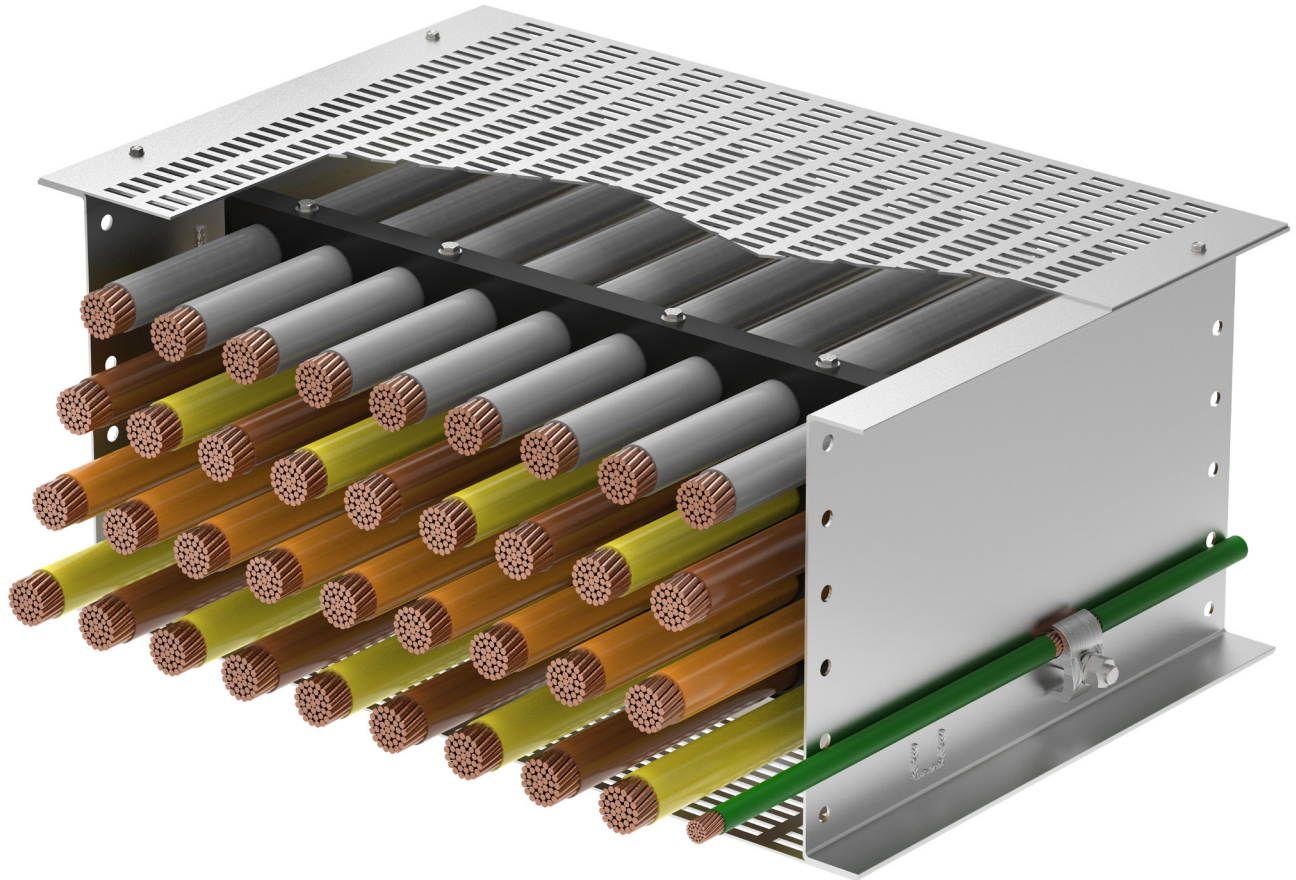


# CABLE BUS INSTALLATION MANUAL

# INTRODUCTION

For over 60 years, MP Husky Cable Bus Systems have been engineered and manufactured for superior reliability. We utilize less conductive material to provide significant cost savings versus non-segregated phase bus duct, conduit, and wire with other electrical feeders. We design our systems to adjust to changes in the field so that your installation minimizes delays and that you can utilize the smallest footprint. With MP Husky Cable Bus you get unparalleled reliability, cost savings and flexibility. See



## Section 1 - General Description

The Cable Bus System supplied has been designed and fabricated to meet your specific job requirements. All of the necessary parts for a complete installation are packaged and marked for easy identification.

The bus enclosure is made from high strength aluminum alloy 6063-T6.

A standard vertical block support (VBS) channel is welded to the inside of the side rail to help the block installation process. The bottom segment of the support block is factory-installed and located every 36 inches on the horizontal and every 18 inches on the vertical bus sections. For bus sections 18-1/8 inches to 24 inches long and less than 12 inches, a stiffener block (no cable holes) is factory installed in one of the rungs in each piece.

The bus enclosure is made with two solid side members with a factory-installed ventilated bottom section and a removable ventilated top cover. The top cover is held in place with self-drilling fasteners (using bolt part number: B-55-SS) located at a maximum spacing of 2 – 3 feet center to center.

The cable support blocks have been custom machined to accept project specified overall diameter of cable. They have been designed to provide the proper cable spacing and phase balance to meet your system specification.

Layout drawings showing the complete system layout are provided-refer to section “Layout Drawing”. These drawings include match-marked part numbers that correspond to markings on the parts shipped.

Cable Bus straight sections are supplied in standard 12-foot and 24-foot lengths with the necessary cut to length pieces required to complete the bus run. Fittings are supplied with the standard 24 inch radius, unless space or cable requires the use of another radius.

All sections and fittings are shipped loose to facilitate ease of installation. Normally, only two people are required to lift up to 24-foot section into place.

The following sections of this installation manual are intended to provide a detailed explanation of each part of the total Cable Bus System.

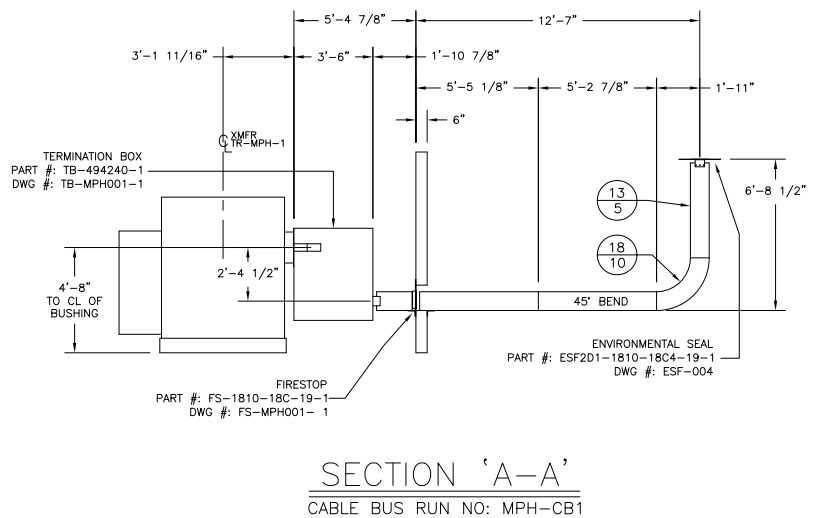
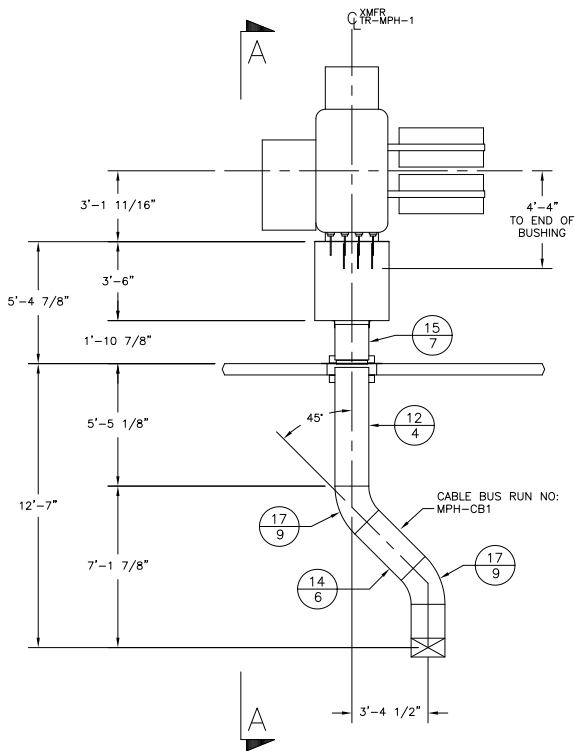
Each section is compiled as a step-by-step outline of recommended procedures. In brief, the following sections will discuss the location of supports, bus enclosure, fittings, termination boxes, seal flanges, etc. and have been arranged in the sequence most closely duplicating actual field installation.

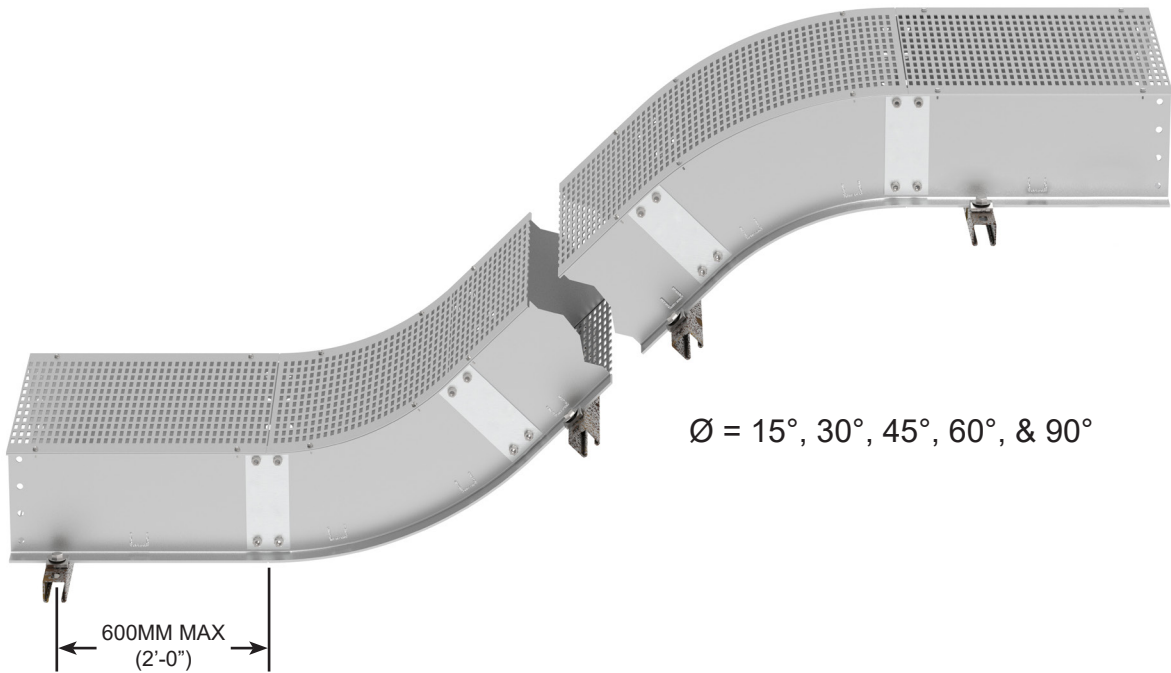
## LAYOUT DRAWINGS – BILL OF MATERIAL

The attached layout drawings and bill of material (master shipping list) will provide the following information:

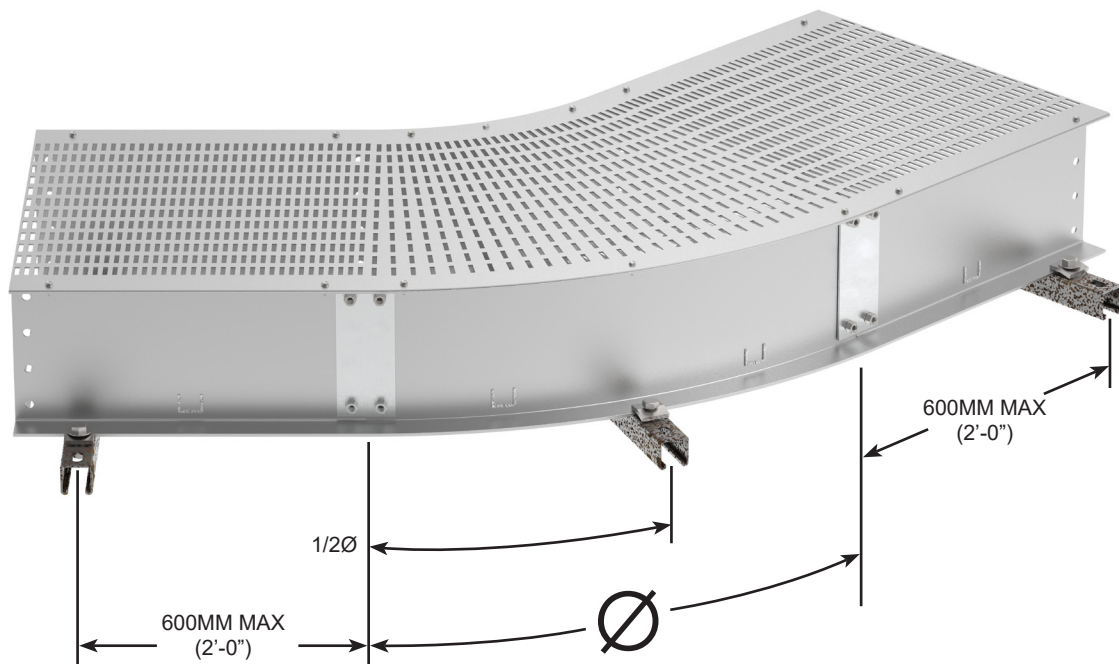
1. Location of bus enclosure sections
2. Quantity and identification of all items
3. Recommended support locations
4. Cable requirement form

Review these prints carefully before attempting to install your Cable Bus System. See the following sections for installation details of each item.





### VERTICAL ELBOW



### HORIZONTAL ELBOW

CENTER SUPPORT NOT REQUIRED  
ON 12" RADIUS, 30° & 45° FITTINGS

## Section 2 - Storage, Handling and Identification

### STORAGE OF EQUIPMENT

Storage recommendations of MP Husky manufactured equipment are offered as a courtesy to field personnel simply to ensure the final integrity of the system.

1. All materials should be stored indoors, in dry-reasonably tempertured quarters.
2. If the material cannot be stored indoors for practical reasons, they should be elevated at least 6" from ground level and properly covered.
3. Gasket and Sealants must never be stored outdoors. If enclosed in shipping crate upon delivery, they should be moved to an indoor, dry location immediately.
4. Covering for material stored outdoors should be such that it is kept dry, but does not allow the inside of the package to sweat due to changes in temperature.
5. Cable Bus and parts should be received and unloaded in accordance with NEMA CB 15001.

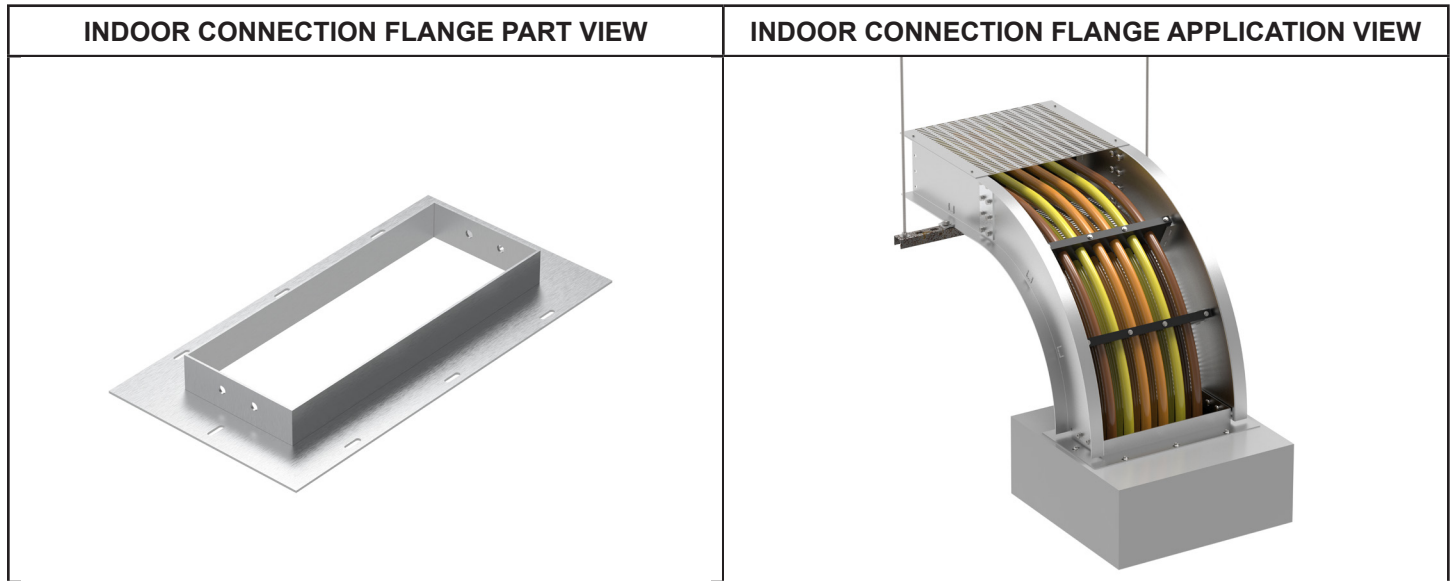
### BUS HANDLING

1. Field personnel are to be responsible for proper handling of the bus sections during removal from carrier and installation on site.
2. Handling of long or oddly configured sections should be accomplished with spreader bars and slings.
3. Slings should be nylon or equal to nylon so as to prevent damage to the housing. Steel slings or chains are not recommended or approved as alternates.
4. Cable reels should be stored indoors on a dry surface. If stored outdoors, cable reels should be placed on suitable dunnage of sufficient size to support the reel weight without sinking or allowing the reels to come in contact with moisture. All cable reels should be stored in the up-right rollout position (do not lay flat).
5. Any unusual conditions existing should and will be noted on drawings or particular orders involved. If said situation is factory-created or, if brought to the attention of MP Husky before shipment, drawings will be changed to facilitate installation.



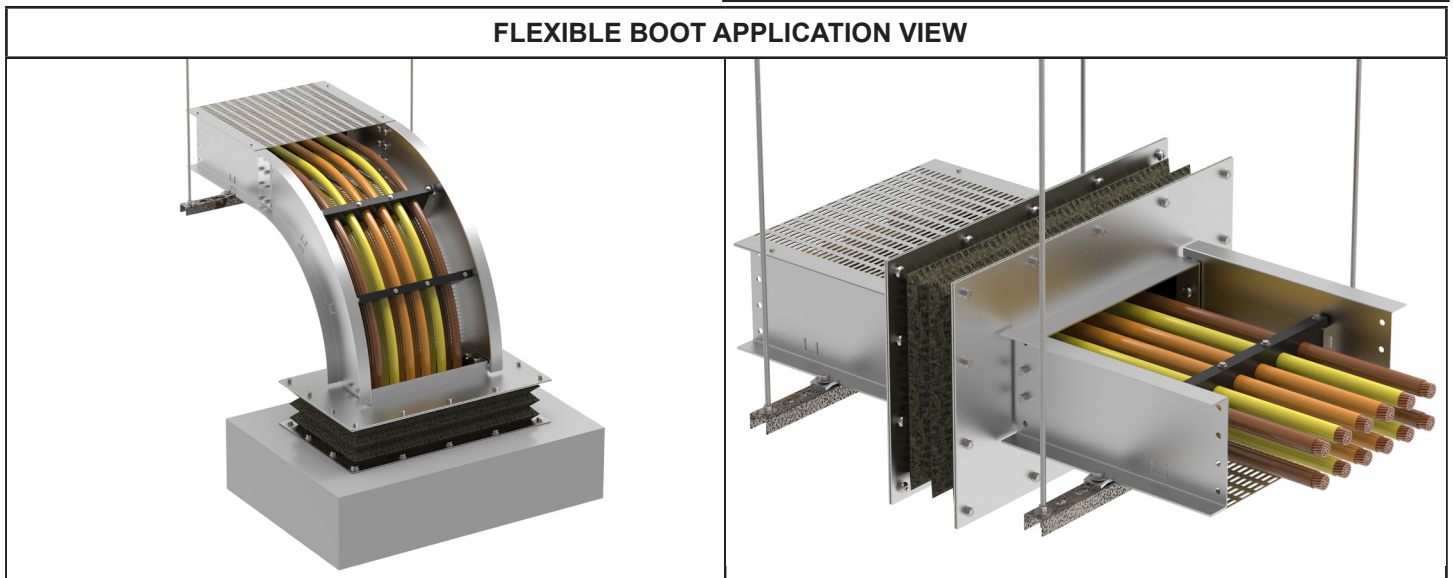
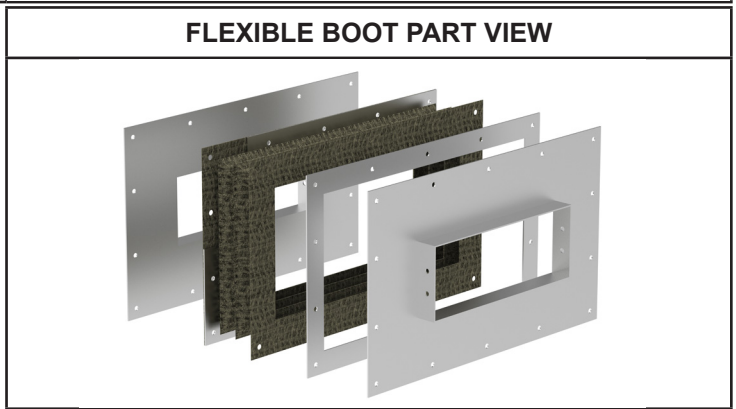
### Indoor Connection Flanges:

Connection Flanges are used indoors at the end of the bus runs (where designated) to connect the bus housing to the switchgear cubicles, motor control centers, panels, and floor penetrations when no environmental protection is needed. The connection flange firmly secures the bus run to the equipment enclosure. After affixing the flange to the designated equipment, slide the bus enclosure over it. Secure the bus enclosure to the connection flange using splice bolts (B-100) and nuts with captive star washers (N-100), supplied with the material.



### Flexible Boots:

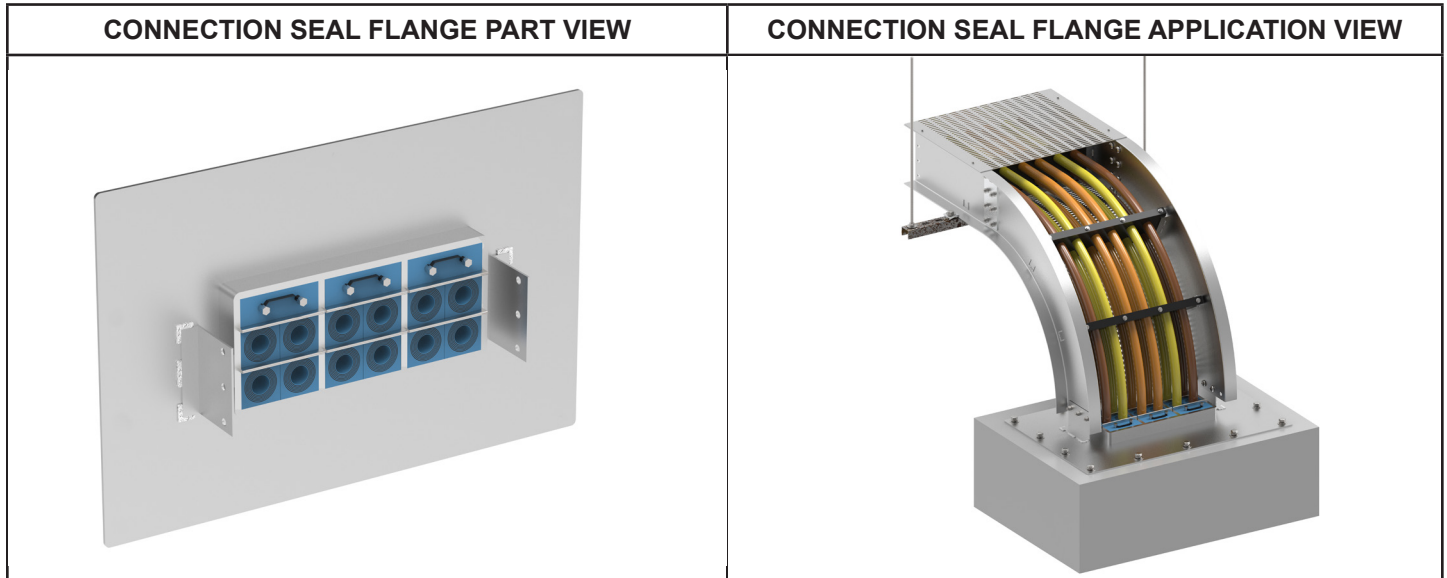
Flexible boots are designed to allow for equipment vibrations, expansion needs and/or settlement concerns. These items are engineered with our flanges and seals to meet the required environmental conditions.





### Compression Seal Flanges:

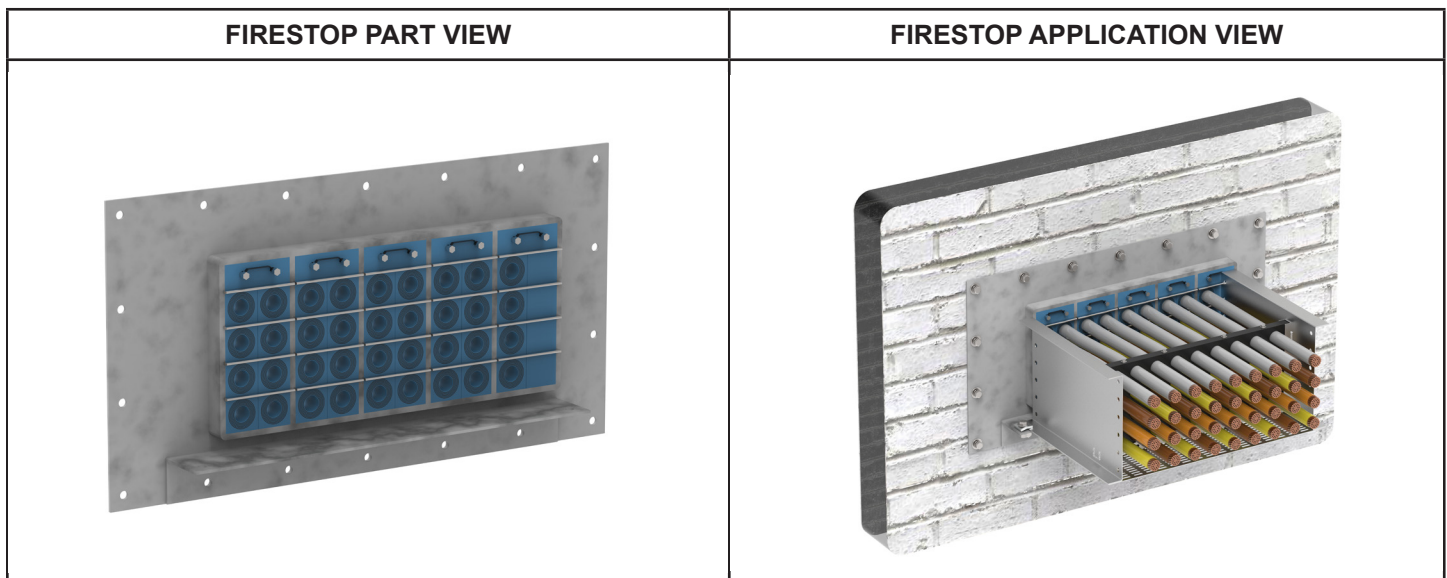
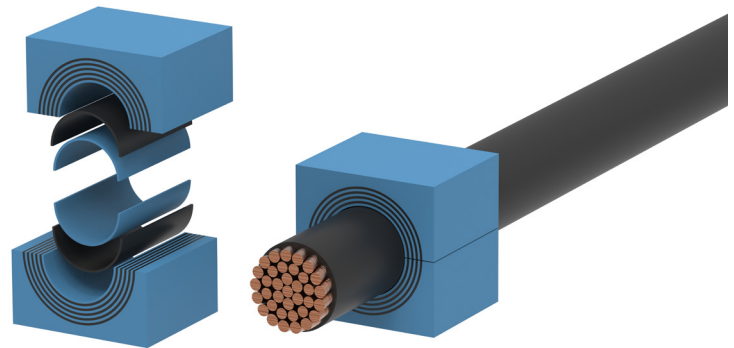
Compression seals (Aluminum) are used when a watertight/vaporproof seal is required, but no fire rating is needed. Neoprene modules are inserted after the cables are installed for a watertight seal and ease of pulling.



### Firestops:

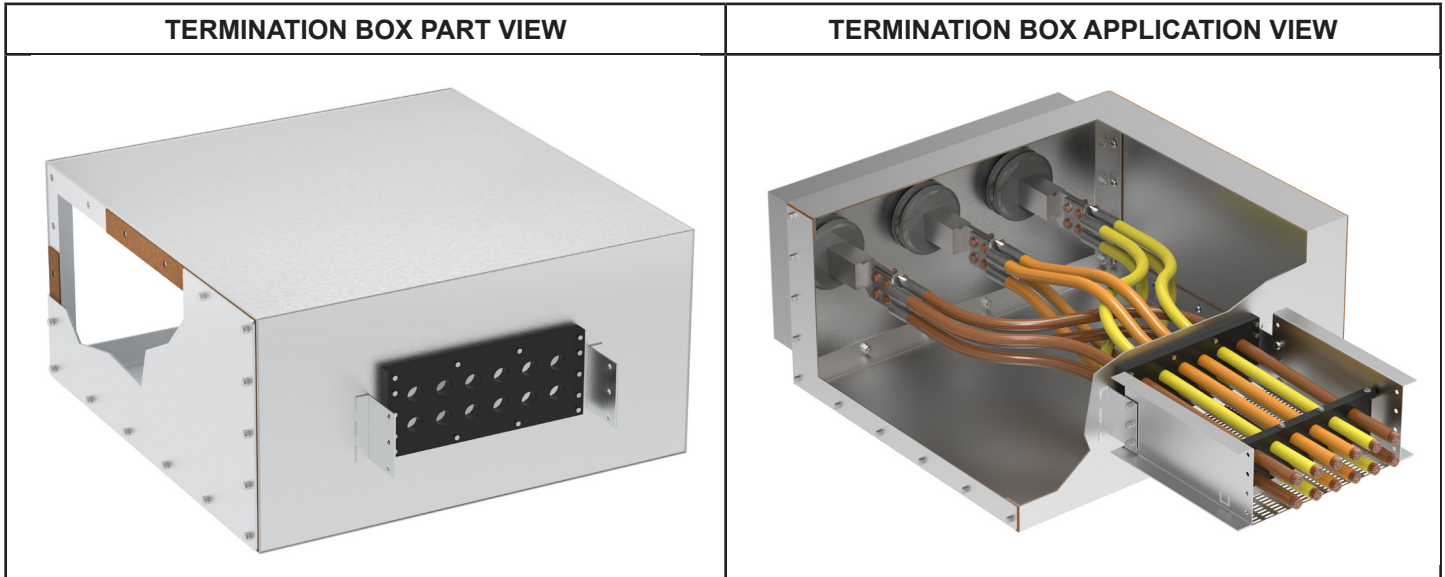
MCT seals (Steel) are used when a fire rating and/or watertight seal are required. Neoprene modules are inserted after the cables are installed for ease of pulling. They carry a 2 hour fire rating and come with all necessary hardware.

Neoprene modules are used with Roxtec frames. They Provide Multidiameter™ Roxtec technology based on removable layers for perfect adaptation to a cable.



**Termination Boxes:**

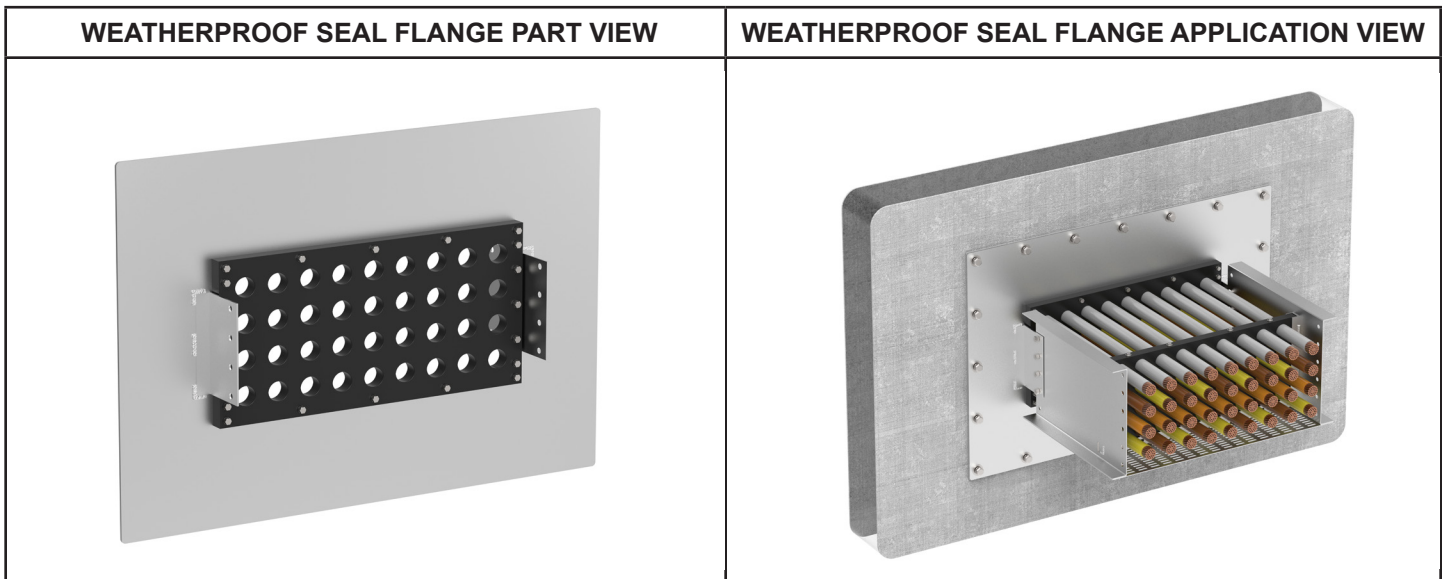
Termination Boxes, SWGR/MCC Top Hats, and other Junction Boxes are designed and supplied by MP Husky to guarantee the needed space to properly transpose the phases and terminate the conductors to the electrical equipment. Boxes are designed and manufactured to NEMA standards with aluminum welded frame construction with bolted removable panels, and welded fixed covers as needed. These boxes are engineered with our flanges and seals to meet the required environmental conditions.



**Weatherproof Seal Flanges:**

This series of flanges are used to provide an weatherproof seal where the cable bus makes a transition through a wall, floor, or where cable bus housing is connected to an outdoor enclosure as required by specification.

See drawings ESF-004, ESF-005, or ESF-007 for the proper equipment seal installation instructions.



## CABLE

The cable supplied for your system meets the required cable specification. Refer to the Cable Bus cross section drawing or detail shown on the layout drawings for more information.

The cable has been supplied on reels, which contain sufficient lengths to avoid cable splicing within the bus runs. Care should be taken to adhere to the attached cutting length schedule on the Cable Requirement Form at the back of this manual.

Care should be taken to phase the individual cables as indicated on the layout drawings.

Transposition of cable in the bus run is not necessary. All cable can be pulled in straight with the collection of phase conductors at termination points, in accordance with MP Husky recommendation or as modified by the layout drawings.

Prior to cable pulling operations, the proper pulling tools should be selected and installed along the bus run.

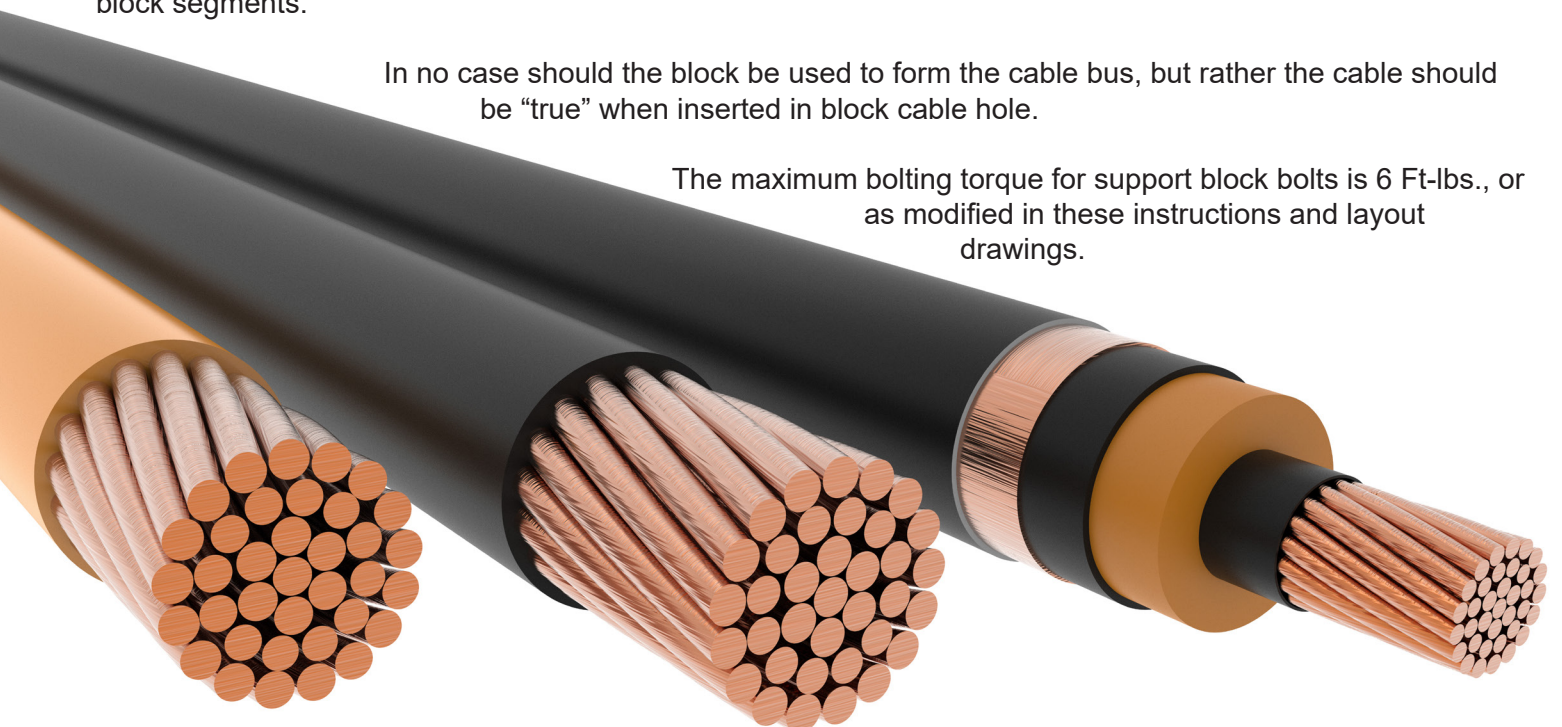
The spacing of rollers depends on the weight of conductor to be pulled. In general, the spacing of rollers should range between approximately ten feet for conductor, weighing over two pounds per foot, and sixteen feet for conductor, weighing no more than eight pounds per foot.

The following practice is suggested to pull conductors in the Cable Bus when using installation tools:

1. Short lengths can be laid in place and small diameter medium length conductors may be pulled with a basket grip only, providing tensions do not elongate or damage the insulation.
2. Best results for installing long lengths of conductor up to 1000 feet, with as many as a dozen bends, are obtained by pulling the conductor in one continuous operation at a speed of 20 to 25 feet per minute. It may be necessary to employ a braked reel to reduce sagging of the conductor between rollers.
3. As the conductors are pulled in, it will be necessary to install the intermediate and upper support block segments.

In no case should the block be used to form the cable bus, but rather the cable should be “true” when inserted in block cable hole.

The maximum bolting torque for support block bolts is 6 Ft-lbs., or as modified in these instructions and layout drawings.



## ELECTRICAL CONNECTORS

The Electrical Connectors, when supplied, are manufactured to NEMA and UL specifications. Long barrel compression connectors are normally provided to assure the user of a low resistance connection.

## TERMINATION KITS

If required, cable termination kits have been provided with this Cable Bus System. Refer to the manufacturer's instructions packaged with each kit for installation details.

## CABLE TESTING

MP Husky recommends that all cable be tested after installation and prior to equipment connections and/or energizing. The purpose of this testing is to reveal any damage to the cable during the pulling process or substandard termination applications.

For low voltage (600V, 2kV and 2.4kV) non-shielded cable, the use of a megger for checking the cable reliability is a general practice. However, for medium voltage shielded power cable, the use of high voltage direct current (D.C) testing is standard. The field test voltages are directly proportional to the cable insulation thickness in mils. Please see the following table for actual test voltage levels.

### High Voltage Field Acceptance Test (prior to cable being placed in service)

Rated Voltage Phase to Phase	D.C. Hi-Pot Test Walls-Mills	kV	D.C. Hi-Pot Test Walls-Mills	kV
5000	90	25	115	35
8000	115	35	140	45
15000	175	55	220	65
25000	260	80	320	95
28000	280	85	345	100
35000	345	100	420	125
46000	445	130	580	170

Note: Test should be conducted for 15 minutes. If leakage current quickly stabilizes, the test duration may be reduced to 10 minutes.

## DIE SELECTION CHART

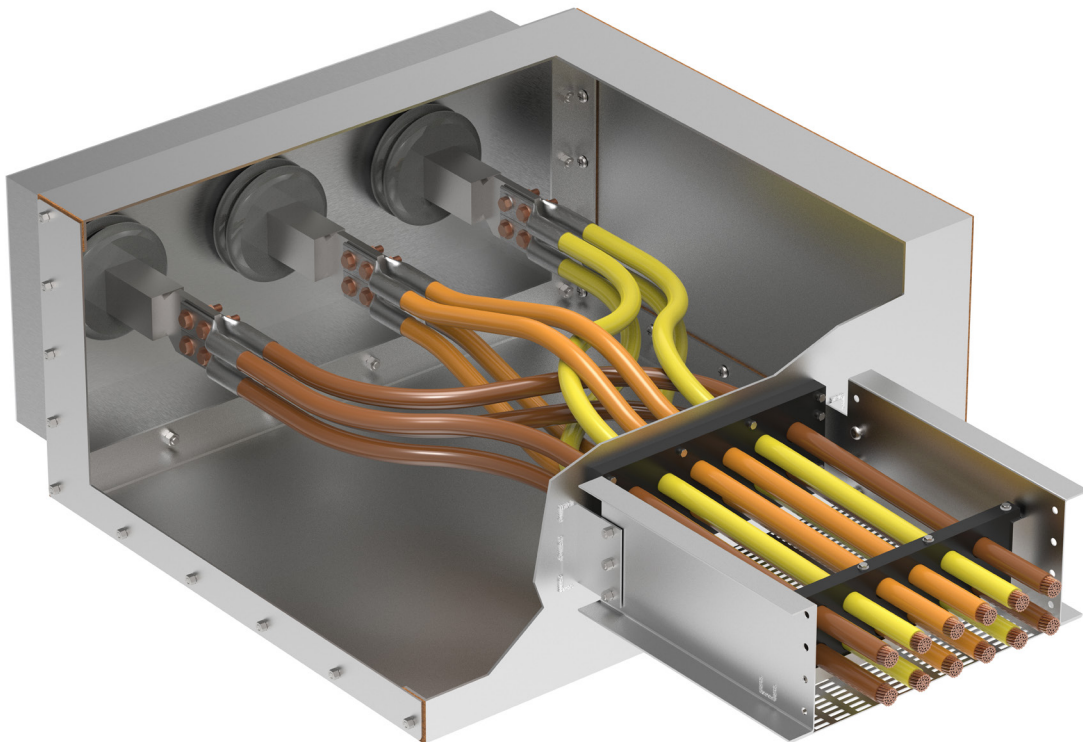
### Copper

Selected Conductor Sizes	Burndy Die No.	Burndy Color	Thomas & Betts Die No.	Thomas & Betts Color
4/0 kcmil	15	Purple	54H	Purple
250 kcmil	16	Yellow	62	Yellow
350 kcmil	18 or 324	Red	71H	Red
500 kcmil	20 or 299	Brown	87H	Brown
750 kcmil	24 or 473	Black	106	Black

### Aluminum

Selected Conductor Sizes	Burndy Die No.	Burndy Color	Thomas & Betts Die No.	Thomas & Betts Color
4/0 kcmil	298	White	66	White
250 kcmil	324	Red	71H	Red
350 kcmil	299	Brown	87H	Brown
500 kcmil	300	Pink	99H	Pink
750 kcmil	301	Red	115H	Yellow
1000 kcmil	302	Brown	140H	N/A

Additional information available upon request.



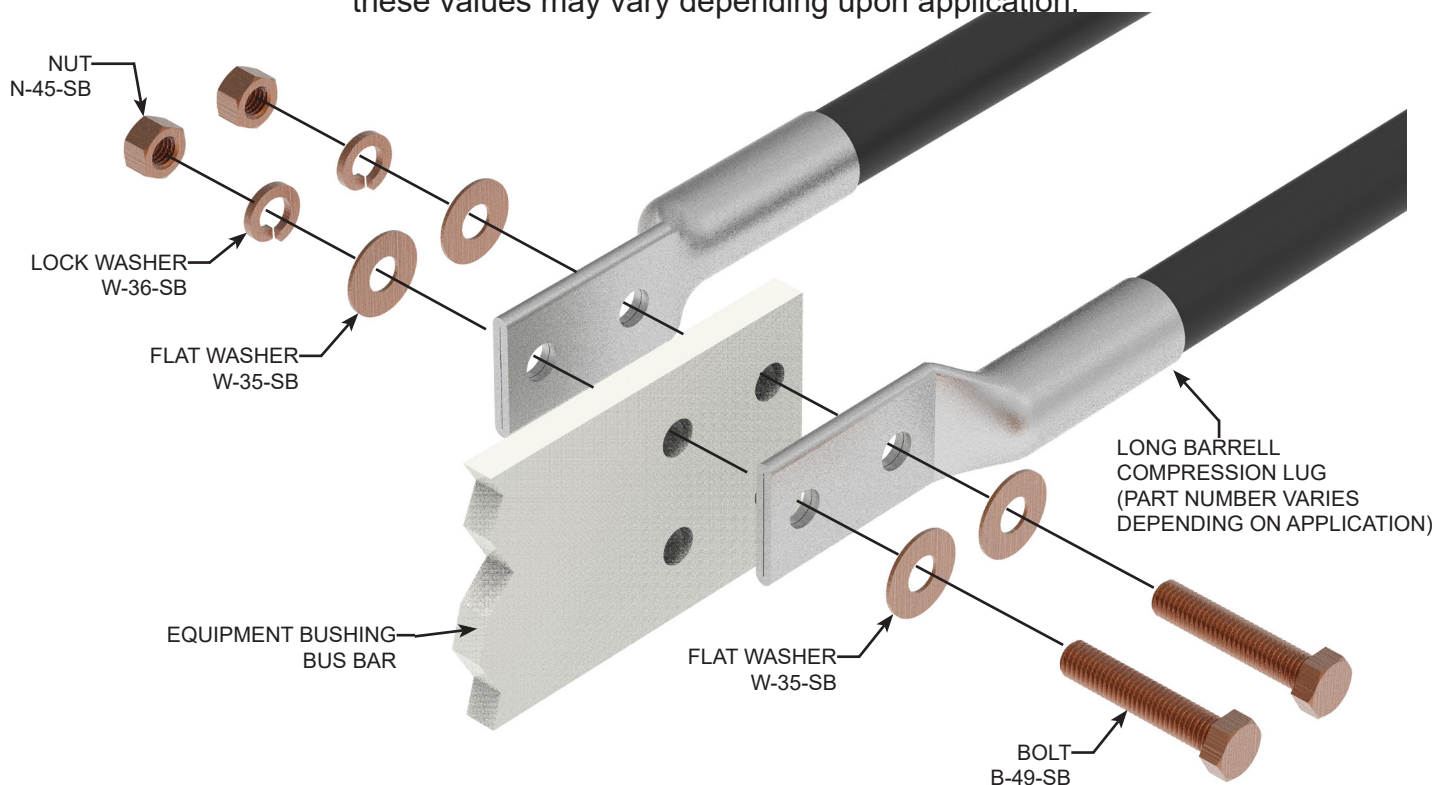
## Standard Cable Bus Hardware List

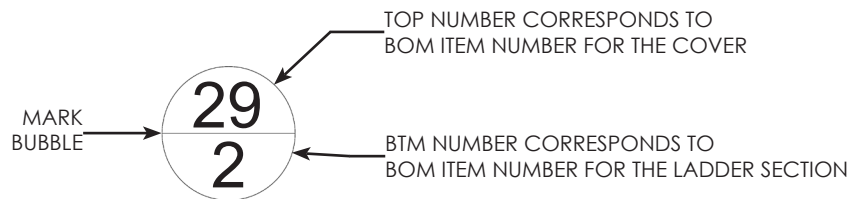
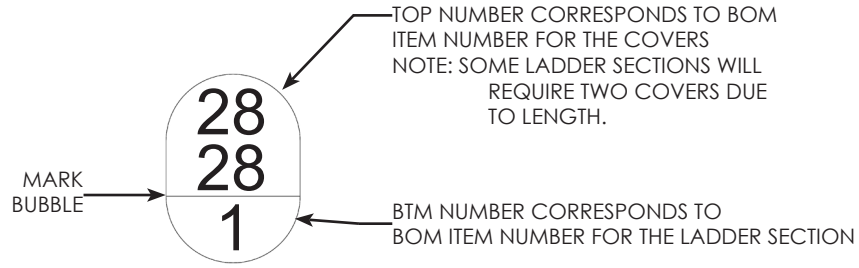
Part	Description	Material	Use	Torque Value
B-100	3/8-16X7/8 Knurled Shank Mach. Screw	Plated Steel	Standard Splice	25 FT-lbs
B-61	1/2-13X1-1/2 Hex Head Screw	Zinc Plated	Fire Stop Plate Hold Down Clips	40 FT-lbs
B-20-6S	1/4-20X1-3/4 Hex Head Bolt	Stainless Steel	Environmental Seal Block	6 FT-lbs
B-TB25-L-SS	1/4-20XL Hex Head Bolt	Stainless Steel	Cable Support Block	6 FT-lbs
B-55-SS	NO. 10-16X5/8 Self Drilled Tap Screw	Stainless Steel	Cover Hold Downs	6 FT-lbs
B-5-SS	1/4-20X5/8 Slot Truss HD Mach. Screw	Stainless Steel	Expansion Splice	6 FT-lbs
W-8-SS	1/4" Flat Washer	Stainless Steel	Cable Support Block	N/A
W-7	1/4" Rubber Bonded Washer	Stainless Steel	Environmental Seal Block	N/A
W-9	1/2" Split Loc-Washer	Zinc Plated	Fire Stop Plate Hold Down Clips	N/A
W-12	1/2" Flat Washer	Zinc Plated	Fire Stop Plate Hold Down Clips	N/A
N-100	3/8-16 Hex Nut w/ Loc-Washer	Plated Steel	Standard Splice	N/A
N-12	1/2-13 Hex Nut	Plated Steel	Fire Stop Plate Hold Down Clips	N/A
N-17	3/8-16 Hex Nut	Stainless Steel	Expansion Splice	N/A

## Cable Termination Hardware

Part	Description	Material	Use	Torque Value
B-49-SB	1/2-13X2 1/2 Hex Head Bolt	Silicone Bronze	Cable Terminations	43 FT-lbs
W-35-SB	1/2" Flat Washer	Silicone Bronze	Cable Terminations	N/A
W-36-SB	1/2" Split Loc-Washer	Silicone Bronze	Cable Terminations	N/A
N-45-SB	1/2-13 Hex Nut	Silicone Bronze	Cable Terminations	N/A

Note: The torque values listed are for the bolts only and these values may vary depending upon application.

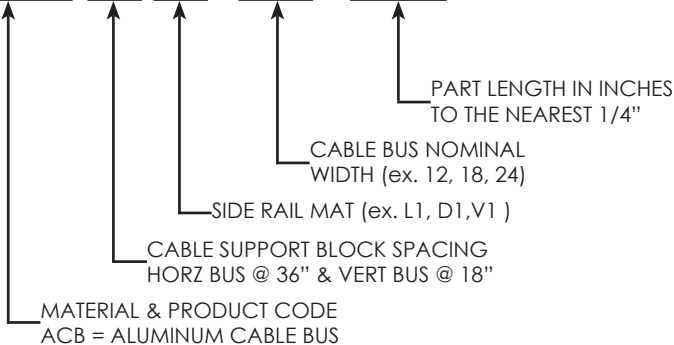




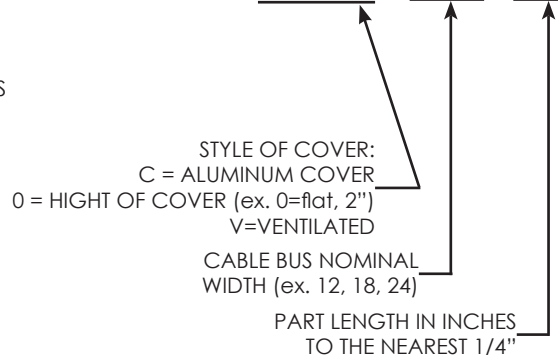
CABLE BUS BILL OF MATERIAL			
ITEM NUMBER	QUANTITY	CATALOG NUMBER	DESCRIPTION
1	20	ACB36L1-24-144	STRAIGHT LADDER SECTION
2	6	ACB36L1-24-60	STRAIGHT LADDER SECTION
3	1	ACB18L1-24-58-1/4	STRAIGHT LADDER SECTION
4	3	ACB18L1-24-20	STRAIGHT LADDER SECTION
28	40	C0V-24-72	STRAIGHT COVER
29	6	C0V-24-60	STRAIGHT COVER
30	1	C0V-24-58-1/4	STRAIGHT COVER

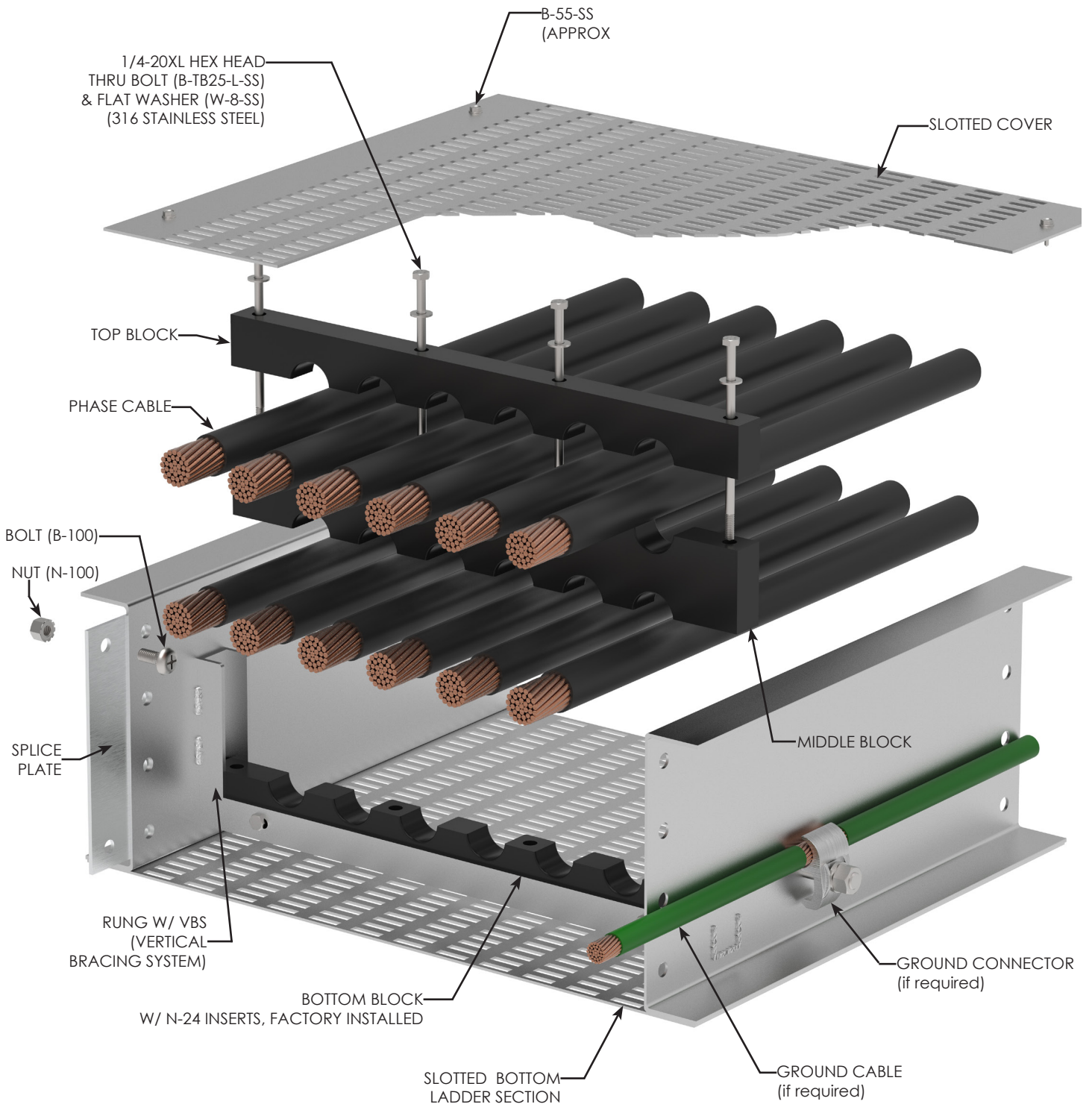
### CATALOG NUMBER DETAILS:

**ACB36L1-24-144**



**C0V-24-72**



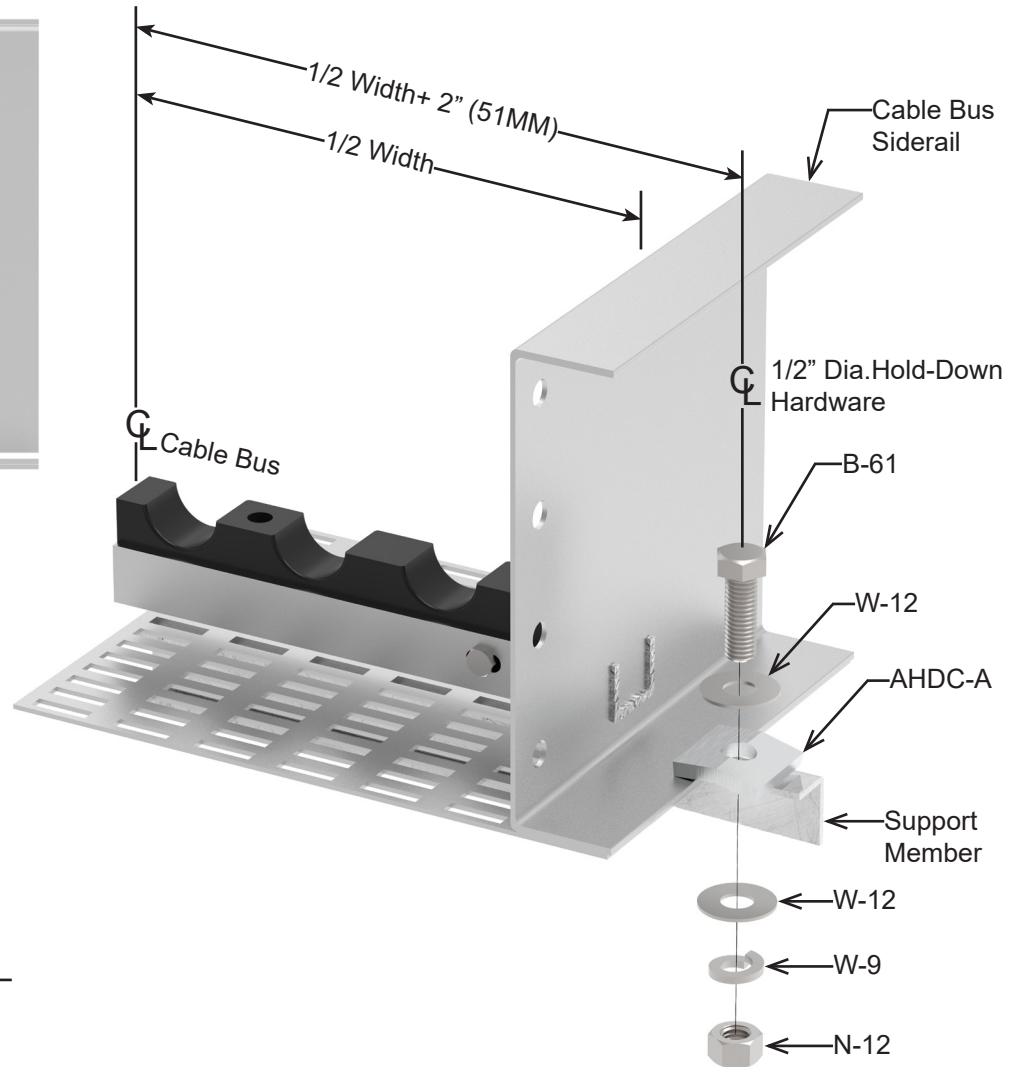
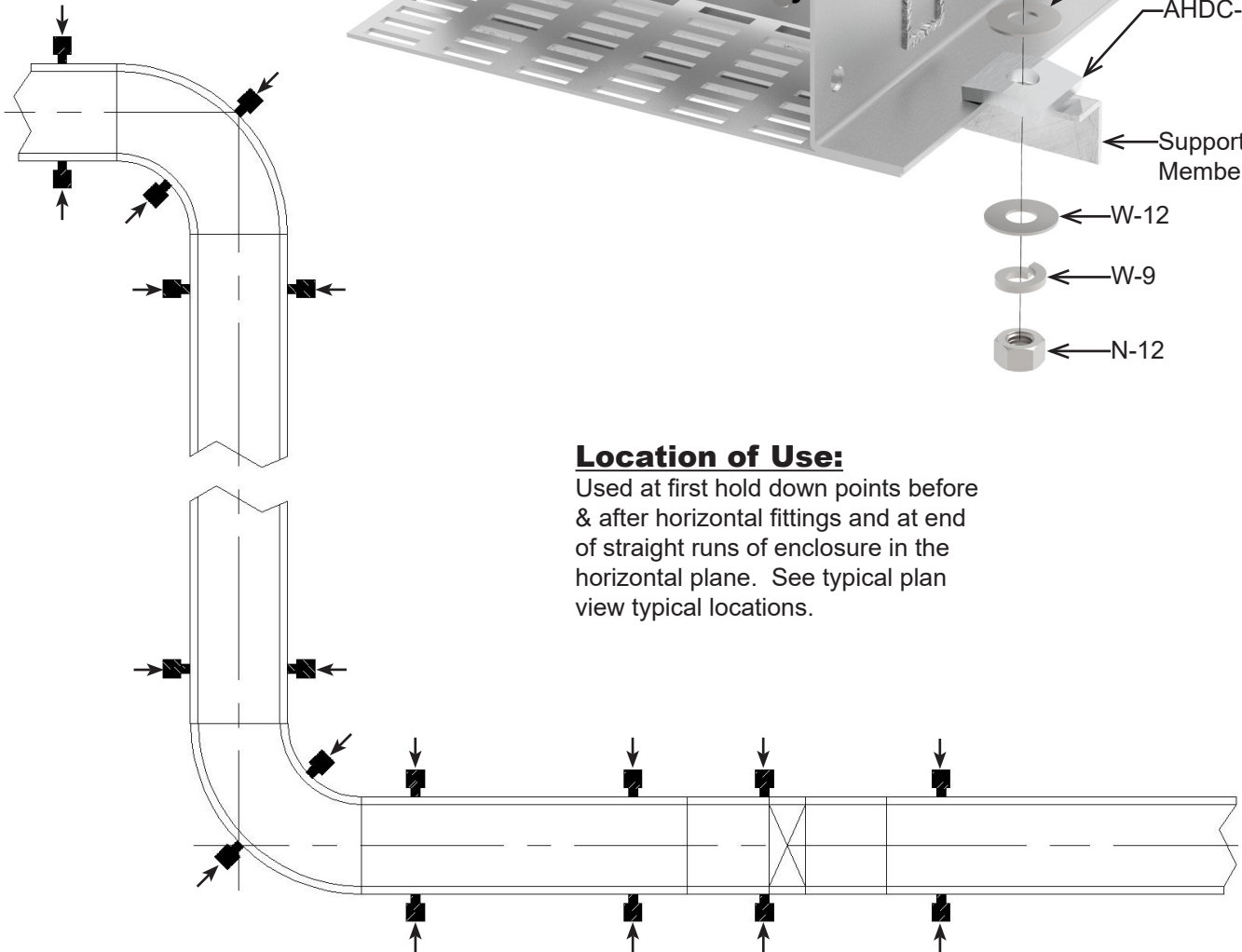




## Hold-Down Clip Detail



### TYPICAL PLAN



### Location of Use:

Used at first hold down points before & after horizontal fittings and at end of straight runs of enclosure in the horizontal plane. See typical plan view typical locations.