FLEX-CABLE

CONECTIVIDAD
INDUSTRIAL Y ARNESES

ROBO DRESS COMPONENTS AND ACCESSORIES

Division of Balaguer Corporation

TECHNICAL
REFERENCE
CATALOG

FLEX-CABLE

COMMODORE MACHINE COMPANY

ELECTRONICS DIVISION/**NCSI**

Worldwide leaders in welding cables and specialty products for over 35 years, Balaguer Corporation and its divisions are recognized as producers of the most advanced products globally.

Our commitment is to meet or exceed our customer's expectations and to inspire confidence in our products. We are dedicated to the advancement of product development through technology.

Now ISO 9001 certified

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FLEX-CABLE

DIVISION OF BALAGUER CORPORATION

ELECTRONICS DIVISION / NCSI

Electronics Division/NCSI

ISO-9001

Partners in Marketing

INTRODUCTION

FLEX-CABLE/NCSI is constantly developing **standard** and **custom** components and systems for **robot dress-out** applications.

Robo Dress™ provides a platform to route and organize power and control cables & air and water lines for robotics, as well as other applications. This technology helps create an innovative system for your industrial needs. The end result is minimal maintenance and less down time.

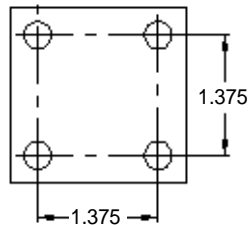To assist you in your efforts, we offer the following products:

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ROBO PATTERN

Our "standard Robo" *(left)* and "mini Robo" *(right)*, fastener pattern is used throughout our product line unless otherwise noted. This "Robo" hole pattern supports the use of a 5/16 inch diameter fastener.
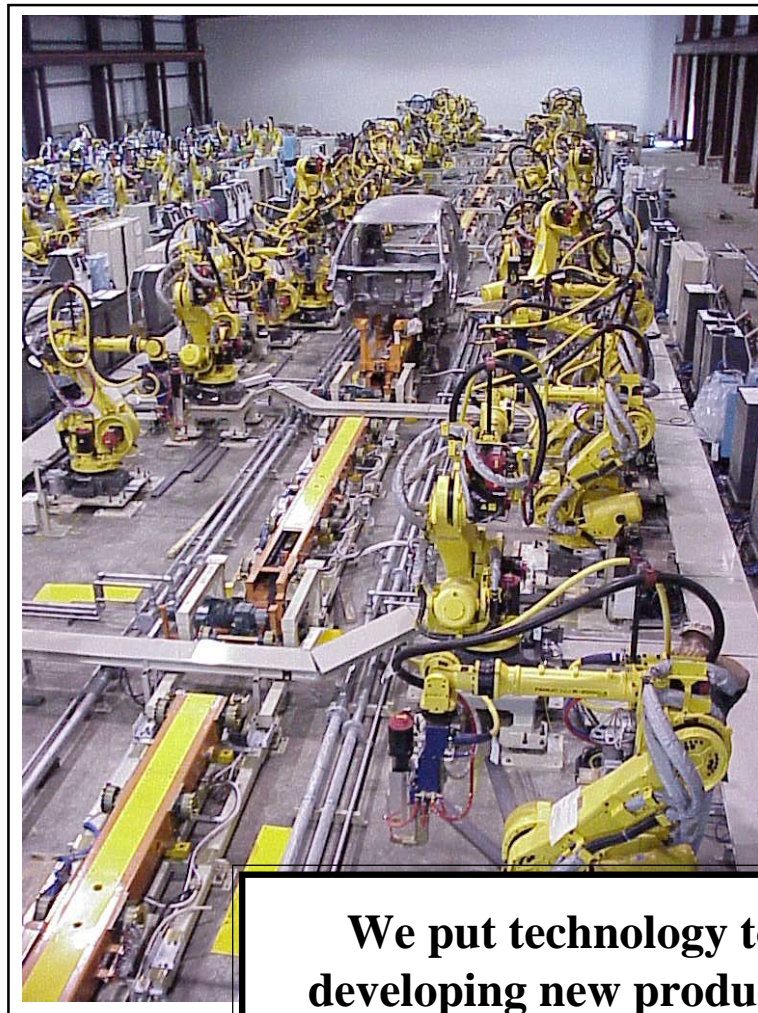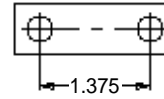
STANDARD ROBO
BOLT PATTERN

1.375

1.375

MINI ROBO
BOLT PATTERN

1.375

We put technology to work developing new products, from robotic accessories and dressout to machining special parts.

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QUICK CHANGE CLAMP ^(PATENT PENDING)

Quick Change Clamps hold various Grommets to secure cables and air/water hose bundles.
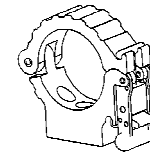Quick Change Clamps are available with fixed or swivel base.

| Quick Change Part No.	Description Clamp Size/Name
6619	6" Clamp
6513	4" Clamp
6520	2-1/2" Clamp
8279	2-1/2" Mini Clamp
6779	4" Swivel Clamp
8018	2-1/2" Swivel Clamp
8349	2-1/2" Mini Swivel Clamp
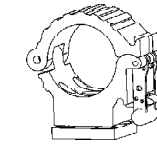
2-1/2" Swivel Clamp
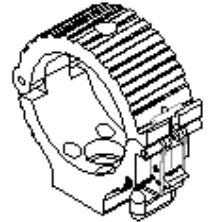
4" Clamp

2-1/2" Mini Clamp

FLAT BAR CLAMP

This unique Aluminum clamp is stackable. Its grommets are made of Urethane for long life and come in a variety of standard sizes.

| Flat Bar Part No.	Description Clamp/Grommet Size
6348*	Flat Bar Clamp
NR-175	Grommet ID 1.75"
NR-188	Grommet ID 1.88"
NR-225	Grommet ID 2.25"
NR-232	Grommet ID 2.32"
NR-250	Grommet ID 2.50"
NRSG-1	Smooth form for custom sizes
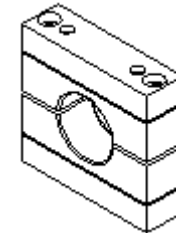
*Grommet & Swivel sold separately

ECONO CLAMP

This clamp is made of Urethane and has a low profile to hold a cable and/or hose bundles close to a weld.

Econo Clamp Part No.	Clamp Name	Max ID (1/16" increments)
6504-DD	Small Econo	1.375" ID
6506-DD	Mid Econo	2.00" ID
6507-DD	Large Econo	2.625" ID
6508-DD	X-Large Econo	3.25" ID

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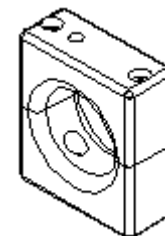
The following Grommets are made of either Urethane or UHMW and are used in our Quick Change Clamps to hold a variety of hoses, wires and tubes.

VARIABLE HOLE GROMMET

Made of UHMW this Grommet is used to clamp primary/control cables and/or air/water hose bundles. This Variable Hole Grommet comes standard with two holes but you can custom order your grommet to have one or more holes or custom shapes.
Ordering a -0-0 enables you to bore your own holes.

Variable Hole Grommet	Description		
	.0625 Increments		Total ID	Fits
Part No.	ID-1	ID-2	MAX	Clamp
8456-ID1-ID2	XXX	XXX	4-1/2"	6" Clamp
6255-ID1-ID2	XXX	XXX	3-1/4"	4" Clamp
6326-ID1-ID2	XXX	XXX	1-3/4"	2-1/2" Clamp
6435-ID1-ID2	XXX	XXX	1-3/4"	2-1/2" Mini
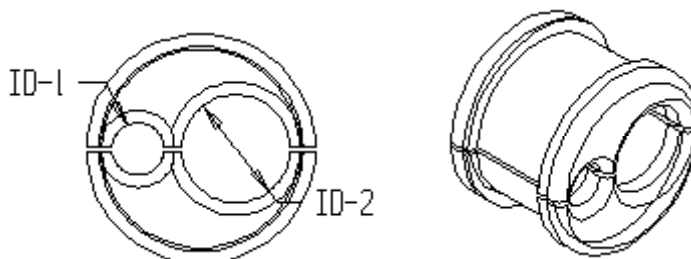
SLIP GROMMET

Made of UHMW, this Grommet allows EXO covered Kickless cables or air/water bundles to slide back and forth easily.

Slip Grommet	Description	
Part No.	Standard ID	Fits Clamp
6595	4-1/2"	6" Clamp
6254	3"	4" Clamp
6344	1-5/8"	2-1/2" Clamp
6611	2-1/8"	2-1/2" Mini

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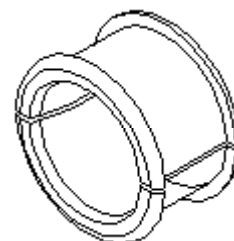
COR-FLEX GROMMET

Made of UHMW, this Grommet controls the movement between the Cor-Flex and your cables.
Rotational - holds the Cor-Flex while allowing it to rotate.
Holding - holds the Cor-Flex and bundles of cables/hoses securely, not allowing them to rotate.
Non-Rotational - stops only the Cor-Flex from rotating.

| Cor-Flex Grommet	Description	
Part No.	Fits Clamp	Type of Holding
4922-70	4" Clamp	Rotational
4932-70-ZZ	4" Clamp	Holding
8022-XX	2-1/2" Clamp	Rotational
8197-XX	2-1/2" Clamp	Non-Rotational
8032-XX-ZZ	2-1/2" Clamp	Holding
6596-XX	2-1/2" Mini	Non-Rotational
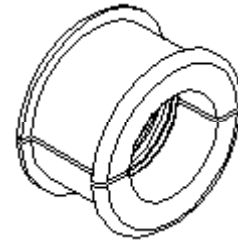
*XX denotes size of Cor-Flex

**ZZ denotes bundle gripping diameter

KICKLESS CABLE GROMMET

Made of Urethane and used to hold Standard and Euro-Flex™) kickless cables, these grommets fit in our 4" Quick Change Clamps (see page 3).

Kickless Grommet	Description	
Part No.	Standard ID	Fits Kickless/Euro-Flex™
6418-20*	2.23"	300 MCM
6418-22*	2.42"	400 MCM
6418-24*	2.60"	500 MCM
6418-25*	2.73"	650 MCM
6418-27*	2.92"	650 MCM Euro-Flex™
6418-29*	3.10"	800 MCM
6418-31*	3.30"	800 MCM Euro-Flex™
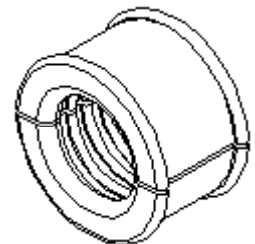
* Dash number denotes effective clamping ID in Tenths of an inch.

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FORKED TERMINAL AND BUSS BAR GROMMET

Made of UHMW and used to hold Kickless Forked Terminals and Buss Bars, these Grommets come with a 7/16" diameter hole for a locking fastener and a set screw for the clamp. Fasteners available to prevent rotation. Call Technical Support for more details.

| Forked Terminal Grommet		
Part No.	Fits Clamp	Fits Terminal No.
6466	4" Clamp	817F & 812F

Buss Bar Grommet		
Part No.	Fits Clamp	Fits Part No.
6465	4" Clamp	BB1717, BB1712, BB1212

ROLLER GROMMET

Made of UHMW, this Grommet is engineered with nylon rollers to aid in the smooth travel of your cable and fits in our 4" Clamp to hold Kickless cables.

Roller Grommet	
Part No.	Standard ID
6253	2-1/5"

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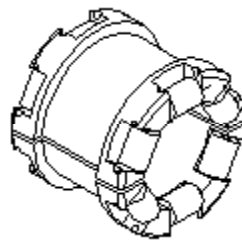
MANIFOLD GROMMETS

These Manifold Grommets fit our standard 4" Clamp and hold primary cables and provide a Manifold for air and water lines. Inserts are made of brass.

| Manifold Grommets			
Part no.	Max ID	ID Increment	Material / Used For
6716-ID*	-32 (2")	1/16"	Urethane
6716-3-ID	-24 (1-1/2")	1/16"	Urethane
6667-ID*	-32 (2")	1/16"	Aluminum / 300, 400, 500 Kickless Cables
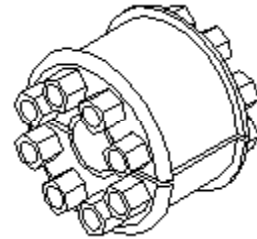
CABLE AND HOSE GROMMET

Made of Urethane this grommet holds air/water hoses around a 500 MCM Kickless cable.
The insert may be used to hold a primary cable.

Cable/Hose Grommet		
Part No.	Fits Clamp ID	ID
6368	4"	N/A
6369-ID	Part No. 6368	1/16" Increment

Insert Example: Part No. 6369-18 fits a 4/3 cable

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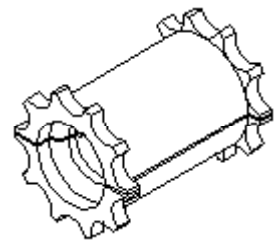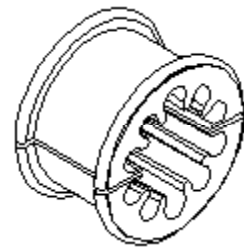
STANDOFF AND BOOM BAR PIPES

These Steel Pipes fit in our standard Aluminum Clamp Blocks and Boom Bar Clamping Blocks to position Robo Dress™ parts anywhere around the robot.

Standoff Pipe	
Part No.	Size & Shape
15-1250-XX*	1.25" Diameter

| Boom Bar Pipes	
Part No.	Size & Shape
15-2000-XX*	2.00" Diameter
15-2009-XX*	2.00" Square
15-2509-XX*	2.50" Square

* XX-Length in 1" increments.
example: 15-1250-12 would be a 12" length of pipe.
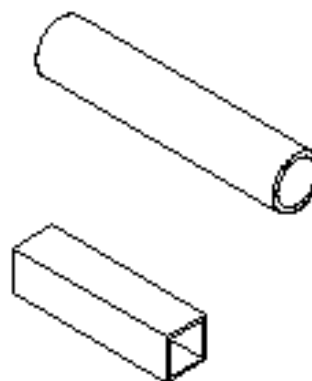
CLAMPING MOUNTING BLOCKS

These tough Aluminum/Steel blocks come standard with our "Robo" pattern and are used for clamping standoff pipe, clamps or a system of Robo Dress™ parts. Bored for 1.250" Standoff Pipe. Come standard with 5/16 SHCS and Allen nuts. The Steel block can be welded.

Clamp Mounting		
Part No.	Material	Orientation
6651	Aluminum	
8545	Steel	Horizontal
8546	Steel	Vertical

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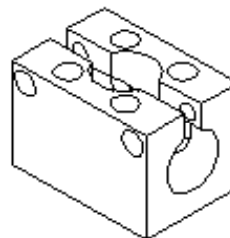
90 DEGREE CLAMPING BLOCK

These tough Aluminum or Steel blocks are used in conjunction with our stand-off pipe for flexible positioning of clamps around a robot. Bored for 1.250" Standoff Pipe. Comes with 5/16 SHCS and Allen nuts. The Steel block can be welded.

90° Clamping Block	
Part No.	Material
6650	Aluminum
8345	Steel
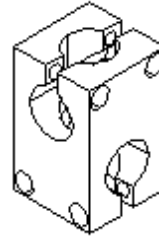
BOOM BAR CLAMPING BLOCK

These tough Aluminum blocks clamp securely to a two inch square boom bar. "Robo" bolt pattern is conveniently located on the top and bottom of the blocks.

Boom Bar Clamping Block	
Part No.	Accepts Pipe Size/Block Material
6658	2" Square / Aluminum
6512	2" Square / Steel
8469	2-1/2" Square / Aluminum
8470	2" Round / Aluminum
8393	40mm Round / Aluminum

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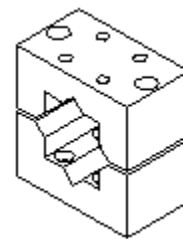
ADAPTOR PLATE

These steel Adaptor Plates are used to join a part with a "Robo" pattern to a part with a 2-3/8" (60mm) square bolt hole pattern.
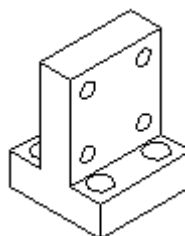
Adapter Plate			
Part No.	Size	Thickness	Material
6300	3.00" Sq	0.75"	Aluminum
6300-S	3.00" Sq	0.75"	Steel
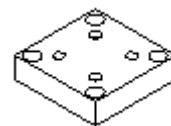
TWIN MOUNTING BRACKET

This rugged steel bracket has our "Robo" pattern and is used to mount pairs/combinations of clamps, or other Robo-Com V accessories.
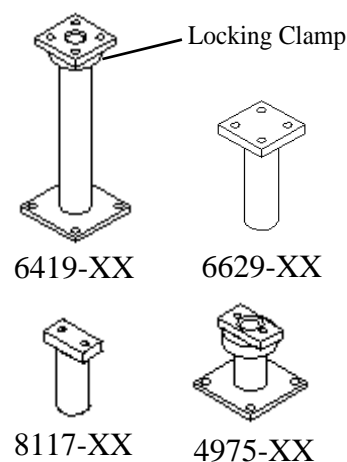
Twin Mounting Bracket
Part No.
6661"

MULTI-ANGLE ADAPTOR

This multi-positional Standoff will let you control the positioning angle of your Clamp. When used with our Clamping Blocks this adaptor will securely lock into place. Tops come standard with our "Robo" pattern, while the base plates have a 2-3/8" pattern.

Locking Clamp

Multi-Angle Standoff		
Part No.	Length in 0.250" increments	Mounting (Top/Base Plate)
6629-XX*	XX	Full/Without Base
8117-XX*	XX	Mini/Without Base
6419-XX*	XX	Full/With Base
4975-XX*	XX	Mini/With Base

*EXAMPLE: 6629-25 IS 6.25" LONG

6419-XX   6629-XX

8117-XX   4975-XX

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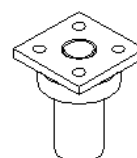
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STANDOFF SWIVEL

This free moving pivot mounts to our Clamps and Mounting Blocks allowing the clamp to swivel freely.

Standoff Swivel		
Part No.	Length in 0.250" increments	Fits Clamp
6546-XX*	XX	6", 4" & 2-1/2"
8081-XX*	XX	Mini
8192-XX*	XX	6", 4" & 2-1/2"

*EXAMPLE: 6546-10 IS 2.5" LONG

8081-XX

6546-XX

8192-XX
Holds two clamps

PLATE MOUNT SWIVEL

These Plate Mount Swivels are free moving and use the "Robo" Pattern or a 2-3/8 (60mm) Pattern to mount to a variety of blocks, clamps, and plates.

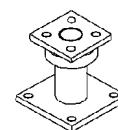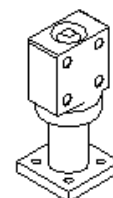| Plate Mount Swivel		
Part No.	Length in 0.250" increments	Mounting (Top/Base Plate)
8444-XX	XX	Full / Robo Base
8015-XX	XX	T / Robo Base
6771-XX	XX	Flat Bar Clamp / 2-3/8" Base
6387-XX	XX	Full / 2-3/8" Base
4968-XX	XX	Mini / 2-3/8" Base
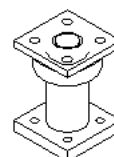
8444-XX
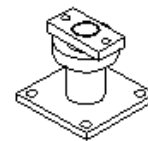
4968-XX

5771-XX

6387-XX

8015-XX
Holds two clamps

PIVOTING STANDOFF ASSEMBLY

Pivoting Standoff Assembly can be moved to the angle and rotation needed and clamped in place. Top has Full "Robo" Pattern.

| Pivoting Clamp	
Part No.	L= length in 1/4" increments
6361-L	Max. 6"

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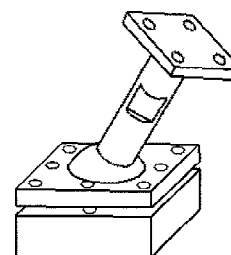
SPRING MOUNTED MINI CLAMP (PATENTED)

Light weight aluminum spring mounted MINIclamp gives flexibility and function to Robotic MIG welding applications. Features a quick-release/positive latching clasp.
Brackets shown fit ABB IRB MIG welding robot.

| MIG Assemblies		
Part No.	Description	
6650	90° Clamping Block	Fits Assy. 6423-L, 6446, 6477
6423-L	IRB Pipe Standoff	L= pipe length in 1/4" increments
8279	2-1/2" Mini Clamp	(see page 3)
6435-D	Slip Grommet	D=ID in 1/16" increments
6446	IRB Clearance Standoff	
6449-L	IRB Spring Standoff	Spring length in 1/4" increments
6450-L	Mig Spring Standoff	Spring length in 1/4" increments
6460	Plate Standoff	2 included with each plate
6477	IRB Bent Tube Standoff	

**Additional assemblies are available for other robots.
Please contact us with your individual needs.**

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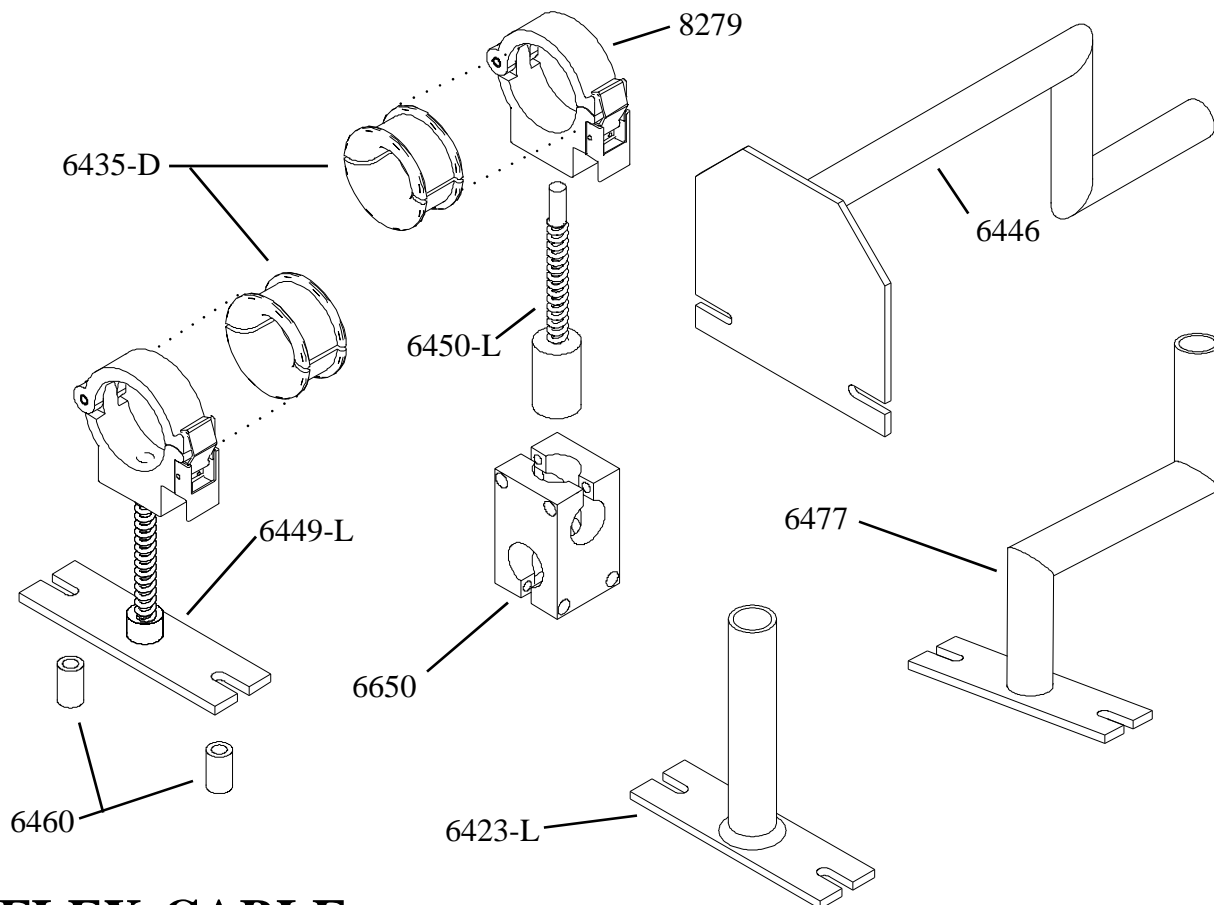
BOOM BAR BASE MOUNTING BLOCKS

These Boom Bar BaseMounting Blocks are made of Aluminum and come standard with our "Robo" pattern. They mount securely to your boom bar to support a variety of our clamps, blocks, and plates.

| Boom Bar Base Mounting Block	
Part No.	Accepts Pipe Size
8471	2" Square
8472	2-1/2" Square
8473	2" Round
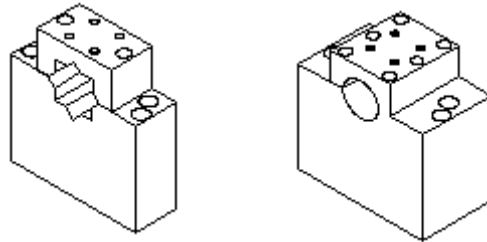
FORWARD MOUNTING BOOM BAR

Our Forward Mounting Boom Bar come in two different styles, one is folded Steel, and the other is made of Steel Tubing. Both units have our standard "Robo" pattern for use with a variety of our RoboDress accessories. Current bolt pattern fits Fanuc 420i robot. Can be turned 180° for 'rearward' configuration.

Forward Mount	
Part No.	Construction
6523	Steel Tubing
6524	Folded Steel
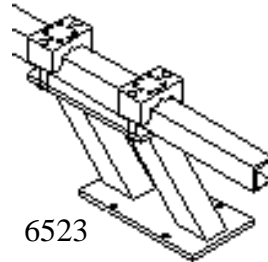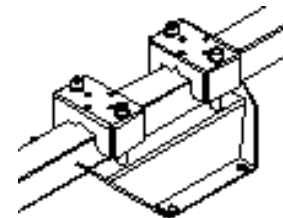
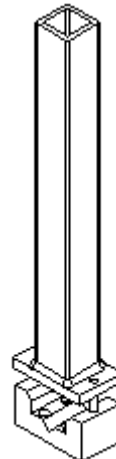6523   6524

TALL EXTENSION MOUNT

This unit is designed to help aid in the placement of your cables. Mounts securely to a new or existing 2" Square Boom Bar.

Tall Extension Mount	
Part No.	Length - 1" Increments
8273-XX	XX

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ROBOT ARM CLAMP (PATENTED)

These mount securely around your robot arm to give you six "Robo" bolt pattern positions. Current grommet sizes fit Nachi robots.
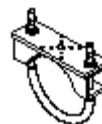
Robot Arm Clamp		
Part No.	ID	Description
6324-24	N/A	Arm Clamp
6325-52	5.188	Grommet
6325-62	6.250	Grommet
6257	6.250	Econo Clamp

6325-52
6325-62

6324-24

6257

AXIS 6 MOUNT

These Steel "Fri-Pans" mount securely to Axis 6 of your Robot. "Fri-Pan" 8310 is ordered seperately so you can customize the multitude of arm combinations shown.

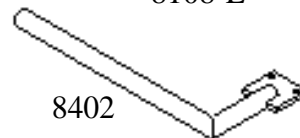| Fri-Pan		
Part No.	Size in / mm	Arm
4959-L	160mm	One Piece, 1/4" increments
8108-L	189mm	One Piece, 1/4" increments
8310**	160mm	Not Included
8564**	189mm	Not Included
8401	Inches	T Shaped
8402	Inches	L Shaped
8403	Inches	Angled
8404	Inches	Straight

** Other diameters available
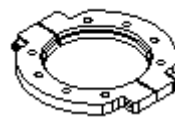
8310
8564
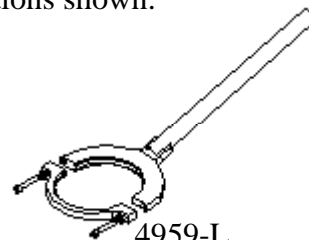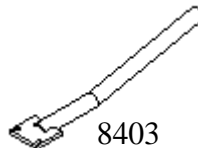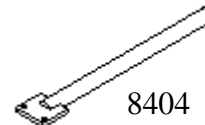
4959-L
8108-L

8401   8402

8403   8404

SADDLE SLING

This Cable Saddle Sling with Velcro straps has been engineered to securely hold your cable without crimping off your water supply. Saddle Sling without Mounting Hook can be stacked together for added width.

Saddle Sling Assembly		
Part No.	Width (w)	
6916-05	2-7/8"	without Mounting Hook
6917-05	2-7/8"	with Mounting Hook
6916-38	1"	without Mounting Hook
6917-38	1"	with Mounting Hook

Mounting Hook
optional

(w)

⌖ FLEX-CABLE
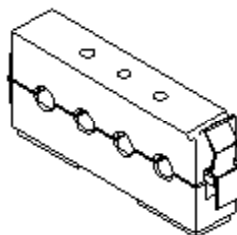
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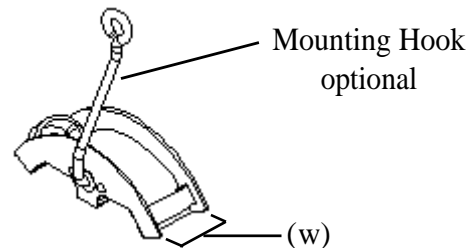
INLINE MANIFOLD

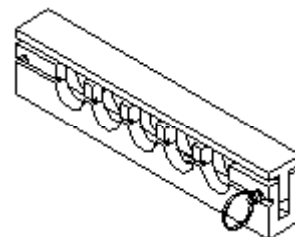This Inline Manifold holds up to four hose/conduit junctions in mid-run.

Inline Manifold
Part No.
6945

SURFACE CLAMP MANIFOLD

This low profile Aluminum Surface Clamp Manifold accommodates five fluid/air lines with quick disconnects. Comes equipped with brass inserts.

Surface Clamp Manifold	
Part No.	Fitting NPT
6246-45	3/8
6248-47	1/4

U MANIFOLD

This U Manifold is made from Steel to offer strength and durability in a compact design. This unit has brass inserts to supports up to nine quick disconnects and is equipped with our "Robo" pattern for optimal use.

U Manifold	
Part No.	Fitting NPT
6321-2	1/4
6321-3	3/8

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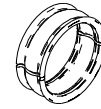
⌘ **FLEX-CABLE**

CONECTIVIDAD
INDUSTRIAL Y ARNESES
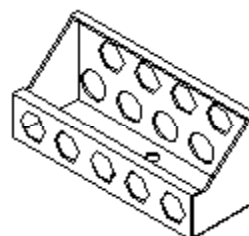
COR-FLEX BUMPER

Our Cor-Flex Bumper is made of Nylon and is held securely in place with two self-tapping screws. The Cor-Flex Bumper Coupler allows you to couple two bumpers together for additional length.

Cor-Flex Bumper	
Part No	Cor-Flex Size
8465-48	48
8465-70	70
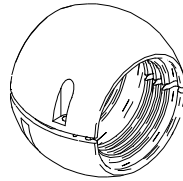
Bumper Coupler	
Part No.	Bumper Size
8538-48	48
8538-70	70

COR-FLEX

Cor-Flex for Robotic Applications

These conduits, specially developed for robots offer extreme flexibility and are ideal for dynamic, flexible tube movements in robotic and automation systems.

Cor-Flex, Robotic Applications		
Part No.	Size	Nom. ID
17-CORF-PIST-07B	7	6.2mm / 0.24"
NC-PISG-17B	17	15.2mm / 0.60"
NC-PISG-23B	23	21.7mm / 0.85"
NC-PISG-29B	29	27.4mm / 1.08"
NC-PISG-48B	48	46.7mm / 1.84"
NC-PIHG-56B	56	56.3mm / 2.22"
NC-PIHG-70B	70	67.2mm / 2.65"

(Other sizes are available. Please contact us for details.)

2 Piece Cor-Flex

This unique divisible corrugated conduit has been created for all retrofit and pre-loomed applications. New cables can be added to existing arrangements without the need for re-wiring or re-threading, thus saving a considerable amount of time and money.

Cor-Flex, 2 Piece		
Part No	Nom. Width	Nom. ID (mm/in)
17-CORF-PPCO-20B	20	19.5mm / 0.77"
17-CORF-PPCO-37B	37	31mm / 1.22"
17-CORF-PPCO-45B	40	42.7mm / 1.68"

(Other sizes are available. Please contact us for details.)

® FLEX-CABLE

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EXO-TOTAL GUARD

EXO-Total Guard System, made of high grade Nylon, offers superior abrasion protection, versatile hose and cable dress-out and unique adaptability to many different applications.
EXO has the capacity to wrap from a single line up to a bundle 6" in diameter.

EXO-Total Guard	
Part No.	ID Size
FCA - 0.500	1/2"
FCA - 0.875	7/8"
FCA - 1.250	1-1/4"
FCA - 1.500	1-1/2"
FCA - 2.000	2"
FCA - 2.500	2-1/2"
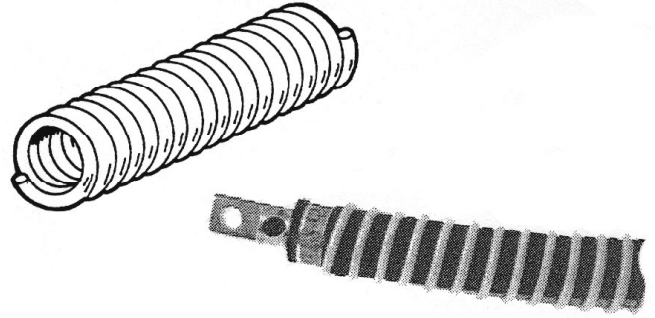
KICKLESS CABLE STRAIN RELIEF

The 11.5" long Kickless Cable Strain Relief, made from SBR rubber, is put at the end of the kickless cable to prevent tight bending and fatigue at the terminal. Tire cord reinforcement prevents splitting and breaking.

| Kickless Cable Strain Relief	
Part No	Cable MCM Size
14-8200	300
14-8225	400
14-8250	500
14-8262	650
14-8300	800
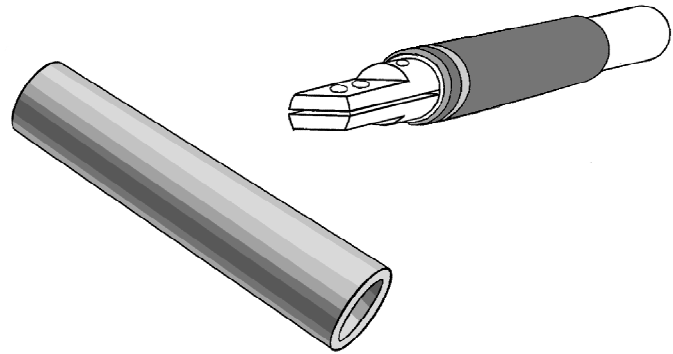
PROTECTIVE SLEEVE (PATENTED)

The Protective Sleeve is a tube that has a Zipper on the side. The Zipper can be opened to install cable or hoses then closed to protect vital lines. Sleeve comes in a variety of lengths and inside diameters. The sleeve can be made in Leather, Kevlar or other engineered materials.

Protective Sleeve	
Part No.	Size
FCA-LPS-L-D	L=Length, D=Diameter

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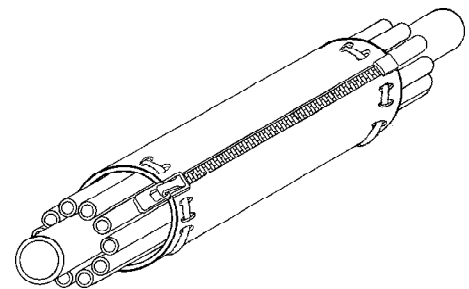
LOCKING URETHANE STRAPS

The additional width of these Urethane Straps prevents pinching of hoses and cables and provides an durable strap for holding cable and hose bundles together. Straps are also availablein longer lengths.

Locking Urethane Strap		
Part No.	Width	Length
FC-US10-18	1"	18"
FC-US15-20	1-1/2"	20"

FLEX TIE STRAPS

The neoprene Flex Tie Straps are easy to use and ideal for bundling hoses and cables together. The twin side release buckle is designed with two mating halves, which make it easy to latch and ideal if two or more straps are needed. The ladderloc feature provides maximum effectiveness against slippage while allowing smooth and easy tightening of the strap

| Flex Tie Straps		
Part No.	Width	Length
FCA - 0500	1/2"	12"

LEATHER SKATE STRAPS

Leather Skate Straps have been used for various applications in automotive body shops for many years. Our Skate Straps are made from top grain leather, with nickel plated roller buckles

Leather Skate Straps		
Part No.	Width	Length
FCA - 0580	3/4"	19"
FCA - 0581	1"	24"
FCA - 0582	1-1/4"	26"

⊛ FLEX-CABLE

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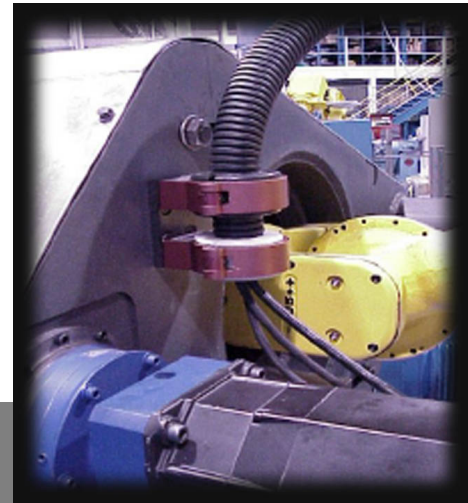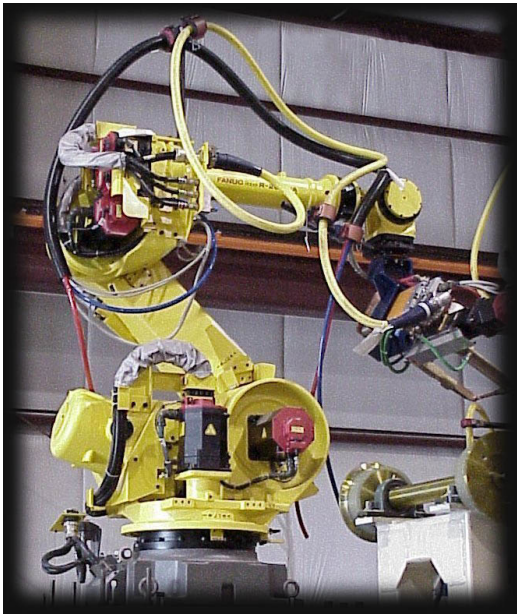**Contact your Flex-Cable representative for more information on how our assemblies can be made to fit your individual needs.**

8424

CALL
FOR MORE
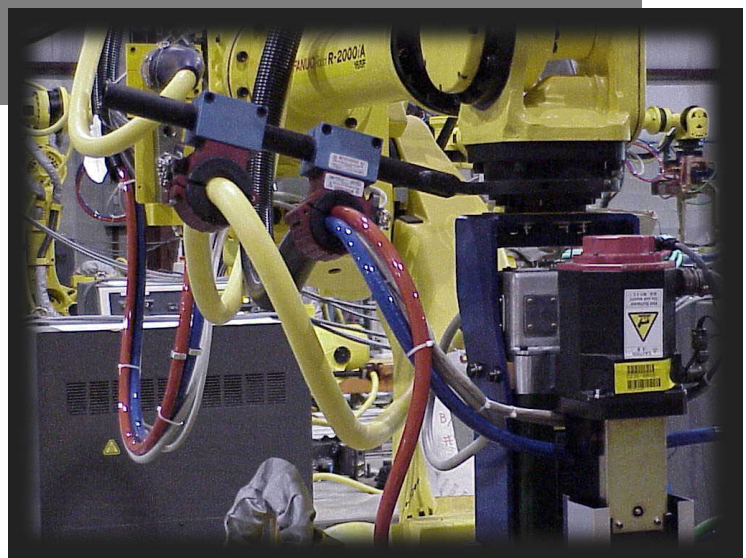INFORMATION

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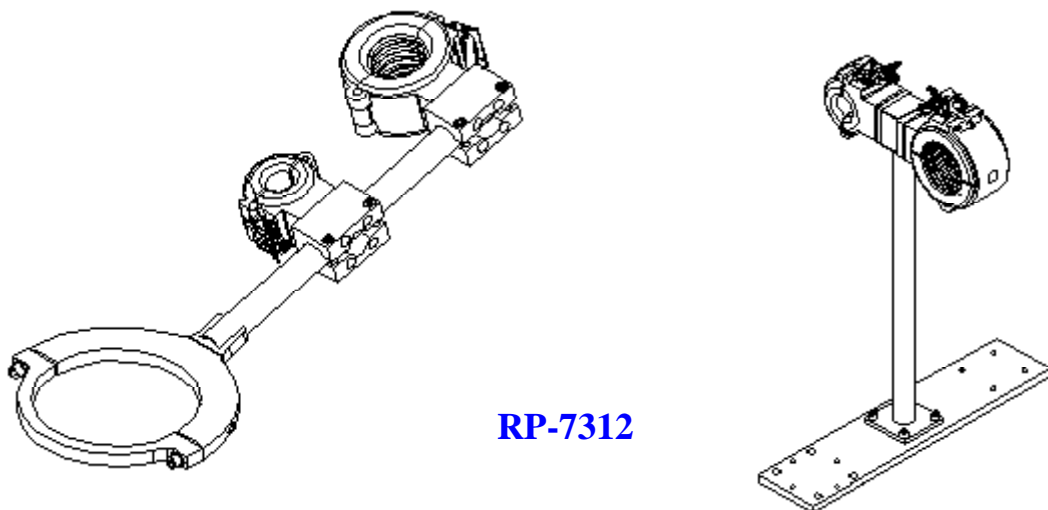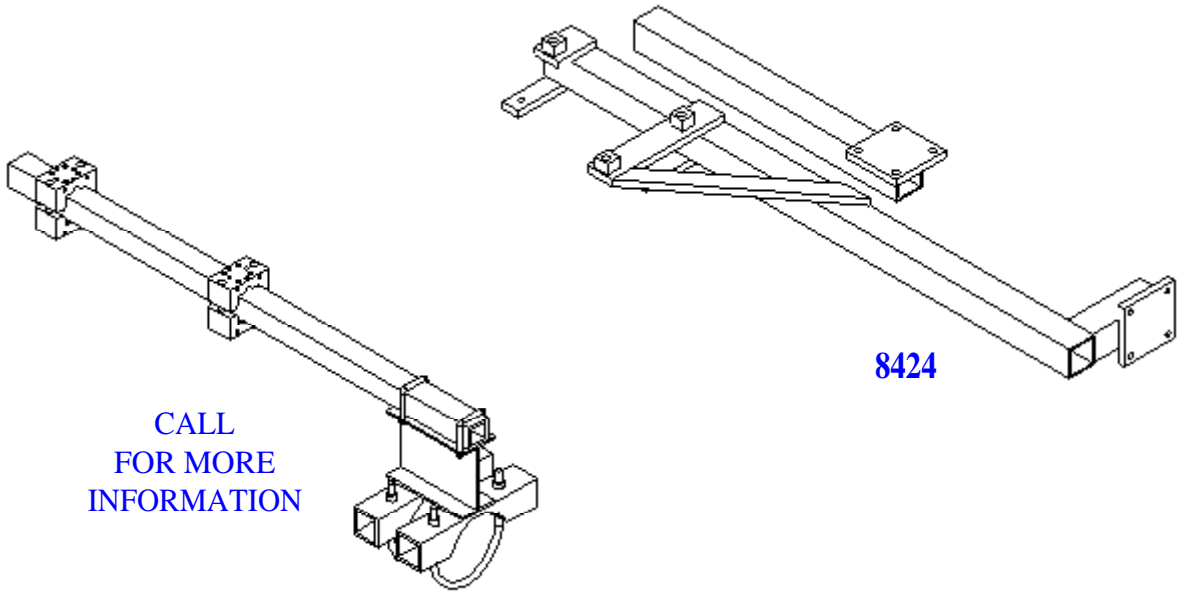
We don't just make products,
we solve problems for our customers
in the manufacturing sector.

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ELECTRONICS DIVISION / NCSI

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Electronics Division/NCSI

CMC
Partners in Marketing

HOW TO CONTACT US:

FLEX-CABLE Div. of Balaguer Corp.
Sales Office
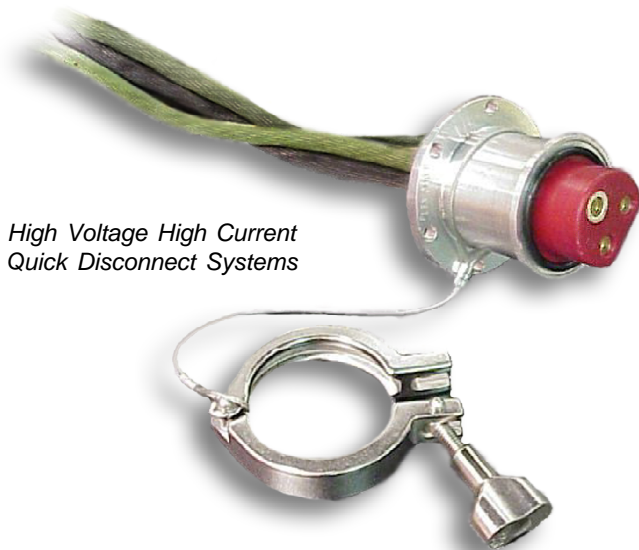9500 Youngman Road
Lakeview, MI 48850

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FAX: 989-352-8588
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WEB: www.flexcable.com

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