

INSTRUCTIONS AND PARTS MANUAL

CARRIAGES AND 3-JAW EXPANDABLE CHUCKS

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Model Number _____

Serial Number _____

Date of Purchase _____

Whenever you request replacement parts or information on this equipment, always supply the information you have recorded above.

LIT-CARRIAGES-IPM-0519

Bug-O Systems is committed to empowering our customers by providing operator controlled mechanized solutions for their welding, cutting and custom applications.



BUG-O SYSTEMS

A DIVISION OF WELD TOOLING CORPORATION

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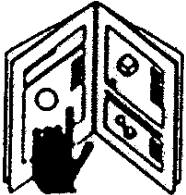
SAFETY

PROTECT YOURSELF AND OTHERS FROM SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.



ELECTRIC SHOCK CAN KILL.

- 1) The equipment is not waterproof. Using the unit in a wet environment may result in serious injury. Do not touch equipment when wet or standing in a wet location.
- 2) The unused connectors have power on them. Always keep the unused connectors covered with the supplied protective panels. Operation of the machine without the protective panels may result in injury.
- 3) Never open the equipment without first unplugging the power cord or serious injury may result.
- 4) Verify the customer supplied power connections are made in accordance with all applicable local and national electrical safety codes. If none exist, use International Electric Code (IEC) 950.
- 5) Never remove or bypass the equipment power cord ground. Verify the equipment is grounded in accordance with all applicable local and national electrical safety codes. In none exist, use International Electric Code (IEC) 950.



READ INSTRUCTIONS.

Read the instruction manual before installing and using the equipment.



EQUIPMENT DAMAGE POSSIBLE.

- 1) Do not plug in the power cord with out first verifying the equipment is OFF and the cord input voltage is the same as required by the machine or serious damage may result.
- 2) Always verify both the pinion and wheels are fully engaged before applying power or equipment damage may occur.
- 3) Do not leave the equipment unattended.
- 4) Remove from the work site and store in a safe location when not in use.



FALLING EQUIPMENT can cause serious personal injury and equipment damage.

Faulty or careless user installation is possible. As a result, never stand or walk underneath equipment.



MOVING PARTS can cause serious injury.

- 1) Never try to stop the pinion from moving except by removing power or by using the STOP control.
- 2) Do not remove any protective panels, covers or guards and operate equipment.

HIGH FREQUENCY WARNINGS

SPECIAL PRECAUTIONS ARE REQUIRED WHEN USING PLASMA, TIG OR ANY WELDING PROCESS THAT USES HIGH FREQUENCY TO STRIKE AN ARC.



WARNING: HIGH FREQUENCY CAN EFFECT MACHINE OPERATION AND THEREFORE, WELD QUALITY.

Read the precautions below before installing and using the equipment.

PRECAUTIONS:

- 1) Some plasma or welding cables are strong sources of high frequency interference. NEVER lay a plasma or welding cable across the controls of the machine.
- 2) Always physically separate the plasma or welding cable leads from the machine cables. For example, the plasma or welding cable leads should NEVER be bundled with a pendant cable or the machine power cord. Maximize the separation between any machine cables and the plasma or welding cables.
- 3) Strictly follow the grounding procedures specified for the plasma or welding unit.
NOTE: Some plasma and welding units produce exceptionally large amounts of high frequency noise. They may require a grounding rod be driven into the earth within six feet (2 meters) of the plasma or welding unit to become compatible with an automatic cutting or welding process.
- 4) If the high frequency is produced using a spark gap, adjust the points so the gap is as small as possible. The larger the gap, the higher the voltage and the higher the interference.
- 5) Some plasma or welding units will inject high frequency interference into the AC power line. Use separate power line branches whenever possible to power the plasma or welding source and the machine. Do not plug them into the same outlet box.
- 6) High frequency noise may enter the machine through the plasma or welding supply remote contactor leads. Some plasma and welding sources can produce noise spikes of up to several thousand volts. These sources are not compatible with automated cutting and welding equipment. It is recommended that the remote contactor leads on these plasma or welding sources not be connected to the machine. An alternate solution is to purchase a separate remote contactor isolation box.

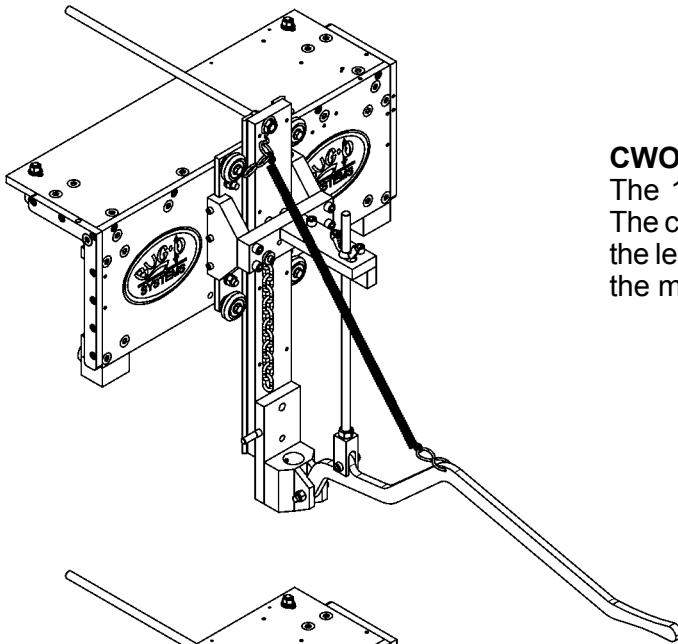
CARRIAGES AND 3-JAW EXPANDABLE CHUCKS

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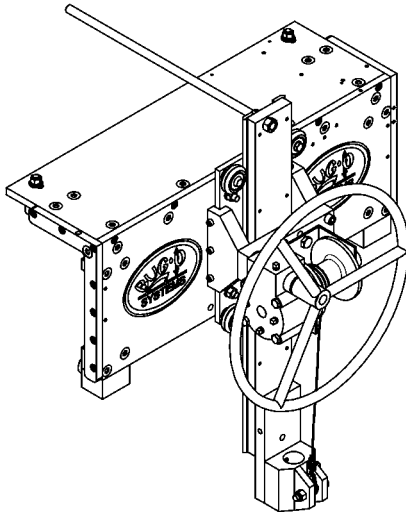
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CARRIAGES (For use on CW-5 / CW-5AX Circle Welders and on CB-1P Circle Burner)



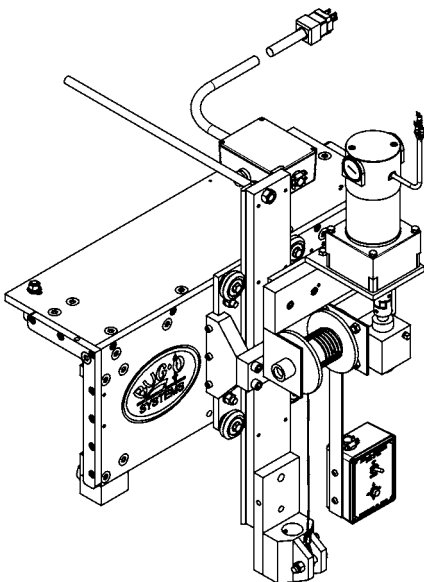
CWO-4530 151 Carriage

The 151 Carriage mounts on a standard monorail. The carriage allows the operator to move the machine the length of the pipe, while utilizing a lever to position the machine vertically.



CWO-4540 151P Carriage

The 151P Carriage mounts on a standard monorail. The carriage allows the operator to move the machine the length of the pipe, while utilizing a winch to position the machine vertically.

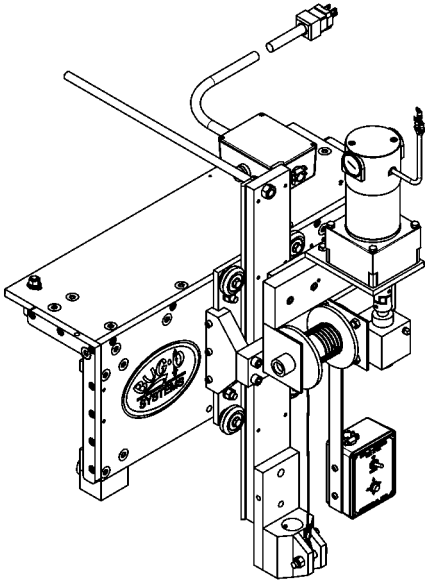


CWO-4550 151M Carriage

The 151M Carriage mounts on a standard monorail. The carriage allows the operator to move the machine the length of the pipe, while utilizing an electric motorized winch to position the machine vertically. To be used with CWO series machine only.

CARRIAGES, CONT'D

(For use on CW-5 / CW-5AX Circle Welders and on CB-1P Circle Burner)

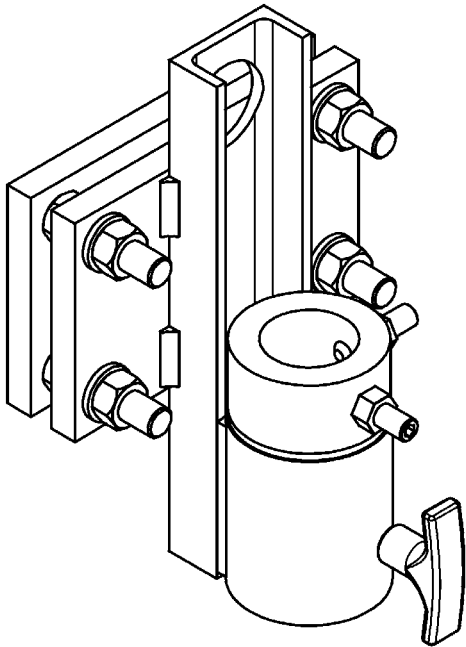


CWE-4550 151M Motorized Carriage

The 151M Carriage mounts on a standard monorail. The carriage allows the operator to move the machine the length of the pipe, while utilizing an electric motorized winch to position the machine vertically. To be used with CWE series machine only.

MANIPULATOR BRACKET

(For use on CB-3 Circle Burner)



CWO-3744 MANIPULATOR BRACKET

The Manipulator Bracket is a non-adjustable fixturing device designed for use on an existing column and boom set-up.

SETUP INSTRUCTIONS FOR CARRIAGES USED IN SPRINKLER FABRICATION

INSTALLING CARRIAGES AND MACHINES ON THE MONORAIL:

Assemble carriages and put them on the monorail.

The CW-5/CW-5AX welder is put on the carriage that is nearest to the welding power source and the CB-1P cutter nearest to the plasma power source.

Proper installation will require the use of an 8" (203.2 mm) diameter pipe.

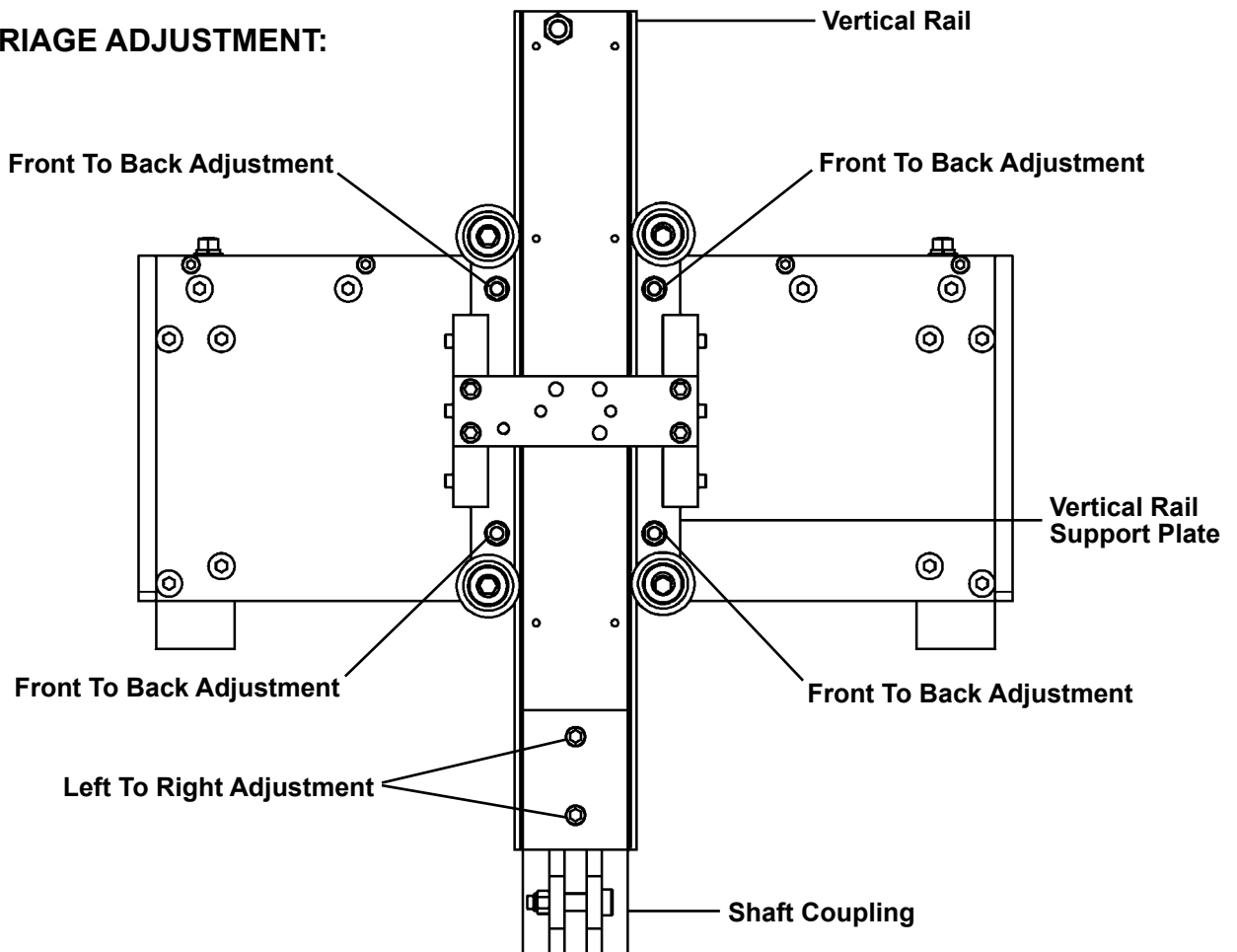
Put the CB-1P cutter machine on the 8" (203.2 mm) pipe in the stands and bring the carriage to the machine. Lower the shaft coupling over the main shaft on the cutter. Ensure that shaft is fully inserted into the shaft coupling. Rotate the machine so that the plasma leads are in front and parallel to the carriage and tighten the set screws in the shaft coupling to secure the main shaft to the vertical slide assembly.

Next put the CW-5/CW-5AX welder on the 8" (203.2 mm) pipe and bring its carriage to it. Lower the shaft coupling down on the main shaft. Rotate the machine so that the welding lead on top of the machine will be on your left. This will put the electrical connector on the right. Tighten the set screws in the shaft coupling to secure the main shaft to the vertical slide assembly.

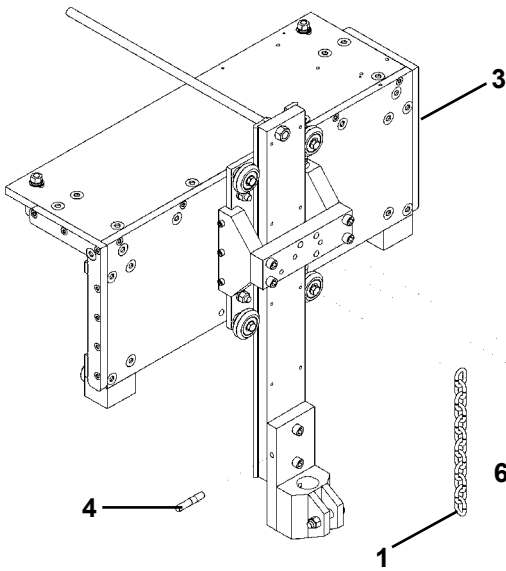
It is important for the machines to hang plumb. Left to right adjustments are made by loosening the two bolts that connect the shaft coupling to the vertical rail. Front to back adjustments are done by adjusting the position of the vertical rail support plate. Move the plate by adjusting the eight nuts on the four studs.

NOTE: Once machines are plumb, verify that the machines are centered over the pipe stand.

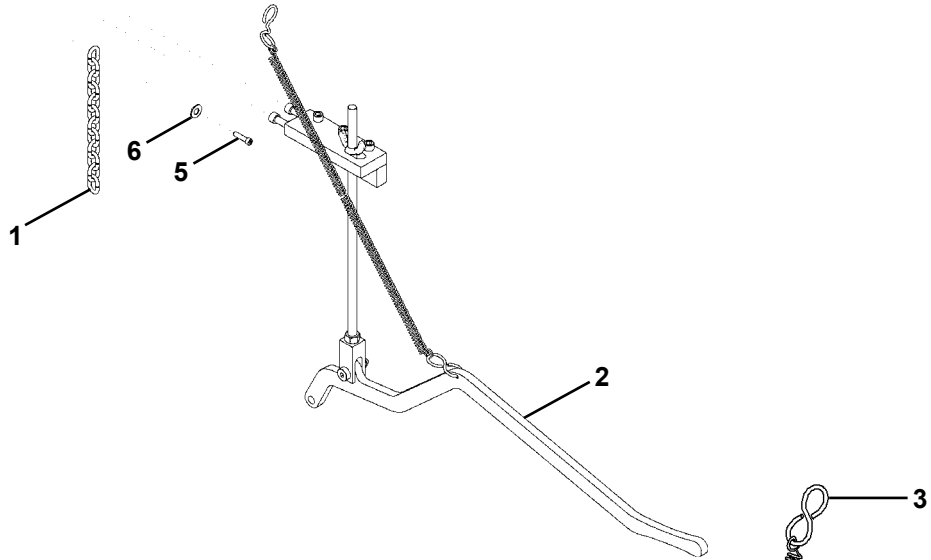
CARRIAGE ADJUSTMENT:



CWO-4530 151 CARRIAGE ASSEMBLY / EXPLODED VIEW / PARTS LIST

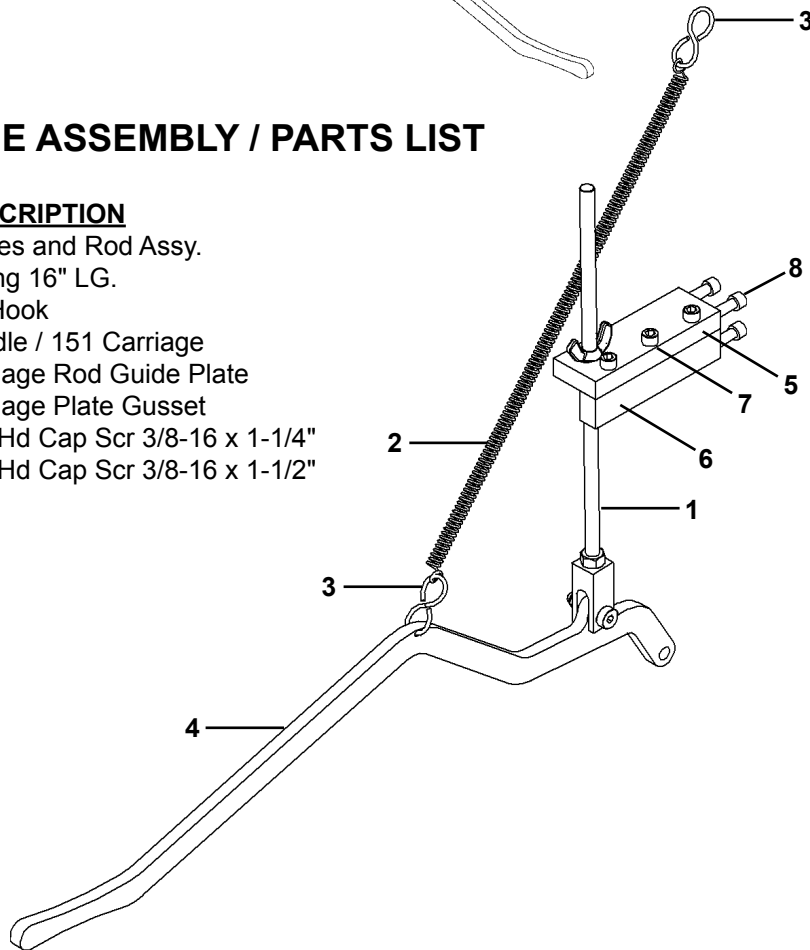


| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|----------------------------|
| 1 | 1 | BUG-3199 | Chain 3/16" |
| 2 | 1 | CWO-3919 | Carriage Guide Assy. |
| 3 | 1 | CWO-3925 | 151 Common Carriage |
| 4 | 1 | CWO-5047 | Stud 3/8-16 x 5/8" x 1" |
| 5 | 1 | FAS-0599 | Soc Hd Cap Scr 3/8-16 x 1" |
| 6 | 1 | WAS-0260 | 3/8" Washer |

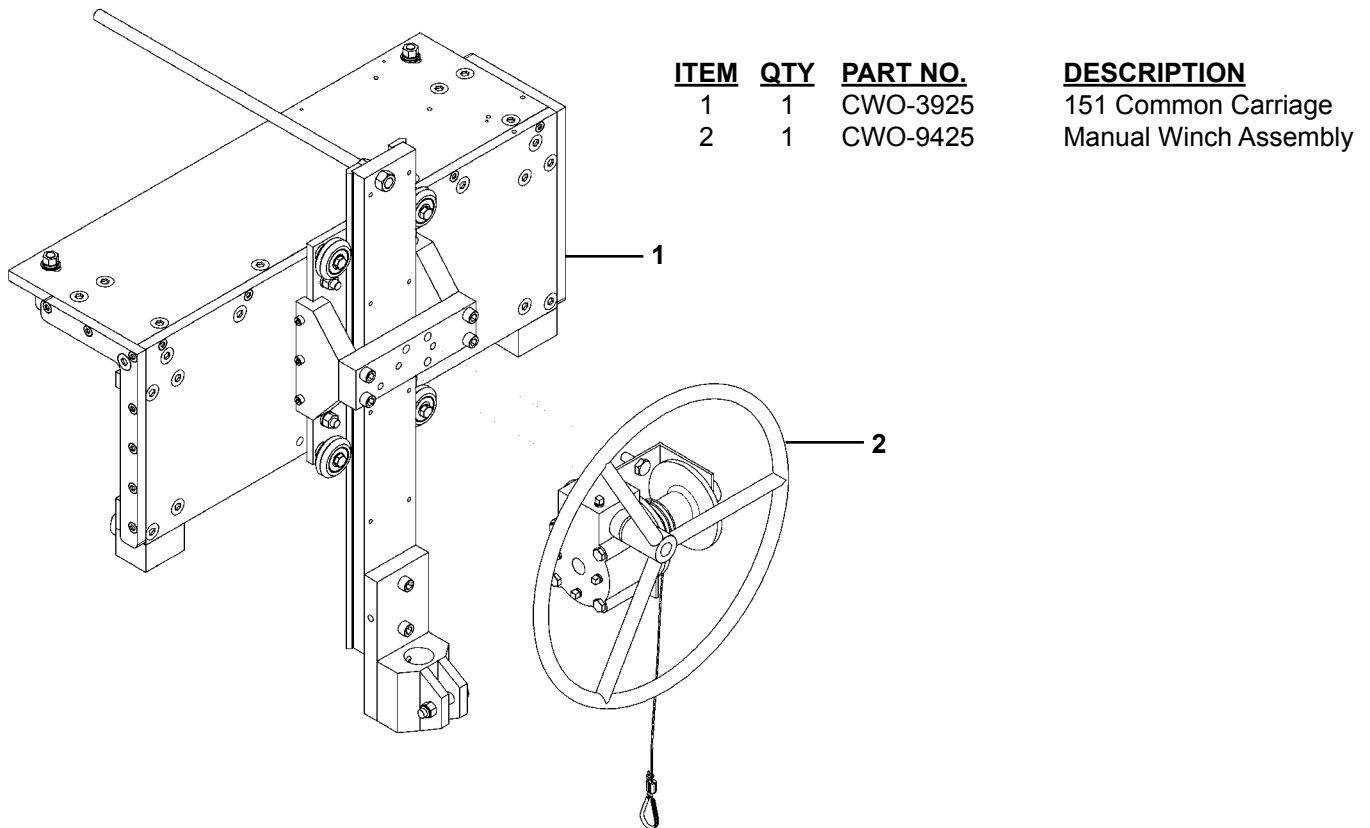


CWO-3919 CARRIAGE GUIDE ASSEMBLY / PARTS LIST

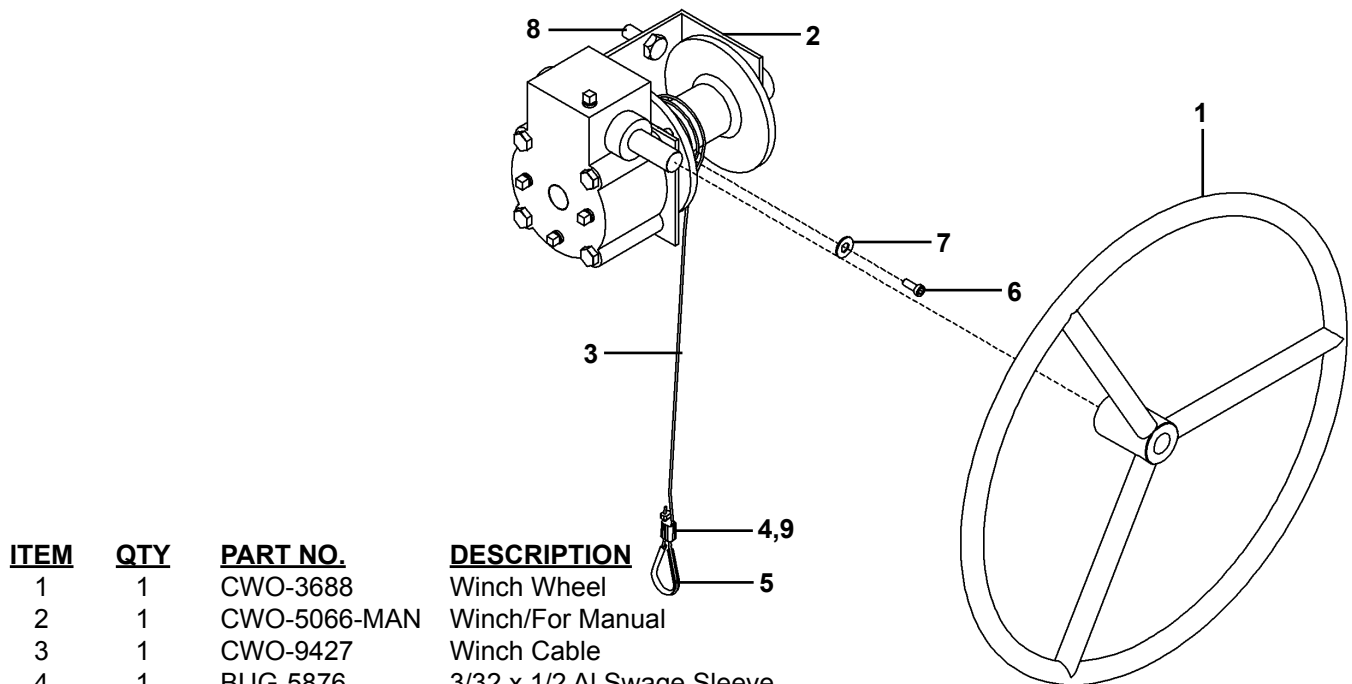
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|--------------------------------|
| 1 | 1 | CWO-3924 | Cleves and Rod Assy. |
| 2 | 1 | CWO-5036 | Spring 16" LG. |
| 3 | 2 | CWO-5037 | "S" Hook |
| 4 | 1 | CWO-5039 | Handle / 151 Carriage |
| 5 | 1 | CWO-9013 | Carriage Rod Guide Plate |
| 6 | 1 | CWO-9014 | Carriage Plate Gusset |
| 7 | 3 | FAS-2591 | Soc Hd Cap Scr 3/8-16 x 1-1/4" |
| 8 | 3 | FAS-2593 | Soc Hd Cap Scr 3/8-16 x 1-1/2" |



CWO-4540 151P CARRIAGE ASSEMBLY / EXPLODED VIEW / PARTS LIST

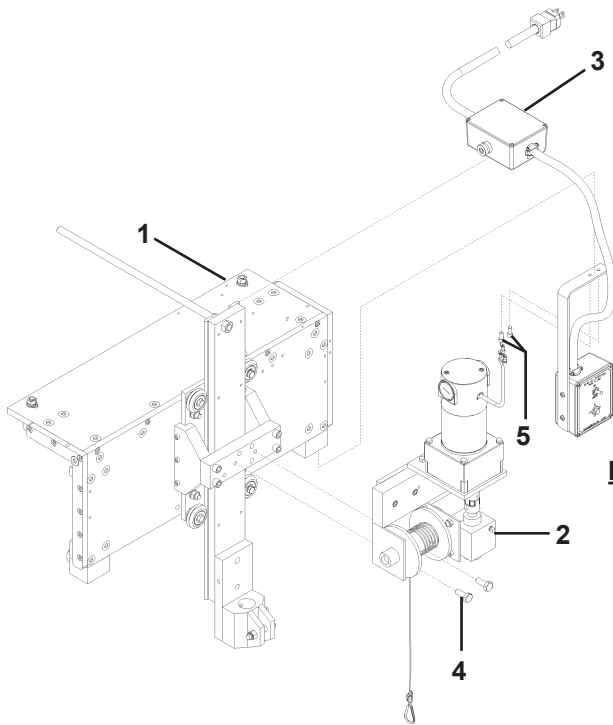


CWO-9425 MANUAL WINCH ASSEMBLY / EXPLODED VIEW / PARTS LIST



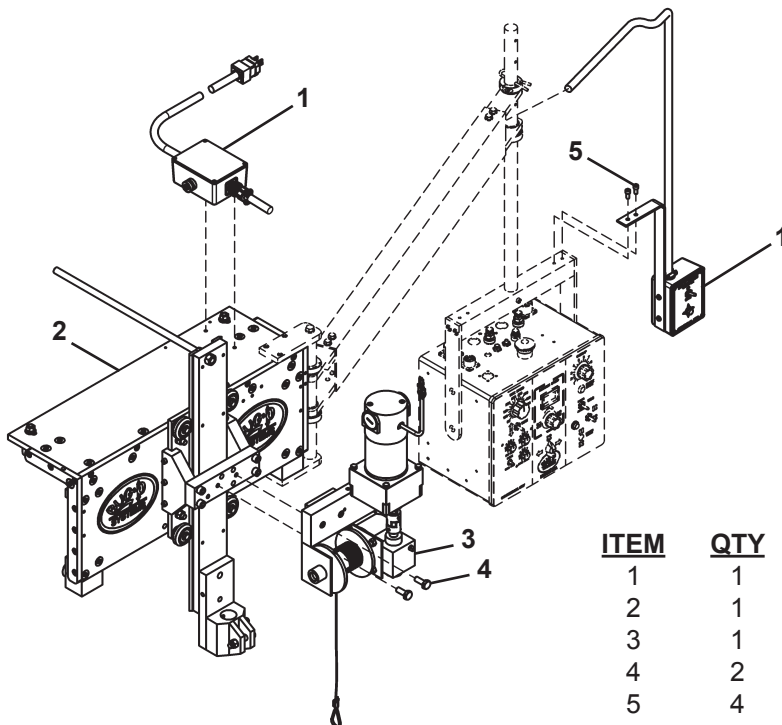
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|------------------------------|
| 1 | 1 | CWO-3688 | Winch Wheel |
| 2 | 1 | CWO-5066-MAN | Winch/For Manual |
| 3 | 1 | CWO-9427 | Winch Cable |
| 4 | 1 | BUG-5876 | 3/32 x 1/2 Al Swage Sleeve |
| 5 | 1 | BUG-1082 | Thimble |
| 6 | 1 | FAS-0555 | Soc Hd Cap 1/4-20 x 1/2" |
| 7 | 1 | WAS-0240 | 1/4" Washer |
| 8 | 1 | FAS-0399 | Hex Hd Cap 3/8-16x1" |
| 9 | 1 | BUG-5877 | 3/32 x 9/32 Al Button Sleeve |

CWO-4550 151M MOTORIZED CARRIAGE ASSEMBLY / EXPLODED VIEW / PARTS LIST



| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|------------------------------|
| 1 | 1 | CWO-3925 | 151 Common Carriage |
| 2 | 1 | CWO-9430 | 151M Motor Assy. |
| 3 | 1 | CWO-3190 | Motorized Carriage Control |
| 4 | 2 | FAS-0399 | Hex Hd Cap Scr 3/8-16 x 1" |
| 5 | 1 | FAS-0555 | Hex Hd Cap Scr 1/4-20 x 1/2" |

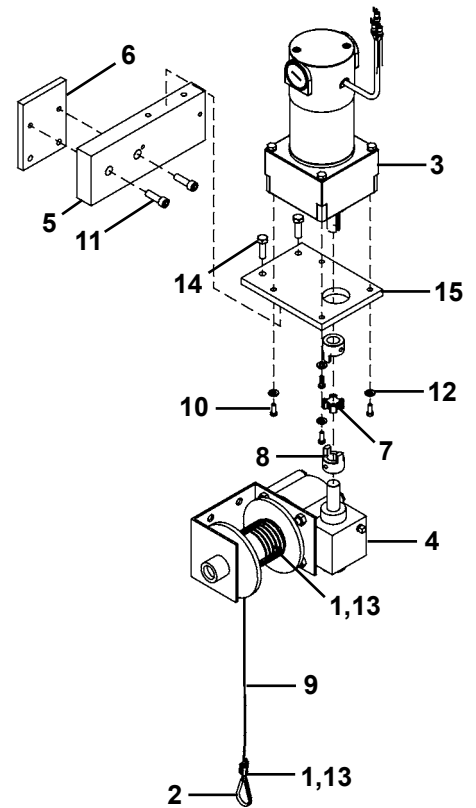
CWE-4550 151M MOTORIZED CARRIAGE ASSEMBLY / EXPLODED VIEW / PARTS LIST



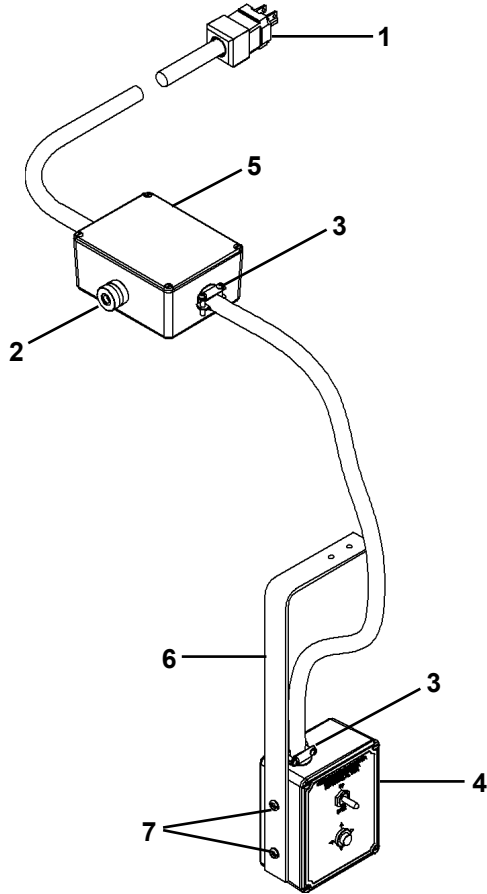
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|------------------------------|
| 1 | 1 | CWE-3190 | Motorized Carriage Control |
| 2 | 1 | CWO-3925 | 151 Common Carriage |
| 3 | 1 | CWO-9430 | 151M Motor Assembly |
| 4 | 2 | FAS-0399 | Hex Hd Cap Scr 3/8-16 x 1" |
| 5 | 4 | FAS-0555 | Soc Hd Cap Scr 1/4-20 x 1/2" |

CWO-9430 151M MOTOR ASSEMBLY / EXPLODED VIEW / PARTS LIST

| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|---------------------------------|
| 1 | 2 | BUG-5876 | 3/32 x 1/2 AL Swage Sleeve |
| 2 | 1 | BUG-1082 | Thimble |
| 3 | 1 | CWO-3380 | P.M. Motor Assembly |
| 4 | 1 | CWO-5066 | Winch/For Motorized |
| 5 | 1 | CWO-5692 | Slide Mount Motor Plate |
| 6 | 1 | CWO-5693 | Carriage Slide Attachment Plate |
| 7 | 1 | CWO-5929 | Spider/Lovejoy Coupling |
| 8 | 2 | CWO-5931 | Lovejoy Coupling |
| 9 | 1 | CWO-9427 | Winch Cable |
| 10 | 4 | FAS-0562 | Soc Hd Cap Scr 1/4-28 x 1/2" |
| 11 | 2 | FAS-0579 | Soc Hd Cap Scr 5/16-18 x 1" |
| 12 | 2 | WAS-0243 | 1/4" Split Lockwasher |
| 13 | 2 | BUG-5877 | 3/32 x 9/32 AL Button Sleeve |
| 14 | 2 | FAS-0389 | Hex Hd Cap Scr 5/16-24 x 1" |
| 15 | 1 | CWO-5696 | Motor Mount Plate |

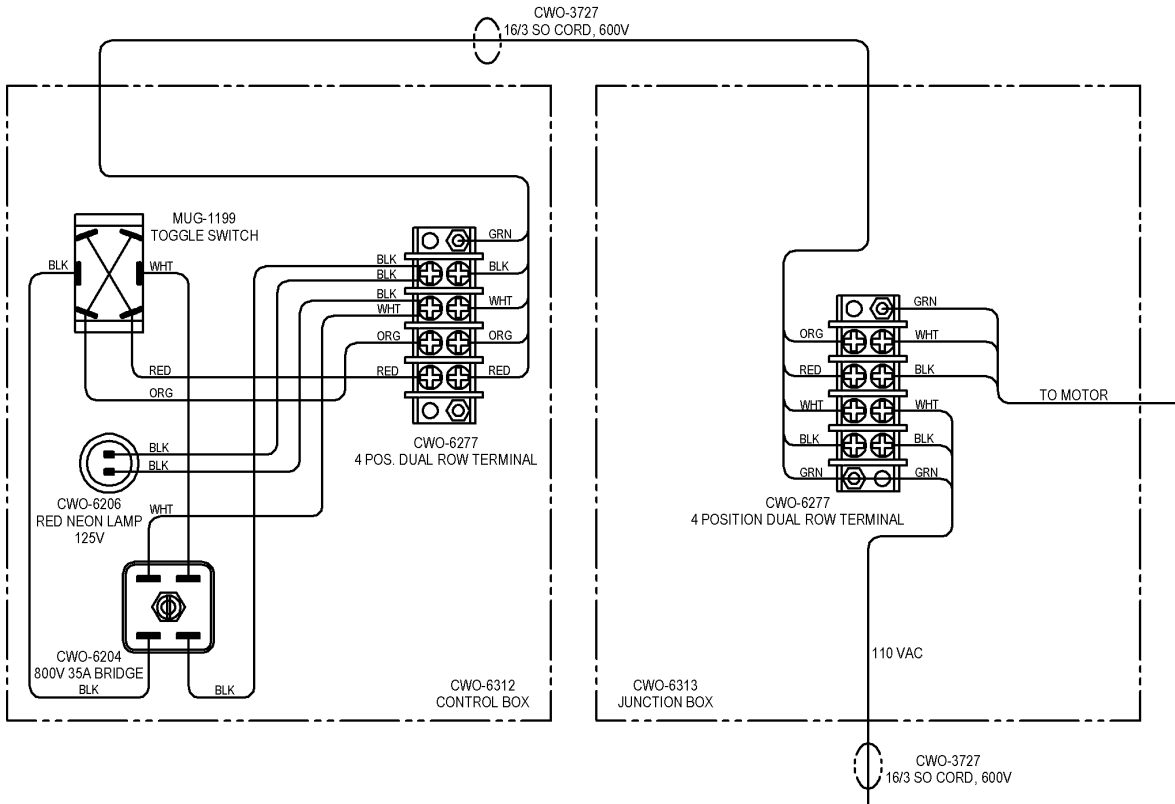


CWO-3190 MOTORIZED CARRIAGE CONTROL / EXPLODED VIEW / PARTS LIST

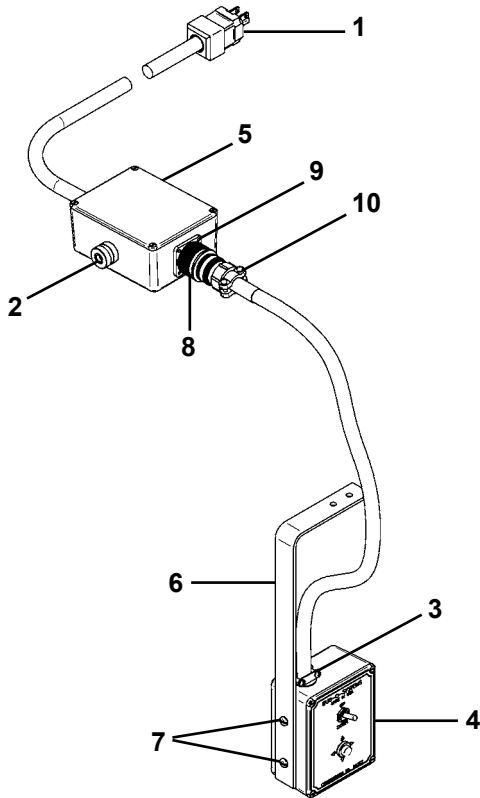


| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|-------------------------|
| 1 | 1 | BUG-2271 | 120V Valise Plug |
| 2 | 1 | BUG-9216 | Cord Grip |
| 3 | 3 | CWO-6278 | Cord Grip 3/8" Romex |
| 4 | 1 | CWO-6312 | Control Box Enclosure |
| 5 | 1 | CWO-6313 | Junction Box Enclosure |
| 6 | 1 | CWO-9483 | "L" Mounting Bracket |
| 7 | 2 | FAS-0146 | Pan Hd Scr 10-32 x 5/8" |

CWO-3190 MOTORIZED CARRIAGE CONTROL / WIRING DIAGRAM

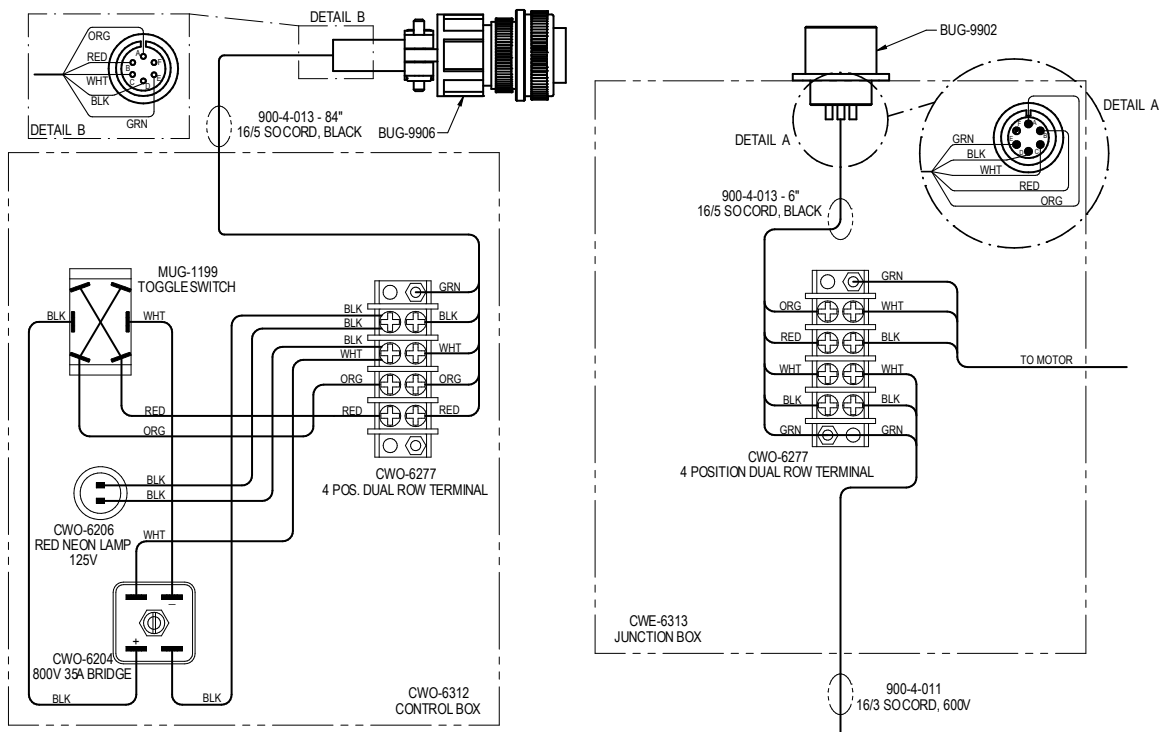


CWE-3190 MOTORIZED CARRIAGE CONTROL / EXPLODED VIEW / PARTS LIST

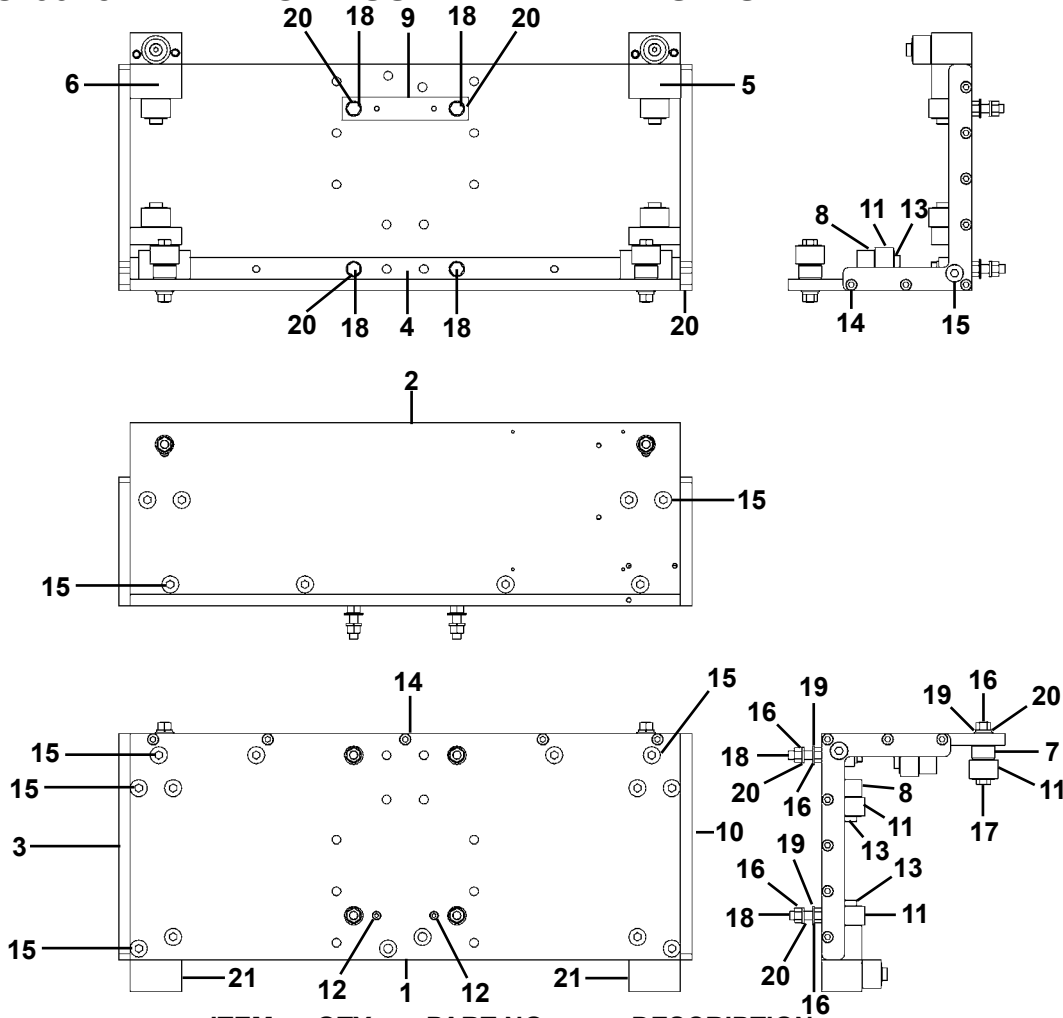


| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|--------------|-----------------------------|
| 1 | 1 | BUG-2271 | 120V Valise Plug |
| 2 | 1 | BUG-9216 | Cord Grip |
| 3 | 3 | CWO-6278 | Cord Grip 3/8" Romex |
| 4 | 1 | CWO-6312 | Control Box Enclosure |
| 5 | 1 | CWO-6313 | Junction Box Enclosure |
| 6 | 1 | CWO-9483 | "L" Mounting Bracket |
| 7 | 2 | FAS-0146 | Pan Hd Scr 10-32 x 5/8" |
| 8 | 1 | CON-2506S | Cable Connector, 6T, Female |
| 9 | 1 | CWO-6759 | Panel Connector, 6T, Male |
| 10 | 1 | CSR-3057-10A | Cord Strain Relief, Size 18 |

CWE-3190 MOTORIZED CARRIAGE CONTROL / WIRING DIAGRAM

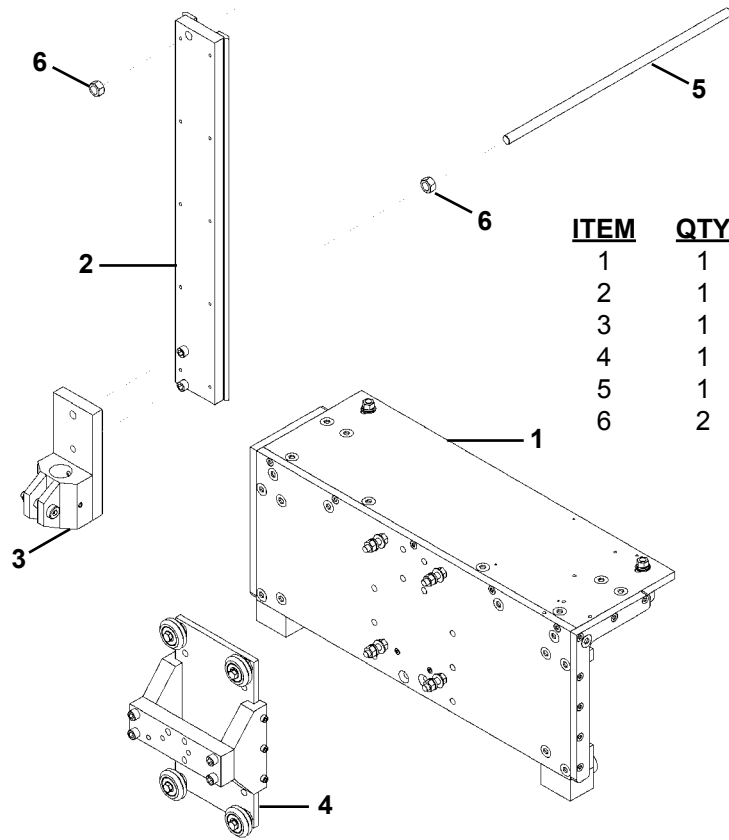


CWO-3918 CARRIAGE ASSEMBLY / PARTS LIST



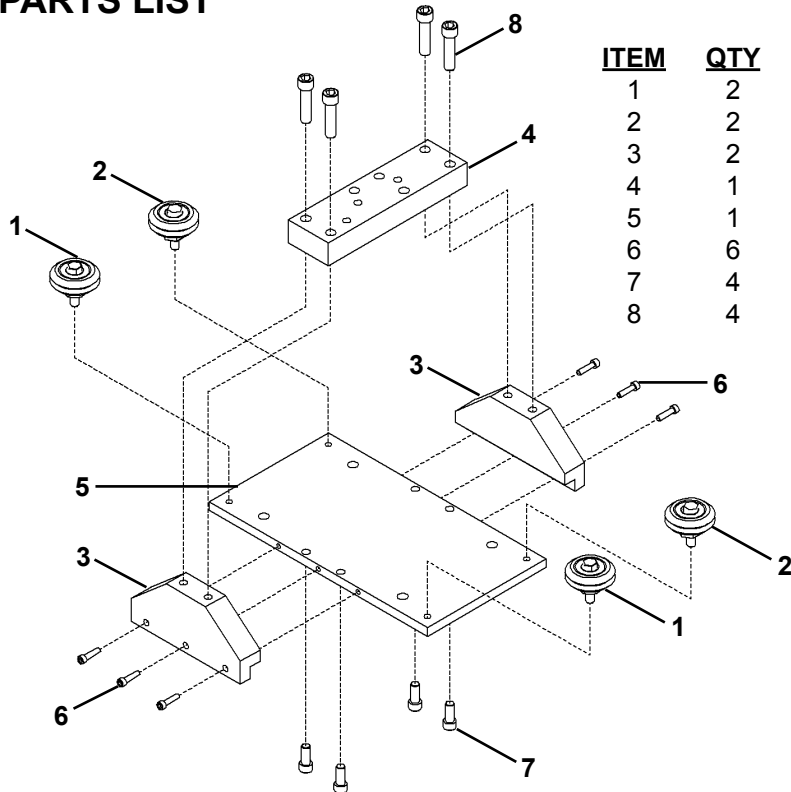
| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|-------------|-------------------------------------|
| 1 | 1 | CWO-9001 | Carriage Front Plate |
| *2 | 1 | CWO-9002 | Carriage Top Plate |
| 3 | 1 | CWO-9003 | Carriage End Plate (LH) |
| 4 | 1 | CWO-9004 | Carriage Reinforcement Bar |
| 5 | 1 | CWO-9005 | Wheel & Clamp Mounting Block, Right |
| 6 | 1 | CWO-9006 | Wheel & Clamp Mounting Block, Left |
| 7 | 2 | CWO-9007 | Cam Roller Spacer |
| 8 | 4 | CWO-9008 | Wheel Mount Block |
| 9 | 1 | CWO-9011 | Carriage Back-Up Bar |
| 10 | 1 | CWO-9194 | Carriage End Plate (RH) |
| 11 | 8 | CWO-4884 | Cam Roller |
| 12 | 2 | FAS-0557 | Soc Hd Cap Scr 1/4-20 x 3/4" |
| 13 | 6 | FAS-0679 | Soc Hd Cap Scr 3/8 x 1 x 5/16-18 |
| 14 | 19 | FAS-0959 | Flt Hd Soc Scr 1/4-20 x 1" |
| 15 | 22 | FAS-0999 | Flt Hd Soc Scr 3/8-16 x 1" |
| 16 | 10 | FAS-1390 | Hex Nut 3/8-16 |
| 17 | 2 | FAS-2397 | Hex Hd Cap Scr 3/8-16 x 2-1/2" |
| 18 | 4 | FAS-2399-FT | Hex Hd Cap Sce 3/8-16 x 3-1/2" F.T. |
| 19 | 6 | WAS-0260 | 3/8" Washer |
| 20 | 10 | WAS-0262 | 3/8 Split Lockwasher |
| 21 | 2 | CWO-9490 | Lower Cam Roller Assembly |

CWO-3925 COMMON CARRIAGE ASSEMBLY / EXPLODED VIEW / PARTS LIST



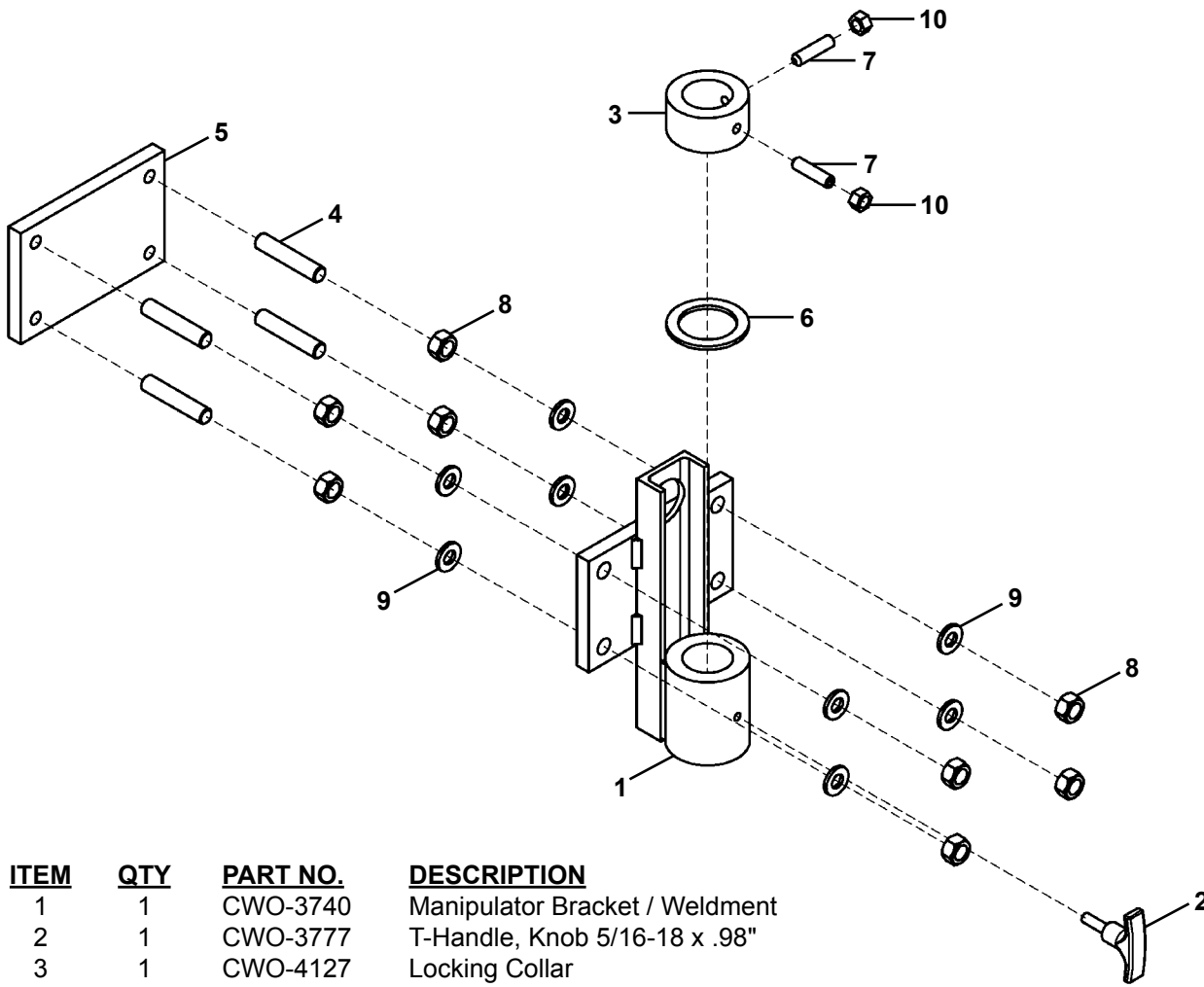
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|--------------------------------|
| 1 | 1 | CWO-3918 | Carriage Assy. |
| 2 | 1 | CWO-3928 | Vertical Slide Bar Assy. |
| 3 | 1 | CWO-3929 | Carriage Machine Support Assy. |
| 4 | 1 | CWO-3946 | Carriage Slide Bridge Assy. |
| 5 | 1 | CWO-9023 | Cord Support |
| 6 | 2 | FAS-1301 | Hex Nut 1/2-13 |

CWO-3946 CARRIAGE SLIDE BRIDGE ASSEMBLY / EXPLODED VIEW / PARTS LIST



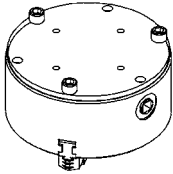
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|--------------------------------|
| 1 | 2 | CWO-4326 | Fixed Leg & Wheel Assy. |
| 2 | 2 | CWO-4327 | Adjustable Leg & Wheel Assy. |
| 3 | 2 | CWO-9012 | Bridge Support |
| 4 | 1 | CWO-9015 | Bridge Plate |
| 5 | 1 | CWO-9016 | Carriage Wheel Mount Plate |
| 6 | 6 | FAS-0557 | Soc Hd Cap Scr 1/4-20 x 3/4" |
| 7 | 4 | FAS-0577 | Soc Hd Cap Scr 5/16-18 x 3/4" |
| 8 | 4 | FAS-0593 | Soc Hd Cap Scr 3/8-16 x 1-1/2" |

CWO-3744 MANIPULATOR BRACKET / EXPLODED VIEW / PARTS LIST

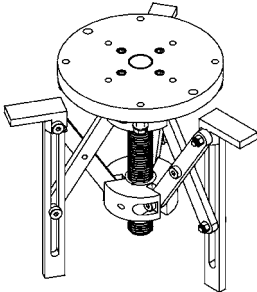


| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|--------------------------------|
| 1 | 1 | CWO-3740 | Manipulator Bracket / Weldment |
| 2 | 1 | CWO-3777 | T-Handle, Knob 5/16-18 x .98" |
| 3 | 1 | CWO-4127 | Locking Collar |
| 4 | 1 | CWO-4421 | 1/2-13 x 2-1/2" All Thread Rod |
| 5 | 1 | CWO-5551 | Bracket / Mount Plate |
| 6 | 1 | CWO-5982 | Oilite Thrust Bearing |
| 7 | 2 | FAS-2493 | Soc Set Scr 3/8-16 x 1-1/2" |
| 8 | 8 | FAS-1301 | Hex Nut 1/2-13 |
| 9 | 12 | WAS-0280 | 1/2" Washer |
| 10 | 2 | FAS-1390 | Hex Nut 3/8-16" |

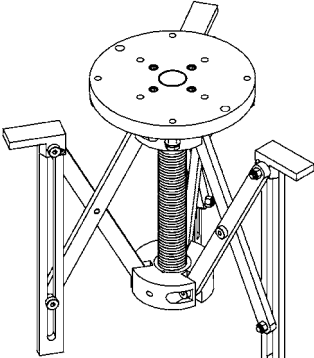
3-JAW EXPANDABLE CHUCKS (For use on CW-5AX/CW-7/CW-11 Circle Welders)



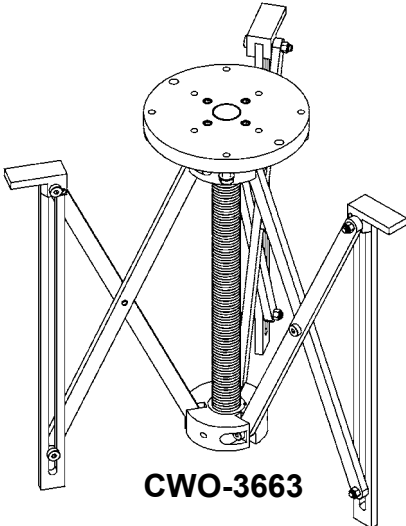
CWO-3660



CWO-3661



CWO-3662

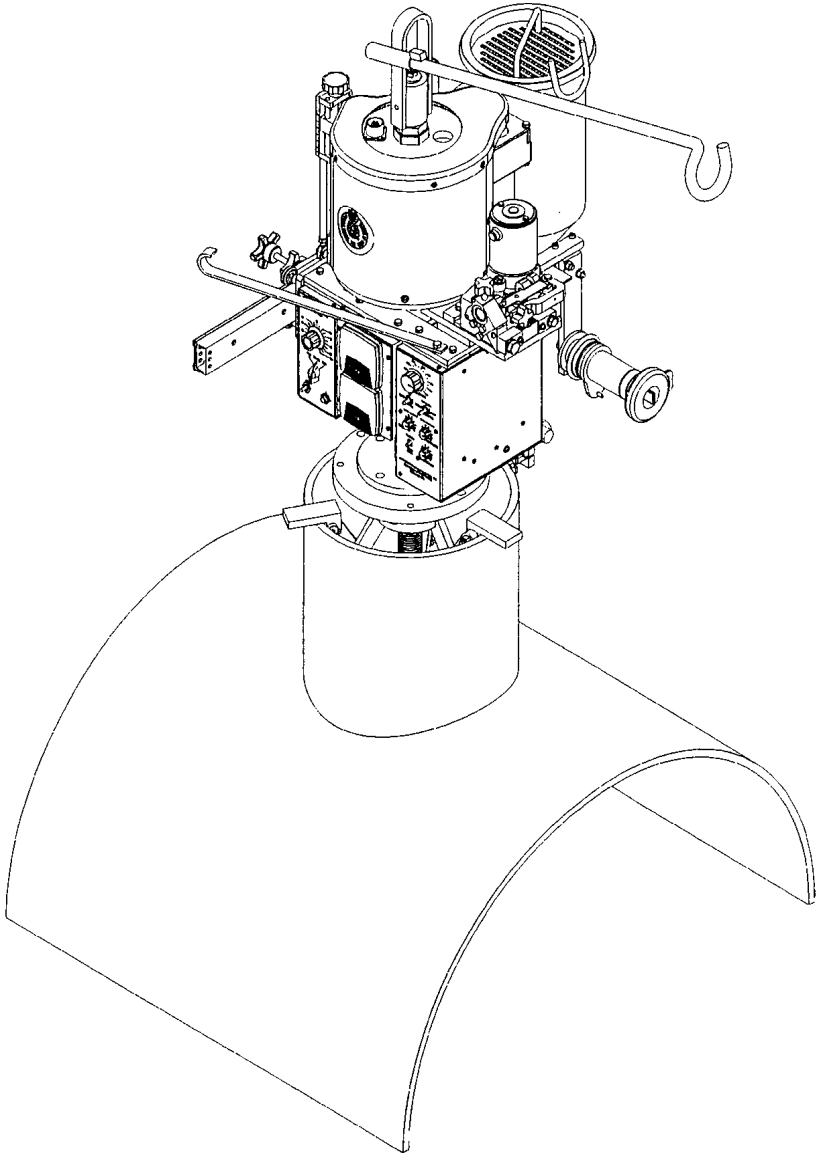


CWO-3663

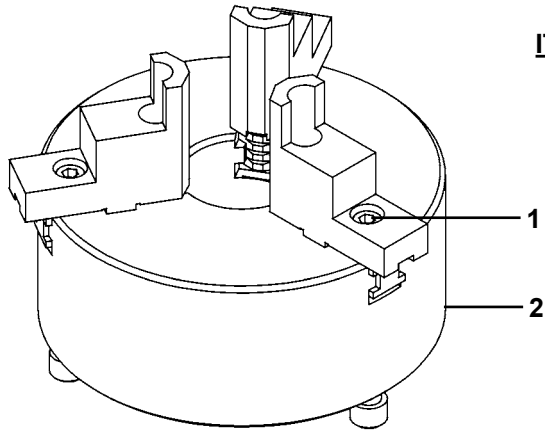
3-Jaw Expandable Chucks

Mounts and automatically centers the Circle Welder on nozzles with or without flanges. As shown below.

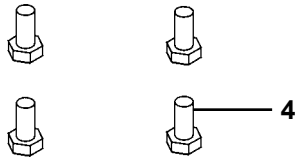
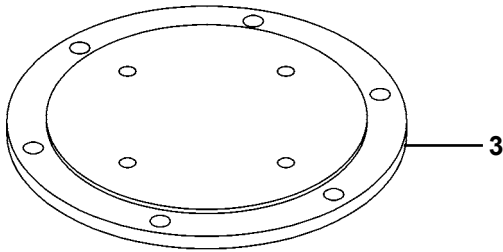
| PART NO. | FOR NOZZLE I.D.'S | WEIGHT |
|----------|-----------------------------|-----------------|
| CWO-3660 | 2"-8" (51-204mm) | 68 lbs. (31 kg) |
| CWO-3661 | 8"-16" (204-405 mm) | 36 lbs. (16 kg) |
| CWO-3662 | 10"-24" (255-610 mm) | 51 lbs. (23 kg) |
| CWO-3663 | 15.75"-47.25" (400-1200 mm) | 64 lbs. (29 kg) |



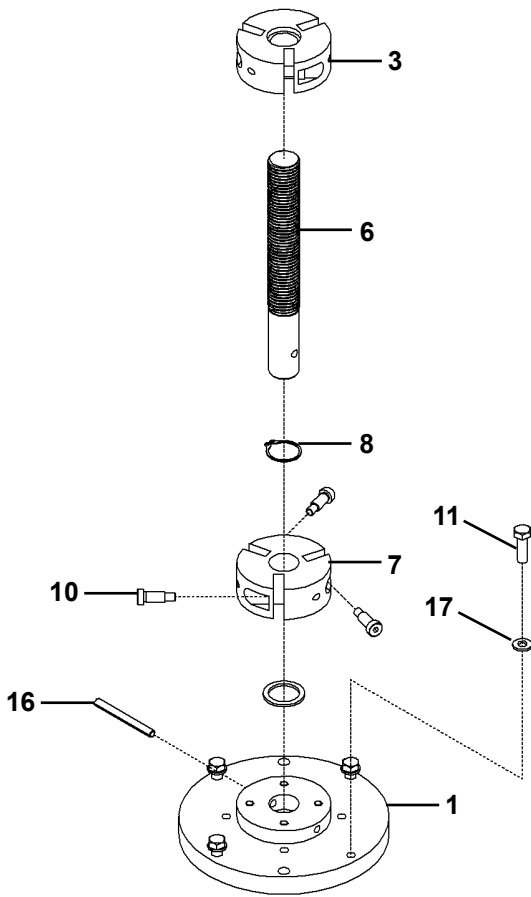
CWO-3660 2/10 3 JAW EXPANDABLE CHUCK / EXPLODED VIEW / PARTS LIST



| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|----------------------------|
| 1 | 1 | CWO-3668 | Extension Jaw |
| 2 | 1 | CWO-4978 | Chuck 10" 3-Jaw |
| 3 | 1 | CWO-3666 | 10" Chuck Mount Plate |
| 4 | 4 | FAS-0309 | Hex Hd Cap Scr 1/2-13 x 1" |

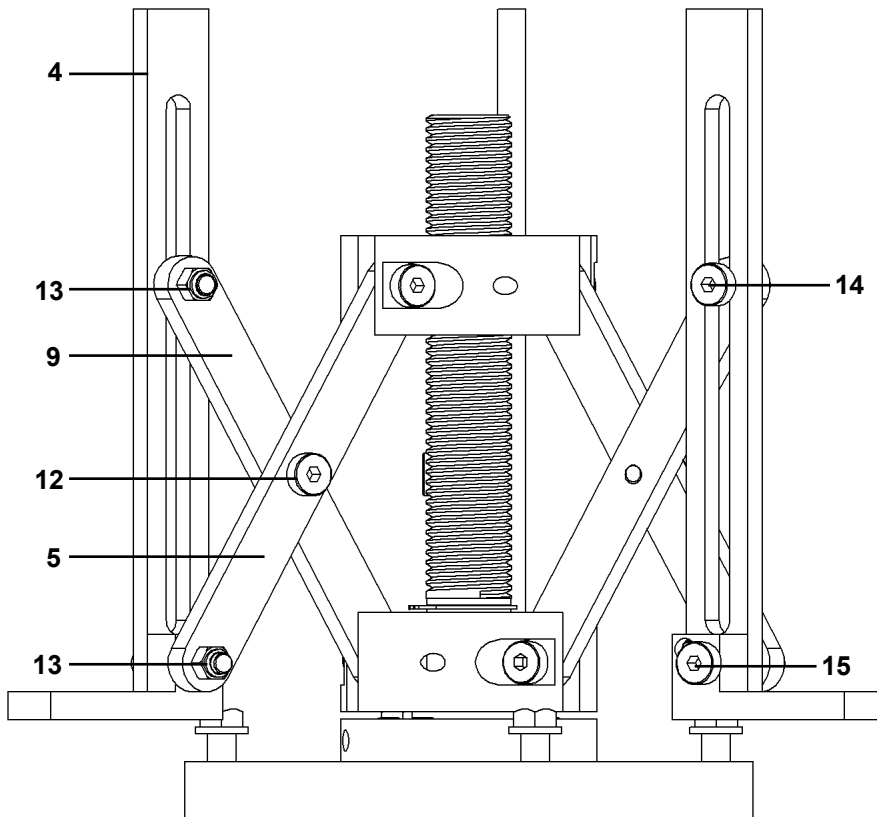


CWO-3661 8/16 3 JAW EXPANDABLE CHUCK / EXPLODED VIEW / PARTS LIST

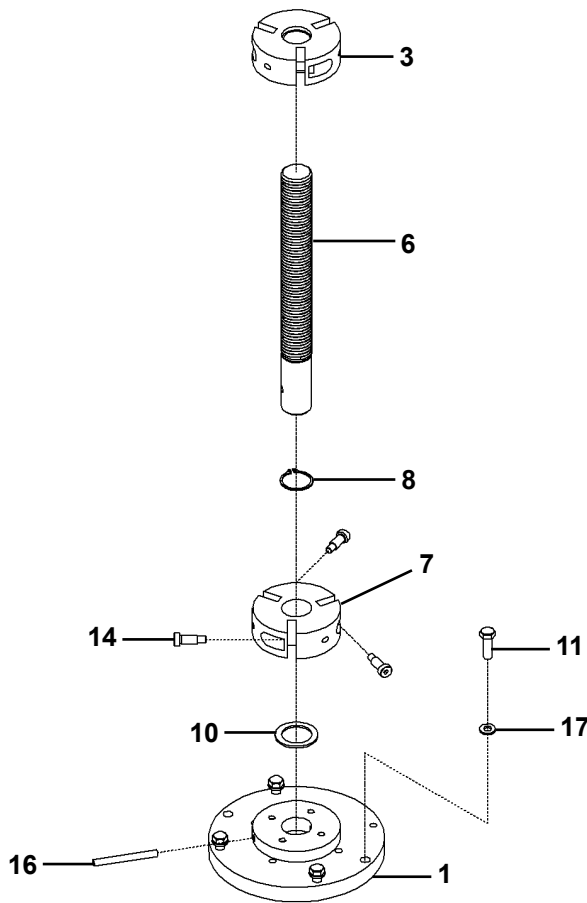


| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|---------------------------------|
| 1 | 1 | CWO-3292 | 8/16 Plate & Hub Assy. |
| *2 | 1 | CWO-3664 | Tightening Bar Assy. |
| 3 | 1 | CWO-3867 | 8/16 Lower Hub Assy. |
| 4 | 3 | CWO-3868 | 8/16 Slide Arm Bracket |
| 5 | 3 | CWO-5687 | Inside Arm 8/16 |
| 6 | 1 | CWO-5895 | Chuck Screw 8/16 |
| 7 | 1 | CWO-5911 | Upper Hub 8/16 |
| 8 | 1 | CWO-5954 | External Retaining Ring |
| 9 | 3 | CWO-5969 | Outside Arm 8/16 |
| 10 | 1 | CWO-5981 | Oilite Thrust Washer |
| 11 | 4 | FAS-0308 | Hex Hd Cap Scr 1/2-13 x 1-1/2" |
| 12 | 3 | FAS-0695 | Soc Hd Shd 1/2" x 1/2" x 3/8-16 |
| 13 | 12 | FAS-1394 | Hex Jam Nut 3/8"-16" |
| 14 | 6 | FAS-2693 | Soc Hd Shd 1/2" x 1" x 3/8-16 |
| 15 | 3 | FAS-2697 | Soc Hd Shd 1/2" x 2" x 3/8-16 |
| 16 | 1 | RPS-2139 | Roll Pin 3/8" x 3-3/4" |
| 17 | 4 | WAS-0280 | 1/2" SAE Flat Washer |

* See CWO-3664 Tightening Bar Exploded View

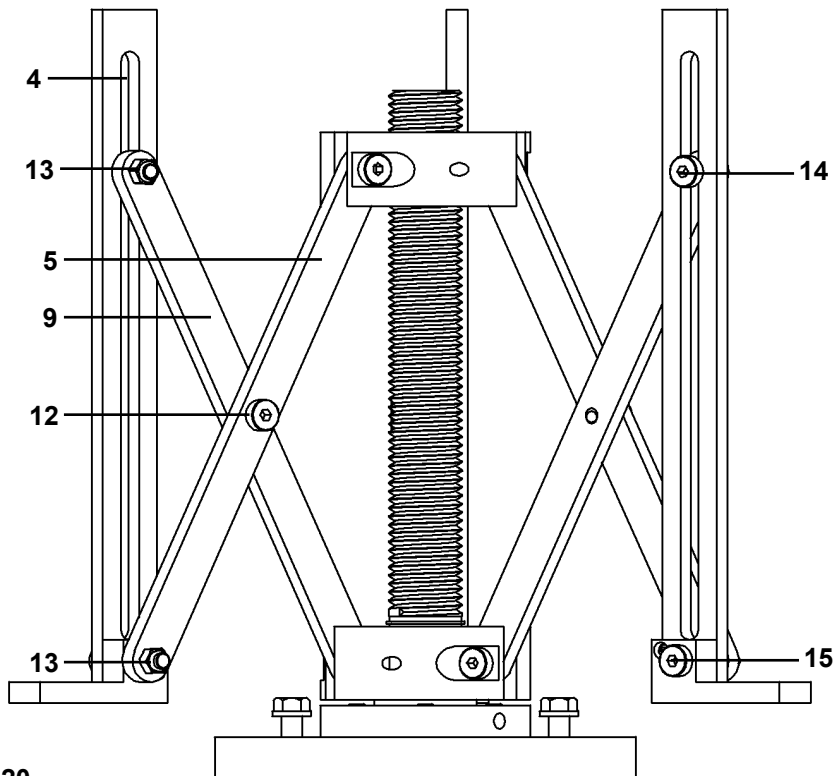


CWO-3662 10/24 3 JAW EXPANDABLE CHUCK / EXPLODED VIEW / PARTS LIST

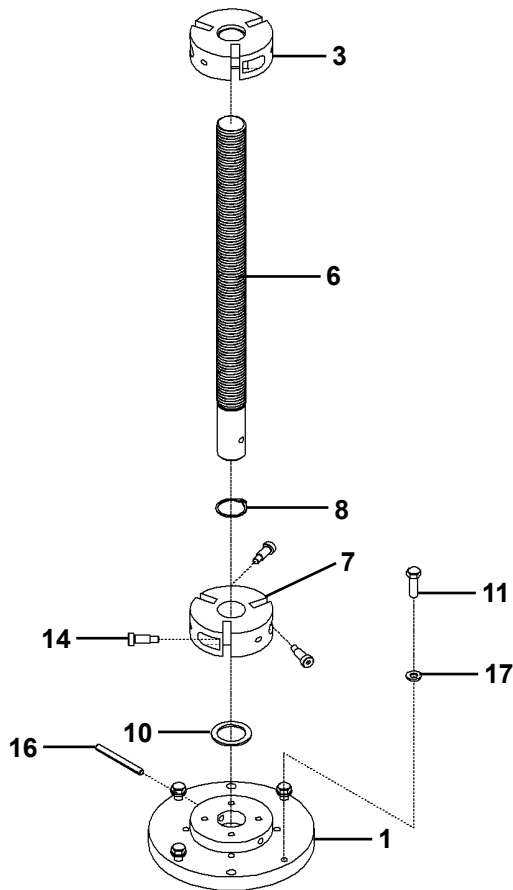


| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|---------------------------------|
| 1 | 1 | CWO-3293 | 10/24, 24/42 Plate & Hub Assy. |
| *2 | 1 | CWO-3664 | Tightening Bar |
| 3 | 1 | CWO-3861 | 10/24, 24/42 Lower Hub Assy. |
| 4 | 3 | CWO-3869 | 10/24 Slide Arm Bracket |
| 5 | 3 | CWO-5688 | Inside Arm 10/24 |
| 6 | 1 | CWO-5896 | Chuck Screw 10/24 |
| 7 | 1 | CWO-5912 | Upper Hub 10/24, 24/42 |
| 8 | 1 | CWO-5956 | External Retaining Ring |
| 9 | 3 | CWO-5971 | Outside Arm 10/24 |
| 10 | 1 | CWO-5981 | Oilite Thrust Washer |
| 11 | 4 | CWO-0308 | Hex Hd Cap Scr 1/2-13 x 1-1/2" |
| 12 | 3 | FAS-0695 | Soc Hd Shr 1/2" x 1/2" x 3/8-16 |
| 13 | 12 | FAS-1394 | Hex Jam Nut 3/8"-16" |
| 14 | 9 | FAS-2693 | Soc Hd Shr 1/2" x 1" x 3/8-16 |
| 15 | 3 | FAS-2697 | Soc Hd Shr 1/2" x 2" x 3/8-16 |
| 16 | 1 | RPS-2139 | Roll Pin 3/8" x 3-3/4" |
| 17 | 4 | WAS-0280 | 1/2" Washer |

* See CWO-3664 Tightening Bar Exploded View

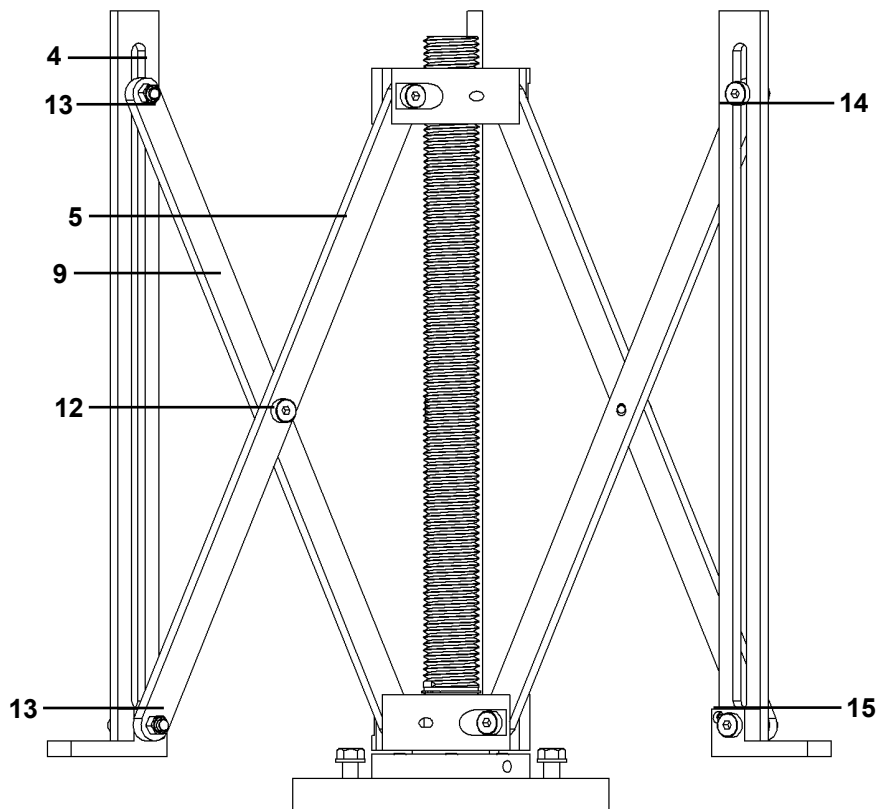


CWO-3663 24/42 3 JAW EXPANDABLE CHUCK / EXPLODED VIEW / PARTS LIST

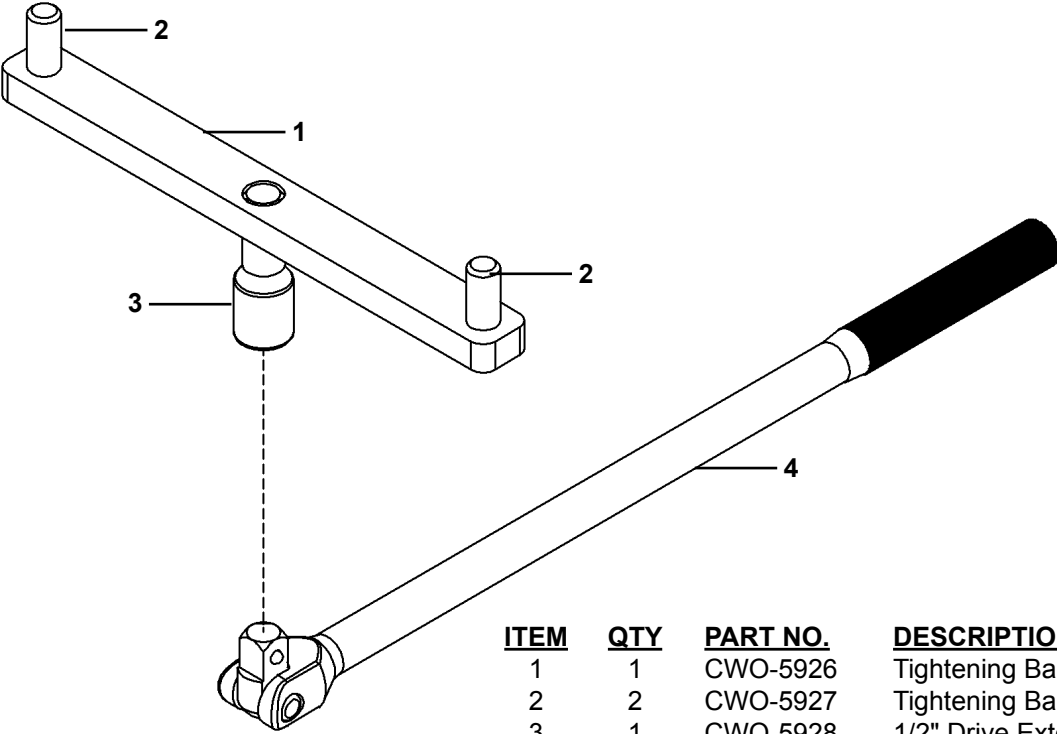


| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|---------------------------------|
| 1 | 1 | CWO-3293 | 10/24, 24/42 Plate & Hub Assy. |
| *2 | 1 | CWO-3664 | Tightening Bar |
| 3 | 1 | CWO-3861 | 10/24, 24.42 Lower Hub Assy. |
| 4 | 3 | CWO-3871 | 24/42 Slide Arm Bracket |
| 5 | 3 | CWO-5689 | Inside Arm 24/42 |
| 6 | 1 | CWO-5897 | Chuck Screw 24/42 |
| 7 | 1 | CWO-5912 | Upper Hub 10/24, 24/42 |
| 8 | 1 | CWO-5956 | External Retaining Ring |
| 9 | 3 | CWO-5972 | Outside Arm 24/42 |
| 10 | 1 | CWO-5981 | Oilite Thrust Washer |
| 11 | 4 | FAS-0308 | Hex Hd Cap Scr 1/2-13 x 1-1/2" |
| 12 | 3 | FAS-0695 | Soc Hd Shr 1/2" x 1/2" x 3/8-16 |
| 13 | 12 | FAS-1394 | Hex Jam Nut 3/8"-16" |
| 14 | 9 | FAS-2693 | Soc Hd Shr 1/2" x 1" x 3/8-16 |
| 15 | 3 | FAS-2697 | Soc Hd Shr 1/2" x 2" x 3/8-16 |
| 16 | 1 | RPS-2139 | Roll Pin 3/8" x 3-3/4" |
| 17 | 4 | WAS-0280 | 1/2" Washer |

* See CWO-3664 Tightening Bar Exploded View



CWO-3664 TIGHTENING BAR / EXPLODED VIEW / PARTS LIST



| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|--------------------------|
| 1 | 1 | CWO-5926 | Tightening Bar Handle |
| 2 | 2 | CWO-5927 | Tightening Bar Dowel Bar |
| 3 | 1 | CWO-5928 | 1/2" Drive Extension |
| 4 | 3 | CWO-5930 | 1/2" Drive Hinge Handle |

WARRANTY

Limited 3-Year Warranty

Model _____
Serial No. _____
Date Purchased: _____
Where Purchased: _____

For a period ending one (1) year from the date of invoice, Manufacturer warrants that any new machine or part is free from defects in materials and workmanship and Manufacturer agrees to repair or replace at its option, any defective part or machine. HOWEVER, if the invoiced customer registers the Product Warranty by returning the Warranty Registration Card supplied with the product within 90 days of the invoice date, or by registering on-line at www.bugo.com, Manufacturer will extend the warranty period an additional two (2) years which will provide three (3) total years from the date of original invoice to customer. This warranty does not apply to machines which, after Manufacture's inspection are determined by Manufacturer to have been damaged due to neglect, abuse, overloading, accident or improper usage. All shipping and handling charges will be paid by the customer.

The foregoing express warranty is exclusive and Manufacturer makes no representation or warranty (either express or implied) other than as set forth expressly in the preceding sentence. Specifically, Manufacturer makes no express or implied warranty of merchantability or fitness for any particular purpose with respect to any goods. Manufacturer shall not be subject to any other obligations or liabilities whatsoever with respect to machines or parts furnished by Manufacturer.

Manufacturer shall not in any event be liable to Distributor or any customer for any loss of profits, incidental or consequential damages or special damages of any kind. Distributor's or customer's sole and exclusive remedy against Manufacturer for any breach of warranty, negligence, strict liability or any other claim relating to goods delivered pursuant hereto shall be for repair or replacement (at Manufacturer's option) of the machines or parts affected by such breach.

Distributor's Warranty:

In no event shall Manufacturer be liable to Distributor or to any customer thereof for any warranties, representations or promises, express or implied, extended by Distributor without the advance written consent of Manufacturer, including but not limited to any and all warranties of merchantability or fitness for a particular purpose and all warranties, representations or promises which exceed or are different from the express limited warranty set forth above. Distributor agrees to indemnify and hold Manufacturer harmless from any claim by a customer based upon any express or implied warranty by Distributor which exceeds or differs from Manufacturer's express limited warranty set forth above.

HOW TO OBTAIN SERVICE:

If you think this machine is not operating properly, re-read the instruction manual carefully, then call your Authorized BUG-O dealer/distributor. If they cannot give you the necessary service, write or phone us to tell us exactly what difficulty you have experienced. BE SURE to mention the MODEL and SERIAL numbers.

*Bug-O System's warranty applies to Bug-O components only. Where other brands of power sources, wire feeders or sub components are a part of Bug-O Equipment, please refer to that specific Manufacturer's manual for warranty specifications on their components.