

INSTRUCTIONS AND PARTS MANUAL

HEAVY-DUTY TRACTOR

HDT-1200	TRACTOR BASE PACKAGE
HDT-1250	TRACTOR BASE PACKAGE W/ EQUIPMENT MOUNTS
HDT-1000	WITH FEEDER & FLUX RECOVERY

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-HDT-IPM-0614



B U G - O S Y S T E M S

A DIVISION OF WELD TOOLING CORPORATION



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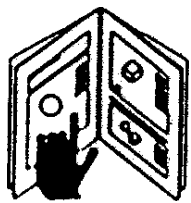
SAFETY

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.



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.



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.



PLASMA CUTTING can produce destructive High Voltage at High Frequency.

- 1) If using plasma, see that the machine as well as the plasma power source is properly grounded.
- 2) Do not use older model plasma machines meant for manual operation. These can leak high frequency at high voltages, which can cause dangerous shock, as well as destroy control circuits.
- 3) Read the instruction manual page on plasma cutting carefully, and follow all precautions.

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.

HEAVY-DUTY TRACTOR INSTRUCTIONS AND PARTS MANUAL

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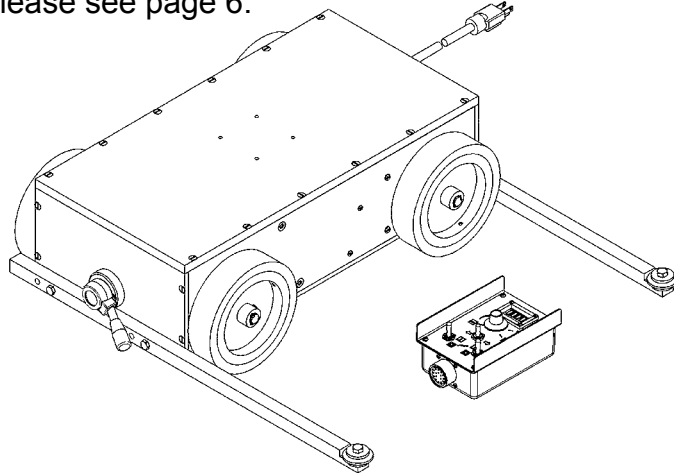
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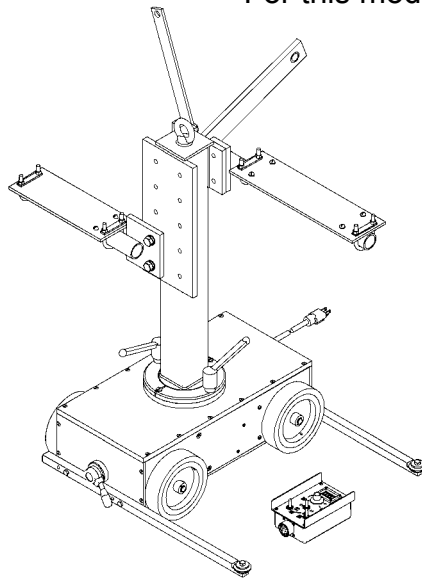
- 31.....Warranty

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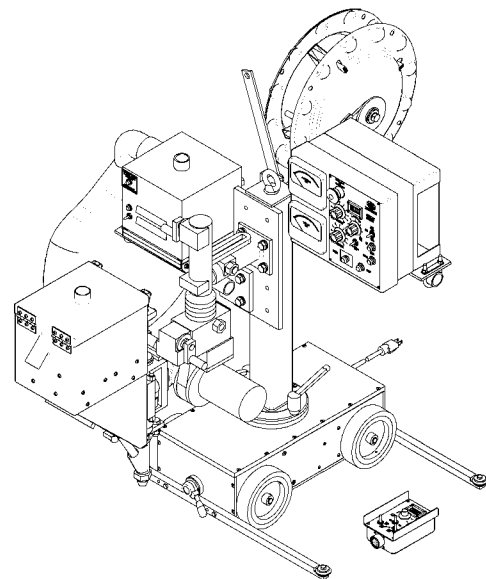
HDT-1200/1202/1204
HEAVY-DUTY TRACTOR BASE PACKAGE
For this model please see page 6.



HDT-1250/1252/1254
HEAVY-DUTY TRACTOR WITH EQUIPMENT MOUNTS
For this model please see page 14.



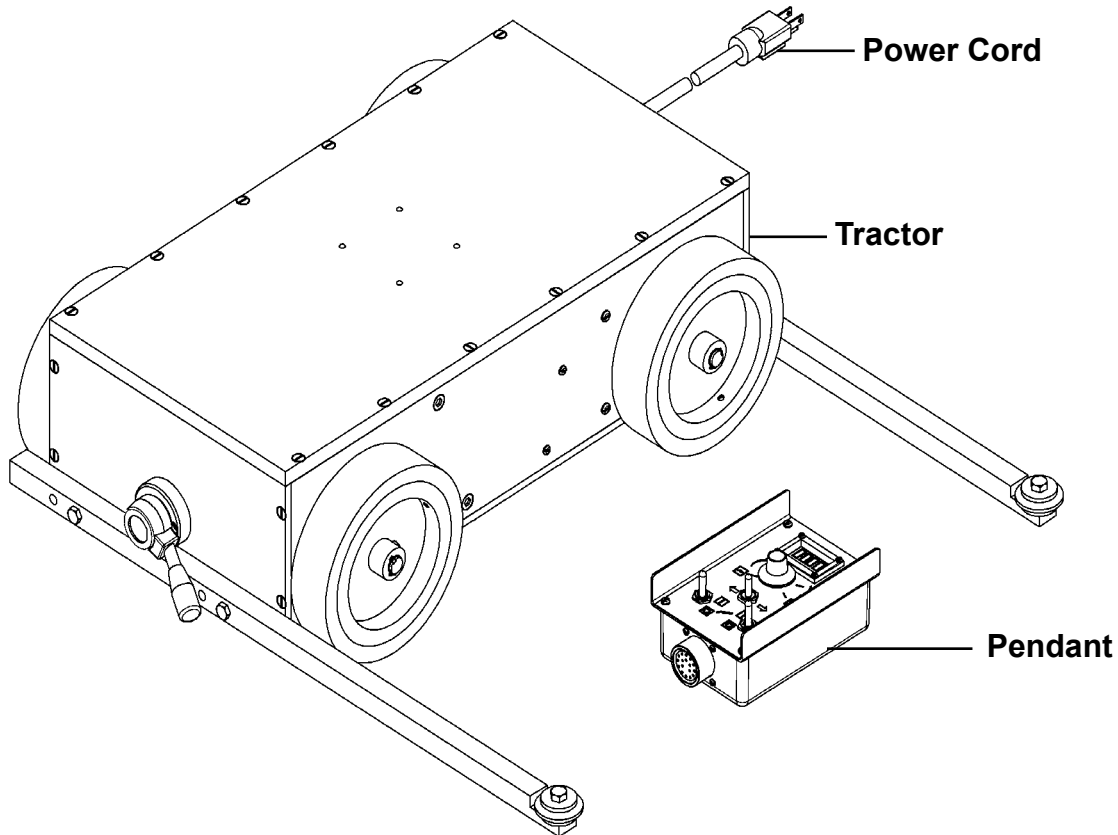
HDT-1000/1002/1004
HEAVY-DUTY TRACTOR WITH
FEEDER AND FLUX RECOVERY
For this model please see page 21.



HDT-1200/1202/1204 / INTRODUCTION

The **HEAVY-DUTY TRACTOR** is a large tractor with over-sized wheels for submerged-arc welding on flat steel plate. The base package is available in 120, 240 or 42 VAC operation. The 120 VAC setup is HDT-1200, 240 VAC setup is HDT-1202 and 42 VAC setup is HDT-1204. A control pendant is used to operate the tractor's speed and direction. The pendant also provides two separate weld contactor switches for the starting operation of two separate torches. The LED display on the pendant shows the set travel speed for the tractor, providing repeatable speed during system setup and operation. The customer is responsible for the mounting of all welding equipment to the tractor base package. Bug-O Systems can also provide custom mounting of the customer's equipment. Contact the sales office for details.

HDT-1200/1202/1204 HEAVY-DUTY TRACTOR BASE PACKAGE

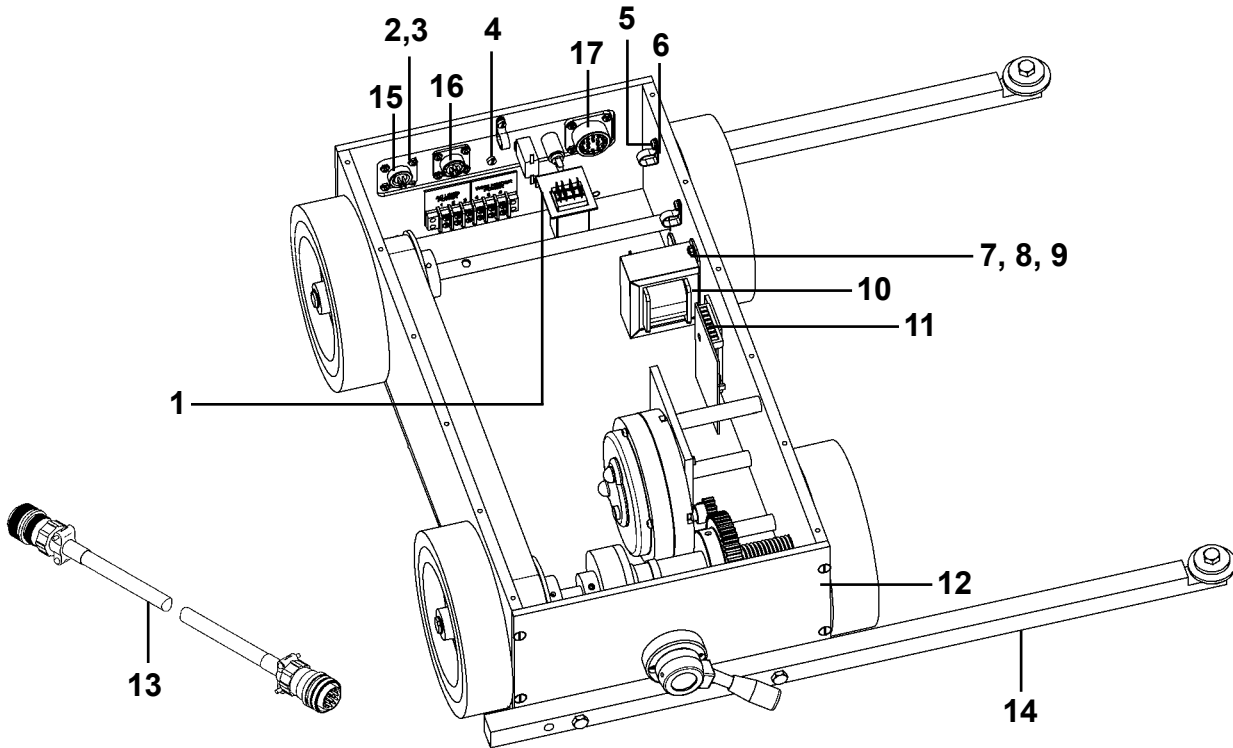


HDT-1200/1202/1204 / SETUP AND OPERATION

1. Remove the machine from the shipping box. Be sure to account for all loose parts before discarding the box!
2. Locate the cords that ship with the machine. A power cord and control pendant cord should be included. The cable connectors are keyed to fit their appropriate mates on the tractor and pendant. Install the power cable and pendant cable to their respective panel connectors on the tractor.
3. The operation of the tractor is handled on the control pendant. Install the control pendant onto the free side of the control pendant cable.
4. If the weld contactor switches on the pendant are to be used, wire up the welding power supplies' remote contactor circuit to the supplied, four-terminal cable connector.
5. If the follower arms are to be used, install them on the front and back of the machine. Make sure that the front follower arm is located in the short position. This guides the front of the machine into the fillet member, allowing the tractor to track a straight line.
6. Install the desired feeder equipment onto the top plate of the tractor. If assistance is required for this step, contact the Bug-O Systems' sales department for application support.
7. DRY RUN:
To ensure proper operation of the unit, test by turning the main power on from the feeder control panel if used in this configuration or by plugging the tractor into a power source. Switch the tractor travel direction switch to the desired travel direction on the pendant. Adjust the speed with the knob located below the LED speed display.
8. All tractor controls are fully adjustable during cycle operation.

NOTE: The tractor can easily be re-wired to draw 120VAC power from the wire-feeder or welding power supply outputs. The default configuration for the HDT-1200/HDT-1202/1204 is to get power from the AC lines through the supplied power cord. **HOWEVER, HDT-1202/1204 (240, 42 VAC VERSIONS) CANNOT BE RE-WIRED FOR OPERATION WITH WELDING POWER SUPPLY OR FEEDER EQUIPMENT, ONLY HDT-1200 (120 VAC VERSION).** See page 9 for details.

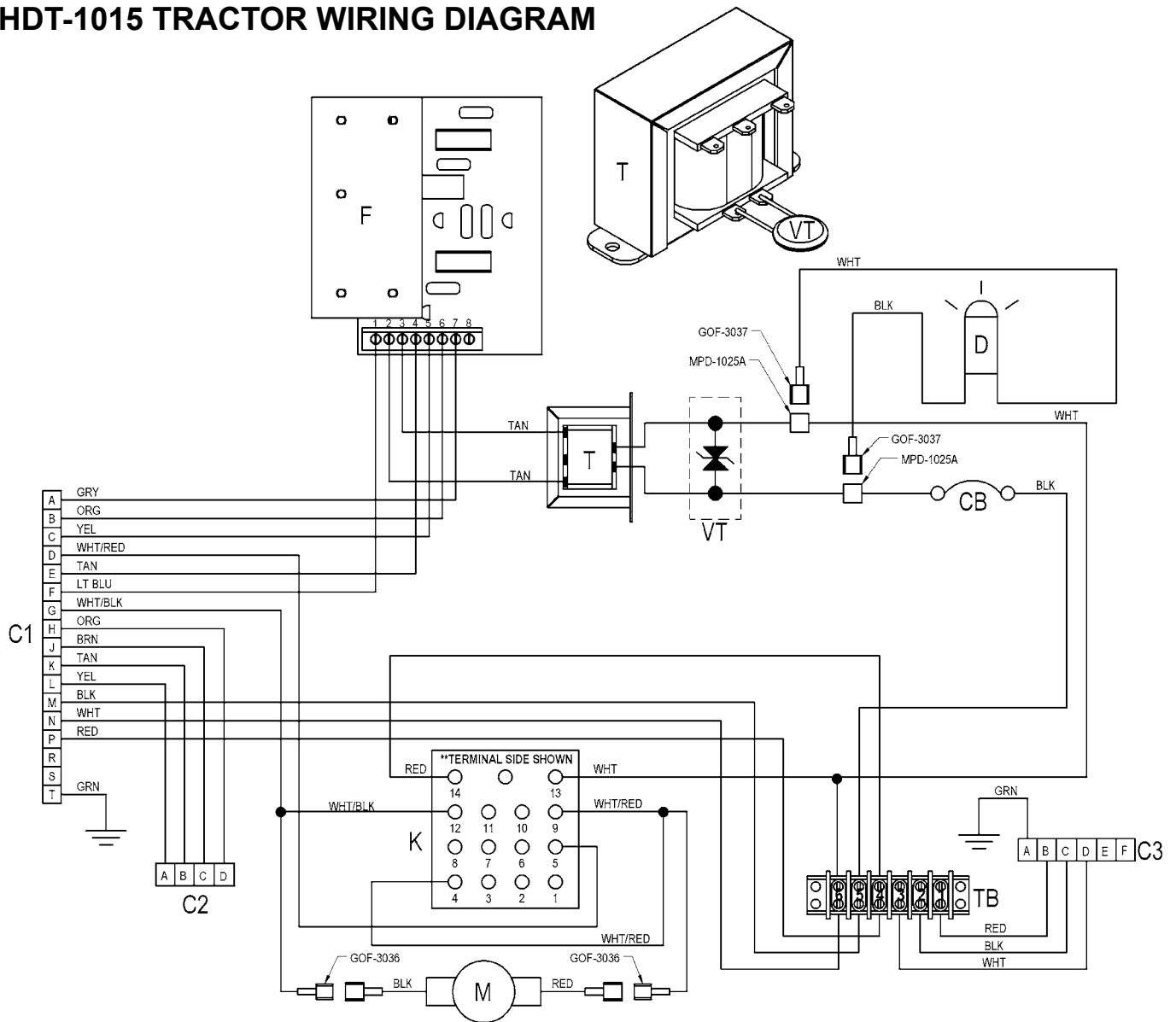
HDT-1010/1012/1014 TRACTOR / EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	2	FAS-0112	Pan Hd Slit 6-32 x 1/4 Black
2	12	FAS-0104	#4-40 x 5/16 Pan Head, Zinc
3	12	FAS-1305	Hex Nut 4-40 Nylon
4	2	FAS-0722	Fil Hd Scr 8-32 x 1/4
5	2	FAS-0124	8/32 x 3/8 Pan Hd, Di-Chrome
6	3	MDS-1030	Cable Clamp, Nylon, Black 7/16
7	2	FAS-1320	Hex Nut 10-24
8	2	WAS-0221	#8 Internal Star Lockwasher
9	2	FAS-0126	#8-32 x 5/8 Pan Hd, Black
10	1	HDT-1015	120 VAC
		HDT-1015-240	240 VAC
		HDT-1015-42	42 VAC
11	2	FAS-0115	6-32 X 1/2 Pan Head, Zinc
12	1	HDT-1020	Tractor Frame / Mechanicals
13	1	BUG-5355-5	5' M To F, 17-Conductor Cable Assy.
14	2	HDT-1190	Follower Arm
*15	1	BUG-1034	Panel Connector, 4-T, M
*16	1	BUG-9909	Panel Connector, 6-T, M
*17	1	CON-07RP17M	17T, M Panel Connector

* - These items are part of HDT-1015, HDT-1015-240 & HDT-1015-42.

HDT-1015 TRACTOR WIRING DIAGRAM

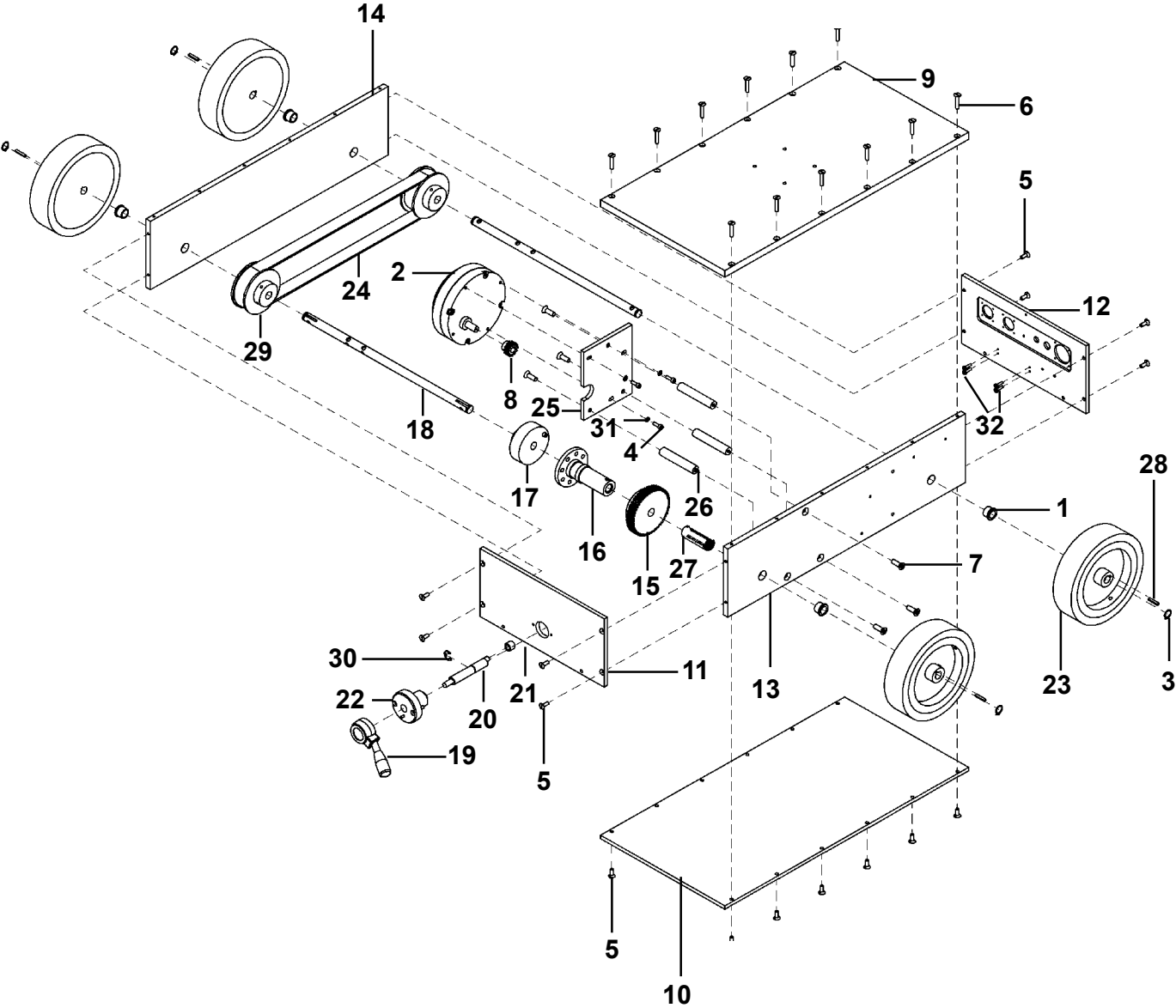


ELECTRICAL COMPONENT CHART

ITEM	DESCRIPTION	HDT-1015* 120 VAC	HDT-1015-240 240 VAC	HDT-1015-42 42 VAC
CB	CIRCUIT BREAKER	BUG-2923 (.7A)	BUG-2952 (.5A)	BUG-2933 (2A)
D	PILOT LIGHT	BUG-1415	BUG-1428	BUG-1427
K	RELAY	BUG-1383	BUG-1551	BUG-9636
T	TRANSFORMER	BUG-9675	GOF-3112	BUG-1466
VT	VOLT TRAP	BUG-1393	BUG-1563	BUG-1393
F	PRECISION SPEED CONTROL	BUG-1725		
C1	PANEL CONNECTOR	BUG-9909		
C2	PANEL CONNECTOR	CON-07RP17M		
C3	PANEL CONNECTOR	BUG-1034		
M	GEAR MOTOR (NOT PART OF WIRING GRP P.10)	BUG-1550 (150:1)		
TB	TERMINAL BLOCK	CWO-6288		

*NA-3 version uses this with different TB configuration.

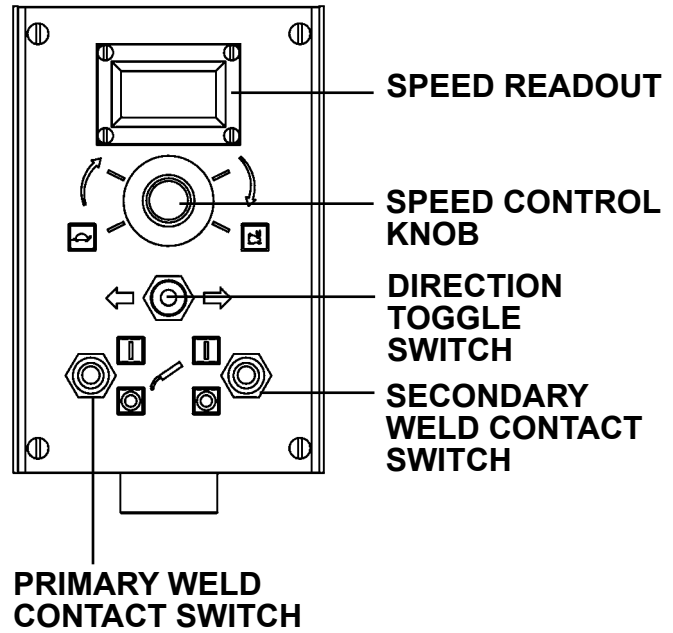
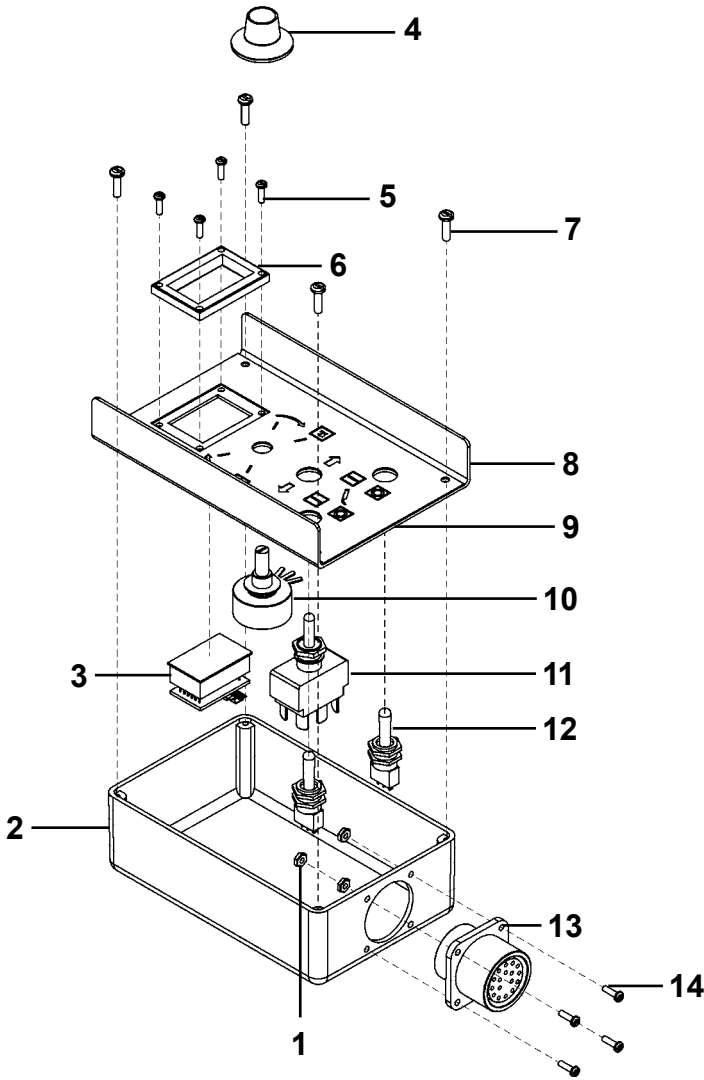
HDT-1020 TRACTOR / EXPLODED VIEW



HDT-1020 TRACTOR / PARTS LIST

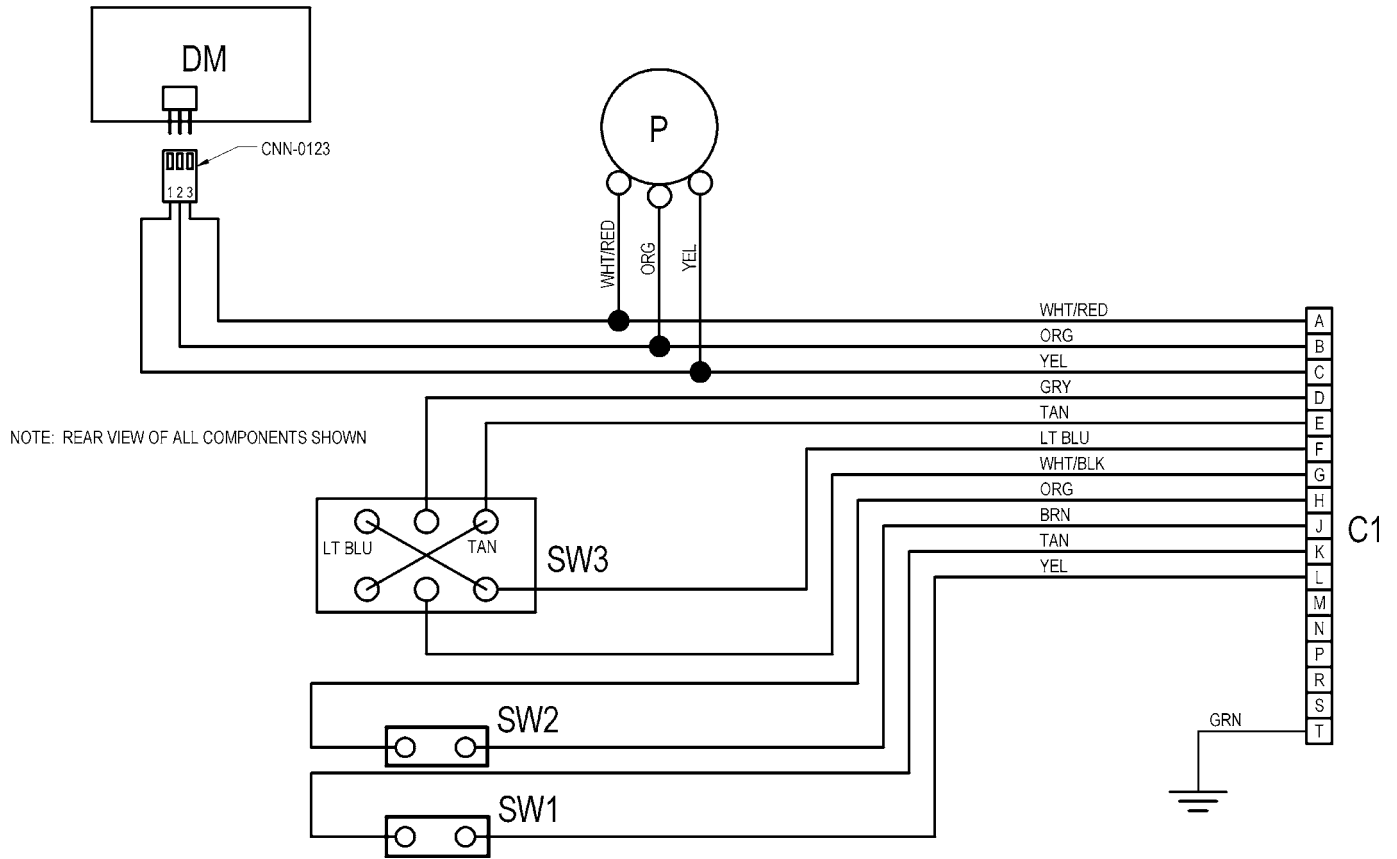
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	BER-1001	Flange Bearing .502 x .627 x
2	1	BUG-1550	Gear Motor (150:1)
3	4	BUG-1893	Retaining Ring 1/2" External
4	3	FAS-0525	Soc Hd Cap 8-32 x 1/2
5	20	FAS-0835	Flt Hd Slit Scr 10-24 x 1/2
6	12	FAS-0838	Flt Hd Slit Scr 10-24 x 7/8
7	6	FAS-0957	1/4-20 x 3/4 Flat Hd Socket
8	1	GOF-3014	Drive Pinion w/ Key Set Screw
9	1	HDT-1021	Top Plate
10	1	HDT-1022	Bottom Plate
11	1	HDT-1023	Front Plate
12	1	HDT-1024	Back Plate
13	1	HDT-1025	Left Plate
14	1	HDT-1026	Right Plate
15	1	HDT-1027	Modified Spur Drive Gear Assembly
16	1	HDT-1028	Clutch Lock Plate Assembly
17	1	HDT-1029	Clutch Lock Stop Assembly
18	2	HDT-1031	Axle
19	1	HDT-1033	Clutch Lever Assembly
20	1	HDT-1034	Clutch Lever Camshaft
21	1	HDT-1035	Clutch Cam Shaft Bearing
22	1	HDT-1036	Clutch Cam Hub Assembly
23	4	HDT-1037	Rubberized Metal Wheel
24	1	HDT-1039	Htd8 Timing Belt
25	1	HDT-1041	Motor Mount Plate
26	3	HDT-1042	Motor Standoff
27	1	HDT-1046	Compression Spring (Steel)
28	4	HDT-1047	Steel Key 1" Long x 1/8" Square
29	2	HDT-1150	Timing Belt Pulley Assembly
30	1	HDW-1501	3/8" E-Style Retaining Ring
31	3	WAS-0221	#8 Internal Star Lockwasher
32	4	FAS-0115	6-32 x 1/2 Pan Head

HDT-1140 TRACTOR PENDANT / EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	FAS-1305-N	Hex Nut 4-40 Nylon
2	1	CBO-4168	Pendant Box
3	1	BUG-1764	Meter Display Board Assembly
4	1	BUG-9621	Knob, Straight Molded
5	4	FAS-0104	4-40 C 3/8 Pan Head, Black
6	1	MDS-1011	Display Bezel
7	4	FAS-0115	6-32 X 1/2 Pan Head, Zinc
8	1	HDT-1141	Toggle Switch Dpdt, On-Off-On
9	1	HDT-1142	Pendant Label
10	1	BUG-9677	Potentiometer
11	1	BUG-2255	Toggle Switch Dpdt, On-Off-On
12	1	BUG-1869	Toggle Switch Spst, On-None-On
13	1	BUG-5527	Panel Connector
14	4	FAS-0104	4-40 C 3/8 Pan Head, Black

PENDANT WIRING DIAGRAM

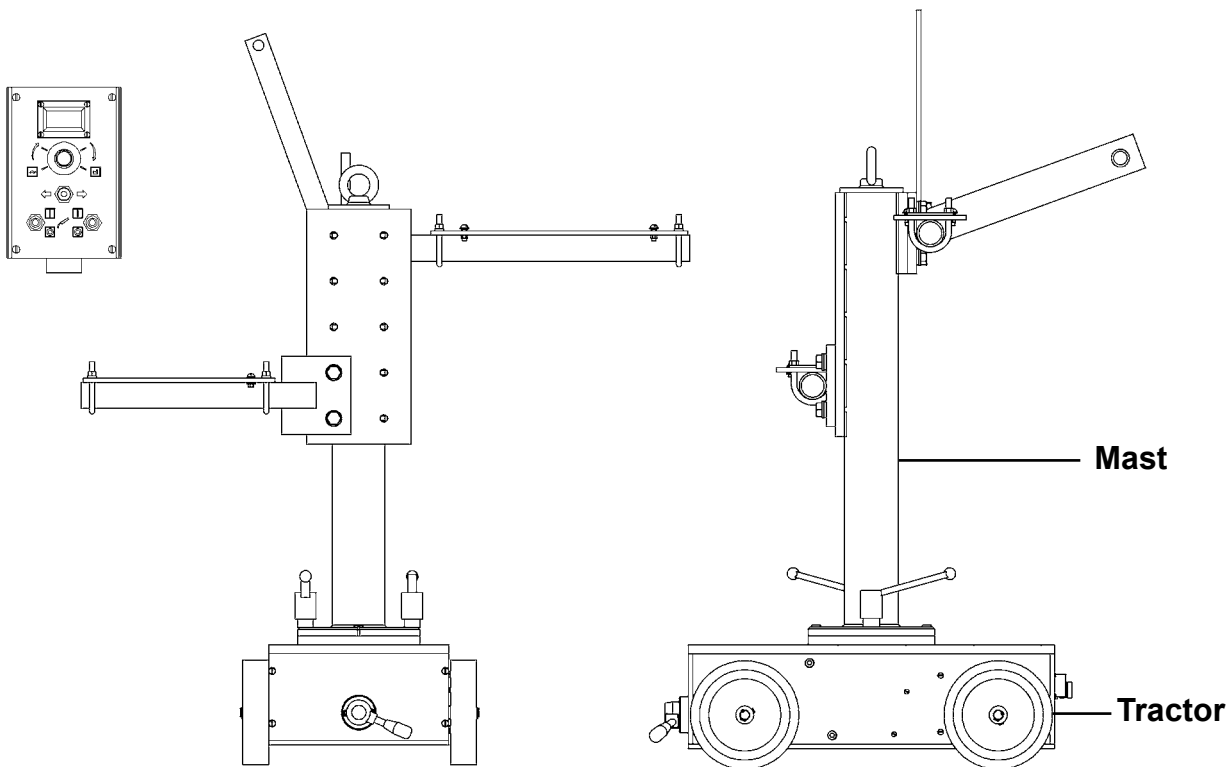


ELECTRICAL COMPONENT CHART		
ITEM	DESCRIPTION	PART NO.
C1	PANEL CONNECTOR	BUG-5527
DM	DIGITAL METER	BUG-1764
P	POTENTIOMETER CONTROL	BUG-9677
SW1	SWITCH	BUG-1869
SW2	SWITCH	BUG-1869
SW3	SWITCH	BUG-2255

HDT-1250/1252/1254 / INTRODUCTION

The **HEAVY-DUTY TRACTOR** can also be configured with the welding equipment mounting features available in the HDT-1000 (see p.21 for details on HDT-1000). This assembly option adds the welding equipment mounts to the base package tractor (HDT-1200/1202/1204). The tractor comes set up for 120, 240 or 42 VAC operation. It comes with a power cord for use with AC line power. Refer to HDT-1200/1202/1204 for details concerning the tractor. The tractor control panel is located on the pendant for ease of use while in process. The unit comes equipped with a mast and horizontal posts for mounting the preferred welding equipment. The HEAVY-DUTY TRACTOR is able to travel long distances at a constant speed. Two methods for weld-joint tracking are available. The included follower arms can be used to track off of a vertical surface located along the weld seam, such as in fillet welding. A magnetic track system is also available when butt-welding operation is needed.

HDT-1250/1252/1254 HEAVY-DUTY TRACTOR WITH WELDING EQUIPMENT MOUNTS



FRONT VIEW

SIDE VIEW

HDT-1250/1252/1254 / SETUP AND OPERATION

1. Remove the machine from the shipping box. Be sure to account for all loose parts before discarding the box!
2. Locate the cords that ship with the machine. A power cord and control pendant cord should be included. The cable connectors are keyed to fit their appropriate mates on the tractor and pendant. Install the power cable and pendant cable to their respective panel connectors on the tractor.
3. The operation of the tractor is handled on the control pendant. Install the control pendant onto the free side of the control pendant cable.
4. If the weld contactor switches on the pendant are to be used, wire up the welding power supply's remote contactor circuit to the supplied, four-terminal cable connector.
5. If the follower arms are to be used, install them on the front and back of the machine. Make sure that the front follower arm is located in the shorter of the two possible positions. This guides the front of the machine into the fillet member, allowing the tractor to track a straight line.
6. Install the welding equipment to be used with the tractor. The mounting plates are supplied with the tractor. It is the customer's responsibility to add the appropriate mounting holes to the mounting plates for their equipment. If assistance is required, contact the Bug-O Systems sales department for application assistance.
7. **DRY RUN:**
To ensure proper operation of the unit, test by turning the main power on from the feeder control panel if used in this configuration or by plugging the tractor into a power source. Switch the tractor travel direction switch to the desired travel direction on the pendant. Adjust the speed with the knob located below the LED speed display.
8. All tractor controls are fully adjustable during cycle operation.

NOTE: The tractor can easily be re-wired to draw 120VAC power from the wire-feeder or welding power supply outputs. The default configuration for the HDT-1250/1252/1254 is to get power from the AC lines through the supplied power cord. **However, HDT-1252/1254 (240, 42 VAC versions) cannot be re-wired for operation with welding power supply or feeder**

NOTES:

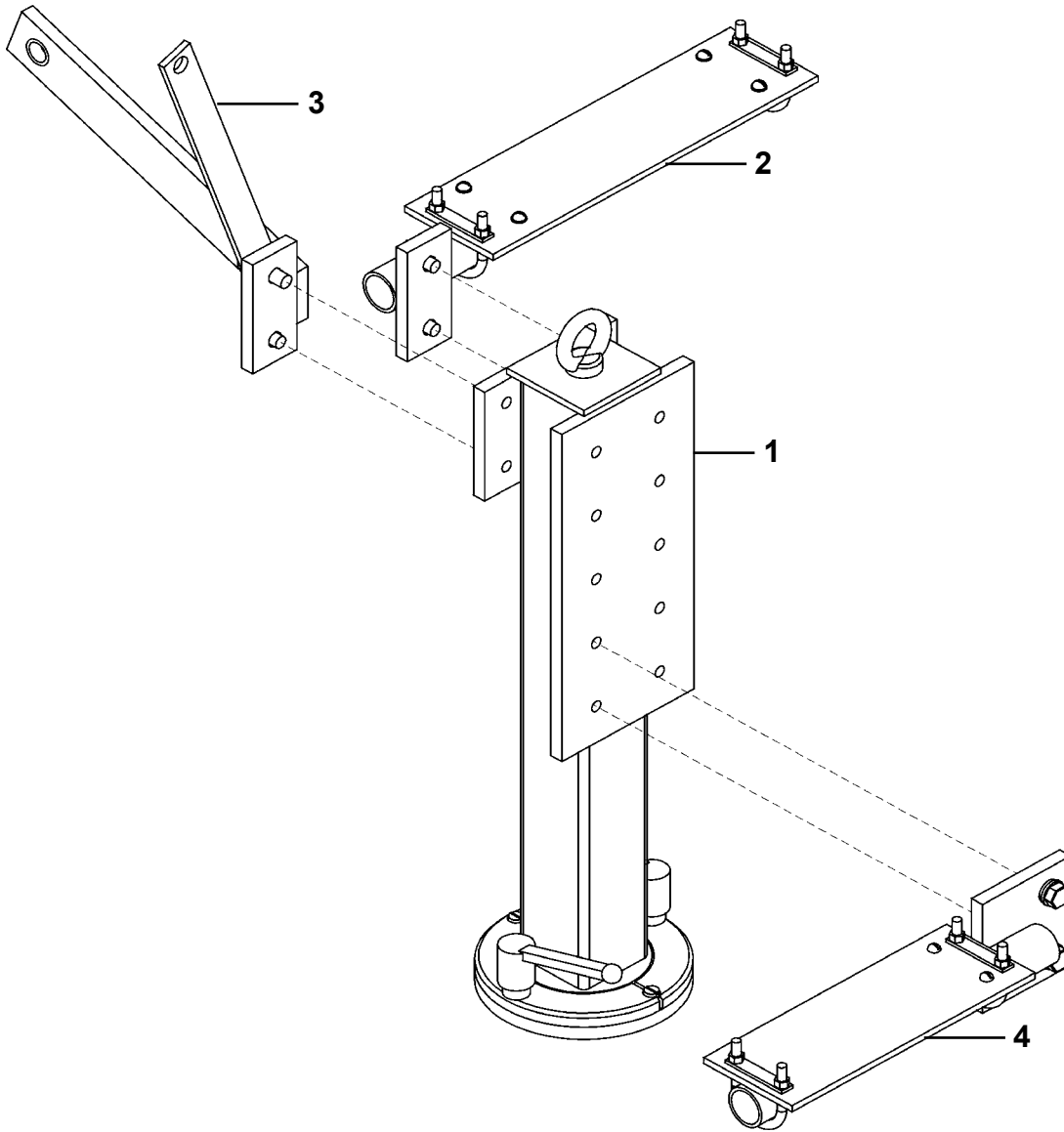
Refer to p.8 for HDT-1010/1012/1014, tractor drawing and parts list.

Refer to p.9 for HDT wiring diagram.

Refer to p.10 & 11 for HDT-1020, tractor mechanicals drawing and parts list.

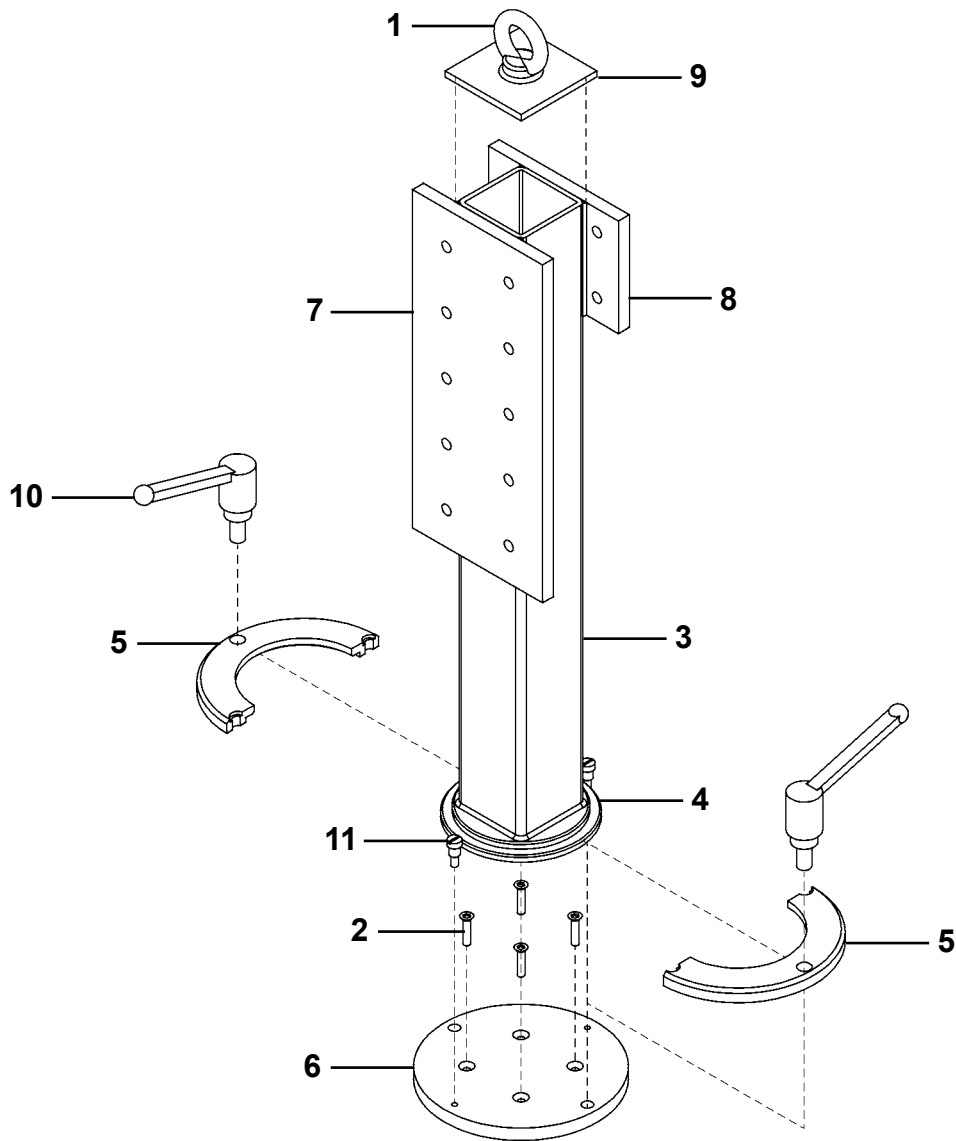
Refer to p.12 for HDT-1140, pendant drawing and parts list.

HDT-1260 / EXPLODED VIEW / PARTS LIST



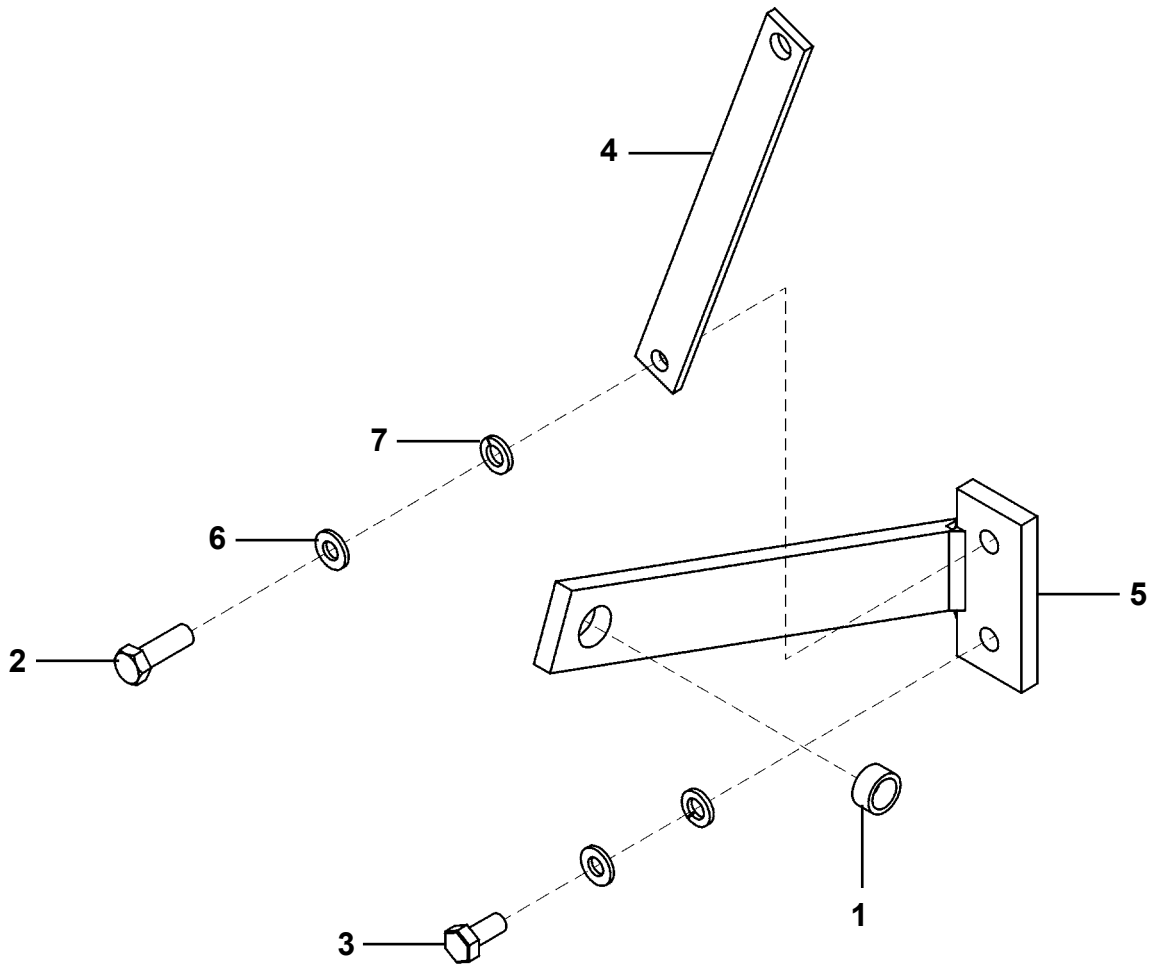
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	HDT-1060	Mast w/Foot Plate
2	1	HDT-1280	Feeder Control Mount without Feeder
3	1	HDT-1270	Wire Spool Bkt without Spool Kit
4	1	HDT-1290	Flux Recovery Vacuum Mount

HDT-1060 MAST / EXPLODED VIEW / PARTS LIST



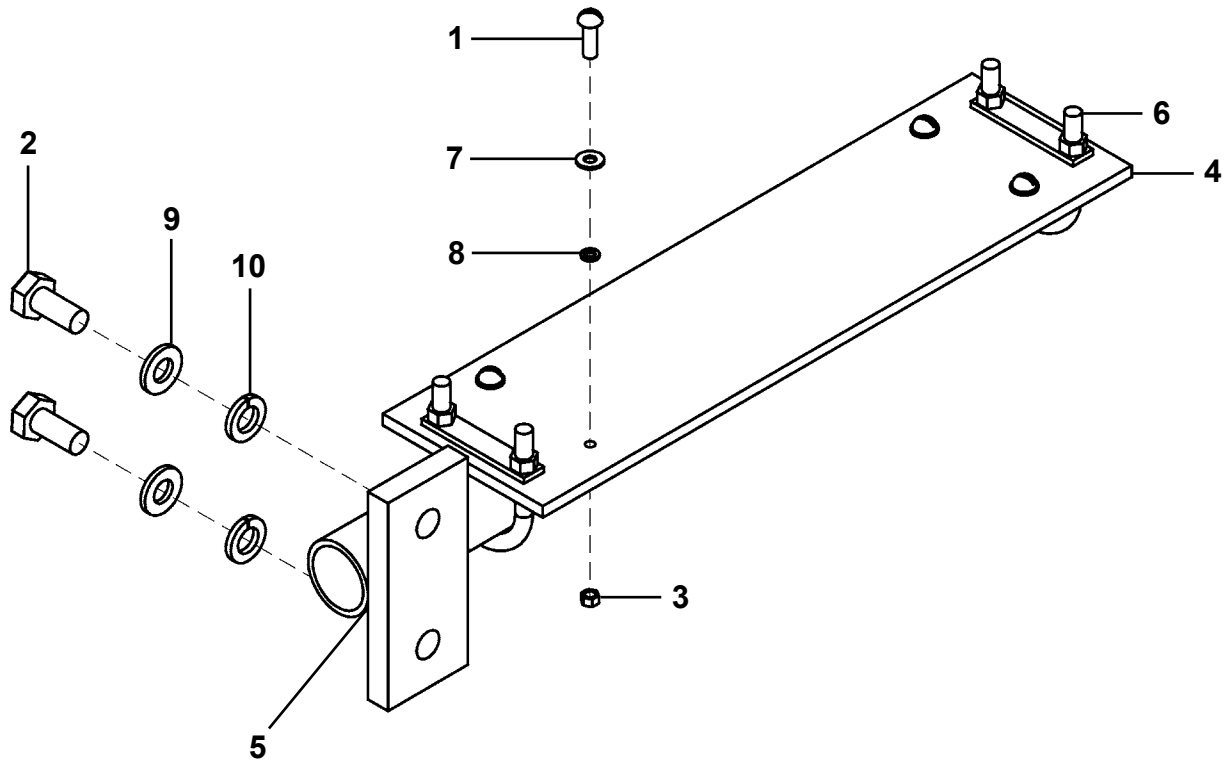
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	CWO-4586	1-9/32" I.D. Eye Bolt
2	4	FAS-0959	1/4-20 x 1" Flat Hd Socket
3	1	HDT-1061	Tooling Mast
4	1	HDT-1062	Tooling Mast Foot Plate
5	1	HDT-1063	Tooling Mast Retainer Ring
6	1	HDT-1064	Tooling Mast Rest Plate
7	1	HDT-1065	Weld Head Mount Plate
8	1	HDT-1066	Accessory Mount Plate
9	1	HDT-1067	Mast Cap
10	2	HDT-1101	Kipp Adjustable Handles
11	2	HDT-1103	Shoulder Screw-1/4-20 x 1/2

HDT-1270 WIRE REEL BRACKET / EXPLODED VIEW / PARTS LIST



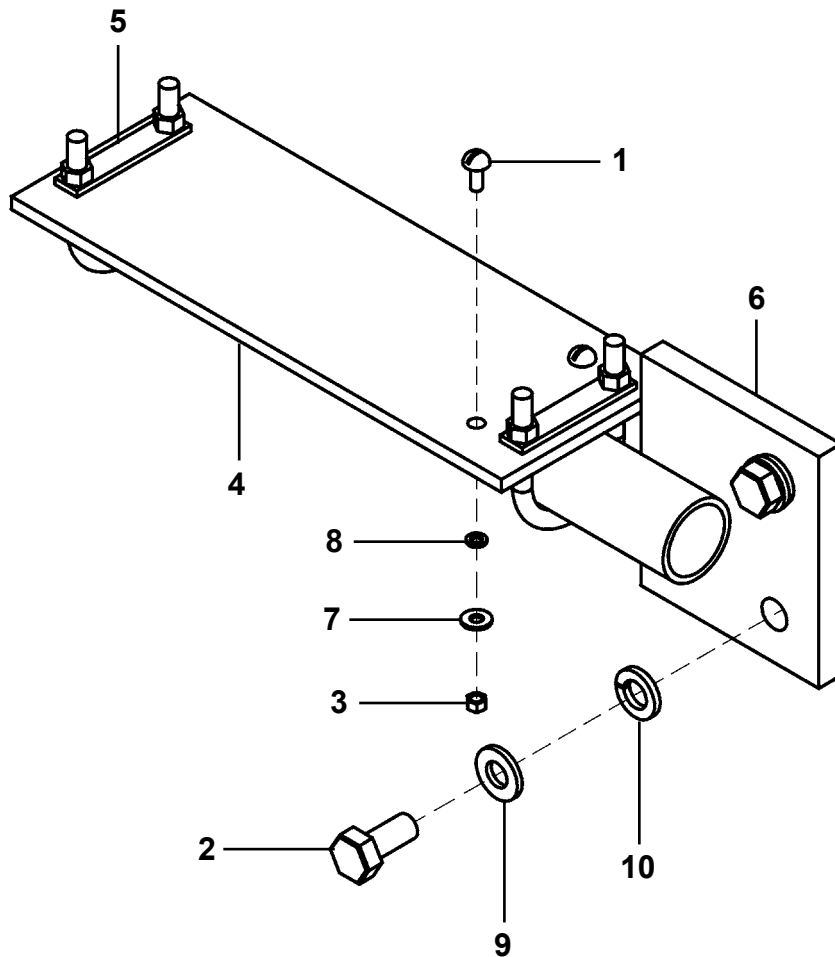
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	BUG-3274	Insulator
2	1	FAS-0308	1/2-13 x 1-1/2 Hex Hd Cap Scr
3	1	FAS-0309	1/2-13 x 1 Hex Hd Cap Scr
4	1	HDT-1073	Wire Capture Bar
5	1	HDT-1075	Wire Reel Mount Bracket
6	2	WAS-0280	1/2 SAE Washer
7	2	WAS-0281	1/2 Split Lock Washer

HDT-1280 CONTROL BOX BRACKET / EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	FAS-0236	Rnd Hd Scr 10-24 x 5/8
2	2	FAS-0309	1/2-13 x 1 Hex Hd Cap Scr
3	4	FAS-1330	Hex Nut 10-24
4	1	HDT-1083	Na-3 Mounting Plate
5	1	HDT-1087	Na-3 Mount
6	2	HDT-1102	U-Bolt W/ Mounting Plate
7	4	WAS-0230	#10 Flat Washer
8	4	WAS-0232	#10 Split Lock Washer
9	2	WAS-0280	1/2 SAE Washer
10	2	WAS-0281	1/2 Split Lock Washer

HDT-1290 FLUX RECOVERY VACUUM MOUNT / EXPLODED VIEW / PARTS LIST



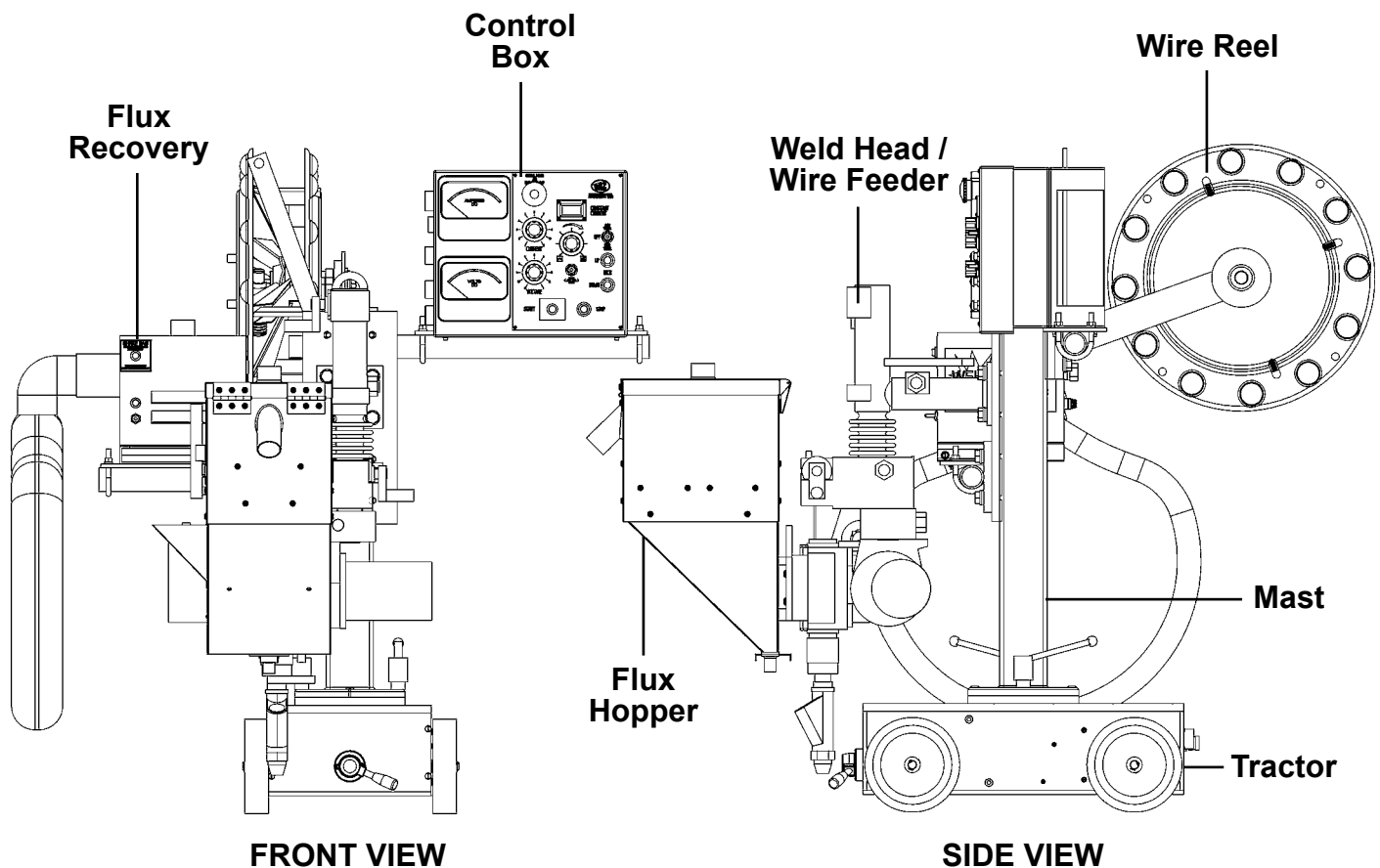
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	2	FAS-0235	Rnd Hd Scr 10-24 x 1/2"
2	2	FAS-0309	Hex Hd Cap Scr 1/2-13 x 1"
3	2	FAS-1330	Hex Nut 10-24
4	1	HDT-1093	Flux Hopper Vacuum Mount Plate
5	2	HDT-1102	U-Bolt w/Mounting Plate
6	1	HDT-1120	Flux Hopper Vacuum Mount
7	2	WAS-0230	#10 SAE Flat
8	2	WAS-0231	#10 Internal Star Lockwasher
9	2	WAS-0280	1/2" SAE Flat
10	2	WAS-0281	1/2" Split Lockwasher

HDT-1000 / INTRODUCTION

The **HEAVY-DUTY TRACTOR** is a large tractor with over-sized wheels for submerged-arc welding on flat steel plate. The unit is available with Lincoln NA-3S feeder and feeder controls. The tractor control panel is integrated into the NA-3S feeder control box for complete operation from the NA-3S panel. The unit is self-contained in that all tools and consumables for submerged-arc welding are located on the tractor. The only connections needed are those to the welding power supply. A flux recovery system is available as well for re-use of the submerged-arc flux. This allows for longer travel distances between fillings of the flux-hopper as well as reduced consumables cost. The **HEAVY-DUTY TRACTOR** is able to travel long distances at a constant speed. Two methods for weld-joint racking are available. Follower arms can be used to rack off of a vertical surface located along the weld seam, such as in fillet welding. A magnetic track system is also available when butt-welding operation is needed. The NA-3S feeder is capable of feeding wire diameters from 1/16" to 7/32".

HDT-1000

HEAVY-DUTY TRACTOR WITH FEEDER, CONTROLS AND FLUX RECOVERY AS SHOWN.



HDT-1000 / SETUP & OPERATION

1. Remove the machine from the shipping box. Be sure to account for all loose parts before discarding the box!
2. Locate the cords that ship with the machine. A power cord and control pendant cord will be included. The cable connectors are keyed to fit their appropriate mates on the tractor and pendant. Install the power cable and pendant cable to their respective panel connectors on the tractor.
3. The operation of the tractor is handled on the control panel of the submerged-arc wire feeder control box.
4. If the follower arms are to be used, install them on the front and back of the machine. Make sure that the front follower arm is located in the short position. This guides the front of the machine into the fillet member, allowing the tractor to track a straight line.
5. Install the welding interface cables from the welding power supply to the wire-feeder control box. Also install the weld current cabling from the wire-feeder control box to the submerged-arc nozzle. Refer to the NA-3 instruction manual that ships with the **HEAVY-DUTY TRACTOR**.
6. Load the wire-reel with the appropriate sized welding wire. Again, refer to the NA-3 instruction manual for proper installation of wire through the feeder and nozzle.
7. **DRY RUN:**
To ensure proper operation of the unit, test by turning the main power on from the feeder control panel. Switch the tractor travel direction switch to the desired travel direction. Switch the **HAND / AUTO** switch to **HAND**. Adjust the speed with the knob located below the LED speed display.
8. All welding parameters and tractor controls are fully adjustable during cycle operation.

NOTE: The HDT-1000 version comes without a power cord since it draws its power from the 120VAC provided to the NA-3S feed control unit from the welding power supply. It is possible to rewire the tractor to receive power from the AC lines. However, this is not needed when purchased with the welding equipment. Consult the Bug-O Systems' sales department for application assistance.

NOTES:

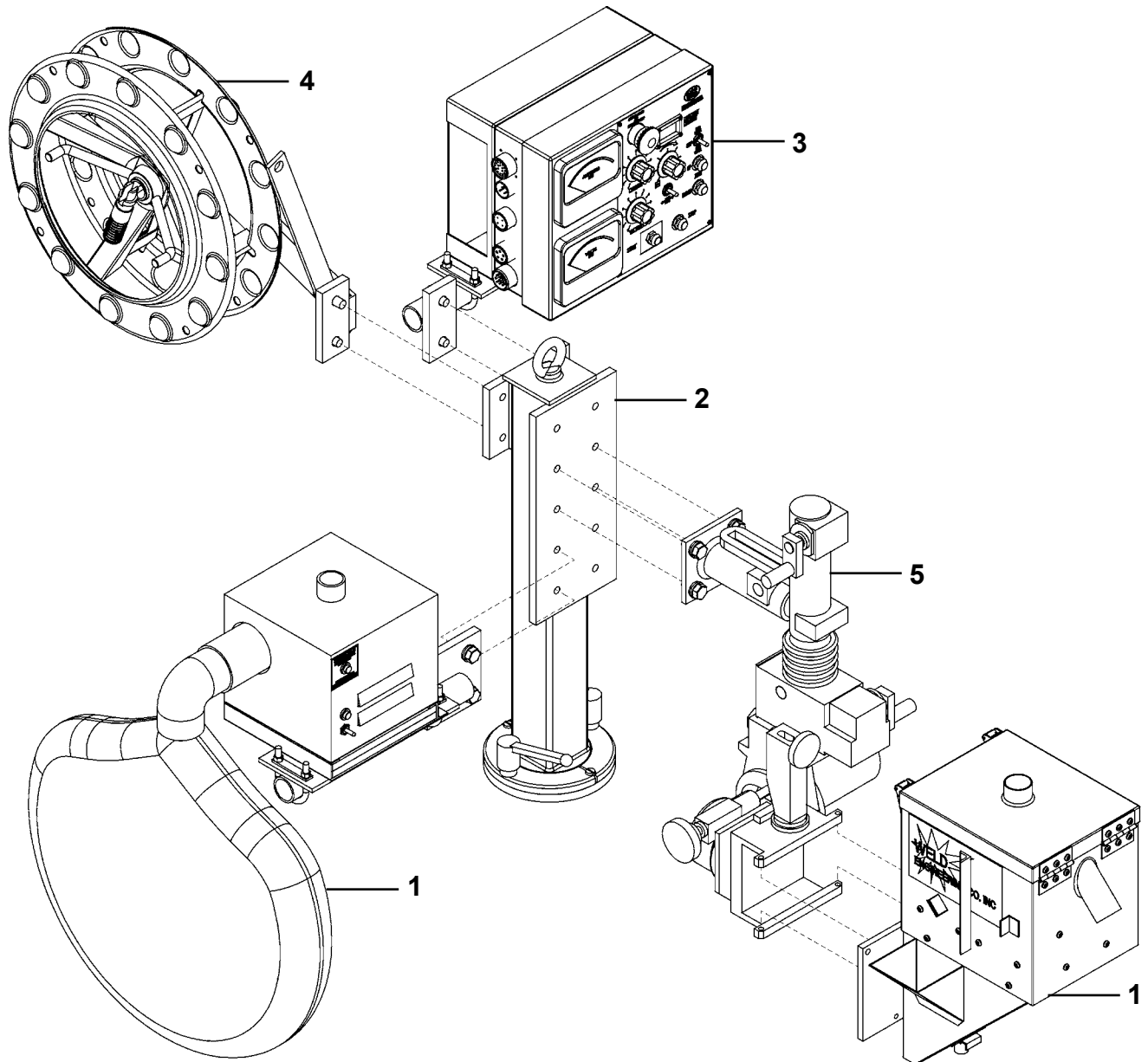
Refer to p.8 for HDT-1010/1012/1014, tractor drawing and parts list.

Refer to p.9 for HDT wiring diagram.

Refer to p.10 & 11 for HDT-1020, tractor mechanicals drawing and parts list.

Refer to p.17 for HDT-1060 / MAST EXPLODED VIEW / PARTS LIST

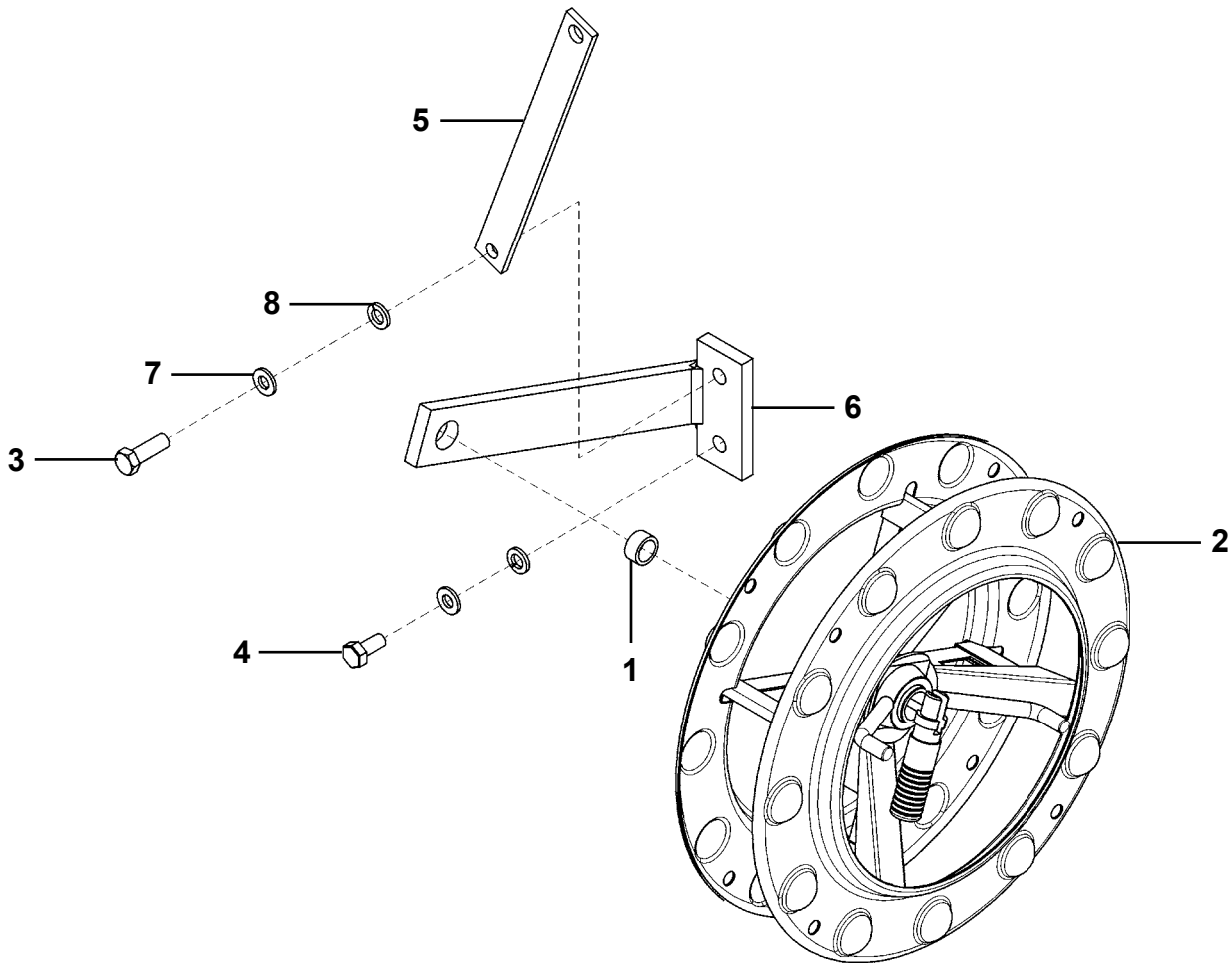
HDT-1050 EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	HDT-1090	Flux Recovery System
2	1	HDT-1060	Mast
3	1	HDT-1080	Na-3 With Mount
4	1	HDT-1070	Wire Reel With Mount
5	1	HDT-1085	Na-3 Automatic Head Assembly

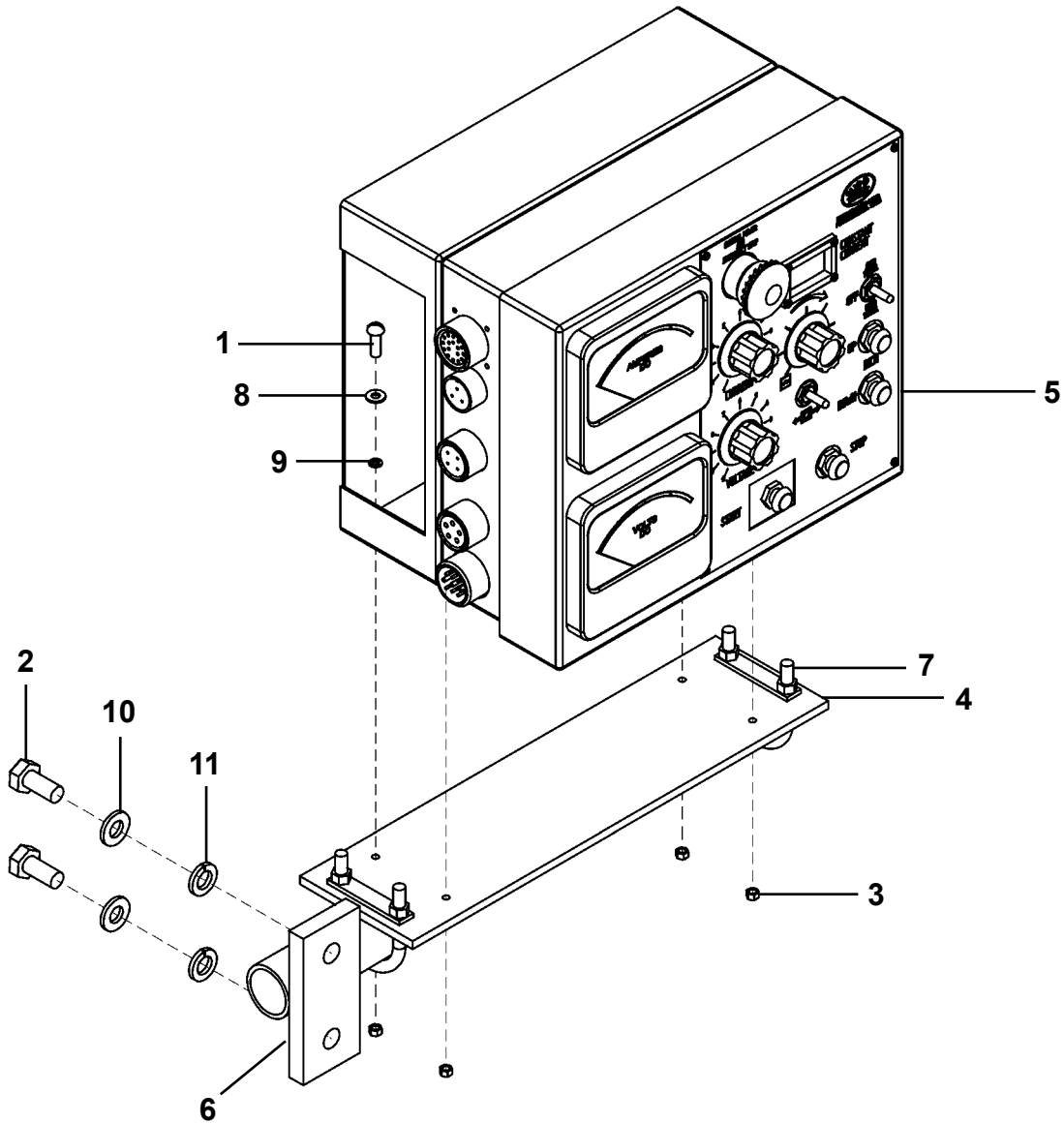
NOTE: Refer to p.17 for HDT-1060 details.

HDT-1070 WIRE REEL W/MOUNT / EXPLODED VIEW / PARTS LIST



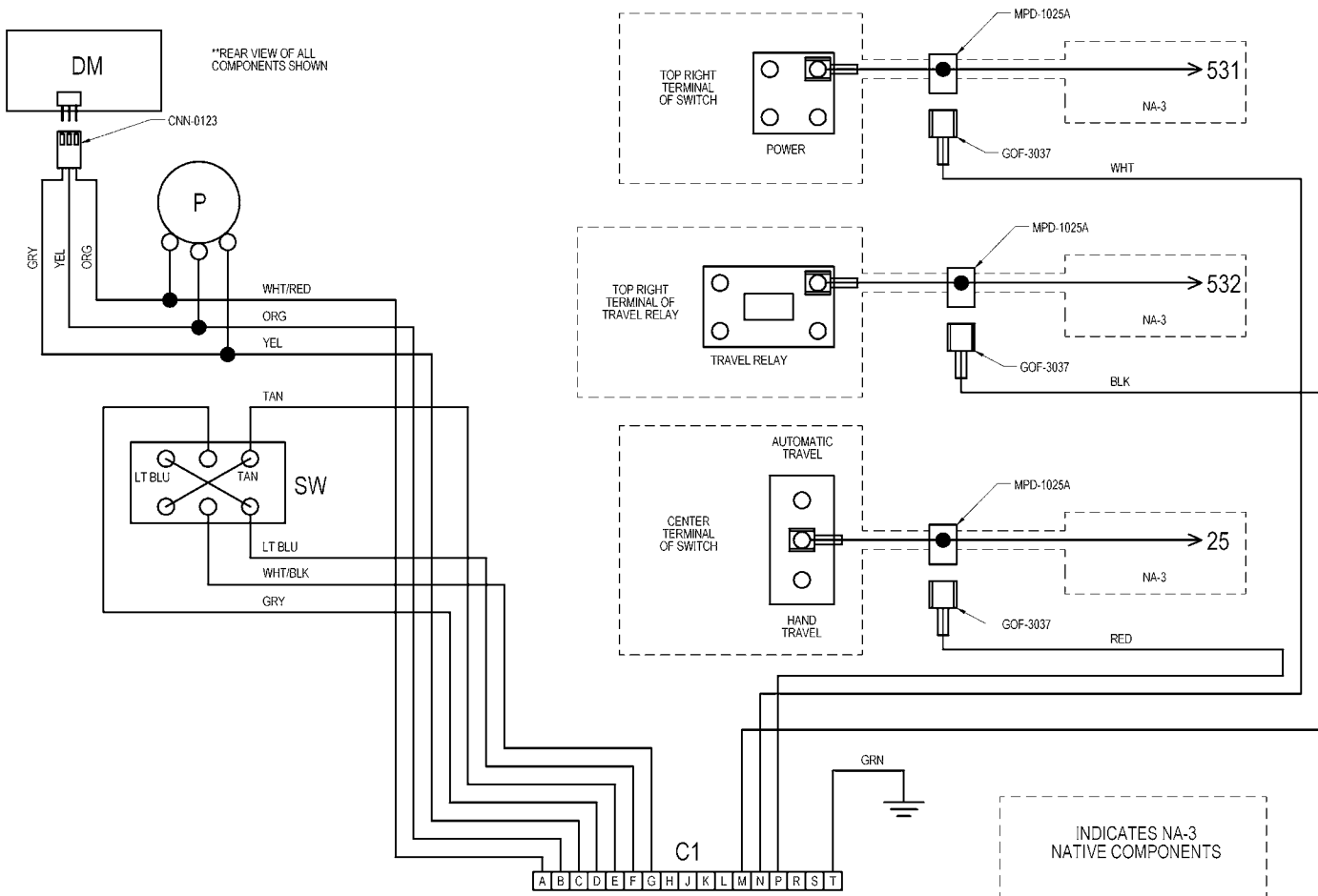
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	BUG-3274	Insulator
2	1	BUG-3293	60# Spool Kit
3	1	FAS-0308	1/2-13 x 1-1/2 Hex Hd Cap Scr
4	1	FAS-0309	1/2-13 x 1 Hex Hd Cap Scr
5	1	HDT-1073	Wire Capture Bar
6	1	HDT-1075	Wire Reel Mount Bracket
7	2	WAS-0280	1/2 SAE Washer
8	2	WAS-0281	1/2 Split Lock Washer

HDT-1080 NA-3 W/MOUNT / EXPLODED VIEW / PARTS LIST



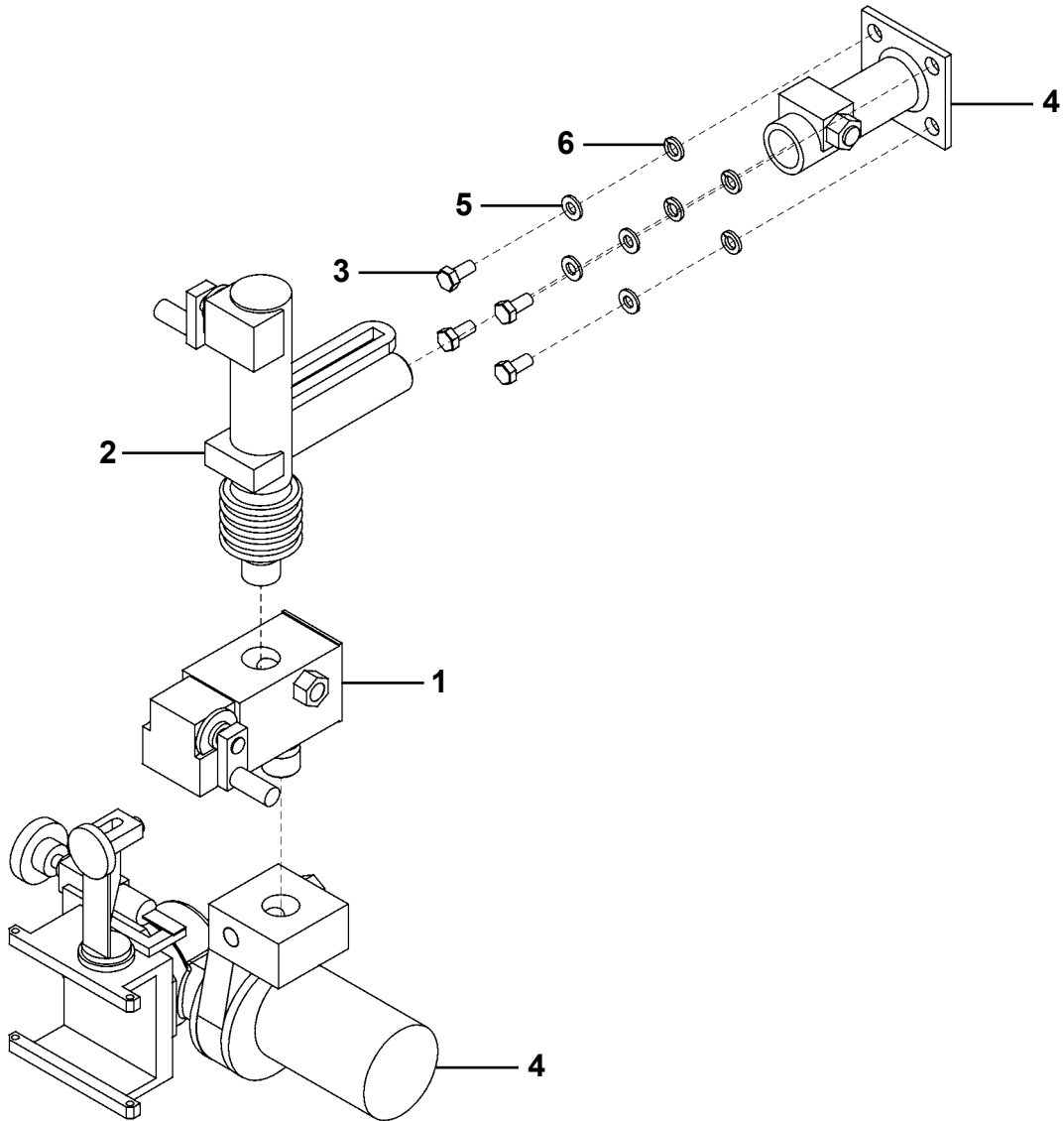
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	FAS-0236	Rnd Hd Scr 10-24 x 5/8
2	2	FAS-0309	1/2-13 x 1 Hex Hd Cap Scr
3	4	FAS-1330	Hex Nut 10-24
4	1	HDT-1083	Na-3 Mounting Plate
5	1	HDT-1086	Lincoln Na-3 Welder
6	1	HDT-1087	Na-3 Mount
7	2	HDT-1102	U-Bolt W/ Mounting Plate
8	4	WAS-0230	#10 Flat Washer
9	4	WAS-0232	#10 Split Lock Washer
10	2	WAS-0280	1/2 SAE Washer
11	2	WAS-0281	1/2 Split Lock Washer

CONTROL BOX WIRING DIAGRAM



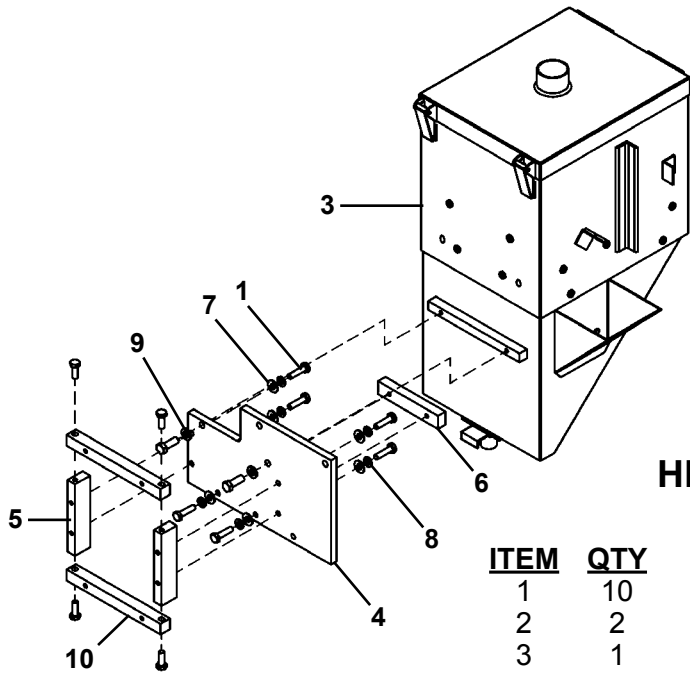
ELECTRICAL COMPONENT CHART		
ITEM	DESCRIPTION	Part NO.
C1	PANEL CONNECTOR	BUG-5527
DM	DIGITAL METER	BUG-1764
SW	SWITCH	BUG-2255
P	POTENTIOMETER CONTROL	BUG-9677

HDT-1085 NA-3 AUTOMATIC HEAD MOUNT / EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	CWO-1465	Fine Adj. Horizontal
2	1	CWO-1466	Vertical-Fine Adjustment
3	4	FAS-0309	Hex Hd Cap Scr 1/2-13 x 1"
4	1	LDC-0010	Automatic Head
5	4	WAS-0280	1/2" SAE Flat
6	4	WAS-0281	1/2" Split Lockwasher

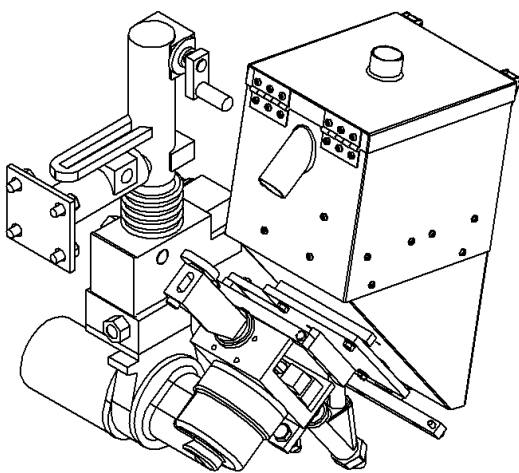
HDT-1090 FLUX RECOVERY UNIT W/MOUNT / EXPLODED VIEW / PARTS LIST



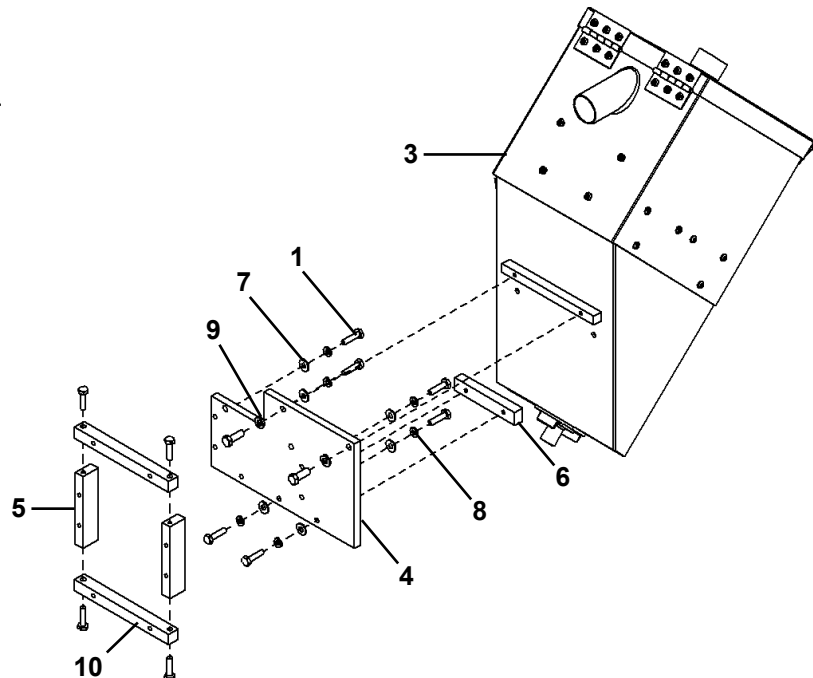
HDT-1110 Flux Hopper w/Mount

<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	10	FAS-0359	Hex Hd Scr 1/4-20 x 1
2	2	FAS-0375	Hex Hd Cap Scr 5/16-18 x 7/8
3	1	FRU-1000-FLH	Flux Recovery Unit - Hopper Only
4	1	HDT-1094	Flux Hopper Mounting Plate
5	2	HDT-1095	Flux Hopper Mounting Plate
6	1	HDT-1096	Flux Hopper Mount Standoff
7	6	WAS-0240	1/4 SAE Flat Washer
8	6	WAS-0243	1/4 Split Lock Washer
9	2	WAS-0251	5/16 Split Lock Washer
10	2	HDT-1097	Flux Hopper Mounting Strip

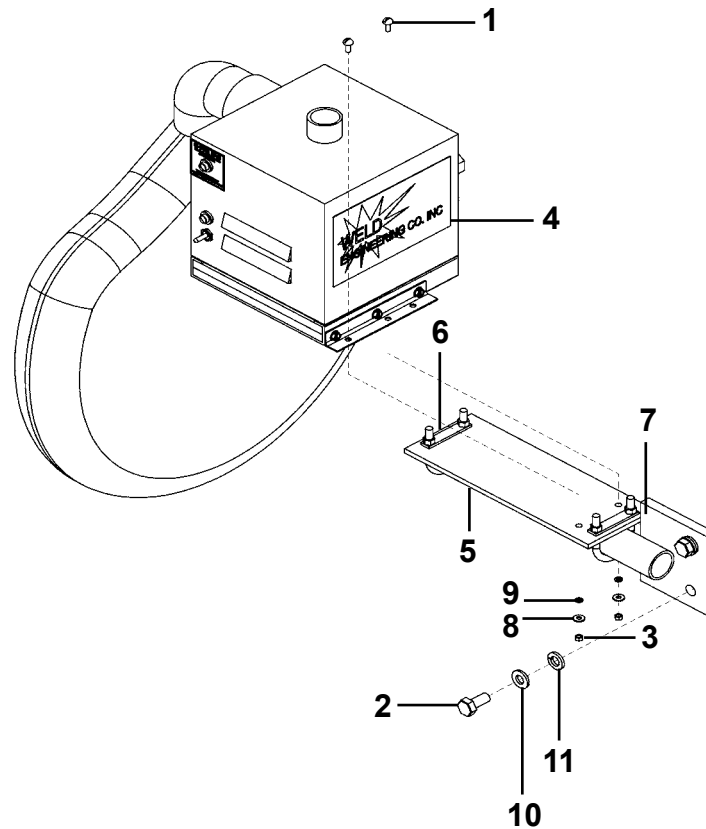
HDT-1110 Configuration for Fillet Welding



Shown on HDT-1085



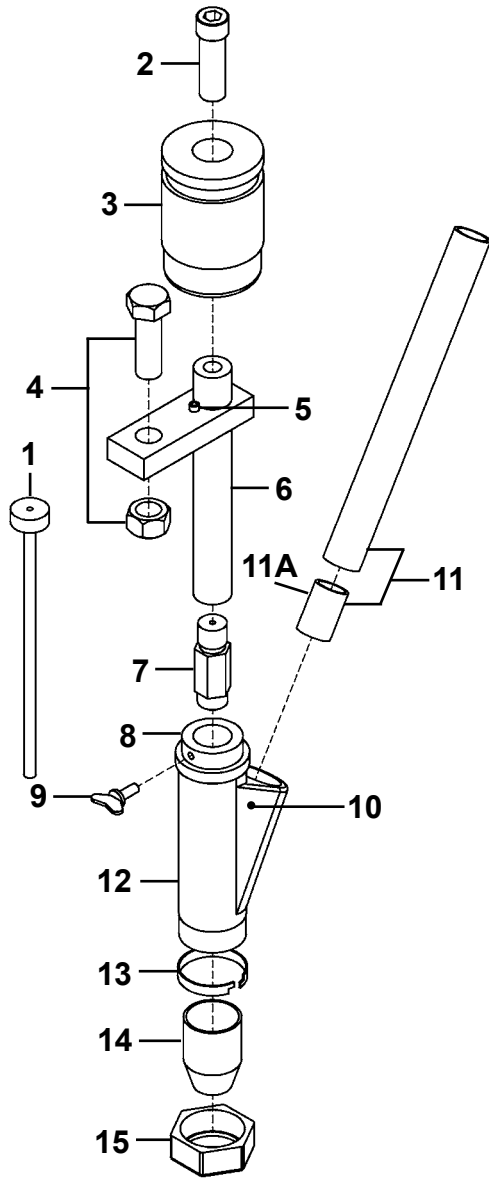
HDT-1090 FLUX RECOVERY UNIT W/MOUNT / EXPLODED VIEW / PARTS LIST



HDT-1115 Flux Vacuum w/Mount

<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	2	FAS-0235	Rnd Hd Scr 10-24 x 1/2"
2	2	FAS-0309	Hex Hd Cap Scr 1/2-13 x 1"
3	2	FAS-1330	Hex Nut 10-24
4	1	FRU-1000-VAC	Flux Recovery Unit-Vac Only
5	1	HDT-1093	Flux Hopper Vacuum Mount Plate
6	2	HDT-1102	U-Bolt W/Mnting Plate
7	1	HDT-1120	Flux Hopper Vacuum Mount
8	2	WAS-0230	#10 SAE Flat
9	2	WAS-0231	#10 Internal Star Lockwasher
10	2	WAS-0280	1/2" SAE Flat
11	2	WAS-0281	1/2" Split Lockwasher

CWO-3690-_ K231 SUB ARC GUN / EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	PXS-15106-3/32	Nozzle Insert
2	1	PXT-10570	Socket Head Screw
3	1	PXS-10493-1	Nozzle Insulator
4	1	PXS-121312	Hex Hd Scr 1 1/2" & Nut 1/2"-13
5	1	PXT-9967-10	Nozzle Body Roll Pin
6	1	CWO-8052	Nozzle Body
7	1	PXS-10125_	Contact Tip (Specify Wire Size)
8	1	PXS-10138	Flux Cone Plug (Insulator)
9	1	PXT-9078-1	Thumb Screw
10	1	PXT-9967-30	Flux Cone Roll Pin
11	1	PXT-13835	3/4" x 7" Flux Hose w/Fbr Ins
11A	1	PXT-13835-IN	Fiber Insulator
12	1	BUG-3161-P	Cone Body Assembly
13	1	BUG-3163	Locking Ferrule
14	1	BUG-3164	Flux Cone (Kp2085-1)
15	1	BUG-3165	Retaining Nut

***WIRE SIZES AVAILABLE:**

<u>PART NO.</u>	<u>WIRE SIZE</u>
CWO-3690-1/16	1/16" (1.6 mm)
CWO-3690-5/64	5/64" (2.0 mm)
CWO-3690-3/32	3/32" (2.4 mm)
CWO-3690-1/8	1/8" (3.2 mm)
CWO-3690-5/32	5/32" (4.0 mm)
CWO-3690-3/16	3/16" (4.8 mm)
CWO-3690-7/32	7/32" (5.6 mm)

***REPLACEMENT CONTACT TIPS AVAILABLE:**

<u>PART NO.</u>	<u>WIRE SIZE</u>
CWO-8048	5/64" (2.0 mm)
CWO-8049	3/32" (2.4 mm)
CWO-8050	5/32" (4.0 mm)
CWO-8051	1/8" (3.2 mm)
PXS-10125XL-7/64	7/64" (2.8 mm)
PXS-10125XL-1/16	1/16" (1.6 mm)
PXS-10125XL-3/16	3/16" (4.8 mm)
PXS-10125XL-7/32	7/32" (5.6 mm)

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 Manufacturer'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.