Volume

1.2

OPERATIONAL MANUAL

MODEL: **CG-211C** PIPE TORCH/BURNER MACHINE

by BLUEROCK ® Tools

UNPACKING THE ITEM

Caution: This machine is packed together with items that may be sharp, oily and overly heavy objects. Remove the machine from the packaging in a safe manner. Check to ensure all accessories are included with the item while unpacking. If any parts are found to be missing, contact the retailer as soon as possible. Do not throw away the packaging until the item is out of the guarantee period. Dispose of the packaging in an environmentally responsible manner. Recycle if possible. Keep all plastic bags away from children due to risk of suffocation.

WEEE - Waste Electrical & Electronic Equipment. Note this machine should be disposed of as electrical & electronic waste.

1033 Andover Park East, Tukwila WA 98188
Phone 206.604.8363 • Fax 425.572.5167
www.bluerocktools.com

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Chapter 1

Safety

DO NOT USE THIS MACHINE UNLESS YOU HAVE READ THE OPERATING INSTRUCTIONS!


Welding safety glasses must be worn at all times in work areas.


Appropriate steel toe footwear must be worn.


Leather safety gloves should be worn at all times and jewelry must not be worn.


Hard-hat must be worn while using machine.


Read operational manual prior to use.


Long and loose hair must be contained.


Close fitting/protective leather clothing must be worn.


Hearing protection should be worn when using this machine.


Dust/fume mask must be worn while using this machine.

PRE-OPERATIONAL SAFETY CHECKS

- **Examine the power cord and plug for damage. This tool is supplied with a ground plug and must always be used with the properly grounded circuit.**
- **Examine the body of the machine and inspect for damage or defects.**
- **Examine the body and cords of the control box.**
- **Examine the cutting torch tips and torch barrel inside and out for damage and/or defect.**

OPERATIONAL SAFETY CHECKS

- **ONLY to be operated by qualified personal who have read instructions.**
  - **NOTE: Failure to read and follow instructions could result in electrical shock, fire, property damage and/or serious injury!**
- **DO ensure all non-essential people are clear of the immediate work area.**

- **DO keep body parts, clothing & power cords clear of turning/cutting pieces. Stay alert and use common since when using this tool.**
- **DO unplug machine, and shut off gas while changing cutting tips so as not to accidentally turn machine on or cause gas related injuries.**
- **DO ensure all tightening points, brackets, wing-nuts, and lever-bolts are tight and stable prior to turning the machine on and/or starting the gas flame.**
- **DO tie a loop in any extension cord connections to prevent cords coming apart and a loss of power.**
- **DO guard against electric shock by preventing body contact with grounded surfaces such as pipes, radiators, ranges, refrigerators, etc.**
- **DO use a dust/fumes extraction system for cutting all materials. The operator should also wear a protective respiratory device in accordance with welding safety standards.**
- **DO NOT make adjustments to machine while the machine is running.**
- **DO NOT remove or modify grounding plug. Only to be used on a properly grounded circuit.**
- **DO NOT leave the machine running when not in use.**
- **DO NOT hold the work piece by hand or using body. Always mechanically clamp or secure.**
- **DO NOT allow flame too close to the machine body. This can cause internal machine components to fail.**
- **DO NOT allow flame to come in contact with power cords.**
- **DO NOT operate machine outside of machine specifications.**
- **DO NOT touch moving parts or cutting flame while the machine is running as death or dismemberment could occur.**
- **DO NOT stand under machine while running. The machine can fall and cause damage or harm to the user.**
- **DO NOT remove machine panel or control box panels while machine is connected to a power source. Only to be removed for service by qualified personal and put back on the machine after service is complete.**
- **DO NOT allow children or untrained personal to operate machine.**
- **DO NOT use this machine in the rain or a wet environment. If using outdoors, make sure the adhering surface is clean and dry.**
- **DO NOT cut into steel that may contain a live electrical wire/circuit.**
- **DO NOT operate this machine on a lower voltage as it may result in the motor being at a reduced power level and the machine could become unreliable while cutting. This could also limit the motor life and control components.**

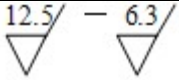
  - **NOTE: Use of long small gauge power extension cords can result in decreased voltage. As local voltages can vary, it may be a good idea to test the voltage at the end of the extension cord to ensure proper voltage requirements are met. You might also consult an electrician to make sure the length of cord matches up with the proper wire gauge for this size motor. Make sure to use outdoor cords when operating outdoors.**

Chapter

2

Specifications

ELECTRICAL DATA	
Voltage	110V, 60Hz
Power Connection	US Standard 3 Prong Type B Plug

MECHANICAL DATA	
Motor Forward or Reverse	Yes
Motor	DC Conversion in Control Box 70SZ08 6000RPM
Reduction Gear	Yes, 3 Pairs
Worrwheel	Yes, 1 Pair
Cutting Tip Types	G02, G03 (similar to Airco Brand)
Minimum Pipe Cutting Diameter	4-1/4" (108mm) and Above
Cutting Depth	Up to 2" Thick (5mm-50mm)
Cutting Speed	1/4"-30" Per Minute Variable Speed (50-750mm/min)
Cutting Precision	Less than 0.5mm on 17" (159mm) seamless steel pipe. Up to 1.5mm on 425mm seamless steel pipe.
Magnet Type	Permanent magnet (not an electo-magnet)
Magnetic Absorption Affinity	50KGS
Cutting and Beveling Surface Roughness	

SHIPPING DATA	
Shipping Weight	1) 37 lbs
Shipping Package Size	1) 26" x 13" x 9"

Included Accessories

DESCRIPTION	*QTY*
Instruction Manual	1
Control Box	1
Power Cord	1
Main Spreader Bar	1
Troch Bracket Assembly	1
Main Beam Spreader Bar Holder	1
G02 Oxy-Acetylene Cutting Tips	3

Note

UPON RECEIPT, CHECK CAREFULLY TO ENSURE THAT THE MACHINE IS IN GOOD CONDITION AND HAS ALL ACCESSORIES LISTED ABOVE.

Additional accessories for this machine can be found in BLUEROCK ® Tools online shop at www.bluerocktools.com or from your local retailer.

Cutting Tip Specifications

Type	Model	Cutting Diameter (mm)	Cutting Thickness (mm)	Cutting Speed (mm)	Oxygen Pressure (Mpa)	Acetylene Pressure (Mpa)
GO_2 Acetylene Cutting tip	#00	0.8	5-10	600-450	0.2-0.3	>0.03
	#0	1	10-20	480-380	0.2-0.3	0.03
	#1	1.2	20-30	400-320	0.25-0.35	0.03
	#2	1.4	30-50	350-280	0.25-0.35	0.03
	#3	1.6	50-70	300-240	0.3-0.4	0.04
	#4	1.8	70-90	260-200	0.3-0.4	0.04
	#5	2	90-120	210-170	0.4-0.6	0.04
	#6	2.4	120-160	180-140	0.5-0.8	0.05
	#7	2.8	160-200	150-110	0.6-0.9	0.05
	#8	3.2	200-280	90-60	0.6-1.0	0.05
	#9	3.6	270-350	90-60	0.7-1.1	0.05
	#10	4	350-400	70-50	0.7-1.2	0.06
$G0_3$ Propane Cutting tip	#0	0.7	5-10	800-450	0.2-0.3	>0.03
	#1	0.9	10-20	480-300	0.2-0.3	0.03
	#2	1.2	20-35	400-320	0.3-0.4	0.03
	#3	1.5	35-60	350-280	0.3-0.4	0.03
	#4	1.8	60-90	300-240	0.4-0.6	0.04
	#5	2.1	90-130	260-200	0.4-0.6	0.04
	#6	2.5	130-180	220-180	0.4-0.6	0.04
	#7	2.7	180-250	200-160	0.5-0.7	0.05
	#8	3.1	250-330	180-140	0.5-0.7	0.05
	#9	3.5	330-380	130-90	0.6-0.8	0.05
	#10	4	380-450	90-50	0.6-0.8	0.05

Chapter

3

Operations

WARNING

DO NOT attempt to use this machine unless you are trained in its proper use as well as trained in the proper use of gas cutting equipment. THOROUGHLY READ THROUGH THE ENTIRE MANUAL BEFORE OPERATING THIS MACHINE!

PURPOSE

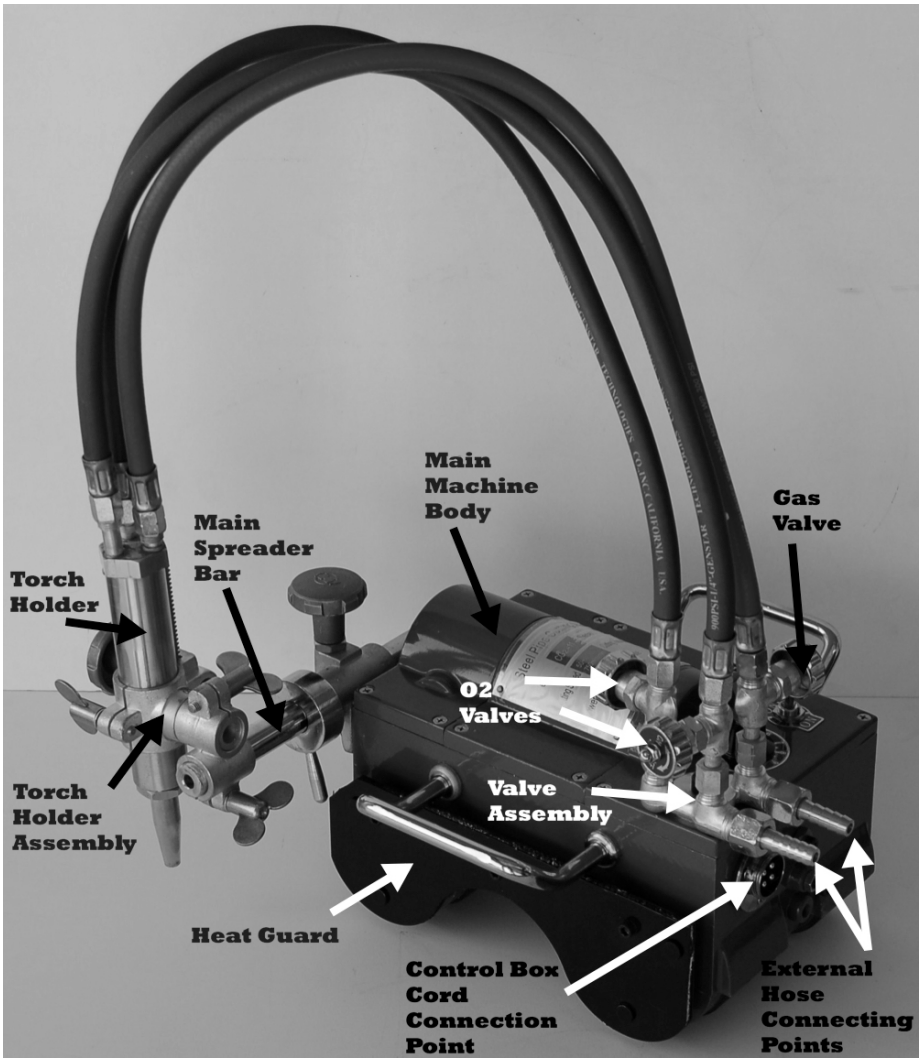
- **The purpose of the CG-211C is to cut steel pipe using oxy-acetylene or propane gas flame cutting. The machine is designed to cut straight and bevel cuts. The torch holder can be adjusted ±15^{O}.**

OPERATIONAL PRINCIPLES

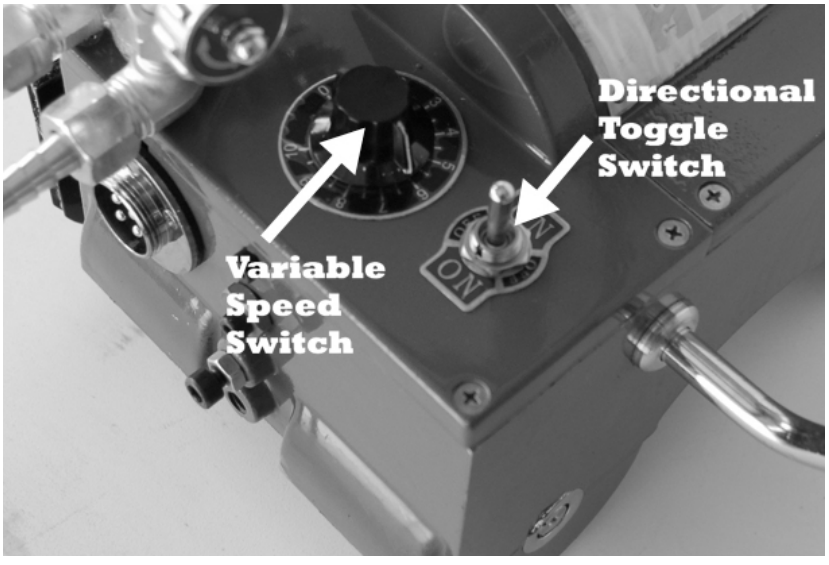
- **When placed on pipe, the main machine wheels rotate in a forward or reverse direction. When engaged, the flame cuts into the steel. The machine speed can be increased or decreased using the variable speed switch. Using the adjusting knobs on the machine, the user can raise or lower the torch holder.**
  - **WARNING: THE CG-211C is not designed to detect the end of a cut. Be careful not leave the machine cutting unattended as it may fall from the end of the elevated work piece.**

MACHINE COMPONENTS

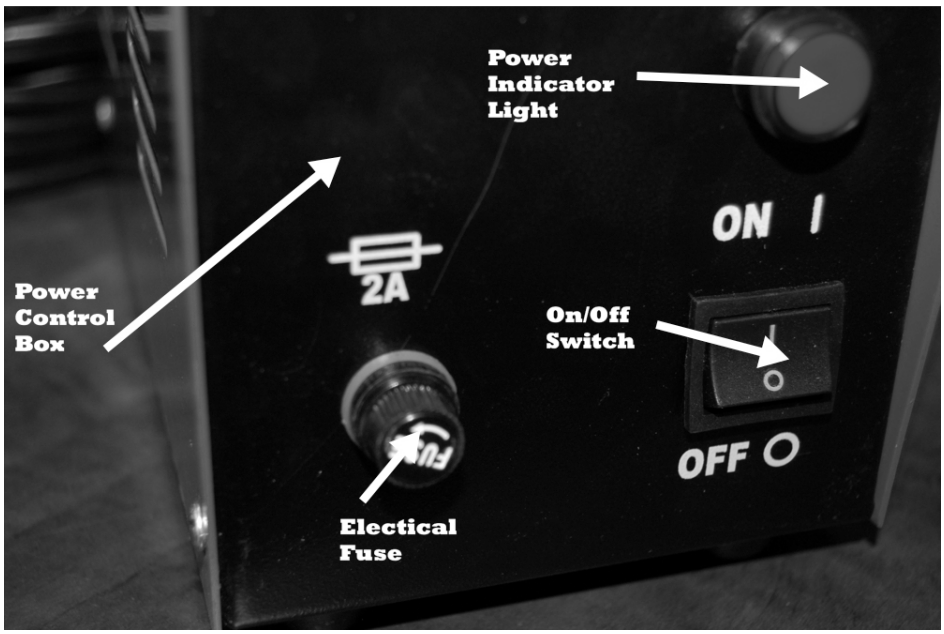
- **The main components of the CG-211C are the torch bracket assembly, torch holder, motor, electrical control panel, power control box, machine body, magnetic wheels and main spreader bar.**
  - **The electrical components must be not be removed except by a qualified technician. Power must be disconnected prior to any service.**
- **This machine has two primary adjusting knobs to position the torch holder.**
  - **These knobs are both located on the torch bracket assembly and main spreader bar (see figure below).**
  - **The top knob will adjust the torch holder left to right.**
  - **The side knob will adjust the torch holder up or down.**



- **There are 2 major components located on the machine control panel (see figure below -the white words indicate the control panel components).**



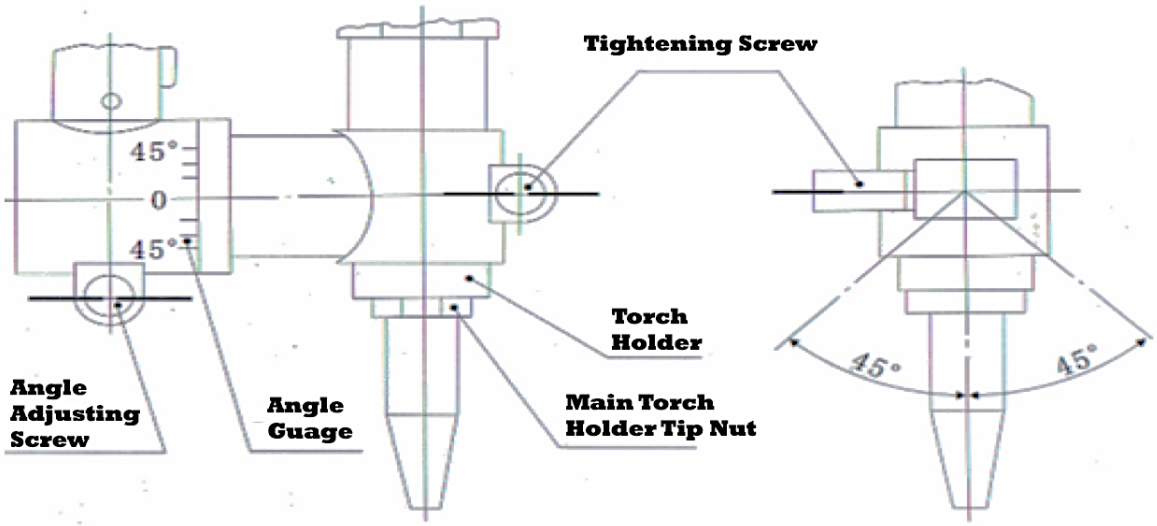
- **The machine has a forward/reverse directional toggle switch located on the main control panel.**
  - **NOTE: There is also a neutral position for this switch in between the positions.**
- **The variable speed switch will increase of decrease the machine speed. 0 symbolizing no movement and 10 symbolizing fast movement.**
- **The power control box cord connection point is where the black power cord plugs in from the control box.**
  - **NOTE: Make sure to line up the half round notch in plug with the half round piece in the plug input.**
- **The control box converts the AC current coming in from external power to DC, which is used by the main machine motor.**
  - **The main power control box has a power indicator light (which indicates the control box has AC power connected), an electrical fuse and a main on/off switch.**
  - **CAUTION: Do not remove the fuse unless the power control box is disconnected from the power source.**
    - **When the main on/off switch is in the "on" position it is sending DC power to the machine.**
    - **When the main on/off switch is in the "off" position it is not sending power to the machine.**



SETTING UP THE MACHINE

- **Install the main spreader bar and the torch holder assembly.**
  - **Tighten the appropriate wing-nuts.**
- **Install the torch holder into the torch holder assembly.**

- Make certain the inside if the torch holder is clean and does not have any burrs. Also make certain any tips you use are free or burrs or defect. It is important the seats are tight.
  - See section below on "proper lighting of gas torch"
- For straight cuts, ensure the torch holder is square (see figure below).



- Tighten the valve assembly side onto the main machine body to the left of the variable speed switch. Ensure it is secured tightly to the body.

TRANSPORTING THE MACHINE

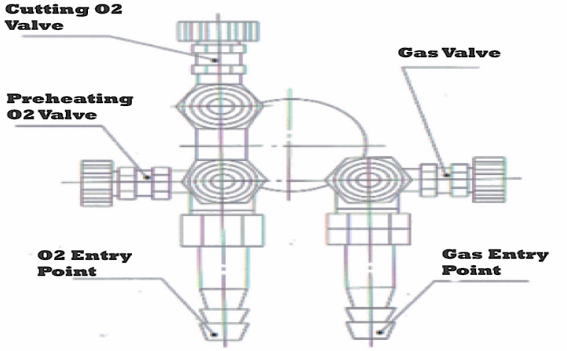
- When transporting the machine, always use the carrying handles on the sides of the machine.
- Disconnect the power control box from the main machine and transport separately.
- Ensure the torch tip is in a raised position so it will not get damaged when lifting up the machine or putting down the machine.
- If transporting inside a vehicle, it is recommended to transport it on with the magnetic wheels down so as to avoid the item falling over. It is also recommended to protect the wheels from damage by placing on non-abrasive surface.
- DO NOT carry the machine by the cord.
- DO NOT allow the cords or plugs to drag along the floor when transporting.

RUNNING THE MACHINE

- Do all pre-operational and operational safety checks from Chapter 1.
- Consider your security and stability as well as the orientation of the machine in the work area.
  - Consider the work surface material, condition, strength, density and rigidity. These factors directly affect the tools use.
  - WARNING: Ensure the piece being cut will be stable after the cut has been made.

- **Ensure the work surface and machine are free of debris, oil, etc.**
  - **NOTE: The machine will deviate from the cut or potentially fall if the material is not clean (bare) and seamless.**
- **Carefully place machine at the start of the cut ensuring the wheels gently make contact with the cutting surface. If cutting pipe, it is generally easiest to start at the top of the pipe.**
- **Select appropriate size torch tips for the application. Install tip.**
- **Select cutting angle.**
- **Connect the control box cord connection plug.**
  - **CAUTION: Ensure all power lines are run in a manner not to cross paths with cutting flame or cut material work pieces.**
- **Securely fasten the plug into the machine and lock in using the plug screw.**
- **Select the neutral position in the machine directional toggle switch (center position).**
- **Plug the cord on the power control box into the external power source.**
- **Connect applicable gas lines.**
  - **Make certain they are properly secured and there are no leaks. It is highly recommended that leak testing be performed on the system prior to using the machine.**
  - **Ensure the lines are long enough to complete the cut you are planning.**
  - **ALWAYS use gas tank cylinders with properly outfitted regulators/flowmeters.**
- **Ensure the torch holder is not too close to the side of the heat guard. It should be set at least 4"s away from the side of the heat guard.**
- **Adjust the side knobs to raise the torch tip to a suitable level for lighting.**
- **Light the torch flame (see section below on proper lighting of torch flame).**
- **Adjust the side knobs a suitable level for cutting though the material.**
- **Select the drive direction using the toggle switch.**
  - **CAUTION: If you have to change machine direction during cutting, please stop the machine first by switching to the neutral position. Once it has fully stopped, switch machine to new direction. This will avoid damage to the internal electrical components.**
- **Select the proper speed of the cut using the variable speed switch.**
- **Activate the toggle switch to engage the machine directionally.**
- **When the cut is complete, stop the machine switching the toggle switch to the neutral position.**
- **Turn the on/off switch on the power control panel to the "off" position.**
- **Shut off the torch flame.**

PROPER LIGHTING OF GAS TORCH



- **Before attempting to light the torch tip follow this check list:**
  - **Verify the regulator pressure adjustment screws are backed out.**
  - **Verify the torch valves are in the closed position.**
  - **Position yourself away from the front side of the regulator.**
  - **Slowly open the oxygen valve and acetylene valve at the cylinder.**
  - **Adjust regulator pressure adjustment screws to the tip pressure.**
  - **Open and close the torch valves at the machine separately and tune the regulator pressure settings on the regulator.**
- **Lighting the torch:**
  - **Open gas valve ½ turn.**
  - **Immediately ignite flame with striker.**
    - **CAUTION: Light flame immediately so gas does not enter machine body or general atmosphere around the machine.**
    - **Ensure proper ventilation around the work area.**
  - **Increase gas flow until flame leaves end of tip and smoke is not present.**
  - **Decrease until flame goes back to tip.**
  - **Open pre-heating oxygen valve and adjust until neutral flame is achieved.**
  - **When the temperature of the steel is suitable temperature for the steel plate, open the cutting oxygen valve.**
  - **After adjustment of the flames efficiency, turn on the machine rotation.**
- **After cutting is complete, close oxygen cutting valve.**
- **Next close pre-heating oxygen valve.**
- **Lastly, close the gas-cutting valve.**
- **If done using the machine, close oxygen and gas valves on the main cylinder regulators.**
  - **Purge oxygen and gas lines.**

Chapter 4

Troubleshooting

Note

SERVICING SHOULD ONLY BE DONE BY A QUALIFIED TECHNICIAN.

DON'T FORGET TO UNPLUG POWER TO UNIT PRIOR TO SERVICE!

No	Problem	Cause	Solution
1	No power to the machine	1. Machine is not plugged in or issue with power. 2. The fuse is burned. 3. The wires in the control panel, plug or switch were disconnected or damaged. 4. Power Control Box damaged	1. Check and repair the circuit. 2. Change the fuse 3. Fix the disconnected wire or replace control panel components. 4. Replace or repair control box.
2	The machine speed can't be adjusted	1. Variable speed switch defective.	1. Repair the variable speed piece
3	Leak gas and/or flame in the joint of torch and torch cutting tip.	1. The torch holder inlet is damaged. 2. There is copper burr or materials on the surface of the torch tip.	1. Softly grind the torch cone with small sand paper to clean out the burr. 2. Clean the material on the cutting tip. Softly grind the surface with small sand paper. Change the cutting tip if it is badly damaged.
4	The flame goes out as soon as the oxygen valve is opened	The cutting oxygen leaked into the preheating oxygen area. 1. Copper stain or useless materials on the inner part of torch 2. The smaller cone of torch cutting mouth was stuck with some with material or was damaged.	1. Softly grind the most inner part of torch holder with sand paper to clean out the debris or damage. 2. Softly grind the smaller surface of the cutting mouth. Change the cutting mouth if it is serious damaged.
5	The steel can't be cut through	1. The torch cutting-tip is too small. 2. The flame frequency is not strong enough 3. Low pressure for cutting oxygen 4. The hole channel of cutting mouth may be jammed 5. The cutting oxygen is not pure. 6. The cutting oxygen was leaked into the preheating oxygen hole channel.	1. Choose the cutting tip spec according to the cutting thickness. 2. Increase flame frequency properly. 3. Properly increase the cutting oxygen to ensure the enough flow speed of cutting oxygen. 4. Clean the useless materials in the torch cutting mouth with cutting pin. 5. Use oxygen with more than 95% purity. 6. Clean the useless materials on the cutting mouth and torch, repair the damaged surface and change cutting mouth if needed.
6	The cutting is not straight enough.	1. The steel pipe was deformed. 2. The flame line was not straight. 3. Uneven pipe surface 4. The torch was poorly fixed and can be moved.	1. Use round steel and calibrate it before cutting. 2. The torch should have a 90° angle with the steel and tightly fixed. Clean the useless materials in the torch cutting mouth with cutting pin. 3. fix surface irregularities. 4. Tighten all connections.

Chapter 5

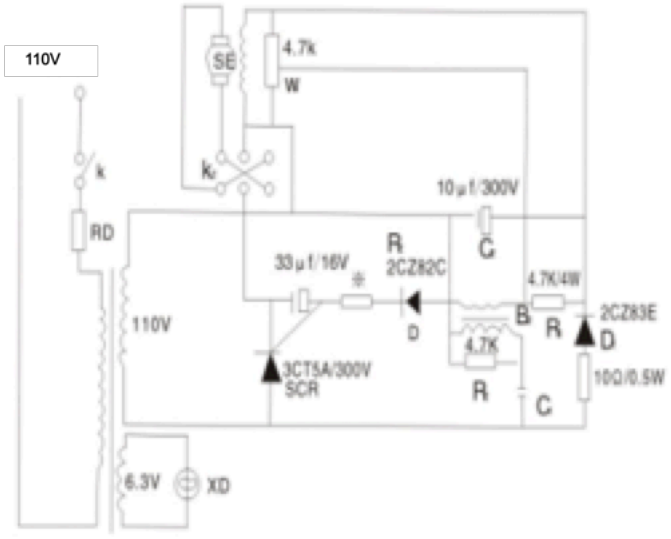
General Maintenance

- Inspect electrical cords and electrical connections.
- Keep machine clean and free of debris.
  - Make sure to frequently clean metal scraps from the roll wheels.
- Check for misalignment, binding and breakage of all moving parts. If damaged, repair tool before use.
- When machine is not in use, place on a magnetic protection board in a dry place to avoid rust on wheels and magnetic irregularity.
- Check to ensure the torch holder is clean and free of debris.
  - Inspect the inside of the holder as well.
- Inspect all torch tips and ensure they are not damaged and the small cutting holes are clean.
- Inspect cutting hoses to ensure they are not damaged.
- DO NOT oil and connection points used in the gas/oxy system!
- If demagnetization occurs, remove the magnetic wheels and re-magnetize them.

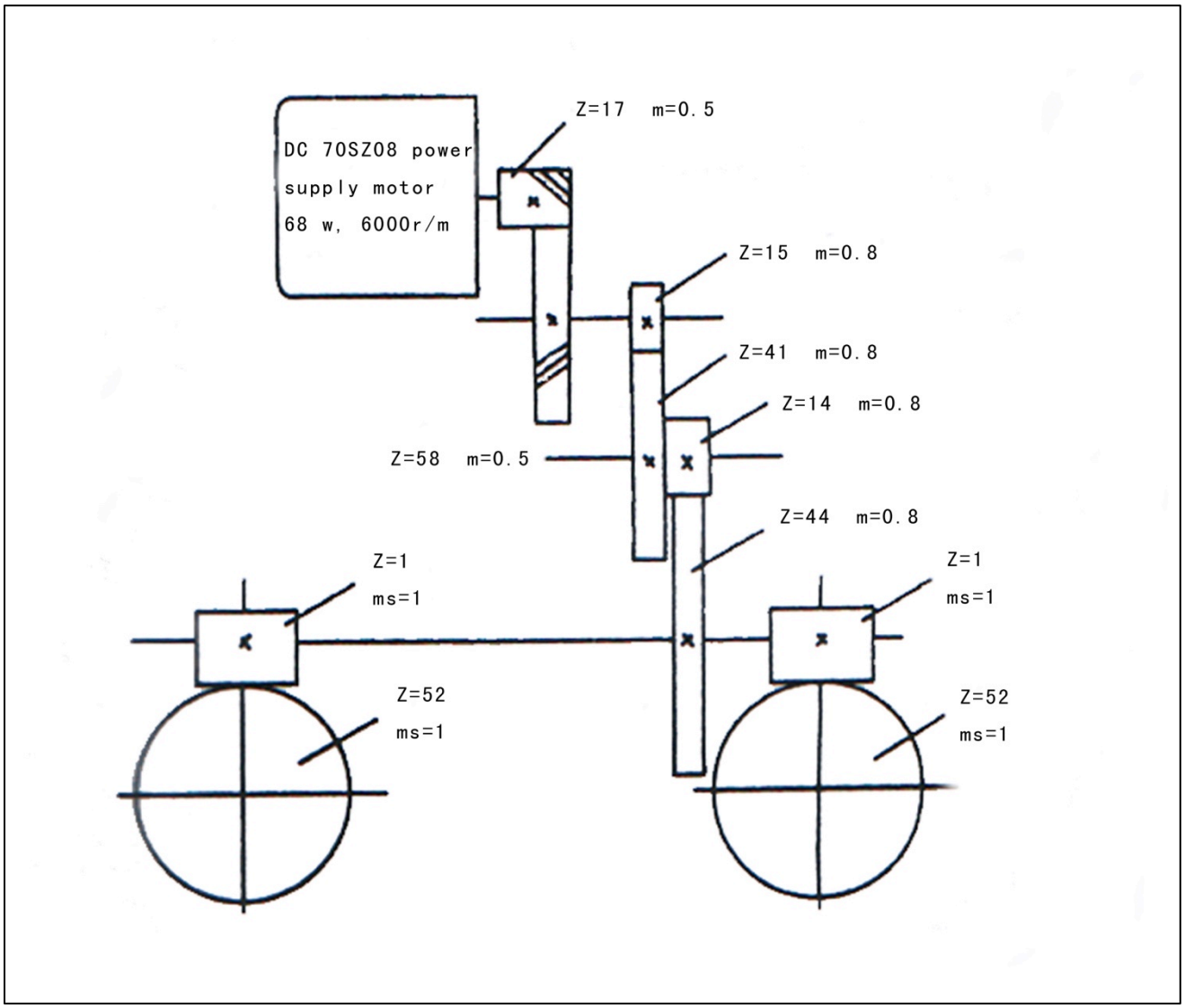
Chapter

6

Electrical Diagram



Motor Drive System Diagram

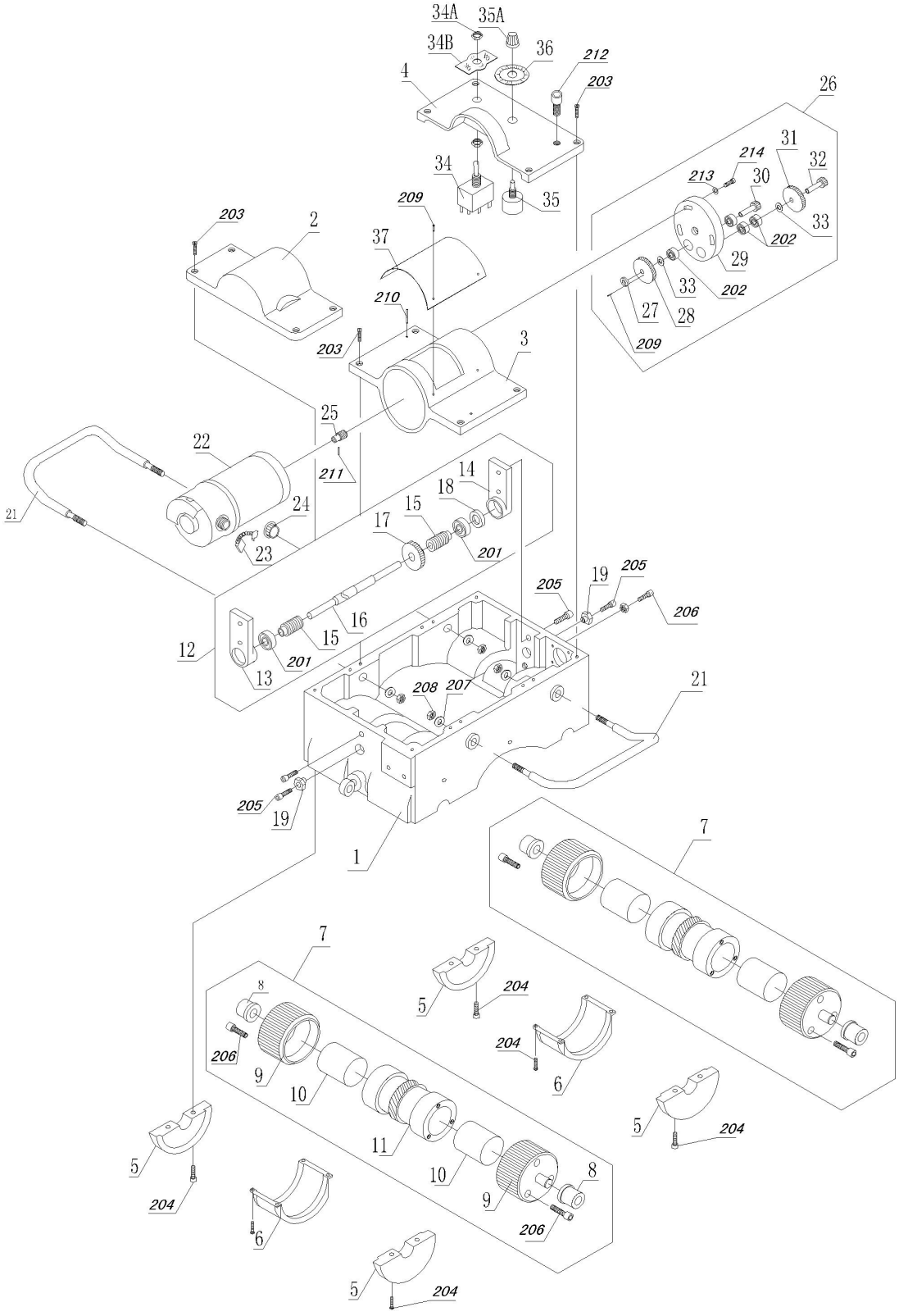


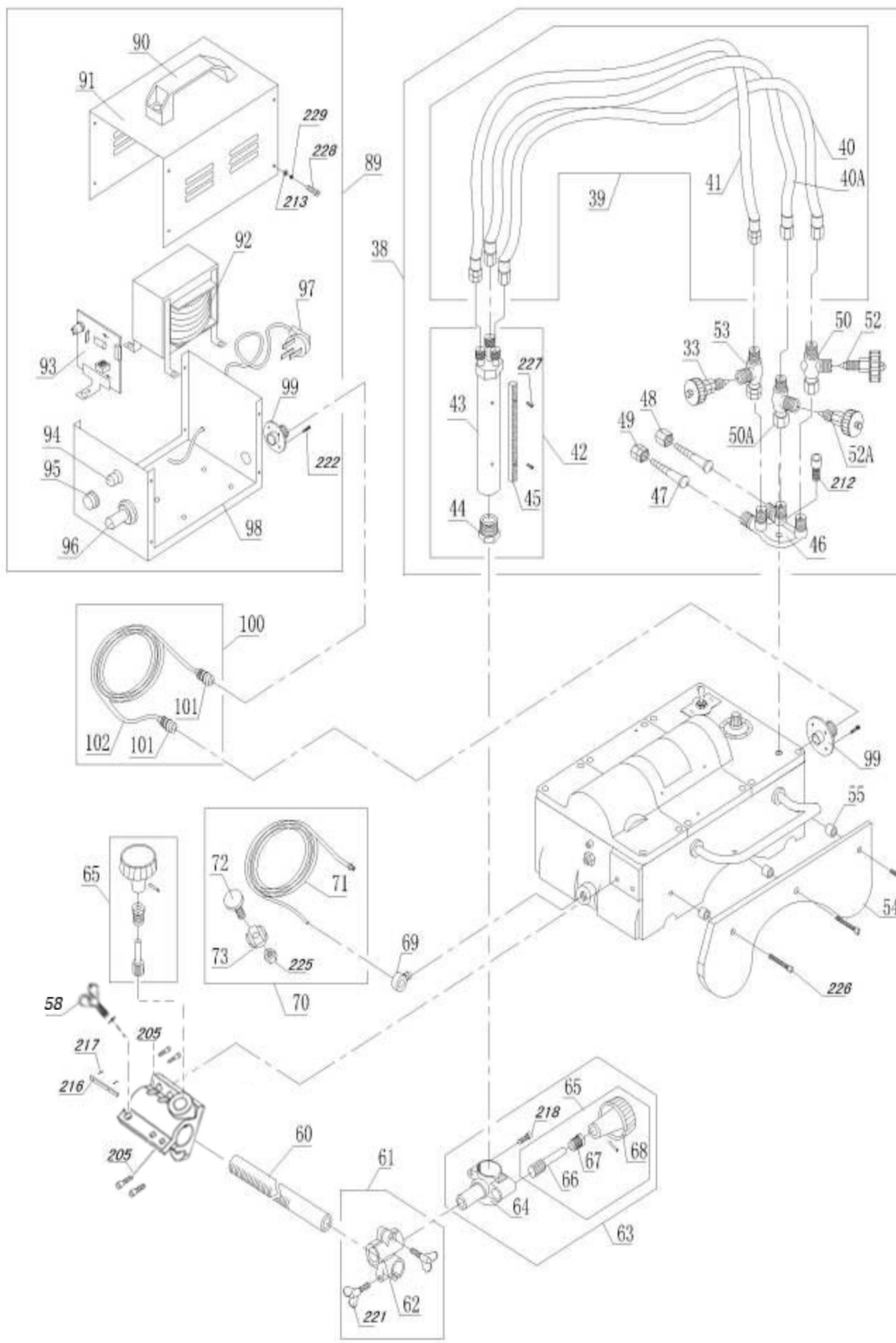
Chapter 7

Parts List

Description	P/N	Description	P/N
Control cable kits	#100	Frame cover	#1
Aviation plug	#101		#54
Control cable	#102	Handle wheel	#21
Control box	#89	Aviation plug	#99
Power cable	#97	Switch nameplate	#34B
Transformer	#92	Potentiometer adjusting knob	#35A
PCB	#93	Speed adjusting nameplate	#36
Indicator	#94	Potentiometer	#35
Fuse holder	#95	Three-way switch	#34
Power switch	#96	Motor back cover	#2
Gas flow kits	#38	Motor holder	#3
Gas flow kits	#39	Reduction kits	#26
AC hose	#40	Secondary slope drving gear	#30
Oxygen hose	#40A	Gear holder ring	#27
Gas hose	#41	Secondary passive gear	#28
Torck kits	#42	Secondary driving gear	#31
Torch	#43	Tertiary drving gear	#32
Torch tooth bar	#45	Motor	#22
Nut locker	#44	Motor gear	#25
Gas distributor	#046	Carbon brush	#23
AC valve	#53	Carbon brush cover	#24
AC valve adjusting handle	#33	Rotating wheel kits	#12
Oxygen valve	#50A	Shaft holder	#13
Oxygen valve adjusting handle	#52A	Worm wheel	#15
Oxygen valve	#50	Worm wheel shaft	#16
Oxygen valve adjusting handle	#52	Passive gear	#17
Torch clamper	#63	Shaft cover	#18
Small adjusting handle kits	#65	Fixing set kits	#70
Torch holder	#61	Steel rope	#71
Horizontal moving bar	#60		

Breakdown View

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