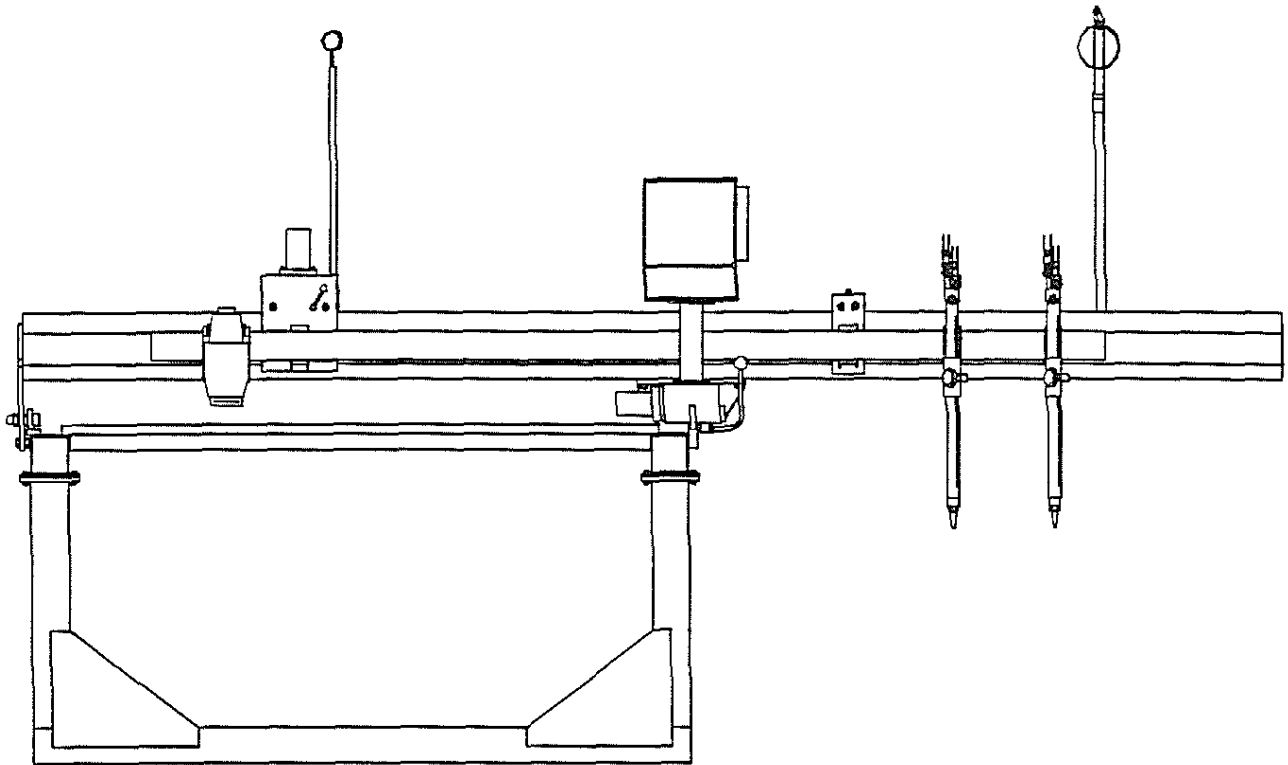


**KOIKE ARONSON, INC.**

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**IK 1200J CANTILEVER  
Coordinate Drive  
OPTICAL TRACE CUTTING MACHINE**



**INSTRUCTION MANUAL MI0502A**

**June 1993**



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**Instruction Manual**

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# SECTION 1

## SAFETY PRECAUTIONS

**USER RESPONSIBILITY-** This equipment will perform in conformity with the description thereof in this manual and accompanying labels and/or inserts when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Defective equipment should not be used. Parts that are broken, missing, plainly worn, distorted or contaminated should be replaced immediately. Should repair or replacement become necessary, Koike Aronson recommends that a request for service be made to the KAR Authorized Distributor from whom purchased or directly to the KAR Service Department.

This equipment or any of its parts should not be altered without the prior written approval of KAR. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than KAR or a facility designated by KAR.

**WARNING-** Protect yourself and others. Read and understand these instructions. **FUMES AND GASES** can be dangerous to your health. **HEAT RAYS (INFRARED RADIATION)** from flame or hot metal can injure eyes.

Read and understand the manufacturers instructions and your employer's safety practices.

Keep your head out of the fumes.

Use enough ventilation, exhaust at the flame, or both, to keep fumes and gases from your breathing zone, and the general area.

### 1.1 GENERAL SAFETY, OXY-FUEL CUTTING

Operation of oxy-fuel torches involves oxygen and flammable gases under pressure, open flames, flying slag and hot metal, fumes and combustion products.

Follow the precautions in this General Safety Section as well as those throughout this manual for your personal safety and the safety of people in the area that may be affected.

When welding, **DO NOT** ground to the machine, the rail system or to the burning table to avoid damage to electronic components.

1. Install and operate this machine only in a well ventilated area.
2. Connect line cord ground wire and machine to good electrical grounds according to local codes and the National Electrical Code.
3. Check gas and electrical connections for tightness after installation and on a regular basis thereafter.
4. Keep combustibles away from work area or protected from sparks and flames.
5. If installed, check proper operation of check valves regularly.
6. Always open gas valves slowly.
7. Never use oxygen to ventilate area or to clean off clothing.
8. Keep oil, grease and combustible dusts away from all oxygen equipment.
9. Wear eye protection safety goggles with proper filter-lens and other protective equipment when cutting.
10. Shut off gas supply valves whenever leaving the cutting machine unattended.
11. Keep equipment clean and in good operating condition.

12. Read accessory instruction manuals supplied for these items for additional safety and operating guidelines before operating equipment.

13. No repair should ever be undertaken or attempted by anyone other than a KAR designated technician.

14. Read and understand further detailed safety precautions throughout this manual.

15. Also refer to the latest revisions of the following sources of safe practices in welding and cutting.

A. National Fire Protection Association Standard 51B CUTTING AND WELDING PROCESSES, obtainable from the NFPA, Batterymarch Park, Quincy, MA 06269.

B. NFPA Standard 51, OXYGEN-FUEL GAS SYSTEMS FOR WELDING AND CUTTING, obtainable same as item A.

C. American Welding Society publication C4.2-78, OPERATOR'S MANUAL FOR OXY-FUEL GAS CUTTING, obtainable from AWS, Box 351040, Miami, Fla. 33135.

## 1.2 GENERAL SAFETY, PLASMA CUTTING

Plasma Arc is a high intensity source of visible light emission as well as ultraviolet and infrared radiation. It can cause severe eye damage and inflict burns on exposed skin when those members are not suitably protected.

Follow the precautions in this General Safety Section and read the supplied plasma equipment instruction manuals for additional and more detailed safety precautions.

1. Facilities should be available for the prompt medical treatment of arc flashes or burns to the eyes.

2. Provide radiation protection for the operator and for personnel in the adjacent area.

3. Do not, under any circumstances, look at a plasma arc without full eye protection. When in the vicinity of the plasma cutting equipment always wear flash goggles with side shields and containing No. 4 filter lenses.

4. The operator must use, in addition to flash goggles, a suitable helmet for eye and face protection when cutting. The helmet must be equipped with a number filter plate as indicated.

**Amperage to 300 Shade No. 9**

**Amperage 300 to 400 Shade No. 12**

**Amperage over 400 Shade No. 14**

5. Do not use helmet or hand shield that are not in good condition. Repair or replace promptly. Protect colored filter plates with a clear glass cover plate.

6. Never start the plasma arc without determining that nearby personnel are wearing adequate protective equipment.

7. All areas of the body must be covered by dark substantial clothing to protect against arc burn, sparks and flying hot metal.

8. The plasma operation should be located in an area where protection for other personal may be readily provided. Portable non-combustible reflecting screens or enclosures with non-reflecting walls may be used. Screens and enclosures should permit free circulation of air at floor level.

9. Do not cut in presence of atmospheres containing even minute amounts of chlorinated solvents such as Trichloroethane and Perchloroethylene since the heat of the arc can decompose these vapors to form Phosgene, a highly toxic gas, and other irritating decomposition products.

10. Plasma cutting operation noise levels may be high enough to require ear protection for the operator and other personnel in the adjacent area.

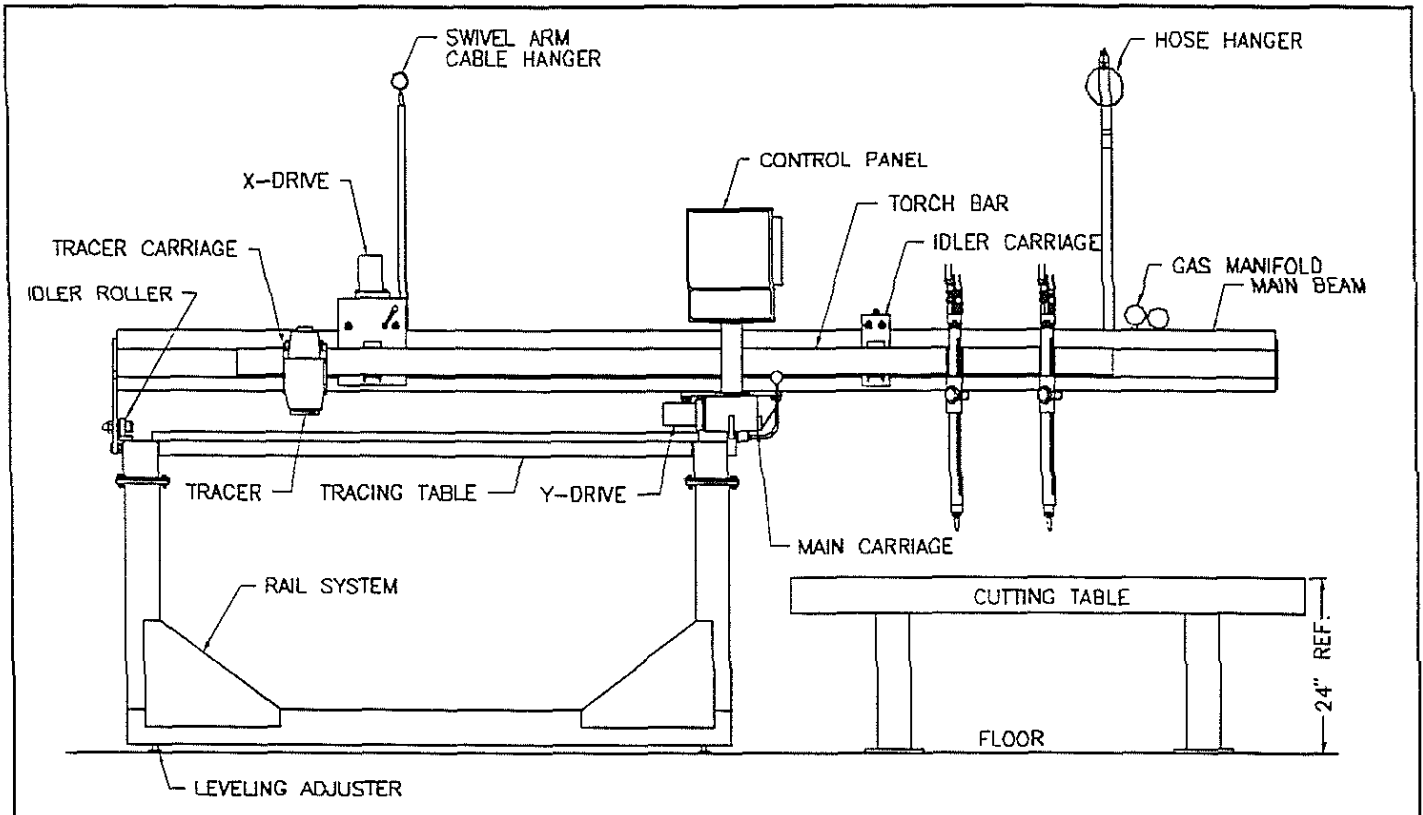
11. Plasma Arc cutting plate, especially Aluminum or magnesium, may cause an accumulation of explosive gas below the plate. Do not allow aluminum or magnesium dross to accumulate in a water table. Prior to cutting, raise and lower the water level several times to dissipate trapped gases. Do not leave plate on the table for extended periods of time, ie. overnight or weekends. When the table is not in use, keep the water level down. Read additional cautions in the water table and plasma system manuals.

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## SECTION 2

### GENERAL INTRODUCTION



**Figure 2.1 IK-1200J Cantilever Cutting Machine**

#### 2.1 SCOPE

This manual provides general installation, operation and service information for the KAR IK-1200J Coordinate Drive Optical Trace Cutting Machine. The manual includes an Illustrated parts listing to aid in ordering replacement parts.

#### 2.2 DESCRIPTION

The IK-1200J is designed to be a general purpose oxy-fuel/plasma cutting machine. The 48 inch cutting width makes the IK-1200J ideal for small fabrication shops, in-plant maintenance departments and for quick part cutting in support of a larger production cutting machine. Micro-processor controls, plasma systems and other optional accessories provide high precision cutting of parts, within the size capability of the machine.

#### 2.3 AXIS DEFINITION

To avoid confusion in determining direction and aid in identifying part locations:

1. The X axis is parallel to the transverse (main) beam.
2. The Y axis is parallel to the longitudinal rail system.
3. A standard machine is left hand, that is with the tracing table to your left as you face the machine and the cutting table to your right.

**Table 2.1 IK-1200J Standard Specifications**

<b>Tracing Width</b>	<b>48 inches</b>
<b>Tracing Table</b>	<b>48 X 47 1/4 inches</b>
<b>Cutting Width</b>	<b>48 inches</b>
<b>Cutting Length</b>	<b>4M, 120 inches - 7M, 240 inches</b>
<b>Rail Gauge</b>	<b>61 inches</b>
<b>Maximum Width, Torch Bar Extended</b>	<b>135 inches</b>
<b>Maximum Length</b>	<b>4M (165.4") or 7M (287.4")</b>
<b>Speed Range</b>	<b>4-160 IPM</b>
<b>Voltage Requirements</b>	<b>110/115V, 50-60Hz, 1 Phase, 10 amp</b>
<b>Torch Station Capacity</b>	<b>4, maximum</b>
<b>Torch Stacking Distance</b>	<b>3.15 inches (with ignitors)</b>
<b>Machine Parking Space</b>	<b>39 inches</b>
<b>Torch Tip to Floor, Up Measurement</b>	<b>31.5 inches</b>
<b>Torch Tip to Floor, Down Measurement</b>	<b>19 3/8 inches</b>
<b>Recommended Cutting Table Height</b>	<b>24 inches</b>
<b>Cutting Thickness Capacity</b>	<b>8 inches, with one torch 6 inches, with two torches 4 inches, with three torches 2 inches, with four torches</b>
<b>Trace/Drive System</b>	<b>HL-83</b>
<b>Trace Accuracy</b>	<b>+/- 1/32 inch</b>
<b>Shipping Weight with 4M Rail</b>	<b>2000 lbs</b>
<b>Shipping Weight with 7M Rail</b>	<b>2550 lbs</b>

**2.4 RAIL ASSEMBLY**

Standard IK-1200J rails are 4M (120" cutting length) in one continuous length for ease of installation. An optional 7M (240" cutting length) rail package is available for cutting of longer parts or for double cutting table operation

Rail sets include the main (guide) rail, outboard rail, 'U'shaped support pedestal assemblies, leveling pads and all associated hardware required for installation. In order to provide ease of installation and alignment plus continuous cutting accuracy, the IK-1200J rail system is not extendable.

**2.5 TEMPLATE TABLE ASSEMBLY**

The tracing table assembly is designed to be moved manually on the Y axis, on teflon tape strips, as required by the plate size. Constructed

of painted plywood, two lateral supports attached to the underside provide increased rigidity. A standard tracing table is 48 inches wide by 47 1/4 inches long. Optional tracing table extensions are available to accommodate longer template sizes.

**2.6 LEFT WHEELCASE ASSEMBLY**

A free roller assembly is located at the left end of the cantilever beam. A lower stop keeps the left end of the cantilever from raising beyond the balance point maintained by a counterweight mounted in the left end of the beam.

**2.7 CANTILEVER BEAM**

The Cantilever Beam, heavy duty structural tubing, is supported by the Left Wheelcase assembly and the Main Saddle.

## 2.8 MAIN SADDLE ASSEMBLY

The main saddle assembly travels on the Y axis rails, driven by the Y axis motor/gearbox. The carriage travels on two wheel assemblies (one in the forward end of the carriage and the second in the rear). The front wheel is energized by the drive motor which moves the machine in the Y directions. Straight alignment is provided by side roller assemblies,(forward and rear), one side fixed and one side eccentric for adjustment,which contact the sides of the main rail.

## 2.9 HOSE SUPPORT

A torch hose hanger is located on the cantilever, cutting side,ofthe IK-1200J. This support provides torch hose travel during the cutting operation. A cable hanger, attached near the main saddle supports power and drive cables, to the optical tracer,during machine movement.

## 2.10 GAS CONTROL SYSTEM

The gas manifold is located on the rear of the cantilever beam on the right end. Standard IK-1200J gas adjustment is accomplished using regulators at the supply cylinders. Three cylinders, two oxygen and one fuel, with regulators and supply hoses (3/8 inch,with 'B' fittings) are required.

The optional HI-LO Gas Control with pre-heat solenoid, provides regulator control of pre-heat gases at the cutting machine for more convenient thick plate cutting. Regulators supplied with the system are mounted to the gas manifold on the cutting machine.Cylinders, cylinder regulators and supply hoses must be supplied by the customer or dealer.

## 2.11 TERMINAL BOX

The Terminal Box, located behind the Gas Manifold, provides connection points for 'S' Lifter motors cables, as well as other options.

## 2.12 AMPLIFIER/CONTROL PANEL

Controls for operation are located on the front of a hinged panel, a part of the drive system amplifier which is mounted on the front of the Main Saddle. The amplifier unit supplies power to energize the tracer head and the X/Y coordinate drive motors.

## 2.13 TRACER AND X AXIS DRIVE

This unit consists of a tracer carriage, tracer head and the motor/gearbox assembly. Located at the left of the Main Saddle,this assembly also supports the left end of the Torch Bar.

## 2.14 IDLER CARRIAGE ASSEMBLY

The Idler Carriage supports the right end of the Torch Bar and moves in the X axis as the tracer carriage is driven.

## 2.15 TORCH BAR

The torch bar,connected between the tracer carriage and the idler carriage, supports up to four torch stations. When driven by the X axis drive motor/gearbox, the Torch Bar moves the idler carriage and carries the torches along the X axis. Hand knob locks allow for lateral positioning of individual torch stations on the torch bar.

## **2.16 TORCH STATIONS**

Control switches and gas manifold outlet bushings for up to four torch stations are provided with the IK-1200J cutting machine. Torch stations are mechanically clamped to the torch bar which provides X axis movement. Torch stations include hoses, torch, torch holder and three cutting tips. Optional raise/lower motors are available. An optional plasma torch station includes a heavy duty, enclosed, motor assembly, torch holder and power cable to the Terminal Box. A 180 degree machine style plasma torch, with shielded leads, must be purchased with the plasma system.

## **2.17 OPTIONAL EQUIPMENT**

The IK-1200J production capability can be greatly enhanced by the addition of various options. Microprocessor controls, plasma systems, command mark slowdown board, HI-LO Gas Control, automatic ignition, water spray, etc. can be added to meet production needs. All options may be purchased at the time of machine order or, at additional cost, may be added as field retrofits if production requirements change.

## SECTION 3

# PRE-INSTALLATION REQUIREMENTS

### 3.1 PRE-INSTALLATION SAFETY

All equipment must be installed in accordance with local requirements and the National Electrical Code. Connect and maintain good electrical grounds to the incoming AC electrical supply, cutting machine and cutting table. Do not ground to electrical conduit, or pipes carrying gases or flammable liquids.

Plan to provide ventilation at least equivalent to requirements in Section 6 of NFPA Standard Z49.1 referenced in this manual's safety section. Proper ventilation is important for safety, good visibility, and personal comfort.

If necessary in a fixed cutting area, use an exhaust hood of required capacity. An additional exhaust line located below the work level in a boxed cutting table will remove fumes that are heavier than air.

Adequate equipment necessary for lifting cutting machine weights listed in Specifications Table 2.1, must be available at time of installation, i.e., overhead crane, forklift, etc.

All normal safety precautions used in working with flammable gases, electrical equipment and heavy machinery as well as procedures listed in your Company Safety Manual must be followed to prevent possible injury.

**NOTE: The following preparations should be complete before the arrival of the installing technician, if one has been contracted.**

### 3.2 SITE LOCATION

Special consideration must be used in the selection of a site for cutting machine operation. Fuel, oxygen, electrical outlets, clean dry shop air and water in the immediate vicinity are essential for economical operation of any oxy-fuel/plasma cutting machine. Material handling is also important and space for stockpiling plate and cut parts as well as material movement by hoist, truck or other means must be considered.

The cutting machine requires a space where floor vibration is at a minimum. Precision operation is necessary for accurate part cutting. An area of vibration transmission, caused by drop hammers, heavy machinery, trucks or rail sidings must be avoided. Positioning of the unit close to a production line, adequate lighting and ventilation should also be considered.

Review IK-1200J Machine Specifications, Table 2.1, in order to determine correct working area requirements, allowing adequate aisle space to provide for operating safety, traffic flow and overhead clearance.

### 3.3 SITE PREPARATION

Solid, secure and accurate rail installation is critical to insure maximum accuracy for any oxy-fuel/plasma cutting machine. The floor for machine installation should be of at least four-inch-thick reinforced concrete. The overall level, either on the floor or on footings, should be within one-half-inch for the entire width and length of the rail installation. Figure 3.1 shows a typical floor plan. In addition to the recommendations listed, all local building codes and construction practices must be followed.

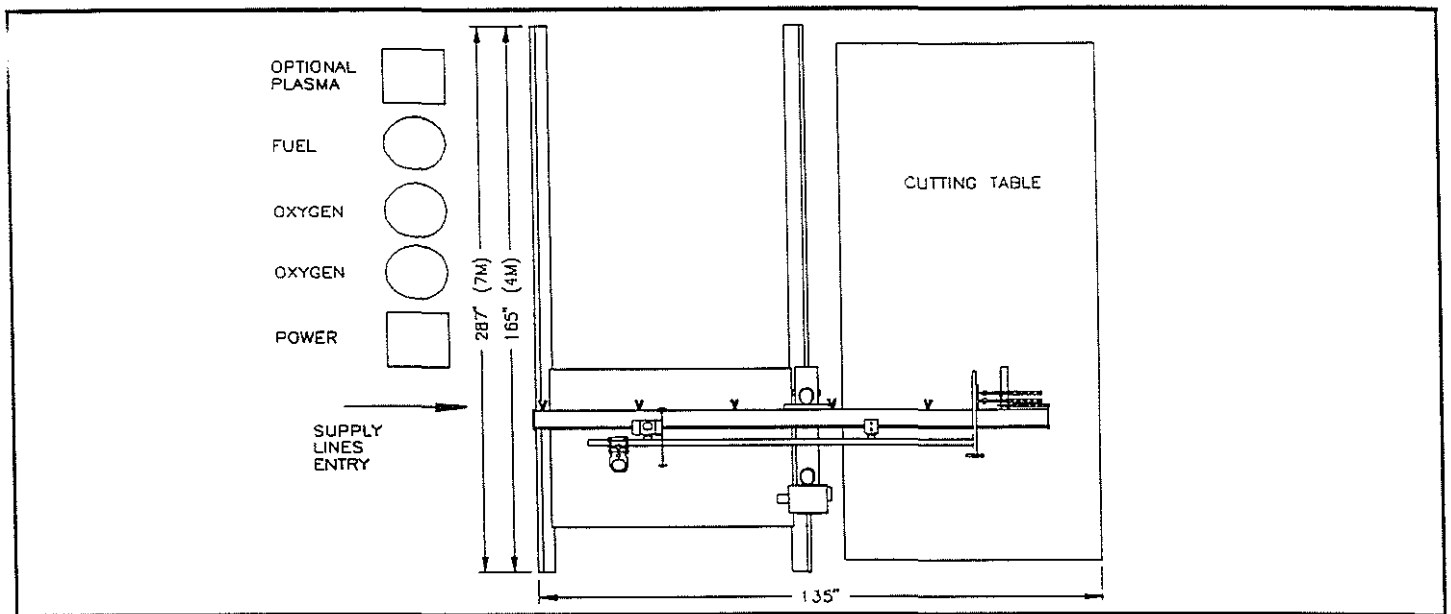


Figure 3.1 IK-1200J Typical Floor Plan

### 3.4 ELECTRICAL REQUIREMENTS

The position of electrical cables on a cutting machine is important for proper operation of the system. Use care when routing cables to avoid pinching or chafing against metallic or other abrasive objects. An appropriate festoon cable carrier, wall or column mounted swivel arm is recommended for all cables traveling with the machine.

Local codes as well as the National Electrical Standard must be followed for all power and grounding installations.

The AC power to the cutting machine should come from a dedicated source. No other machinery or equipment should be connected to this line. Cutting machine electrical requirements are, 110-115V, (+/- 10%), 50-60Hz, single phase, 10 to 20 amps. A 50 foot long power cable is furnished with the IK-1200J. This cable should be hardwired into a dedicated breaker box. Plasma system, if ordered, electrical requirements are listed in the system manufacturers literature. Be sure to provide correct voltage and phase requirements for the optional plasma system as well as for the cutting machine.

All power cables should be kept as far as possible away from auxiliary components such as machine control boxes, solenoids, encoders, etc. Avoid random placement of wiring. AC cables should enter the machine on the left side as you face the machine. Use the welded supply line holders located at the rear of the machine to run cables, as well as fuel and oxygen supply lines. Provisions must also be made to install any plasma power supply unit(s) at the rear of the rail system on the left hand side of the machine. Keep all wiring as short as possible, do not coil any cables. If a festoon supply carrier system is used, cables should be twice the length of the rail system (to allow for system drape) plus ten feet (on the machine), plus distance to source.

**Proper grounding of the cutting machine and peripheral equipment is critical to the reliable operation of the system.**

This requires careful and proper installation of ground rods and associated wire connections. Ground wires will eventually connect from each machine rail, as well as from the cutting table, through a "STAR" ground connection on the cutting table to the ground rod.

The ground rod, for oxy-fuel systems and less than 100 amp plasma systems should be 1/2 inch diameter solid copper, 8 feet in length. The wire connection to the Star ground should be minimum #2 AWG stranded wire, and should not exceed four feet in length. The ground rod for machines with plasma systems of 100 amps or more should be 3/4 inch diameter solid copper, 15 feet in length. If you cannot drive a 15 foot ground rod you may use two 8 foot ground rods connected with 4/0 cable, then to Star ground. The wire to the Star ground connection will be a minimum 4/0 cable and should not exceed 4 feet in length.

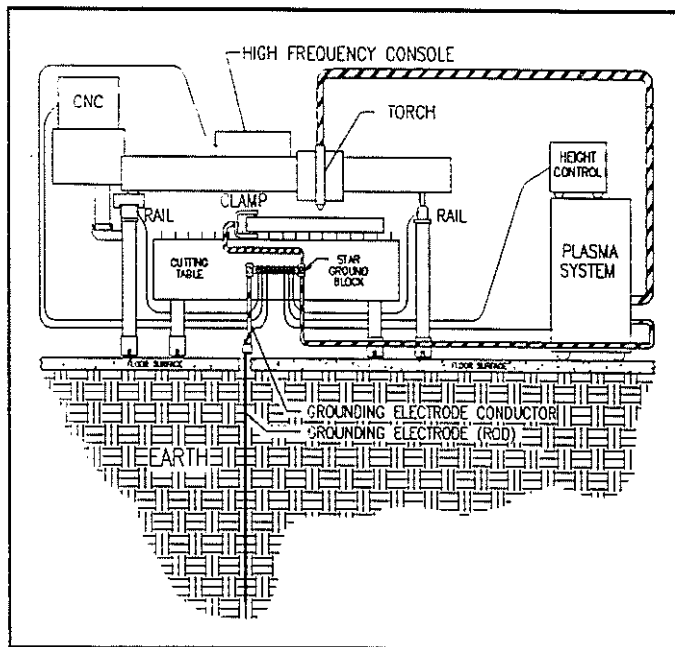


Figure 3.2 Star Ground Connection

**NOTE: Ground rods must be installed according to National Electrical Code Standards.**

All ground connections must make intimate contact with the component they are grounding. All rusted or painted surfaces must be cleaned and the connection made should be tight. Any grounding strap should be minimum #8 AWG wire. Also, plan for #8 AWG wire from each rail to the Star ground connection.

### 3.5 OXY-FUEL REQUIREMENTS

Oxygen and fuel gas supply systems should normally be recommended and installed by your local gas supply distributor. Individual cylinders, two oxygen and one fuel, or a cylinder bank is normally sufficient for the IK-1200J cutting machine.

During an installation of this type, care should be taken to ensure that oxygen valves, lines and fittings are cleaned for oxygen service. Supply to the cutting machine, including indicated cylinders, supply hoses and regulators are a customer responsibility. Supply hoses should be 3/8 inch with 'B' fittings. Two oxygen (green) and one fuel (red) are required. Heavy plate cutting may require increased capacity. Your local gas supply dealer should be able to make recommendations.

All normal cylinder handling safety precautions should be observed. Provision should be made to avoid possible tipping of cylinders, ie, cylinder rack, or chain to wall or column.

**CAUTION: Do not allow oil, grease, or other combustibles to come in contact with oxygen equipment. Use only thread sealing compounds approved for oxygen service when making up threaded joints.**

Oxygen supply requirements must be calculated on maximum number of torches to be used and maximum material thickness expected. Your local gas supply distributor is best suited to assist in determining your requirements. Typically, four torches cutting 1 inch material may require 50 psi with a 200 CFH delivery capability. Heavy cutting will require increased capacity.

Fuel requirements should also be determined by your local supplier. Typical four torch, 1 inch material requirements are:

*Acetylene 120 CFH at 15 psi*

*Ethylene/Mapp 100 CFH at 15 psi*

*Propane 120 CFH at 15 psi*

*Natural Gas 350 CFH at 15 psi*

*Note: Natural gas normally requires a locally supplied pressure booster.*

Compressed air for general blowdown and clean-up should be dry and clean with a 5 micron maximum particle size filter installed. If air is to be used for plasma cutting, consult the plasma system manufacturers literature for specified requirements.

Optional water spray is sometimes used for 3/8 inch material and less, while oxy-fuel cutting, to avoid shifting and distortion of parts. Standard tap water through a 1/2 inch hose valve is normally satisfactory. Particles or minerals, if present, may tend to clog water spray nozzle orifices. If water will be used for a water cooled plasma system or for an automatic water table, consult the appropriate manufacturers manual for detailed purity, column and pressure requirements.

### **3.6 BURNING TABLE**

A burning table, fabricated enclosed or open frame, is a customer responsibility. Refer to the Specifications, Table 2.1, to determine clearance and recommended cutting table height.



## SECTION 4 INSTALLATION

### 4.1 INSTALLATION SAFETY PRECAUTIONS

Voltages used with this machine can be injurious to personnel if improperly used. All equipment must be installed and maintained in accordance with local requirements and the National Electrical Code.

Connect and maintain suitable electrical grounds to the supply ground wire. Machine rails and cutting table must be earth grounded as shown in figure 3.2. Do not connect ground to electrical conduit or to pipes carrying gases or flammable liquids. Use only the recommended sizes of electrical cable.

If it was necessary to install forced ventilation, operate the machine only when such ventilation is running to prevent harmful and dangerous accumulation of fumes.

Avoid enclosing areas where fuel leaks may occur, or insure that such leaks cannot occur in lines passing through or ending in confined spaces.

Use normal precautions when loading or operating heavy equipment. Follow procedures in your Company Safety Manual.

### 4.2 HANDLING AND STORAGE

On delivery, inspect machine packing case and if damage is found, file a claim with the carrier immediately. Freight claims are the receivers responsibility.

Handle the packing case carefully, right side up as marked. Store components inside case in a dry location at the installation site until ready to install.

### 4.3 UNPACKING AND CLEANING

The equipment has been packaged to prevent damage in transit. Unpack carefully to prevent accidental damage by uncrating tools. After uncrating, examine the equipment for signs of damage, particularly to control knobs, switches and electrical components. Report any damage immediately to KAR and the freight carrier in writing.

**REMOVE PRESERVATION COATING** from all unpainted surfaces as components are needed for installation, with Trichloroethane or Perchloroethylene solvents.

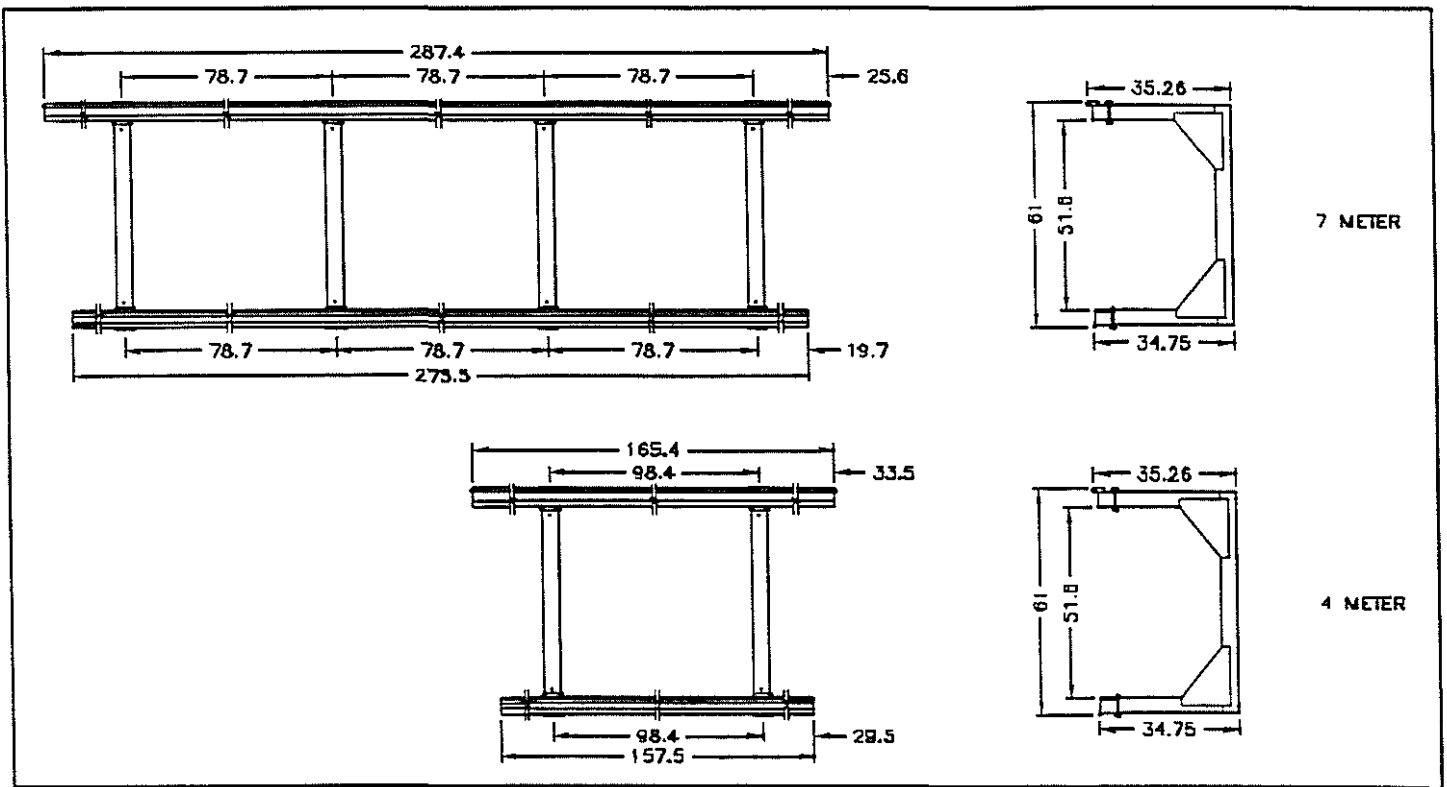
**CAUTION:** When using Trichloroethane or Perchloroethylene, provide sufficient ventilation to prevent toxic accumulation in the breathing air. Avoid prolonged contact of solvents with the skin.

### 4.4 RAIL INSTALLATION

Proper setting of the rails and their mechanical alignment is critical to insure maximum cutting accuracy with coordinate drive cutting machines. The IK-1200J base pedestal units and one piece main (inboard) and outboard rails have been designed for ease of installation.

Refer to Figure 2.1, Machine Outline and Table 2.1 Specifications in order to determine a rail system location which will allow adequate clearances for operation.

**NOTE:** The guide rail and the flat rail on the main and outboard rail tubing must face outward as indicated in Figure 4.1. The main (longer) rail installs on the right side pedestal as you face the machine.



**Figure 4.1 Rail Installation**

1. Position the 'U' shaped pedestals in the approximate locations as indicated in the typical *Floor Plan drawing Figure 3.1. CLEAN THE RAIL SURFACES.* Place the main (INBOARD) rail in position on the pedestal units. Use fasteners provided to temporarily snug the rail in place.

2. Place the outboard rail on the pedestal units and snug into place temporarily with furnished fasteners.

3. Tighten all fasteners on the main rail and pedestal unit.

4. Beginning at one end of the outboard rail, measure the 61 (+/- 1/16) inch distance from the outside edge of the guide rail to the outside edge of the flat (idler) rail. When the outboard rail has been positioned tighten all fasteners.

5. Recheck all dimensions once fasteners have been tightened. As reference, the dimension inside to inboard and outboard rail tubing should be 51.6 inches.

6. Place a level (a manometer type water level is ideal) on the inboard rail. Adjust the pedestal unit right hand leveling bolts as required to obtain end to end level on the inboard rail. Check level at each pedestal unit.

7. Place the level on the inboard and outboard rail to check level to one another. Check at each pedestal unit. The height difference between the flat (idler) rail and the guide rail should be 0.51 inches. Adjust the leveling bolts on the left side of the pedestal units as required.

8. Recheck level at all pedestal locations. Lock leveling bolts into position using locknuts.

9. Recheck all rail system dimensions. Use angle brackets to lag bolt pedestals to floor, especially for high speed plasma applications, to avoid rail system shifting .

10. The rail system should now be ready for machine installation.

## 4.5 TRACING TABLE ASSEMBLY

Lay the two painted plywood table sections face down on a flat surface with predrilled holes facing up. Follow the layout in Figure 4.2 for table assembly. Angle brackets parallel the Y axis, tubing stiffeners parallel the X axis. Two section attachment brackets join the table sections.

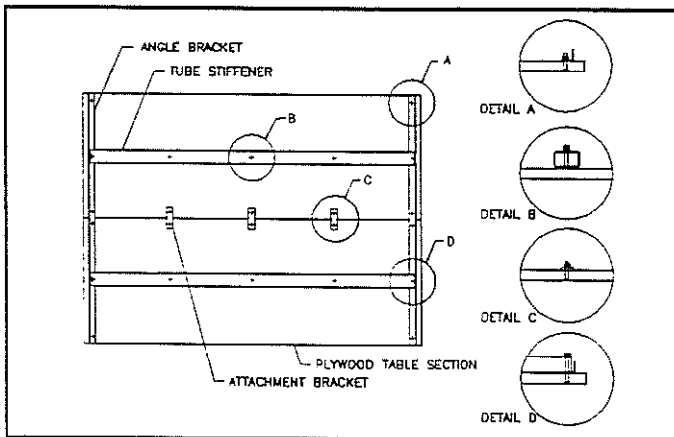


Figure 4.2 Tracing Table Assembly

After assembly, position the tracing table in position on the rail tubing teflon slide strips. Use a straight edge and the four furnished leveling bolts to assure that the table is flat and level within 1/16 inch, side to side, end to end and corner to corner. The tracing head lens has a focal depth of 1/8 inch, if the table is not level as specified the tracer will not operate properly. Use lock nuts on the leveling bolts to secure table position.

## 4.6 MACHINE INSTALLATION

The IK-1200J can be mounted on the rail system from above (vertically) or from the front (horizontally). Suspend the machine assembly by means of two slings under the crossbeam on the right side of the main carriage (saddle) and at the left wheel case assembly, (*Note: the left beam contains a hidden counterweight.. Balance the unit by test lifting.* CLEAN BEARINGS AND WHEELS.

1. On the main carriage, open the side guide roller spacing to the widest position. Open both front and rear side guide roller assemblies.

2. Remove the fixed stop unit on the left wheel case assembly temporarily. Refer to Figure 4.3.  
 3. Lower the machine unit into position on the rail assembly. Be particularly careful not to damage the Y axis drive gear during mounting. Use care in lowering, do not damage rails, wheels or jar electrical/electronic components.  
 4. Reinstall the left wheel case fixed lower stop.  
 5. Adjust the front and rear eccentric side guide rollers. Manually rotate the eccentric shaft to the point where it just touches the guide rail. Properly adjusted, you should just be able to rotate the roller against the rail using thumb and index finger.

6. Tighten the eccentric roller shaft nut.

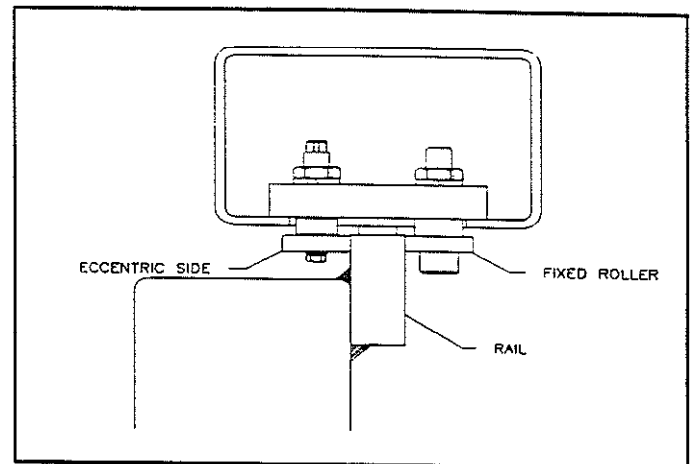


Figure 4.3 Guide Roller Adjustment

## 4.7 TORCH BAR MOUNTING

Position the torch bar on the X axis drive carriage torch bar bracket and on the idler torch bar bracket. Check that carriage rollers turn freely and that all rollers are in contact with the X axis rails. Use fasteners provided and tighten the torch bar in place.

## 4.8 HOSE AND CABLE HANGERS

Attach the torch hose hanger in position on the extreme right end of the cantilever beam assembly. Attach the electrical cable hanger to the rear of the cantilever beam assembly on the left side of the main carriage.

## 4.9 OPTICAL TRACING HEAD

Mount the tracer support carriage to the torch bar above the tracing table and lock into position. Using the furnished adjustment block check to see that the distance from the SCRIBE LINE on the tracer head lens housing and the tracing table surface is 1.5 inch. If necessary use the slotted holes on the tracer head housing to adjust to proper height. Note: use a square to see that the tracer head is perpendicular to the tracing table in both directions. Tighten all fasteners.

## 4.10 OXY-FUEL TORCH STATIONS

Mount the torch station carriages to the torch bar on the right side of the main carriage and lock into position. Run torch hoses, two oxygen and one fuel through the hose hanger ring. If optional 'S' risers, ignition or water spray have been ordered, run these hoses and cables through the ring also. Refer to Figure 4.4 for hose and cable connection points.

OPTIONAL 'S' riser motor cables insert through four access holes on the top of the terminal box, behind the gas manifold. Remove the rear access plate on the terminal box and plug the 'S' lifter cables into their respective receptacles. Replace the rear access plate.

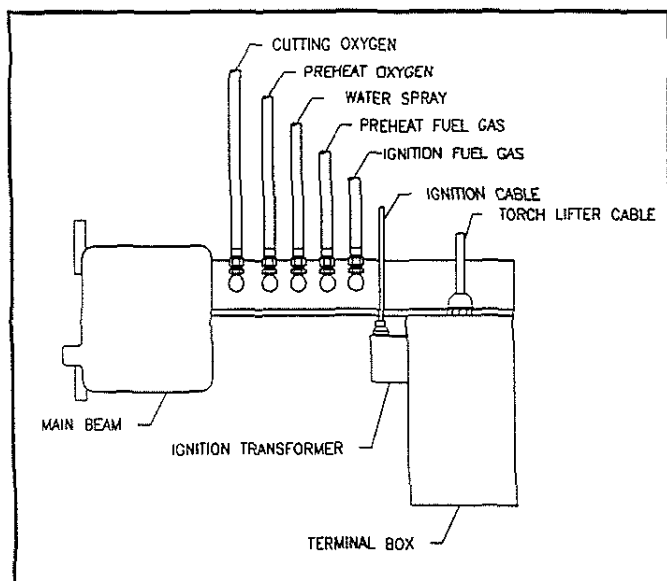


Figure 4.4 Supply Hose Connections

## 4.11 CONTROL/AMPLIFIER

The HL-83 control/amplifier assembly mounts on the forward end of the main carriage using four 10mm bolts. All machine/control cables have unique plug-in connections and/or are labeled as to their connection point.

## 4.12 UTILITIES

The furnished 50 foot power cord plugs into the rear of the control/amplifier unit. The power cord *should be hardwired* into a dedicated breaker box. Check to see that power to the breaker box is **OFF** before attempting this connection. The power cord should be brought into the machine from the left side and run through the welded holders on the rear of the cantilever beam.

Incoming oxy-fuel supply hose connection locations depend on whether or not the optional HI-LO gas system has been ordered. Refer to , Basic System or HI-LO System for supply connection at the machine. Refer to the Pre-Installation section of this manual for gas system requirements and configuration.

**Check all connections with a soap solution before operating the cutting machine.**

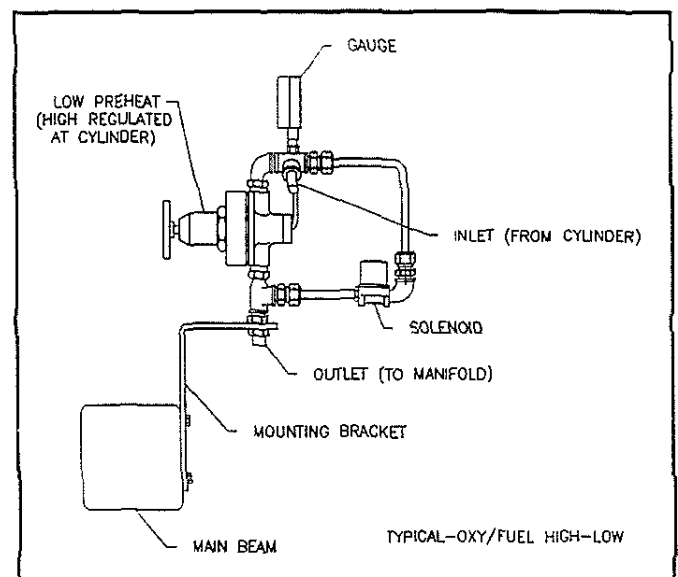


Figure 4.5 HI-LO Gas System (Optional)

### 4.13 OPTIONAL EQUIPMENT

**MICROPROCESSOR CONTROL-** The Hybrid or Burny series controls may require drilling and tapping for mounting of encoder feedback rack in both the X and Y axis. Encoder and control mounting will be required. Refer to drawings, furnished, for N/C installation.

**PLASMA SYSTEMS-** If ordered with your IK-1200J, the plasma system has been factory installed and tested. Install the Heavy Duty plasma torch station on the torch bar, run plasma cables and lifter motor cable through the hose hanger ring. Refer to the plasma system manual for additional connections and requirements.

**ADDITIONAL OPTIONS-** Options such as water spray, ignitors, etc., are factory installed before shipment of your IK-1200J. Connections required are unique and/or labeled.

**BURNING TABLE-** The burning table is a customer responsibility. Refer to the specifications in Section 2 of this manual to determine allowable clearances.

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## SECTION 5 OPERATION

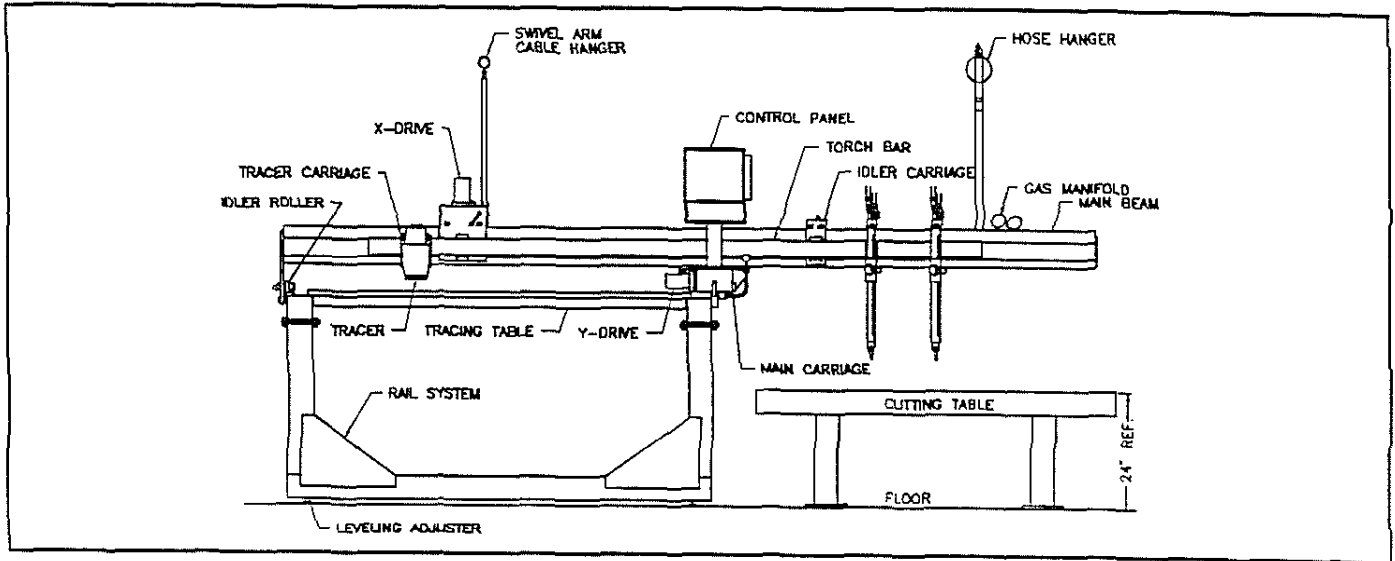


Figure 5.1 IK-1200J Cantilever Cutting Machine

### 5.1 SAFETY

Follow the precautions in the SAFETY section and throughout this manual for your personal safety and the safety of people near the equipment.

1. Operate cutting equipment only in a well ventilated area.
2. Check gas connections for tightness regularly.
3. Keep combustibles away from the work area or protected from sparks and flames.
4. Check function of check valves regularly.
5. Before connecting pressure reducing regulator to oxygen cylinder or manifold, always wipe outlet connection with a clean, oil-free cloth and "crack" the cylinder valve to remove any dirt or contaminate particles.
6. Always drain gas from oxygen regulator before opening cylinder or manifold valve, by engaging adjusting screw and opening downstream valves to allow gas to escape. Adjusting screw may then be released before opening cylinder valve.
7. Open cylinder or supply valves slowly.
8. Never use oxygen to ventilate area or clean off clothing.
9. Keep oil, grease and combustibles away from oxygen equipment.
10. Purge oxygen and fuel lines individually before lighting torch, by briefly opening and closing each valve in turn.
11. Wear appropriate eye protection safety goggles with filter lens.
12. Keep equipment clean and in good operating condition.
13. If PLASMA ARC cutting, refer to the manual supplied by the plasma manufacturer for additional safety precautions.
14. When welding, DO NOT ground to the machine, the rail system, or to the cutting table at any time to avoid damage to electronic components.

## 5.2 PRE-OPERATION

The IK-1200J may be operated in the Manual Mode for ripping plate, in the Trace Mode with a template drawing for shape cutting or for trace teaching an optional N/C unit. It may also be operated in the N/C Mode with an optional micro-processor control installed.

Prior to using the cutting machine, a visual inspection of the gas and electrical systems is recommended to ensure trouble free operation.

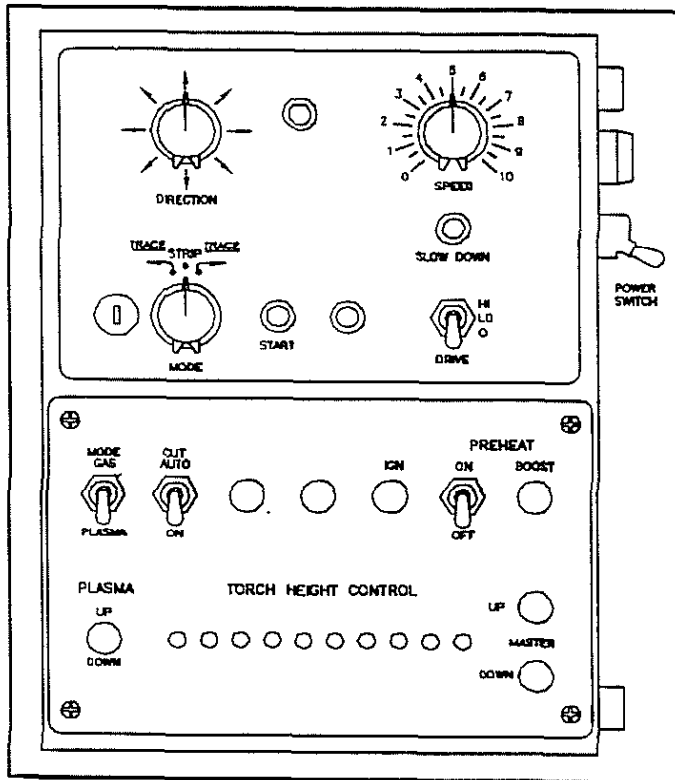


Figure 5.2 Control Panel Switches

## 5.3 CONTROL PANEL SWITCH FUNCTIONS

The control panel of the IK-1200J is mounted on the hinged door of the Amplifier/Control unit. Refer to Figure 5.2 as you review the switch function descriptions.

### 1. Power Toggle Switch

When in the 'ON' (up) position, power to the machine and gas control system is enabled. In the 'OFF' (down) position power is off.

### 2. Tracer Mode Rotary Switch

The Tracer Mode switch is a three position rotary switch. In the 'STRIP' position the manual mode for ripping and squaring plate (straight line cutting, true X or true Y directions) without a template is functional. The Direction Switch will control the direction of cut.

Rotated to the right, RIGHT ARROW, the tracer will acquire a pattern and once acquired the tracer travel is to the right from the direction of approach.

Rotated to the left, LEFT ARROW, the tracer will travel to the left from the direction of approach once the pattern is acquired.

### 3. Direction Rotary Switch

The 8 position rotary switch controls the direction of machine motion during rip and square operation and during template acquisition. Vertical and horizontal positions correspond to machine motion parallel to the Y and X axes. Intermediate positions correspond to positions approximately 45 degrees between axes. The 45 degree positions should not be relied upon for accurate strip cutting.

### 4. Speed Control

The speed control rotary switch adjusts machine speed in per cent of available speed. The graduated scale (0-10) indicates 0-100 per cent of either HI or LO machine speed ranges.

### 5. Drive Toggle Switch

The drive toggle switch provides optimum stability for either HI speed or LO speed operation. In the 'HI' position, the machine is stabilized for high end (plasma) speeds. In the 'LO' position the machine is stabilized for low end oxy-fuel cutting speeds. In the 'OFF' position, the X and Y drive motor signals are disconnected.



## 6. Start Pushbutton

When the start pushbutton is pressed and held, the tracer moves in the direction determined by the Direction switch at a speed selected at the Drive switch and on the Speed Control Switch. If a pattern is encountered 'ON PATTERN' is energized, the Green Tracing lamp is lit and the tracer traces the pattern in the direction indicated by the Tracer Mode switch setting.

## 7. Process Mode Toggle Switch

'GAS' position enables machine oxy-fuel functions. 'PLASMA' position disables oxy-fuel functions for Plasma cutting applications.

## 8. Ignition Pushbutton (optional)

The ignition momentary pushbutton activates the optional automatic torch ignitor system while held 'IN'. Turning button CW will lock ignition, turn CCW to unlock.

## 9. PreHeat Toggle Switch

The PreHeat toggle switch operates preheat solenoids for the IK-1200J Gas Control System and the optional HI-LO Gas Control. In the 'ON' position, the preheat solenoid is activated. In the 'OFF' position the solenoid is not energized and preheat gases are not available.

## 10. Cutting Oxygen Toggle Switch

In the 'ON' position, the cutting oxygen solenoid is activated. 'OFF' position deactivates the cutting oxygen solenoid except during CNC cutting. In the 'AUTO' position the cutting oxygen solenoid is activated when the start button is pressed and when a pattern is being traced.

## 11. Slowdown Pushbutton

Holding the momentary Slowdown button 'IN' reduces machine speed during tracing operations to about one-half of the speed setting.

## 12. Torch Height Control Switches

Functional only with the optional Model 'S' motorized torch lifters, the raise/ lower switch will activate a selected torch motor. These are momentary switches, activated when held in position. Releasing the switch will stop torch lifter motion. The Plasma lifter (optional) is supplied with a separate raise/lower switch.

## 13. Master Up/Down

The lower button, when pushed, lowers all optionally motorized torch stations simultaneously. The upper button raises all motorized torch stations.

## 14. Power Lamp

This 'RED' lamp indicates that the main Power switch is in the on position and power to the machine and gas control system is activated.

## 15. Trace Lamp

This 'GREEN' lamp indicates that the optical tracer is in an 'On Pattern' condition, tracing a template and controlling machine motion.

## 5.4 CONTROL PANEL FUSES

One 5 amp fuse protects the tracer and gas control circuits in the event of a power overload condition.

## 5.5 GAS CONTROL SYSTEMS

The IK-1200J cutting machine requires two Oxygen cylinders, one for cutting oxygen and one for preheat oxygen supply. It requires one cylinder of Fuel Gas. Each cylinder must be supplied with a regulator and a 3/8 inch supply hose to the machine manifold.

The standard IK-1200J gas system, with preheat solenoids is sufficient for most cutting applications. The more sophisticated optional HI-LO Gas System is ideal for thicker plate applications requiring substantial plate preheating.

The gas control system set-up is the first step in preparing to oxy-fuel cut plate. If you are preparing to Plasma Arc cut plate refer to the plasma system manual for correct set-up procedures.

## 5.6 OXY-FUEL LIGHT UP PROCEDURE

**CAUTION:** To prevent fire, when setting pressures, keep sources of ignition away from the torch area. Always purge Oxygen and Fuel lines before operation. Purge lines individually, close each torch valve before opening the next one.

### Standard Gas System

1. Shut all valves on each torch.
2. Toggle POWER switch to 'ON'.
3. Set supply cylinder regulator pressures according to cutting charts in this manual or your tip chart.
4. Toggle Process MODE switch to 'GAS'.
5. Toggle CUT OXYGEN switch to 'ON'. Note: if optional Preheat solenoid is installed, also toggle Preheat switch to 'ON'.
6. Open preheat oxygen valve at one torch, one full turn.
7. At the torch, open the fuel valve 1/2 turn and ignite the torch.
8. Adjust the preheat oxygen valve to obtain a proper preheat flame.
9. Open cutting oxygen valve on the torch. Adjust the flame if required.

10. Repeat 6,7,8,and 9 for additional torches.
11. Toggle PREHEAT and CUT OXYGEN switches to 'OFF'. Flame adjustment is complete.

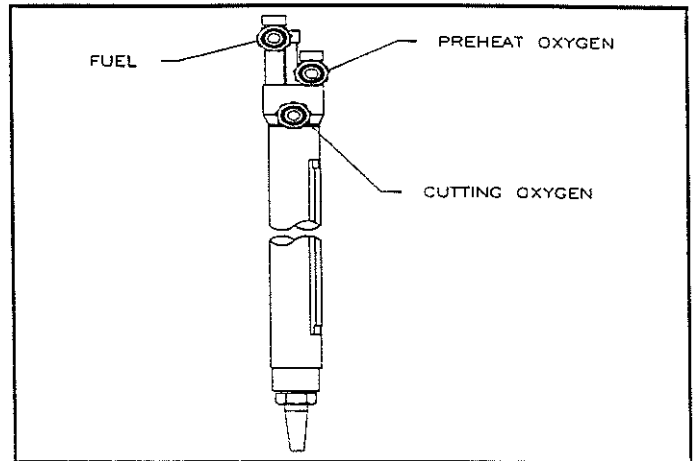


Figure 5.3 Torch Valve Identification

### HI-LO Gas System (optional)

1. Shut all valves on each torch.
2. Toggle POWER switch to 'ON'.
3. Toggle Process MODE switch to 'GAS'.
4. Toggle Preheat switch to 'ON'.
5. Set HI Preheat supply cylinder regulator pressures according to cutting charts in this manual or from your tip chart.
6. Toggle CUT switch to 'ON'.
7. Open preheat oxygen valve at one torch one full turn.
8. At the HI-LO Gas Control, set preheat oxygen to LO settings indicated in cutting charts.
9. At the torch, open the fuel valve 1/2 turn and ignite the torch.
10. At the HI-LO Gas Control, set fuel pressure to LO setting indicated in cutting charts.

11. Adjust the preheat oxygen valve to obtain a proper preheat flame.
12. Open cutting oxygen valve on the torch. This condition is low preheat with cutting oxygen. Adjust the flame if required.
13. Repeat 7,9,11 and 12 for additional torches.
14. Toggle PREHEAT and CUT OXYGEN switches to 'OFF'. Flame adjustment is complete.

### 5.7 OPERATIONAL MODE SEQUENCE

The IK-1200J is capable of oxy-fuel or plasma operation in the Manual Mode for ripping plate, in the Trace Mode for shape cutting with a template, or (optionally) in the CNC Mode for programmed shape cutting.

When any of the following cutting sequences have been completed, always shut down fuel and oxygen supplies or the plasma system. Never leave the machine unattended with supplies on, or plasma system activated.

#### Manual Strip Mode (Mode switch on STRIP)

##### 1. OXY-FUEL SEQUENCE

- a. Control Panel POWER switch to 'ON', Process MODE switch to 'GAS'.
- b. Refer to the appropriate gas system set up procedure and set pressures for plate to be cut.
- c. Ignite torches. If preheat solenoid option is installed, set PREHEAT switch to on first.
- d. Set the 8 position DIRECTION switch for the desired direction of travel.
- e. Set SPEED DIAL for desired cutting speed.
- f. Toggle CUT switch to 'ON'.
- g. DRIVE switch to desired range, (HI / LO).

##### 2. PLASMA SEQUENCE

- a. Control Panel POWER switch to 'ON', Process MODE switch to 'PLASMA'.
- b. Refer to the Plasma System manual and set Plasma System parameters.
- c. Set the 8 position DIRECTION switch for direction of desired travel.
- d. Set SPEED DIAL for desired cutting speed, DRIVE switch to 'HI'.
- e. Toggle CUT switch to 'ON'. If there is no plasma arc, check to see that the plasma system is energized.

#### Optical Trace Mode

##### 1. OXY-FUEL SEQUENCE

- a. Position template on tracing table.
- b. Control Panel POWER switch to 'ON', Process MODE switch to 'GAS', DRIVE switch to 'LO', Trace MODE switch to 'STRIP'.
- c. Steer tracer to desired starting position using the DIRECTION switch and SPEED control. When desired position is reached, toggle DRIVE switch to 'OFF'.
- d. Set Trace MODE switch for the desired tracing direction.
- e. Set SPEED control for desired speed.
- f. Set DIRECTION switch for pattern entry direction.
- g. Refer to Gas System set up procedures, set pressures for material being cut.
- h. PREHEAT switch to 'ON', ignite torches.
- i. Toggle CUT switch to 'AUTO', DRIVE switch to 'LO'.

j. Push START button until the tracer acquires the pattern. When the GREEN tracing light comes 'ON', release the START button.

k. Turn the DIRECTION switch so that at the end of the cut, the tracer can be made to leave the pattern in a direction away from the cut parts.

l. At the end of the cut, turn Tracer MODE switch to 'STRIP'. Tracer will leave the pattern and cutting oxygen will shut off.

m. If cutting sequence is complete, toggle DRIVE switch to 'OFF', toggle CUT and PREHEAT switches to off.

## 2. PLASMA SEQUENCE

a. Position template on tracing table.

b. Control Panel POWER switch to 'ON', Process MODE switch to 'PLASMA', DRIVE switch to 'LO', Trace MODE switch to 'STRIP'.

c. Steer tracer to desired starting position using the DIRECTION switch and SPEED control. When desired position is reached, toggle DRIVE switch to 'OFF'.

d. Set trace MODE switch to desired tracing direction.

e. Set SPEED control for desired Speed.

f. Set DIRECTION switch for pattern entry direction.

g. Refer to plasma system manual, set plasma parameters.

h. Toggle CUT switch to 'AUTO' position, DRIVE switch to 'HI'.

i. Push START button until the tracer acquires the pattern. When the GREEN tracing light comes on, release the START button.

j. Set the DIRECTION switch so that at the end of the cut, the tracer can be made to leave the pattern in a direction away from the cut parts.

k. During cutting, the SLOWDOWN button may be pushed and held to prevent corner overshoot at high speeds.

l. At the end of the cut, turn tracer MODE switch to 'STRIP', tracer will leave the pattern.

m. If cutting sequence is complete, toggle DRIVE switch to 'OFF', toggle CUT switch to 'OFF'.

## CNC Shape Cutting Mode (optional)

### 1. OXY-FUEL SEQUENCE

a. POWER switch to 'ON', process MODE switch to 'GAS'.

b. Refer to gas system set-up procedure and set parameters.

c. Program microprocessor with desired parts.

d. Ignite torches, if ignition option is not on your machine.

e. Toggle CUT switch to 'OFF/CNC'.

f. Select cut or cycle start on the microprocessor control.

### 2. PLASMA SEQUENCE

a. POWER switch to 'ON', process MODE switch to 'PLASMA'.

b. Refer to plasma manual and set parameters.

c. Program microprocessor for desired parts.

d. Toggle CUT switch to 'OFF/CNC'.

e. Select cut or cycle start on the microprocessor control

Table 5.1 OPERATING DATA FOR PREHEAT SYSTEM

Koike 500L torch, Fuel Supply at 13-15 psi, Oxygen at 150 psi

Thickness (Inches)	Preheat Oxygen (psig)		Acetylene	
	LO	HI	LO	HI
1/8	4	7.5	2	5.5
1/4	4	10	2	7
3/8 to 3/4	7	15	3	7.5
1 to 2	8	20	3	8
2 to 4-1/2	10	25	3	8
5 to 7	15	25	3	9.5
8 to 10	25	35	6	8.5
10 to 12	40	40	9	9
Thickness (Inches)	Preheat Oxygen (psig)		Propane (psig)	
	LO	HI	LO	HI
1/8	5	5	2	2
3/16	8	8	2	2
3/8 to 3/4	15	35	3	4.5
1 to 3	20	40	4	6
3 to 5	35	50	5	6
7 to 10	50	50	7	7
10 to 12	55	55	7	7
Thickness (Inches)	Preheat Oxygen (psig)		Ethylene/Mapp (psig)	
	LO	HI	LO	HI
1/8 to 3/16	5	5	2	2
1/4	7	7	2	2
3/8 to 3/4	8	35	2	8.5
3/4 to 2	10	40	2	9
2-1/2 to 6	12	50	3	8.5
7 to 12	55	55	7	7
Thickness (Inches)	Preheat Oxygen (psig)		Natural Gas (psig)	
	LO	HI	LO	HI
1/8 to 3/16	10	15	3	4
1/4	15	20	3	4
3/8 to 1	20	45	3	6
1-1/4 to 2-1/2	25	50	3	6.5
3 to 5	35	50	5	7.5
6 to 12	55	55	7	7

Table 5.2 CUTTING GUIDE FOR MILD STEEL

Material Thickness Inches	Tip Size	Standard Speed Tips			High Speed Tips		
		Cutting Oxygen (psig)	Inches Per Minute	Kerf Width Inches	Cutting Oxygen (psig)	Inches Per Minute	Kerf Width Inches
1/8	00	20	27	0.04	100	31.5	0.03
1/4	0	30	24	0.04	100	29	0.04
3/8	0	30	22	0.05	100	27	0.05
1/2	1	40	21	0.06	100	25	0.05
3/4	2	45	18	0.07	100	22	0.06
1	2	45	17	0.08	100	20	0.07
1-1/2	3	45	14	0.09	100	18	0.08
2	4	45	12.5	0.11	100	16	0.10
2-1/2	5	55	11	0.12	100	14	0.11
3	5	55	10	0.12	100	12.5	0.11
4	6	55	8	0.14	100	10	0.13
5	6	55	7	0.14	100	9	0.14
6	7	65	6	0.16	100	7	0.14
8	7	65	5	0.17	100	5.5	0.18
10	8	65	3	0.23	100	4	0.20
12	8	65	2	0.27	100	3	0.24

Note: Values listed are average starting points, refer to your tip chart for recommendations.

### 5.8 TEMPLATE PREPARATION

Refer to the Westinghouse manual furnished with your machine for detailed template preparation instructions. Basic considerations are:

1. Template material should be off-white and non-reflective, of a type that will not expand or contract from temperature and humidity conditions.
2. Use black India Ink or an HB drafting pencil for line drawing. Some felt tipped markers use a high per cent of red to formulate black ink, the tracer may not 'see' these lines. Template lines must be at least 6mm (0.023") wide. The HL-8 is a line edge tracer, you may also use a silhouette pattern.
3. The edge of a template line must be continuous and even. A break or narrow section in a line will cause the tracer to cross-over and reverse

direction, tracing the inside of the template line.

4. Follow minimum corner radii guidelines in the Westinghouse manual for travel speeds. Faster cutting speeds require a larger radius. An optional command mark slowdown board is available to allow command marks drawn on the template to automatically slow machine speed on corners.
5. It is advisable to 'Test Run' a template before actual cutting. If problems occur, try running the test template furnished with the machine.

### 5.9 OPTIONAL EQUIPMENT

Refer to the appropriate manual supplied by the manufacturer of the microprocessor control, plasma system or other optional equipment for operating procedures and guidelines.

## SECTION 6 MAINTENANCE

### 6.1 SAFETY PRECAUTIONS

Shut **OFF** main power switch, pull fuses, or lock and red-tag switch before attempting work on electrical circuits. Do not touch electrically hot parts or those with residual voltage, such as capacitors until they have been grounded and their electric charge dissipated.

Check gas cylinder valves, regulators, and hose and torch connections regularly for leaks with a solution of 1/4 oz. liquid soap per gallon of water.

Always open gas valves slowly.

Always purge oxygen and fuel lines individually to discharge combustible mixtures before lighting each torch. Close each torch valve before opening the next one.

**Do Not** purge in the presence of flame, lit cigarettes and other sources of ignition, nor towards persons or clothing.

Before attempting to disassemble any part of the System, depressurize the System. **Do Not** disconnect any part of the System that is under pressure.

All parts, repaired, replaced, or otherwise handled, must be cleaned for oxygen service.

Regularly inspect check valves and keep them in operating order. They prevent reverse flow (from torches to hoses) of hazardous mixtures of flammable gas and air (or oxygen).

Keep power cables dry, free of oil and grease, and protected at all times from damage by hot metal and sparks. **Do Not** use any power cable with worn or damaged insulation, repair or replace immediately.

Equipment which is not functioning properly should **Not** be used until all repairs have been completed and the equipment has been tested to ascertain that it is in proper operating condition.

Inspection and maintenance of equipment as indicated in this manual may ordinarily be undertaken by a competent person having at least general experience in the maintenance of equipment of this nature.

When welding, **DO NOT** ground to the machine, the rail system, or to the cutting table at any time to avoid damage to electronic components.

Except for inspection and maintenance listed in this manual, it is recommended that all other servicing be done by a service technician authorized by KAR.

Goggles with correct filter lenses must be worn whenever torches are lit. Suitable protective clothing must be worn where necessary.

Comply with these and other safety procedures listed in this manual. Refer to appropriate manual, furnished by the manufacturer, for safety procedures for plasma, drive, N/C or other optional equipment.

### 6.2 GENERAL INFORMATION

This manual provides standard preventative maintenance procedures required for accurate and proper operation of the IK-1200J cutting machine. Follow these procedures to maintain machine operation at peak efficiency and to extend the useful life of the machine.

The machine has been assembled, properly adjusted and factory tested before shipment. Factory settings, other than those listed in the installation section of this manual, should not be changed. If machine performance is unsatisfactory, contact a *KAR* authorized service representative for advice.

Keep the machine clean, in good condition and free of oil, grease and other combustibles. If replacement parts are required, it is recommended that they be purchased from *KAR* through an authorized distributor.

Separate manuals, listing maintenance procedures, have been furnished by the manufacturer for optional items such as plasma systems, microprocessor controls and certain other components.

### **6.3 PREVENTATIVE MAINTENANCE SCHEDULE**

The following procedures should be performed routinely based on machine **operation hours**. Do not allow any grease which has not been approved for oxygen use to come in contact with oxygen equipment.

#### **1. EACH 8 OPERATION HOURS**

- a. Clean and lightly oil wheels, rollers, rails, gears and racks with LPS No.1 from LPS Research Company, or equivalent.
- b. Clean torches and tips.
- c. Check freedom of **X** and **Y** axis carriage movement and or excessive backlash.
- d. Blow out rails, rollers and wheels with low pressure shop air, (not oxygen). OSHA requires that cleaning air be below 30 psig.

#### **2. EACH 50 OPERATION HOURS**

- a. Clean, readjust, and grease torch holders with Never-Seez form Never-Seez Corp., or equivalent.
- b. Check gas system for leaks with soap and water solution.
- c. Check and clean, with a soft cloth, tracing eye lens and bulbs.

#### **3. EACH 1000 OPERATION HOURS**

- a. Check and clean electrical equipment.
- b. Check cutting oxygen check valves for reverse flow.

#### **4. EACH 2000 OPERATION HOURS**

- a. Remove, clean, check and repack ball bearings of all wheels with Never-Seez or equivalent grease. Fill only 10% of space to prevent drag.
- b. With a straight edge, check flatness of the tracing table and distance from the tracer scribe line to the tracing table.

### **6.4 GUIDE ROLLER ADJUSTMENT**

After prolonged usage, the main carriage eccentric guide rollers may require adjustment.

Adjust eccentric bolts until rollers can just be turned, using thumb and forefinger, against the side of the rail. Check that all guide rollers turn easily as the machine is moved and have no wobble.

### **6.5 RAIL CLEANING**

Clean and lubricate (with LPS-1) the contact surfaces of rails and ways at least once each eight hour shift.



Blow surfaces clean with low pressure (below 30 psig) shop air. Clean off remaining build-up with Beartex cloth, Grade BF, Type S/Z from bear brands, and spray with LPS-1.

Wipe rails clean with lint-free cloth. Spray LPS-1 on cloth, or on rails after cleaning to leave a LIGHT FILM of LPS-1 for protective lubrication. A heavier coating will attract dust. DO NOT use a petroleum base oil.

File off larger burrs that may appear on rails, they could affect cutting performance.

## 6.6 ROLLER CLEANING

At least once each shift, remove dirt build-up from small rollers, main carriage side guide rollers and torch carriage rollers as follows:

- a. Hold a steel flat bar (1/16 X 1 inch cross section or pocket rule) flat on rail edge against roller surface.
- b. Move carriage in direction away from bar, holding bar against roller for at least one complete revolution to scrape off dirt build-up.

## 6.7 WHEEL CLEANING

At least once each shift, remove dirt build-up from wheels of Y axis carriage.

Scrape off build-up from wheels with edge of steel flat bar (1/16 X 1 inch, or pocket rule) while rolling carriage through one revolution of each wheel.

## 6.8 GEARS AND PINIONS

At least once each shift remove debris from gears and pinions using a stiff wire brush. Spray on a light film of LPS-1.

## 6.10 GAS CONTROL SYSTEM

In general, problems occurring with the Gas System result from inadequate incoming supply pressures (oxygen-minimum 100 psig, fuel-minimum 15 psig), or incorrect regulator adjustments. Correct operating adjustments are detailed in Section 5 of this manual. Refer to the trouble shooting guide below for possible oxy-fuel cut quality problems.

1. Cut edges distorted or melted - Preheat flame too high.
2. Flame backfiring - Preheat flame too low, tip to close to work piece.
3. Distorted flame - Dirty cutting tip, replace or clean.
4. Dispersed or slanting oxygen jet - Cutting tip is dirty or distorted.
5. Cut edge is cambered towards bottom - Preheat flame too low, cutting oxygen too high.
6. Too much drag on cut surface - cutting speed is too fast.

If incoming supply pressures are correct and gas panel pressure set ups are correct for the fuel gas, torch and tip combination and problems persist, contact your KAR service representative for advice and assistance.

## 6.11 OPTIONS AND ACCESSORIES

Separate manuals are furnished by the manufacturer of equipment supplied with the IK-1200J. They provide detailed operating and maintenance procedures for items such as Plasma Systems, Water Tables, Supply Hose Carrier Systems, etc. Refer to these manuals for preventative maintenance and trouble shooting assistance.

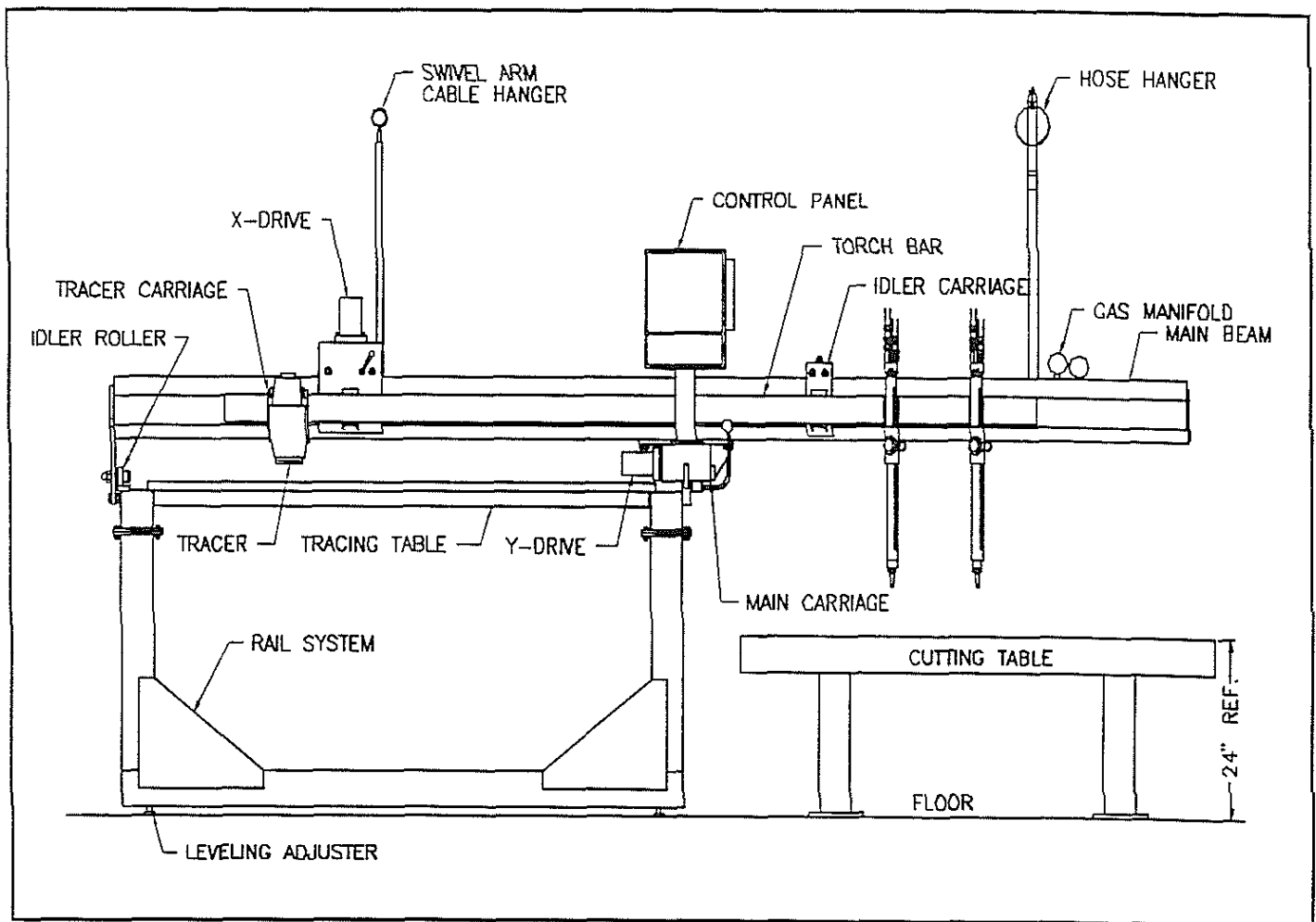
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## SECTION 7 REPLACEMENT PARTS

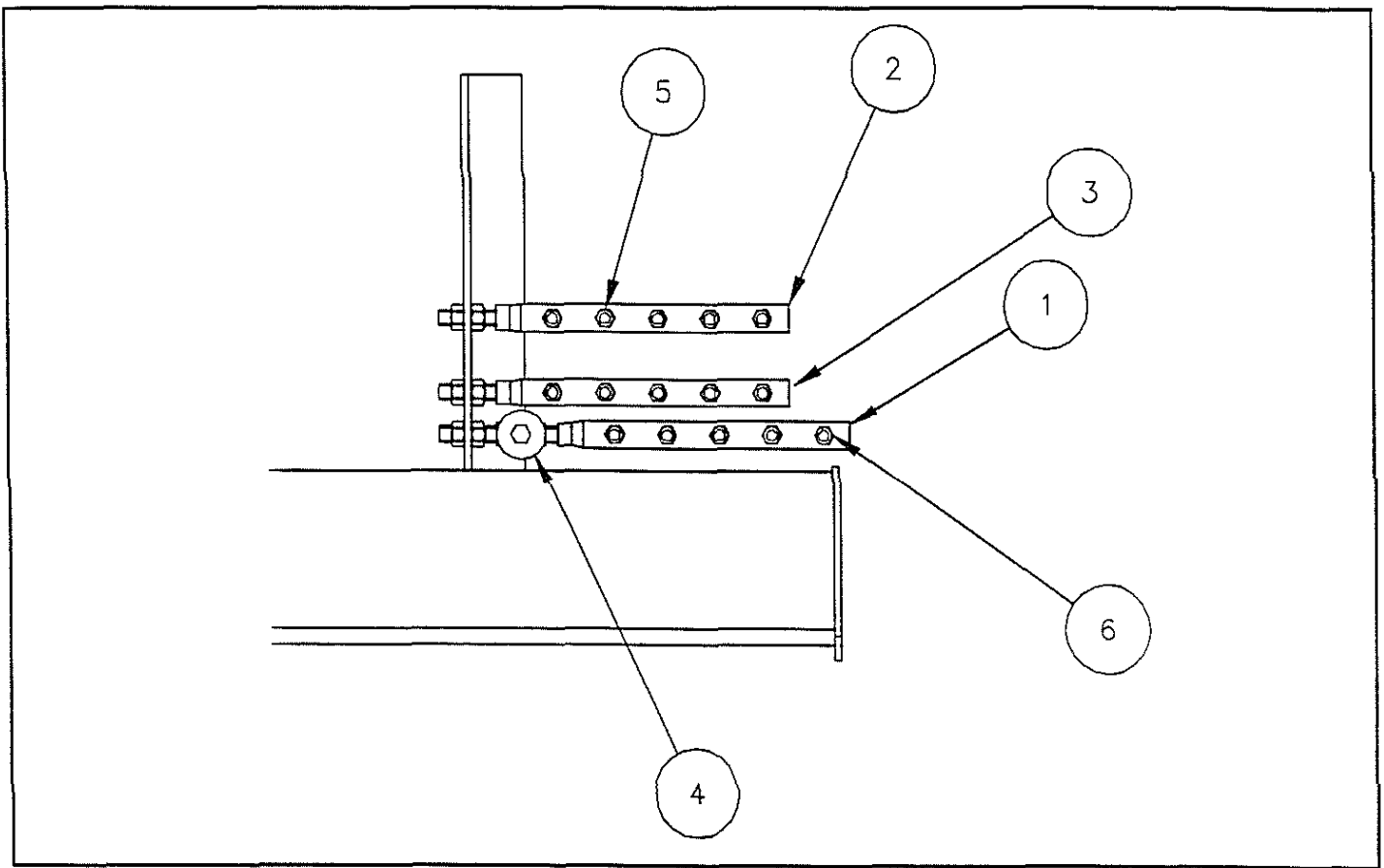
To assure minimum downtime, it is recommended that spare parts noted by the symbol \* in the Part No. column of the parts list be kept on hand.

To assure proper operation, it is recommended that only genuine KAR parts and products be used with this equipment. To order replacement parts:

- a. Provide Shop Order (SO#), serial number and model of equipment from the Serial Tag located on the rear of the main beam.
- b. Provide part number, description and quantity of part.
- c. Indicate any special shipping instructions.

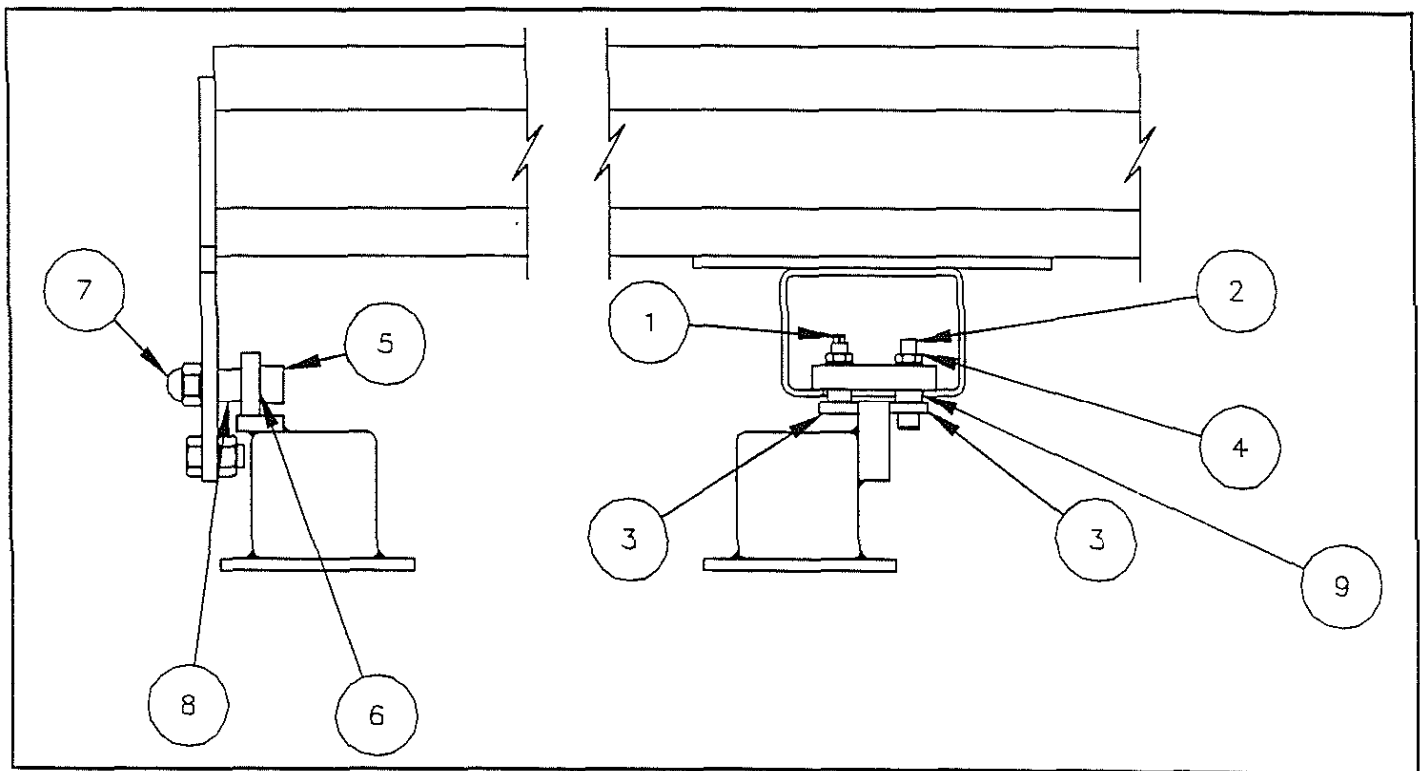


**Figure 1. IK-1200J Cutting Machine**



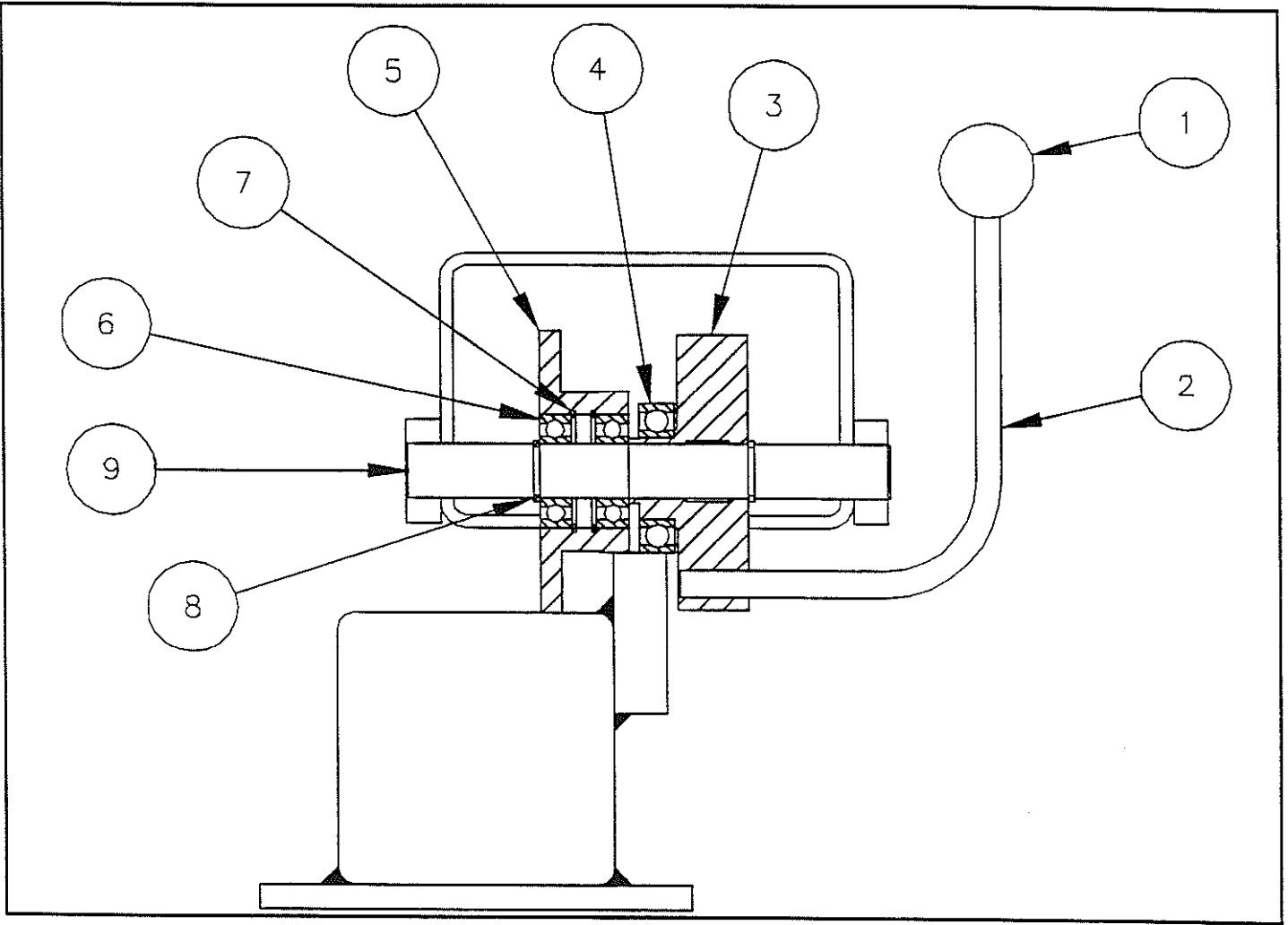
**Figure 2. Gas Manifold Assembly**

<b>Item</b>	<b>Part No.</b>	<b>Description</b>
	1112005101	Gas Manifold Distribution Unit
1	1115025603	Cutting Oxygen Manifold Pipe
2	1115025601	Fuel Manifold Pipe
3	1115025600	Preheat Oxygen Manifold Pipe
4	0866898500*	Solenoid, Cutting Oxygen
5	0866836200	Fuel Chain & Plug
6	0866836600	Oxygen Chain & Plug



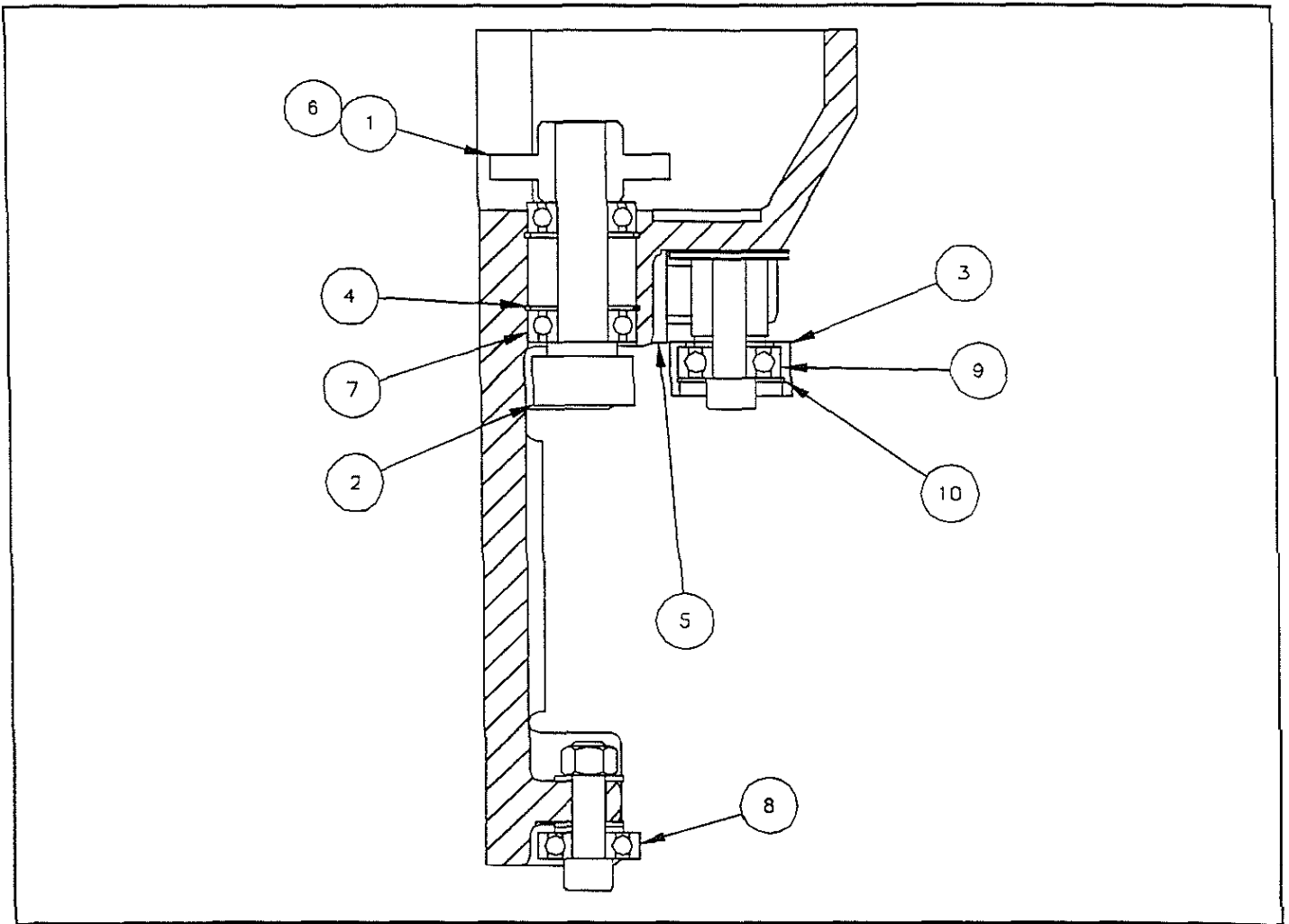
**Figure 3. 'Y' Axis Roller Assemblies**

Item	Part No.	Description
1	1115011200	Eccentric Shaft
2	9968138300	Fixed Shaft
3	1138350700	Bearing
4	9968123600	Hex Nut
5	9968142700	Fixed Shaft
6	1138351300*	Bearing
7	9938264100	Cap Nut
8	1115026300	Spacer
9	1115011300	Spacer



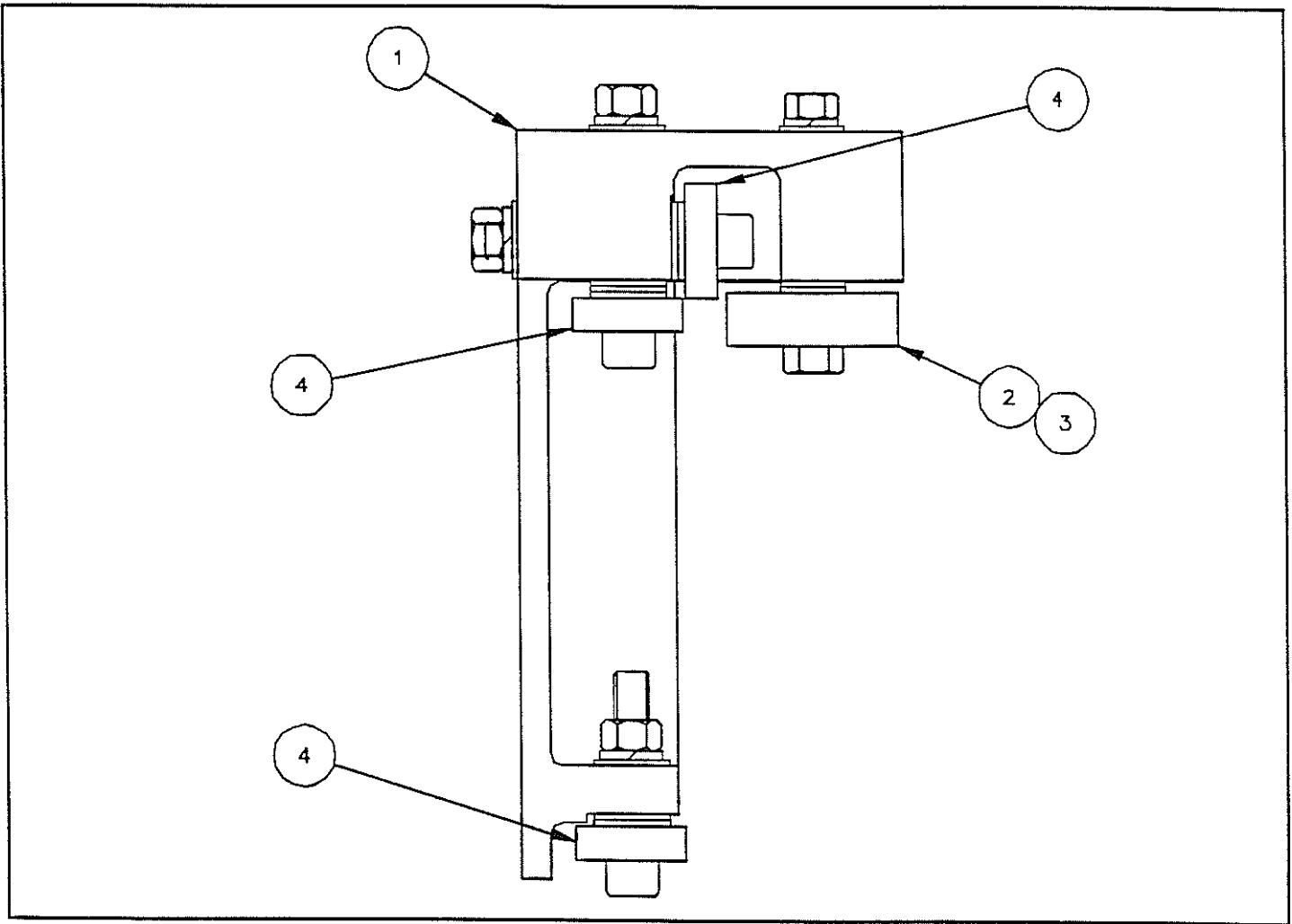
**Figure 4. 'Y' Axis Wheel Assemblies**

Item	Part No.	Description
1	1138301900	Ball Knob
2	1138302000	Clutch Lever
3	1115011100	Clutch Guide
4	1138350500*	Bearing, Wheel
5°	1138301700*	Drive Gear
6	1138350400*	Bearing
7	9968253100	Retaining Ring
8	9968311100	Retaining Ring
9	1115011001	Axle
N/S	1138350600*	Wheel, Rear
N/S	1115011000	Axle, Rear Wheel
N/S	9968311100	Retaining Ring, Rear Wheel



**Figure 5. 'X' Axis Drive Carriage**

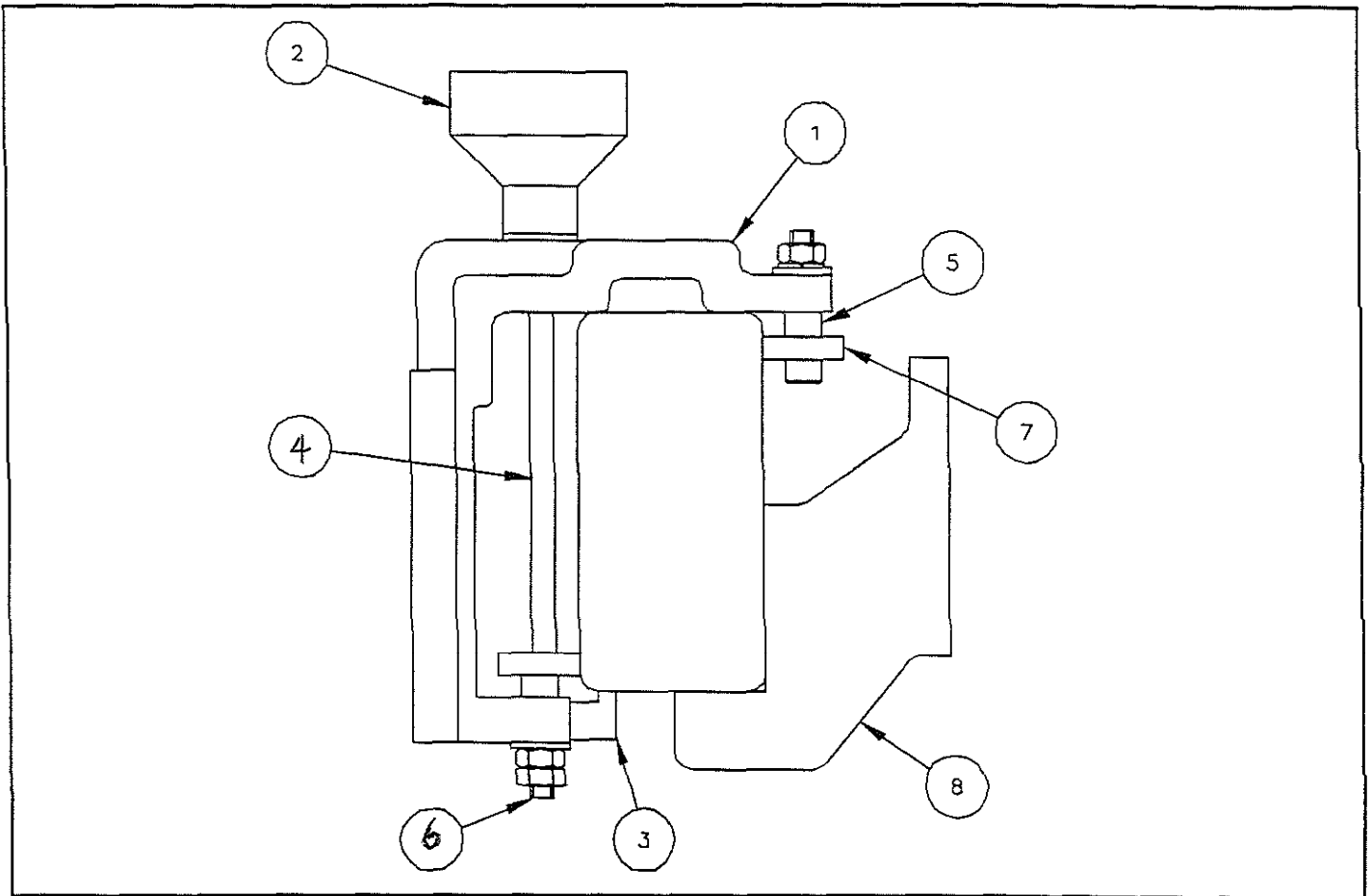
<b>Item</b>	<b>Part No.</b>	<b>Description</b>
1	1138313600*	Drive Gear
2	1138314400*	Drive Roller
3	1138314200	Roller
4	9968252500	Retaining Ring
5	1138352000*	Upper Wheel
6	9968368700	Taper Pin
7	1138353600*	Bearing
8	1138352000	Lower Wheel
9	1138352000	Bearing
10	9968252400	Retaining Ring
N/S	1138200200	Thrust Bearing, Clutch Assembly
N/S	1138314300	Collar, Clutch Assembly



**Figure 6. Idler Carriage**

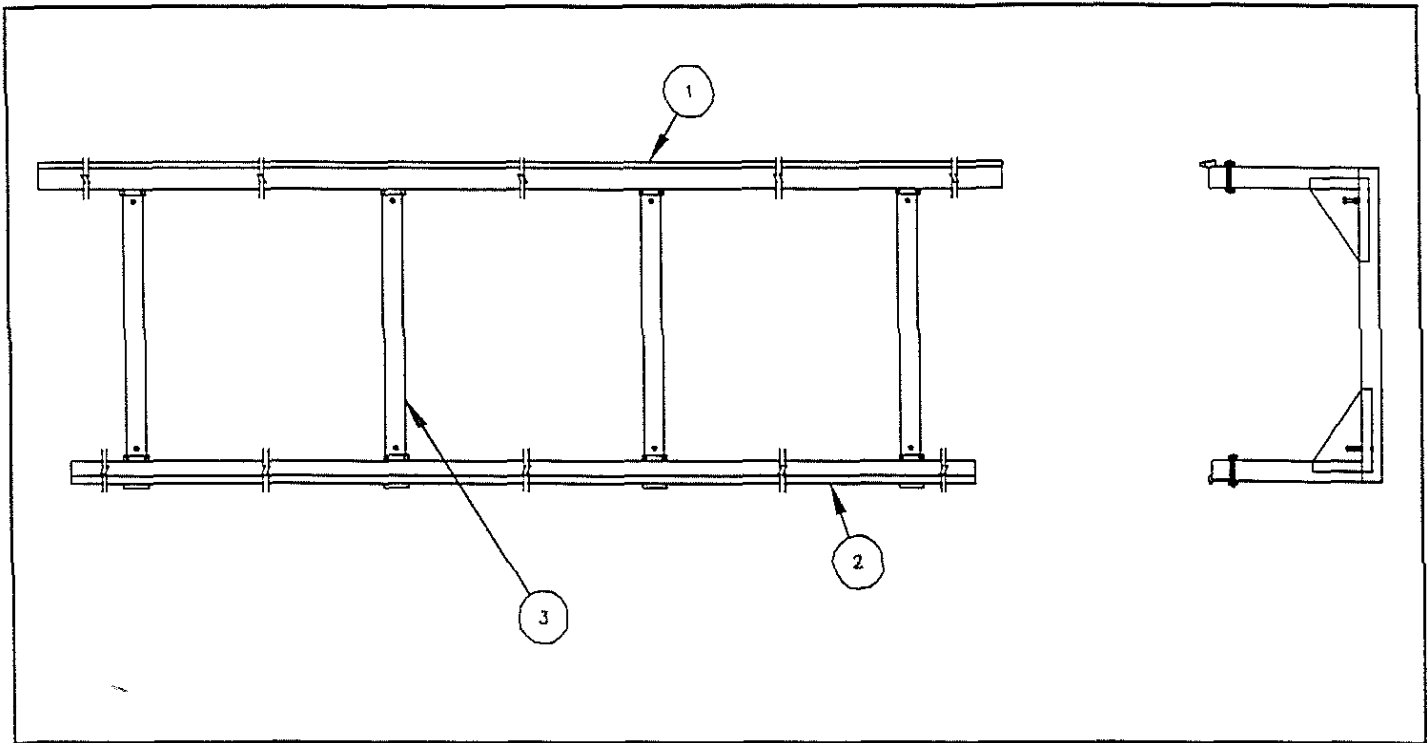
<b>Item</b>	<b>Part No.</b>	<b>Description</b>
1	1138402600	Main Body
2	1138403800	Eccentric Collar
3	1138351600*	Bearing
4	1138352000*	Bearing





**Figure 7. Tracer Carriage/Torch Bar**

Item	Part No.	Description
1	ZS62144	Carriage
2	ZS60433	Handle
3	ZS60435	Lock Bracket
4	ZS60436	Shaft, Adjustment
5	ZS60437	Collar
6	ZS60434	Shaft, Locking
7	1138351200	Bearing
8	ZM61552	Torch Bar Assembly
N/S	1115008900	Tracer Set-up Block



**Figure 8. Rail System**

<b>Item</b>	<b>Part No.</b>	<b>Description</b>
1	1112032500	4M Guide Rail
	1112032600	7M Guide Rail
2	1112035000	4M Outboard Rail
	1112035100	7M Outboard Rail
3	1112037500	Pedestal Assembly
N/S	1112040000	Tracing Table Assembly

## SECTION 8 OPTIONS

The options included in this Section are available, through your local Distributor, from KAR. Your machine, as purchased may not be equipped with all of these options. However, the modular design of the IK-1200J allows for field retrofit.

Many accessories which are available for the IK-1200J are not included in this manual. Plasma Systems, NC Controls, Water Tables, Power Track Systems, etc. available from KAR normally have a separate manual provided by the equipment manufacturer. These manuals are included with your machine documentation.

As Indicated in Section 7, Parts, any Part No. marked with the symbol\* should be kept on hand to assure minimum downtime.

**OXY-FUEL TORCH STATION**

**PLASMA TORCH STATION**

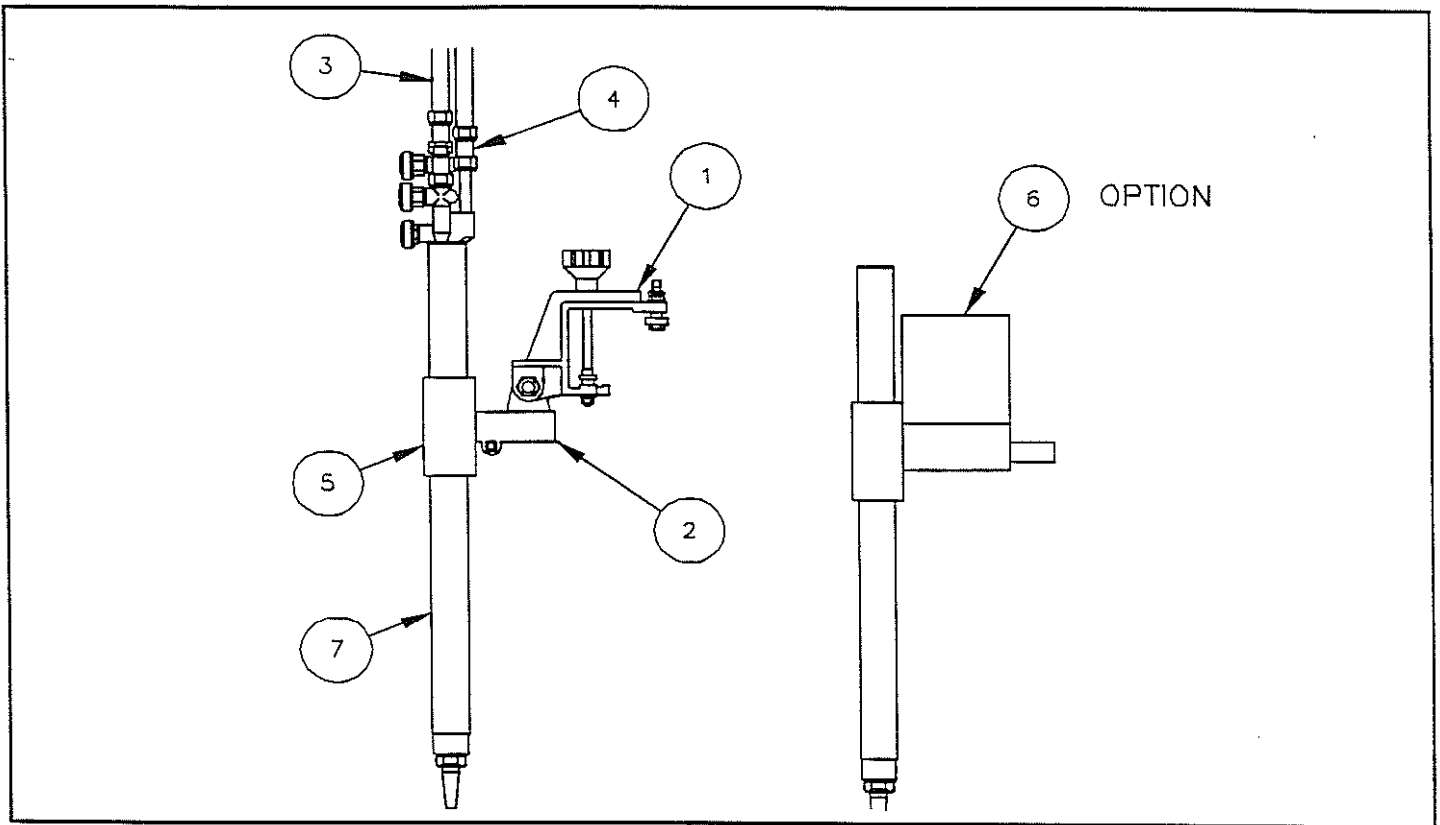
**HI-LO GAS CONTROL SYSTEM**

**AUTOMATIC IGNITION**

**WATER SPRAY SYSTEM**

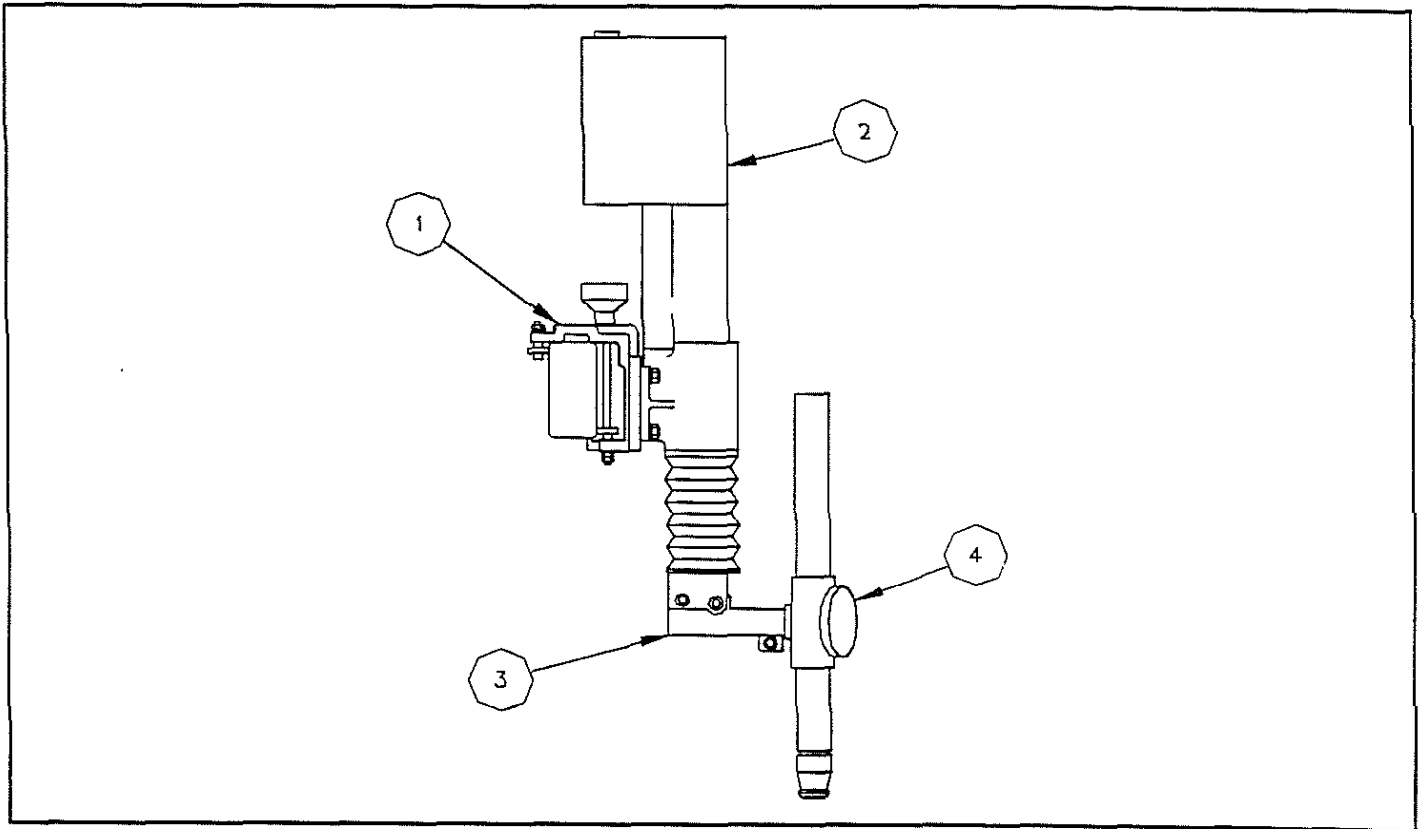
**AUTO EASE-ON SYSTEM**

## Oxy-Fuel Torch Station



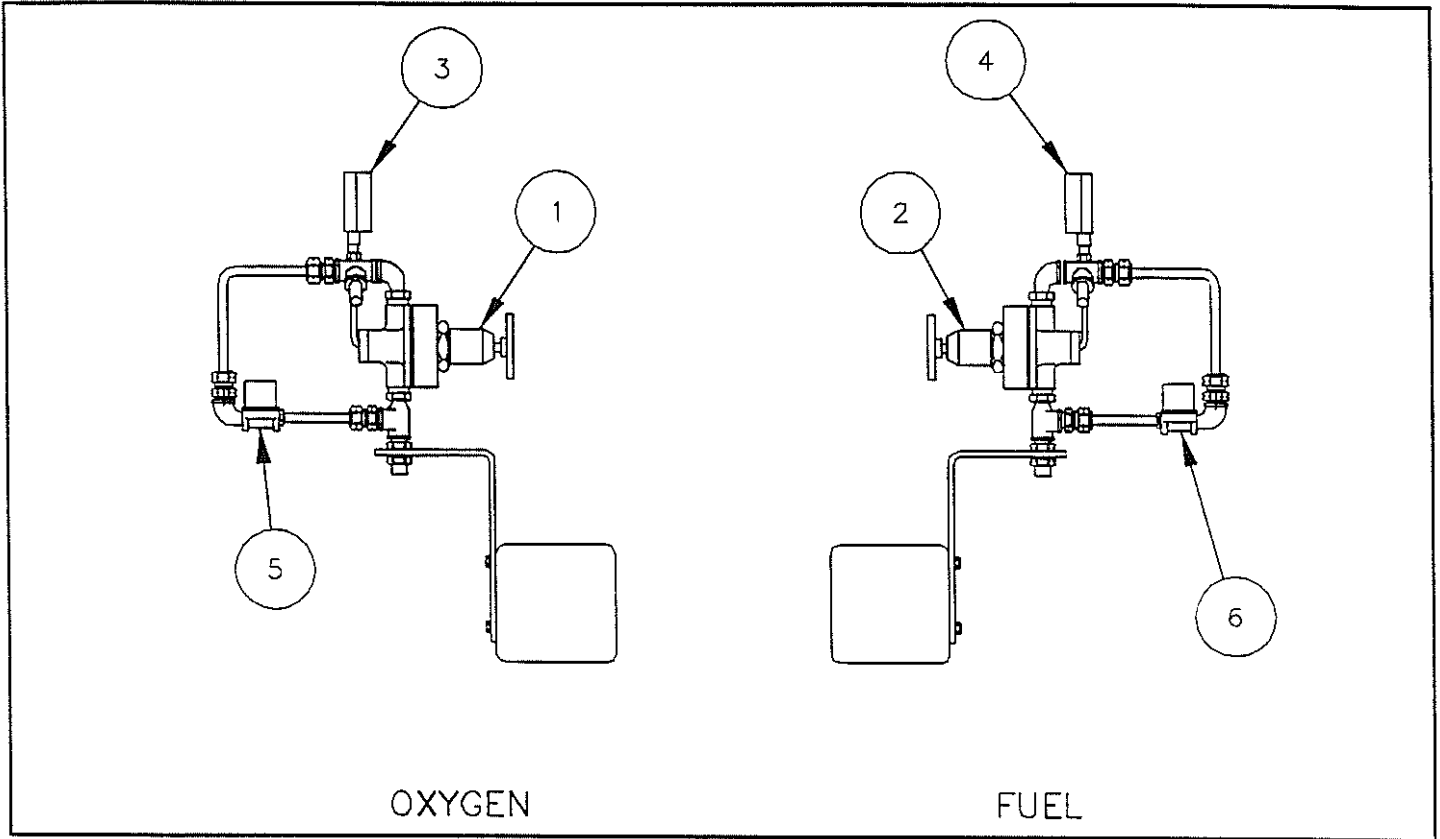
Item	Part No.	Description
1	ZS60431	Torch Carriage
2	ZS61106	Torch Support
3	ZK61401	Torch Hose Set
4	1138307800*	Fuel Check Valve
	1138300000*	Oxygen Check Valve
5	ZS61108	Torch Holder
6	ZM61995	Model 'S' Lifter and Cable (N/R for manual station)
7	ZA3251006	Torch, Koike 500L

### Heavy Duty Plasma Torch Station



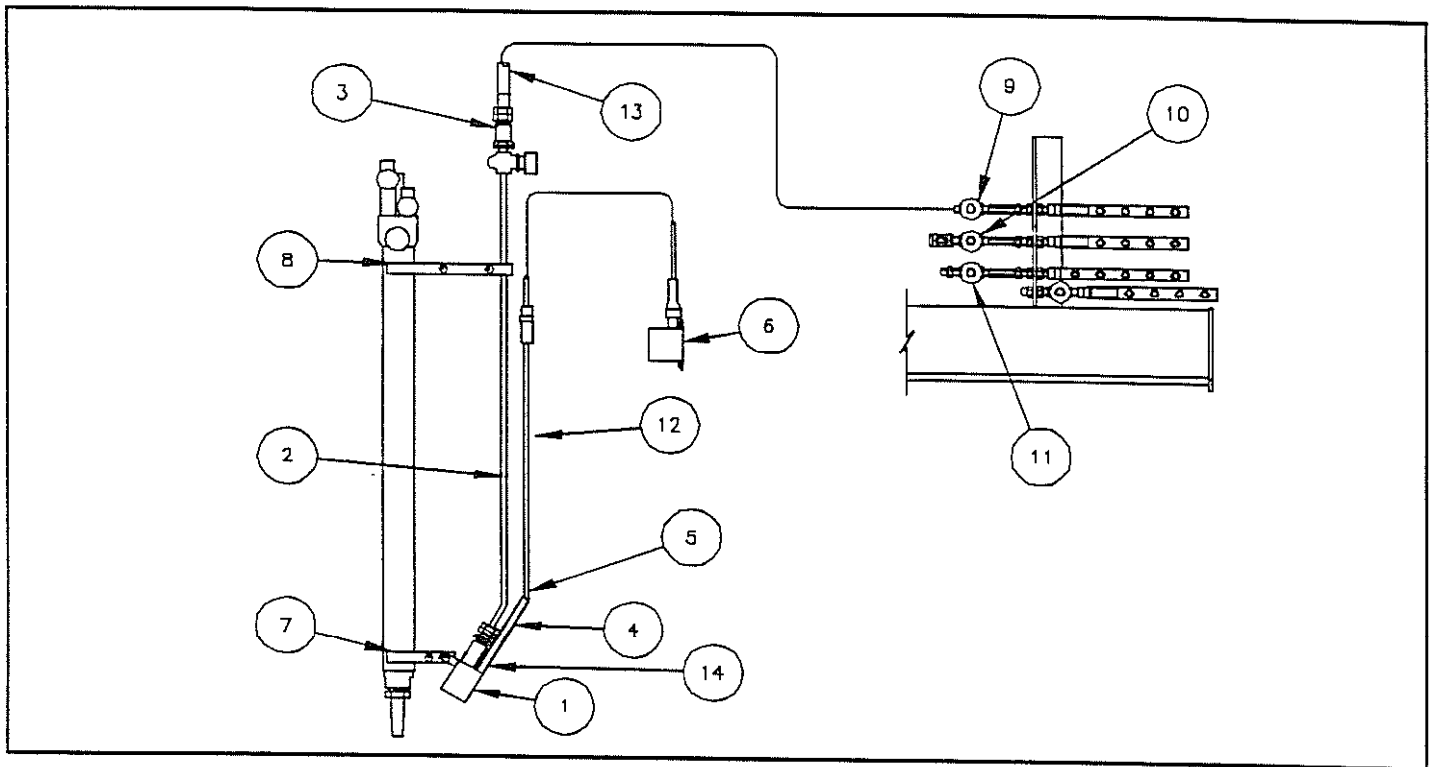
Item	Part No.	Description
1	ZS62528	Torch Carriage
2	33087091600	Heavy Duty Lifter
3	ZS62463	Torch Support
4	0866842800	Torch Holder
N/S	1139100601	Cables and Switch Package

## HI-LO Gas Control System



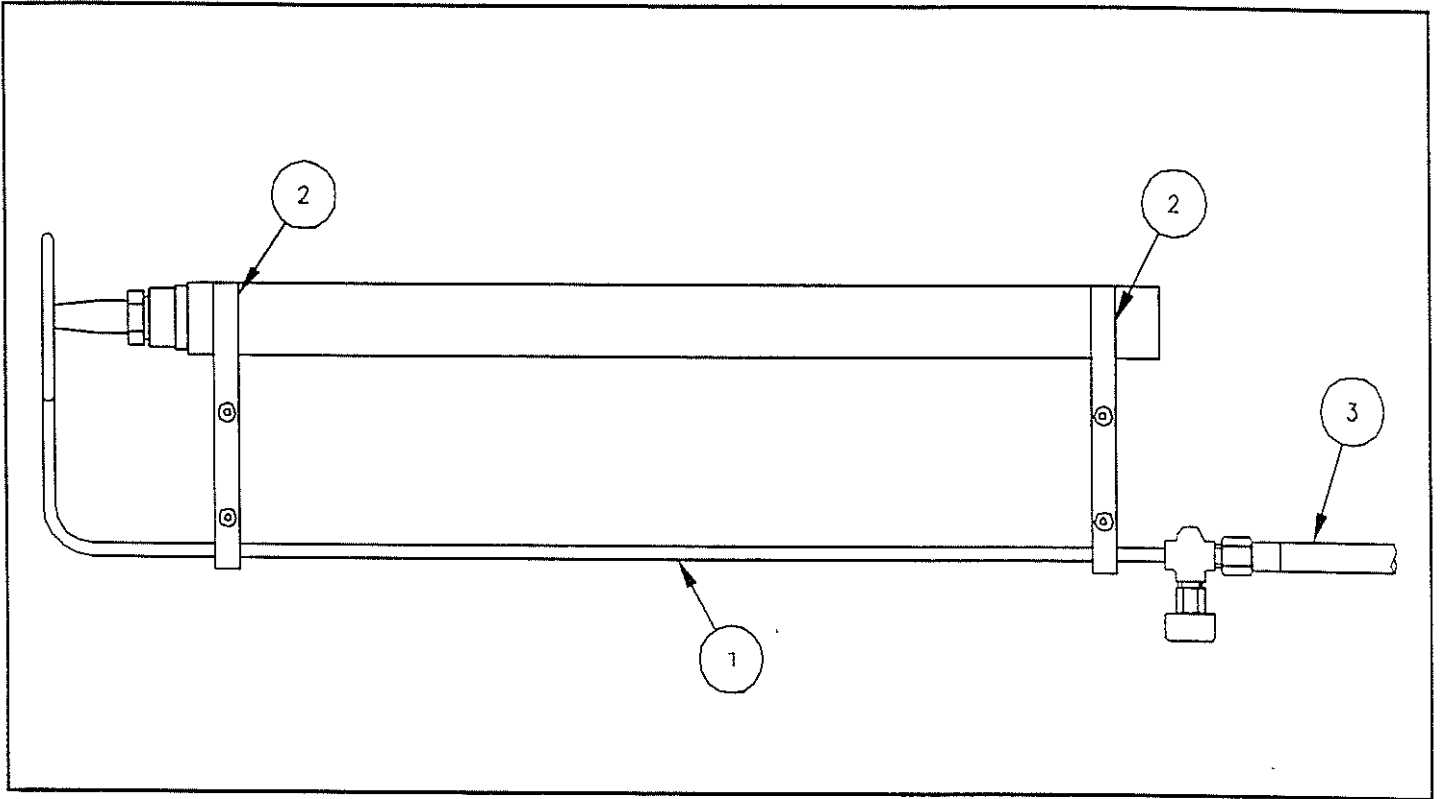
Item	Part No.	Description
1	2011105	LO-Regulator, Oxygen
2	2011106	LO-Regulator, Fuel
3	ZS62588	Gauge, Oxygen (0-80 lbs.)
4	ZS60481	Gauge, Fuel (0-30 lbs.)
5	0866854600	Solenoid, Oxygen
6	0866854800	Solenoid, Fuel
N/S		Manifold PreHeat Oxygen Solenoid
N/S		Manifold PreHeat Fuel Solenoid

## Automatic Ignition System



Item	Part No.	Description
1	ZS60282*	Pilot Tip, Acetylene/Mapp
	ZS60321*	Pilot Tip, Propane
	ZS60611*	Pilot Tip, Natural Gas
2	ZS62767	Pilot Torch Tube
3	1138307800	Check Valve, Fuel
4	ZM62973	Teflon Tube
5	ZM62972	Glas Fibre Tube
6	ZM60287	Ignition Transformer
7	1115524600	Ignitor Clamp
8	1115524500	Ignitor Clamp
9	0866854800*	Solenoid Valve, Fuel
10	0866854800*	Solenoid Valve, Fuel
11	0866854600*	Solenoid Valve, Oxygen
12	1115023600	Cable Assembly
13	1113000314	Hose Assembly
14	ZS60290*	Ignition Electrode

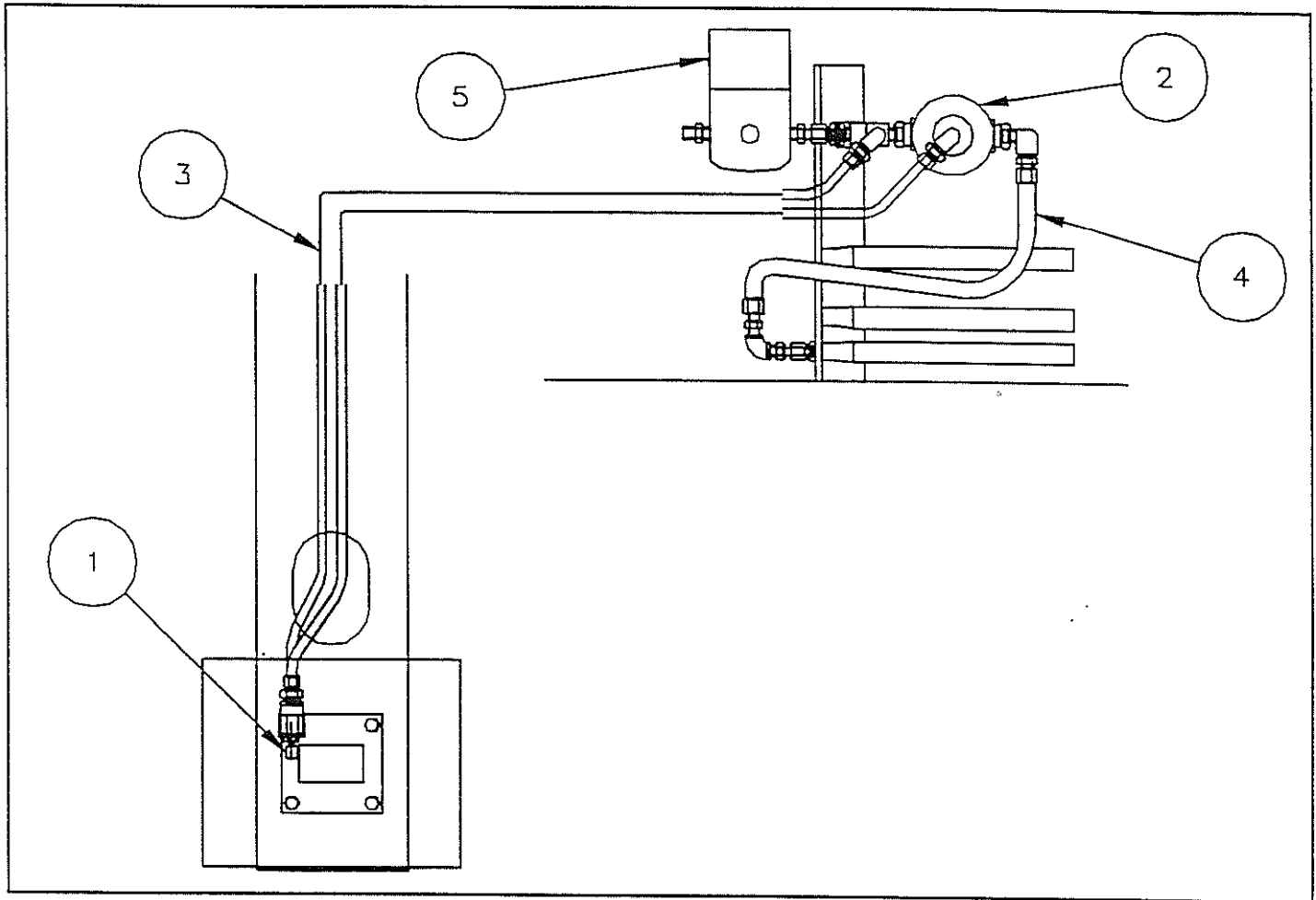
## Water Spray System



<b>Item</b>	1115033500	Water Spray Nozzle
1	1115524500	Water Spray Clamp
2	1113000503	Water Spray Hose
3	1112060100	Water Spray Basic, Manifold
N/S		
<b>Part No.</b>	<b>Description</b>	



## Auto Ease-On System



Item	Part No.	Description
1	0834354700	Ease-on Valve
2	0866874200	Dome Regulator
3	0867340800	Hose, Oxygen, 3/16"
4	0867300200	Hose, Oxygen, 3/8"
5	0866898500	Solenoid Valve, Oxygen





