

Operator's Manual



McELROY

www.mcelroy.com



TRACSTAR

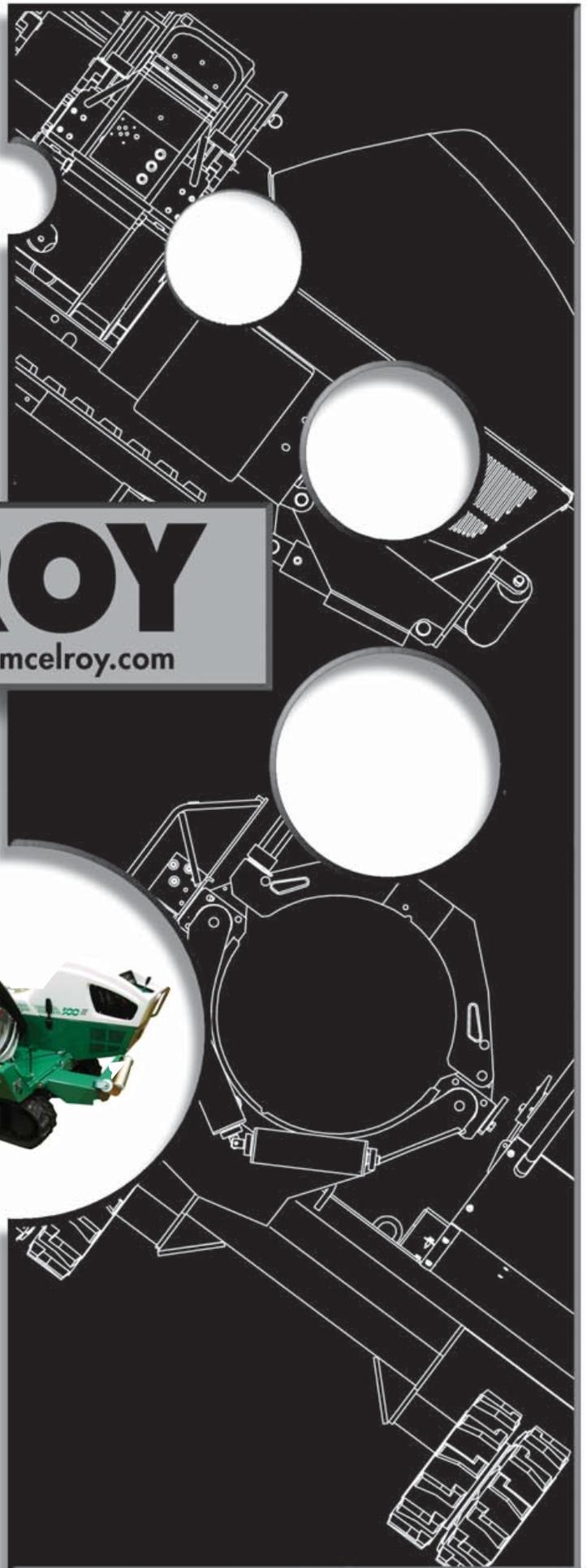
500 *II*

Fusion Machine

Patent No's. 5,814,182 / 6,212,748 /
6,212,747 / 6,021,832 Other Patents Pending

Original Language: English

Manual: T5019208 Revision: C 9/11



**California
Proposition 65 Warning**

*Engine exhaust from this product
contains chemicals known to the State
of California to cause cancer, birth
defects, or other reproductive harm.*



Introduction



Thank You for purchasing this McElroy product

The TracStar® 500 series II model is a self-contained, self-propelled, all terrain fusion machine, and is designed to produce consistently high quality polyolefin pipe butt fusion joints with a minimum of operator effort.

The TracStar® 500 series II model fuses 6" IPS (180mm) minimum to 20" IPS (500mm) maximum pipe.

With reasonable care and maintenance, this machine will give years of satisfactory service.

Before operating this machine, please read this manual thoroughly, and keep a copy with the machine for future reference. This manual is to be considered part of your machine.

Always return the manual to the literature compartment.



PH01610-5-15-99

Patent No's. 5,814,182 / 6,212,748 /
6,212,747 / 6,021,832 Other Patents Pending

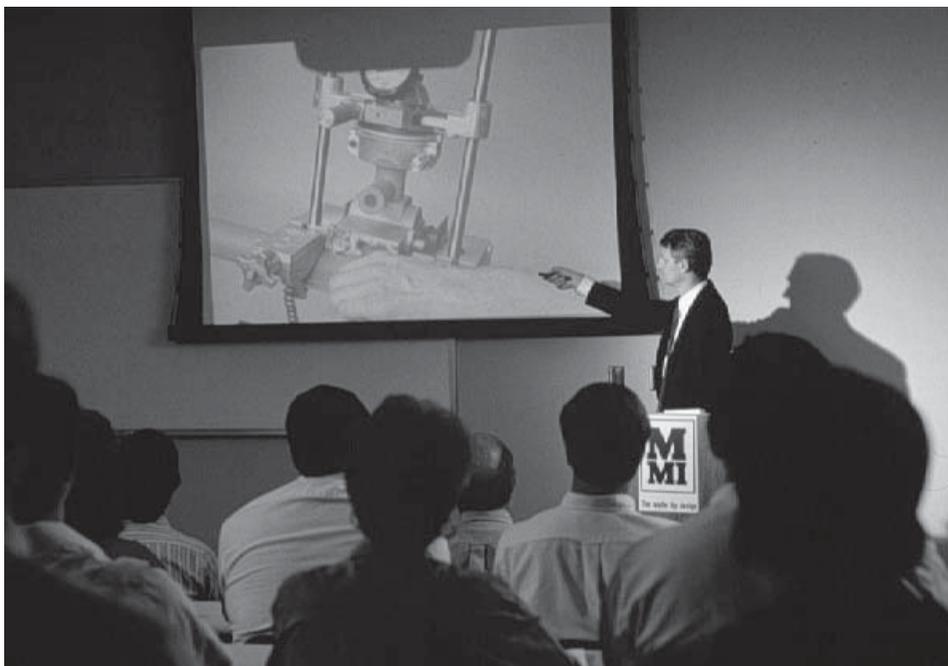
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World Class Training

This manual is intended as a guide only and does not take the place of proper training by qualified instructors. The information in this manual is not all inclusive and can not encompass all possible situations that can be encountered during various operations.

McElroy Manufacturing, Inc., offers advanced training classes to enhance efficiency, productivity, safety and quality. Training is available at our facility or on-site at your location. Call (918) 836-8611.

TX01315-4-7-97



PH00917-8-15-96



TracStar® 500 series II Warranty



LIMITED WARRANTY

McElroy Manufacturing, Inc. (McElroy) warrants all products manufactured, sold and repaired by it to be free from defects in materials and workmanship, its obligation under this warranty being limited to repairing or replacing at its factory and new products, within **3 years** after shipment, with the exception of purchased items (such as electronic devices, pumps, switches, etc.), in which case that manufacturer's warranty applies. Warranty applies when returned freight is prepaid and which, upon examination, shall disclose to have been defective. This warranty does not apply to any product or component which has been repaired or altered by anyone other than McElroy or has become damaged due to misuse, negligence or casualty, or has not been operated or maintained according to McElroy's printed instructions and warnings. This warranty is expressly in lieu of all other warranties expressed or implied. The remedies of the Buyer are the exclusive and sole remedies available and Buyer shall not be entitled to receive any incidental or consequential damages. Buyer waives the benefit of any rule that disclaimer of warranty shall be construed against McElroy and agrees that such disclaimers herein shall be construed liberally in favor of McElroy.

RETURN OF GOODS

Buyer agrees not to return goods for any reason except upon the written consent of McElroy obtained in advance of such return, which consent, if given, shall specify the terms and conditions and charges upon which any such return may be made. Materials returned to McElroy, for warranty work, repair, etc., **must have a Return Material Authorization (RMA) number**, and be so noted on the package at time of shipment. For assistance, inquiry shall be directed to:

McElroy Manufacturing, Inc.
 P.O. Box 580550
 833 North Fulton Street Tulsa, Oklahoma 74158-0550
 PHONE: (918) 836-8611, FAX: (918) 831-9285.
 EMAIL: fusion@McElroy.com

Note: Certain repairs, warranty work, and inquiries may be directed, at McElroy's discretion, to an authorized service center or distributor.

DISCLAIMER OF LIABILITY

McElroy accepts no responsibility of liability for fusion joints. Operation and maintenance of the product is the responsibility of others. We recommend qualified joining procedures be followed when using McElroy fusion equipment.

McElroy makes no other warranty of any kind whatever, express or implied; and all implied warranties of merchantability and fitness for a particular purpose which exceed the aforesaid obligation are hereby disclaimed by McElroy.

PRODUCT IMPROVEMENT

McElroy reserves the right to make any changes in or improvements on its products without incurring any liability or obligation to update or change previously sold machines and/or the accessories thereto.

INFORMATION DISCLOSED

No information of knowledge heretofore or hereafter disclosed to McElroy in the performance of or in connection with the terms hereof, shall be deemed to be confidential or proprietary, unless otherwise expressly agreed to in writing by McElroy and any such information or knowledge shall be free from restrictions, other than a claim for patent infringement, is part of the consideration hereof.

PROPRIETARY RIGHTS

All proprietary rights pertaining to the equipment or the components of the equipment to be delivered by McElroy hereunder, and all patent rights therein, arising prior to, or in the course of, or as a result of the design or fabrication of the said product, are exclusively the property of McElroy.

LAW APPLICABLE

All sales shall be governed by the Uniform Commercial Code of Oklahoma, U.S.A.

**Register your product online to activate your warranty:
www.McElroy.com/fusion**

(Copy information listed on the machine nameplate here for your records).

Model No. _____

Serial No. _____

Date Received _____

Distributor _____



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Safety Alerts

This hazard alert sign  appears in this manual. When you see this sign, carefully read what it says. **YOUR SAFETY IS AT STAKE.**

You will see the hazard alert sign with these words: **DANGER**, **WARNING**, and **CAUTION**.



WR00051-11-30-92



DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.



In this manual you should look for two other words: **NOTICE** and **IMPORTANT**.

NOTICE: can keep you from doing something that might damage the machine or someone's property. It may also be used to alert against unsafe practices.

IMPORTANT: can help you do a better job or make your job easier in some way.

TX00030-12-1-92

Read and Understand

Do not operate this equipment until you have carefully read, and understand all the sections of this manual, and all other equipment manuals that will be used with it.

Your safety and the safety of others depends upon care and judgment in the operation of this equipment.

Follow all applicable federal, state, local, and industry specific regulations.

McElroy Manufacturing, Inc. cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this manual and on the machine are therefore not all inclusive. You must satisfy yourself that a procedure, tool, work method, or operating technique is safe for you and others. You should also ensure that the machine will not be damaged or made unsafe by the method of operation or maintenance you choose.



WR00052-12-1-92

TX02946-4-15-09



Fusion Equipment Safety



General Safety

Safety is important. Report anything unusual that you notice during set up or operation.

LISTEN for thumps, bumps, rattles, squeals, air leaks, or unusual sounds.

SMELL odors like burning insulation, hot metal, burning rubber, hot oil, or natural gas.

FEEL any changes in the way the equipment operates.

SEE problems with wiring and cables, hydraulic connections, or other equipment.

REPORT anything you see, feel, smell, or hear that is different from what you expect, or that you think may be unsafe.



SAFE1ST:12-22-92

TX00114-4-22-93

Wear Safety Equipment

Wear a hard hat, safety shoes, safety glasses, and other applicable personal protective equipment.

Remove jewelry and rings, and do not wear loose-fitting clothing or long hair that could catch on controls or moving machinery.



WR00053-12-2-92

TX00032-4-7-93

Fuel Handling

⚠ DANGER Gasoline and diesel fuel are extremely flammable and their vapors will explode if ignited.

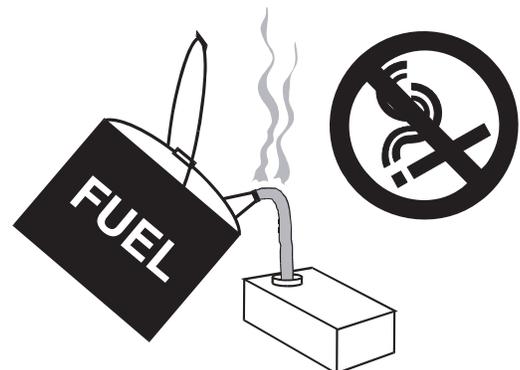
Do not fill the fuel tank while the engine is hot or running, as spilled fuel could ignite.

Refuel in a well ventilated area. Do not smoke or allow flames or sparks in the area where the engine is refueled, or where gasoline is stored.

Do not start the engine near spilled fuel. Wipe up spills immediately.

Make sure the fuel tank cap is closed and properly secured.

NOTICE: Avoid repeated or prolonged contact with skin or breathing of vapor.



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TX00953-3-30-11



Units With Engines

⚠ DANGER Combustion engines can cause explosions when operated in a hazardous environment. Do not operate gas or diesel powered machines in a hazardous environment.

When operating in a hazardous environment, keep engine and chassis in a safe area by using hydraulic extension hoses.

Help prevent fires by keeping machine clean of accumulated trash, debris and facer shavings.



WR000804-12-93

TX01266-2-21-97

Carbon Monoxide

⚠ DANGER Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide can cause severe nausea, fainting and death. Avoid inhaling exhaust fumes and never run the engine in a closed or confined area.



WR00093-5-14-96

TX00954-5-14-96

Heater is Not Explosion Proof

⚠ DANGER This heater is not explosion proof. Operation of heater in a hazardous environment without necessary safety precautions will result in explosion and death.

When operating in a hazardous environment, the heater should be brought up to temperature in a safe environment, then **unplugged before entering** the hazardous atmosphere for fusion.



WR00034-11-30-92

TX00100-9-16-94

Crush Points

⚠ WARNING Hydraulically operated equipment is operated under pressure. Anything caught in the machine will be crushed. Keep fingers, feet, arms, legs, and head out of the machine while operated.



WR00012-12-4-92

TX03004-8-11-09



Fusion Equipment Safety



Battery



Do not expose the battery to flames or electrical sparks. Hydrogen gas generated by battery action is explosive. Blindness or serious injury can result from an exploding battery.



CD001769-1495



Do not allow battery fluid to contact your skin, eyes, fabrics, or painted surfaces. Sulfuric acid can cause burns. After touching a batter or battery cap, do not touch or rub your eyes.

Eye Contact: Flush eyes with large amounts of water for at least 15 minutes. Seek immediate medical attention if eyes have been exposed directly to acid.

Skin Contact: Flush affected area(s) with large amounts of water using deluge emergency shower, if available, shower for at least 15 minutes. Remove contaminated clothing. If symptoms persist, seek medical attention.



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TX00650-3-7-11

Electrical Safety



Always ensure equipment is properly grounded. It is important to remember that you are working in a wet environment with electrical devices. Proper ground connections help to minimize the chances of an electric shock.

Frequently inspect electrical cords and unit for damage. Have damaged components replaced and service performed by a qualified electrician.

NOTICE: Always connect units to the proper power source as listed on the unit, or in the owner's manual.

NOTICE: Disconnect the machine from the power source before attempting any maintenance or adjustment.



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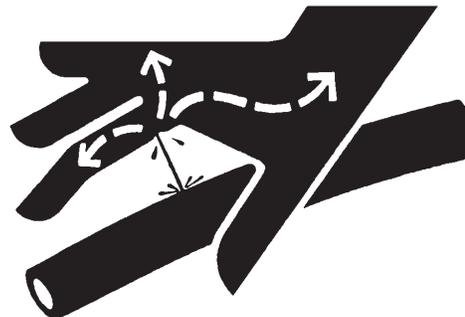
Units With Hydraulics

It is important to remember that a sudden hydraulic oil leak can cause serious injury, or even be fatal if the pressure is high enough.

WARNING Escaping fluid under pressure can penetrate the skin causing serious injury. Keep hands and body away from pinholes which eject fluid under pressure. Use a piece of cardboard or paper to search for leaks. If any fluid is injected into the skin, it must be immediately removed by a doctor familiar with this type of injury.

WARNING Unwanted movement of the machine could result in serious injury or damage to machine. Unwanted movement of the machine may take place if switches do not match machine state when the machine power is turned on.

NOTICE: Wear safety glasses, and keep face clear of area when bleeding air from hydraulic system to avoid spraying oil into eyes.



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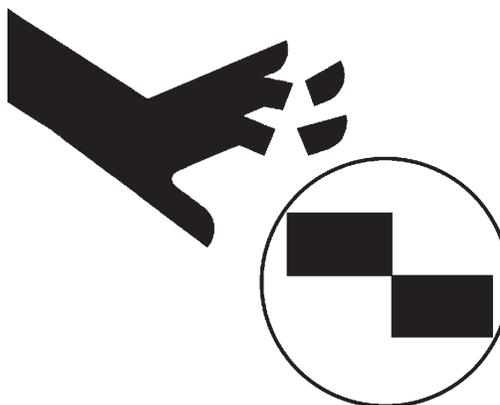
TX03007-10-12-10

Facer Blades Are Sharp

WARNING Facer blades are sharp and can cut. Never attempt to remove shavings while the facer is running, or is in the facing position between the jaws. Use care when operating the facer, and when handling the unit.

NOTICE: Disconnect power from the facer, and remove the facer blades before attempting any maintenance or adjustment.

NOTICE: Never extend the blade beyond the inner or outer circumference of the facer.

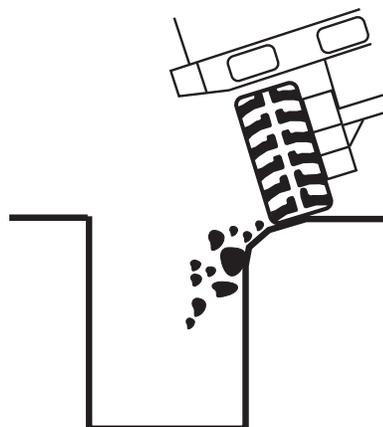


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TX02378-1-24-05

Keep Machine Away From Edge of Ditch

WARNING Heavy equipment too close to a ditch can cause the walls of the ditch to cave-in. Keep the machine far enough away from the edge of the ditch to prevent injury to personnel and damage to the equipment from a cave-in.



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TX01447-3-30-11

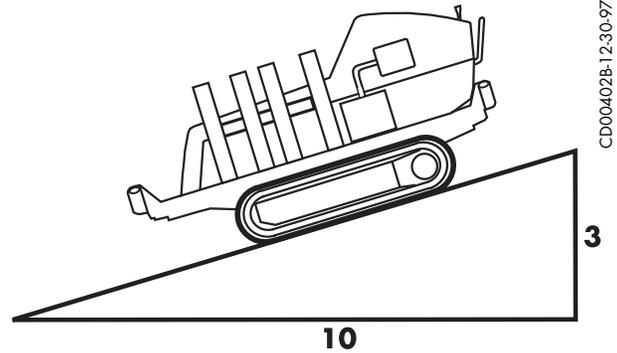


Operating Fusion Machine

Place fusion machine on as level ground as possible.

If it is necessary to operate machine on unlevel grade, chock the tracks and block the unit to make it as stable as possible. Some unstable conditions may be ice, snow, mud and loose gravel.

WARNING Operating machine on a grade steeper than 30% could cause the machine to tip over. Never operate the machine on a grade steeper than 30 % (A 3 foot elevation change in 10 feet). Always operate fusion machine from the highest level, on an unlevel grade. Failure to do so could result in serious injury or death.



CD00402B-12-30-97

TX01902-3-30-11

Heater Is Hot

CAUTION The heater is hot and will burn clothing and skin. Keep the heater in its insulated heater shroud when not in use, and use care when heating the pipe.

NOTICE: Use only a clean non-synthetic cloth to clean the heater plates.



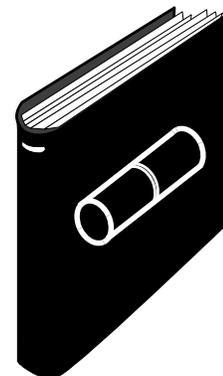
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TX04244-10-12-10

Fusion Procedures

Obtain a copy of the pipe manufacturer's procedures for the pipe being fused. Follow the procedure carefully, and adhere to all specified parameters.

CAUTION Failure to follow pipe manufacturer's procedure could result in a bad joint. Always follow pipe manufacturer's procedures.



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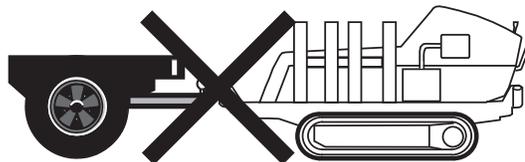


Fusion Equipment Safety



Do Not Attempt to Tow Fusion Machine

NOTICE: The machine is not designed for towing. Attempting to tow the machine can result in machine damage. Always transport the machine by flat bed truck or similar means, and make sure that unit is properly secured.



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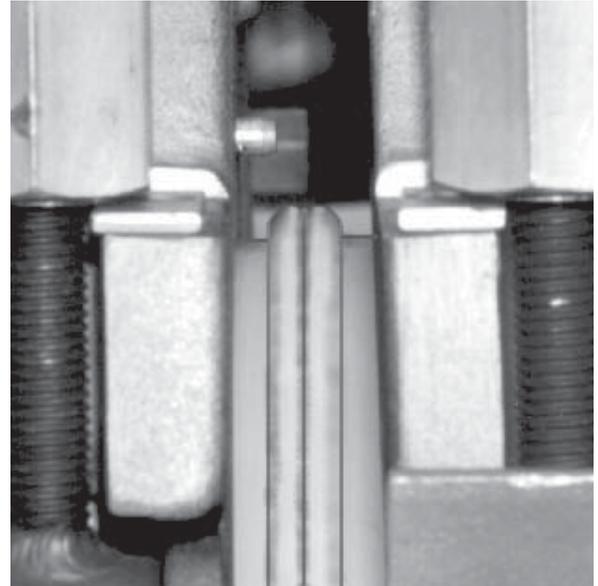
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Theory of Heat Fusion

The principle of heat fusion is to heat two surfaces to a designated temperature, and then fuse them together by application of force. This pressure causes flow of the melted materials, which causes mixing and thus fusion. When the polyethylene material is heated, the molecular structure is transformed from a crystalline state into an amorphous condition. When fusion pressure is applied, the molecules from each polyethylene part mix. As the joint cools, the molecules return to their crystalline form, the original interfaces are gone, and the fitting and pipe have become one homogeneous unit. The joint area becomes as strong as the pipe itself in both tensile and pressure conditions.

The principal operations include:

- Clamping** The pipe pieces held axially to allow all subsequent operations to take place.
- Facing** The pipe ends must be faced to establish clean, parallel mating surfaces perpendicular to the centerline of the pipes.
- Aligning** The pipe ends must be aligned with each other to minimize mismatch or high-low of the pipe walls.
- Heating** A melt pattern that penetrates into the pipe must be formed around both pipe ends.
- Joining** The melt patterns must be joined with a specified force. The force must be constant around the interface area.
- Holding** The molten joint must be held immobile with a specified force until adequately cooled.
- Inspecting** Visually examine the entire circumference of the joint for compliance with standards established by your company, customer, industry, federal, state, or local regulations.



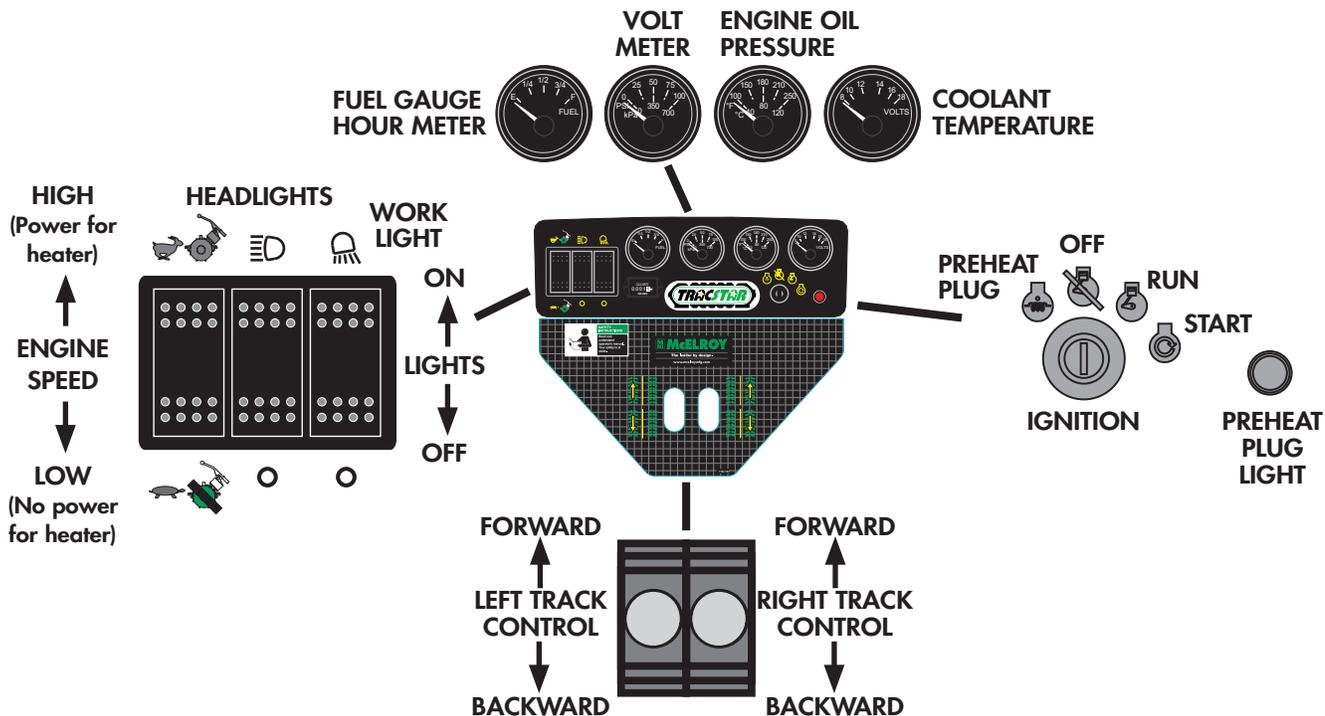
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Overview



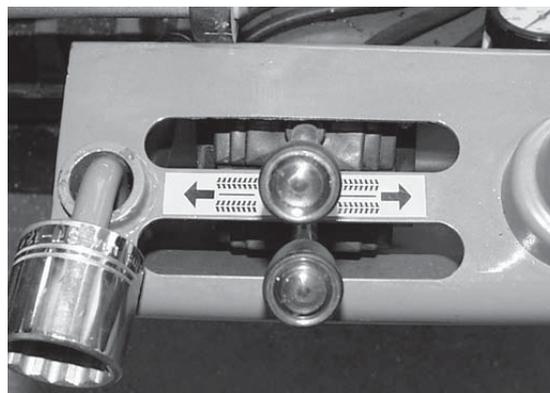
TracStar 500[®] series II Console



CD00407-63-2-10

Alternate Drive Controls

Alternate track drive controls are located on the operator side of the machine. Each lever controls one track. Both levers must be moved together to go forward or backward in a straight line. Moving levers in opposite directions makes the machine turn sharply.

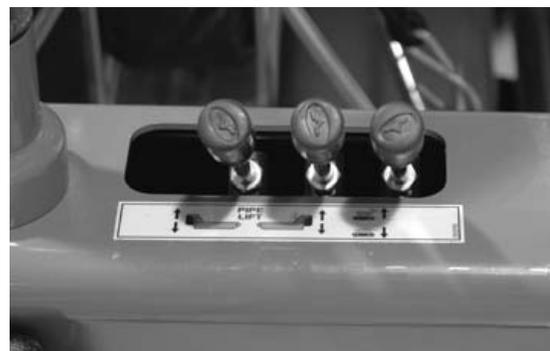


PH01247-1-29-98

TX02002-4-24-02

Pipe Lift Controls

The pipe lift controls are located on the operator side of the machine to the right of the alternate drive controls. Moving the right lever up and down moves the rear pipe lift up and down. Moving the left lever up and down moves the forward pipe lift up and down.



PH03297-9-18-06

TX02003-4-24-02



Overview



Carriage Assembly

The carriage assembly consists of two fixed jaws and two hydraulically operated movable jaws. The top jaws may be reversed to open from the other side of the carriage. Simply remove the detent pins from the back of the jaw. Use one of the pins to push the clamp knob eyebolt detent pins out and reverse the pivot and clamping sides of the jaws.

The carriage assembly can be removed from the machine for remote operation. An optional hydraulic extension kit is required when using the carriage remotely.

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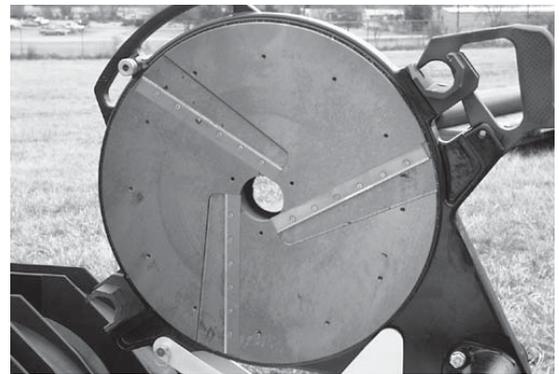
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Facer

The facer is a McElroy Rotating Planer-Block design. The blade holders each contain three cutter blades. The block rotates on ball bearings and is chain driven (enclosed in lubricant) by a hydraulic motor.

NOTICE: Never extend the blade beyond the inner or outer circumference of the facer.

TX02376-1-10-05



PH01256-2-2-98

Hydraulic Manifold Block

Mounted on this block are a carriage directional control valve, a pressure reducing selector valve, three pressure reducing valves, and a 1500 psi gauge.

- A) The carriage control valve, mounted on the top of the manifold, determines whether the carriage is moving left, right, or is in neutral.
- B) A 1500 psi gauge is mounted on top of the manifold.
- C) The selector valve, mounted on the front of the manifold, selects a reduced pressure from one of the pressure reducing valves.

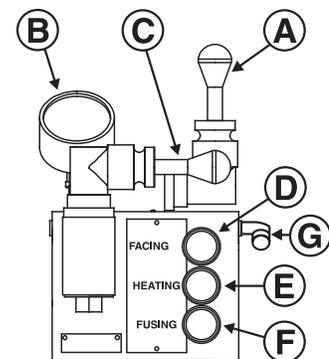
Each pressure reducing valve is labeled with a different function:

- D) The top valve adjusts facing pressure to a maximum of 400 psi.
- E) The middle valve adjusts heating pressure to a maximum of 400 psi.
- F) The bottom valve adjusts fusion pressure to a maximum of 1500 psi.
- G) Datalogger port

TX00357-1-12-11



PH01924-11-15-00



CD00138H-1-12-11



Overview



Diesel Engine

Read the operating and maintenance instructions for the engine before operating.

There is a key ignition on the console that shows the preheat, start, run and off positions.



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Power for Heater

The heater cord plugs into a military type receptacle on the frame. Tighten coupling nut after plugging into receptacle.

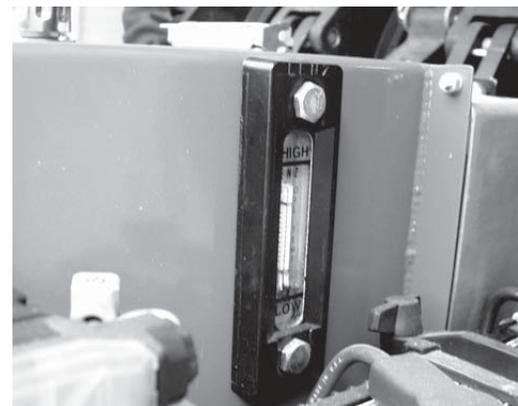


PH01999-1-15-01

TX01466-2-10-98

Oil Reservoir

The oil reservoir is located under the front hood of the machine. The oil level sight gauge is located on the front of the reservoir. Proper fluid level is indicated on the sight gauge.



PH01251-1-29-98

TX01467-2-10-98

Filter

This machine is equipped with a 10 Micron filter on the return side of the circuit.



PH02000-1-15-01

TX01496-3-3-98



Hydraulic Clamping (Optional)

Hydraulic clamping cylinders replace the manual clamp knobs to apply force to the jaws to clamp the pipe. Both inner cylinders have knobs that can adjust the stroke of the cylinder for Hi/Lo adjustment.

TX03089-3-5-10



PH04031-3-2-10

Read Before Operating

Before operating this machine, please read this manual thoroughly and keep a copy available for future reference.

Return manual to the protective storage box when not in use. This manual is to be considered part of your machine.



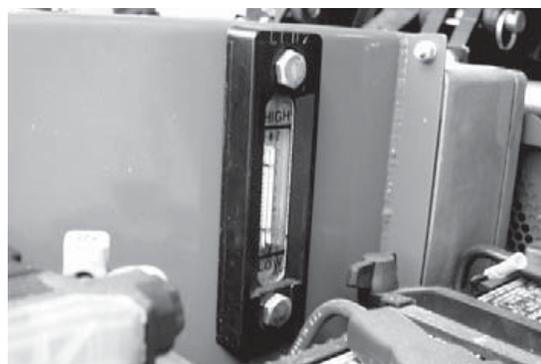
Stop-1228-95

TX00401-9-15-94

Check Oil Level

Check oil level in sight gauge on reservoir and add oil if necessary.

Refer to the "Hydraulic Fluids" section of this manual for hydraulic oil recommendations.



PH01251-22-98

TX01450-2-3-98

Diesel Engine

Read the operating and maintenance instructions for the engine before operating.

The key ignition has four positions. Preheat, off, run and start.

NOTICE: Switch the engine to slow speed before starting.

For cold weather starting, turn switch to preheat for no longer than 10 seconds. Never use starting fluid.

Turn the key and start the engine.

Confirm that all gauges read correctly.

Turn the key to OFF to stop the engine.



TX02377-1-10-05



PH04060-3-2-10



Operation



Moving Machine Into Position

Make sure all personnel are safely clear of the machine before moving.

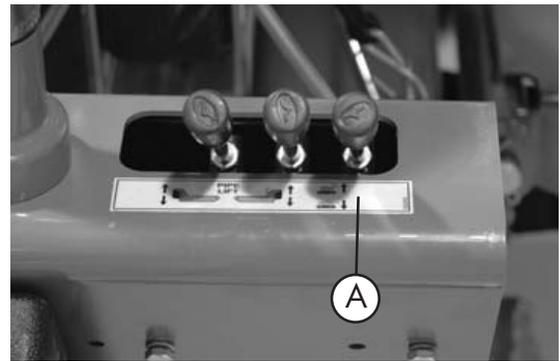
Stand behind the machine console and start the engine.

Move both track control levers forward to go in a straight line. Release the levers to stop. Moving just the right track forward turns the machine to the left. Moving just the left track forward turns the machine to the right.

The track speed valve (A) is used to switch between low speed/high torque and high speed/low torque. The machine will not have torque available to turn in all conditions in high speed.



PH04061-3-2-10



PH03297-9-18-06

TX02669-9-18-06

Prepare Heater

⚠ DANGER Heater Is Not Explosion Proof. Operation of heater in a hazardous environment without necessary safety precautions will result in explosion and death.

If operating in a hazardous environment, heater should be brought up to temperature in a safe environment, then unplugged before entering the hazardous atmosphere for fusion.

Install butt fusion heater plates.

NOTICE: Non-coated heaters should never be used without butt fusion heater plates installed. Refer to the "Maintenance" section of this manual for installation procedure.

Place heater in insulated heater stand.

Select low engine speed.

Plug heater into outlet on machine.

Select high engine speed at the console. Allow heater to warm-up to operating temperature.



PH02263-3-20-02



PH04062-3-2-10

TX01464-6-21-05



Install Clamping Inserts

Select and install appropriate clamping inserts for the pipe that is being fused.

TX00368-9-15-94



PH02283-4-2-02

Set up Pipe Supports

Set up pipe stands and adjust height so the pipe is in line with the jaws.

X00367-9-15-94



PH01264-2-12-98

Loading Pipe into Machine

Clean the inside and outside of pipe ends that are to be fused.

Open the upper jaws and insert pipe in each pair of jaws with applicable inserts installed.

Let the pipe ends protrude more than 1" past the face of the jaws.

TX01094-8-20-96



PH02300-4-17-02

Positioning Pipe into Machine

Swing the facer into place. Move the carriage toward the fixed jaw, while watching the gap at each end of the facer guide rod brackets. When the pipe is in contact with the facer, this gap indicates the amount of material that will be trimmed from the pipe end. Assure sufficient material will be removed for a complete face off.

Tighten the clamp knobs on the outside jaws. Hand tighten the inside clamp knobs.



PH02303-4-17-02

TX01492-3-2-98

Hydraulic Clamping (Optional)

For machines equipped with hydraulic clamping, the controls are located on the end of the inner fixed jaw. The left knob (A) opens/closes the fixed jaws and the right knob (B) opens/closes the movable jaws.

To unclamp the jaws:

With your free hand, hold the tie bar between two cylinders.

Rotate the valve knob up to unclamp.

Pull the tie bar towards operator until the cylinders come to rest.

To clamp the jaws:

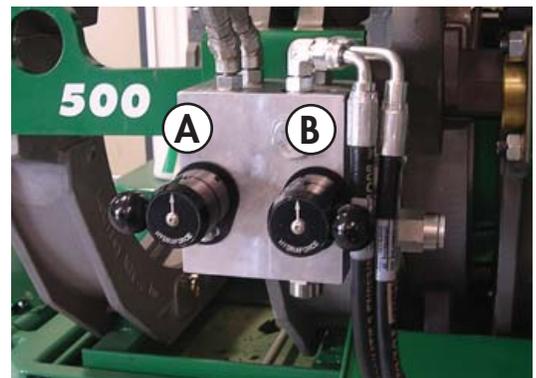
Push the cylinder tie bar toward the jaws until cylinders are vertical.

Rotate the valve knob down to clamp.

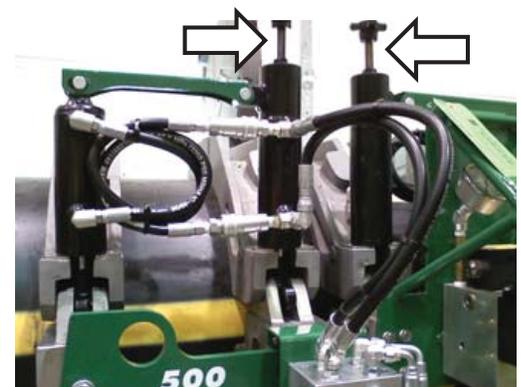
Hi/Lo adjustment:

Use the hand knobs on the inner adjustable stroke cylinders to adjust for hi/lo misalignment.

CAUTION Prior to starting the machine, always ensure that the hydraulic clamping directional valves are both in the center (neutral) position to eliminate undesired clamp cylinder movement during startup.



PH04058-3-2-10



PH04059-3-2-10

TX03090-3-5-10

Begin Facing

Turn facer on by opening valve on top of the facer.

Move the selector valve on the hydraulic manifold block to the top (facing pressure) position.

The facing pressure should be set as low as possible while still facing pipe. Excessive facing pressure can damage the facer. It may be necessary to adjust the carriage pressure.

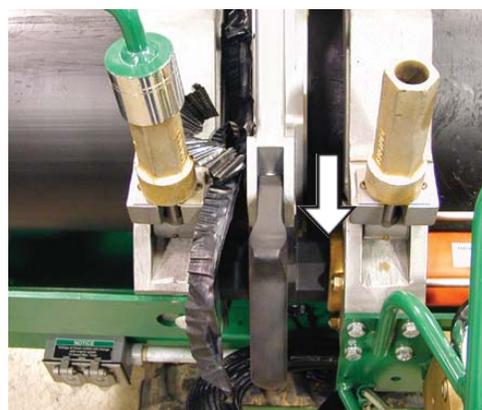


WARNING Facer blades are sharp and can cut. Never attempt to remove shavings while the facer is running, or is in the facing position between the jaws. Use care when operating the facer, and when handling the unit.

Activate the carriage control valve and move the carriage to the left to begin facing. Continue to face the pipe until the rest buttons on the jaws bottom out on the facer rest buttons.



PH02303-4-17-02

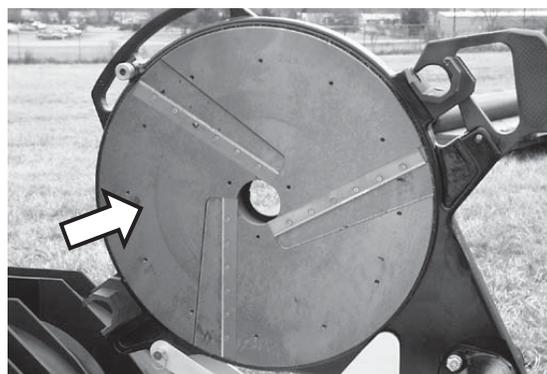


PH01901-11-15-00

TX04261-3-30-11

After Facing

Turn facer motor off. Move carriage all the way to the right. Center the facer in between the pipe ends to avoid dragging facer stops on the pipe ends. Swing facer to the out position. Clean shavings out of pipe ends and from between the jaws. Do not touch faced pipe ends.



PH01256-2-98

TX04262-3-30-11

Determine Drag Pressure

Drag pressure should be determined using the following procedure:

Move the carriage so that the faced pipe ends are approximately 2" apart.

Shift the carriage control valve to the middle (neutral) position.

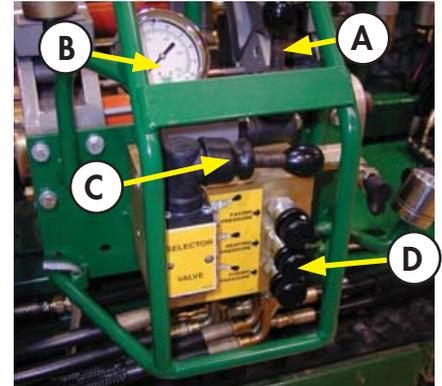
Select the heating mode, and adjust the middle pressure reducing valve to its lowest pressure by turning the valve counterclockwise.

Shift the carriage control valve to the left.

Gradually increase the pressure by turning the valve clockwise. Increase the pressure until the carriage moves.

Quickly reduce the heating pressure valve counterclockwise until the carriage is just barely moving.

Record this actual drag pressure.



PH01924-11-15-00

- A - Carriage Control Valve
- B - Pressure Gauge
- C - Pressure Selector Valve
- D - Pressure Reducing Valves (3)

TX03023-8-19-09

Set Fusion Pressure

With the selector valve in the down position, the fusion pressure can be set.

The theoretical fusion pressure can be calculated using the enclosed fusion pressure calculator. Always add drag pressure to the theoretical fusion pressure.

Gauge (Fusion) Pressure = Theoretical Fusion Pressure + Drag Pressure



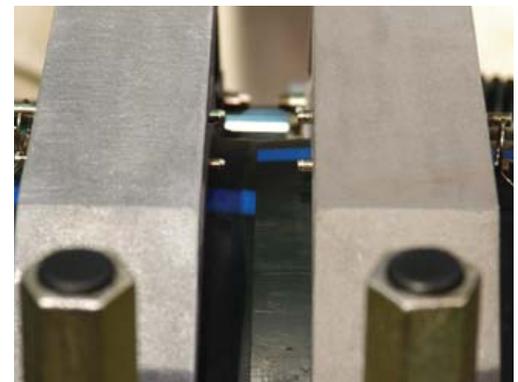
PH04004-8-25-09

TX03024-10-19-10

Check for Slippage

Bring the two sections of pipe together under fusion pressure to make sure they don't slip in the jaws.

If slippage occurs, return to **Loading Pipe into Machine**.



PH04464-1-31-11

TX00971-12-7-10

Check Alignment

Move carriage to the left at facing pressure, until pipe ends contact. Look across the top surface of pipe ends to check alignment. If there is a noticeable step across the joint, adjustments must be made.

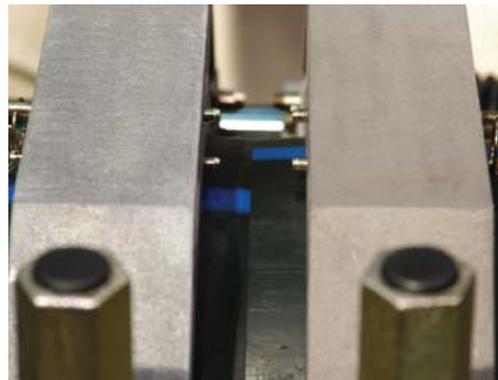
⚠ WARNING Hydraulically operated equipment is operated under pressure. Anything caught in the machine will be crushed. Keep fingers, feet, arms, legs, and head out of the machine while operated.

If pipe is not lined up, tighten the high side jaw to bring into alignment.

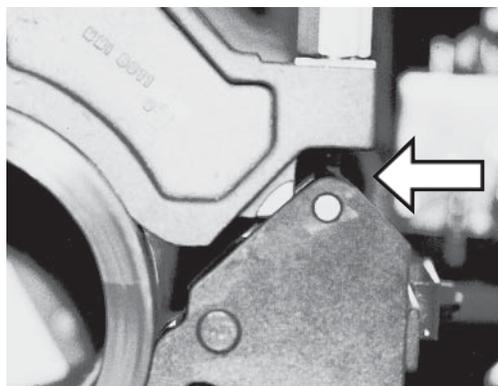
IMPORTANT: Always tighten the side that is higher, never loosen the low side.

When the pipe is properly aligned, ensure all clamp knobs are tight.

NOTICE: When clamping, do not over-tighten the clamp knobs because machine damage can result. Check to see if there is space between the upper and lower jaws. If the two jaws are touching, do not continue to tighten.



PH04464-1-31-11

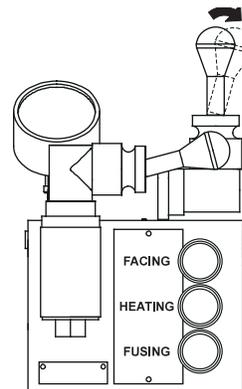


PH00323-9-25-93

TX04263-3-30-11

Position Carriage for Heater Insertion

Move the carriage to open a gap large enough to insert the heater.



CD00138D-9-12-94

TX01462-2-9-98

Check Heater Temperature

CAUTION Incorrect heating temperature can result in questionable fusion joints. Check heater plates periodically with a pyrometer and make necessary adjustments.

Check heater surface temperature.

Refer to the pipe manufacturer's recommendations or appropriate joining standard for proper heater temperature.

TX04248-11-17-10



WR00077-4-16-93

Inserting Heater

DANGER Heater is not explosion proof. Operation of heater in a hazardous environment without necessary safety precautions will result in explosion and death.

DANGER If operating in a hazardous environment, heater should be brought up to temperature in a safe environment, then unplugged before entering the hazardous atmosphere for fusion.

Use a clean non-synthetic cloth to clean the butt fusion heater surfaces.

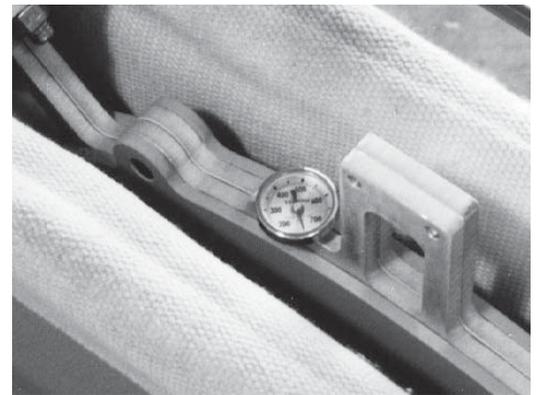
Verify heater temperature by noting the reading on the dial thermometer.

Insert heater between the pipe ends.

TX00377-3-30-11



PH02306-4-17-02



PH01094-2-20-97

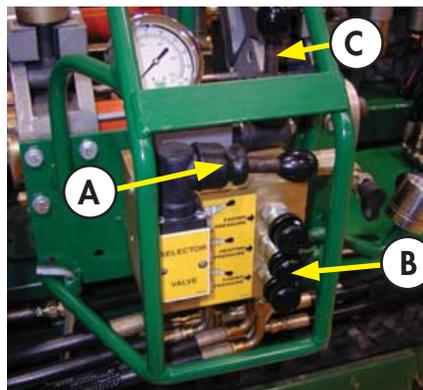
Heat Pipe

Shift the selector valve (A) to the center position, and set the heating pressure (if required). If heating pressure is not required, set the pressure reducing valve (B) at its lowest setting, or the drag pressure, whichever is higher.

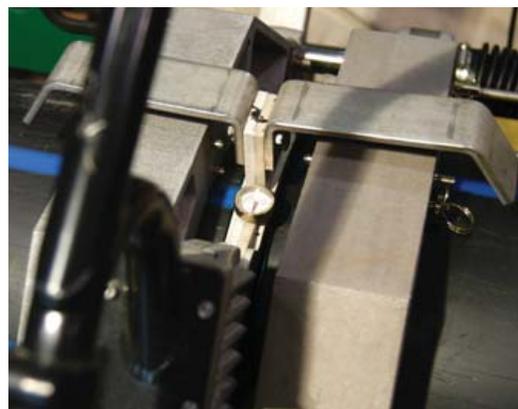
Shift the selector valve (A) to the fusion position and move the carriage control valve (C) to the left to bring pipe ends in contact with the heater. Move selector valve (A) to middle (heating mode) position. If heater pressure is not required by pipe manufacturer or joining standard, or opposing forces are not great enough to move the carriage away from the heater, shift the carriage control valve to neutral.

IMPORTANT: Always shift into the heating mode **before** returning carriage valve to neutral.

Follow the pipe manufacturer's suggested heating and soaking procedure or joining standard.



PH01924-1-15-00



PH04465-1-31-11

TX04264-3-30-11

Fusing the Pipe

CAUTION Failure to follow the pipe manufacturer's heating time, pressure and cooling time may result in a bad joint.

After following the heating procedure, verify carriage control valve is in neutral and move selector valve down, to fusion position.

Move the carriage to the right just enough to remove the heater.

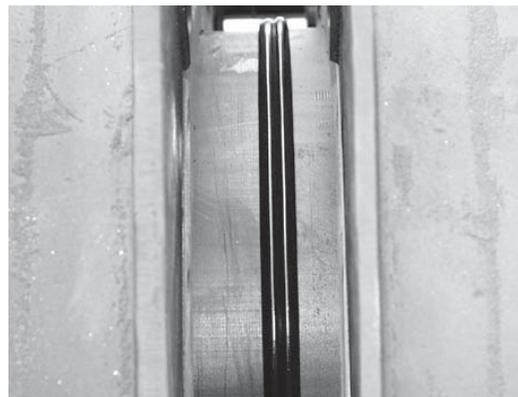
Quickly remove the heater.

Quickly inspect pipe ends for appropriate melt.

When heater is clear of the jaws, quickly move the carriage to the left and bring the pipe ends together using the pipe manufacturer's recommended pressure.

Allow joint to cool under pressure according to pipe manufacturer's recommendations or appropriate joining standard.

Visually examine the entire circumference of the joint for compliance with standards established by your company, customer, industry, federal, state, or local regulations.



TX04265-3-30-11



Opening Movable Jaws

After the joint has cooled for the pipe manufacturer's recommended time, shift the carriage control to the neutral position.

Loosen all clamp knobs, and open carriage far enough to open the jaw nearest the facer.

Open the movable jaws.

TX01461-2-9-98



PH012702-13-98

Opening Fixed Jaws

Open the fixed jaws.

TX00381-9-16-94



PH01271-2-13-98

Raise Pipe

Raise the joined pipe using the hydraulic pipe lift.

TX00818-12-21-95



PH02301-4-17-02

Position Pipe for Next Joint

Move the fusion machine to end of pipe, or pull the pipe through the jaws until the end of the pipe is protruding more than 1" past the jaw face of the fixed jaw.

TX01091-8-20-96



PH02300-4-17-02



Install Next Piece of Pipe

Insert a new piece of pipe in movable jaws and repeat all previous procedures.



PH023024-17-02

TX00384-10-12-95



Special Operations - In Ditch



Overview

The carriage may be removed and hoisted or hand carried into a ditch. The carriage needs to be stripped down to be hand carried or when sliding underneath the pipe.

NOTICE: Turn ignition key to off position before doing anything else.

TX01469-2-13-98



PH024060-3-2-10

Remove the Facer

Lower the facer into the carriage and remove the detent pin securing the facer to the pivot arm.

Disconnect hydraulic hoses.

Remove the facer from the carriage and place in the facer stand.

TX01477-2-26-98



PH02286-4-17-02

Remove Hydraulic Hoses

Disconnect the hydraulic hoses from the carriage.

TX01478-2-26-98



PH01287-2-26-98



Removing Outer Fixed Jaw

If the carriage is going to be hand carried, or used for fusing to a tee, the outer fixed jaw needs to be removed.

Remove the outer fixed jaw braces. Remove the two bolts that attach the 3-Jaw skid to the 4-Jaw skid. The 3-Jaw skid can now be lifted out of the 4-Jaw skid leaving the outer fixed jaw behind.

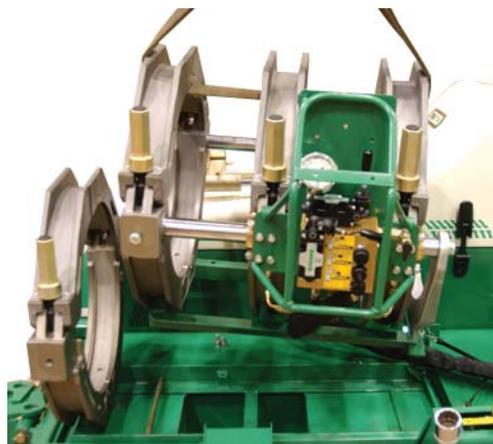


PH02270-4-2-02



PH012269-4-2-02

TX01501-3-9-98

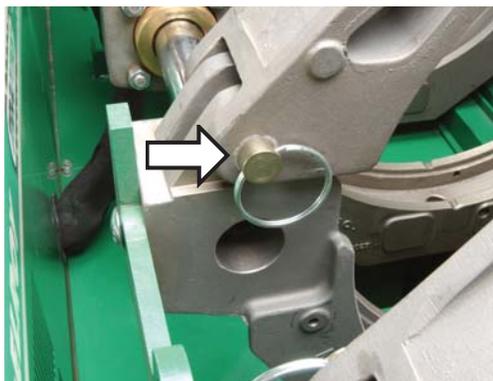


PH02271-4-2-02

Removing Top Jaws

If the carriage is going to be hand carried, or if the carriage needs to be hoisted and slid underneath the pipe, the top jaws need to be removed.

Loosen all clamp knobs. Take out the detent pins securing the top jaws and remove the jaws.



PH02284-04-17-02



PH02289-4-17-02

TX01479-2-26-98



Removing Carriage

Remove the rod that locks the carriage to the frame.
The carriage can now be lifted and removed.

Make sure hydraulic hoses are disconnected.



PH02264-4-2-02



PH02268-4-2-02

X01480-2-26-98



PH02266-4-2-02

Lower 3-Jaw or 4-Jaw Carriage Into Ditch

Connect the hydraulic hoses to each other to keep dirt out of the connectors.

Use all 4 jaws whenever possible. The three jaw unit should be used only when space is not available for the entire carriage, such as fusing onto a tee, an ell or doing saddle fusion.

4-Jaw

Attach lifting sling to the manifold bracket and the near side lift point.

Lift carriage assembly and lower into ditch.

3-Jaw

Attach lifting sling to the manifold bracket.

Lift carriage assembly and lower into ditch.



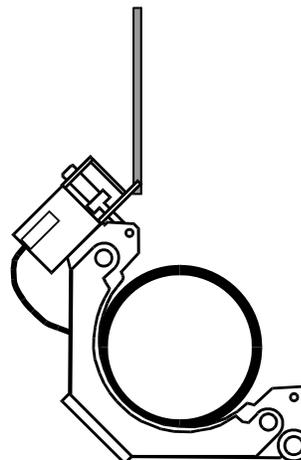
PH02272-4-2-02

TX02004-4-24-02



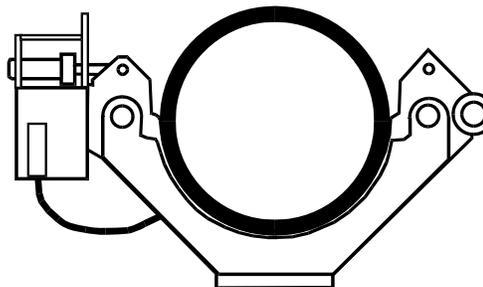
Position Carriage Under Pipe

Position carriage assembly on side of the pipe. Lift pipe and slide carriage assembly under pipe.



CD001936-2-29-96

Rotate carriage assembly around to a normal upright position.

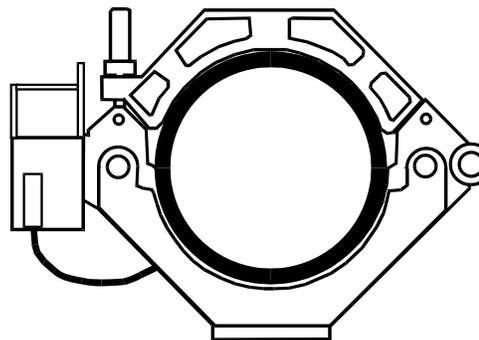


CD001946-2-19-96

TX01476-2-26-98

Attach Upper Jaws

Attach the top jaws and clamp around pipe.



CD001956-2-19-96

TX01484-2-26-98



Special Operations - In Ditch



Attach Hydraulic Hoses

There are two sets of hydraulic extension hoses. One set connects to the carriage hoses on the machine and to the carriage. The other set connects the facer hoses on the machine to the facer.

Connect all hoses.

TX02005-4-24-02

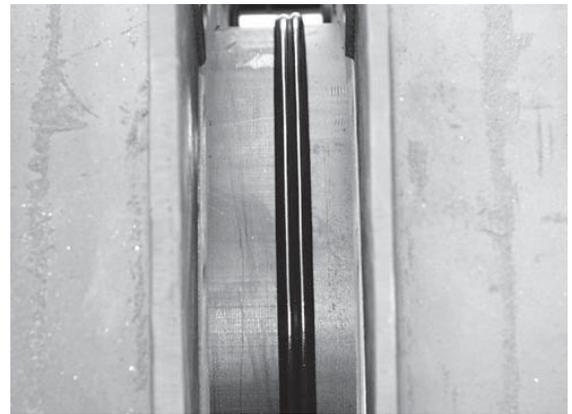


PHO1299-3-4-98

Make Fusion Joint

Refer to the "Butt Fusion Procedure" for operating instructions. After facing operation, remove the facer from ditch.

TX00450-9-16-94

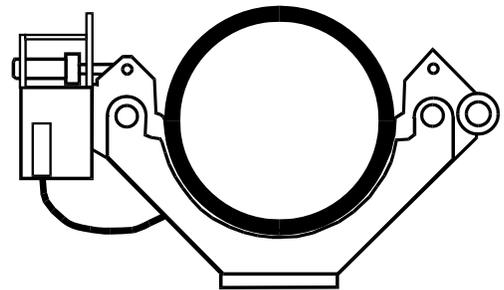


PHO1269-2-13-98

Remove Upper Jaws

Loosen clamp knobs, pull ball lock pins and remove the top jaws.

TX01486-2-26-98

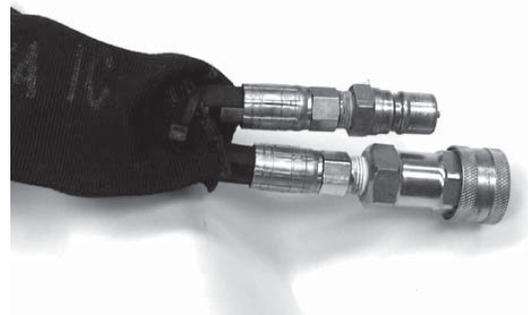


CD00194b-2-19-96

Remove Hydraulic Hoses

Disconnect hydraulic hoses to carriage and remove hoses from ditch.

TX01487-2-26-98

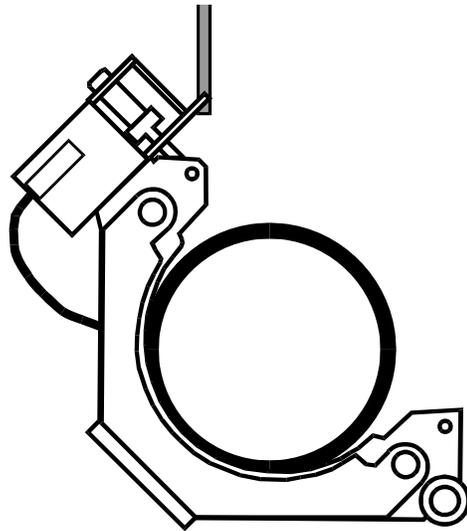


PHO1299-3-4-98



Remove Carriage From Ditch

- Attach sling to manifold bracket.
- Rotate carriage assembly from under pipe.
- Lift carriage assembly from ditch.



CD00193b-2-1996

TX01488-2-26-98



Lifting Safety

Follow all applicable federal, state, local, and industry specific regulations when lifting.

⚠️WARNING

Safety warnings:

1. Do not exceed rated load or lift loads greater than the rated load rating of the lifting strap or sling.
2. Do not operate a damaged or malfunctioning lifting strap or sling.
3. Do not lift persons.
4. Do not lift a suspended load over persons.
5. Do not leave a suspended load unattended.
6. Do not remove or obscure warning labels.
7. Read and understand the operator's manual before using the device.
8. Stay clear of the suspended load.
9. Lift loads only as high as necessary.
10. Do not alter or modify the lifting strap or sling.
11. Employ generally accepted safe lifting practices.
12. Do not shock or impact load the lifting strap or sling.
13. Inspect all lifting pins for damage.





Special Operations - Lifting the Machine



Required Equipment

- ❑ Proper overhead rigging and equipment of adequate load rating to lift the fusion machine.
- ❑ Lifting Sling - (supplied with machine)

Notice: Check all equipment to confirm that it is in good working order.



TX01881-11-10-00

Attach Slings

Attach the sling to the lift points on the machine. The steel tube goes to the outside of the machine, the shorter cable with white sleeve goes to the rear of the machine as shown in picture A, and the longer cable with the yellow sleeve goes to the front of the machine as shown in picture B.

Route the yellow cable under the carriage as shown in the picture.



TX02358-11-29-04



Maintenance



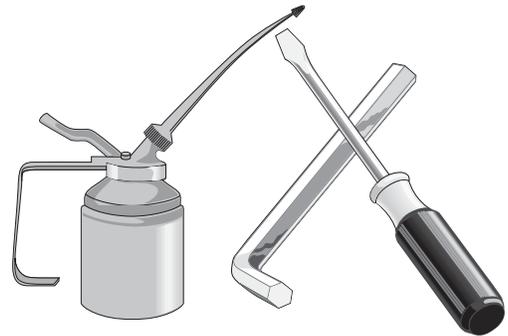
Preventative Maintenance

To insure optimum performance, the machine must be kept clean and well maintained.

With reasonable care, this machine will give years of service. Therefore, it is important that a regular schedule of preventative maintenance be kept.

Store machine inside, out of the weather, whenever possible.

TX00428-8-10-95



CD00142-11-2-94

Washing the Machine

The machine should be cleaned, as needed with a soap and water wash.

TX00429-9-15-94



CD00178-5-3-96

Check Hydraulic Fluid

The hydraulic fluid level should be checked daily.

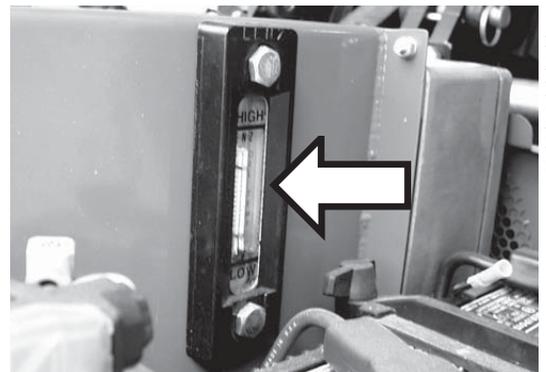
If hydraulic oil is not visible in the sight gauge, oil must be added.

If level drops below this point, fill reservoir to the HIGH level on the sight gauge.

Never allow dirt or other foreign matter to enter the tank.

Refer to the "Hydraulic Fluids" section of this manual for hydraulic oil recommendations.

TX01913-1-15-01



PH01251-2-2-5-98

Change Hydraulic Fluid and Filter

The hydraulic fluid and filter should be replaced after every 400 hours of operation.

Fluid should also be changed as extreme weather conditions dictate.

Refer to the "Hydraulic Fluids" section of this manual for hydraulic oil recommendations.

TX00431-9-15-94



PH01250-2-2-5-98

Adjusting System Pressure

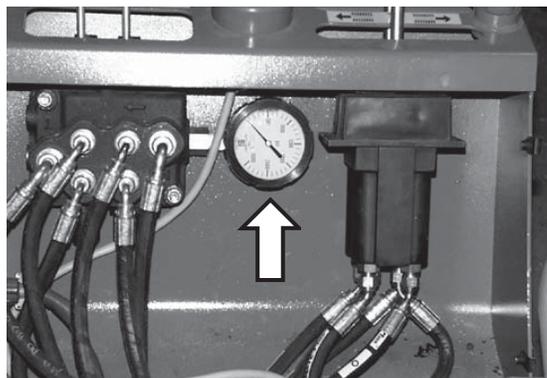
Remove the cover over the system pressure gauge.
(Located in front of the pipe lift controls)

Remove the side engine cover to gain access to the hydraulic pump.

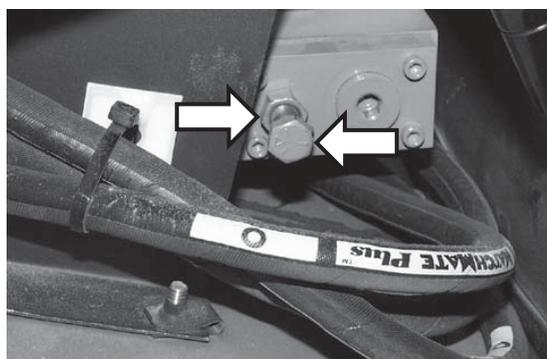
Start the engine and select high speed.

The system pressure should be at 2300 psi.

To adjust the pressure, loosen the jam nut and turn the compensator to the right to increase the pressure, or to the left to decrease pressure.



PH01310-3-12-98



PH01312-3-12-98

X02006-4-24-02

Bleeding Air From Fuel Line

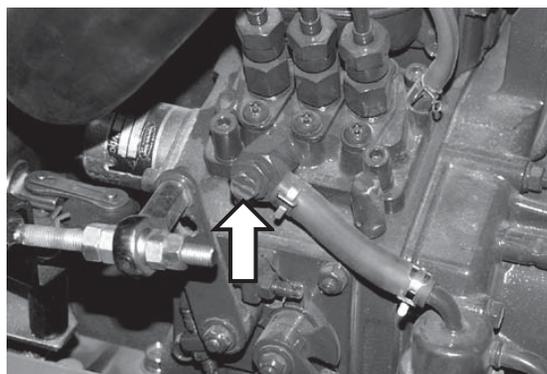
If the fuel tank becomes empty, air will be pumped into the fuel line. The following procedure will purge the system of air.

Loosen the air vent plug where the fuel line from the pump goes to the injectors.

Turn the ignition key to START position until fuel starts coming out of the vent plug, then turn key off.

Tighten air vent plug.

The engine can now be started.



PH01309-3-12-98

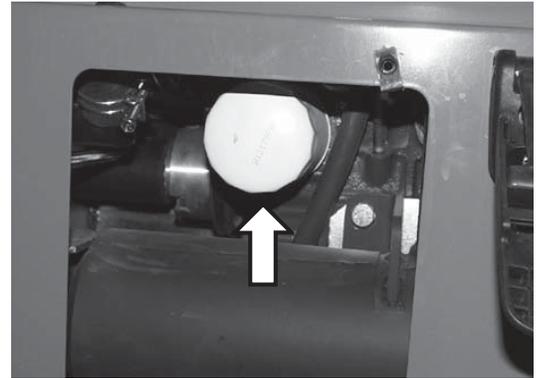
TX01505-3-12-98

Engine Oil System

Change engine oil after the first 50 hours of operation. After the first oil change, change the oil and filter every 200 hours of operation. Read the engine maintenance instructions.

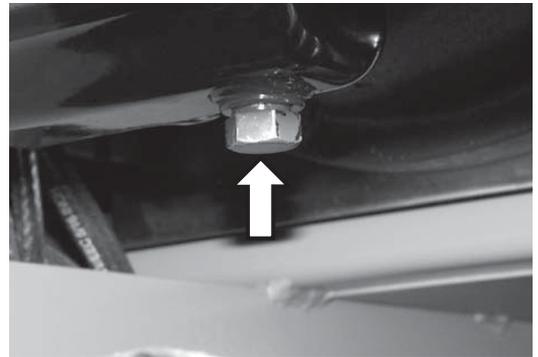
Use appropriate oil for the ambient temperature.

The oil filter is located behind the engine access panel.



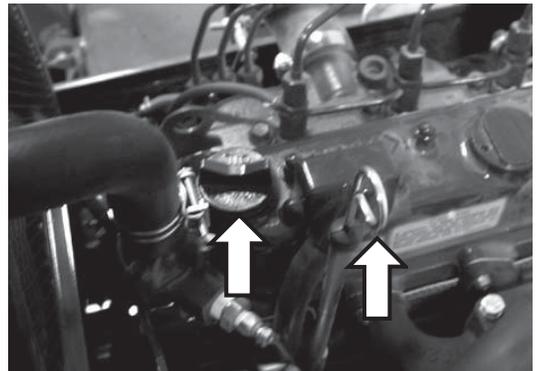
PHO1311-3-12-98

The oil drain plug is located on the bottom of the oil pan.



PHO1314-3-12-98

The oil filler cap and dip stick are located on top of the engine.



PHO1313-3-12-98



Maintenance



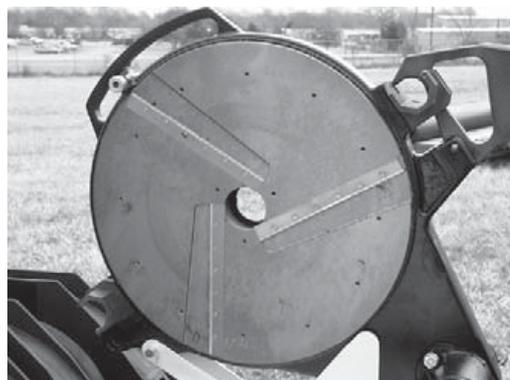
Facer Blades

Blades bolt directly to the blade holder and should be inspected for damage and sharpness.

Dull or chipped blades must be replaced.

NOTICE: Never extend the blade beyond the inner or outer circumference of the facer.

TX02475-3-29-05



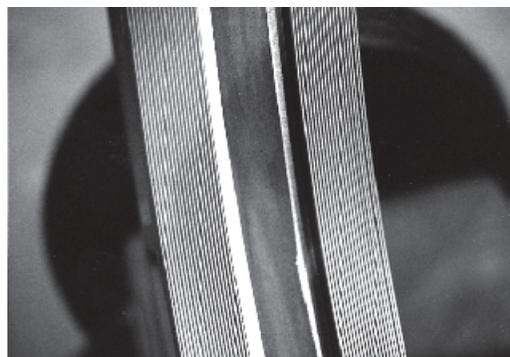
PH01256-2-25-98

Clean Jaws and Inserts

To prevent slippage and insure proper alignment, the jaws and inserts must be clean.

Clean the jaws and inserts of any dirt or residual material using a stiff-bristled brush.

TX00433-9-15-94



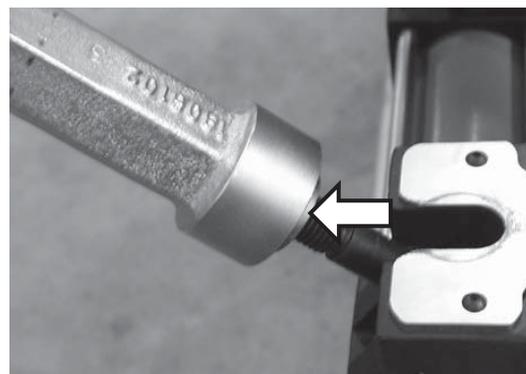
PH00927-8-20-96

Clean Thrust Bearings

The thrust bearings located in the clamp knobs must turn freely.

Wash the clamp knob bearing assembly with a solvent, and then lubricate with 30W or lighter oil.

TX00434-9-13-94

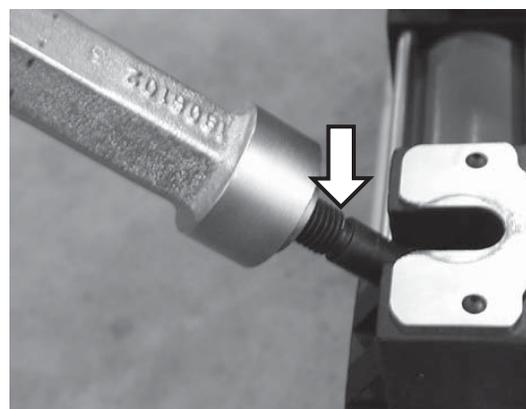


PH01292-3-3-98

Clean Eyebolt Threads

Keep the clamp knob eyebolt threads brushed cleaned.

TX00435-9-13-94



PH01292-3-3-98

Bleeding Air From Hydraulic System

The two carriage cylinders have air bleed **screws** and must be bled if the system ever runs low on oil or leaks air on inlet side of pump. Air in the system is indicated when carriage movement becomes jerky and erratic. To bleed the system, proceed as follows:

Tilt machine so the fixed jaw end is higher than the opposite end.

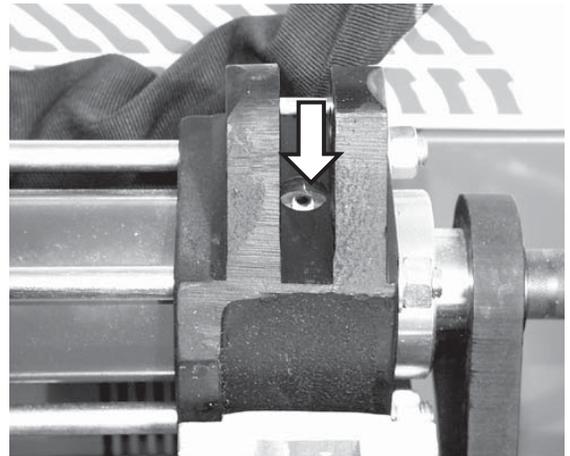
Shift the directional control and move the carriage to the fixed jaw end. Adjust the pressure to approximately 50-100 psi before proceeding.

Loosen the bleed plug on one cylinder next to the fixed jaw.

Hold pressure on the cylinder until no air is indicated and quickly tighten the plug.

Repeat this operation on the opposite cylinder.

Tilt the machine so the opposite end is higher than the fixed jaw end. Move the carriage to the end opposite the fixed jaw and repeat the above procedure on the this end of the cylinders.



PH012963-4-98

TX00877-2-16-96

Installing Butt Fusion Heater Plates

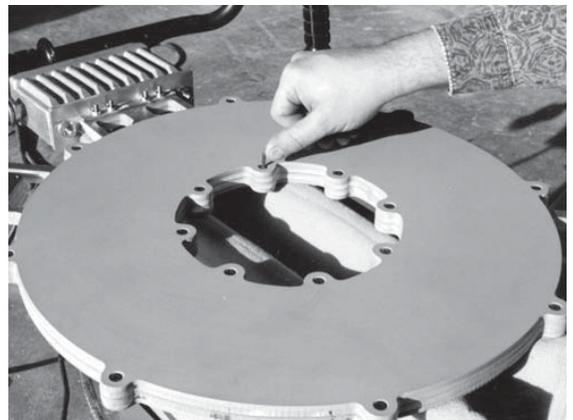
Coated butt fusion heater plates are available for all non-coated heaters.

Butt fusion heater plates are installed with Stainless Steel Cap Screws.

Care should be taken to assure that the butt fusion heater plates are seated on the heater body, and that there is no foreign matter trapped between these surfaces.

IMPORTANT: Do not over tighten the bolts.

The surface of the butt fusion heater plates are coated with an antistick coating.



PH012973-4-98

TX02534-6-21-05



Clean Heater Surfaces

The heater faces must be kept clean and free of any plastic build up or contamination.

Before each fusion joint the heater surfaces must be wiped with a clean, non-synthetic cloth.

NOTICE: Do not use an abrasive pad or steel wool. Use a non-synthetic cloth that won't damage surfaces.

TX00440-8-14-08

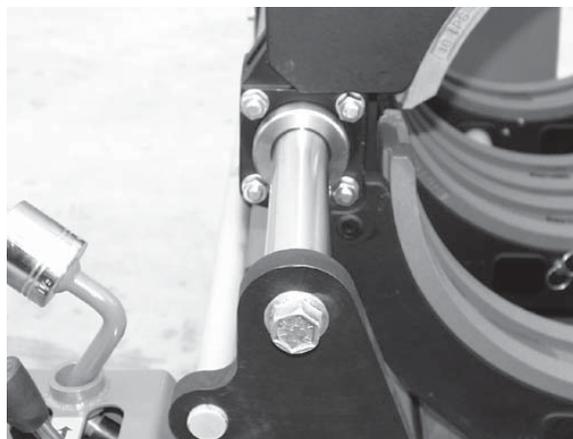


PH02306-4-17-02

Fasteners Must Be Tight

Check all nuts, bolts, and snap rings to make certain they are secure and in place.

TX00437-9-13-94

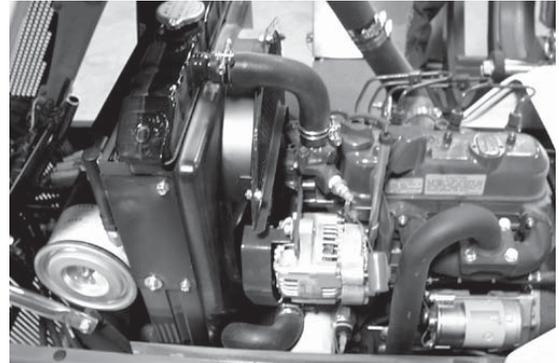


PH01282-2-25-98



Engine Maintenance

Refer to the operation and maintenance manual for the engine.



PH012933-3-98

TX01500-3-5-98

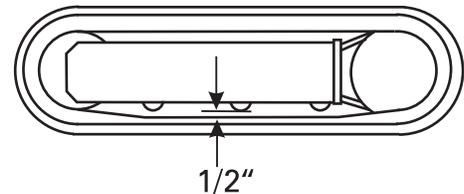
Checking Track Tension

Park the machine on a flat solid surface.

Use the spreader bar or hydraulic jacks for raising machine off the ground.

Place adequate supports under the bottom frame after lifting.

Measure the deflection between the bottom center roller and the inside surface of the rubber track. Track tension is normal when this distance is about 1/2". If the deflection is more or less than this, the tension needs to be adjusted.



CD004632-2-5-98

TX01472-2-25-98

Adjusting Track Tension



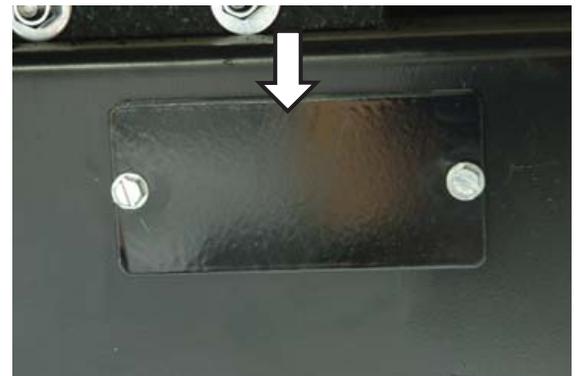
WARNING The grease in the hydraulics of the track is pressurized. If the grease valve is loosened too much, grease can be expelled at high pressure and cause serious injury. Injury could also result if the grease nipple is loosened. Never loosen the grease nipple.

Remove screws and cover to access the adjustment system.

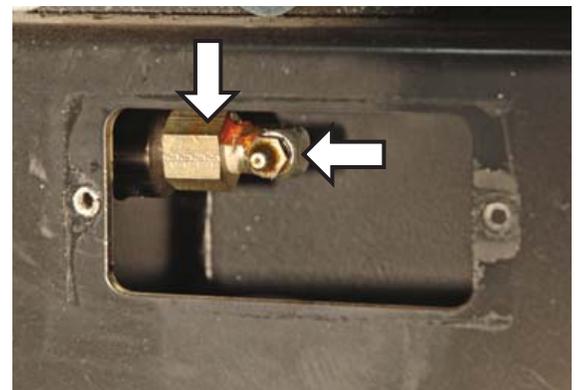
To tighten the track, connect a grease gun to the nipple and add grease to the system. When the track stretches to the correct tension, stop adding grease. Clean off any excess grease.

To loosen the track, turn hex shaped valve counterclockwise until grease comes out. When correct track tension is obtained, turn valve clockwise and tighten it. Clean off any expelled grease.

Replace access cover and tighten down with screws.



PH03300-9-18-06



PH03301-9-18-06

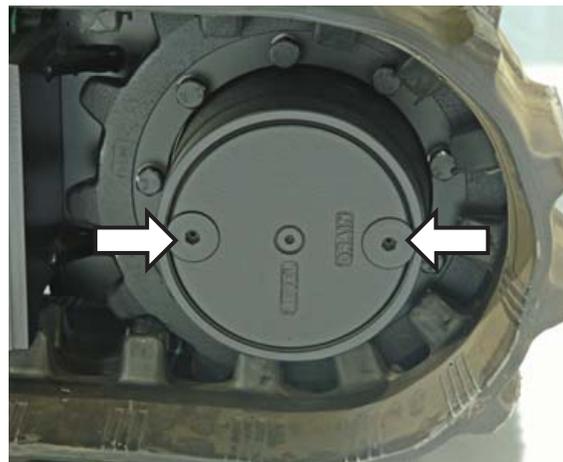
TX02632-6-20-06

Check oil Level in Gearbox

Check the oil level in the gearbox every 100 hours of operation.

To check the oil level, stop the machine with the gear motor plugs aligned horizontally. Remove the plugs and check that the oil level is up to the plug holes. If oil needs to be added, fill through one of the holes while checking the other hole for the oil level.

Replace the plugs and tighten.



PH032999-9-18-06

TX01474-2-25-98

Changing Oil in Gearbox

Replace the oil after the first 200 hours of operation. Subsequent oil changes should be scheduled at least once a year or every 1000 hours.

To replace the oil, stop the gearbox with the gear motor plugs aligned vertically.

Remove both plugs and drain out all oil.

Move machine until the plug holes align horizontally.

Fill the gearbox through one of the holes while checking the other hole for the oil level. The oil level should be up to the plug holes.

Use SAE-30-CD oil to fill the gearbox.

Replace the plugs and tighten.



PH032989-9-18-06

TX02633-6-20-06



Adjusting Heater Temperature

Turn knob to desired temperature. Measure the heater surface temperature with a pyrometer. Any variance must be corrected to the pyrometer reading.

Loosen setscrew in the knob. Turn knob to point to the same temperature as the pyrometer. Tighten setscrew in the knob.

Turn knob to desired temperature. Allow heater to stabilize at the new temperature (5 to 10 minutes) after adjusting.

The thermometer on the heater body indicates internal temperature and should be used as a reference only.

TX02009-3-13-02



PH02313-4-24-02

Heater Indicator Light

The heater has a green indicator light which will flash on and off. This indicates that the controller is operating normally. If the green indicator is not flashing then the controller may not be operating properly. If this occurs, disconnect power and have the heater repaired by an McElroy Authorized Service Center.

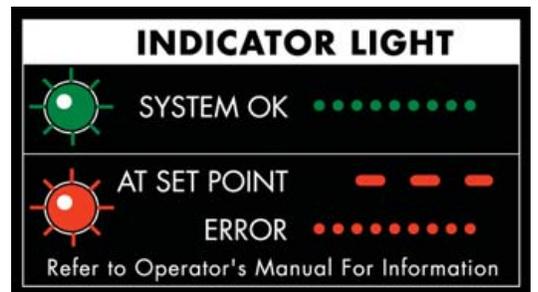
The heater has a red indicator light on the handle at the bottom of the temperature scale. When the heater is plugged in and preheating the red light glows steadily until the set temperature is reached. The red light then goes off and on as the heater maintains temperature.

If the heater is not operating properly, the control will attempt to turn the heater off and the red indicator light will flash rapidly. If this occurs, disconnect the power and take it to a McElroy Authorized Service Center for repair.

TX04036-4-12-10



PH02314-4-24-02



PH02571-11-19-03



Maintenance Checklist



TracStar[®] 500 series II

	TRACSTAR INSPECTION CHECKLIST	OK	Repairs Made	Date Repaired
1.	For engine maintenance & service, Review engine manual			
2.	Machine is clean			
3.	Inserts and inserts keeper pins are with machine			
4.	All nuts & bolts are tight			
5.	All identification placards are on unit			
6.	All clamp knobs lubricated and turn freely			
7.	Wiring, battery cables, & all electrical terminals			
8.	Rubber tracks in good repair			
9.	Hydraulic oil is visible in reservoir sight glass			
10.	No visual oil or water leaks (engine and hydraulic system)			
11.	Fuel tank is full (diesel only)			
12.	Engine crankcase is filled to correct level			
13.	Cooling system level is correct			
14.	Hydraulic hoses are in good condition			
15.	Engine starts and runs properly			
16.	Facer works properly			
17.	Heater in good condition (no knicks or gouges)			
18.	Surface temperature check with a pyrometer			
19.	All warning lights work			
20.	Two position throttle control works properly			
21.	Low oil / voltage & high water temperature alarm works			
22.	Primary pump pressure (2300 psi)			
23.	Hydraulic carriage works smoothly			

Inspector: _____ Date: _____

Comments: _____



Hydraulic Fluids



Hydraulic Fluids

The use of proper hydraulic oil is mandatory to achieve maximum performance and machine life. Use a clean, high quality, anti-wear hydraulic oil with a viscosity index (VI) of 135 minimum. It should have a maximum viscosity of 500 cSt (2000 SSU) at startup (ambient temperature) and a minimum viscosity of 13 cSt (65 SSU) at the maximum oil temperature (generally 80°F above ambient). Using hydraulic oils that do not meet these criteria may cause poor operation and/or damage to the hydraulic components.

The following table specifies the oil temperature at various viscosities. Temperature rise of the hydraulic oil can vary from 30° F to about 80° F over the ambient temperature depending on the pressure setting, age of the pump, wind, etc. Mobil Univis N46 hydraulic oil is installed at our factory. The advantage of this oil is a wider temperature range, however, this oil should not be used for continuous operation below 24°F.

NOTE: The Mobil DTE 10 Excel series replaced the DTE 10M Series. The Exxon Univis N series are now Mobil Univis N.

Hydraulic Fluids Characteristics																	
Manufacturer	Fluid Name	cSt 100F	cSt 210F	V.I.	-20F	-10F	0F	10F	30F	50F	70F	90F	110F	130F	150F	Range °F	Range °C
Mobil	10 Excel 15	15.8	4.1	168	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	-16 - 113	-27 - 45
	10 Excel 32	32.7	6.6	164				*****	*****	*****	*****	*****	*****	*****	*****	12 - 154	-11 - 68
	10 Excel 46	45.6	8.5	164				*****	*****	*****	*****	*****	*****	*****	*****	23-173	-5 - 78
	10 Excel 68	68.4	11.2	156				*****	*****	*****	*****	*****	*****	*****	*****	37-196	3 - 91
	Univis N-32	34.9	6.9	164				*****	*****	*****	*****	*****	*****	*****	*****	12-150	-11 - 66
	Univis N-46	46	8.5	163				*****	*****	*****	*****	*****	*****	*****	*****	24-166	-4 - 74
	Univis N-68	73.8	12.1	160				*****	*****	*****	*****	*****	*****	*****	*****	39-193	4 - 89

TX03082-2-23-10

NOTE: This chart is based on pump manufacturer recommendations of 13 to 500 cSt.

NOTE: Temperatures shown are fluid temperatures. – NOT ambient temperatures.



Fusion Machine Dimensions

Length, Pipe Lift up: 95" (2,413mm)

Track Width: 46-1/2" (1,181mm)

Overall Width: 63" (1600mm)

Centerline Height, Carriage: 31" (787mm)

Overall Height: 53" (1,346 mm)

Fusion Machine Weights

Total Vehicle Weight: 2700 lbs (1,225kg)

Carriage, 4 Jaws: 390 lbs (177kg)

Carriage, 3 Jaws: 290 lbs (132kg)

Bottom Jaws ONLY, 3 Jaws: 238 lbs (108kg)

Facer: 76 lbs (34.5kg)

Heater: 40 lbs (18kg)

Heater Stand: 17 lbs (8kg)

Specifications

Maximum Pipe Diameter: 20" (500mm)

Minimum Pipe Diameter: 6" (180mm)

Effective Piston Area: 6.01 sq in (38.7 sq cm)

Maximum Force: 9,015 lbs (4,089kg)

Travel Speed: Low Speed 1.18 mph

High Speed 2.08 mph

Ground Pressure: 3.5 lb/in²

Power Pack

23 hp (17kW) 905 cc, 3-cylinder, Liquid Cooled Diesel Engine

11 gal (42 liters) Fuel Capacity

2,300 PSI (152 bar) Operating System pressure

12 gal (45 liters) Hydraulic Reservoir

6,000 W Direct Drive Alternator

About this manual . . .

McElroy Manufacturing continually strives to give customers the best quality products available. This manual is printed with materials made for durable applications and harsh environments.

This manual is waterproof, tear resistant, grease resistant, abrasion resistant and the bonding quality of the printing ensures a readable, durable product.

The material does not contain any cellulose based materials and does not contribute to the harvesting of our forests, or ozone-depleting constituents. This manual can be safely disposed of in a landfill and will not leach into ground water.

TX001660-8-19-99



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