

Operator's Manual

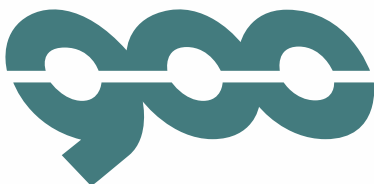


McELROY

www.mcelroy.com



Fusion Machine



Patent No. 5,814,182 Other Patents Pending

Manual: T9013103 Revision: B 11/05

Original Language: English



**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[®] 900 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[®] 900 fuses 12" IPS (340mm) minimum to 36" OD (900mm) 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.



PH02514-07-16-03

TX011659-8-13-99

Patent No. 5,814,182
Other Patents Pending

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[®] 900 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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Tulsa, Oklahoma, USA

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Fusion Equipment Safety



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**.



WRC0051-11-30-92



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



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



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

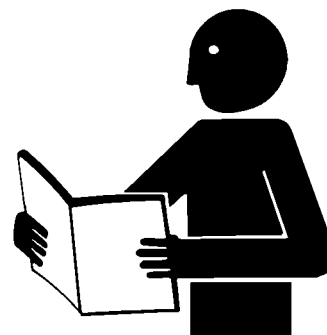
Read and Understand

Do not operate this equipment until you have carefully read, and understand the "Safety" and "Operation" 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.



WRC0052-12-1-92

TX00031-12-8-92



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.



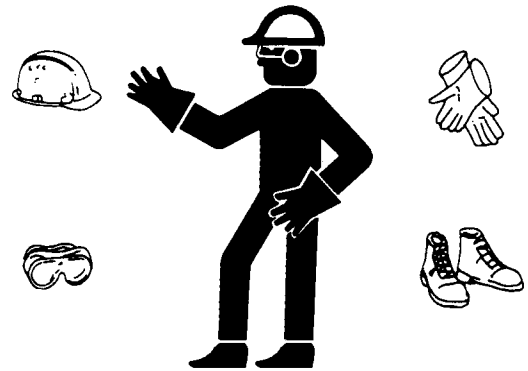
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Wear Safety Equipment

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.



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Fuel Handling

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

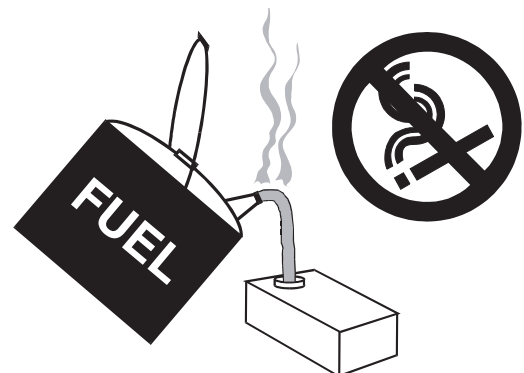
Do not fill the fuel tank while the engine is hot or running, as spilled fuel could ignite.

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.

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



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TX00953-2-19-97



Fusion Equipment Safety



Units With Engines



Internal 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.

TX01266-2-21-97



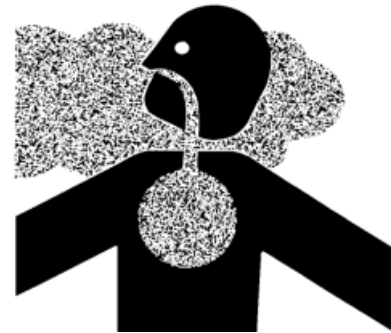
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Carbon Monoxide



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.

TX00954-5-14-96



WR00093-5-14-96

Heater is Not Explosion Proof



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

TX00100-9-16-94



WR00034-11-30-92

Crush Points



Hydraulically operated jaws are operated under pressure. Anything caught in the jaws will be crushed. Keep fingers, feet, arms, legs, and head out of the jaw area. Always check pipe alignment with a pencil or similar object.

TX00103-4-6-93



WR00012-12-4-92



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.

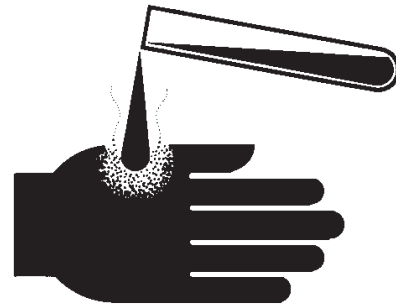


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Do not allow battery fluid to contact your skin, eyes, fabrics, or painted surfaces. Sulfuric acid can cause burns. After touching a battery or battery cap, do not touch or rub your eyes.

Thoroughly wash your hands. If the acid contacts your eyes, skin or clothing, immediately flush with water for at least 15 minutes and seek medical attention.



CD00177-9-14-95

TX00650-9-14-95

Electrical Safety



Always ensure power cords are 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.

Do not carry electrical devices by the cord.

NOTICE: Always connect units to the proper power source as listed on the unit, or in the owner's manual. On units with two power cords, plug each cord into separate power circuits. Do not plug into both outlets of one duplex receptacle.

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



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Fusion Equipment Safety

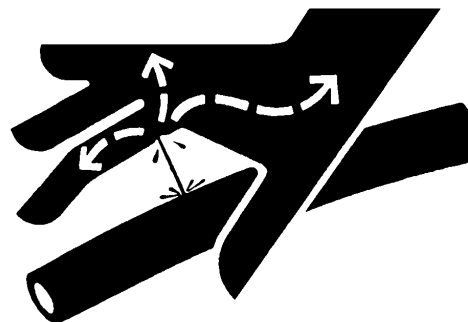


Units With Hydraulics

Although the hydraulic pressures in this machine are low compared to some hydraulically operated equipment, 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.

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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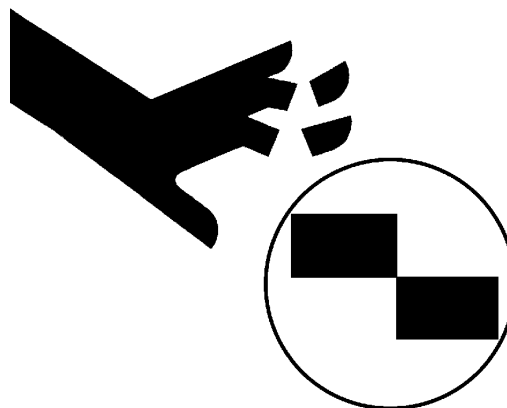
TX00110-8-23-95

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.

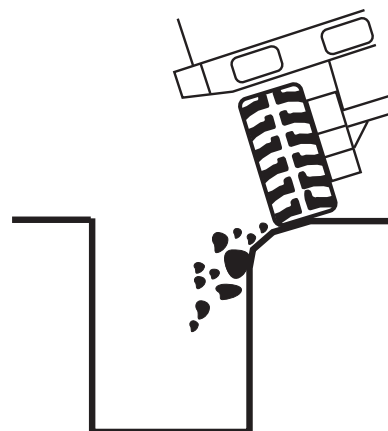


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TX02378-1-24-05

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 equipment from a cave-in.



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Fusion Equipment Safety



Positioning Fusion Machine

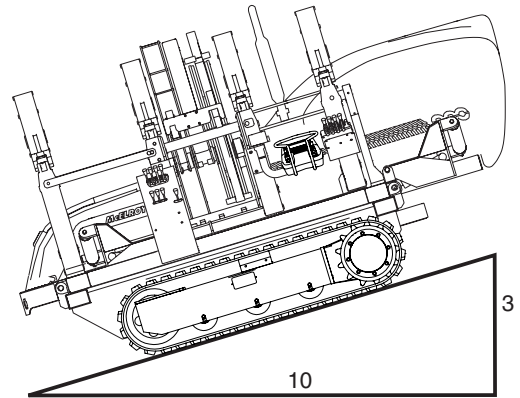
Place fusion machine on as level ground as possible.

If it is necessary to operate machine on unlevel grade, make sure that the ground is stable. Some unstable conditions may be ice, snow, mud and loose gravel.



WARNING For operation safety, never operate the machine on a grade steeper than 30 %. (A 3 foot elevation change in 10 feet)

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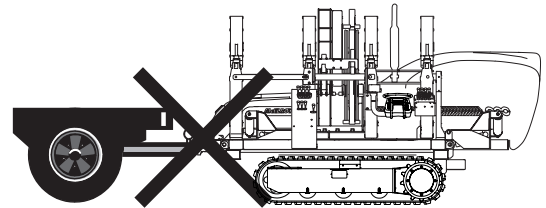
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Do Not Attempt to Tow Fusion Machine



CAUTION The machine is not designed for towing. The tracks will not move. 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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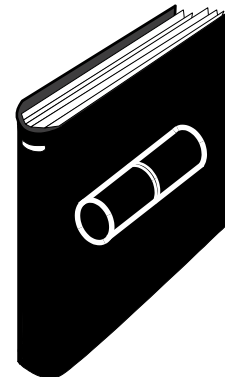
Fusion Procedures

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.

TX00113-4-12-93



WR00079-2-7-96

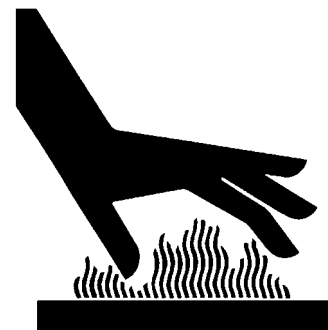
Heater Is Hot



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

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

TX00104-8-12-94



WR00030-2-10-93



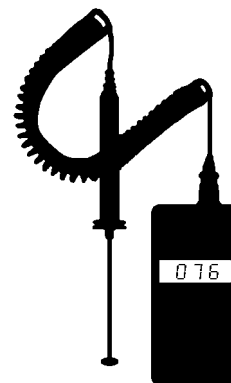
Fusion Equipment Safety



Periodically Check Temperature

NOTICE: Incorrect heating temperature can result in bad fusion joints. Check heater plate surface temperature periodically with a properly calibrated pyrometer, and make necessary adjustments.

The thermometer on heaters indicate internal temperature, and should be used as a reference only.



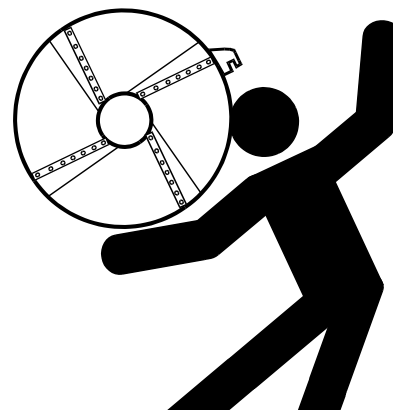
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TX00107-11-13-95

Stand Clear

WARNING Jaws, heater and facer pivot rapidly and can cause severe bodily injury if someone is standing too close. All personnel must stand clear of machine when operating.

Be aware of yourself and others when operating this machine and when sections of pipe are being moved.



WR00091-3-4-96

TX00822-12-27-95

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 pipe is heated, the molecular structure is transformed from a crystalline state into an amorphous condition. When fusion pressure is applied, the molecules from each pipe end mix. As the joint cools, the molecules return to their crystalline form, the original interfaces are gone, and the two pipes have become one homogeneous pipe. The joint area becomes stronger than the pipe itself in both tensile and pressure conditions.



PH012692-1-98

The principle 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.

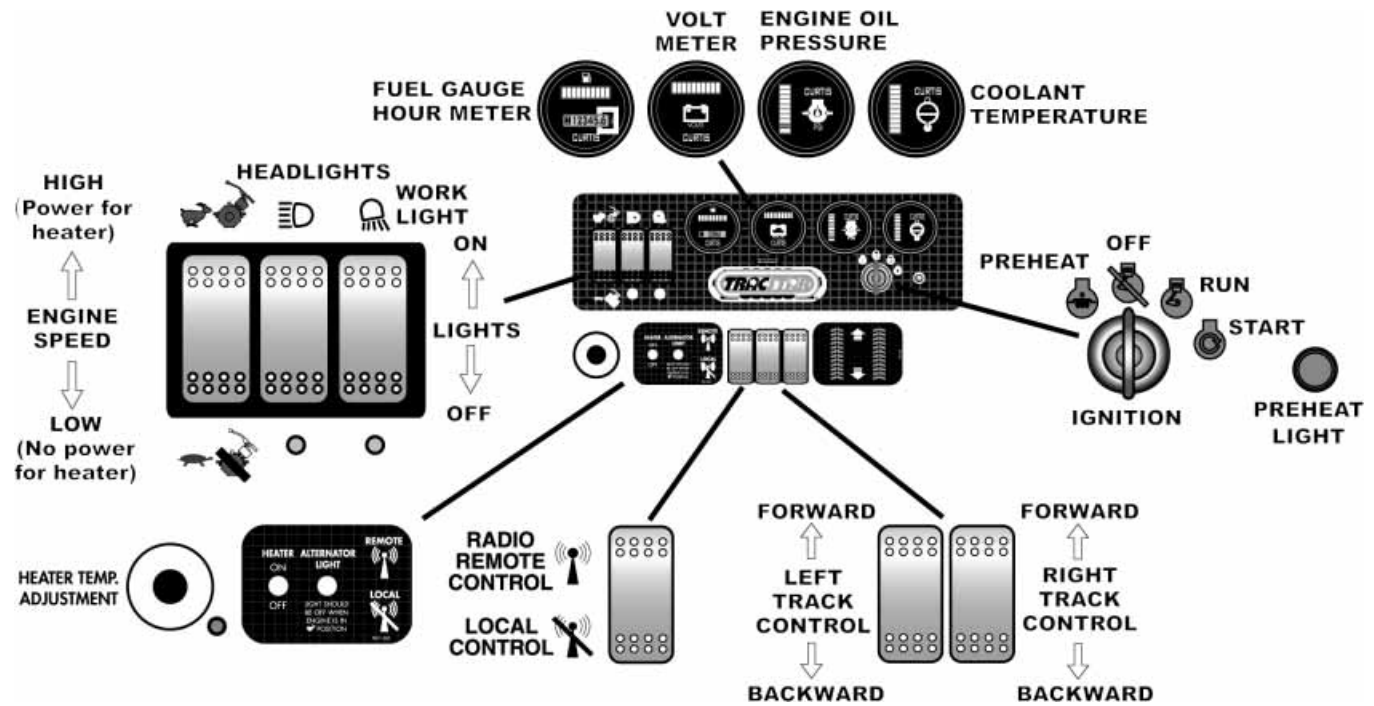
Each pipe manufacturer has a slightly different approach for fulfilling the heating, joining, and holding phases, but the end result is the same – a fusion joint that is as strong or stronger than the pipe itself.



Overview



TracStar[®] 900 Console



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Radio Remote Drive Controls

The engine can be started and machine can be driven from the radio remote.

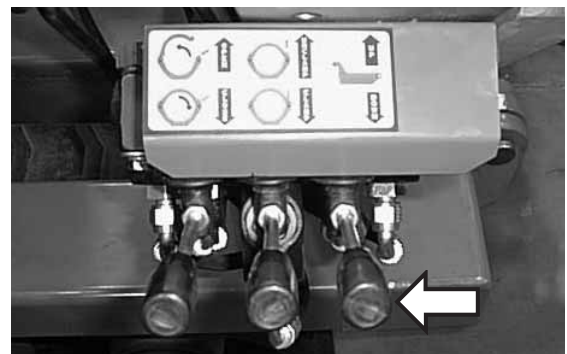


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Pipe Lift Controls

Hydraulic pipe lifts are used to aid in positioning pipe in the machine.



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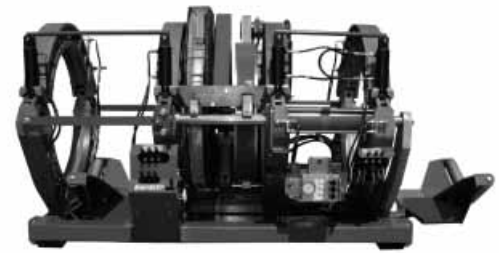
Overview



Carriage Assembly

The carriage assembly consists of two fixed jaws and two hydraulically operated movable jaws.

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



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Facer

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



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TX01665-8-19-99

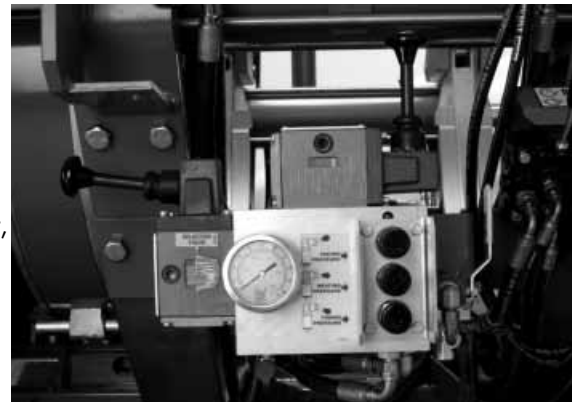
Hydraulic Manifold Block

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

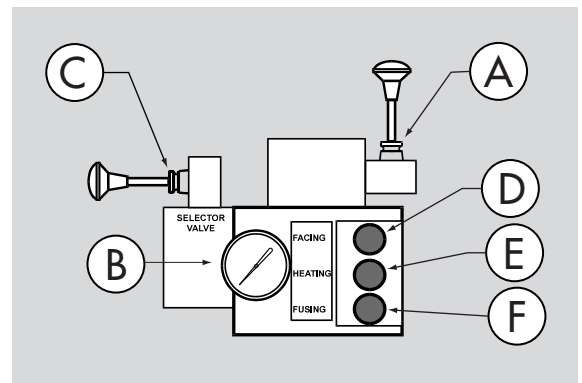
- A) The carriage control valve, mounted on the top of the manifold, determines whether the carriage is moving left, right, or is in neutral.
- B) A 1500 psi gauge is mounted on the front of the manifold.
- C) The selector valve, mounted on the front of the manifold, selects a reduced pressure from one 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 800 psi.
- E) The middle valve adjusts heating pressure to a maximum of 800 psi.
- F) The bottom valve adjusts fusion pressure to a maximum of 1500 psi.



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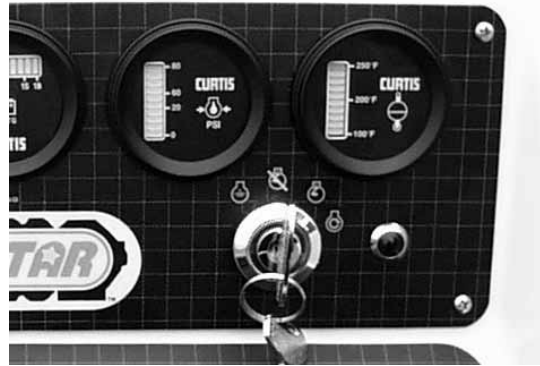
Overview



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, off, run, and start positions.



PH01261-2-12-98

TX01465-2-10-98

Power for Heater

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



PH01708-8-19-99

TX01666-8-19-99

Oil Reservoir

The oil reservoir is located under the front hood of the machine. The oil level sight gauge is located on the side of the reservoir. It includes a thermometer which indicates oil temperature. Fill to the LOW level on the sight gauge when the oil is cool or to the HIGH level if the oil is hot. Refer to the "Hydraulic Fluids" section of this manual for hydraulic oil recommendations.

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



PH01701-8-19-99

TX02297-4-26-04

Filter

This machine is equipped with a 3 Micron filter on the return side of the circuit.



PH01716-8-19-99

TX01668-8-19-99



Operation



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.

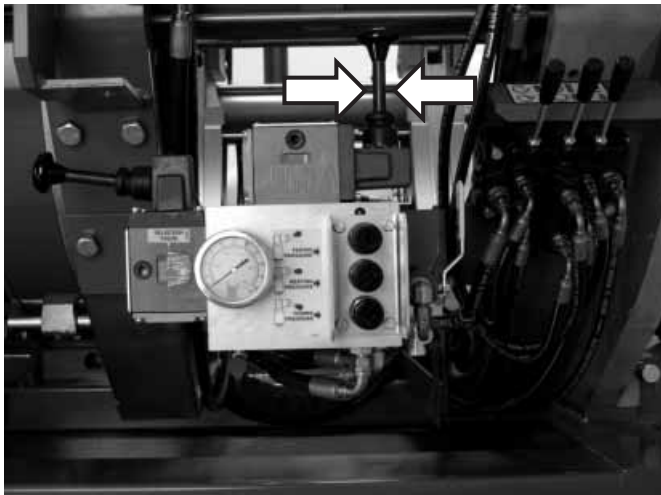


Stop-12-28-95

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Before Starting

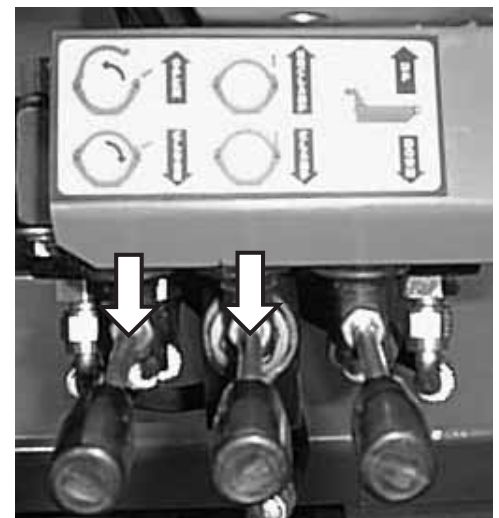
Before starting this machine make sure that index valve is in the locked position, that the carriage directional control is centered, and the jaws are locked down with the clamp valve in the clamp position. This will prevent any unwanted movement upon ignition of motor.



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PH02222-8-22-01



PH01711-8-19-99

TX01671-8-19-99

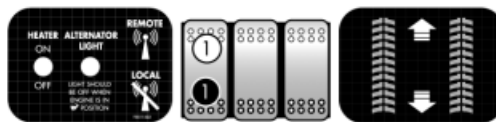
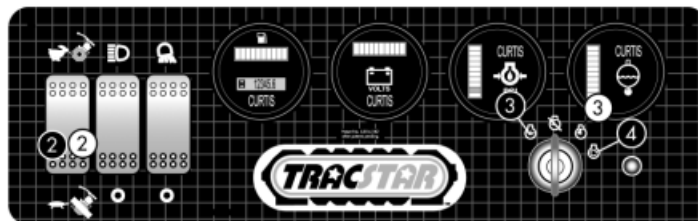
Starting Instructions

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

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

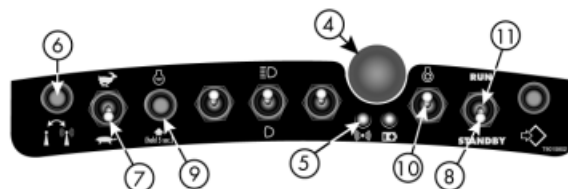
Starting in Local Mode

- ① Set rocker switch to Local.
- ② Set engine speed to slow.
- ③ Turn key switch to preheat for 5 sec.
- ④ Turn key switch to start.



Starting in Remote Mode

- ① Set rocker switch to Remote.
- ② Set speed switch on Instrument Panel to slow.
- ③ Turn the key switch on the control panel to run.
- ④ Turn remote Estop button so it comes out.
- ⑤ Confirm that the green LED is flashing – if it isn't, charge the battery.
- ⑥ Press the Reset button to link the remote.
- ⑦ Set engine speed to slow.
- ⑧ Set the remote to Standby.
- ⑨ Hold the preheat pushbutton on for 5 sec.
- ⑩ Push the crank toggle until the engine starts.
- ⑪ Switch out of Standby mode to drive the vehicle.





Operation



Driving Vehicle

In local mode the tracks are operated by the toggle switches on the main console.

WARNING Driving the vehicle with the indexer lock valve open can damage the machine. Be sure to open it before loading or fusing pipe.

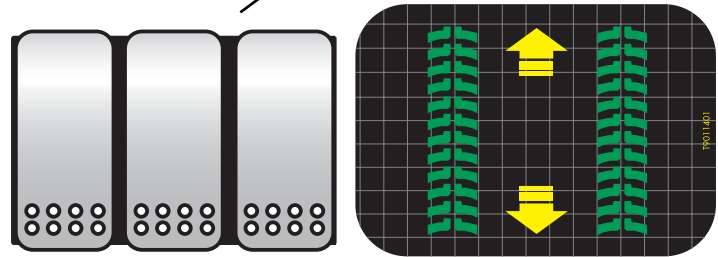
Left drive toggle switch engages left track. Right Drive toggle switch engages right track.

To turn LEFT toggle the left switch in reverse and the right switch forward.

To turn RIGHT toggle the right switch in reverse and the left switch forward.



PH02517-07-17-03

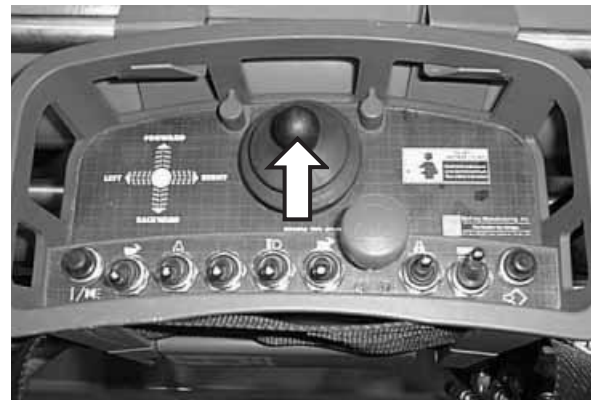


CD00569-8-19-99

In Radio Mode the joystick controls the tracks.

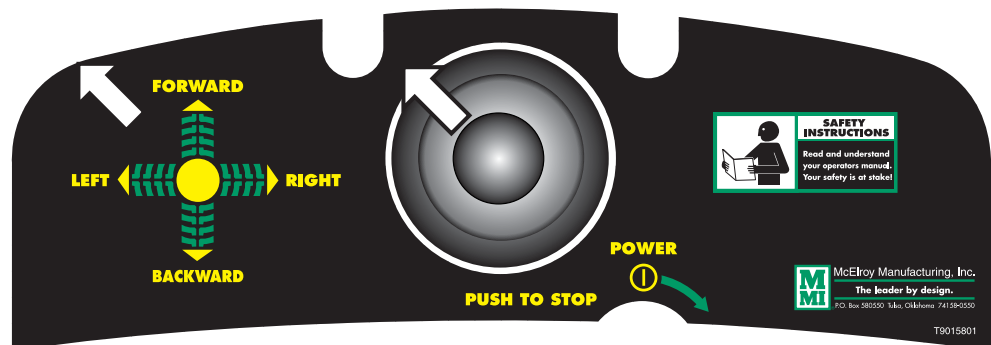
CAUTION When using remote mode, switch to "standby" when not driving the vehicle to prevent accidental movement.

With the Standby/Run switch in "RUN" move the joystick in the backward direction to move toward the grille. Moving the joystick to the left or right will make it turn in that direction.



PH01710-8-19-99

TX01449-8-19-99



CD00568-8-19-99

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Operation



Prepare Heater



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

Make sure butt fusion heater adapters are properly installed.

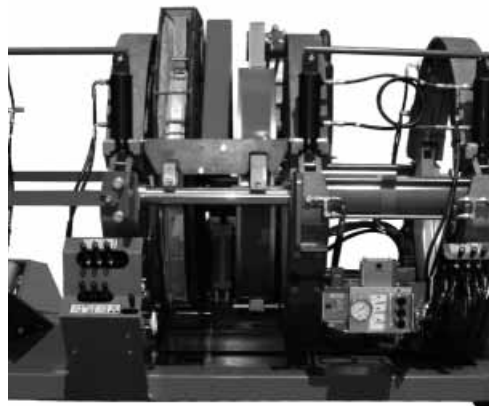
NOTICE: Non-coated heaters should never be used without butt fusion heater adapters installed. Refer to the "Maintenance" section of this manual for installation procedure.

Select low engine speed.

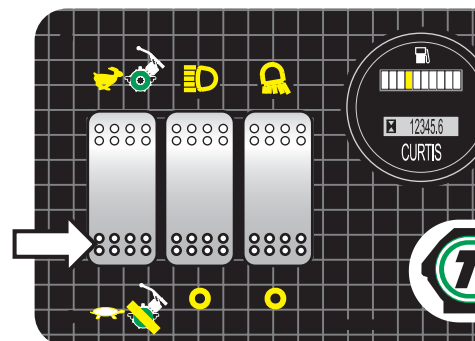
Plug heater into receptacle on machine.

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

Refer to the "Maintenance" section of this manual for instructions how to adjust heater temperature.



PH02512-07-17-03



CD00570-8-19-99



PH01708-8-19-99

TX02145-07-16-03



Operation

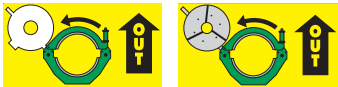


Move Heater and Facer Out

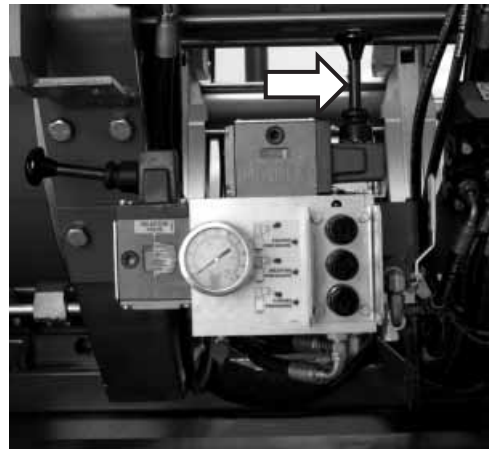
Unlock Index Heater/Facer valve and move carriage to the right. Pivot Support Arm / Heater Bag out by moving lever on valve to out position.



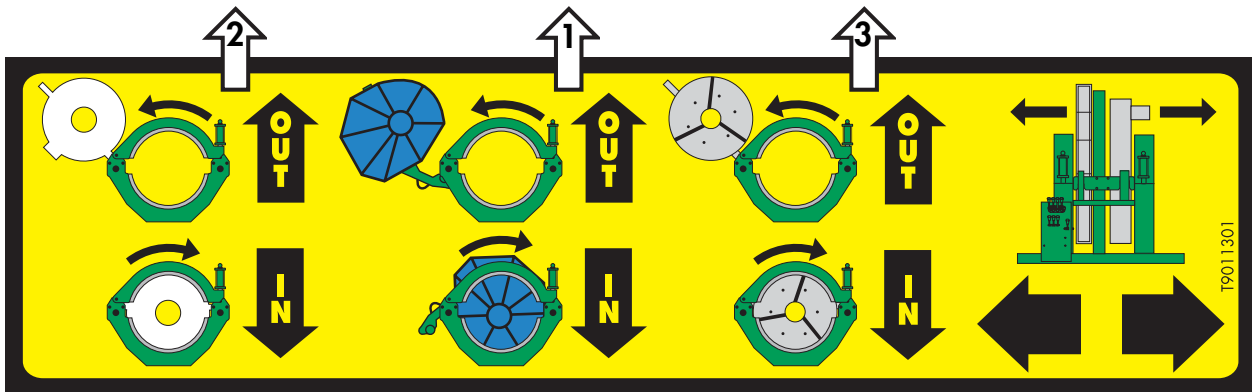
Swing Heater and Facer out by moving levers on valves to out positions.



PH02222-8-22-01



PH02511-07-17-03



TX01675-8-19-99

CD000567-8-19-99

Jaws

Move clamp valve lever to unclamp position and swing the clamp cylinders toward you. Move jaw valve lever to open position and open jaws.



PH01656-8-19-99

TX00726-11-3-95



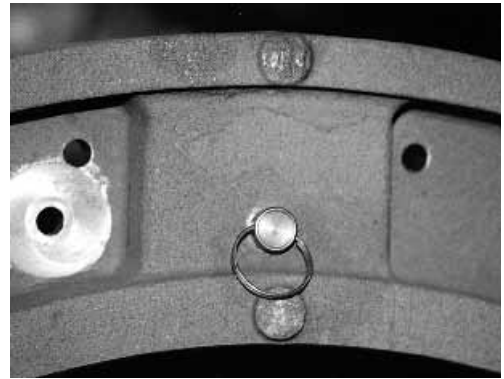
Operation



Jaw Inserts

Install appropriate size jaw inserts for the pipe that is being fused. The inserts are held in place by detent pins.

TX01660-8-19-99



PH00737-3-11-96

Loading Pipe into Machine

Position pipe support stands approximately 20 feet from each end of the machine to help support and align the pipe.

Position pipe with enough material protruding past the jaw faces to allow for facing of the pipe end.

Important: The radio remote can be used to help position the machine for proper facing of the pipe end. Large diameter pipe may be difficult to position in the machine. The track drive can also be used to position the machine under the pipe.

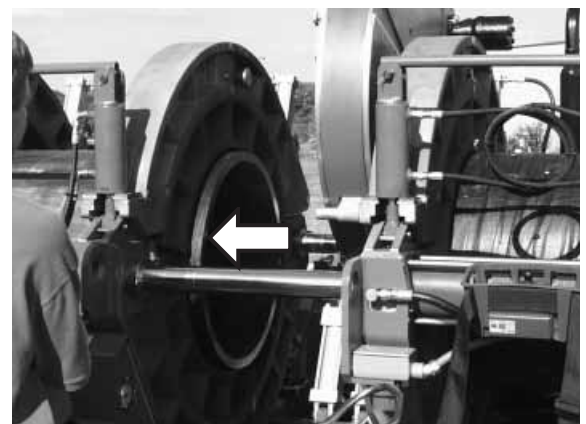
TX01689-8-19-99



PH02224-8-22-01



PH01673-8-19-99



PH01667-8-19-99



Operation



Closing Jaws

Move the jaw valve control lever to Close position.
 Move the clamp cylinders into the vertical position and then move the jaw clamp control valve lever to the Clamp position.

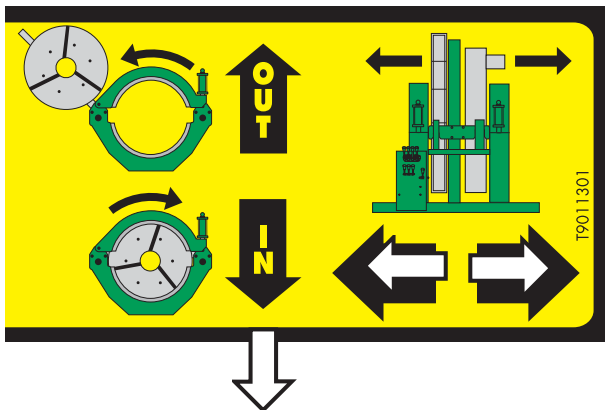
TX01493-3-2-98



PH01725-8-19-99

Positioning Facer

Make sure the index cylinder lock valve is in the open position and move the heater/facer index valve lever to position the facer between the pipe ends.
 Pivot the facer into position by activating the facer valve to **IN** position.



TX00730-11-3-95



PH02222-8-22-01



PH01656-8-19-99

CD00567-8-19-99

Facing Pipe

Select facing pressure on the carriage manifold.

Turn facer motor on by opening the ball valve next to the carriage manifold.

Close the carriage. Adjust the facing pressure as needed so the facer continues to cut.

Continue to face the pipe until the rest buttons on the jaws bottom out on the facer rest buttons.

Turn facer off. Open the carriage and pivot the facer out.

Remove chips from pipe ends.

Do not touch faced pipe ends.

Inspect both pipe ends for complete face off. If the face off is incomplete, return to **Loading Pipe into Machine**.

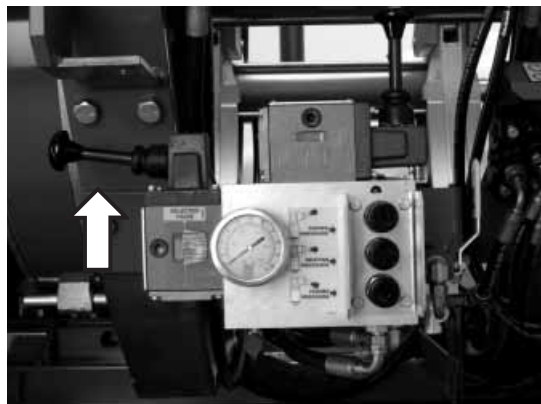
Move carriage to the left until pipe ends contact. Look across the top surface of pipe ends to check alignment. If there is a noticeable step across the joint, adjustments must be made. Adjusting screws are located on top of both inner jaws. The jaws must be opened to perform the adjustment. Tighten the bolt on the high side jaw to improve alignment.

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



WARNING Do not use finger to check for high/low (misalignment). The unit is under pressure, and slippage could result in crushed fingers. Always keep hands clear of the jaw area.

Ensure there is no unacceptable gap between the pipe ends. If there is an unacceptable gap, return to **Loading Pipe into Machine**.



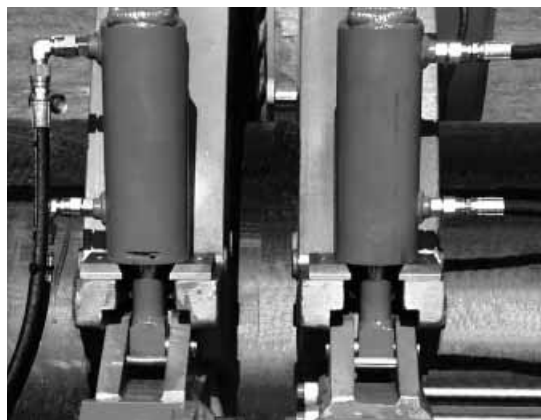
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PH01667-8-19-99



PH01676-8-19-99



PH01667-8-19-99



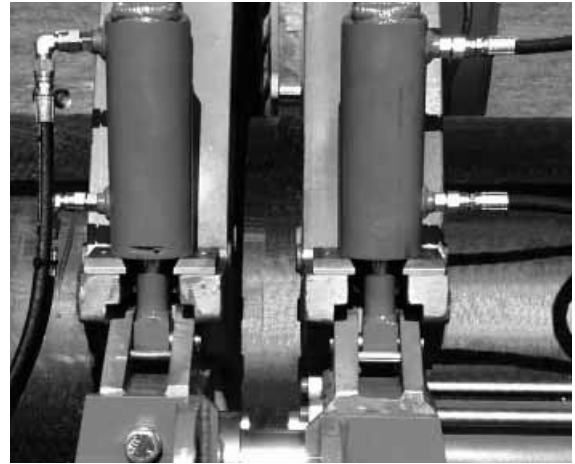
Operation



Check for Slippage

Bring the pipe ends together under fusion pressure to check for slippage. If slippage occurs, return to **Loading Pipe into Machine**.

TX01493-3-2-98



PH01672-8-19-99

Heater Position

Move the carriage to the right.
Activate the heater/facer index valve and move the heater to center on gap.
Move heater valve lever to IN position and swing heater into position.

TX01677-8-19-99



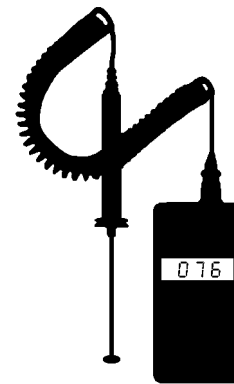
PH01671-8-19-99

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 for proper heater temperature.

TX01678-8-19-99



WR00077-4-16-93

Cleaning Heater

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

TX01679-8-19-99



PH01720-8-19-99

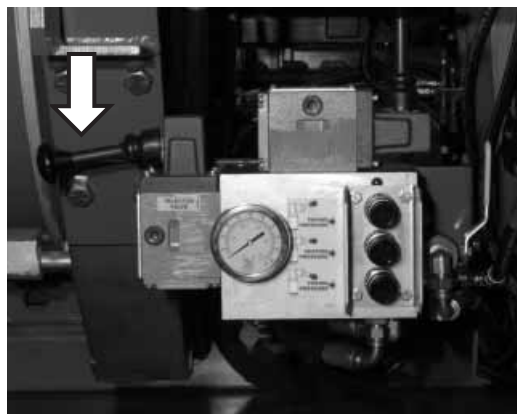


Operation



Select Fusion Pressure

Move the selector valve on the carriage manifold to fusion pressure.



PH02516-07-16-03

TX02147-07-16-03

Heating the Pipe

Use the indexing valve to move the heater left until it is within 1/2" of the pipe end.

Close the carriage, bringing the heater into contact with both pipe ends. Move selector valve to middle position (heating mode). If heater pressure is not required by pipe manufacturer, or opposing forces are not great enough to move the carriage away from the heater, shift the carriage directional control to neutral.

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

Watch the Stopwatch and follow the pipe manufacturer's suggested heating and soaking procedure.



PH01677-8-19-99

TX02148-07-16-03

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 pipe manufacturer's suggested heating procedure, move the carriage direction control to neutral.

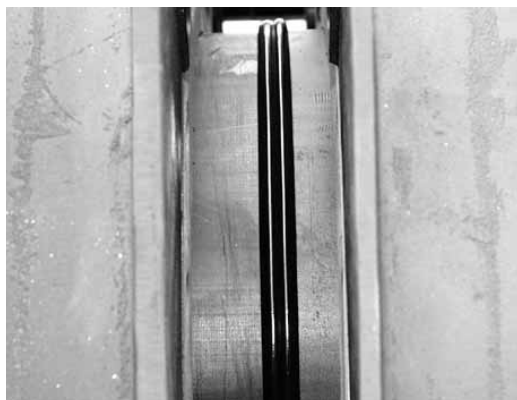
Move the selector valve to lower (fusion mode) position.

Open the carriage just enough to remove the heater.

Index the heater to clear the pipe ends.

Quickly remove the heater and close the carriage, bringing the pipe ends together under the pipe manufacturer's recommended pressure.

Allow joint to cool under pressure according to pipe manufacturer's recommendation.



PH01269-2-13-98

TX02149-07-16-03



Operation



Opening Moveable Jaws

After the joint has cooled for the pipe manufacturer's recommended time, move the index carriage all the way left then shift the carriage control to the neutral position.

- Open clamp cylinders.
- Open the movable jaws.

TX01680-8-19-99



Opening Fixed Jaws

- Unclamp the fixed jaws.
- Open the fixed jaws.

TX00381-9-16-94



Raise Pipe

Raise the joined pipe using the hydraulic pipe lifts.

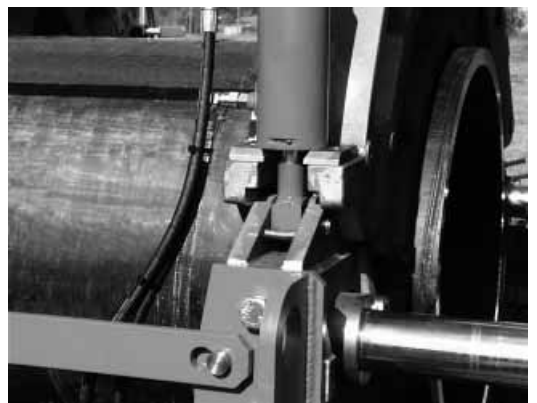
TX01681-8-19-99



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 approximately 2" past the jaw face of the fixed jaw.

TX01682-8-19-99





Operation



Install Next Piece of Pipe

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



PH01673-8-19-99

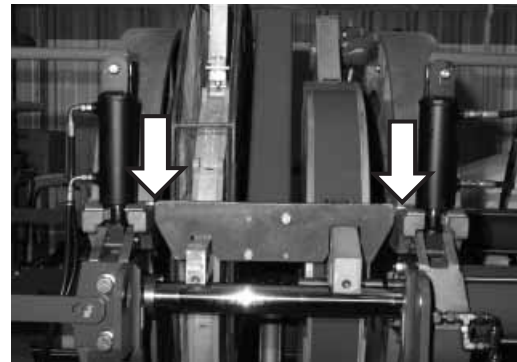
TX00384-10-12-95

Securing Carriage for Transport

Open the carriage and move the heater/facer indexer all the way to the right. Pivot the heater, facer, and then the heater bag in.

Close the carriage at low pressure (100 psi or less) against the stops on the heater bag. After closing the carriage, turn the valve handle to lock the heater/facer indexer.

NOTICE: Do not use pressure higher than 100 psi to secure carriage for transport.



PH01673-8-19-99



PH01673-8-19-99

TX02152-07-21-03



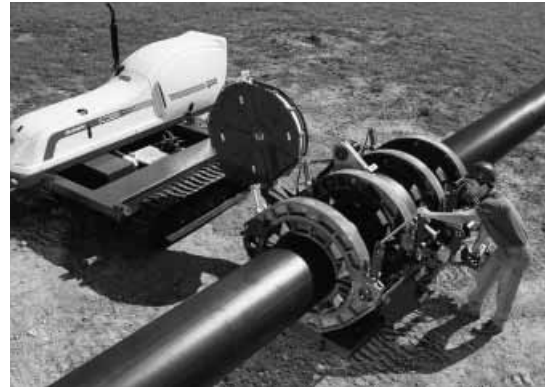
Special Operations - In Ditch



Overview

The carriage may be used off the vehicle for in ditch tie-ins and fusing tees or fittings that require more working space.

TX01682-8-19-99



PH017028-19-99

Removing Carriage

Pivot the heater facer and support arm into the machine.
Turn off the engine.
Remove the four clevis pins.

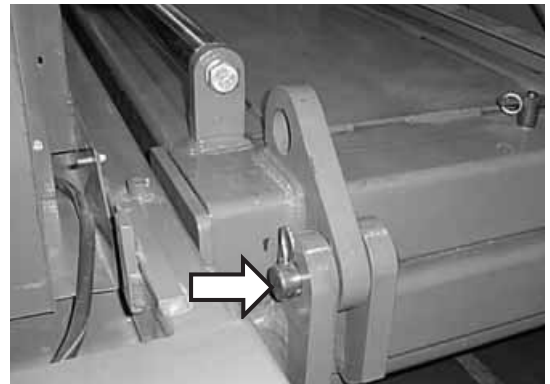
Disconnect all hoses and cables.

Attach the spreader bar as shown.

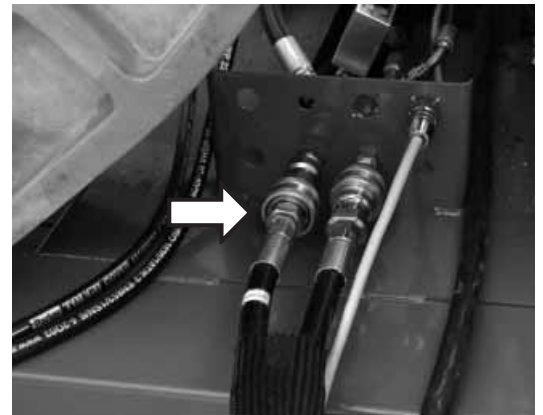
The outrigger under the outer fixed jaw may be extended for additional support.

Attach extension cables and hoses between Carriage and Machine.

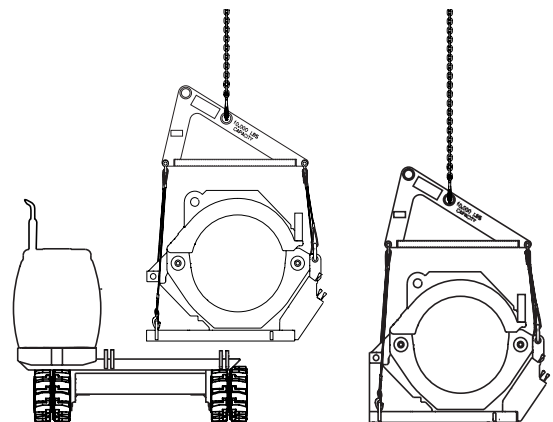
TX01683-8-19-99



PH017148-19-99



PH02513-07-16-03



CD0546-8-19-99



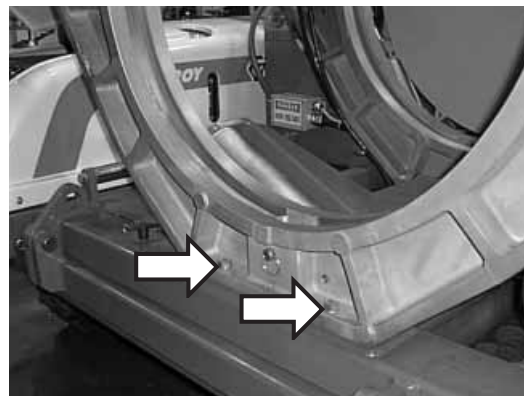
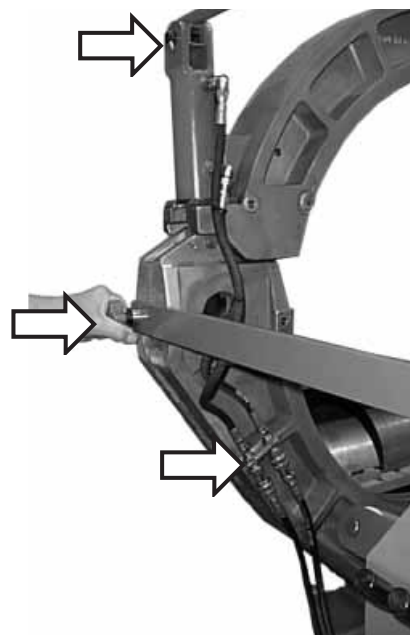
Removing Outer Fixed Jaw

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

Disconnect clamp handle, tie bar and hydraulic connections between jaws.

Remove the bolts securing the outer fixed jaw and remove the jaw.

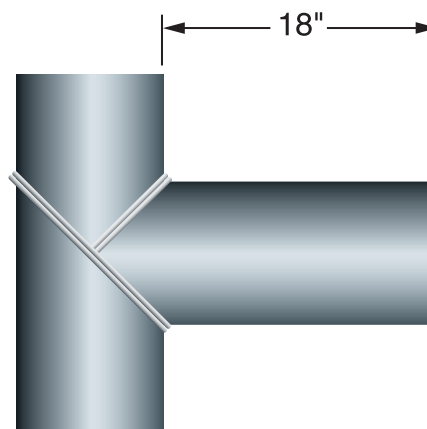
TX01684-8-19-99



Tee Leg Length Requirement

Tee's must have enough leg length to clear the indexing carriage during the facing operation.

TX01686-8-19-99





Maintenance

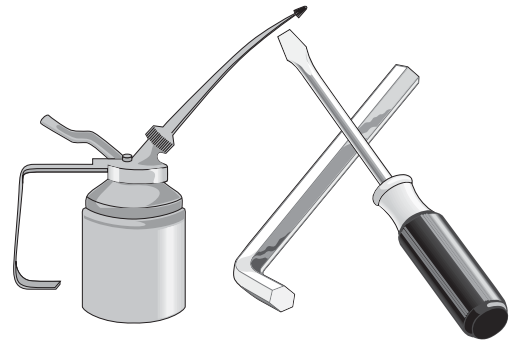


Preventative Maintenance

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.



CD00142-11-2-94

TX00428-8-10-95

Washing the Machine

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



CD00178-5-3-96

TX00429-9-15-94

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.

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



PHO1701-8-19-99

TX00430-9-22-94

Change Hydraulic Fluid and Filter

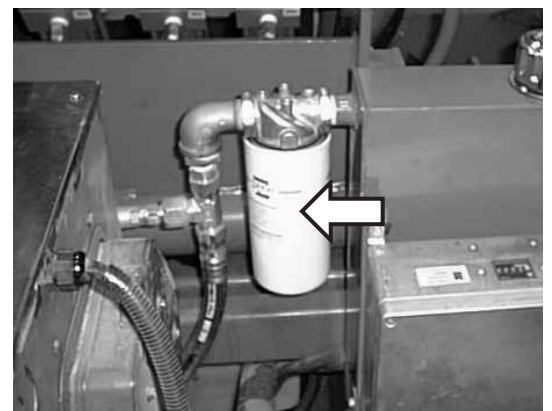
The hydraulic fluid and filter should be replaced after every 400 hours of operation.

Fluid should also be changed as extreme weather conditions dictate.

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

Filter is an MED00052

Disconnect the carriage before draining the unit. Couple the carriage hoses together. After replacing oil, circulate oil 5 minutes to remove all air before reconnecting carriage.



PHO1716-8-19-99

TX00431-2-2-00



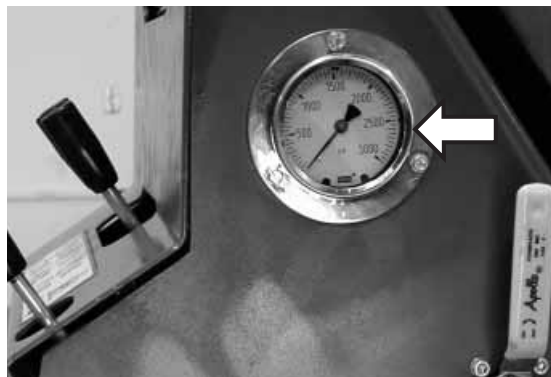
Adjusting System Pressure

Open rear hood to gain access to the hydraulic pump.

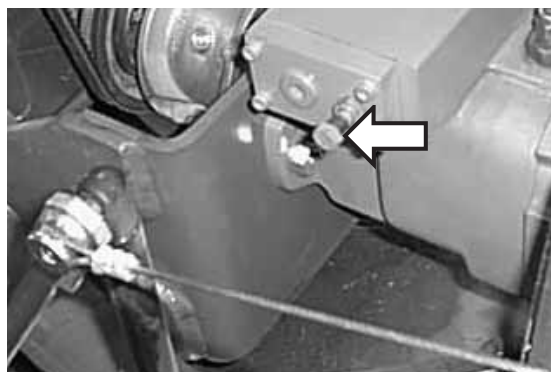
Start the engine and select high speed.

The system pressure should be at 2200 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.



PH01739-8-19-99



PH01722-8-19-99

TX01504-3-12-98

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.

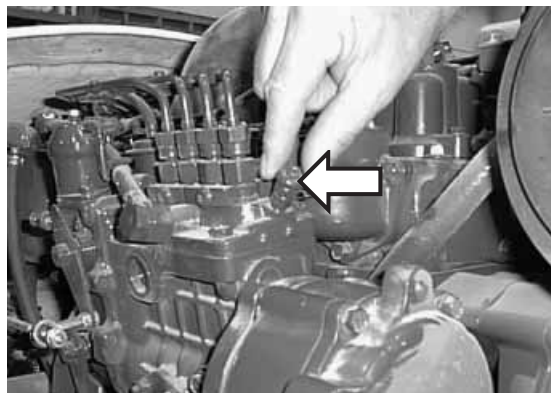
Loosen the air vent valve where the fuel line from the pump goes to the injectors.

Turn the ignition key to START position until you hear fuel flowing back into the tank.

Tighten air vent valve.

The engine can now be started.

TX01505-3-12-98

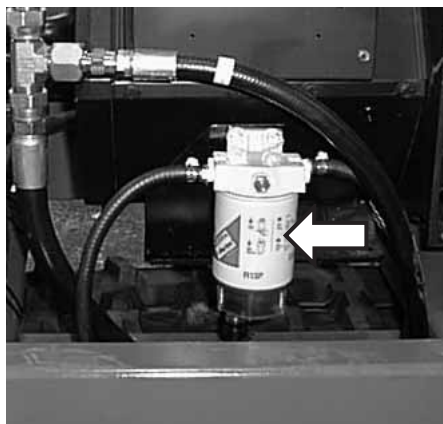


PH01704-8-19-99

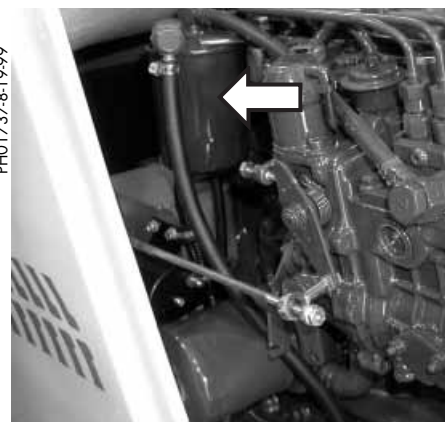
Replace Fuel Filter

Replace Fuel Filters every 400 hours.

Filter is a Kubota 16631-43560



PH01737-8-19-99



PH01744-8-19-99

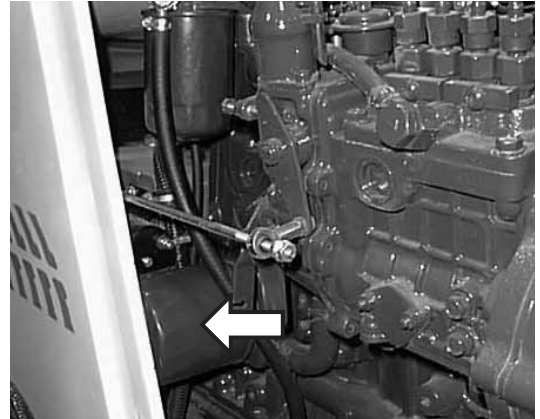
TX01787-2-2-00

Engine Oil System

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

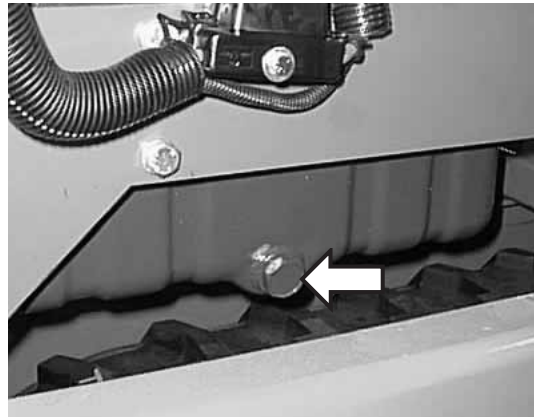
The oil filter is located on the right side of the engine.

Filter is a Kubota # 1C10-32430



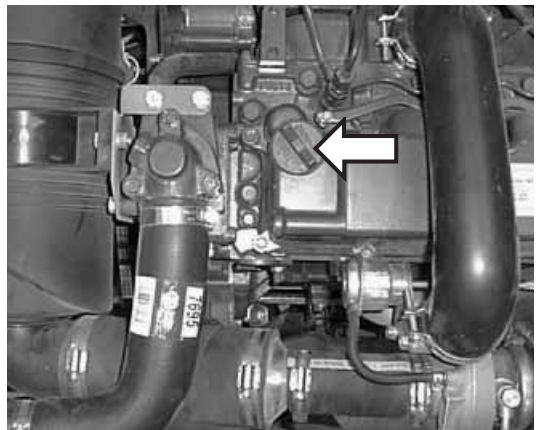
PH01721-8-19-99

The oil drain plug is located on the left side of the oil pan.



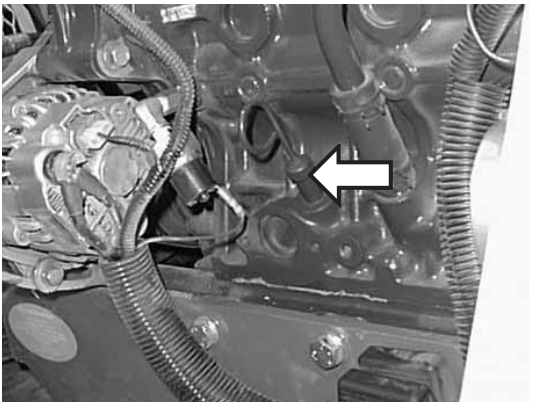
PH01314-3-12-98

The oil filler cap is located on top of the engine.



PH01706-8-19-99

The dipstick is located on the left side.



PH01706-8-19-99



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.



PH01697-8-19-99

TX00439-9-13-94

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.



PH00666-1-15-96

TX00433-9-15-94

Grease

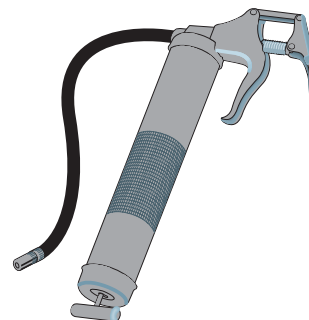
Keep moving parts well lubricated daily with high temperature grease.

Jaw pivot pin

Facer pivot bushings

Heater pivot bushings

Facer



CD00183-11-6-95

TX00746-11-3-95

Oil

On a daily basis, oil all hydraulic cylinder pivot pins, with SAE 10W-40 weight oil.

Add oil to the indexer shaft housing as needed.



CD00184-11-6-95

TX00747-11-3-95

Bleeding Air From Hydraulic System

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.

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

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

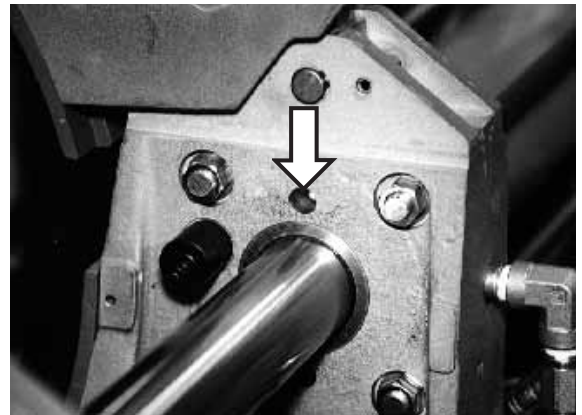
Repeat bleeding operation on the opposite cylinder.

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

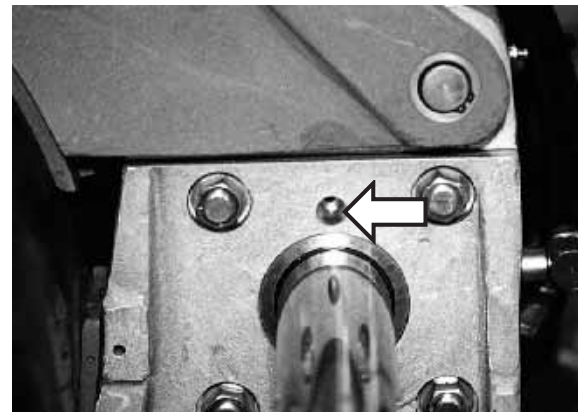
Move the carriage to the end opposite the fixed jaw end.

Repeat the bleeding procedures for the remaining cylinders.

TX00761-11-14-95



PH00627-12-13-95



PH00628-12-13-95

Installing Butt Fusion Heater Adapters

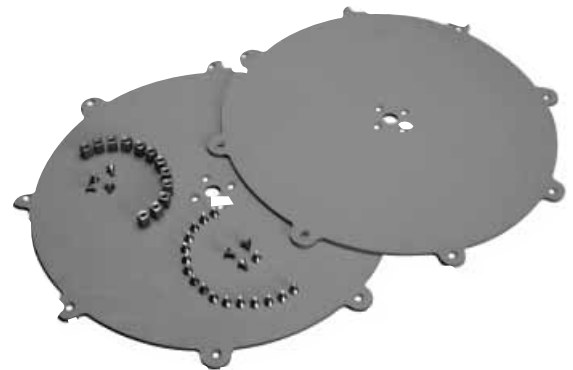
Coated butt fusion heater plates are available for all non-coated heaters.

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

Care should be taken to assure that the butt fusion heater adapters 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 adapters are coated with an antistick coating.



PH01297-3-4-98

TX01092-8-20-96



Maintenance



Clean Heater Surfaces

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

Before and after 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.

TX00440-9-13-94



PH01718-8-19-99

Heater Temperature Adjustment

The thermometer on the heater may not read actual surface temperature and should be used only as a general indicator.

The temperature control knob and an on/off switch are located on the control panel. Heater surface temperature should be checked periodically with a pyrometer and the necessary adjustment made to the temperature controller.

TX02153-07-21-03

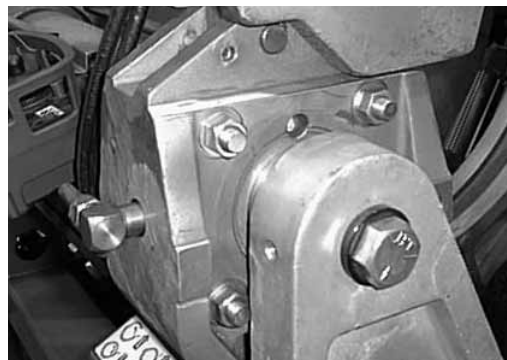


PH02520-07-17-03

Fasteners Must Be Tight

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

TX00437-9-13-94



PH01709-8-19-99

Engine Maintenance

Refer to the operation and maintenance manual for the engine.

TX01500-3-5-98



PH01728-8-19-99



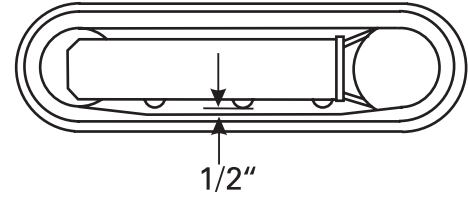
Checking Track Tension

Park the machine on a flat solid surface.

Use the spreader bar or hydraulic jacks to raise machine off the ground.

Place adequate supports under the 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.



CD00463-2-25-98

TX01472-2-25-98

Adjusting Track Tension



WARNING

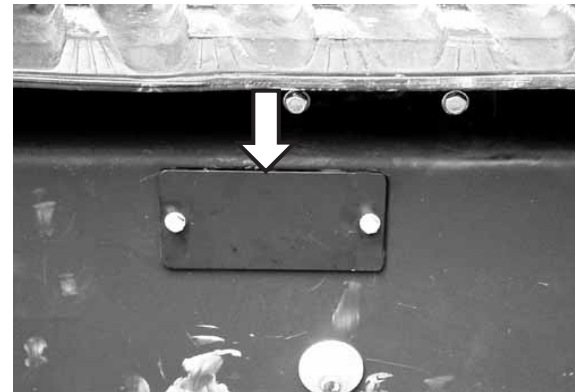
The grease in the hydraulics of the track is pressurized. If the grease valve is loosened too much, grease can be expelled at high pressure and cause serious injury. Never loosen grease valve more than one turn. Injury could also result if the grease nipple is loosened. Never loosen the grease nipple.

Remove screws and cover to access the adjustment system.

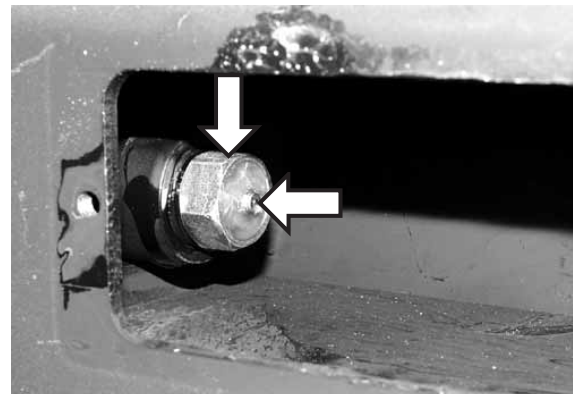
To tighten the track, connect a grease gun to the nipple and add grease to the system. When the track stretches to the correct tension, stop adding grease. Clean off any excess grease.

To loosen the track, turn hex shaped valve counterclockwise no more than 1 turn. If grease does not start to drain out, then slowly rotate the track. 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.



PH01283-2-25-98



PH01284-2-25-98

TX01473-2-25-98

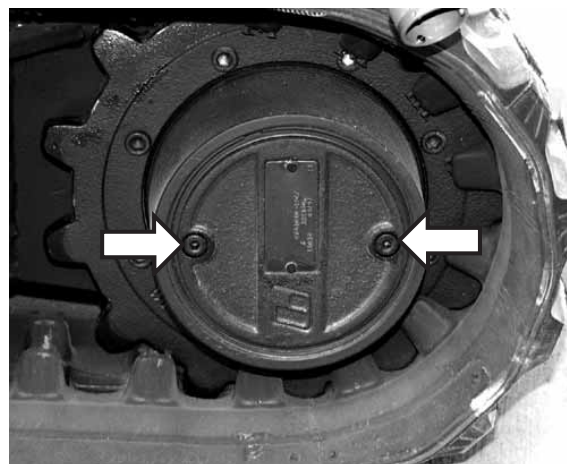


Check oil Level in Gearbox

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.



PH01284-2-25-98

TX01474-2-25-98

Changing Oil in Gearbox

Replace the oil after the first 100 hours of operation. Subsequent oil changes should be scheduled at least once a year, or more often when required by working conditions.

Use gear oils with E.P. additives and with a viscosity of VG 150 or SAE 80W/90. When service temperatures vary over a high range, use synthetic oil with E.P. properties, minimum 165 viscosity index with a VG 150 or 220 viscosity class.

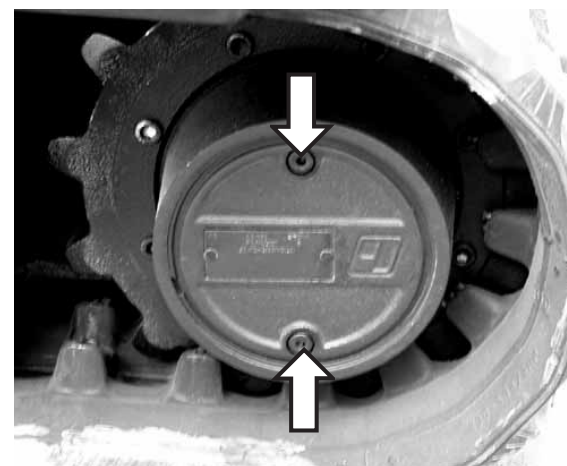
To replace the oil, stop the gearbox with the gear motor plugs aligned vertically.

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.

Replace the plugs and tighten.



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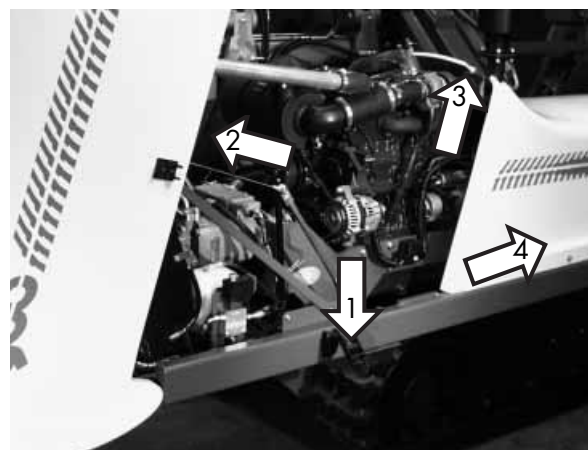
TX01475-2-25-98

Opening Rear Hood

Release latches on each side and pivot hood back.

Removing Front Hood

With Rear Hood open lift back end of hood 2" and slide hood forward and lift off.



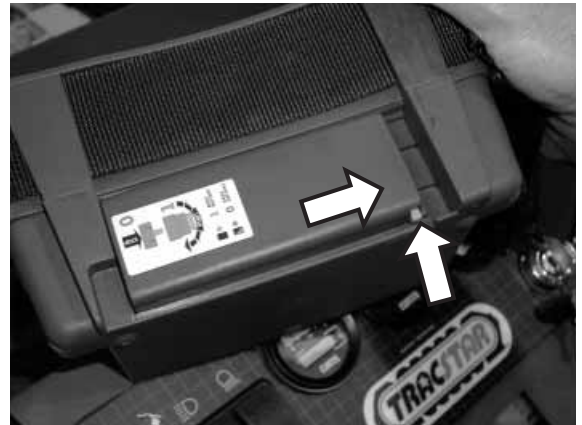
PH01728-8-19-99

TX01500-3-5-98



Charging Remote Battery

Remove battery from Remote. Push orange release button and slide out.



Place battery into charger.



Plug charger cord into receptacle located under hatch.

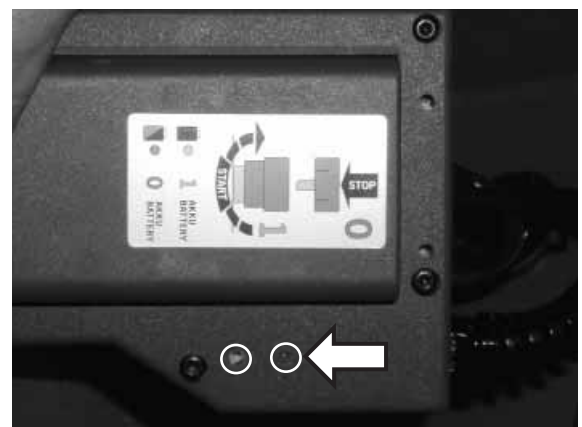


Notice Indicator lights for charge completion.

Green - Power to Charger

Red - Battery Charging

Red & Green Flashing - Charging Completed



TX01687-2-2-00



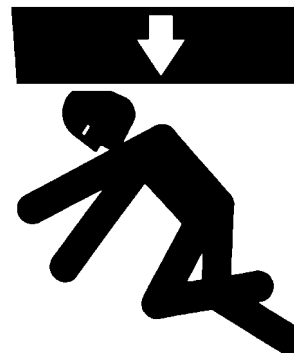
Maintenance



Heavy Overhead Load



The Fusion Machine and plastic pipe are heavy. If loaded or lifted improperly, they could crush or kill. Handle load carefully with proper overhead rigging and equipment of adequate load rating.



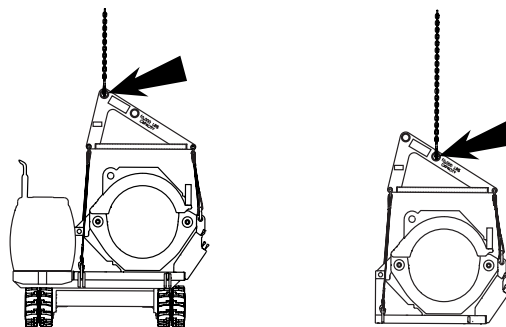
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TX01690-8-19-99

Lifting Fusion Machine

A special spreader bar shipped with the machine has been designed to lift the entire machine as well as the carriage assembly.

Notice: Never use this spreader bar for any other purpose. You could damage the spreader bar and machine.



CD005728-19-99

TX01691-8-19-99

Lifting Safety

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

Never carry loads over people.

Always use proper overhead rigging and equipment of appropriate load rating to lift the machine.



SAFE1st-12-14-92

TX01692-8-19-99



Maintenance Checklist



TracStar® 900

	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			
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 nicks or gouges)			
18.	Surface temperature check with a pyrometer			
19.	All warning lights and safety kill switch work			
20.	Two position throttle control works properly			
21.	Low oil / voltage & high water temperature alarm works			
22.	Primary pump pressure (2200 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. Exxon 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 20° F. For use in extremely cold ambient temperatures, we suggest Mobil DTE 11M, which can be used to -16° F. This oil should not be used for continuous operation above 100° F (oil temperature).

TX02244-2-2-04

Hydraulic Fluids Characteristics																
Manufacturer	Fluid Name	SSU 100F	SSU 210F	V.I.	-20F	-10F	0F	10F	30F	50F	70F	90F	110F	130F	150F	Range °F
Mobil	DTE 11M	87	40	145	*****	*****	*****	*****	*****	*****	*****	*****				-27-87
	DTE 13M	165	48	140				*****	*****	*****	*****	*****	*****	*****		5-130
	DTE 15M	225	53	140				*****	*****	*****	*****	*****	*****	*****		5-140
Exxon	Univis N-32	177	49	164				*****	*****	*****	*****	*****	*****	*****		5-140
	Univis N-46	233	55	163					*****	*****	*****	*****	*****	*****		25-142
	Univis N-68	376	68	160						*****	*****	*****	*****	*****	*****	34-155

NOTE: This chart is based on pump manufacturer recommendations of 65 to 2000 SSU limits.

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



Specifications



Fusion Machine Dimensions

- Length: 142" (3,607mm)
- Track Width: 77" (1,956mm)
- Overall Width: 100" (2,540mm)
- Centerline Height, Carriage: 51-1/2" (1308mm)
- Overall Height: 85" (2,159 mm)

Fusion Machine Weights

- Total Vehicle Weight: 9300 lbs (4,218 kg)
- Carriage, 4 Jaws 3790 lbs (1,719 kg)
- Carriage, 3 Jaws 3555 lbs (1,612 kg)

Carriage Specifications

- Maximum Pipe Diameter: 36" (900mm)
- Minimum Pipe Diameter: 12.75" (355mm)

Low Force

- Effective Piston Area: 9.43 sq in (60.8 sq cm)
- Maximum Force: 14,145 lbs (6,416 kg)

Medium Force

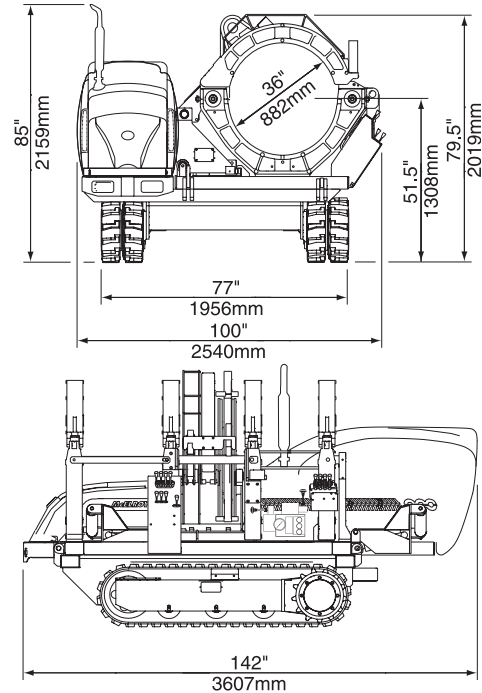
- Effective Piston Area: 15.32 sq in (98.8 sq cm)
- Maximum Force: 22,980 lbs (10,424 kg)

High Force

- Effective Piston Area: 29.44 sq in (189.9 sq cm)
- Maximum Force: 44,160 lbs (20,031 kg)

Power Pack Specifications

- 83 hp (62kW) 3300 cc, 4-cylinder, Liquid Cooled Turbo Diesel Engine
- 23 gal (87 liters) Fuel Capacity
- 2,200 PSI (152 bar) Operating System pressure
- 12 gal (45 liters) Hydraulic Reservoir
- 22,000 W Direct Drive Alternator - 240V-3Ph.-60Hz
- Travel Speed: Maximum 2 ft./sec.





Optional Accessories



DataLogger® Compatible

Record the Time, Temperature, and Pressure of each fusion joint.

The McElroy DataLogger can be used with this machine to record the fusion parameters that are used on each joint. This data can then be viewed and downloaded to a personal computer or printed.

DataLogger Features:

- Battery operated
- Rugged, portable, weather resistant
- Pocket PC with familiar Windows® interface
- Infrared temperature probe
- Detailed joint reports
- Built in data redundancy
- Flexible storage capacity



The Pocket PC is also available in a ruggedized version.



For more information, contact your distributor or visit www.mcelroy.com.

TX02567-11-16-05

1. Date & Time : 2005/02/11 14:50:21
2. Joint No. : 12
3. Job No. : Demo 1
4. Employee ID : DL Teacher
5. Machine ID : McElroy 1
6. Mach. Model : #618 MF
7. Piston Area : 6,010 in²
8. Pipe Material: ISO (Single HF) IP
9. Pipe Size : 8" IPS DR 11

Interfacial Pressures (psi):

- 12. Heat : 75
- 13. Soak : 0
- 14. Fuse : 75
- 15. Cool : ---

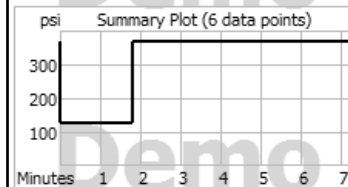
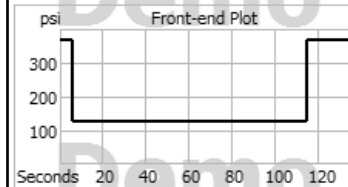
Recommended Gauge Pressures (psi):

- 18. Heat : 371
- 19. Soak : 130
- 20. Fuse : 371
- 21. Cool : ----

Recorded Data:

- 23. Drag Pressure: 130 psi
- 24. DataLogger Probe: ---
- 25. External Probe: ---
- 26. MDL3-0002 v0.0.2 Console v0.0.1
- 27. Notes:

Demonstration of field operation



PH03025-11-10-05

PH03121-11-16-05

PH03120-11-10-05

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



The leader by design.

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