

Operator's Manual



McELROY

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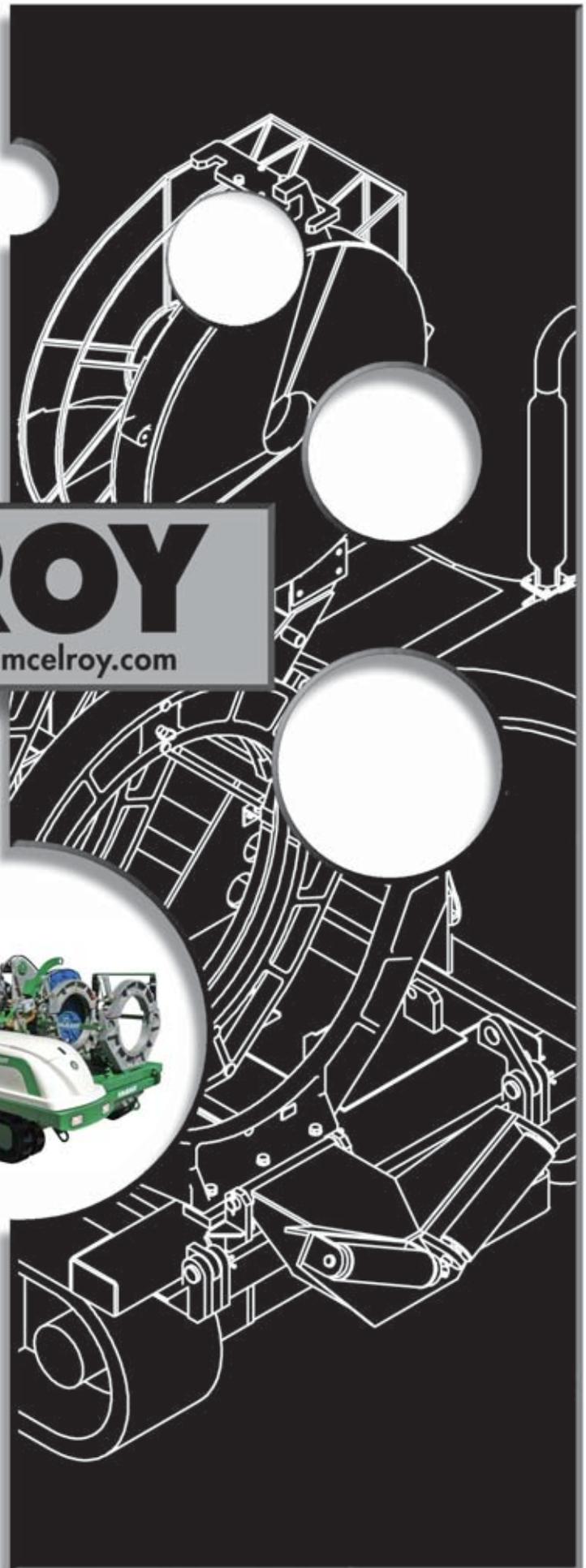
824, 1236, **TRACSTAR** 630 and 900 Fusion Machines

Patent No. 5,814,182 Other Patents Pending

Japanese Patent No. 4285806

Manual: T9028801 Revision: F 11/16

Original Language: English



This product and other products could be protected by patents or have patents pending. All the latest patent information is available at patent.mcelroy.com

**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 re-designed MegaMc® 824, 1236 and TracStar® 630, TracStar® 900 machines will butt fuse pipe sizes from:

8" IPS (225mm) minimum to 24" OD (630mm) maximum pipe on a 824/TracStar 630.

12" IPS (340mm) minimum to 36" OD (900mm) maximum pipe on a 1236/TracStar 900.

Above ground or in the ditch, these machines bring the flexibility of the smaller machines to MegaMc® large diameter fusion. These fusion machines have all the advantages of their predecessors with additional features for in-ditch, close quarters work.

The carriage has 4-jaws with a removable 3-jaw carriage and is capable of top loading the heater and facer to maximize functionality with limited space. The TracStar carriages are mounted on independently controlled, self propelled tracks and feature a wireless remote driving control. Both models are hydraulically powered to assist all fusion functions including the operation of the jaws, pipe lifts, heater and facer. The machines allow for butt fusion of most fittings without special holders or removal of outer jaw. Optional mitered inserts are available for fabricating ells.

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.

TX02729-11-2-10



McElroy University

For more than 30 years, McElroy has been the only pipe fusion machine manufacturer to continuously offer advanced training. Course offerings are meant to enhance your efficiency, productivity and safety in the proper use of McElroy machines. McElroy University classes are structured so that the skills learned and the machines used in each class closely match the machines found on pipelining jobsites. We offer training at our facility or yours. Our uniquely qualified McElroy University course instructors offer years of industry experience.

Tuition for each course includes lunches, course materials and a certificate of completion. Online registration, as well as up-to-date course offerings and dates, is available at www.mcelroy.com/university

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.

TX04659-03-24-14



MU203-13-14



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 **5 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.



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.



WR00051:11:30:92

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.



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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:12292

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.



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TX00032-4-7-93

Fuel Handling



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

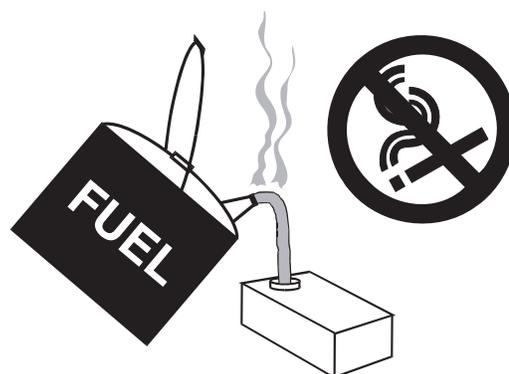
Do not fill the fuel tank while the engine is hot or running, as spilled fuel could ignite.

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.



CD003652:19-97

TX00953-2-19-97



Fusion Equipment Safety



Units With Engines



Combustion engines can cause explosions when operated in an explosive atmosphere. Do not operate gas or diesel powered machines in an explosive atmosphere.

When operating in an explosive atmosphere, 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.

TX01266-04-28-14



WR00080-4-12-93

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 an explosive atmosphere without necessary safety precautions will result in serious injury or death.

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

TX00100-04-28-14



WR00034-11-30-92

Do Not Operate This Machine in a Hazardous Environment



Electric motors and heaters are not explosion proof. Operation of these components in an explosive atmosphere will result in serious injury or death.

TX00796-04-11-14



WR00080-4-12-93



Fusion Equipment Safety



Pipe Handling Safety



Do not position yourself under supported or raised pipe. Pipe is heavy and could result in serious injury or death.



Pipe that is bent can store a great amount of energy. Do not bend and force the pipe into the machine. A bent pipe with stored energy could cause serious injury or death when that energy is released.

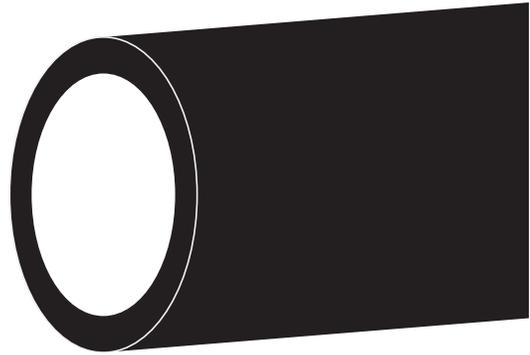
It is recommended that the pipe is always held securely by either being clamped securely in the fusion machine jaws or attached to a lifting device.

NOTICE: Do not leave machine unattended to unauthorized personnel. Operation of the machine by unauthorized personnel could damage the machine.

Keep persons that are not involved in handling pipe away from handling operations. Keep away from the pipe when the pipe and handling equipment are in motion. When in motion, all persons involved in handling pipe should be able to see all other persons at all times. If any handling person is not in sight, immediately stop moving equipment and pipe and locate that person. Do not continue until all persons are accounted for and in sight.

Never push, roll, dump or drop pipe lengths, bundles or coils off the truck, off handling equipment or into a trench. Always use appropriate equipment to lift, move and lower the pipe.

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WR00097-4-17-13

Crush Points



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.

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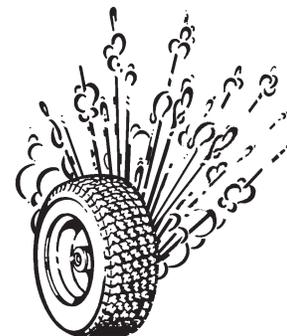
WR00012-12-4-92

Have Tires Properly Serviced



Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death. Have tires mounted by someone that is experienced, and has the proper equipment to perform the job safely.

TX00118-4-22-93



WR00083-4-22-93



Fusion Equipment Safety



Battery

⚠️ WARNING Do not expose the battery to flames or electrical sparks. Hydrogen gas generated by the battery is explosive. Serious injury can result from an exploding battery.

⚠️ WARNING 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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CD00177-9-14-95

Electrical Safety

⚠️ WARNING 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.

⚠️ WARNING Disconnect the machine from the power source before attempting to service the control panel. Failure to disconnect the power could result in electric shock. Refer service to a qualified technician.



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WR00025-11-30-92



Fusion Equipment Safety



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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Facer Blades Are Sharp

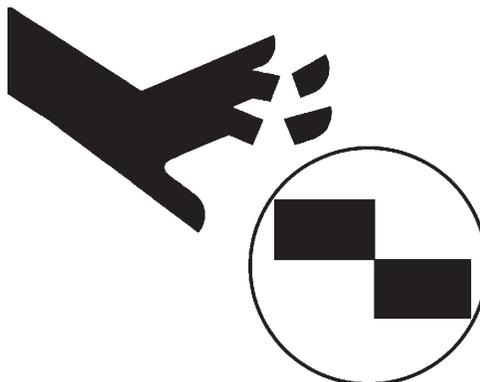


WARNING Facer blades are sharp and can cut. Never attempt to remove shavings while the facer is running, or is in the facing position between the jaws. Use care when operating the facer, and when handling the unit.

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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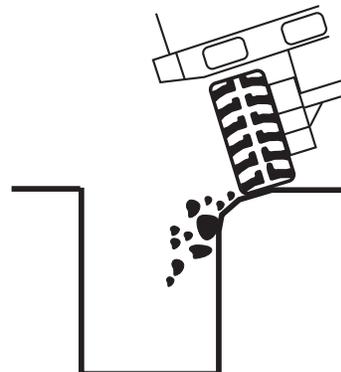


WRC0073-4-6-93

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

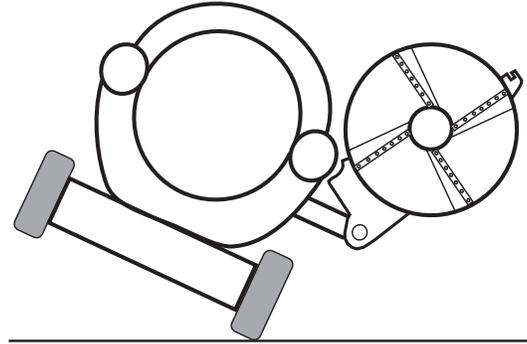


Setting Unit

Outriggers must be set before operation of the machine. Position the fusion machine on as level ground as possible. Chock the wheel and adjust outriggers to make it as level and stable as possible.

WARNING This machine can tip over if the outriggers are not set before moving the heater and facer out. Set the outriggers before operating this machine to avoid serious injury.

NOTICE: Always use outriggers to support weight when using pipe in the machine. Failure to do so will result in damage to the tires.



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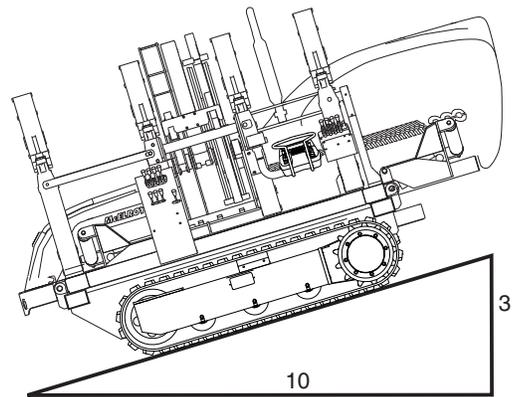
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Positioning Tracked Fusion Machine

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)



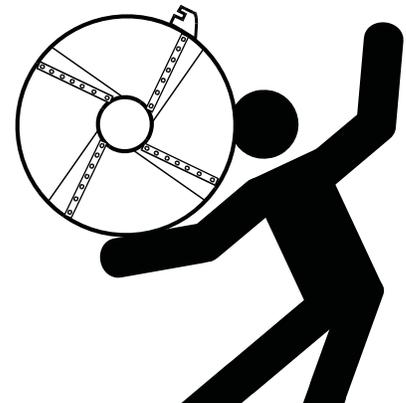
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Stand Clear

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.



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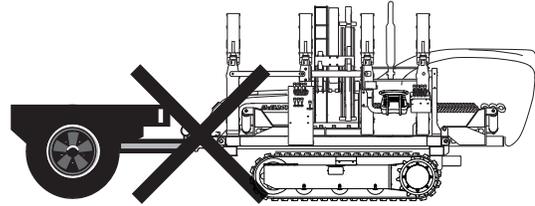
Fusion Equipment Safety



Do Not Attempt to Tow Tracked Fusion Machine



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 flatbed trailer or similar means, and make sure that unit is properly secured.



TX04245-11-8-10

CD005488-19-99

Heater Is Hot



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.



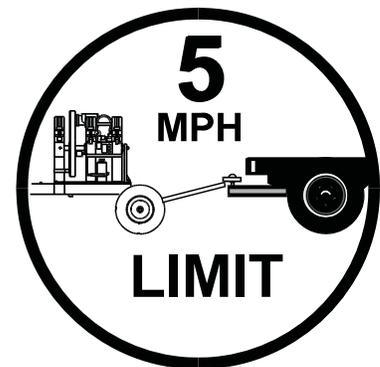
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Do Not Tow Rolling Fusion Machine At Speeds Greater Than 5 MPH

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.

NOTICE: Do not turn fusion machine against the turning stops. Turning machine against stops could damage machine and the towing vehicle.



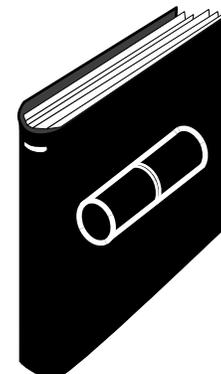
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Fusion Procedures

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

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



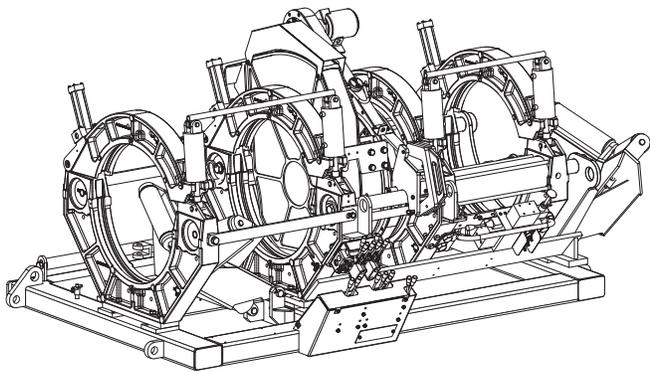
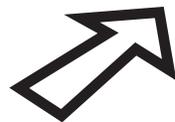
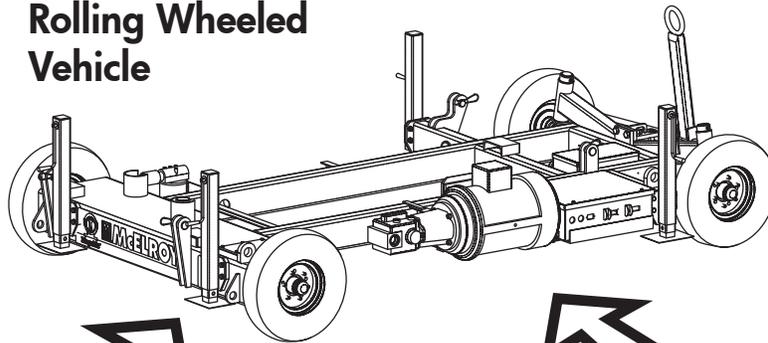
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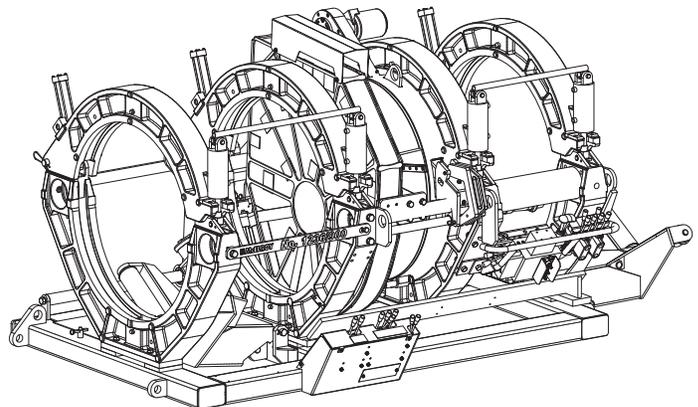
Carriage Assembly and Vehicles

The carriage assembly comes configured on either the rolling vehicle or tracked vehicle. The carriage assembly is interchangeable with both vehicles.

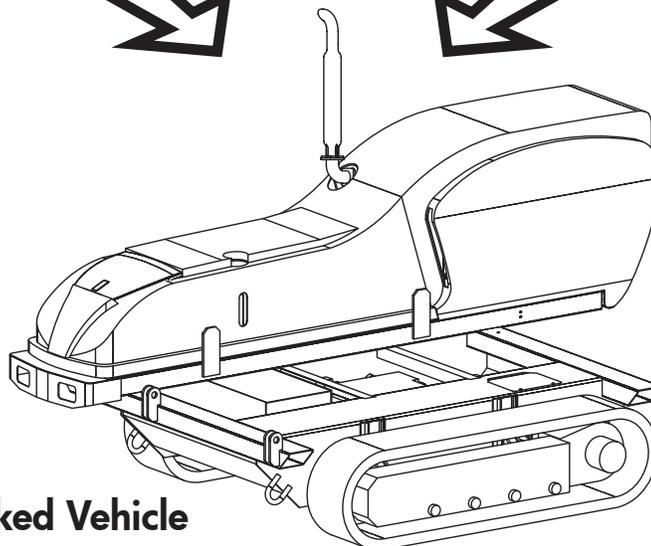
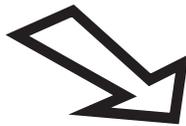
Rolling Wheeled Vehicle



**824/630
Carriage Assembly**



**1236/900
Carriage Assembly**



Tracked Vehicle

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 develops pressure which causes flow of the melted materials, which causes mixing and thus fusion. When the thermoplastic material is heated, the molecular structure is transformed into an amorphous condition. When fusion pressure is applied, the molecules from each thermoplastic part mix. As the joint cools, the molecules return to their form, the original interfaces are gone, and the fitting and pipe have become one monolithic unit. A strong, fully leak tight connection is the result.

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.



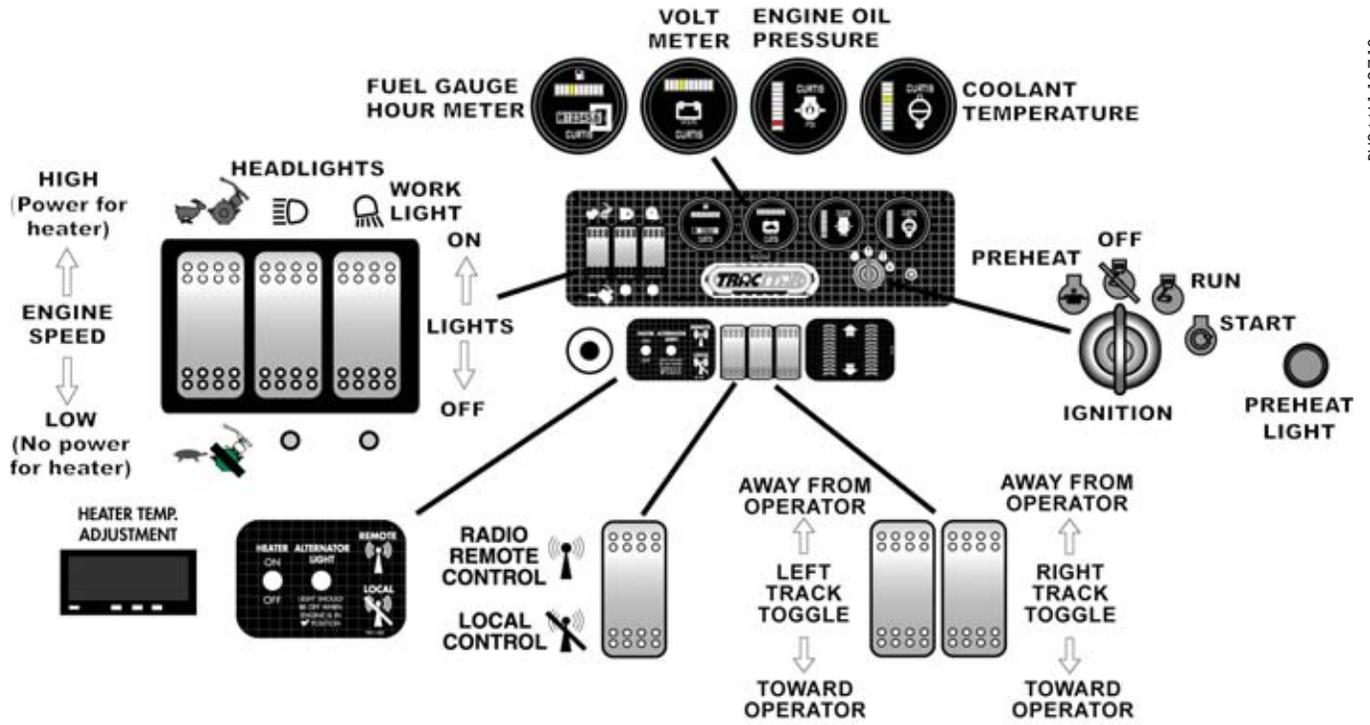
PH012692-1-98



Overview



TracStar® 630 and 900 Console



PH04461-127-10

Radio Remote Drive Controls (Tracked Vehicle)

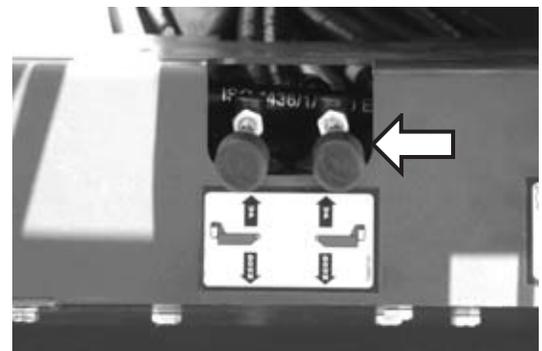
The engine can be started and machine can be driven from the radio remote.



PH03740-121-09

Pipe Lift Controls

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



PH3258-623-06

TX016628-19-99

TX016638-19-99



Overview



Jaw Pivot and Clamp Control

Arrows on valves indicate direction of control lever movement for operation required.



PH03735-1:21:09
PH03736-1:21:09

TX00885-3-7-96

Indexer, Heater and Facer Controls

Arrows on valves indicate direction of control lever movement for operation required.



PH03491-10-17:07

TX00886-3-7-96

Jaw Clamps

Jaw clamps are hydraulically operated for clamping and unclamping the upper jaws.

There is a handle connecting both clamping cylinders that is used for lowering the clamps away from the jaws.



PH03492-10-17:07

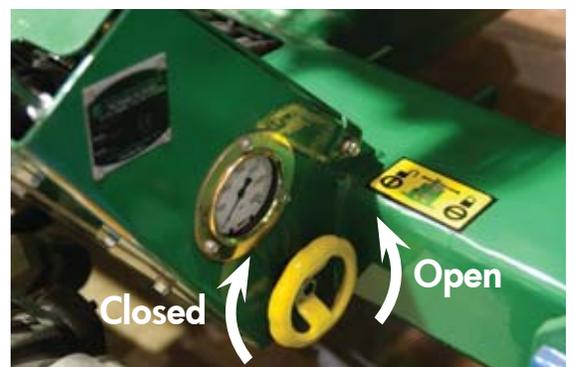
TX00887-3-7-96

Index Cylinder Lock

The index cylinder lock valve should be in the closed position for transporting.

Open the index cylinder lock valve before operating.

NOTICE: Open valve before operating, failure to do so will result in damage to the machine.



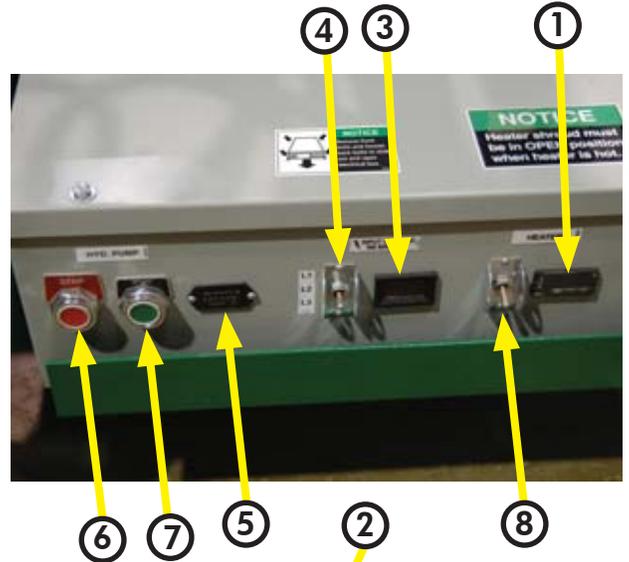
PH03493-10:17:07

TX04253-12-7-10

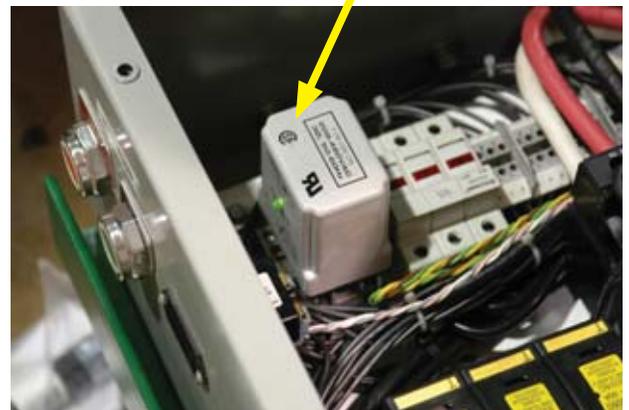
Electrical Box (Rolling Vehicle)

Control Panel

1. **Temperature Adjustment.** Digital controller used to set heater temperature.
2. **Reverse Phase Relay.** Interrupts power and prevents pump from turning the wrong direction.
3. **Volt Meter.** Displays incoming voltage from the power source.
4. **Volt Meter Selector Switch.** Allows for selecting each incoming phase of a 3-phase electrical system.
5. **Hour Meter.** Registers total hours hydraulic pump has been used.
6. **Stop - Hydraulic Pump.** Shuts off power to the hydraulic pump.
7. **Start - Hydraulic Pump.** Turns power on to the hydraulic pump.
8. **Heater On/Off.** Turns electrical power on and off to heater.



PH03494-10-17-07



PH03495-10-17-07

WARNING

Disconnect the machine from the power source before attempting to service the control panel. Failure to disconnect the power could result in electric shock. Refer service to a qualified technician.

To open the electrical box, remove the front side mounting bolts and loosen the rear bolts. Grab the front bracket of the electrical box and pull the box out. Loosen the screws on the top of the box to open it.

TX02730-11-15-07



Overview



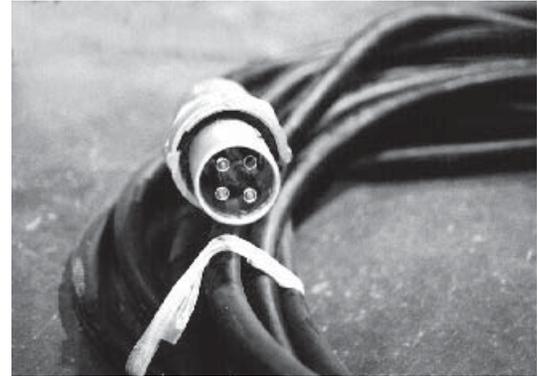
Electrical Power (Rolling Vehicle)

⚠ DANGER All electrical equipment and power sources must be located outside an explosive atmosphere. Failure to do so will result in serious injury or death.

See SPECIFICATIONS section of this manual for power requirements.

Ensure proper ground for the electrical system.

TX00714-04-11-14



PH00741-3-12-96

Electric Motor (Rolling Vehicle)

The pump motor is a totally enclosed fan cooled motor.

⚠ DANGER Electric motors are not explosion proof. Operation of these components in an explosive atmosphere will result in serious injury or death.

TX00720-04-11-14



PH03496-10-17-06

Diesel Engine (Tracked Vehicle)

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

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

TX01465-11-8-10



PH04455-11-11-10



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.

The two moveable and inner fixed jaw can be removed in a 3-Jaw configuration for remote operation from the carriage.

TX02637-7-17-06



PH02512-07-17-03

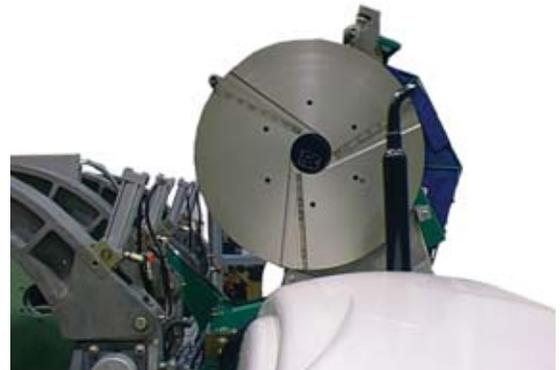
Facer

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.

When needed, the facer can be removed from its carriage skid-mounted pivot arm, for off-vehicle modular operation.

The optional extension kit as well as the optional heater/facer stand is needed for modular facer operation.

TX02638-3-12-07



PH01697-8-19-99

Hydraulic Manifold Block

Mounted on this block are a carriage directional control valve, a pressure reducing selector valve, three pressure reducing valves, a 3000 psi gauge, and a DataLogger port.

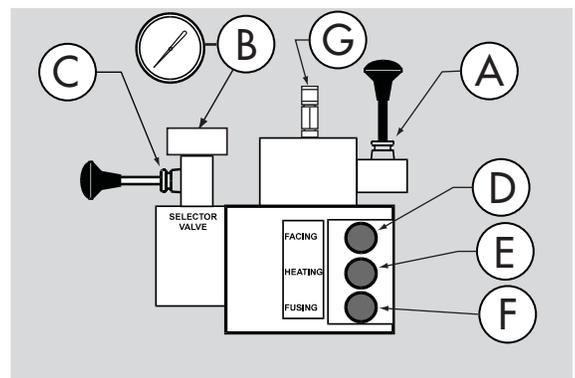
- A) The carriage control valve, mounted on the top of the manifold, determines whether the carriage is moving left, right, or is in neutral.
- B) A 3000 psi gauge is mounted on a bracket next to the manifold.
- C) The selector valve, mounted on the upper left of the manifold, selects a reduced pressure 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 2300 psi.
- G) DataLogger port



PH03262-7-17-06



CD00182D-11-1-1-10

TX02731-11-15-07



Overview



Hydraulic Fluid Reservoir

The fluid reservoir is located under the front hood of the tracked vehicle and on the rear of the rolling vehicle. The fluid level sight gauge is located on the reservoir. It includes a thermometer which indicates fluid temperature.

Tracked Vehicle:

Fill to the bottom of the sight gauge when the fluid is cool to allow for fluid volume expansion.

Rolling Vehicle:

Fill to the top of the sight gauge when the fluid is cool.

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

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

Tracked



PH03541-10-17-07

Rolling



PH03508-10-17-07

TX02732-06-09-14

Filter

This rolling and tracked machines are equipped with a 10 Micron filter on the return side of the circuit.

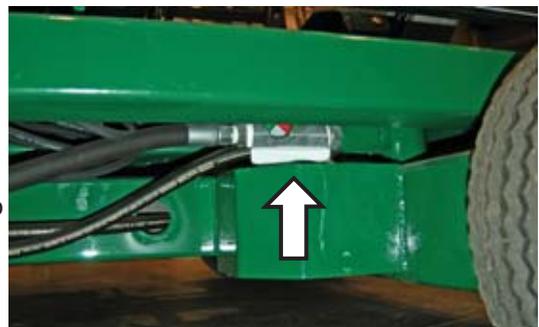
The rolling machine is also equipped with a magnetic suction filter.

Tracked

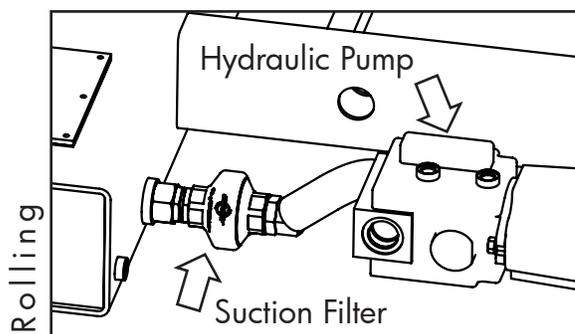


PH01716-8-19-99

Rolling



PH03509-10-17-07



TX02713-1-21-09



Overview



Heater

The heater is equipped with butt fusion heater plates, coated with an antistick coating.

⚠ DANGER This heater is not explosion proof. Operation of heater in an explosive atmosphere without necessary safety precautions will result in serious injury or death.

When needed, the heater can be removed from its carriage skid-mounted pivot arm, for off-vehicle modular operation.

The optional extension kit as well as the optional heater/facer stand is needed for modular heater operation.

TX02733-06-09-14



PH03260-8-7-06

Power for Heater

The heater cord has a receptacle on the vehicle to allow carriage removal and has a receptacle on the carriage to allow heater removal. Extension cable for remote use can be used between either receptacle. Tighten coupling nut after plugging into receptacle.

Tracked



PH01708-8-19-99

Rolling



PH03507-10-17-07

TX02734-11-15-07

Outriggers (Rolling Vehicle)

Outriggers must be set before operation of the machine. Position the fusion machine on as level ground as possible. Chock the wheel and adjust outriggers to make it as level and stable as possible.

⚠ WARNING This machine can tip over if the outriggers are not set before moving the heater and facer out. Set the outriggers before operating this machine to avoid serious injury.

The outriggers can also be used to make the machine immobile when the machine is not being transported.

NOTICE: All outriggers must be raised before moving the machine.

TX02735-11-8-10



PH03510-10-17-07



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-1228-95

TX00401-9-15-94

Before Starting

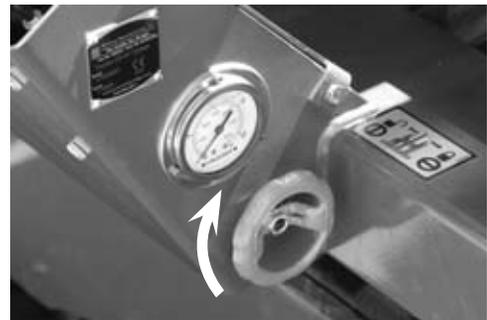
Before starting this machine make sure that the carriage directional control is centered.

The clamp valves (A) should be in the centered position, the jaw pivot valves (B) should match the current position of the jaws.

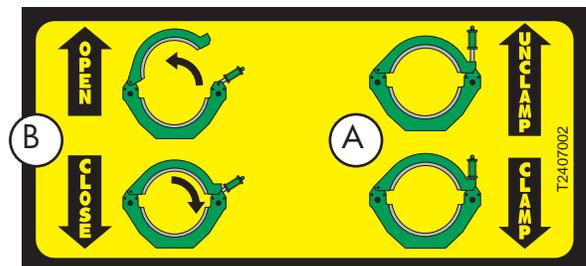
This will prevent any unwanted movement upon starting of engine.



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



PH032657-17-06



PH04453-11-11-10

TX02714-11-8-10



Operation



Starting Instructions (Tracked Vehicle)

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

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

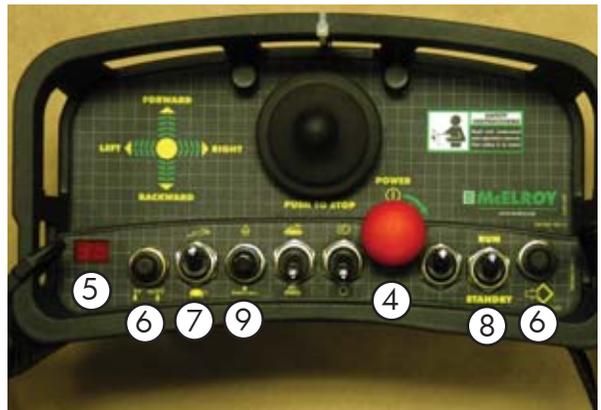
Starting in Local Mode

- 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.

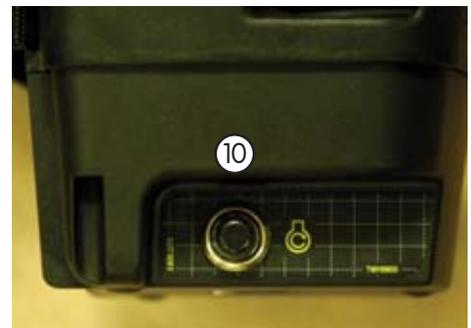


Starting in Remote Mode

- 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 If the LED display shows a **L** in the display and has an audible beep, the batteries are low and need to be replaced. Refer to the "Remote Batteries" in the maintenance section.
- 6 Press the Reset button to link the remote. If the remote has interference, the remote channel can be changed. See the section "Changing Remote Channel" in the Maintenance section of this manual.



- 7 Set engine speed to slow. 
- 8 Set the remote to Standby. 
- 9 Hold the preheat push-button on for 5 sec. 
- 10 Push the engine start button until the engine starts. 
- 11 Switch to Run mode to drive the vehicle.
- 12 To stop the engine, press the engine stop button until the engine is off. 



TX02144-1-21-09

PH02519-07-17-03

PH03740-1-21-09

PH03740-1-21-09

PH03740-1-21-09



Operation



Driving Vehicle (Tracked Vehicle)

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

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

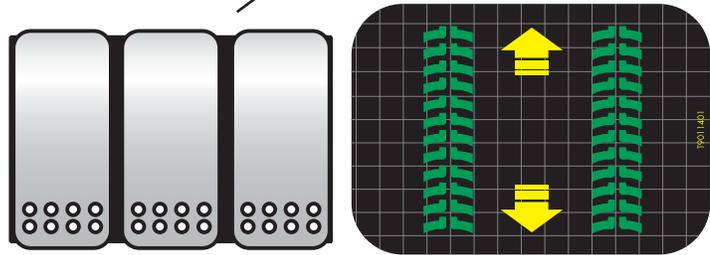
Left drive toggle switch engages left track. Right drive toggle switch engages right track.

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.



PH04458-11-11-10



CD00569-8-19-99

In Radio Mode the joystick controls the tracks.

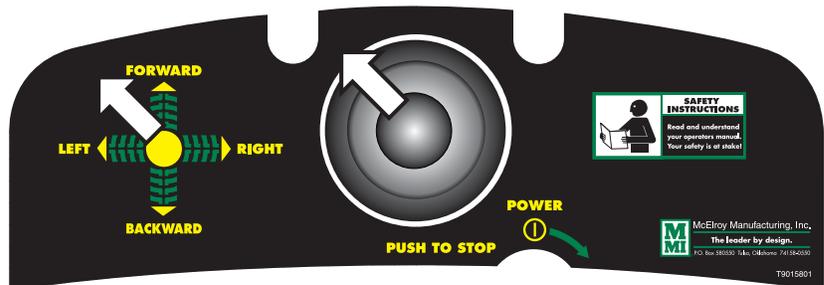
CAUTION When using remote mode, switch to "standby" when not driving the vehicle to prevent accidental movement.

With the Standby/Run switch in "RUN" move the joystick in the backward direction to move the machine backwards. Standing at the rear of the machine, moving the joystick to the left or right will make the machine turn in that direction.



PH03740-1-2-1-09

The track speed switch 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.



CD00568-8-19-99

TX02631-11-11-10

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The leader by design.
P.O. Box 580550, L.A., California 94138-0550
T9015901



Operation



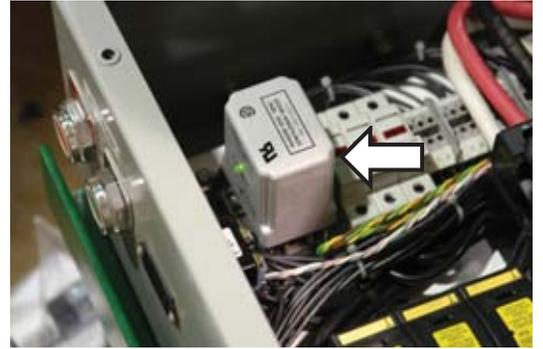
Electrical Power (Rolling Vehicle)

NOTICE: Low voltage will damage unit. Connect unit to proper electrical power source. Ensure proper ground for electrical system.

If unit fails to start, check to see if the light on the reverse phase relay is on. If not, disconnect the power source and switch any two incoming power leads and try again. If the unit still doesn't start, call qualified service personnel for assistance.

The reverse phase relay ensures correct rotation of the pump motor so damage to the hydraulic system does not occur.

TX00722-11-11-10



PH03495-10-17-07

Hydraulic pump (Rolling Vehicle)

Turn on hydraulic pump by pushing start button. System pressure gauge reading should be 2300 psi.



PH03496-10-17-07



PH03493-10-17-07

TX02736-11-11-10



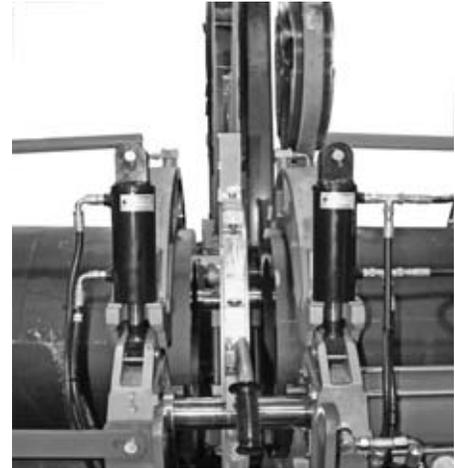
Prepare Heater



Heater is not explosion proof. Operation of heater in an explosive atmosphere without necessary safety precautions will result in serious injury or 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.



PH03261-6-26-06



PH01708-8-19-99

TracStar machines only:

Plug heater into receptacle on machine.

Switch the heater on. Adjust heater temperature to required setting. Allow heater to warm-up to operating temperature.



PH04456-11-11-10

Tracked

Rolling machines only:

Switch heater on. Adjust heater temperature to required setting. Allow heater to warm-up to operating temperature.

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



PH03494-10-17-07

Rolling



Operation

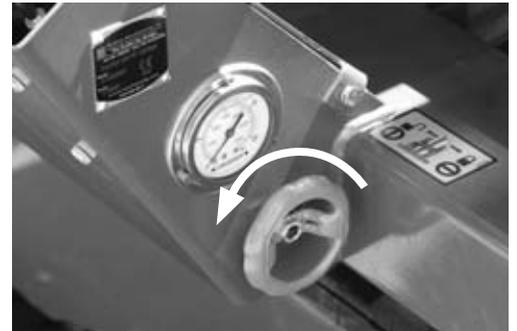


Move Heater and Facer Out

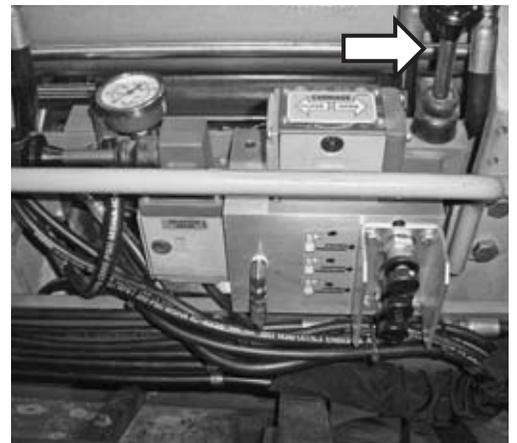
Unlock Index Cylinder valve and move carriage to the right.
Pivot Support Arm / Heater Bag out by moving lever on valve to out position.



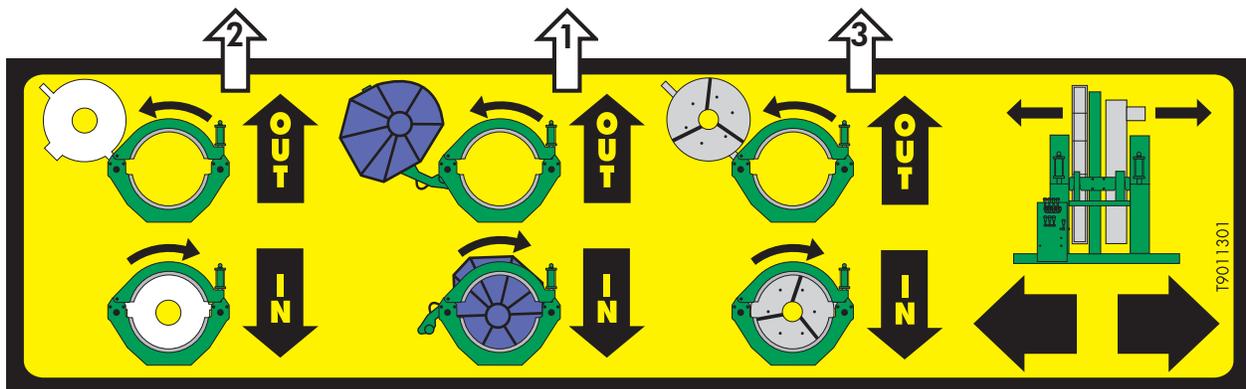
Swing Heater and Facer out by moving levers on valves to out positions.



PH03265-1-22-07



PH03262-6-26-06



TX01675-8-19-99

CD00567-8-19-99

Jaws

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

NOTICE: Do not let the clamp cylinders drop. Dropping the cylinders can damage the equipment.

Move jaw valve lever to open position and open jaws.



PH01681-8-19-99

TX02644-7-17-06

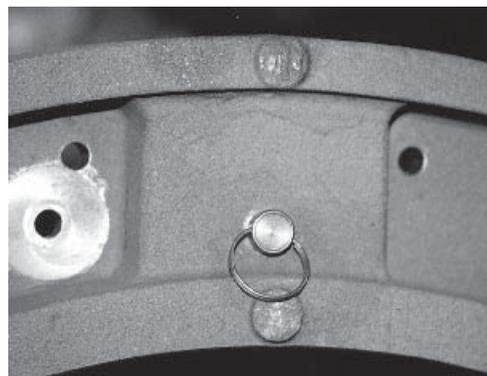


Operation



Jaw Inserts

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



PH007373-11-96

TX01660-8-19-99

Loading Pipe into Machine

Position pipe support stands more than half way from each end of the machine to help support and align the pipe.

Raise pipe lifts on carriage to allow pipe to roll into position.

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.



PH02224-8-22-01



PH01673-8-19-99



TX01689-11-15-07



Operation



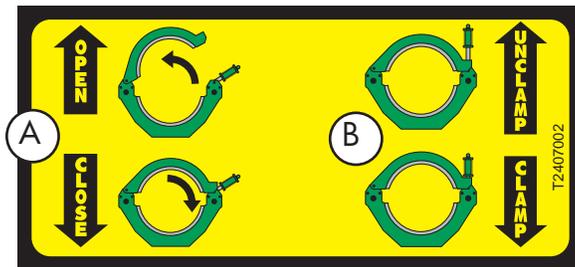
Closing Jaws

Move the jaw valve control lever to Close position (A).

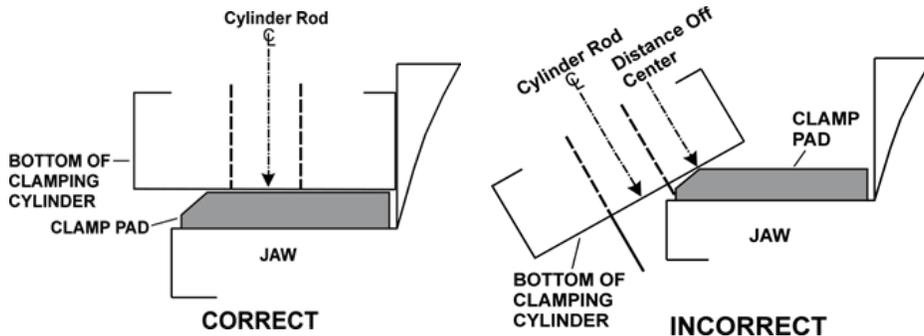
Move the clamp cylinders into the vertical position and then move the jaw clamp control valve lever to the Clamp position (B).

NOTICE: The jaw clamping cylinders are designed to clamp when in the upright position, evenly applying pressure over the entire base of the cylinder. Always ensure the clamping cylinder is upright over the clamping pad of the jaw before clamping the jaw. Damage to the cylinder and jaw can occur if not clamped properly.

Clamp marks on the bottom of the cylinder are an indication that the cylinder was not in the proper position when clamped down.



PH03515-10-17-07



PH04855-3-15-13

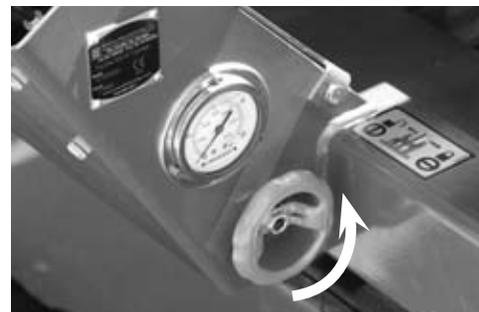
PH04855-3-15-13

TX02645-10-15-13

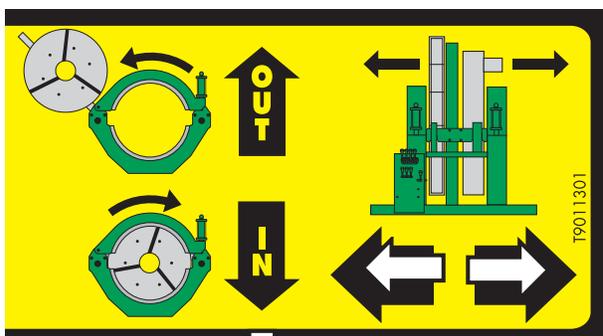
Positioning Facer

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.

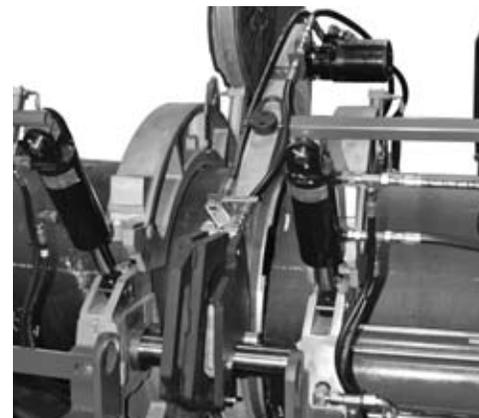
Pivot the facer into position by moving the facer valve lever to **IN** position.



PH03265-6-30-06



CD005678-19-99



PH03266-6-30-06

TX02739-11-15-07



Operation



Begin Facing

Turn facer on by opening valve on top of the facer (824/TracStar 630) or next to the carriage manifold (1236/TracStar 900).

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.



PH03511-10-17-07

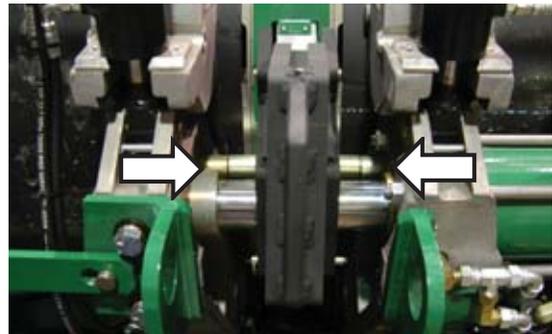


1236/TracStar 900



824/TracStar 630

PH03278-6-30-06 PH03534-10-17-07



PH03512-10-17-07

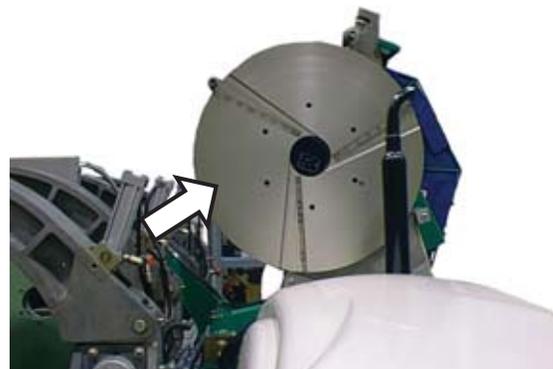
TX04246-11-11-10

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.



WARNING Turn the hydraulics off if it is necessary to enter the unit for maintenance or chip removal. Death or serious injury will result if the hydraulics are activated while in the unit.



PH016978-19-99

TX02877-11-11-10

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.

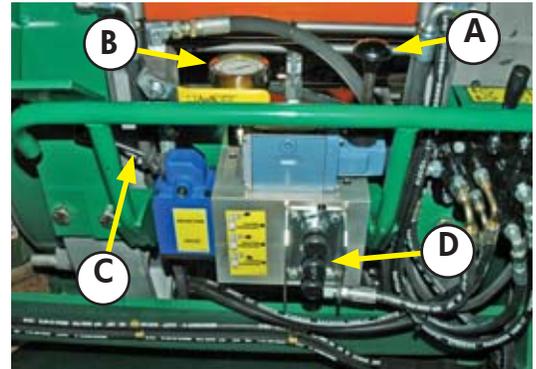
Select the heating mode, and adjust the middle pressure reducing valve to its lowest pressure by turning the valve counterclockwise.

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.



PH04453-11-1-10

- 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**.



PH03514-10-17-07

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.

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.



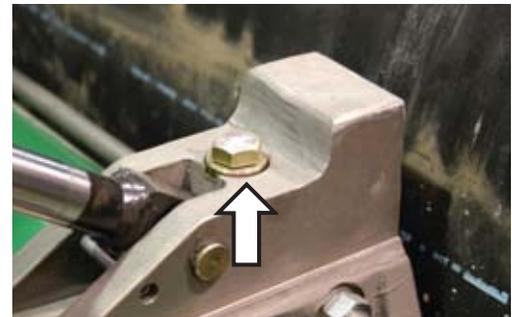
WARNING Hydraulically operated equipment is operated under pressure. Anything caught in the machine will be crushed. Keep fingers, feet, arms, legs, and head out of the machine while operated.

Insert facer and reface the pipe ends.

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



PH03514-10-17-07



PH03513-10-17-07

TX04247-11-1-13

Carriage Indexer Heater Position

Move the carriage to the right.

Activate the heater/facer index valve and move the heater to center of gap.

Move heater valve lever to IN position and swing heater into position.

TX02648-7-17-06



PH01671-8-19-99

Check Heater Temperature

NOTICE: 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.

TX04248-04-28-14



WR00077-4-16-93

Cleaning Heater

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

TX04249-11-17-10



PH017208-19-99

Heat Pipe

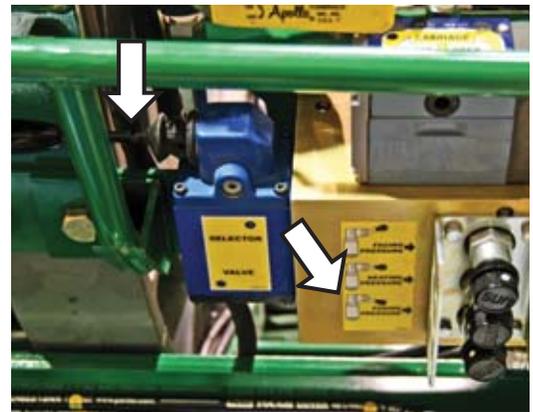
Shift the selector valve to the center position, and set the heating pressure (if required). If heating pressure is not required, set the pressure reducing valve at its lowest setting, or the drag pressure, whichever is higher.

Shift the selector valve to the fusion position and move carriage to the left to bring pipe ends in contact with the heater. Move selector valve 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.

TX02880-10-12-10



PH03511-10-17-07



PH03516-10-17-07



Fusing the Pipe

NOTICE: 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.

Index the heater to the right to clear the pipe ends. Move the heater pivot valve to **OUT** position to quickly pivot heater out.

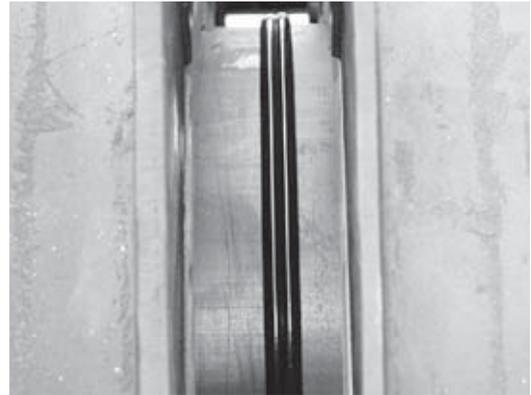
Quickly inspect pipe ends for appropriate melt.

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.

TX04265-1-20-12



PH012692-13-98

Opening Moveable Jaws

Unclamp jaws on carriage and open jaws until they bottom out on the clamp cylinders, releasing grip on pipe.

Move heater and facer completely to the right.

NOTICE: Watch facer to make sure it clears the upper end of the cylinder that opens the inner movable jaw.

Move carriage all the way to the right. Jaws should slip on pipe. Close the carriage jaws and swing clamping cylinders out, then open carriage jaws.

TX00737-11-3-95



PH01725-8-19-99

Opening Fixed Jaws

Unclamp the fixed jaws.

Open the fixed jaws.

TX00381-9-16-94



PH01684-8-19-99



Operation



Raise Pipe

Raise the joined pipe using the hydraulic pipe lifts.

TX01681-8-19-99



PH01734-8-19-99

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 past the jaw face of the fixed jaw.

TX01682-11-17-10



PH01668-8-19-99

Install Next Piece of Pipe

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

TX00384-10-12-95



PH01673-8-19-99



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 than is possible while the carriage is mounted on the machine.



PH017028:19:99

TX02651-3-12-07

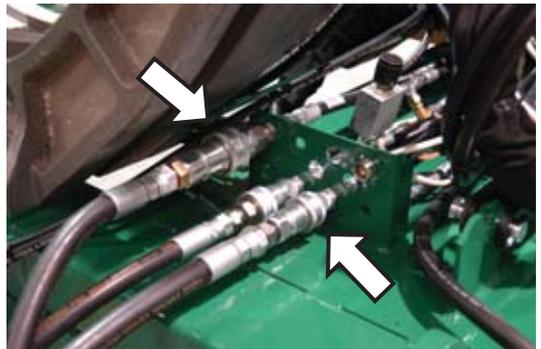
Removing Carriage

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



PH017148:19:99

Disconnect all hoses and cables.



PH03522:10:17:07

Attach the spreader bar as shown on page 4-2.

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

Attach extension cables and hoses between Carriage and Machine.



Special Operations - In Ditch



Removing Carriage (cont'd)

Spreader bar configuration shown is for lifting entire carriage.

Spreader bar assembly comes with:

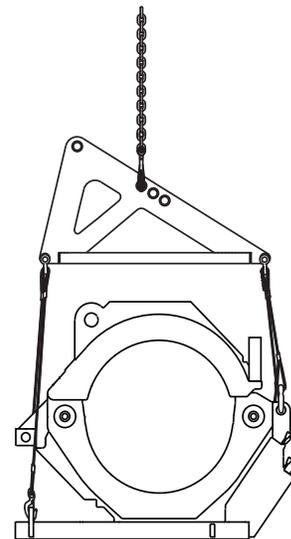
(1) Spreader bar weldment

(2) Sets of 47" slings

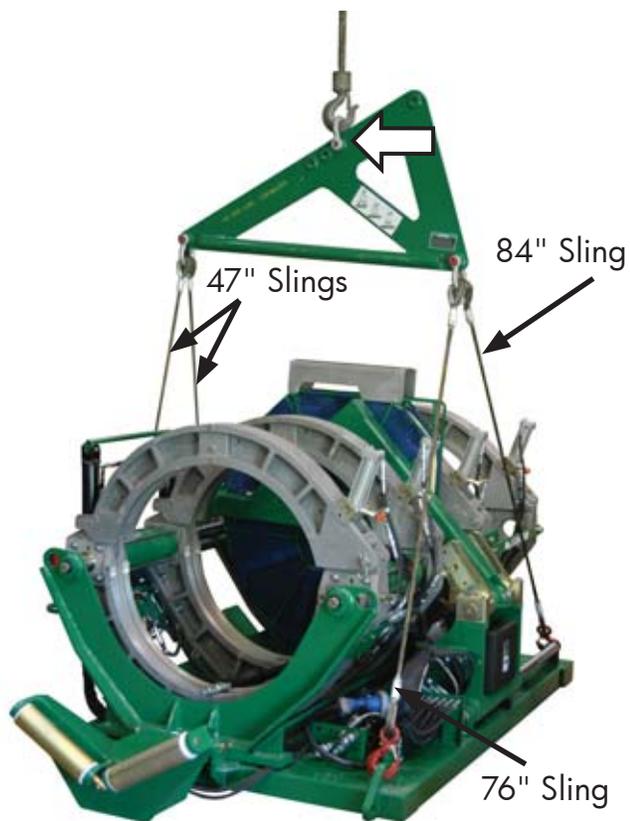
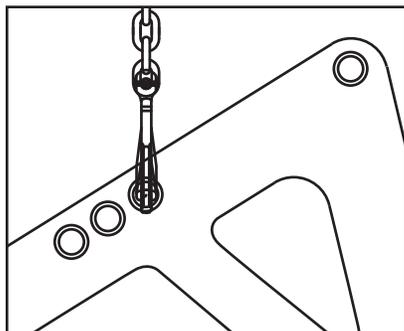
(1) Sling set consisting of:

(1) 84" sling

(1) 76" sling



NOTICE: Long sling (84") is toward the fixed jaw end.



4 Jaw Carriage



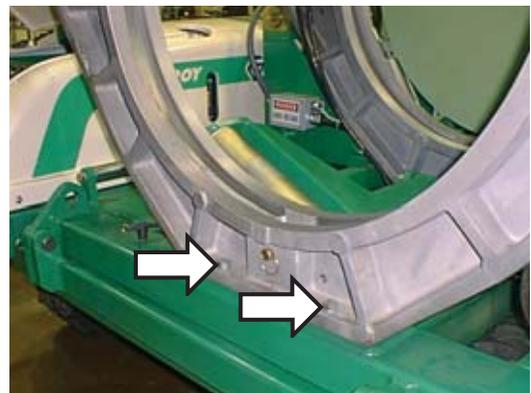
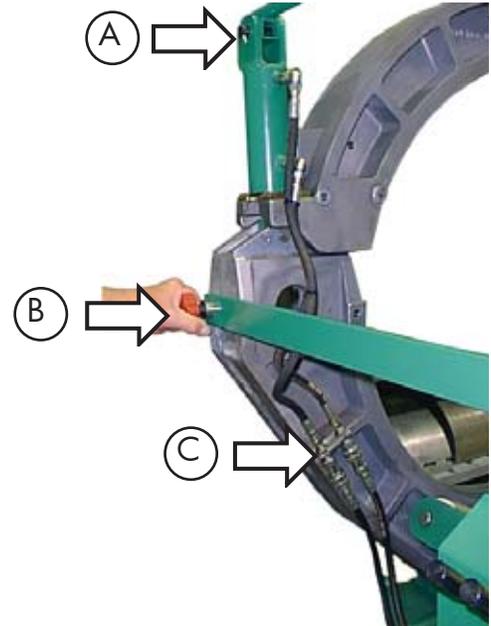
Removing Outer Fixed Jaw

Certain fusion applications require more clearance than is available in the 4-jaw, off-vehicle configuration. When needed, the outer fixed jaw can be removed from the carriage skid assembly while leaving the rest of the carriage skid assembly intact.

To remove the outer fixed jaw:

Disconnect the clamp handle (A), the tie bar (B), and the hydraulic connection between the jaws (C).

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





Special Operations - Three Jaw



Removing 3-Jaw Carriage

For very tight fusion conditions where the carriage skid assembly won't fit, or for fusing special fittings that would interfere with the carriage skid, pipe lifts, or the outer fixed jaw, the 3-jaw carriage assembly (2 moveable jaws and inner fixed jaw) can be removed as a separate unit from the carriage skid.

With the machine turned off and the facer, heater and heater bag support arm pivoted out:

Disconnect hoses between the carriage and the 3-jaw carriage assembly (A).

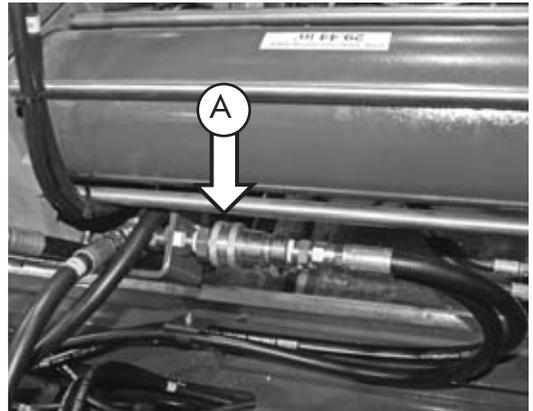
Disconnect the hoses to the facer near the facer motor (B).

Remove the fixed jaw supports (C) and clamp cylinder handle (D).

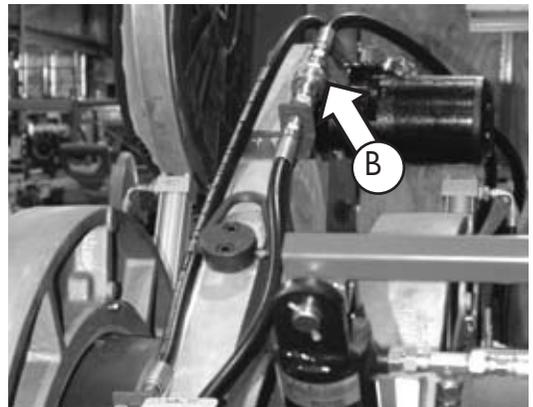
Disconnect hoses from outer fixed jaw pivot and clamp (E).

Remove (2) fixed jaw mounting bolts and (3) guide rod support mounting bolts (F).

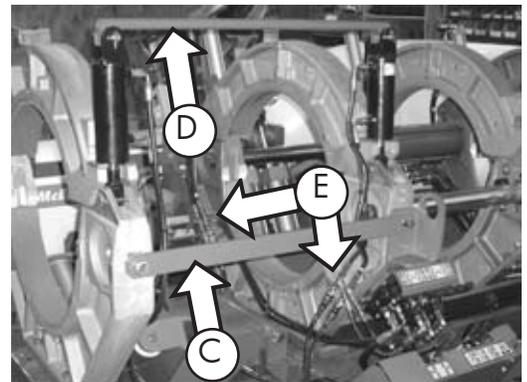
Attach spreader bar with (2) sets of 47" slings to lifting eyes on inner fixed jaw and guide rod support as shown.



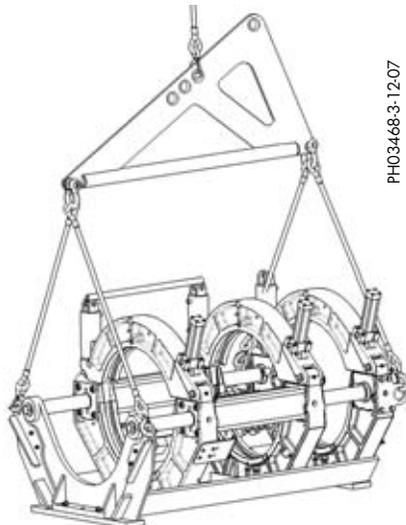
PH032827-1706



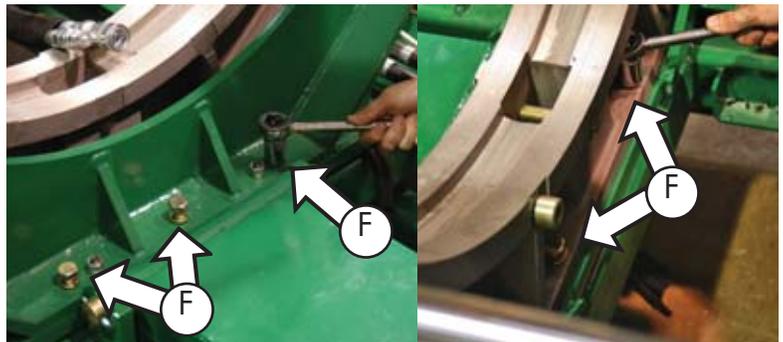
PH03469-3-1207



PH03466-3-1207



PH03468-3-1207



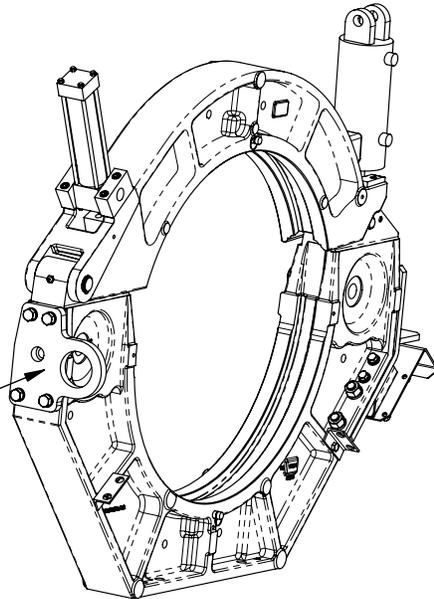
PH03467-3-1207



3-Jaw Carriage Tee Leg Length Requirement

The inner fixed-jaw inbound lifting lug must be removed to achieve the minimum length.

REMOVE FOR MINIMUM
TEE LEG LENGTH



CD00766-11-17-07

TX02743-11-15-07

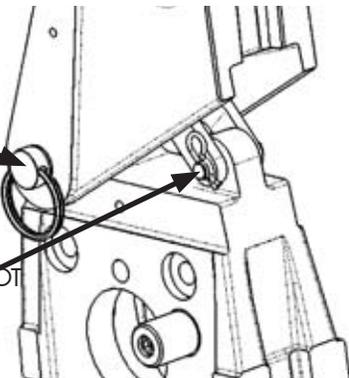
Remove Upper Jaws

Upper jaws may be removed by removing hairpin and clevis pin for pivot cylinder and removing the hairpin and jaw pin.

Disconnect the pivot cylinder hoses.

REMOVE HAIRPIN AND
JAW PIN TO REMOVE
UPPER JAW

REMOVE HAIRPIN AND CLEVIS
PIN TO DISCONNECT JAW PIVOT
CYLINDER



PH03448-1-22-07

TX02705-11-15-07



Modular Facing Operation

When operating the fusion machine in the 3-Jaw carriage assembly configuration, the facer must be operated away from the machine in a modular configuration.

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.

To remove the facer from its on-skid pivot arm:

With the facer valve closed so the facer blades are not rotating, pivot the facer out to just above the clamping cylinders (A).

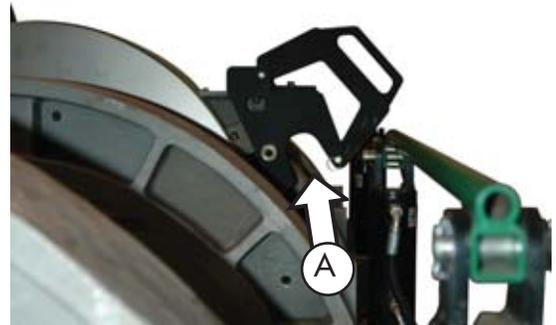
Attach a lifting strap of adequate load rating to the lifting eye on the top of the facer (B).

Turn off the machine.

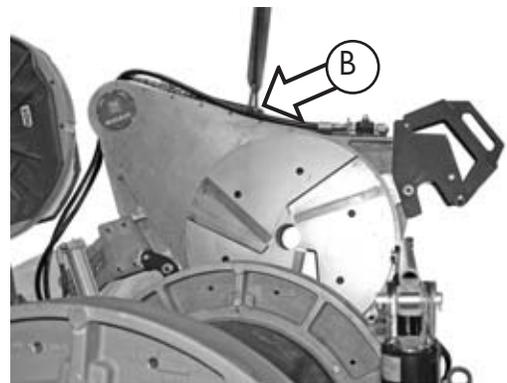
NOTICE: The facer must be rotated out to the clamping cylinders before removing the mounting bolts and lifting the facer. Failure to do so may cause uncontrolled movement of the facer and damage to the machine.

Remove in-board rest buttons (C).

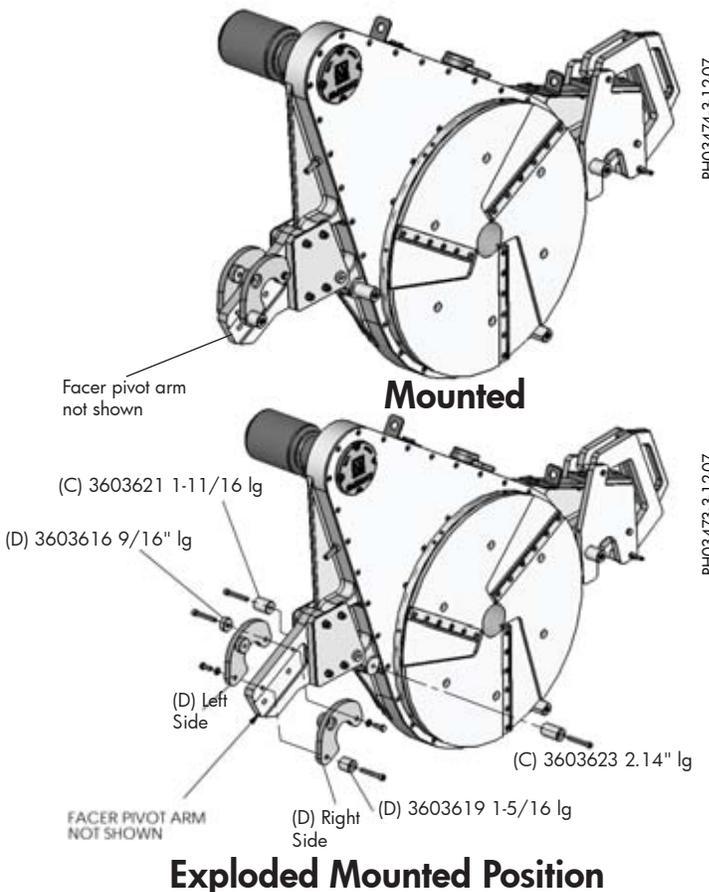
Remove mounted guide rod anchors and rest buttons (D).



PH03622-14-08



PH03288-6-30-06



PH03474-3-12-07

PH03473-3-12-07

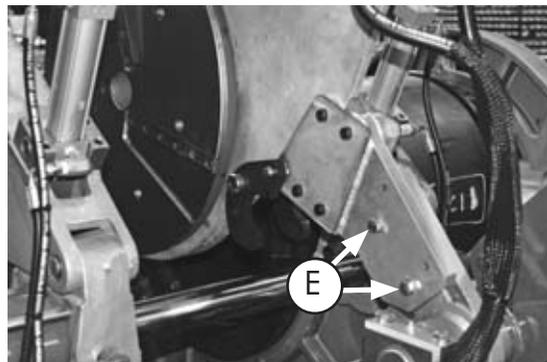


Modular Facing Operation (continued)

Loosen and remove the (2) facer mounting bolts (E).

Disconnect the hoses at the quick disconnects near the facer motor.

Slowly lift out the facer using an overhead lifting device.



PH03470-3-12.07

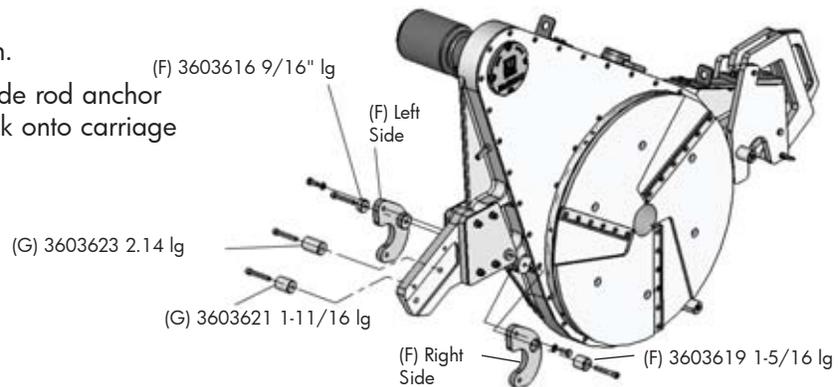
824, TracStar 630 Modular Facer Setup

Configure the facer as shown for in-ditch application.

NOTICE: Guide rod anchors and facer rest buttons must be installed as shown prior to modular facer operation.

Install anchors and rest buttons (F) as shown.

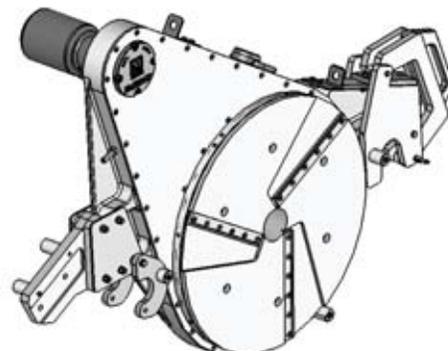
Store the original rest buttons (G) in the guide rod anchor locations until facer is to be re-installed back onto carriage indexer pivot arm.



PH03472-3-12.07

Exploded In Ditch Position

Attach the optional hose extension kit between the 3-Jaw carriage assembly and the facer.



PH03471-3-12.07

In Ditch



Modular Facing Operation (continued)

1236, TracStar 900 Modular Facer Setup

Configure the facer as shown for in-ditch application.

NOTICE: Guide rod anchors and facer rest buttons must be installed as shown prior to modular facer operation.

Remove rest button (C).

Remove the bolts (D) from guide rod anchors and remove from facer pivot arm.



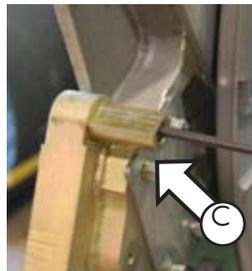
PH03531-10-17-07

Rotate anchors and rest buttons (E) and reinstall as shown on both sides of the facer.

Install anchor bolts (F) in the guide rod anchor on both sides of the facer.

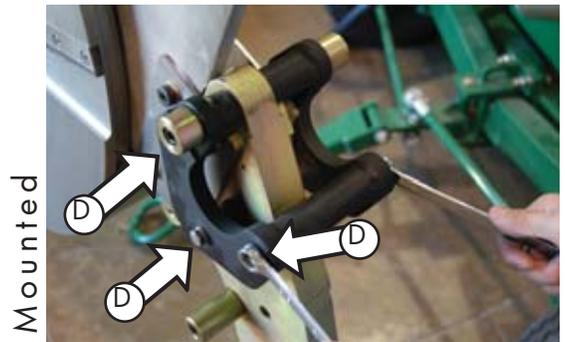
Install the bolt connecting the two guide rod anchors together (G).

Reattach rest button (C) on the facer arm as shown for storage until the facer is to be re-installed back onto the carriage indexer pivot arm.



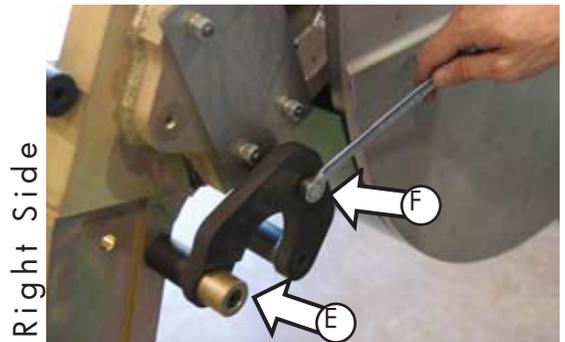
PH03532-10-17-07

Attach the optional hose extension kit between the 3-Jaw carriage assembly and the facer.



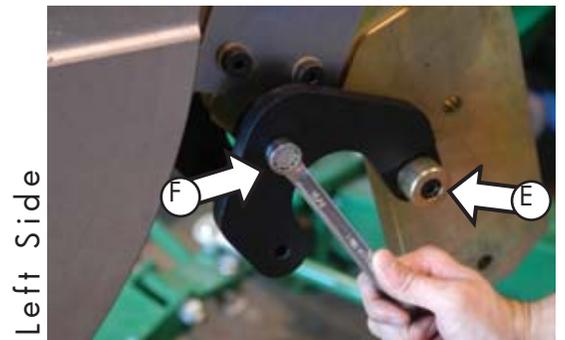
Mounted

PH03526-10-17-07



Right Side

PH03528-10-17-07



Left Side

PH03529-10-17-07



In-Ditch

PH03530-10-17-07



PH03533-10-17-07



Modular Facing Operation (continued)

Lower the facer between the pipe ends - the guide rod anchors will engage the inboard guide rod and the facer locking handle will engage the outboard guide rod. Open the latching handle by removing the pin (J)

To lock the facer in place during the facing operation, engage the pin back into the locking handle after the latch has swung below the guide rod.

Restart the machine.

Open facer valve on top of the facer.

Follow the instructions from section "Facing the Pipe" to face the pipe ends.

To re-install the facer to the skid-mounted pivot arm:

Turn off the machine

Disconnect hoses connected to the facer.

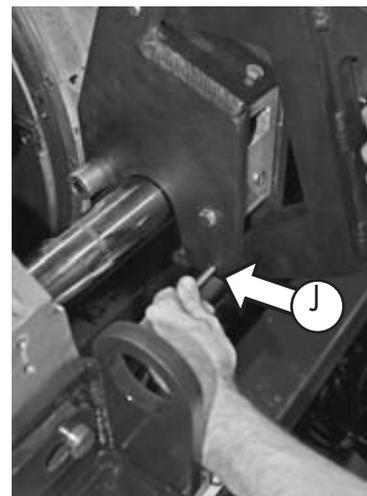
Position the facer so that the two halves of the pivot arm are aligned.

Install the (2) facer mounting bolts (K).

Remove the facer rest buttons and the guide rod anchors and install them as shown for the mounted position.

NOTICE: Failure to remove and reconfigure guide rod anchors on facer arm will result in damage to guide rods and guide rod anchors. Facer rest buttons must be re-installed onto the facer prior to standard operation.

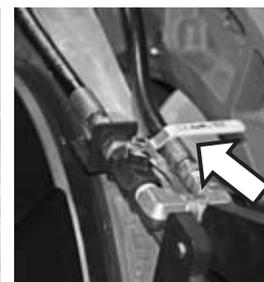
Connect the hoses between the 3-Jaw carriage assembly and the facer.



PH03277-6-30-06

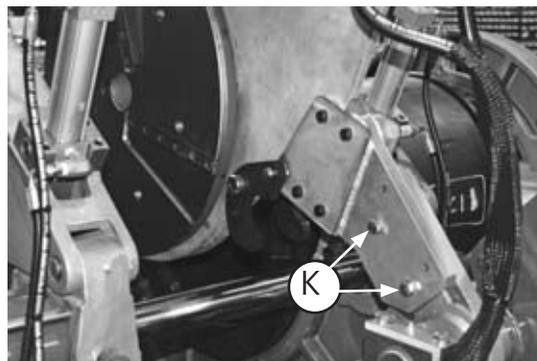


1236/TracStar 900



824/TracStar 630

PH03534-10-17-07
PH03278-6-30-06



PH03470-3-12-07



Modular Heater Operation

When operating the fusion machine in the 3-Jaw carriage assembly configuration, the heater must be operated away from the machine in a modular configuration.

To remove the heater:

Verify the heater is turned off and cool.

Unplug the power and RTD connections attached to the heater (A).

Pivot the heater into a position between the guide rods.

Attach a lifting sling of proper rating to the lifting arm attached to the heater.

Remove the (2) heater mounting bolts (B).

Lift the heater clear of the machine.

When the heater is mounted on the pivot arm attached to the skid, the heater is able to be separated from the melted ends of the pipe hydraulically. Without this hydraulic aid, the heater must have a stripper bar (included with fusion machine package) installed so that the heater can be removed quickly and efficiently.

Remove the stripper bar assembly and braces from storage location on heater bag arm and install onto heater as shown.

Attach in ditch extension power and RTD cables between the vehicle and heater.

Set engine speed to high and turn on heater.



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.

Refer to Section - Heating the Pipe for heating procedures.

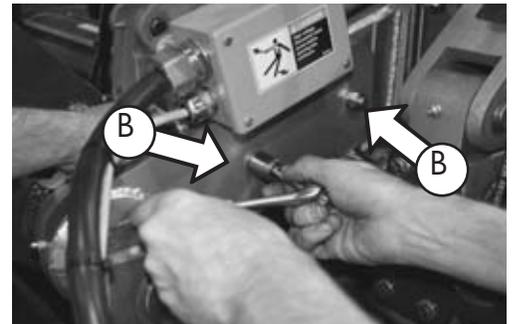
Heating times and pressures are the same for either on machine fusions or modular fusions.

Use the handle to steady the heater when positioning it between the pipe ends and removing the heater after heating.

NOTICE: Stripper bar must be removed before re-installing heater onto indexer pivot arm.



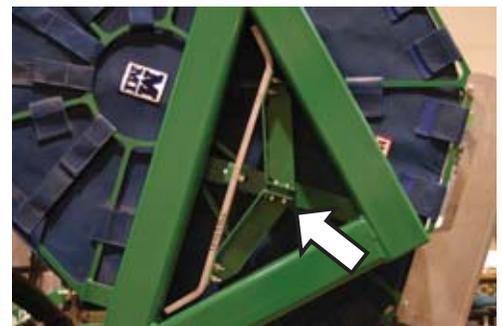
PH03524-10-17-07



PH03279-7-01-0-06



PH03260-8-7-06



PH03525-10-17-07



PH03280-7-017-06



Lifting Fusion Machine



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 device.
2. Do not operate a damaged or malfunctioning lifting device.
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 device.
11. Employ generally accepted safe lifting practices.
12. Do not shock or impact load the lifting device.
13. Inspect all lifting pins for damage.



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WR00014-3-8-93



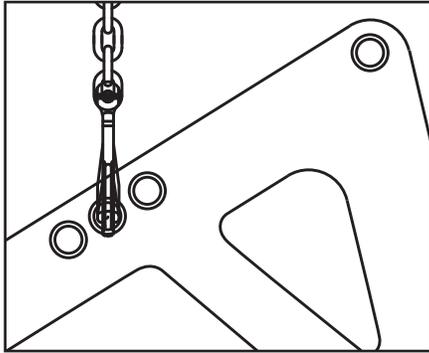
Lifting Fusion Machine



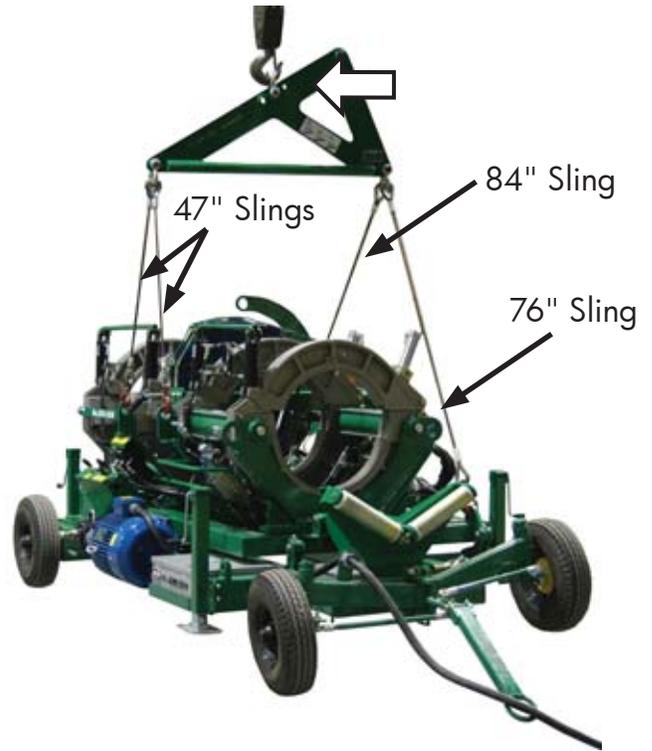
Lifting Rolling Fusion Machine

A special spreader bar shipped with the machine has been designed to lift the entire machine, the carriage assembly, and the 3-Jaw carriage.

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



TX02653-7-17-06



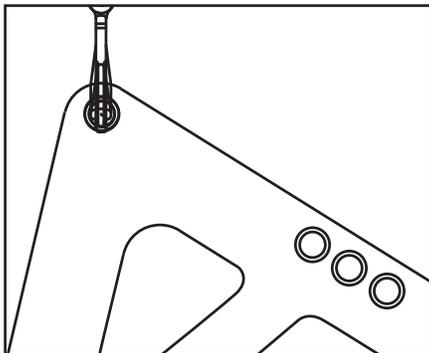
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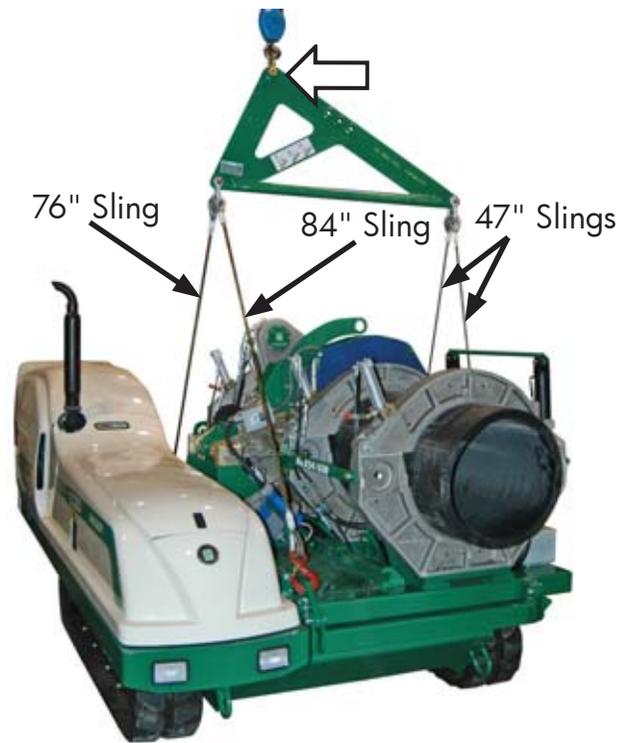
Lifting Tracked Fusion Machine

A special spreader bar shipped with the machine has been designed to lift the entire machine, the carriage assembly, and the 3-Jaw carriage.

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



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PH03521-10-17-07

CD0761-10-17-07



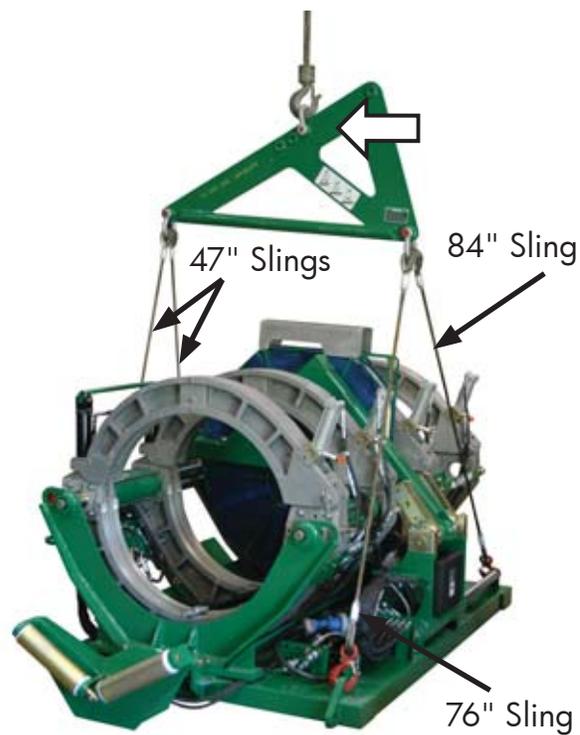
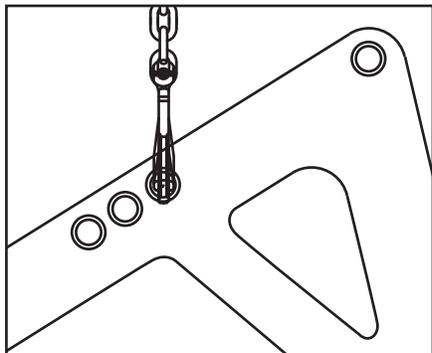
Lifting Fusion Machine



Lifting Fusion Carriage

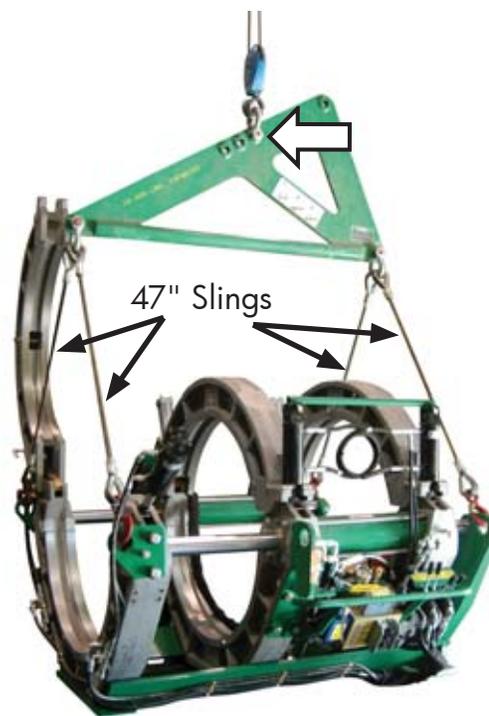
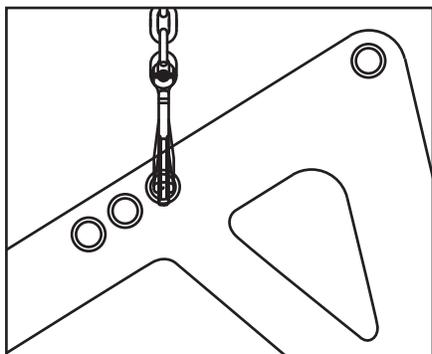
A special spreader bar shipped with the machine has been designed to lift the entire machine, the carriage assembly, and the 3-Jaw carriage.

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



4 Jaw Carriage

Lifting the 3-Jaw Carriage:



3 Jaw Carriage

PH03520-10-17-07

CD0761-10-17-07

PH03621-2-14-08

CD0761-10-17-07



Lifting Fusion Machine



Securing Carriage for Transport

The carriage is a free floating mechanism that needs to be secured prior to transport as a safeguard against machine damage.

To properly secure the carriage for transport:

Position the moveable jaws all the way to the right.

Move the heater/facer indexer all the way to the right.

Place heater support block (A) into position in provided brackets.

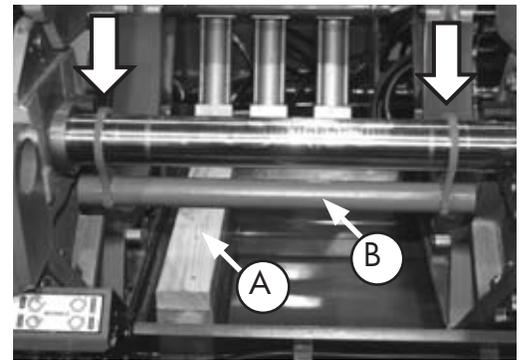
Install one hanging shipping brace (B) onto the interior guide rod and one hanging shipping brace onto the exterior guide rod as shown.

Pivot facer, heater and heater bag into the carriage.

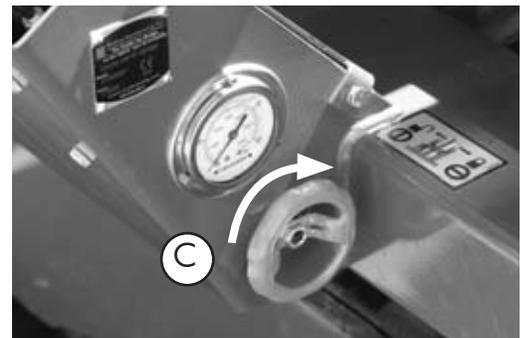
Move the carriage at low pressure (100 psi or less) to the left against the shipping braces.

After closing the carriage against the braces, turn the valve handle to lock the heater/facer indexer (C).

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



PH03281-4-17-06



PH032657-17-06

TX02650-11-15-07



Maintenance

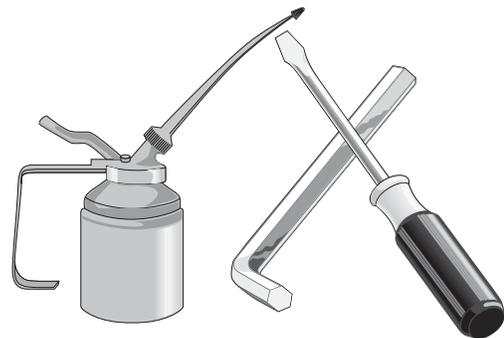


Preventative Maintenance

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

Disconnect Electrical Power



WARNING Always disconnect unit from electrical power source before beginning any maintenance to avoid the risk of electric shock

Cover plug and electrical control box before washing.



WR00055-4-7-93

TX00742-11-3-95

Washing the Machine

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

Do not pressure wash.



CD00178-5-3-96

TX00429-04-28-14

Check Hydraulic Fluid

The hydraulic fluid level should be checked daily.

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

Tracked Vehicle:

Fill to the bottom of the sight gauge when the fluid is cool to allow for fluid volume expansion.

Rolling Vehicle:

Fill to the top of the sight gauge when the fluid is cool.

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

TX04251-06-09-14

Tracked

Rolling



PH03541-10-17-07

PH03508-10-17-07



Adjusting System Pressure

TracStar machines:

Open rear hood to gain access to the hydraulic pump.
Start the engine and select high speed.

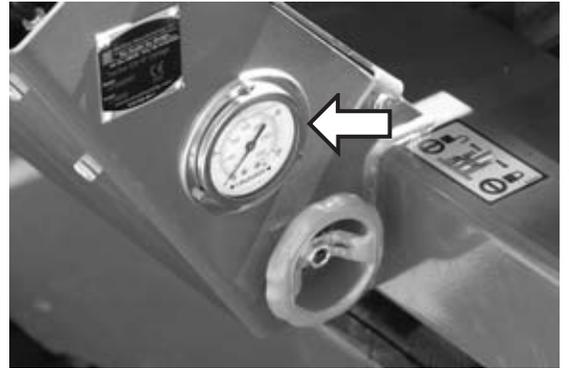
CAUTION Do not touch belts and rotating parts while the engine is running. Failure to do so could result in injury.

Rolling machines:

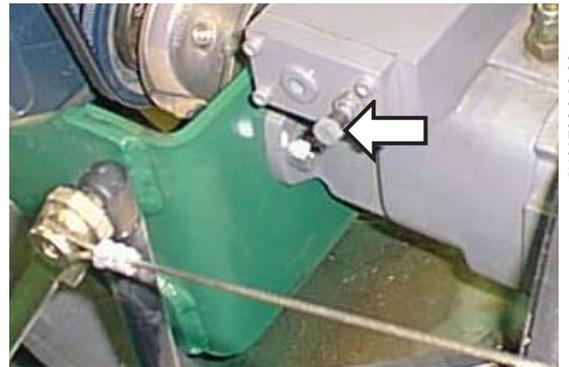
The pump is attached to the electric motor on the operator side of the machine.

To adjust the pressure, loosen the jam nut and turn the compensator clockwise to increase the pressure, or counter-clockwise to decrease pressure.

The system pressure should be at 2300 psi.
Re-tighten the jam nut.



PH03265-7-17-06



PH01722-8-19-99

Tracked



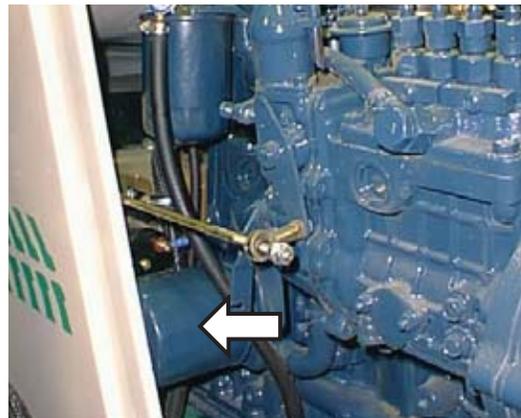
PH03518-10-17-07

Rolling

Engine Oil System (Tracked Vehicle)

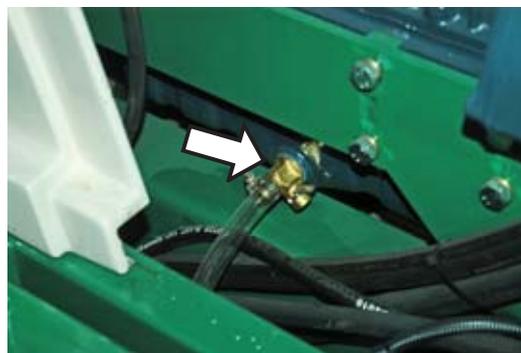
Change engine oil after the first 50 hours of operation. Following that, change the oil and filter every 200 hours of operation. Read the engine maintenance instructions.

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



PH01721-8-19-99

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



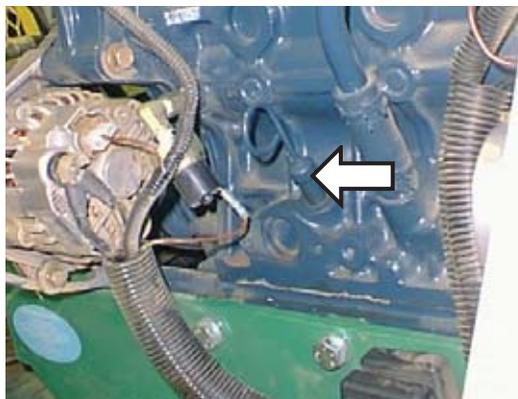
PH04459-11-30-10

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



PH01706-8-19-99

The dipstick is located on the outboard side.



PH01706-8-19-99



Maintenance



Bleeding Air From Fuel Line (Tracked Vehicle)

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

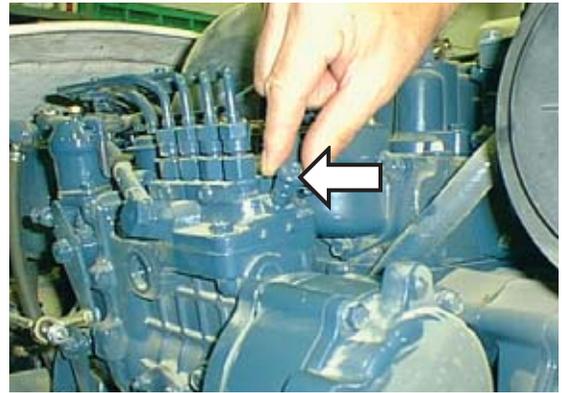
Loosen the air vent valve where the fuel line from the pump goes to the injectors.

Turn the ignition key to RUN position so that the electric pump will pump fuel to the engine.

Close vent valve when air has been purged.

The engine can now be started.

TX02747-11-15-07



PH017048-19-99

Replace Fuel Filter (Tracked Vehicle)

Replace Fuel Filters every 400 hours, both engine and prefilter/water separator.



PH017448-19-99

PH017378-19-99

TX01787-11-15-07

Facer Blades

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

Dull or chipped blades must be replaced.



PH016978-19-99

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

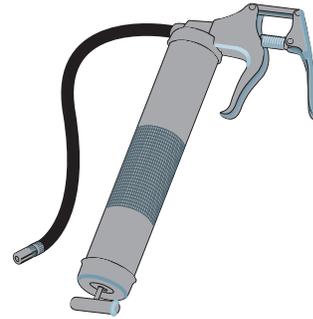
Heater pivot bushings

Hydraulic cylinder pivot pins

Indexer shaft housing

Facer

TX04252-12-1-10



CD00183-11-6-95

Change Hydraulic Fluid and Filter

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

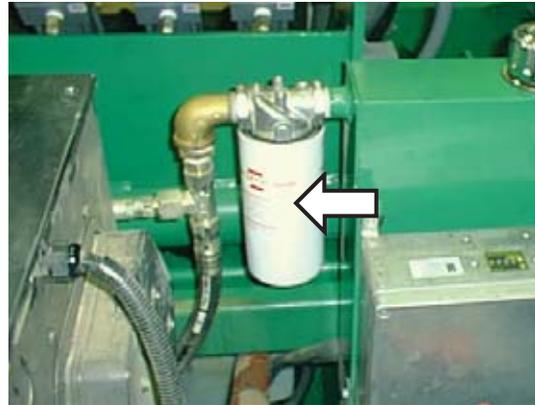
Fluid should also be changed as extreme weather conditions dictate.

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

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

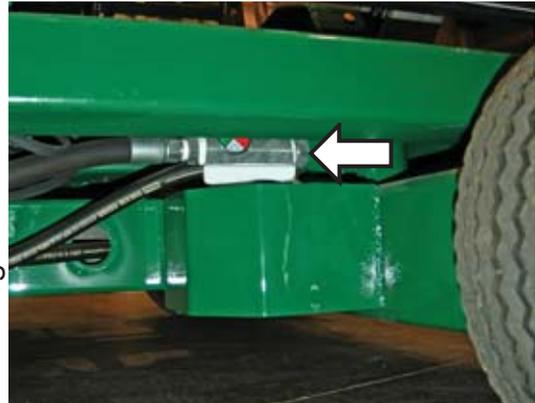
On rolling machines, at every 400 hours of operation, disassemble and clean the magnetic suction filter. Use compressed air to removed contamination from the magnetic elements.

Tracked



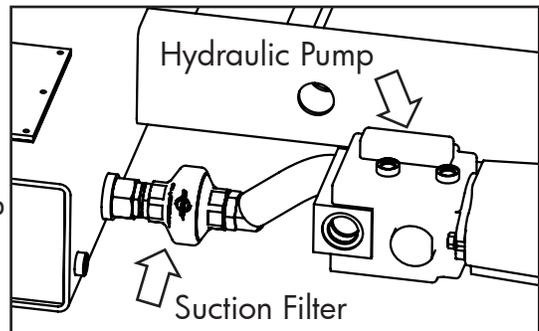
PH01716-8-19-99

Rolling



PH01716-8-19-99

Rolling

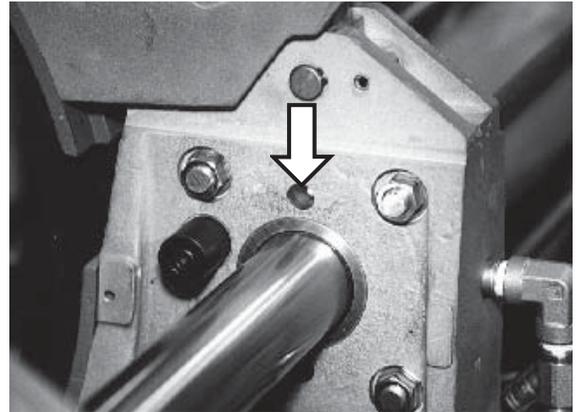


CD00771-121-09

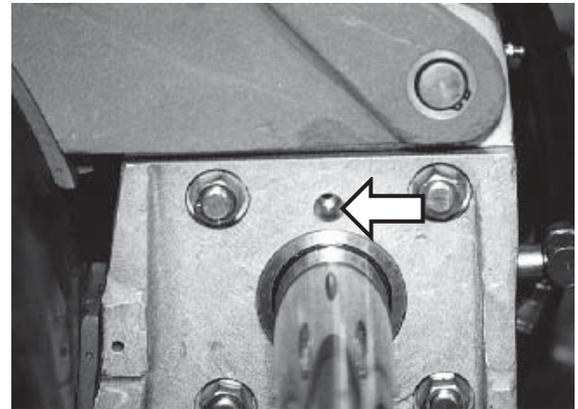
TX00431-06-09-14

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 cylinder.



PH00627-12-13-95



PH00628-12-13-95

TX00761-11-15-07

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.
 Install butt fusion heater plates while the heater is cool.
 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

TX02716-11-30-10



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



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.

Tracked Vehicle:

The temperature controller and an on/off switch are located on the control panel.

Rolling Vehicle:

The temperature controller and an on/off switch are located on the front of the electrical box.

Heater surface temperature should be checked periodically with a pyrometer and the necessary adjustment made to the temperature controller.

TX02748-11-30-10

Tracked



PH04460-11-30-10

Rolling

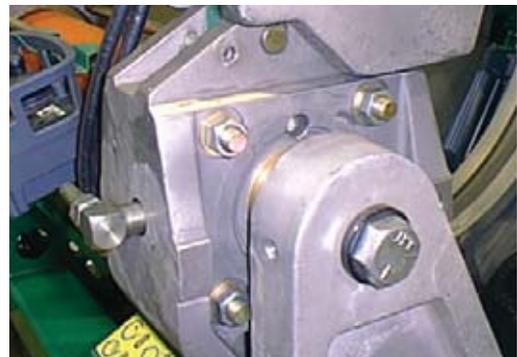


PH02520-07-17-03

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

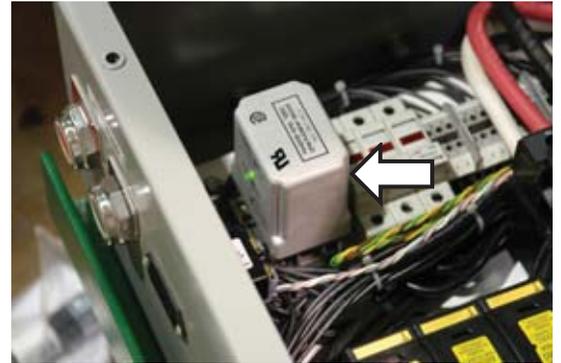
If Unit Fails to Start (Rolling Vehicle)

Check electrical source to make sure it is sufficient for your machine.

NOTICE: Low voltage will damage unit. Using the phase selector switch and observing the volt meter on the control panel, check voltage at each of the three phases.

If unit fails to start, check to see if the light on the reverse phase relay is on. If not, disconnect the power source and switch any two incoming power leads and try again. If the unit still doesn't start, call qualified service personnel for assistance.

Inspect fuses inside electrical box. Replace as required.



PH03495-10-17-07

TX00810-11-30-10

Hydraulic Cylinder Cushion

Most hydraulic cylinders are equipped with a cushion which slows the motion of the cylinder near the end of the stroke. There is a set screw near either end of the cylinder to adjust this cushion.

To adjust, turn the set screw making fine adjustments until the cushion is correct.



PH00608-12-8-95

TX02749-11-15-07

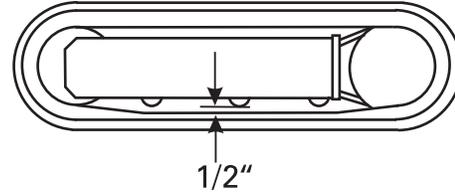
Checking Track Tension (Tracked Vehicle)

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 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 (Tracked Vehicle)

CAUTION

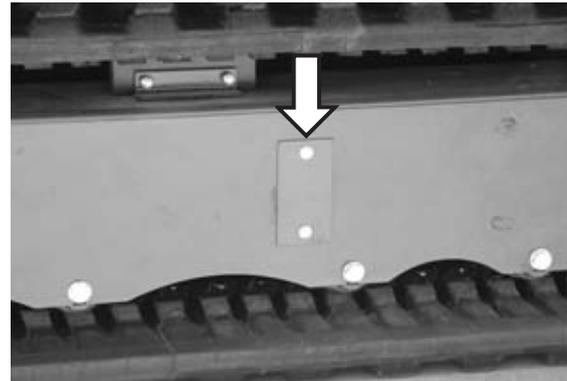
The grease in the hydraulics of the track is pressurized. If the grease valve is loosened too much, grease can be expelled at high pressure and cause injury. Injury could also result if the grease nipple is loosened. Never loosen the grease nipple.

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.



PH03254-6-20-06



PH03255-6-20-06

TX02632-6-20-06



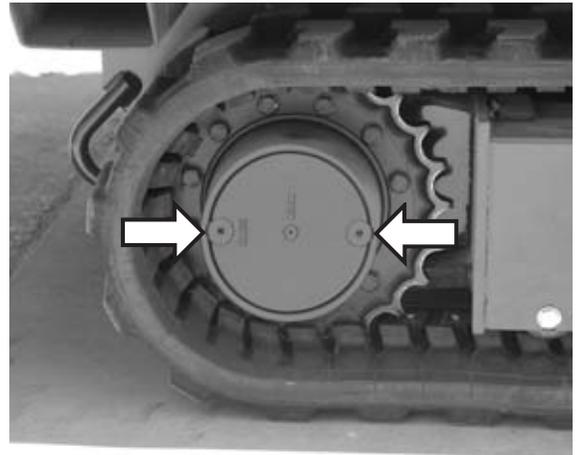
Check Oil Level in Gearbox (Tracked Vehicle)

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.

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

Replace the plugs and tighten.



PH03256-6-20-06

TX01474-11-30-10

Changing Oil in Gearbox (Tracked Vehicle)

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 gear motor with the gear motor plugs aligned vertically.

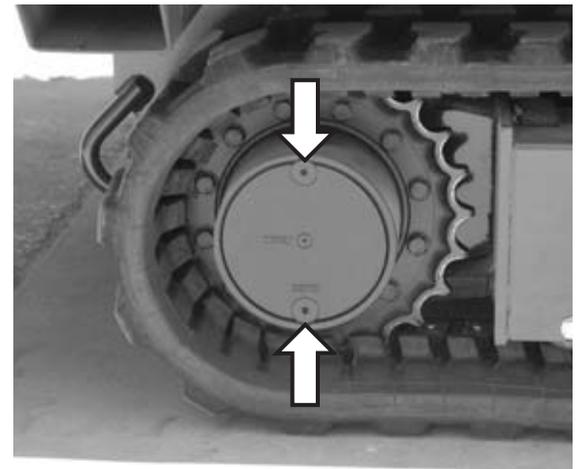
Remove both plugs and drain out all oil.

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.



PH03257-6-20-06

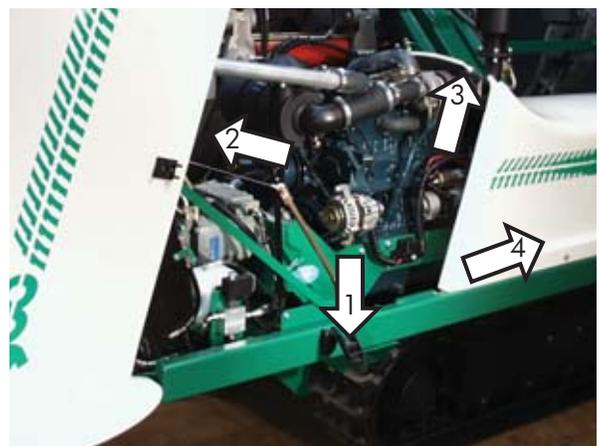
TX02633-6-20-06

Opening Rear Hood (Tracked Vehicle)

Release latches on each side and pivot hood back.

Removing Front Hood (Tracked Vehicle)

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



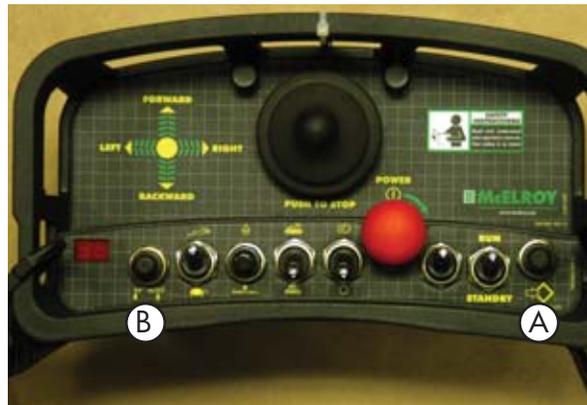
PH01728-8-19-99

TX01500-3-5-98

Changing Remote Channel

There may be a need to change the remote channel to improve communication between the remote and the machine.

To change channels on the remote, press and hold the channel button (A) on the right side of the remote and press the reset button (B) to change to the desired channel.



PH03740-1-2-1-09

TX04254-1-27-10

Remote Batteries (Tracked Vehicle)

To replace the batteries in the remote:

Open the battery cover on the back of the remote.

Remove the used batteries.

Place two new AA batteries into the remote.

Close the battery cover on the back of the remote.



PH017428-19-99

TX02855-1-26-09

Fuji Model PXR3 Temperature Controller Setup

Setting the heater temperature

Turn the heater on and press the SEL key to display the SV (Setting Value). The SV indicator lamp will be illuminated. Press the ▲ (UP) or ▼ (DOWN) arrow keys until the desired setting is displayed. The new value will be registered in the SV after three seconds. Thereafter, the controller will operate using the new SV value.

Checking the heater with a pyrometer

Each day the operator should check the surface of the heater to see that the PV (Process Value) reading on the controller agrees with the actual surface temperature. When the heater has come up to operating temperature, use a hand-held pyrometer or DataLogger® to read the actual surface temperature. Be sure to allow enough time after the heater is turned on for the surface to stabilize. If a discrepancy is detected and the difference is consistent, the operator can modify the controller bias setting as described below.

Adjusting the Controller Bias Setting

Press and hold the SEL key for approximately 6 seconds until the $P_{\Delta}F$ (PVOF) parameter is displayed. Press the SEL key once to display current offset. Use the ▲ (UP) and ▼ (DOWN) arrow keys to adjust the setting to the desired offset value. To increase the heater surface temperature, the offset should be a negative (-) number. Press the SEL key once and $P_{\Delta}F$ (PVOF) will be displayed and the new offset value will be added or subtracted from the SV setting. Press the SEL key for two seconds, to return to the SV setting. After approximately thirty seconds the display will return to the PV reading.

Perform Auto-Tune

Auto-tuning determines the PID values (proportional band, integral time and derivative time) for optimum heater performance. Press and hold the SEL key for approximately 3 seconds. AF (AT) will be displayed. Press the SEL key once. Use ▲ (UP) key to change AF (AT) to 1. Push SEL key once to accept the new AF (AT) value. The unit will begin auto-tuning. The lamp at the bottom right of the display will flash until auto-tuning is complete. AF (AT) value will automatically be reset to 0.



PH03494-10-17-07



Removing masking

The factory setup hides most of the parameters. The first part of this procedure removes the masking so the parameters can be verified or changed. The final part of this procedure reinstalls the masking to prevent the parameters from being inadvertently changed.

1. Hold SEL button until display shows *dSP 1* Push SEL to access value.
Use Δ ∇ to change value to *96* Push SEL to enter new value.
2. Push ∇ until display shows *dSP2* Push SEL to access value.
Use Δ ∇ to change value to *252* Push SEL to enter new value.
3. Push ∇ until display shows *dSP3* Push SEL to access value.
Use Δ ∇ to change value to *128* Push SEL to enter new value.
4. Push ∇ until display shows *dSP4* Push SEL to access value.
Use Δ ∇ to change value to *13* Push SEL to enter new value.
5. Push ∇ until display shows *dSP5* Push SEL to access value.
Use Δ ∇ to change value to *128* Push SEL to enter new value.
6. Push ∇ until display shows *dSP6* Push SEL to access value.
Use Δ ∇ to change value to *1* Push SEL to enter new value.
7. Push ∇ until display shows *dSP7* Push SEL to access value.
Use Δ ∇ to change value to *0* Push SEL to enter new value.
8. Push ∇ until display shows *dSP8* Push SEL to access value.
Use Δ ∇ to change value to *0* Push SEL to enter new value.
9. Push ∇ until display shows *dSP9* Push SEL to access value.
Use Δ ∇ to change value to *0* Push SEL to enter new value.
10. Push ∇ until display shows *dP 10* Push SEL to access value.
Use Δ ∇ to change value to *111* Push SEL to enter new value.
11. Push ∇ until display shows *dP 11* Push SEL to access value.
Use Δ ∇ to change value to *255* Push SEL to enter new value.
12. Push ∇ until display shows *dP 12* Push SEL to access value.
Use Δ ∇ to change value to *255* Push SEL to enter new value.
13. Push ∇ until display shows *dP 13* Push SEL to access value.
Use Δ ∇ to change value to *127* Push SEL to enter new value.
14. Turn temperature controller off for a few seconds and turn it back on.



Maintenance



Enter 1st Block Parameters

- | | | | |
|----|--|------|------------------------------|
| 1. | Hold SEL until display shows | 5t6Y | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | OFF | Push SEL to enter new value. |
| 2. | Push ∇ until display shows | Pr0G | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | OFF | Push SEL to enter new value. |
| 3. | Push ∇ until display shows | LACH | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0 | Push SEL to enter new value. |
| 4. | Push ∇ until display shows | AF | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0 | Push SEL to enter new value. |
| 5. | Push ∇ until display shows | FN-1 | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0 | Push SEL to enter new value. |
| 6. | Push ∇ until display shows | AL 1 | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 600 | Push SEL to enter new value. |
| 7. | Push ∇ until display shows | L0C | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0 | Push SEL to enter new value. |
| 8. | Turn temperature controller off for a few seconds and turn it back on. | | |

Enter 2nd Block Parameters

- | | | | |
|-----|--|------|------------------------------|
| 1. | Hold SEL until display shows | P | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 5.0 | Push SEL to enter new value. |
| 2. | Push ∇ until display shows | z | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 240 | Push SEL to enter new value. |
| 3. | Push ∇ until display shows | d | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 60.0 | Push SEL to enter new value. |
| 4. | Push ∇ until display shows | HY5 | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 1 | Push SEL to enter new value. |
| 5. | Push ∇ until display shows | E00L | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 1.0 | Push SEL to enter new value. |
| 6. | Push ∇ until display shows | db | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.0 | Push SEL to enter new value. |
| 7. | Push ∇ until display shows | EFrL | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | PID | Push SEL to enter new value. |
| 8. | Push ∇ until display shows | FE | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 18 | Push SEL to enter new value. |
| 9. | Push ∇ until display shows | FEZ | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 30 | Push SEL to enter new value. |
| 10. | Push ∇ until display shows | P-nZ | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 1 | Push SEL to enter new value. |
| 11. | Push ∇ until display shows | P-5L | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | -200 | Push SEL to enter new value. |



Maintenance



Enter 2nd Block Parameters (continued)

- | | | | |
|-----|--|--------------------------------|------------------------------|
| 12. | Hold SEL until display shows | <i>P-SU</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 700 | Push SEL to enter new value. |
| 13. | Push ∇ until display shows | <i>P-dP</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0 | Push SEL to enter new value. |
| 14. | Push ∇ until display shows | <i>P-F</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | $^{\circ}\text{F}$ | Push SEL to enter new value. |
| 15. | Push ∇ until display shows | <i>PUDF</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0 | Push SEL to enter new value. |
| 16. | Push ∇ until display shows | <i>SUDF</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0 | Push SEL to enter new value. |
| 17. | Push ∇ until display shows | <i>P-dF</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 5.0 | Push SEL to enter new value. |
| 18. | Push ∇ until display shows | <i>ALN 1</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 1 | Push SEL to enter new value. |
| 19. | Push ∇ until display shows | <i>SRAF</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | OFF | Push SEL to enter new value. |
| 20. | Push ∇ until display shows | <i>PFn</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 1 | Push SEL to enter new value. |
| 21. | Push ∇ until display shows | <i>S\bar{u}-1</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 32 | Push SEL to enter new value. |
| 22. | Push ∇ until display shows | <i>r\bar{n}1r</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 23. | Push ∇ until display shows | <i>r\bar{n}15</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 24. | Push ∇ until display shows | <i>S\bar{u}-2</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 32 | Push SEL to enter new value. |
| 25. | Push ∇ until display shows | <i>r\bar{n}2r</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 26. | Push ∇ until display shows | <i>r\bar{n}25</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 27. | Push ∇ until display shows | <i>S\bar{u}-3</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 32 | Push SEL to enter new value. |
| 28. | Push ∇ until display shows | <i>r\bar{n}3r</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 29. | Push ∇ until display shows | <i>r\bar{n}35</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 30. | Push ∇ until display shows | <i>S\bar{u}-4</i> | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 32 | Push SEL to enter new value. |



Maintenance



Enter 2nd Block Parameters (continued)

- | | | | |
|-----|--|--------------|------------------------------|
| 31. | Hold SEL until display shows | r_{n4r} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 32. | Push ∇ until display shows | r_{n45} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 33. | Push ∇ until display shows | $5\bar{u}-5$ | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 32 | Push SEL to enter new value. |
| 34. | Push ∇ until display shows | r_{n5r} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 35. | Push ∇ until display shows | r_{n55} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 36. | Push ∇ until display shows | $5\bar{u}-6$ | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 32 | Push SEL to enter new value. |
| 37. | Push ∇ until display shows | r_{n6r} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 38. | Push ∇ until display shows | r_{n65} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 39. | Push ∇ until display shows | $5\bar{u}-7$ | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 32 | Push SEL to enter new value. |
| 40. | Push ∇ until display shows | r_{n7r} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 41. | Push ∇ until display shows | r_{n75} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 42. | Push ∇ until display shows | $5\bar{u}-8$ | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 32 | Push SEL to enter new value. |
| 43. | Push ∇ until display shows | r_{n8r} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 44. | Push ∇ until display shows | r_{n85} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0.00 | Push SEL to enter new value. |
| 45. | Push ∇ until display shows | n_{od} | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 0 | Push SEL to enter new value. |
| 46. | Turn temperature controller off for a few seconds and turn it back on. | | |

Enter 3rd Block Parameters

- | | | | |
|----|--|--------------|------------------------------|
| 1. | Hold SEL until display shows | $P-n\ l$ | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 4 | Push SEL to enter new value. |
| 2. | Push ∇ until display shows | $5\bar{u}-L$ | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 32 | Push SEL to enter new value. |
| 3. | Push ∇ until display shows | $5\bar{u}-H$ | Push SEL to access value. |
| | Use $\Delta \nabla$ to change value to | 550 | Push SEL to enter new value. |



Maintenance



Enter 3rd Block Parameters (continued)

- | | | | |
|-----|------------------------------|--------------|------------------------------|
| 4. | Push ▽ until display shows | <i>dLY 1</i> | Push SEL to access value. |
| | Use △▽ to change value to | 0 | Push SEL to enter new value. |
| 5. | Push ▽ until display shows | <i>R 1hY</i> | Push SEL to access value. |
| | Use △▽ to change value to | 1 | Push SEL to enter new value. |
| 6. | Push ▽ until display shows | <i>R 1aP</i> | Push SEL to access value. |
| | Use △▽ to change value to | 001 | Push SEL to enter new value. |
| 7. | Hold SEL until display shows | <i>dSP 1</i> | Push SEL to access value. |
| | Use △▽ to change value to | 247 | Push SEL to enter new value. |
| 8. | Push ▽ until display shows | <i>dSP2</i> | Push SEL to access value. |
| | Use △▽ to change value to | 255 | Push SEL to enter new value. |
| 9. | Push ▽ until display shows | <i>dSP3</i> | Push SEL to access value. |
| | Use △▽ to change value to | 255 | Push SEL to enter new value. |
| 10. | Hold SEL until display shows | <i>dSP4</i> | Push SEL to access value. |
| | Use △▽ to change value to | 255 | Push SEL to enter new value. |
| 11. | Push ▽ until display shows | <i>dSP5</i> | Push SEL to access value. |
| | Use △▽ to change value to | 247 | Push SEL to enter new value. |
| 12. | Push ▽ until display shows | <i>dSP6</i> | Push SEL to access value. |
| | Use △▽ to change value to | 255 | Push SEL to enter new value. |
| 13. | Hold SEL until display shows | <i>dSP7</i> | Push SEL to access value. |
| | Use △▽ to change value to | 255 | Push SEL to enter new value. |
| 14. | Push ▽ until display shows | <i>dSP8</i> | Push SEL to access value. |
| | Use △▽ to change value to | 255 | Push SEL to enter new value. |
| 15. | Push ▽ until display shows | <i>dSP9</i> | Push SEL to access value. |
| | Use △▽ to change value to | 255 | Push SEL to enter new value. |
| 16. | Hold SEL until display shows | <i>dP 10</i> | Push SEL to access value. |
| | Use △▽ to change value to | 255 | Push SEL to enter new value. |
| 17. | Push ▽ until display shows | <i>dP 11</i> | Push SEL to access value. |
| | Use △▽ to change value to | 255 | Push SEL to enter new value. |
| 18. | Push ▽ until display shows | <i>dP 12</i> | Push SEL to access value. |
| | Use △▽ to change value to | 255 | Push SEL to enter new value. |
| 19. | Push ▽ until display shows | <i>dP 13</i> | Push SEL to access value. |
| | Use △▽ to change value to | 31 | Push SEL to enter new value. |

A complete operations manual for the Fuji PXR3 controller may be downloaded in .pdf form from the following websites:

<http://www.fujielectric.com>

<http://www.bectrol.com>

<http://www.instrumart.com>



Maintenance Checklist



TracStar® 630 and 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			
6.	Wiring, battery cables, & all electrical terminals are in good condition			
7.	Tracks are in good repair			
8.	Hydraulic fluid is visible in reservoir sight glass			
9.	No visual fluid or water leaks (engine and hydraulic system)			
10.	Fuel tank is full (diesel only)			
11.	Engine crankcase is filled to correct level of oil			
12.	Cooling system level is correct			
13.	Hydraulic hoses are in good condition			
14.	Engine starts and runs properly			
15.	Facer works properly			
16.	Heater in good condition (no nicks or gouges)			
17.	Surface temperature check with a pyrometer			
18.	Switches and buttons operate properly			
19.	Two position throttle control works properly			
20.	Low oil / voltage & high water temperature alarm works			
21.	System pressure (2300 psi)			
22.	Hydraulic carriage works smoothly			
23.	Remote functions properly			
24.	Hydraulic valves function properly			
25.	No damage to fusion machine			
26.	Tracks are tensioned properly			

TX02751-06-09-14

Inspector: _____ Date: _____

Comments: _____

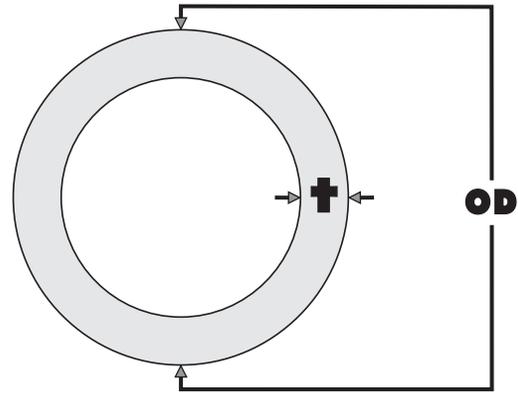


Determining Fusion Pressure



Variable Definitions

- O.D. = Outside Diameter
- t = Wall Thickness
- Π = 3.1416
- SDR = Standard Dimensional Ratio
- IFP = Manufacturer's Recommended Interfacial Pressure
- TEPA = Total Effective Piston Area



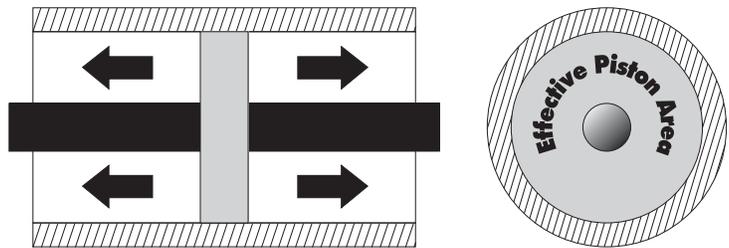
Formulas

$$t = \frac{\text{O.D.}}{\text{SDR}}$$

$$\text{AREA} = (\text{O.D.} - t) \times t \times \Pi$$

$$\text{FORCE} = \text{AREA} \times \text{IFP}$$

$$\text{GAUGE PRESSURE} = \frac{(\text{O.D.} - t) \times t \times \Pi \times \text{IFP}}{\text{TEPA}} + \text{DRAG}$$



Example

Pipe Size = 8" IPS

O.D. of Pipe = 8.625

DRAG = as measured in PSI (for this example use 30 PSI)

SDR of Pipe = 11

Recommended Interfacial Pressure = 75 PSI

Using a Model 28 Fusion Unit

$$t = \frac{\text{O.D.}}{\text{SDR}} = \frac{8.625}{11} = 0.784$$

TEPA = 4.710 (From Table)

$$\text{GAUGE PRESSURE} = \frac{(\text{O.D.} - t) \times t \times \Pi \times \text{IFP}}{\text{TEPA}} + \text{DRAG}$$

$$\text{GAUGE PRESSURE} = \frac{(8.625 - .784) \times .784 \times 3.1416 \times 75}{4.710} + 30 \text{ PSI} = 338 \text{ PSI}$$

Total Effective Piston Areas

Fusion Model	High Force (Standard)	Medium Force (High Velocity)	Low Force (Extra High Velocity)
28	4.710	-	1.66
412	11.775	6.013	3.142
618	11.775	6.013	3.142
824	29.44	15.32	9.425
1236	29.44	15.32	9.425
1648	31.42	14.14	-
2065	31.42	-	-
1600mm	31.42	14.14	-



Hydraulic Fluids



Hydraulic Fluids

The use of proper hydraulic fluid is mandatory to achieve maximum performance and machine life. Use a clean, high quality, anti-wear hydraulic fluid 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 fluid temperature (generally 80°F above ambient). Using hydraulic fluids that do not meet these criteria may cause poor operation and/or damage to the hydraulic components.

The following table specifies the fluid temperature at various viscosities. Temperature rise of the hydraulic fluid 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 fluid is installed at our factory. The advantage of this fluid is a wider temperature range, however, this fluid 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

TX030822-26-14

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

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



Specifications



824 Fusion Machine Dimensions

Length: 131" (3,327mm)
 Width: 83" (2,108mm)
 Height: 69" (1,753mm)
 Centerline Height, Carriage: 40" (1,016mm)

Fusion Machine Weights

Total Vehicle Weight: 5,905 lbs (2,678 kg)
 Carriage, 4 Jaws 3,790 lbs (1,719 kg)
 Carriage, 3 Jaws 1,350 lbs (612 kg)
 Facer 390 lbs (177 kg)
 Heater 240 lbs (109 kg)

Carriage Specifications

Maximum Pipe Diameter: 24" OD (630mm)
 Minimum Pipe Diameter: 8" IPS (225mm)

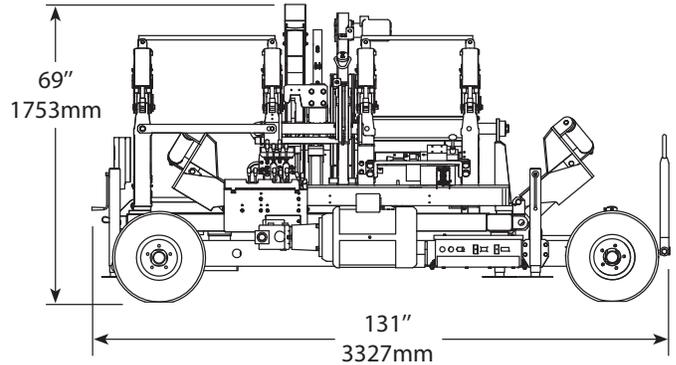
Low Force	Effective Piston Area: 9.45 sq in (60.8 sq cm) Maximum Force: 21,689 lbs (9,836 kg)
Medium Force	Effective Piston Area: 15.32 sq in (98.8 sq cm) Maximum Force: 35,236 lbs (15,980 kg)
High Force	Effective Piston Area: 29.44 sq in (189.9 sq cm) Maximum Force: 67,712 lbs (30,708 kg)

General Specifications

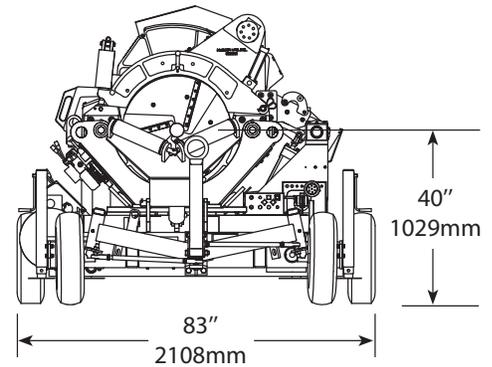
Motor: 20HP, 3 Phase, 240V
 28 gal (106 liters) Hydraulic Reservoir Capacity
 2,300 PSI (158 bar) Operating System pressure
 Tires: 6.90-9NHS, 75 PSI Max.
 Heater Power: 10,950 Watt
 Minimum Power Requirement*: 29.8KVA/28.1KW
 Front Axle: Articulating
 Transportation: Pulled via towing ring

* Minimum requirement at sea level

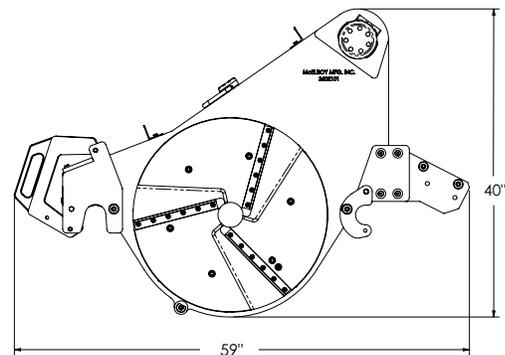
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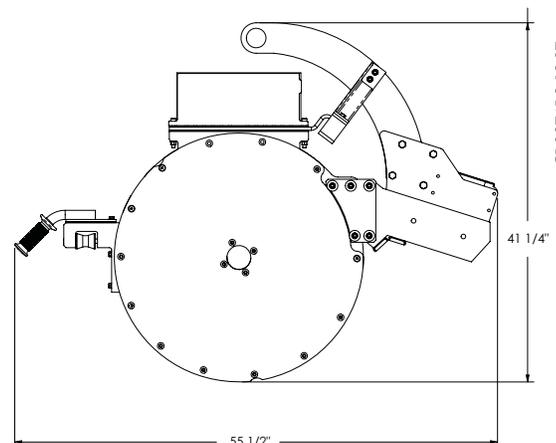
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CD00756-10-17-07



CD00744-3-12-07



CD00745-3-12-07

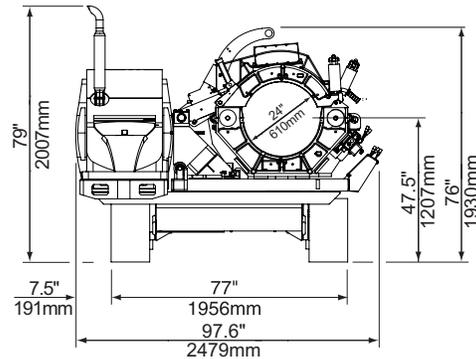


Specifications



TracStar 630 Fusion Machine Dimensions

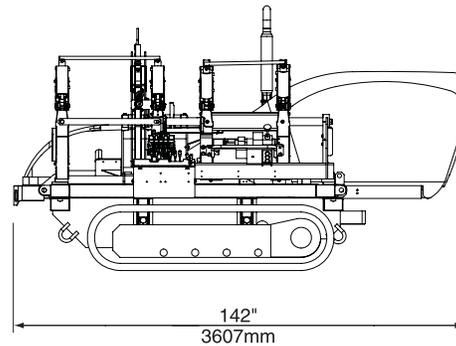
Length: 142" (3,607mm)
 Track Width: 77" (1,956mm)
 Overall Width: 97.6" (2,479mm)
 Centerline Height, Carriage: 47.5" (1,207mm)
 Overall Height: 79" (2,007mm)



CD00723-6-20-06

Fusion Machine Weights

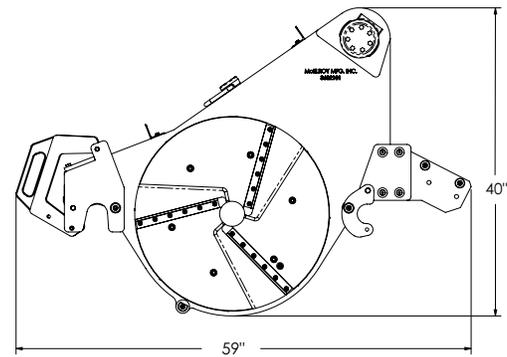
Total Vehicle Weight: 8,600 lbs (3,900 kg)
 Carriage, 4 Jaws 3,790 lbs (1,719 kg)
 Carriage, 3 Jaws 1,350 lbs (612 kg)
 Facer 390 lbs (177 kg)
 Heater 240 lbs (109 kg)



Carriage Specifications

Maximum Pipe Diameter: 24" OD (630mm)
 Minimum Pipe Diameter: 8" IPS (225mm)

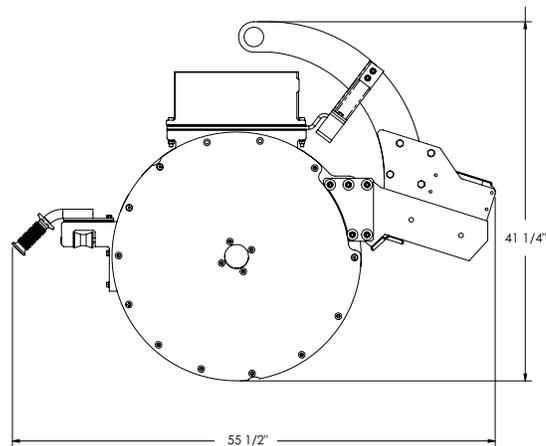
Low Force	Effective Piston Area: 9.45 sq in (60.8 sq cm) Maximum Force: 21,689 lbs (9,836 kg)
Medium Force	Effective Piston Area: 15.32 sq in (98.8 sq cm) Maximum Force: 35,236 lbs (15,980 kg)
High Force	Effective Piston Area: 29.44 sq in (189.9 sq cm) Maximum Force: 67,712 lbs (30,708 kg)



CD00744-3-12-07

Power Pack Specifications

84.5 hp (62kW) 3600 cc, 4-cylinder, Liquid Cooled Turbo Diesel Engine
 23 gal (87 liters) Fuel Capacity
 2,300 PSI (158 bar) Operating System pressure
 12 gal (45 liters) Hydraulic Reservoir
 22,000 W Direct Drive Alternator - 240V-3Ph.-60Hz
 Heater Power: 10,950 Watt
 Travel Speed: Low Speed - 1.04 mph
 High Speed - 1.68 mph.



CD00745-3-12-07



Specifications



1236 Fusion Machine Dimensions

Length: 131" (3,327mm)

Width: 83" (2,108mm)

Centerline Height, Carriage: 46.25" (1,175mm)

Overall Height: 78" (1,981mm)

Fusion Machine Weights

Total Vehicle Weight: 6,842 lbs (3,103 kg)

Carriage, 4 Jaws: 3,865 lbs (1,753 kg)*

Carriage, 3 Jaws: 1,820 lbs (825 kg)*

Facer: 480 lbs (218 kg)

Heater: 382 lbs (173 kg)

* All carriage weights without heater and facer.

Carriage Specifications

Maximum Pipe Diameter: 36" OD (900mm)

Minimum Pipe Diameter: 12" IPS (340mm)

Low Force

Effective Piston Area: 9.45 sq in (60.8 sq cm)

Maximum Force: 21,689 lbs (9,836 kg)

Medium Force

Effective Piston Area: 15.32 sq in (98.8 sq cm)

Maximum Force: 35,236 lbs (15,980 kg)

High Force

Effective Piston Area: 29.44 sq in (189.9 sq cm)

Maximum Force: 67,712 lbs (30,708 kg)

General Specifications

Motor: 20HP, 3 Phase, 240V

28 gal (106 liters) Hydraulic Reservoir Capacity

2,300 PSI (158 bar) Operating System pressure

Tires: 6.90-9NHS, 75 PSI Max.

Heater Power: 20,461 Watt

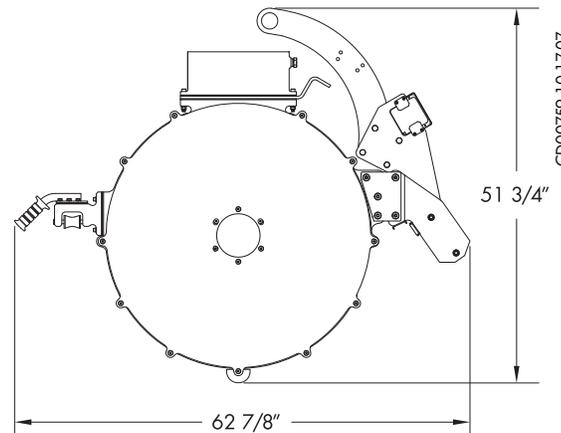
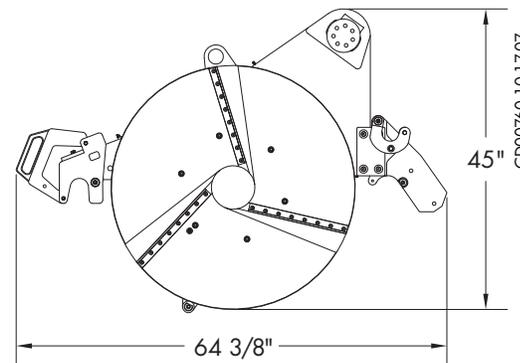
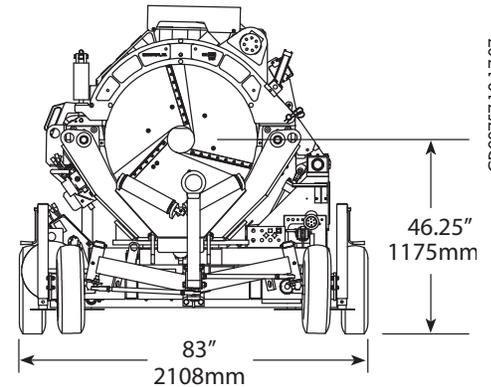
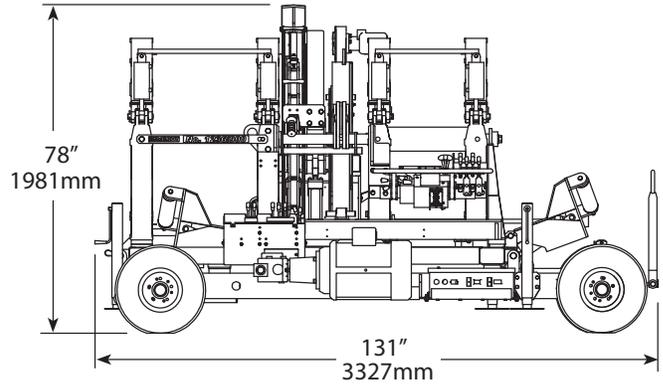
Minimum Power Requirement*: 39.4KVA/37.7KW

Front Axle: Articulating

Transportation: Pulled via towing ring

* minimum requirement at sea level

TX02754-11-30-10





Specifications



TracStar 900 Fusion Machine Dimensions

Length: 142" (3,607mm)
 Width: 98.4" (2,499mm)
 Height: 85" (2,159mm)
 Centerline Height, Carriage: 52.5" (1,334mm)
 Track Width: 77" (1,956mm)

Fusion Machine Weights

Total Vehicle Weight: 9,527 lbs (4,321 kg)
 Carriage, 4 Jaws: 3,865 lbs (1,753 kg)*
 Carriage, 3 Jaws: 1,820 lbs (825 kg)*
 Facer: 480 lbs (218 kg)
 Heater: 382 lbs (173 kg)
 * All carriage weights without heater and facer.

Carriage Specifications

Maximum Pipe Diameter: 36" OD (900mm)
 Minimum Pipe Diameter: 12" IPS (340mm)

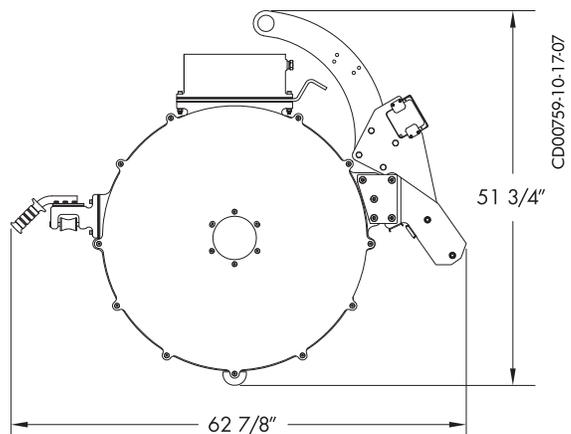
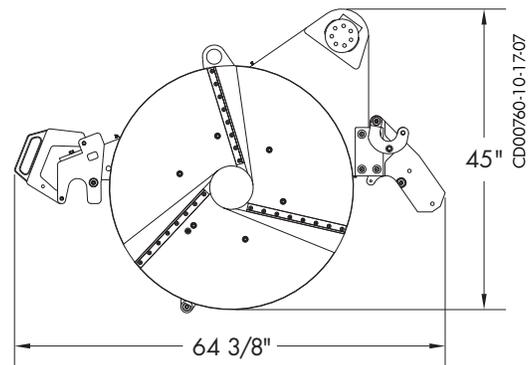
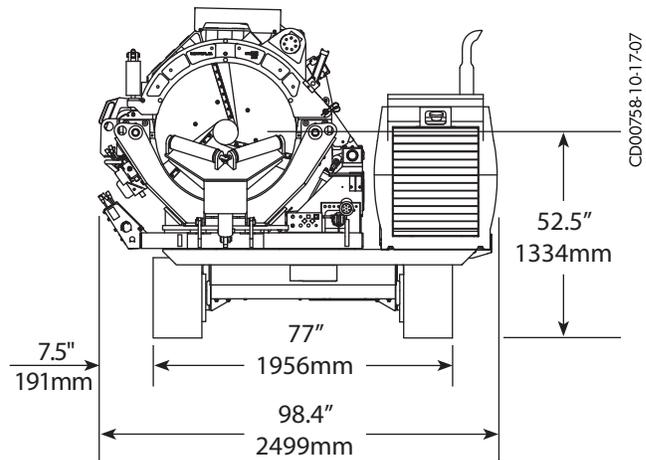
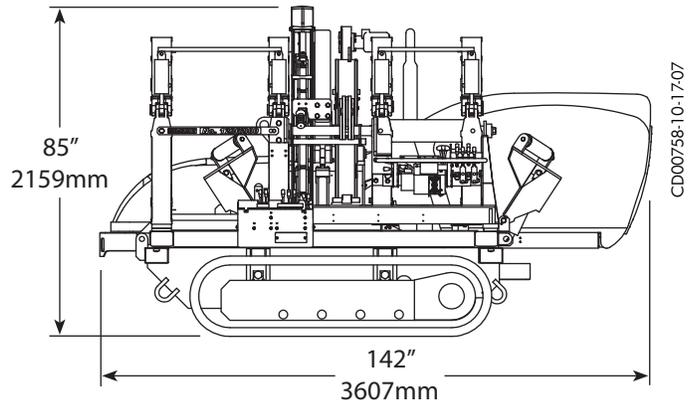
Low Force Effective Piston Area: 9.45 sq in (60.8 sq cm)
 Maximum Force: 21,689 lbs (9,836 kg)

Medium Force Effective Piston Area: 15.32 sq in (98.8 sq cm)
 Maximum Force: 35,236 lbs (15,980 kg)

High Force Effective Piston Area: 29.44 sq in (189.9 sq cm)
 Maximum Force: 67,712 lbs (30,708 kg)

General Specifications

84.5 hp (62kW) 3600 cc, 4-cylinder, Liquid Cooled Turbo Diesel Engine
 12 gal (45 liters) Hydraulic Reservoir Capacity
 2,300 PSI (158 bar) Operating System pressure
 22,000 W Direct Drive Alternator - 240V-3Ph.-60Hz
 23 gal (87 liters) Fuel Capacity
 Heater Power: 20,461 Watt
 Travel Speed: Low Speed - 1.04 mph
 High Speed - 1.68 mph.





Optional Accessories



DataLogger® Compatible

The DataLogger® from McElroy offers the ability to record and document the parameters of the pipe fusion process. The latest generation of the DataLogger has a rechargeable internal battery, and a pressure sensor with a 0 to 3,000 PSI pressure range. The FusionGuide™ feature gives a faster "go/no-go" interpretation of graphs generated by the DataLogger. Trained inspectors can look at the FusionGuide data to determine if a fusion joint was fused with correct pressures and times according to supported standards.

DataLogger Features:

- FusionGuide which provides the user with a visual graphical interpretation
- Multilingual Support
- Supports many fusion standards
- Supports butt fusion, sidewall fusion and dual containment fusion
- On-screen coaching leads operator step by step to generate joint reports
- Flexibility to use your own pyrometer
- A GPS stamp thus making for easier and accurate location of fusion joint
- 1D Scanner to record bar coded information on pipe and fittings
- 5MP camera for pictures of fusion joints, jobsite, face-off and bead up

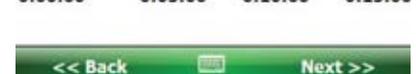
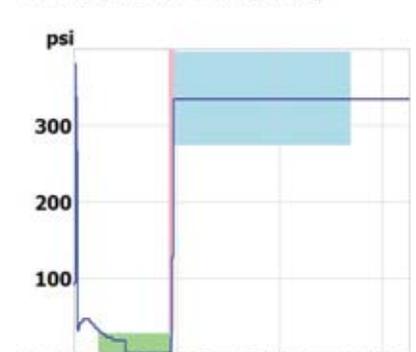
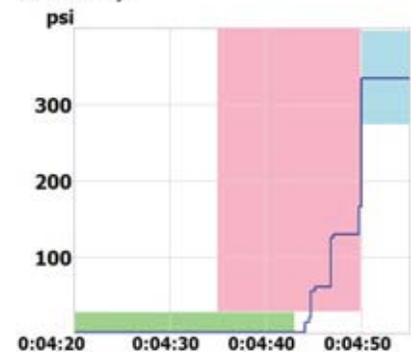
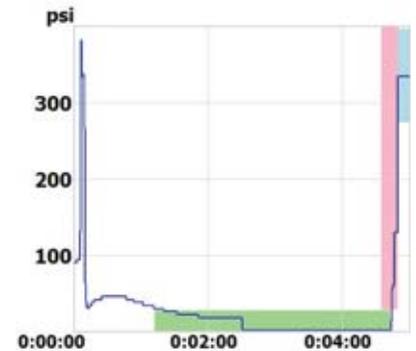


Joint reports can be transferred to a USB drive or uploaded to the DataLogger Vault™. The DataLogger Vault is a software application from McElroy that provides joint data storage and analysis at no cost to users. The DataLogger Vault is a secure, online application that allows users to view and analyze their joint data from almost any device, from almost any location.

All that is needed is a device such as a PC, Mac, smartphone, tablet, etc. that has a browser and access to the Internet.

To create your free DataLogger Vault account, and for more information (including complete instructions), visit: <http://vault.mcelroy.com>.

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



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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