Challenger®

MT835 / MT845 / MT855 / MT865 / MT835B
MT845B / MT855B / MT865B / MT875B
Track Tractor

SERVICE MANUAL
79023768 F Rev.

CONTENTS

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79023977 B Rev.
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Challenger®

Service Manual

MT800 and MT800B Series

Introduction

CHALLENGER®
79023977 B Rev.
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CONTENTS

INTRODUCTION

SERVICE MANUAL

This Service Manual is for all Challenger® MT800 Series and MT800B Series rubber track tractors. CE and Non-CE versions are included.

This service manual has been prepared with the latest service information available at the time of publication. Read the service manual carefully before doing any service on the machine.

Right-hand and left-hand, as used in this manual, is determined by facing the direction the machine will travel when in use.

The photos, illustrations, and data used in this manual were current at the time of printing, but due to possible production change, your machine can vary slightly. The Manufacturer reserves the right to redesign and change the machine as necessary without notification.

WARNING: Some pictures in this manual show the machine with shields removed to allow for a better view of the subject of the picture. Never operate the machine with any of the shields removed.

Divisions and Page Numbers

The service manual is separated into Divisions. Refer to the Master Table of Contents.

Each Division has an identifying part number with an alpha revision level indicator. Each Division has a Table of Contents, Safety section and an Index.

Each page is identified with the Division part number and revision level. Pages are in simple numeric order within each Division.

UNITS OF MEASUREMENT

Measurements are given in metric units of measurement followed by the equivalent in U.S. units. Hardware sizes are given in millimeters for metric hardware and inches for U.S. hardware.

REPLACEMENT PARTS

To receive prompt efficient service, always remember to have the following information:

- Correct part description and part number.
- Model number of your machine.
- Serial number of your machine.

IMPORTANT SAFETY INFORMATION

Most personal injuries occurring during product operation, maintenance or repair are caused by failure to observe basic safety rules and precautions. In most cases, an injury can be avoided by recognizing hazardous situations before an injury occurs.

A person must be alert to potential hazards. This person should also have the necessary training, skills and tools to perform these functions properly.

Improper operation, lubrication, maintenance or repair of this product can be hazardous and could result in injury or death.

Do not operate or perform any lubrication, maintenance or repair on this product, until you have read and understood the operation, lubrication, maintenance and repair information.

Safety precautions and warnings are provided in this manual and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or to other persons.

Not every possible circumstance that might involve a potential hazard can be anticipated. The warnings in this publication and on the product are, therefore, not all inclusive. If a tool, procedure, work method or operating technique that is not specifically recommended by AGCO is used, you must satisfy yourself that it is safe for you and for others.

You must also make sure that the product will not be damaged or be made unsafe by the operation, lubrication, maintenance or repair procedures that you choose. The information, specifications, and illustrations in this publication are on the basis of information that was available at the time that the publication was written.

The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service that is given to the product. Obtain the complete and most current information before you start any job. Challenger dealers have the most current information available.

WARNING: When replacement parts are required for this product AGCO recommends using AGCO replacement parts or parts with equivalent specifications including, but not limited to, physical dimensions, type, strength and material. Failure to heed this warning can lead to premature failures, product damage, personal injury or death

SAFETY ALERT SYMBOL

FIG. 1: This is the safety alert symbol. It means ATTENTION! BECOME ALERT! SAFETY IS INVOLVED!

Look for it, both in this manual and on safety decals on the tractor and planter. It will direct your attention to information that involves your safety and the safety of others.

FIG. 1

SIGNAL WORDS

The words DANGER, WARNING or CAUTION are used with the safety alert symbol. Learn to recognize these safety alerts and follow the recommended precautions and safe practices.

DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in DEATH OR VERY SERIOUS INJURY.

WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in DEATH OR SERIOIUS INJURY.

CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in MINOR INJURY.

INFORMATIONAL MESSAGES

The words IMPORTANT and NOTE are not related to personal safety, but are used to give additional information and tips for operating or servicing the equipment.

IMPORTANT: Identifies special instructions or procedures that, if not strictly observed, could result in damage to, or destruction of the tractor, attachments or the environment.

NOTE: Identifies points of particular interest for more efficient and convenient operation or repair.

GENERAL HAZARD INFORMATION

When the engine is running and the steering wheel is turned, the tractor will not turn with the transmission control lever in the PARK position. The tractor will turn with the transmission control lever in the NEUTRAL position.

Do not start the engine until the area is free of personnel. This will aid in avoiding personal injury due to unexpected tractor movement.

Know the width of your equipment to maintain proper clearance when you operate the tractor near fences or near boundary obstacles.

Wear a hard hat, protective glasses, and other protective equipment, as required.

Do not wear loose clothing or jewelry that can snag on controls or on other parts of the tractor.

Make sure that all protective guards and all covers are secured in place on the tractor.

Keep the tractor free from foreign material. Remove debris, oil, tools, and other items from the deck, from walkways, and from steps.

Secure lunch boxes, tools, and other loose items that are not a part of the tractor.

Know the appropriate work site hand signals and the personnel that are authorized to give the hand signals. Accept hand signals from one person only.

Never put maintenance fluids into glass containers. Drain all liquids into a suitable container.

Discard any drained fluids and discard any filter elements according to local regulations.

Use all cleaning solutions with care.

Report all necessary repairs.

Do not allow unauthorized personnel on the tractor.

Do not smoke when you service an air conditioner. Also, do not smoke if refrigerant gas may be present. Inhaling the fumes that are released from a flame that contacts air conditioner refrigerant can cause bodily harm or death.

Inhaling gas from air conditioner refrigerant through a lighted cigarette can cause bodily harm or death.

Unless you are instructed otherwise, perform the maintenance under the following conditions:

- The tractor is parked on level ground.
- The Implements are lowered to the ground.
- The Transmission control lever is in the PARK position.
- The engine is stopped.
- The engine start switch is turned off and the switch key is removed.
- The tractor has cooled down.

Pressurized Air

Air under pressure can cause personal injury. When pressurized air is used for cleaning, wear a protective face shield, protective clothing and protective shoes.

The maximum air pressure for cleaning purposes must be below 205 kPa (30 psi).

Asbestos Information

AGCO equipment and replacement parts that are shipped from AGCO are asbestos free. AGCO recommends the use of only genuine AGCO replacement parts.

Electrical Storm Injury Prevention

When lightning is striking in the vicinity of the machine, the operator should not attempt to dismount or mount the machine.

If you are in the operator's station during an electrical storm, stay in the operator's station. If you are on the ground during an electrical storm, stay away from the vicinity of the machine.

Mounting and Dismounting

Mount the tractor and dismount the tractor only at locations that have steps and/or handholds. Before you mount the tractor, clean the steps and the handholds. Inspect the stairs and handholds. Make any necessary repairs.

Face the rear of the tractor whenever you mount the tractor and whenever you dismount the tractor.

Maintain three-point contact with the steps and handholds. Three-point contact is two feet and one hand or one foot and two hands.

Never mount a moving tractor. Never dismount a moving tractor. Never jump off the tractor except in an emergency.

Do not carry tools or supplies when you try to mount the tractor or when you try to dismount the tractor. Use a hand line to pull equipment onto the platform.

Do not use any controls as handholds when you enter the operator compartment or when you exit the operator compartment.

IMPORTANT: Make sure that the steps are not adjusted too close to the hood on the tractor.

You must leave a minimum dimension of 75 mm between the inside handhold and the hood so that there is enough room for the operator's hand.

Before Starting Engine

Start the engine only from the operator compartment. Never short across the starter terminals or across the batteries. Shorting could damage the electrical system or cause unexpected tractor movement.

Adjust the seat so that full pedal travel can be achieved with the operator's back against the back of the seat.

Make sure that the tractor is equipped with a lighting system that is adequate for the job conditions. Make sure that all of the tractor lights are working properly.

Before you start the engine and before you move the tractor, make sure that no one is underneath the tractor, around the tractor, or on the tractor. Make sure that the area is free of personnel.

Engine Starting

Move all hydraulic controls to the HOLD position before you start the engine.

Make sure the transmission control lever is in the PARK position

Diesel engine exhaust contains products of combustion which can be harmful to your health. Always run the engine in a well ventilated area. If you are in an enclosed area, vent the exhaust to the outside.

When the engine is running and the steering wheel is turned, the tractor will not turn with the transmission control lever in PARK position.

WARNING: The tractor WILL turn if the steering wheel is moved when the transmission control lever is in NEUTRAL and the engine is running.

Do not start the engine until the area is free of personnel. This will aid in avoiding personal injury due to unexpected tractor movement.

Before Operation

Clear all personnel from the tractor and from the area.

Clear all obstacles from the tractor's path. Beware of hazards (wires, ditches, etc).

Be sure that all windows are clean. Secure the doors and the windows in the open position or in the shut position.

Adjust the rearview mirrors for the best visibility close to the tractor. Make sure that the horn, the backup alarm (if equipped), and all other warning devices are working properly.

Fasten the seat belt securely, low around your hips.

Operation

Only operate the tractor while you are in the operator's seat. The seat belt must be fastened around you while you operate the tractor. Only operate the controls while the engine is running.

Check for proper operation of all controls and of all protective devices while you operate the tractor slowly in an open area.

Make sure that no one will be endangered before you move the tractor.

Report any damage that was noted during operation of the tractor. Make any necessary repairs.

Hold attachments approximately 40 cm (15 inches) above ground level while you drive the tractor. Do not drive the tractor near an overhang, near the edge of a cliff, or near the edge of an excavation.

If the tractor begins to sideslip on a grade, immediately dispose of the load and turn the tractor downhill.

Be careful to avoid any ground condition which could cause the tractor to tip.

A rollover of the tractor can occur when you work on hills, on banks, or on slopes. A rollover of the tractor can also occur when you cross ditches, ridges, or other unexpected obstacles.

When possible, operate the tractor up slopes and down slopes. Avoid operating the tractor across the slope, when possible.

Keep the tractor under control. Do not overload the tractor beyond capacity.

Make sure that the towing devices are adequate for the application.

Make sure that the components on the three-point hitch are adequate for the application.

Connect trailing equipment only to a drawbar or to a hitch.

Never straddle a wire cable. Never allow other personnel to straddle a wire cable.

When you maneuver to connect the equipment, make sure that no personnel are between the tractor and trailing equipment. Block up the hitch of the trailing equipment to align the equipment with the drawbar.

Know the maximum dimensions of your tractor.

When you operate on icy roads, reduce travel speed.

After operating in muddy conditions, allow sufficient time for the belts to reject debris and moisture before making high speed maneuvers. Belts that are wet and belts that are muddy may impede the tractor's steering.

If stability of the tractor is noticeably reduced, reduce travel speed.

Select a gear that will control tractor speed when you descend a hill.

Downshift if braking is required to control tractor speed. Never coast down a hill with the transmission in NEUTRAL.

Do not steer the tractor when you cross ditches. Ditches that are wide and/or ditches that are deep may allow guide blocks to sag below the midwheels. This can cause the belt to come off.

Parking

Park on a level surface. If you must park on a grade, chock the tractor's belts.

Move the transmission control lever to the PARK position.

Lower all implements to the ground.

Move the implement controls to the HOLD position.

Before you stop the engine, move the throttle control lever to the LOW IDLE position. Run the engine at low idle speed for five minutes. This will allow the turbocharger to cool.

Stop the engine.

Turn the engine start switch to the OFF position and remove the engine start switch key.

Turn the battery disconnect switch to the OFF position.

Operator Station

Any modifications to the inside of the operator station should not project into the operator space. The addition of a radio, fire extinguisher, and other equipment must be installed so that the defined operator space is maintained.

Any item that is brought into the cab should not project into the defined operator space. A lunch box or other loose items must be secured. Objects must not pose an impact hazard in rough terrain or in the event of a rollover.

Crushing Prevention and Cutting Prevention

Support the equipment properly when you perform work beneath the equipment. Do not depend on the hydraulic cylinders to hold up the equipment. An implement can fall if a control lever is moved or if a hydraulic line breaks.

Never jump across the starter solenoid terminals to start the tractor. Unexpected tractor movement could result.

Never attempt adjustments while the tractor is moving or while the engine is running.

Whenever there are attachment control linkages, the clearance in the linkage area will change with movement of the attachment.

Stay clear of all rotating parts and all moving parts.

Keep objects away from moving fan blades. The fan blades will throw objects and the fan blades can cut objects.

Do not use a wire cable that is kinked or frayed. Wear gloves when you handle wire cable.

When you strike a retainer pin, the retainer pin might fly out. The loose retainer pin can injure personnel. Make sure that there are no people in the area when you strike a retainer pin. To avoid injury to your eyes, wear protective glasses when you strike a retainer pin.

Chips or other debris may fly off objects when you strike the objects. Make sure that no one will be injured by flying debris before you strike any object.

Rollover Protective Structure (ROPS)

Do not make any modifications to the ROPS as this will affect the protection provided. Do not alter the structure by welding, cutting, adding weight, or drilling holes into the structure.

Any alteration that is not specifically authorized by AGCO invalidates the AGCO certification for the ROPS. The protection that is offered by the ROPS will be impaired if the ROPS has structural damage. Damage to the structure can be caused by an overturn or by falling objects.

Do not mount items (fire extinguishers, first aid kits, work lights, etc) by welding any brackets to the ROPS or by drilling holes in the ROPS. See your dealer for mounting guidelines.

MACHINE INDENTIFICATION

Product Identification Information

Plate Locations

The product identification number (PIN) will be used to identify a powered tractor that is designed for an operator to ride.

Components such as engines, transmissions and major attachments that are not designed for an operator to ride are identified by serial numbers.

For quick reference, record the identification numbers in the spaces that are provided below the Illustration.

FIG. 2: Machine PIN. The plate is located on left side of the frame rail

Machine PIN: _____

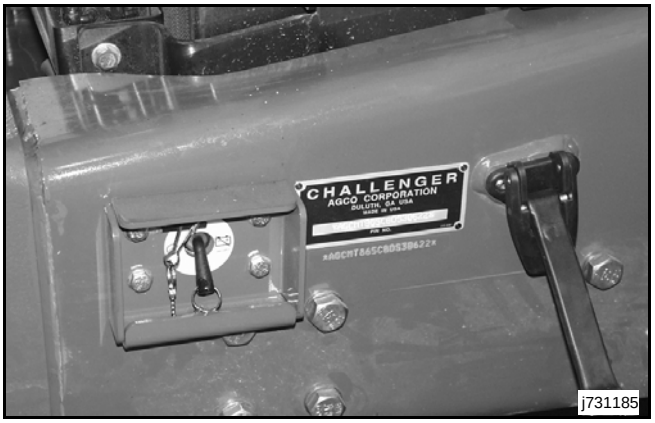


FIG. 2

FIG. 3: Engine Serial Number. The plate is located on the engine.

Engine Serial Number: _____

FIG. 3

FIG. 4: Transmission Serial Number. The plate is located on the left front side of the transmission above the hardball.

Transmission Serial Number: _____

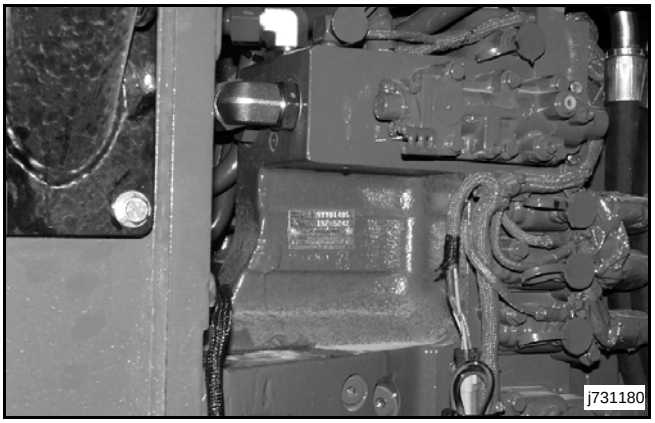


FIG. 4

FIG. 5: Cab Serial Number. The plate is located inside the cab and below the inching clutch control.

Cab Serial Number: _____

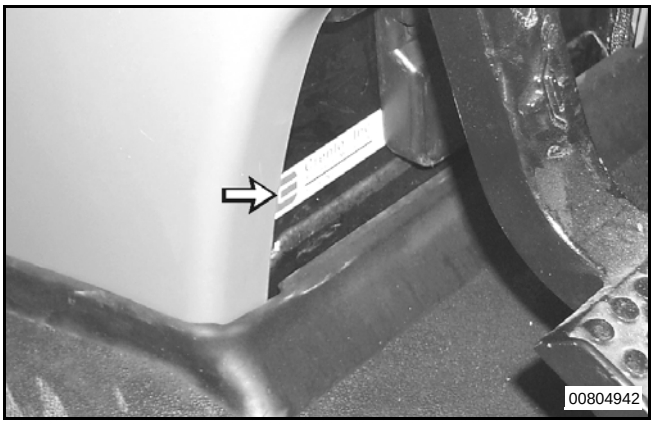


FIG. 5

FIG. 6: Operators Seat Serial Number. The tag (1) is located on the rear of the operators seat.

Seat Serial Number: _____

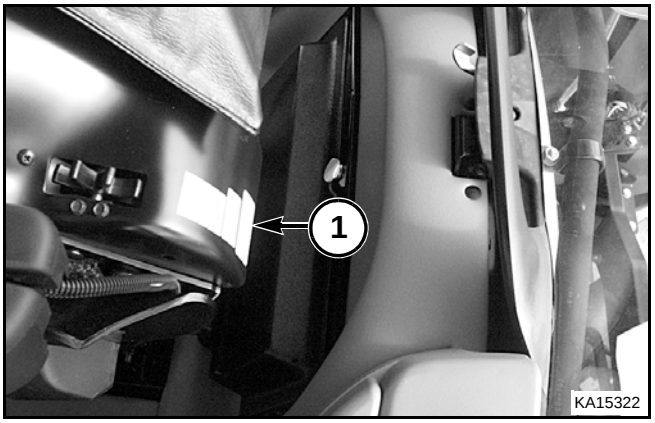


FIG. 6

FIG. 7: Track Belt Serial Number. The serial number is located on the edge of each belt.

Left Belt Serial Number: _____

Right Belt Serial Number: _____

FIG. 7

FIG. 8: Serial Number for the Differential and for the Axles. The plate is located near the base of the filler tube for the hydraulic system.

Differential and Axles Serial Number: _____

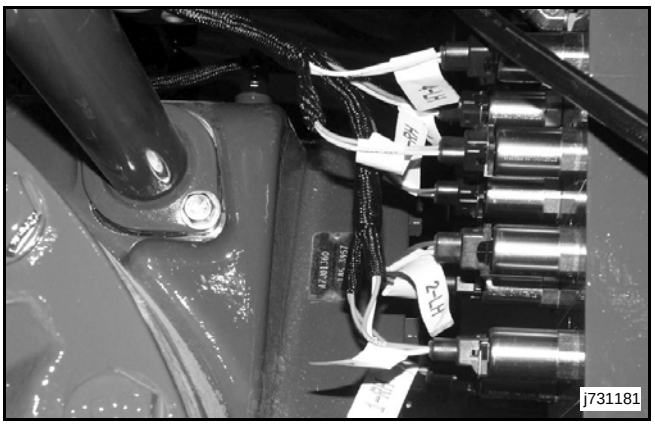


FIG. 8

TORQUE SPECIFICATIONS

WARNING: Mismatched or incorrect fasteners can result in damage or malfunction, or personal injury. Take care to avoid mixing metric dimensioned fasteners and inch dimensioned fasteners.

Exceptions to these torques are given in the Service Manual if necessary.

Prior to installation of any hardware, ensure that components are in near new condition. Bolts and threads must not be worn or damaged. Threads must not have burrs or nicks. Hardware must be free of rust and corrosion. Clean the hardware with a noncorrosive cleaner.

Do not lubricate the fastener threads except for the rust preventive. The rust preventive should be applied by the supplier of that component for purposes of shipping and storage. Other applications for lubricating components may also be specified in the Service Manual.

Constant Torque Hose Clamps

Due to extreme temperature changes, the hose will heat set. Heat setting can cause hose clamps to loosen. Loose hose clamps can result in leaks. There have been reports of component failures that have been caused by hose clamps that have loosened. The constant torque hose clamp will help prevent these failures.

FIG. 9: The constant torque hose clamp is installed correctly under the following conditions:

- Screw tip (1) extends 6.35 mm (.25 inch) (A) beyond the housing.
- The belleville washers are collapsed nearly flat after screw (2) is tightened to a torque of 11 Nm (8.1 lb/ft).

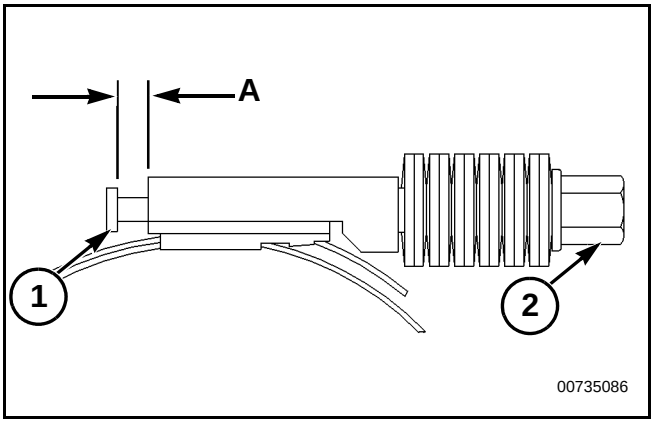


FIG. 9

FASTENERS INFORMATION

Metric Fasteners

Assembly Torque for Metric Fasteners

Standard			High		Low	
Thread Size	**Torque Pound Feet Lb. Ft.**	**Torque Newton Meters Nm**	**Torque Pound Feet Lb. Ft.**	**Torque Newton Meters Nm**	**Torque Pound Feet Lb. Ft.**	**Torque Newton Meters Nm**
M6 x 1	9 ± 1	12 ± 3	10 ± 1	13 ± 3	4 ± .5	6 ± 1
M8 x 1.25	21 ± 2	28 ± 7	22 ± 2	30 ± 7	11 ± 1	15 ± 3
M10 x 1.5	41 ± 4	55 ± 10	44 ± 4	60 ± 12	22 ± 2	30 ± 7
M12 x 1.75	75 ± 8	100 ± 20	80 ± 8	105 ± 20	35 ± 4	50 ± 10
M14 x 2	120 ± 12	160 ± 30	130 ± 10	175 ± 30	60 ± 5	80 ± 15
M16 x 2	175 ± 15	240 ± 40	200 ± 20	270 ± 40	90 ± 10	125 ± 20
M20 x 2.5	340 ± 35	460 ± 60	390 ± 40	530 ± 70	185 ± 20	250 ± 40
M24 x 3	590 ± 60	800 ± 100	665 ± 65	900 ± 100	315 ± 30	425 ± 50
M30 x 3.5	1180 ± 120	1600 ± 200	1330 ± 130	1800 ± 200	625 ± 60	850 ± 100
M36 x 4	2000 ± 200	2700 ± 300	2285 ± 230	3100 ± 350	1100 ± 110	1500 ± 200

Standard Taperlock Studs		
Thread Size	**Torque Pound Feet Lb. Ft.**	**Torque Newton Meters Nm**
M6	6	8
M8	13	17
M10	26	35
M12	48	65
M16	80	110
M20	125	170
M24	300	400
M30	550	750
M36	880	1200

Inch Fasteners

Assembly Torque for Inch Fasteners

Standard			High		Low	
Thread Size	**Torque Pound Feet Lb. Ft.**	**Torque Newton Meters Nm**	**Torque Pound Feet Lb. Ft.**	**Torque Newton Meters Nm**	**Torque Pound Feet Lb. Ft.**	**Torque Newton Meters Nm**
1/4 - 20	9 ± 1	12 ± 3	10 ± 1	13 ± 3	4 ± .5	6 ± 1
5/16 - 18	18 ± 2	25 ± 6	20 ± 2	28 ± 7	10 ± 1	13 ± 3
3/8 - 16	35 ± 4	47 ± 9	40 ± 4	50 ± 10	18 ± 2	25 ± 6
7/16 - 14	50 ± 5	70 ±15	60 ± 6	80 ± 15	30 ± 3	40 ± 8
1/2 - 13	75 ± 8	105 ± 20	90 ± 9	120 ± 20	45 ± 5	60 ± 12
9/16 - 12	120 ± 10	160 ± 30	130 ± 13	175 ± 30	60 ± 5	85 ± 15
5/8 - 11	160 ± 15	215 ± 40	175 ± 15	240 ± 40	85 ± 10	115 ± 20
3/4 - 10	275 ± 30	370 ± 50	320 ± 30	430 ± 60	150 ± 15	200 ± 40
7/8 - 9	460 ± 50	620 ± 80	520 ± 50	700 ± 90	240 ± 25	325 ± 40
1 - 8	660 ± 70	900 ± 100	775 ± 75	1050 ± 150	370 ± 35	500 ± 65
1 1/8 - 7	960 ± 100	1300 ± 150	1070 ± 105	1450 ± 150	515 ± 50	700 ± 90
1 1/4 - 7	1320 ± 130	1800 ± 200	1550 ± 155	2100 ± 250	975 ± 95	1000 ± 125
1 3/8 - 6	1780 ± 180	2400 ± 300	1990 ± 200	2700 ± 300	1315 ± 130	1000 ± 150
1 1/2 - 5	2280 ± 230	3100 ± 350	2650 ± 265	3600 ± 400	1680 ± 165	1700 ± 200

Standard Taperlock Studs		
Thread Size	**Torque Pound Feet Lb. Ft.**	**Torque Newton Meters Nm**
1/4	6	8
5/16	13	17
3/8	26	35
7/16	33	45
1/2	48	65
5/8	80	110
3/4	125	170
7/8	190	260
1	300	400
1 1/8	390	525
1 1/4	550	750
1 3/8	700	950
1 1/2	880	1200

TIGHTENING STRAIGHT THREAD FITTINGS

The straight thread hydraulic fittings require precise tightening. Overtightening of the hydraulic fittings will ruin the sealing surfaces and will require the replacement of the damaged parts.

Proper initial tightening depends on the mating parts to be connected. Proceed as follows:

An adapter fitting (37° flare) connected to a double flare tube assembly. The fitting must be tightened finger tight and wrenched 1/2 turn (for single flare, 1/4 turn).

An adapter fitting (37° flare) connected to a hose. The fitting must be tightened finger tight and wrenched 1/4 turn.

An o-ring adapter fiitting connected to a solid port. The fitting must be tightened so that the backup washer contacts the face of the boss after the fitting has been properly positioned.

To retighten after initial tightening, as in service work, both tube and hose connnections should be tightened finger tight and wrenched 1/4 turn. O-ring fittings should be tightened as for initial assembly.

JIC SWIVEL NUTS (37° SEAT). The following valvues are the maximum recommended torque valvues for JIC (37° seat) swivel nuts either swaged or brazed type. The swivel nuts will normally withstand this torque for a minimum of 15 repeated assemblies.

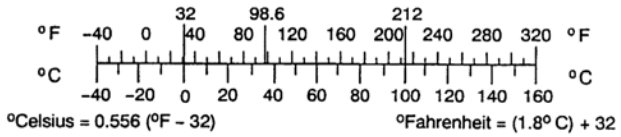
The torque required to seal swivel female fittings or hose couplings to a male connector depends on many variables such as fluid medium, pressure, surface finish, etc. The following values are intended only as a guide for the maximum values the fittings may be subjected to.

DASH SIZE	TUBE O. D. (REF.)	TORQUE MAX		
		N-m	lb-in	lb-ft
-4	1/4	12	110	9
-5	5/16	20	180	15
-6	3/8	27	240	20
-8	1/2	40	360	30
-10	5/8	54	480	40
-12	3/4	95	840	70
-14	7/8	110	980	80
-16	1	120	1080	90
-20	1 1/4	160	1440	120
-24	1 1/2	180	1575	130
-32	2	400	3600	300
-40	2 1/2	540	4800	400
-48	3	680	6000	500

METRIC INFORMATION

	MULTIPLY:	BY:		To Get: MULTIPLY	BY:		To Get:
LINEAR	inches	x 25.4	=	millimeters (mm)	x 0.03937	=	inches
	feet	x 0.3048	=	meters (m)	x 3.281	=	feet
	yards	x 0.9144	=	meters (m)	x 1.0936	=	yards
	miles	x 1.6093	=	kilometers (km)	x 0.6214	=	miles
	inches	x 2.54	=	centimeters (cm)	x 0.3937	=	inches
	microinches	x 0.0254	=	micrometers (um)	x 39.37	=	microinches
AREA	inches²	x 645.16	=	millimeters² (mm²)	x 0.00155	=	inches²
	inches²	x 6.4516	=	centimeters² (cm²)	x 0.155	=	inches²
	feet²	x 0.0929	=	meters² (m²)	x 10.764	=	feet²
	yards²	x 0.8361	=	meters² (m²)	x 1.196	=	yards²
	acres	x 0.4047	=	hectometers² (hm²)	x 2.471	=	acres
			=	hectares (ha)			
VOLUME	inches³	x 16387	=	millimeters³ (mm³)	x 0.000061	=	inches³
	inches³	x 16.387	=	centimeters³ (cm³)	x 0.06102	=	inches³
	inches³	x 0.01639	=	liters	x 61.024	=	inches³
	quarts	x 0.94635	=	liters	x 1.0567	=	quarts
	gallons	x 3.7854	=	liters	x 0.2642	=	gallons
	feet³	x 28.317	=	liters	x 0.03531	=	feet³
	feet³	x 0.02832	=	meters³ (m³)	x 35.315	=	feet³
	fluid oz.	x 29.57	=	milliliters (ml)	x 0.03381	=	fluid oz.
	yards³	x 0.7646	=	meters³ (m³)	x 1.3080	=	yards³
	teaspoons	x 4.929	=	milliliters (ml)	x 0.2029	=	teaspoons
	cups	x 0.2366	=	liters	x 4.227	=	cups
	bushel	x 35.239	=	liters	x 0.02838	=	bushels
	bushel	x 0.03524	=	meters³ (m³)	x 28.378	=	bushels
MASS	ounces (av)	x 28.35	=	grams (g)	x 0.03527	=	ounces (av)
	pounds (av)	x 0.4536	=	kilograms (kg)	x 2.2046	=	pounds (av)
	tons (2000 lbs)	x 907.18	=	kilograms (kg)	x 0.001102	=	tons (2000 lbs)
	tons (2000 lbs)	x .90718	=	metric tons(t)	x 1.1023	=	tons(2000 lbs)
	tons (long) (2240 lbs)	x 1016.05	=	kilograms (kg)	x .000984	=	tons (long) (2240 lbs)
FORCE	ounces - f (av)	x 0.278	=	newtons (N)	x 3.597	=	ounces - f (av)
	pounds - f (av)	x 4.488	=	newtons (N)	x 0.2248	=	pounds - f (av)
	kilograms - f	x 9.807	=	newtons (N)	x 0.10197	=	kilograms - f
PRESSURE OR STRESS	pounds/sq.in.	x 6.895	=	kilopascals (kPa)	x 0.145	=	pounds/sq. in.
	pounds/sq.in.	x 0.0689	=	bar	x 14.503	=	pounds/sq. in.
POWER	horsepower	x 0.746	=	kilowatts (kW)	x 1.34	=	horsepower
	ft-lbf/min.	x 0.0226	=	watts (W)	x 44.25	=	ft - lbf/min.
TORQUE	pound - inches	x 0.11298	=	newton-meters (N.m)	x 8.851	=	pound-inches
	pound - feet	x 1.3558	=	newton-meters (N.m)	x 0.7376	=	pound-feet
VELOCITY	miles/hour	x 1.6093	=	kilometers/hour (km/h)	x 0.6214	=	miles/hour
	feet/sec.	x 0.3048	=	meters/sec. (m/s)	x 3.281	=	feet/sec.
	kilometers/hr.	x 0.27778	=	meters/sec. (m/s)	x 3.600	=	kilometers/hr.
	miles/hours	x 0.4470	=	meters/sec. (m/s)	x 2.237	=	miles/hour

TEMPERATURE



°Celsius = 0.556 (°F – 32)

°Fahrenheit = (1.8° C) + 32

MetConv.doc

METCONV

Printed in U.S.A.

Information for the Caterpillar® engines used in these tractors, must be procured through an authorized Caterpillar® engine distributor.

79023572 B Rev.
October, 2005

Challenger®

Service Manual

MT800 and MT800B Series

Engine Auxiliary Components

CONTENTS

CONTENTS

SAFETY

GENERAL INFORMATION

Important Safety Information

FIG. 1: Improper operation, lubrication, maintenance or repair of this product can be hazardous and could result in injury or death.

Most injuries that involve product operation, maintenance, and repair are caused by failure to observe basic safety rules or precautions. An injury can often be avoided by recognizing potential hazardous situation before an injury occurs. A person must be alert to potential hazards. This person should also have the necessary training, skills, and the tools to perform these functions properly.

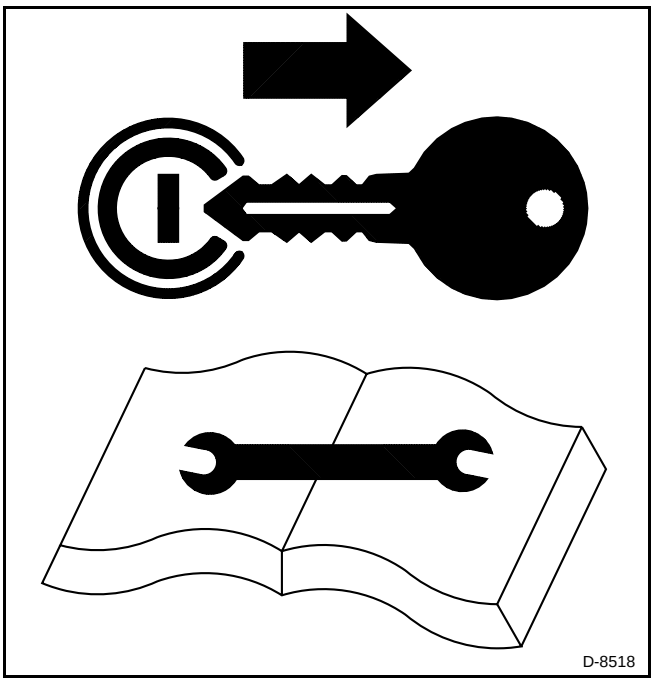


FIG. 1

Safety Alert Symbol

FIG. 2: This is the safety alert symbol. It means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! Look for it, both in this manual and on safety decals on the tractor. It will direct your attention to information that involves your safety and the safety of others

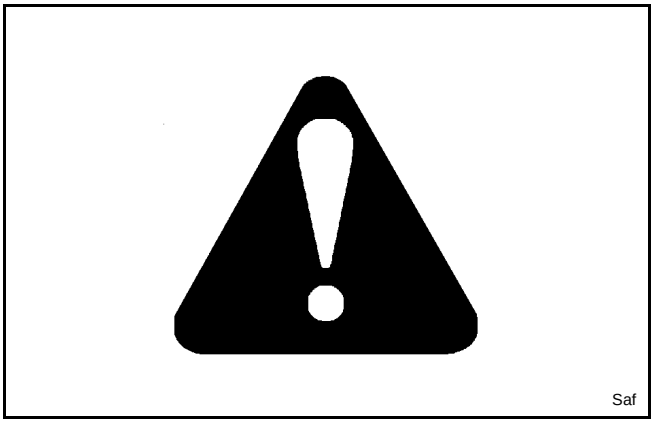


FIG. 2

Signal Words

FIG. 3: The words DANGER, WARNING or CAUTION are used with the safety alert symbol. Learn to recognize these safety alerts, and follow the recommended precautions and safe practices.

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

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

CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in minor injury.

The words IMPORTANT and NOTE are not related to personal safety, but are used to give additional information and tips for servicing or operating the equipment.

IMPORTANT: The word IMPORTANT is used to identify special instructions or procedures which, if not strictly observed could result in damage to, or destruction of the machine, process or its surroundings.

NOTE: The word NOTE is used to indicate points of particular interest for more efficient and convenient repair or operation.

Replace any **DANGER, WARNING, CAUTION** or instructional decal that is not readable or is missing. The location and part number of these decals is identified in the operator's manual for this machine.

FIG. 3

Informational Messages

FIG. 4: Do not operate or perform any lubrication, maintenance, or repair on this product, until you have read and understood the operation, lubrication, maintenance, and repair information.

Read and understand this manual, the operator's manual, and the manual for all attachments before operating, servicing or repairing the tractor.

Learn how to operate, service and repair the tractor and how to use the controls properly.

Do not let anyone operate, service or repair the tractor without instruction and training.

For your safety and the safety of others, follow all safety precautions and instructions found in the manuals and on decals affixed to the tractor and the tractor's attachments.

Personal injury and death may result if these precautions are not followed.

Right-hand and left-hand as used in this manual, is determined by facing the direction the machine will travel when in use.

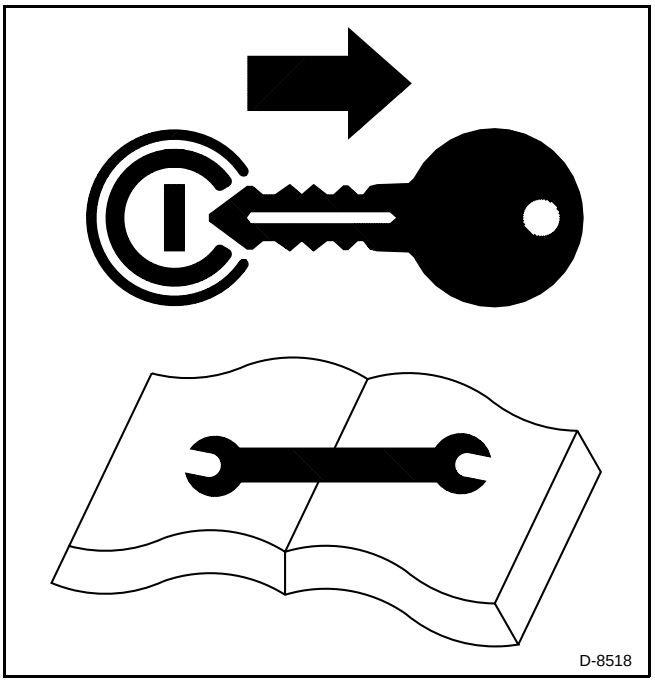


FIG. 4

General Hazard Information

FIG. 5: When the engine is running and the steering wheel is turned, the tractor will not turn with the transmission control lever (1) in the PARK (P) position. The tractor will turn with the transmission control lever in the NEUTRAL (N) position.

Do not start the engine until the area is free of personnel. This will aid in avoiding personal injury due to unexpected tractor movement.

Unless you are instructed otherwise, perform the maintenance under the following conditions:

- The tractor is parked on level ground.
- The implements are lowered to the ground.
- The transmission control lever is in the PARK position.
- The engine is stopped.
- The engine start switch is turned off and the switch key is removed.
- The tractor has cooled down.

Know the width of your equipment to maintain proper clearance when you operate the tractor near obstacles.

FIG. 5

FIG. 6: Be prepared for emergencies. Always carry one or more suitable fire extinguishers - ABC rating, dry chemical.

Keep a first aid kit handy for treatment of minor cuts and scratches.

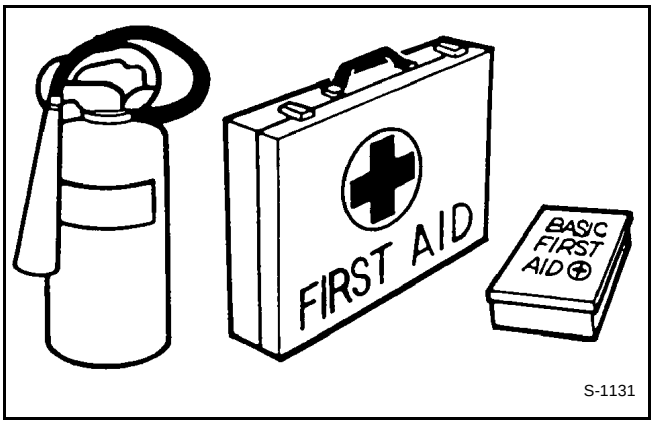


FIG. 6

FIG. 7: Wear a hard hat, protective glasses, and other protective equipment as required.

Do not wear loose clothing or jewelry that can snag on parts of the tractor or controls.

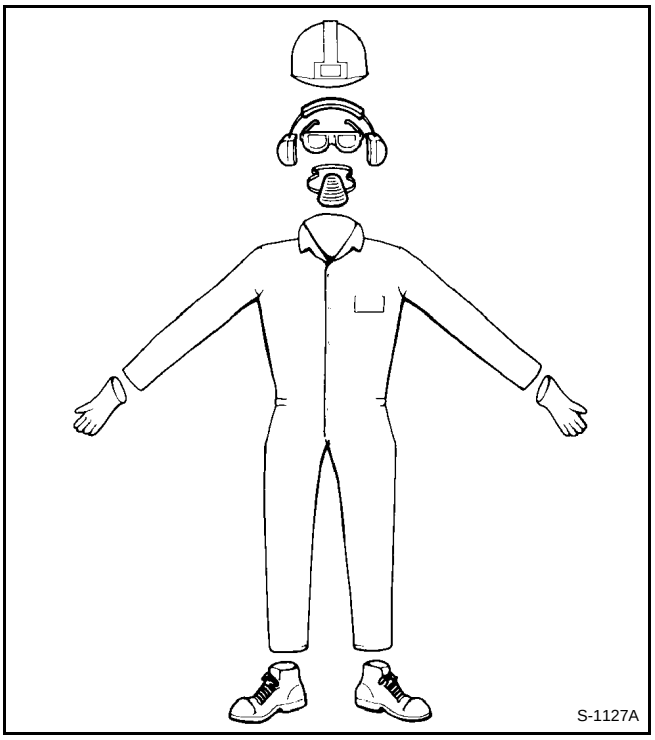


FIG. 7

FIG. 8: Face the rear of the tractor whenever you mount the tractor and whenever you dismount the tractor.

Maintain three- point contact with the steps and the handrails. Three-point contact is two feet and one hand or one foot and two hands.

Do not attempt to get on or off the tractor while it is moving.

IMPORTANT: Make sure that the steps are not adjusted too close to the hood on the tractor.

You must leave a minimum dimension of 75 mm between the inside handhold and the hood so that there is enough room for the operator's hand.

FIG. 8

FIG. 9: Diesel engine exhaust contains products of combustion that can be harmful to your health. Always run the engine in a well-ventilated area. Never operate the engine in a closed building unless the exhaust is vented outside.

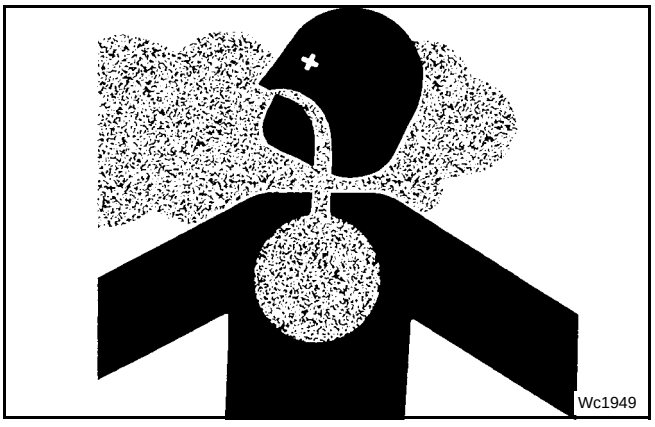


FIG. 9

FIG. 10: Start the engine only from the operator's seat. Never short across the starter terminals or across the batteries.

FIG. 10

FIG. 11: Only operate the tractor while you are in the operator's seat. The seat belt must be fastened around you while you operate the tractor. Only operate the controls while the engine is running.

If another person is riding in the instructor's seat, make sure they wear their seat belt. Never allow anyone on any part of the tractor or its attachment except in the operator's seat and the instructor's seat when the engine is running.

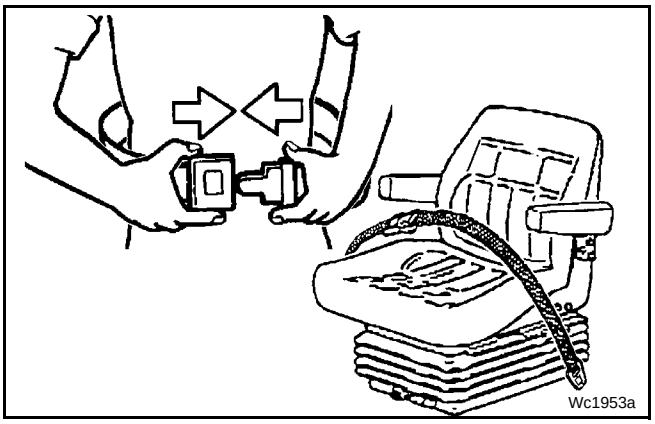


FIG. 11

FIG. 12: Some photos in this manual may have been taken with shields removed for clarity.

WARNING: In order to provide a better view, certain photographs and illustrations in the manual may show an assembly with the shield removed. Do not operate the tractor unless all shields are in good condition and are in place. Replace shields immediately upon completion of inspection, repairs, cleaning or adjustments and before operating begins/resumes.

FIG. 12

FIG. 13: Never put maintenance fluid into glass containers. Drain all fluids into a suitable container.

Discard any drained fluids and discard any fluid saturated materials according to local regulations.

Use all cleaning solutions with care.

FIG. 13

FIG. 14: Do not smoke when you service an air conditioner. Inhaling gas from air conditioner refrigerant through alighted cigarette can cause bodily harm or death.

Keep the tractor free from foreign material (fuel, oil, coolants, oily rags, and debris).

Do not weld on lines or on tanks that contain flammable fluids or gases.

Use caution when you are refueling a tractor. Do not smoke while you are refueling a tractor. Always stop the engine before refueling. Fill the fuel tank outdoors.

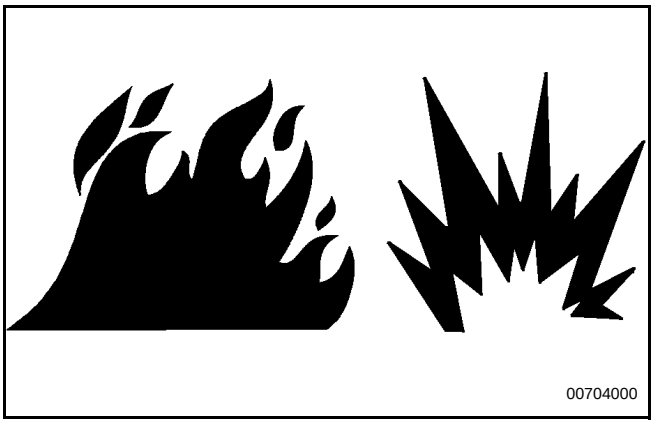


FIG. 14

FIG. 15: Always shut off the engine, shift the transmission to park, remove the start key, and set the battery disconnect switch to the OFF position before permitting anyone to inspect, clean, lubricate, adjust, or repair any part of the tractor or its attachments.

FIG. 15

FIG. 16: Any modifications to the inside of the operator station should not project into the operator space.

Support the equipment properly when you perform work beneath the equipment.

Do not make any modifications to the ROPS as this will affect the protection provided. Do not alter the structure by welding, cutting, adding weight, or drilling hole into the structure.

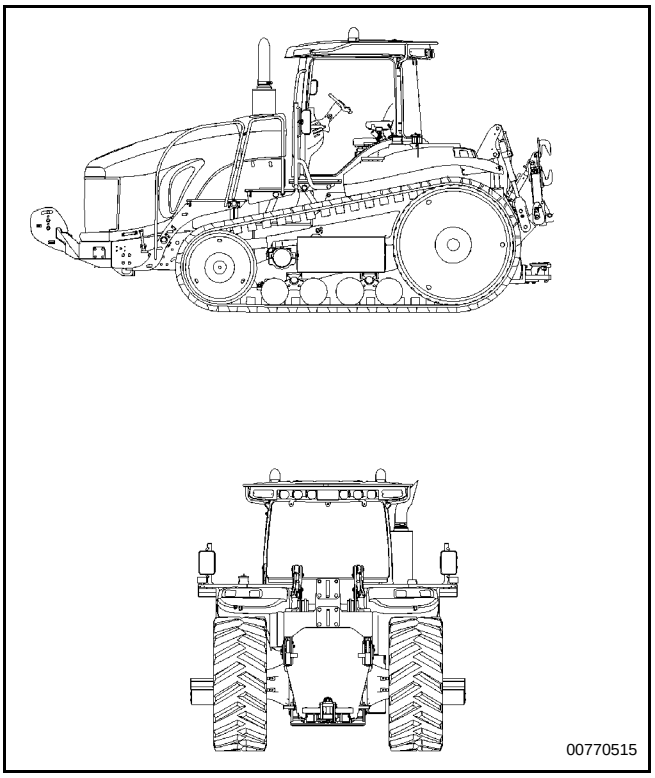


FIG. 16

FIG. 17: Keep objects away from moving fan blades. The fan blades will throw objects and the fan blades can cut objects.

Moving parts can pull you in faster than you can move away.

FIG. 17

FIG. 18: Do not touch any part of an operating engine. Allow the engine to cool before any maintenance is performed on the engine. Relieve all pressure in the air system, in the oil system, in the lubrication system, in the fuel system, or in the cooling system before any line, fittings or related items are disconnected.

FIG. 18

FIG. 19: Do not remove the radiator cap if the engine is hot. Only remove the cap when it is cool enough to touch with the bare hands. Loosen the cap slowly to the first notch to relieve pressure, then remove the cap.

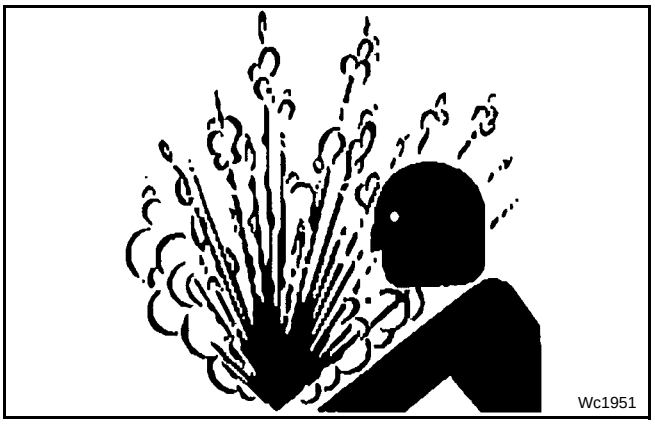


FIG. 19

FIG. 20: Escaping fluid under high pressure can be almost invisible but penetrate the skin causing serious injury.

Consult a doctor immediately if you sustain a injury be escaping fluids. Fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

Hot oil and hot components can cause personal injury.

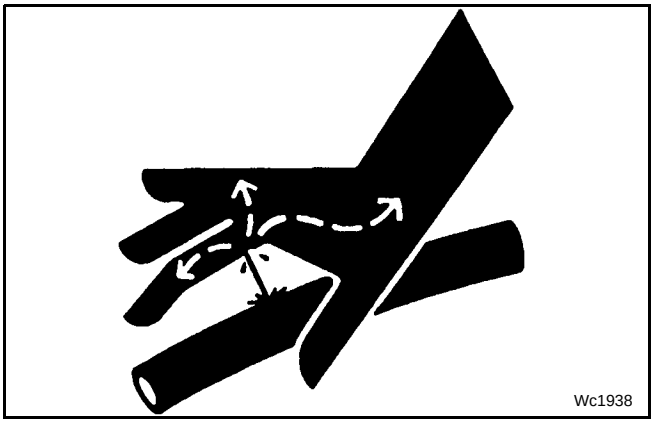


FIG. 20

FIG. 21: Use a piece of cardboard or wood to search for possible leaks, never use you hands.

Do not bend high-pressure lines. Do not strike high-pressure lines. Do not install any lines that are bent or damaged.

Check lines, tubes, and hoses carefully. Repair any lines that are loose or damaged. Tighten all connections to the recommended torque.

Replace the parts if any of the following conditions are present:

- End fittings are damaged or leaking.
- Outer coverings are chafed or cut.
- Wires are exposed.
- Outer covering are ballooning.
- Flexible parts of the hoses are kinked.
- Outer covers have embedded armoring.
- End fittings are displaced.

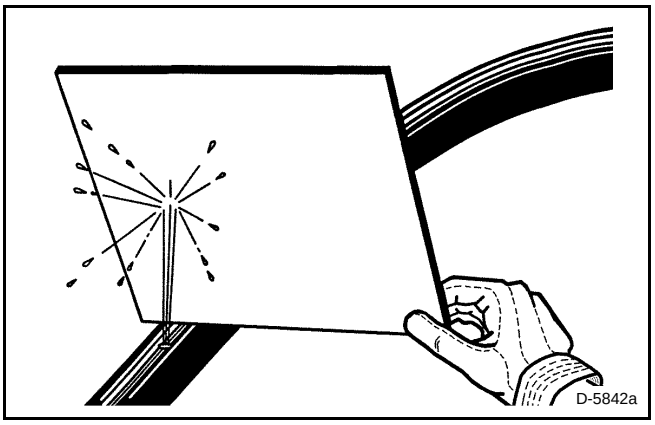


FIG. 21

FIG. 22: The electrolyte in batteries on the tractor is an acid and can cause personal injury. Do not allow electrolyte to contact the skin or the eyes. Always wear protective glasses for servicing batteries. Wash hand after touching the batteries and the connectors.

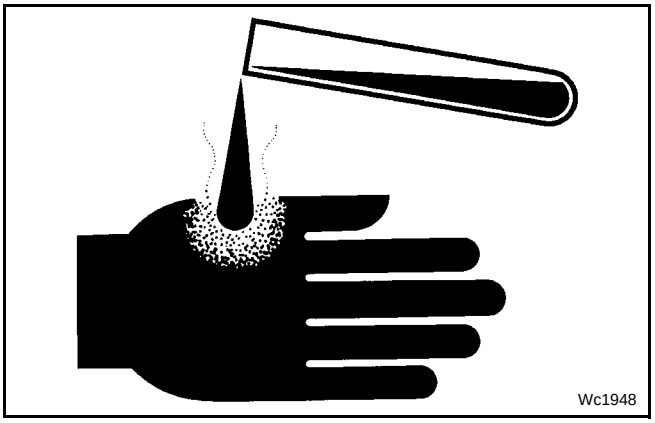


FIG. 22

FIG. 23: Gases from a battery can explode. Keep any open flames or sparks away from the top of a battery. Do not smoke in battery charging areas.

Never check the battery charge by placing a metal object across the terminal posts. Do not lay tools or other conductive materials on the battery.

Be careful when connecting booster cables to the batteries. Electrical component damage or battery explosion can result if booster cables are not installed correctly.

Do not charge a frozen battery as it may explode. Warm the batter to 16°C (60°F).

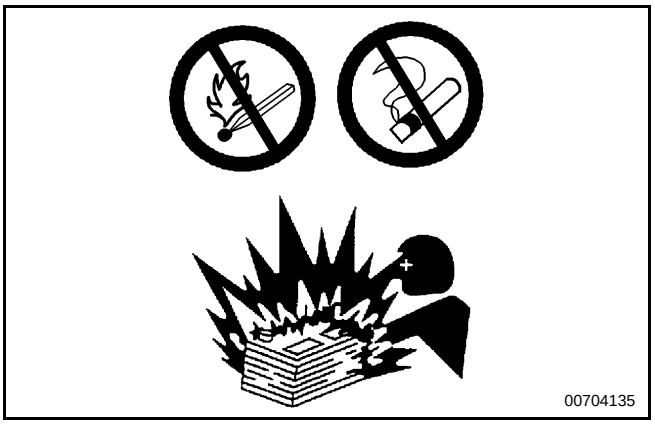


FIG. 23

FIG. 24: Make sure that all of the tractor lights, reflectors, and SMV are installed, in good condition, and wiped clean.

Consult your local law enforcement agency for local regulation regarding movement of farm equipment on public roads.

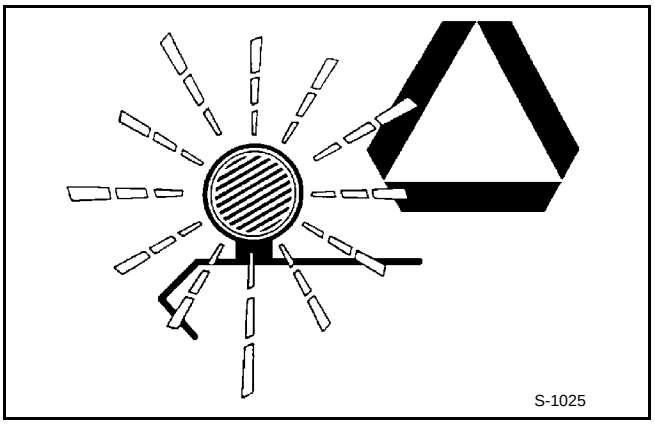


FIG. 24

FIG. 25: Auto-Guide can be momentarily disabled if the satellite signal is lost. It is imperative that the operator be alert to his position and conditions in the field at all times.

The purpose of the Auto-Guide System is to aide the operator with steering the tractor. Operator attention is required at all times.

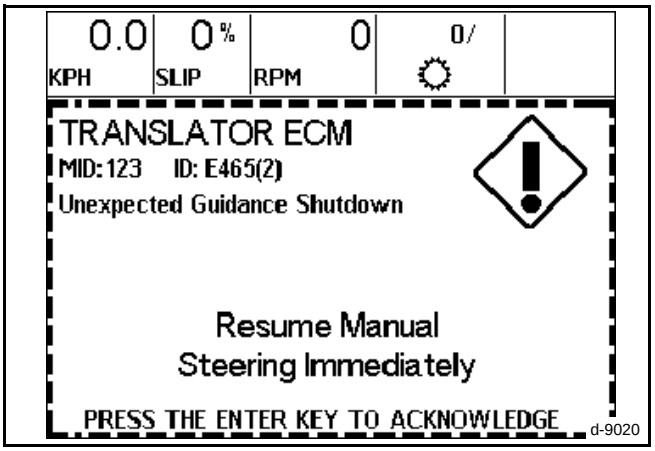


FIG. 25

DISASSEMBLY AND ASSEMBLY

ALTERNATOR - REMOVE AND INSTALL

Removal Procedure

FIG. 26: To remove the alternator and wiring:

1. Turn the disconnect switch to the Off position.
2. Remove the belt. Refer to Operation and Maintenance Manual Belt (Alternator and Water Pump) - Replace.
3. Remove wiring (1), (3), and (4) from alternator (2).

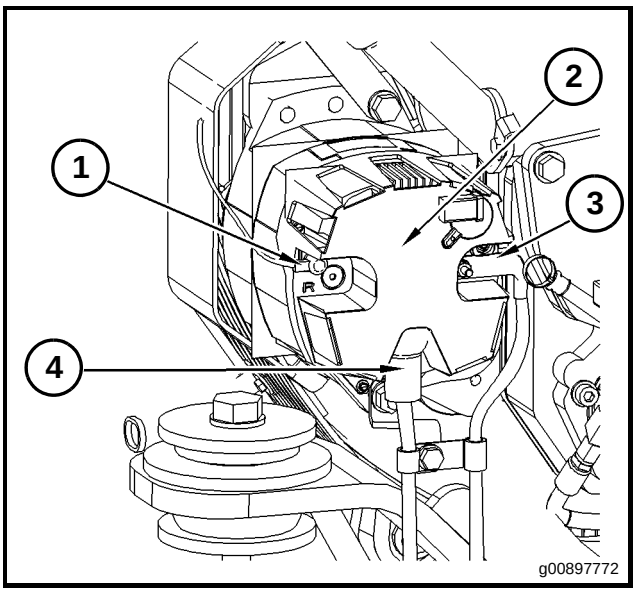


FIG. 26:

FIG. 27: Remove the bolts that hold the guard.

4. Remove bolts (5), (6), and (7).

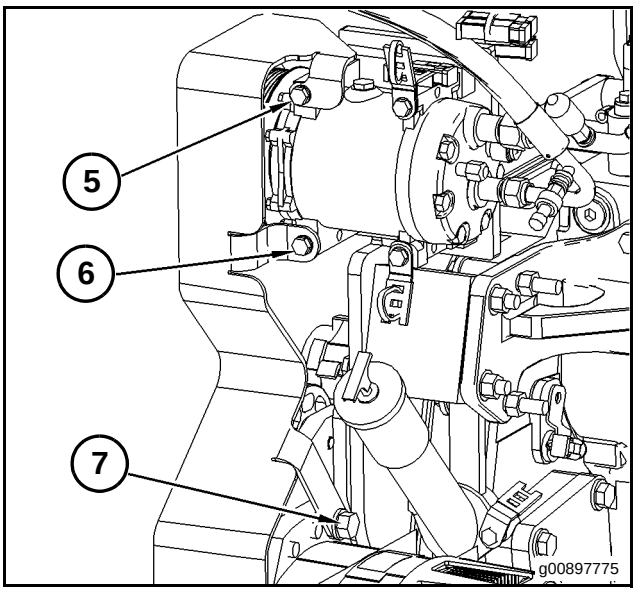


FIG. 27:

FIG. 28: Remove the guard and the alternator.

5. Remove the two top bolts (8) and bottom bolt (9). Remove guard (10). Remove alternator (2).

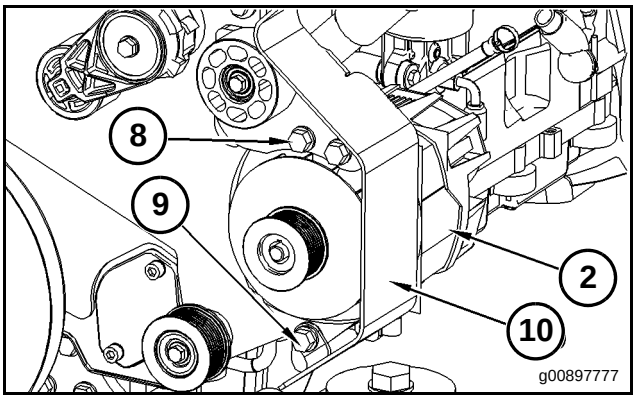


FIG. 28:

Installation Procedure

FIG. 29: Install the alternator and guard.

1. Install alternator (2). Install guard (10). Install the two top bolts (8) and bottom bolt (9).

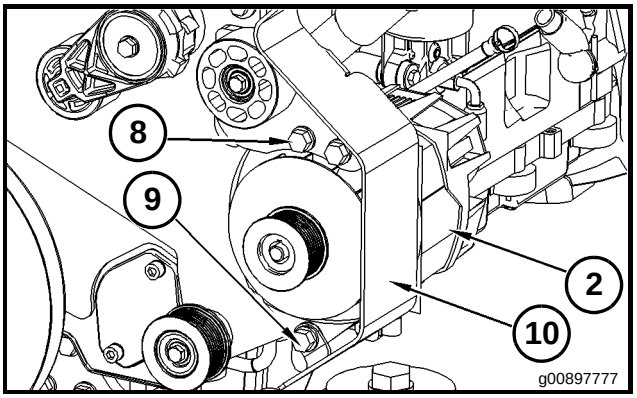


FIG. 29:

FIG. 30: Install the bolts for the guard.

2. Install bolts (5), (6), and (7).

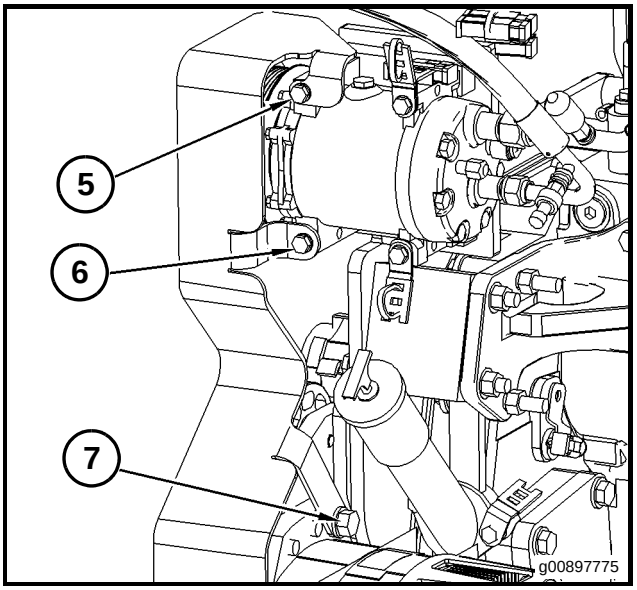


FIG. 30:

FIG. 31: Install the wiring.

3. Install wiring (1), (3), and (4) on alternator (2).
4. Install the belt. Refer to Operation and Maintenance ManualBelt (Alternator and Water Pump) - Replace.
5. Turn the disconnect switch to the On position.

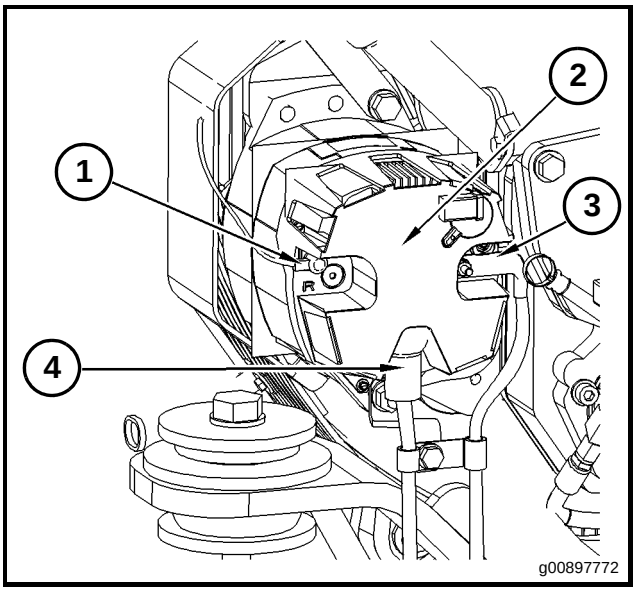


FIG. 31:

ELECTRIC STARTING MOTOR - REMOVE AND INSTALL

Removal Procedure

1. Raise the hood. Refer to Operation and Maintenance Manual Hood (Engine Compartment) - Raise/Lower.
2. Turn the battery disconnect switch to the OFF position.

FIG. 32: Remove the battery cables and wiring from he starter.

3. Disconnect wires (1), (2), (3), (4), and (5).
4. Remove bolts (7) and electric starting motor (6) from the machine.

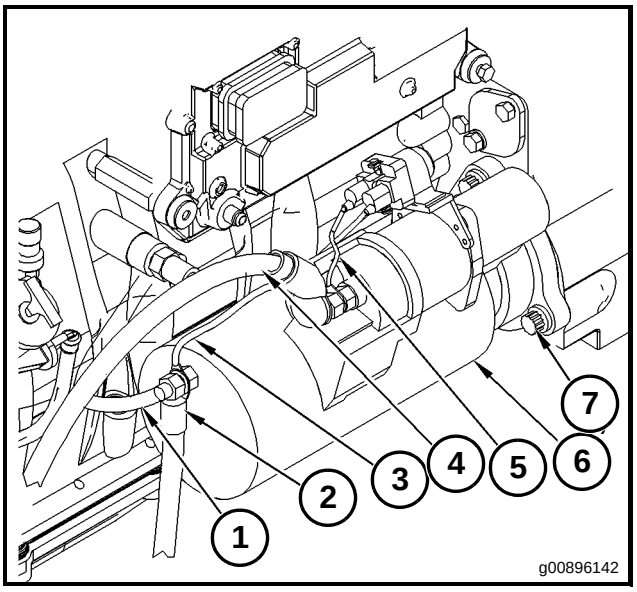


FIG. 32:

Installation Procedure

FIG. 33: Install the starter, battery cables, and wires as follows:

NOTE: Remove the paint from the bores and the threads of bolts (7) before the installation procedure.

1. Install electric starting motor (6) in the tractor with bolts (7).
2. Connect wires (5), (4), (3), (2), and (1) to electric starting motor (6).
3. Turn the battery disconnect switch to the ON position.
4. Lower the hood. Refer to Operation and Maintenance Manual Hood (Engine Compartment) - Raise/Lower.

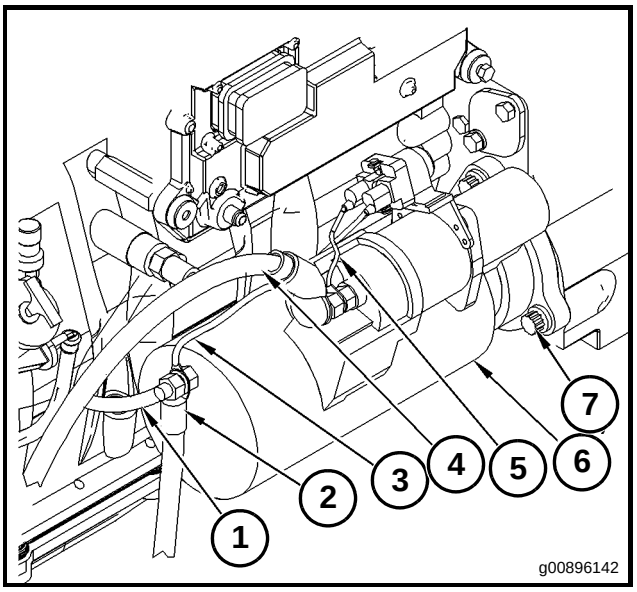


FIG. 33:

COOLING ASSEMBLY - REMOVE

Removal Procedure

Required Tools			
Tool	Part Number	Description	Qty
A	138-7575	Link Bracket	2

Start By:

Remove the hood. Refer to Disassembly and Assembly Hood - Remove.

NOTE: Put identification marks on all hoses, on all hose assemblies, on all wires, and on all tube assemblies for installation purposes. Plug all hose assemblies and all tube assemblies. This helps to prevent fluid loss, and this helps to keep contaminants from entering the system.

IMPORTANT: Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the machine. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

WARNING: Personal injury can result from contact with refrigerant.

Contact with refrigerant can cause frost bite. Keep face and hands away to help prevent injury.

Protective goggles must always be worn when refrigerant lines are opened, even if the gauges indicate the system is empty of refrigerant.

Always use precaution when a fitting is removed. Slowly loosen the fitting. If the system is still under pressure, release it slowly in a well ventilated area.

Personal injury or death can result from inhaling refrigerant through a lit cigarette.

Inhaling air conditioner refrigerant gas through a lit cigarette or other smoking method or inhaling fumes released from a flame contacting air conditioner refrigerant gas, can cause bodily harm or death.

Do not smoke when servicing air conditioners or wherever refrigerant gas may be present.

Use a certified recovery and recycling cart to properly remove the refrigerant from the air conditioning system.

1. Remove the fan guards and the fan shroud.
2. Remove the batteries. Refer to Operation and Maintenance Manual Batteries - Remove and Install.
3. Drain the coolant from the cooling system into a suitable container for storage or disposal. Refer to Operation and Maintenance Manual Cooling System Coolant (DEAC) - Change or Operation and Maintenance Manual Cooling System Extended Life Coolant - Change for the machine that is being serviced.
4. Recover the air conditioner refrigerant from the air conditioner system.

FIG. 34: Removing the air intake.

5. Remove bolts (3) on top of the radiator. Remove hose (3a) Loosen hose clamp (1) and remove air intake (2).

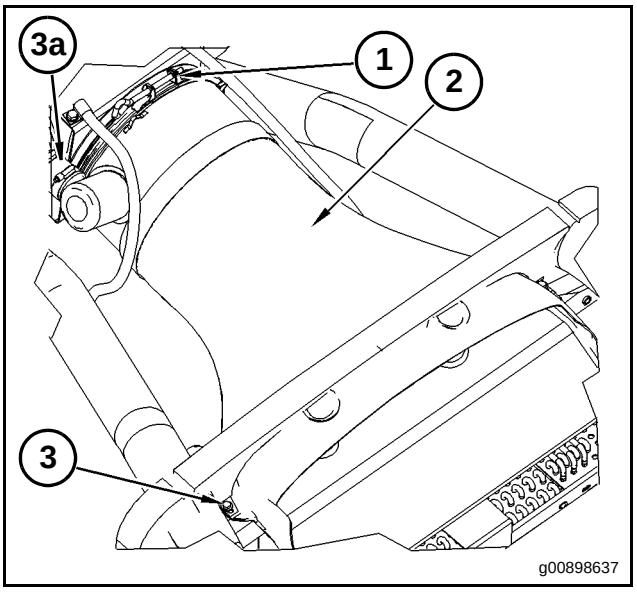


FIG. 34:

FIG. 35: Removing the charge air tubes.

6. Loosen hose clamps (4). Remove tubes (5).

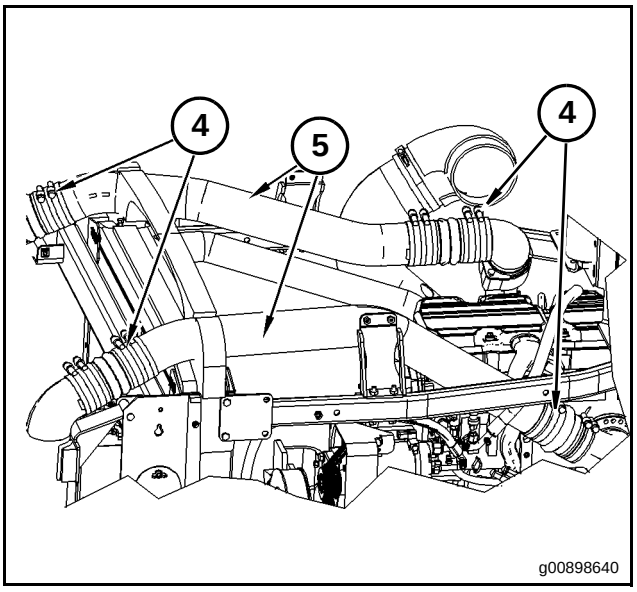


FIG. 35:

FIG. 36: Removing the radiator hoses.

7. Disconnect hose assemblies (6) and (7) from the top of the radiator. DO NOT remove bolts (7A) at this time.

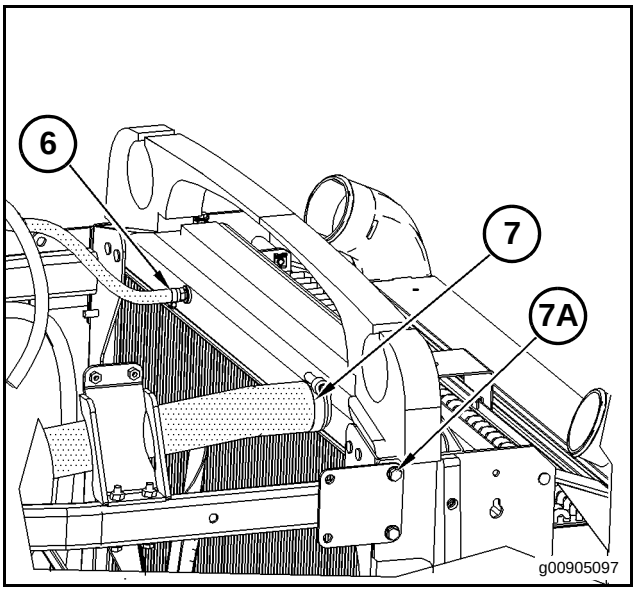


FIG. 36:

FIG. 37: Remove the lower radiator hose.

8. Disconnect hose assembly (8) from the bottom of the radiator.

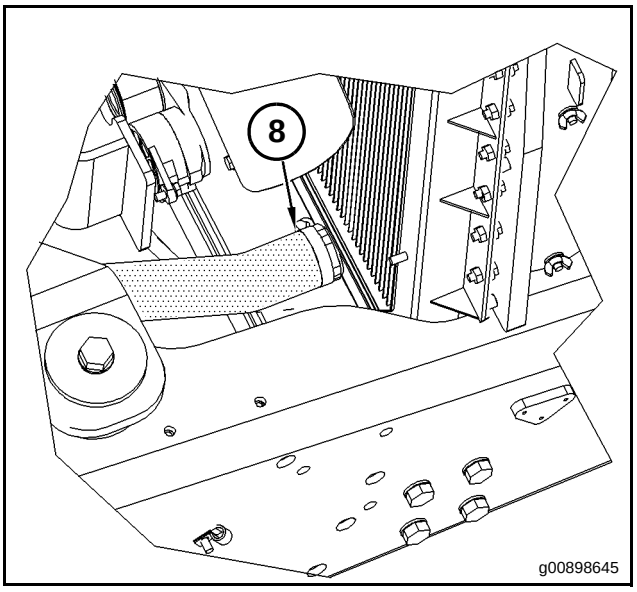


FIG. 37:

FIG. 38: Remove the oil cooler lines and the air conditioning lines.

9. Remove bolts (9) and the clamps from fuel hose assemblies (10) and refrigerant hose assemblies (11). Remove the oil cooler line and the air conditioning line that is connected to the fan guard.

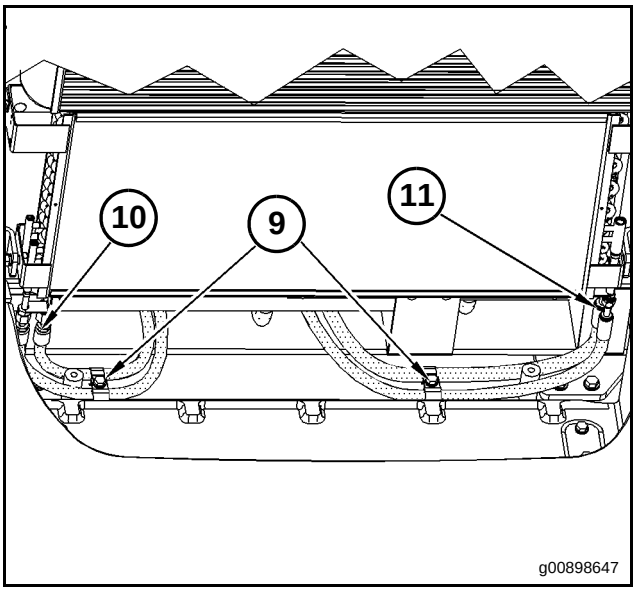


FIG. 38:

FIG. 39: Remove access covers.

10. Remove bolts (12) and covers (13).

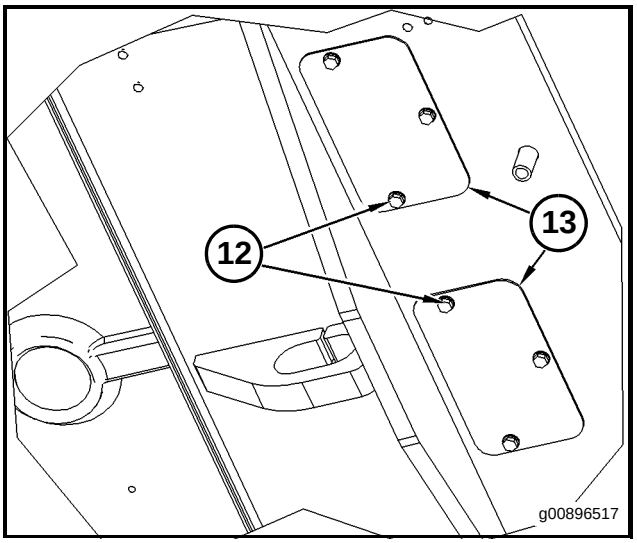


FIG. 39:

FIG. 40: Remove the hoses.

11. Disconnect hose assemblies assemblies (14).

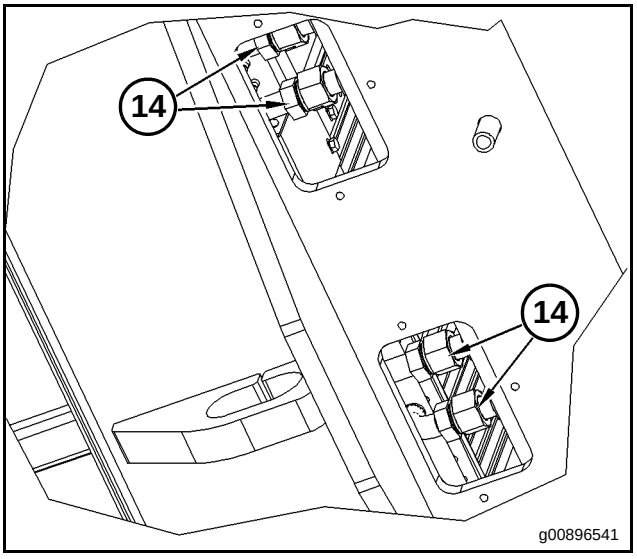


FIG. 40:

FIG. 41: Connect lifting chains.

12. Attach Tooling (A) to cooling package (15). Use chains and a suitable lifting device to support the cooling package.

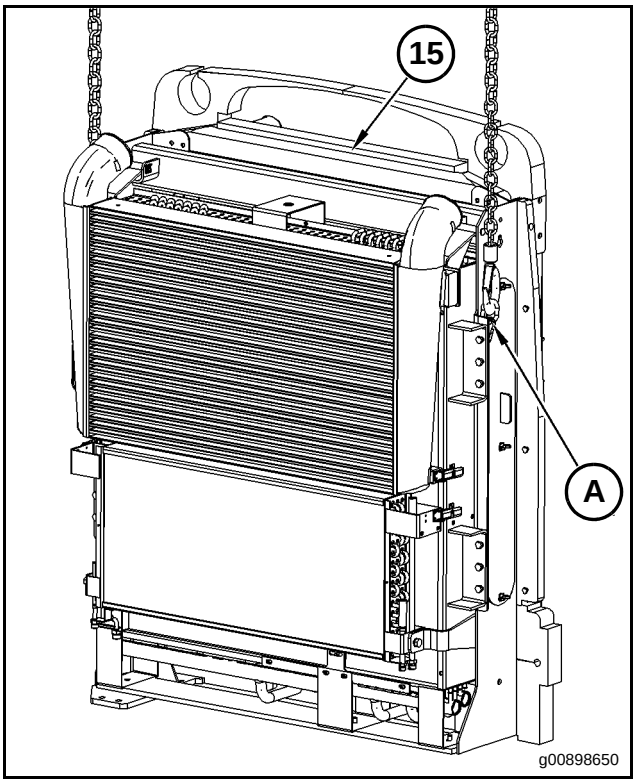


FIG. 41:

FIG. 42: Removing the radiator.

13. Remove bolts (7A).

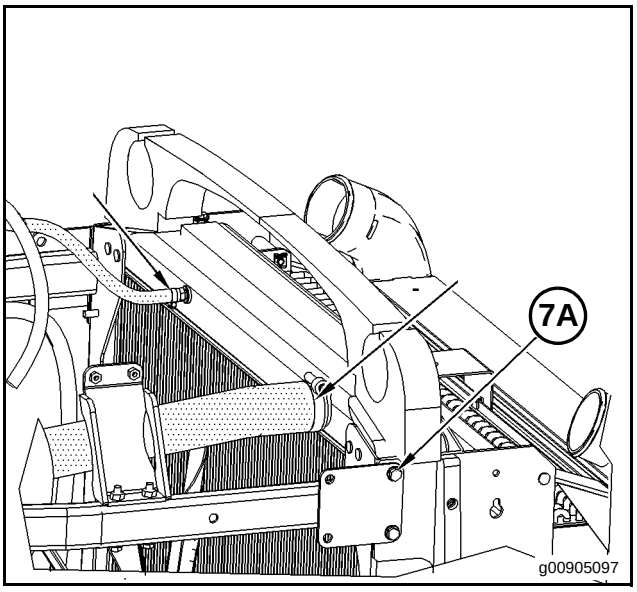


FIG. 42:

FIG. 43: Remove the mounting hardware.

14. Remove four bolts (16) on the front and on the back of cooling assembly (17).
15. Remove cooling package (17). The weight of the cooling package is approximately 296 kg (653 lb).

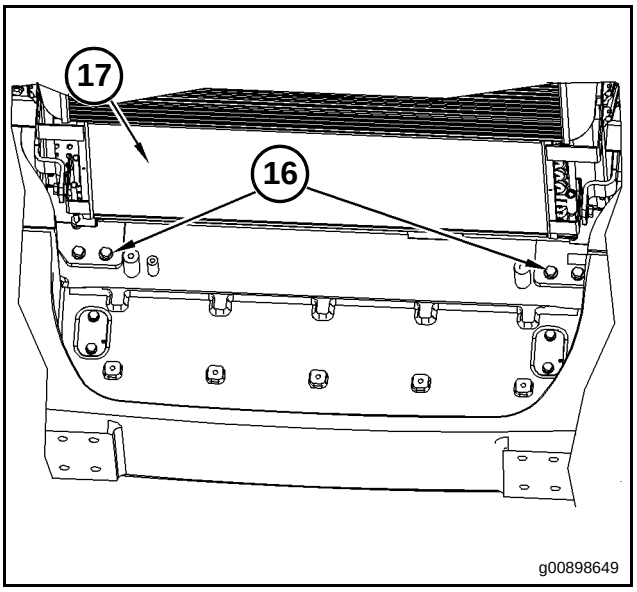


FIG. 43:

COOLING ASSEMBLY - INSTALL

Installation Procedure

Required Tools			
Tool	Part Number	Description	Qty
A	138-7575	Link Bracket	2

FIG. 44: Connect lifting chains.

1. Attach Tooling (A) to cooling package (17). Use chains and a suitable lifting device to support the cooling package.
2. Install cooling package (13). The weight of the cooling package is approximately 296 kg (653 lb).

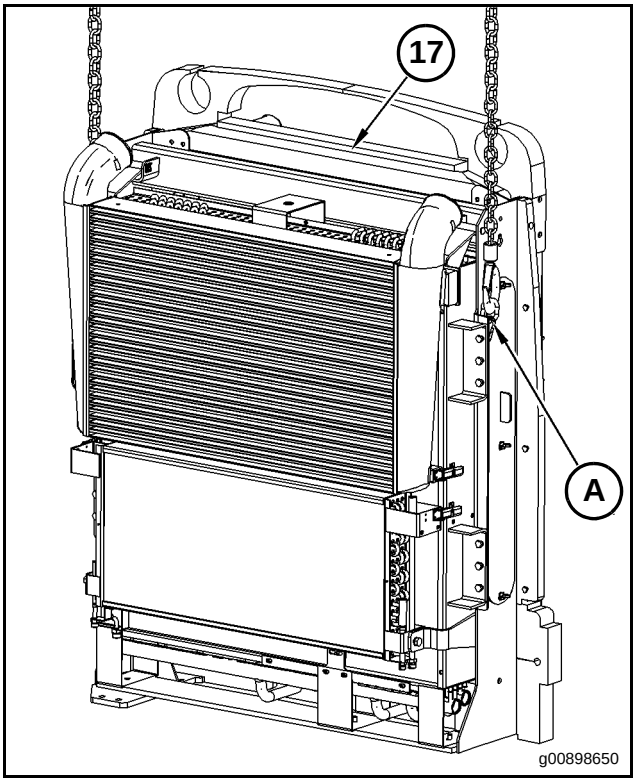


FIG. 44:

FIG. 45: Install the mounting hardware.

3. Install four bolts (15) on the front and on the back of cooling assembly (16).

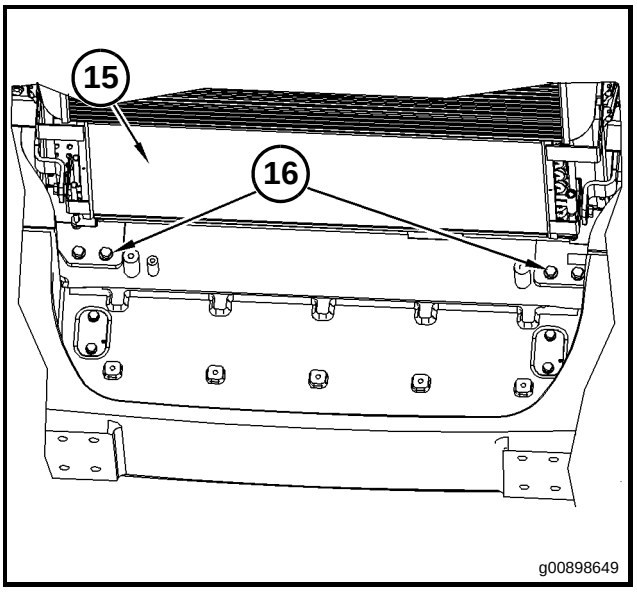


FIG. 45:

FIG. 46: Installing the radiator.

4. Install bolts (7A).

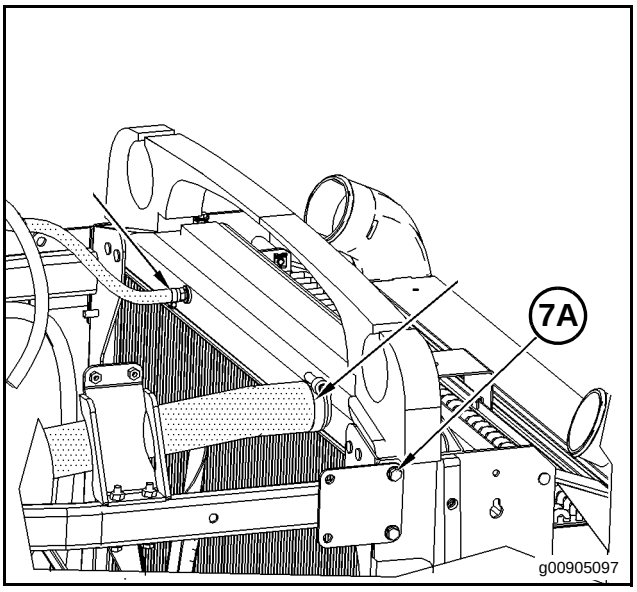


FIG. 46:

FIG. 47: Install oil cooler lines.

5. Connect hose assemblies (14).

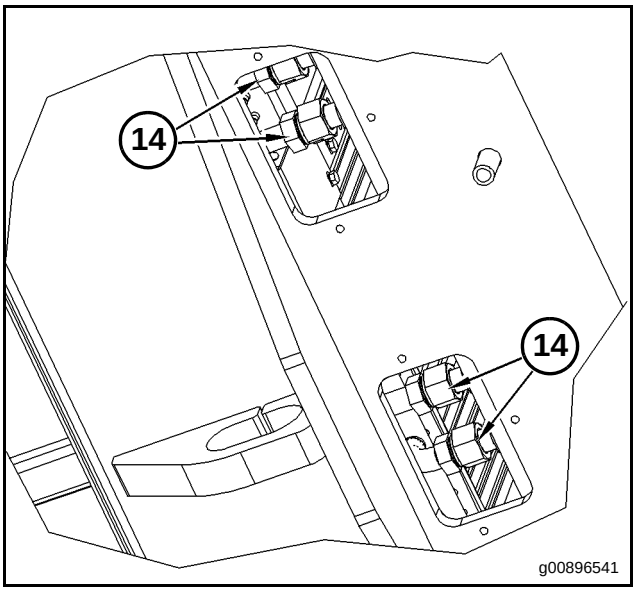


FIG. 47:

FIG. 48: Install access covers.

6. Install bolts (12) and covers (13).

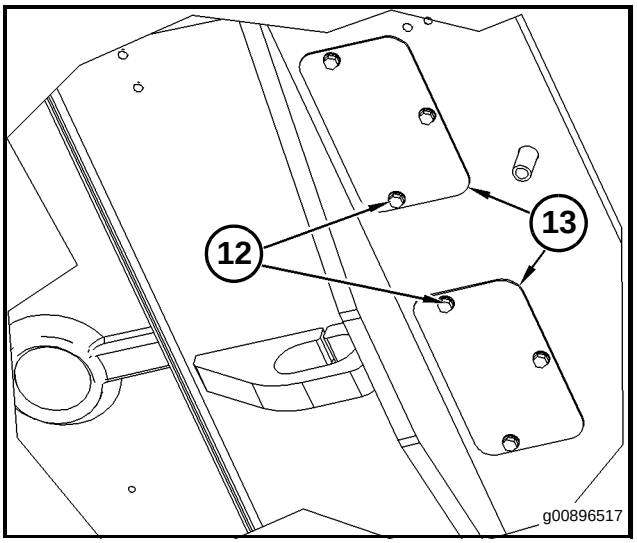


FIG. 48:

FIG. 49: Install the air conditioning lines

7. Install bolts (9) and the clamps on fuel hose assemblies (10) and refrigerant hose assemblies (11).

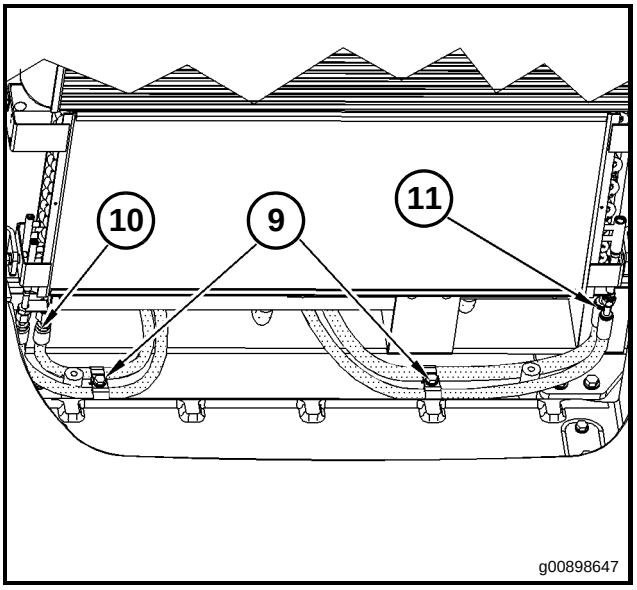


FIG. 49: