60D
Excavator
Operation and Test

TECHNICAL MANUAL

60D
Excavator
Operation and Test

TM10760 21SEP10 (ENGLISH)

For complete service information also see:

60D Excavator Repair	**TM10761**
60D Excavator Operator's Manual	**OMT244925**
Super Caddy Oil Cleanup Procedure	**CTM310**
Undercarriage Appraisal Manual	**SP326**
Specification Manual	**SP458**

Worldwide Construction
And Forestry Division
LITHO IN U.S.A.

Introduction

Foreword

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Technical Manuals are concise guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

DX,TMIFC -19-29SEP98-1/1

Technical Information Feedback Form

We need your help to continually improve our technical publications. Please copy this page and FAX or mail your comments, ideas and improvements.

SEND TO: John Deere Dubuque Works
18600 South John Deere Road
Attn: Publications, Dept. 324
Dubuque, IA 52004-0538
USA

FAX NUMBER: 1-563-589-5800 (USA)

Publication Number:_____

Page Number:_____

Ideas, Comments:_____

Name: _____

Phone: _____

Email Address: _____

THANK YOU!

TX,TM,FAX -19-03JUL01-1/1

Contents

Original Instructions. All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

Section 9000
General Information

Contents

Recognize Safety Information

This is the safety alert symbol. When this symbol is noticed on the machine or in this manual, be alert for the potential of personal injury.

Follow the precautions and safe operating practices highlighted by this symbol.

A signal word — DANGER, WARNING, or CAUTION — is used with the safety alert symbol. DANGER identifies the most serious hazards.

On the machine, DANGER signs are red in color, WARNING signs are orange, and CAUTION signs are yellow. DANGER and WARNING signs are located near specific hazards. General precautions are on CAUTION labels.

T133555 —UN—28AUG00

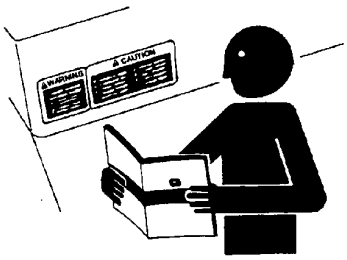
T133588 —19—28AUG00

TX03679,00016CC -19-03JAN07-1/1

Follow Safety Instructions

Read the safety messages in this manual and on the machine. Follow these warnings and instructions carefully. Review them frequently.

Be sure all operators of this machine understand every safety message. Replace operator's manual and safety labels immediately if missing or damaged.



T133556 —UN—24AUG00

TX03679,00016F9 -19-03JAN07-1/1

Operate Only If Qualified

Do not operate this machine unless the operator's manual has been read carefully, and you have been qualified by supervised training and instruction.

Operator should be familiar with the job site and surroundings before operating. Try all controls and machine functions with the machine in an open area before starting to work.

Know and observe all safety rules that may apply to every work situation and work site.

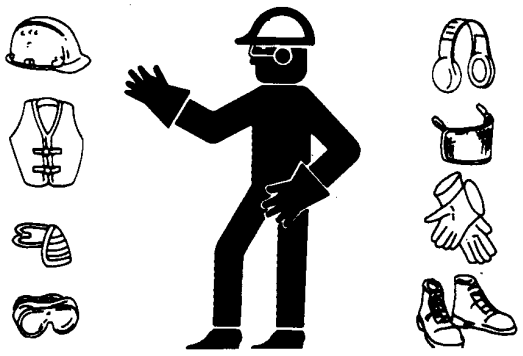
TX03679,00016FA -19-03JAN07-1/1

Wear Protective Equipment

Guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protection such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



TS206 —UN—23AUG88

TX03679,00016D0 -19-03JAN07-1/1

Avoid Unauthorized Machine Modifications

Modifications of this machine, or addition of unapproved products or attachments, may affect machine stability or reliability, and may create a hazard for the operator or others near the machine.

Always contact an authorized dealer before making machine modifications that change the intended use, weight or balance of the machine, or that alter machine controls, performance or reliability.

TX03679,00016B7 -19-30OCT00-1/1

Add Cab Guarding for Special Uses

Special work situations or machine attachments may create an environment with falling or flying objects. Working near an overhead bank, doing demolition work, using a hydraulic hammer, or working in a wooded area, for example, may require added guarding to protect the operator.

FOPS (falling object protective structures) and special screens or guarding should be installed when falling or flying objects may enter or damage the machine. Contact your authorized dealer for information on devices intended to provide protection in special work situations.

TX14740,0001EF3 -19-25JAN07-1/1

Inspect Machine

Inspect machine carefully each day by walking around it before starting.

Keep all guards and shields in good condition and properly installed. Fix damage and replace worn or broken parts immediately. Pay special attention to hydraulic hoses and electrical wiring.

T6607AQ —UN—18OCT88

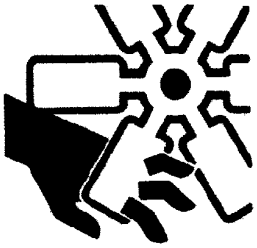
TX03679,0001734 -19-03JAN07-1/1

Stay Clear of Moving Parts

Entanglements in moving parts can cause serious injury.

Stop engine before examining, adjusting or maintaining any part of machine with moving parts.

Keep guards and shields in place. Replace any guard or shield that has been removed for access as soon as service or repair is complete.



T133592 —UN—12SEP01

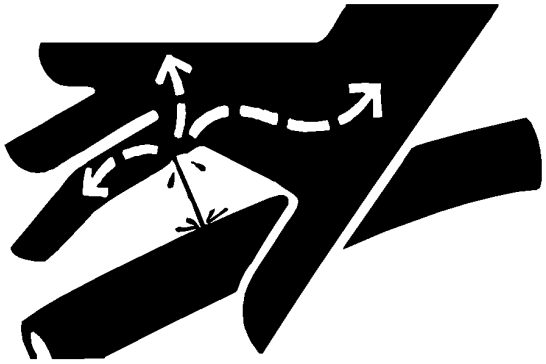
TX03679,00016D2 -19-03JAN07-1/1

Avoid High-Pressure Fluids

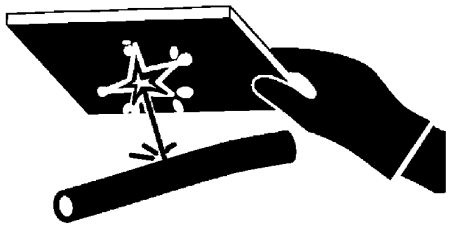
This machine uses a high-pressure hydraulic system. Escaping fluid under pressure can penetrate the skin causing serious injury.

Never search for leaks with your hands. Protect hands. Use a piece of cardboard to find location of escaping fluid. Stop engine and relieve pressure before disconnecting lines or working on hydraulic system.

If hydraulic oil penetrates your skin, see a doctor immediately. Injected oil must be removed surgically within hours or gangrene may result. Contact a knowledgeable medical source or the Deere & Company Medical Department in Moline, Illinois, U.S.A.



T133509 —UN—17MAR06



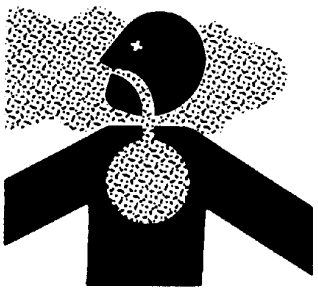
T133840 —UN—20SEP00

TX03679,00016D3 -19-29JUN06-1/1

Beware of Exhaust Fumes

Prevent asphyxiation. Engine exhaust fumes can cause sickness or death.

If you must operate in an enclosed space, provide adequate ventilation. Use an exhaust pipe extension to remove the exhaust fumes or open doors and windows to bring outside air into the area.



T133546 —UN—24AUG00

TX03679,00016D4 -19-03NOV08-1/1

Prevent Fires

Handle Fuel Safely: Store flammable fluids away from fire hazards. Never refuel machine while smoking or when near sparks or flame.

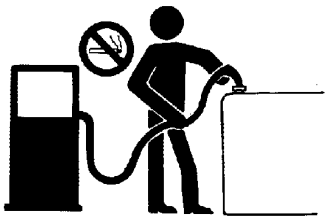
Clean Machine Regularly: Keep trash, debris, grease and oil from accumulating in engine compartment, around fuel lines, hydraulic lines, exhaust components, and electrical wiring. Never store oily rags or flammable materials inside a machine compartment.

Maintain Hoses and Wiring: Replace hydraulic hoses immediately if they begin to leak, and clean up any oil spills. Examine electrical wiring and connectors frequently for damage.

Keep A Fire Extinguisher Available: Always keep a multipurpose fire extinguisher on or near the machine. Know how to use extinguisher properly.

T133552 —UN—14SEP00

T133553 —UN—07SEP00



T133554 —UN—07SEP00

TX03679,00016F5 -19-03NOV08-1/1

Prevent Battery Explosions

Battery gas can explode. Keep sparks, lighted matches, and open flame away from the top of battery.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

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

TS204 —UN—23AUG88

TX03679,000174A -19-03NOV08-1/1

Handle Chemical Products Safely

Exposure to hazardous chemicals can cause serious injury. Under certain conditions, lubricants, coolants, paints and adhesives used with this machine may be hazardous.

If uncertain about safe handling or use of these chemical products, contact your authorized dealer for a Material Safety Data Sheet (MSDS) or go to internet website http://www.jdmsds.com. The MSDS describes physical and health hazards, safe use procedures, and emergency response techniques for chemical substances. Follow

T133580 —UN—25AUG00

MSDS recommendations to handle chemical products safely.

TX03679,00016D7 -19-03JAN07-1/1

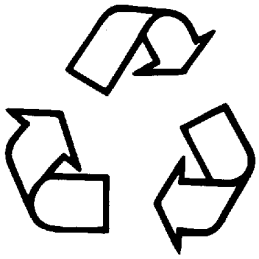
Dispose of Waste Properly

Improper disposal of waste can threaten the environment. Fuel, oils, coolants, filters and batteries used with this machine may be harmful if not disposed of properly.

Never pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants can damage the atmosphere. Government regulations may require using a certified service center to recover and recycle used refrigerants.

If uncertain about the safe disposal of waste, contact your local environmental or recycling center or your authorized dealer for more information.



T133567 —UN—25AUG00

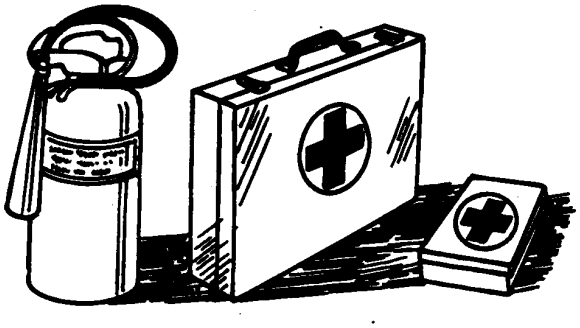
TX03679,0001733 -19-03JAN07-1/1

Prepare for Emergencies

Be prepared if an emergency occurs or a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



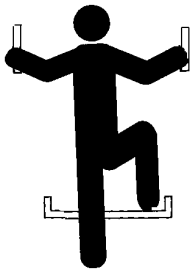
TS291 —UN—23AUG88

TX03679,000174B -19-03JAN07-1/1

Use Steps and Handholds Correctly

Prevent falls by facing the machine when you get on and off. Maintain 3-point contact with steps and handrails. Never use machine controls as handholds.

Use extra care when mud, snow, or moisture present slippery conditions. Keep steps clean and free of grease or oil. Never jump when exiting machine. Never mount or dismount a moving machine.



T133468 —UN—30AUG00

TX03679,00016F2 -19-14SEP00-1/1

Start Only From Operator's Seat

Avoid unexpected machine movement. Start engine only while sitting in operator's seat. Ensure all controls and working tools are in proper position for a parked machine.

Never attempt to start engine from the ground. Do not attempt to start engine by shorting across the starter solenoid terminals.

T133715 —UN—07SEP00

TX03679,0001799 -19-22APR10-1/1

Use and Maintain Seat Belt

Use seat belt when operating machine. Remember to fasten seat belt when loading and unloading from trucks and during other uses.

Examine seat belt frequently. Be sure webbing is not cut or torn. Replace seat belt immediately if any part is damaged or does not function properly.

The complete seat belt assembly should be replaced every three years, regardless of appearance.

T133716 —19—14SEP00

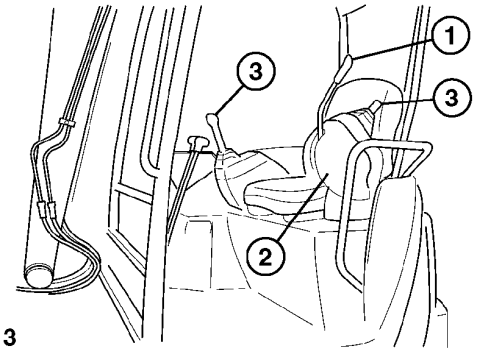
TX03679,00016DD -19-17OCT00-1/1

Prevent Unintended Machine Movement

Be careful not to accidentally actuate control levers when co-workers are present. Pull pilot control shutoff lever (1) to locked position during work interruptions. Pull pilot control shutoff lever to locked position and stop engine before allowing anyone to approach machine.

Always lower work equipment to the ground and pull pilot control shutoff lever to locked position before standing up or leaving the operator's seat. Stop engine before exiting.

1— Pilot Control Shutoff Lever
2— Console
3— Pilot Control Levers



T204913

T204913 —UN—03DEC04

OUO1032,00015D1 -19-25JAN07-1/1

Avoid Work Site Hazards

Avoid contact with gas lines, buried cables and water lines. Call utility line location services to identify all underground utilities before you dig.

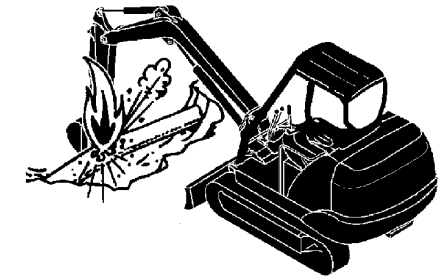
Prepare work site properly. Avoid operating near structures or objects that could fall onto the machine. Clear away debris that could move unexpectedly if run over.

Avoid boom or arm contact with overhead obstacles or overhead electrical lines. Never move any part of machine or load closer than 3 m (10 ft) plus twice the line insulator length to overhead wires.

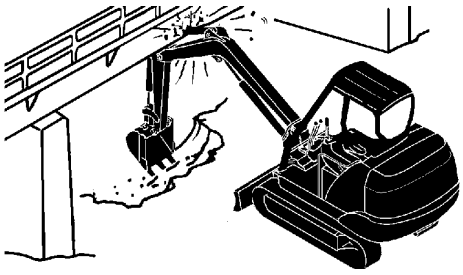
Keep bystanders clear at all times. Keep bystanders away from raised booms, attachments, and unsupported loads. Avoid swinging or raising booms, attachments, or loads over or near personnel. Use barricades or a signal person to keep vehicles and pedestrians away. Use a signal person if moving machine in congested areas or where visibility is restricted. Always keep signal person in view. Coordinate hand signals before starting machine.

Operate only on solid footing with strength sufficient to support machine. When working close to an excavation, position travel motors away from the hole.

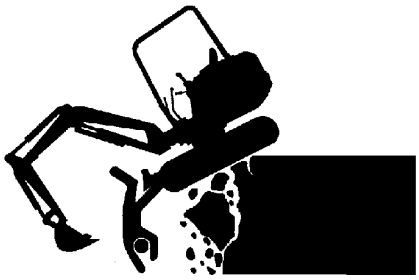
Reduce machine speed when operating with tool on or near ground when obstacles may be hidden (e.g., during snow removal or clearing mud, dirt, etc.). At high speeds hitting obstacles (rocks, uneven concrete or manholes) can cause a sudden stop. Always wear your seat belt.



T153094 —UN—01APR02



T153096 —UN—01APR02



T153097 —UN—01APR02

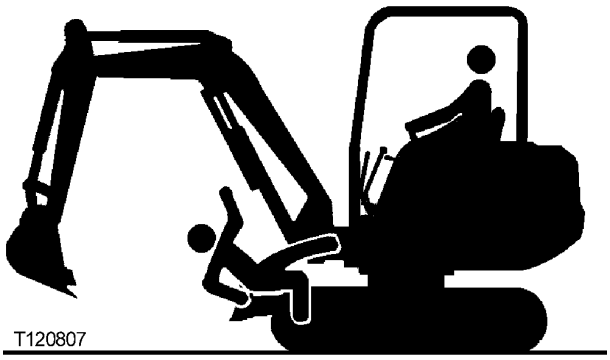
TX14740,0001E9F -19-30JUN10-1/1

Keep Riders Off Machine

Only allow operator on machine.

Riders are subject to injury. They may fall from machine, be caught between machine parts, be struck by foreign objects.

Riders may obstruct operator's view or impair his ability to operate machine safely.



T120807 —UN—14APR99

TX14740,0001E7A -19-19MAR02-1/1

Avoid Backover Accidents

Before moving machine, be sure all persons are clear of both travel and swing paths. Turn around and look directly for best visibility. Keep windows clean, adjusted, and in good repair.

Be certain travel alarm is working properly.

Use a signal person when backing if view is obstructed or when in close quarters. Keep signal person in view at all times. Use prearranged hand signals to communicate.

OUO1032,00015D0 -19-25JAN07-1/1

Avoid Machine Tip Over

Use seat belt at all times.

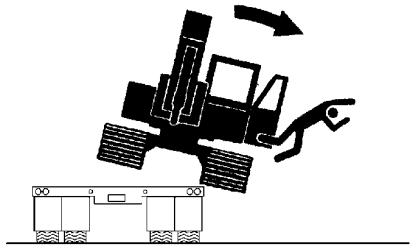
Do not jump if the machine tips. You will be unlikely to jump clear and the machine may crush you.

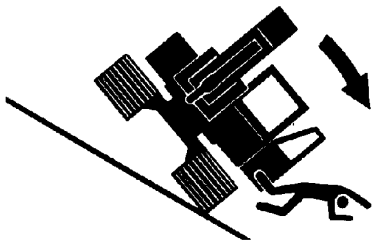
Load and unload from trucks or trailers carefully. Be sure truck is wide enough and on a firm level surface. Use loading ramps and attach them properly to truck bed. Avoid trucks with steel beds because tracks slip more easily on steel.

Be careful on slopes. Use extra care on soft, rocky or frozen ground. Machine may slip sideways in these conditions. When traveling up or down slopes, keep the bucket on uphill side and just above ground level.

Be careful with heavy loads. Using oversize buckets or lifting heavy objects reduces machine stability. Extending a heavy load or swinging it over side of undercarriage may cause machine to tip.

Ensure solid footing. Use extra care when operating near banks or excavations that may cave-in and cause machine to tip or fall.





TX03679,00016DF -19-03JAN07-1/1

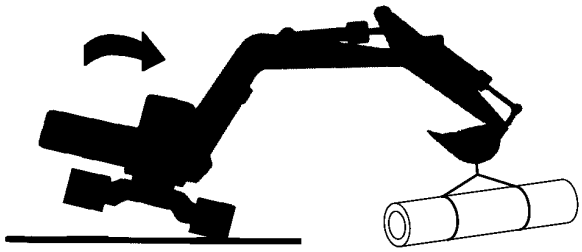
Use Special Care When Lifting Objects

Never use this machine to lift people.

Never lift a load above another person. Keep bystanders clear of all areas where a load might fall if it breaks free. Do not leave the seat when there is a raised load.

Do not exceed lift capacity limits posted on machine and in this manual. Extending heavy loads too far or swinging over undercarriage side may cause machine to tip over.

Use proper rigging to attach and stabilize loads. Be sure slings or chains have adequate capacity and are in good condition. Use tether lines to guide loads and prearranged hand signals to communicate with co-workers.



T133839 —UN—27SEP00

TX03679,00016E1 -19-03JAN07-1/1

Add and Operate Attachments Safely

Always verify compatibility of attachments by contacting your authorized dealer. Adding unapproved attachments may affect machine stability or reliability, and may create a hazard for others near the machine.

Ensure that a qualified person is involved in attachment installation. Add guards to machine if operator protection is required or recommended. Verify that all connections are secure and attachment responds properly to controls.

Carefully read attachment manual and follow all instructions and warnings. In an area free of bystanders and obstructions, carefully operate attachment to learn its characteristics and range of motion.

TX03679,00016F0 -19-14SEP00-1/1

Park and Prepare For Service Safely

Warn others of service work. Always park and prepare your machine for service or repair properly.

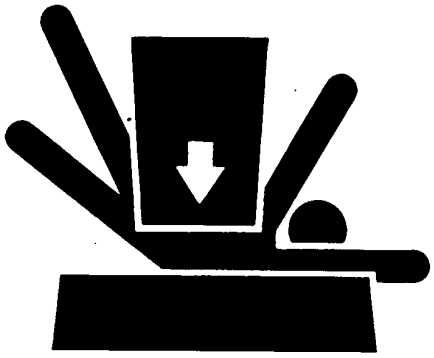
- Park machine on a level surface and lower equipment and attachments to the ground.
- Place pilot control shut-off lever in “lock” position. Stop engine and remove key.
- Attach a “Do Not Operate” tag in an obvious place in the operator’s station.

Securely support machine or attachment before working under it.

- Do not support machine with boom, arm, or other hydraulically actuated attachments.
- Do not support machine with cinder blocks or wooden pieces that may crumble or crush.
- Do not support machine with a single jack or other devices that may slip out of place.

Understand service procedures before beginning repairs. Keep service area clean and dry. Use two people whenever the engine must be running for service work.

T133332 —19—14DEC01



TS229 —UN—23AUG88

TX03679,00016E9 -19-17OCT00-1/1

Service Cooling System Safely

Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

TS281 —UN—23AUG88

DX,RCAP -19-04JUN90-1/1

Remove Paint Before Welding or Heating

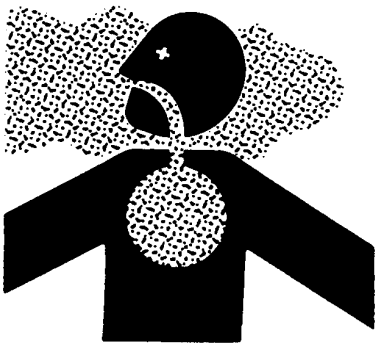
Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

Do not use a chlorinated solvent in areas where welding will take place.



TS220 —UN—23AUG88

Do all work in an area that is well ventilated to carry toxic fumes and dust away.

Dispose of paint and solvent properly.

DX,PAINT -19-24JUL02-1/1

Make Welding Repairs Safely

IMPORTANT: Disable electrical power before welding. Turn off main battery switch or disconnect positive battery cable. Separate harness connectors to engine and vehicle microprocessors.

Avoid welding or heating near pressurized fluid lines. Flammable spray may result and cause severe burns if pressurized lines fail as a result of heating. Do not let heat go beyond work area to nearby pressurized lines.

Remove paint properly. Do not inhale paint dust or fumes. Use a qualified welding technician for structural repairs.

T133547 —UN—31AUG00

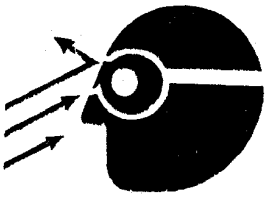
Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

OUO1032,00015DD -19-06OCT09-1/1

Drive Metal Pins Safely

Always wear protective goggles or safety glasses and other protective equipment before striking hardened parts. Hammering hardened metal parts such as pins and bucket teeth may dislodge chips at high velocity.

Use a soft hammer or a brass bar between hammer and object to prevent chipping.



T133738 —UN—14SEP00

TX03679,0001745 -19-03JAN07-1/1

Section 9001
Diagnostics

Contents

Continued on next page

29.00 — Spare Accelerator Sensor Upper Limit Error (P1226)

With spare accelerator sensor voltage 1.1 V and above, foot pedal normally open switch detected being OFF or foot pedal normally closed switch detected being ON.

See Diagnostic Trouble Code (P1226) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by eight short flashes.
- Engine Operation: Runs under restriction at a constant rotational speed.
- DTC/Malfunction Condition Resets: None

TF44157,000034E -19-05AUG08-1/1

29.01 — Spare Accelerator Sensor Lower Limit Error (P1225)

With spare accelerator sensor voltage at or below 0.65 V. Foot pedal normally open switch detected being ON or foot pedal normally closed switch detected being OFF.

See Diagnostic Trouble Code (P1225) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by eight short flashes.
- Engine Operation: Runs under restriction at a constant rotational speed.
- DTC/Malfunction Condition Resets: None

TF44157,000034F -19-05AUG08-1/1

29.02 — Spare Accelerator Sensor Intermittent Failure (P0224)

Unconfirmed spare accelerator sensor error detected ten times.

See Diagnostic Trouble Code (P0224) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Does not flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,0000350 -19-05AUG08-1/1

29.03 — Spare Accelerator Sensor High Voltage Failure (P0223)

Spare accelerator sensor voltage 4.6 V or higher.

See Diagnostic Trouble Code (P0223) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by eight short flashes.
- Engine Operation: Runs under restriction at a constant rotational speed.
- DTC/Malfunction Condition Resets: Yes, when a normal voltage is input.

TF44157,0000351 -19-29JUL08-1/1

29.04 — Spare Accelerator Sensor Low Voltage Failure (P0222)

Spare accelerator sensor voltage 0.2 V or lower.

See Diagnostic Trouble Code (P0222) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by eight short flashes.
- Engine Operation: Runs under restriction at a constant rotational speed.
- DTC/Malfunction Condition Resets: Yes, when a normal voltage is input.

TF44157,0000352 -19-05AUG08-1/1

29.08 — Spare Accelerator Sensor Communication Error (P1227)

Failure with spare accelerator sensor pulse communication.

See Diagnostic Trouble Code (P1227) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by eight short flashes.
- Engine Operation: Runs under restriction at a constant rotational speed.
- DTC/Malfunction Condition Resets: Yes, when a normal data is received.

TF44157,0000354 -19-05AUG08-1/1

91.00 — Accelerator Sensor Upper Limit Error (P1126)

With accelerator sensor voltage 1.1 V and above, foot pedal normally open switch detected being OFF or foot pedal normally closed switch detected being ON.

See Diagnostic Trouble Code (P1126) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by eight short flashes.
- Engine Operation: Runs under restriction at a constant rotational speed.
- DTC/Malfunction Condition Resets: None

TF44157,0000355 -19-05AUG08-1/1

91.01 — Accelerator Sensor Lower Limit Error (P1125)

With accelerator sensor voltage at or below 0.65 V, foot pedal normally open switch detected being ON or foot pedal normally closed switch detected being OFF.

See Diagnostic Trouble Code (P1125) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by eight short flashes.
- Engine Operation: Runs under restriction at a constant rotational speed.
- DTC/Malfunction Condition Resets: None

TF44157,0000356 -19-05AUG08-1/1

91.02 — Accelerator Sensor Intermittent Failure (P0124)

Unconfirmed accelerator sensor error detected ten times.

See Diagnostic Trouble Code (P0124) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Does not flash.
- Engine Operation: Runs under restriction at a constant rotational speed.
- DTC/Malfunction Condition Resets: None

TF44157,0000357 -19-05AUG08-1/1

91.03 — Accelerator Sensor High Voltage Failure (P0123)

Accelerator sensor voltage 4.6 V or higher.

See Diagnostic Trouble Code (P0123) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Five short flashes.
- Engine Operation: Runs under restriction at a constant rotational speed.
- DTC/Malfunction Condition Resets: Yes, when a normal voltage is input.

TF44157,0000358 -19-29JUL08-1/1

91.04 — Accelerator Sensor Low Voltage Failure (P0122)

Accelerator sensor voltage 0.2 V or lower.

See Diagnostic Trouble Code (P0122) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Five short flashes.
- Engine Operation: Runs under restriction at a constant rotational speed.
- DTC/Malfunction Condition Resets: Yes, when a normal voltage is input.

TF44157,0000359 -19-05AUG08-1/1

97.00 — Oily Water Separator Mechanical Failure (P1151)

Oily water separator switch turns ON after engine has been started.

See Diagnostic Trouble Code (P1151) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Five short flashes.
- Engine Operation: Runs restricting high idle speed or engine power.
- DTC/Malfunction Condition Resets: None

TF44157,000035A -19-28JUL08-1/1

100.01 — Oil Pressure Lower Limit Error (P1198)

Oil pressure switch turns ON after engine has been started.

See Diagnostic Trouble Code (P1198) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Three long flashes followed by one short flash.
- Engine Operation: Runs restricting high idle speed or engine power.
- DTC/Malfunction Condition Resets: None

TF44157,000035B -19-05AUG08-1/1

100.04 — Oil Pressure Switch Open Circuit Failure (P1192)

Oil pressure switch turns ON with engine stopped.

See Diagnostic Trouble Code (P1192) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Two long flashes followed by one short flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,000035C -19-05AUG08-1/1

107.00 — Air Cleaner Mechanical Failure (P1101)

Air cleaner switch turns ON after engine has been started.

See Diagnostic Trouble Code (P1101) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Three long flashes followed by four short flashes.
- Engine Operation: Runs restricting high idle speed or engine power.
- DTC/Malfunction Condition Resets: None

TF44157,000035D -19-05AUG08-1/1

108.02 — Atmospheric Pressure Sensor Intermittent Failure (P2230)

Unconfirmed atmospheric pressure sensor error detected ten times.

See Diagnostic Trouble Code (P2230) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Does not flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,000035E -19-05AUG08-1/1

108.03 — Atmospheric Pressure Sensor High Voltage Failure (P2229)

Atmospheric pressure sensor voltage 4.8 V or higher.

See Diagnostic Trouble Code (P2229) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by nine short flashes.
- Engine Operation: Runs under restriction with atmospheric pressure unchanged.
- DTC/Malfunction Condition Resets: None

TF44157,000035F -19-05AUG08-1/1

108.04 — Atmospheric Pressure Sensor Low Voltage Failure (P2228)

Atmospheric pressure sensor voltage 0.2 V or lower.

See Diagnostic Trouble Code (P2228) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by nine short flashes.
- Engine Operation: Runs under restriction with atmospheric pressure unchanged.
- DTC/Malfunction Condition Resets: None

TF44157,0000360 -19-05AUG08-1/1

110.00 — Engine Coolant Temperature Rise Error (P0217)

Engine coolant temperature is 115°C (240°F) or higher.

See Diagnostic Trouble Code (P10217) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Three long flash followed by six short flashes.
- Engine Operation: Runs with restriction to high idle speed or engine power.
- DTC/Malfunction Condition Resets: Yes, when the normal coolant temperature is detected.

TF44157,0000361 -19-29JUL08-1/1

110.02 — Engine Coolant Temperature Sensor Intermittent Failure (P0119)

Unconfirmed engine coolant temperature sensor error detected ten times.

See Diagnostic Trouble Code (P0119) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Does not flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,0000362 -19-05AUG08-1/1

110.03 — Engine Coolant Temperature Sensor High Voltage Failure (P0118)

Engine coolant temperature sensor voltage 4.8 V or higher.

See Diagnostic Trouble Code (P0118) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Four long flashes.
- Engine Operation: With EGR, runs with restriction to high idle speed or engine power. Without EGR, Normal
- DTC/Malfunction Condition Resets: With EGR, None. Without EGR, Yes, when a normal sensor voltage is detected.

TF44157,0000363 -19-05AUG08-1/1

110.04 — Engine Coolant Temperature Sensor Low Voltage Failure (P0117)

Engine coolant temperature sensor voltage 0.2 V or lower.

See Diagnostic Trouble Code (P0117) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Four long flashes.
- Engine Operation: With EGR, runs with restriction to high idle speed or engine power. Without EGR, Normal
- DTC/Malfunction Condition Resets: With EGR, None. Without EGR, Yes, when a normal sensor voltage is detected.

TF44157,0000364 -19-29JUL08-1/1

168.00 — Engine Control Unit (ECU) Supply Voltage Upper Limit Error (P0563)

ECU supply voltage over 16 V.

See Diagnostic Trouble Code (P0563) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Two long flashes followed by three short flashes.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: Yes, when normal supply voltage is detected.

TF44157,0000365 -19-05AUG08-1/1

168.01 — Engine Control Unit (ECU) Supply Voltage Lower Limit Error (P0562)

ECU supply voltage below 10 V.

See Diagnostic Trouble Code (P0562) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Two long flashes followed by three short flashes.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: Yes, when normal supply voltage is detected.

TF44157,0000366 -19-05AUG08-1/1

190.00 — Engine Overspeed (P0219)

Engine speed sensor signal at or above the upper limit (high idle speed).

See Diagnostic Trouble Code (P0219) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Two long flashes followed by five short flashes.
- Engine Operation: Stop immediately.
- DTC/Malfunction Condition Resets: None

TF44157,0000367 -19-05AUG08-1/1

638.03 — Engine Fuel Rack Actuator High Output Failure (P1213)

Rack actuator current detected equal to or above the upper limit.

See Diagnostic Trouble Code (P1213) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Eight long flashes.
- Engine Operation: Stop immediately.
- DTC/Malfunction Condition Resets: None

TF44157,0000368 -19-05AUG08-1/1

638.04 — Engine Fuel Rack Actuator Low Output Failure (P1212)

Rack actuator current detected equal to or below the lower limit.

See Diagnostic Trouble Code (P1212) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Eight long flashes.
- Engine Operation: Stop immediately.
- DTC/Malfunction Condition Resets: None

TF44157,0000369 -19-05AUG08-1/1

638.07 — Engine Fuel Rack Actuator Mechanical Failure (P1211)

Rack operation check at the activation.

See Diagnostic Trouble Code (P1211) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Eight long flashes.
- Engine Operation: Stop immediately.
- DTC/Malfunction Condition Resets: None

TF44157,000036A -19-05AUG08-1/1

729.02 — Air Heater Relay Intermittent Error (P1234)

Unconfirmed air heater relay error detected ten times.

See Diagnostic Trouble Code (P1234) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Does not flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,000036B -19-05AUG08-1/1

729.03 — Air Heater Relay Short Circuit Failure (P1233)

Engine control unit (ECU) detects the air heater relay turning OFF during the command to turn ON the air heater relay.

See Diagnostic Trouble Code (P1233) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by five short flashes.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,000036C -19-05AUG08-1/1

729.04 — Air Heater Relay Open Circuit Failure (P1232)

Engine control unit (ECU) detects the air heater relay turning ON during the command to turn OFF the air heater relay.

See Diagnostic Trouble Code (P1232) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by five short flashes.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,000036D -19-05AUG08-1/1

1079.02 — Sensor 5V Intermittent Failure (P1644)

Unconfirmed sensor 5V error detected ten times.

See Diagnostic Trouble Code (P1644) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Does not flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,000036E -19-05AUG08-1/1

1079.03 — Sensor 5V High Voltage Failure (P0643)

Sensor 5V monitoring voltage 5.5 V or higher.

See Diagnostic Trouble Code (P0643) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Two long flashes followed by four short flashes.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,000036F -19-05AUG08-1/1

1079.04 — Sensor 5V Low Voltage Failure (P0642)

Sensor 5V monitoring voltage 4.5 V or lower.

See Diagnostic Trouble Code (P0642) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Two long flashes followed by four short flashes.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,0000370 -19-05AUG08-1/1

1136.00 — Engine Control Unit (ECU) Internal Temperature Rise Error (P0634)

ECU internal temperature is 150°C (300°F) or higher.

See Diagnostic Trouble Code (P0634) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Two long flashes followed by five short flashes.
- Engine Operation: Runs with restriction to high idle speed or engine power.
- DTC/Malfunction Condition Resets: Yes, when the normal internal temperature of ECU is detected.

TF44157,0000371 -19-29JUL08-1/1

1136.02 — Engine Control Unit (ECU) Internal Temperature Sensor Intermittent Failure (P1664)

Unconfirmed ECU internal temperature sensor error detected ten times.

See Diagnostic Trouble Code (P1664) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Does not flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,0000372 -19-05AUG08-1/1

1136.03 — Engine Control Unit (ECU) Internal Temperature Sensor High Voltage Failure (P0669)

ECU internal temperature sensor voltage 4.6 V or higher.

See Diagnostic Trouble Code (P0669) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Four long flashes followed by one short flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: Yes, when normal sensor voltage is detected.

TF44157,0000373 -19-29JUL08-1/1

1136.04 — Engine Control Unit (ECU) Internal Temperature Sensor Low Voltage Failure (P0668)

ECU internal temperature sensor voltage 1.0 V or lower.

See Diagnostic Trouble Code (P0668) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Four long flashes followed by one short flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: Yes, when normal sensor voltage is detected.

TF44157,0000374 -19-05AUG08-1/1

1210.03 — Engine Fuel Rack Position Sensor High Voltage Failure (P1202)

The engine fuel rack position sensor voltage upper limit and above.

See Diagnostic Trouble Code (P1202) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Seven long flashes.
- Engine Operation: Engine start—run under restriction. Engine running—stop immediately.
- DTC/Malfunction Condition Resets: None

TF44157,0000375 -19-05AUG08-1/1

1210.04 — Engine Fuel Rack Position Sensor Low Voltage Failure (P1202)

The engine fuel rack position sensor voltage lower limit and below.

See Diagnostic Trouble Code (P1202) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Seven long flashes.
- Engine Operation: Runs with restriction to high idle speed and fuel injection rate is restricted.
- DTC/Malfunction Condition Resets: None

TF44157,0000376 -19-05AUG08-1/1

1485.04 — Engine Control Unit (ECU) Main Relay Error (P0686)

Power supply to ECU fails to turn OFF.

See Diagnostic Trouble Code (P0686) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by six short flashes.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,0000377 -19-05AUG08-1/1

2049.02 — Engine Fuel Rack Actuator Relay Intermittent Failure (P1224)

Unconfirmed engine fuel rack actuator relay error detected ten times.

See Diagnostic Trouble Code (P1224) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Does not flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,0000378 -19-05AUG08-1/1

2049.03 — Engine Fuel Rack Actuator Relay Short Circuit Failure (P1223)

ECU detects the rack actuator relay turning OFF during the command to turn ON the rack actuator relay.

See Diagnostic Trouble Code (P1223) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by seven short flashes.
- Engine Operation: Stop immediately.
- DTC/Malfunction Condition Resets: None

TF44157,0000379 -19-05AUG08-1/1

2049.04 — Engine Fuel Rack Actuator Relay Open Circuit Failure (P1222)

ECU detects the rack actuator relay turning ON during the command to turn OFF the rack actuator relay.

See Diagnostic Trouble Code (P1222) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by seven short flashes.
- Engine Operation: Stop immediately.
- DTC/Malfunction Condition Resets: None

TF44157,000037A -19-05AUG08-1/1

2050.02 — Cold Start Device (CSD) Solenoid Valve Intermittent Failure (P1244)

Unconfirmed cold start solenoid valve error detected ten times.

See Diagnostic Trouble Code (P1244) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: Does not flash.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,000037B -19-05AUG08-1/1

2050.03 — Cold Start Device (CSD) Solenoid Valve Short Circuit Failure (P1243)

ECU detects the CSD solenoid valve turning OFF signal during the command to turn ON the CSD solenoid valve.

See Diagnostic Trouble Code (P1243) in Yanmar Engine Service Manual for more information.

- System Malfunction Indicator Light Flashes: One long flash followed by four short flashes.
- Engine Operation: Normal
- DTC/Malfunction Condition Resets: None

TF44157,000037C -19-05AUG08-1/1