

Compact Utility Tractors 3032E, 3036E, and 3038E Series

TECHNICAL MANUAL

3032E, 3036E, and 3038E Compact Utility Tractor, Tractor Repair, Test and Adjustments

TM100619 27SEP19 (ENGLISH)

Table of Contents

tm100619 Service ADVISOR™	10
Recognize Safety Information	11
Understand Signal Words	12
Replace Safety Signs	13
Handle Fluids Safely—Avoid Fires	14
Prepare for Emergencies	15
Prevent Battery Explosions	16
Prevent Acid Burns	17
Wear Protective Clothing	19
Avoid High-Pressure Fluids	20
Avoid Heating Near Pressurized Fluid Lines	21
Service Machines Safely	22
Use Proper Tools	23
Park Machine Safely	24
Support Machine Properly	25
Use Proper Lifting Equipment	26
Work in Clean Area	27
Protect Against High Pressure Spray	28
Illuminate Work Area Safely	29
Work In Ventilated Area	30
Remove Paint Before Welding or Heating	31
Avoid Harmful Asbestos Dust	32
Service Tires Safely	33
Stay Clear of Rotating Drivelines	34
Service Cooling System Safely	37
Dispose of Waste Properly	38
Handle Chemical Products Safely	39
Live With Safety	40
Metric Bolt and Screw Torque Values	41
Unified Inch Bolt and Screw Torque Values	43
Metric Cap Screw Torque Values—Grade 7	45
Gasket Sealant Application	46
Service Recommendations For Flat Face O-Ring Seal Fittings	47
Service Recommendations for O-Ring Boss Fittings	49
Diesel Fuel	51
Handling and Storing Diesel Fuel	53
Diesel Engine Oil	54
Diesel Engine Break-In Oil	55
Alternative and Synthetic Lubricants	56
Lubricant Storage	57
Mixing of Lubricants	58
Grease	59
Transmission and Hydraulic Oil	60

Heavy Duty Diesel Engine Coolant	62
tm100619 Service ADVISOR™ (1)	63
Machine Product Identification Number	64
Engine Serial Number	65
General Specifications	66
Repair Specifications	68
Tests and Adjustment Specifications	76
Operational Tests	77
Torque Values, Non-Standard Fasteners	78
Service Equipment and Tools	79
Other Materials	81
Air Cleaner and Intake Components	82
Turbocharger Components	83
Fuel Supply Components	85
Fuel System Operation	86
Cooling System Operation	88
Air Intake System	89
Turbocharger Operation	91
Lubrication System Operation	93
Engine Troubleshooting	95
Engine Oil Diagnostics	96
Excessive Fuel Consumption	99
Incorrect Manifold Pressure	100
Low Engine Compression	101
Engine Starting Problem	102
Engine Operation Poor	105
Engine Oil Pressure Low	111
Coolant Temperature Abnormal	112
Coolant in Oil or Oil in Coolant	113
Turbocharger Failure Analysis	114
Diagnostic Table	117
Check for Head Gasket Failures	120
Check Air Intake System	124
Check for Intake and Exhaust Restrictions	126
Fan and Alternator Drive Belt Adjustment	127
Throttle Rod Adjustment	130
Slow Idle Adjustment	132
Cylinder Compression Test	134
Valve Clearance Adjustment	136
Valve Lift Check	140
Radiator Bubble Test	142
Thermostat Opening Test	143
Radiator Pressure Cap Test	145
Cooling System Pressure Test	146
Engine Oil Pressure Test	147

Check for Excessive Engine Crankcase Pressure (Turbocharged Engines)	149
Fuel System Leakage Test	150
Bleed Fuel System	151
Fuel Supply Pump Pressure Test	152
Injection Pump Timing	154
Fuel Injection Nozzle Test	170
Check for Exhaust Air Leaks (Turbocharger)	174
Turbocharger Oil Seal Leak Check	175
Turbocharger Waste Gate Test	178
Turbocharger Inspection	180
Crankshaft End Play Check	188
Timing Gear Backlash Check	190
Camshaft End Play Check	191
Connecting Rod Side Play Check	193
Connecting Rod Bearing Clearance Check	194
Crankshaft Main Bearing Clearance Check	197
Glow Plug Removal and Installation (3032E)	199
Radiator Removal and Installation	201
Thermostat Removal and Installation	205
Water Pump Removal and Installation	208
Fuel Filter and Water Separator	212
Secondary Fuel Filter	214
Fuel Injection Pump	215
Fuel Injection Nozzles	222
Intake Manifold	230
Muffler Removal and Installation	231
Turbocharger Removal and Installation	233
Exhaust Manifold	236
Starting Motor Removal and Installation	237
Rocker Cover Removal and Installation	239
Rocker Arm Assembly	242
Engine Removal and Installation	248
Engine and Flywheel Housing Split	259
Cylinder Head and Valves Removal and Installation	260
Cylinder Head and Valves Disassembly and Assembly	263
Valve Seats	266
Valve Recession	269
Valve Guides	270
Valve Springs	272
Grind Valve Seats	274
Lap Valves	276
Measure Piston-To-Cylinder Head Clearance	277
Piston and Connecting Rod	278
Piston Inspection	287
Cylinder Bore	296

Crankshaft Front Oil Seal	301
Crankshaft Rear Oil Seal	302
Crankshaft and Main Bearings	304
Flywheel and Coupling	311
Camshaft	313
Camshaft Followers	322
Timing Gear Cover	325
Idler Gear	328
Timing Gear Cover Mounting Plate	331
Oil Pan and Strainer	332
Oil Pump	333
Reading Electrical Schematics	340
Theory Of Operation Information	342
Diagnostic Information	343
Wire Color Abbreviation Chart	344
Common Circuit Tests	346
Conductors For 12 Volt Circuits	348
Specifications	349
Service Equipment and Tools (1)	351
Other Materials (1)	352
Electrical Components	353
Control Panel	355
Load Center	358
Cruise Control Components	359
Schematic and Wiring Harness Legend	360
Main Schematic	362
W1 Main Wiring Harness	369
W1 Main Wiring Harness Color Codes	373
Cruise Control Schematic	376
W2 Cruise Control Wiring Harness	378
Cruise Control Harness Color Codes	379
Power Circuit Theory of Operation	380
Power Circuit Schematic	382
Power Circuit Diagnosis	386
Cranking Circuit Theory of Operation	402
Glow Plug Circuit Theory of Operation	403
Fuel Supply Circuit Theory of Operation	404
Cranking, Glow Plug, and Fuel Circuit Schematic	405
Cranking Circuit Diagnosis	409
PTO Circuit Operation	413
PTO Circuit Schematic	414
PTO Circuit Diagnosis	416
Charging Circuit Theory of Operation	420
Charging Circuit Schematic	421
Charging Circuit Diagnosis	423

Display Panel Theory of Operation	426
Display Panel Circuit Schematic	428
Display Panel Circuit Diagnosis	433
Cruise Control Circuit Theory of Operation	441
Cruise Control Circuit Schematic	442
Cruise Control Circuit Diagnosis	445
Lighting Circuit Theory of Operation	455
Lighting Circuit Schematic	457
Lighting Circuit Diagnosis	462
Ground Circuit Test	479
Battery Voltage and Specific Gravity Test	480
Battery—Charge	483
Battery—Load Test	485
Alternator Regulated Voltage Test	487
Regulated Amperage and Voltage Test	489
Starting Motor Solenoid Test	492
Starting Motor Amperage Draw Test	494
Starting Motor No-Load Amperage Draw and RPM Test	496
Fuse Test	499
Engine Oil Pressure Switch Test	500
Engine Coolant Temperature Sensor Test	502
Key Switch Test	504
Light Switch Test	506
Turn Signal Switch Test	508
Hazard Switch Test	510
Cruise Control Switch Test	512
Fuel Shutoff Solenoid Test	514
PTO Solenoid Test	516
Cruise Control Magnet Test	517
Sensing Switch Test	519
Brake Switch Test	521
Relay Test	523
Miniature Relay Test	525
Rear PTO Switch Test	528
Horn Switch Test	530
Seat Switch Test	531
Glow Plug Test	532
Manifold Heater Test	534
Starting Motor Disassembly and Assembly	536
Test	541
Alternator Removal and Installation	546
Alternator Disassembly and Assembly	548
Electrical Components (1)	560
Control Panel (1)	562
Load Center (1)	564

Schematic and Wiring Harness Legend (1)	565
Main Schematic (1)	567
W1 Main Wiring Harness (1)	577
W1 Main Wiring Harness Color Codes (1)	583
Power Circuit Theory of Operation (1)	589
Power Circuit Electrical Schematic	591
Power Circuit Diagnosis (1)	601
Charging Circuit Operation	625
Charging Circuit Electrical Schematic	626
Charging Circuit Diagnosis (1)	629
Cranking Circuit Theory of Operation (1)	632
Cranking Circuit Electrical Schematic	633
Cranking Circuit Diagnosis (1)	636
Glow Plug Circuit Theory of Operation (1)	640
Glow Plug Circuit Schematic	641
Glow Plug and Manifold Heater Circuit Diagnosis	643
Fuel and Safety Circuit Operation	647
Fuel and Safety Circuit Electrical Schematic	649
Fuel and Safety Circuit Diagnosis	655
PTO and Safety Circuit Operation	662
PTO and Safety Circuit Electrical Schematic	664
PTO and Safety Circuit Diagnosis	669
Display Panel Theory of Operation (1)	673
Display Panel Circuit Electrical Schematic	675
Display Panel Circuit Diagnosis (1)	683
Cruise Control Circuit Theory of Operation (1)	691
Cruise Control Circuit Schematic (1)	693
Cruise Control Circuit Diagnosis (1)	696
Lights and Horn Circuit Operation	706
Lights and Horn Circuit Schematic	710
Lights and Horn Circuit Diagnosis	719
General Specifications (1)	763
Repair Specifications (1)	764
Torque Specifications	765
Service Equipment and Tools (2)	767
Other Material	768
Drive Pedals and Linkage	769
Transmission Oil Pump	772
Transmission and Swash Plate	774
Transmission Housing	776
Pinion Shaft	778
Differential Assembly	780
Rear Axle and Final Drive	782
Brake and Differential Lock Linkage	784
Brake and Axle Housing	786

PTO Clutch and Brake Assembly	788
PTO Rear Shaft	790
Front Drive (For MFWD)	792
MFWD Front Axle Housing and Differential	794
Axle Housing	796
Range Transmission	798
Differential Power Flow and Lock	800
MFWD Power Operation	802
Power Transmission - Rear PTO	804
System Checks	806
Final Drive Diagnosis	809
General Operation	810
Differential Lock	811
Symptom Diagnosis	812
PTO Diagnostics	815
Final Drive Symptom Diagnosis	816
Differential Pinion Shaft Adjustment	817
Differential Backlash Adjustment	830
Control Pedal Adjustment	835
Charge Pump Pressure Test and Adjustment	837
Machine Splitting (Rear)	841
Machine Splitting (Front)	849
Hydraulic Gear Pump Removal	855
Hydraulic Gear Pump and Drive Removal	860
MFWD Output Assembly	879
Speed Range Gears	888
Rear Axles	901
Axle Housing Disassembly and Assembly	903
Brake Assembly	907
Differential Removal and Installation	914
PTO Drive Shaft and Gears	923
PTO Clutch Removal and Installation	928
PTO Clutch Disassembly and Assembly	930
MFWD Removal and Installation	937
MFWD Final Drive Cover	939
MFWD Spindle Shaft	942
MFWD Differential	951
Hydraulic Specifications	961
Service Equipment and Tools (3)	963
Torque Specifications (1)	965
Steering System Components	966
Steering System Schematic	968
Rockshaft and SCV System Schematics	972
PTO System Schematics	976
Rockshaft and Lift Arms	980


Rockshaft Control Valve	982
Rockshaft Control Valve (1)	984
Hydraulic Operation	986
PTO Clutch and Brake Theory of Operation	988
Rockshaft Operation	992
Hydrostatic Troubleshooting	994
Rockshaft Hydraulics	996
Hydraulic System Bleed Procedure	998
Rate of Drop and Stop Valve Adjustment	999
Lift Arms Adjustment	1000
System Pressure and Flow Test	1001
System Pressure Adjustment	1003
Steering Pressure Test	1005
Charge Pressure Test	1007
PTO Clutch Pressure Test	1008
Rockshaft Lift Cycle Test	1010
Rockshaft Leakage Test	1012
Rockshaft Position Feedback Linkage Adjustment	1014
Rockshaft Surge Relief Test	1015
Hydraulic Gear Pump and Reduction	1016
Rockshaft Removal and Installation	1030
Rockshaft Disassembly and Assembly	1032
Rockshaft Lift Arms Removal and Installation	1047
Steering Specifications	1055
Torque Specifications (2)	1056
Service Equipment and Tools (4)	1057
Steering Components	1058
Steering System Schematic (1)	1060
Steering	1062
System Steering Checks	1063
Symptom Steering Problems	1064
Symptom Steering Noisy or Vibrates	1068
Steering Pressure Check	1069
Steering System Test	1071
Toe-in Adjustment MFWD	1072
Steering Cylinder Removal and Installation MFWD	1074
Steering Wheel Removal and Installation	1076
Steering Control Unit (SCU) Removal and Installation	1077
Tie Rod Removal and Installation MFWD	1079
Brakes	1080
Torque Specifications (3)	1081
Brake Pedal and Linkage	1082
Brake Pedal and Linkage (Exploded View)	1083
Brake Assembly (1)	1085
Brakes (1)	1087

Diagnostic Check Points	1089
Brakes (2)	1092
Brake and Differential Lock Adjustment	1094
Brake Pedal Assembly Removal and Installation	1097
Brake Assembly (2)	1099
General Specifications (2)	1106
Torque Specifications (4)	1107
Fuel Tank and Firewall	1108
Front Wheel Removal and Installation	1110
Rear Wheel Removal and Installation	1111
Rear Fenders Removal and Installation	1112
Seat and Seat Support Removal and Installation	1114
Roll Over Protection System (ROPS)	1115
Operator's Foot Decks	1117
Hood Removal and Installation	1120
Battery Removal and Installation	1122
Control Panel Removal and Installation	1123
Fuel Tank Removal and Installation	1125

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.

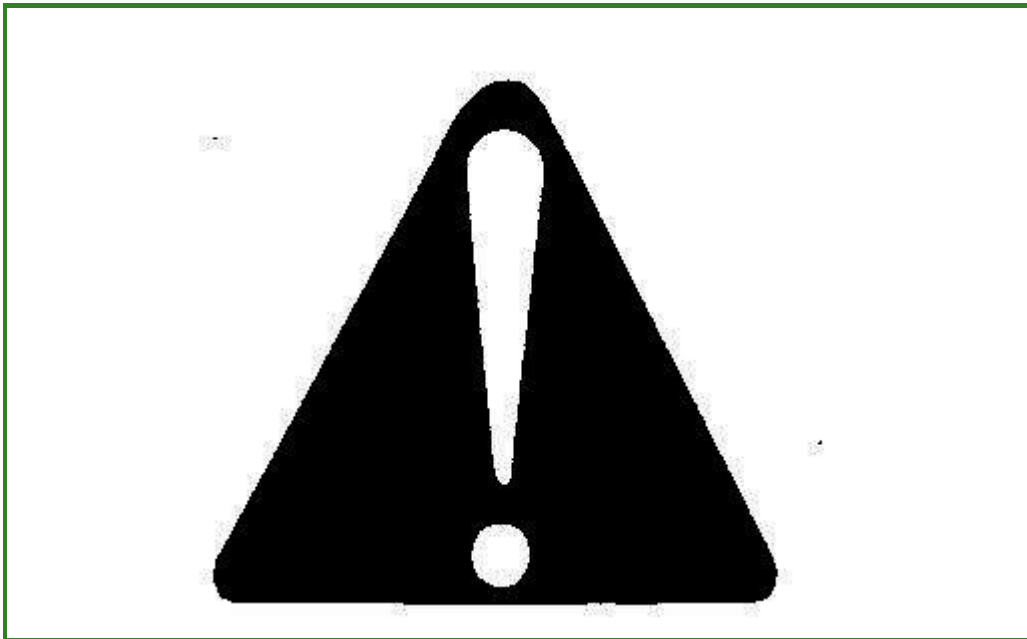
Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

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.

Recognize Safety Information



T81389-UN: Safety-alert symbol

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

Follow recommended precautions and safe operating practices.

Understand Signal Words

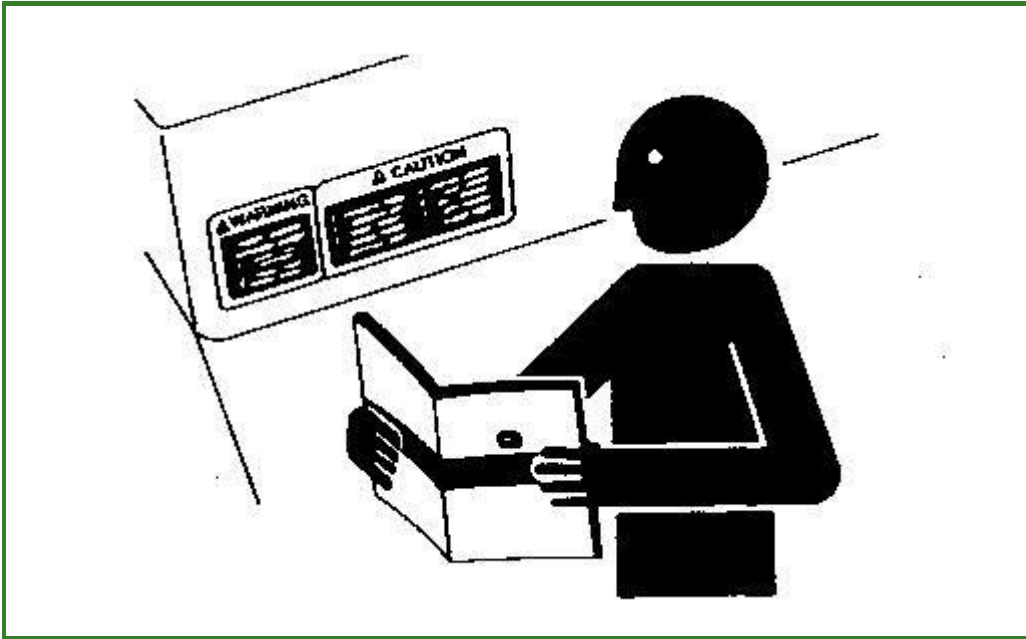


TS187-19: Signal Words

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

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

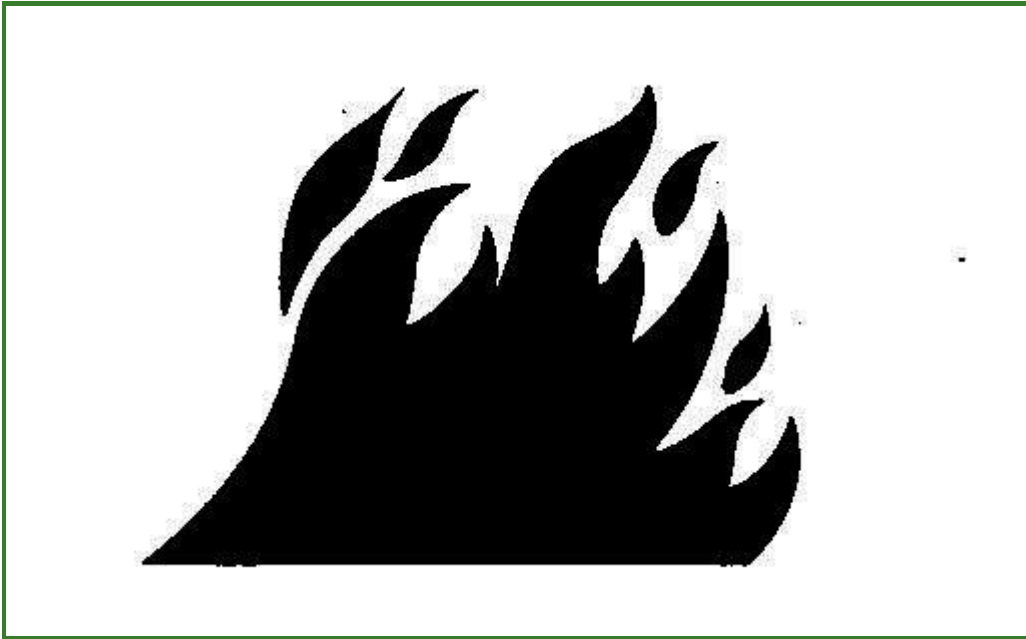
Replace Safety Signs



TS201-UN: Safety Signs

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

Handle Fluids Safely—Avoid Fires



TS227-UN: Avoid Fires

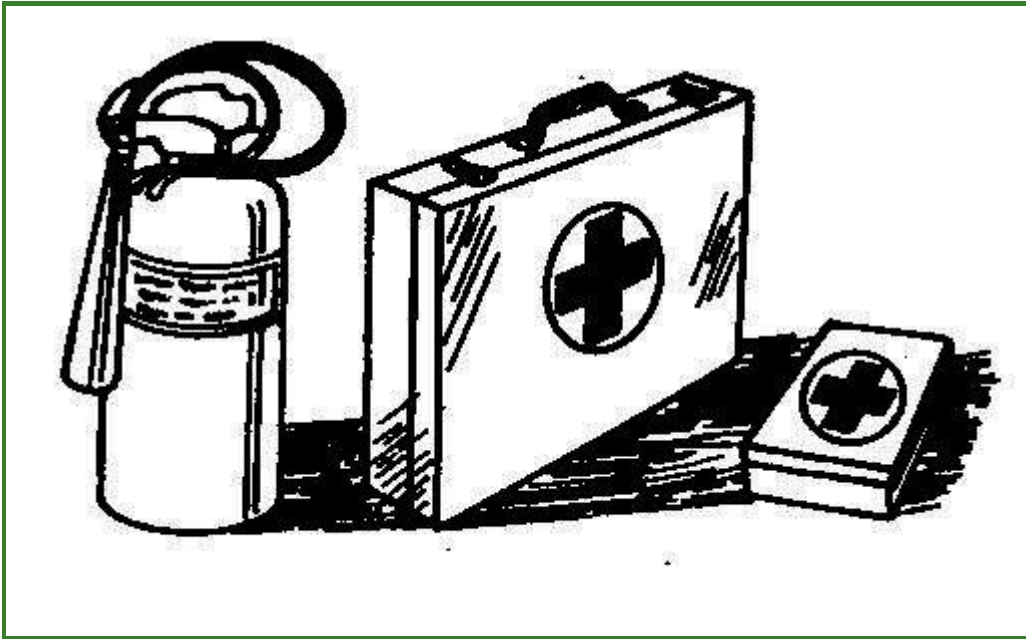
When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

Prepare for Emergencies



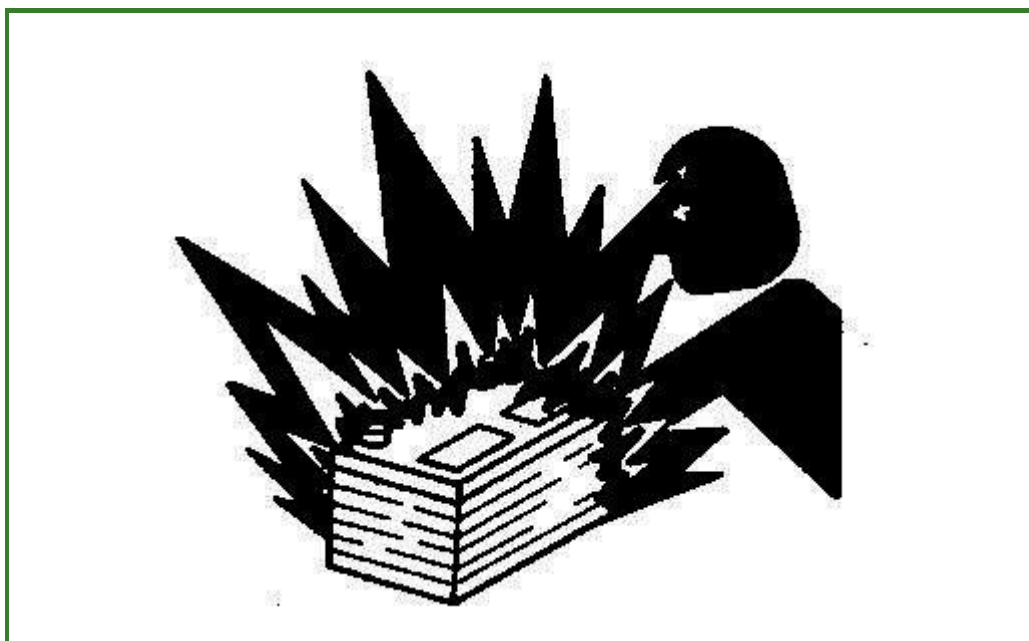
TS291-UN: First Aid Kit

Be prepared if 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.

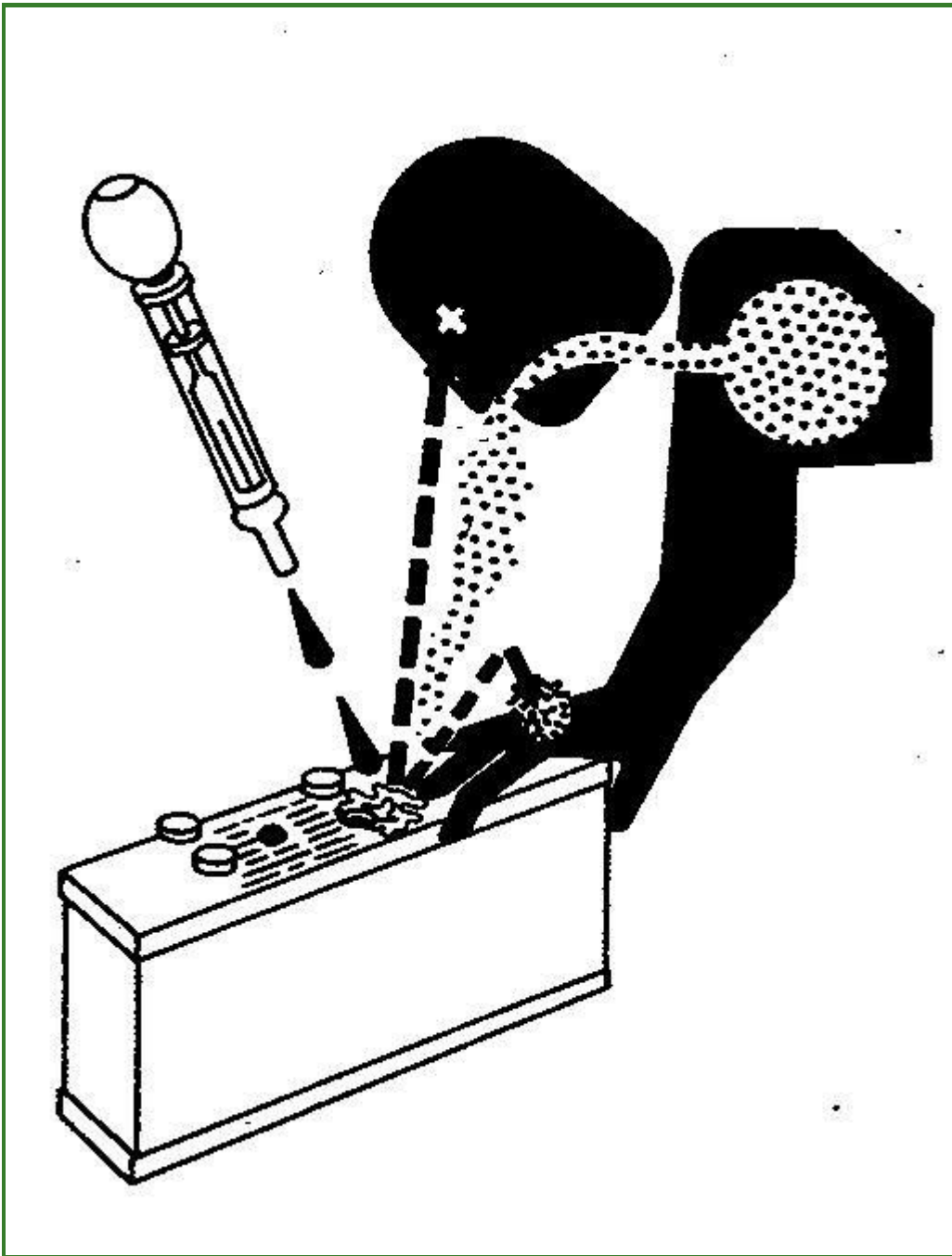
Prevent Battery Explosions



TS204-UN: Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode. Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer. Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).

Prevent Acid Burns



TS203-UN: Acid Burns

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

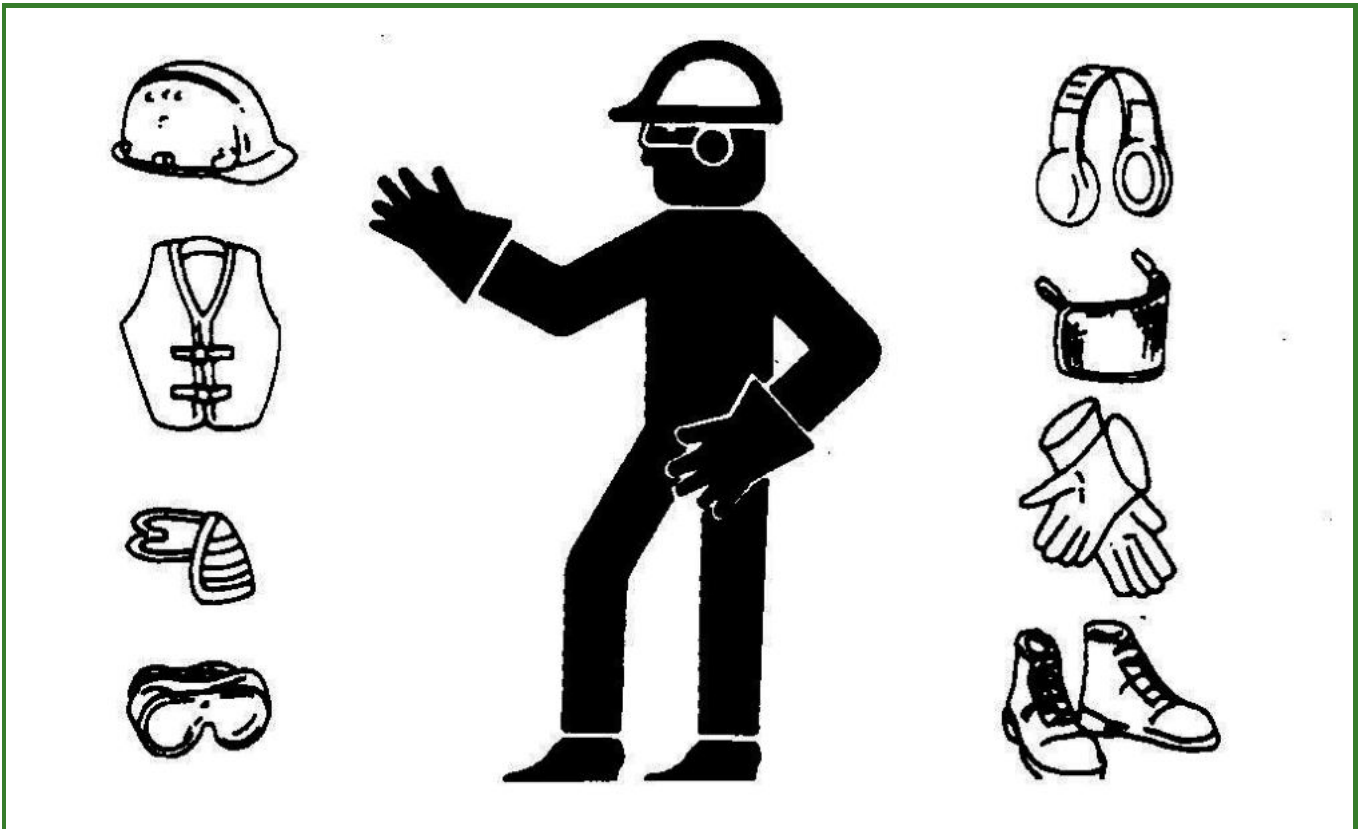
1. Flush your skin with water.

2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 L (2 quarts).
3. Get medical attention immediately.

Wear Protective Clothing



TS206-UN: Protective Clothing

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

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

Avoid High-Pressure Fluids



X9811-UN: High-Pressure Fluids

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

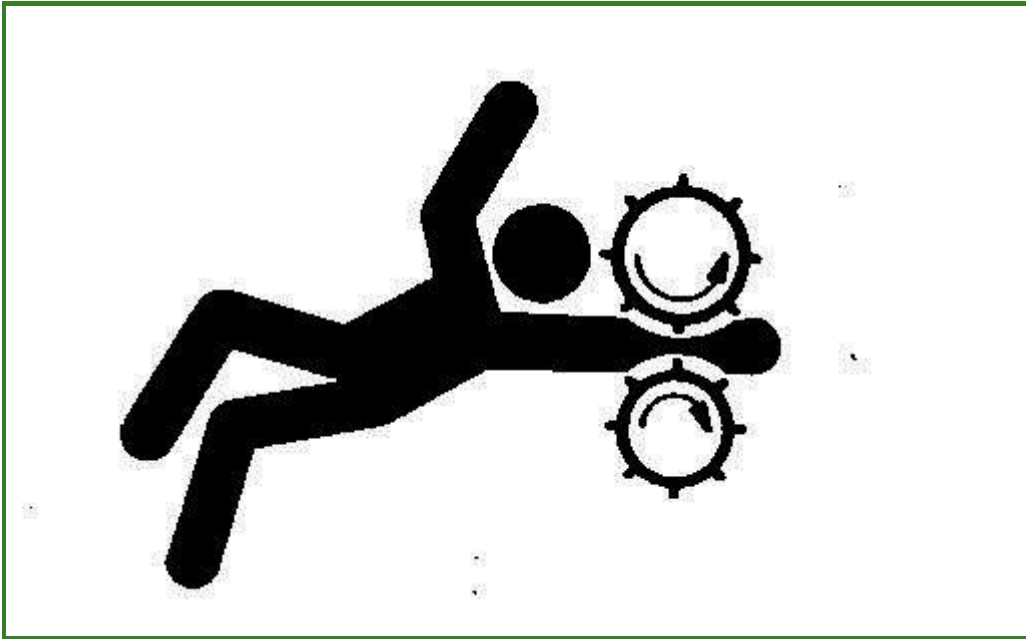
Avoid Heating Near Pressurized Fluid Lines



TS953-UN: Flammable Spray

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can accidentally burst when heat goes beyond the immediate flame area.

Service Machines Safely

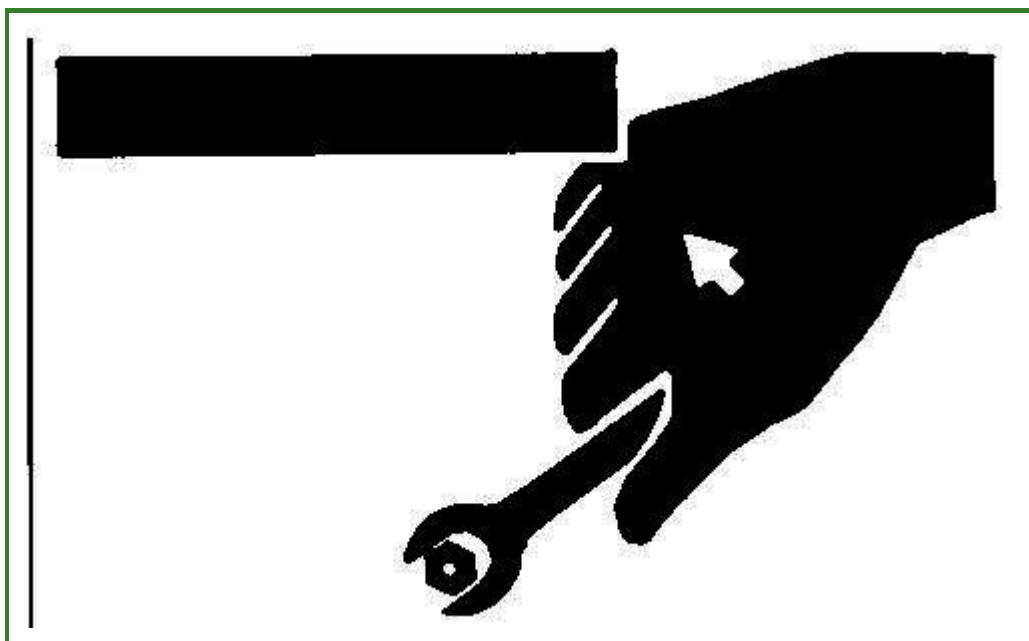


TS228-UN: Moving Parts

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.

Use Proper Tools



TS779-UN: Proper Tools

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.

Please click here and go
back to our website.

BUY NOW

Then Instant Download the
Complete Manual.

Thank you very much!