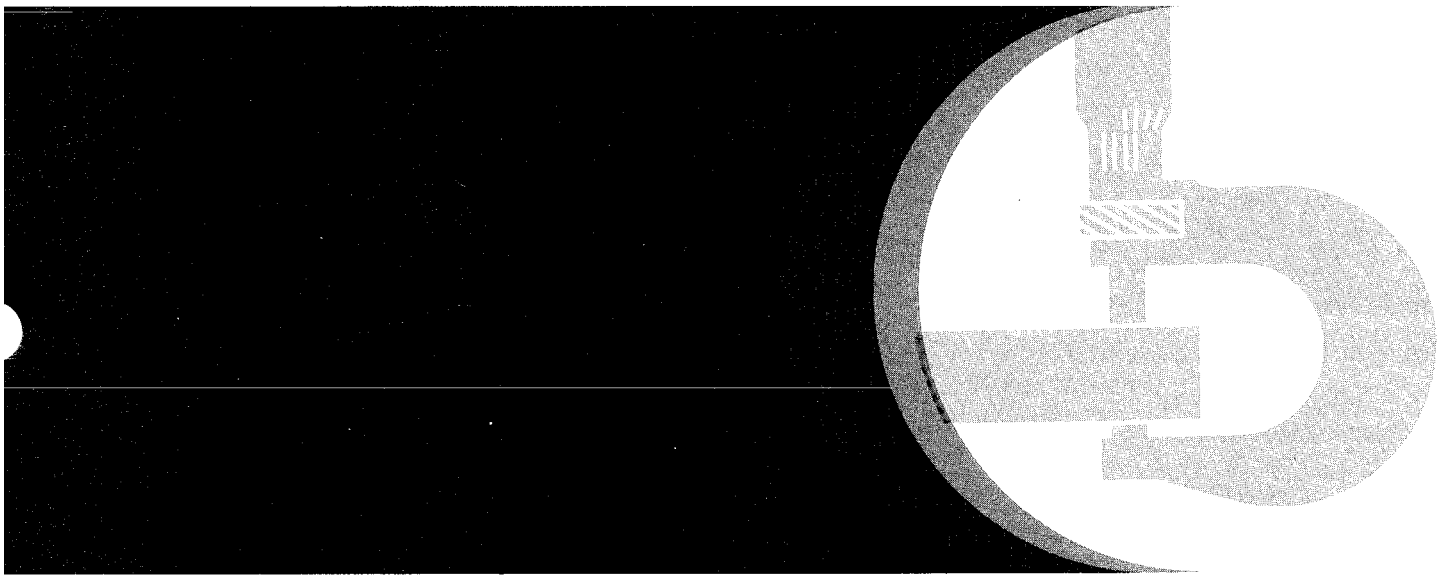
John Deere 444D, 544D and 644D Loader Repair



TECHNICAL MANUAL

TM-1341 (Oct-87)

LITHO IN U.S.A.

444D, 544D, AND 644D LOADERS TECHNICAL MANUAL TM-1341 (Oct-87)

SECTION AND GROUP CONTENTS

All information, illustrations and specifications contained in this technical 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.

T64;1341 J6 041187

SECTION AND GROUP CONTENTS—Continued

T64;1341 J8 021187

INTRODUCTION

This manual is part of a total service support program.

FOS Manuals—reference

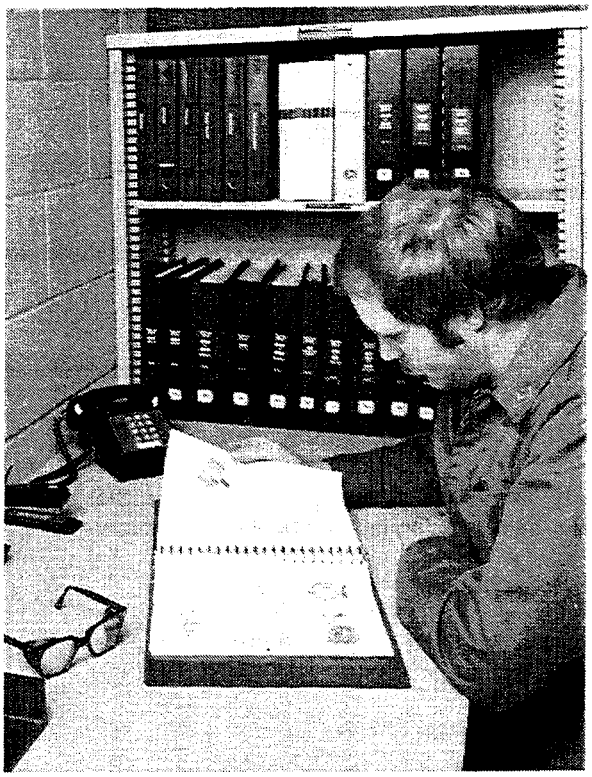
Technical Manuals—machine service

Component Manuals—component service

Fundamentals of Service (FOS) Manuals cover basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic types of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technical Manuals are concise service guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed by an experienced service technician.

Component Technical Manuals are concise service guides for specific components. Component technical manuals are written as stand alone manuals covering multiple machine applications.



AB6;RW5559 053;INTR02 030785

FEATURES OF THIS TECHNICAL MANUAL

John Deere ILLUSTRUCTION format emphasizing illustrations and concise instructions in easy-to-use modules.

Emphasis on diagnosis, analysis, and testing so you can understand the problem and correct it.

Diagnostic information presented with the most logical and easiest to isolate problems first to help you identify the majority of routine failures quickly.

Step-by-step instructions for teardown and assembly.

Summary listing at the beginning of each group of all applicable specifications, wear tolerances, torque values, essential tools, and materials needed to do the job.

An emphasis throughout on safety—so you do the job right without getting hurt.

This technical manual was planned and written for you—an experienced service technician. Keep it in a permanent binder in the shop where it is handy. Refer to it when you need to know correct service procedures or specifications.

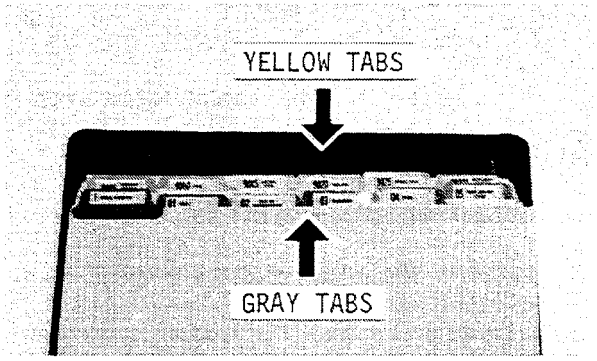
AB6;RW5560 053;INTR03 071085

USING TABS

To fully utilize this technical manual, you must understand how it is organized.

Only two tab colors are used—gray and yellow. Each color represents a different type of information.

Spend a minute reading this now and save many minutes of searching later.



018;T5933AB T82;FLPD I 260785

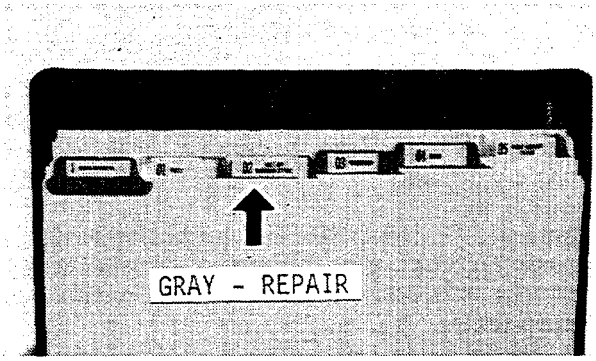
GRAY TAB SECTIONS

The gray tab sections are repair sections that tell how to repair the components of the various systems.

Repair of a component includes:

- Removal from machine (when necessary)
- Disassembly
- Inspection
- Replacement of parts
- Assembly
- Adjustment
- Installation on machine (when necessary)

The numbers used for the repair (gray tab) sections are part of an overall service publication numbering system. The numbers identify the same sections in the parts catalog, flat rate manual, service information bulletins, and service training courses.

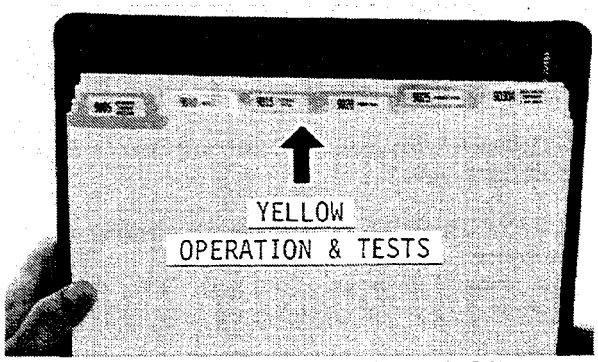


018;T5933AC T82;FLPD J 260785

YELLOW TAB SECTIONS

Each yellow tab section contains information on:

Groups	
05	Theory of Operation
10	System Operational Checks
15	System Diagnostic Information
20	Adjustments
25	Tests



018;T5933AD T82;FLPD K 260785

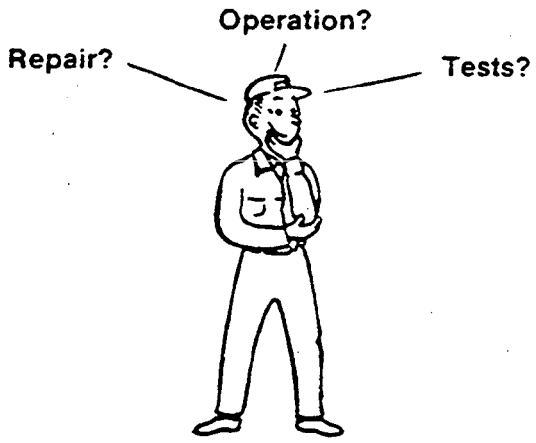
THREE-STEP PROCEDURE

Use the following three-step procedure to locate the desired information.

1. Determine the type of information you need. Is it repair, operation, or tests?

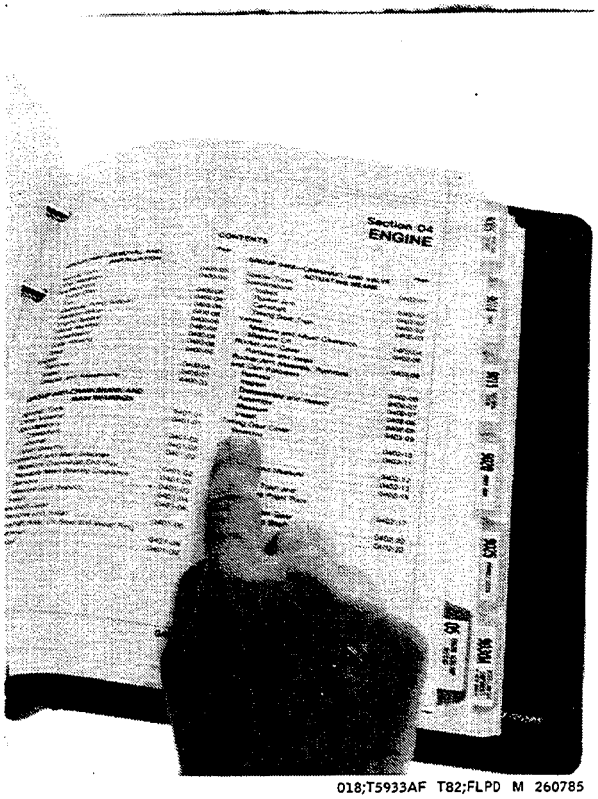
2. Go to the appropriate section tab:

   Gray for Repair
   Yellow for Operation or Tests



018;T5940AT T82;FLPD L 260785

3. Use the table of contents on the first page of the section to locate the information.



018;T5933AF T82;FLPD M 260785

RECOGNIZE SAFETY INFORMATION

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

AB6;T81389 053;ALERT 071085

UNDERSTAND SIGNAL WORDS

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

Safety signs with signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

⚠ DANGER

⚠WARNING

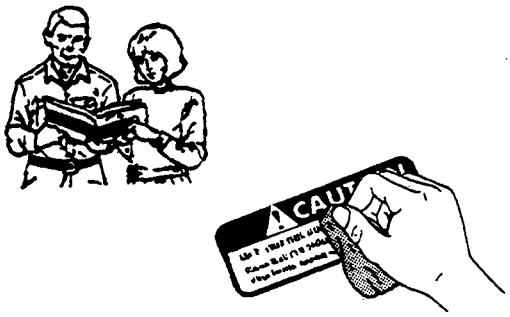
⚠CAUTION

AB6;TS187 053;SIGNAL 071085

FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Follow recommended precautions and safe operating practices.

Keep safety signs in good condition. Replace missing or damaged safety signs.



AB6;TS188 053;SIGNS 071085

Above top step

018;T6084BF T82;FLSA X 280685

Right front ROPS post, facing operator

018;T6001BE T82;FLSA R 290585

If equipped—Inside operator's station above left front ROPS post

018;T6084BE T82;FLSA Y 300585

AVOID FIRE HAZARDS

Keep a fully charged fire extinguisher in a handy location.

Never use an open flame around the machine or to check fuel, battery electrolyte, or coolant levels.

Internal corrosion inhibitor is a volatile compound. All openings must be sealed and taped after preserving. Keep container closed when not in use.

Inspect and replace any damaged electrical wiring.

018;T6080AG T82;FLSA C 010485

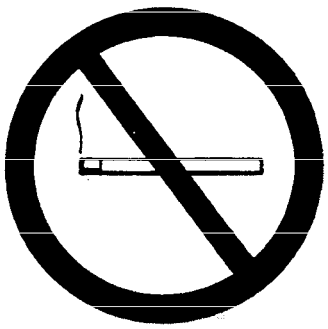
REFUEL SAFELY

Do not smoke while refueling or handling highly flammable material.

Shut off the engine when refueling.

Use care in refueling if the engine is hot.

Do not use open pans of gasoline or diesel fuel for cleaning parts. Use good commercial, nonflammable solvents.



018;T6130BP T82;FLSA F 010485

CLEAN TRASH FROM MACHINE

Wait until engine has cooled before removing trash from areas such as engine, radiator, batteries, hydraulic lines, fuel tank, and operator's station.

Temperature in engine compartment may go up immediately after engine is stopped. BE ON GUARD FOR FIRES DURING THIS PERIOD.

Open side shields to cool the engine faster.

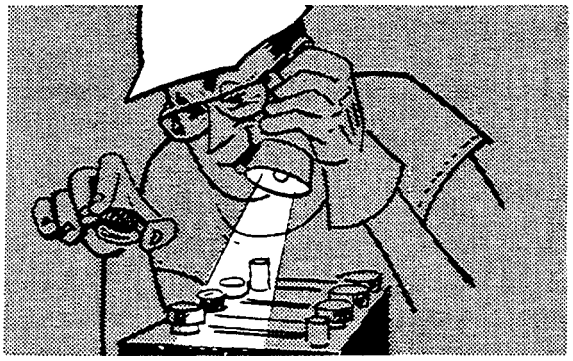
018;T86512 T82;FLSA D 010485

PREVENT BATTERY EXPLOSIONS

Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

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

Always remove grounded (-) battery clamp first and replace it last.



AB6;TS181 053;EXPLO 180485

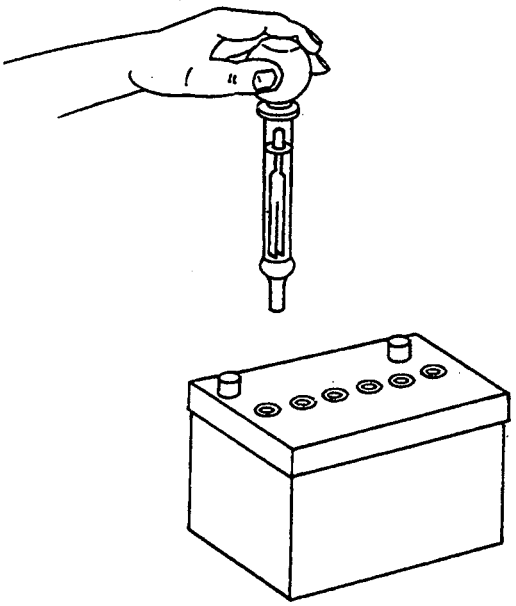
AVOID ACID BURNS

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.

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 10-15 minutes. Get medical attention immediately.

If acid is swallowed:
1. Drink large amounts of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.



AB6;TS182 053;ACID 180485

HANDLE STARTING FLUID SAFELY

Starting fluid is highly flammable. DO NOT incinerate or puncture a starting fluid container. Store starting fluid containers away from high temperature areas.

018;T6089AU T82;FLSA G 010485

WEAR PROTECTIVE CLOTHING

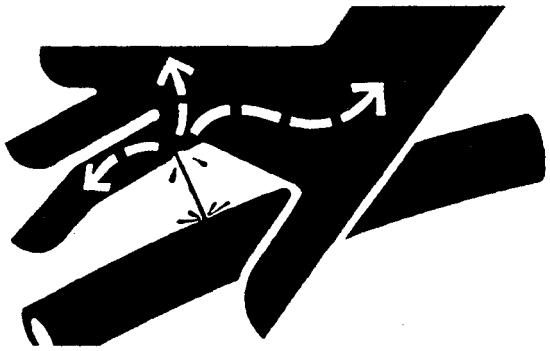
Wear fairly tight clothing . . . and safety equipment.

018;T85056 T82;FLSA AA 130685

AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard to search for leaks.

If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene may result.

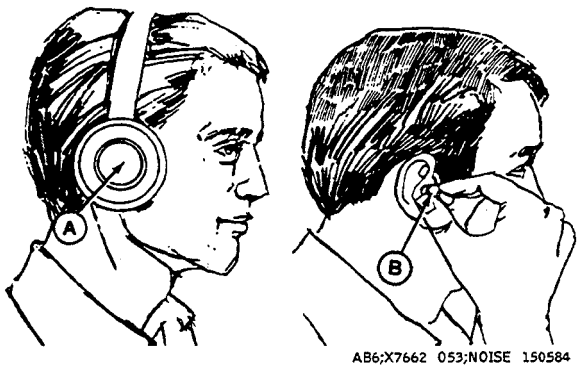


AB6;X9811 053;FLUID 010586

PROTECT AGAINST NOISE

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

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



AB6;X7662 053;NOISE 150584

UNDERSTAND MACHINE OPERATION, SERVICE

Allow only qualified people to operate and service the machine.

Learn the location and purpose of all controls, instruments, indicators, and labels.

Be sure you understand a service procedure before you work on the machine.

Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

ALWAYS USE TWO PEOPLE when making checks with the engine running——the operator at the controls, able to see the person doing the checking.

Keep hands away from moving parts.

018;T6073AO T82;FLSA H 010485

PREVENT MACHINE RUNAWAY

Avoid possible injury or death from machine runaway.

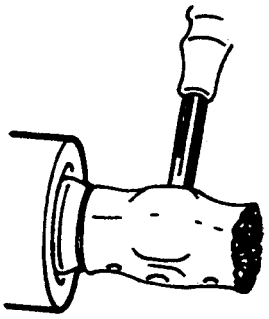
Do not start engine by shorting across starter terminals. Machine will start in gear and will move if normal circuitry is bypassed.

Never start engine while standing on ground. Start engine only from operator's seat, with gear shift lever in neutral, neutral lock latch in place, and park brake applied.

AB6;TS177 T82;FLSA I 010485

PROTECT AGAINST FLYING DEBRIS

When you drive connecting pins in or out, guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.



018;T6073AP T82;FLSA AB 130685

SUPPORT RAISED EQUIPMENT

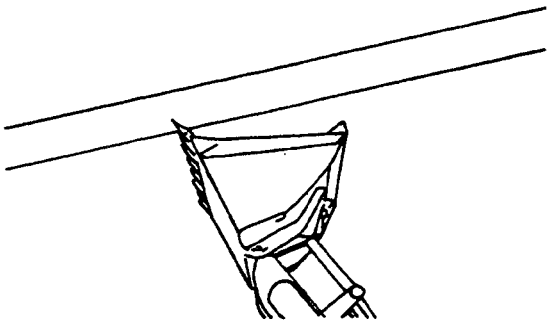
Raised equipment must be supported before working under it.

If a support is not available, lower equipment to the ground.

T82;FLSA O 010485

AVOID POWER LINES

Keep away from power lines. Serious injury or death may result. Never move any part of the machine or load closer to power line than 10 ft (3 m) plus twice the line insulator length.



018;T6133AK T82;FLSA Q 100685

OBSERVE SERVICE PRECAUTIONS

Keep ALL equipment free of dirt and oil.

Clean oil, grease, mud, ice or snow from the operator's station, steps and hand rails.

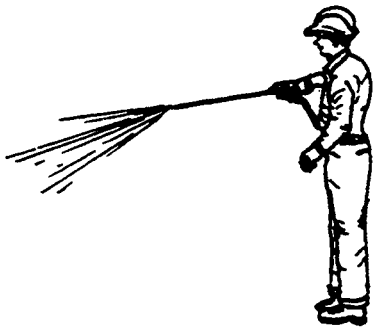
DO NOT remove the radiator cap unless the engine is cool. Then loosen the cap slowly to the stop. Release all pressure before you remove the cap.

Check the exhaust system regularly for leaks.

Release hydraulic pressure before you work on the hydraulic system.

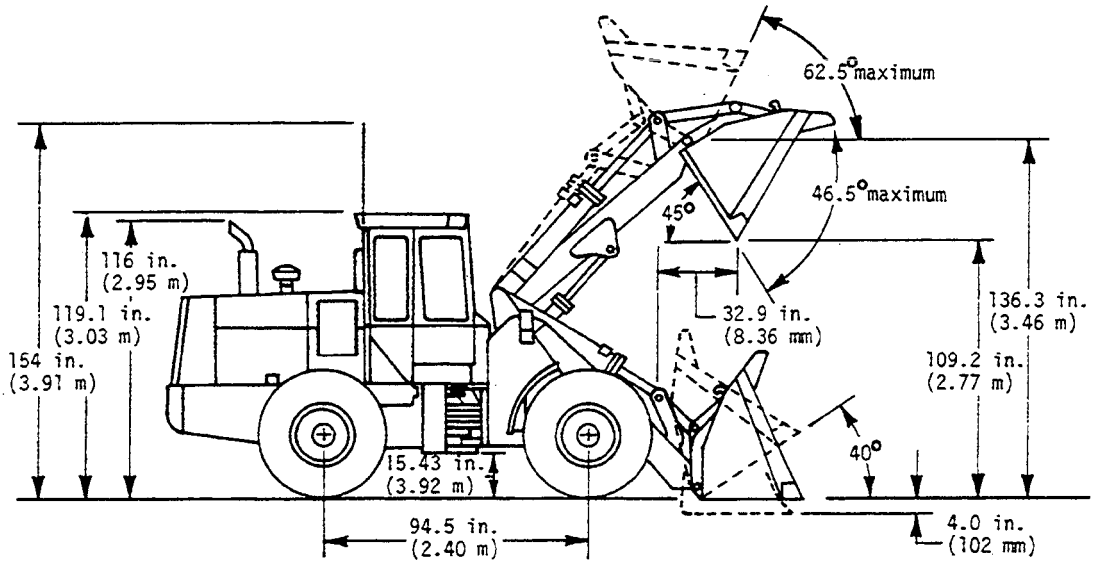
Disconnect negative (—) battery cable.

When you check hydraulic pressure, be sure to use the correct test gauge.



018;T5813AM T82;FLPD P 130886

444D LOADER



Engine:
- John Deere 6-cylinder turbocharger diesel ..... 90 SAE hp (67 kw)
- Bore and stroke
  - Pin (—511476) ..... 4.02 x 4.33 in. (102 x 110 mm)
  - Pin (511477—) ..... 4.19 x 4.33 in. (106 x 110 mm)
- Piston displacement
  - Pin (—511476) ..... 3.29 cu. in. (5.392 L)
  - Pin (511477—) ..... 3.59 cu. in. (5.833 L)
- Lubrication ..... Pressure system with full-flow filter
- Cooling ..... Pressurized with thermostat and controlled bypass
- Fan ..... Blower
- Dual-stage air cleaner with restriction indicator ..... Dry
- Electrical system ..... 12-volt with alternator
- Batteries (one 12-volt)
  - Cold cranking capacity at 0°F (−18°C) ..... 625 amps
  - Reserve capacity ..... 170 min. ea.
- Alternator: standard ..... 42 amps
  - optional with cab ..... 90 amps

Differentials:
- Front and rear ..... Standard
- Front hydraulic differential lock with capture circuit ..... Optional
- Front No Spin ..... Optional

Drive Axles:
- Inboard-mounted planetary gears to each wheel.
- Front axle fixed.
- Rear axle oscillates 22° total (15.6 in (396 mm) vertical travel at center of tire).

018;T6140AC 05T;115 C72 140886

Torque Converter ..... Twin-turbine

Transmission ..... Power shift planetary

Forward Speeds	mph	km/h
1	0—2.9	0—4.7
2	2.9—6.5	4.7—10.5
3	0—11.0	0—17.7
4	11.0—24.6	17.7—39.6
Reverse Speeds		
1	0—3.9	0—6.3
2	3.9—8.8	6.3—14.2

NOTE: Shift from 1st to 2nd and 3rd to 4th is automatic.

Brakes:
- Service:
  - Power-actuated, 4-wheel, inboard-mounted, wet-disk.
  - Foot-operated by either pedal.
  - Left pedal also disconnects transmission.
  - External inspection.
  - Low brake pressure warning light and buzzer.
- Park:
  - Expanding shoe on transmission output shaft, foot-operated.
  - Transmission disconnects with park brake applied.
  - Warning light on instrument panel.

Steering:
- Turning radius ..... 13 ft 10 in. (4.22 m) measure to center line of outside tire
- Secondary steering—if equipped: Meets the requirements of SAE J53.

Main Hydraulic and Steering System @ fast idle:

Hydraulic System Relief	2250—2450 psi (15 514—15 895 kPa) (155—159 bar)
Boom Raise Circuit Relief	2500—2625 psi (17 238—18 005 kPa) (173—180 bar)
Bucket Rollback Circuit Relief	2500—2625 psi (17 238—18 005 kPa) (173—180 bar)
Bucket Dump Circuit Relief	850—1050 psi (5 861—7 240 kPa) (59—72 bar)
Clam Open Circuit Relief	2500—2625 psi (17 238—18 005 kPa) (173—180 bar)
Clam Close Circuit Relief	2500—2625 psi (17 238—18 005 kPa) (173—180 bar)
Maximum Steering System Pressure	2400—2500 psi (16 550—17 240 kPa) (165—172 bar)
Steering Crossover Relief Valve Pressure	3000—3200 psi (20 685—22 060 kPa) (207—220 bar)

Brake and Differential Lock Hydraulic System:

Unloading Valve Pressure Setting (Closing)	1800 psi (12 411 kPa) (124 bar)
(Opening)	2300 psi (15 859 kPa) (159 bar)
Differential Lock Circuit Pressure	600 psi (4 137 kPa) (41 bar)
Transmission System Pressure	125—170 psi (862—1 172 kPa) (8.6—11.7 bar)

Maximum lift capacity with standard equipment

Maximum height	7,310 lb (3320 kg)
Ground level	18,790 lb (8525 kg)

05T;115 C73 140886

Tires:	Cold Tire Inflation Pressure
13.0—24, 8 PR, G2	50 psi (345 kPa) (3.5 bar)
15.5—25, 8 PR, L2	45 psi (310 kPa) (3.1 bar)
15.5—25, 12 PR, L2	55 psi (380 kPa) (3.8 bar)
15.5—25, 1 STAR, XRAT	front 50 psi (340 kPa) (3.4 bar)
	rear 30 psi (210 kPa) (2.1 bar)
17.5—25, 12 PR, L2	50 psi (340 kPa) (3.4 bar)
*18.4—26, 10 PR, LS2	30 psi (210 kPa) (2.1 bar)
*23.1—26, 10 PR, LS2	25 psi (170 kPa) (1.7 bar)

**Use with log loader*

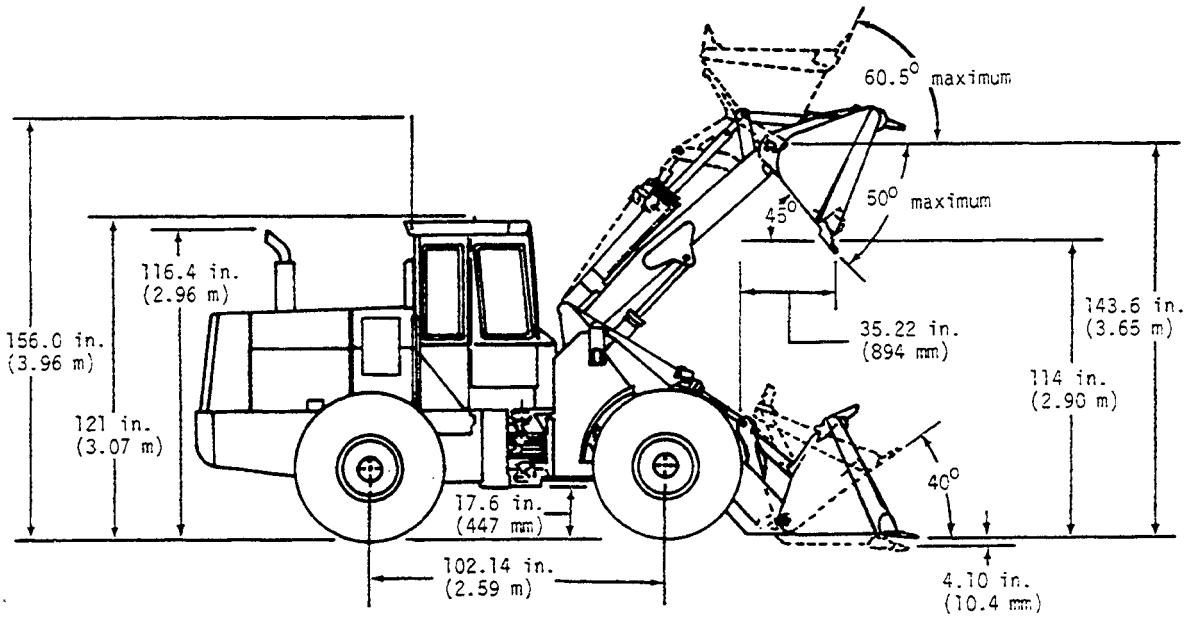
Wheel Treads:
Front and rear ..... 70.0 in. (1.78 m)

Refill Capacities:	U.S.	Metric
Cooling System	24 qt.	23 L
Fuel tank	50 gal.	189 L
Engine crankcase and filter	12 qt.	11.4 L
Transmission case and filter	8.5 gal	32.2 L
Front and rear differential	17 qt.	16 L
Hydraulic reservoir	64 qt.	61 L
Weight:	19, 223 lb	8727 kg

NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment, 15.5—25, 8 PR loader-tread tires with 940 lb (426 kg) $CaC1_2$ solution in rear tires, ROPS cab, full fuel tank, and 175 lb (79 kg) operator.

T82;FLSP H 140685

544D LOADER



Engine:

John Deere 6-cylinder turbocharger diesel	115 SAE hp (86 kw)
Bore and stroke	4.19 x 5 in. (106.5 x 127 mm)
Piston displacement	414 cu. in. (6.785 L)
Lubrication	Pressure system with full-flow filter
Cooling	Pressurized with thermostat and controlled bypass
Fan	Blower
Aspirated dual-stage air cleaner with restriction indicator	Dry
Electrical system	12-volt with alternator
Batteries (one 12-volt)	
Cold cranking capacity at 0°F (−18°C)	625 amps
Reserve capacity	170 min. ea.
Alternator: standard	42 amps
optional with cab	90 amps
Torque Converter	Twin-turbine
Transmission	Power shift planetary

Forward Speeds	mph	km/h
1	0—3.1	0—5.0
2	3.1—7.3	5.0—11.7
3	0—11.7	0—18.8
4	11.7—27.9	18.8—45.0
Reverse Speeds		
1	0—4.2	0—6.8
2	4.2—9.9	6.8—16.0

NOTE: Shift from 1st to 2nd and 3rd to 4th is automatic.

25A;T6140AD T82;FLPD S 310785

Differentials:
- Front and rear ..... Standard
- Front hydraulic differential lock with capture circuit ..... Optional
- Front No Spin ..... Optional

Drive Axles:
- Inboard-mounted planetary gears to each wheel.
- Front axle fixed.
- Rear axle oscillates 22° total (13.5 in (343 mm) vertical travel at center of tire).

Brakes:
- Service:
  - Power-actuated, 4-wheel, inboard-mounted, wet-disk.
  - Foot-operated by either pedal.
  - Left pedal also disconnects transmission.
  - External inspection.
  - Low brake pressure warning light and buzzer.
- Park:
  - Expanding shoe on transmission output shaft, foot-operated.
  - Transmission disconnects with park brake applied.
  - Warning light on instrument panel.

Steering:
- Turning radius ..... 14 ft 7 in. (4.44 m) measured to center line of outside tire
- Secondary steering—if equipped: Meets the requirements of SAE J53.

Main Hydraulic and Steering System:

Hydraulic System Relief	2625—1750 psi (18 099—18 960 kPa) (179—189 bar)
Boom Raise Circuit Relief	2875—3000 psi (19 823—20 680 kPa) (198—207 bar)
Bucket Rollback Circuit Relief	2875—3000 psi (19 823—20 680 kPa) (198—207 bar)
Bucket Dump Circuit Relief	1750—1950 psi (12 066—13 445 kPa) (119—134 bar)
Clam Open Circuit Relief	2875—3000 psi (19 823—20 680 kPa) (198—207 bar)
Clam Close Circuit Relief	2875—3000 psi (19 823—20 680 kPa) (198—207 bar)
Maximum Steering System Pressure	2400—2500 psi (16 550—17 240 kPa) (166—172 bar)
Steering Crossover Relief Valve Pressure	3000—3200 psi (20 685—22 060 kPa) (207—220 bar)

Brake and Differential Lock Hydraulic System:

Unloading Valve Pressure Setting (Closing)	1800 psi (12 411 kPa) (124 bar)
(Opening)	2300 psi (15 859 kPa) (159 bar)
Differential Lock Circuit Pressure	600 psi (4 137 kPa) (41 bar)
Transmission System Pressure	125—170 psi (862—1 172 kPa) (18.6—11.7 bar)

Maximum lift capacity with standard equipment

Maximum height	10,239 lb (4 654 kg)
Ground level	25,009 lb (11 368 kg)

T82;FLSP E 081185

Tires:	Cold Tire Inflation Pressure
14.0—24, 10 PR, G2	55 psi (380 kPa) (3.8 bar)
14.0—24, 12 PR, G2	65 psi (410 kPa) (4.1 bar)
17.5—25, 12 PR, L2	50 psi (345 kPa) (3.5 bar)
17.5—25, 12 PR, L3	50 psi (345 kPa) (3.5 bar)
17.5—25, 1 START, XRAT	front 50 psi (345 kPa) (3.5 bar)
	rear 30 psi (210 kPa) (2.1 bar)
20.5—25, 12 PR, L3	50 psi (345 kPa) (3.5 bar)
20.5—25, 12 PR, L3	50 psi (345 kPa) (3.5 bar)
*23.1—26, 10 PR, LS2	25 psi (170 kPa) (1.7 bar)
*28.1—26, 14 PR, LS2	30 psi (210 kPa) (2.1 bar)

**Use with feller buncher and log loader*

Wheel Treads:

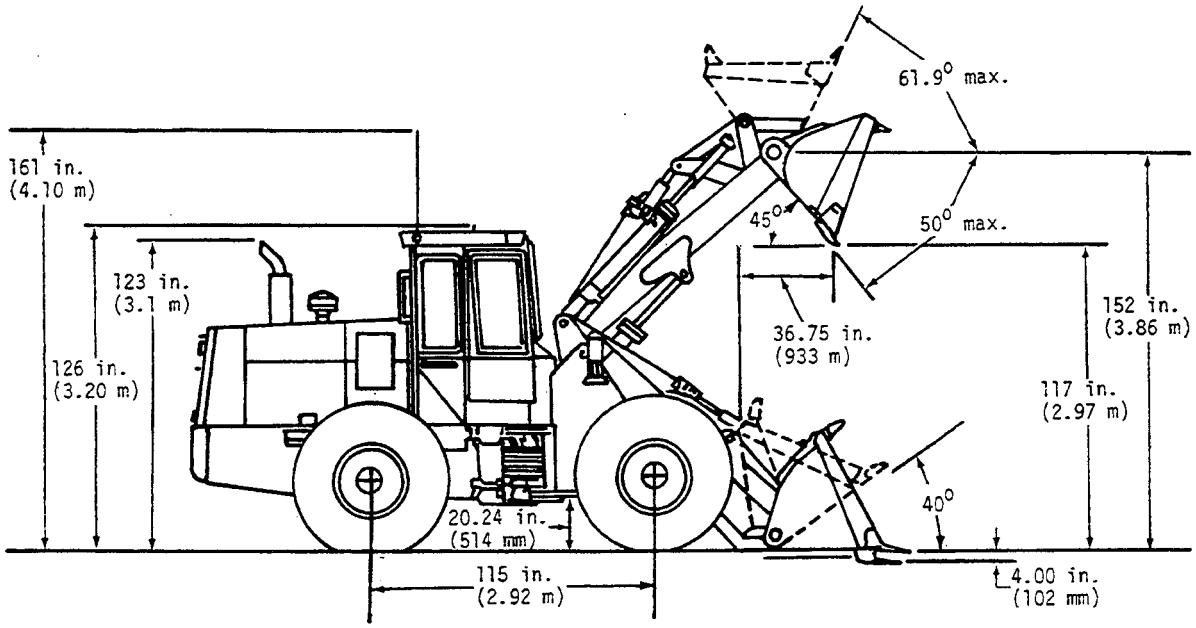
Front and rear	70.0 in. (1.78 m)
Front and rear w/20, 5—25 tires	80.0 in. (2.03 m)

Refill Capacities:	U.S.	Metric
Cooling System	24 qt.	23 L
Fuel tank	50 gal.	189 L
Engine crankcase and filter	20 qt.	19 L
Transmission case and filter	8.5 gal	32 L
Front differential	24 qt.	23 L
Rear differential	24 qt.	23 L
Hydraulic reservoir	64 qt.	61 L
Weight:	22, 665 lb	10 290 kg

NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment, 17.5—25, 12 PR, L2 tires with 1180 lb (535 kg) $CaC1_2$ solution in rear tires, ROPS cab, full fuel tank, and 175 lb (79 kg) operator.

T82;FLSP I 111185

644D LOADER



Engine:

John Deere 6-cylinder turbocharger diesel	155 SAE hp (116 kw)
Bore and stroke	4.56 x 4.75 in. (116 x 121 mm)
Piston displacement	466 cu. in. (7.636 L)
Lubrication	Pressure system with full-flow filter
Cooling	Pressurized with thermostat and controlled bypass
Fan	Blower
Dual-stage air cleaner with restriction indicator	Dry
Electrical system	12-volt with alternator
Batteries (two 12-volt)	
Cold cranking capacity at 0°F (−18°C)	625 amps
Reserve capacity	170 min. ea.
Alternator: standard	42 amps
optional with cab	90 amps
Torque Converter	Twin-turbine
Transmission	Power shift planetary

Forward Speeds	mph	km/h
1	0—3.3	0—5.3
2	3.3—7.1	5.3—11.4
3	0—12.8	0—20.6
4	12.8—27.3	20.6—43.9
Reverse Speeds		
1	0—3.8	0—6.1
2	3.8—8.2	6.1—13.2

NOTE: Shift from 1st to 2nd and 3rd to 4th is automatic.

018;T6140AE T82;FLPD T 310785

Differentials:
- Front and rear ..... Standard
- Front hydraulic differential lock with capture circuit ..... Optional
- Front No Spin ..... Optional

Drive Axles:
- Inboard-mounted planetary gears to each wheel.
- Front axle fixed.
- Rear axle oscillates 22° total (15.6 in (396 mm) vertical travel at center of tire).

Brakes:
- Service:
  - Power-actuated, 4-wheel, inboard-mounted, wet-disk.
  - Foot-operated by either pedal.
  - Left pedal also disconnects transmission.
  - External inspection.
  - Low brake pressure warning light and buzzer.
- Park:
  - Expanding shoe on transmission output shaft, foot-operated.
  - Transmission disconnects with park brake applied.
  - Warning light on instrument panel.

Steering:
- Turning radius ..... 16 ft 6 in. (5.03 m) measure to center line of outside tire
- Secondary steering—if equipped: Meets the requirements of SAE J53.

Main Hydraulic and Steering System:

Hydraulic System Relief	2625—2750 psi (18 099—18 960 kPa) (181—190 bar)
Boom Raise Circuit Relief	2875—3000 psi (19 823—20 680 kPa) (198—207 bar)
Bucket Rollback Circuit Relief	2875—3000 psi (19 823—20 680 kPa) (198—207 bar)
Bucket Dump Circuit Relief	1750—1950 psi (12 066—13 445 kPa) (121—134 bar)
Clam Open Circuit Relief	2875—3000 psi (19 823—20 680 kPa) (198—207 bar)
Clam Close Circuit Relief	2875—3000 psi (19 823—20 680 kPa) (198—207 bar)
Maximum Steering System Pressure	2400—2500 psi (16 550—17 240 kPa) (166—172 bar)
Steering Crossover Relief Valve Pressure	3000—3200 psi (20 685—22 060 kPa) (207—220 bar)

Brake and Differential Lock Hydraulic System:
- Unloading Valve Pressure Setting (Closing) ..... 1800 psi (12 411 kPa)(124 bar)
  (Opening) ..... 2300 psi (15 859 kPa) (159 bar)
- Differential Lock Circuit Pressure ..... 600 psi (4 137 kPa) (41 bar)

Transmission System Pressure ..... 125—170 psi (862—1 172 kPa) (8.6—11.7 bar)

Maximum lift capacity with standard equipment
- Maximum height ..... 14,682 lb (6 674 kg)
- Ground level ..... 31,325 lb (14 239 kg)

T82;FLSP G 081185

Tires:	Cold Tire Inflation Pressure
16.0—24, 12 PR, G2	50 psi (345 kPa) (3.5 bar)
17.5—25, 12 PR, L2	60 psi (410 kPa) (4.1 bar)
29.5—25, 12 PR, L2	50 psi (345 kPa) (3.5 bar)
20.5—25, 12 PR, L-3	50 psi (345 kPa) (3.5 bar)
20.5—25, 16 PR, L3	60 psi (410 kPa) (4.1 bar)
20.5—25, 1 STAR, XRAT	front 50 psi (345 kPa) (3.5 bar)
	rear 30 psi (210 kPa) (2.1 bar)
23.5—20, 12 PR, L3	45 psi (310 kPa) (3.1 bar)
*28.1—26, 14 PR, LS2	30 psi (210 kPa) (2.1 bar)

**Use with log loader*

Wheel Treads:

Front and rear	80.0 in. (2.03 m)
Front and rear w/23.5—25 tires	84.8 in. (2.15 m)

Refill Capacities:	U.S.	Metric
Cooling System	29 qt.	28 L
Fuel tank	67 gal.	254 L
Engine crankcase and filter	20 qt.	19 L
Transmission case and filter	8.5 gal	32 L
Front differential	24 qt.	23 L
Rear differential	24 qt.	23 L
Hydraulic reservoir	100 qt.	95 L
Weight:	29, 320 lb	13 311 kg

NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment, 20.5—25, 12 PR, L2 loader-tread tires w 1820 lb (826 kg) $CaC1_2$ solution in rear tires, ROPS cab, full fuel tank, and 175 lb (79 kg) operator.

T82;FLSP J 111185

HARDWARE TORQUE SPECIFICATIONS

Check cap screws and nuts to be sure they are tight. If hardware is loose, tighten to torque shown on the following charts unless a special torque is specified.

T82;SKMA AT 270286

NOTE: Torques shown are for dry (no lubrication on threads) hardware.

NOTE: Torque wrench tolerance is ± 10 per cent of specified torque.

Customary Hardware

Cap Screw Size-Inches	Grade B		Grade D		Grade F	
	lb-ft.	(N-m)	lb-ft.	(N-m)	lb-ft.	(N-m)
1/4	----	----	10	(14)	14	(19)
5/16	----	----	20	(27)	30	(41)
3/8	----	----	35	(47)	50	(68)
7/16	35	(47)	55	(75)	80	(108)
1/2	55	(75)	85	(115)	120	(163)
9/16	75	(102)	130	(176)	175	(237)
5/8	105	(142)	170	(230)	240	(325)
3/4	185	(251)	300	(407)	425	(576)
7/8	160	(217)	445	(603)	685	(929)
1	250	(339)	670	(908)	1030	(1396)
1-1/8	330	(447)	910	(1234)	1460	(1979)
1-1/4	480	(651)	1250	(1695)	2060	(2793)

018;T88884 T82;FLMA AJ 140685

WHEEL RETAINER CAP SCREWS

Tighten cap screws to 410 ± 40 N·m (300 ± 30 lb-ft).

05T;115 C74 140886

METRIC HARDWARE TORQUE CHART

NOTE: Torques shown are for hardware with SAE30W oil on threads.

NOTE: Torque wrench tolerance is ± 10 percent of specified torque.

Metric Standard Thread

Thread	8.8		10.9		12.9	
	N·m	lb-ft	N·m	(lb-ft)	N·m	(lb-ft)
M5	5.9	(4.4)	7.9	(5.8)	9.8	(7.2)
M6	9.8	(7.2)	13.8	(10.2)	16.7	(12.3)
M8	24.6	(18.1)	34.4	(25.4)	40.2	(29.6)
M10	48.1	(35.5)	67.8	(50.0)	81.5	(60.1)
M12	84.4	(62.2)	118.0	(87.0)	142.0	(105.0)
M14	133.0	(98.0)	187.0	(138.0)	226.0	(167.0)
M16	206.0	(152.0)	290.0	(214.0)	348.0	(257.0)
M18	285.0	(210.0)	398.0	(294.0)	476.0	(351.0)
M20	402.0	(296.0)	570.0	(420.0)	677.0	(499.0)
M22	540.0	(398.0)	765.0	(564.0)	914.0	(674.0)
M24	697.0	(514.0)	980.0	(723.0)	1180.0	(870.0)

Metric Fine Thread

Thread	8.8		10.9		12.9	
	N·m	(lb-ft)	N·m	(lb-ft)	(N·m)	lb-ft)
M8 x 1	26.5	(19.5)	37.3	(27.5)	44.2	(32.6)
M10 x 1	47.1	(34.7)	68.8	(50.7)	81.5	(60.1)
M12 x 1.5	88.4	(65.2)	123.0	(91.0)	147.0	(108.0)
M14 x 1.5	147.0	(108.0)	206.0	(152.0)	246.0	(181.0)
M16 x 1.5	221.0	(163.0)	309.0	(228.0)	373.0	(275.0)
M18 x 1.5	319.0	(235.0)	451.0	(333.0)	540.0	(398.0)
M20 x 1.5	451.0	(333.0)	628.0	(463.0)	755.0	(557.0)
M22 x 1.5	599.0	(442.0)	845.0	(623.0)	1030.0	(760.0)
M24 x 2	765.0	(564.0)	1080.0	(796.0)	1275.0	(940.0)
M26 x 2	1130.0	(833.0)	1570.0	(1158.0)	1915.0	(1412.0)

T82;EXMA T 290384

SERVICE RECOMMENDATIONS FOR FLAT FACE O-RING SEAL FITTINGS

1. Inspect the fitting sealing surfaces. They must be free of dirt or defects.

2. Inspect the O-ring. It must be free of damage or defects.

3. Lubricate O-rings and male threads with petroleum jelly.

4.Push O-ring into the groove.

5. Index angle fittings and tighten by hand.

6. Tighten fitting or nut to torque valve shown on the chart per dash size shown on the chart per dash size stamped on the fitting. Do not allow hoses to twist while tightening fittings.

FLAT FACE O-RING SEAL FITTING TORQUE (1)

Nominal Tube O.D. mm	Nominal Tube O.D. in.	Dash Size	O-Ring Face Seal End: Thread Size in.	O-Ring Face Seal End: Swivel Nut Torque Nm	O-Ring Face Seal End: Swivel Nut Torque lb-ft	O-Ring Boss End: Bulkhead Nut Torque Nm	O-Ring Boss End: Bulkhead Nut Torque lb-ft
4.76	0.188	-3	----------	-----	-----	-----	-----
6.35	0.250	-4	9/16-18	16	12	5.0	3.5
7.94	0.312	-5	----------	-----	-----	-----	-----
9.52	0.375	-6	11/16-16	24	18	9.0	6.5
12.70	0.500	-8	13/16-16	50	37	17.0	12.5
15.88	0.625	-10	1-14	69	51	17.0	12.5
19.05	0.750	-12	1 3/16-12	102	75	17.0	12.5
22.22	0.875	-14	1 3/16-12	102	75	17.0	12.5
25.40	1.000	-16	1 7/16-12	142	105	17.0	12.5
31.75	1.250	-20	1 11/16-12	190	140	17.0	12.5
38.10	1.500	-24	2-12	217	160	17.0	12.5

1. Tolerance: +15 −20%

T82;FLSP A

O-RING BOSS FITTING SERVICE RECOMMENDATIONS

1. Inspect boss O-ring seat. It must be free of dirt and defects. If repeated leaks occur, inspect for defects with a magnifying glass. Some raised defects can be removed with a slip stone.

Occasionally a lower durometer O-ring will seal against a rough seat. If neither of these solutions work, the component must be replaced.

2. Lubricate O-ring using petroleum jelly. Put a thimble over the threads to protect O-ring from nicks. Slide O-ring over the thimble and into the turned down section of fitting.

For angle fittings, loosen special nut and push special washer against threads so O-ring can be installed into the turned down section of fitting.

3. Turn fitting into the boss by hand until special washer or washer face (straight fitting) contacts boss face and O-ring is squeezed into its seat.

4. To position angle fittings, turn the fitting counterclockwise a maximum of one turn.

5. Tighten straight fittings to the torque valve shown in chart. For angle fittings, tighten the special nut to valve shown in the chart while holding body of fitting with a wrench.

STRAIGHT FITTING OR SPECIAL NUT TORQUE (1)

Thread Size	Torque[1] N·m	(lb-ft	Number Of Flats[2]
3/8-24 UNF	8	(6)	2
7/16-20 UNF	12	(9)	2
1/2-20 UNF	16	(12)	2
9/16-18 UNF	24	(18)	2
3/4-16 UNF	46	(34)	2
7/8-14 UNF	62	(46)	1-1/2
1-1/16-12 UN	102	(75)	1
1-3/16-12 UN	122	(90)	1
1-5/16-12 UN	142	(105)	3/4
1-5/8-12 UN	190	(140)	3/4
1-7/8-12 UN	217	(160)	1/2

1. Tolerance ± 10%.

2. To be used if a torque wrench cannot be used. After tightening fitting by hand, put a mark on nut and boss; then tighten special nut or straight fitting the number of flats shown.

T82;TLP0 AA 040285