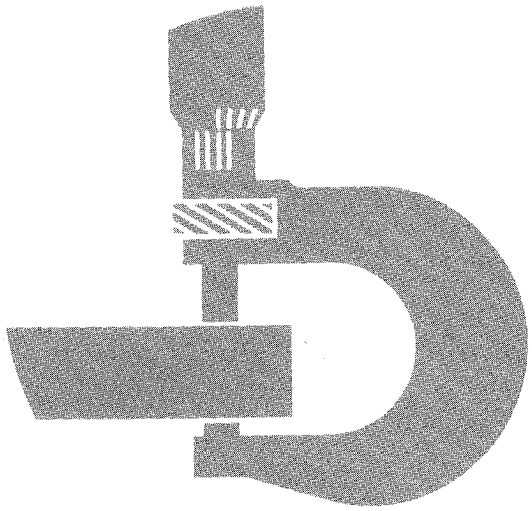
595
Excavator



TECHNICAL MANUAL

TM1375
(OCT-88)
Litho in U.S.A.

595 EXCAVATOR TECHNICAL MANUAL TM-1375 (OCT-88)

SECTION AND GROUP CONTENTS

SECTION I—GENERAL INFORMATION
Group I—Introduction and Safety Information
Group II—General Specifications
Group III—Torque Values
Group IV—Fuels and Lubrication

SECTION 02—AXLES AND SUSPENSION SYSTEMS
Group 0200—Removal and Installation
Group 0210—Differential or Bevel Drive
Group 0240—Powered Wheel Axle Planetary Hub Reduction, Steering Knuckle Front, and Rear Axle Housings

SECTION 03—TRANSMISSION
Group 0300—Removal and Installation
Group 0350—Gears, Shafts, Bearings and Power Shift Clutch Main Shaft, Bevel Gear, Countershaft, Front Output Shaft, 2WD-to-4WD Shifter, Low to High Range Shifter, Gear Pump and Front and Rear Case.
Group 0360—Hydraulic System Propel (Transmission Drive), Motor, Brake Valve

SECTION 04—ENGINE
NOTE: For engine, 4.5L (276 cu in.), repair, see CTM-4.

SECTION 05—ENGINE AUXILIARY SYSTEMS
Group 0515—Speed Controls Engine Speed Linkage, Speed Control Lever, Fuel Shut-Off Linkage

SECTION 09—STEERING SYSTEM
Group 0960—Hydraulic System Steering Valve and Steering Cylinder

SECTION 10—SERVICE BRAKES
Group 1011—Active Elements

SECTION 11—PARK BRAKE
Group 1111—Active Elements

SECTION 16—ELECTRICAL SYSTEMS
Group 1671—Batteries, Support, and Cables
Group 1672—Alternator, Regulator and Charging System Wiring
Group 1674—Wiring Harness and Switches
Group 1676—Instruments and Indicators
Group 1677—Motors and Actuators

SECTION 18—OPERATOR'S STATION
Group 1830—Heating and Air Conditioning Specifications—Air Conditioning

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SECTION 22—PNEUMATIC SYSTEM

Group 2261—Pump and Drives

Air Compressor, Idle Pulley

Group 2262—Control Valves

Control Valves,
Relief Valves

Group 2264—Reservoir, Filter, and Trap

Specifications—Air Dryer, Air Horn

Group 2265—Cylinders

Specifications—Master Brake Cylinder

SECTION 33—EXCAVATOR

Group 3315—Controls Linkage
Group 3340—Frames

Specifications—Pivot Pins and Bushings

Group 3360—Hydraulic System

Control Valve,
Cylinders, Axial
Pumps, Regulator, and
Hydraulic Reservoir

SECTION 43—SWING, ROTATION OR PIVOTING SYSTEM

Group 4360—Hydraulic System

Swing Motor

SECTION 9005—OPERATIONAL CHECK-OUT PROCEDURE

SECTION 9010—ENGINE OPERATION AND TEST

Group 05—Theory of Operation
Group 10—System Operational Check
Group 15—Diagnostic Information
Group 20—Adjustments
Group 25—Tests

SECTION 9015—ELECTRICAL SYSTEM OPERATION AND TEST

Group 05—Theory of Operation
Group 10—System Operational Check
Group 15—Diagnostic Information
Group 25—Tests

SECTION 9020—POWER TRAIN OPERATION AND TEST

Group 05—Theory of Operation
Group 10—System Operational Check
Group 15—Diagnostic Information
Group 20—Adjustments
Group 25—Tests

SECTION 9025—HYDRAULIC SYSTEM OPERATION AND TEST

Group 05—Theory of Operation
Group 10—System Operational Check
Group 15—Diagnostic Information
Group 20—Adjustments
Group 25—Tests

SECTION 9030—MISCELLANEOUS COMPONENTS/AIR SYSTEM OPERATION AND TEST

Group 05—Theory of Operation
Group 10—System Operational Check
Group 15—Diagnostic Information
Group 20—Adjustments
Group 25—Tests

SECTION 9031—HEATING AND AIR CONDITIONING OPERATION AND TEST

Group 05—Theory of Operation
Group 10—System Operational Check
Group 20—Adjustments
Group 25—Tests

SECTION 99—DEALER FABRICATED TOOLS

Group 9900—Dealer Fabricated Tools

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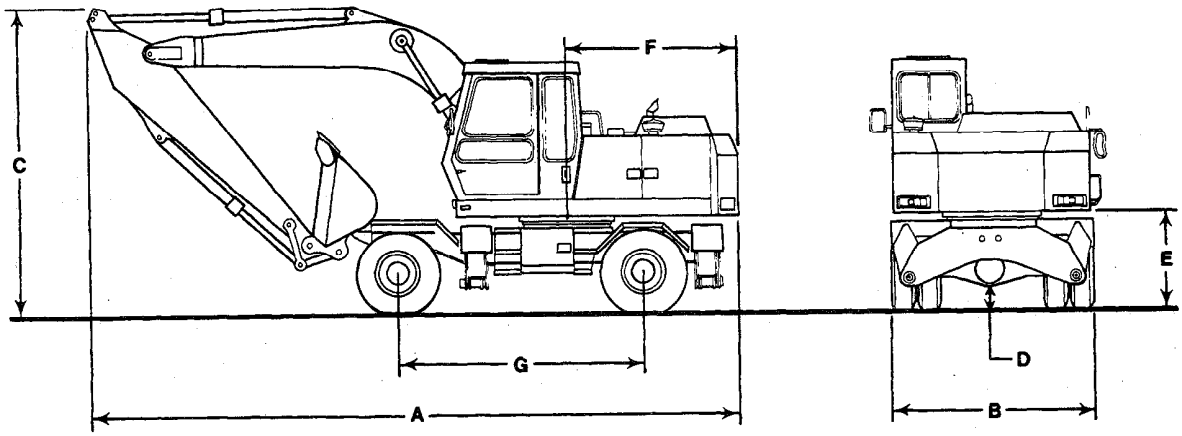
595 EXCAVATOR



A—Overall length	8.2 mm (26 ft 9 in.)
B—Overall width (stabilizers up)	2.5 m (8 ft 2 in.)
(stabilizers down)	3.4 m (11 ft 11 in.)
C—Overall height	3.8 m (12 ft 5 in.)
D—Minimum ground clearance	300 mm (1 ft)
E—Counterweight clearance	1.2 m (4 ft)
F—Rear end swing radius	2.3 m (7 ft 5 in.)
Rear end length	2.2 m (7 ft 1 in.)
G—Wheelbase	3.1 m (10 ft 2 in.)
Standard operating weight	16 830 kg (37 100 lb)
Dozer blade (if equipped):	
Height	610 mm (2 ft)
Width	2.5 m (8 ft 1 in.)
Depth of blade cut	85 mm (3.4 in)
Maximum blade to ground clearance	354 mm (1 ft 2 in.)

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DRAIN AND REFILL CAPACITIES

	Metric	U.S.
Fuel tank	258 L	68 gal
Cooling system	19 L	5 gal
Engine oil and filter	13 L	14 qt
Hydraulic reservoir	110 L	29 gal
Swing gear	9 kg	20 lb
Swing gearbox	5.3 L	5.6 qt
Transmission	5.3 L	5.6 qt
Front axle case	6.9 L	7.3 qt
Rear axle case	10.2 L	10.6 qt
Hub reduction	2.2 L	2.3 qt

05T;115 C2 2910186

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with PCSA and SAE standards. Except where otherwise noted, these specifications are based on a unit with full fuel tank, 80 kg [175 lb] operator, and standard equipment.)

Engine:
- John Deere 4-cylinder turbocharged diesel ..... 71 SAE net kW (95 hp)
- Bore and stroke ..... 106.5 x 127 mm (4.19 x 5 in.)
- No. of cylinders 4
- Piston displacement ..... 4.5 L (276 cu. in.)
- Lubrication ..... Pressure system with full-flow filter
- Cooling fan ..... Suction
- Electrical system ..... 24-volt with 42 amp alternator

Transmission ..... Constant mesh with high and low speed range

Drive system ..... 4 x 4 (low speed range) and 4 x 2 (high speed range)

Travel speeds:
- F1 Low ..... 0—4.5 km/h (0—2.8 mph)
- F1 High ..... 0—15 km/h (0—9.3 mph)
- F2 Low ..... 0.9 km/h (0—5.6 mph)
- F2 High ..... 0—30 km/h (0—18.6 mph)
- R (Low Only) ..... 0—4.5 km/h (0—2.8 mph)

Brakes:
- Service (foot pedal or switch) ..... Air over hydraulic brakes acting at each wheel, internal expanding shoe type
- Park (switch) ..... Spring actuated, air-released internal expanding shoe type

Axles:
- Front ..... Oscillating axle (14° total oscillation) with locking hydraulic cylinders
- Rear ..... Fixed to frame

Hydraulic system (open center, variable flow):
- Hydraulic system relief ..... 29 414 kPa (294 bar) (4266 psi)
- Travel circuit relief ..... 30 400 kPa (304 bar) (4409 psi)
- Boom circuit relief ..... 25 988 kPa (260 bar) (3770 psi)
- Arm circuit relief ..... 25 988 kPa (260 bar) (3770 psi)
- Bucket circuit relief ..... 25 988 kPa (260 bar) (3770 psi)
- Swing motor circuit relief ..... 20 588 kPa (206 bar) (2986 psi)
- Stabilizers circuit relief ..... 24 517 kPa (245 bar) (3556 psi)

Main hydraulic pumps (two variable-displacement axial piston):
- Pressure setting ..... 29 420 kPa (294 bar) (4267 psi)
- Maximum oil flow ..... 2 x 183 L/min (2 x 48.3 gpm)

Pilot pump (gear pump):
- Pressure setting ..... 3628 kPa (36 bar) (526 psi)
- Maximum oil flow ..... 9.6 L/min (2.54 gpm)

Steering pump (gear pump):
- Pressure setting ..... 12 258 kpa (123 bar) (1778 psi)
- Maximum oil flow ..... 31.6 L/min (8.35 gpm)

05T;115 C3 300186

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

CHECK WHEEL CAP SCREW TORQUE

SPECIFICATIONS

Wheel cap screw torque ..... 441—541 N·m
(325—399 lb-ft)

04T;90 C18 230186

Bolt Tightening Torque
Bolts are classified into three kinds according to their materials.

T-BOLT

H-BOLT

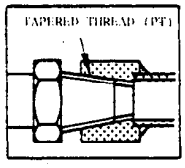
M-BOLT

Unit: Nm (lb-ft)

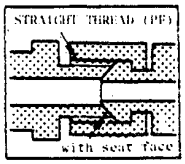
Nominal dia(mm) / Kind	8	10	12	14	16	18	20	22	24	27	30	33	36
T-BOLT	29 (21)	63 (46)	108 (80)	176 (130)	265 (195)	392 (289)	539 (398)	735 (542)	931 (687)	1372 (1012)	1911 (1410)	2548 (1880)	3136 (2314)
H-BOLT	20 (15)	45 (33)	88 (65)	137 (101)	206 (152)	294 (217)	392 (289)	539 (398)	686 (506)	1029 (759)	1421 (1048)	1911 (1410)	2401 (1772)
M-BOLT	10 (7)	20 (15)	34 (25)	54 (40)	78 (58)	118 (87)	167 (123)	216 (159)	274 (202)	392 (289)	539 (398)	735 (542)	931 (687)

(Tolerance: ±10%)

Flared Type Joint Tightening Torque



TAPERED THREAD



STRAIGHT THREAD
(with seat face)

Unit: Nm (lb-ft)

THREAD (inch) / KIND OF THREAD	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
TAPERED THREAD	15 (11)	20 (15)	29 (21)	49 (36)	69 (51)	108 (80)	157 (116)	196 (145)	255 (188)
STRAIGHT THREAD	—	45 (33)	69 (51)	93 (69)	176 (130)	206 (152)	343 (253)	539 (398)	588 (434)

(Tolerance: ±10%)

Note: If female thread is of cast iron (in case of control valves, brake valve motors etc.), the torque must be reduced by about 10%.

018;T95773 04T;90 C19 290186

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 200286

HYDRAULIC FLANGED CONNECTIONS (HIGH PRESSURE SERIES)

1. Inspect the sealing surfaces for nicks or scratches, roughness or out-of-flat condition. Scratches cause leaks. Roughness causes seal wear. Out-of-flat causes seal extrusion. If these defects cannot be polished out, replace the component.

2. Install the correct O-ring (and backup washer if required) into the groove using petroleum jelly to hold it in place.

3. For split flange; loosely assemble split flange halves, being sure that the split is centrally located and perpendicular to the port. Hand tighten cap screws to hold parts in place. Do not pinch O-ring.

4. For single piece flange; put hydraulic line in the center of the flange and install four cap screws. With the flange centrally located on the port, hand tighten cap screws to hold it in place. Do not pinch O-ring.

5. For both single piece flange and split flange, be sure the components are properly positioned and cap screws are hand tight. Tighten one cap screw, then tighten the diagonally opposite cap screw. Tighten the two remaining cap screws. Tighten all cap screws within the specified limits shown in the chart.

DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT overtighten.

Metric Standard Thread

Thread	N·m	(lb-ft)
M6	12	9
M8	30	22
M10	57	42
M12	95	70
M14	157	116
M16	217	160
M18	334	246
M20	431	318

NOTE: Tolerance ± 10%. The torques given are enough for the given size connection with the recommended working pressure.
Increasing cap screw torque beyond these amounts will result in flange and cap screw bending and connection failures.

T82;EXMA BY 110684