

521D/XT

Articulated Wheel Loader



ENGINE

Model..... Case 4TAA-390
 Type..... 4-stroke, turbocharged
 Cylinders..... 4
 Bore/Stroke 4.02" x 4.72"
 (102 x 120 mm)
 Displacement..... 238 in³ (3.9 L)
 Fuel injection..... Direct
 Fuel..... #2 Diesel
 Fuel filter..... Replaceable, full flow
 spin-on cartridge
 Air filter..... Dry type element
 w/warning restriction indicator
 Radiator
 Core type..... In-line 9 fins/in
 Rows of tubes..... 5
 Fan
 Style..... 6 blade puller
 Diameter..... 28" (711 mm)
 Water pump
 Style..... Integral
 Engine oil
 Pump..... Deep sump plate cooler
 with pressurized
 under-piston nozzles
 Pump operating angle ratings
 Side-to-side..... Rated 45°
 Fore and aft..... Rated 45°
 Oil filtration..... Replaceable,
 full flow spin-on cartridge
 Engine speeds (rpm)
 Rated speed, full load..... 2000
 Low idle..... 1020 - 1080
 High idle, no load..... 2220 - 2280
 Horsepower
 Gross..... 118 (88 kW) @ 2000 rpm
 Net..... 110 (82 kW) @ 2000 rpm
 Peak torque @ 1400 rpm
 Gross..... 355 lb-ft (481 N·m)
 Net 345 lb-ft (468 N·m)
 Torque rise..... 14.5%

NOTE: Gross horsepower and torque per SAE J1995. Net horsepower and torque per SAE J1349.

DRIVETRAIN

Transmission..... 4F/3R Proportional
 w/Electronic Control Module
 torque sensing autoshift/manual
 shift and modulation
 Gears..... Helical cut
 Gear ratios Forward Reverse
 1st..... 4.012..... 3.804
 2nd..... 2.024..... 1.919
 3rd..... 1.088..... 1.031
 4th..... 0.619..... NA
 Torque converter
 Stall ratio..... 2.549:1
 Differential..... Limited slip
 w/45% transfer on front
 and rear axles
 Rear axle oscillation..... 24° total
 Front and rear axle
 Differential ratio..... 3.0
 Planetary ratio..... 6.4
 Final axle ratio..... 19.2
 Planetaries..... Outboard
 Service brakes..... Hydraulically
 actuated maintenance-free
 multiple wet disc w/accumulator
 to all four wheels
 Brake surface area.... 184 in² per hub
 (0.119 m²)
 Parking brakes..... Spring-applied
 hydraulic release disc on
 transmission output shaft
 Travel speeds – mph (km/h)
 w/17.5x25 L2/L3 Tires
 Forward Reverse
 1st..... 4.3 (6.9) 4.5 (7.3)
 2nd 8.4 (13.5) 8.8 (14.2)
 3rd 14.9 (23.9) ... 15.6 (25.1)
 4th..... 24.1 (38.8)..... NA

NOTE: Travel speeds at full engine throttle.

ELECTRICAL

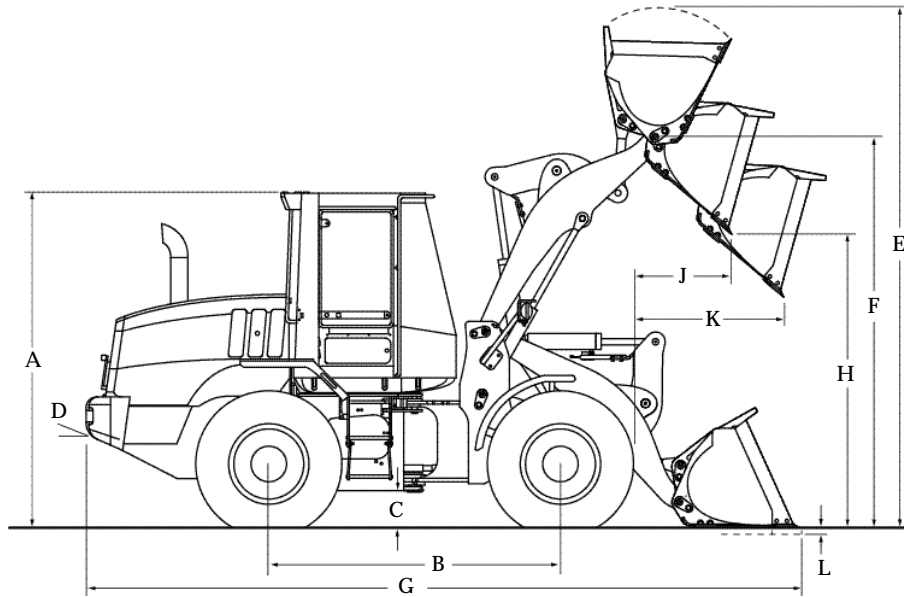
Voltage..... 24 Volts, negative ground
 Alternator..... 45 amp
 Batteries..... (2) 12 Volt

HYDRAULICS

Pump (steering/implement) ... Closed
 centered pressure/flow
 compensated
 Variable displacement..... 4.33 in³/rev
 35.4 gpm @ 2000 rpm @ 2750 psi
 (134 L/min @ 2000 rpm
 @ 18961 kPa)
 Loader control valve... Closed-center,
 sectional 2, 3 or 4-spool with
 pilot control for lift, tilt
 and auxiliary hydraulics,
 electromagnetic detents in
 float, raise and rollback
 Loader auxiliary
 Steering..... Hydraulic orbital
 center-pivot articulating
 w/on-demand oil flow
 Main relief pressure..... 3625 psi
 (25 000 kPa)
 Filtration..... 10-micron,
 full flow replaceable cartridges
 on return line, condition indicator
 light for filter

CYLINDERS

Lift cylinder
 Bore diameter..... 4.0" (102 mm)
 Rod diameter 2.25" (57 mm)
 Stroke 30.82" (783 mm)
 Dump cylinder (Z-Bar)
 Bore diameter..... 4.5" (114 mm)
 Rod diameter 2.5" (64 mm)
 Stroke 20.84" (529 mm)
 Dump cylinders (XT)
 Bore diameter..... 3.75" (95 mm)
 Rod diameter..... 2.25" (57 mm)
 Stroke..... 36.32" (923 mm)



DIMENSIONS

Height to –	
A. Top of ROPS cab.....	124.9" (3173 mm)
Drawbar.....	39.5" (1.0 m)
B. Wheelbase.....	108.3" (2750 mm)
C. Ground clearance.....	14.9" (377 mm)
D. Angle of departure.....	34°
Width –	
Overall* w/o bucket.....	92.1" (2339 mm)
Centerline tread.....	72.8" (1.85 m)
Turning radius* – outside.....	194.8" (4947 mm)
Turning angle –	
From center	40°
Total angle.....	80°
Rear axle oscillation, total.....	24°

NOTE: *Dimensions taken with 17.5x25 L2/L3XHATL tires. Additional dimensions on pages 3 & 4.

WEIGHT ADJUSTMENTS

Select Options	Weight Adjustment	Tipping Load Adjustment Straight	Tipping Load Adjustment 40° Turn
ROPS canopy.....	-295 lb (-134 kg).....	-268 lb (-121 kg).....	-237 lb (-108 kg)
15.5x25 12 ply L2 tires.....	-244 lb (-111 kg).....	-231 lb (-105 kg).....	-488 lb (-222 kg)
15.5x25 12 ply L3 tires.....	-104 lb (-47 kg).....	-29 lb (-13 kg).....	-110 lb (-50 kg)
15.5R25 XTLATL tires	-118 lb (-54 kg).....	-125 lb (-57 kg).....	-104 lb (-47 kg)
15.5R25 XHA TL tires.....	+58 lb (+26 kg).....	+52 lb (+24 kg)	+3 lb (+2 kg)
17.5x25 12 ply L2 tires.....	-140 lb (-64 kg).....	-128 lb (-58 kg).....	-96 lb (-43 kg)
17.5x25 12 ply L3 tires	+68 lb (+31 kg)	+64 lb (+29 kg).....	+58 lb (+26 kg)
17.5R25 XHA TL tires.....	+224 lb (+101 kg)	+209 lb (+95 kg).....	+189 lb (+86 kg)

NOTE: **Unit equipped with Z-Bar loader arms, 2.0 yd³ (1.53 m³) general purpose pin-on bucket w/ bolt-on edge, 17.5R25 16 ply XTLAMichelin tires, ROPS cab with heater, standard counterweight, standard batteries, front and rear fenders, full fuel and 175 lb (79 kg) operator. Adjust select options from rated weight.

PERFORMANCE DATA

521D Z-Bar	2.5 yd ³ GP (1.91 m ³) Bucket w/Bolt-on Edge	2.25 yd ³ GP (1.72 m ³) Bucket w/Bolt-on Edge	2.25 yd ³ GP (1.72 m ³) Bucket w/Teeth & Segment
SAE bucket capacity – struck.....	2.12 yd ³ (1.62 m ³)	1.92 yd ³ (1.47 m ³)	1.92 yd ³ (1.47 m ³)
Heaped.....	2.5 yd ³ (1.91 m ³)	2.25 yd ³ (1.72 m ³)	2.25 yd ³ (1.72 m ³)
Bucket width – outside	97.2" (2468 mm)	97.2" (2468 mm)	97.2" (2468 mm)
Bucket weight.....	1,577 lb (715 kg)	1,639 lb (744 kg)	1,707 lb (774 kg)
E. Operating height – fully raised w/spillguard	186.6" (4740 mm)	184.5" (4686 mm)	184.5" (4686 mm)
F. Hinge pin height – fully raised.....	142.1" (3610 mm)	142.1" (3610 mm)	142.1" (3610 mm)
G. Overall length – bucket level on ground.....	264.0" (6707 mm)	261.3" (6636 mm)	267.1" (6786 mm)
Dump angle – fully raised.....	50°	50°	50°
H. Dump height – fully raised, 45° dump.....	105.2" (2672 mm)	107" (2719 mm)	103.2" (2621 mm)
J. Bucket reach – fully raised, 45° dump.....	41.6" (1056 mm)	39.9" (1013 mm)	43.8" (1114 mm)
K. Bucket reach – 7'0" (2.13 m) height, 45° dump	57.6" (1463 mm)	56.9" (1445 mm)	59" (1498 mm)
Operating load – SAE.....	7,115 lb (3227 kg)	7,146 lb (3242 kg)	7,103 lb (3222 kg)
Maximum material density – SAE	2,846 lb/yd ³ (1688 kg/m ³)	3,176 lb/yd ³ (1884 kg/m ³)	3,157 lb/yd ³ (1873 kg/m ³)
Tipping load – SAE			
Straight.....	16,979 lb (7701 kg)	17,060 lb (7738 kg)	16,973 lb (7699 kg)
40° turn.....	14,229 lb (6454 kg)	14,293 lb (6483 kg)	14,206 lb (6444 kg)
Lift capacity –			
Full height.....	12,313 lb (5585 kg)	12,251 lb (5557 kg)	12,184 lb (5526 kg)
Maximum reach.....	17,099 lb (7756 kg)	17,049 lb (7733 kg)	16,980 lb (7702 kg)
Ground.....	20,741 lb (9408 kg)	21,853 lb (9912 kg)	21,844 lb (9908 kg)
Breakout force w/tilt cylinder.....	18,197 lb (8254 kg)	19,392 lb (8796 kg)	19,322 lb (8764 kg)
Maximum rollback –			
Ground.....	40°	40°	40°
Carry position.....	43°	43°	43°
@ Maximum reach.....	52°	52°	52°
@ Full height	54°	54°	54°
L. Dig depth.....	3.0" (76 mm)	2.7" (68 mm)	3.1" (78 mm)
Maximum grading angle w/bucket – back dragging.....	61°	60°	61°
Loader clearance circle.....	431.3" (10 956 mm)	429.7" (10 915 mm)	433.2" (11 003 mm)

521D XT	2.0 yd ³ GP (1.50 m ³) Bucket w/Edge**
E. Operating height – fully raised w/spillguard.....	194.5" (4940 mm)
F. Hinge pin height – fully raised.....	148.4" (3769 mm)
G. Overall length – bucket level on ground.....	270.0" (6857 mm)
Dump angle – fully raised.....	50°
H. Dump height – fully raised, 45° dump.....	113" (2871 mm)
J. Bucket reach – fully raised, 45° dump.....	54.5" (1383 mm)
K. Bucket reach – 7'0" (2.13 m) height, 45° dump.....	70.6" (1793 mm)
Operating load – SAE.....	5,857 lb (2657 kg)
Maximum material density – SAE.....	2,763 lb/yd ³ (1639 kg/m ³)
Tipping load – SAE	
Straight.....	14,061 lb (6378 kg)
40° turn.....	11,714 lb (5313 kg)
Lift capacity –	
Full height.....	11,765 lb (5337 kg)
Maximum reach.....	15,411 lb (6990 kg)
Ground	24,365 lb (11 052 kg)
Breakout force – dump cylinder	23,190 lb (10 519 kg)
Loader clearance circle	439.4" (11 161 mm)

2.0 yd³ GP (1.50 m³) Bucket w/Bolt-on Edge	2.0 yd³ GP (1.50 m³) Bucket w/Teeth & Segments
..... 1.70 yd ³ (1.3 m ³).....	..... 1.70 yd ³ (1.3 m ³).....
..... 2.0 yd ³ (1.53 m ³).....	..... 2.0 yd ³ (1.53 m ³).....
..... 97.2" (2468 mm).....	..... 97.2" (2468 mm).....
..... 1,555 lb (705 kg).....	..... 1,622 lb (736 kg).....
..... 181.4" (4606 mm).....	..... 181.3" (4606 mm).....
..... 142.1" (3610 mm).....	..... 142.1" (3610 mm).....
..... 258.3" (6561 mm).....	..... 264.2" (6710 mm).....
..... 50°.....	..... 50°.....
..... 109.0" (2768 mm).....	..... 105.2" (2670 mm).....
..... 37.9" (963 mm).....	..... 41.9" (1064 mm).....
..... 55.9" (1421 mm).....	..... 57.8" (1469 mm).....
..... 7,271 lb (3298 kg).....	..... 7,228 lb (3279 kg).....
..... 3,635 lb/yd ³ (2157 kg/m ³).....	..... 3,614 lb/yd ³ (2144 kg/m ³).....
..... 17,355 lb (7863 kg).....	..... 17,250 lb (7824 kg).....
..... 14,541 lb (6596 kg).....	..... 14,456 lb (6557 kg).....
..... 12,338 lb (5596 kg).....	..... 12,270 lb (5566 kg).....
..... 17,152 lb (7780 kg).....	..... 17,083 lb (7749 kg).....
..... 23,630 lb (10 719 kg).....	..... 26,633 lb (10 720 kg).....
..... 20,951 lb (9503 kg).....	..... 20,884 lb (9473 kg).....
..... 40°.....	..... 40°.....
..... 43°.....	..... 43°.....
..... 52°.....	..... 52°.....
..... 54°.....	..... 54°.....
..... 2.4" (62 mm).....	..... 2.9" (73 mm).....
..... 60°.....	..... 61°.....
..... 428.0" (10 872 mm).....	..... 431.4" (10 958 mm).....

NOTE: *XT lift arm with buckets for JRB 416 coupler. **XT lift arm with buckets for ACS Pro Series 2000® size 30HD coupler. Performance data unit equipped with 17.5-25 12PR L2 tires, ROPS cab w/heater and A/C, standard counterweight, standard batteries, front and rear fenders, full fuel and 175 lb (79 kg) operator. Specifications per SAE J732, J1234, J695, J742 and J818.

INSTRUMENTATION

Electronic Information Center
Displays/Gauges –
Speedometer
Tachometer
Direction selected F-N-R
Transmission modes –
Auto shift/Manual shift
Gear selected
Gear position
Turn signal indicator
Engine coolant temperature
Engine oil pressure
Fuel level
Transmission oil temperature
Hydraulic oil temperature
Voltmeter
Hourmeter
Indicator lights –
Beacon*
Work lights
Loader control lockout
Low coolant
Brake pressure
Master indicator
Secondary steering*
Parking brake
Air conditioning*
Hydraulic oil filter
Transmission filter
Air filter
Audible alarms –
Caution alarm
Critical alarm
Backup alarm
Horn

NOTE: *If equipped with option.

OPERATOR ENVIRONMENT

ROPS canopy
Key start
Articulated power steering
w/tilt column
Fully adjustable, vinyl
suspension seat
Foot throttle
1-Lever loader control w/wrist rest
Cup holder
Coat hook
(2) Interior rearview mirrors
2" (51 mm) retractable seat belt
Storage tray behind seat
Lunch box retainer strap

LOADER

Z-bar loader linkage
Single control for lift and tilt
Positive hold float
Automatic return-to-dig
Automatic height control
Automatic return-to-travel
Automatic self-leveling on XT
Brake pedal transmission disconnect
Bucket position indicator on bucket
(Z bar only)

CYCLE TIME

Raise w/rated bucket load..... 5.6 sec
Dump w/rated bucket load
Z-Bar..... 1.1 sec
XT..... 1.1 sec
Lower (empty)
Power down 3.7 sec
Float down..... 2.7 sec

SERVICE CAPACITIES

Fuel tank..... 50 gal (189 L)
Hydraulic system
Total 30 gal (113.6 L)
Reservoir..... 15 gal (56.8 L)
Transmission
Service w/filter..... 2 gal (7.6 L)
Front and rear axle
Total axle (each)..... 22 qt (20.8 L)
Engine oil w/filter 12 qt (11.3 L)
Cooling system (-40)... 4.8 gal (18.2 L)

OPERATING WEIGHTS

Z-Bar

Unit equipped with ROPS
cab with heater and A/C, standard
counterweight, 17.5 R25 XTLA
Michelin tires, front and
rear fenders, 2.00 yd³ (1.52 m³)
general purpose loader bucket
w/edge, full fuel, 175 lb (79 kg)
operator 21,603 lb (9799 kg)

XT

Unit equipped with ROPS
cab with heater and A/C,
standard counterweight,
17.5 R25 XTLA Michelin tires,
front and rear fenders,
2.00 yd³ (1.52 m³) ACS loader
bucket w/edge and coupler,
full fuel, 175 lb (79 kg)
operator 21,670 lb (9829 kg)

STANDARD EQUIPMENT

OPERATOR'S COMPARTMENT

See page 5

ENGINE

Case 4TAA-390 diesel
Turbocharger
Charge air cooling
Automatic fan belt tensioner
Integral engine oil cooling
Fuel filter w/water trap
Dual element air cleaner
45 amp alternator
(2) 700 CCA12-volt batteries
Liquid-cooled radiator
Non spark-arresting muffler

LOADER

See page 5

DRIVETRAIN

4-wheel drive
4F/3R Selectable autoshift/manual
shift transmission

Electronic Control Module –
Programmable, computer
controlled proportional shifting
with programmable gear selection
Onboard diagnostics
Single lever electronic shift control
F/N/R switch in loader
control handle
Downshift button
Torque converter
Outboard planetary axles
Limited-slip differentials
Transmission oil cooler
Brake pedal transmission disconnect
Hydraulic wet disc brakes
Spring-applied hydraulic release
parking brake
Limp-Home Mode
Lubed-for-life drive shaft

HYDRAULICS

2-spool loader control valve
Flow-amplified, wide-angle steering
(7) Diagnostic quick couplers

OTHER

Front and rear fenders
Lights –
2 Front driving headlights
(high/low beam)
2 Front flood
2 Stop/tail lights and backup light
2 Rear flood
Front and rear turn signal/flash
Counterweight
Drawbar hitch
Articulation locking bar
Lift arm locking bar
Lift and tie-down points – front/rear
Backup alarm
Remote drain points

OPTIONAL EQUIPMENT

OPERATOR'S COMPARTMENT

Cab with –
Pressurized, air filtering
Anti-glare window strip and visor
Defroster
Cloth-covered mechanical
suspension seat
Side windows, partial/fully opening
Dome light
Wipers, rear and intermittent front
Windshield washers, front and rear
Rubber floor mat
Cloth-covered air-suspension seat
3" (76 mm) retractable seat belt
Sound Shield noise suppression
package
Cab heater
Cab air-conditioning w/heater
Radio or radio/cassette
Radio-ready (12 or 24-volt)
Auxiliary power (12-volt)
Lighter (24-volt)

Rotating beacon
External rearview mirrors
RH steps and platform
Conventional (open-center) axles

ENGINE

Cold weather ether starting aids
Engine block heater

LOADER

XT Tool-Carrier Loader Arms
Hydraulic attachment coupler
Attachment auxiliary hydraulics
Loader controls –
3-spool, 2-lever
Buckets (see page 3 & 4)
Loader coupler systems

HYDRAULICS

Auxiliary hydraulics
Ride Control
Secondary steering

3 or 4-spool loader valves with 2 or
3-lever loader control
Hydraulic reversing fan

TIRES

15.5 R25 12PR XTLA (dirt)
15.5-25 12PR L2 (dirt)
15.5-25 12PR L3 (rock)
15.5-25 12PR XHA (rock)
17.5 R25 VUT (dirt)
17.5 R25 12PR XTLA (dirt)
17.5 R25 VMT (rock)
17.5-25 12PR L2 bias (dirt/traction)
17.5-25 12PR L3 bias (rock)
17.5-R25 XTLA radial (dirt/traction)
17.5-R25 XHA radial (rock)

OTHER

Special paint
Full coverage fenders

NOTE: All specifications are stated in
accordance with SAE standards or
Recommended Practices, where applicable.

IMPORTANT: Case Corporation reserves the
right to change these specifications without
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relating to such change.

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