



TIER II CERTIFIED

590 Super M Series 2 Loader/Backhoe

ENGINE

Model..... Case Family III
445T/M2 diesel, Tier II certified
Type..... 4-stroke, turbocharged
Cylinders..... 4
Bore/Stroke..... 4.09" x 5.19"
(104 x 132 mm)
Displacement 272 in³ (4.5 L)
Fuel injection..... Direct
Fuel..... Diesel
Fuel filter w/water trap
Air intake Cross-flow
Cooling..... Liquid
Engine speeds* (rpm)
Rated speed, full load 2200
Low idle..... 800 - 900
High idle, no load 2380 - 2480
Horsepower
Gross 99 (74 kW) @ 2200 rpm
Net 98 (73 kW) @ 2200 rpm
Maximum torque @ 1400 rpm
Gross..... 294 lb-ft (398 N·m)
Net 289 lb-ft (392 N·m)
Torque rise at rated speed 24%

NOTE: *Engine speeds with standard transmission. Meets federal emission regulations.

ENGINE COOLING

Radiator
Core type Square wave
Core size area..... 487 in² (.315 m²)
Rows of tubes 5
Fan
Style Viscous 9 blade suction
Diameter 19.2" (488 mm)
Ratio 1.35:1
Water pump
Style Integral
Engine oil
Pump..... Deep sump plate cooler
with pressurized
under-piston nozzles
Pump operating angle ratings
Side-to-side Rated 35°
Fore and aft..... Rated 35°
Oil filtration..... Replaceable,
full-flow cartridge

TIRES

Front
2WD - 14.5/75 x 16.1, 10-ply
4WD - 14 x 17.5, 10-ply
Rear
2/4WD - 21L x 24, 10-ply

POWERTRAIN

Transmission 4-speed
synchromesh with hydraulically
actuated clutches and electric F/R
shuttle control, clutch disconnect
buttons on the transmission shifter
and loader control lever
Gear ratios Forward Reverse
1st..... 5.491 4.550
2nd 3.043 2.522
3rd 1.584 1.313
4th 0.793 0.657
Torque converter
Ratio 2.63
Differential lock..... On-the-go
push-button activation
Front 4WD axle
Differential ratio 2.308
Planetary hub ratio 6.0
Total reduction ratio 13.846
Rear axle
Differential ratio 2.75
Planetary hub ratio 6.0
Total reduction ratio 16.5
Service brakes.. Individually applied,
hydraulically actuated,
maintenance-free, self-adjusting,
inboard mounted, wet disc
Disc area 59.6 in² (.038 m²)
Parking brakes..... Mechanically
applied with electric activation
sensors at each brake
Travel speeds - mph (km/h)
1st 2nd 3rd 4th
Forward 3.5 6.7 13.5 25.5
(5.7) (10.8) (21.7) (41.0)
Reverse..... 4.3 8.1 16.3 30.8
(6.9) (13.0) (26.2) (49.6)

NOTE: Travel speeds at 2324 engine rpm.

ELECTRICAL

Voltage 12 volts, negative ground
Alternator 90 amp
Battery..... 850 cold-cranking amps
Optional batteries (2) 600
cold-cranking amps
Power plugs..... (2) 30 amps ea.

HYDRAULICS

Pump Gear-type tandem,
transmission driven
Main relief pressure
3050 + 50 - 50 psi @ 42.5 gpm
(210 + 3 - 3 bar @ 161 L/min)
Filtration..... 7-micron,
full flow replaceable
cartridge on return line,
condition indicator light for filter
Oil cooler Heavy-duty
Loader flow @ rated engine rpm
31.5 gpm @ 3050 psi
(121 L/min @ 210 bar)
Loader control valve Monoblock
single lever control for
lift, tilt and auxiliary hydraulics,
positive hold float and
return-to-dig
Loader auxiliary hydraulics
with full loader flow available
14 to 31.5 gpm
(53 to 119 L/min)
Backhoe flow @ rated engine rpm
42.5 gpm @ 3050 psi
(161 L/min @ 210 bar)

Manual Backhoe Controls

Backhoe Control Valve... Monoblock
open-center, parallel circuits
Boom and dipper, with pilot operated
checks.

Pilot Backhoe Controls

Backhoe Control Valve..... Sectional
closed-center with inlet compensator
and circuits in parallel.

Backhoe auxiliary hydraulics.....

Uni-directional flow, adjustable
variable flow from 0 to 36 gpm
(136L/min)

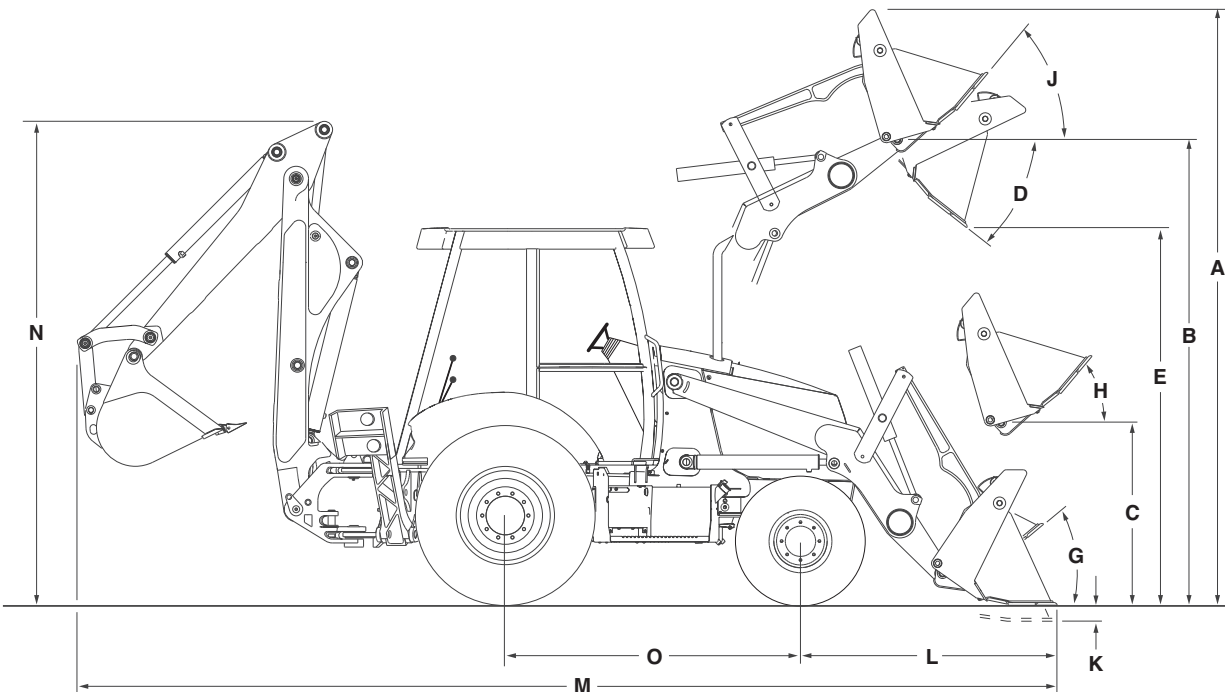
Control Operation

Manual... Foot switch activated
PilotButton on left joystick

Bi-Directional flow, variable flow from
0 to 42.5 gpm
(161 L/min) @ rated engine rpm

Control operation

Manual Hand lever
PilotButtons on left joystick



LOADER DIMENSIONS

General Purpose Bucket 4 IN 1[®] Bucket

| | | |
|--|--------------------------|-----------------------|
| A. Overall operating height – fully raised | 14'2" (4.32 m) | 14'6" (4.43 m) |
| Height to – | | |
| B. Bucket hinge pin fully raised..... | 11'5" (3.47 m)..... | 11'5" (3.47 m) |
| C. Bucket hinge pin @ SAE carry | 13.7" (349 mm) | 14.9" (379 mm) |
| D. Dump angle @ full height..... | 45° | 45° |
| E. Dump clearance @ full height, 45° dump – | | |
| Bucket..... | 9'0" (2.75 m) | 9'2" (2.78 m) |
| Clam open..... | NA | 9'10" (3.0 m) |
| F. Dump reach @ full height, 45° dump – | | |
| Bucket | 27.5" (699 mm) | 25.9" (659 mm) |
| Clam open..... | NA | 11.5" (293 mm) |
| Bucket rollback – | | |
| G. @ groundline..... | 40° | 40° |
| H. @ SAE carry | 45° | 45° |
| J. @ full height..... | Adjustable | Adjustable |
| K. Digging depth below grade – | | |
| Bucket flat..... | 3.8" (96 mm) | 4.3" (109 mm) |
| Clam open (dozing) | NA | 1.7" (42 mm) |
| L. Reach from front axle centerline – bucket on ground | 77.6" (1.97 m)..... | 75.2" (1.91 m) |
| Lift capacity to full height | 7,327 lb (3323 kg) | 7,437 lb (3373 kg) |
| Breakout force – | | |
| Lift cylinders..... | 10,729 lbf (47 725 N) .. | 10,294 lbf (45 790 N) |
| Dump cylinders | 10,980 lbf (48 841 N) .. | 12,004 lbf (53 396 N) |
| Bucket cutting edge width..... | 93" (2.36 m)..... | 93" (2.36 m) |
| Maximum grading angle | 116° | 116° |
| Maximum clam opening..... | NA | 38.3" (972 mm) |
| Moldboard height | NA | 36.8" (934 mm) |
| Raising time to full height | 4.7 sec..... | 4.7 sec |
| Bucket dumping time..... | 1.2 sec..... | 1.2 sec |
| Lowering time – | | |
| Power down | 2.8 sec..... | 2.8 sec |
| Return-to-dig..... | 3.1 sec..... | 3.1 sec |
| Clam – | | |
| Open time | NA..... | 2.3 sec |
| Close time | NA..... | 2.3 sec |

NOTE: Loader dimensions taken with 4WD.

DIMENSIONS

| | Standard Backhoe | | Extendahoe® | |
|--|------------------|----------------|----------------|----------------|
| | | | Retracted | Extended |
| M. Overall transport length – | | | | |
| General purpose bucket..... | 23'7" (7.13 m) | 23'7" (7.19 m) | NA | NA |
| 4 IN 1® bucket..... | 22'7" (6.88 m) | 22'8" (6.91 m) | NA | NA |
| Overall transport width..... | 7'9" (2.36 m) | 7'9" (2.36 m) | NA | NA |
| Height – | | | | |
| To top of canopy..... | 8'11" (2.73 m) | 8'11" (2.73 m) | 8'11" (2.73 m) | 8'11" (2.73 m) |
| To top of cab..... | 8'10" (2.69 m) | 8'10" (2.69 m) | 8'10" (2.69 m) | 8'10" (2.69 m) |
| To top of exhaust stack..... | 8'7" (2.62 m) | 8'7" (2.62 m) | 8'7" (2.62 m) | 8'7" (2.62 m) |
| N. Transport..... | 11'2" (3.41 m) | 11'7" (3.54 m) | NA | NA |
| Ground clearance at backhoe frame..... | 14.6" (371 mm) | 14.8" (375 mm) | 14.8" (375 mm) | 14.8" (375 mm) |
| Angle of departure..... | 23° | 23° | 23° | 23° |
| Front wheel tread – | | | | |
| 2WD..... | 72.6" (1.84 m) | 72.6" (1.84 m) | NA | NA |
| 4WD..... | 73.4" (1.86 m) | 73.4" (1.86 m) | NA | NA |
| Rear wheel tread..... | 69.9" (1.78 m) | 69.9" (1.78 m) | NA | NA |
| O. Wheelbase – | | | | |
| 2WD..... | 84" (2.13 m) | 84" (2.13 m) | NA | NA |
| 4WD..... | 84.5" (2.15 m) | 84.5" (2.15 m) | NA | NA |

NOTE: Dimensions taken with 21L x 24 rear tires and 14.5/75L x 16.1 front tires except that data marked 4WD is taken with 14 x 17.5 front tires.

CYLINDERS

| | Bore Diameter | Rod Diameter | Stroke |
|-----------------------|-----------------|-----------------|------------------|
| Loader | | | |
| Lift (2)..... | 3.5" (89 mm) | 1.75" (44.5 mm) | 30.2" (766 mm) |
| Bucket (2)..... | 3.25" (83 mm) | 1.75" (44.5 mm) | 20.6" (522 mm) |
| 4 IN 1® clam (2)..... | 3.0" (76 mm) | 1.75" (44.5 mm) | 9.1" (231 mm) |
| Backhoe | | | |
| Boom..... | 5.5" (139.7 mm) | 2.5" (63 mm) | 38.4" (976 mm) |
| Dipperstick..... | 5.5" (139.7 mm) | 2.75" (69.9 mm) | 22.2" (564.2 mm) |
| Bucket..... | 3.75" (95 mm) | 2.75" (69.9 mm) | 34.3" (872 mm) |
| Extendahoe®..... | 3.0" (76 mm) | 1.75" (44.5 mm) | 48.0" (1.22 m) |
| Swing (2)..... | 4.0" (101.6 mm) | 2.0" (50.8 mm) | 11.5" (292 mm) |
| Stabilizer (2)..... | 5.0" (127 mm) | 2.25" (57.2 mm) | 20.4" (519.4 mm) |
| Steering | | | |
| 2WD..... | 2.75" (69.9 mm) | 1.5" (38.1 mm) | 6.7" (170 mm) |
| 4WD..... | 2.48" (63 mm) | 1.5" (38.1 mm) | 9.53" (242 mm) |

BACKHOE LIFT CAPACITIES

Boom and Dipper Lift Capacities are rated per SAE J31 and are 87% of the maximum hydraulic lift force available with the specified options.

| Boom Lift | Standard Backhoe | | Extendahoe® | | | |
|--------------------|-------------------------------|---------------------------------|-------------------------------|---------------------------------|-------------------------------|---------------------------------|
| | Distance from swing pivot (m) | Backhoe lift capacity - lb (kg) | Retracted | Retracted | Extended | Extended |
| | | | Distance from swing pivot (m) | Backhoe lift capacity - lb (kg) | Distance from swing pivot (m) | Backhoe lift capacity - lb (kg) |
| +18' (5.48 m) | | | | | | 1,940 (880) |
| +16' (4.87 m) | | 2,870 (1302) | | | 13'6" (4.11) | 2,200 (998) |
| +14' (4.27 m) | 9'9" (2.97) | 3,590 (1628) | 10'8" (3.25) | 3,310 (1501) | 15'5" (4.70) | 2,300 (1043) |
| +12' (3.66 m) | 12'1" (3.69) | 3,670 (1665) | 12'9" (3.89) | 3,280 (1488) | 16'10" (5.13) | 2,420 (1098) |
| +10' (3.05 m) | 13'8" (4.16) | 3,670 (1665) | 14'2" (4.32) | 3,410 (1547) | 17'11" (5.46) | 2,370 (1075) |
| +8' (2.44 m) | 14'8" (4.47) | 3,620 (1642) | 15'2" (4.62) | 3,330 (1510) | 18'9" (5.72) | 2,420 (1098) |
| +6' (1.83 m) | 15'3" (4.65) | 3,550 (1610) | 15'11" (4.85) | 3,390 (1538) | 19'3" (5.87) | 2,420 (1098) |
| +4' (1.22 m) | 15'8" (4.77) | 3,460 (1569) | 16'3" (4.96) | 3,280 (1488) | 19'7" (5.97) | 2,310 (1048) |
| +2' (0.61 m) | 15'10" (4.82) | 3,370 (1529) | 16'4" (4.98) | 3,210 (1456) | 19'8" (5.99) | 2,290 (1039) |
| Ground Level | 15'7" (4.75) | 3,330 (1510) | 16'1" (4.91) | 3,120 (1415) | 19'6" (5.94) | 2,260 (1025) |
| -2' (0.61 m) | 15'1" (4.60) | 3,250 (1474) | 15'8" (4.77) | 3,010 (1365) | 19'2" (5.84) | 2,230 (1012) |
| -4' (1.22 m) | 14'4" (4.37) | 3,110 (1411) | 14'11" (4.55) | 2,950 (1338) | 18'6" (5.64) | 2,220 (1007) |
| -6' (1.83 m) | 13'2" (4.01) | 3,040 (1379) | 13'9" (4.19) | 2,850 (1293) | 17'8" (5.38) | 2,140 (971) |
| -8' (2.44 m) | 11'5" (3.48) | 2,960 (1343) | 12'2" (3.71) | 2,840 (1288) | 16'6" (5.03) | 2,110 (957) |
| -10' (3.05 m) | 8'9" (2.67) | 2,960 (1343) | 9'10" (2.99) | 2,810 (1275) | 14'10" (4.52) | 2,090 (948) |
| -12' (3.66 m) | | 2,930 (1329) | 5'8" (1.72) | 2,880 (1306) | 12'9" (3.89) | 2,180 (989) |
| -14' (4.27 m) | | | | | 9'9" (2.97) | 2,240 (1016) |
| -15' (4.57 m) | | | | | 6'0" (1.83) | 2,490 (1129) |
| Dipper Lift | | | | | | |
| +16' (4.87 m) | | | | | 12'10" (3.91) | 2,810 (1275) |
| +14' (4.27 m) | 9'5" (2.87) | 4,800 (2177) | 10'2" (3.10) | 4,850 (2200) | 14'0" (4.27) | 2,940 (1334) |
| +12' (3.66 m) | 10'7" (3.23) | 5,290 (2399) | 11'2" (3.40) | 5,310 (2409) | 14'7" (4.45) | 3,080 (1397) |
| +10' (3.05 m) | 11'0" (3.35) | 5,580 (2531) | 11'6" (3.50) | 5,510 (2500) | 14'9" (4.50) | 3,100 (1406) |
| +8' (2.44 m) | 10'7" (3.23) | 5,750 (2608) | 11'2" (3.40) | 5,720 (2595) | 14'8" (4.47) | 3,150 (1429) |
| +6' (1.83 m) | 9'4" (2.84) | 5,630 (2554) | 10'1" (3.08) | 5,740 (2604) | 14'0" (4.27) | 3,190 (1447) |
| +4' (1.22 m) | 6'0" (1.83) | 6,490 (2944) | 7'4" (2.23) | 6,590 (2989) | 12'9" (3.89) | 3,290 (1492) |

BACKHOE OPERATIONAL DATA

| | Standard Backhoe | | Extendahoe® | |
|---|-----------------------|--|-----------------------|-----------------------|
| | | | Retracted | Extended |
| Digging depth – | | | | |
| Maximum | 15'11" (4.85 m) | | 15'11" (4.85 m) | 19'11" (6.07 m) |
| Maximum w/hi-capacity bucket | 16'4" (4.98 m) | | 16'4" (4.98 m) | 20'4" (6.20 m) |
| 2' (610 mm) flat bottom | 15'10" (4.83 m) | | 15'10" (4.83 m) | 19'10" (6.05 m) |
| 8' (2.44 m) flat bottom | 14'11" (4.55 m) | | 14'11" (4.55 m) | 19'2" (5.84 m) |
| Overall reach from – | | | | |
| Rear axle centerline | 23'3" (7.09 m) | | 23'3" (7.09 m) | 27'2" (8.28 m) |
| Swing pivot | 19'8" (5.99 m) | | 19'8" (5.99 m) | 23'7" (7.19 m) |
| Loading height | 11'5" (3.48 m) | | 11'5" (3.48 m) | 13'9" (4.19 m) |
| Loading reach – dipper retracted | 9'6" (2.90 m) | | 9'6" (2.90 m) | 12'9" (3.89 m) |
| Swing arc | 180° | | 180° | 180° |
| Bucket rotation – | | | | |
| #1 position | 164° | | 164° | 164° |
| #2 position | 200° | | 190° | 190° |
| Stabilizer spread – operating | 11'1" (3.38 m) | | 11'1" (3.38 m) | 11'1" (3.38 m) |
| Digging force – | | | | |
| Bucket cylinder | 14,718 lbf (65 469 N) | | 14,718 lbf (65 469 N) | 14,718 lbf (65 469 N) |
| Dipper cylinder | 8,449 lbf (37 583 N) | | 8,449 lbf (37 583 N) | 5,999 lbf (26 685 N) |
| | w/bucket @ 50° | | w/bucket @ 50° | w/bucket @ 51° |
| Leveling angle | | | | |
| maximum slope that backhoe will make vertical cut | 12° | | 12° | 12° |

NOTE: Lift capacities apply straight to the rear of prime mover. Equipped with 24" (610 mm) Universal H.D. trenching bucket and Case coupler except as noted.

STANDARD EQUIPMENT

OPERATOR'S COMPARTMENT

See page 2

ENGINE

Case Family III 445T/M2 turbocharged diesel
Tier II certified
Integral crank driven balancer
Automatic fan belt tensioner
Viscous fan drive
Integral engine oil cooling
Fuel filter w/water trap
KKSBB starter timing control
Dual element air cleaner with integral pre-cleaner
90 amp alternator
850 CCA 12-volt battery
Heavy-duty radiator w/deaeration bottle
Non-spark-arresting muffler

LOADER

See page 2

BACKHOE

See page 2

POWERTRAIN

2WD
4F/4R Power shuttle synchromesh transmission
Torque converter
Transmission de-clutch
Electro-hydraulic differential lock
Hydrostatic steering
Wet disc brakes
Remote lube front axle pivot

HYDRAULICS

2-spool loader control valve
6-spool backhoe control valve
Heavy-duty oil cooler

OTHER

Forward tilt engine hood
Replaceable, molded front bumpers
Front/rear tie downs
Reflective logos
Lights - Cab and Canopy
2 Rear tail/stop
2 Front flashers/turn
2 Rear flashers/turn
4 Front & 4 rear adjustable halogen lights (55 w)

OPTIONAL EQUIPMENT

OPERATOR'S COMPARTMENT

Cab with –
Heater
Defroster
Dome light
Wipers, front and rear
Tinted glass
Floor mat
Side window partial hold open
Inside release for side windows
Operator Convenience Package
Tilt wheel
Windshield washer w/adjustable nozzles (front & rear)
Sun visor
Deluxe Cab Package
Operator Convenience Package PLUS
Vinyl-covered interior
Radio-ready kit w/antenna and speakers
Reduced sound level to 72 dB(A)
Vinyl or cloth-covered mechanical suspension seat
Air Ride suspension seat
3" (76 mm) retractable seat belt
Cab air-conditioning, 100% filtered air, in-cab filter access, 8 adjustable roof vents, 2 floor vents, w/heater
Ride Control
Cab right door

Canopy Convenience Package
Front windshield w/wiper & washer
85 dB(A) sound
Floor mat
Sun visor

LOADER

Hydraulic attachment coupler
Attachment auxiliary hydraulics
Buckets (see page 2)

BACKHOE

Case hydraulic coupler
Buckets (see page 2)
Extendahoe®
Two-lever control
Pilot Operated Control System
Fingertip Proportional
Electrohydraulic stabilizer controls.
Thumb operated Proportional
Electrohydraulic Extendahoe control
Thumb operated horn button
Thumb operated Auxiliary Hydraulic Control
Infinitely Adjustable Towers
In-Cab Switchable "Excavator to Backhoe" control pattern change
Stabilizer pads
Flip-over
Rubber pad
Front counterweights
440 lb (200 kg)
900 lb (408 kg)

ENGINE

Cold weather grid heater starting aid
Dual, 12-volt, 600CCA batteries
Exhaust aspirated air cleaner

POWERTRAIN

4WD w/outboard planetary drive, on-the-go push-button activation and 14 x 17.5 front tires
Powershift transmission with Autoshift (4WD unit only)

HYDRAULICS

Auxiliary backhoe uni-directional hydraulics
Auxiliary backhoe bi-directional hydraulics
Hand lever operated for manual controls
Button operated for pilot controls

OTHER

Outside breakaway mirror
Rear fender extension
Tool box
Special paint

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

NOTE: All engines meet current EPA emissions requirements.

IMPORTANT: CNH America LLC reserves the right to change these specifications without notice and without incurring any obligation relating to such change. CNH America LLC does not warrant the safety or reliability of attachments from other manufacturers.

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