

ENGINE

Make	FPT
Model	F4HFE613T
Emissions Certification	Tier 4 Final
Type	4-stroke, turbocharged and air-to-air cooled
Cylinders	6-cylinder in-line
Bore/Stroke	4.09 x 5.20 in (104 x 132 mm)
Displacement	411 in ³ (6.7 L)
Fuel	#2 Diesel, #1 and #2 mixture permitted for cold temperatures
Fuel injection	Direct injection – electronic
Fuel filter	Replaceable
Fuel pump	Bosch CR/CP3
Gradeability:	
Side-to-side	35°
Fore and aft	35°
Air filter	Dry type elements w/ warning restriction indicator
Mid-mount cooling module:	Mid-mount air/water
Fan – hydraulic driven:	
Style	8 blade puller
Diameter	32 in (813 mm)
Water pump	Integral
Engine oil pump operating angle ratings:	
Side-to-side	35°
Fore and aft	35°
Oil filtration	Replaceable
Engine speeds	RPM
Rated – full load	2000
Horsepower:	
Maximum Power Mode:	
Peak gross @ 2000 RPM	195 hp (145 kW)
Net rated @ 2000 RPM	179 hp (133 kW)
Peak net @ 2000 RPM	179 hp (133 kW)
Standard Power Mode:	
Peak gross @ 1700 RPM	176 hp (131 kW)
Net rated @ 2000 RPM	144 hp (107 kW)
Peak net @ 1600 RPM	163 hp (121 kW)
Economy Power Mode:	
Peak gross @ 1400 RPM	147 hp (109 kW)
Net rated @ 2000 RPM	121 hp (90 kW)
Peak net @ 1400 RPM	138 hp (103 kW)

Torque – peak:	
Maximum Power Mode:	
Gross @ 1300 RPM	701 lb-ft (950 N-m)
Net @ 1300 RPM	674 lb-ft (914 N-m)
Standard Power Mode:	
Gross @ 1300 RPM	620 lb-ft (841 N-m)
Net @ 1300 RPM	594 lb-ft (805 N-m)
Economy Power Mode:	
Gross @ 1200 RPM	589 lb-ft (799 N-m)
Net @ 1200 RPM	567 lb-ft (768 N-m)
Torque rise:	
Maximum power range	37%
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 – 4 Speed	Forward/Reverse
1st	3.745/3.551
2nd	2.184/2.071
3rd	1.072/1.017
4th	0.636/ –
Gear ratios – 5 Speed	Forward/Reverse
1st	3.921/3.718
2nd	2.255/2.138
3rd	1.466/0.894
4th	0.942/ –
5th	0.613/ –
Torque converter:	
Stall ratio – 4-speed	2.81:1
Stall ratio – 5-speed	2.42:1
Differential:	
Limited slip w/ 30% transfer on front and rear axles	
Rear axle oscillation	24° total
Front and rear axles:	
Differential ratio	3.4/3.2
Planetary ratio	6.0/6.4
Final axle ratio	20.2/20.4
Heavy-duty axles – optional:	
Front axle equipped w/ locking differential	
Rear axle equipped w/ open differential	
Planetaries	Outboard
Service brakes:	
Hydraulically actuated, maintenance-free, multiple wet disc w/ accumulator to all four wheels	
Brake surface area:	
Front hub – each	600 in ² (0.387 m ²)
Rear hub – each	600 in ² (0.387 m ²)
Parking brakes:	
Spring-applied hydraulic release disc on transmission output shaft neutralizes power flow to wheels when engaged	

Travel speeds – 4-speed transmission:		
	Forward	Reverse
	mph (kph)	mph (kph)
1st	4.7 (7.6)	5.0 (8.0)
2nd	7.9 (12.8)	8.4 (13.4)
3rd	15.2 (24.5)	15.9 (25.7)
4th	23.5 (37.8)	–

Travel speeds – 5-speed transmission:		
	Forward	Reverse
	mph (kph)	mph (kph)
1st	4.5 (7.2)	4.9 (7.9)
2nd	7.8 (12.6)	8.4 (13.5)
3rd	11.8 (19.0)	19.3 (31.1)
4th	18.3 (29.5)	–
5th	25.0 (40.0)	–

NOTE: Travel speeds at full engine throttle w/ 23.5 x 25 L3 tires.

ELECTRICAL

Voltage	24 Volts, negative ground
Alternator	120 amp
Batteries (2)	12-volt

OPERATOR ENVIRONMENT

ROPS cab AC w/ heat; Key start; Articulated power steering w/ tilt column; Fully adjustable, suspension seat; Foot throttle; Single lever loader control w/ fully adjustable wrist rest, 2 cup holders; 2 interior rear view mirrors; 2 in (51 mm) retractable seat belt; Multiple storage trays; Single brake pedal; F/N/R shuttle switch; External rearview mirrors; Pressurized air filtering; Anti-glare window strip; Front and Rear Defroster; Side window, partial/fully open; 2 Dome lights; Wipers, rear and intermittent front; Windshield washers, front and rear; Rubber floor mat; Horn.

Displays/Gauges:

Digital:
Transmission oil temperature; Hydraulic oil temperature; Fuel Level; Engine coolant temperature.

LCD screen:
Hour meter; Engine speed; Travel speed; Time; Automatic transmission indication; Current gear selection; FNR indication; DeClutch indication; Engine mode indication; Trip computer A/B; Fuel consumption; Multiple languages, Metric/English; Engine diagnostics; Transmission diagnostics; Warning prompts; Error reporting; Diff. lock*.

Audible/Visual alarms:

Warning lights:
Four-way flashers and turn signals; Brake pressure; Lamp/high beam indication; Grid heater*.

Caution warnings:

Parking brake; Coolant temperature; Hydraulic oil temperature; Transmission oil temperature; Air filter; Transmission filter; Hydraulic filter; Alternator; Low fuel.

Critical warnings:

Engine oil pressure; Brake pressure; Steering pressure – w/ aux. steering*; Coolant temperature; Hydraulic oil temperature; Transmission oil temperature.

Backup alarm**Maintenance reminders:**

Cab air filter; Engine oil filter; Fuel pre-filter; DEF tank vent filter; SCR supply filter; Hydraulic oil and filter; Engine air filter; Engine coolant drive belt; Cab recirculation filter; Engine breather filter; Transmission breather; Front and rear axle fluid; SCR supply module filter.

NOTE: *If equipped w/ option.

OPERATING WEIGHT**Z-Bar**

Unit equipped w/ 3.25 yd³ (2.5 m³) MD pin on w/ bolt on edge; 20.5-R25 L3 Radial tires; ROPS cab w/ heater and A/C; Std. battery; Heavy counterweight – 2,764 lb (1 254 kg); Front and rear fenders; Lights; Full fuel/urea; 165 lb (75 kg) operator:

32,492 lb (14 738 kg)

XT

Unit equipped w/ 3.0 yd³ (2.3 m³) CNH GP w/ BOE and CNH coupler; 20.5-R25 L3 Radial tires; ROPS cab w/ heater and A/C; Std. battery; Heavy counterweight – 2,764 lb (1 254 kg); Front and rear fenders; Lights; Full fuel /urea; 165 lb (75 kg) operator:

33,392 lb (15 146 kg)

XR

Unit equipped w/ 3.0 yd³ (2.3 m³) pin on bucket w/ bolt on edge; 20.5-R25 L3 Radial tires; ROPS cab w/ heater and A/C; Std. battery; Heavy counterweight – 2,764 lb (1 254 kg); Front and rear fenders; Lights; Full fuel/urea; 165 lb (75 kg) operator:

32,851 lb (14 901 kg)

HYDRAULICS**Pump – steering/implement:**

Closed center pressure/flow compensated

Variable displacement – load-sensing:

54.2 gpm @ 2000 RPM
(206 L/min @ 2000 RPM)

Loader control valve:

Closed-center, sectional 2, 3 or 4-function w/ 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

High pressure standby:

Implement 3,625 psi (25 000 kPa)
Steering 3,499 psi (24 132 kPa)

Filtration:

Filtered vent w/ relief on hydraulic reservoir, maintains 3-5 psi on reservoir, 10-micron, return filter furnishes only clean oil to all components of the system

SERVICE CAPACITIES

Fuel tank 65.0 gal (246.0 L)

DEF tank – Diesel Exhaust Fluid:

Usable capacity 9.8 gal (37.1 L)
Total 15.6 gal (58.9 L)

Hydraulic system:

Reservoir 24.0 gal (90.8 L)
Total 47.0 gal (177.8 L)

Transmission:

Service w/ filter 9.0 gal (34.0 L)

Front and rear axle:

Front axle 9.2 gal (35.0 L)
Rear axle 6.1 gal (23.0 L)

Front and rear axle – optional:

Front axle 37.0 qt (35.0 L)
Rear axle 37.0 qt (35.0 L)

Engine oil w/ filter 16.0 qt (15.1 L)

Cooling system 7.5 gal (28.4 L)

OTHER SPECIFICATIONS**Lift cylinder:**

Bore diameter 4.8 in (121 mm)
Rod diameter 3.0 in (76 mm)
Stroke 32.6 in (828 mm)

Dump cylinder – Z-Bar and XR:

Bore diameter 5.8 in (146 mm)
Rod diameter 3.0 in (76 mm)
Stroke 24.8 in (629 mm)

Dump cylinder – XT:

Bore diameter 4.5 in (114 mm)
Rod diameter 2.3 in (57 mm)
Stroke 33.7 in (857 mm)

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; Brake pedal transmission disconnect; Bucket position indicator on bucket.

Cycle time:

Raise w/ rated bucket load:
Z-Bar 5.2 sec
XR 5.2 sec
XT 5.2 sec

Dump w/ rated bucket load:

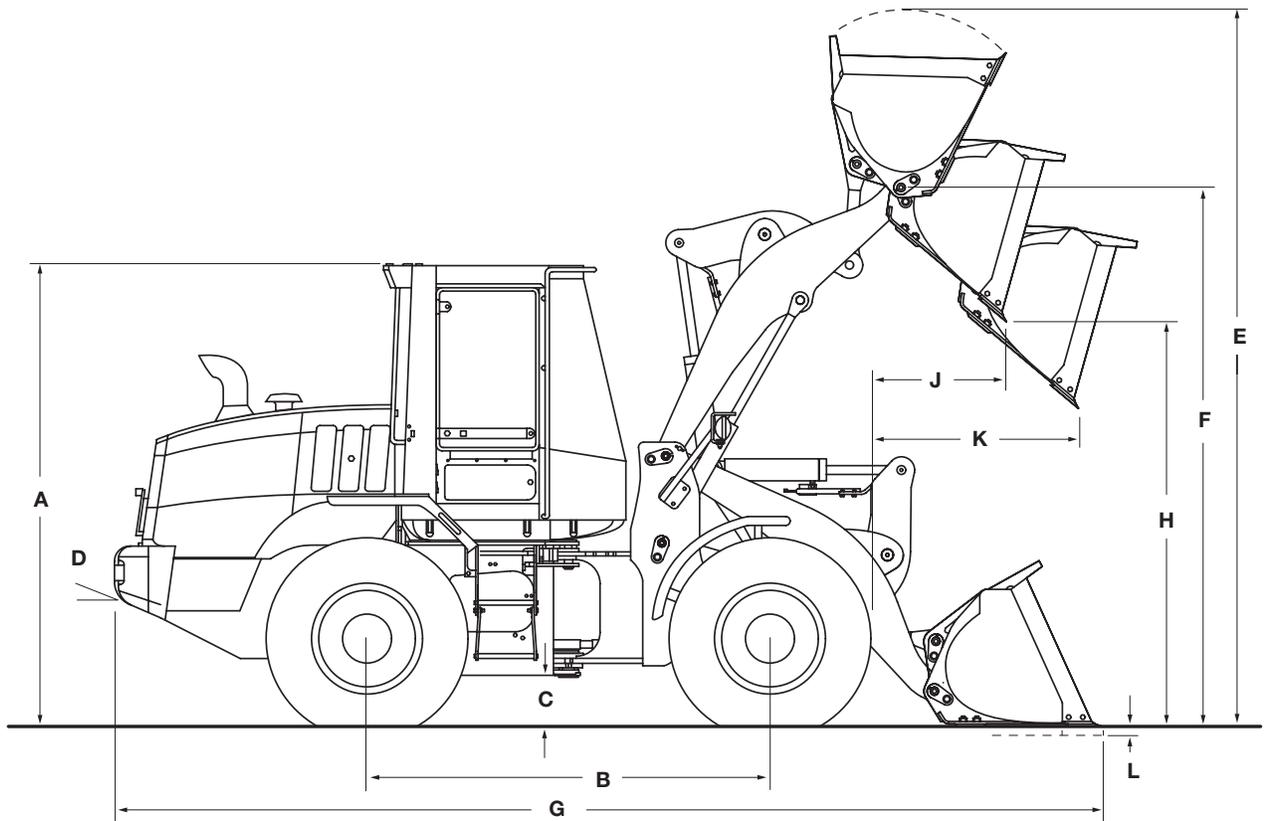
Z-Bar 1.2 sec
XR 1.2 sec
XT 1.3 sec

Power down:

Z-Bar 2.5 sec
XR 2.5 sec
XT 2.5 sec

Float down:

Z-Bar 2.4 sec
XR 2.4 sec
XT 2.4 sec



Line drawings are for illustrative purpose only and may not be exact representation of unit.

DIMENSIONS

A. Height to top of ROPS cab	133.0 in (3 378 mm)
Height to drawbar	43.5 in (1 105 mm)
B. Wheelbase	128.1 in (3 253 mm)
C. Ground clearance	15.1 in (384 mm)
D. Angle of departure	29°
Width:	
Overall* without bucket	100.7 in (2 558 mm)
Centerline tread	79.9 in (2 030 mm)
Turning radius* – outside	226.3 in (5 748 mm)
Turning angle:	
From center	40°
Total angle	80°
Rear axle oscillation – total	24°

NOTE: *Dimensions taken with 23.5-R25 L3 Radial tires. Additional dimensions on pages 4 through 8.

WEIGHT ADJUSTMENTS

Select Options	Weight Adjustment	Tipping Load Adjustment Straight	Tipping Load Adjustment 40° Turn
20.5 x 25 12 ply L2 Bias tires	-564 lb (-256 kg)	-920 lb (-417 kg)	-1,483 lb (-673 kg)
20.5 x 25 12 ply L3 Bias tires	-536 lb (-243 kg)	+100 lb (+45 kg)	+184 lb (+84 kg)
20.5-R25 L2 Radial tires	-256 lb (-116 kg)	-262 lb (-119 kg)	-163 lb (-74 kg)
20.5-R25 Snow Radial Tires	-132 lb (-60 kg)	-169 lb (-77 kg)	-79 lb (-36 kg)
20.5-R25 Solid Tires Req. Lock Diff Axles, Ltd Speed Controller	+5,545 lb (+2 515 kg)	+4,494 lb (+2 038 kg)	+4 139 lb (+1 878 kg)
Base Counterweight	-545 lb (-247 kg)	-1,129 lb (-512 kg)	-878 lb (-398 kg)

NOTE: Unit equipped with Z-Bar loader arms, 4.75 yd³ (3.6 m³) pin on bucket with bolt-on edge, 23.5-R25 L3 Radial tires, ROPS cab with heater and air conditioner, full counterweight, heavy-duty batteries, front and rear fenders, full fuel and 165 lb (75 kg) operator. Adjust select options from rated weight.

PERFORMANCE SPECS

721G Z-Bar*	3.0 yd³ GP (2.3 m³) Bucket with Bolt-on Edge	2.8 yd³ GP (2.1 m³) Bucket with Teeth Only	3.25 yd³ GP (2.5 m³) Bucket with Bolt-on Edge
Operating weight	32,403 lb (14 698 kg)	32,301 lb (14 652 kg)	32,492 lb (14 738 kg)
SAE bucket capacity – struck	2.56 yd ³ (1.96 m ³)	2.42 yd ³ (1.85 m ³)	2.78 yd ³ (2.13 m ³)
Heaped	3.00 yd ³ (2.29 m ³)	2.80 yd ³ (2.14 m ³)	3.25 yd ³ (2.48 m ³)
Bucket width – outside	106.3 in (2 700 mm)	106.8 in (2 713 mm)	106.3 in (2 700 mm)
Bucket weight	2,540 lb (1 152 kg)	2,438 lb (1 106 kg)	2,629 lb (1 192 kg)
E. Operating height – fully raised with spillguard	203.4 in (5 165 mm)	203.4 in (5 165 mm)	205.7 in (5 225 mm)
F. Hinge pin height – fully raised	156.5 in (3 976 mm)	156.5 in (3 976 mm)	156.5 in (3 976 mm)
G. Overall length – bucket level on ground	299.4 in (7 606 mm)	305.2 in (7 753 mm)	301.6 in (7 660 mm)
Dump angle – fully raised	50°	50°	50°
H. Dump height – fully raised, 45° dump	116.6 in (2 961 mm)	112.9 in (2 868 mm)	115.2 in (2 926 mm)
J. Bucket reach – fully raised, 45° dump	42.6 in (1 081 mm)	47.1 in (1 196 mm)	44.2 in (1 123 mm)
K. Bucket reach – 7 ft 0 in (2.13 m) height, 45° dump	64.1 in (1 628 mm)	66.9 in (1 700 mm)	65.1 in (1 654 mm)
Operating load – ISO Rigid Tires	11,897 lb (5 397 kg)	12,150 lb (5 511 kg)	11,825 lb (5 364 kg)
Operating load – ISO Deflected Tires	10,373 lb (4 705 kg)	10,592 lb (4 804 kg)	10,294 lb (4 669 kg)
Maximum material density – ISO Rigid Tires	3,966 lb/yd ³ (2 353 kg/m ³)	4,339 lb/yd ³ (2 575 kg/m ³)	3,639 lb/yd ³ (2 159 kg/m ³)
Maximum material density – ISO Deflected Tires	3,458 lb/yd ³ (2 052 kg/m ³)	3,783 lb/yd ³ (2 245 kg/m ³)	3,167 lb/yd ³ (1 879 kg/m ³)
Tipping load – ISO Rigid Tires:			
Straight	27,355 lb (12 408 kg)	27,916 lb (12 663 kg)	27,204 lb (12 340 kg)
40° turn	23,795 lb (10 793 kg)	24,300 lb (11 022 kg)	23,651 lb (10 728 kg)
Tipping load – ISO Deflected Tires:			
Straight	25,490 lb (11 562 kg)	26,006 lb (11 796 kg)	25,330 lb (11 489 kg)
40° turn	20,745 lb (9 410 kg)	21,184 lb (9 609 kg)	20,587 lb (9 338 kg)
Lift capacity:			
Full height	16,135 lb (7 319 kg)	16,247 lb (7 369 kg)	16,046 lb (7 278 kg)
Ground	30,124 lb (13 664 kg)	30,568 lb (13 865 kg)	29,913 lb (13 568 kg)
Breakout force with tilt cylinder	33,810 lb (15 336 kg)	36,573 lb (16 589 kg)	32,158 lb (14 587 kg)
Maximum rollback:			
Ground	40°	40°	40°
Carry position	45°	45°	45°
@ Full height	57°	57°	57°
L. Dig depth	3.0 in (77 mm)	2.9 in (75 mm)	3.0 in (77 mm)
Maximum grading angle with bucket – back dragging	58°	59°	58°
Loader clearance circle with bucket	497.1 in (12 626 mm)	500.8 in (12 719 mm)	498.3 in (12 656 mm)

721G XR	3.0 yd³ GP (2.3 m³) Bucket with Bolt-on Edge	2.8 yd³ GP (2.1 m³) Bucket with Teeth Only	3.25 yd³ GP (2.5 m³) Bucket with Bolt-on Edge
Operating weight	32,851 lb (14 901 kg)	32,748 lb (14 854 kg)	32,939 lb (14 941 kg)
E. Operating height – fully raised with spillguard	218.9 in (5 560 mm)	218.9 in (5 560 mm)	221.2 in (5 620 mm)
F. Hinge pin height – fully raised	172.1 in (4 371 mm)	172.1 in (4 371 mm)	172.1 in (4 370 mm)
G. Overall length – bucket level on ground	313.5 in (7 963 mm)	319.3 in (8 111 mm)	315.7 in (8 018 mm)
Dump angle – fully raised	50°	50°	50°
H. Dump height – fully raised, 45° dump	132.1 in (3 356 mm)	128.4 in (3 262 mm)	130.8 in (3 321 mm)
J. Bucket reach – fully raised, 45° dump	42.6 in (1 082 mm)	47.1 in (1 197 mm)	44.2 in (1 124 mm)
K. Bucket reach – 7 ft 0 in (2.13 m) height, 45° dump	76.2 in (1 936 mm)	79.3 in (2 014 mm)	77.3 in (1 965 mm)
Operating load – ISO Rigid Tires	9,983 lb (4 528 kg)	10,187 lb (4 621 kg)	9,914 lb (4 497 kg)
Operating load – ISO Deflected Tires	8,805 lb (3 994 kg)	8,987 lb (4 076 kg)	8,732 lb (3 961 kg)
Maximum material density – ISO Rigid Tires	3,328 lb/yd ³ (1 975 kg/m ³)	3,638 lb/yd ³ (2 159 kg/m ³)	3,051 lb/yd ³ (1 810 kg/m ³)
Maximum material density – ISO Deflected Tires	2,935 lb/yd ³ (1 742 kg/m ³)	3,210 lb/yd ³ (1 904 kg/m ³)	2,687 lb/yd ³ (1 594 kg/m ³)
Tipping load – ISO Rigid Tires:			
Straight	23,078 lb (10 468 kg)	23,527 lb (10 672 kg)	22,935 lb (10 403 kg)
40° turn	19,967 lb (9 057 kg)	20,373 lb (9 241 kg)	19,830 lb (8 995 kg)
Tipping load – ISO Deflected Tires:			
Straight	21,678 lb (9 833 kg)	22,099 lb (10 024 kg)	21,528 lb (9 765 kg)
40° turn	17,610 lb (7 988 kg)	17,974 lb (8 153 kg)	17,463 lb (7 921 kg)
Lift capacity:			
Full height	15,025 lb (6 815 kg)	15,135 lb (6 865 kg)	14,936 lb (6 775 kg)
Ground	25,085 lb (11 378 kg)	25,444 lb (11 541 kg)	24,897 lb (11 293 kg)
Breakout force with tilt cylinder	33,706 lb (15 289 kg)	36,459 lb (16 537 kg)	32,058 lb (14 541 kg)
Loader clearance circle with bucket	510.3 in (12 962 mm)	514.5 in (13 067 mm)	511.7 in (12 996 mm)

PERFORMANCE SPECS

721G Z-Bar*	3.0 yd³ GP (2.3 m³) Bucket with Teeth Only	3.5 yd³ GP (2.7 m³) Bucket with Bolt-on Edge	3.5 yd³ GP (2.7 m³) Bucket with Grapple with Bolt-on Edge
Operating weight	32,390 lb (14 692 kg)	32,633 lb (14 802 kg)	34,425 lb (15 615 kg)
SAE bucket capacity – struck	2.62 yd ³ (2.00 m ³)	3.00 yd ³ (2.29 m ³)	3.00 yd ³ (2.29 m ³)
Heaped	3.00 yd ³ (2.29 m ³)	3.50 yd ³ (2.68 m ³)	3.50 yd ³ (2.68 m ³)
Bucket width – outside	106.8 in (2 713 mm)	106.3 in (2 700 mm)	106.3 in (2 700 mm)
Bucket weight	2,526 lb (1 146 kg)	2,769 lb (1 256 kg)	4,561 lb (2 069 kg)
E. Operating height – fully raised with spillguard	205.7 in (5 225 mm)	208.4 in (5 294 mm)	273.2 in (6 941 mm)
F. Hinge pin height – fully raised	156.5 in (3 976 mm)	156.5 in (3 976 mm)	156.4 in (3 973 mm)
G. Overall length – bucket level on ground	307.3 in (7 805 mm)	304.0 in (7 721 mm)	304.0 in (7 722 mm)
Dump angle – fully raised	50°	50°	50°
H. Dump height – fully raised, 45° dump	111.6 in (2 834 mm)	113.7 in (2 888 mm)	113.6 in (2 886 mm)
J. Bucket reach – fully raised, 45° dump	48.6 in (1 236 mm)	46.0 in (1 169 mm)	46.0 in (1 167 mm)
K. Bucket reach – 7 ft 0 in (2.13 m) height, 45° dump	67.8 in (1 723 mm)	66.2 in (1 682 mm)	66.1 in (1 680 mm)
Operating load – ISO Rigid Tires	12,005 lb (5 445 kg)	11,711 lb (5 312 kg)	10,837 lb (4 915 kg)
Operating load – ISO Deflected Tires	10,450 lb (4 740 kg)	10,174 lb (4 615 kg)	9,269 lb (4 204 kg)
Maximum material density – ISO Rigid Tires	4,002 lb/yd ³ (2 374 kg/m ³)	3,346 lb/yd ³ (1 985 kg/m ³)	3,096 lb/yd ³ (1 837 kg/m ³)
Maximum material density – ISO Deflected Tires	3,483 lb/yd ³ (2 067 kg/m ³)	2,907 lb/yd ³ (1 725 kg/m ³)	2,648 lb/yd ³ (1 571 kg/m ³)
Tipping load - ISO Rigid Tires:			
Straight	27,597 lb (12 518 kg)	26,963 lb (12 230 kg)	25,214 lb (11 437 kg)
40° turn	24,010 lb (10 891 kg)	23,423 lb (10 624 kg)	21,674 lb (9 831 kg)
Tipping load - ISO Deflected Tires:			
Straight	25,691 lb (11 653 kg)	25,081 lb (11 377 kg)	23,297 lb (10 567 kg)
40° turn	20,901 lb (9 480 kg)	20,348 lb (9 230 kg)	18,537 lb (8 408 kg)
Lift capacity:			
Full height	16,155 lb (7 328 kg)	15,904 lb (7 214 kg)	14,116 lb (6 403 kg)
Ground	30,217 lb (13 706 kg)	29,622 lb (13 436 kg)	27,759 lb (12 591 kg)
Breakout force with tilt cylinder	34,749 lb (15 762 kg)	30,485 lb (13 822 kg)	28,621 lb (12 982 kg)
Maximum rollback:			
Ground	40°	40°	40°
Carry position	45°	45°	45°
@ Full height	57°	57°	57°
L. Dig depth	3.0 in (75 mm)	3.1 in (78 mm)	3.1 in (80 mm)
Maximum grading angle with bucket – back dragging	59°	59°	59°
Loader clearance circle with bucket	501.9 in (12 749 mm)	499.6 in (12 689 mm)	499.6 in (12 689 mm)

721G XR	3.0 yd³ GP (2.3 m³) Bucket with Teeth Only	3.5 yd³ GP (2.7 m³) Bucket with Bolt-on Edge	3.5 yd³ GP (2.7 m³) Bucket with Grapple with Bolt-on Edge
Operating weight	32,837 lb (14 895 kg)	33,080 lb (15 005 kg)	34,872 lb (15 818 kg)
E. Operating height – fully raised with spillguard	221.2 in (5 620 mm)	224.0 in (5 689 mm)	288.8 in (7 335 mm)
F. Hinge pin height – fully raised	172.1 in (4 371 mm)	172.1 in (4 370 mm)	172.0 in (4 368 mm)
G. Overall length – bucket level on ground	321.4 in (8 163 mm)	318.1 in (8 078 mm)	318.0 in (8 078 mm)
Dump angle – fully raised	50°	50°	50°
H. Dump height – fully raised, 45° dump	127.1 in (3 229 mm)	129.2 in (3 282 mm)	129.2 in (3 281 mm)
J. Bucket reach – fully raised, 45° dump	48.7 in (1 237 mm)	46.1 in (1 170 mm)	46.0 in (1 168 mm)
K. Bucket reach – 7 ft 0 in (2.13 m) height, 45° dump	80.3 in (2 039 mm)	78.5 in (1 995 mm)	78.5 in (1 993 mm)
Operating load – ISO Rigid Tires	10,064 lb (4 565 kg)	9,807 lb (4 449 kg)	8,926 lb (4 049 kg)
Operating load – ISO Deflected Tires	8,865 lb (4 021 kg)	8,621 lb (3 911 kg)	7,713 lb (3 499 kg)
Maximum material density – ISO Rigid Tires	3,355 lb/yd ³ (1 991 kg/m ³)	2,803 lb/yd ³ (1 663 kg/m ³)	2,550 lb/yd ³ (1 513 kg/m ³)
Maximum material density – ISO Deflected Tires	2,955 lb/yd ³ (1 753 kg/m ³)	2,463 lb/yd ³ (1 462 kg/m ³)	2,204 lb/yd ³ (1 308 kg/m ³)
Tipping load – ISO Rigid Tires:			
Straight	23,258 lb (10 550 kg)	22,712 lb (10 302 kg)	20,946 lb (9 501 kg)
40° turn	20,127 lb (9 130 kg)	19,619 lb (8 899 kg)	17,853 lb (8 098 kg)
Tipping load – ISO Deflected Tires:			
Straight	21,831 lb (9 902 kg)	21,299 lb (9 661 kg)	19,506 lb (8 848 kg)
40° turn	17,729 lb (8 042 kg)	17,243 lb (7 821 kg)	15,426 lb (6 997 kg)
Lift capacity:			
Full height	15,044 lb (6 824 kg)	14,794 lb (6 710 kg)	13,005 lb (5 899 kg)
Ground	25,151 lb (11 408 kg)	24,637 lb (11 175 kg)	22,768 lb (10 327 kg)
Breakout force with tilt cylinder	34,641 lb (15 713 kg)	30,391 lb (13 785 kg)	28,529 lb (12 940 kg)
Loader clearance circle with bucket	515.8 in (13 101 mm)	513.2 in (13 035 mm)	513.2 in (13 035 mm)

PERFORMANCE SPECS

721G Z-Bar*	5.5 yd³ (4.2 m³) Bucket with Bolt-on Edge	3.0 yd³ GP Pin-On (2.3 m³) Bucket on CNH Coupler with Bolt-on Edge	3.0 yd³ GP Pin-On (2.3 m³) Bucket (JRB Compatible) with Teeth Only
Operating weight	33,265 lb (15 089 kg)	33,344 lb (15 124 kg)	33,241 lb (15 078 kg)
SAE bucket capacity – struck	4.44 yd ³ (3.39 m ³)	2.56 yd ³ (1.96 m ³)	2.42 yd ³ (1.85 m ³)
Heaped	5.50 yd ³ (4.21 m ³)	3.00 yd ³ (2.29 m ³)	2.80 yd ³ (2.14 m ³)
Bucket width – outside	106.3 in (2 700 mm)	106.3 in (2 700 mm)	106.8 in (2 713 mm)
Bucket weight	3,402 lb (1 543 kg)	3,480 lb (1 579 kg)	3,378 lb (1 532 kg)
E. Operating height – fully raised with spillguard	223.0 in (5 665 mm)	210.9 in (5 356 mm)	210.9 in (5 356 mm)
F. Hinge pin height – fully raised	156.5 in (3 975 mm)	156.5 in (3 975 mm)	156.5 in (3 975 mm)
G. Overall length – bucket level on ground	320.2 in (8 132 mm)	310.0 in (7 873 mm)	315.9 in (8 025 mm)
Dump angle – fully raised	50°	50°	50°
H. Dump height – fully raised, 45° dump	102.9 in (2 613 mm)	109.9 in (2 791 mm)	106.0 in (2 692 mm)
J. Bucket reach – fully raised, 45° dump	56.7 in (1 439 mm)	51.0 in (1 296 mm)	55.2 in (1 403 mm)
K. Bucket reach – 7 ft 0 in (2.13 m) height, 45° dump	71.1 in (1 806 mm)	69.4 in (1 763 mm)	71.5 in (1 816 mm)
Operating load – ISO Rigid Tires	10,822 lb (4 909 kg)	10,579 lb (4 799 kg)	10,739 lb (4 871 kg)
Operating load – ISO Deflected Tires	9 330 lb (4 232 kg)	9,172 lb (4 160 kg)	9,312 lb (4 224 kg)
Maximum material density – ISO Rigid Tires	1,968 lb/yd ³ (1 168 kg/m ³)	3,526 lb/yd ³ (2 093 kg/m ³)	3,836 lb/yd ³ (2 276 kg/m ³)
Maximum material density – ISO Deflected Tires	1,696 lb/yd ³ (1 007 kg/m ³)	3,057 lb/yd ³ (1 814 kg/m ³)	3,326 lb/yd ³ (1 973 kg/m ³)
Tipping load – ISO Rigid Tires:			
Straight	25,027 lb (11 352 kg)	24,466 lb (11 098 kg)	24,816 lb (11 256 kg)
40° turn	21,644 lb (9 817 kg)	21,159 lb (9 597 kg)	21,479 lb (9 743 kg)
Tipping load – ISO Deflected Tires:			
Straight	23,208 lb (10 527 kg)	22,759 lb (10 323 kg)	23,083 lb (10 470 kg)
40° turn	18,660 lb (8 464 kg)	18,344 lb (8 321 kg)	18,623 lb (8 447 kg)
Lift capacity:			
Full height	15,247 lb (6 916 kg)	15,171 lb (6 881 kg)	15,278 lb (6 930 kg)
Ground	27,872 lb (12 643 kg)	26,989 lb (12 242 kg)	27,806 lb (12 613 kg)
Breakout force with tilt cylinder	22,682 lb (10 288 kg)	26,469 lb (12 006 kg)	28,279 lb (12 827 kg)
Maximum rollback:			
Ground	41°	40°	40°
Carry position	45°	45°	45°
@ Full height	57°	57°	57°
L. Dig depth	4.5 in (114 mm)	2.7 in (69 mm)	3.0 in (77 mm)
Maximum grading angle with bucket – back dragging	63°	60°	62°
Loader clearance circle with bucket	509.3 in (12 936 mm)	502.9 in (12 775 mm)	507.0 in (12 877 mm)

721G XR	5.5 yd³ (4.2 m³) Bucket with Bolt-on Edge	3.0 yd³ GP Pin-On (2.3 m³) Bucket on CNH Coupler with Bolt-on Edge	3.0 yd³ GP Pin-On (2.3 m³) Bucket (JRB Compatible) with Teeth Only
Operating weight	33,712 lb (15 292 kg)	33,791 lb (15 327 kg)	33,689 lb (15 281 kg)
E. Operating height – fully raised with spillguard	238.6 in (6 060 mm)	226.4 in (5 751 mm)	226.4 in (5 751 mm)
F. Hinge pin height – fully raised	172.0 in (4 369 mm)	172.0 in (4 369 mm)	172.0 in (4 369 mm)
G. Overall length – bucket level on ground	334.1 in (8 486 mm)	324.1 in (8 232 mm)	330.0 in (8 383 mm)
Dump angle – fully raised	50°	50°	50°
H. Dump height – fully raised, 45° dump	118.4 in (3 008 mm)	125.4 in (3 186 mm)	121.5 in (3 087 mm)
J. Bucket reach – fully raised, 45° dump	56.7 in (1 440 mm)	51.1 in (1 297 mm)	55.3 in (1 404 mm)
K. Bucket reach – 7 ft 0 in (2.13 m) height, 45° dump	84.1 in (2 135 mm)	81.9 in (2 081 mm)	84.2 in (2 140 mm)
Operating load – ISO Rigid Tires	9,045 lb (4 103 kg)	8,872 lb (4 024 kg)	9,007 lb (4 085 kg)
Operating load – ISO Deflected Tires	7,886 lb (3 577 kg)	7,769 lb (3 524 kg)	7,890 lb (3 579 kg)
Maximum material density – ISO Rigid Tires	1,644 lb/yd ³ (976 kg/m ³)	2,957 lb/yd ³ (1 755 kg/m ³)	3,217 lb/yd ³ (1 909 kg/m ³)
Maximum material density – ISO Deflected Tires	1,434 lb/yd ³ (851 kg/m ³)	2,590 lb/yd ³ (1 537 kg/m ³)	2,818 lb/yd ³ (1 672 kg/m ³)
Tipping load – ISO Rigid Tires:			
Straight	21,056 lb (9 551 kg)	20,656 lb (9 369 kg)	20,948 lb (9 502 kg)
40° turn	18,089 lb (8 205 kg)	17,745 lb (8 049 kg)	18,014 lb (8 171 kg)
Tipping load – ISO Deflected Tires:			
Straight	19,682 lb (8 928 kg)	19,354 lb (8 779 kg)	19,629 lb (8 903 kg)
40° turn	15,771 lb (7 154 kg)	15,538 lb (7 048 kg)	15,780 lb (7 158 kg)
Lift capacity:			
Full height	14,139 lb (6 413 kg)	14,063 lb (6 379 kg)	14,170 lb (6 428 kg)
Ground	23,100 lb (10 478 kg)	22,866 lb (10 372 kg)	21,125 lb (10 489 kg)
Breakout force with tilt cylinder	22,198 lb (10 069 kg)	26,226 lb (11 896 kg)	28,082 lb (12 738 kg)
Loader clearance circle with bucket	524.2 in (13 315 mm)	517.0 in (13 133 mm)	521.6 in (13 248 mm)

PERFORMANCE SPECS

721G Z-Bar*	3.0 yd³ GP Pin-On (2.3 m³) Bucket ACS Coupler with Bolt-on-Edge	2.8 yd³ GP Pin-On (2.1 m³) Bucket (ACS Compatible) with Teeth Only
Operating weight	33,414 lb (15 156 kg)	33,312 lb (15 110 kg)
SAE bucket capacity – struck	2.56 yd ³ (1.96 m ³)	2.42 yd ³ (1.85 m ³)
Heaped	3.00 yd ³ (2.29 m ³)	2.80 yd ³ (2.14 m ³)
Bucket width – outside	106.3 in (2 700 mm)	106.8 in (2 713 mm)
Bucket weight	3,551 lb (1 611 kg)	3,449 lb (1 564 kg)
E. Operating height – fully raised with spillguard	208.6 in (5 298 mm)	208.6 in (5 298 mm)
F. Hinge pin height – fully raised	156.5 in (3 975 mm)	156.5 in (3 975 mm)
G. Overall length – bucket level on ground	307.2 in (7 802 mm)	312.9 in (7 948 mm)
Dump angle – fully raised	50°	50°
H. Dump height – fully raised, 45° dump	111.6 in (2 835 mm)	107.9 in (2 741 mm)
J. Bucket reach – fully raised, 45° dump	48.4 in (1 231 mm)	52.8 in (1 342 mm)
K. Bucket reach – 7 ft 0 in (2.13 m) height, 45° dump	67.7 in (1 719 mm)	70.2 in (1 782 mm)
Operating load – ISO Rigid Tires	10,798 lb (4 898 kg)	10,962 lb (4 972 kg)
Operating load – ISO Deflected Tires	9,357 lb (4 244 kg)	9,501 lb (4 310 kg)
Maximum material density – ISO Rigid Tires	3,599 lb/yd ³ (2 136 kg/m ³)	3,915 lb/yd ³ (2 323 kg/m ³)
Maximum material density – ISO Deflected Tires	3,119 lb/yd ³ (1 851 kg/m ³)	3,393 lb/yd ³ (2 013 kg/m ³)
Tipping load – ISO Rigid Tires:		
Straight	24,973 lb (11 327 kg)	25,332 lb (11 491 kg)
40° turn	21,595 lb (9 796 kg)	21,924 lb (9 945 kg)
Tipping load – ISO Deflected Tires:		
Straight	23,222 lb (10 533 kg)	23,554 lb (10 684 kg)
40° turn	18,714 lb (8 488 kg)	19,002 lb (8 619 kg)
Lift capacity:		
Full height	15,111 lb (6 854 kg)	15,216 lb (6 903 kg)
Ground	27,954 lb (12 680 kg)	28,241 lb (12 810 kg)
Breakout force with tilt cylinder	28,136 lb (12 762 kg)	30,175 lb (13 687 kg)
Maximum rollback:		
Ground	40°	40°
Carry position	45°	45°
@ Full height	57°	57°
L. Dig depth	3.1 in (78 mm)	3.1 in (78 mm)
Maximum grading angle with bucket – back dragging	60°	61°
Loader clearance circle with bucket	501.4 in (12 735 mm)	505.2 in (12 832 mm)

721G XR	3.0 yd³ GP Pin-On (2.3 m³) Bucket ACS Coupler with Bolt-on-Edge	2.8 yd³ GP Pin-On (2.1 m³) Bucket ACS Coupler with Teeth Only
Operating weight	33,861 lb (15 359 kg)	33,759 lb (15 313 kg)
E. Operating height – fully raised with spillguard	224.1 in (5 692 mm)	224.1 in (5 692 mm)
F. Hinge pin height – fully raised	172.0 in (4 369 mm)	172.0 in (4 369 mm)
G. Overall length – bucket level on ground	321.3 in (8 159 mm)	327.0 in (8 305 mm)
Dump angle – fully raised	50°	50°
H. Dump height – fully raised, 45° dump	127.1 in (3 230 mm)	123.5 in (3 136 mm)
J. Bucket reach – fully raised, 45° dump	48.5 in (1 232 mm)	52.9 in (1 343 mm)
K. Bucket reach – 7 ft 0 in (2.13 m) height, 45° dump	80.1 in (2 034 mm)	82.8 in (2 103 mm)
Operating load – ISO Rigid Tires	9,033 lb (4 097 kg)	9,171 lb (4 160 kg)
Operating load – ISO Deflected Tires	7,909 lb (3 587 kg)	8,032 lb (3 643 kg)
Maximum material density – ISO Rigid Tires	3,011 lb/yd ³ (1 787 kg/m ³)	3,275 lb/yd ³ (1 943 kg/m ³)
Maximum material density – ISO Deflected Tires	2,636 lb/yd ³ (1 564 kg/m ³)	2,869 lb/yd ³ (1 702 kg/m ³)
Tipping load – ISO Rigid Tires:		
Straight	21,033 lb (9 541 kg)	21,332 lb (9 676 kg)
40° turn	18,066 lb (8 195 kg)	18,341 lb (8 319 kg)
Tipping load – ISO Deflected Tires:		
Straight	19,703 lb (8 937 kg)	19,984 lb (9 065 kg)
40° turn	15,817 lb (7 174 kg)	16,065 lb (7 287 kg)
Lift capacity:		
Full height	14,003 lb (6 351 kg)	14,110 lb (6 400 kg)
Ground	23,201 lb (10 524 kg)	23,442 lb (10 633 kg)
Breakout force with tilt cylinder	28,045 lb (12 721 kg)	30,078 lb (13 643 kg)
Loader clearance circle with bucket	515.3 in (13 088 mm)	519.5 in (13 196 mm)

PERFORMANCE SPECS

721G XT	3.0 yd³ GP Pin-On (2.3 m³) Bucket (JRB-Compatable) with Bolt-on Edge	2.8 yd³ GP Pin-On (2.1 m³) Bucket (JRB-Compatable) with Teeth Only	3.0 yd³ GP (2.3 m³) Bucket (ACS-Compatable) with Bolt-on Edge	2.8 yd³ GP (2.1 m³) Bucket (ACS-Compatable) with Teeth Only
Operating weight	33,392 lb (15 146 kg)	33,290 lb (15 100 kg)	33,861 lb (15 359 kg)	33,759 lb (15 313 kg)
E. Operating height – fully raised with spillguard	217.1 in (5 515 mm)	217.1 in (5 516 mm)	219.1 in (5 564 mm)	219.1 in (5 564 mm)
F. Hinge pin height – fully raised	163.6 in (4 157 mm)	163.6 in (4 157 mm)	163.6 in (4 156 mm)	163.6 in (4 156 mm)
G. Overall length – bucket level on ground	312.7 in (7 942 mm)	318.4 in (8 086 mm)	315.2 in (8 005 mm)	320.9 in (8 151 mm)
Dump angle – fully raised	55°	55°	55°	55°
H. Dump height – fully raised, 45° dump	114.9 in (2 919 mm)	111.3 in (2 827 mm)	113.3 in (2 878 mm)	109.6 in (2 784 mm)
J. Bucket reach – fully raised, 45° dump	50.2 in (1 275 mm)	54.6 in (1 388 mm)	52.1 in (1 323 mm)	56.5 in (1 435 mm)
K. Bucket reach – 7 ft 0 in (2.13 m) height, 45° dump	72.0 in (1 828 mm)	74.6 in (1 894 mm)	73.1 in (1 856 mm)	75.5 in (1 918 mm)
Operating load – ISO Rigid Tires	10,237 lb (4 643 kg)	10,390 lb (4 713 kg)	9,851 lb (4 469 kg)	9,998 lb (4 535 kg)
Operating load – ISO Deflected Tires	8,844 lb (4 011 kg)	8,978 lb (4 072 kg)	8,481 lb (3 847 kg)	8,611 lb (3 906 kg)
Maximum material density – ISO Rigid Tires	3,412 lb/yd ³ (2 025 kg/m ³)	3 711 lb/yd ³ (2 202 kg/m ³)	3,284 lb/yd ³ (1 949 kg/m ³)	3,571 lb/yd ³ (2 119 kg/m ³)
Maximum material density – ISO Deflected Tires	3,948 lb/yd ³ (1 749 kg/m ³)	3,207 lb/yd ³ (1 903 kg/m ³)	2,827 lb/yd ³ (1 677 kg/m ³)	3,075 lb/yd ³ (1 825 kg/m ³)
Tipping load – ISO Rigid Tires:				
Straight	23,624 lb (10 716 kg)	23,956 lb (10 866 kg)	22,805 lb (10 344 kg)	23,124 lb (10 489 kg)
40° turn	20,474 lb (9 287 kg)	20,779 lb (9 425 kg)	19,703 lb (8 937 kg)	19,996 lb (9 070 kg)
Tipping load – ISO Deflected Tires:				
Straight	21,942 lb (9 953 kg)	22,250 lb (10 092 kg)	21,152 lb (9 595 kg)	21,449 lb (9 729 kg)
40° turn	17,687 lb (8 023 kg)	17,957 lb (8 145 kg)	16,962 lb (7 694 kg)	17,222 lb (7 812 kg)
Lift capacity:				
Full height	14,396 lb (6 530 kg)	14,564 lb (6 606 kg)	13,839 lb (6 277 kg)	14,003 lb (6 352 kg)
Ground	31,434 lb (14 258 kg)	31,483 lb (14,281 kg)	31,098 lb (14 106 kg)	31,112 lb (14 112 kg)
Breakout force with tilt cylinder	27,817 lb (12 618 kg)	29,706 lb (13 474 kg)	26,353 lb (11 954 kg)	28,074 lb (12 734 kg)
Loader clearance circle with bucket	497.9 in (12 647 mm)	500.8 in (12 720 mm)	499.0 in (12 674 mm)	501.9 in (12 749 mm)

NOTE: *Z-Bar performance data shown with full counterweight.

Performance data unit equipped with 23.5-R25 L3 Radial tires, ROPS cab with heater and A/C, full counterweight, standard batteries, front and rear fenders, full fuel and 165 lb (75 kg) operator. Specifications per SAE J732, J1234, J695, J742 and J818.

STANDARD EQUIPMENT

OPERATOR ENVIRONMENT

See page 1

ENGINE

Case/FPT F4HFE613T
Tier 4 Final Certified
Selectable work modes:
 Maximum Power
 Standard Power
 Economy Power
 Auto Power
Turbocharger
Charge air cooling
Automatic belt tensioner
Integral engine oil cooling
Fuel filter with water trap
Dual-element dry-type air cleaner
Hydraulic-driven cooling fan
Air-cooled radiator
Mid-mounted cooling module
Common rail electronic fuel injection

LOADER

See page 2 – Operating weight,
Other specifications

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
Limited-slip differentials
Heavy-duty axles – XT/XR
Outboard planetary axles
Transmission oil cooler
Brake pedal transmission
 disconnect – declutch
Hydraulic wet disc brakes
Spring-applied hydraulic release
 parking brake
Limp-Home Mode
Greaseable rear axle trunnion
3-piece rims

HYDRAULICS

Electro-hydraulic (EH) joystick loader control
Low-effort steering
Hydraulic driven cooling fan
Diagnostic quick couplers
Split flange hydraulic connections –
 1 in or greater

ELECTRICAL

Alternator and voltage regulator
Battery isolator/electrical disconnect
120 amp alternator
(2) 700 CCA 12-volt batteries
Electric starter
Lights:
 2 Front and 2 rear halogen flood lights
 2 Front driving headlights – high/low beam
 with integrated turn signals
 2 LED stop/tail lights with integrated
 turn signals
Key start/stop switch
Backup alarm
Centrally located fuse box
 with all electrical circuits protected
Remote jump start posts

OTHER

Electric hood lift
Front and rear fenders, partial coverage
Heavy counterweight
Drawbar hitch
Articulation locking bar
Lift arm locking bar
Lift and tie-down points – front/rear
Remote drain points
Grouped remote-mounted ecology drains:
 Engine oil
 Engine coolant
 Hydraulic oil

TELEMATICS

CASE SiteWatch™ Telematics – includes
hardware and a 3-yr Advanced
data subscription

OPTIONAL EQUIPMENT

OPERATOR ENVIRONMENT

- Cloth-covered heated air-suspension seat
- Leather trimmed heated air seat with active suspension
- Cloth mechanical suspension seat
- Headrest
- 3 in (76 mm) retractable seat belt
- Sound Shield noise suppression package
- Bluetooth radio, 12V AM/FM with auxiliary input
- Radio-ready – 12 or 24-volt with auxiliary power – 12-volt
- Cab convenience package:
 - Rear sun shade, interior mirror, under the seat drawer, coat hook, 12V accessory port, and an ash tray
- LED rotating beacon
- Rear view camera
- External rear view mirrors
- LED front and rear work lights
- Extra front-facing LED work lights

DRIVETRAIN

- 5F/3R Autoshift/manual shift transmission, lockup torque converter, PowerInch de-clutch
- Heavy-duty axles:
 - With locking front differential and rear open differential
- Cold weather package:
 - Heavy-duty (2) 950 CCA 12V batteries
 - Grid heater
 - Fuel heater
 - Hydraulic oil cooler bypass
 - Low temperature hydraulic oil
 - Fast-warm hydraulic valve

HYDRAULICS

- Auxiliary hydraulics
- Ride Control
- Secondary steering
- Joystick steering with and without secondary steering
- 2-function loader valve with single access control
- 3- function loader valve with 3 lever control or with joystick plus lever

LOADER

- XR extended reach version
- XT tool carrier version
- Attachment auxiliary hydraulics
- Coupler systems – JRB or ACS compatible
- Buckets – see pages 4 through 8
- 4 – 1 clamp buckets
- Forks

TIRES

- 20.5-25 16 PR L2 bias – dirt/traction
- 20.5-25 16 PR L3 bias – rock
- 20.5-R25 L2 radial – dirt/traction
- 20.5-R25 L3 radial – rock
- 20.5-R25 radial Michelin SnoPlus
- 20.5-R25 radial Bridgestone Snow Wedge
- SolidFlex HD solid tires on adapter rims
- Spare wheels and tires
- Axle oscillation stops

OTHER

- Additional RH steps and platform w/ standard or wide fenders
- Side guards for rear frame
- Tool box – ground level access
- Light counterweight – Z-Bar
- Fire extinguisher
- License plate bracket
- 12.4 mph (20 kph) maximum speed control
- Special paint

ADVANCED ENGINE AIR FILTRATION

- Heavy Debris cooling system:
 - Slanted cooling module cover
 - Auto reversing fan
 - Sy-Klone® ejective air pre-cleaner
 - Increased cooling fin spacing
 - Added cooling module sealing
- Variable speed hydraulic reversing fan
- Full view air pre-cleaner
- Sy-Klone® ejective air pre-cleaner

GUARDING

- Skid plate, transmission and front chassis bottom guards
- Windscreen guard
- Specialized guarding package:
 - Windscreen, articulation, front cover, chassis bottom, skid plate, transmission, lift cylinder, front lights, fuel tank, metal wrapped hoses and cylinder debris ejectors

