



## ENGINE

Model	FPT F5H FL413 E*B002
Emissions Certification	Tier 4 Final
Type	Diesel, Turbo – Direct Injection
Cylinders	4
Bore/Stroke	3.9 x 4.3 in (99 x 110 mm)
Displacement	207 in <sup>3</sup> (3.4 L)
Fuel injection	Direct
Fuel	#2 Diesel
Fuel filter:	
Pre-filter	Beta (30) = 200/spin-on
Main filter	Beta (4) = 20/spin-on
Air intake	Turbocharged w/ waste gate and external cooled EGR
Exhaust aftertreatment	Selective Catalytic Reduction – SCR
Cooling	Liquid
Engine speeds	RPM
High idle – no load	2500 +/- 25
Rated – full load	2500
Low idle	1150 +/- 25
Horsepower @ 2500 RPM – SAE J1349:	
Gross	90 hp (67 kW)
Net	84 hp (63 kW)
Peak torque @ 1400 RPM	282 lb-ft (383 N-m)
Radiator:	
Core type	Aluminum bar and plate
Core size area	2.21 ft <sup>2</sup> (0.206 m <sup>2</sup> )
Rows of tubes	21
Cap pressure	16 +/- 2 psi (1.10 +/- 0.14 bar)
Fan:	
Diameter	22 in (560 mm)
Ratio	0.96:1 standard, 1.1:1 high flow
Water pump:	
Style	Centrifugal
Flow	47.8 gpm (181 L/min)
Engine lubrication pump	Rotor pump w/ deep sump pan, plate cooler and pressurized under-piston nozzles
Pump operating angle ratings:	
Side to side	45°
Bucket up	35°
Bucket Down	45°

## LIFT GEOMETRY

Vertical Lift

## DRIVETRAIN

Drive pump controls	Servo-assist mechanical
Pump to engine ratio	1:1
Displacement	2.81 in <sup>3</sup> (46 cm <sup>3</sup> )
Flow @ rated engine RPM:	
@ 97% efficiency	29.4 gpm (111 L/min)
Charge pressure	360 psi (24.5 bar)
System relief pressure	5,220 psi (360 bar)

Drive pump controls	Electro-hydraulic
Pump to engine ratio	1:1
Displacement	2.75 in <sup>3</sup> (45 cm <sup>3</sup> )
Flow @ rated engine RPM:	
@ 97% efficiency	28.8 gpm (109 L/min)
Charge pressure	362 psi (25 bar)
System relief pressure	5,220 psi (360 bar)

Drive motors:	
Max. displacement	28.7 in <sup>3</sup> (470 cm <sup>3</sup> )
Displacement – optional:	
High speed	17.2 in <sup>3</sup> (282 cm <sup>3</sup> )
Motor RPM @ high idle and 97% efficiency:	
Standard 1-speed	237
Optional 2-speed	355
Motor torque @ max. displacement and relief pressure, calculated @ 5,220 psi (360 bar):	1,987 lb-ft (2 694 N-m)

Travel speed:	
Low range	7.0 mph (11.3 kph)
High range – optional	10.5 mph (16.9 kph)

Final drive Single-reduction chain drive

Drive chain:	
Size	ASA #100
Tensile strength	30,000 lb (133.4 kN)

Axles:	
Torque @ max. displacement and relief pressure	5,957 lb-ft (8 077 N-m)
Diameter	2.44 in (62 mm)
Length	15.6 in (396 mm)

Parking brake:	
Type	Spring-applied, hydraulic release multiple disc.
Engagement	Depress on/off brake button on handle or instrument panel, raise seat bar, get off seat or stop engine.

## ELECTRICAL

Alternator	160 amp
Starter	4.29 hp (3.2 kW)
Battery	12-volt low-maintenance 1,000 cold-cranking amps @ 0° F (-18° C°)

## OPERATOR ENVIRONMENT

Enclosed Cab w/ Heater and AC; Fully sealed and pressurized – FSP; Glass door w/ wiper and washer; Sliding side windows – removable; Heater and air conditioner; AM/FM radio w/ 2 speakers; Keyless start ignition; Tilt ROPS/FOPS;

Rear window w/ emergency escape; Deluxe cloth, air suspension seat, w/ 2 in (51 mm) retractable 3 point lap seat belt, w/ heater and lumbar support; Hand and foot throttle; Alarm package – back-up and horn; Headliner; Dome Light; Top window; Cup holder; 12V Power plug socket; Foot rest; Seat Pocket; Padded seat bar w/ integral armrests; Loader control lockout system; Electric parking brake control; Operator's compartment floor cleanout; Proportional auxiliary hydraulic control – on joystick; Advanced Instrument Cluster w/ digital hour meter, tachometer, fuel level LCD bar graph w/ alarm, DEF Level, diagnostic features and security lockout.

Warning lights with alarms:  
Engine coolant temperature; Engine oil pressure; Engine malfunction; Hydraulic charge pressure; Hydraulic filter restriction; Hydraulic oil temperature; Critical system stop, Engine system, Hydraulic system, Electrical and diagnostic system.

Warning alarms:  
Battery voltage – plus display; Diesel Exhaust Fluid (DEF); Oil service.

Indicator light:  
Engine preheat; Parking brake;  
Seat bar reminder.

## OPERATING WEIGHT

Unit equipped w/ open cab; 165 lb operator; 72 in Low Profile bucket; full of fuel;	
12 x 16.5 tires:	8,655 lb (3 925 kg)
Shipping weight	8,311 lb (3 770 kg)

Add-on weights:	
Side cab glass	47 lb (21.3 kg)
Polycarbonate cab door	75 lb (34.0 kg)
Glass cab door w/ wiper	75 lb (34.0 kg)
Suspension seat	22 lb (10.0 kg)
Additional counterweight	300 lb (136.0 kg)

## HYDRAULICS

Implement pump type	Gear
Displacement:	
Standard aux.	2.23 in <sup>3</sup> (36.6 cm <sup>3</sup> )
High-flow aux.	1.24 in <sup>3</sup> (20.4 cm <sup>3</sup> )

Standard flow @ rated engine RPM:  
@ 100% efficiency 24.2 gpm (91.5 L/min)

Optional high-flow @ rated engine RPM:  
@ 100% efficiency 37.6 gpm (142.5 L/min)

Enhanced high-flow @ rated engine RPM:  
@ 100% efficiency 35.0 gpm (132.5 L/min)

Loader control valve:	
Type	3 spool/open center/series - series
Relief pressure	3,046 psi (210 bar)

Port relief pressures:	
Loader raise	3,263 psi (225 bar)
Bucket curl	3,770 psi (260 bar)
Bucket dump	1,160 psi (80 bar)

Hydraulic lines:	
Tubing	37° JIC Flare
Loop hoses	SAE 100 R19

## HYDRAULICS CONT.

Hydraulic oil cooler:	
Number of fins	10 per inch (3.94 per cm)
Number of tube rows x columns	9 bar/plate
Area	138.7 in <sup>2</sup> (890 cm <sup>2</sup> )

Hydraulic filter	Beta (4) = 75/spin-on
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Lift cylinders:	
Bore diameter	2.75 in (69.85 mm)
Rod diameter	2.0 in (50.8 mm)
Stroke	34.9 in (886.5 mm)
Closed length	47.4 in (1 205 mm)

Bucket cylinders:	
Bore diameter	3.0 in (76.2 mm)
Rod diameter	1.5 in (38.1 mm)
Stroke	16.4 in (410 mm)
Closed length	24.0 in (610 mm)

## SERVICE CAPACITIES

Fuel tank	25.5 gal (96.5 L)
Engine oil w/ filter	8.9 qt (8.5 L)

Hydraulic system:	
Reservoir	6.0 gal (22.7 L)
Total	11.75 gal (44.5 L)

Chain tanks – per side	5.9 gal (22.2 L)
Diesel Exhaust Fluid (DEF) Tank	2.8 gal (10.7 L)

## PERFORMANCE SPECS

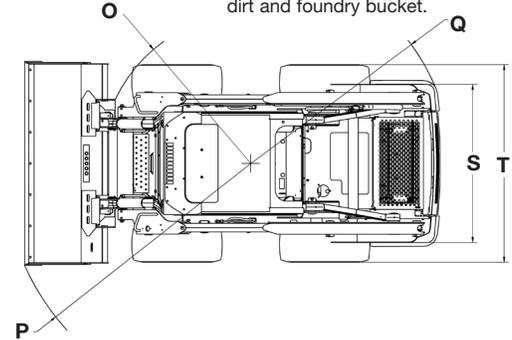
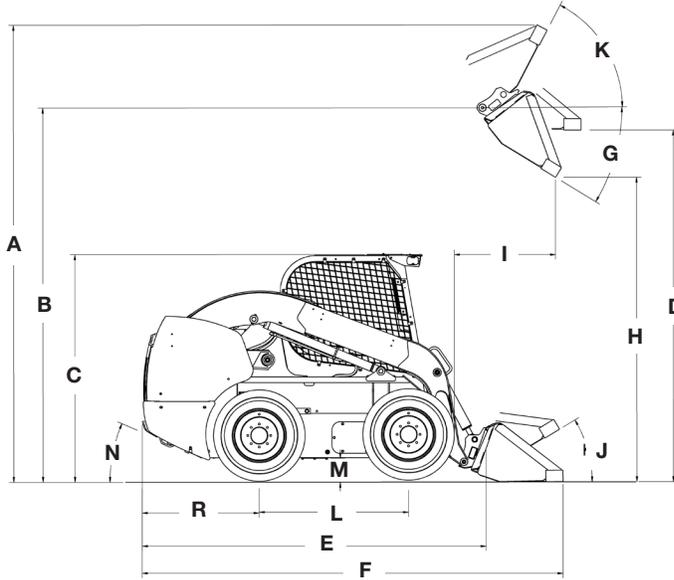
Rated operating capacity – ROC*:	
50% of tipping load	3,000 lb (1 360 kg)
w/ additional counterweight	3,200 lb (1 451 kg)

Tipping load*	6,000 lb (2 722 kg)
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Breakout forces @ 3,150 psi (217 bar)*:	
Bucket cylinders	8,776 lb (39.0 kN)
Lift cylinders – tip limit	6,237 lb (27.7 kN)

Cycle times:	
Raise	4.6 sec
Lower	3.5 sec
Dump	2.6 sec
Roll back	2.0 sec

NOTE: \*Measured using 72 in (1.83 m) dirt and foundry bucket.



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

## DIMENSIONS

A. Overall operating height:		
with foundry/excavating bucket		160.4 in (4.07 m)
with low profile bucket		164.4 in (4.18 m)
with low profile extended bucket		169.5 in (4.30 m)
Height to:		
B. Bucket hinge pin		130.0 in (3.30 m)
C. Top of ROPS		78.8 in (2.00 m)
D. Bottom of level bucket, fully raised		124.8 in (3.17 m)
Overall length:		
E. without attachment with coupler		119.1 in (3.02 m)
F. with foundry/excavating bucket on ground		143.2 in (3.64 m)
with low profile bucket		147.3 in (3.74 m)
with low profile extended bucket		152.4 in (3.87 m)
G. Maximum dump angle		53.5°
H. Dump height:		
with foundry/excavating bucket		103.5 in (2.63 m) @ 45°
with low profile bucket		100.6 in (2.56 m) @ 45°
I. Dump reach at maximum height with low profile bucket		29.3 in (0.74 m) @ 45°
Maximum attachment rollback:		
J. Bucket on ground		35.0°
K. Bucket at full height		86.0°
L. Wheelbase		52.0 in (1.32 m)
M. Ground clearance – bottom of belly pan		8.0 in (0.20 m)
N. Angle of departure		23.5°
Clearance circle:		
O. without bucket		56.2 in (1.43 m)
P. with 72 in (1.83 m) foundry/excavating bucket in carry position		84.1 in (2.14 m)
with 72 in (1.83 m) low profile bucket on ground		87.8 in (2.23 m)
with 72 in (1.83 m) extended low profile on ground		71.2 in (2.35 m)
Q. Clearance circle rear		70.4 in (1.81 m)
R. Rear axle to bumper		42.0 in (1.07 m)
S. Tread over gauge with spec tires		56.9 in (1.45 m)
T. Over the tire width spec tires		69.6 in (1.77 m)

## TIRE SELECTION

Type	Size	Tread Gauge	Over Tires Width	Each Tire Weight*
Heavy-Duty	12 L x 16.5	56.9 in (1.45 m)	70.0 in (1.78 m)	110 lb (50 kg)
Premium	12 L x 16.5	56.9 in (1.45 m)	70.0 in (1.78 m)	119 lb (54 kg)
Premium-Lined	12 L x 16.5	56.9 in (1.45 m)	70.0 in (1.78 m)	119 lb (54 kg)
Severe-Duty	12 L x 16.5	56.9 in (1.45 m)	70.0 in (1.78 m)	135 lb (61 kg)
Non-Pneumatic – Solid	12 L x 16.5	56.9 in (1.45 m)	70.0 in (1.78 m)	280 lb (127 kg)
Mining	12 L x 16.5	56.9 in (1.45 m)	70.0 in (1.78 m)	380 lb (173 kg)
Flotation	33 L x 15.5 x 16.5	59.0 in (1.50 m)	76.0 in (1.93 m)	143 lb (65 kg)
Premium	14 L x 17.5	62.0 in (1.58 m)	76.0 in (1.93 m)	148 lb (67 kg)

NOTE: \*Tire weight does not include the wheel weight.

## OPTIONAL BUCKETS

Type	Width	Weight	Heaped Capacity
Dirt & Foundry	72 in (1.83 m)	420 lb (190 kg)	16.2 ft <sup>3</sup> (0.46 m <sup>3</sup> )
	78 in (1.98 m)	440 lb (200 kg)	17.7 ft <sup>3</sup> (0.50 m <sup>3</sup> )
Low Profile	72 in (1.83 m)	480 lb (218 kg)	14.8 ft <sup>3</sup> (0.42 m <sup>3</sup> )
Low Profile Extended	72 in (1.83 m)	510 lb (232 kg)	17.7 ft <sup>3</sup> (0.50 m <sup>3</sup> )
	78 in (1.98 m)	540 lb (245 kg)	19.1 ft <sup>3</sup> (0.54 m <sup>3</sup> )
	84 in (2.13 m)	575 lb (262 kg)	20.5 ft <sup>3</sup> (0.58 m <sup>3</sup> )
Light Material	72 in (1.83 m)	475 lb (216 kg)	23.3 ft <sup>3</sup> (0.66 m <sup>3</sup> )
	84 in (2.13 m)	540 lb (245 kg)	27.5 ft <sup>3</sup> (0.78 m <sup>3</sup> )
Manure & Slurry	72 in (1.83 m)	480 lb (218 kg)	19.1 ft <sup>3</sup> (0.54 m <sup>3</sup> )
	84 in (2.13 m)	545 lb (248 kg)	22.6 ft <sup>3</sup> (0.64 m <sup>3</sup> )
Heavy-Duty	72 in (1.83 m)	510 lb (230 kg)	14.1 ft <sup>3</sup> (0.40 m <sup>3</sup> )
	78 in (1.98 m)	530 lb (240 kg)	15.5 ft <sup>3</sup> (0.44 m <sup>3</sup> )
	84 in (2.13 m)	550 lb (250 kg)	17.0 ft <sup>3</sup> (0.48 m <sup>3</sup> )
Heavy-Duty with spillguard	72 in (1.83 m)	585 lb (265 kg)	18.4 ft <sup>3</sup> (0.52 m <sup>3</sup> )
	78 in (1.98 m)	605 lb (275 kg)	19.8 ft <sup>3</sup> (0.56 m <sup>3</sup> )
	84 in (2.13 m)	640 lb (290 kg)	21.5 ft <sup>3</sup> (0.61 m <sup>3</sup> )

## STANDARD EQUIPMENT

### OPERATOR ENVIRONMENT

See page 1

### ENGINE

FPT F5H FL413 E\*B002  
207 CID (3.4 L) Turbo  
Tier 4 Final Certified  
Diesel Oxidation Catalyst (DOC) with  
Selective Catalytic Reduction  
(SCR) muffler  
Charged Air Cooler (CAC)  
High Pressure Common Rail (HPCR)  
fuel injection  
Horsepower:  
Gross: 90 hp (67 kW)  
Net: 84 hp (63 kW)  
Peak torque 282 lb-ft (383 N-m)  
160 amp alternator  
Dual element air cleaner  
Organic Acid Technology (OAT)  
Anti-freeze solution to -34° F  
Fuel tank - 25.5 gal (U.S.)  
Over and under radiator and oil cooler  
3-stack after cooler/radiator/oil  
cooler configuration  
Glow plugs

## OPTIONAL EQUIPMENT

### OPERATOR ENVIRONMENT

ROPS/FOPS Level 1 canopy  
with side screens  
Keyed start ignition  
Ventilation system with integrated heater  
Electro-hydraulic controls:  
For drive/steering, loader functions  
Switchable between H and ISO patterns  
Adjustable sensitivity of controls  
Mechanical hand controls  
Hand and foot controls:  
Hand controls the loader drive function  
and foot controls the bucket and boom  
Non suspension seat  
Suspension seat, vinyl  
Open cab interior trim package  
Demolition cab door with polycarbonate  
FOPS level 2

Integral engine oil cooler  
Fuel filter with water trap  
1,000 CCA 12V battery  
Master electrical disconnect

### DRIVETRAIN

2-speed hydrostatic four wheel drive  
ASA #100HS drive chain  
SAHR disc parking brake

### HYDRAULICS

Auxiliary hydraulics:  
@ 3,050 psi (210 bar) – 24.2 gpm  
(91.5 L/min)  
6 micron oil filtration system  
3-spool loader control valve  
Auxiliary hydraulic disconnects, ISO  
flat-face – connect-under-pressure  
with case drain  
Hydraulic circuit pedal lock  
Auxiliary function lockout override  
Loader lift lockout override  
Heavy-duty hydraulic oil cooler  
Loader arm float position  
Hydraulic one-way self-leveling  
Ride control

### HYDRAULICS

High-flow auxiliary hydraulics – combined:  
@ 3,050 psi (210 bar) – 37.6 gpm  
(142.5 L/min)  
Enhanced High-Flow auxiliary hydraulics – EHF:  
@ 4,000 psi (276 bar) – 35.0 gpm  
(132.5 L/min)  
Second auxiliary hydraulics

### LOADER

Auxiliary front electric control  
Hydraulic attachment coupler

### LOADER

Heavy duty hydraulic attachment coupler  
Vertical lift geometry  
Loader lift arm support strut  
SAE operating load: 3,000 lbs  
Tipping load: 6,000 lbs  
In-cab loader lock

### TIRES

12 X 16.5 Heavy duty

### OTHER STANDARD FEATURES

Halogen lights - 2 front, 2 side, 2 rear flood  
Heavy duty front lights  
Pre-wired for rotating beacon  
Lockable service access hood  
Single-point daily service  
Rear tail lights  
Remote oil drain  
Remote oil and fuel filters  
Block heater  
Debris ingress sealing  
Mounting points for add-on counterweights  
Heavy duty rear door

### OTHER

Language decals  
Factory-installed tires – see page 3  
Buckets – see page 3  
Bolt-on bucket cutting edges  
Bolt-on heavy-duty bucket spill guard  
Special paint  
Offsite service arrangement  
Telematics

### FACTORY SUPPLIED ATTACHMENTS

Interior mirror  
Add-on counterweights  
Road lights  
Rotating beacon  
Four-corner LED strobe  
Bolt-on heavy-duty bucket teeth  
48 in (1.22 m) pallet forks

### SERVICE PARTS

3 inch (76.2 mm) retractable seat belt

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