



## ENGINE

Model	Perkins 404F-E22TA
Emissions Certification	Tier 4 Final
Type	Diesel 4-stroke, Turbo. D.I.
Cylinders	4
Bore/Stroke	3.31 x 3.94 in (84 x 100 mm)
Displacement	135.2 in <sup>3</sup> (2.2 L)
Fuel injection	Direct, high pressure common rail – HPCR
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 intercooled w/ external EGR
Exhaust aftertreatment:	
	Diesel Oxidation Catalyst – DOC Diesel Particulate Filter – DPF
Cooling	Liquid
Engine speeds	RPM
High idle – no load	2825 +/- 25
Rated – full load	2800
Low idle	1200 +/- 50
Horsepower @ 2800 RPM – SAE J1349:	
Gross	60 hp (44.7 kW)
Net	57 hp (42.4 kW)
Peak torque @ 1800 RPM	153 lb-ft (208 N-m)
Radiator:	
Core type	Aluminum bar and plate
Core size area	265 in <sup>2</sup> (0.171 m <sup>2</sup> )
Rows of tubes	20
Cap pressure	16 +/- 2 psi (1.10 +/- 0.14 bar)
Fan:	
Diameter	17.7 in (450 mm)
Ratio	0.89:1
Water pump:	
Style	Centrifugal
Flow	14.7 gpm (55.5 L/min)
Engine lubrication pump	Pressure feed w/ Trichoid pump
Pump operating angle ratings:	
Side to side	35°
Bucket up	35°
Bucket Down	35°

## LIFT GEOMETRY

Vertical Lift

## DRIVETRAIN

Drive pump controls	Direct mechanical
Pump to engine ratio	1:1
Displacement	2.14 in <sup>3</sup> (35 cm <sup>3</sup> )
Flow @ rated engine RPM:	
@ 97% efficiency	25.1 gpm (95 L/min)
Charge pressure	360 psi (24.5 bar)
System relief pressure	5,000 psi (345 bar)
Drive pump controls	Electro-hydraulic
Pump to engine ratio	1:1
Displacement	2.14 in <sup>3</sup> (35 cm <sup>3</sup> )
Flow @ rated engine RPM:	
@ 97% efficiency	25.1 gpm (95 L/min)
Charge pressure	362 psi (24.5 bar)
System relief pressure	5,220 psi (360 bar)
Drive motors:	
Max. displacement	19.8 in <sup>3</sup> (325 cm <sup>3</sup> )
Displacement:	
High speed	12.2 in <sup>3</sup> (200 cm <sup>3</sup> )
Motor RPM @ high idle and 97% efficiency:	
2-speed	443
Motor torque @ max. displacement and relief pressure, calculated @ 5,000 psi (345 bar):	443 1,315 lb-ft (1 783 N-m)
Travel speed:	
Low range	7.4 mph (11.9 kph)
High range	10.8 mph (17.4 kph)
Final drive	Single-reduction chain drive
Drive chain:	
Size	ASA #80
Tensile strength	21,000 lb (93.4 kN)
Axles:	
Torque @ max. displacement and relief pressure	4,381 lb-ft (5 940 N-m)
Diameter	2.0 in (50.8 mm)
Length	15.1 in (384.0 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	120 amp
Starter	2.68 hp (2.0 kW)
Battery	12-volt low-maintenance 950 cold-cranking amps @ 0° F (-18° C)

## OPERATOR ENVIRONMENT

ROPS/FOPS Level 1 canopy w/ side screens;  
Keyed start ignition; Tilt ROPS/FOPS; Rear  
window w/ emergency escape; Suspension Seat,  
vinyl w/ 2 in (51 mm) retractable 3 point lap seat  
belt; Hand and foot throttle; Alarm package –  
back-up and horn; Rearview mirror; 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,  
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; Oil service.

### Indicator light:

Engine preheat; Parking brake;  
Seat bar reminder.

## OPERATING WEIGHT

Unit equipped w/ open cab; 165 lb operator;  
66 in Dirt & Foundry bucket; full of fuel;  
10 x 16.5 tires: 6,570 lb (2 980 kg)  
Shipping weight 6,270 lb (2 840 kg)

### Add-on weights:

Side cab glass 47 lb (21.3 kg)  
Polycarbonate cab door 74 lb (33.6 kg)  
Glass cab door w/ wiper 134 lb (60.8 kg)  
Suspension seat 22 lb (10.0 kg)  
Additional counterweight 140 lb (63.5 kg)

## HYDRAULICS

Implement pump type	Gear
Displacement:	
Standard aux.	1.7 in <sup>3</sup> (27.8 cm <sup>3</sup> )
High-flow aux.	0.84 in <sup>3</sup> (13.8 cm <sup>3</sup> )
Standard flow @ rated engine RPM: @ 100% efficiency	20.6 gpm (78.0 L/min)
Optional high-flow @ rated engine RPM: @ 100% efficiency	30.7 gpm (116.2 L/min)
Loader control valve:	
Type	3 spool/open center/series - series
Relief pressure	3,050 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
Hydraulic oil cooler:	
Number of fins	9.5 per inch (3.74 per cm)
Number of tube rows	7
Area	108 in <sup>2</sup> (700 cm <sup>2</sup> )
Hydraulic filter	Beta (4) = 75/spin-on

## HYDRAULICS CONT.

<b>Lift cylinders:</b>	
Bore diameter	2.50 in (63.5 mm)
Rod diameter	1.75 in (44.45 mm)
Stroke	26.81 in (681 mm)
Closed length	38.66 in (982 mm)
<b>Bucket cylinders:</b>	
Bore diameter	2.50 in (63.5 mm)
Rod diameter	1.38 in (34.9 mm)
Stroke	16.14 in (410 mm)
Closed length	24.02 in (610 mm)

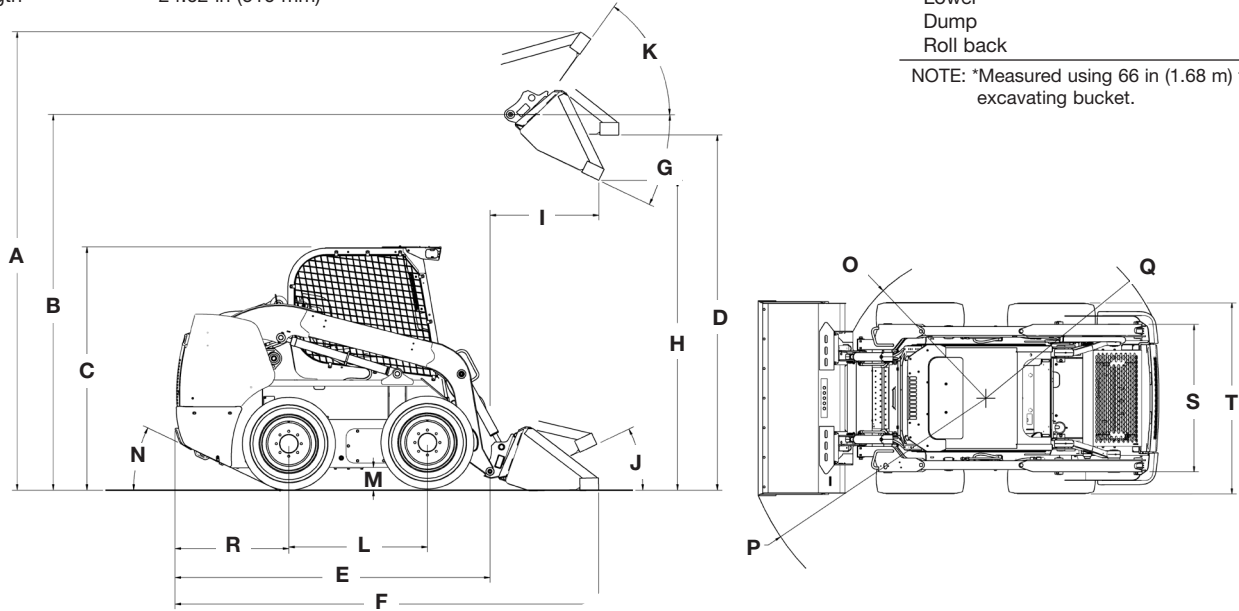
## SERVICE CAPACITIES

Fuel tank	19.5 gal (73.8 L)
Engine oil w/ filter	7.5 qt (7.1 L)
<b>Hydraulic system:</b>	
Reservoir	4.3 gal (16.3 L)
Total	8.5 gal (32.2 L)
Chain tanks – per side	1.95 gal (7.4 L)

## PERFORMANCE SPECS

<b>Rated operating capacity – ROC*:</b>	
50% of tipping load	1,850 lb (840 kg)
w/ additional counterweight	1,950 lb (885 kg)
Tipping load*	3,700 lb (1 678 kg)
<b>Breakout forces @ 3,150 psi (217 bar)*:</b>	
Bucket cylinders	5,550 lb (24.7 kN)
Lift cylinders – tip limit	3,450 lb (15.3 kN)
<b>Cycle times:</b>	
Raise	3.5 sec
Lower	2.3 sec
Dump	2.1 sec
Roll back	1.5 sec

NOTE: \*Measured using 66 in (1.68 m) foundry/ excavating bucket.



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

## DIMENSIONS

<b>A.</b> Overall operating height:	
with foundry/excavating bucket	150.4 in (3.82 m)
with low profile bucket	154.6 in (3.93 m)
with low profile extended bucket	159.6 in (4.06 m)
Height to:	
<b>B.</b> Bucket hinge pin	120.0 in (3.05 m)
<b>C.</b> Top of ROPS	77.7 in (1.97 m)
<b>D.</b> Bottom of level bucket, fully raised	113.2 in (2.88 m)
Overall length:	
<b>E.</b> without attachment with coupler	105.7 in (2.69 m)
<b>F.</b> with foundry/excavating bucket on ground	131.7 in (3.34 m)
with low profile bucket	135.8 in (3.45 m)
with low profile extended bucket	140.9 in (3.58 m)
<b>G.</b> Maximum dump angle	51.9°
<b>H.</b> Dump height:	
with foundry/excavating bucket	93.7 in (2.38 m) @ 45°
with low profile bucket	90.7 in (2.31 m) @ 45°
<b>I.</b> Dump reach at maximum height with low profile bucket	33.7 in (0.86 m) @ 45°
Maximum attachment rollback:	
<b>J.</b> Bucket on ground	35°
<b>K.</b> Bucket at full height	87.6°
<b>L.</b> Wheelbase	44.4 in (1.13 m)
<b>M.</b> Ground clearance – bottom of belly pan	7.0 in (0.18 m)
<b>N.</b> Angle of departure	23.0°
Clearance circle:	
<b>O.</b> without bucket	53.0 in (1.35 m)
<b>P.</b> with 66 in (1.68 m) foundry/excavating bucket in carry position	80.2 in (2.04 m)
with 66 in (1.68 m) low profile bucket on ground	83.9 in (2.13 m)
with 66 in (1.68 m) extended low profile on ground	88.6 in (2.25 m)
<b>Q.</b> Clearance circle rear	62.9 in (1.60 m)
<b>R.</b> Rear axle to bumper	36.4 in (0.92 m)
<b>S.</b> Tread over gauge with spec lines	53.9 in (1.37 m)
<b>T.</b> Over the tire width spec tires	64.6 in (1.64 m)

**OPTIONAL BUCKETS**

Type	Width	Weight	Heaped Capacity
Dirt & Foundry	66 in (1.68 m)	385 lb (175 kg)	14.8 ft <sup>3</sup> (0.42 m <sup>3</sup> )
	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	66 in (1.68 m)	440 lb (200 kg)	13.4 ft <sup>3</sup> (0.38 m <sup>3</sup> )
	72 in (1.83 m)	480 lb (218 kg)	14.8 ft <sup>3</sup> (0.42 m <sup>3</sup> )
Low Profile Extended	66 in (1.68 m)	470 lb (214 kg)	15.9 ft <sup>3</sup> (0.45 m <sup>3</sup> )
	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> )
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> )
Heavy-Duty Extended with SmartFit Teeth	72 in (1.83 m)	667 lb (303 kg)	17.4 ft <sup>3</sup> (0.49 m <sup>3</sup> )
	78 in (1.98 m)	697 lb (316 kg)	18.9 ft <sup>3</sup> (0.54 m <sup>3</sup> )

## STANDARD EQUIPMENT

### OPERATOR ENVIRONMENT

See page 1

### ENGINE

Charged Air Cooler (CAC)  
Dual element air cleaner  
Organic Acid Technology (OAT)  
Anti-freeze solution to -34° F  
Fuel tank – 20 gal (U.S.)  
Over and under radiator and oil cooler  
3-stack after cooler/radiator/oil cooler configuration  
Glow plugs  
Integral engine oil cooler  
Fuel filter with water trap  
925 CCA 12V battery  
Master electrical disconnect

### DRIVETRAIN

2-speed hydrostatic four wheel drive  
ASA #80 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  
Loader function lockout system

### LOADER

Auxiliary front electric control  
Manual attachment coupler  
Vertical lift geometry  
In-cab loader lock

### TIRES

10 X 16.5 Heavy duty

### OTHER STANDARD FEATURES

Halogen lights – 2 front, 2 side, 2 rear flood  
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

## OPTIONAL AND FIELD INSTALLED EQUIPMENT

### OPERATOR ENVIRONMENT

Enclosed cab:  
Fully sealed and pressurized – FSP  
Glass door with wiper and washer  
Sliding side windows – removable  
Heater and air conditioner  
AM/FM Bluetooth radio with 2 speakers  
Keyless start ignition  
8 in Color LCD Display  
Economy Mode (auto idle shutdown)  
Auto Engine Protection Shutdown  
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  
Deluxe cloth, air suspension seat, with heater and lumbar support  
Demolition cab door with polycarbonate

Ignition Timeout  
Machine Settings User Access Levels  
Operator Security Codes

### HYDRAULICS

High-flow auxiliary hydraulics – combined:  
@ 3,050 psi (210 bar) – 30.7 gpm  
(116.2 L/min)  
Hydraulic one-way self-leveling  
Auto Ride Control  
Ride control

### LOADER

Hydraulic attachment coupler

### DRIVETRAIN

Creep Speed Mode

### OTHER

Language decals  
Buckets – see page 3  
Bolt-on bucket cutting edges  
Special paint  
CASE SiteWatch™ Telematics  
Rotating beacon  
4 Point Lift Hook

### SERVICE PARTS

3 inch (76.2 mm) retractable seat belt  
Bolt-on heavy-duty bucket teeth  
Second auxiliary hydraulics  
Add-on counterweights  
Road lights  
Four-corner LED strobe  
Fire Extinguisher  
Tamper Resistant Front Door Bracket  
Bucket Cylinder Guards  
Single Point Lift Hook  
FOPS level 2  
Aspirator  
Attachment Hose Guide Kit  
Drawbar

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