

SEM
WHEEL LOADER

SEM 665F



The 665F introduces a groundbreaking automatic electric-hydraulic control countershaft transmission, which delivers smooth shifting. Additionally, it features an optimized heavy-duty tailored axle, ensuring high reliability and enhanced comfort.

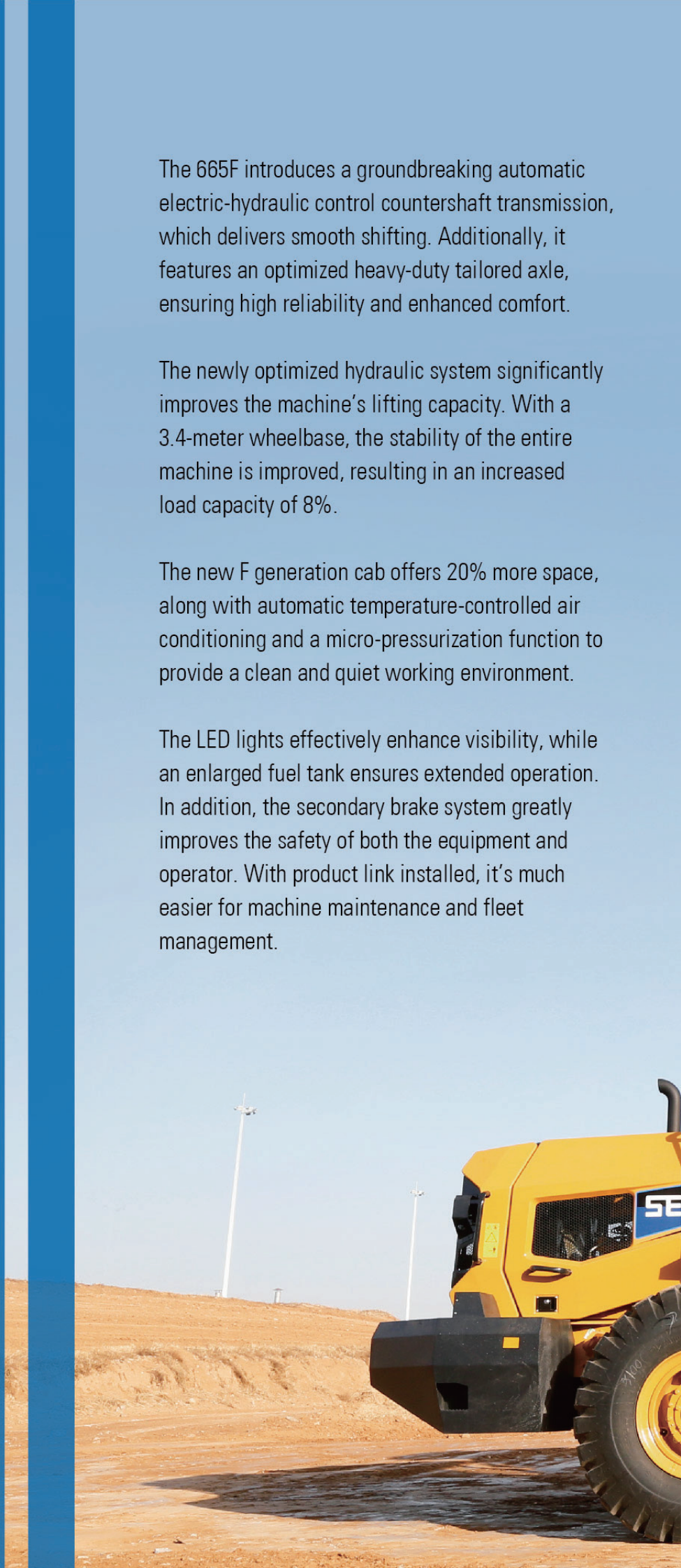
The newly optimized hydraulic system significantly improves the machine's lifting capacity. With a 3.4-meter wheelbase, the stability of the entire machine is improved, resulting in an increased load capacity of 8%.

The new F generation cab offers 20% more space, along with automatic temperature-controlled air conditioning and a micro-pressurization function to provide a clean and quiet working environment.

The LED lights effectively enhance visibility, while an enlarged fuel tank ensures extended operation. In addition, the secondary brake system greatly improves the safety of both the equipment and operator. With product link installed, it's much easier for machine maintenance and fleet management.

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NEW Ttransmission - Smooth & Efficient

- SEM TR220 EH control countershaft transmission features , F2/R1 gear settings, with the 1st gear catering to most work needs, eliminating the need for frequent gear changes and ensuring easy operation.
- The automatic shifting mode further reduces operator fatigue.
- Caterpillar's extensive experience in countershaft transmission design and manufacturing ensures reliability.
- Excellent matching between engine and transmission offers a greater range of transmission efficiency, resulting in improved efficiency and fuel economy.
- Fine-tuned gear shifting and a self-protection mechanism guarantee exceptional longevity.

Improved Productivity

- An extended wheelbase improves the tipping load, increasing the rated load to 6.5 tons and optimizing loading capability.
- The performance series bucket can accommodate 10% more material.
- The single load-sensing hydraulic system guarantees faster hydraulic cycle times of 9.8 s, allowing the machine to respond quickly.
- With a large hitch frame and 50/50 split at the center of articulation, the machine is both flexible and stable.
- Improved drawbar pull force ensures easy and full bucket loading.
- The large-displacement coaxial flow steering unit provides better maneuverability and smooth steering.

Powerful Performance

- Customized Weichai engine ensures optimal compatibility with the machine systems to deliver robust power.
- An optimized hydraulic system increases pressure from 18 Mpa to 20 Mpa, effectively improving the boom lifting force.
- Breakout force, drawbar force and boom lifting force ensure the machine can handle all kinds of challenging jobsites.
- New optimized axle differential and casing bolts improve reliability, with the SO36 axle available for extremely heavy applications.
- The modular design cooling system provides excellent cooling performance, with a high ambient cooling package also available.



1 Upgraded Transmission Smooth & Efficient

- SEM TR220 EH control countershaft transmission offers simple and efficient operation.
- Excellent matching between the engine and TR220 transmission results in a greater range of transmission efficiency for improved efficiency and fuel economy.
- 2-speed automatic transmission features F2/R1 gear settings, allowing the 1st gear to handle most duties and eliminating the need for frequent gear changes.
- The fully automatic shifting mode further reduces operator fatigue.
- Improved drawbar pull force and bucket ensure easy insertion into stockpiles and full loading.
- The large-displacement coaxial flow steering unit delivers better maneuverability and smooth steering.
- With an electronically controlled automatic leveling function, the operator can freely define bucket lifting and tilting positions based on working conditions.
- Proven countershaft transmission design and manufacturing experience ensure reliability.
 - Tapered bearing design effectively ensures gearbox service life.
 - The gearbox undergoes a variety of verification processes to ensure reliability.
 - Unique transmission protection function ensures reliability and safety.





2 More Productive

- Extended wheelbase and optimized axle greatly increase machine load capacity.
- The full steering tipping load is significantly increased, with the rated load increased to 6.5 tons to better meet the needs of heavy-load applications.
- The 665F adopts a 3.4-meter-long wheelbase design, greatly improving stability and loading capacity.
- The performance series bucket can load 10% more material and easily be inserted into material piles, effectively reducing fuel consumption.
- The single-load sensing hydraulic system guarantees faster hydraulic motions, with hydraulic cycle time of 9.8 s. The machine responds quickly and loads more efficiently, providing additional traction force to the tires to enhance working efficiency when the hydraulic system is insufficient. In addition, the system supplies flow and pressure only when required, saving fuel consumption by 8%-12% and effectively reducing the load on the radiator system.
- With a large hitch frame and 50/50 split at the center of articulation, the machine is flexible and stable.
- The drive shaft uses a face-tooth structure, effectively improving reliability.

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Supercharged Machine

- Optimized hydraulic system and increased pressure from 18 Mpa to 20 Mpa, effectively improve boom lifting force.
- Standard single-lever pilot control and optional dual-lever pilot control offer flexible configuration for comfortable operation.
- New optimized axle differential and casing bolts improve reliability and load capacity, with the SO36 axle available for order for heavy-duty applications.
- The modular design cooling system delivers excellent cooling performance and reduces maintenance costs, with an optional high ambient cooling package available. The cooling tail door can be opened from the back, making maintenance convenient.
- Secondary braking serves as the parking brake, with continuously adjustable parking brake force to ensure operator and equipment safety in emergency situations.
- The fuel tank's effective capacity is now increased to 303 liters, effectively improving the machine's endurance.
- A variety of lift arms and work tools are provided to meet the needs of different customers and applications.



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Comfortable Operating Environment

- The integrally molded cab features ample space (20% wider than the D Series) and excellent visibility. The fresh air pressurization function keeps the cab cleaner, while automatic temperature control air conditioning and a multi-air-vent design achieve better defrosting performance and faster temperature adjustment.
- Full interior trim and ergonomic design make operations easier, and features such as a multi-directional adjustable suspension seat, sun visor, arm and hand rests, 24 V charging port, and adjustable steering column ensure all controls are within reach.
- The front instrument panel provides all necessary equipment information and includes a three-phase alarm function. An optional rear camera allows for better monitoring the machine's working status.
- Caterpillar's technology shock-absorbing system effectively mitigates cab and engine vibrations, enhancing reliability and comfort.



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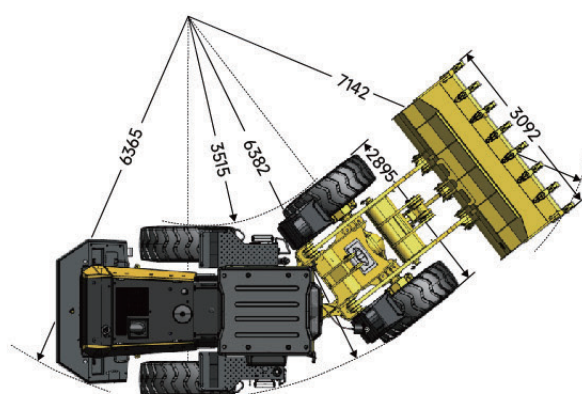
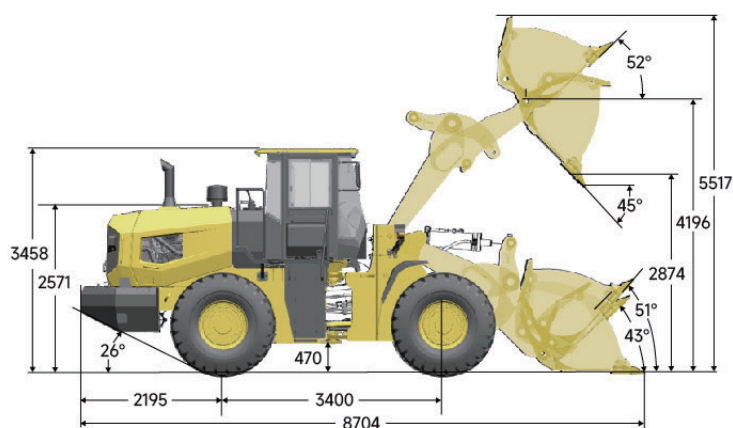
Enhanced Reliability

- Professionally tuned gearshift and self-protection feature guarantee a more durable transmission. The electrohydraulic control transmission, designed and manufactured by Caterpillar, provides greater reliability while lowering maintenance costs.
- SEM customized 2,000 rpm Weichai engine achieves optimal compatibility with the machine system, delivering impressive power and lower fuel consumption.
- The 3-stage air filter design ensures high filtration efficiency, with the first-stage filter element achieving up to 93% filtration to reduce early wear by 90%. The optional oil bath air filter provides lower maintenance cost under severe working conditions.
- Caterpillar's C-link technology (Dynamic fatigue strength analysis and performance optimization), FEA (Finite element analysis), and OMSA (On machine stress-strain analysis) are applied to significantly guarantee the reliability and life of the machine chassis.
- Proven design for hydraulic system and axle.

Main Specifications

Items		665F	Items		665F
Main Specifications			Engine		
Rated Load	kg	6,500 (for Std. Linkage)	Model		WD10G240
Operating Weight with Standard Bucket	kg	20,500	Rated Power	kW	178
Bucket Capacity	m³	2.9-5.5	Rated Speed	r/min	2,000
Wheelbase	mm	3,400	Displacement	L	9.7
Overall Dimension	mm	8,704*3,092*3,458	Implement Hydraulic		
Max. Drawbar Force	kN	220	Implement System Type		Open center flow sharing
Breakout Force	kN	188	Boom Raise Time	s	5.7
Dump Clearance	mm	3,050	Hydraulic Cycle Time	s	9.8
B-Pin Height	mm	4,196 (for Std. Linkage)	System Pressure Setting	MPa	20
Transmission			Brake System		
Transmission Type		EH countershaft. power shift	Service Brake		Dry & caliper, air to oil control
Transmission Gears		F2/R1	Parking Brake		Drum/Shoe
Maker & Type		SEM TR220	Steering System		
Forward I	km/h	11.6	System Type		Load sensing
Forward II	km/h	38.5	Steering Pump Type		Piston pump
Reverse I	km/h	15.5	System Pressure Setting	MPa	18
Axle			Steering Angle (L/R)	°	38±1
Main Drive Type		Spiral bevel gear, single stage	Tires		
Final Drive Reduction Type		Planetary type, single stage	Size		23.5-25
Rear - Oscillating +/-	°	±11	Type		Bias
			Layer		20
			Textured Type		L-3

Dimensions



WORK TOOLS

Capacity (m³)	Description	Lift Arm	Image	Dump Clearance (mm)	B Pin Height (mm)	Dump Reach (mm)	Work Tool W*L*H (mm)	Work Tool Weight (kg)	Note
2.8	BKTA SD ST 3080 mm	STD		4,080/ 2,839	4,196	190/ 1,516	3,080*2,072*1,727	3,420	Side dump bucket, with tips and segments
2.9	BKTA RSP ST 3100 mm	STD		2,827	4,196	1,456	3,100*1,746*1,379	2,369	Spade nose rock bucket with tips and segments and sidebar protectors
3.3	BKTA RST ST 3078 mm	STD		3,107	4,196	1,302	3,078*1,535*1,378	2,171	Rock bucket, with tips, segments and protector side bar.
3.5	BKTA FF ST 3094 mm	STD/ HL/SHL		3,051/ 3,426/3,686	4,196/ 4,530/4,774	1,397/ 1,407/1,231	3,094*1,691*1,442	1,917	Performance series bucket, with tooth
3.5	BKT SD ST 3206 mm	STD		4,030/ 2,749	4,196	230/ 1,763	3,206*2,212*1,735	3,612	Side dump bucket, with tips and segments
3.6	BKTA FF ST 3020 mm	STD/ HL/SHL		2,996/ 3,390/3,611	4,196/ 4,530/4,774	1,290/ 1,293/1,242	3,020*1,515*1,415	1,890	Performance series bucket, with cutting edge
4	BKTA GP ST 3394 mm	STD/ HL/SHL		3,096/ 3,430/3,674	4,196/ 4,530/4,774	1,382/ 1,323/1,281	3,394*1,714*1,543	2,099	Premium performance series bucket, with tooth
4.1	BKTA GP ST 3370 mm	STD/ HL/SHL		3,048/ 3,382/3,626	4,196/ 4,530/4,774	1,399/ 1,341/1,298	3,370*1,540*1,521	2,057	Premium performance series bucket, with cutting edge
4.5	BKTA FF ST 3370 mm	HL/SHL		3,353/3,598	4,530/4,774	1,357/1,293	3,370*1,560*1,524	2,063	With cutting edge
5.5	BKTA FF ST 3520 mm	STD/SHL		2,870/3,405	4,196/4,774	1,545/1,469	3,520*1,795*1,452	2,611	Coal bucket, with Cutting edge
7.5	BKT FF LM 3520 mm	SHL		3,737	5,173	1,710	3,520*1,820*1,828	2,600	Light material bucket



With its rich configuration and diverse array of work tools, the 665F is ready to tackle any challenge thrown its way, while the bold design of the F generation family ensures it stands out on any worksite. Featuring a long wheelbase design and optimized lifting force, the 665F is primed to excel in demanding environments such as ports, mines, steel plants, sand and gravel operations, earthwork projects, and other heavy-duty conditions.



Standard Equipment

ENGINE

- Weichai WD10G240 Engine EPA Tier 2/EU Stage II engine output 178 kW (239 hp), 6 cylinders, 4 stroke
- Mechanical direct fuel injection system
- Pre-filter with water separator
- Fuel filter
- E-fan

TRANSMISSION

- Electrical hydraulic control countershaft transmission

AXLE

- SEM dry axle without limited slip differentials
- Caliper discs service brake system
- Parking brake service

HYDRAULIC SYSTEM

- Two pump flow sharing system
- Single joystick control
- Lift arm kick-out, automatic
- Bucket positioner, automatic
- Plugs for pressure check and sample oil
- Emergency lift arm lower via pilot accumulator

STEERING SYSTEM

- Load sensing system with coaxial flow amplification and steering priority
- Piston pump

TIRE & RIM

- 23.5-25, L3/E3, bias tire
- Normal fender with rubber plate

CHASSIS FRAME

- Spacious central articulation arrangement with conic bearing
- Articulation locking bar
- Tow hitch

LINKAGE & ATTACHMENTS

- Z-bar linkage

ELECTRIC SYSTEM

- Two front lights with high/low beam
- Two front headlights on top of cab
- Two rear headlight sides of hood
- Turn signals with flasher
- Batteries, free of maintenance
- 24 V power outlet
- Electric horn
- Front windshield wiper
- Back-up alarm
- Reversing warning light, automatic
- Rotating beacon
- Radio/player with bluetooth port

DASHBOARD

- Engine coolant temperature
- Transmission oil temperature
- Fuel level
- Hour meter
- Voltage

ALARM SYSTEM

- Intake air filter alert
- Battery charging
- Brake oil pressure
- Parking brake applied
- Power cut-off
- Turning lights
- Transmission oil pressure alarm

CAB

- Seat - mechanical suspension with seat belt
- Adjustable steering column
- Cab marco mounts
- Cab fresh air filter
- One interior & dual exterior rear view mirrors
- Cab rear wiper and washer
- HVAC

OTHERS

- Manual central lubrication
- Product link (available for certified countries, check details with your local SEM dealers)
- License-plate bracket and light

Optional Equipment

ENGINE

- Oil bath air filter

COOLING

- High ambient cooking package

AXLE

- S036 heavy duty axle

TIRE & RIM

- Radial tire
- Tubeless tire 26.5-25
- Desert pattern tire

CAB

- ROPS cab
- Rear-view camera
- Cab top protection guard

LINKAGE & ATTACHMENTS

- Additional counterweight
- High / Super-high linkage
- Rock bucket
- Coal bucket
- Aggregate bucket
- Log grapple with corresponding and crossed teeth
- Quick coupler
- Forke

CONTROL

- 2-lever pilot control
- 3-lever pilot control for 3 rd valve
- Joystick + 1 lever pilot control for 3 rd valve

OTHERS

- Brake air drier
- Transmission protective guard

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