

SEM
MOTOR GRADER

SEM

920F/922F



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The SEM F series Tier 2 Motor Grader is equipped with an SDEC engine and a PPPC load-sensing hydraulic system for consistent and precise blade movement and reduced fuel consumption. The SEM rear tandem axle, designed and manufactured by Caterpillar, leverages the proven Caterpillar tandem axle design to deliver differentiated reliability and a longer service life, resulting in lower owning & operating costs.

In response to customer suggestions and feedback, the new generation F series Motor Grader has been upgraded to better meet the needs of customers and further improve machine performance. This includes the removal of the transmission shaft, direct connection of the hydraulic pump to the gearbox, and a new molded engine hood with a contemporary aesthetic, providing the machine with a striking and impactful visual design.

With these enhancements, SEM's new F series Motor Grader offers improved competitiveness and solutions to support the success of our dealers and customers.



Operate in comfort

- Standard float function for high efficiency and simple operation.
- Caterpillar's classic lever control with a short distance and stroke.
- Adjustable console and seat with optimized ergonomics.
- Cab with improved airtightness and noise reduction.
- Added vents in the new dashboard and cab columns for increased comfort.

Low cost per hour

- Less heat and fuel consumption; load-sensing and PPPC hydraulic system offer increased efficiency.
- Hydraulic cooling fan, high efficiency in various ambient temperature conditions and enhances cooling effect.
- Caterpillar (Qingzhou) in-house tandem axle, final drive units with four planetary gears, oil-bath lubrication, and maintenance-free and adjustment-free chain support a higher carrying capability.
- Dismountable drawbar ball joint for easy replacement and maintenance.

Performance you need

- Up to 2 times more circle drive torque than the industry standard for increased working efficiency.
- PPPC hydraulic system ensures precise, predictable and consistent operational movement regardless of engine speed.
- Cab is mounted in the frontal frame to provide enhanced visibility for convenient operations.
- 7-hole linkbar of Electro Hydraulic pin puller offers excellent extensibility of the moldboard, delivering superior performance.



1

High efficiency and reliability

- World-class variable displacement piston pump and proportional priority pressure compensating (PPPC) valves with a load sensor hydraulic system specifically designed for motor grader applications, ensuring continuous matching of hydraulic flow and pressure to power demands while allowing for ease of multi-function control and reduction of energy loss for optimizing working efficiency.
- The implement pump has been moved to the Power take-off (PTO) port of transmission and the pump drive shaft under the cab has been removed, decreased working noise, less points for daily maintenance and easy to own.
- The standard blade float function allows the blade to lower without hydraulic pressure for increased versatility, providing protection for the machine and pavement during snow removal, while reducing the difficulty of work and operator intensity and effectively improving construction efficiency.
- Class-leading circle drive torque delivers higher material spreading and blading capability with superior working efficiency.
- Versatile configurations can meet various customer needs, including options like handle throttle, Drawbar Circle Moldboard (DCM) grease tank, level gauge, rear camera, and transmission guard.





2

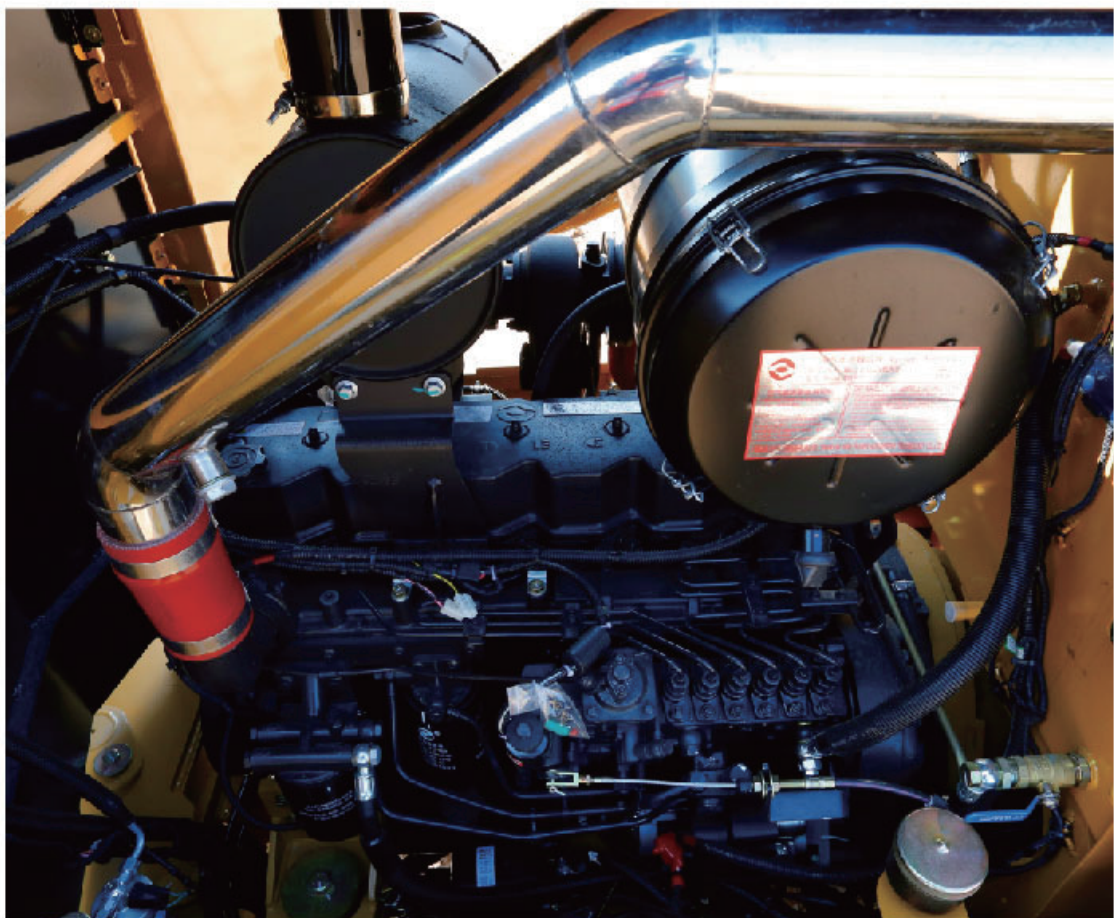
Ease of operation

- The cab, mounted on the front frame, provides an exceptional view of the blade and front axle even when using articulation, ensuring the safety and accuracy of operation.
- Short throw levers are efficiently spaced, allowing ease of multi-function control. The short lever stroke coupled with low lever effort, reduces operator fatigue with and enhances overall operation efficiency.
- The PPPC load sensing hydraulic system maintains consistent and precise blade movement, whether extending or retracting the cylinder, regardless of variable engine speed.
- 7-hole link bar with electro-hydraulic control allows for ease of operation within the cab, providing excellent blade extension capability.
- Air conditioning is standard, with additional air vents from the dashboard and left and right cab columns for improved comfort. The optimization of cab sealing capability further contributes to lower noise and vibration levels.

3

Robustness and durability

- The A-frame tubular design drawbar provides maximum strength and durability. The flanged box section front frame removes welds from high-stress areas, improving reliability and durability. Continuous top and bottom plate construction ensures consistency and strength, further enhancing front frame durability.
- Leveraging Caterpillar's design and experience with the Motor Grader tandem axle, there's an improved bearing layout and optimized load distribution with a final drive featuring four planetary gears, oil bath tandem axle, and longer service intervals for lubrication oil changes without the need to fill in grease frequently.
- Inboard lock check valves within the PPPC system prevent inadvertent cylinder movement and potential leaks.
- The hydraulic driven cooling fan comes with a standard 43 °C and optional 50 °C cooling package, providing better adaptability for all kinds of application environments.





4

Ease of maintenance and lower cost

- New family style metal molded hood offers a bold visual impact, and right and left lateral doors for easy service and maintenance.
- Replaceable drawbar draft ball (bolted – not welded), allowing for easy removal of wear shims to adjust the drawbar, resulting in less service time and cost.
- The axle tandem comes with an external disk service brake, providing superior braking and a shorter brake distance. The SEM Wheel Loader-compatible friction plate allows for easy replacement, and high reliability, while the grease-free lubrication design of the rear axle and tandem, along with the chain adjustment-free design, prolongs the maintenance cycle, contributing to lower cost of ownership.
- Hydraulic hose routing minimizes exposure to damage and provides quick access for service.
- One-key operation for convenient machine and fleet management.
- The transmission filling port is raised up to ease oil changing and protect the port from crashes. Additionally, the transmission oil level dipstick has been replaced with a glasses level gauge, making inspection much more convenient.



5

Operational safety

- The disk service brake features dual circuit braking separately for front/rear braking and left/right braking, ensuring high safety standards.
- The dashboard includes a 3-level alarm monitoring system.
- A three-point contact handrail is provided for easy access and regular inspection and maintenance.





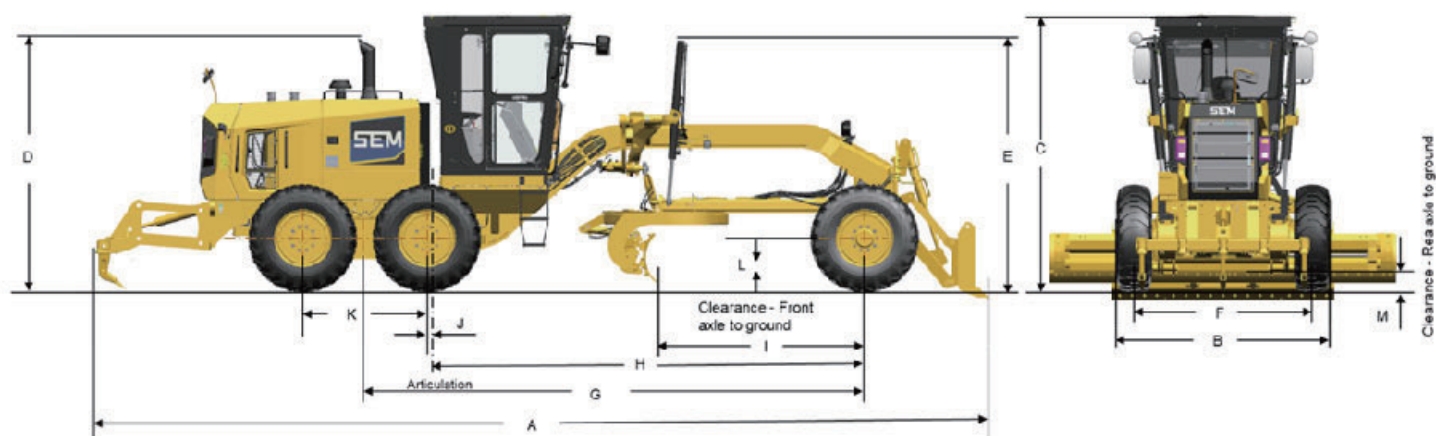
Typical applications such as ground leveling and trenching, slope scraping, bulldozing, snow removal, loosening, distribution, mixing and land reclamation, etc. It is an important equipment in the construction of mine construction, road construction, water conservancy construction and farmland turning and leveling.



Main Parameters		
Items	920F	922F
Main specifications		
Standard Weight/kg (Non ROPS high profile plus)	15,435	16,340
Standard Weight/kg (with ROPS)	15,735	16,640
Overall Dimensions (L*W*H)	11,100*2,630*3,140	11,100*2,630*3,140
Travel Speed (Forward/Reverse) km/h	40/25	40/25
Max. Drawbar traction/kN	87	99
Frame Articulation Angle	20°	20°
Min. Turning Radius/mm	7,800	7,800
Tire	17.5-25 12PR	17.5-25 12PR
Engine		
Engine Manufacturer	SDEC	SDEC
Engine Model	SC7H200.2G2	SC9D220G2
Net Power/kW@RPM	147 @ 2200	162 @ 2200
Max. Torque/N.m@RPM	760 @ 1400	920 @ 1400
Emission	Tier 2	Tier 2
Transmission		
Brand/Manufacturer	Advance/HangChi	Advance/HangChi
Type	Converter, Powershift	Converter, Powershift
Forward/Reverse Gears	6 Forward/3 Reverse	6 Forward/3 Reverse
Rear Axle/Tandem		
Brand/Manufacturer	SEM/Caterpillar	SEM/Caterpillar
Differential	No-Spin	No-Spin
Service Brake	Air over oil, Disc	Air over oil, Disc
Oscillation Front Up	15°	15°
Oscillation Front Down	25°	25°

Main Parameters		
Items	920F	922F
Front Axle		
Ground Clearance/mm	630	630
Wheel Lean, left/right	±18°	±18°
Max. Oscillation	±16°	±16°
Steering Range, left/right	±47.5°	±47.5°
Hydraulic System		
Circuit Type	Load Sensing, PPPC	Load Sensing, PPPC
Pump Type	Variable Piston	Variable Piston
Moldboard		
Blade Width, STD/mm	3,974	4,279
Blade Width, OPT/mm	3,669/4,279	3,669/3,974
Blade Height/mm	610	610
Blade Thickness/mm	20	20
Max. Lifting Height/mm	475	475
Max. Cut Depth/mm	715	715
Float Function	YES	YES
Service Refill Capacity		
Fuel Tank/L	280	280
Engine Oil/L	17.5	26
Coolant/L	50	50
Transmission/L	28	36
Differential Case/L	33	33
Tandem Case, each side/L	62	63
Circle Drive, Non Slip Clutch/L	2	2
Circle Drive, With Slip Clutch/L	7	7
Hydraulic Oil Tank/L	55	60

Dimension



Unit: mm		920F	922F
A		11,100	11,100
B		2,630	2,630
C	LP non-ROPS cab	3,140	3,140
	ROPS cab	3,360	3,360
D		3,099	3,099
E		3,057	3,057
F		2,185	2,185
G		6,140	6,140
H		384	384
I		2,538	2,538
J		49	49
K		1,538	1,538
L		630	630
M		384	384

*920F-922F with 17.5-25 tire.

*Standard weight, 920F/922F with frontal 1,000 kg and rear 400 kg counterweights.

Standard equipment

Engine & Installation

- SDEC 7H engine (only for 920F)
- SDEC 9D engine (only for 922F)
- Engine & installation

Powertrain & Transmission

- Electro-hydraulic power shift transmission and attachments
- Tandem axle
- Frontal axle
- Drive shaft

Hydraulic Arrangement

- Cylinder group
- Lines group
 - pump
 - steering
 - fan
 - DCM
- Pin puller hydraulic
- Hydraulic pump, motor

Frame Arrangement

- Front frame
- Rear frame
- Hitch

Cab Installation

- Console operation
- Control transmission
- Floor attachment

Electrical

- Wiring
- Wiring engine
- Switch attachment (dashboard)
- Road lights

Cooling Arrangement

- Cooling radiators
- Lines group
- Fan
- Coolant tank

Work Tool

- Mounting group
- Circle group
- Drawbar group

Structure

- Enclosure group
- Fuel tank
- Battery box
- Front cover
- Hydraulic tank
- Ladder group

Brake

- Brake service
- Brake parking

Air conditioner

Transmission guard

Product Link

Optional equipment

Electrical

- License light
- Rear camera
- Beacon
- Radio

Work tool

- Scarifier
- Tooth
- Snow wing & installation

Others

- Cab guard
- Toolbox
- Second steering
- Hand throttle
- Drawbar circle moldboard grease tank
- Level gauge
- Rear mirror
- Fender
- Installation snow wing

Mandatory attachment

Cab

- Cab non-ROPS low profile base
- Cab non-ROPS low profile plus
- Cab non-ROPS high profile plus
- Cab ROPS high profile plus

Hydraulic

- Control AR (multi-way valves)
- Tip hydraulic
- Circle drive
 - Standard
 - Slip clutch

Work tool

- Blade
 - 12 feet (only for 920F)
 - 13 feet
 - 14 feet
- Rear attachment
 - Installation - no choice (only for 920F)
 - Rear counterweight 400 kg
 - Ripper
- Frontal attachment
 - Installation - no choice (only for 920F)
 - Blade
 - Counterweight 500 kg (only for 920F)
 - Counterweight 1,000 kg
 - Middle mounted scarifier

Start-up System

- Normal starting
- Cold starting
- Arctic starting

Light

- Working light
 - Halogen
 - LED

Tire & rim

- 17.5-25 12 PR tubeless tire
- 17.5-25 12 PR tube tire
- 17.5-25 16 PR tubeless tire
- 17.5R25 radial tire

*Select one from each group. Mandatory and optional equipment may vary. Consult your dealer for specifics.

» *EMPOWER YOUR SUCCESS* »»

We steadfastly uphold our service promise – “SEM Services, Full Commitment”, with an unwavering focus on customer satisfaction. Through our comprehensive “Five Strengths” approach, which encompasses responsiveness, maintenance, reliability, professionalism, and assurance, SEM offers seamless support from pre-sales to after-sales for our rapidly growing global customer base. We pledge top-tier response times, exceptional service capabilities, and premier spare parts solutions. At the same time, in order to better assist customers, minimize equipment downtime, streamline equipment management, and maximize customer value, we have deeply integrated digital technology with traditional construction machinery aftermarket services, and with the launch of the SEM eService APP, we now provide a comprehensive online solution for parts and technical information.

We are dedicated to providing a range of diversified and competitive aftermarket solutions, which encompass our Customer Service Agreement (CSA), SEM SELECT parts, service options, SEM Extended Protection (SEP) and more. Our aim is to deliver the utmost value to customers. With a global parts distribution network comprising over 20,000 types of spare parts, we assure unparalleled service and availability to SEM customers in a timely and dependable manner. Moving forward, we will continue to deliver reliable aftermarket support carefully tailored to your needs.



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