

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Track excavator with 360 rotating log grapple Monthly Rental	1.00000	MO	8993.000000	8993.00

Comm Code	Manufacturer	Specification	Model #
22101526			

Commodity Line Comments:

Extended Description:

54" Log Grapple
3-4.5 Ton, 360 Rotator
17800 kg operating weight (max 23560 kg)

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	Track excavator with 360 rotating log grapple Weekly Rental	1.00000	WK	2997.000000	2997.00

Comm Code	Manufacturer	Specification	Model #
22101526			

Commodity Line Comments:

Extended Description:

54" Log Grapple
3-4.5 Ton, 360 Rotator
17800 kg operating weight (max 23560 kg)

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
3	Track excavator with 360 rotating log grapple Daily Rental	1.00000	DAY	333.000000	333.00

Comm Code	Manufacturer	Specification	Model #
22101526			

Commodity Line Comments:

Extended Description:

54" Log Grapple
3-4.5 Ton, 360 Rotator
17800 kg operating weight (max 23560 kg)

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
4	Delivery Fee 1st Mile	1.00000	MILE	8.000000	8.00

Comm Code	Manufacturer	Specification	Model #
22101526			

Commodity Line Comments:

Extended Description:

Delivery Fee 1st Mile

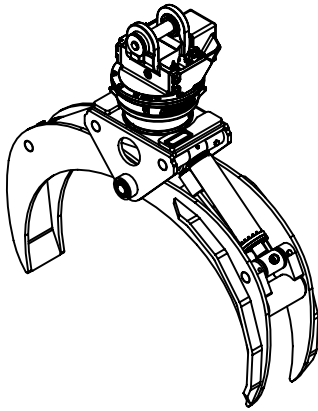
Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
5	Delivery Fee Each Additional Mile	1.00000	MILE	8.000000	8.00

Comm Code	Manufacturer	Specification	Model #
22101526			

Commodity Line Comments:

Extended Description:

Delivery Fee Each Additional Mile

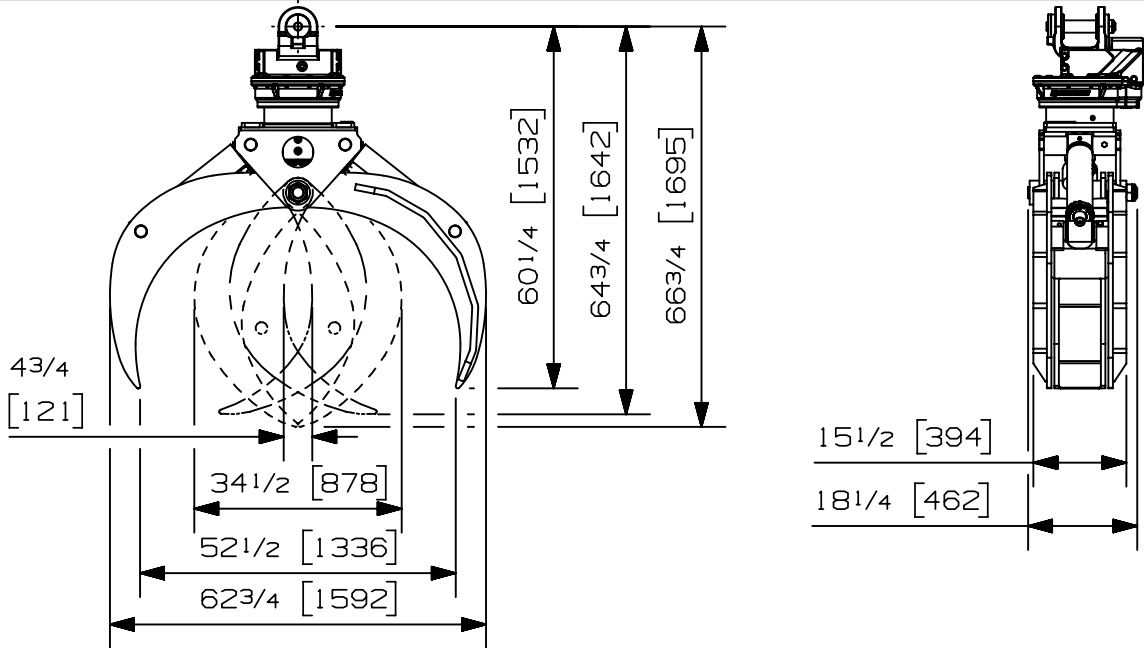


Max load:	- lb	- kg
Volume:	.23 cord of 8 ft	.84 m ³
Area tip to tip:	3.70 ft ²	.34 m ²
Rotator lifting capacity:	50000 lb	22680 kg
Torque at relief pressure:	19245 lb-in 1450 psi	2174 Nm 100 bars
Weight:	1350 lb	612 kg

Rotator	Maximum pressure: 5000 psi 345 bars	Maximum flow: 9 gpm 34 l/min
Rotator recommended flow will produce a maximum speed of 25 rpm		

Cylinder	Diameter	Recommended pressure	Pressure range	Flow range	Lock valves
Standard	3 1/2 " (89 mm)	3800 psi (262 bars)	3100 - 4500 psi (214-310 bars)	11 - 16 gpm (42-61 l/min.)	Yes
Optional	3 1/2 " (89 mm)	3800 psi (262 bars)	3100 - 4500 psi (214-310 bars)	11 - 16 gpm (42-61 l/min.)	No
Optional	4 " (102 mm)	2750 psi (190 bars)	2500 - 3000 psi (172-207 bars)	16 - 23 gpm (61-87 l/min.)	No
Optional	4 1/2 " (114 mm)	2500 psi (172 bars)	2000 - 3000 psi (138-207 bars)	21 - 30 gpm (79-114 l/min.)	Yes
Optional	4 1/2 " (114 mm)	2500 psi (172 bars)	2000 - 3000 psi (138-207 bars)	21 - 30 gpm (79-114 l/min.)	No

Grapple cylinder maximum flow will theoretically produce a complete grapple open/close cycle in 5 seconds.



Options:

- Head protector (12 lbs / 5 kg)
- Log protection package, including shaft on jaw tips and protection strips on jaw edges (40 lbs / 18 kg)
- Shaft on jaw tips to prevent log damage (N/A)
- Impact protection relief valve (10 lbs / 5 kg)

web site: www.rotobec.com

email: rotobec@rotobec.com

Rotobec Inc.: Head office serving OEM's and Eastern Canada Ph: (418) 383-3002 Fax: (418) 383-5334
Rotobec West: Branch serving Western Canada and Western USA Ph: (250) 765-1161 Fax: (250) 765-0035
Rotobec USA: Branch serving Eastern and Central USA Ph: (603) 444-2103 Fax: (603) 444-0327

Exhibit A - Pricing Page

Equipment Description - without operator			\$ Rate of Rental without delivery			\$ Delivery							
Item Number	Description		Daily	Weekly	Monthly	1st Mile	Additional Mile						
1	Excavator with Rotating Log Grapple		333	2997	8993	\$7	\$7						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Make</th> <th style="text-align: left;">Model</th> <th style="text-align: left;">Serial Number</th> </tr> </thead> <tbody> <tr> <td>VOLVO</td> <td>EC220EL</td> <td>TBD</td> </tr> </tbody> </table>	Make	Model	Serial Number	VOLVO	EC220EL	TBD						
Make	Model	Serial Number											
VOLVO	EC220EL	TBD											

Quantity Needed: 3
 Duration of Rental: 5 months

Required Minimum Specifications:
 54" Log Grapple
 3-4.5 Ton, 360° Rotator
 17800 kg operating weight (max 23560 kg)

Sample Models
 CAT 318D2 L
 John Deere 210P
 Komatsu PC88MR-11

Delivery Address:
 2878 N Jefferson St.
 Lewisburg, WV 24901

Volvo Construction Equipment
Building Tomorrow



EC220E

Volvo Excavators 20.6-25.1t / 45,350-55,360 lb 173 hp



A passion for performance

At Volvo Construction Equipment, we're not just coming along for the ride. Developing products and services that raise productivity – we are confident we can lower costs and increase profits for customers around the globe. Part of the Volvo Group, we are passionate about innovative solutions to help you work smarter – not harder.

Helping you to do more

Doing more with less is a trademark of Volvo Construction Equipment. High productivity has long been married to low energy consumption, ease of use and durability. When it comes to lowering life-cycle costs, Volvo is in a class of its own.

Designed to fit your needs

There is a lot riding on creating solutions that are suited to the particular needs of different industry applications. Innovation often involves high technology – but it doesn't always have to. Some of our best ideas have been simple, based on a clear and deep understanding of our customers' working lives.



You learn a lot in 180 years

Over the years, Volvo has advanced solutions that have revolutionized the use of construction equipment. No other name speaks Safety louder than Volvo. Protecting operators, those around them and minimizing our environmental impact are traditional values that continue to shape our product design philosophy.

We're on your side

We back the Volvo brand with the best people. Volvo is truly a global enterprise, one that is on standby to support customers quickly and efficiently – wherever they are.

We have a passion for performance.

A strong, dedicated, capable dealer network

Our dealers are strategically located throughout North America to provide the equipment you need and the parts and service support you demand for a productive and profitable operation.

The strength of our dealer network is enhanced with extensive individualized product support training at our best-in-class Customer Center in Shippensburg and through hands-on training. Using a great Product Demonstration Center featuring a dedicated area for most common applications, visitors operate equipment from our entire product line under a variety of simulated working conditions. This facility is in year-round use by our dealers and customers.

Building the best starts right here.

The products designed and manufactured by Volvo Construction Equipment have their beginnings at the most advanced Research & Design centers in the industry. Volvo CE machines are designed in 11 R&D centers and produced in 15 manufacturing facilities across the world.

The major R&D center and manufacturing plant in the Americas is located in Shippensburg, Pennsylvania. This facility has been in operation for over 30 years and – with its recently added 200,000 sq. ft. expansion – now covers 570,000 sq. ft. on an 80 acre campus. Dedicated work teams and highly advanced technologies and techniques using the Volvo Production System ensure continuous quality improvements, labor savings and cost control to reach the high quality that our customers have come to expect from Volvo.





Volvo Trucks



Renault Trucks



Mack Trucks



UD Trucks



Volvo Buses



Volvo Construction Equipment



Volvo Penta



Volvo Financial Services

Best in Class Efficiency

The EC220E builds on its efficiency reputation from the D-Series by ensuring all components work together and complement each other. The enhancements deliver the best in class fuel efficiency while not compromising on power – reducing emissions and consumption, while increasing productivity.

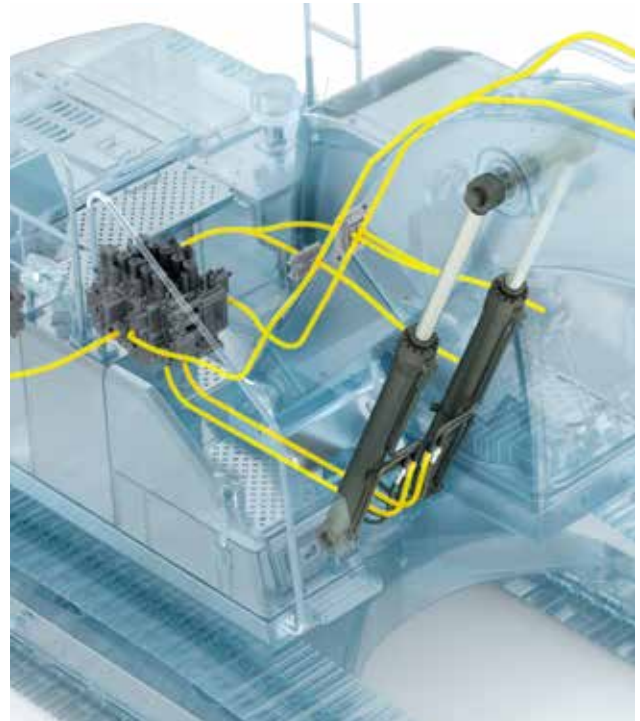
Volvo engine

Featuring proven advanced technology, and built on decades of experience, Volvo's robust D6 Tier 4 Final engine boasts more power - while reducing both fuel consumption and emissions to deliver superior quality, reliability and durability.



Increased power

The increased pump input power creates a highly responsive operation resulting in greater productivity and faster cycle time.



Boom float function

With the boom float function, the pump power for boom lowering can be saved or used for other functions, reducing the cycle time. Also, the grading operation can be made easier.



Main Control Valve and Software

The valve is compatible with software in the machine to aid controllability, by providing smooth and easy operation. In addition to increased swing force, the EC220E also comes with a boom swing priority valve; this enhances controllability of the swing and boom operation – making it ideal for loading trucks.

Auto engine shutdown

To reduce fuel consumption, the engine will automatically switch off when the machine is inactive for a pre-set amount of time (five minutes is the default setting).



OPTIMIZED HYDRAULICS

The hydraulics system, combined with the fully electronic control system and advanced ECO mode, has been optimized to work in harmony with D6 Tier 4 Final engine to match the engine power, reduce power loss and improve controllability and response time.



HUMAN MACHINE INTERFACE (HMI)

All machine interfaces – including joysticks, keypad, panel and larger LCD monitor – are ergonomically designed for optimum control and efficiency, resulting in increased productivity and workplace wellbeing.. The number of switches have been simplified and climate control integrated into the keypad for easy adjustments.

First Choice for Comfort

The cab design puts the operator in the drivers' seat to control personal specifications - from climate control, to short-cut functions on the joystick. The spacious cab allows the operator to move comfortably, to create a working environment that naturally promotes increased productivity.

Side view camera

As well as the rear view camera, side view camera can be optionally available for customers' comfort. Both views are displayed on the colour monitor, creating a safer working environment, protecting the operator and personnel on the ground.



Short-cut key

For added convenience, functions such as windshield wipers, cameras, auto-mute or power max function can all be assigned a short-cut button on the joystick. This allows the operator to select a function during the application without disruption.



Bluetooth®

To aid operator convenience and support better productivity, you can now connect a Bluetooth device to the machine enabling the handsfree function.



Seatbelt warning alarm

If the seatbelt is not buckled when the ignition key is turned, an alarm is triggered in intervals along with a continuous visual alert. This emphasises our priority for operator safety.

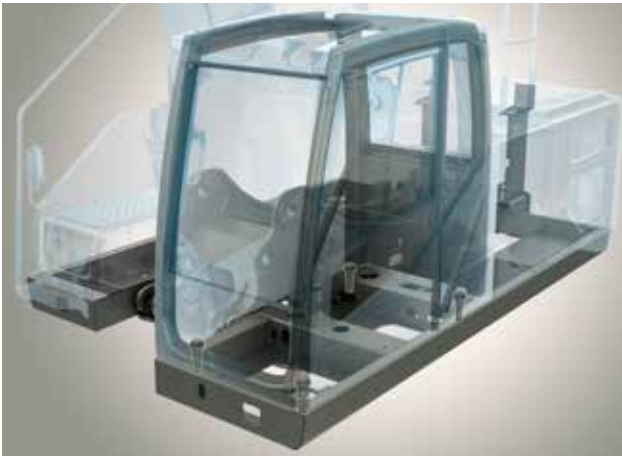


Building on Foundations of Trust and Quality

Quality is one of Volvo's core values and it goes hand-in-hand with reliability and durability. The EC220E pays particular attention to having all the components working at a high level of capacity but also being built to stand the test of time – providing the customer and operator with peace of mind.

ROPS

The cab features ROPS – this reinforced steel structure ensures the operator is protected in the unlikely event of the machine rolling over, while it also meets the ISO standards for safety.



Lower frame

The intelligently designed X-shape lower frame enables even weight distribution increasing stability and durability - preventing damage from rock and debris.



Boom and Arm

The robust design includes internal plates positioned to support pressure points during the range of applications. This helps disperse the stress from high-pressure areas of the boom and arm, to ensure maximum productivity time after time, during the most demanding applications.



Narrow and Heavy-duty (NH) Undercarriage

The EC220E NH's oversized and heavy-duty undercarriage creates excellent tractive force for improved durability and reliability in demanding terrain. A robust undercarriage increases the service life of the machine.





BUILT TO LAST

Working in tough conditions means every component matters - this is why Volvo pays extra attention to each detail during the manufacturing and product design processes. Silicone caulking is used to prevent rust, waterproof harnesses and connections are installed - as well as heavy-duty door hinges and bolted-on protection for the frame-work lights.



ULTIMATE TOOL CARRIER

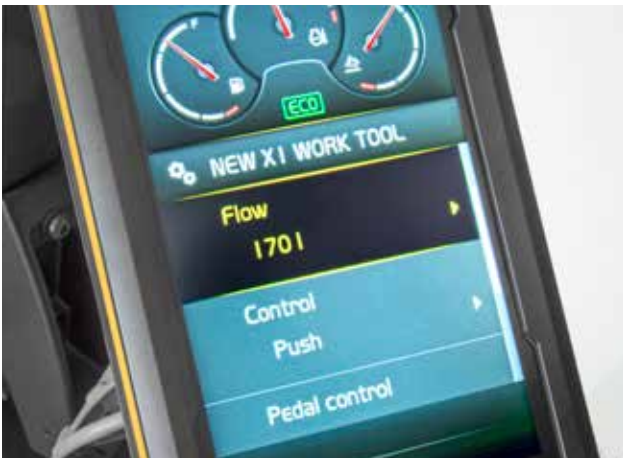
The machine can be adjusted to take a wide variety of hydraulic lines, which are factory fitted with breaker and shear piping (X1), as well as rotator piping (X3). State-of-the-art auxiliary lines provide the correct flow and pressure for special attachments such as mowers and grinders, shears, crushers and tilt rotators among other attachments. You can choose between the one or two pump flow to maximize profits and productivity.

Customer Choice

Creating a machine that can adapt to a number of attachments increases productivity and reduces cycle time. The EC220E not only manages to achieve this versatility but it is a machine that incorporates the same high quality performance across its entire menu of applications – meaning the operator is safe in the knowledge that with Volvo there is no better option.

Attachment Management System

The password protected management system allows storage for up to 20 different attachments. It pre-sets and permits hydraulic flow and pressure to be adjusted within the cab, which ensures the use of various attachments for increased versatility.



Extra piping

An additional piping solution is available on the breaker and shear piping (X1), accommodating the use of tilt/rotator attachments.



Electrical pedal

The electric pedal offers precise control to allow the operator to use a wider variety of attachments.



Response mode

The attachment response sensitivity can be adjusted using the keypad. This allows the operator to tailor machine response for maximum impact in different environments.



Proactive Maintenance Solutions

Maintaining your machine will ensure you get the maximum lifetime and productivity. This is why Volvo have made this process easy – developing it to be fast, regular and safe.

Full size guard rails

Multiple sturdy handrails provide safe and easy access to the superstructure for inspection and maintenance.



Single layer cooling system

The radiator, charged air cooler and hydraulic oil cooler are situated side-by-side on a single layer, to maximize efficiency, reduce blockages and aid cleaning. The system is easily accessed from ground level by simply opening the side door.



Service interval alerts

Real-time service alerts are displayed on the colour monitor to enable diagnostic checks. Separate service intervals include – the engine oil/ filter, fuel filter/water separator, hydraulic oil and hydraulic oil filter. This ensures peace of mind and maximum uptime.



Anti-slip steel plates

Well-positioned punched anti-slip plates provide superior grip and durability. The design facilitates easy cleaning while promoting safety.





GROUPED FILTERS

Maintaining a good level of inspection is important for machine longevity and that is why Volvo has grouped filters together, making them easily accessible for regular checks to maximize machine uptime.



MATCHED ATTACHMENTS

Volvo's durable attachments have been purpose-built to work in perfect harmony with Volvo machines, forming one solid, reliable unit. With functions and properties ideally matched, Volvo attachments are an integrated part of the excavator for which they're intended.

Mix and match for a superior fit

Maximize your productivity and profitability with Volvo's EC220E crawler excavator and a range of durable attachments. Increase your versatility, access more applications and perform a variety of tasks – all while experiencing faster cycle times and excellent control.

Buckets – GP/HD/XD

Volvo's buckets are the perfect tool for digging and re-handling in all conditions from soft, medium and hard materials. Heavy-duty buckets are intended for productive digging in compact materials. All provide maximum productivity and long life and feature original Volvo wear components.



Breakers HB21, HB22

The HB-Series of hydraulic breakers are optimized to the specific weights of Volvo machines and tailored to Volvo quick couplers for swift, safe and simple attachment changes. They are available with a full assortment of tools.



Quick Coupler

Volvo offers a full range of quick couplers, from its dedicated Volvo S-type coupler to the Steelwrist® ones. Both couplers feature Front Pin Lock technology, which allows supreme safety when changing attachments. Those innovative couplers are not only designed to fit perfectly with Volvo excavators but they also comply with the latest safety regulations of ISO 13031 and EN474-1. Steelwrist® is a registered trademark of Steelwrist AB



Tilt Rotator

Volvo's tilt rotator can be ordered factory installed with multifunctional joysticks and color display that's fully integrated into the machine's system. The new series of Volvo XD excavator buckets are perfectly matched to the factory installed tilt rotator.



Improved total cost of ownership

OPTIMIZED HYDRAULICS

Designed to perfectly match the engine power, reduce power loss, and improve controllability and response time.

Boom and Arm

To achieve the best performance, select the most suitable boom and arm configuration combination for your requirements.

ULTIMATE TOOL CARRIER

Designed to not only be compatible with a range of attachments, but also to enhance their performance by easily and quickly switching to accommodate any needs.

Boom float function

The pump power for boom lowering can be saved or used for other functions, reducing the cycle time. Also, the grading operation can be made easier.

Attachment Management System

The password protected management system allows storage for up to 20 different attachments. It pre-sets and permits hydraulic flow and pressure to be adjusted within the cab.



HMI

All machine interfaces are ergonomically positioned and designed for optimum control and efficiency.

Side view camera

Covers the visual blind spot at the side of machine. View is displayed on the colour monitor, creating a safer working environment, protecting the operator and personnel on the ground.

Full size guard rails

Multiple sturdy handrails provide safe and easy access to the super-structure for inspection and maintenance.

Short-cut key

For ease of use, functions such as windshield wipers, cameras, auto-mute or power max function can all be assigned a short-cut button on the joystick.

Bluetooth®

Bluetooth and hands-free functions have been added, allowing the operator to connect to wireless functions for increased comfort and safety.

Volvo engine

Volvo's efficient D6 Tier 4 Final engine gives you more power while consuming less fuel for low emission levels.

Diesel Exhaust Fluid (DEF)

Volvo offers a total DEF solution that is quality assured, cost efficient and easily accessible. Contact your Volvo dealer for more information.

GROUPED FILTERS

Filters are well grouped and easily accessible from the ground level. This facilitates the speed and ease of servicing.

BUILT TO LAST

All detail – no matter how small – is overlooked. Silicone caulking is used to prevent rust, waterproof harnesses and connections have been installed – as well as heavy-duty door hinges and bolted-on protection for the framework lights.

Adding value to your business

Being a Volvo customer means having a complete set of services at your fingertips. Volvo can offer you a long-term partnership, protect your revenue and provide a full range of customer solutions using high quality parts, delivered by passionate people. Volvo is committed to increasing the positive return on your investment and maximising uptime.

Complete Solutions

Volvo has the right solution for you. So why not let us provide all your needs throughout the whole life cycle of your machine? By listening to your requirements, we can reduce your total cost of ownership and increase your revenue.



Genuine Volvo Parts

Our attention to detail is what makes us stand out. This proven concept acts as a solid investment in your machine's future. Parts are extensively tested and approved because every part is vital for uptime and performance. Only by using Genuine Volvo Parts, can you be sure that your machine retains the renowned Volvo quality.

Service Network

In order to respond to your needs faster, a Volvo expert is on their way to your job site from one of our Volvo facilities. With our extensive infrastructure of technicians, workshops and dealers, Volvo has a comprehensive network to fully support you using local knowledge and global experience.





CUSTOMER SUPPORT AGREEMENTS

The range of Customer Support Agreements offer preventive maintenance, total repairs and a number of uptime services. Volvo uses the latest technology to monitor machine operation and status, giving you advice to increase your profitability. By having a Customer Support Agreement you are in control of your service costs.

Volvo EC220E in detail

Engine

The latest generation, Volvo engine Tier 4f emissions compliant diesel engine fully meets the demands of the latest, emissions regulations. Featuring Volvo Advanced Combustion Technology (V-ACT), it is designed to deliver superior performance and fuel efficiency. The engine uses precise, high pressure fuel injectors, turbo charger and air-to-air intercooler, and electronic engine controls to optimize machine performance. Air Filter: 3-stage with precleaner Automatic Idling System: Reduces engine speed to idle when the levers and pedals are not activated resulting in less fuel consumption and low cab noise levels.

Engine	Volvo	D6J
Max power at	r/min (r/s)	1 800 (30)
Net, ISO 9249/SAE J1349	kW (hp)	128 (172)
Gross, ISO 14396/SAE J1995	kW (hp)	129 (173)
Max torque	Nm (ft lbf)	849 (626)
at engine speed	r/min (r/s)	1 350 (22.5)
No. of cylinders		6
Displacement	l (in ³)	5.7 (348)
Bore	mm (in)	98 (3.86)
Stroke	mm (in)	126 (4.96)

Electrical system

Well protected high-capacity electrical system. Waterproof double-lock harness plugs are used to secure corrosion-free connections. The main relays and solenoid valves are shielded to prevent damage. The master switch is standard. Contronics provides advanced monitoring of machine functions and important diagnostic information.

Voltage	V	24
Batteries	V	2 x 12
Battery capacity	Ah	140
Alternator	V/A	28/80
Start motor	V - kW	24 - 5.5

Swing system

The swing system uses an axial piston motors, driving a planetary gearbox for maximum torque. An automatic holding brake and antirebound valve are standard

Max. slew speed	r/min	11.1
Max. slew torque	kNm (ft lbf)	83 (61,220)

Travel System

Each track is powered by an automatic two-speed shift travel motor. The track brakes are multi-disc, spring-applied and hydraulic released. The travel motor, brake and planetary gears are well protected within the track frame.

Max. drawbar pull	kN (lbf)	183 (41,150)
Max. travel speed (low)	km/h (mi/h)	3.5 (2.2)
Max. travel speed (high)	km/h (mi/h)	5.7 (3.5)
Gradeability	°	35

Undercarriage

Robust X-shaped frame with greased and sealed track chains as standard

Track shoes		2 x 49
Link pitch	mm (in)	190 (7.5)
Shoe width, triple grouser	mm (in)	500 / 600 / 700 / 800 / 900 (20 / 24 / 28 / 32 / 36)
Shoe width, triple grouser (HD)	mm (in)	600 (24)
Shoe width, double grouser	mm (in)	700 (28)
Bottom rollers		2 x 8
Top rollers		2 x 2

Hydraulic system

The hydraulics system, combined with the fully electronic control system and advanced ECO mode, has been optimized to work in harmony with engine to match the engine power, reduce power loss and improve controllability and response time. The following important functions are included in the system: Summation system: Combines the flow of both hydraulic pumps to ensure quick cycle times and high productivity. Arm priority: Gives priority to the arm operation for faster cycle times in leveling and for increased bucket filling when digging. Swing priority: Gives priority to swing functions for faster simultaneous operations. Regeneration system: Prevents cavitation and provides flow to other movements during simultaneous operations for maximum productivity. Power boost: All digging and lifting forces are increased. Holding valves: Boom and arm holding valves prevent the digging equipment from creeping.

Main pump: 2 x variable displacement axial piston pumps

Maximum flow	l/min (gal/min)	2 x 207 (2 x 55)
Pilot pump: Gear pump		
Maximum flow	l/min (gal/min)	1 x 18 (1 x 5)

Relief value setting pressure

Implement	MPa (psi)	34.3 / 36.3 (4,980 / 5,260)
Travel circuit	MPa (psi)	34.3 (4,980)
Slew circuit	MPa (psi)	27.9 (4,050)
Pilot circuit	MPa (psi)	3.9 (570)

Travel: Variable displacement axial piston motor with mechanical brake
Slew: Fixed displacement axial piston motor with mechanical brake

Hydraulic Cylinders

Mono boom		2
Bore x Stroke	ø x mm (ø x in)	125 x 1 235 (4.9 x 48.6)
2 piece boom		1
Bore x Stroke	ø x mm (ø x in)	160 x 1 070 (6.3 x 42.1)
Arm		1
Bore x Stroke	ø x mm (ø x in)	135 x 1 540 (5.3 x 60.6)
Bucket		1
Bore x Stroke	ø x mm (ø x in)	120 x 1 065 (4.7 x 41.9)
Bucket for LR boom		1
Bore x Stroke	ø x mm (ø x in)	100 x 865 (3.9 x 34.1)

Cab

The operator's cab has easy access via a wide door opening. The cab is supported on hydraulic dampening mounts to reduce shock and vibration levels. These along with sound absorbing lining provide low noise levels. The cab has excellent all-round visibility. The front windshield can easily slide up into the ceiling, and the lower front glass can be removed and stored in the side door. Integrated air-conditioning and heating system: The pressurized and filtered cab air is supplied by an automatically-controlled fan. The air is distributed throughout the cab from 14 vents. Ergonomic operator's seat: The adjustable seat and joystick console move independently to accommodate the operator. The seat has nine different adjustments plus a seat belt for the operator's comfort and safety.

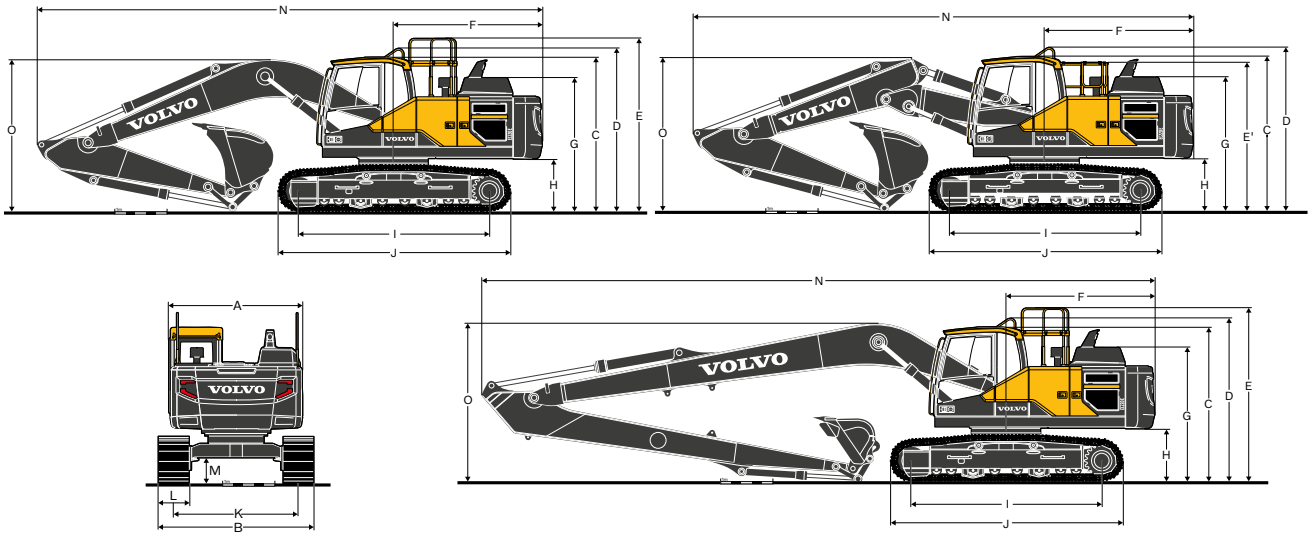
Sound Level

Sound pressure level in cab according to ISO 6396		
L _{pA} (standard)	dB	69
L _{pA} (tropical)	dB	70
External sound level according to ISO 6395 and EU Noise Directive 2000/14/EC		
L _{WA} (standard)	dB	102
L _{WA} (tropical)	dB	103

Service Refill

Fuel tank	l (gal)	320 (85)
DEF/AdBlue® tank	l (gal)	27 (7)
Hydraulic system, total	l (gal)	290 (77)
Hydraulic tank	l (gal)	140 (37)
Engine oil	l (gal)	25 (7)
Engine coolant	l (gal)	35 (9)
Slew reduction unit	l (gal)	6 (2)
Travel reduction unit	l (gal)	2 x 5.8 (2 x 2)

Specifications

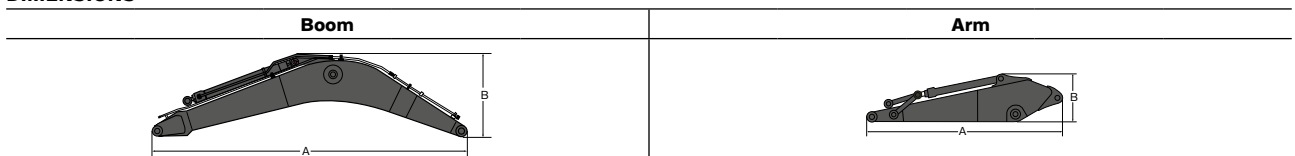


DIMENSIONS

Description	Unit	EC220EL								EC220ELR	
		5.7 (18'8") mono and 5.57 (18'3") 2-piece									
Boom	m, ft in										
Arm	m, ft in	2.0	6'7"	2.5	8'2"	2.9	9'6"	3.5	11'6"	6.25	20'6"
A. Overall width of upper structure	mm ft in	2 540	8'4"	2 540	8'4"	2 540	8'4"	2 540	8'4"	2 540	8'4"
B. Overall width	mm ft in	2 990	9'10"	2 990	9'10"	2 990	9'10"	2 990	9'10"	3 190	10'6"
C. Overall height of cab	mm ft in	2 955	9'8"	2 955	9'8"	2 955	9'8"	2 955	9'8"	2 955	9'8"
D. Overall height of handrail	mm ft in	3 075	10'1"	3 075	10'1"	3 075	10'1"	3 075	10'1"	3 075	10'1"
E. Overall height of guardrail (unfolded)	mm ft in	3 270	10'9"	3 270	10'9"	3 270	10'9"	3 270	10'9"	3 270	10'9"
E'. Overall height of guardrail (folded)	mm ft in	2 790	9'2"	2 790	9'2"	2 790	9'2"	2 790	9'2"	2 790	9'2"
F. Tail swing radius	mm ft in	2 850	9'4"	2 850	9'4"	2 850	9'4"	2 850	9'4"	2 850	9'4"
G. Overall height of engine hood	mm ft in	2 600	8'6"	2 600	8'6"	2 600	8'6"	2 600	8'6"	2 600	8'6"
H. Counterweight clearance *	mm ft in	1 025	3'4"	1 025	3'4"	1 025	3'4"	1 025	3'4"	1 025	3'4"
I. Tumbler length	mm ft in	3 660	12'0"	3 660	12'0"	3 660	12'0"	3 660	12'0"	3 660	12'0"
J. Track length	mm ft in	4 460	14'8"	4 460	14'8"	4 460	14'8"	4 460	14'8"	4 460	14'8"
K. Track gauge	mm ft in	2 390	7'10"	2 390	7'10"	2 390	7'10"	2 390	7'10"	2 390	7'10"
L. Shoe width	mm ft in	600	2'0"	600	2'0"	600	2'0"	600	2'0"	800	2'7"
M. Min. ground clearance *	mm ft in	460	1'6"	460	1'6"	460	1'6"	460	1'6"	460	1'6"
N. Overall length	mm ft in	9 795	32'2"	9 745	32'0"	9 690	31'9"	9 720	31'11"	12 880	42'3"
N1. Overall length	mm ft in	9 660	31'8"	9 610	31'6"	9 570	31'5"	9 560	31'4"	-	-
O. Overall height of boom	mm ft in	3 100	10'2"	3 080	10'1"	2 940	9'8"	3 260	10'8"	3 055	10'0"
O1. Overall height of boom	mm ft in	3 065	10'1"	3 065	10'1"	2 960	9'9"	3 310	10'10"	-	-

* Without shoe grouser.
1 2-piece boom

DIMENSIONS



Description	Unit	mono		mono		2-piece		Long-Reach	
		5.7	18'8"	5.7 HD	18'8"	5.57	18'3"	8.85	29'0"
Length	mm	5 910	19'5"	5 910	19'5"	5 780	19'0"	9 060	29'9"
Height	mm	1 585	5'2"	1 585	5'2"	1 570	5'2"	1 460	4'9"
Width	mm	670	2'2"	670	2'2"	670	2'2"	670	2'2"
Weight	kg	2 006	4,420	2 151	4,740	2 585	5,700	2 510	5,530

* Includes cylinder, piping and pin, excludes boom cylinder pin

Description	Unit											Long-Reach	
		2.0	6'7"	2.5	8'2"	2.9	9'6"	2.9 HD	9'6"	3.5	11'6"	6.25	20'6"
Length	mm	3 065	10'1"	3 525	11'7"	3 910	12'10"	3 910	12'10"	4 540	14'11"	7 330	24'1"
Height	mm	980	3'3"	860	2'10"	860	2'10"	860	2'10"	855	2'10"	945	3'1"
Width	mm	440	1'5"	440	1'5"	440	1'5"	440	1'5"	440	1'5"	385	1'3"
Weight	kg	1 091	2,410	1 133	2,500	1 146	2,530	1 183	2,610	1 226	2,700	1 309	2,890

* Includes cylinder, linkage and pin

Specifications

MACHINE WEIGHTS AND GROUND PRESSURE

Description	Shoe width		Operating weight		Ground pressure		Overall width		Operating weight		Ground pressure		Overall width	
	mm	ft in	kg	lb	kPa	psi	mm	ft in	kg	lb	kPa	psi	mm	ft in
	EC220EL													
	5.7m (18'8") boom, 2.9m (9'6") arm, 860kg / 0.92m³ (1,810lb) bucket, 4 200kg (9,260lb) counterweight						5.57m (18'3") 2-piece, 2.9m (9'6") arm, 860kg / 0.92m³ (1,810lb) bucket, 4 200kg (9,260lb) counterweight							
Triple grouser	500	20	21 480	47,370	53.9	7.8	2 890	9'6"	22 170	48,880	54.9	8.0	2 890	9'6"
	600	24	21 740	47,940	45.1	6.5	2 990	9'10"	22 425	49,450	46.1	6.7	2 990	9'10"
	700	28	22 200	48,950	39.2	5.7	3 090	10'2"	22 880	50,460	40.2	5.8	3 090	10'2"
	800	32	22 485	49,580	35.3	5.1	3 190	10'6"	23 170	51,090	36.3	5.3	3 190	10'6"
	900	36	22 780	50,230	31.4	4.6	3 290	10'10"	23 460	51,740	32.4	4.7	3 290	10'10"
Triple grouser HD	600	24	21 910	48,310	45.1	6.5	2 990	9'10"	22 590	49,820	47.1	6.8	2 990	9'10"
Double grouser	700	28	22 465	49,540	40.2	5.8	3 090	10'2"	23 150	51,050	41.2	6.0	3 090	10'2"
Single grouser	600	24	21 950	48,400	45.1	6.5	2 990	9'10"	22 630	49,910	47.1	6.8	2 990	9'10"
	EC220ELR													
	8.85m (29'0") boom, 6.25m (20'6") arm, 452kg / 0.52m³ (1 000lb) bucket, 5 000kg (11 030lb) counterweight													
Triple grouser	800	32	23 690	52,250	37.3	5.4	3 190	10'6"						
	900	36	23 990	52,890	33.3	4.8	3 290	10'10"						

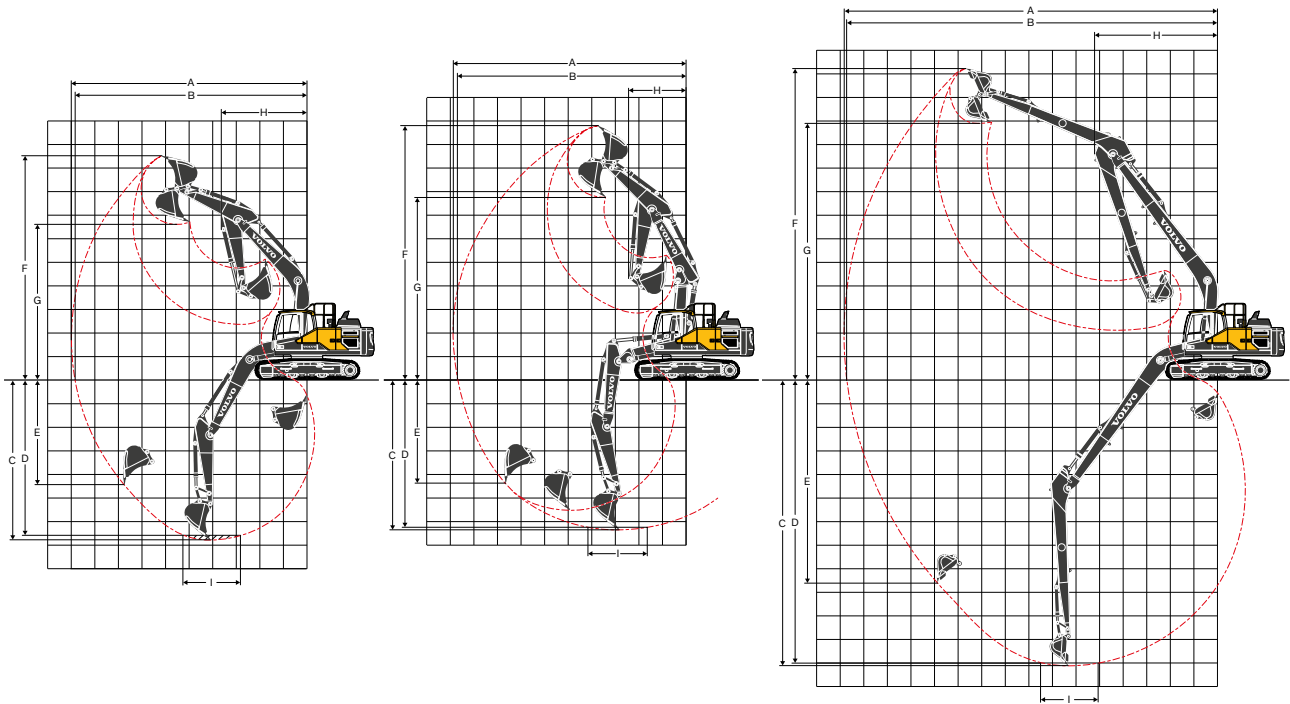
BUCKET SELECTION GUIDE

Bucket type	Capacity		Cutting width		Weight		Teeth	EC220EL								
								5.7m (18'8") Boom				5.57m (18'3") 2-piece				
	L	yard ³	mm	in	kg	lb	EA	800mm (32") shoe, 4 200kg (9 260lb) counterweight								
								2.0m (6'7")	2.5m (8'2")	2.9m (9'6")	3.5m (11'6")	2.0m (6'7")	2.5m (8'2")	2.9m (9'6")	3.5m (11'6")	
Direct fit Buckets	General purpose	480	0.63	600	23.40	666	1,468	3.00	C	C	C	C	C	C	C	C
		590	0.77	750	29.25	711	1,568	3.00	C	C	C	C	C	C	C	C
		750	0.98	900	35.10	792	1,746	4.00	C	C	C	C	C	C	C	C
		920	1.20	1 050	40.95	862	1,900	4.00	C	C	C	C	C	C	C	C
		1 090	1.43	1 200	46.80	951	2,096	5.00	C	C	C	C	C	C	C	C
		1 270	1.66	1 350	52.65	1 038	2,289	5.00	C	C	C	C	C	C	C	C
	Heavy	480	0.63	600	23.40	738	1,628	3.00	D	D	D	D	D	D	D	D
		480	0.63	600	23.40	675	1,488	3.00	D	D	D	D	D	D	D	D
		750	0.98	900	35.10	872	1,922	4.00	D	D	D	D	D	D	D	D
		750	0.98	900	35.10	808	1,783	4.00	D	D	D	D	D	D	D	D
		920	1.20	1 050	40.95	951	2,098	4.00	D	D	D	D	D	D	D	D
		920	1.20	1 050	40.95	888	1,959	4.00	D	D	D	D	D	D	D	D
		1 090	1.43	1 200	46.80	1 046	2,307	5.00	D	D	D	D	D	D	D	D
		1 090	1.43	1 200	46.80	983	2,168	5.00	D	D	D	D	D	D	D	D

Please consult with your Volvo dealer for the proper match of buckets and attachments to suit the application.
The recommendations are given as a guide only, based on typical operation conditions.
Bucket capacity based on ISO 7451, heaped material with a 1:1 angle of repose.

Maximum material density

	kg/m ³	lb/yd ³	
A	1 200 - 1 300	2,000 - 2,200	Coal, Caliche, Shale
B	1 400 - 1 600	2,300 - 2,700	Wet earth and clay, Limestone, Sandstone
C	1 700 - 1 800	2,800 - 3,100	Granite, Wet sand, Well blasted rock
D	> 1 900	> 3,200	Wet mud, Iron ore



WORKING RANGES

Description	Unit		EC220EL												EC220ELR					
	m	ft in	5.7 (18'8") mono						5.57 (18'3") 2-piece						8.85	29'0"				
Boom			2.0	6'7"	2.5	8'2"	2.9	9'6"	3.5	11'6"	2.0	6'7"	2.5	8'2"	2.9	9'6"	3.5	11'6"	6.25	20'6"
Arm	m	ft in																		
A. Max. digging reach	mm	ft in	9 090	29'10"	9 550	31'4"	9 930	32'7"	10 390	34'1"	8 980	29'6"	9 450	31'0"	9 840	32'3"	10 310	33'10"	15 800	51'10"
B. Max. digging reach on ground	mm	ft in	8 910	29'3"	9 380	30'9"	9 770	32'1"	10 240	33'7"	8 800	28'10"	9 280	30'5"	9 670	31'9"	10 150	33'4"	15 700	51'6"
C. Max. digging depth	mm	ft in	5 830	19'2"	6 330	20'9"	6 730	22'1"	7 330	24'1"	5 410	17'9"	5 900	19'4"	6 300	20'8"	6 850	22'6"	12 100	39'8"
D. Max. digging depth (2.44 m / 8' level)	mm	ft in	5 560	18'3"	6 100	20'0"	6 540	21'5"	7 130	23'5"	5 290	17'4"	5 790	19'0"	6 200	20'4"	6 750	22'2"	12 000	39'4"
E. Max. vertical wall digging depth	mm	ft in	4 880	16'0"	5 620	18'5"	6 090	20'0"	6 470	21'3"	4 390	14'5"	4 990	16'4"	5 410	17'9"	5 930	19'5"	11 290	37'0"
F. Max. cutting height	mm	ft in	8 940	29'4"	9 220	30'3"	9 460	31'0"	9 460	31'0"	10 010	32'10"	10 380	34'1"	10 710	35'2"	10 920	35'10"	13 300	43'8"
G. Max. dumping height	mm	ft in	6 190	20'4"	6 430	21'1"	6 650	21'10"	6 700	22'0"	7 100	23'4"	7 460	24'6"	7 780	25'6"	8 010	26'3"	10 950	35'11"
H. Min. front swing radius	mm	ft in	3 790	12'5"	3 670	12'0"	3 640	11'11"	3 660	12'0"	2 890	9'6"	2 740	9'0"	2 470	8'1"	2 730	8'11"	5 200	17'1"

DIGGING FORCES WITH DIRECT FIT BUCKET

Bucket radius		mm	ft in	1 528	5'0"	1 528	5'0"	1 528	5'0"	1 528	5'0"	1 528	5'0"	1 528	5'0"	1 528	5'0"	1 528	5'0"	1 250	4'1"
Breakout force - bucket	Normal	SAE J1179	kN	146	32,820	125	28,100	125	28,100	125	28,100	146	32,820	125	28,100	125	28,100	125	28,100	68	15,290
	Power boost	SAE J1179	kN	154	34,620	132	29,670	132	29,670	132	29,670	154	34,620	132	29,670	132	29,670	132	29,670	-	-
	Normal	ISO 6015	kN	165	37,090	141	31,700	141	31,700	141	31,700	165	37,090	141	31,700	141	31,700	141	31,700	77	17,310
	Power boost	ISO 6015	kN	174	39,120	149	33,500	149	33,500	149	33,500	174	39,120	149	33,500	149	33,500	149	33,500	-	-
Tearout force - dipper arm	Normal	SAE J1179	kN	144	32,370	117	26,300	101	22,710	92	20,680	144	32,370	117	26,300	101	22,710	92	20,680	44	9,890
	Power boost	SAE J1179	kN	153	34,400	124	27,880	107	24,050	97	21,810	153	34,400	124	27,880	107	24,050	97	21,810	-	-
	Normal	ISO 6015	kN	149	33,500	121	27,200	104	23,380	94	21,130	149	33,500	121	27,200	104	23,380	94	21,130	45	10,120
Power boost	ISO 6015	kN	158	35,520	128	28,780	110	24,730	99	22,260	158	35,520	128	28,780	110	24,730	99	22,260	-	-	
Rotation angle, bucket			°	166	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	178	

Specifications

LIFTING CAPACITY EC220EL

Lifting capacity at the arm end without bucket.

For lifting capacity including bucket, simply subtract actual weight of the direct fit bucket or the bucket with quick coupler from the following values.

	Lifting hook related to ground level		1.5m (5')				3.0m (10')				4.5m (15')				6.0m (20')					
			Along UC		Across UC		Along UC		Across UC		Along UC		Across UC		Along UC		Across UC			
	m	in	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb		
Boom: 5.7m (18'8") Arm: 2.5m (8'2") Shoe: 800mm (32") CWT: 4,200kg (9,260lb)	7.5	25																		
	6.0	20															*5.5	*12,110	*5.5	*12,110
	4.5	15										*7.0	*15,100	*7.0	*15,100		*6.0	*13,120	5.6	12,150
	3.0	10										*9.0	*19,400	8.2	17,660	*6.9	*14,990	5.4	11,640	
	1.5	5										*10.8	*23,250	7.7	16,610	*7.8	*16,910	5.2	11,140	
	0.0	0										*11.6	*25,050	7.5	16,120	8.0	17,210	5.0	10,810	
	-1.5	-5					*10.8	*24,770	*10.8	*24,770		*11.5	*24,900	7.5	16,050	7.9	17,100	5.0	10,710	
-3.0	-10					*14.8	*32,010	14.7	31,560	*10.6	*22,840	7.6	16,280	*7.8	*16,730	5.0	10,890			
-4.5	-15					*11.4	*24,370	*11.4	*24,370	*8.2	*17,180	7.8	16,940							
Boom: 5.7m (18'8") Arm: 2.9m (9'6") Shoe: 800mm (32") CWT: 4,200kg (9,260lb)	7.5	25															*5.2		*5.2	
	6.0	20															*5.1	*11,170	*5.1	*11,170
	4.5	15															*5.7	*12,330	*5.7	12,310
	3.0	10										*8.4	*18,180	8.3	17,980	*6.6	*14,300	5.5	11,780	
	1.5	5										*10.4	*22,370	7.8	16,830	*7.6	*16,400	5.2	11,240	
	0.0	0					*5.4	*12,560	*5.4	*12,560	*11.4	*24,740	7.5	16,210	8.0	17,270	5.0	10,860		
	-1.5	-5	*6.3	*14,060	*6.3	*14,060	*10.3	*23,490	*10.3	*23,490	*11.6	*25,120	7.4	16,030	7.9	17,090	5.0	10,700		
-3.0	-10	*11.4	*25,580	*11.4	*25,580	*15.7	*33,940	14.6	31,310	*10.9	*23,640	7.5	16,180	8.0	17,190	5.0	10,790			
-4.5	-15					*12.7	*27,330	*12.7	*27,330	*9.1	*19,310	7.7	16,680							
Boom: 5.7m (18'8") Arm: 3.5m (11'6") Shoe: 800mm (32") CWT: 4,200kg (9,260lb)	7.5	25																		
	6.0	20																		
	4.5	15															*4.9	*10,720	*4.9	*10,720
	3.0	10															*5.8	*12,590	5.6	11,980
	1.5	5															*6.8	*14,710	5.3	11,380
	0.0	0															*7.6	*16,460	5.1	10,900
	-1.5	-5										*10.8	*23,490	7.4	15,960	7.9	17,040	4.9	10,650	
-3.0	-10					*15.4	*33,360	14.4	30,840	*10.6	*22,860	7.4	15,980	*7.9	17,020	4.9	10,630			
-4.5	-15	*16.7	*38,240	*16.7	*38,240	*13.1	*28,240	*13.1	*28,240	*9.3	*20,080	7.6	16,320	*6.9	*14,650	5.0	10,920			
	Lifting hook related to ground level		7.5m (25')				9.0m (30')				Max. reach									
			Along UC		Across UC		Along UC		Across UC		Along UC		Across UC		m	ft				
	m	in	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb						
Boom: 5.7m (18'8") Arm: 2.5m (8'2") Shoe: 800mm (32") CWT: 4,200kg (9,260lb)	7.5	25										*5.7	*12,540	*5.7	*12,540	5.6	18.0			
	6.0	20										*5.6	*12,350	4.7	10,400	6.9	22.3			
	4.5	15	*5.7		4.0							*5.7	*12,530	3.9	8,630	7.6	24.8			
	3.0	10	6.0	12,850	3.9	8,370						5.4	11,970	3.5	7,790	8.0	26.2			
	1.5	5	5.9	12,610	3.8	8,140						5.3	11,580	3.4	7,490	8.1	26.5			
	0.0	0	5.8	12,450	3.7	7,990						5.4	11,890	3.5	7,650	7.9	25.8			
	-1.5	-5										5.9	13,090	3.8	8,380	7.4	24.1			
-3.0	-10										*7.0	*15,470	4.6	10,180	6.5	21.1				
-4.5	-15										*7.2	*15,750	6.8	15,530	5.0	16.0				
Boom: 5.7m (18'8") Arm: 2.9m (9'6") Shoe: 800mm (32") CWT: 4,200kg (9,260lb)	7.5	25										*4.9	*10,930	*4.9	*10,930	6.2	19.9			
	6.0	20										*4.6	*10,120	4.2	9,480	7.3	23.8			
	4.5	15	*5.4	*11,760	4.0	8,670						*4.5	*9,950	3.6	8,020	8.0	26.2			
	3.0	10	*5.8	*12,560	3.9	8,450						*4.6	*10,220	3.3	7,300	8.4	27.5			
	1.5	5	5.9	12,670	3.8	8,200						4.9	10,840	3.2	7,030	8.5	27.8			
	0.0	0	5.8	12,460	3.7	8,000						5.0	11,090	3.2	7,150	8.3	27.1			
	-1.5	-5	5.8	12,400	3.7	7,950						5.5	12,060	3.5	7,750	7.8	25.5			
-3.0	-10										6.5	14,380	4.1	9,180	6.9	22.7				
-4.5	-15										*6.9	*15,270	5.7	12,930	5.6	18.0				
Boom: 5.7m (18'8") Arm: 3.5m (11'6") Shoe: 800mm (32") CWT: 4,200kg (9,260lb)	7.5	25										*4.9	*10,920	4.5	10,160	7.1	23.0			
	6.0	20	*4.7	*10,360	4.2	8,940						*4.9	*10,800	3.6	8,060	8.1	26.5			
	4.5	15	*4.8	*10,550	4.1	8,820						4.8	10,670	3.2	7,000	8.8	28.6			
	3.0	10	*5.2	*11,410	4.0	8,560	4.6		3.0			4.5	9,900	2.9	6,450	9.1	29.8			
	1.5	5	*5.7	*12,500	3.8	8,250	4.5	9,680	2.9	6,270		4.4	9,640	2.8	6,250	9.2	30.1			
	0.0	0	5.8	12,460	3.7	8,000						4.5	9,820	2.9	6,340	9.0	29.5			
	-1.5	-5	5.7	12,310	3.6	7,860						4.8	10,520	3.1	6,770	8.6	28.0			
-3.0	-10	5.7	12,390	3.7	7,930						5.5	12,100	3.5	7,760	7.8	25.5				
-4.5	-15										*5.9	*12,990	4.5	10,010	6.6	21.5				

Notes: 1. Machine in "Fine Mode-F" (Power Boost) for lifting capacities. 2. The above loads are in compliance with SAE J1097 and ISO 10567 Hydraulic Excavator Lifting Capacity Standards. 3. Rated loads do not exceed 87% of hydraulic lifting capacity or 75% of tipping load. 4. Rated loads marked with an asterisk (*) are limited by hydraulic capacity rather than tipping load.

LIFTING CAPACITY EC220ELR

Lifting capacity at the arm end without bucket.

For lifting capacity including bucket, simply subtract actual weight of the direct fit bucket or the bucket with quick coupler from the following values.

	Lifting hook related to ground level		6.0m (20')				7.5m (25')				9.0m (30')				10.5m (35')			
			Along UC		Across UC		Along UC		Across UC		Along UC		Across UC		Along UC		Across UC	
	m	in	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb
	12.0	40																
	10.5	35																*3,530
	9.0	30																*4,750
	7.5	25															*2.2	*4,910
	6.0	20															*2.4	*5,240
	4.5	15																
	3.0	10	*4.6	*9,900	*4.6	*9,900	*3.7	*8,060	*3.7	*8,060	*3.2	*6,960	3.1	6,620	*2.9	*6,250	2.4	*5,140
	1.5	5	*5.6	*12,040	5.0	10,860	*4.3	*9,370	3.7	8,000	*3.6	*7,820	2.9	6,140	*3.1	*6,830	2.2	4,830
	0	0	*6.4	*13,750	4.6	9,870	*4.9	*10,520	3.4	7,360	*4.0	*8,600	2.7	5,710	*3.4	*7,370	2.1	4,540
	-1.5	-5	*6.9	*14,860	4.3	9,270	*5.3	*11,380	3.2	6,910	4.1	8,920	2.5	5,390	3.3	7,170	2.0	4,310
	-3.0	-10	*7.1	*15,400	4.2	8,970	5.2	11,220	3.1	6,630	4.0	8,690	2.4	5,170	3.3	7,010	1.9	4,160
	-4.5	-15	*7.1	15,410	4.1	8,890	5.2	11,100	3.0	6,520	4.0	8,580	2.4	5,070	3.2	6,930	1.9	4,090
	-6.0	-20	*6.9	*14,980	4.2	8,980	5.2	11,130	3.0	6,550	4.0	8,600	2.4	5,080	3.2	6,960	1.9	4,110
	-7.5	-25	*6.5	*13,970	4.3	9,230	*5.2	*11,130	3.1	6,710	4.0	8,750	2.4	5,220	3.3	7,130	2.0	4,270
	-9.0	-30	*5.7	*12,200	4.5	9,650	*4.6	*9,710	3.2	7,040	*3.6	*7,640	2.5	5,540				
	-10.5	-35	*4.4	*9,090	*4.4	*9,090	*3.4		*3.4									
Boom: 8.85m (29'0") Arm: 6.25m (20'6") Shoe: 800mm (32") CWT: 5000kg (11 030lb)	Lifting hook related to ground level		12.0m (40')				13.5m (45')				Max. reach				m		ft	
			Along UC		Across UC		Along UC		Across UC		Along UC		Across UC					
	m	in	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb				
		12.0	40								*0.8	*1,950	*0.9	*1,950	10.3	33.1		
		10.5	35								*0.8	*1,780	*0.8	*1,780	11.6	37.7		
		9.0	30	*1.5	*2,610	*1.5	*2,610				*0.8	*1,680	*0.8	*1,680	12.6	41.1		
		7.5	25	*2.1	*4,190	*2.1	*4,190				*0.7	*1,630	*0.7	*1,630	13.4	43.7		
		6.0	20	*2.3	*5,120	2.1	4,420	*1.3	*2,230	*1.3	*2,230	*0.7	*1,620	*0.7	*1,620	13.9	45.6	
		4.5	15	*2.5	*5,410	2.0	4,260	*1.8	*3,440	1.6	3,330	*0.8	*1,650	*0.8	*1,650	14.3	46.9	
		3.0	10	*2.6	*5,770	1.9	4,060	*2.2	*4,230	1.5	3,220	*0.8	*1,710	*0.8	*1,710	14.5	47.6	
		1.5	5	*2.8	*6,160	1.8	3,850	2.4	*4,720	1.4	3,090	*0.8	*1,810	*0.8	*1,810	14.6	47.8	
		0	0	2.82	6,070	1.7	3,660	2.3	*4,830	1.4	2,980	*0.9	*1,950	*0.9	*1,950	14.4	47.4	
		-1.5	-5	2.74	5,910	1.6	3,510	2.3	*4,250	1.4	2,890	*1.0	*2,150	*1.0	*2,150	14.2	46.5	
		-3.0	-10	2.69	5,800	1.6	3,410	*1.7	*2,460	1.3	*2,460	*1.1	*2,430	*1.1	*2,430	13.7	45.0	
		-4.5	-15	2.67	5,780	1.6	3,380					*1.3	*2,850	*1.3	*2,850	13.1	42.9	
		-6.0	-20	*2.4	*3,580	1.6	3,460					*1.6	*3,490	1.6	3,460	12.3	40.0	
		-7.5	-25									*2.0	*4,590	1.8	4,100	11.2	36.3	
		-9.0	-30									*3.0	*6,990	2.3	5,280	9.7	31.2	
		-10.5	-35									*3.3	*7,140	*3.3	*7,140	7.6	24.2	

Notes: 1. Machine in "Fine Mode-F" (Power Boost) for lifting capacities. 2. The above loads are in compliance with SAE J1097 and ISO 10567 Hydraulic Excavator Lifting Capacity Standards. 3. Rated loads do not exceed 87% of hydraulic lifting capacity or 75% of tipping load. 4. Rated loads marked with an asterisk (*) are limited by hydraulic capacity rather than tipping load.

Equipment

STANDARD EQUIPMENT
Engine
Turbocharged, 4 stroke diesel engine with water cooling, direct injection and charged air cooler that meets Tier 4f requirements
Air filter with indicator
Air intake heater
Cyclone pre-cleaner
Electric engine shut-off
Fuel filter and water separator
Alternator, 80 A
Tropical cooling system (50 deg. C)
Electric / Electronic control system
Contronics
Advanced mode control system
Self-diagnostic system
Satellite Caretrack and 3yr-Caretrack subscription
Machine status indication
Engine speed sensing power control
Automatic idling system
One-touch power boost
Safety stop/start function
Adjustable LCD color monitor
Master electrical disconnect switch
Engine restart prevention circuit
High-capacity halogen or LED lights:
Frame-mounted 2
Boom-mounted 1
Travel alarm
Batteries, 2 x 12 V / 140 Ah
Start motor, 24 V / 5.5 kW
Frame
Access way with handrail
Tool storage area
Punched metal anti-slip plates
Undercover (heavy-duty)
Full height counterweight:
4 200 kg (9,260 lb) - Long Crawler (L)
5 000 kg (11,030 lb) - Long Reach (LR)
Undercarriage
Undercover
Hydraulic track adjusters
Greased and sealed track link
Track Guard
800 mm (32") shoe with triple grousers
Hydraulic system
Boom float function without HRV
Automatic sensing hydraulic system
Summation system
Arm priority
Swing priority
Pilot control pattern change
ECO mode fuel saving technology
Boom, arm and bucket regeneration valves
Swing anti-rebound valves
Boom and arm holding valves
Multi-stage filtering system
Boom cylinders (x2)
Cylinder cushioning
Cylinder contamination seals
Auxiliary hydraulic valve
Automatic two-speed travel motors
Hydraulic oil, longlife oil 46

STANDARD EQUIPMENT
Cab and interior
ROPS (ISO12117-2) certified cab
Silicon oil and rubber mounts with spring
Opening top hatch
Control lock out lever
Travel pedals and hand levers
Adjustable operator seat with heater and joystick control console
Control joysticks with 4 switches each
Straight travel pedal
Heater & air-conditioner, automatic
Flexible antenna
Radio with MP3 and USB Jack with bluetooth
Cab, all-weather sound suppressed, includes:
Cup holders
Door locks
Tinted glass
Floor mat
Horn
Large storage area
Pull-up type front window
Removable lower windshield
Seat belt
Safety glass
Sun screens, front, roof, rear
Windshield wiper with intermittent feature
Rear view camera
Master key
Digging equipment
Boom: monoblock 5.7 m (18'8"), Long Reach 8.85 m (29'0")
Arm: 2.9 m (9'6"), Long Reach 6.25 m (20'6")
Manual centralized lubrication
Linkage without lifting eye
OPTIONAL EQUIPMENT
Engine
Block heater: 120 V
Oil bath pre-cleaner
Diesel coolant heater, 5 kW
Water separator with heater
Auto engine shutdown
Fuel filler pump: 50 l/min (13.2 gpm), with automatic shut-off
Standard cooling system by fan clutch (40 deg. C)
Electric
Extra work lights (Halogen or LED):
Boom-mounted 1
Cab-mounted 3
Counterweight-mounted 1
Anti-theft system
Rotating warning beacon
Flashing beacon, LED
Side view camera
Volvo Smart View (VSV)

OPTIONAL EQUIPMENT

Undercarriage

- Full track guard
- 500mm (20") / 600mm (24") / 600mm HD (24") / 700mm (28") / 900mm (36") shoe with triple grousers
- 700 mm (28") shoe with double grousers
- 600 mm (24") shoe with single grouser

Hydraulic system

- Boom hose rupture valve (HRV) with overload warning device
- Arm hose rupture valve (HRV)
- Boom float function with HRV
- Hydraulic piping:
 - Work tool management system (up to 20 programmable memories)
 - Hammer & shear, 1 and 2 pump flow
 - Slope & rotator (40lpm/11gpm or 60lpm/16gpm)
 - Extra for slope & rotator
- Grapple
- Oil leak (drain) line
- Quick coupler piping
- Breaker & shear pressure pre-setting
- Additional return filter
- Volvo hydraulic quick coupler S1, S1 without hook
- Hydraulic oil, biodegradable 46
- Hydraulic oil, longlife oil 32, 68

Machine control system

- Dig assist 2D/In-field/Steelwrist
- Volvo Active Control (Semi-autonomous)
- Please refer to separate Brochure for more details

OPTIONAL EQUIPMENT

Cab and interior

- Fabric seat without heater
- Fabric seat with heater and air suspension
- Control joysticks with semi-long
- Control joysticks with 3 switch & 1 propotional
- Falling object guard (FOG)
- Frame-mounted
- Cab-mounted
- Cab-mounted falling object protective structure (FOPS)
- Side view camera
- Rain shield
- Smoker kit (ashtray and lighter)
- Safety net for front window
- Lower wiper with intermittent control
- Cleaning air gun
- Anti-vandalism kit

Digging equipment

- Boom: 5.7 m (18'8") monoblock, heavy duty
- Boom: 5.57 m (18'3") 2-piece boom
- Arm: 2.0 m (6'7"), 2.5 m (8'2"), 2.9 m (9'6"), 3.5 m (11'6")
- Linkage with lifting eye

Service

- Tool kit, daily maintenance
- Tool kit, full scale

SELECTION OF VOLVO OPTIONAL EQUIPMENT

Auto engine shutdown



Two-piece boom



Diesel coolant heater



LED lights



Fuel fill pump



Cleaning air gun



Not all products are available in all markets. Under our policy of continuous improvement, we reserve the right to change specifications and design without prior notice. The illustrations do not necessarily show the standard version of the machine.

VOLVO

Volvo Construction Equipment

volvoce.com



State of West Virginia
Agency Request for Quote
Equip. Rental

Proc Folder: 1294430			Reason for Modification:
Doc Description: Rental of three (3) Excavators w/ 360 Grapple w/o operator			
Proc Type: Agency Master Agreement			
Date Issued	Solicitation Closes	Solicitation No	Version
2023-09-21	2023-10-03 14:30	ARFQ 0803 DOT2400000025	1

BID RECEIVING LOCATION

BUDGET & PROCUREMENT
DIVISION OF HIGHWAYS
BLDG 5, RM A-317
1900 KANAWHA BLVD E
CHARLESTON WV 25305
US

VENDOR

Vendor Customer Code: 000000218366
Vendor Name: Rudd Equipment Company
Address: PO Box 610
Street: SW 2nd St Rd.
City: Nitro
State: WV Country: USA Zip: 25143
Principal Contact: Ron Jacobs
Vendor Contact Phone: 304-561-8790 Extension:

FOR INFORMATION CONTACT THE BUYER
Amber J Heath
304-414-7105
amber.j.heath@wv.gov

Vendor Signature X *Ron Jacobs* FEIN# 61-0445955 DATE 10-3-23

ADDITIONAL INFORMATION

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION - BUDGET AND PROCUREMENT DIVISION - THIS IS AN OPEN-END CONTRACT FOR RENTAL OF THREE (3) EXCAVATORS WITH 360 ROTATING LOG GRAPPLE AND WITHOUT OPERATOR AT d9 PER THE ATTACHED DOCUMENTS.

QUESTIONS REGARDING THE SOLICITATION MUST BE SUBMITTED IN WRITING TO DOTPROCUREMENTTECHQUES@WV.GOV PRIOR TO THE QUESTION PERIOD DEADLINE CONTAINED IN THE INSTRUCTIONS TO VENDORS SUBMITTING BIDS.

*****NOTICE*****

WE DO NOT ACCEPT EMAIL BIDS

MUST USE ONE THE FOLLOWING TO SUBMIT A BID:

- * UPLOAD TO OASIS
- * HAND DELIVERY
- * MAIL IN HARD COPY
- * FAX TO 304-558-0047

MAKE SURE YOU DOWNLOAD ALL INFORMATION - THE COMPLETE SOLICITATION - PRICING PAGES - SIGN THE PAGES THAT NEED SIGNED

PLEASE NOTE THAT TO BE AWARDED THIS CONTRACT YOU WILL NEED TO BE REGISTERED WITH WV STATE PURCHASING DIVISION, AND COMPLIANT WITH SEVERAL AGENCIES SUCH AS THE WVSOS, TAX DEPARTMENT, WORKER'S COMPENSATION, AND UNEMPLOYMENT INSURANCE.

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS		DIVISION OF HIGHWAYS	
DISTRICT NINE		2876 N JEFFERSON ST	
146 STONEHOUSE RD			
LEWISBURG	WV	LEWISBURG	WV
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Track excavator with 360 rotating log grapple Monthly Rental	1.00000	MO	8993	8993

Comm Code	Manufacturer	Specification	Model #
22101526	VUNO	HYD. EXCAVATOR	EC220EL

Extended Description:

54" Log Grapple
3-4.5 Ton, 360 Rotator
17800 kg operating weight (max 23560 kg)

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS		DIVISION OF HIGHWAYS	
DISTRICT NINE		2876 N JEFFERSON ST	
146 STONEHOUSE RD			
LEWISBURG	WV	LEWISBURG	WV
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	Track excavator with 360 rotating log grapple Weekly Rental	1.00000	WK	\$ 2997	\$ 2997

Comm Code	Manufacturer	Specification	Model #
22101526	VONCO	Hyd. Excavator	EC220EL

Extended Description:
54" Log Grapple
3-4.5 Ton, 360 Rotator
17800 kg operating weight (max 23560 kg)

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS		DIVISION OF HIGHWAYS	
DISTRICT NINE		2876 N JEFFERSON ST	
146 STONEHOUSE RD			
LEWISBURG	WV	LEWISBURG	WV
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
3	Track excavator with 360 rotating log grapple Daily Rental	1.00000	DAY	\$ 333	\$ 333

Comm Code	Manufacturer	Specification	Model #
22101526	VONCO	Hyd. Excavator	EC220EL

Extended Description:
54" Log Grapple
3-4.5 Ton, 360 Rotator
17800 kg operating weight (max 23560 kg)

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS		DIVISION OF HIGHWAYS	
DISTRICT NINE		2876 N JEFFERSON ST	
146 STONEHOUSE RD			
LEWISBURG	WV	LEWISBURG	WV
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
4	Delivery Fee 1st Mile	1.00000	MILE	\$ 8	\$ 8

Comm Code	Manufacturer	Specification	Model #
22101526	VOLVO	Hyd. Exc.	EC220EL

Extended Description:
Delivery Fee 1st Mile

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS		DIVISION OF HIGHWAYS	
DISTRICT NINE		2876 N JEFFERSON ST	
146 STONEHOUSE RD			
LEWISBURG	WV	LEWISBURG	WV
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
5	Delivery Fee Each Additional Mile	1.00000	MILE	\$ 8	\$ 8

Comm Code	Manufacturer	Specification	Model #
22101526	VOLVO	Hyd. Exc	EC220EL

Extended Description:
Delivery Fee Each Additional Mile

SCHEDULE OF EVENTS

Line	Event	Event Date
1	TECHNICAL QUESTION DUE BY 10AM ET	2023-09-27

Exhibit A - Pricing Page

Equipment Description - without operator		\$ Rate of Rental without delivery			\$ Delivery	
Item Number	Description	Daily	Weekly	Monthly	1st Mile	Additional Mile
1	Excavator with Rotating Log Grapple	333	2997	8993	\$8	\$8

Make	Model	Serial Number
VOLVO	EC220EL	TBD

Delivery Address:
 2878 N Jefferson St.
 Lewisburg, WV 24901

Quantity Needed: 3
 Duration of Rental: 5 months

Required Minimum Specifications:
 54" Log Grapple
 3-4.5 Ton, 360° Rotator
 17800 kg operating weight (max 23560 kg)

Sample Models
 CAT 318D2 L
 John Deere 210P
 Komatsu PC88MR-11

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Ron Jacobs
(Printed Name and Title)
PO BOX 610, NIATO WV 25143
(Address)
304-755-7788
(Phone Number) / (Fax Number)
r.jacobs@ruddequipment.com
(E-mail address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through WV OASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; ; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the Vendor has properly registered with any State agency that may require registration.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law.

Rudd Equipment Company
(Company)

Ron Jacobs
(Signature of Authorized Representative)

Ron Jacobs
(Printed Name and Title of Authorized Representative)

10/2/23
(Date)

304-755-7788 / 304-755-7990
(Phone Number) (Fax Number)