BID SUBMITTAL FORM
Alabama County Joint Bidding Program
Heavy Equipment – Bid Item: TRACK-MOUNTED EXCAVATOR OPTION C-1

Company Name: Cowin Equipment Company Inc.

Address: 4325 Northern Blvd

Montgomery Al 36110

Bid Submitted by: John Edwards
(Name of company representative)

Title: Governmental Sales Manager E-mail address: jedwards@cowin.com

Phone: o-334-262-6642 c-850-685-7055 Fax: 334-834-2272

By submitting this bid, we agree:	Initials
The equipment model number identified below meets the bid specs for this bid item	JE
That the bid price will be honored for all counties for the period from Jan. 1, 2021 to Dec. 31, 2021.	JE
The equipment will be delivered at the bid price to all counties participating in the joint bid program	JE
The company representative listed above will be the contact person for purchasing this bid item under the joint bid program	JE
The bid is accompanied by a current catalog or model specification document for the model number identified below	JE
The bid is accompanied by a copy of the manufacturer's standard warranty as required in the bid specifications	JE
The bid includes the e-verify documentation required by Alabama law	JE
If awarded the bid, a performance bond will be provided upon request	JE
The bid documents include the **Manufacturer's Suggested Retail Price Sheet (MSRP) for the Standard Machine**	JE

TRACK-MOUNTED EXCAVATOR OPTION C-1

Total Bid Price for Standard Machine: $ $134,734.00
(Total Bid Price for Standard Machine Includes Freight Preparation, Delivery and Standard Warranty Costs) *

Freight Preparation and Delivery: $ $1,750.00
(Included in Standard Machine Bid Price)

Manufacturer's Suggested Retail Price for Standard Machine: $ $159,173.00

Equipment Model #: Volvo EC160E

Description: Hydraulic Track Mounted Excavator

Signature of company representative submitting bid: John Edwards

Title: Governmental Sales Manager

*** NOTE:** Award will be made based on the total cost of the **Standard Machine**. The total cost of the standard machine is to include the freight preparation, delivery and standard warranty cost. Freight preparation, delivery will be excluded from the total bid price of the standard machine in determining the percentage discount for any available options.

BID SUBMITTAL FORM: OPTION COST SHEET
TRACK-MOUNTED EXCAVATOR OPTION C-1

By submitting this bid, we agree:

To offer any available options at the percent difference between the Manufacturer's Suggested Retail Price Sheet and the actual bid price on the Standard Machine* JE

The bid documents include the Manufacturer's Suggested Retail Price Sheet (MSRP) with **any available Options** for the Standard Machine JE

Equipment Model #: Volvo EC160E

Description: Hydraulic Track Mounted Excavator

Signature of company representative submitting bid: John Edwards

Title: Governmental Sales Manager

***Note:** The percent difference between the **Manufacturer's Suggested Retail Price Sheet (MSRP)** for the standard machine as specified by these **Bid Specifications** and the actual price bid by the vendor will be calculated to determine the percentage discount to be applied to any available options. The bid price of the freight preparation, delivery cost shall be excluded in determining the percentage discount to be applied to available options. Any individual county may choose to add any available option to the standard machine at the percentage discount at the time of purchase.

BID SPECIFICATIONS
FOR
TRACK-MOUNTED EXCAVATOR OPTION C-1

GENERAL

These specifications shall be construed as the minimum acceptable standards for a track mounted hydraulic excavator with long undercarriage. Should the manufacturer's current published data or specifications exceed these standards, the manufacturer's standards shall be considered minimum and shall be furnished. All integral parts not specifically mentioned in the scope of these specifications that are necessary to provide a complete working unit shall be furnished. Additionally, the machine offered for bid shall include all standard manufacturers' equipment. The excavator must be a new current production model and shall meet all EPA and other applicable standards at the time of manufacture.

Use of specific names and numbers in the specifications is not intended to restrict the bidder or any seller or manufacturer, but is intended solely for the purpose of indicating the type, size and quality of equipment considered best adapted to the uses of the counties participating in this joint bid.

BID SUBMITTAL FORM

Each bidder must submit his or her bid on the bid submittal form included in the invitation to bid package. All written warranties to be submitted shall be attached to the bid submittal form.

BID PRICE

The price bid shall include all destination charges, delivery charges, title fees, rebates, and all other applicable costs and refunds.

MANUALS

Each unit shall be provided with one (1) copy of the operator's manual, one [1] repair manual, and one (1) copy of the current parts manual. Units will not be accepted for delivery until the manuals as outlined above are received by the purchaser.

REPLACEMENT PARTS AVAILABILITY

Parts must be available for 5 years or 7,500 hours of use for the piece of equipment. If any replacement parts are not delivered within three (3) working days of an order being placed, the bidder will deliver an equivalent machine for the county to use at no cost to the county until such time as the parts are delivered to the county so it can affect repairs to its machine.

WARRANTY

Bidders shall submit a copy of the manufacturer's standard warranty. Warranty shall include service response time of maximum of 36 hours within notification by county.

Yes✓ No___
Page#_____
or
Attachment✓

WEIGHT

Minimum 37,000 lbs. equipped with minimum 28 inch wide track shoes.	Yes ✓ No ___ Page # 24

ENGINE

Four Cylinder, turbocharged, minimum 245 cubic inch displacement diesel engine capable of a minimum 110 net horsepower.	Yes ✓ No ___ Page # 20
Engine shall be manufactured by the equipment manufacturer.	Yes ✓ No ___ Page # 20

UNDERCARRIAGE

Track length shall be minimum 12' 10".	Yes ✓ No ___ Page # 22
Track shoe width shall be minimum 28" (Triple grouser Shoes)	Yes ✓ No ___ Page # 20
Minimum seven (7) track rollers per side.	Yes ✓ No ___ Page # 20
Minimum two (2) carrier rollers per side.	Yes ✓ No ___ Page # 20

CAPACITIES

Fuel Tank Capacity – 66 gallon minimum	Yes ✓ No ___ Page # 20
Hydraulic Tank Capacity – 25 gallon minimum	Yes ✓ No ___ Page # 20
Engine Coolant – 4.7 gallon minimum	Yes ✓ No ___ Page # 20

BOOM AND STICK

One piece boom with minimum 16' 9" length	Yes ✓ No ___ Page # 22
Stick shall be a minimum 8' 6" long	Yes ✓ No ___ Page # 22

DIMENSIONS

Reach at ground level –28' 7" minimum	Yes ✓ No ___ Page # 23
Lifting Capacity at ground level, 15' over front of machine shall be a minimum 14,300 lbs.	Yes ✓ No ___ Page # 25
Lifting Capacity at ground level, 15' over side of machine shall be a minimum 8,300 lbs.	Yes ✓ No ___ Page # 25
Bucket breakout force – minimum 22,250 lbs.	Yes ✓ No ___ Page # 23
Stick digging force – minimum 17,400 lbs.	Yes ✓ No ___ Page # 23

BUCKET

Standard with no bucket. Buckets will be considered optional attachment's.

HYDRAULICS

Hydraulic pump output shall be a minimum of 76 GPM	Yes ✓ No ___ Page # 21

CAB

Enclosed ROPS cab:	Yes ✓ No ___ Page # 26
Heater	Yes ✓ No ___ Page # 26
Factory installed air conditioning	Yes ✓ No ___ Page # 26
AM/FM radio	Yes ✓ No ___ Page # 26
Suspension seat	Yes ✓ No ___ Page # 27

INVITATION TO BID
HEAVY EQUIPMENT
NOTICE OF BID OPENING

NOTICE IS HEREBY GIVEN that the Association of County Commissions of Alabama, which administers the Alabama County Joint Bid Program on behalf of Alabama's county governing bodies, shall receive and open bids for the purchase of zero (0) or more items of heavy road equipment at its office located at 2 North Jackson Street, Montgomery, Alabama, at 10:00 a.m. on Friday, September 4, 2020. Bid specifications are available at http://www.alabamacounties.org/heavy-equipment/ for each of the following items:

Light Duty Backhoe
Medium Duty Backhoe
Heavy Duty Backhoe Option A
Heavy Duty Backhoe Option C
85 PTO Tractor Option A
85 PTO Tractor Option B
95 PTO Tractor Option A
95 PTO Tractor Option B
Track Mount Excavator Option A-1
Track Mount Excavator Option A-2
Track Mount Excavator Option A-3
Track Mount Excavator Option B-1
Track Mount Excavator Option B-2
Track Mount Excavator Option B-3
Track Mount Excavator Option C-1
Track Mount Excavator Option C-2
19 Ton Wheeled Excavator
21 Ton Wheeled Excavator
Compact Track Mount Excavator Option D-1
Compact Track Mount Excavator Option D-2
Light Duty Motorgrader – Option A
Light Duty Motorgrader – Option B
Heavy Duty Motorgrader – Option A
Heavy Duty Motorgrader – Option B
Medium Duty Motorgrader – Option A
Medium Duty Motorgrader – Option B
Medium Duty Motorgrader – AWD
Light Duty Motorgrader – Option B
100 HP Heavy Duty Hydrostatic Bulldozer –Option B
100 HP Heavy Duty Hydrostatic Bulldozer – Option C
100 HP Heavy Duty Hydrostatic Bulldozer – Option D
125 HP Heavy Duty Hydrostatic Bulldozer – Option A
125 HP Heavy Duty Hydrostatic Bulldozer – Option B
Mulching Dozer
3 CY Wheel Loader Option A
3 CY Wheel Loader Option B
3 CY Wheel Loader Option C
3.65 CY Wheel Loader Option A
3.65 CY Wheel Loader Option B
Heavy Duty Dump Chassis – Option B
Heavy Duty Dump Chassis – Option C
Heavy Duty Dump Chassis – Option E
Lowboy Tractor Option – B
Lowboy Tractor Option – C
Lowboy Tractor Option – D
Skid Steer Attachments
Ride-on Industrial Boom Mower
Telescopic Boom Cutter 75 FT. Reach
Telescopic Boom Cutter 55 FT. Reach
Asphalt Distributor Truck
Chip Spreader
Rubber Tire Roller
One-man Pothole Patcher Option A
2WD Highway Speed Truck Excavator
4WD Highway Speed Truck Excavator

Time is of the essence in submitting bids and only bids received in the Association office by 10:00 a.m. Central Time on Friday, September 4, 2020 will be opened and considered. Bidders and any other interested individuals are invited to attend the bid opening.

THE INVITATION PACKAGE

The invitation package for each item to be bid includes: this invitation to bid, the written bid specifications for the particular item of heavy road equipment, and a Bid Submittal Form to be used in submitting a bid for that particular item. Bidders should verify that they have received all pages of the invitation package. If there are any omissions, the bidder should contact Kenya Howard in the Association office by mail, fax, or e-mail (jointbid@alabamacounties.org) to request missing pages. It is the responsibility of the bidder to make this request in sufficient time to prepare and submit the bid in time for the bid opening. Bidders should carefully read and comply with all parts of the invitation package, including all attachments and/or any addendum.

PREPARING AND SUBMITTING BIDS

All bids must be typed or hand written in ink on the attached Bid Submittal Form. **The completed Bid Submittal Form shall be placed in front of and separated from all other documents included in the bid packet, such that it will be the first document viewed upon opening the bid packet.**

Bids submitted in pencil and bids not submitted on the Bid Submittal Form will ***not*** be considered. All bids shall include a current catalog or model specification document for the equipment model number being offered for consideration. Bids submitted without such documentation will ***not*** be considered. Only information contained on the attached Bid Submittal Form and in the model specification document will be considered in evaluating bids.

Each separate requirement in the bid specification includes a block for indicating whether or not the item bid meets the specification. The bidder shall indicate compliance with each requirement by checking "Yes" or "No" in the block to the right of each bid specification. In addition, the bidder shall indicate the page number in the supplied manufacturer's equipment literature on which compliance with the specification can be verified. Failure to complete this portion of the bid form may result in the subject bid not being considered.

Each bid for one of the heavy equipment items included in the bid package must be submitted on the Bid Submittal Form for that item and forwarded in a separate envelope with the bid item and item number clearly identified on the outside of the envelope. Envelopes containing a "no bid" shall also include the words "NO BID" on the outside of the envelope. Facsimiles and e-mails will not be accepted. Bids submitted by "Express/Overnight" services must be in a separate inner envelope or package sealed and identified as stated above. All bids must be received in the Association office prior to the bid opening. Bids received after the deadline will be returned unopened.

The County Joint Bid Program reserves the right to require a performance bond from successful bidders as permitted under Alabama law. However, **no bid bond is required for this bid offering**.

All bids should be mailed or hand-delivered to:

Association of County Commissions of Alabama

Attention: JOINT BID PROGRAM		**Attention: JOINT BID PROGRAM**
2 North Jackson Street	**OR**	**P.O. Box 5040**
Montgomery, Alabama 36104		**Montgomery, Alabama 36103**

BID SPECIFICATIONS

Please note that each piece of heavy equipment available for bid may include several different sizes and categories of machines. You should read each set of specifications very carefully as the differences vary depending upon the piece and size of equipment.

The award will be based on the total cost of the **Standard Machine** bid by the lowest responsible bidder. Each Bid shall include a **Manufacturer's Suggested Retail Price Sheet (MSRP)** for each machine bid. The percent difference between the Manufacturer's Suggested Retail Price (MSRP) for the standard machine as specified by these bid specifications and the actual price bid by the vendor will be calculated and that percentage discount shall be applied to any options an individual county may choose to add to the machine.

Once the bids have been awarded, any county participant purchasing under this program may, at its discretion, add any of the vendor's available options at the same discount off the Manufacturer's Suggested Retail Price Sheet as was applied to the Standard Machine Price Bid.

Any use of specific names and/or model numbers in the attached specifications is not intended to restrict the bidder or any seller or manufacturer, but is included solely for the purpose of indicating the type, size, and quality of materials, product services, or equipment considered best adapted to the use of the counties participating in the joint bid program.

ACQUISITION AND FINANCING OPTIONS

The awarded Vendor will provide the equipment, including any options required by the purchaser, at the awarded price as contracted through the Joint Bid Program. The purchaser may secure its own financing to acquire the equipment or execute any financial options available under Alabama law with the awarded Vendor in order to acquire the equipment.

BIDDER QUALIFICATIONS

All bidders and all program participants must be in compliance with any applicable federal, state, county and municipal laws, regulations, resolutions and ordinances, including but not limited to, licensing, permitting, and taxation requirements. All bidders should be prepared to submit evidence or documentation as proof that they are properly licensed and permitted under any applicable laws upon request. Such evidence or documentation may be submitted with the bid. Additionally, all bidders shall provide proof that they are in compliance with the e-verify requirements of Alabama's Immigration Law (Ala. Code § 31-13-1 et seq., as amended by Act No. 2012-491).

BID AWARD

The Houston County Commission will serve as the awarding authority for all bids and will award all contracts at a regular meeting of the Houston County Commission. Any and all bids submitted in compliance with this invitation to bid shall be considered, and award will be made to the lowest responsible bidder meeting bid specifications as determined by the awarding authority in compliance with Alabama law. All bids will be reviewed and evaluated by a committee created for that purpose, which committee will make comments and recommendations to the awarding authority regarding the award. All factors contained in each invitation package will be evaluated in determining the successful bidder, and any omissions of the stated requirements may be cause for rejection of the bid submitted. The awarding authority reserves the right to reject any and all bids, to waive any informality in bids, and to accept in whole or in part such bid or bids solely at its discretion.

The contract period will be one year with an option to renew for a second and third year under identical price, terms, and conditions upon the mutual consent of the vendor and the awarding authority. Any renewal contract shall be approved in writing by the vendor and the awarding authority no later than 90 days prior to the expiration of the existing contract.

CONTACT REGARDING BIDS AND INVITATION

Contact initiated by a potential bidder with any county official, county employee, or member of the Association staff shall only be as specifically set out in this Invitation to Bid. Any questions related to the bid or the County Joint Bid Program shall be directed to Association staff in writing under the procedures set out in this Invitation to Bid. Additionally, a bidder may contact the Association in writing to request an appointment to review bid specifications following the bid opening. **However, there shall be no communication with any county official or county employee regarding this bid between the date of this invitation and the date of bid award**. Any contact other than as set out here shall be deemed as an attempt to unduly influence the bid award, and shall be grounds for rejection of the bid submitted by the bidder initiating such other contact.

Any questions or problems related to downloading or obtaining copies of this Invitation to Bid should be directed to Kenya Howard at jointbid@alabamacounties.org or 334-263-7594.

Any other questions or requests for additional information regarding this invitation or the bid specifications shall be submitted **in writing** no later than five (5) days prior to bid opening to:

ATTN: Chase Cobb
Association of County Commissions of Alabama
P.O. Box 5040
Montgomery, Alabama 36103
E-mail: ccobb@alabamacounties.org

ACCA

Volvo Construction Equipment

COWIN EQUIPMENT COMPANY, INC.

John Edwards
Governmental Sales Manager
850-685-7055
jedwards@cowin.com

EC160E

VOLVO EXCAVATORS 16.5-20.7 t / 36,266-45,592 lb 148 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.

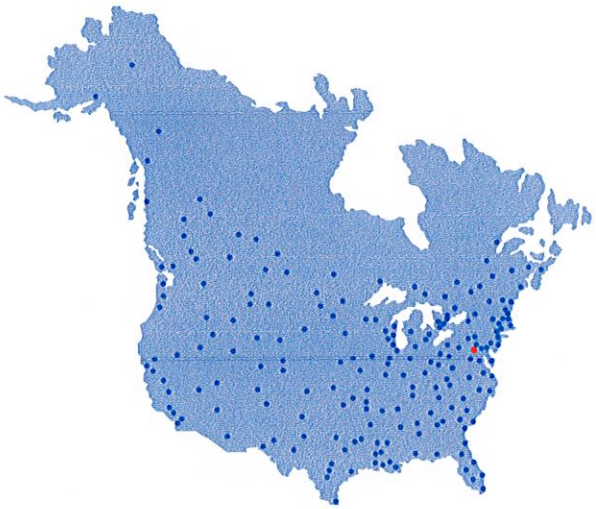
A strong, dedicated, capable dealer network.

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.

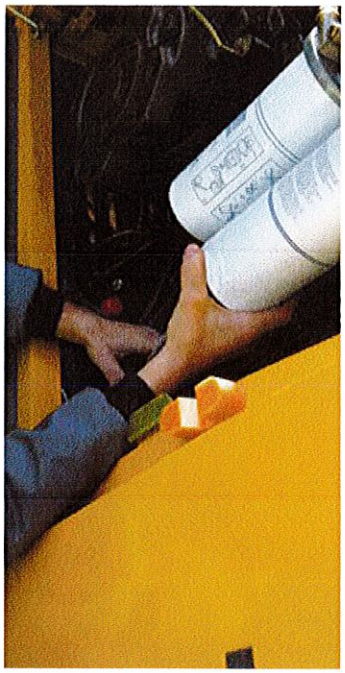
The strength of our dealer network is enhanced with extensive individualized product support training at our best-in-class Customer Center in Shippensburg and through hands-on training. Using a great Product Demonstration Center featuring a dedicated area for most commons applications, visitors operate 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.



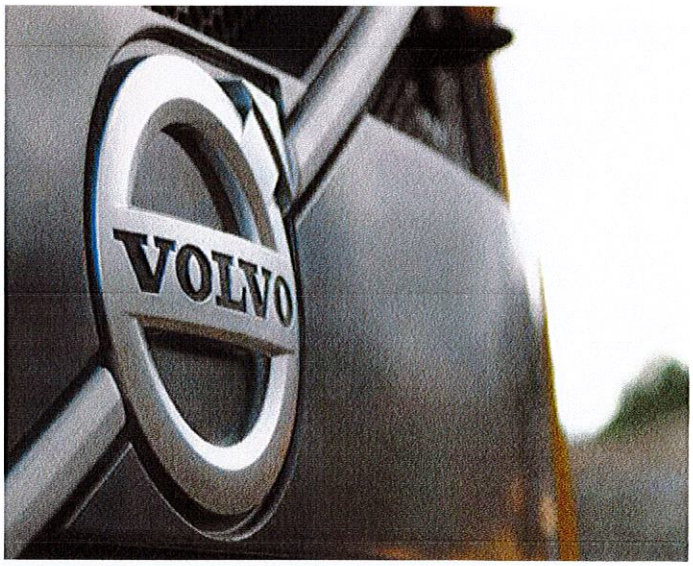










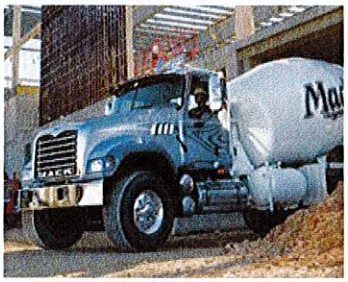




Volvo Trucks



Renault Trucks



Mack Trucks



UD Trucks



Volvo Buses



Volvo Construction Equipment



Volvo Penta



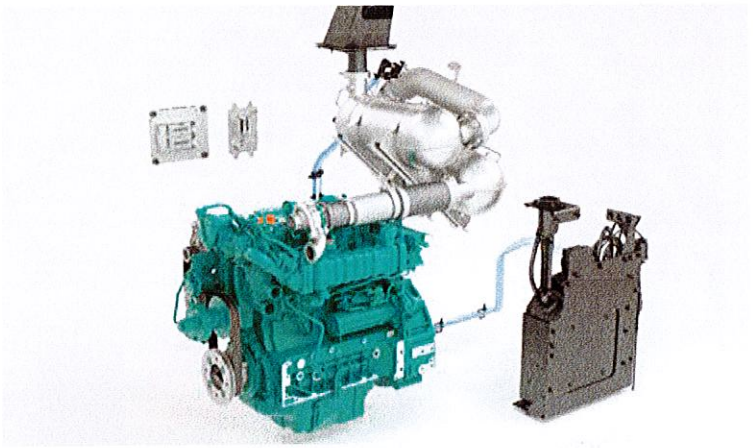
Volvo Financial Services

Effortless Efficiency.

Volvo's new EC160E provides a range of new features to ensure efficiency is a key priority. By carefully considering every duty and component, a machine has been produced that incorporates maximum uptime while also reducing fuel consumption and cycle times – all while delivering elite performance.

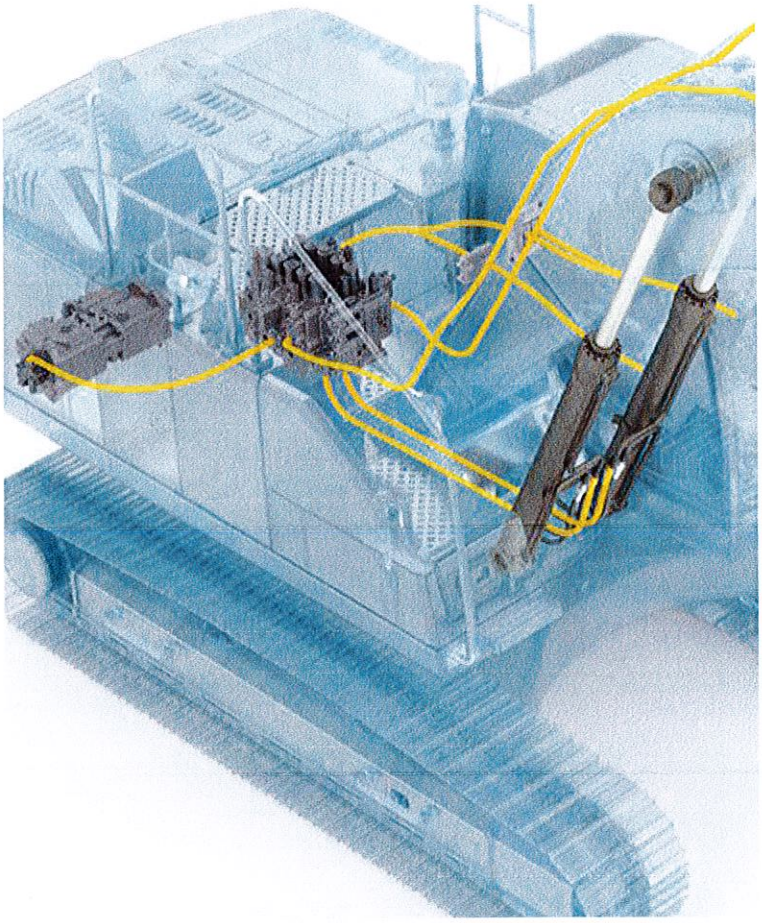
Volvo engine

Featuring proven advanced technology, and built on decades of experience, Volvo's robust D4 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 engine power combined with the increased pump flow creates a highly responsive combined operation and travel. It also produces faster cycle times and low fuel consumption which leads to higher productivity.





Boom float function

With the boom float function, the pump flow 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

This valve is compatible with software in the machine – building on the already superior controllability by providing a smooth and easy operation. It is also compatible with Volvo's ECO mode – this provides electronic pump control to enhance fuel efficiency.

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 system

The hydraulics system, combined with the fully electronic control system and advanced ECO mode, has been optimized to work in harmony with D4 Tier 4 Final engine to match the engine power, reduce power loss and improve controllability and response time.



Human Machine Interface (HMI)

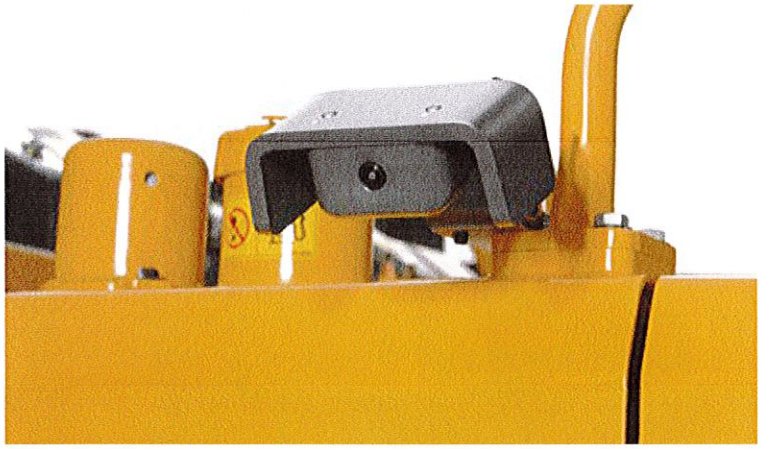
All machine interfaces – including joysticks, keypad, panel and larger LCD monitor – are ergonomically designed for optimum control and efficiency, resulting in increased productivity and operator comfort. The number of switches have been simplified and climate control integrated into the keypad for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

Making hard work easy.

The EC160E has been ergonomically designed for convenience and ease of use, allowing the operator to take control in comfort. The spacious cab design, controls and features increase productivity by ensuring the machine takes the strain and not the operator.

Side view camera

As well as the rear view camera, there is now a side view camera option to cover the visual blind spot. Both views are displayed on the color monitor, creating a safer working environment, protecting the operator and personnel on the ground.



Short-cut key

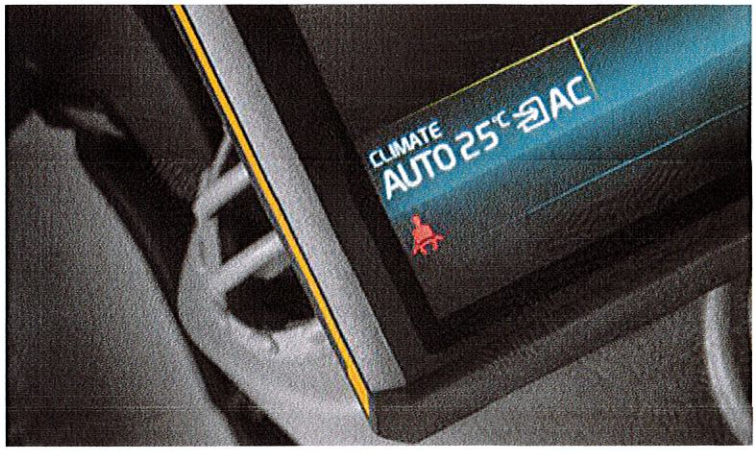
For added convenience, functions such as windshield wipers, cameras, auto-mute function can all be assigned a short-cut button on the joystick. This allows the operator to select a function during the application without disruption.





Bluetooth®

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



Climate control system

With more than 98% efficiency, Volvo's air filtration system provides the cleanest operator environment in the industry – even in dusty conditions. The high-capacity heating and ventilation system improves comfort, enhancing productivity..

From Strong to Stronger.

The EC160E not only encompasses state-of-the-art design but Volvo also recognizes that for technology to be truly innovative, top priorities need to be durability, quality and reliability for every function. This is why care has been taken to ensure every aspect of the machine is built to last while operating at the highest level of productivity.

ROPS

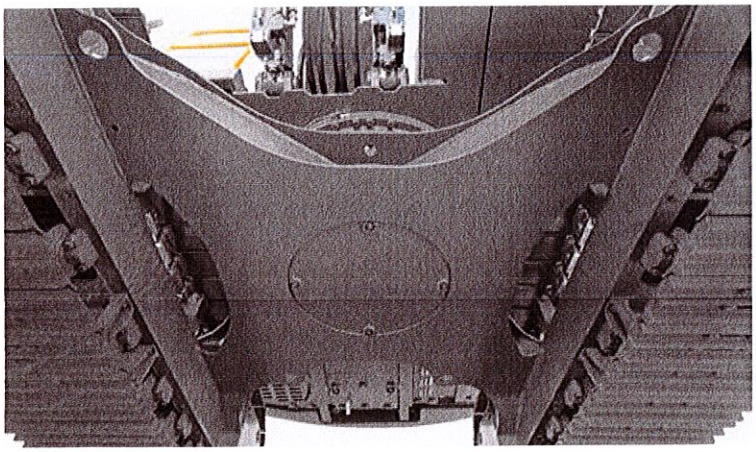
Volvo cabs are ROPS certified according to the rigorous ISO standards. Their reinforced steel structures ensure the operator is protected in the unlikely event of the machine rolling over..



Boom and Arm

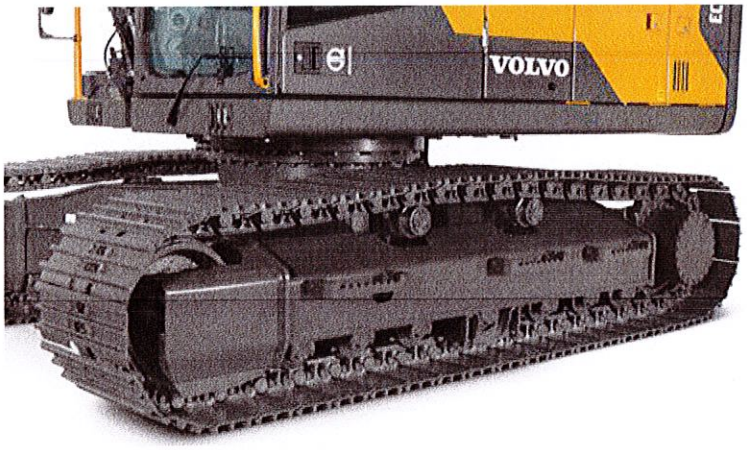
The robust design includes internal plates positioned to support pressure points during the range of applications. This helps disperse the stress from high-pressure areas of the boom and arm, to ensure maximum productivity time after time, during the most demanding applications.





Lower frame

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



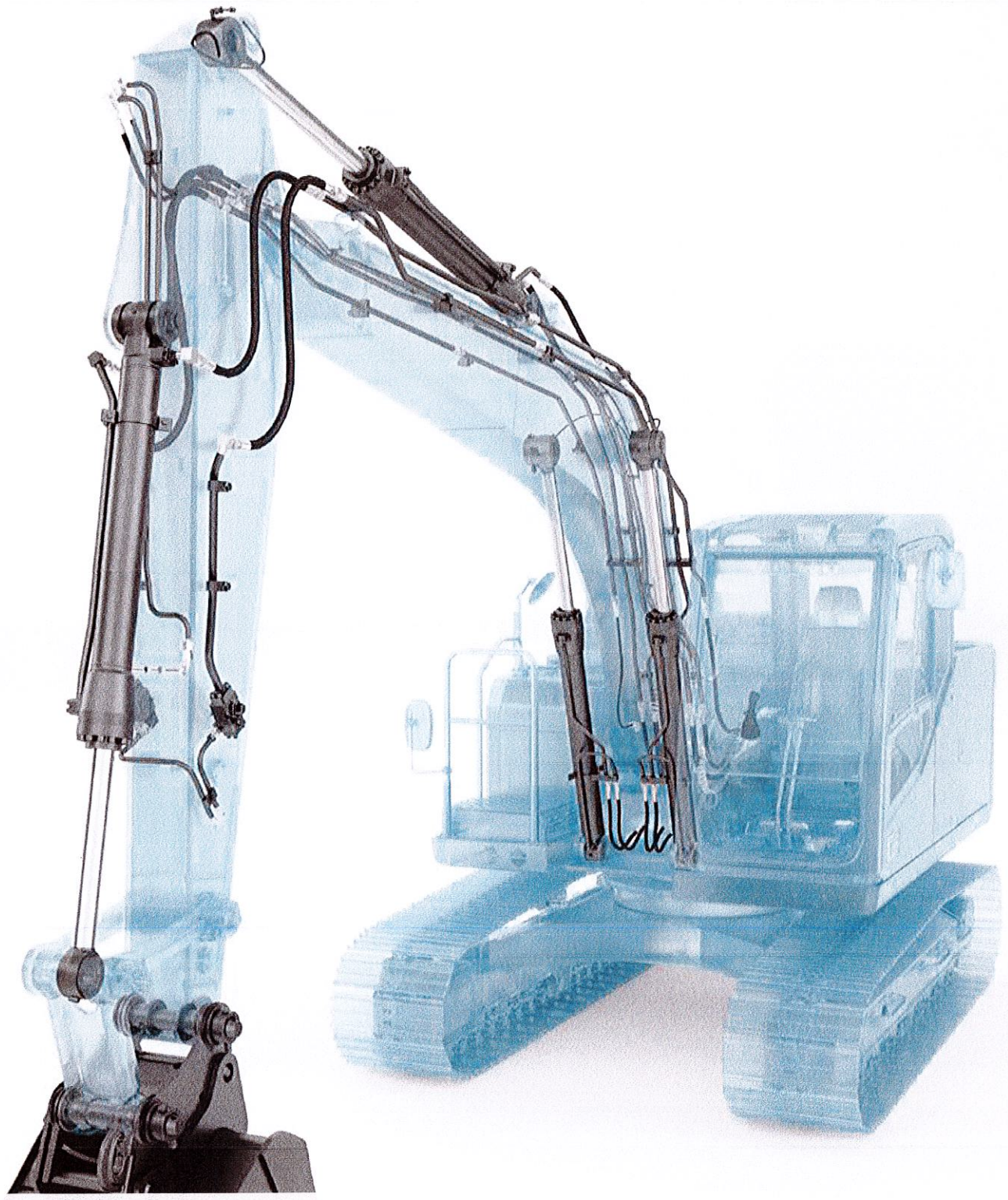
Undercarriage

The idlers, track links, upper and bottom rollers are built to withstand all elements and terrain, to create improved long-lasting durability and support maximum uptime.



Built to last

Working in tough conditions means every component matters - this is why Volvo pays extra attention to each detail during the manufacturing process. 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 work lights.





Ultimate tool carrier

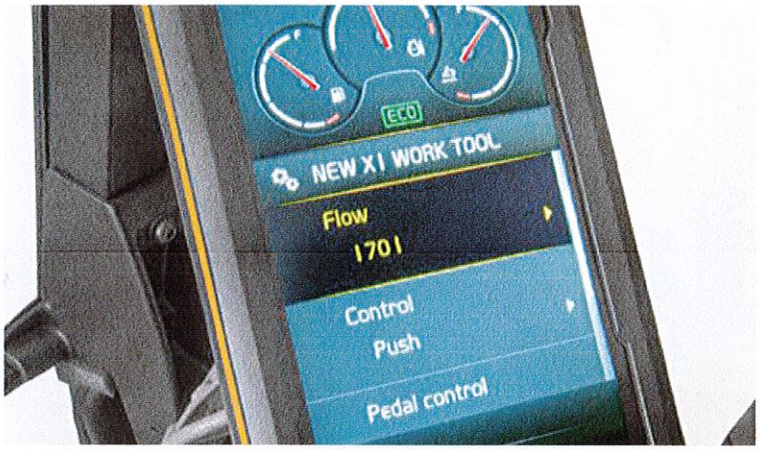
The Volvo excavator can be outfitted with a wide variety of auxiliary circuits from the factory, from breaker and shear piping (X1) to rotator piping (X3). State of the art hydraulics provide the correct flow and pressure for special attachments such as mowers and grinders, shears, crushers and tilt rotators among other attachments. You can choose between the one or two pump flow to maximize profits and productivity..

Fits with Variety.

Volvo has listened to customer needs and designed an excavator that is not only capable of doing a variety of applications but can do them all at an unrivaled consistent quality. Not only can the EC160E work with a large number of attachments, it can easily switch between them to maximize uptime and productivity.

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

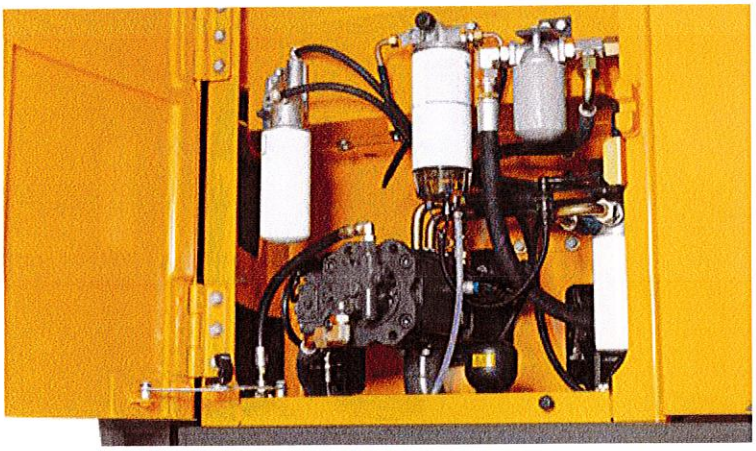
The attachment response sensitivity can be adjusted using the keypad. This allows the operator to tailor machine response for maximum impact in different environments.

Ground Control.

Proactive maintenance is crucial to prolong machine life – this is why making inspections safe and easy is a priority. Volvo has grouped access points together and made them safer to reach to ensure regular checks to maximize machine uptime while reducing the chances of any surprises.

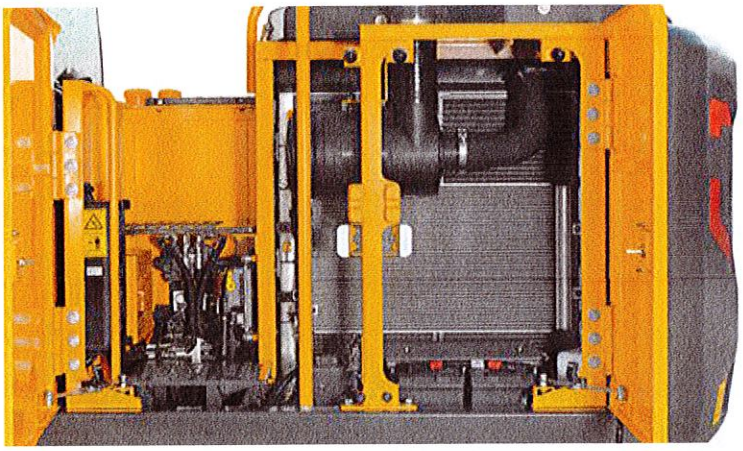
Grouped filters

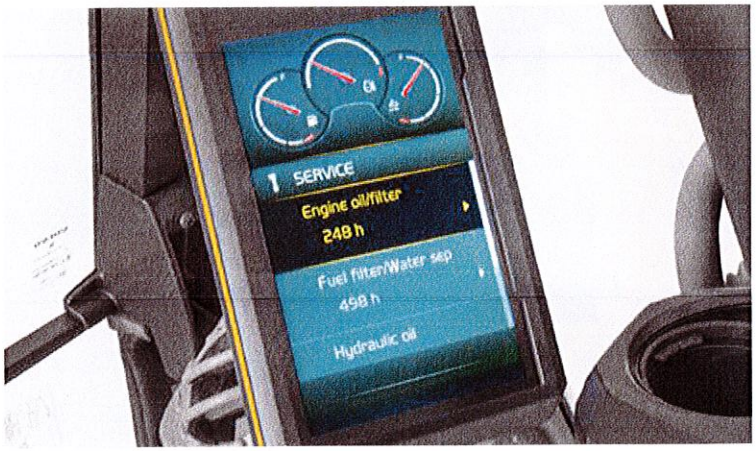
Filters are well grouped and easily accessible from the ground level. This facilitates the speed and ease of servicing.



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 color 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 ensuring safety.



Service access

Easy access for maintenance means regular checks are completed faster – increasing uptime and driving down total cost of ownership. The E-series features safe access guardrails to assist in checking the hydraulic tank, fuel tank and Diesel Exhaust Fluid (DEF). This is in addition to the easily accessible side entry, through a wide compartment door.



Matched attachments

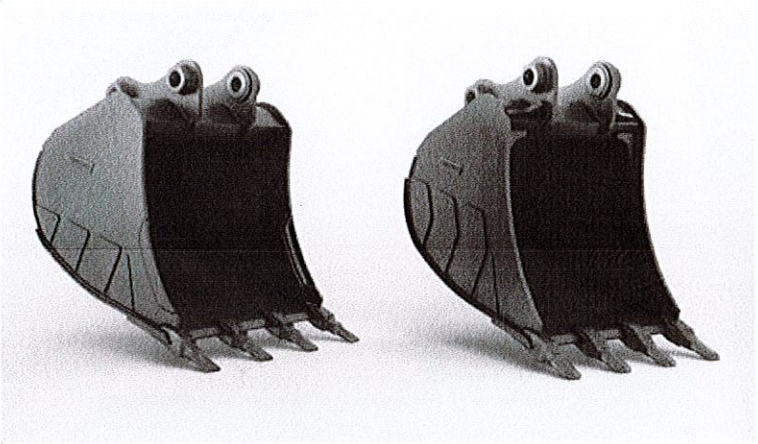
Volvo's durable attachments have been purpose-built to work in perfect harmony with Volvo machines, forming one solid, reliable unit. With functions and properties ideally matched, Volvo attachments are an integrated part of the excavator for which they're intended.

Mix and match for a superior fit.

Maximize your productivity and profitability with Volvo's EC160E 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

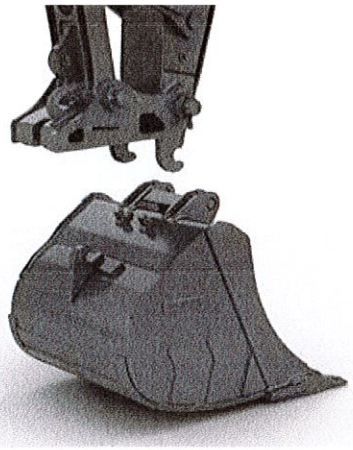
Volvo's buckets are the perfect tool for digging and re-handling in all conditions from soft, medium and hard materials. Heavy-duty buckets are intended for productive digging in compact materials. All provide maximum productivity and long life and feature the Volvo Tooth System..



Breakers

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.





S-type Coupler

The Volvo S-type quick coupler is designed to work with Volvo attachments - delivering ultimate compatibility and unrivalled performance.



Universal Quick Coupler

The Volvo universal quick coupler offer maximum versatility. It picks up a variety of attachments from various manufacturers and meets new safety regulations.

Genuine Volvo wear parts

Volvo offers a selection of economic, replaceable wear parts including high quality teeth, segments, side cutters, adapters and shrouds to protect the bucket and ensure long life.

Improved total cost of ownership.

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.



Optimized hydraulics

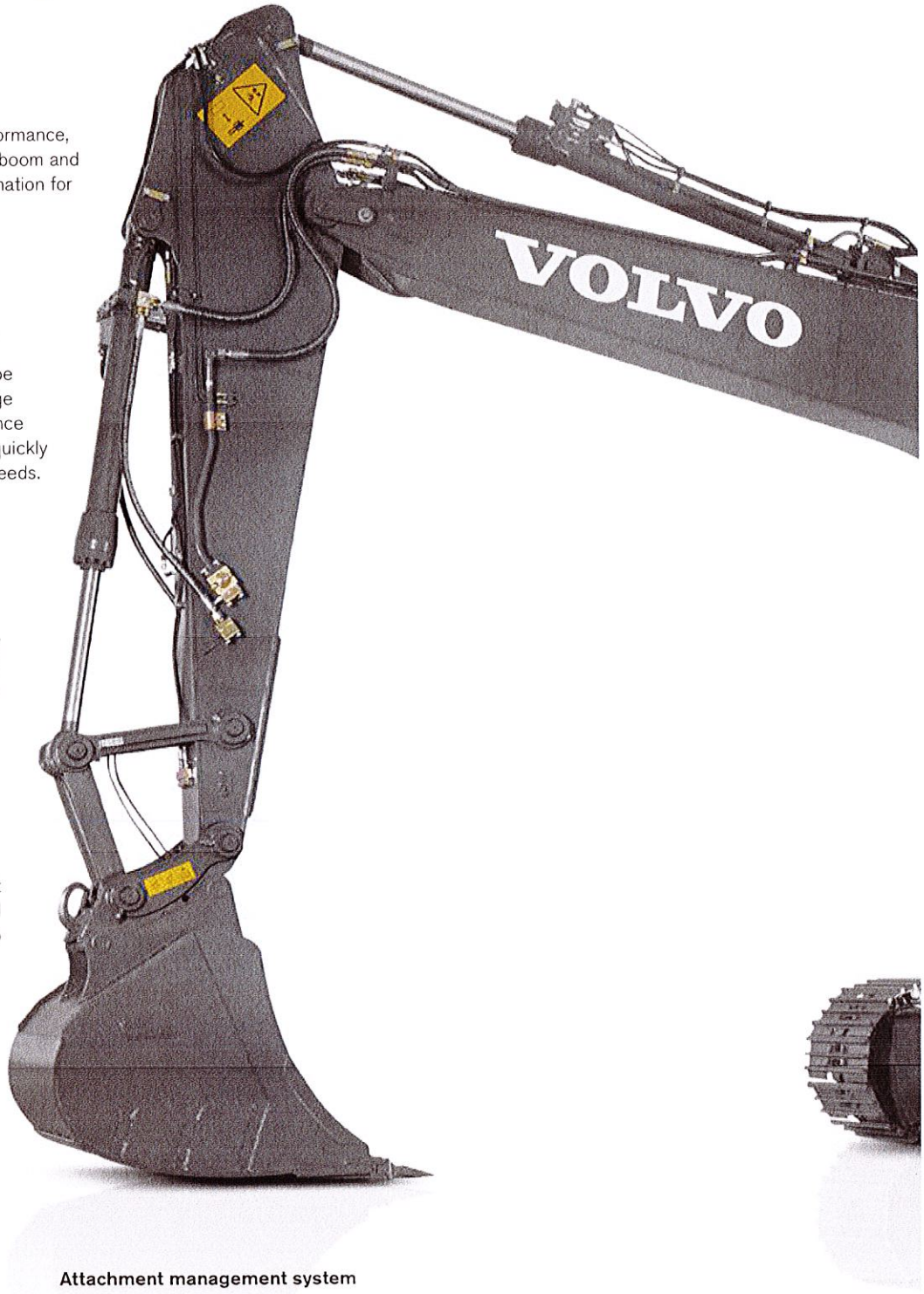
Designed to perfectly match the engine power, reduce power loss, and improve controllability and response time.

Diesel Exhaust Fluid (DEF)

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

Boom float

The pump flow 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.

Side view camera

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

Short cut key function

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



HMI

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

Bluetooth®

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

Service access

The E-series features a new convenient and safe access - such as guardrails - to check the hydraulic tank, fuel tank and Diesel Exhaust Fluid. This is in addition to the easily accessible side entry, through a wide compartment door.

Volvo engine

Volvo's D4 Tier 4 Final IV engine boasts more power while reducing both fuel consumption and emissions; delivering superior quality, reliability and durability.

Built to last

Volvo pays attention to the details. 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.

Grouped filters

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

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 the positive return of your investment.





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 EC160E in detail.

Engine

The latest generation of Volvo Tier 4 Final diesel engines 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.
The 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		D4J
Max power at		r/min		2,000
Net, ISO 9249/SAE J1349	kW	hp	109	146
Gross, ISO 14396/SAE J1995	kW	hp	110	148
Max power	Nm	lbf ft	609	449
at engine speed		r/min		1,600
No. of cylinders				4
Displacement	l	in^3	4.04	247
Bore	mm	in	101	3.98
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	100
Alternator	V / Ah	28 / 80

Service refill capacities

Fuel tank	l	gal	250	66
Hydraulic system, total	l	gal	255	67
Hydraulic tank	l	gal	110	29
DEF tank	l	gal	20	5
Engine oil	l	gal	16	4
Engine coolant	l	gal	27	7
Swing reduction unit	l	gal	2.6	0.7
Travel reduction unit	l	gal	2 x 5.8	2 x 2

Swing system

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

Max. slew speed		r/min		12.5
Max. slew torque	kNm	lbf ft	51.7	38,130

Drive

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	152	34,180
Max. travel speed	km/h	mph	3.1 / 5.6	1.9 / 3.5
Gradeability		°		35

Undercarriage

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

Track shoe				2 x 44
Link pitch	mm	in	190	7.5
			500	20
			600	24
Shoe width, triple grouser	mm	in	700	28
			800	32
			900	36
Bottom rollers				2 x 7
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

Type			2 x variable displacement axial piston pumps	
Maximum flow	l/min	gpm	2 x 152	2 x 40
Pilot pump				
Type				Gear pump
Maximum flow	l/min	gpm	1 x 20	1 x 5
Relief valve setting				
Implement				
Standard	MPa	psi	34.3	4,980
Power Boost	MPa	psi	36.3	5,260
Travel circuit	MPa	psi	34.3	4,980
Slew circuit	MPa	psi	26.5	3,840
Pilot circuit	MPa	psi	3.9	570

Hydraulic motors

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	115 x 1 165 4.5 x 45.9
Arm		1
Bore x Stroke	ø x mm ø x in	120 x 1 345 4.7 x 53.0
Bucket		1
Bore x Stroke	ø x mm ø x in	105 x 1 000 4.1 x 39.4
Dozer blade		2
Bore x Stroke	ø x mm ø x in	140 x 320 5.5 x 12.6

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 a 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.

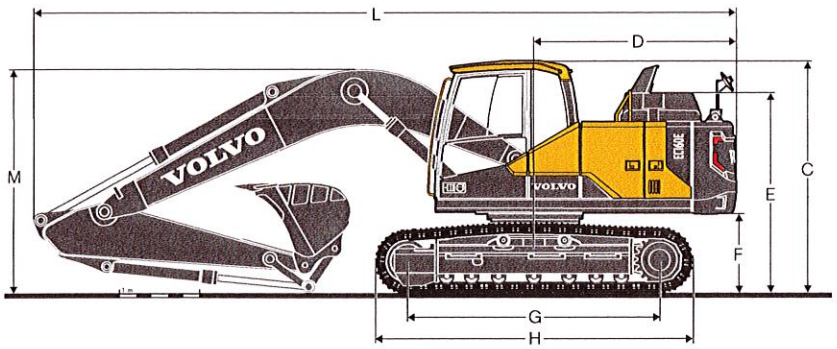
Ergonomic operator's seat: The adjustable seat and joystick console move independently to accommodate the operator. The seat has nine different adjustments plus a seat belt for the operator's comfort and safety.

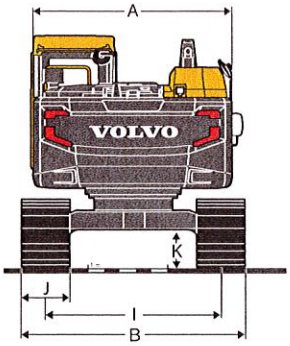
Sound Level

Sound level in cab according to ISO 6396		
LpA (standard)	dB(A)	69
LpA (tropical)	dB(A)	70
External sound level according to ISO 6395, EU Noise Directive (2000/14/EC)		
LwA (standard)	dB(A)	101
LwA (tropical)	dB(A)	102

Specifications.

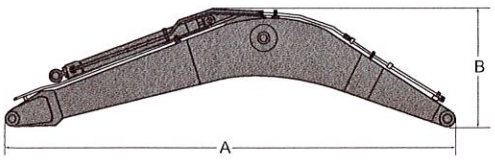
DIMENSIONS

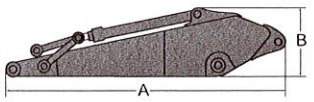




Description		Unit		EC160EL					
Mono boom		m, ft in		5.2, 17' 1"					
Arm		m	ft in	2.3	7' 7"	2.6	8' 6"	3.0	9' 10"
A	Overall width of upper structure	mm	ft in	2 490	8' 2"	2 490	8' 2"	2 490	8' 2"
B	Overall width	mm	ft in	2 590	8' 6"	2 590	8' 6"	2 590	8' 6"
C	Overall height of cab	mm	ft in	2 900	9' 6"	2 900	9' 6"	2 900	9' 6"
D	Tail swing radius	mm	ft in	2 550	8' 4"	2 550	8' 4"	2 550	8' 4"
E	Overall height of engine hood	mm	ft in	2 510	8' 3"	2 510	8' 3"	2 510	8' 3"
F	Counterweight clearance*	mm	ft in	1 010	3' 4"	1 010	3' 4"	1 010	3' 4"
G	Tumbler length	mm	ft in	3 180	10' 5"	3 180	10' 5"	3 180	10' 5"
H	Track length	mm	ft in	3 980	13' 1"	3 980	13' 1"	3 980	13' 1"
I	Track gauge	mm	ft in	1 990	6' 6"	1 990	6' 6"	1 990	6' 6"
J	Shoe width	mm	ft in	600	2' 0"	600	2' 0"	600	2' 0"
K	Min. ground clearance*	mm	ft in	460	1' 6"	460	1' 6"	460	1' 6"
L	Overall length	mm	ft in	8 880	29' 2"	8 770	28' 9"	8 810	28' 11"
M	Overall height of boom	mm	ft in	2 980	9' 9"	2 900	9' 6"	3 020	9' 11"

* Without shoe grouser





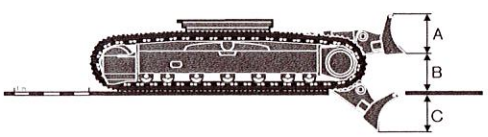
Description		Unit		mono	
Boom		m	ft in	5.2	17' 1"
A	Length	mm	ft in	5 400	17' 9"
B	Height	mm	ft in	1 640	5' 5"
	Width	mm	ft in	565	1' 10"
	Weight	kg	lb	1 370	3,020

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

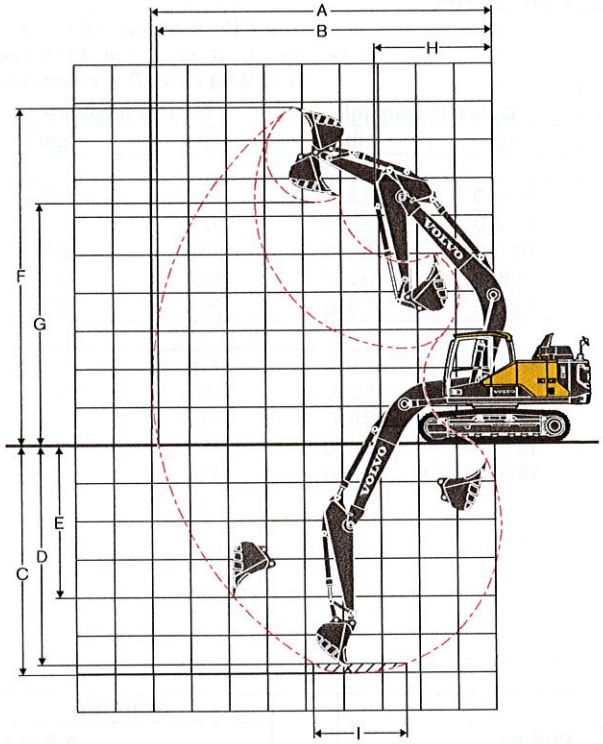
Description		Unit							
Arm		m	ft in	2.3	7' 7"	2.6	8' 6"	3.0	9' 10"
A	Length	mm	ft in	3 240	10' 8"	3 500	11' 6"	3 900	12' 10"
B	Height	mm	ft in	855	2' 10"	855	2' 10"	845	2' 9"
	Width	mm	ft in	395	1' 4"	395	1' 4"	395	1' 4"
	Weight	kg	lb	790	1,740	800	1,760	860	1,900

* Includes cylinder, linkage and pin

Front dozer blade		Unit			
A	Height	mm	ft in	452	1' 6"
	Width	mm	ft in	2 590	8' 6"
	Weight	kg	lb	553	1,220
B	Lift height	mm	ft in	571	1' 10"
C	Digging depth	mm	ft in	735	2' 5"



WORKING RANGES



Description			Unit		EC160EL					
Boom			m, ft in		5.2, 17' 1" mono					
Arm			m	ft in	2.3	7' 7"	2.6	8' 6"	3.0	9' 10"
A	Max. digging reach		mm	ft in	8 660	28' 5"	8 980	29' 6"	9 350	30' 8"
B	Max. digging reach on ground		mm	ft in	8 500	27' 11"	8 820	28' 11"	9 200	30' 2"
C	Max. digging depth		mm	ft in	5 770	18' 11"	6 070	19' 11"	6 470	21' 3"
D	Max. digging depth (2.44 m / 8' level)		mm	ft in	5 470	17' 11"	5 810	19' 1"	6 240	20' 6"
E	Max. vertical wall digging depth		mm	ft in	4 510	14' 10"	4 990	16' 4"	5 410	17' 9"
F	Max. cutting height		mm	ft in	8 560	28' 1"	8 820	28' 11"	9 030	29' 8"
G	Max. dumping height		mm	ft in	6 080	19' 11"	6 310	20' 8"	6 510	21' 4"
H	Min. front swing radius		mm	ft in	3 070	10' 1"	3 070	10' 1"	3 070	10' 1"
DIGGING FORCES WITH DIRECT FIT BUCKET										
Bucket radius			mm	ft in	1 319	4' 4"	1 319	4' 4"	1 319	4' 4"
Breakout force - bucket	Normal	SAE J1179	kN	lbf	101.5	22,810	101.5	22,810	101.5	22,820
	Power boost	SAE J1179	kN	lbf	107.3	24,110	107.3	24,120	107.3	24,130
	Normal	ISO 6015	kN	lbf	115.3	25,910	115.3	25,920	115.3	25,930
	Power boost	ISO 6015	kN	lbf	121.9	27,390	121.9	27,400	121.9	27,410
Tearout force - dipper arm	Normal	SAE J1179	kN	lbf	90.0	20,230	80.0	17,980	72.5	16,290
	Power boost	SAE J1179	kN	lbf	95.1	21,390	84.6	19,010	76.6	17,220
	Normal	ISO 6015	kN	lbf	92.2	20,730	81.7	18,370	73.8	16,600
	Power boost	ISO 6015	kN	lbf	97.5	21,910	86.4	19,420	78.1	17,550
Rotation angle, bucket			°		183		183		183	

Specifications.

MACHINE WEIGHTS AND GROUND PRESSURE

EC160EL			5.2 m / 17' 1" boom, 2.6 m / 8' 6" arm, 514 kg / 1,130 lb - 0.7 m³ / 0.93 yd³ bucket, 3 200 kg / 7,060 lb counterweight					
Description	**Shoe width**		**Operating weight**		**Ground pressure**		**Overall width**	
	mm	**in**	**kg**	**lb**	**kPa**	**psi**	**mm**	**in**
Without dozer blade								
	500	20	17 640	38,890	50.0	7.3	2 490	8' 2"
	600	24	17 870	39,390	42.2	6.1	2 590	8' 6"
Triple grouser	700	28	18 100	39,910	36.3	5.3	2 690	8' 10"
	800	32	18 500	40,790	32.4	4.7	2 790	9' 2"
	900	36	18 760	41,370	29.4	4.3	2 990	9' 10"
With dozer blade								
	500	20	18 810	41,480	53.0	7.7	2 490	8' 2"
	600	24	19 040	41,990	45.1	6.5	2 590	8' 6"
Triple grouser	700	28	19 280	42,510	39.2	5.7	2 690	8' 10"
	800	32	19 675	43,380	35.3	5.1	2 790	9' 2"
	900	36	19 940	43,970	31.4	4.6	2 990	9' 10"

BUCKET SELECTION GUIDE

Bucket type		**Capacity**		**Cutting width**		**Weight**		**Teeth**	**EC160EL**			**EC160EL with dozer blade**		
									5.2 m / 17' 1" boom, 600 mm / 24' shoe, 3 200 kg / 7,060 lb counterweight					
		m³	**yd³**	**mm**	**ft**	**kg**	**lb**	**EA**	**2.3 m / 7' 7" arm**	**2.6 m / 8' 6" arm**	**3.0 m / 9' 10" arm**	**2.3 m / 7' 7" arm**	**2.6 m / 8' 6" arm**	**3.0 m / 9' 10" arm**
Direct fit Buckets	**General purpose**	0.30	0.39	450	17.72	390	861	3	C	C	C	C	C	C
		0.36	0.47	600	23.62	417	919	3	C	C	C	C	C	C
		0.46	0.60	750	29.53	450	992	3	C	C	C	C	C	C
		0.58	0.76	900	35.43	505	1,114	4	C	C	C	C	C	C
		0.70	0.92	1050	41.34	550	1,213	4	C	C	C	C	C	C
		0.84	1.10	1200	47.24	618	1,362	5	C	C	C	C	C	C
	Heavy duty	0.30	0.39	450	17.72	382	841	3	D	D	D	D	D	D
		0.36	0.47	600	23.62	409	903	3	D	D	D	D	D	D
		0.46	0.60	750	29.53	444	979	3	D	D	D	D	D	D
		0.58	0.76	900	35.43	511	1,126	4	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 materal density

	kg/m³	lb/yd³	
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

LIFTING CAPACITY EC160EL

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		1.5 m, 5 ft		3.0 m, 10 ft		4.5 m, 15 ft		6.0 m, 20 ft		7.5 m, 25 ft		Max. Reach		
			Along UC	Across UC	Along UC	Across UC	Along UC	Across UC	Along UC	Across UC	Along UC	Across UC	Along UC	Across UC	
Boom: 5.2 / 17' 1"	6.0 m	kg	-	-	-	-	-	-	-	-	-	-	*4 480	3 650	5.9 m
Arm: 2.3 m / 7' 7"	20 ft	lb	-	-	-	-	-	-	-	-	-	-	*9,860	8,220	19.0 ft
Shoe: 600 mm / 24'	4.5 m	kg	-	-	-	-	*4 970	*4 970	*4 660	3 480	-	-	4 490	2 880	6.8 m
CWT: 3 200 kg / 7,060 lb	15 ft	lb	-	-	-	*10,770	*10,770	*10,230	7,500	-	-	-	9,990	6,400	22.1 ft
	3.0 m	kg	-	-	-	-	*6 580	5 050	5 290	3 340	-	-	3 990	2 530	7.2 m
	10 ft	lb	-	-	-	*14,180	10,920	11,400	7,220	-	-	-	8,810	5,610	23.6 ft
	1.5 m	kg	-	-	-	-	7 920	4 730	5 130	3 200	-	-	3 820	2 410	7.3 m
	5 ft	lb	-	-	-	17,060	10,230	11,050	6,910	-	-	-	8,420	5,310	24.1 ft
	0 m	kg	-	-	-	-	7 720	4 560	5 010	3 100	-	-	3 920	2 450	7.1 m
	0 ft	lb	-	-	-	16,610	9,850	10,800	6,690	-	-	-	8,640	5,410	23.4 ft
	-1.5 m	kg	-	-	*10 820	8 360	7 670	4 520	4 970	3 060	-	-	4 360	2 710	6.6 m
	-5 ft	lb	-	*24,720	17,960	16,500	9,750	10,730	6,620	-	-	-	9,650	6,000	21.6 ft
	-3.0 m	kg	-	-	*13 000	8 500	7 750	4 590	-	-	-	-	5 590	3 430	5.6 m
	-10 ft	lb	-	*28,150	18,280	16,670	9,900	-	-	-	-	-	12,470	7,650	18.2 ft
Boom: 5.2 / 17' 1"	7.5 m	kg	-	-	-	-	-	-	-	-	-	-	*4 110	*4 110	4.8 m
Arm: 2.6 m / 8' 6"	25 ft	lb	-	-	-	-	-	-	-	-	-	-	*9,050	*9,050	15.4 ft
Shoe: 600 mm / 24'	6.0 m	kg	-	-	-	-	-	-	*4 150	3 570	-	-	*3 760	3 320	6.3 m
CWT: 3 200 kg / 7,060 lb	20 ft	lb	-	-	-	-	-	-	*9,030	7,680	-	-	*8,320	7,460	20.3 ft
	4.5 m	kg	-	-	-	-	*4 570	*4 570	*4 390	3 510	-	-	*3 680	2 680	7.1 m
	15 ft	lb	-	-	-	-	*9,930	*9,930	*9,630	7,570	-	-	*8,130	5,960	23.2 ft
	3.0 m	kg	-	-	*9 730	9 330	*6 190	5 120	*5 090	3 370	3 770	2 400	3 750	2 380	7.5 m
	10 ft	lb	-	-	*20,590	20,160	*13,350	11,060	*11,080	7,280	-	-	8,280	5,280	24.7 ft
	1.5 m	kg	-	-	-	-	*7 930	4 780	5 150	3 220	3 700	2 340	3 600	2 270	7.7 m
	5 ft	lb	-	-	-	-	*17,130	10,320	11,090	6,940	7,980	5,040	7,930	5,010	25.1 ft
	0 m	kg	-	-	*5 620	*5 620	7 740	4 570	5 020	3 100	-	-	3 680	2 300	7.5 m
	0 ft	lb	-	-	*13,000	*13,000	16,640	9,870	10,820	6,690	-	-	8,110	5,090	24.5 ft
	-1.5 m	kg	*5 790	*5 790	*9 910	8 310	7 660	4 510	4 960	3 050	-	-	4 050	2 520	6.9 m
	-5 ft	lb	*12,980	*12,980	*22,600	17,860	16,470	9,730	10,700	6,590	-	-	8,950	5,580	22.7 ft
	-3.0 m	kg	*10 330	*10 330	*13 460	8 440	7 710	4 550	-	-	-	-	5 020	3 100	6.0 m
	-10 ft	lb	*23,240	*23,240	*29,140	18,140	16,590	9,830	-	-	-	-	11,180	6,900	19.5 ft
	-4.5 m	kg	-	-	*10 810	8 720	-	-	-	-	-	-	*7 450	4 980	4.4 m
	-15 ft	lb	-	-	*23,080	18,790	-	-	-	-	-	-	*16,540	11,410	13.9 ft
Boom: 5.2 / 17' 1"	7.5 m	kg	-	-	-	-	-	-	-	-	-	-	*3 470	*3 470	5.4 m
Arm: 3.0 m / 9' 10"	25 ft	lb	-	-	-	-	-	-	-	-	-	-	*7,760	*7,760	17.3 ft
Shoe: 600 mm / 24'	6.0 m	kg	-	-	-	-	-	-	*3 660	3 610	-	-	*3 170	2 980	6.7 m
CWT: 3 200 kg / 7,060 lb	20 ft	lb	-	-	-	-	-	-	*8,160	7,750	-	-	*7,010	6,680	21.8 ft
	4.5 m	kg	-	-	-	-	-	-	*3 990	3 530	-	-	*3 110	2 450	7.5 m
	15 ft	lb	-	-	-	-	-	-	*8,740	7,600	-	-	*6,850	5,450	24.5 ft
	3.0 m	kg	-	-	*8 200	*8 200	*5 610	5 160	*4 720	3 370	3 770	2 390	*3 200	2 190	7.9 m
	10 ft	lb	-	-	*17,400	*17,400	*12,100	11,150	*10,290	7,280	8,110	5,150	*7,050	4,850	25.9 ft
	1.5 m	kg	-	-	*5 660	*5 660	*7 430	4 790	5 140	3 200	3 680	2 310	3 330	2 090	8.0 m
	5 ft	lb	-	-	*13,630	*13,630	*16,040	10,350	11,070	6,910	7,940	4,990	7,340	4,610	26.3 ft
	0 m	kg	-	-	*6 130	*6 130	7 720	4 550	4 990	3 070	3 610	2 250	3 390	2 110	7.8 m
	0 ft	lb	-	-	*14,100	*14,100	16,590	9,810	10,750	6,620	7,790	4,850	7,480	4,660	25.7 ft
	-1.5 m	kg	*5 290	*5 290	*9 280	8 190	7 600	4 450	4 910	3 000	-	-	3 690	2 290	7.3 m
	-5 ft	lb	*11,850	*11,850	*21,140	17,600	16,330	9,590	10,580	6,470	-	-	8,160	5,060	24.1 ft
	-3.0 m	kg	*8 980	*8 980	*13 880	8 290	7 620	4 460	4 920	3 010	-	-	4 440	2 740	6.5 m
	-10 ft	lb	*20,200	*20,200	*30,040	17,810	16,380	9,630	10,630	6,510	-	-	9,870	6,090	21.1 ft
	-4.5 m	kg	-	-	*11 770	8 530	7 790	4 610	-	-	-	-	6 650	4 010	5.0 m
	-15 ft	lb	-	-	*25,240	18,360	16,780	9,970	-	-	-	-	15,120	9,100	16.0 ft

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 EU (Stage IV) requirements
- Air filter with indicator
- Air intake heater
- Cyclone pre-cleaner
- Electric engine shut-off
- Fuel filter and water separator
- Tropical cooling system
- Alternator, 80 A

Electric/Electronic control system

- Contronics
  - Advanced mode control system
  - Self-diagnostic system
- Machine status indication
- Satellite Caretrack and Caretrack subscription
- 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
- Travel alarm
- High-capacity halogen lights:
  - Frame-mounted: 2, Boom-mounted: 1
- Batteries, 2 x 12 V / 100 Ah
- Start motor, 24 V / 5.5 kW

Hydraulic system

- Boom float function without HRV
- Automatic sensing hydraulic system
  - Summation system
  - Boom priority
  - Arm priority
  - Swing priority
- 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
- Pilot control pattern change
- Hydraulic oil, ISO oil 46

Frame

- Access way with handrail
- Tool storage area
- Punched metal anti-slip plates
- Heavy duty lower cover plates
- 3 200 kg, 7,060 lb counterweight

Cab and interior

- ROPS (ISO12117-2) certified cab with openable roof hatch
- Silicon oil and rubber mounts with spring
- Control lock out lever
- Travel pedals and hand levers
- Straight travel pedal
- Adjustable operator seat with heater
- Control joysticks with 4 switches each
- Heater & air-conditioner, automatic
- Flexible antenna
- Radio with AUX, USB Jack and 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

Undercarriage

- Heavy Duty belly cover plates
- Hydraulic track adjusters
- Greased and sealed track link
- Track Guard

Digging equipment

- 5.2 m / 17' 1" mono boom
- 2.6 m / 8' 6" arm
- Reinforced linkage
- Manual centralized lubrication

OPTIONAL EQUIPMENT

Engine

- Block heater: 120 V
- Diesel coolant heater, 5 kW
- Water separator with heater
- Auto engine shutdown
- Standard cooling system
- Fuel filler pump: 35 l/min / 9 gpm

Electric

- High-capacity LED lights:
  - Frame-mounted: 2, Boom-mounted: 1
- Extra work lights (Halogen or LED):
  - Boom-mounted 1
  - Cab-mounted 3
  - Counterweight-mounted 1
- Anti-theft system
- Rotating warning beacon

OPTIONAL EQUIPMENT

Hydraulic system

- Boom hose rupture valve with overload warning device
- Arm hose rupture valve
- Boom float function with HRV
- Hydraulic piping:
  - Work tool management system (up to 20 programmable memorized settings)
  - Breaker & shear, 1 or 2 pump flow
  - Slope & rotator (40 lpm, 11 gpm or 60 lpm, 16 gpm)
  - Extra for slope & rotator
  - Grapple
  - Oil leak (drain) line
  - Quick coupler
- Additional return filter
- Breaker & shear pressure pre-setting
- Volvo hydraulic quick coupler S1, S6
- Volvo hydraulic quick coupler VQC-HU,DR16
- Hydraulic oil, biodegradable 46
- Hydraulic oil, longlife oil 32, 68

Cab and interior

- ROPS (ISO12117-2) certified cab with fixed hatch
- Fabric seat without heater
- Fabric seat with heater and air suspension
- Control joysticks with semi-long
- Control joysticks with 3 switch & 1 proportional
- Cab-mounted falling object guard (FOG)
- Cab-mounted falling object protective structure (FOPS)
- Anti-vandalism kit
- Safety net for front window
- Side view camera
- Smoker kit (ashtray and lighter)
- Sunlight protection, roof (steel)
- Lower wiper with intermittent control
- Rain shield
- Specific key

Undercarriage

- Dozer blade
  500 mm, 20"/600 mm, 24"/700 mm, 28"/800 mm, 32"/900 mm, 36" shoe with triple grousers

Digging equipment

- 2.3 m/7' 7" , 3.0 m/9' 10" arm
- Linkage with lifting eye

Service

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

Selection of Volvo optional equipment

Auto engine shutdown



Two-piece boom



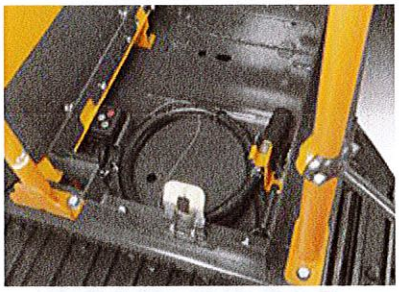
Diesel coolant heater



LED lights



Fuel filler pump



Falling Objects Guard (FOG)



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.

Ref. No VOE22100009391 / English-22 / 2015.06 / EXC / Volvo CE Americas

VOLVO

Volvo Construction Equipment

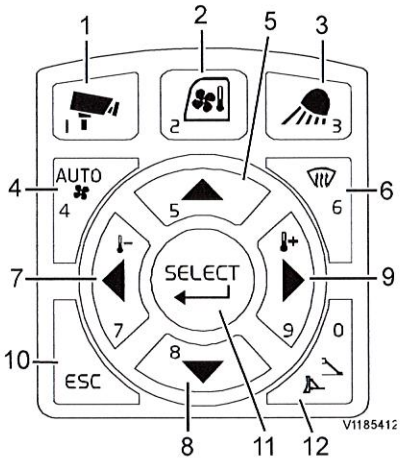
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check message for quick coupler locking confirmation will appear in the IC (Instrument Cluster) and the buzzer sound will continue.

NOTE!
When the attachment is correctly locked in the attachment quick coupler, this has to be confirmed by pressing the upper end of the attachment quick coupler confirmation switch (position 8) on the left instrument panel, see page *35*.

See page *223* for the complete procedure of the attachment quick coupler operation.

12. IC (Instrument Cluster) control keypad

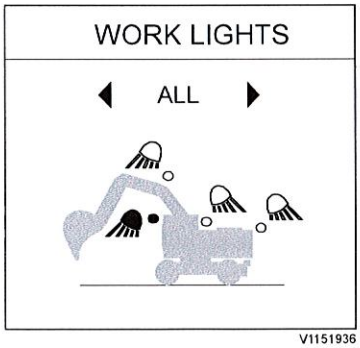


1 Camera button
2 HVAC control button
3 Work lights control button
4 HVAC auto-mode select button
5 Arrow up button
6 Defroster select button
7 Arrow left button
8 Arrow down button
9 Arrow right button
10 ESC button
11 Select button
12 Stabiliser control button

1 **Camera button**
This button is used to control the camera screen in the IC (Instrument Cluster).
A short press on the camera button shows the camera view with the gauges on top of the screen.
A long press on the camera button will bring up the camera configuration bar.
For detailed information about the camera control, see page *128*.

2 **HVAC control button**
This button is used to control the HVAC system.
For detailed information about this climate control system, see page *117*.

3 **Work lights control button**
This button is used to control the work lights on the boom, counterweight, cab front and cab rear.
A short press on the work lights button switches on/off the work lights with the latest configuration.
If one of the work lights is activated, this button is illuminated.



Work light control

Work lights menu
A long press on the work lights button opens the work lights menu on the IC (Instrument Cluster).
Press the arrow right or arrow left button to select the work lights on in clockwise / counter-clockwise order.
Press SELECT to turn the selected working light on/off. If the light is on the icon is yellow.
The selection menu can be closed by pressing ESC on the keypad.
The position where you escape the menu is saved.

4 **HVAC auto-mode select button**
This button is used to control the HVAC system.
See page *117*.

5 **Arrow up button**
Press this button to scroll between items and adjust each segment on the screen.

6 **Defroster select button**
This button is used to activate the defroster.

Model: Volvo EC160EL Crawler Excavator MSRP

Description	Article	MSRP
Volvo EC160EL Crawler Excavator	EC160EL	127574.80
Boom, 17` 1" (5.2m), GP	XC10119	10560.40
Arm, 8` 6" (2.6m), GP	XC10239	4506.36
Linkage with lifting eye, GP	XC10403	206.72
Track Pads, 28" Triple Grouser	XC20104	7797.56
Decal Kit NA	XC10503	0.00
Roller guard STD	XC20205	0.00
Lower frame - foldable steps	XC20302	0.00
Belly Cover STD, 4.5mm	XC20401	70.04
Engine NA	XC30101	0.00
Cooling System High Capacity	XC30202	0.00
Air precleaner, Cyclone	XC30401	89.08
Anti-vandal mounting brackets on cab	XC40112	0.00
CareCab w/ Opening Hatch	XC40103	361.76
Seat, Air suspension w/Heater & X-Isolator	XC40203	959.48
Seat Belt, 3 inch Retractable	XC41204	0.00
Joystick, 4 Switches	XC40405	884.00
Air conditioning, ACC (automatic climate control)	XC40502	2018.92
Universal key	XC40602	0.00
Radio with MP3, USB port & Bluetooth	XC40708	0.00
Work lights on deck & boom, Halogen	XC50000	0.00
Travel alarm	XC50102	0.00
Battery switch protector	XC50132	0.00
Volvo Smart View on Instrument Cluster only	XC50144	0.00
CareTrack, GSM/Satellite	XC50402	0.00
CareTrack Connectivity 4 yr Subscription	XC50404	0.00
De-activate SAT	XC50406	0.00
Hydraulic oil ISO VG46	XC60102	493.00
Manual, English	XC70302	0.00
Counterweight, 7060lbs (3200kg), fabrication	XC80153	3264.68
Under cover HD, 4.5mm superstructure	XC80202	0.00
Frame lifetime guarantee	XC70501	386.24
Less Bucket With Pins	XC8291084	0.00
TOTAL MSRP STANDARD SPECIFICATION		**159173.04**

OPTIONS

Basic		
BOOM		
Boom, 16` 5" (5.0m), 2-Piece	XC10120	10154.44
Arm		
Arm, 9` 10" (3.0m), GP	XC10224	4955.84

Description	Article	MSRP
Arm, 7` 7" (2.3m), GP	XC10223	4072.52
Arm with Strip		
Wear strip for arm	XC10801	143.48
Linkage		
Linkage w/o lifting eye	XC10401	0.00
Decal kit		
Decal Quebec	XC10510	0.00
HERC decals		
HERC Decals	XCH9999	0.00
UC		
Track chain		
Track Pads, 20" Triple Grouser	XC20101	5953.40
Track Pads, 24" Triple Grouser	XC20102	6914.24
Track Pads, 32" Triple Grouser	XC20106	8296.68
Track Pads, 36" Triple Grouser	XC20107	8988.24
Lower frame		
Lower frame D/blade-foldable steps	XC20304	7556.16
Undercover Lower frame		
Belly Cover HD, 10mm	XC20402	249.56
Less Lower Structure		
Less lower structure	XC20100	0.00
Engine		
Cooling system		
Cooling System Standard	XC30201	0.00
Fuel filler pump		
Fuel filler pump, 9.25 gpm	XC30301	889.44
Auxiliary Heater		
Engine Block heater, 120V	XC30501	252.28
Coolant heater by diesel, 5KW	XC30504	1695.92
Water separator heater		
Water separator with heater	XC30601	267.24
Automatic engine shutdown		
Automatic engine shutdown	XC30901	416.84
Regeneration		
Arctic regeneration	XC31101	76.84
Cab		
Cabin type		
CareCab w/ Fixed Hatch	XC40104	0.00
Operator Seat		
Seat, Mechanical suspension w/o Heater	XC40201	879.92
Seat, Mechanical suspension w/ Heater	XC40202	879.92
Deluxe seat	XC40210	1680.28
Control Joystick		
Joystick, Semi-long, 1 Switch	XC40401	921.40
Joystick, 3 Switches & 1 Proportional	XC40404	1843.48
Tiltrotator Control System		

VOLVO

Volvo Construction Equipment North America

Warranty – Disclaimers – Limitations
Limited Warranty for Governmental / Municipalities

Volvo Construction Equipment North America ("Volvo CE") hereby extends to its authorized dealers ("Dealer") and the Dealer's Governmental / Municipalities customers ("Customer", and both Dealer and Customer are referred to herein as a "Buyer"), who purchase a new Volvo construction equipment machine ("Machine") or new Volvo part ("Part", both of which are referred to herein as a "Product") from Volvo, the following limited warranty:

Subject to the exceptions and limitations set forth below, Volvo CE or Dealer will repair or replace any part of a new Machine or new Part which proves to be defective in material or workmanship during the following periods (the "Warranty Period"):

Volvo wheel loaders: 12 months/2500 hours, whichever first occurs
Volvo articulated haulers: 12 months/2500 hours, whichever first occurs
Volvo hydraulic excavators: 12 months/2500 hours, whichever first occurs
Volvo motor graders: 12 months/2500 hours, whichever first occurs
Volvo compactors: 12 months/1500 hours, whichever first occurs
24 months unlimited hours on DD90 and larger compactors
Volvo pavers: 12 months/1500 hours, whichever first occurs
24 months unlimited hours on 6000 / 7000 series pavers
Volvo milling: 12 months/1500 hours, whichever first occurs
Volvo compact wheel loaders (up to 100 net hp.): 12 months/unlimited hours
Volvo skid steer loaders: 12 months/unlimited hours; Lifetime arm for one-sided
Volvo compact hydraulic excavators (less than 11 metric tons): 12 months/unlimited hours
Volvo backhoe loaders: 12 months/unlimited hours
Volvo engines: 12 months/2500 hours, whichever first occurs
Volvo parts: 6 months/1500 hours, whichever first occurs
Volvo remanufactured components: 12 months/2500 hours, whichever first occurs
Volvo Attachments: 12 months

The Warranty Period commences immediately following the delivery of said Product to the Buyer who first puts said Product into use. The foregoing limited warranty shall include the labor cost to accomplish the repair or replacement of the defective part provided that the repair or replacement was performed by a Dealer.

The foregoing warranty does not cover: (i) any Product found to have been damaged by abuse, accident, other casualty or a failure to maintain or use the warranted Product in accordance with the applicable manuals or instructions (Buyer is required to use only original equipment manufacturer filters during the Warranty Period); (ii) the labor costs to repair or replace defective Parts after the expiration of the Warranty Period of the Machine in which such Part is located; (iii) overtime labor premiums; (iv) costs and expenses associated with the transportation of Dealer's service personnel to and from the location of the warranted Product; (v) any parts, components, attachments or accessories for which Buyer receives a separate warranty by the manufacturer or producer thereof (in specified cases said warranty may be administered by Volvo CE); (vi) maintenance items or ground engaging parts that have achieved their normal service life.

DISCLAIMER OF IMPLIED WARRANTIES AND LIMITATION OF REMEDIES

THE FOREGOING WARRANTY TO BUYER IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

REMEDIES AVAILABLE TO BUYER ARE LIMITED TO MAKING A CLAIM UNDER THE FOREGOING WARRANTY AND ARE EXCLUSIVE AND EXPRESSLY LIMITED TO OBTAINING THE PARTS AND LABOR IN ACCORDANCE WITH THE TERMS OF SAID WARRANTY.

Warranty – Disclaimers – Limitations

LIMITATIONS OF LIABILITY AND DAMAGES

Regardless of whether a claim against Volvo CE or Dealer is based on the foregoing warranty or is an action in contract, tort (negligence or strict liability) or otherwise, their respective liability for losses, damages or expenses of any kind arising from the design, manufacture, repair or sale of the Products is limited, unless otherwise prohibited by law, to an amount not exceeding the cost performing the obligations contained in the foregoing warranty, and in no event shall their respective or joint liability exceed the value of the Product or part thereof giving rise to such liability.

CONSEQUENTIAL AND SIMILAR DAMAGES NOT RECOVERABLE

Except for performing the obligations of the foregoing warranty in accordance with its terms, Volvo CE and Dealer shall have no liability for loss, damage, or expense, directly or indirectly, attributable to a loss of use of a Product, loss or damage to property other than the Product, loss or damage to the Product or any part thereof or any other economic or commercial loss, including, without limitation, lost profits or special or consequential damages (except liability for any type of consequential damages which by law may not be disclaimed). The parties intend that this prohibition against consequential and similar damages will survive and be effective even if the limitation of remedies in the foregoing sections is found to fail of its essential purpose under section 2-719 of the Uniform Commercial Code.

ALLOCATION OF RISK

The foregoing warranty disclaimers, limitations of liability and limitation of remedies are bargained allocations of risks among (i) the Customer who purchased the Product; (ii) the Dealer who sold the Product, and (iii) Volvo CE, which is a third party beneficiary of the contract of sale between the Customer and the Dealer. The Buyer of the Product accepts the foregoing warranty and the other bargained for allocations of risk as part of the agreed price for the purchase of the Product to which the foregoing warranty applies. Volvo CE is prepared to offer different warranties and other allocations of risk for other prices. However, any such change in the warranty or the allocation of risks must be confirmed in writing by Volvo CE.

STATUTE OF LIMITATIONS

Any action by a Buyer of a Product for breach of contract, for breach of warranty arising under, or for a cause of action arising out of the sale of a Product, whether based on contract, tort (negligence or strict liability) or otherwise, shall be commenced within one (1) year after the cause of action has accrued. Any such cause of action shall be deemed to have accrued at the earlier of (i) the discovery of the defect or breach, or (ii) the expiration of the applicable Warranty Period.

ACCA Response Commitment

Cowin Equipment Commits to respond to a call from a county concerning a warranty repair within 36 hours.

E-Verify

Company ID Number: 505216

THE E-VERIFY PROGRAM FOR EMPLOYMENT VERIFICATION MEMORANDUM OF UNDERSTANDING

ARTICLE I

PURPOSE AND AUTHORITY

This Memorandum of Understanding (MOU) sets forth the points of agreement between the Department of Homeland Security (DHS) and **Cowin Equipment Co Inc** (Employer) regarding the Employer's participation in the Employment Eligibility Verification Program (E-Verify). This MOU explains certain features of the E-Verify program and enumerates specific responsibilities of DHS, the Social Security Administration (SSA), and the Employer. E-Verify is a program that electronically confirms an employee's eligibility to work in the United States after completion of the Employment Eligibility Verification Form (Form I-9). For covered government contractors, E-Verify is used to verify the employment eligibility of all newly hired employees and all existing employees assigned to Federal contracts or to verify the entire workforce if the contractor so chooses.

Authority for the E-Verify program is found in Title IV, Subtitle A, of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), Pub. L. 104-208, 110 Stat. 3009, as amended (8 U.S.C. § 1324a note). Authority for use of the E-Verify program by Federal contractors and subcontractors covered by the terms of Subpart 22.18, "Employment Eligibility Verification", of the Federal Acquisition Regulation (FAR) (hereinafter referred to in this MOU as a "Federal contractor with the FAR E-Verify clause") to verify the employment eligibility of certain employees working on Federal contracts is also found in Subpart 22.18 and in Executive Order 12989, as amended.

ARTICLE II

FUNCTIONS TO BE PERFORMED

A. RESPONSIBILITIES OF SSA

1. SSA agrees to provide the Employer with available information that allows the Employer to confirm the accuracy of Social Security Numbers provided by all employees verified under this MOU and the employment authorization of U.S. citizens.

2. SSA agrees to provide to the Employer appropriate assistance with operational problems that may arise during the Employer's participation in the E-Verify program. SSA agrees to provide the Employer with names, titles, addresses, and telephone numbers of SSA representatives to be contacted during the E-Verify process.

3. SSA agrees to safeguard the information provided by the Employer through the E-Verify program procedures, and to limit access to such information, as is appropriate by law, to individuals responsible for the verification of Social Security Numbers and for evaluation of the E-Verify program or such other persons or entities who may be authorized by SSA as governed

E-Verify

Company ID Number: 505216

To be accepted as a participant in E-Verify, you should only sign the Employer's Section of the signature page. If you have any questions, contact E-Verify at 888-464-4218.

Employer **Cowin Equipment Co Inc**	
Tracy Womack	
Name (Please Type or Print)	Title
Electronically Signed	**02/15/2012**
Signature	Date

Department of Homeland Security – Verification Division	
USCIS Verification Division	
Name (Please Type or Print)	Title
Electronically Signed	**02/15/2012**
Signature	Date

Information Required for the E-Verify Program

Information relating to your Company:

Company Name:	**Cowin Equipment Co Inc**
Company Facility Address:	**2238 Pinson Valley Parkway**
	Birmingham, AL 35217
Company Alternate Address:	**PO Box 10624**
	Birmingham, AL 35202
County or Parish:	**JEFFERSON**
Employer Identification Number:	**630141942**

Company ID Number: 475502

E-VERIFY

CORPORATE COMPANY

If you have any questions, contact E-Verify at 888-464-4218.

INFORMATION REQUIRED FOR E-VERIFY

Information relating to your Company:

Company Name:	**Cowin Equipment Company Inc**
Company Facility Address:	**2238 Pinson Valley Parkway** **Birmingham, AL 35217**
County or Parish:	**JEFFERSON**

Information relating to the Corporate Administrator(s) for your Company on policy questions or operational problems:

Name:	**George Tickle**		
Telephone Number:	**(205) 488 - 3950**	Fax Number:	**(205) 841 - 2639**
E-mail Address:	**gtickle@cowin.com**		
Name:	**Tracy Womack**		
Telephone Number:	**(205) 488 - 3959**	Fax Number:	**(205) 488 - 3164**
E-mail Address:	**twomack@cowin.com**		