

V O L V O



Powered by Volvo Co-Pilot

# LOAD ASSIST

Volvo Construction Equipment

A large-scale industrial aggregate processing site under a cloudy sky. In the foreground, a yellow and black Volvo wheel loader is parked on a dirt surface. Behind it are two large, conical piles of grey aggregate material. In the background, there are several conveyor belt systems, green processing equipment, and a building. Tall light poles are visible against the sky.

# LIFT UP EFFICIENCY

Optimize load cycles and boost your profits with the Load Assist suite of apps, accessed from the 10" Volvo Co-Pilot tablet and designed to help you get the most from your Volvo Wheel Loader.



# ON-BOARD WEIGHING

## Take control of your productivity

When it comes to loading the optimum amount of material, intuition can only get you so far. Are you moving enough... or moving too much? Say goodbye to guess-work and get it right first time with On-Board Weighing.



▲  
Watch it  
for yourself

### Lift the pace

Make overloading, underloading, reweighing and waiting times a thing of the past with On-Board Weighing, providing real-time insight into the bucket's load. By measuring bucket load on the go, the dynamic system eliminates any disruption to the workflow.

### Operate safely

A customizable alert notifies the operator if the bucket load exceeds a set limit. When travelling at speeds over 10km/h (6 mph) certain functions are disabled, avoiding operator distractions.



*Eliminate overloading, underloading,  
reweighing and waiting times.*

## Loading made easy

Simply use the Volvo Co-Pilot touchscreen to monitor loading progress, track materials and trucks, as well as change work orders in seconds.

### Simple mode **NEW**

Getting started with On-Board Weighing has never been easier, thanks to Simple Mode. Accessed by entering a pin code, this simplified version limits the tool to three core functions: viewing of the current load in trip mode, the loaded weight and printing a simplified receipt.

### Low load mode **NEW**

The perfect solution when working with lightweight material, this function enables operators to weigh loads which are currently under the lower limit of the system, reducing the limit of the machine's rated working load from 5% to 1%.



### Task modes

Choose between four modes which will adapt the information displayed according to the task at hand: Trip Meter, Truck Loading, Stockpiling or Process Loading.

### Partial unloading

Managing the last bucket of the trip is easy with tip off capability.

### Work orders

Select customer name and target tonnage with just a few touches.

### Buckets, and more

Optimized for standard bucket operations, the system is also suitable for high tip buckets and side dump buckets, as well as compatible with forks and grapples (accuracy +/-2). What's more, operators will benefit from a guided on-screen calibration process.

### Precision loading

Tonnage measurements are accurate to within +/- 1% for every load. When site conditions or customer requirements make it impossible to lock the load within this margin, simply switch to within an accuracy of +/- 2%.

### Reporting on demand

Production data is stored in the Volvo Co-Pilot and can be exported over the air or by using a USB-stick. The system populates CareTrack – combining productivity data and fuel data into a single report.

# OPERATOR COACHING

## Enhanced operator performance

As machines become more advanced, Operator Coaching helps operators understand how their actions influence machine productivity and efficiency, and how to use their Volvo Wheel Loader to its full potential.



Watch to find  
out more

### Unlock the potential

Understand when and how to use the many smart functions of your Volvo Wheel Loader to achieve optimum results on site. You can also set targets in order to continually improve your technique, helping to get the most out of yourself and the machine you are working with.

### Efficiently productive

Make better decisions behind the controls thanks to instant feedback on operating behavior, combined with real-time on-screen guidance. With information available at the blink-of-an-eye, operators can ensure they are working in a way which delivers optimum productivity and fuel efficiency, as well as reduced machine wear.



*I check my score every day, it's great to see if I have improved since the last check. The system makes me constantly think about those small changes which can have a big impact on my score and help me get the best result possible.*

Volvo Wheel Loader operator from Denmark

# Operator Coaching Advanced **NEW**

Featuring a host of new functions, Operator Coaching Advanced builds on the proven Operator Coaching Start.

More details can be found on page 18.

## Dashboard

Key information relating to machine utilization (operating time, fuel consumption, distance traveled) is clearly displayed and can be reset separately from the machine display.

## Operating behavior

Keep track of key indicators including idling time, brake and throttle use, and lock up engagement.

## Productivity

Monitor tons moved per gallon, tons moved per hour and fuel consumed per hour. Information is displayed as a total for the entire work shift and for the active work, and can be broken down according to short cycles or load and carry cycles.



## Utilization

Displays an overview of the time spent, productivity achieved, and fuel consumed during different tasks. For example, the amount of fuel consumed by travel and the percentage of time spent idling.

## Score and trend

Real-time score and graphical visualization of performance across previous shifts.

## Notifications

Operators receive real-time guidance on how to best operate the machine, such as 'Activate Boom Suspension System' and 'Activate Lock-up'.

## Operator feedback

Operators receive interactive feedback based on 'What to improve' and what to keep. Feedback is viewed by tapping on a feedback point, which brings up information on improvement areas and a QR code link to the relevant instructional video. At the start of each shift operators are greeted with a performance summary from the previous shift.

## Interactive guidance

Navigate the different in-cab switches, controls and functions – such as Lock-up and Boom Suspension System – and access guidance on how to use them.

## User ID

Create individual profiles and easily recall personalized saved data and objectives before each shift.

# TIRE PRESSURE MONITORING SYSTEM

## Proactive tire management

Optimize tire life with the support of the Tire Pressure Monitoring System, which allows the operator to check the condition of the tires from the comfort of the cab.



### **Tire monitoring made easy**

With real-time information on tire pressure and temperature, the operator can ensure that tires are operating within the correct parameters. If not, the operator receives an alert and visual display of which tire needs attention.

### **Less fuel, less wear**

The integrated system saves time during machine inspections while also helping to secure the highest levels of tire life, fuel efficiency, machine performance and operator comfort.

## Durable system

The system consists of a transceiver and four tire valve sensors. The well-protected components are built to the highest standards and designed to take on the toughest environments.

### Monitored information

The system tracks three criteria: low pressure, high pressure and high temperature.

### A clear indication

A blue message will let the operator know there are inconsistencies in pressure or temperature and that a tire(s) should be kept under observation. An amber message indicates those inconsistencies have worsened and it is time to take action.

### Set your limits

Each tire is monitored independently; pressure limits are set per axle and can be easily changed. Alarm limits are displayed as nominal values and percentages.



### Insight and analysis

Data can be accessed via CareTrack, allowing you to review and analyze historical tire trends.



# MAP

## A complete site overview

Monitor the whereabouts of your machines, vehicles and visitors in real-time with Map, a connected tool which provides accurate positioning to help keep track of on-site traffic and navigate the workspace more efficiently.



### Improved orientation

Knowing the position of all personnel and equipment on site can help operators avoid unwanted situations, especially when working on jobsites with restricted visibility.

### Efficient driving

Being able to monitor traffic and follow the transportation flow in a work cycle allows operators to better anticipate driving decisions, resulting in a more efficient performance.



*Real-time positioning of on-site traffic helps to better anticipate operating decisions and reduce unnecessary stops.*

## How it works

The loader's built-in GPS is used for positioning and communication purposes with other machines equipped with Volvo Co-Pilot, as well as any other vehicle and visitor connected to the Map application through telecom.

### Roads

Roads are shown to help operators navigate around the site.

### Speed limits

Set speed restrictions for the entire site, or specific sections. Notifications will remind operators to maintain the recommended speed.

### Restricted areas

Specify no-go zones to help operators avoid entering restricted areas.



### Single lane sections

To avoid traffic congestions, the operator will be notified if another machine is approaching within a predefined single lane section.

### Point of Interest

Visualize specific points of interest for reference purposes, such as the office, workshop, fuel station, lunchroom or load and dump zone.

# Integrated rear view

When installed, the rearview camera and radar detect system – which gives a visual and audible alert to the operator of unseen on-coming objects – are shown into the Volvo Co-Pilot.



# Handy essentials

Just as you would expect from your smartphone or tablet, Volvo Co-Pilot comes pre-installed with apps designed to make the operator's life easier.

# Quick Tips

The 'Quick Tips' button is the perfect companion to the operator's manual, displaying information messages on how to use specific apps and functions found within the Volvo Co-Pilot.



## Calculator

Completes basic calculations and can also be used as a unit converter.



## Notes

There's no need for a pen and paper when you have a digital notepad at your fingertips.



## Weather

Weather informs you of current and upcoming weather conditions – helping you to plan the work ahead.



## Support you can count on

As a fully integrated and factory-fitted Volvo system, all the components, hardware and software of Load Assist are supported by your Volvo dealer to keep your operation running smoothly.



### Remote support

Get remote support when you need it thanks to the connectivity of your machine combined with Volvo Co- Pilot.



### Over the air updates

Just as you would expect from your mobile phone, Load Assist stays fully up-to-date with the latest software version, thanks to Over-The-Air updates.



### Easy upgrades

As you continue to evolve how you use Load Assist, you can easily upgrade the available functionality without any work required to the machine or hardware.

# Load Assist in detail

## AVAILABILITY

		L60H	L70H	L90H	L110H	L120H	L150H	L180H	L180H High-Lift	L220H	L260H	L350H
LOAD ASSIST	On-Board Weighing	Coming soon			X	X	X	X		X	X	X
	Operator Coaching Start	X	X	X	X	X	X	X		X	X	X
	Operator Coaching Advanced				X	X	X	X		X	X	X
	Tire Pressure Monitoring System	X	X	X	X	X	X	X		X	X	X
	Map	X	X	X	X	X	X	X		X	X	X
	Calculator, Notes, Weather	X	X	X	X	X	X	X		X	X	X
	Integrated radar detect system	X	X	X	X	X	X	X		X	X	X

## VOLVO CO-PILOT HARDWARE

Pressure sensors	2
Inertial Measurement Units (IMU)	3
Display unit	10 inch touchscreen
• Resolution	1024 x 768
• Display modes	Day mode/Night mode
• Internal memory	16 Gb
• SIM card	Mini SIM, 3G or 4G dongle
• USB connectors	2
• Number of languages	25
Pre-installed apps	Calculator, Notes and Weather*

\*A SIM-card and mobile connection are needed to enable these apps.



## ON-BOARD WEIGHING

Type of system	Fully dynamic*
Typical accuracy	1%*
Load range	Within the range of 5-150% of the machine working load
Load range - Low Load Mode	Within the range of 1-5% of the machine working load
Certifiable/trade approved	NO
Unit of measure	Tonnes, short tons and lbs
Task modes	Trip, Truck, Pile**, Process**
Loading multiple compartments	YES, up to 3 individual compartments
Tip-off functionality	Tip-off onto pile or tip-off onto truck
Pause functionality	YES
Rear-view camera, Radar detect system**	YES, when reversing only, OR at all times in full screen mode or split screen
Number of work orders	More than 100 000
Number of attachments	More than 100 000
Number of customers	More than 100 000
Number of trucks/targets	More than 100 000
Number of material types	More than 100 000
Data transferred via Cloud service via SIM card	<ul style="list-style-type: none"> <li>Detailed data per bucket</li> <li>Weight, Material name, Target name, Customer name, Work order name</li> <li>Detailed data per work order</li> </ul>
Data transferred via USB	<ul style="list-style-type: none"> <li>Start and stop times</li> <li>Work order name, Total material loaded, Material type</li> <li>Customer name</li> </ul>
Data transferred in CareTrack	<ul style="list-style-type: none"> <li>Tonnes/tons, Liter/gallon</li> <li>Ton(ne)/hour, Ton(ne)/liter or gallon</li> <li>Liter or gallon of fuel/ton(ne)</li> <li>Number of cycles</li> </ul>
Load summary	<ul style="list-style-type: none"> <li>Per time unit / customer / target / work order / material and task mode</li> <li>Export to USB (pdf) and printout</li> </ul>
Operator manual	<ul style="list-style-type: none"> <li>Accessible via touchscreen</li> <li>Available in 25 languages</li> </ul>
Calibration time	One 15-20 second calibration per day* or after changing attachment
Overload warning	<ul style="list-style-type: none"> <li>Truck/target</li> <li>Bucket</li> </ul>
Printer / Type**	Thermal printer. Printouts can also be exported as pdf to USB
Printer / Connectivity	USB
Printer / Information on printout	<ul style="list-style-type: none"> <li>Company name, location, address and phone number, free text field</li> <li>Date and time</li> <li>Customer name</li> <li>Work order name</li> <li>Target</li> <li>Total weight, weight per compartment, weight per material</li> <li>Bucket count</li> </ul>

\*Depending on working conditions | With Low Load Mode activated the system is not fully dynamic and has a lower accuracy

\*\*Optional equipment

# Load Assist in detail

OPERATOR COACHING		
	Start	Advanced*
Operator score	x	x
Notifications	x	x
Interactive guide	x	x
Historical graphs	x	x
Previous shift summary		x
On-Board Weighing data integration		x
Productivity		x
Utilization		x
Operator tips		x
Tips library		x
Unit of measure	Meters, litres, yards and gallons	
Rear-view camera, Radar detect system**	YES - when reversing only	
Data/results	Linked to individual operator profiles only. Maximum 40 profiles allowed	
Data transferred via Cloud service	N/A	
Data transferred via USB	N/A	
Data transferred via CareTrack	N/A	
Printer / Connectivity	N/A	
Screen views	2 views: Main view (including historical graph), Interactive guide	5 views: Main view (including historical graph), Interactive guide + Productivity view (including historical graph), Utilization view, Operator tips view (including tips library)
Measurements Which constitute overall score	4 Key Performance Indicators: Idling, brake, throttle, lock-up**	8 Key Performance Indicators: Idling, brake, throttle, lock-up*** + fuel efficiency, fuel consumption, productivity, utilization
Machine data	Consumption, Operating time, Distance, Average Consumption	Consumption, Operating time, Distance, Average Consumption + Total load
Historical data	Operating score graph Up to 8 hours or 21 days	Operating score graph + productivity score graph Up to 8 hours or 21 days
Workshift resets	Manually performed through the menu OR after operator profile has been logged out for more than 4,5 hours	
Interactive guide	Information on the switches located on the A-pillar	Dynamic tips based on operator behaviour and a tips library
Notifications	Live status of automatic functions, plus basic suggestions for more efficient driving Live operator feedback	

\*On-Board Weighing hardware and software are needed to enable Operator Coaching Advanced

\*\*Optional equipment

\*\*\*The Lock-up dial disappears if the transmission lock-up option is not detected



*I find it really useful. The system will tell me when to activate the Boom Suspension System, when to activate Lock-Up and flag up any changes I need to make to my operating style, like not riding the brakes and the throttle at the same time. It's great for me and would be so helpful for new operators too.*

*I think it's a great tool. A new operator might not know where all the controls are for example, but just push a button and all the information you need on machine functions appears on screen.*

*I think it's fantastic, I probably check my score on the app 10 times a day! I want to see how I can improve and it has almost become a daily competition to get the best out of the machine and get the best score possible!*

*You might think after 30 years doing this job that there was nothing I could be taught, but even I have changed the way I work. I now think about how I can get more out of the machine and be more profitable in the long run.*

**Volvo Wheel Loader operators**  
from Sweden, USA and Denmark

Watch to get more feedback  
from operator Anders Rönnemark



**MAP\***

Positioning	Machine GPS
Number of connected machines	1 to 50
Speed limit warnings	Road speed limit, speed limit zones, site speed limit
Restricted areas warning	When entering a specified no-go zone
Single lane sections warning	When a predefined single lane road is occupied, with no room for machines to pass each other
Point of interest	14 types
Traffic signs	6 types

\*A SIM-card and mobile connection is needed to enable this app.

**TIRE PRESSURE MONITORING SYSTEM**

Sensors	Pressure: kPa, bar, psi
• Pressure range	33 to 1296Kpa
• Accuracy	±14 kPa
• Operating frequency	434.10 MHz
• Operating temperature range	-40°C to +125°C (-140°F to +257°F)
• Storage temperature range	-50°C to +125°C (-122°F to +257°F)
• Battery	Internal, non-rechargeable, non-replaceable
• Dimensions (tire valve sensors)	Width 1.57in x Height 1.55in x Depth 1.52in
• Tire fill	Liquid or air
• Pressure readings	Sensors take pressure and temperature readings every 16 seconds
Exterior signal transceiver	
• Modulation mode	FSK
• Accuracy	±14 kPa
• Operating frequency	434.10 MHz
• Input voltage range	12/24VDC
• Dimensions (transceiver excluding antenna)	Width 3.31in x Height 5.19in x Depth 2.06in
• Dimensions (antenna)	Width 0.26in x Height 2.63in x Depth 0.26in
Units of measure	Pressure: kPa, bar, psi Temperature: °C and °F
Data transferred via Cloud service	N/A
Data transferred via USB	N/A
Data transferred via CareTrack	Matris data can be accessed through CareTrack
Notifications	Alerts for incorrect inflation and high tire temperature

**RADAR DETECT SYSTEM**

Supply voltage	8 to 16V (protected against reverse polarity)
Supply current	120mA
Frequency ISM Band	24.000 GHz - 24.250 GHz (USA, EU Member states and EFTA countries)
Sensitivity	Ability to detect a person of average child size
Max. transmit power	20dBm (EIRP) ETSI 300 / 440 compliant with 250MHz bandwidth
Detection area	6m, divided in 5 equally sized segments
Obstacle reaction delay	50ms.
Camera	
• Video signal	PAL = 720(H)x576(V) 50fld/s. 1 Vtt composite video into 75 Ohm
• Sensor element	¼" CMOS digital image sensor. 640 H x 480 V
• Light sensitivity	<0,05 Lux
• Dynamic Range	80dB
• Power input	12 - 24V/DC
• Power consumption	Max. power at 24V 0,15A = 3,6W
• Weight	0,21kg (0.46lb)
Operating temperature	-40°C to +85°C (-140°F to +185°F)
Ingress protection	IP67 according to IEC 60529
Ingress protection	IP67 according to IEC 60529

**V O L V O**