

# Electric telehandlers



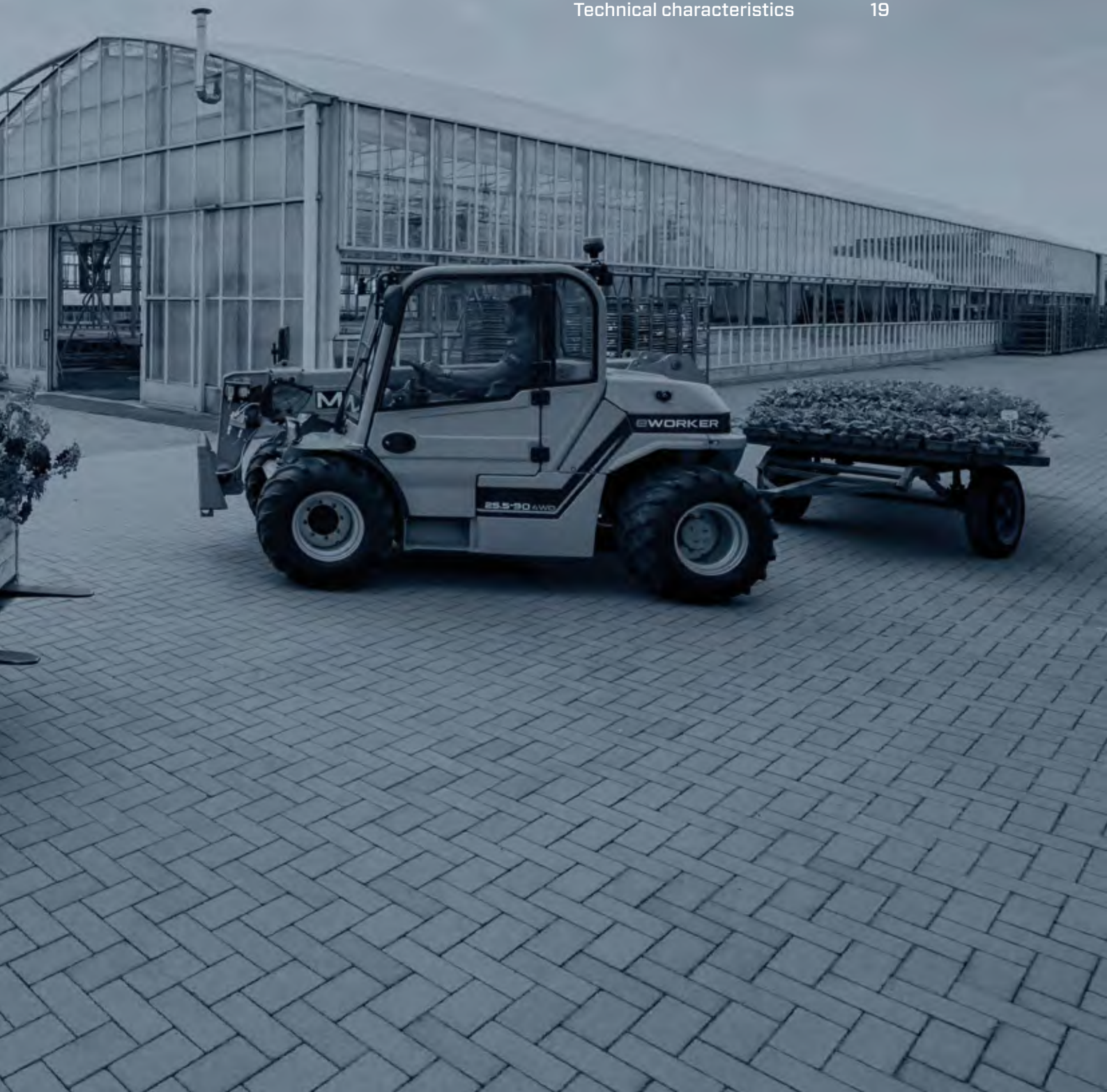






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## Merlo Headquarters

S. Defendente di Cervasca (CN)  
Italy

Merlo facility with 350.000 m<sup>2</sup> of covered area:

- A - Electrical component production
- B - Hydraulic component production
- C - Frame production
- D - Cab production
- E - Axle production
- F - Motor configuration
- G - Machine assembly





# Merlo

## The technological leader in operating machines

Founded in Cuneo, Italy in 1964, Merlo is a family-run industrial group which designs, produces and markets a wide range of machinery under the Merlo and TreEmme brands.

People, innovation and sustainability are central to the Merlo brand. The Merlo Group is committed to respecting the environment while making the work of the operator (and everyone who is passionately dedicated to constantly improving the efficiency and performance of our products) more functional, safe and comfortable.

Our product portfolio consists of a complete range of telescopic handlers (both fixed and rotating), as well as self-loading concrete mixers (DBMs), TreEmme implement-holders for municipal and forestry use, and multi-purpose tracked Cingo transporters.

All products in the Merlo range are characterised by innovation, reliability and versatility. These pillars are the foundation of the Merlo Group, and continue to define Merlo's product range to this day.

Merlo S.p.A has always been synonymous with technological innovation in the world of telehandlers





## **Electric telehandler range** **Safety and respect for the environment**

The continuous search for specific innovative solutions and technologies, to satisfy all customers' needs, has led Merlo S.p.A. to the creation of an exclusive range of compact telehandlers respectful of the environment, 100% powered by electric energy. These machines are designed not only to completely reduce noise levels and polluting emissions, but also to increase manoeuvrability in confined spaces and drastically reduce operating costs, without having to compromise on performance and autonomy. The new range of electric models is the ideal tool for applications in closed environments such as stables, warehouses, materials sheds, industries and underground environments, ensuring operation and traction even in off-road situations for the needs of municipalities, agriculture, construction and landfills.



### Hydraulic System:

The hydraulic pump with helical gears is fitted on the left-hand side of the machine, protected by a casing, with great accessibility for maintenance in any situation. Extremely quiet and with electronic Flow Sharing for best-in-class performance.

### Cab:

The design is developed to maximise the comfort level of the operator and access to the driver seat. FOPS- and ROPS-certified, the cab provides maximum ergonomics and safety while ensuring ease of use.

### Telescopic Boom:

Telescopic boom with two sections made with high-resistance material. ZM2S-type carriage with Tac-Lock as standard, on which a wide range of dedicated equipment can be fitted.



### Manoeuvrability:

The electric telehandlers are equipped with a steering rear axle characterised by high steering angle of the wheels, similar to those on forklifts. The steering range is minimised in order to maximise manoeuvrability.

### Powertrain:

Transmission of e-WORKER is 100% electric and consists of a battery that directly powers the electric motors, so as to ensure generous and constant drive torque throughout the acceleration phase. Maximum speed of 25 km/h

### Battery:

The battery pack consists of lead-acid solutions. Accessible from the right side of the machine in lowered position to maximise the vehicle stability, and is dimensioned to ensure 8 hours of autonomy.

# Safety

## Our Key Focus

Throughout the design of a Merlo, our main focus is always on operator safety. This has pushed the group's research and development department to design a machine that represents a real turning point towards an even more efficient, safe and sustainable way of working. Thanks to the fully electrical power supply, it is possible to work with peace of mind with a drastic reduction of noise and vibration and no pollutant emissions. In addition, this range has been designed with the aim of operating at low voltage thus reducing health risks both during use and maintenance. Finally, the models of this range comply with all regulations for prevention against front tilt.

### Merlo Boom

The Merlo boom uses a double "C" profile in high-strength steel, with welds made along the neutral bending axis. Hydraulic hoses and electrical wires positioned inside the boom with a "cartridge" system, to protect against any possible impacts and easy extraction in case of maintenance. The L-shaped runner blocks are made of composite material, maximising efficiency and reducing impact and wear on the sliding surfaces. The Merlo boom offers high accuracy with millimetric precision of movement control.



### e-Holder and braking system

The braking system consists of two wet disc brakes installed inside the front wheel reducer, and an electric-hydraulic negative parking brake, that can be manually and automatically operated: the e-Holder. The latter engages when the machine stops and disengages when the machine is started by the accelerator pedal, assisting the operator during uphill starts and preventing the vehicle from moving when the accelerator pedal is released, so as to avoid unintentional movements and maintain the vehicle control.



## FOPS and ROPS protection

The cab ensures a high degree of safety thanks to its certification according to standards ROPS (Rollover Protection) and FOPS (Falling object protective structures). The FOPS protection, achieved through a shaped metal structure, ensures maximum load visibility in the operational phases and offers a high level of protection for the operator and the cab components in the event of accidental falling of objects or materials.



## Anti-tilt system

All models are equipped with anti-tilt sensors integrated in the rear axle, ensuring maximum stability without compromising the machine performance. The dynamic stability of the machine, according to standard EN15000, is intrinsically ensured by the boom geometry, the diagram and the weight distribution.

## Pre-arrangement for aerial work platform

The e-WORKER is optionally equipped with pre-arrangement for aerial work platform use (from the control panel up to 2 km/h, regardless of the aerial work platform height). This solution increases the level of active and passive safety during work at heights, and ensures greater machine versatility.



## No noise and pollutant emissions

The solution developed by Merlo allows to completely reduce noise and pollutant emission level, for greater safety of the operator and those who work around the vehicle. This solution has a great number of advantages, including: the possibility of working in closed environments (such as warehouses, greenhouses, etc.), no restrictions for its use in ecologically protected areas (such as historic centres, archaeological sites or public parks), and, of course, greater attention to environment and health.



# Performance

## Power at your Fingertips

Merlo electric telehandlers are equipped with a 100% electric drive, which can be combined with either four or two-wheel drive: a solution that ensures not only high precision and modularity of the transfer speed and high power and torque to the wheels, but also unparalleled ease of use. The new electric drive allows a maximum speed of 25 km/h, while ensuring millimetric control of travel, and is capable of delivering sufficient power to allow equipping the machines as “Agricultural tractors with telescopic boom”, giving the possibility of towing farm trailers on the road.

In terms of hydraulics, this range is also capable of delivering performance comparable to similar conventionally powered models.

### Double configurations (2WD and 4WD)

The e-WORKER is available in a double configuration, in two- or four-wheel drive, designed for different customer needs. The 2WD models, ideal for indoor or yard operations, are equipped with two electric motors directly fitted on the front wheel reducers, ensuring front traction and better manoeuvrability. In addition to the two front motors, the 4WD models are equipped with an additional motor for rear traction. This allows discharging the driving force to the ground on all the wheels, ensuring traction in all circumstances, even in off-road conditions.



### Hydraulic system

The machine is configured with a hydraulic pump with helical gears, powered by an electric motor and controlled by a capacitive electronic joystick control able to ensure up to three simultaneous movements without any problems for the operator.

- Maximum pressure 210 bar.
- Maximum flow rate 42 l/min.

The system is completed by a rear service line (optional) and a line at the top of the boom (standard). The boom descent by gravity allows the weight of the boom and load to be used for the lowering movement, significantly limiting the demand for hydraulic power and, consequently, consumption and noise.

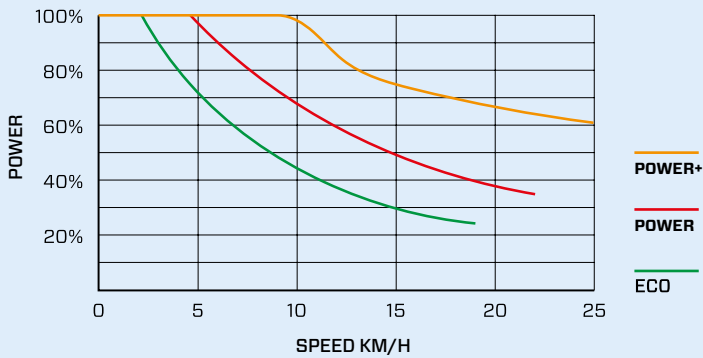


## Steering

Like forklifts, the e-WORKER only steers on the rear wheels. Making the most of the high steering angle of the wheels, that reaches 85°, the e-WORKER offers maximum encumbrance, while manoeuvring, 1 metre smaller than comparable competitor models with conventional steering systems. In this way the e-WORKER ensures best agility, manoeuvre and transfer speed in its category. A compact all-rounder!



ACCELERATION CURVE



## Transmission management

The transmission features three modes of use, depending on the customers' needs:

- **ECO:** maximum saving, maximum attainable speed 19 km/h.
- **POWER:** normal conditions of use, maximum attainable speed 22 km/h.
- **POWER+:** for maximum performance and power, maximum attainable speed 25 km/h.

## RRM

A unique and patented solution. Merlo developed and manufactured hydraulic couplings ensure:

- Quick assembly and disassembly
- Increased tightness of connections
- Increased component service life
- No risk of line twisting.



## Road type-approval

The models of the Merlo electric range, in both 2WD and 4WD versions, are the only ones that can be approved for road use and with the possibility to achieve the approval for agricultural trailer towing. To complete this configuration, it is possible to install the power socket, in the rear part of the machine, to control the trailer lights and the towing hook. The maximum towing capacity is 2000 kg.

# Comfort

## The best work station

The cab design is developed to maximise the comfort level of the operator and access to the driver seat. Moreover, acoustic and thermal insulation has also been taken care of down to the smallest details, thanks to intensive research into the most innovative technical solutions and materials. A large front windscreen, the side windows and the rear window ensure perfect internal brightness. On the inside, the controls have been designed to improve machine operation and ergonomics: adjustable steering, electric heater, double reverse shuttle, Merlo capacitive joystick... Everything is designed to make the machine easy and pleasant to use in all conditions.

### Comfort at the driver seat

The 100% electric solution allows drastically reducing the noise level of the machine and the vibration normally transmitted to the operator by the heat engine. This results in an optimal workstation for the operator, reducing fatigue and the risk of occupational diseases. Thanks also to the cab soundproofing system, the e-WORKER model offers an unparalleled work place in terms of comfort and quiet running! Moreover, the external noise levels are extremely low, facilitating communication between the driver and people working near the machine.



### User interface and capacitive joystick

The high ergonomics of controls, the tilting steering wheel, armrest with adjustable position and a simplified user interface reduce operator fatigue and facilitate his/her work. The capacitive electronic joystick control is able to detect the presence of the hand by means of a sensor without pressing the “dead man” button and also allows managing:

- Selection of travel direction
- Auxiliary hydraulic functions
- 4 hydraulic movements of the boom



## Heating

To ensure maximum operating comfort, the e-WORKER can be equipped with an electric heating system, in order to maintain and ensure suitable temperatures also in case of work in cold environments or with harsh climates. In addition, a heated front window is available that, using a small electrical heating element, prevents fogging in case of high humidity, ensuring visibility over the load and the manoeuvring area.



## Display

The e-WORKER range is equipped with an in-house developed digital display to give the user, at a glance, all information he/she needs to drive the vehicle and inform him/her of the battery charge status. Moreover, it allows setting the correct operating mode: ECO, POWER and POWER+.

## Boom Suspensions

The active Boom Suspension System (BSS) is available as an option, which protects the load during transfer and maintains a high level of driving comfort on rough terrain. The suspension is automatically deactivated at low speed (below 3 km/h), allowing for maximum boom precision and power.



## Lighting

The standard configuration of e-WORKER range features 4 LED lights fitted on the cab overhead guard and a blue light for reversing, which allow adequately illuminating the work area for safe and easy operation even in poorly lit environments and outdoor at night. As an option, it is possible to configure the machine with road (front and rear) lights and lighting for the number plate holder, in line with road traffic approvals.



## Accessibility to the components

Every element of the machine is easy to reach for maintenance thanks to dedicated doors and clearly visible components. This saves a great deal of time both when recharging and during routine and extraordinary machine maintenance, reducing downtime and increasing productivity.



# Efficiency

## Simpler and Smarter

The energy required to power the machine's transmission and hydraulic movements is stored in a lead-acid battery pack, accessible from the right side of the machine and mounted in a low position to maximise the stability of the vehicle. This solution allows maximising accessibility for maintenance, facilitates battery pack replacement and increases the charging procedure ergonomics. It is also a widely-tested, robust and reliable technology: the autonomy in continuous duty cycle reaches an impressive 8 hours, the maximum in its category.

### Battery duration

The battery pack is dimensioned so as to offer high autonomy of approx. 8 hours in continuous cycle (tested according to VDI 2198) and a recharge time between 8 and 9 hours. This allows the e-WORKER to work without interruption throughout the work shift, ensuring significant performance and efficiency.



### Start and Stop system

To increase efficiency and battery life, Merlo electric telehandlers are equipped, as standard, with the automatic Stop and Start system. If the operator gets up from the driver's seat without properly switching off the machine, after a few seconds of inactivity the telehandler automatically switches off, thus preserving the charge in the batteries. When the operator goes back in the cab, the system will automatically restart the telehandler.

### Visibility

Merlo's improved visibility increases range of movement and safety for operators. To achieve these standards of visibility, Merlo has invested in understanding the best position of the cab and boom for the operator.

Merlo has also developed a detailed bonnet design and a large glass surface with the aim of ensuring fast, safe and precise operations. In addition, two different brushes are installed on the machine to ensure perfect window cleaning even in heavy rain.





## Battery replacement

For customers who need to work all day, the e-WORKER is designed to allow battery replacement and eliminate waiting time for recharging. A convenient quick release system allows removing a flat battery and replace it in a matter of minutes. The access for removal is available on the right-hand side of the machine chassis.



## Merlo Carriage

Merlo machines have a carriage designed to ensure extraordinary performance with every implement, without compromising on lightness, which is essential for ensuring an exceptional lifting capacity. The maximum rotation facilitates the loading and unloading of material with buckets. The Tac-lock device, which comes as standard on all the models, guarantees maximum operating comfort, allowing the implements to be hydraulically locked from the cab. The machine is fitted with a ZM2S carriage as standard, optimised for accessibility and use on a machine of this size. The ZM2 carriage is available as an optional, to ensure compatibility with all Merlo accessories.

## Regenerative braking

To maximise machine efficiency and save all available energy, the e-WORKER's electric motors are able to recover braking energy. The regenerative braking system, unlike a conventional dynamic braking system, converts the kinetic energy of the machine into electric energy that is stored in the batteries. This slows down the machine and at the same time generates electrical energy immediately available, for example for lights or the display (on which there is an indication of the recovered energy).



## TCO

A study of the machine's TCO shows that fuel represents on average 30% of the cost of ownership and around 15% of the maintenance costs. For this reason, the e-WORKER's cost of ownership is lower than that of a conventional diesel machine, not only because electricity costs less than diesel, but also because, thanks to the completely electric transmission, there are significant savings on routine and extraordinary maintenance costs.



### EW25.5-60

Designed to meet the needs of industrial customers. These are front-wheel drive models equipped with two electric motors directly fitted on the front wheel reducers, providing excellent front-wheel drive and reducing the power required for transfers.

**Maximum power 44 kW - 60 HP**

**Maximum speed: 25 km/h**

This solution ensures maximum machine autonomy; the rear axle is free to oscillate up to 7 degrees, and the maximum pull force is 2000 kg.







### **EW25.5-90**

Designed for construction and agricultural applications. In addition to the two front motors, they are equipped with an additional motor for rear-wheel drive, making them to all intents and purposes four-wheel drive models. This allows discharging the driving force to the ground on all the wheels, ensuring traction in all circumstances, even in off-road conditions.

**Maximum power 66 kW - 90 HP**

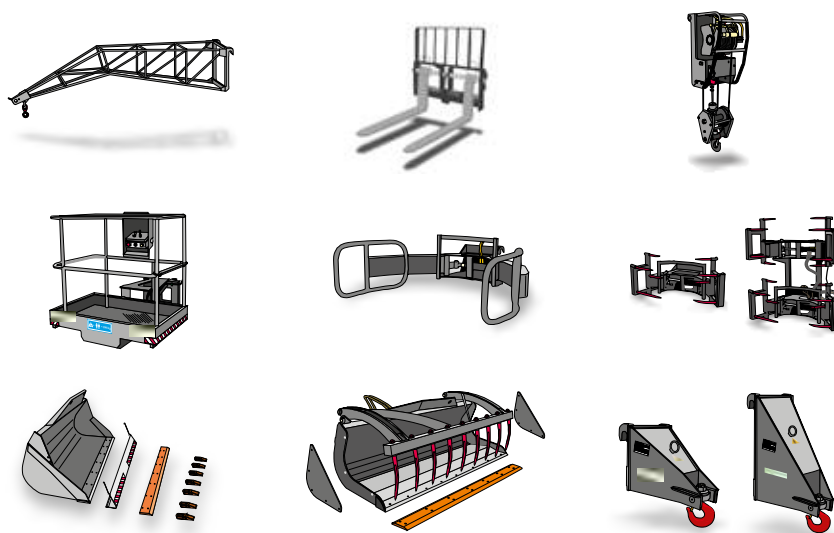
**Maximum speed: 25 km/h**

The 4WD models have been designed to ensure maximum transmission performance in terms of off-road traction, the rear axle is free to oscillate up to 7 degrees, and the maximum pull force is 3000 kg.



## Attachments

The attachments, which are designed and manufactured at the Merlo Group facilities, are the real operational tools used by Merlo telehandlers, and are designed to bring out the machines' performance and versatility in different operational situations. The patented recognition of the attachments and the effective Tac-lock hydraulic locking system allow for quick tool changes to be performed, with the operating parameters being configured automatically for maximum safety.



## Service and Spare Parts

Merlo is committed to protecting the **value**, **performance** and **productivity** of your telehandler over time. Whoever purchases a Merlo machine can rest assured that they have chosen a product that meets the highest standards in quality, reliability and innovation.

Careful periodic maintenance, combined with the use of original spare parts, becomes an economic advantage, and reduces the number of interventions required; in this way, your Merlo telehandler will maintain the same excellent performance levels over time, not to mention a high resale value.



## MerloMobility

The Merlo telehandler range offers exclusive Movimatica technology, making Merlo telehandlers even smarter and more connected.

The MerloMobility connectivity system uses 4.0 technology to transfer key information from the machine to a web portal. The information transferred is related to the functionality, safety and location of the machine.





# Technical characteristics

MODEL	EW25.5-60	EW25.5-90
<b>Performance</b>		
Unladen weight (kg)	4950	4950
Maximum load capacity (kg)	2500	2500
Lift height (m)	4,8	4,8
Maximum reach (m)	2,6	2,6
Load capacity at max. height (kg)	1500	1500
Load capacity at max. reach (kg)	900	900
Height - maximum load capacity (m)	3,4	3,4
Reach at max. load capacity (m)	1,15	1,15
Boom section	2	2

## Powertrain

Motor	Electric	Electric
Battery (type and V)	Lead-acid - 48V	Lead-acid - 48V
Nominal capacity	960 Ah	960 Ah
Emissions	No emissions	No emissions
Max power (kW/CV)	44/60	66/90
Maximum speed (km/h)	25	25
Traction	2WD	4WD
Autonomy (hours)	8	8
Recharge time (hours)	9	9
Recharge voltage	220 V / 400 V	220 V / 400 V
Standard battery charger	Wall-box 400V 16A	Wall-box 400V 16A

## Hydraulic

Hydraulic pump	Helical gears + FS	Helical gears + FS
Delivery/pressure (l/min-bar)	42/210	42/210
Hydraulic outlet on top of the boom	Yes	Yes
Rear hydraulic outlets	Optional	Optional

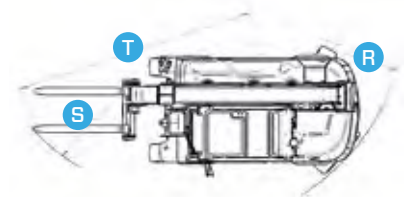
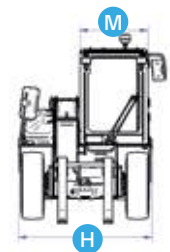
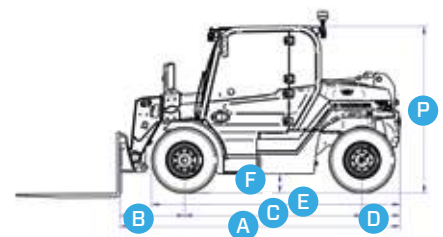
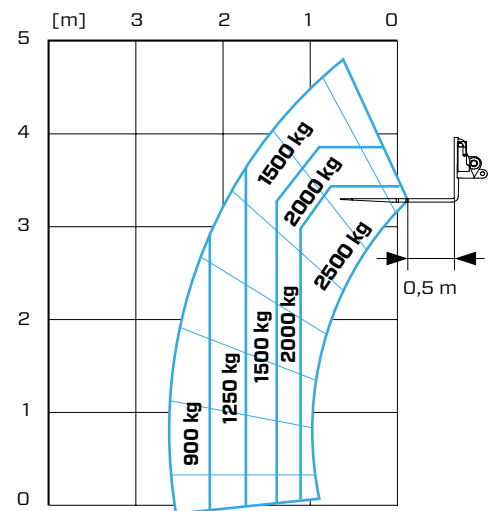
## Cab

Closed cab	Optional	Optional
FOPS LEV I Cab - ROPS	Yes	Yes
Cab controls	Electronic joystick control	Electronic joystick control
Reverse shuttle	Dual reverse	Dual reverse

## Configuration

Battery fast replacement	Yes	Yes
Tac-lock	Yes	Yes
Work lights on cab	Yes	Yes
Two floating forks	Yes	Yes
Boom suspension	Optional	Optional
Two steering wheels	Rear	Rear
Front standard tyres	10,0/75-15,3	10,0/75-15,3
Rear standard tyres	10,0/75-15,3	10,0/75-15,3
Optional tyres	7,5R15	7,5R15 31x15,5-15
Brakes	Front wet	Front wet
Automatic parking brake	Yes	Yes
Pre-arrangement for aerial work platform	Optional	Optional
Tractor type approval	Optional	Optional

EW25.5



DIMENSIONS	EW25.5-60	EW25.5-90
<b>A (mm)</b>	3320	3320
<b>B (mm)</b>	765	765
<b>C (mm)</b>	2100	2100
<b>D (mm)</b>	455	455
<b>E (mm)</b>	2940	2940
<b>F (mm)</b>	230	230
<b>H (mm)</b>	1540	1540
<b>M (mm)</b>	770	770
<b>P (mm)</b>	1975	1975
<b>R (mm)</b>	2850	3250
<b>S (mm)</b>	2230	2700
<b>T (mm)</b>	0	670



**Your Merlo dealer**

**MERLO S.P.A.**

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