

Costruzioni



WALKAROUND

BY MATTHIEU COLOMBO

Mecalac 714MWe



Maximum operating
weight

15 tons

Net power

88 kW

Maximum speed

33 km/h



MECALAC 714 MWE



**COMPACT, UNIQUE
AND VERSATILE**

WALKAROUND PLUS

by Costruzioni



- 1 Four machines in one. Designed to work as an excavator, loader, pipe-layer and pick and carry lifter.
- 2 The Active Control hydraulic system is the best available on the market. It is a pressure compensated, closed centre system with flow sharing distributor and full load sensing regulation.
- 3 The exclusive jib invented by Mecalac is very effective in confined spaces. Standard: offset and quick coupling.
- 4 It is the most compact 15 t maximum weight wheeled machine, without offset, in its class. Rear overhang: 1,600 mm.
- 5 The two axles have as standard a differential with slip limited to 45% to ensure maximum traction at all times.
- 6 With the optional 4 wheel steering, the wheels' turning radius is only 4,440 mm.
- 7 With a symmetrical body, the operator can work in excavator mode both on the blade and on the stabilizers side.
- 8 Exclusive automatic function for ground levelling with synchronised operation of the jib cylinders.
- 9 Steel structure, cylinders and swivel joints manufactured in-house by the controlled company Hydromo. Direct quality processes.
- 10 Each part is painted by electrolysis (immersion) or an electrostatic chemical process.

The 714 MWe is an exclusive machine whose principal characteristic is its versatility. The kinematics favours working alongside the machine.



EXCAVATOR BREAKOUT FORCE 8,400 DAN
PENETRATION FORCE 6,200 DAN

WHEELED EXCAVATOR In this configuration the 714 MWE works as a classical 15 t maximum weight wheeled excavator, but it distinguishes itself by its jib with standard offset (flush and offset excavation, etc.), the ultra compact turret (rear overhang 1,600 mm) and the optional 4 wheel steering. Twin 10.00-20 wheels are available.

4 machines in one

PIPE-LAYER The 714 MWE can be personalised according to operational needs. If lifting is required, both blade and stabilizers can be requested. The jib can be equipped with safety valves on all the cylinders (optional) and quick hydraulic coupling with a lifting hook. The machine is also quick in pick-and-carry operations.



Curved windscreen
for optimum
visibility



HANDLER By fitting the forks, pallets can be unloaded for site work up to 7.3 m high, but also 3.2 m below ground level. In this way the performance and operating area are superior to those of a skid steer loader.

compact efficiency



FRONT LOADER The Mecalac jib is also designed to carry loader buckets. The exclusive thrust ram on the penetrator (see photo) gives maximum controllability and permits unloading to heights of over 7 m. For example, it is possible to load material in a heap onto a truck or unload it, "dosing" aggregate and moving along for filling trenches.

LOADER RIPPING FORCE 5,200 DAN

HALOGEN HEADLAMPS
Standard fitting includes headlamps for driving on the road and 1 working light on the cabin. 2 additional headlamps are available.

Stabilizers (optional) with independent activation and hinged support plates.

PARALLEL AND ANTI-DROP
To enable full personalisation, the blade is on request and two blades can also be fitted (without stabilizers). The trapezoidal lever system of the blade enables it to be lowered with precision keeping the right inclination, while the lifting cylinders have safety valves.



Symmetry and 4WS

The Mecalac 714 MWe is not merely a wheeled excavator, but a versatile machine, designed to **provide** high performance in many applications in situations that **would be prohibitive** for other machines of a similar type. The perfect symmetry of the chassis is synonymous with **versatility**.

THE MOST COMPACT AND AGILE 15 T MACHINE

The turret, with a rear overhang of only 1,600 mm, and the special Mecalac jib permit a minimum radius of rotation of 3,500 mm which increases to 3,600 (see diagrams) when the stabilizers are on the ground. **4 wheel steering (4WS)**, available on request, reduces the steering radius by **40%**: from 7,360 mm to 4,440. With 4WS there are also **3 methods of steering**: front axle, both axles concentric or unidirectional (crabbing).



NOT ONLY OFFSET
 The jib is the characteristic feature of all Mecalac models. Here, at the side, is a first series 714 MW in a working position that shows the distribution of the load with respect to the external stabilisation point. When working very close to the machine, the weight of the jib (green line) increases stability.

Simultaneous action of the lifting cylinders and penetrator for ground levelling



Unique jib

- 1 **COMPACT KINEMATICS** Ideal for working in the narrowest streets of town centres, in tunnels, and when laying pipes very close to the machine.
- 2 **VERSATILE** The design of the jib has been perfected over more than 35 years to optimise operation with a bucket, loader and forks.
- 3 **SAFE** The jib cylinders are fitted with safety valves (4 valves on request) and the quick coupler has a patented hydraulic lock



Safety valves are available for the 5 jib cylinders

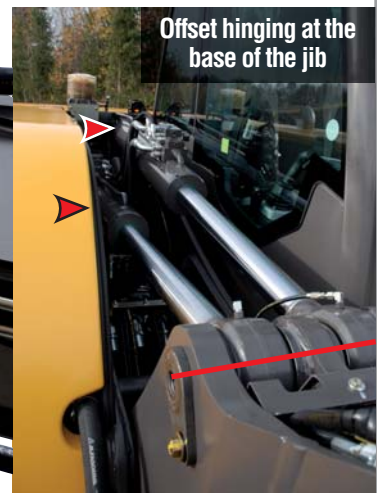
JIB RETRACTION WITH 2 OFFSET CYLINDERS
 The patented Mecalac equipment is characterised by a double cylinder for retraction of the main jib. This enhances the lifting performance in the area closest to the machine.



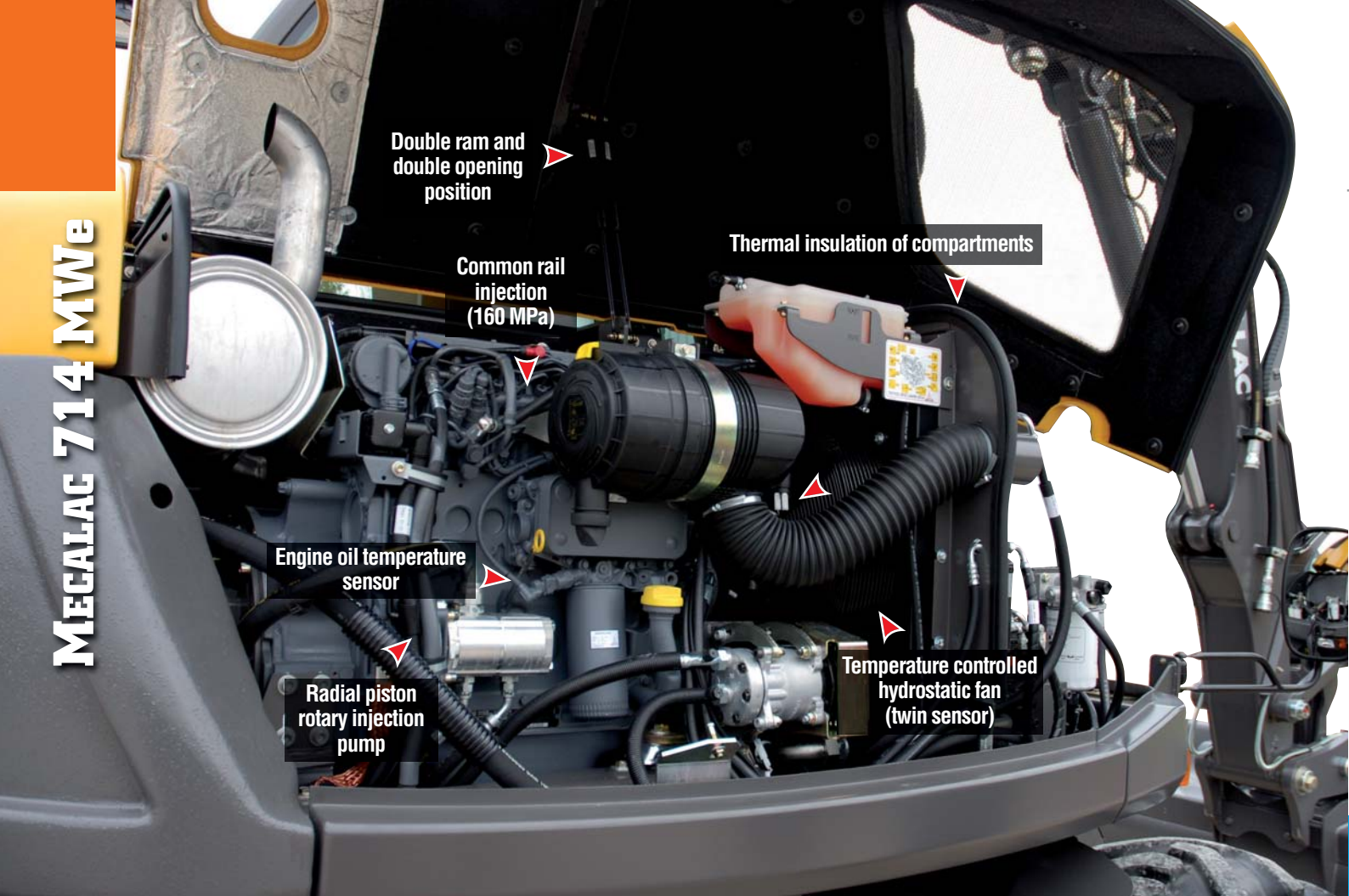
Offset, 1 hydraulic line and standard quick coupling



Offset hinging of the standard jib



Offset hinging at the base of the jib



Double ram and double opening position

Common rail injection (160 MPa)

Thermal insulation of compartments

Engine oil temperature sensor

Radial piston rotary injection pump

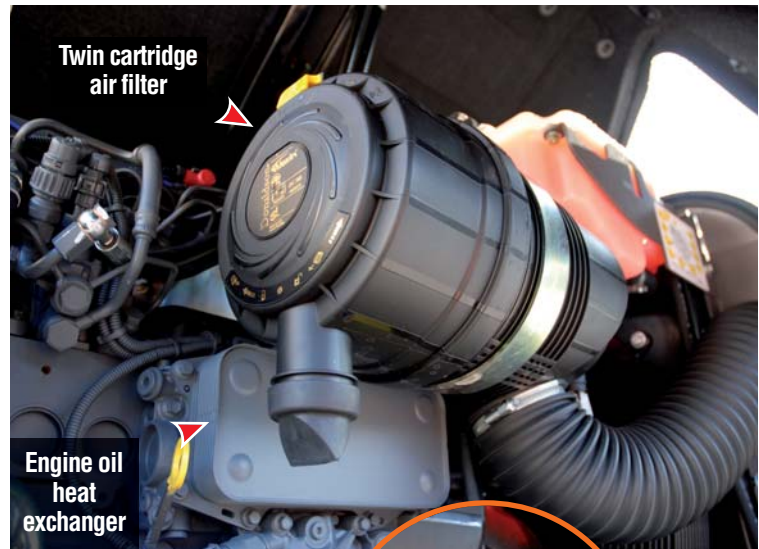
Temperature controlled hydrostatic fan (twin sensor)

German reliability

The side-mounted engine permits a very compact turret. The 4 cylinder turbo diesel is a 4 litre Deutz giving **88 kW maximum power** at 2,100 r.p.m. and a maximum torque of **495 Nm at 1,600 r.p.m.**

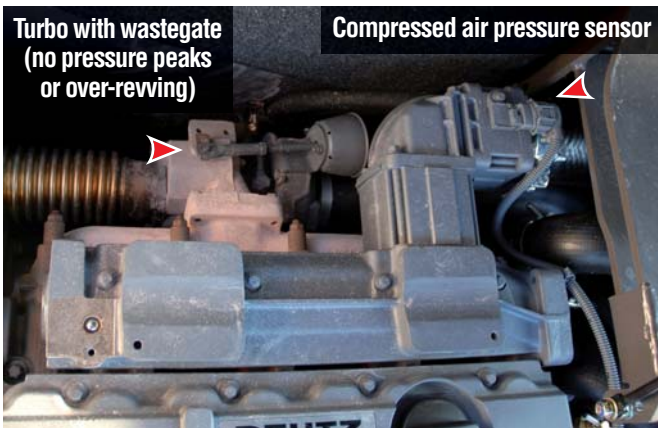
160 MPa COMMON RAIL INJECTION

The DCR injection is common rail and works up to a pressure of 160 MPa supplied by a radial piston pump. This technology requires the use of a low sulphur fuel, complying with standard DIN EN590. Furthermore, the Deutz unit is managed electronically by a (EMR 3) control unit mounted in the cabin, away from high temperatures, vibration and humidity.



Twin cartridge air filter

Engine oil heat exchanger

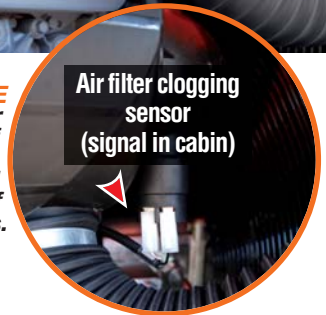


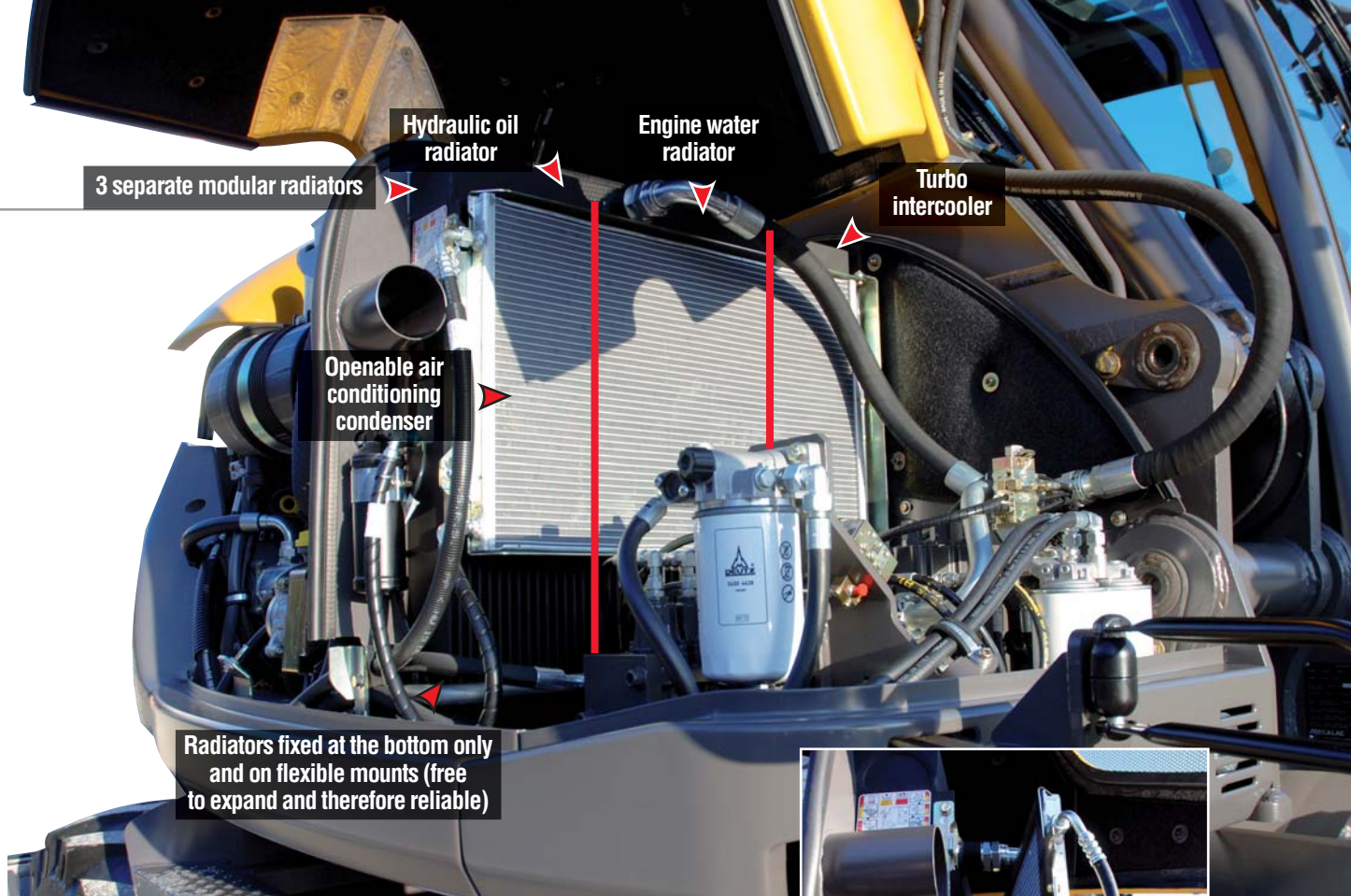
Turbo with wastegate (no pressure peaks or over-revving)

Compressed air pressure sensor

500 HOUR OIL CHANGE
The heat exchanger fitted on the right side of the engine crankcase permits engine oil changes at intervals of 500 hours.

Air filter clogging sensor (signal in cabin)





Temperature-controlled fan

COOLS WHEN NECESSARY The cooling fan is hydrostatic and adjusts its speed according to the temperature of the engine coolant and hydraulic oil. In this way the engine quickly reaches its optimum working temperature and the fan only consumes power when necessary. This reduces fuel consumption and noise.

Working engine speeds

- **1,500 R.P.M.** There is only one engine mapping. With the Eco function on, the maximum speed is limited to 1,500 r.p.m (the hydraulic management also changes).
- **1,800 R.P.M.** This is the standard speed in the “Site” operating mode.
- **2,100 R.P.M.** This is the maximum speed only reached in the “Road” mode and enables 33 km/h to be reached.

POWERFUL STARTING
The starter motor has fully 4 kW of power to start a 4 litre engine. The ratio of 1 kW of starting power per litre of cylinder capacity is excellent.



OPENABLE CONDENSER
The air conditioning condenser has a hinged opening allowing to remove easily impurities such as pollen, leaves, etc. from the radiators.

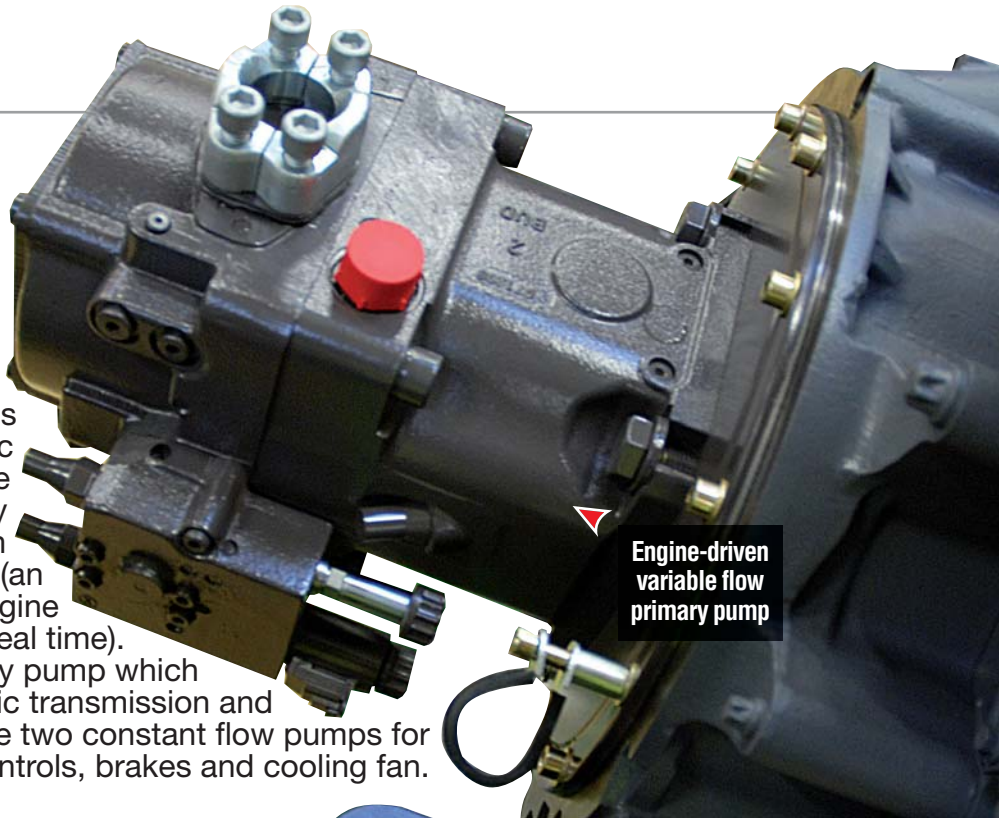


SIGNAL IN CABIN The remote fuel filter detects the presence of water and sends a signal to the operator. It has a drain valve and priming pump.

“ACTIVE CONTROL” PLANT

The 714 MWe hydraulic system uses a closed centre, pressure compensated, **flow sharing** distributor, with **full load sensing** control. The primary pump (on the side, connected to the crankshaft by a flexible coupling) is variable flow with electronic control: essentially, the plate that adjusts the cubic capacity changes its inclination according to the engine load (an optical sensor measures engine speed in real time).

In addition to the primary pump which supplies the hydrostatic transmission and working tools, there are two constant flow pumps for controls, brakes and cooling fan.



Engine-driven variable flow primary pump

Top hydraulics

PLUS

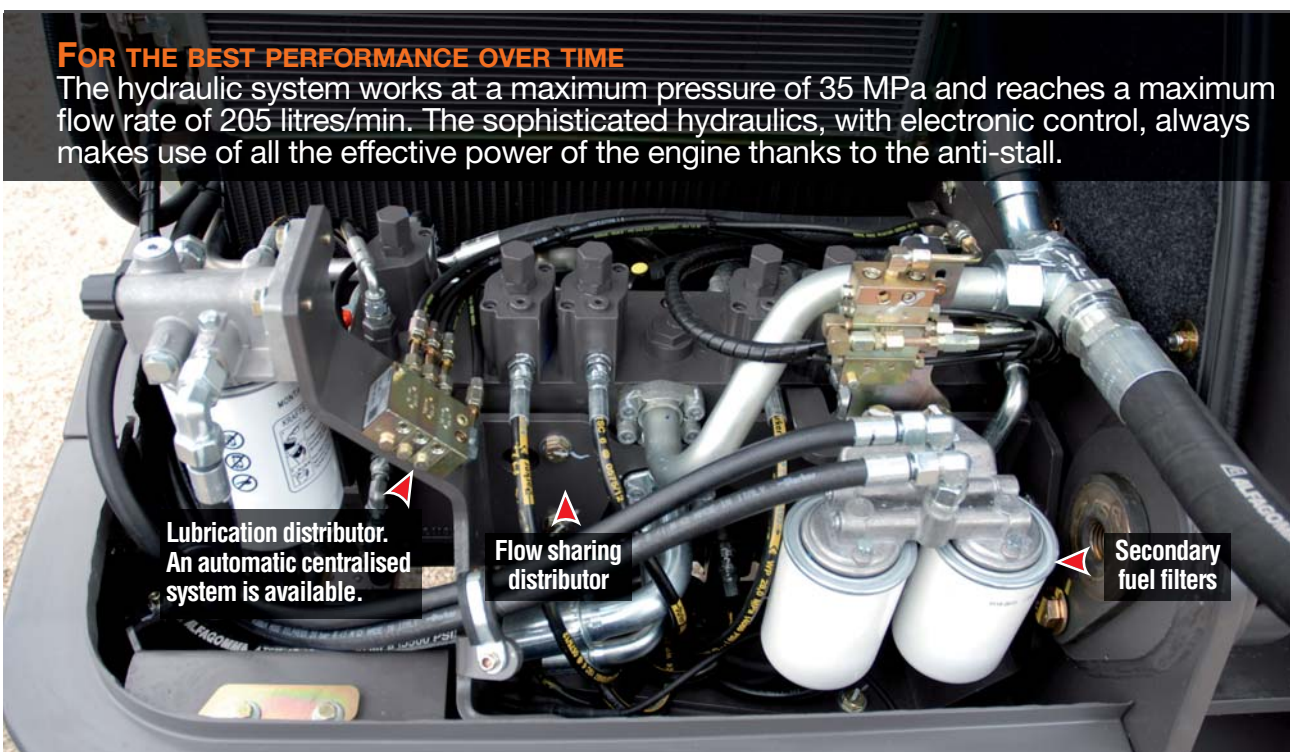
- **FULL LOAD SENSING**
- **PRESSURE COMPENSATED CLOSED CENTRE SYSTEM**
- **FLOW SHARING TECHNOLOGY**
- **VARIABLE FLOW ELECTRONICALLY CONTROLLED PUMP**

RELIABLE PLANT
The hydraulic oil reservoir (140 litres) is placed higher than the pumps to protect them from cavitation. The oil change interval is 1,500 hours.



FOR THE BEST PERFORMANCE OVER TIME

The hydraulic system works at a maximum pressure of 35 MPa and reaches a maximum flow rate of 205 litres/min. The sophisticated hydraulics, with electronic control, always makes use of all the effective power of the engine thanks to the anti-stall.



Lubrication distributor. An automatic centralised system is available.

Flow sharing distributor

Secondary fuel filters

Slip limited to 45%

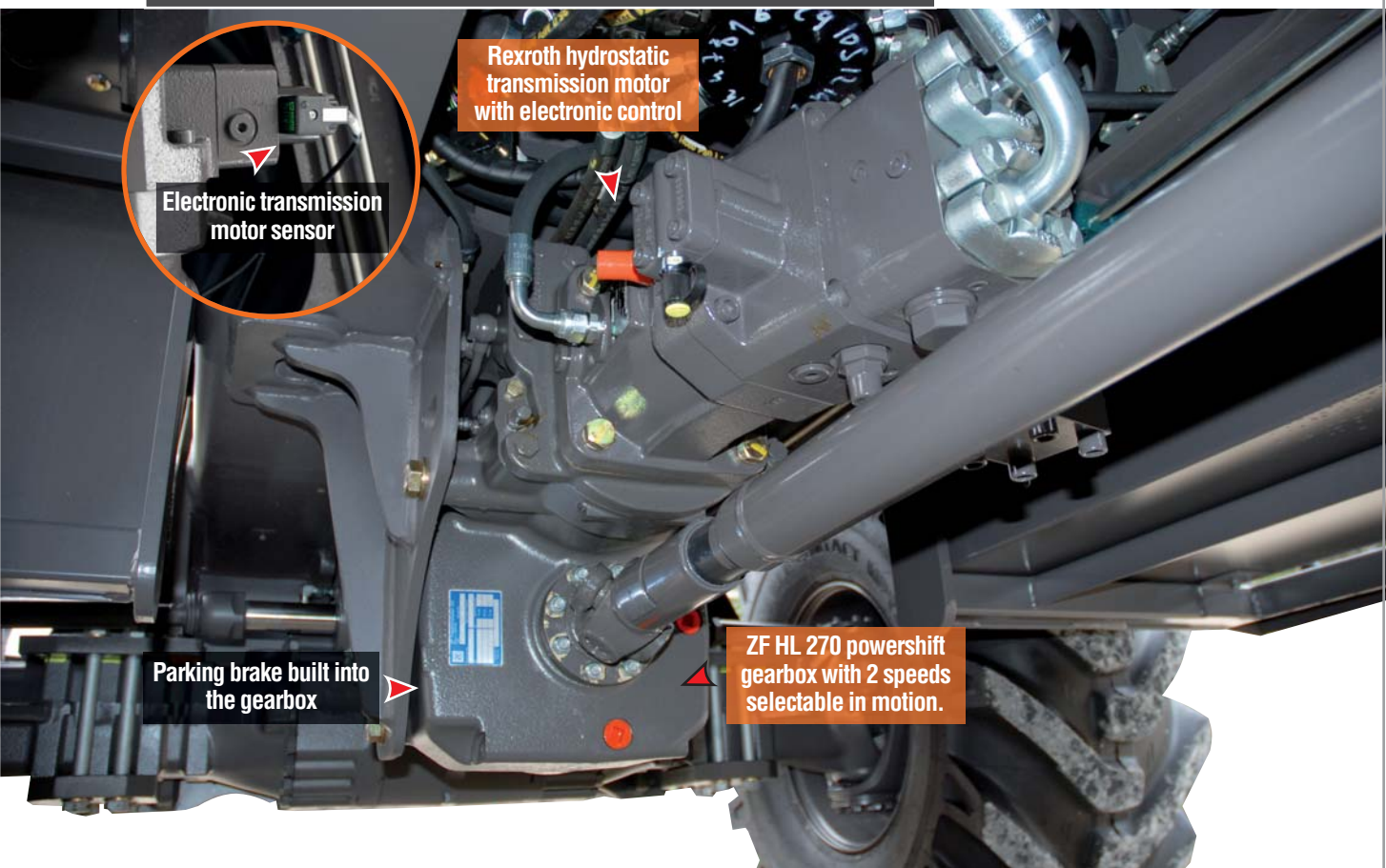
SUPERSIZED TECHNOLOGY Both the Dana Spicer axles have a differential with slip limited to 45% to ensure high traction even in case of loss of grip. This technology is typical of the larger wheeled shovels.



THREE METHODS OF STEERING (IN THE 4WS VERSION) AND OSCILLATING AXLE WITH AUTOMATIC ENGAGEMENT

HYDROSTATIC TRANSMISSION The Rexroth hydraulic motor with a maximum displacement of 107 cm³ is coupled to a two-speed ZF powershift gearbox that can transmit up to 770 Nm of torque. With electronic management, three speeds (snail, turtle, hare) and cruise control in the "road" and "site" modes are obtained.

VERSATILITY AND SAFETY
The +/- 8° oscillating front axle has a safety valve on both jacks. The operator can select function A which activates the lock when braking on the road. In the 4WS version, there is also a steering mode selector.



Rexroth hydrostatic transmission motor with electronic control

Electronic transmission motor sensor

Parking brake built into the gearbox

ZF HL 270 powershift gearbox with 2 speeds selectable in motion.



RADIO WITH USB The radio, with remote controls near the left control handle, is standard. It has a jack socket, USB and is compatible with MP3 files.

Pneumatic suspension and heated seat available

Intuitive sliding door unlocking

Seat belt with automatic winder

Double adjustment slides

FUNCTIONAL QUALITY
The bottom of the cabin is covered with a thermoformed plastic carpet that facilitates cleaning.

Plenty of space

The turret architecture with lateral motor has enabled a spacious cabin to be built. Accessibility is by means of an exclusive sliding door of optimum construction (pressed). Note the double-jointed, telescopic steering column.





The 60/40 windscreen opens very easily thanks to a clever system of hinges. It remains well away from the operator's head and the steering.



The double-jointed telescopic steering column improves operator visibility for close working.

THE DOOR of the Mecalac 714 MWe combines sliding opening with door leaf closing. This exclusive system was designed to give **no alignment problems** over time. The door is produced from **two steel pressings** sandwiched together. The windscreen is **bonded** and equipped with a **sliding opening**.

EXCLUSIVE
-45% OPENING
AREA



Safe and comfortable

CABIN There is no shortage of space on board the Mecalac 714 MWe. The internal height of the cabin is 1,600 mm, width 980 mm and length 1,850 mm. The Rops Fops certified structure is in boxed steel joined by robotised welding. Note that an upper protective grille is available and it raises the Fops certification to level II.



EVERYTHING IS INTUITIVE Among the close at hand controls, note the automatic return to minimum engine speed (1), the speed control (2), the proportional control of the tool (3) and the one for control of the blade and stabilizers (4).



Touch controls for the air conditioning (optional)



Simultaneous operation of jib and penetrator

Nozzles individually connected to the air conditioning (efficiency)

Removable rubber carpet

17 litre cooled and removable compartment (cleanliness - hygiene)

12 V socket

Control station

3 SPEEDS By selecting “snail” the accelerator adjusts the speed from 0 to 3 km/h in first gear with fixed hydraulic flow. In “turtle” mode it stays in first gear, but the hydraulic flow is variable and the speed can reach 8.5 km/h. By selecting “hare” the speed reaches 33 km/h in second gear with the hydraulic motor unlimited.

3 operating modes

- P PARKING** The hydraulic motor does not transmit motion and the joysticks are not active.
- C SITE** All the power is available for the tool. While moving, the front axle, if in automatic mode, is locked when braking.
- S ROAD** The side lights are switched on and the “cruise control” speed regulator can be activated.

Eco-MODE
In addition to limiting the engine speed to about 1,500 r.p.m., the Eco Mode function operates on the hydraulic controls to **reduce fuel consumption without decreasing the working power.**



Potentiometric
accelerator

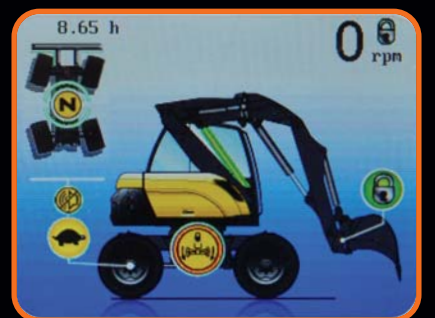
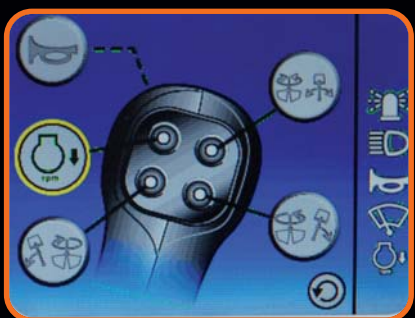
Speed

Operating mode

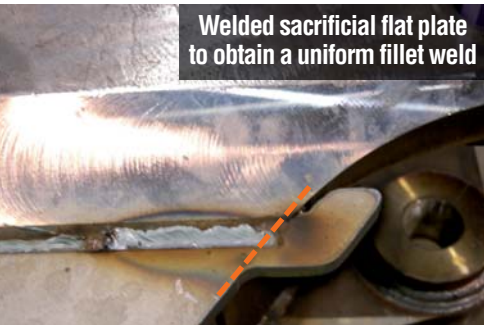
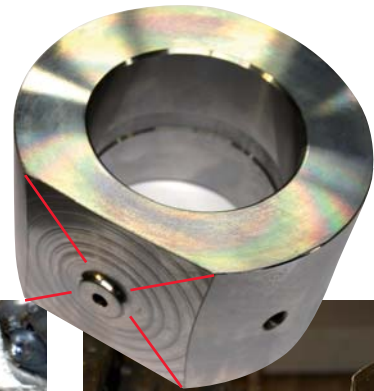
**ECO-MODE
BUTTON**
Operates on the
hydraulics and
engine.



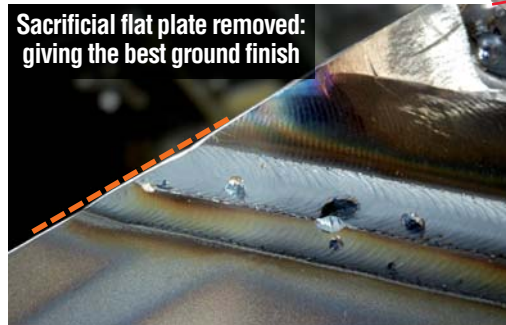
THE LCD MONITOR varies in brightness according to the external light: in the three screenshots above it is day time, while in the ones below the sun has set. Above centre, shows the engine speed in Eco-Mode. Below, shows the control of the joystick functions, intermediate boom locking and excavator functions.



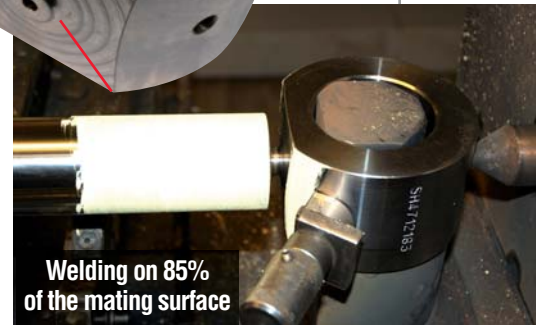
Quality and care in manufacturing



Welded sacrificial flat plate to obtain a uniform fillet weld



Sacrificial flat plate removed: giving the best ground finish



Welding on 85% of the mating surface



HYDROMO TECHNOLOGY The Mecalac Hydromo production unit specialises in plasma cutting (using a double torch, the machine cuts plates up to 30 mm thick) and robotised steel welding, manufacturing of rotating hydraulic joints and welding of the heads to the jack stems. Concerning this, the method used permits welding of about 85% of the section of the stem to the head. The welding alignment and quality are checked ultrasonically for each cylinder produced. Destructive tests are carried out on samples.

Details that matter



Left tool-carrier compartment (right optional)



Cabin roof that channels water



Safety valve on the oscillating axle



Sound-absorbing components with long-life stud fixings

STANDARD AND GUARANTEED BY THE MANUFACTURER

The quick coupling designed and manufactured by Mecalac has automatic take-up of play. The tools use 4 mechanical wedges and a plate for the hydraulic lock. Mecalac offers various buckets, forks and also a ripper tooth. A kit is available to adapt other tools. Remember that the hydraulic line is supplied as standard: a flow rate of 180 l/min and a pressure set to 18 MPa as standard.



4 ISO 15818 hooks for transportation



THE PANELS ARE ALL NUMBERED
A sign of quality for the fibreglass panels that are made in France.



Non-slip aluminium footplate



Simple Maintenance



Mecalac 714 MWE Specifications

Version	714MWe
Maximum operating weight (triple)	15 t
Lifting capacity at 360°, on the ground and at a distance of	2,300 kg 4.5 m (no bucket)
Net power	88 kW
Deutz Engine	TCD2012L04 2V
Cubic Capacity	4.04 litres
Cylinders	4
Bore x stroke	101 x 126 mm
Calibration speed	2,100 r.p.m.
Piston speed	8.82 m/s
Valves per cylinder	2
Distribution	conv.
Injection	CR
Injection stages	3
EGR	yes (internal)
Exhaust gas treatment	no
Fuel supply	after turbo
Pumps	variable flow
Flow rate	205 l/min
Pump regulation	LS positive
Slide valve distributor	c. c. press. comp.
Pressure (max)	35 MPa
Travelling speed	33 km/h
Turret rotation speed	10 m/s
Wheelbase	2,450 mm
Machine width	2,500 mm
Jib	triple-offset
Depth of excavation (excavator)	4,600 mm
Depth of excavation on plinth (excav.)	2,900 mm
Distance of excavation on the ground (excav.)	8,200 mm
Ripping force at the bucket (excav.)	8,400 daN
Ripping force at the bucket (loader)	5,200 daN
Penetration force (excav.)	6,200 daN
Rear turret overhang	1,600 mm
Turret width	2,400 mm
Tyre width std. (twin)	2,390 (2,505) mm
Tyres (twin)	18-19.5 (10-20)
Jib/cab height	3,790/3,140 mm
Battery	2 x 110 Ah
Alternator	55 A
Fuel tank	150 litres
System/hydraulic reservoir	n. d./140 litres



150 LITRE PLASTIC FUEL TANK. The fuel filler of the plastic fuel tank (no corrosion or condensation) can be reached from the rear compartment. An electric pump is also available for refuelling with automatic prevention of overfilling. Well designed, the system for protecting the fuel filler from impurities is fitted with a grille.



ACCESSIBILITY The mechanical parts are accessible, in spite of the very compact turret, thanks to the laterally mounted engine and the generous fibreglass engine hoods with assisted opening and key locking. The main maintenance intervals are given below:

- **ENGINE OIL CHANGE** 500 hours
- **HYDRAULIC OIL CHANGE** 1,500 hours
- **COOLANT CHANGE** 3,000 hours
- **ROTATION OIL CHANGE** 1,000 hours

SEE THE VIDEO DEDICATED
TO THE **MECALAC**
714 MWE EXCAVATOR

