

# **DIESEL**

## *international*

DIESEL SUPPLEMENT

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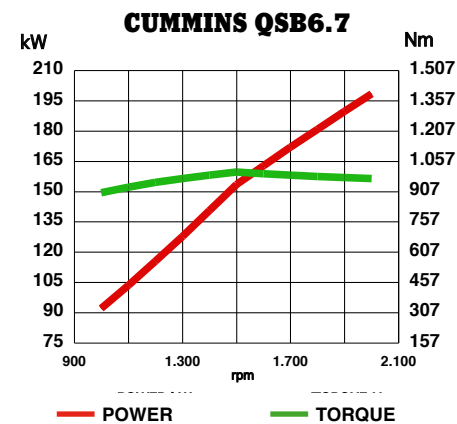
DRILLING RIG  
"SOILMEC SR-45"

**MISSION**  
**100 KW**

**DIESEL OF THE YEAR:**  
the new Kohler horizon  
Kdi3404Tcr Scr is the winner







Brand	Cummins
Model	Qsb 6.7

I. D.	
B x S mm - S/B	107 x 124 - 1.16
N. cil. - dm³	6 - 6.69
Maximum power kW - rpm	201 - 2,000
Mep at max power bar	18.4
Piston speed m/s	8.3
Maximum torque Nm - rpm	990 - 1,500
Mep at max torque bar	19
% power at max torque (kW)	39.3
Torque at max power Nm	960
% power at max torque (kW)	77.4 (156)
Work range rpm	500

DETAILS	
Specific power kW/dm³	30
Specific torque Nm/dm³	147.9

RULES AND BALANCE	
Dry weight kg	536
L x W x H mm	1,059x726x960
Volume m³	0.74
Weight/power kg/kW	2.7
Weight/displacement kg/dm³	80.1
Power density kW/m³	271.6

TECHNO	
Injection system	Common rail
Air intake - devices	vgt egr dpf
DIESEL INDEX	7.6

## FOR OFF-ROAD TOO

In North America and China, Cummins practically stands for automotive engines, and especially bus engines in the Far East. In Europe, while maintaining a certain appeal in the automotive area, particularly in passenger transport, the brand is mainly identified with medium to high-power construction equipment (see J 427 and J 437 Jcb wheel loaders). Moreover, the Soilmec drilling rig takes good advantage of this versatile engine, which always stood out for its lightness: in comparison with other same-sized competitors in Tier 4 final version, the Qsb 6.7 outweighs by only 1 kg (without post-treatment module, which weighs 37 kg) the – smaller - N6.7 by Fpt Industrial, a bit more than 1000 Series by Mtu and 100/150 kg less than other competitors.

Specific torque lacks a few Nm, but power per liter ratio leaves all other brands behind. An automotive signature is the vgt by Holset, which helps the tracks of this heavyweight to make good use of torque in stop/start cycles, while Cummins provides the filtration system, which must manage temperature range, severe environmental conditions and impurities conveyed by the dust. This task is entrusted to Ces - Cummins emission solutions.

Cummins and Soilmec

# BORN TO DRILL

A red American six cylinder for an international Italian guy. Thanks to its new concept design, the Soilmec SR-45 drilling rig offers very good performances in several activities for the foundation projects. All packed in a sturdy and reliable package







BOSCH REXROTH

## First class parts

A technologically advanced machine designed for demanding operations could not miss reliable hydraulics and electrical systems, adequately sized and thus able to provide the SR-45 all the power needed in any type of application. At the heart of the hydraulics, branded **Bosch - Rexroth**, we find two main pumps, providing a flow rate of 214 liters per minute each, supported by an auxiliary 120 liters per minute pump, both supplied by a 450 liters hydraulic oil tank. An electronic control unit controls the total power use so as to maximize the available power; all hydraulic compo-

**The SR-45 undercarriage, manufactured by Sampierana with Berco class D5 components, thanks to the variable gauge through telescoping side frames can reach a width of 3,750 mm**

nents are positioned on the right side of the machine, so as to be easily accessible. The electrical system, completely separate from the hydraulic system, is managed through a wired control panel by **Gea**, and makes use of wiring with automotive harness and Deutsch connectors to achieve maximum reliability even in harsh environments. The system includes an inclinometer and a depth measuring device.



**The SR-45 features a device capable of automatically moving the mast from the transportation condition to the working position and vice versa, allowing the SR-45 to be transported complete with kelly bar hence reducing setup time.**

**The rotation of the turret, mounted on a wheel manufactured by La Leonessa, is driven by two Trasmital Bonfiglioli gearbox.**



**H**ow to do to draw the coordinates between Columbus, in Ohio, and Cesena, in Emilia - Romagna, a small town near-by the excellences of motor valley (Ferrari, Lamborghini, Ducati)? It's easy. Combining the renowned Italian creativity with technological excellence to face the international market challenges. And it's

surely a challenging area – the drilling and foundations sector - the playground of Soilmec, that has updated at the beginning of 2015 one of its most successful models, the SR-45 hydraulic drilling rig.

### By rotary head

Powered by Cummins, the SR-45 has been specially designed

for suiting applications such as cased bore piles with casing driven directly by rotary head or optionally by casing oscillator powered by the base carrier itself, deep uncased bored piles stabilized by drilling fluid or dry hole, Cfa (Continuous flight auger) piles by means of long auger string, Dp (Displacement Piles)/Tct (Traction compacting tool) and Tj (Turbojet)/Ttj

(Twin shaft turbojet) for soil consolidation. Let's take a look at its main features. According to Soilmec, the new SR-45 represents a new approach to the hydraulic drills market.

### A redesigned rig

The basic rig, in fact, has been completely redesigned in order to offer greater comfort

and safety on site, featuring special solutions such as the casings entirely covered with sound damping and absorbing material, the totally redesigned walkways, handrails and the camera system complete with lcd screen to guarantee the best possible safety for the operator, and the new Soilmec 'H-Cab', with sliding doors, a touch-screen Dms adjustable

monitor and more ergonomic controls and knobs to offer the operator a significantly greater comfort.

### A versatile engine

All packed in a sturdy and reliable technological package powered by a Cummins Qsb6.7 Tier4 engine, capable of delivering high power (201 kW at 2,000 rpm) while maintaining

## The rotary waves the Italian flag

Maximum torque of 185 kNm, maximum drilling speed of 47 rpm, maximum spin – off speed of 146 rpm, and a total weight of 2715 kg. This is the Id card of the Soilmec Rd-160 rotary table installed on the SR-45, which is characterized by a particularly compact and flattened shape so to contain the overall weight of the machine. The cylinder is made of removable and reversible nosings, which can be replaced without removing the shaft, while rotation torque is achieved through two variable displacement axial piston motors and two planetary gears branded **Trasmital Bonfiglioli**. Spin-off operation is driven by a specific radial piston motor which provides high rotation speed. Slides supports allow an easy replacement of the three nylon nosings without disassembling the rotary, which also features a centralized lubrication system.



Brand Model	Soilmec SR 45 (Wcs Version)
<b>I. D.</b>	
Operating weight kg	42,000
Max pile diameter (alog mast) mm	1,300
Max pile diameter (tool below mast ) mm	2,000
Max pile depth (friction kelly) m	63 - 65.5
Max pile depth (locking kelly) m	47.5 - 50.5
<b>WINCH CROWD SYSTEM</b>	
Crowd force pull up (down/up) kN	240/240
Stroke mm	14,500
Speed (down/up) m/min	28
Fast speed (down/up) m/min	28



## Automotive comfort

The new Soilmec 'H-Cab' fitted on the SR-45 comes in a complete set-up not only in terms of equipment but also with a comfort level that sticks to one of the main inputs followed in the design of the machine, which is the maximum operator comfort. In this view lies the implementation of an automotive concept seat, complete with air suspension, adjustable backrest and seat and lumbar support; a micro-switch inserted in the driver's seat, similar to safety belt alarms in automobiles, inhibits all movements of the machine when the driver's seat is empty. Talking about instrumentation, two main joysticks control all driving movements; two monitors - a 12" touch screen for the Dms system and a 7" for the four cameras of the control system (located on winches, excavation front, right and rear side of the machine), and a display for diesel and particulate filter diagnostics provide a full overview of all the parameters of the machine. Standard equipment includes sliding door, air conditioning with control display, Radio & cd kit, Rops & Fops protection, cab and excavation front light kit.



**The SR-45 provides easy access to inner components facilitating maintenance.**



**A front weight-**  
The special Soilmec leverage mechanism fitted on the SR-45 allows rapidly shifting from transport to working configuration, a large work radius and ease of positioning.



efficiency and flexibility. The SR-45 has been designed to meet different geological and operational conditions, using each time the most suitable drilling technologies.

### Rotary table

This concept is accurately reflected by its outfit, which includes a rotary table designed to give a particularly

compact and flattened shape to the case, bringing considerable advantages also with regard to its weight. It was also designed to facilitate maintenance operations and deliver a maximum torque of 185 kNm.

The mast, which is completely new, is built with high strength steel that allows streamlining the rig for easier portability

and optimizing the balance in the front part of the drill rig by improving its stability.

### The gift of flexibility

The rig is also equipped with a device capable of automatically moving the mast from the transportation condition to the working position and vice versa, which is particularly functional because the SR-45



can be transported complete with kelly bar hence reducing the site installation times. Thanks to the new Soilmec concept design, the SR-45 shows very good performances in traditional bored piles with kelly bars – but also in cased piles – and it can be easily reconfigured to perform different drilling technologies such as continuous flight au-

**The compact SR-45 mast geometry allows to make the most of the features of high tensile steel. The head can remain folded during transport; electrical and hydraulic connections both in the head and the mast are housed internally.**

## TOTAL CONTROL

Dms Onboard is the whole group of electronic devices and instrumentation dedicated to machine supervision and control, recording of production data, tracking usage of raw materials and fuel consumption. The visible part of the system is constituted by a multi-language touch screen display, installed in the cab, designed to show in real time all the information relating to the operation and performance of the machine, assisted execution of work cycles, fuel consumption and diagnostics. Production data is recorded on a removable Usb memory for subsequent elaboration on a pc to conduct analysis and to obtain detailed production reports. Dms Pc is the software that displays and processes the data acquired by Dms Onboard. It's possible to analyze, process and print production data and verify the use of raw materials and fuel consumption. Available on demand is the 3D option, which is a virtual reconstruction that processes three-dimensional models based on the data acquired in the execution of diaphragm walls. Dms Manager, finally, is the software for remote, centralized supervision of the rig fleet. The rigs can automatically send real time geographic location, events, alarms, production and consumption data to a customer's company server equipped with Dms Manager. The software is web accessible, giving valuable support to project managers, site managers and maintenance supervisors.



ger piles, full displacement piles and consolidation treatments with Turbojet. The SR-45 can be optionally equipped with a mast extension that allows using 5x13,5 self erecting masts and drilling up to a depth of 61.5 m.

### Drilling mate system

The Sr-45 is equipped with the Soilmec Dms system in order to have total control over the rig performance and site production rates. Dms - Drilling mate system - is a project born in the mid-90s with the aim of providing to both operator and jobsite personnel an active instrument to control and interact with the machine (sensors, safety devices, diesel engine, drilling parameters, etc.). Soilmec, having perceived an upcoming electronic revolution in the field of drilling

machines, used the extensive experience acquired on jobsites to develop a tool that would allow the operator to manage both machine and production.

### A double plc

Featuring characteristics such as Can open bus, full colour touch-screen suitable for the drilling field, diesel engine electronic control unit and machine parameters interface, easy troubleshooting and a double plc redundant system for superior reliability the Dms, thanks to its software, is able to collect, display and process via a pc all the data collected by the machine (drilling and concreting parameters), allowing to create jobsite reports, analyze production and processing, plan machine maintenance, et other features.