



# SM-22 MICROPILES

**soilmec**  
Drilling and Foundation Equipment

**SM-22**



soilmec

More flexibility, more performance, ease-of-maintenance and a low environmental impact.



Soilmec SM-22 is the evolution of the legendary PSM-1350 and SM-20 with proven sales record of over 300 units worldwide.

The machine has been completely redesigned to ensure high levels of efficiency, productivity and safety on construction sites. Thanks to its modular design the rig can be easily configured to suit different piling works and technologies including drilling with direct and reverse mud circulation, DTH, CFA and jet grouting.

SM22 can be equipped with single or double rotary, top-hammer and vibro-rotary for soil consolidation, micro piling and anchoring.



Vertical

# Really flexible.

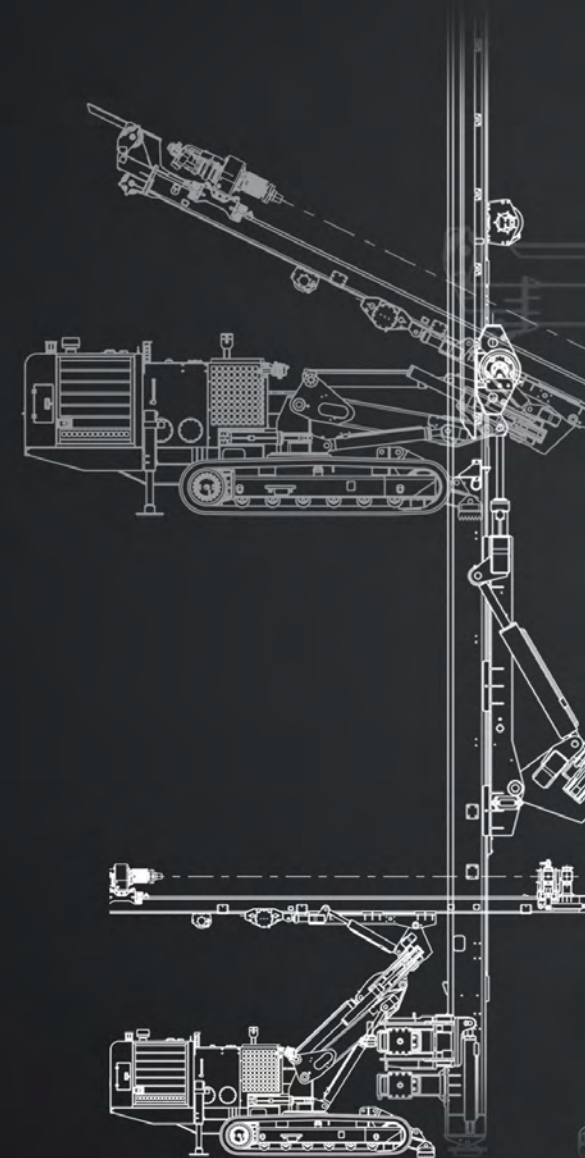
Flexibility of the kinematic mechanism ensures high versatility in the machine movements and mast positioning even in the most challenging conditions. It also grants the operator full control over the rig to perform any job in total safety. Kinematic characteristics of the SM-22 include 90° articulation joint, which allows drilling in parallel to the track.

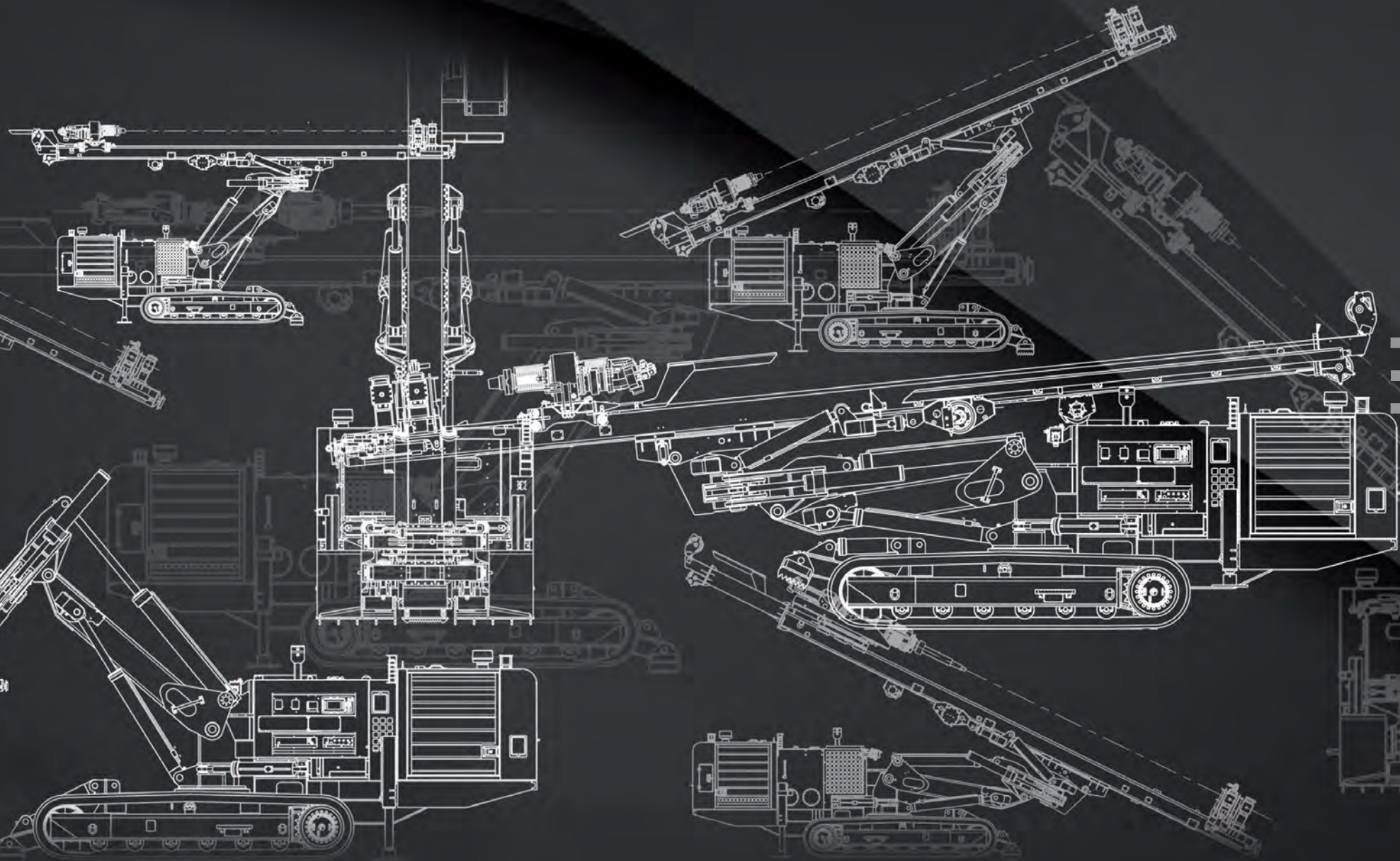
Together with a swivelling boom driven by a slewing ring and a cylinder-operated sliding mast such design allows SM-22 to reach different drilling angles and positions.

The drilling mast has a sturdy monolithic design to withstand work stress.

Adding a fixed or telescopic 3m mast extension facilitates execution of soil consolidation works, micro piles and anchors by using various drilling techniques.

SM-22 can be equipped with a wide range of rotary heads to meet any job requirements: single or double, high torque or fast drilling speed, cradle with side shifting, hydraulic chuck, diverter head for mud flushing or air/water swivel.





Veritas

# Safety first.

To guarantee the maximum safety and functionality during operation, SM-22 can be equipped with a radio remote control or with a hydraulic/proportional panel on pivotal support arm for drilling manoeuvres and a wired remote control for tramming.

Additionally, the base machine is fitted with a fixed control board displaying fuel consumption, rotary rotation speed (opt.), working pressure and temperatures of oil and water.

SM22 can be fitted with a rod loader operated by a hydraulic arm to feed two 9m or three 6m rods. Alternatively, the machine can be equipped with a new carousel loading system for rods and casings, capable of handling up to 7 or 8 rods & casings in total safety and excellent stability.





# Enjoy the power.

SM-22 features a powerful Cummins diesel engine with open crankcase ventilation filter, particulate filter and high temperature regeneration system to ensure optimized performance with reduced noise emissions and fuel consumption (thanks to the low idle engine control on radio remote control panel).





The new sound proofed canopies are designed to minimize noise emissions and increase accessibility during maintenance of the diesel engine, electric and hydraulic systems.

The machine has proportional, hydraulic servo-assisted controls and load sensing technology, including a main pump with axial pistons and two auxiliary gear pumps, so that drilling and positioning operations become easy, precise and smooth.



# Technical data

## Undercarriage



Undercarriage		
Track shoe width	500 mm	19.7 in
Wheel base (centre idler to centre sprocket)	2910 mm	114.6 in
Overall length	3630 mm	142.9 in
Overall width (not extendable crawler)	2450 mm	96 in
Travelling speed	2 km/h	1.24 mph
Average ground pressure	0,94 MPa	13.6 PSI
Ground stabilizers	n°2 pivoting on front + n°2 fixed on rear	

## Clamp & breaker



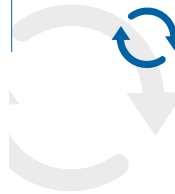
Clamp & Breaker		
Nominal size	50 - 315 (opz. 60-415) mm	1.96 - 12.4 (opz: 2.4-16.4) in
Maximum clamping force	266 kN	59798 lbf
Maximum breaking torque	5200 daNm	38376 lbf*ft
Extractor Device type (opt.)	N. 2 Telescopic Cylinders	N. 2 Telescopic Cylinders
Extractor stroke	1000 mm	39 in
Extraction Force	194 kN	43612 lbf

## Engine



Diesel engine		
Make and model	CUMMINS QSB6,7	CUMMINS QSB6,7
Emission certification	EU stage V - US EPA tier4f	EU stage V - US EPA tier4f
Diesel Engine power rating	209 kW @ 2200	284 HP @ 2200
Fuel tank capacity	350 l	92 US gal

## Rotary



Rotary head	HR-1700	HR-1700	HD-2000	HR-2000
Gear box type	3 Gear	3 Gear	Variable	Variable
Maximum torque	1740 daNm	12841 lbf*ft	2024 daNm	14508 lbf*ft
Maximum rotation	203 rpm	203 rpm	175 rpm	242 rpm
Inner passage	144 mm	5.67 in	144 mm	5.67 in

## Noise



Noise		
Pressure acoustic level	LpA 84 dB(A)	LpA 84 dB(A)
Power acoustic level	LwA 111 dB(A)	LwA 111 dB(A)

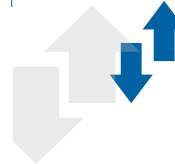
Rotary head	HDD-2500	HDD-2500	HT-3700	HT-3700	HR-14	HR-14
Gear box type	Variable	Variable	Variable	Variable	6 Gear	Gear
Maximum torque	2448 daNm	18055 lbf*ft	3661 daNm	27018 lbf*ft	1333 daNm	9832 lbf*ft
Maximum rotation	144 rpm	144 rpm	122 rpm	122 rpm	727 rpm	727 rpm
Inner passage	144 mm	5.67 in	144 mm	5.67 in	100 mm	3.94 in

## Hydraulic system



Hydraulic system		
Main pumps: variable axial pumps	214 + 214 l/min	57 + 57 US gal/min
Set pressure main pumps	32 MPa	4641 psi
Auxiliary pumps: gear pumps	40 + 22 l/min	11 + 6 US gal/min
Hydraulic oil tank capacity	600 l	159 US gal

## Hoist & Feed



Hoist & Feed system	Motoreducer	Motoreducer	Motoreducer	Motoreducer
Feed Stroke	7200 mm	283.46 in	10200 mm	401.57 in
Rod lenght type (in single rotary head)	6 m	19.7 ft	9 m	29.5 ft
Max. hoist pull / feed force	110 kN	24729 lbf	110 kN	24729 lbf
Opt. max. hoist pull / feed force	150 kN	33721 lbf	150 kN	33721 lbf

## Controls



Full radio remote control or hydraulic/proportional panel on pivotal support arm for all drilling operations kinematic positioning and tracks movements. The parameters like Diesel engine and working pressure are shown on LCD display.

LCD on board showing consumption of Diesel engine, working pressure, engine speed and temperatures of oil & water.

Rig tramping operated by wired remote control for emergency conditions.


Safety hydraulic controls for emergency conditions are fitted on board.

# Configurations

Foam pump 30 l/min (8 US gal) complete with gauge pressure and safety valve	<input type="radio"/>
Washing kit complete with hose rewriter & washing lance	<input type="radio"/>
Fire extinguisher	<input checked="" type="radio"/>
Hydraulic prearrangement for auxiliary pump	<input checked="" type="radio"/>
Emergency kit on the mast	<input checked="" type="radio"/>
Triplex mud pump 200 l/min (53 US gal) complete with support	<input type="radio"/>
Auxiliary winch 20 kN (4496 lbf)	<input type="radio"/>
Auxiliary winch 38 kN (8543 lbf)	<input type="radio"/>
Articulated boom crane complete with radio control	<input type="radio"/>
Hydraulic prearrangement for loading system	<input checked="" type="radio"/>
 Kit slow rotation	<input type="radio"/>
 Hydraulic safety cage kit driven by cylinder	<input type="radio"/>
Mud screw pump 930 l/min (246 US gal) complete with pressure gauge	<input type="radio"/>
Tow hook kit	<input type="radio"/>
Floating system for rotary head	<input type="radio"/>
Rotary cradle with side shifting	<input type="radio"/>
 CE marking kit	<input type="radio"/>
Hydraulic drifter	<input type="radio"/>
D.T.H. lubricator	<input type="radio"/>
Centering device	<input type="radio"/>
Hydraulic rod loader 2/3 rods	<input type="radio"/>
Additional auxiliary pump	<input type="radio"/>
Third clamp assembly range 60-415 mm (2.4 - 16.3 in)	<input type="radio"/>
Diesel engine EU Stage III - US Epa Tier 3	<input type="radio"/>
Control board on pivoting arm for tramping	<input type="radio"/>
Load sensing hydraulic system	<input checked="" type="radio"/>
Control board on base frame for positioning	<input checked="" type="radio"/>
Wired remote control for tramping	<input checked="" type="radio"/>
Mast 7200 mm (283 in) stroke	<input checked="" type="radio"/>
Mast extension for modular mast 10200 mm (402 in) stroke	<input type="radio"/>
1450 mm (57 in) stroke cylinder for sliding mast	<input checked="" type="radio"/>
Kinematic mechanism - Boom rotation on base machine +/- 25°	<input checked="" type="radio"/>
Kinematic mechanism - Articulated 90° joint w/o pin removing	<input checked="" type="radio"/>
Kinematic mechanism - Counter slide	<input checked="" type="radio"/>
7" LCD for alarm & Diesel engine control	<input checked="" type="radio"/>
Full radio remote control	<input type="radio"/>
Rotating and pivoting stabilizers for double rotary head or longer mast applications	<input type="radio"/>

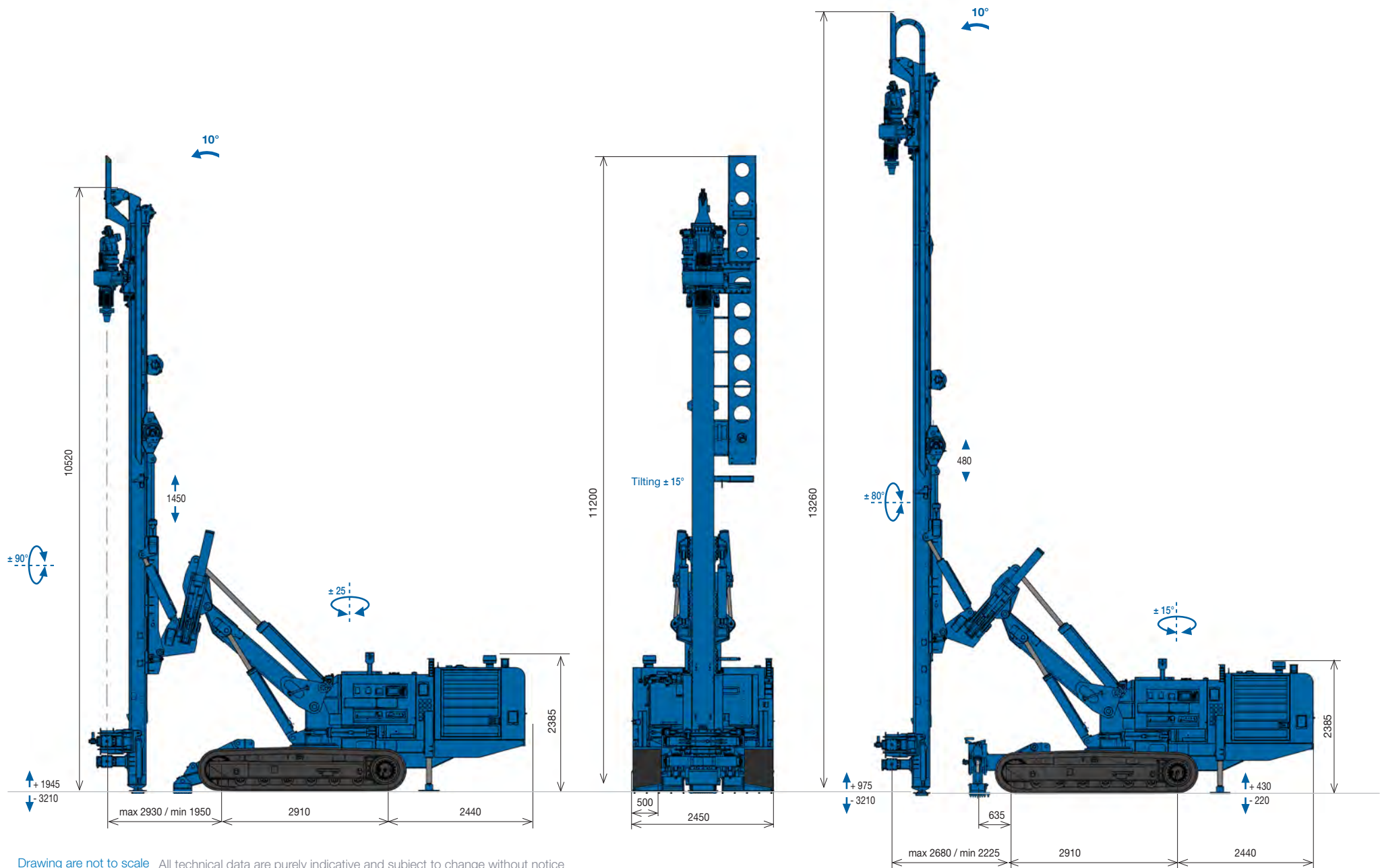
<b>Jet Grouting</b>	
Kit for single fluid	<input checked="" type="radio"/>
Kit for double fluid	<input type="radio"/>
Telescopic extension	<input checked="" type="radio"/>
Hydraulic chuck complete with gauge pressure and safety device	<input checked="" type="radio"/>
Wedge kit for hydraulic chuck	<input checked="" type="radio"/>
Centering device for rods	<input checked="" type="radio"/>
Cradle for swivel	<input checked="" type="radio"/>
Automatic clamp kit	<input checked="" type="radio"/>
Transport kit for telescopic mast	<input type="radio"/>
Hydraulic prearrangement for JG	<input type="radio"/>
<b>Double rotary</b>	
Rotary cradle complete with pads that can be shifted by hydraulic cylinder 600 mm stroke	<input checked="" type="radio"/>
Floating spindle & balancing rod	<input checked="" type="radio"/>
Air swivel	<input checked="" type="radio"/>
Water swivel (1000 l/min - 246 US gal flow rate)	<input checked="" type="radio"/>
Ejection bell	<input checked="" type="radio"/>
Additional counterweight 750 kg (1653 lb)	<input checked="" type="radio"/>
Jib extension for auxiliary winch	<input type="radio"/>

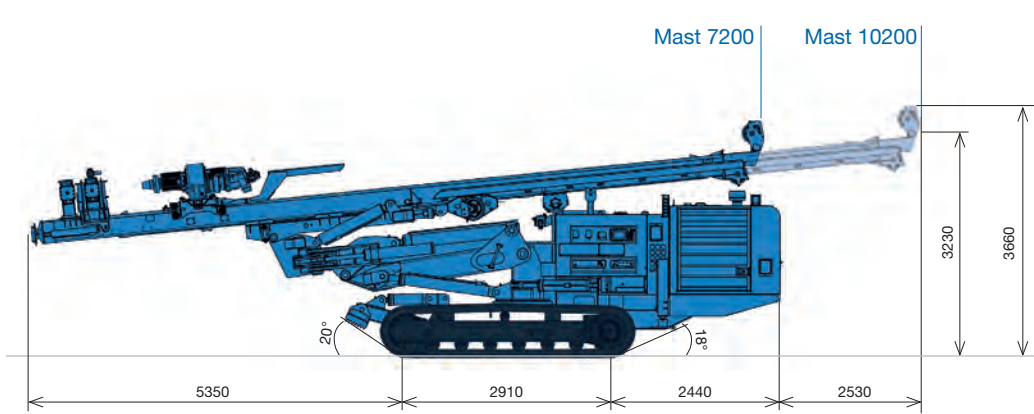
standard     optional    n.a. not available

 standard equipment for CE certification

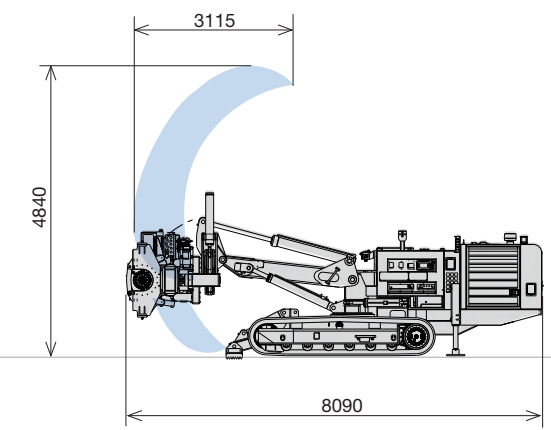
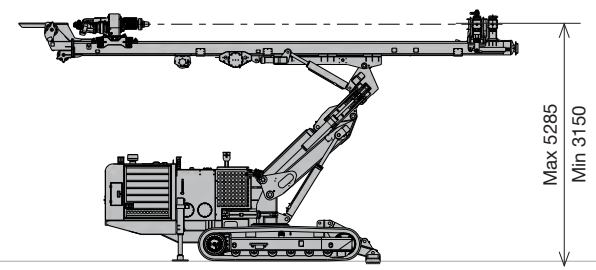
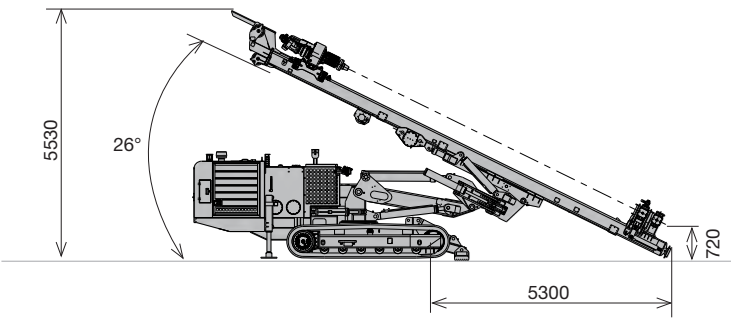
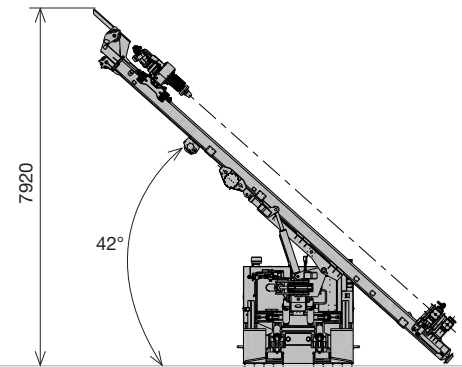
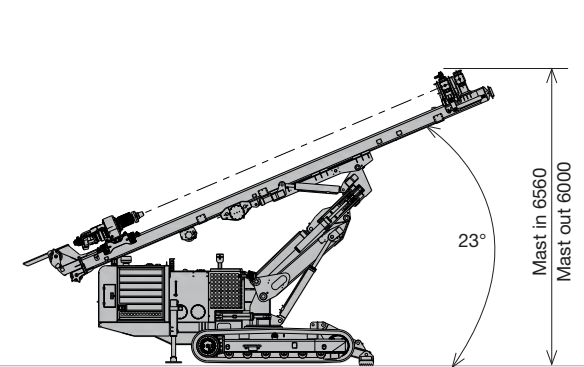
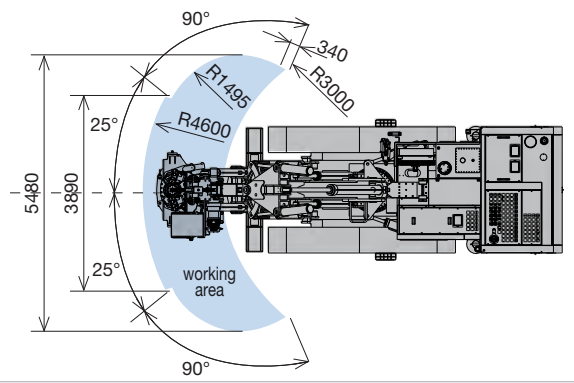
# Mast 7200 mm

# Mast 10200 mm



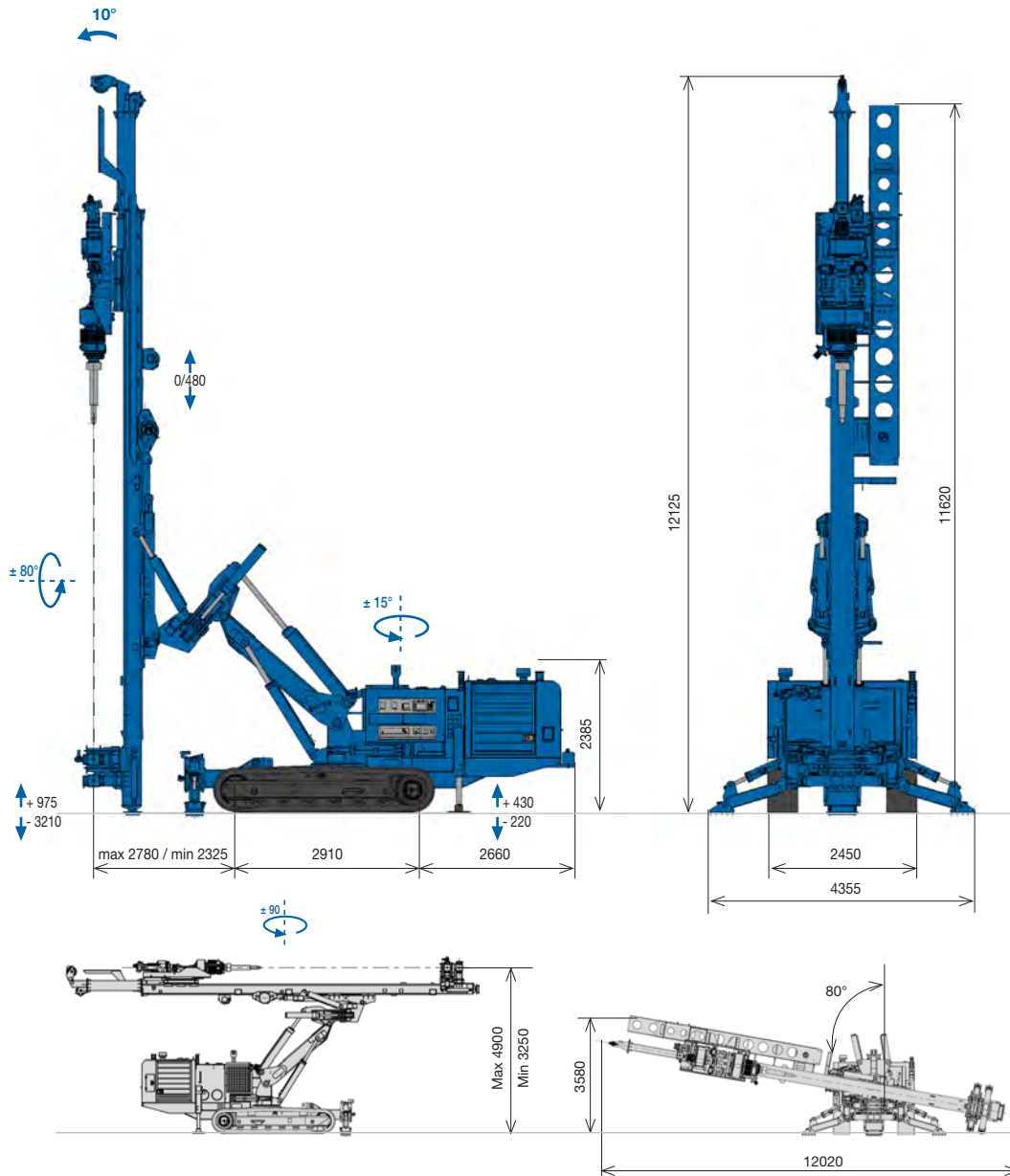


Stroke 7200 mm (283 in)		
Transport length	10700 mm	421,26 in
Transport width	2450 mm	96,46 in
Transport height	3390 mm	133,46 in
Transport weight	22000 kg	48501 lb
Stro 10200 mm (402 in)		
Transport length	13230 mm	520,86 in
Transport width	2450 mm	96,46 in
Transport height	3660 mm	144,09 in
Transport weight	22500 kg	49604 lb

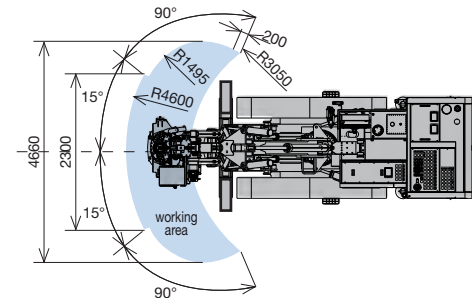


Drawing referred to 7200 mm stroke version

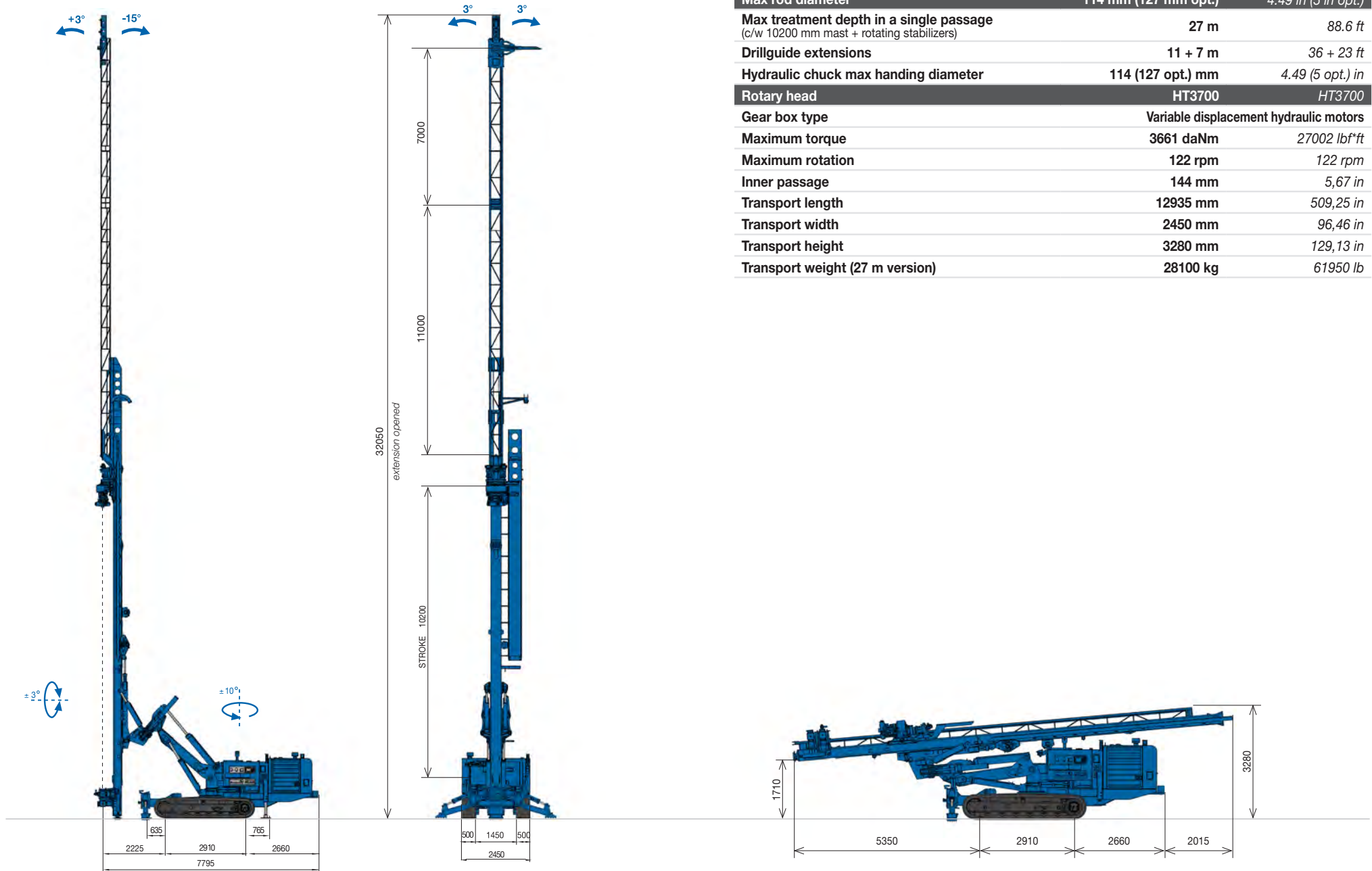
# Double rotary



Hoist & Feed system	Motoreducer	Motoreducer
Feed Stroke	7200 mm	283,46 in
Maximum Hoist pull/Feed force	110 kN	24729 lbf
Optional Maximum Hoist pull/Feed force	150 kN	33721 lbf
Upper head for rods	HT1400V	HT1400V
Gear box type	Variable	Variable
Maximum torque	1356 daNm	10001 lbf*ft
Maximum rotation	229 rpm	229 rpm
Lower head for casing	HT3700	HT3700
Gear box type	Variable	Variable
Maximum torque	3661 daNm	27000 lbf*ft
Maximum rotation	122 rpm	122 rpm
Inner passage	144 mm	5,67 in



# Jet grouting



<b>Operating weight (approx. w/o rods)</b>	<b>28100 kg</b>	<b>61950 lb</b>
<b>Max rod diameter</b>	<b>114 mm (127 mm opt.)</b>	<b>4.49 in (5 in opt.)</b>
<b>Max treatment depth in a single passage</b> <small>(c/w 10200 mm mast + rotating stabilizers)</small>	<b>27 m</b>	<b>88.6 ft</b>
<b>Drillguide extensions</b>	<b>11 + 7 m</b>	<b>36 + 23 ft</b>
<b>Hydraulic chuck max handing diameter</b>	<b>114 (127 opt.) mm</b>	<b>4.49 (5 opt.) in</b>
<b>Rotary head</b>	<b>HT3700</b>	<b>HT3700</b>
<b>Gear box type</b>	<b>Variable displacement hydraulic motors</b>	
<b>Maximum torque</b>	<b>3661 daNm</b>	<b>27002 lbf*ft</b>
<b>Maximum rotation</b>	<b>122 rpm</b>	<b>122 rpm</b>
<b>Inner passage</b>	<b>144 mm</b>	<b>5,67 in</b>
<b>Transport length</b>	<b>12935 mm</b>	<b>509,25 in</b>
<b>Transport width</b>	<b>2450 mm</b>	<b>96,46 in</b>
<b>Transport height</b>	<b>3280 mm</b>	<b>129,13 in</b>
<b>Transport weight (27 m version)</b>	<b>28100 kg</b>	<b>61950 lb</b>

A close-up photograph of a muddy tire tread on a dirt surface. The tire is on the left side of the frame, and the mud is dark brown and textured. The background is blurred, showing more of the dirt and a hint of a blue object.

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#muddyboots