

# ST-60 Tunnelling rig

**soilmeco**  
Drilling and Foundation Equipment





# ST-60

## Your tunnel rig

The ST-60 is a positioner, a single-boom hydraulic drilling rig designed for the execution of horizontal and sub-horizontal consolidations for the realization of medium and large-section tunnels.

Despite the large size, also in relation to the importance of the treatments to perform, the machine is very flexible and fast to use and that means higher profitability.



ST-60

## The answer to all your job site needs

### Excellent Performance

To reach the maximum heading stroke points with respect to ground level, a special system of thrust blocks and sliding blocks was designed to reach these points in total safety. The variability of the height of the thrust blocks axis of rotation combined with the column extension allows a great working radius.

### Great Efficiency

Dual power supply (Diesel engine and electric motor) for both drilling and tramming ensures performance also in case of malfunction of one of the two units.

### Unparalleled Ergonomics

The machine is fitted with the full radio remote controls for all movements and drilling operations to guarantee always total control of working area and ensuring high levels of productivity. Moreover, the ST-60 has emergency wired remote control and manual controls on remote board.

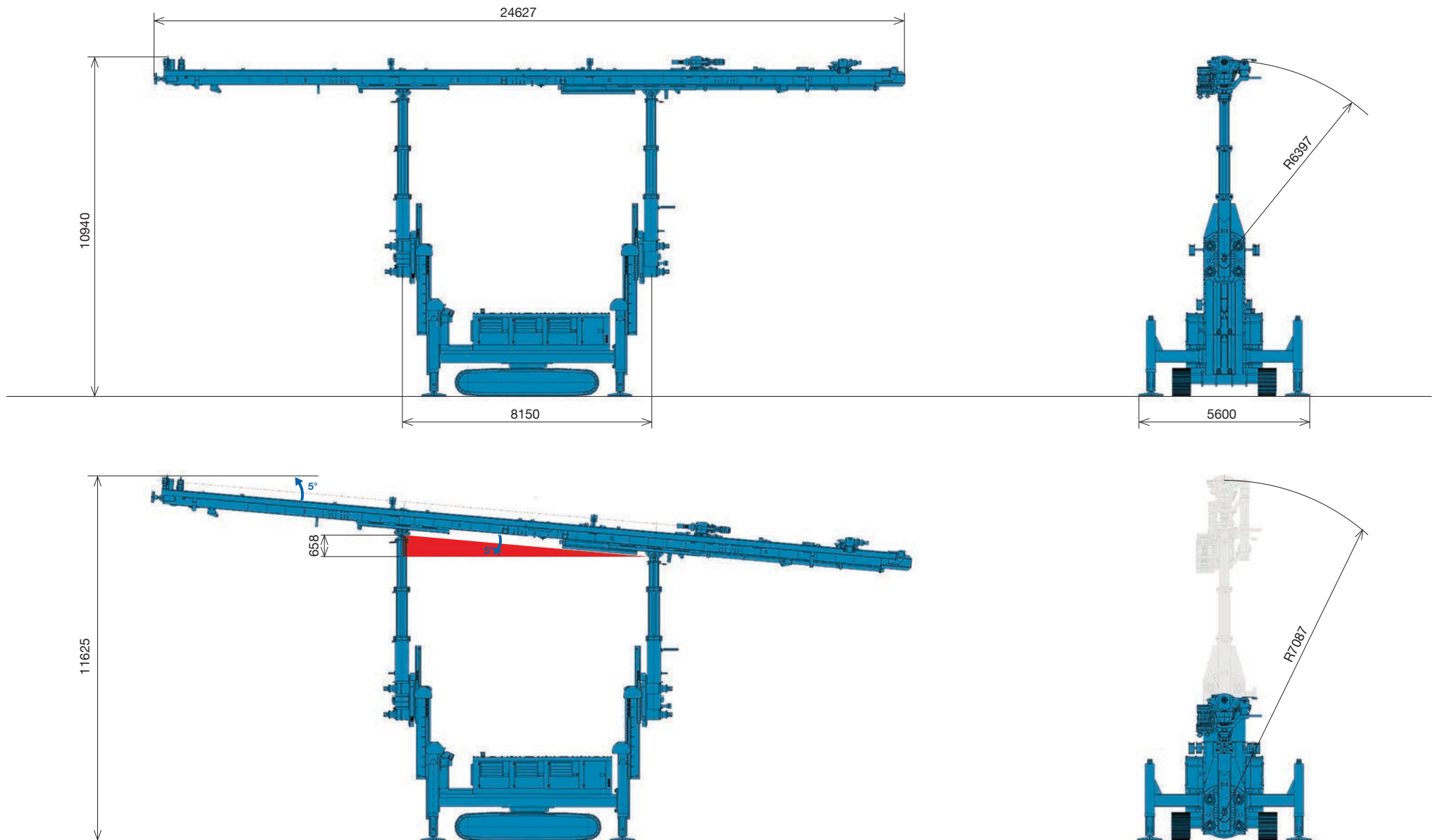
### Extraordinary Versatility

The ST-60 can support a wide range of drilling techniques as single rotary, jet-grouting, top hammer and double rotary. Wide range of optional devices (Loader, crane, dust collector etc..) for every working need.

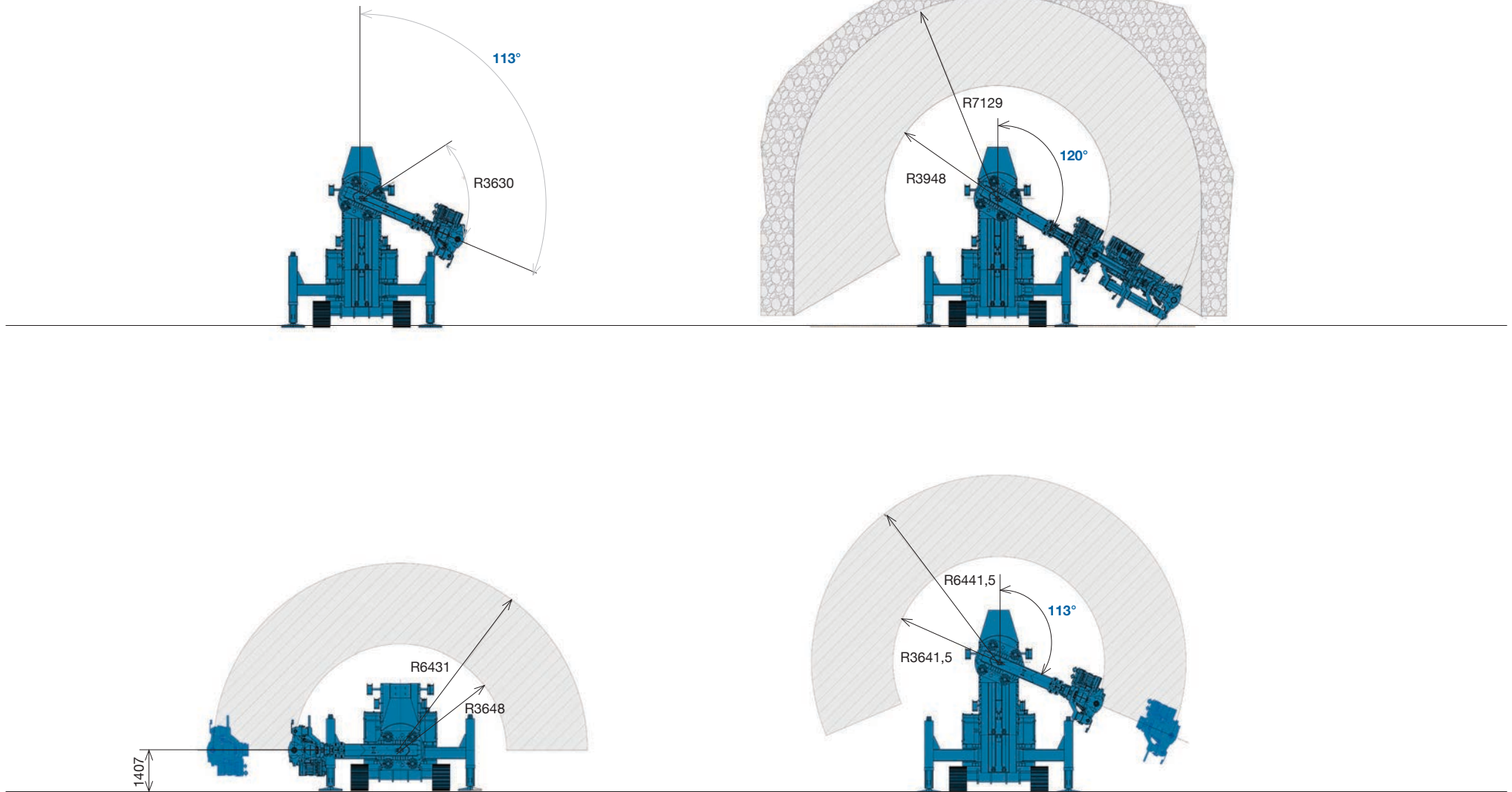




# Tunnelling



# Tunnelling



# Technical data

## Undercarriage



Undercarriage		
Triple grouse track shoe width	<b>extendable type</b>	<i>extendable type</i>
Wheel base (centre idler to centre sprocket)	<b>600 mm</b>	<i>24 in</i>
Overall length	<b>3900 mm</b>	<i>154 in</i>
Overall width (retracted-extended)	<b>4732 mm</b>	<i>186 in</i>
Travelling speed	<b>2500 - 3400 mm</b>	<i>98 - 134 in</i>
Average ground pressure	<b>2,2 km/h</b>	<i>1,4 mph</i>
Ground stabilizers	<b>N°4 openable, 1000 mm (39 in) stroke</b>	<i>N°4 openable, 1000 mm (39 in) stroke</i>

## Engine



Diesel engine		
Option 1		
Make and model	<b>Cummins B 6.7</b>	<i>Cummins B 6.7</i>
Emission certification	<b>EU stage V US EPA Tier 4f</b>	<i>EU stage V US EPA Tier 4f</i>
Diesel engine power rating	<b>209 kW @ 2000 rpm</b>	<i>280 HP @ 2000 rpm</i>
Fuel tank capacity	<b>345 l</b>	<i>91 US gal</i>
Option 2		
Make and model	<b>Cummins B 6.7</b>	<i>Cummins B 6.7</i>
Emission certification	<b>EU stage III US EPA Tier 3</b>	<i>EU stage III US EPA Tier 3</i>
Diesel engine power rating	<b>194 kW @ 2200 rpm</b>	<i>260 HP @ 2200 rpm</i>
Max Diesel engine power	<b>201 kW @ 2000 rpm</b>	<i>269 HP @ 2000 rpm</i>
Fuel tank capacity	<b>345 l</b>	<i>91 US gal</i>

Electric motor		
Make and model	<b>ELECTROADDA FE3GP315S-4 ie3</b>	<i>ELECTROADDA FE3GP315S-4 ie3</i>
Diesel engine power rating	<b>110 kW @ 1475 rpm</b>	<i>147 HP @ 1475 rpm</i>

## Hydraulic system



Hydraulic system		
Main pumps: <i>variable axial pumps</i>	<b>150 + 150 l/min</b>	<i>40 + 40 US gal/min</i>
Auxiliary pumps: <i>gear pumps</i>	<b>194 + 16 l/min</b>	<i>51 + 4 US gal/min</i>
Hydraulic oil tank capacity	<b>680 l</b>	<i>180 US gal</i>

## Clamp & breaker



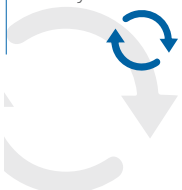
Clamp & hydraulic joint breaker		
Nominal size	<b>60 - 260 mm</b>	<i>2 - 10 in</i>
Maximum clamping force	<b>159 kN</b>	<i>35744 lbf</i>
Maximum breaking torque	<b>3830 daNm</b>	<i>28249 lbf*ft</i>
Extractor Device stroke (opt)	<b>600 mm</b>	<i>24 in</i>
Extractor Device force (opt)	<b>130 kN</b>	<i>29225 lbf</i>

## Hoist & Feed system



Hoist & Feed system		
Type	<b>Winch</b>	<i>Winch</i>
Feed Stroke	<b>19000 mm</b>	<i>748 in</i>
Maximum Hoist pull	<b>97 kN</b>	<i>21806 lbf</i>
Maximum Feed force	<b>97 kN</b>	<i>21806 lbf</i>
Side shifting movement	<b>430 mm</b>	<i>17 in</i>

## Rotary



Rotary head		
ZF 110		
Gear box type	<b>Variable</b>	<i>Variable</i>
Maximum torque	<b>1966 daNm</b>	<i>14500 lbf*ft</i>
Maximum rotation	<b>242 rpm</b>	<i>242 rpm</i>
Inner passage	<b>130 mm</b>	<i>5,1 in</i>
ZF 11		
Gear box type	<b>Variable</b>	<i>Variable</i>
Maximum torque	<b>1561 daNm</b>	<i>11513 lbf*ft</i>
Maximum rotation	<b>187 rpm</b>	<i>187 rpm</i>
Inner passage	<b>100 mm</b>	<i>3,9 in</i>

Transport		
Transport width	<b>2550 mm</b>	<i>100 in</i>
Transport height	<b>3350 mm</b>	<i>132 in</i>
Transport length	<b>10400 - 9500 mm</b>	<i>409 - 374 in</i>
Transport weight	<b>53500 - 52000 kg</b>	<i>117946 - 114639 lb</i>

# Configurations

Tunnelling Performance		
Radius of treatment at 0°	<b>3642 - 6442 mm</b>	<i>143 - 254 in</i>
Radius of treatment at 5°	<b>4340 - 7140 mm</b>	<i>171 - 281 in</i>
Height from working level af drilling axis 0°	<b>8149 - 10949 mm</b>	<i>321 - 431 in</i>
Height from working level of slew ring rotation axis	<b>907 - 4507 mm</b>	<i>36 - 177 in</i>
Maximum mast inclination angle	<b>5°</b>	<i>5°</i>
Maximum boom tilting angle	<b>5°</b>	<i>5°</i>
Jet Grouting		
Option 1		
Max rod diameter	<b>90 - 114 mm</b>	<i>4 - 4,5 in</i>
Max treatment depth in a single passage	<b>19 m</b>	<i>62,3 ft</i>
Option 1		
Max rod diameter	<b>90 - 114 mm</b>	<i>4 - 4,5 in</i>
Max treatment depth in a single passage	<b>24 m</b>	<i>78,7 ft</i>
Top Hammer		
Weight	<b>400 kg</b>	<i>882 lb</i>
Blow frequency @ Impact energy	<b>2500 / min @ 340 Nm</b>	<i>2500 / min @ 250.8 lbf</i>
Max torque	<b>12600 daNm</b>	<i>92933 lbf*ft</i>
Double rotary		
Rotary for rods		
Type	<b>Fixed</b>	<i>Fixed</i>
Max torque	<b>1019 daNm</b>	<i>7516 lbf*ft</i>
Maximum rotation	<b>86 rpm</b>	<i>86 rpm</i>
Rotary for casings		
Type	<b>Variable</b>	<i>Variable</i>
Max torque	<b>1836 daNm</b>	<i>13542 lbf*ft</i>
Maximum rotation	<b>69 rpm</b>	<i>69 rpm</i>

Extendable type undercarriage	●
3 grouse track shoes	●
Anti-rotation device	●
Ground stabilizer: 4 openable, 1000 mm (39.4 in) stroke	●
Diesel engine EU Stage V - US EPA Tier 4f	●
Diesel engine EU S tage III - US EPA Tier 3	○
Electric motor	●
Full radio remote control	●
Emergency wired remote control for tramming	●
Hydraulic controls on machine sides for emergency mode	●
Emergency manual controls on remote board for drilling	●
Air-water unit	●
Kinematic mechanism - Telescopic boom rotation slewing ring	●
Kinematic mechanism - Double extension telescopic uprights	●
Dust collector	○
Lock valves on the jacks	●
Emergency stop button;	●
Emergency stop ropes	●
Horn and acoustic warnings	●
Dry dust extinguisher	●
Automatic greasing system	○
Fiberglass rods loader	○
Goniometer kit	○
Foam pump c/w gauge pressure and safety valve	○
Clamp & breaker 60-260 mm (2.4 - 10 in)	●
Extractor device	●
Centering device	○
Floating system for rotary head	○
Water & mud pumps	○
Washing kit including with hose rewinder & washing lance	○
Auxiliary crane	○
120 kg (264.5 lb) PLE lifting platform	○
Jet Grouting kit	○
Jet Grouting extension	○
Double heads kit	○
Top Hmmer kit	○





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