

CH 850






SELF-ERECTING
HYDRAULIC PILING RIG



THE MULTIPURPOSE PILING RIG

CH

The **CH 850** is a piling machine designed for the most demanding projects. With a maximum power of 405 kW (543 HP) and an operating weight of 98 tons, this machine guarantees **exceptional performance** and is a highly **adaptable and versatile solution** that can cover a wide variety of projects with minimal changes. The **CH 850** has been engineered with a view to optimising performance, its main features including:





	<p>POWER & EFFICIENCY</p>	<ul style="list-style-type: none"> The latest generation hydraulic system, developed by Comacchio utilizing state-of-the-art electronic control systems, ensures high levels of productivity thanks to the innovative CR 36 rotary head, capable of developing a maximum torque of 360 kNm, and allows to reduce fuel consumption
	<p>VERSATILITY</p>	<ul style="list-style-type: none"> Designed to perform multiple technologies, including Kelly, CFA, DP and SM, the CH 850 is suitable for a wide range of applications, from foundation construction to ground improvement
	<p>HIGH PERFORMANCE</p>	<ul style="list-style-type: none"> In its Kelly pile configuration the CH 850 can be used to construct piles up to a diameter of 3000 mm (9'10") and a depth of 90 m (295' 3"), offering the ideal solution for large and complex projects
	<p>REDUCED NOISE & EXHAUST EMISSIONS</p>	<ul style="list-style-type: none"> Thanks to the unique design incorporating advanced and sustainable solutions, the CH 850 guarantees a low environmental impact, reducing noise and emissions to a minimum
	<p>EASY TRANSPORT & SET-UP</p>	<ul style="list-style-type: none"> The machine can be easily disassembled into modules to facilitate transport and reduce logistics costs and is equipped with a hydraulic system for counterweight lifting to ensure safer and faster rigging and de-rigging operations



TECHNOLOGIES



The **unique design** of the **CH 850** adapts to a wide range of drilling technologies that include:

	<p>KP (Kelly Piles)</p> <p>CKP (Cased Kelly Piles)</p>	<p>KP - Uncased Kelly Piles excavated by dry method or stabilized by fluid overpressure</p>						
		<p>CKP - Kelly Piles with Casing installation by rotary drive or optionally by hydraulic casing oscillator</p>						
			m.s.	i.s.	KP		CKP	
		Max. pile diameter WPD (STANDARD drilling axis)	mm	ft-in	2.500 ¹	8' 2" ¹	2.000 ^{1/2}	6' 6" ^{1/2}
		Max. pile diameter WPD (PLUS drilling axis)	mm	ft-in	3.000 ¹	9' 10" ¹	2.500 ^{1/2}	8' 2" ^{1/2}
		Max. pile depth WPD	mm	ft-in	90.000 ^{3/4}	295' 3" ^{3/4}	90.000 ^{3/4}	295' 3" ^{3/4}
		NOTES	1 - w/o bottom mast element		2 - Depending on the twister			
	3 - c/w 7.650 mm (25'1") mast extension		4 - Using self-mounting 5-elements kelly bar					
	<p>CFA (Continuous Flight Auger)</p>	<p>CFA - Piles that are drilled uncased by the use of a continuous hollow auger stem</p>						
			m.s.	i.s.	CFA			
		Max. pile diameter	mm	ft-in	1.200	3' 11"		
		Max. pile depth (QCFA/WPD)	mm	ft-in	27.700 ¹	91' 2" ¹		
		NOTE	1 - c/w 7.650 mm (25'1") mast extension					
	<p>DP (Displacement Piles)</p>	<p>DP - Piles installed without soil removal by advancing a special tool into the ground that causes the soil to be displaced radially and vertically</p>						
			m.s.	i.s.	DP			
		Max. pile diameter	mm	ft-in	600	1' 11"		
		Max. pile depth	mm	ft-in	33.700 ¹	87' 11" ¹		
		NOTE	1 - c/w 7.650 mm (25'1") mast extension					
	<p>SM (Soil Mixing)</p>	<p>SM - Piles constructed by mixing and partly replacing the existing soils with grout using a soil mixing tool</p>						
			m.s.	i.s.	SM			
		Max. pile diameter	mm	ft-in	2.500 ¹	6' 7" ¹		
		Max. pile depth	mm	ft-in	34.200 ²	87' 11" ²		
		NOTES	1 - According to the soil conditions		2 - c/w 7.650 mm (25'1") mast extension			

TECHNICAL DATA

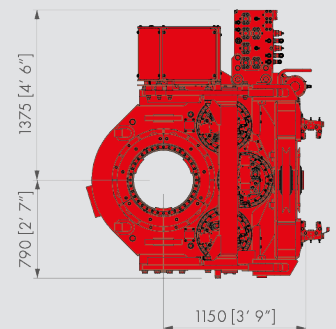
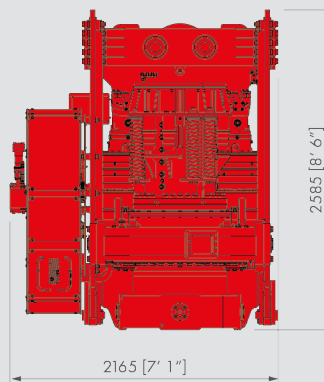
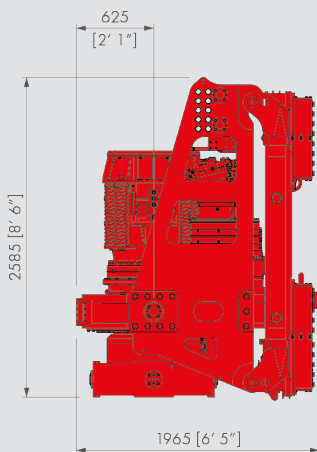
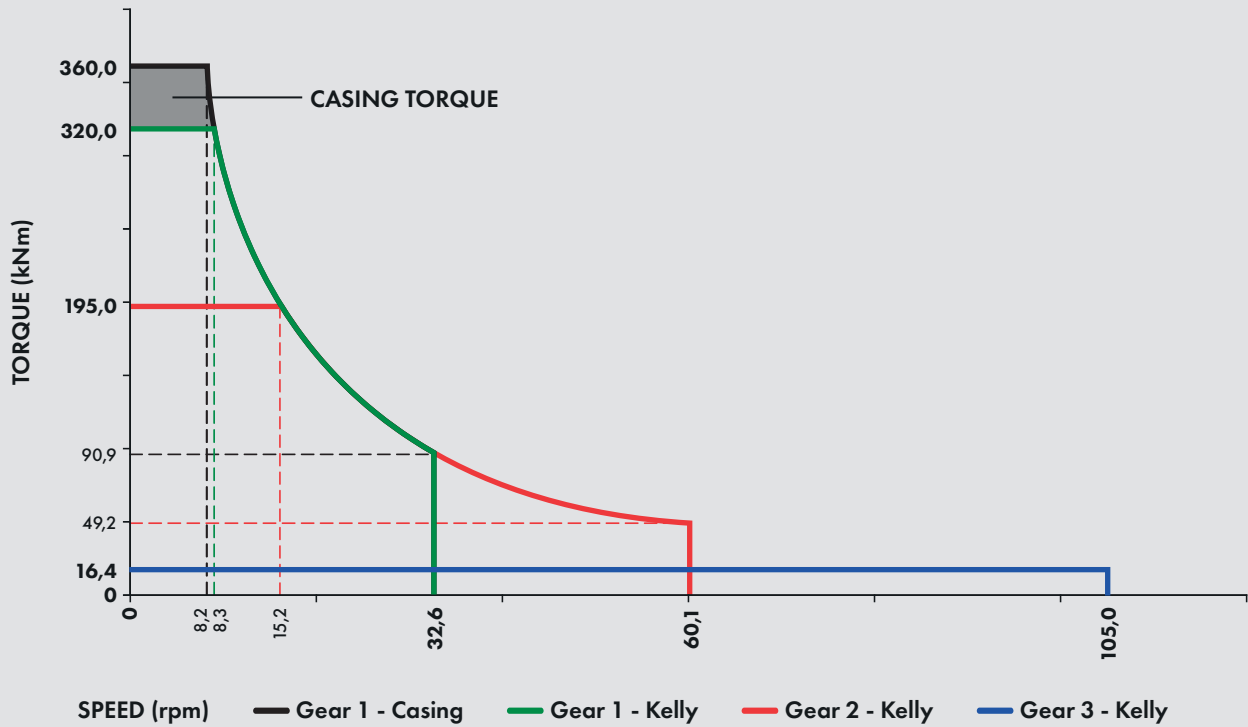


UNDERCARRIAGE		m.s.	i.s.			
Type	-	Variable gauge, telescoping side frames				
Removable tracks	-	Yes				
Track shoe width	mm	ft-in	800	2' 8"	900	2' 11"
Track shoe type	-	Triple grouser				
Overall width (retracted side frames)	mm	ft-in	2.980	9' 9"	3.150	10' 4"
Overall width (extended side frames)	mm	ft-in	4.580	15'	4.750	15' 7"
Overall length	mm	ft-in	5.920		19' 5"	
Centre idler to centre sprocket	mm	ft-in	4.990		16' 4"	
UPPERFRAME		m.s.	i.s.			
Width	mm	ft-in	3.000		9' 10"	
Operators' cabin	-	TOPS & FOPS-1 certified, 965 mm (3' 2") wide				
Control system type	-	CAN-BUS				
User interface	-	12" Touch Screen				
Tail swing radius	mm	ft-in	4.310		14' 1"	
DIESEL ENGINE		m.s.	i.s.			
		High Tech Line				
Make and model	-	Volvo D13				
Emission certification	-	EU stage IIIA / US EPA Tier 3			EU stage V / US EPA Tier 4f	
Power rating (2.000 rpm)	kW	hp	345	463	345 - 405	463 - 543
Aspiration	-	Turbocharged and charge air cooled				
Displacement	cc	in ³	12.780		780	
Fuel tank	l	gal	735		194	
Sound pressure level in cabin (EN 16228-1, Annex B)	-	L _{pA} 82 dB (A)				
Sound Power level (2000/14/EC - EN 16228-1, Annex B)	-	L _{WA} 108 dB (A)				
HYDRAULIC SYSTEM		m.s.	i.s.			
Main pumps flow	l/min	gal/min	2 x 345		2 x 91.1	
Service pump flow	l/min	gal/min	180		47.5	
Hydraulic oil tank capacity	l	gal	960		253.6	
MAIN WINCH		m.s.	i.s.			
Type	-	Controlled descent				
1 st layer line pull	kN	lbs	300		67,443	
1 st layer rope speed	mm/min	ft/min	80.000		262'	
Rope diameter	mm	in	30		1 ³ / ₁₆ "	
Rope layers	-	2				
FEM classification	-	M6 - L3 - T5				
SERVICE WINCH		m.s.	i.s.			
Type	-	Controlled descent				
1 st layer line pull	kN	lbs	133		29,900	
1 st layer rope speed	mm/min	ft/min	64.000		210'	
Rope diameter	mm	in	20		¹³ / ₁₆ "	
Rope layers	-	3				
FEM classification	-	M5-L2-T5				

CR 36 ROTARY HEAD



ROTARY DIAGRAM - CH 850

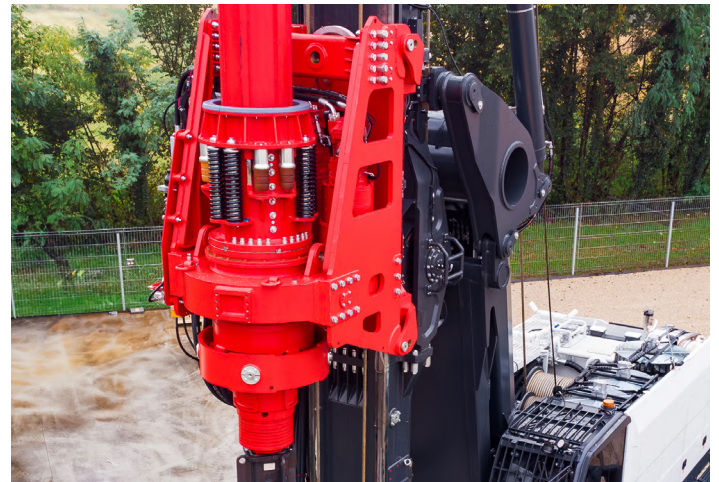


ROTARY HEAD	m.s.	i.s.	CR 36	
Max. torque Casing	kNm	lbf-ft	360 at 32 MPa	265,522 at 4,641 psi
Max. torque Kelly	kNm	lbf-ft	320 at 28,5 MPa	236,020 at 4,134 psi
Max. drilling speed	rpm		60	
Hydraulic power	kW	hp	310	208
Spin-off speed	rpm		125	
Replaceable drive sleeve	-		Yes	
Replaceable drive keys	-		Yes	
Weight (as shown)	kg	lbs	8.000	17,637


OPTIONS AND ACCESSORIES



STANDARD EQUIPMENT	
Main winch with special grooving	Automatic lubrication kit for rotary sliding guides
Hoist and lowering limit switches on main and service ropes	Transport securing lugs on crawler unit
Swivel for main rope	Work lights
Service rope parking point	Electric refuelling pump and hydraulic oil refilling
Mast inclination measurement on X & Y axes (digital and analog display)	Diagnostic panel for hydraulic, engine, electrical and electronic functions
Automatic vertical mast alignment	Front and top cabin protective grate (FOPS-1 certified)
Depth measuring device on main winch	Radio with bluetooth
Stroke measuring device on crowd winch	Phone charger
Rpm measuring device on rotary	CCS Comacchio Controlling System
Crowd pressure setting	Spinoff and Shaker tool dump systems
Oscillator attachment brackets	Rotary auto speed management & interactive multiple gear
Heating & air conditioning system	Tool box
Emergency mode of operation for engine	Swivel for auxiliary rope
Video cameras set	



OPTIONAL EQUIPMENT

Biodegradable oil	Welding equipment & generator
Cardan joint	Air compressor kit
Main and aux winch load cells	Washing kit
Jack-up system for tracks removal	Flange for casing driving
Central lubrication system	Prearrangement for casing oscillator
Custom painting	Casing oscillator
CFA cleaner (star or roller or brush type)	Vibratory equipment for steel cage
Flange for bucket opening	Data logger
	ComNect system 

CE CONFORMITY KIT

Machine travel remote radio control	CFA cleaner
Main and aux winch load cells	Rubber strip guards on auger guide
Side walkways w/handrails	

Inspired by the automotive-style fit and finish, the new **Comacchio cab** stands out for its ergonomic design and **safety features**, offering **high level of comfort** for the operator and ensuring **smooth and easy operation**.

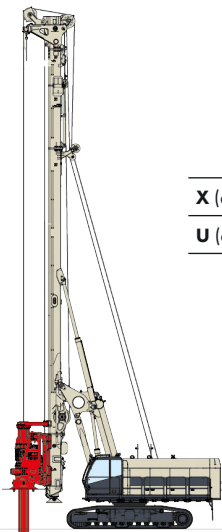


INNOVATIVE KELLY BAR SYSTEM



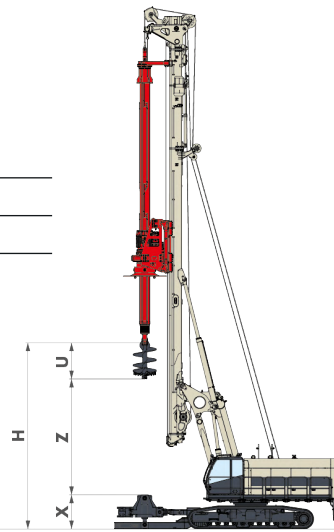
Two bar sizes are **available with minor changes** on the rotary head.

KELLY BAR SIZES	m.s.		i.s.		Outer diameter	
	mm	ft-in	mm	ft-in	mm	ft-in
Standard	mm	ft-in	445	17 1/2"		
Optional (reduced torque)	mm	ft-in	419	16 1/2"		



X (approx.)	mm	ft-in	1.500	4' 11"
U (approx.)	mm	ft-in	1.500	4' 11"

$$Z = H - X - U$$



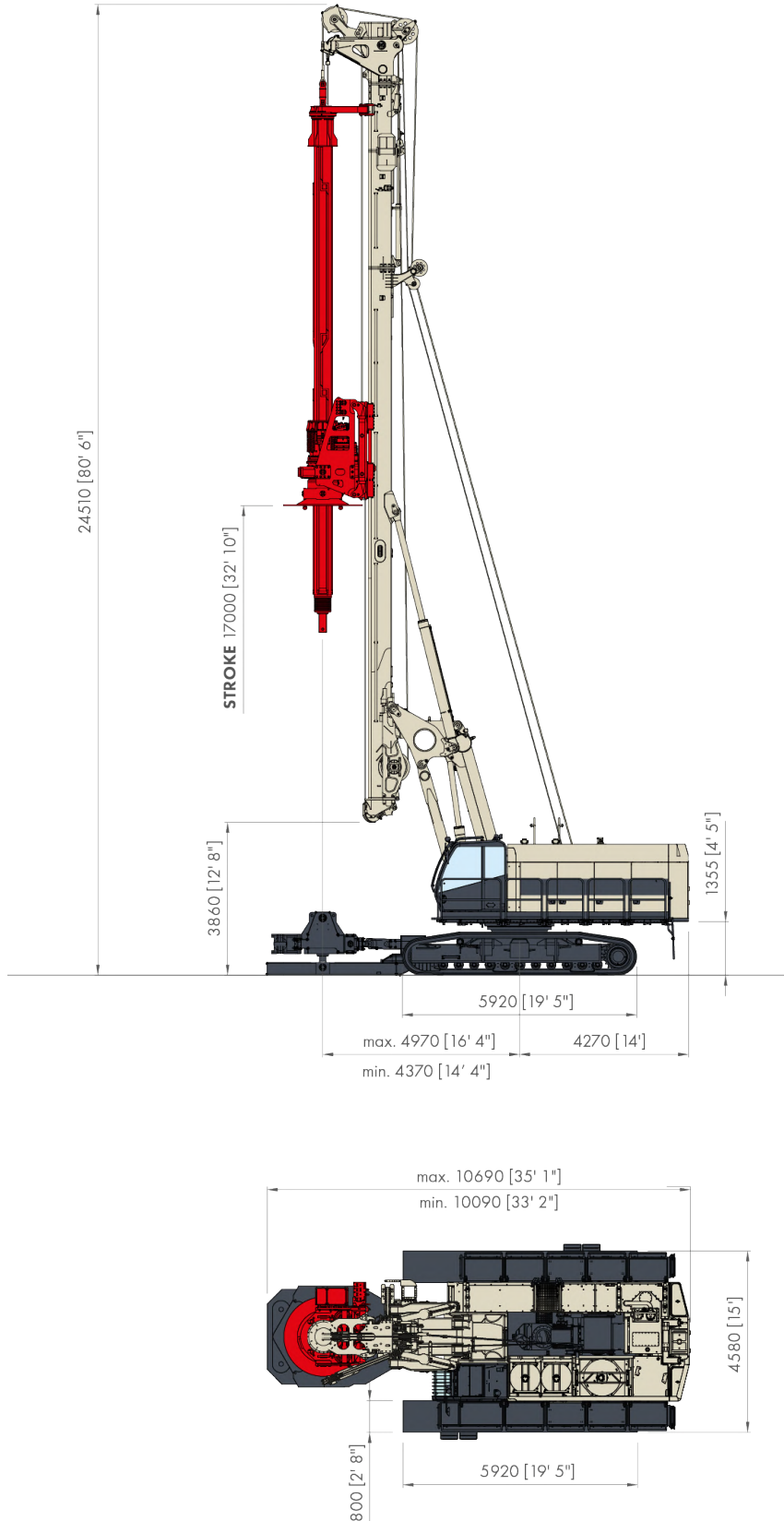
DEPTH	KELLY BARS				WPD					
	N.	Length		Weight ¹	Depth ²		H ³		H ⁴	
		mm	ft-in		ton	mm	ft-in	mm	ft-in	mm
Locking or friction (320 kNm)	3	12.000	39' 4"	7,35	30.500	100'	8.750	28' 8"	11.750	38' 7"
	3	13.500	44' 3"	8,2	35.000	115'	7.250	23' 9"	10.250	33' 8"
	3	15.000	49' 3"	9	39.500	130'	5.750	18' 10"	8.750	28' 8"
	3	16.500	54' 2"	9,85	44.000	144'	4.250	13' 11"	7.250	23' 9"
	3	18.000	59' 1"	10,65	48.500	159'	2.750	9'	5.750	18' 10"
	3	19.500	64'	11,5	53.000	174'	1.250	4' 1"	4.250	13' 11"
Locking or friction (320 kNm)	4	12.000	39' 4"	9,15	41.500	136'	8.750	28' 8"	11.750	38' 7"
	4	13.500	44' 3"	10,2	47.500	156'	7.250	23' 9"	10.250	33' 8"
	4	15.000	49' 3"	11,2	53.500	176'	5.750	18' 10"	8.750	28' 8"
	4	16.500	54' 2"	12,2	59.500	195'	4.250	13' 11"	7.250	23' 9"
	4	18.000	59' 1"	13,25	65.500	215'	2.750	9'	5.750	18' 10"
	4	19.500	64'	14,25	71.500	235'	1.250	4' 1"	4.250	13' 11"
Friction (180 kNm)	5	12.000	39' 4"	8,55	52.500	172'	8.750	28' 8"	11.750	38' 7"
	5	13.500	44' 3"	9,5	60.000	197'	7.250	23' 9"	10.250	33' 8"
	5	15.000	49' 3"	10,45	67.500	221'	5.750	18' 10"	8.750	28' 8"
	5	16.500	54' 2"	11,45	75.000	246'	4.250	13' 11"	7.250	23' 9"
	5	18.000	59' 1"	12,4	82.500	271'	2.750	9'	5.750	18' 10"
	5	19.500	64'	13,35	90.000	295'	1.250	4' 1"	4.250	13' 11"

NOTES	1 - Weight refers to Ø 445 mm (17 1/2") Standard version	2 - Tool height 1.500 mm (4' 11")
		3 - Mast extension length 4.650 mm (15' 3")

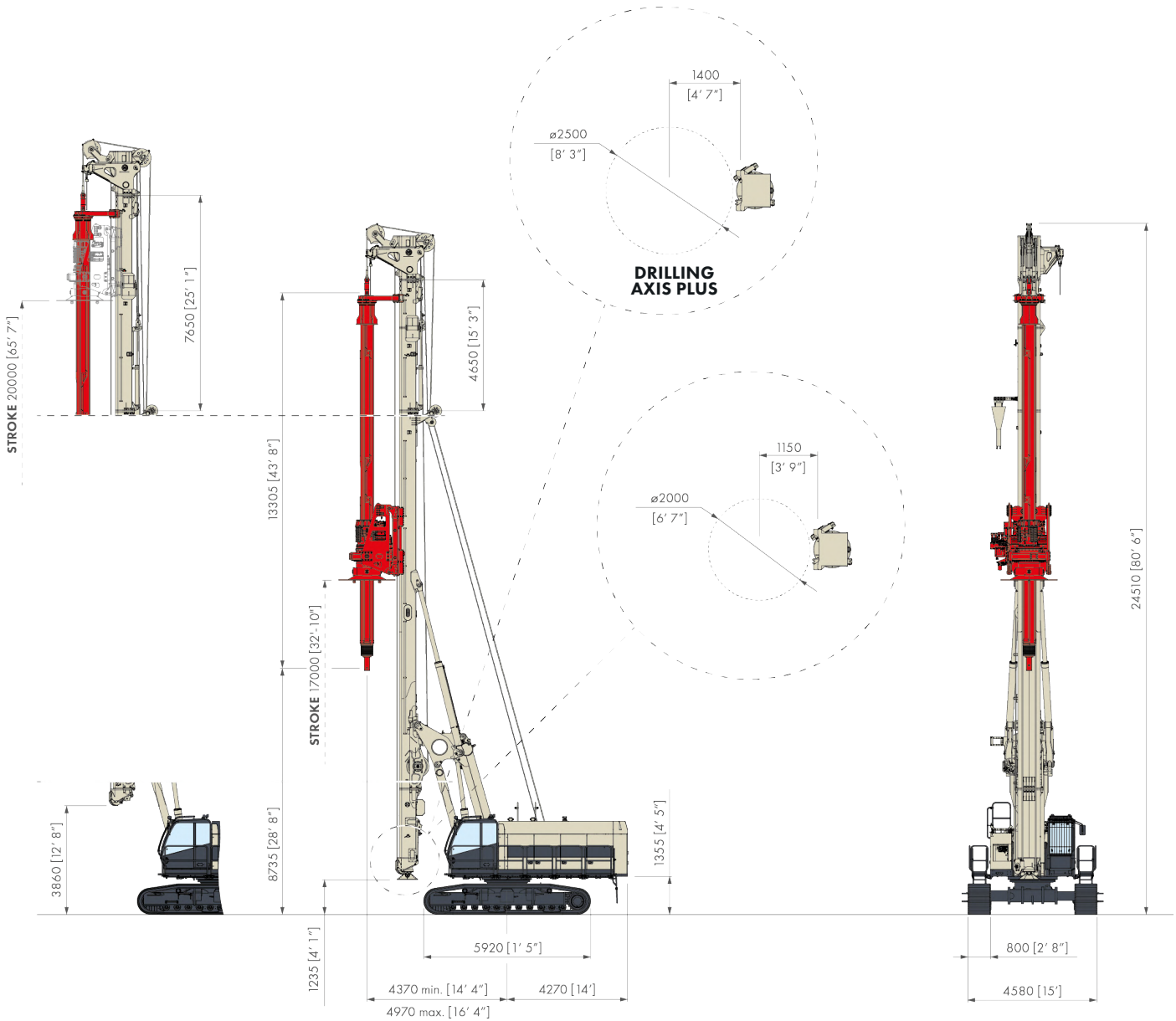
CASING OSCILLATOR ARRANGEMENT



WPD



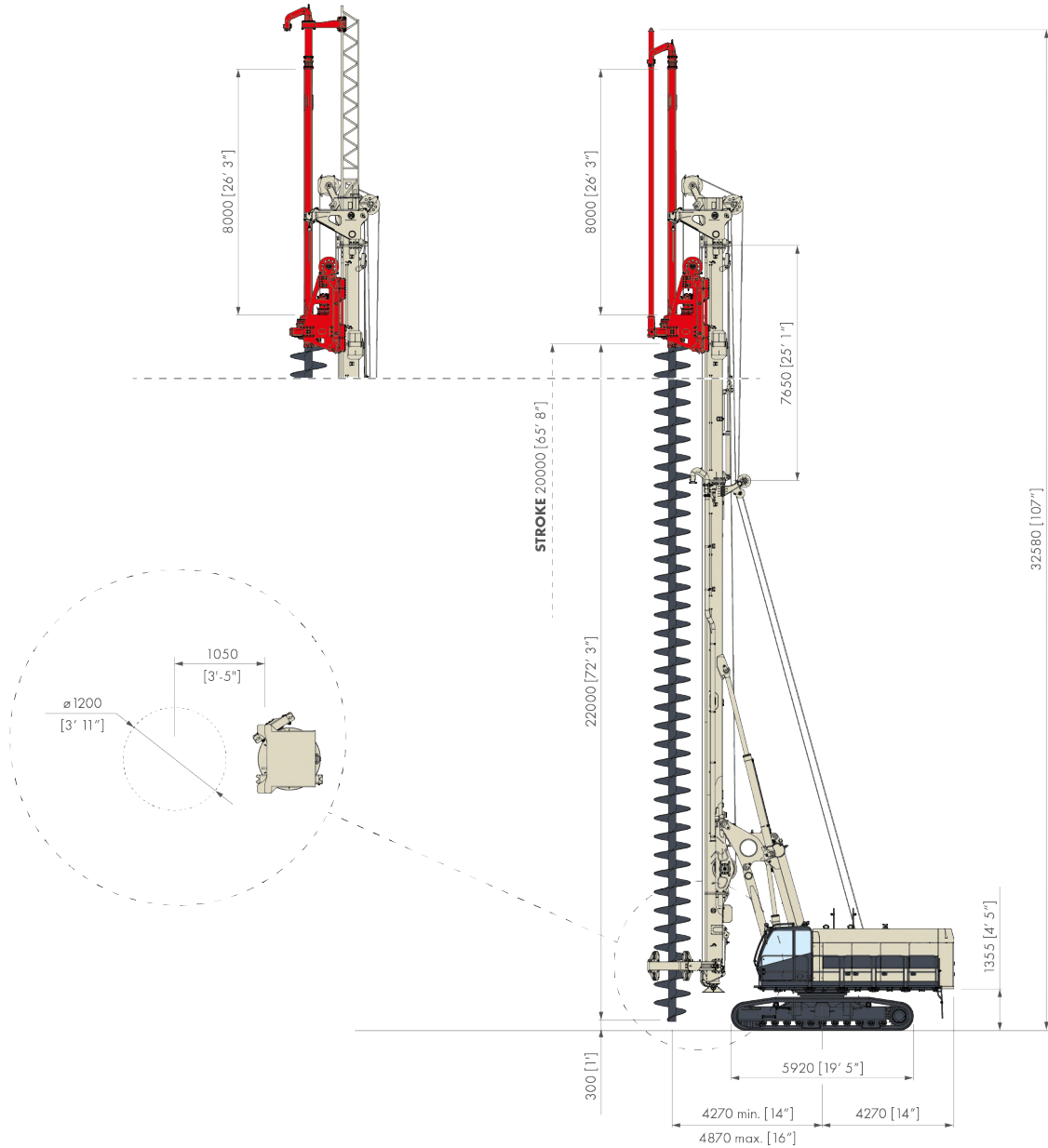
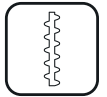
KELLY PILES



WPD (Winch Pull Down)	m.s.	i.s.		
Stroke	mm	ft-in	17.000 - 13.140 ¹	55' 9" - 43' 1" ¹
Stroke c/w 7.650 mm (25' 1") mast extension	mm	ft-in	20.000 - 16.140 ¹	65' 7" - 52' 11" ¹
Max. pull up force	kN	lbs	420	94,420
Max. pull down force	kN	lbs	420	94,420
Speed down	mm/min	ft/min	36.000	118'
Max. pile diameter	mm	ft-in	2.000 - 2.500 ¹	6' 6" - 8' 2" ¹
Max. pile diameter - drilling axis PLUS	mm	ft-in	2.500 - 3.000 ¹	8' 2" - 9' 10" ¹
Operating weight w/o kelly bar	ton		89	

NOTE | 1 - With - without bottom mast element

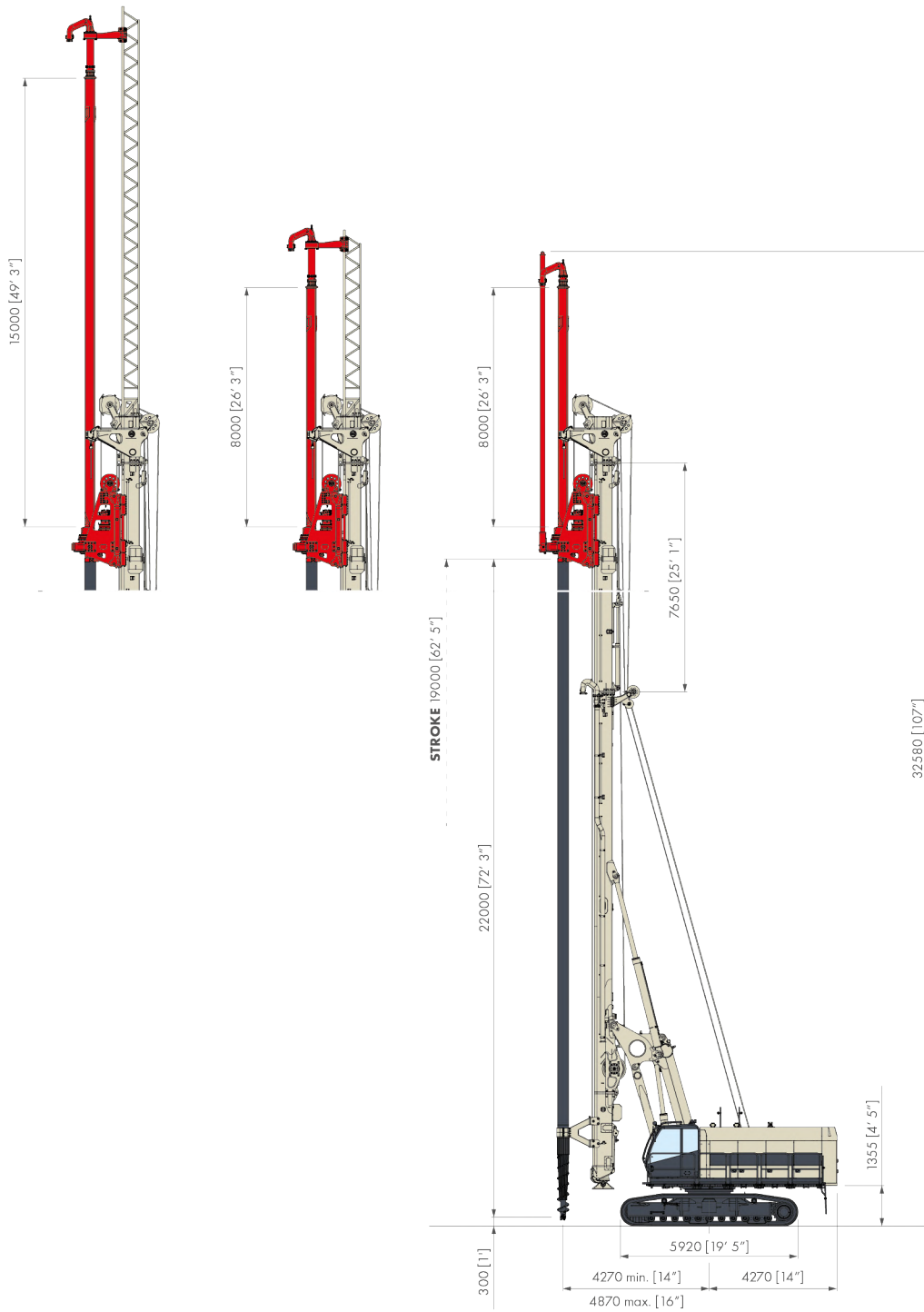
CFA/WPD



CFA/WPD (Quick Conversion CFA)	m.s.	i.s.	CFA (Continuous Flight Auger)	
Max. pile diameter	mm	ft-in	1.200	3' 11"
Max. length of augers	mm	ft-in	22.000 ¹	72' 2" ¹
Max. length of auger extension	mm	ft-in	8.000	26' 3"
Max. pile depth	mm	ft-in	19.700 + 8.000 = 27.700 ¹	64' 7" + 26' 3" = 90' 10" ¹
Extraction force	kN	lbs	945	212,444
Crowd force on auger	kN	lbs	300	67,443
Operating weight w/o tool	ton		92	

NOTE | 1 - c/w 7.650 mm (25' 1") mast extension

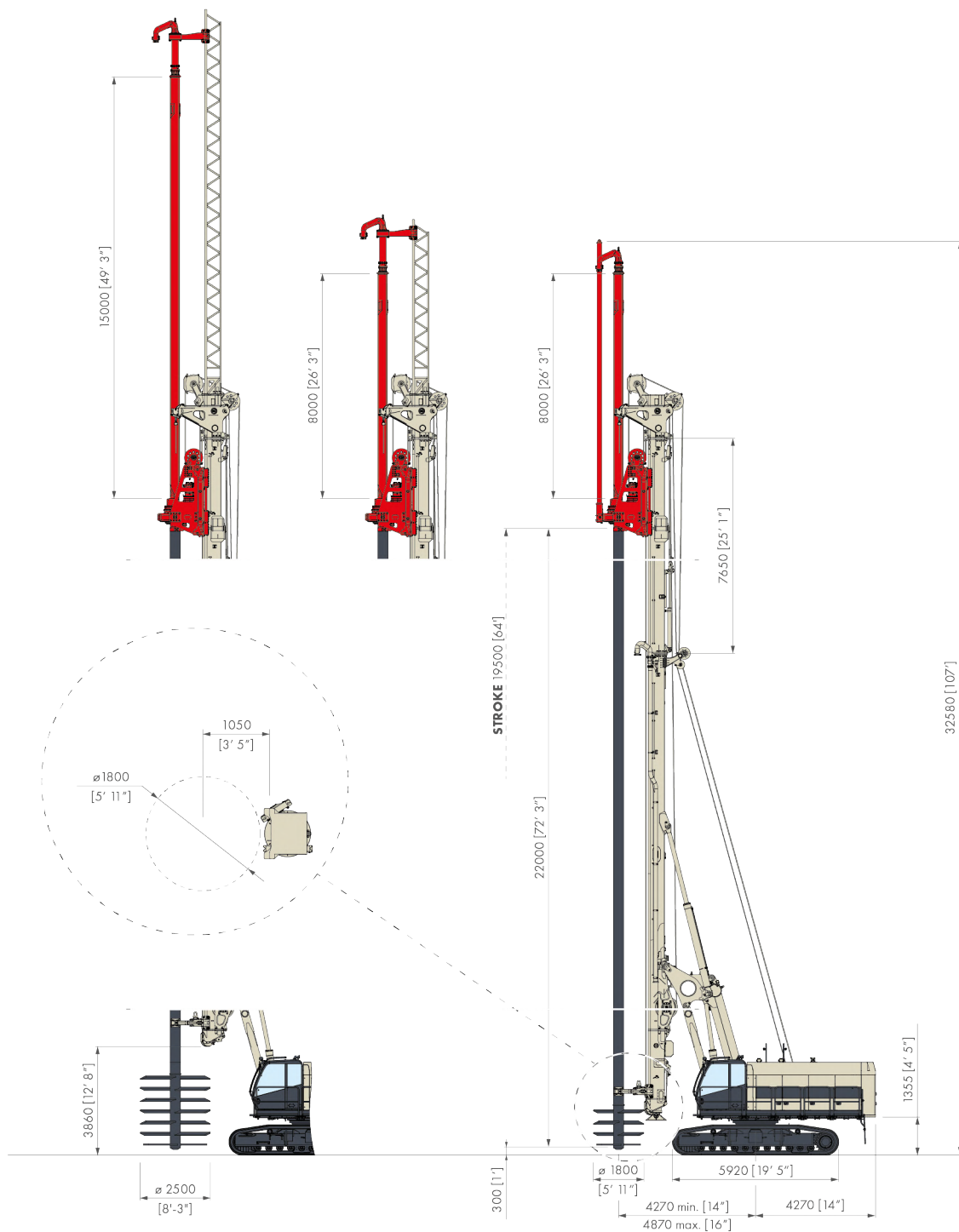
DP



WPD (Winch Pull Down)	m.s.	i.s.	DP (Displacement Piles)	
Max. pile diameter	mm	in	600	1' 11"
Max. drill string length	mm	ft-in	22.000 ¹	72' 3" ¹
Max. length of drill string extension	mm	ft-in	15.000	49' 2"
Max. pile depth	mm	ft-in	18.700 + 15.000 = 33.700 ¹	61' 4" + 49' 2" = 110' 6" ¹
Extraction force	kN	lbs	945	212,444
Max. pull down force	kN	lbs	300	67,443
Operating weight w/o tool	ton		91	

NOTE | 2 - c/w 7.650 mm (25' 1") mast extension

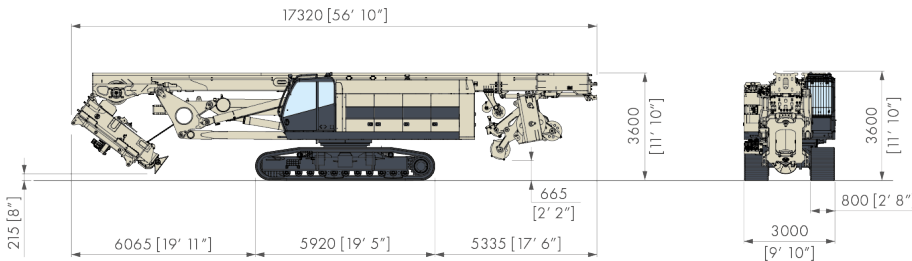
SM



WPD (Winch Pull Down) / DP-SM	m.s.	i.s.	SM (Soil Mixing)	
Max. pile diameter	mm	in	400 - 2.500 ¹	1' 3" - 8' 2" ¹
Max. drill string length	mm	ft-in	22.000 ²	72' 2" ²
Max. length of drill string extension	mm	ft-in	15.000	49' 2"
Max. pile depth	mm	ft-in	19.200 + 15.000 = 34.200 ²	62' 11" + 49' 2" = 112' 2" ²
Extraction force	kN	lbs	945	212,444
Max. pull down force	kN	lbs	300	67,443
Operating weight w/o tool	ton		91	

NOTES | 1 - According to the soil conditions | 2 - c/w 7.650 mm (25' 1") mast extension

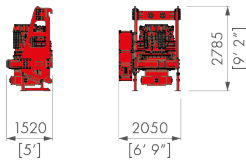
TRANSPORT DIMENSIONS



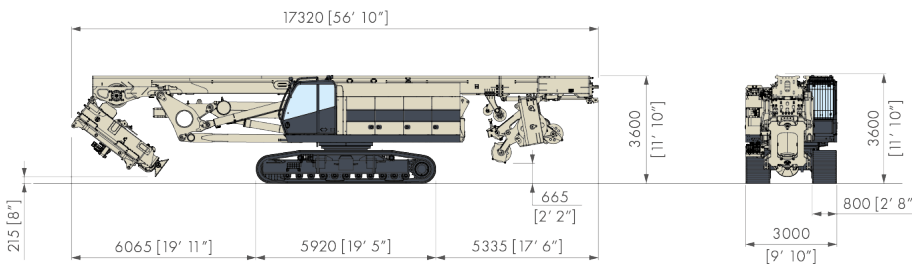
m.s.	
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Transport weight	ton	80,3¹
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NOTES 1	c/w 4.650 mm (15' 3") mast extn.
	c/w 800 mm (2' 7") tracks
	c/w Counterweight
	w/o Rotary head



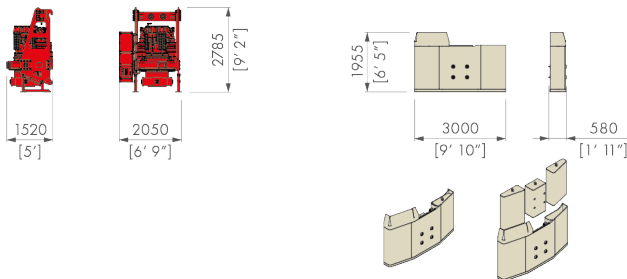
Rotary head		
Weight	ton	8



m.s.	
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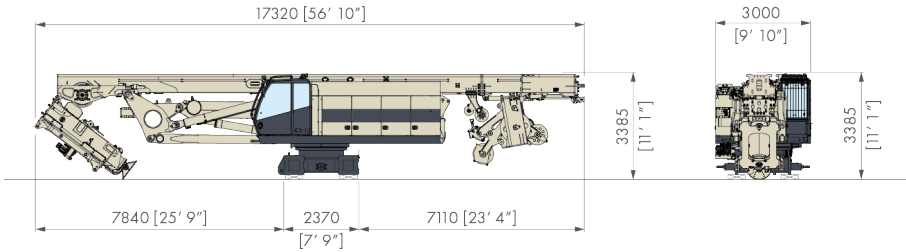
Transport weight	ton	69,7²
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NOTES 2	c/w 4.650 mm (15' 3") mast extn.
	c/w 800 mm (2' 7") tracks
	w/o Counterweight
	w/o Rotary head



Counterweight		
Weight	ton	10,6

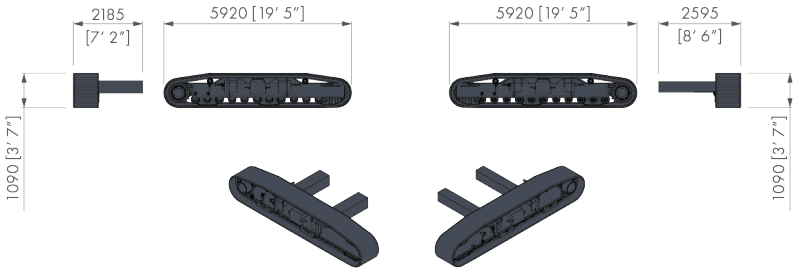
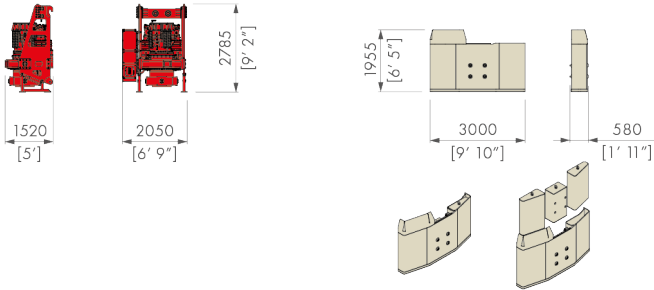
CH 850



m.s.		
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Min. transport weight	ton	51,4³
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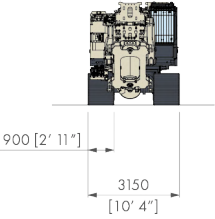
NOTES 3	c/w 4.650 mm (15' 3") mast extn.
	w/o 800 mm (2' 7") tracks
	w/o Counterweight
	w/o Rotary head



800 mm [2' 7"] Tracks		
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Weight	ton	18,3
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TRANSPORT VARIATIONS



w/o Mast Foot		
Weight	ton	-1,97

c/w 7.650 mm (25' 1") Mast extension		
Weight	ton	+ 0,84

900 mm [2' 11"] Tracks		
Weight	ton	+ 0,64



SELF-ERECTING HYDRAULIC PILING RIG



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