COMACCHIO

CH

CH 850

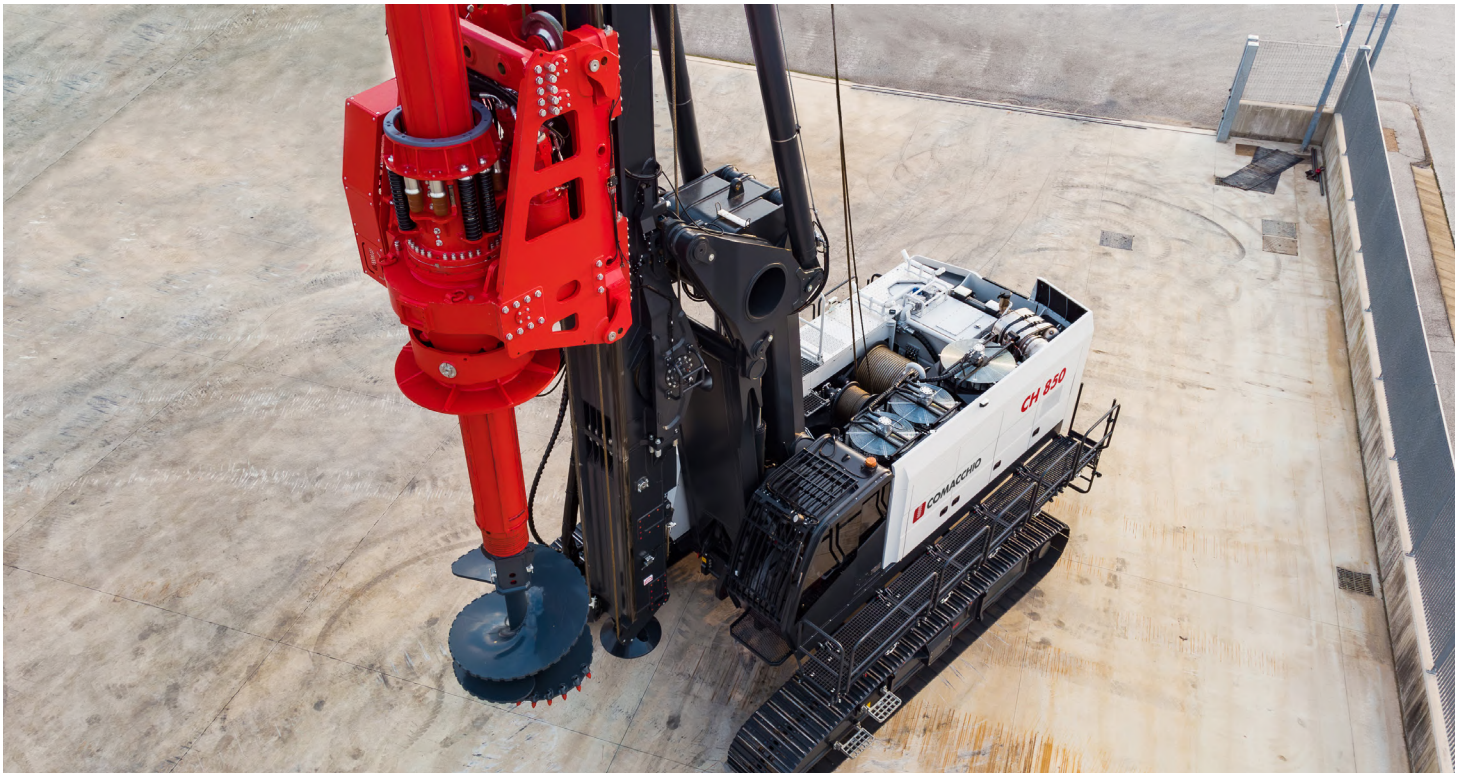
SELF-ERECTING
HYDRAULIC PILING RIG

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:

	POWER & EFFICIENCY	• 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
	VERSATILITY	• 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
	HIGH PERFORMANCE	• 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
	REDUCED NOISE & EXHAUST EMISSIONS	• 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
	EASY TRANSPORT & SET-UP	• 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:

KP
(Kelly Piles)

CKP
(Cased Kelly Piles)

KP - Uncased Kelly Piles excavated by dry method or stabilized by fluid overpressure

CKP - Kelly Piles with Casing installation by rotary drive or optionally by hydraulic casing oscillator

	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

CFA
(Continuous Flight Auger)

CFA - Piles that are drilled uncased by the use of a continuous hollow auger stem

	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

DP
(Displacement Piles)

DP - Piles installed without soil removal by advancing a special tool into the ground that causes the soil to be displaced radially and vertically

	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

SM
(Soil Mixing)

SM - Piles constructed by mixing and partly replacing the existing soils with grout using a soil mixing tool

	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

CH

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)	-	**LP_A 82 dB (A)**		
Sound Power level (2000/14/EC - EN 16228-1, Annex B)	-	**LW_A 108 dB (A)**		

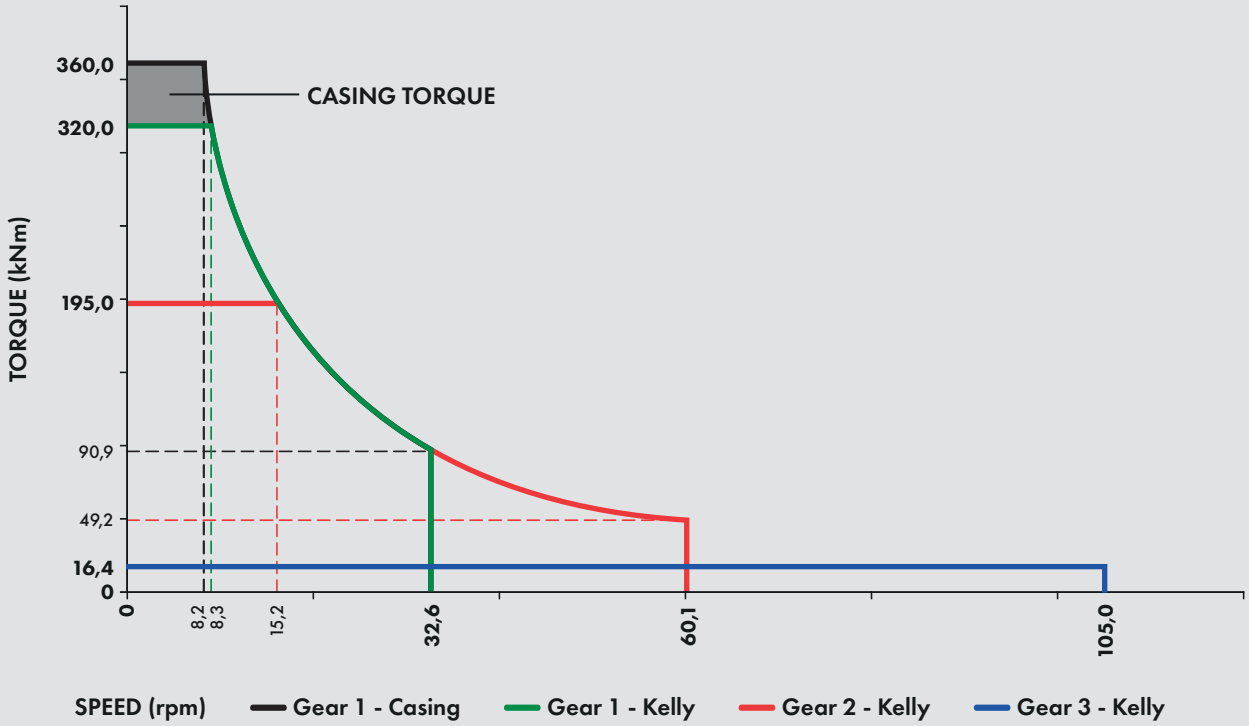
HYDRAULIC SYSTEM	**m.s.**	i.s.		
Main pumps flow	**l/min**	gal/min	**2 x 345**	2 x 91.1
Service pump flow	**l/min**	gal/min	**180**	47.5
Hydraulic oil tank capacity	**l**	gal	**960**	253.6

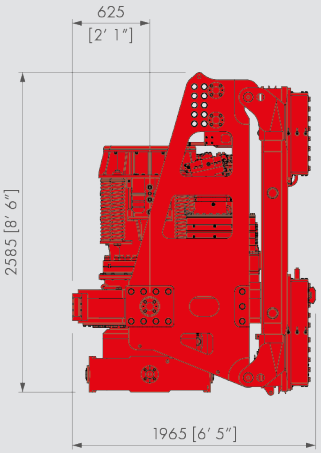
MAIN WINCH	**m.s.**	i.s.		
Type	-	**Controlled descent**		
1st layer line pull	**kN**	lbs	**300**	67,443
1st layer rope speed	**mm/min**	ft/min	**80.000**	262′
Rope diameter	**mm**	in	**30**	$1\,^3/_{16}$″
Rope layers	-	**2**		
FEM classification	-	**M6 - L3 - T5**		

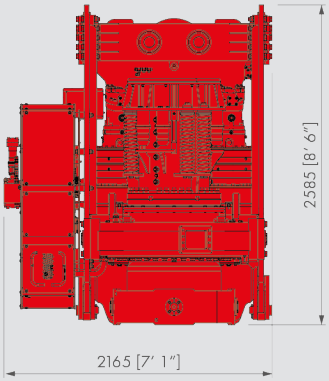
SERVICE WINCH	**m.s.**	i.s.		
Type	-	**Controlled descent**		
1st layer line pull	**kN**	lbs	**133**	29,900
1st layer rope speed	**mm/min**	ft/min	**64.000**	210′
Rope diameter	**mm**	in	**20**	$^{13}/_{16}$″
Rope layers	-	**3**		
FEM classification	-	**M5-L2-T5**		

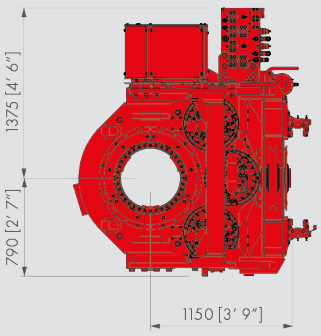
CR 36
ROTARY HEAD

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

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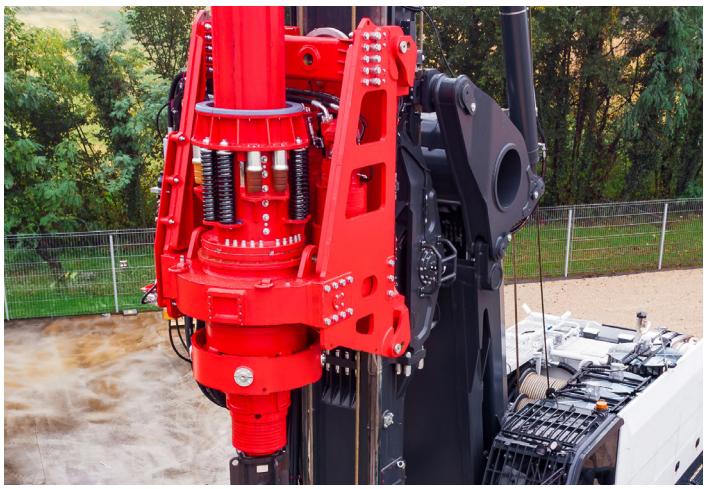
STANDARD EQUIPMENT	
Main winch with special grooving	Automatic lubrication kit for rotary sliding guides
Hoist and lowering limit switches on main and service ropes	Transport securing lugs on crawler unit
Swivel for main rope	Work lights
Service rope parking point	Electric refuelling pump and hydraulic 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	

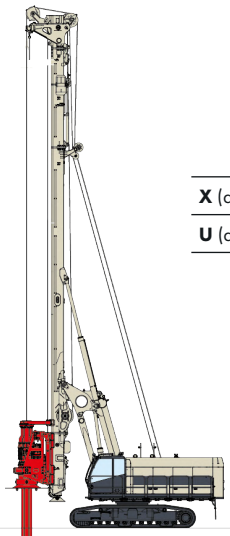
Inspired by the automotive-style fit and finish, the new **Comacchio cab stands out for its ergonomic design** and **safety features**, offering **high level of comfort** for the operator and ensuring **smooth and easy operation**.

INNOVATIVE KELLY BAR SYSTEM

CH

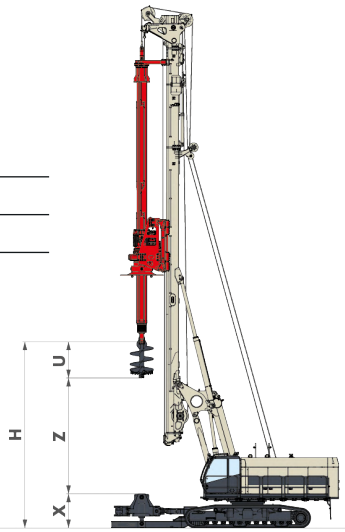
Two bar sizes are **available with minor changes** on the rotary head.

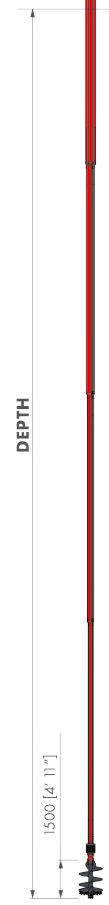
KELLY BAR SIZES	m.s.	i.s.	Outer diameter	
Standard	**mm**	ft-in	**445**	17 1/2"
Optional (reduced torque)	**mm**	ft-in	**419**	16 1/2"



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

Z = H - X - U



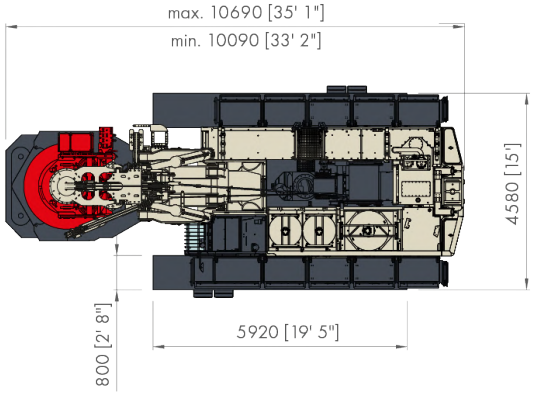


	N.	KELLY BARS Length mm	ft-in	Weight [1] ton	WPD Depth [2] mm	ft-in	H [3] mm	ft-in	H [4] mm	ft-in
Locking or friction (320 kNm)	3	**12.000**	39' 4"	**7,35**	**30.500**	100'	**8.750**	28' 8"	**11.750**	38' 7"
	3	**13.500**	44' 3"	**8,2**	**35.000**	115'	**7.250**	23' 9"	**10.250**	33' 8"
	3	**15.000**	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"

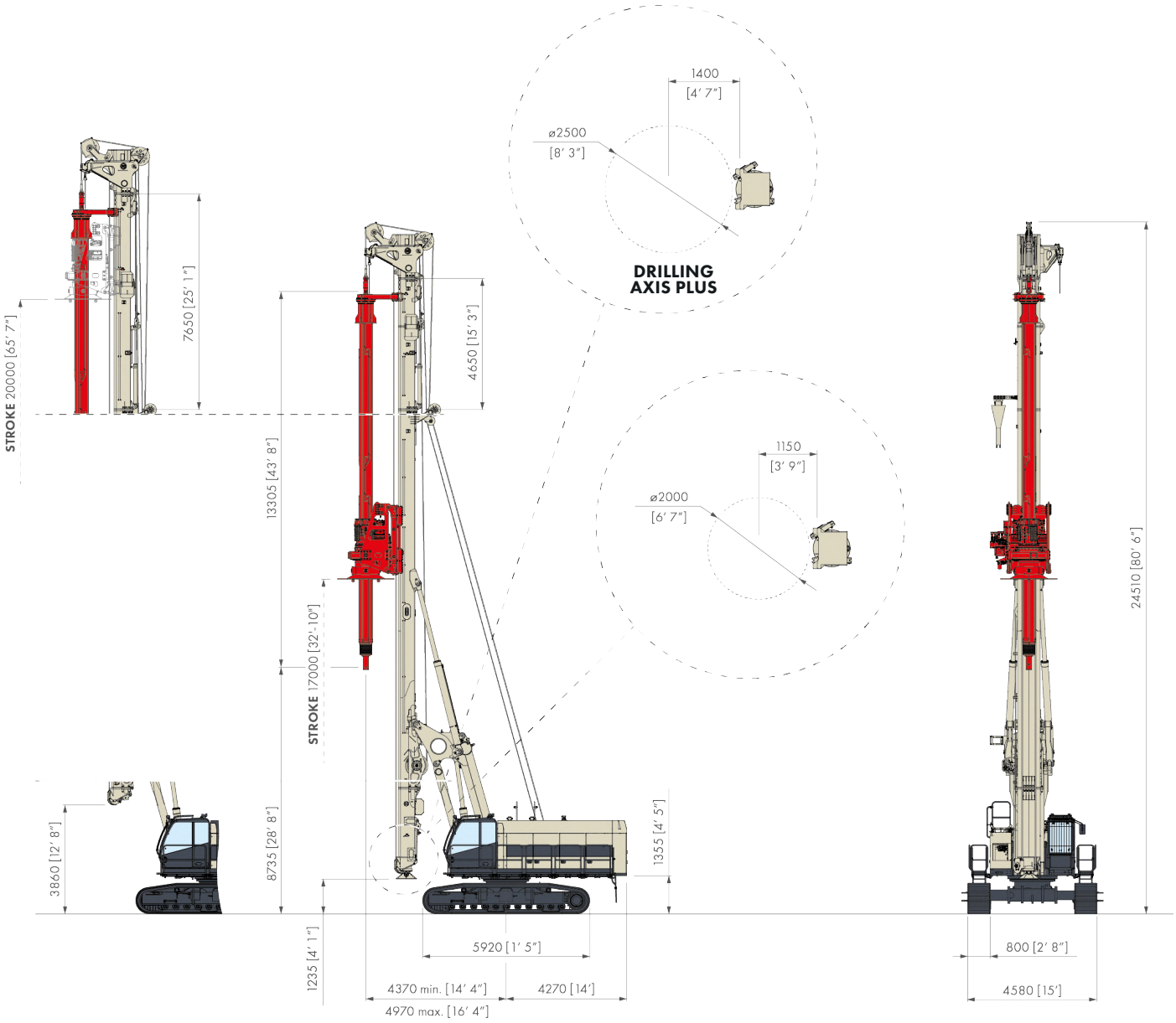
NOTES		
	1 - Weight refers to Ø 445 mm (17 1/2") **Standard** version	**2 -** Tool height 1.500 mm (4' 11")
	3 - Mast extension length 4.650 mm (15' 3")	**4 -** Mast extension length 7.650 mm (25' 1")

CASING OSCILLATOR ARRANGEMENT

WPD



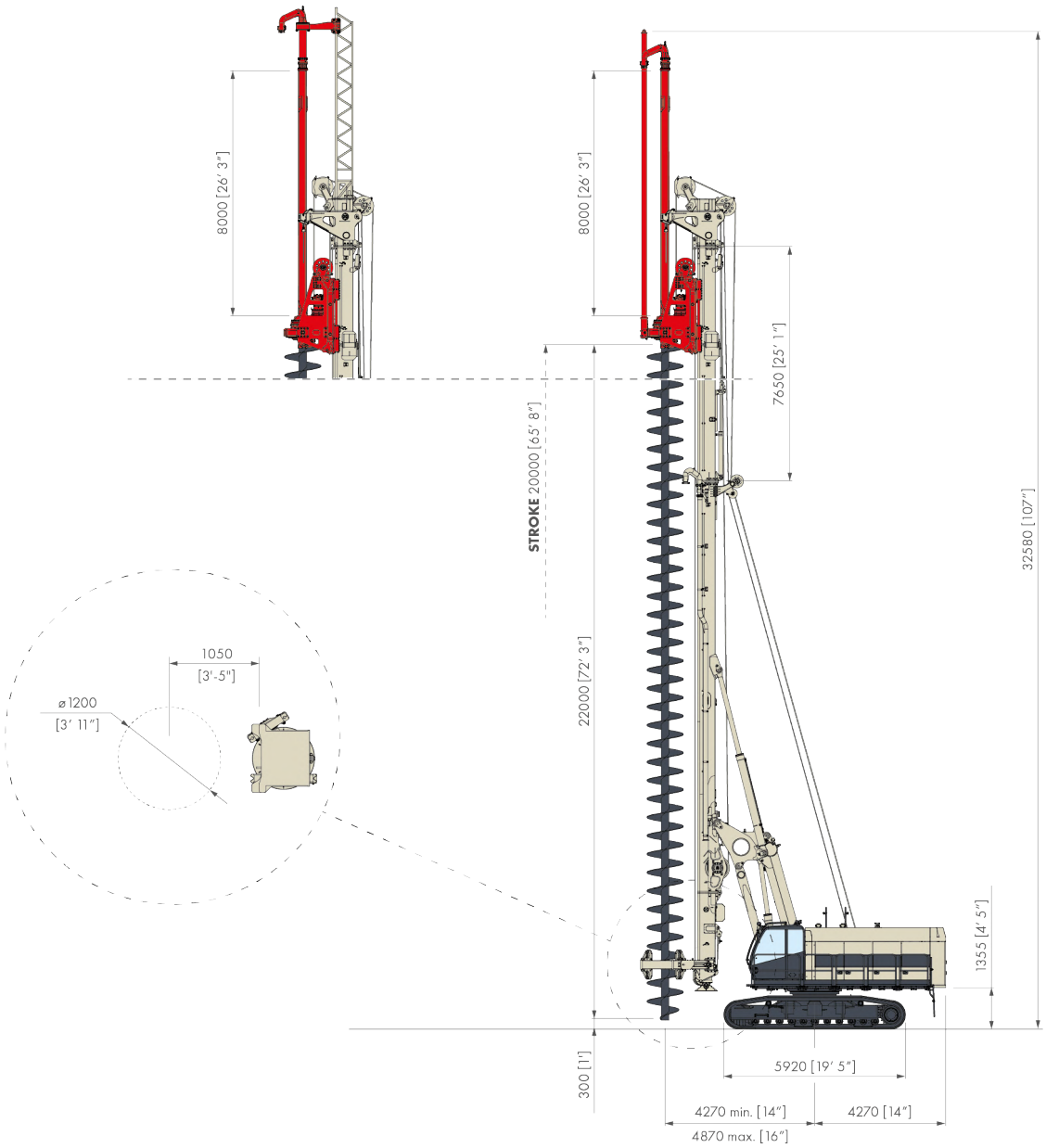
KELLY PILES



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

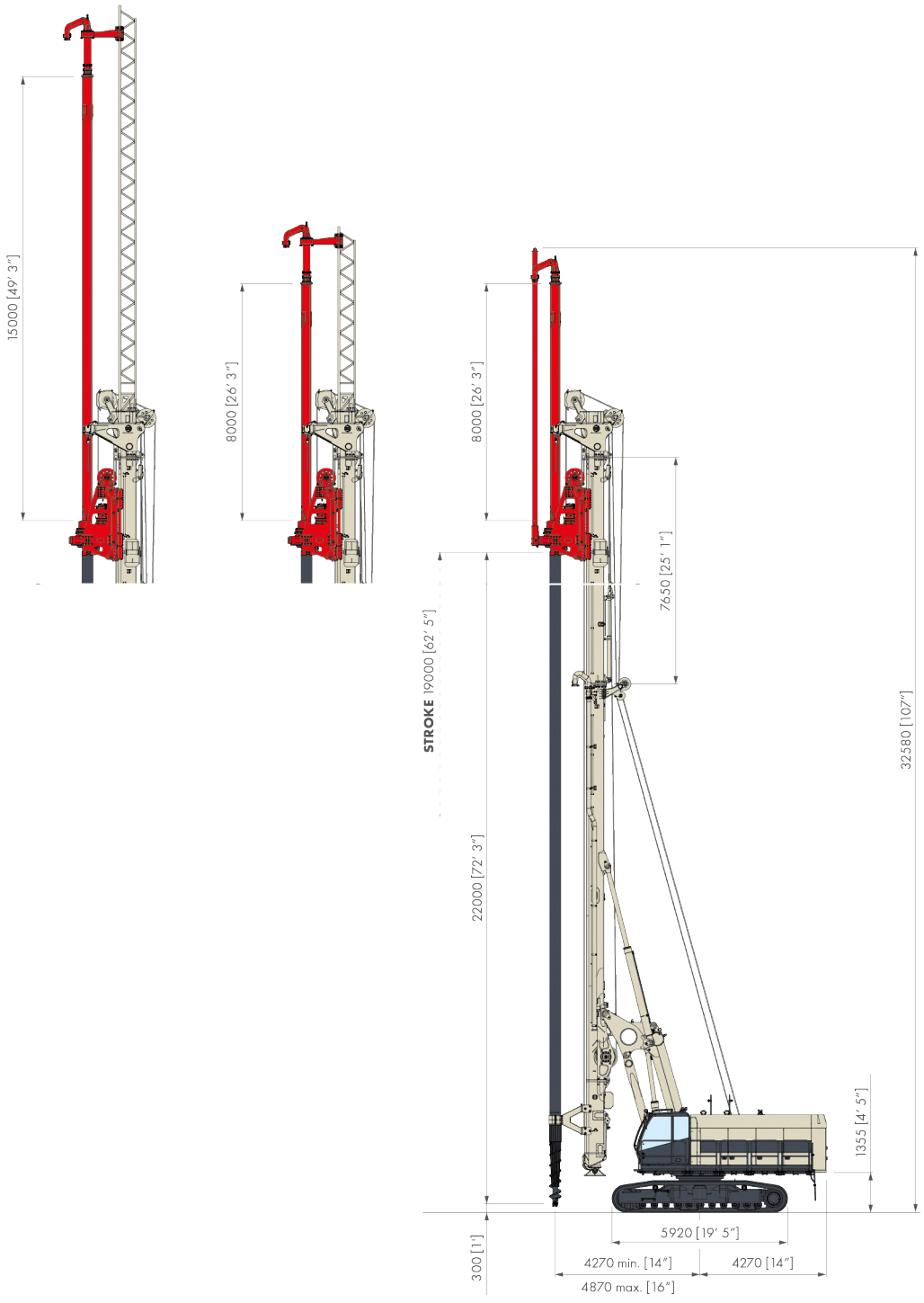
CFA/WPD



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

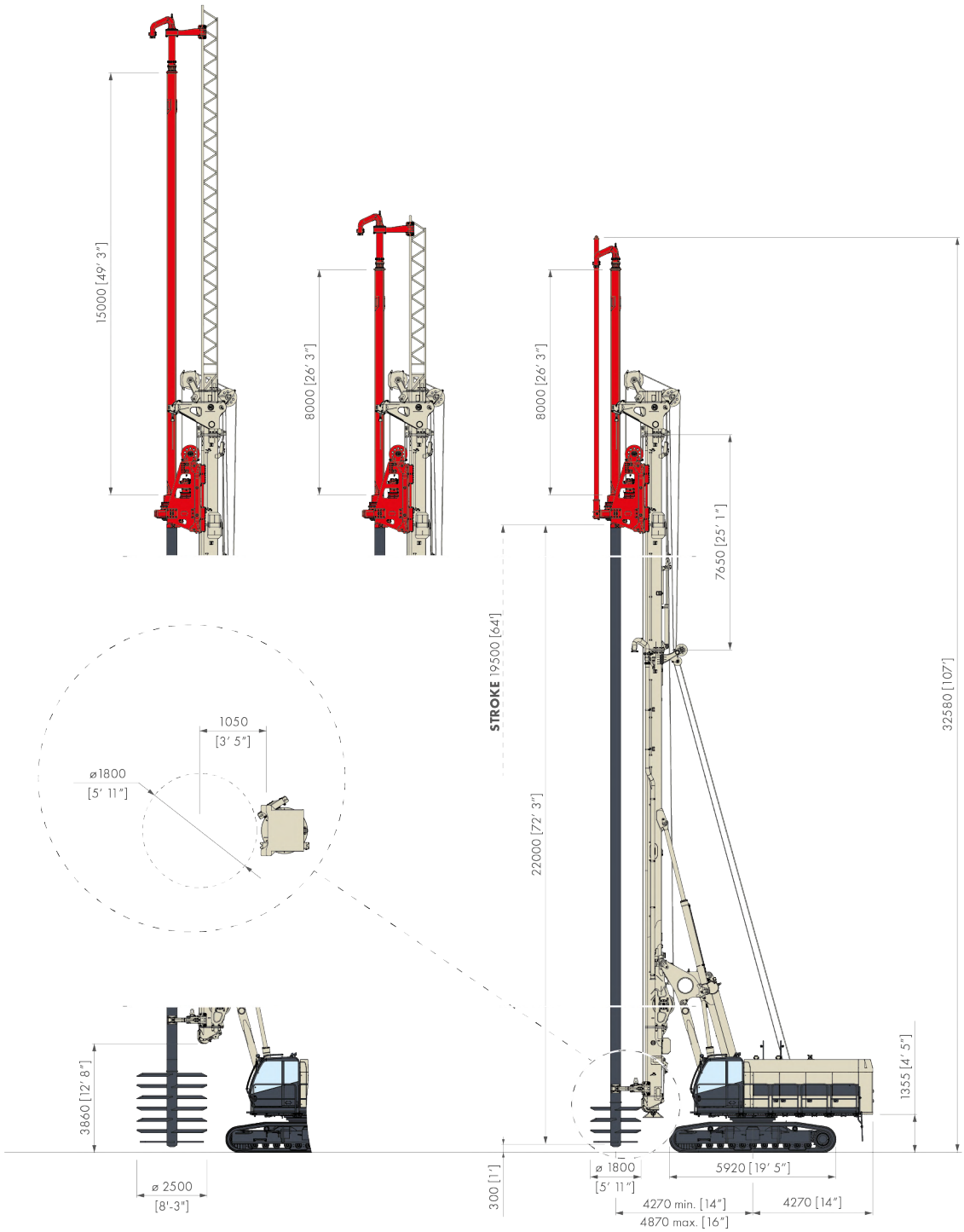
DP



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

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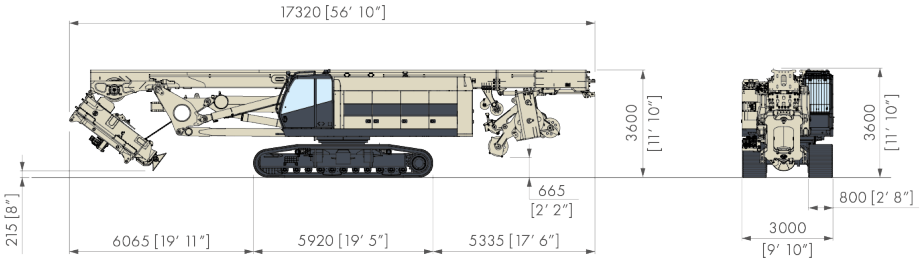
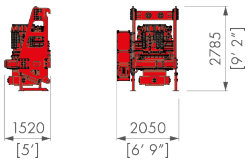
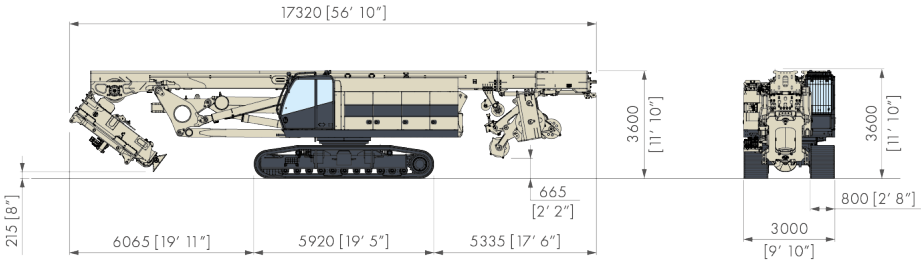




	m.s.	
Transport weight	**ton**	**80,3** [1]

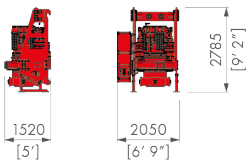
NOTES 1	c/w 4.650 mm (15' 3") mast extn. c/w 800 mm (2' 7") tracks c/w Counterweight w/o Rotary head

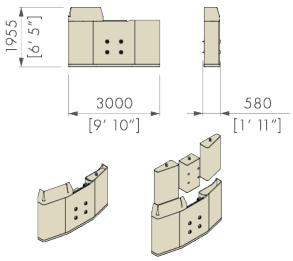
Rotary head		
Weight	**ton**	**8**



	m.s.	
Transport weight	**ton**	**69,7** [2]

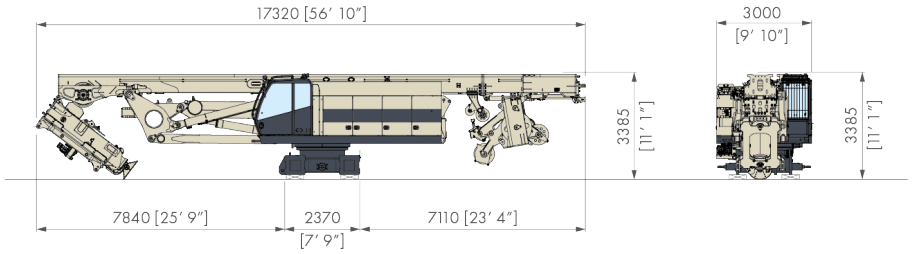
NOTES 2	c/w 4.650 mm (15' 3") mast extn. c/w 800 mm (2' 7") tracks w/o Counterweight w/o Rotary head

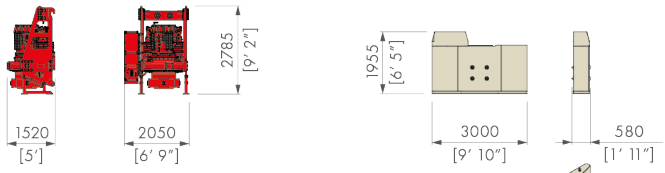


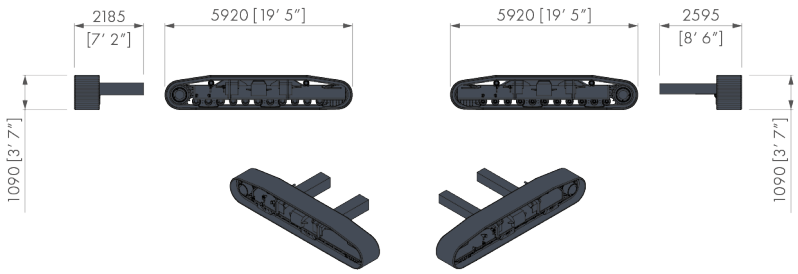


Counterweight		
Weight	**ton**	**10,6**

CH 850





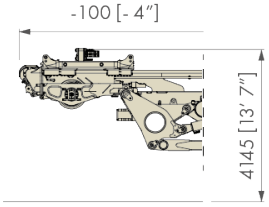


	m.s.	
Min. transport weight	**ton**	**51,4** [3]

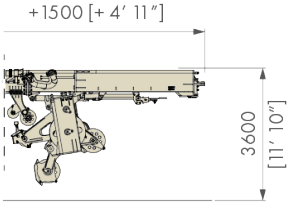
NOTES 3	c/w 4.650 mm (15′ 3″) mast extn. w/o 800 mm (2′ 7″) tracks w/o Counterweight w/o Rotary head

800 mm [2′ 7″] **Tracks**		
Weight	**ton**	**18,3**

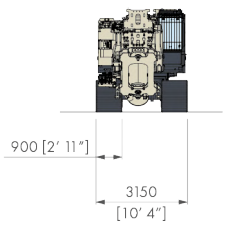
TRANSPORT VARIATIONS



w/o Mast Foot		
Weight	**ton**	**-1,97**



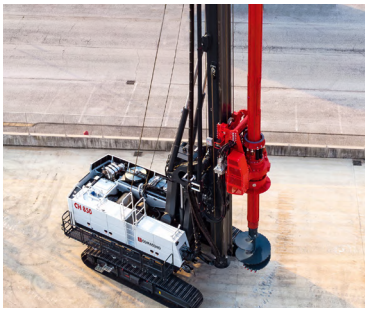
c/w 7.650 mm (25′ 1″) **Mast extension**		
Weight	**ton**	**+ 0,84**



900 mm [2′ 11″] **Tracks**		
Weight	**ton**	**+ 0,64**

Edition 10-2024

SELF-ERECTING
HYDRAULIC PILING RIG



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