

CH 12

SELF-ERECTING
HYDRAULIC PILING RIG



THE MULTIPURPOSE PILING RIG



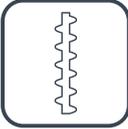
The **winning solution** for job sites of short duration that require frequent operations of transport, setting up and dismantling.

Truly self-erecting.

The machine is entirely autonomous and self-erecting, and can be transported in one piece/fully assembled with the rotary head and kelly bar installed. Once on site, the machine is easily off loaded from the truck and set up without the need for crane service.

Wide range of drilling technologies.

The **CH 12** can be offered in **CS** (Cylinder System) and **WS** (Winch System) configuration. It can also be available in **LHR** (Low Head Room) configuration, designed for operate in challenging access site. The **unique design** of this machine allows for the use of the following drilling technologies:

	BP (Bored Piles) CBP (Cased Bored Piles)	BP - Uncased Kelly Piles excavated by dry method or stabilized by fluid overpressure						
		CBP - Kelly Piles with Casing installation by rotary drive						
			m.s.	i.s.	BP	CBP		
		Max. pile diameter CS	mm	ft-in	1.300 / 1.500 ¹	4' 3" / 4' 11" ¹	1.000 ²	3' 3" ²
		Max. pile diameter WS	mm	ft-in	1.180 / 1.500 ¹	3' 10" / 4' 11" ¹	880 ²	2' 11" ²
		Max. pile depth CS	mm	ft-in	47.700 ³	156' 6" ³	-	-
		Max. pile depth WS	mm	ft-in	47.000 ⁴	154' 2" ⁴	-	-
		NOTES	1 - Tool below mast		2 - Depending on the twister			
	3 - Using self mounting 5-elements kelly bar; with 1.500 mm (4' 11") lower mast extension							
	4 - Using self mounting 5-elements kelly bar; with mast foot installed.							
	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	800	2' 7"		
		Max. pile depth (CFA/WS)	mm	ft-in	11.000 + 7.000 = 18.000	36' 1" + 23' = 59' 1"		
		Max. pile depth (CFA T4)	mm	ft-in	13.000 + 6.000 = 19.000	42' 8" + 19' 8" = 62' 4"		
	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			
		Pile diameter	mm	in	450	18"		
		Max. pile depth	mm	ft-in	10.500 + 7.000 = 17.500	34' 5" + 23' = 57' 5"		
	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			
		Pile diameter	mm	ft-in	400 - 1100 ⁴ / 2000 ⁵	16" - 3' 7" ³ / 6' 7" ⁴		
		Max. pile depth	mm	ft-in	10.500 + 7.000 = 17.500	34' 5" + 23' = 57' 5"		
		NOTES	4 - According to the soil conditions		5 - Tool below mast			

TECHNICAL DATA

UNDERCARRIAGE	m.s.	i.s.	WINCH SYSTEM		CYLINDER SYSTEM	
Type	-	-	Variable gauge, telescoping side frames			
Track shoe width	mm	in	600	23" ⁵ / ₈		
Track shoe type	-	-	Triple grouser			
Overall width (retracted side frames)	mm	ft-in	2.550	8' 4" ¹ / ₂		
Overall width (extended side frames)	mm	ft-in	3.750	12' 3" ¹ / ₂		
Overall length	mm	ft-in	4.295	14' 1"	4.280	14'
Centre idler to centre sprocket	mm	ft-in	3.560	11' 8"	3.550	11' 7"

UPPERFRAME	m.s.	i.s.				
Width	mm	ft-in	2.550	8' 4" ¹ / ₂		
Operators' cabin	-	-	TOPS & FOPS-1 certified, 960 mm (3' 2") wide			
Control system type	-	-	CAN-BUS			
User interface	-	-	12" Touch Screen			
Tail swing radius	mm	ft-in	3.100	10' 2"		

DIESEL ENGINE	m.s.	i.s.	High Tech Line			
Make and model	-	-	Cummins B4.5		Cummins QSB4.5	
Emission certification	-	-	EU stage V / US EPA Tier 4f		EU stage IIIA / US EPA Tier 3	
Aspiration	-	-	Turbocharged and charge air cooled			
Power rating (2.000 rpm)	kW	hp	142	190	123	165
Displacement	cc	in ³	4.500	275		
Fuel tank	l	gal	300	80		

HYDRAULIC SYSTEM	m.s.	i.s.				
Main pumps flow	l/min	gal/min	2 x 160	2 x 42.3		
Hydraulic oil tank capacity	l	gal	400	105		

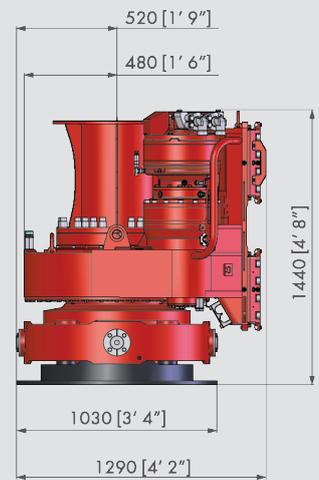
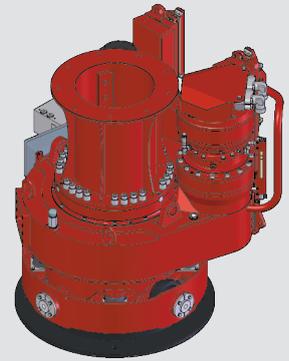
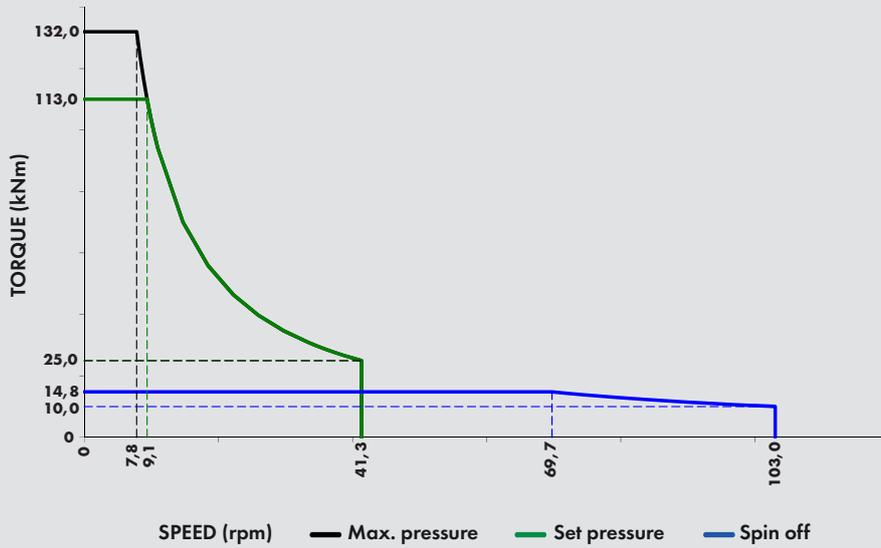
MAIN WINCH	m.s.	i.s.				
Type	-	-	Controlled descent			
1 st layer line pull	kN	lbs	120	26,980		
1 st layer rope speed	mm/min	ft/min	86.000	282'		
Rope diameter	mm	in	21	⁷ / ₁₆ "		
Rope layers	-	-	2			
FEM classification	-	-	M5-L2-T5			

SERVICE WINCH	m.s.	i.s.				
Type	-	-	Controlled descent			
1 st layer line pull	kN	lbs	61	13,700		
1 st layer rope speed	mm/min	ft/min	58.000	190' 3"		
Rope diameter	mm	in	15	⁹ / ₁₆ "		
Rope layers	-	-	4			
FEM classification	-	-	M5-L2-T5			

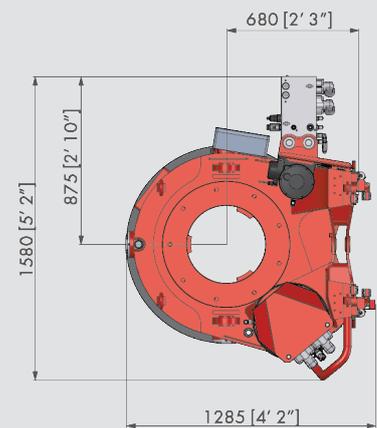
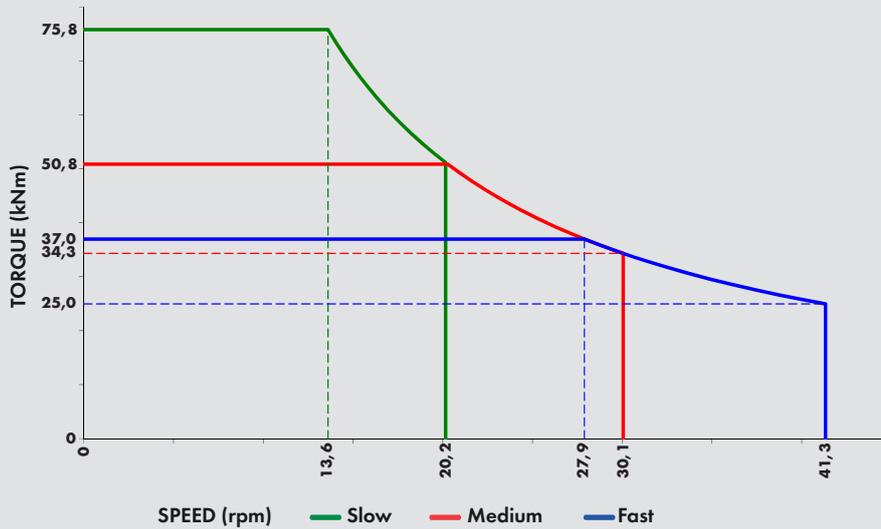
CR 13 ROTARY HEAD



TORQUE DIAGRAM



SOIL MIXING - TORQUE DIAGRAM



ROTARY HEAD		CR 13	
	m.s.	i.s.	
Nominal max. torque	kNm	lbf-ft	132 at 35 MPa 97,300 at 5,076 psi
Max. torque	kNm	lbf-ft	113 at 30 MPa 83,300 at 4,350 psi
Max. drilling speed	rpm		41
Hydraulic power	kW	hp	CUMMINS stage V 108 145
	kW	hp	CUMMINS stage IIIA 94 126
Spin-off speed	rpm		103
Replaceable drive sleeve	-	-	Yes
Replaceable drive keys	-	-	Yes (optional)
Weight (as shown)	kg	lbs	1.700 3,748

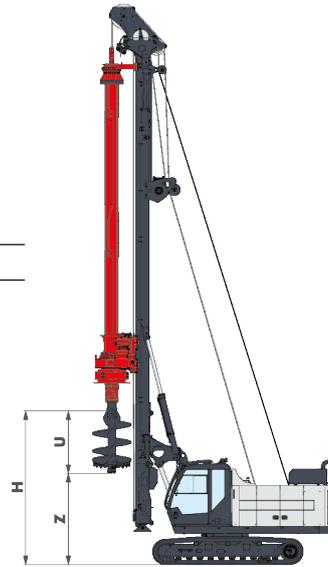
INNOVATIVE KELLY BAR SYSTEM

KELLY BAR SIZES	m.s.	i.s.	Outer diameter	
L (Standard)	mm	in	355	14"
NOTE	Different sizes upon request			



U (approx.)	mm	ft-in	1.500	4' 11"
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$$Z = H - U$$



		KELLY BARS			WS (Winch Sistem)				CS (Cylinder System)			
	N.	Length		Weight	Depth ¹		H ³		Depth ²		H ³	
		mm	ft-in	ton	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
Locking or friction	4	6.000	19' 8"	2,8	19.900	65' 3"	7.500	24' 7"	20.600	67' 7"	4.800	15' 9"
	4	7.000	23'	3,1	23.900	78' 5"	6.500	21' 4"	24.600	80' 9"	4.800	15' 9"
	4	8.000	26' 3"	3,5	27.900	91' 6"	5.500	18' 1"	28.600	93' 10"	4.800	15' 9"
	4	9.000	29' 6"	3,9	31.900	104' 8"	4.500	14' 9"	32.600	106' 11"	4.450	14' 7"
	4	10.500	34' 5"	4,4	37.700	123' 8"	3.000	9' 10"	38.400	126'	2.950	9' 8"
Friction	5	6.000	19' 8"	3,2	24.700	81'	7.500	24' 7"	25.400	83' 4"	4.800	15' 9"
	5	7.000	23'	3,6	29.700	97' 5"	6.500	21' 4"	30.400	99' 9"	4.800	15' 9"
	5	8.000	26' 3"	4	34.700	113' 10"	5.500	18' 1"	35.400	116' 2"	4.800	15' 9"
	5	9.000	29' 6"	4,5	39.700	130' 3"	4.500	14' 9"	40.400	132' 7"	4.450	14' 7"
	5	10.500	34' 5"	5,1	47.000	154' 2"	3.000	9' 10"	47.700	156' 6"	2.950	9' 8"

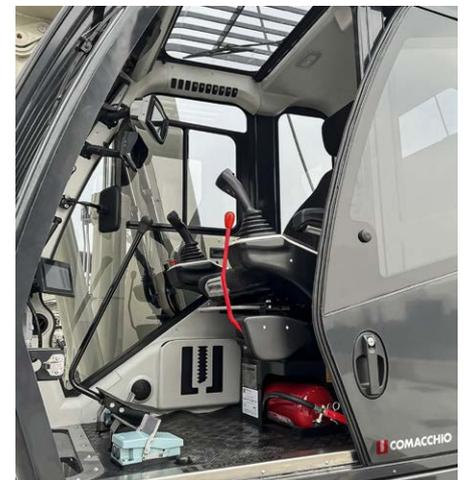
NOTE	1 - Depth to be reduced by 1.300 mm (4' 3") in case mast foot is not installed
	2 - c/w 1.500 mm (4' 11") lower mast extension
	3 - Max. height of bottom kelly pin above ground, with 130 x 130 mm (5" 1/8 x 5" 1/8) square joint. Using 200 x 200 mm (7" 7/8 x 7" 7/8) square joint the height decreases by approx. 200 mm (7" 7/8)

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 and service winch rope	Work lights
Service rope parking point	Electric refuelling pump and hydraulic oil refilling system
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 player with bluetooth
Rpm measuring device on rotary	Phone charger
Crowd pressure setting	CCS Comacchio Controlling System - 7" Touch Screen
Automatic stop of the main winch at the end of the hole	Adjustable spin-off and shaker tool discharge systems
Heating & air conditioning system	Rotary auto speed management & interactive multiple gear
Diesel engine diagnostics system	Tool box
Video cameras set	Tool tray in front of cabin



OPTIONAL EQUIPMENT	
Biodegradable oil	Air compressor kit
Main and aux winch load cells	Washing kit
Rotary quill with interchangeable kelly ribs	Flange for bucket opening
Central lubrication system	Auger extension transportation kit (CFA version)
Custom painting	Vibratory equipment for steel cage
CFA cleaner (star type)	Data logger
Cardan joint	ComNect system 
Welding equipment & generator	

CE CONFORMITY KIT	
Remote radio control for machine travel	CFA cleaner
Main and aux winch load cells	Rubber strip on auger guide
Side walkways with handrails	



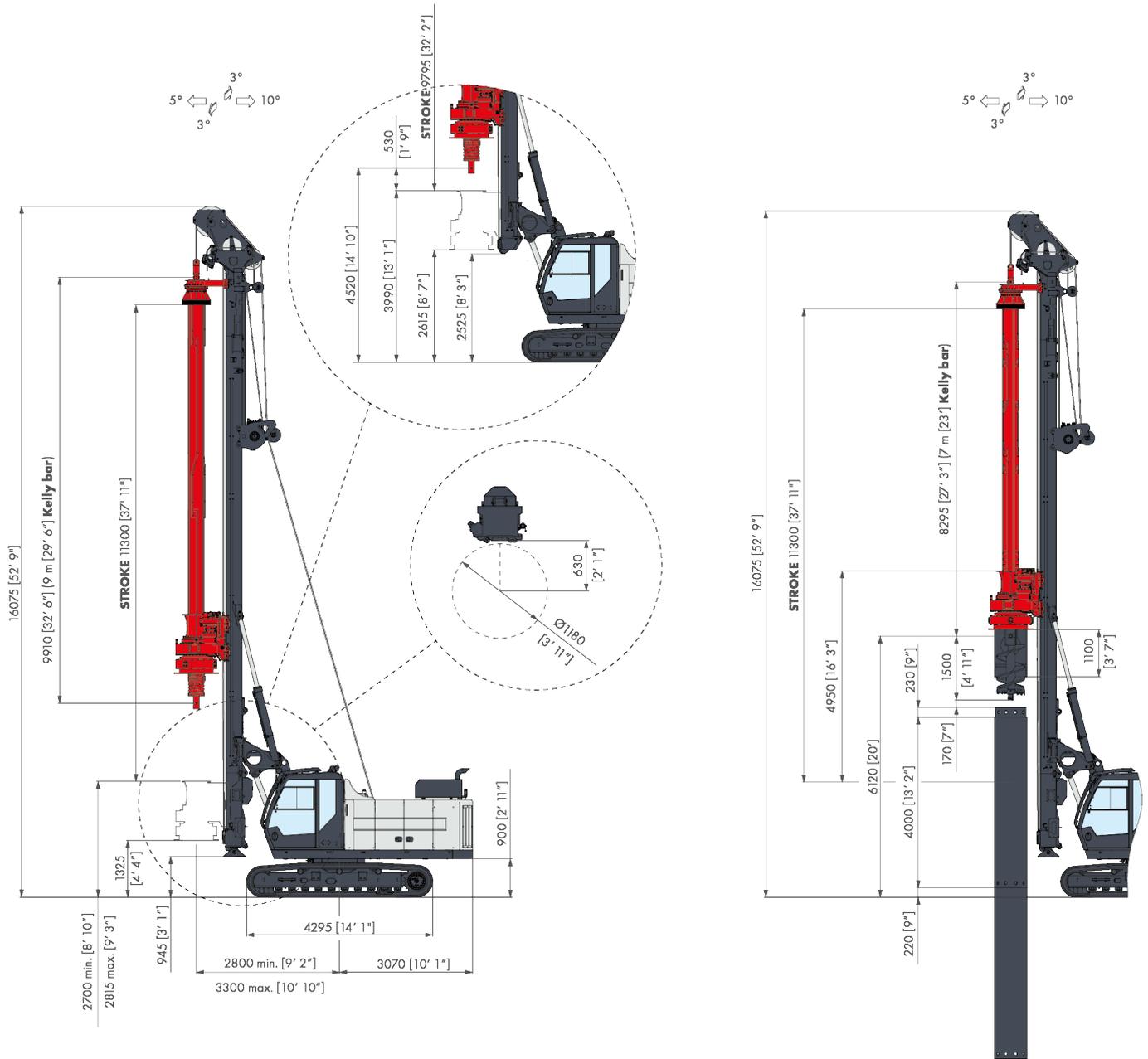
BORED PILES



CH 12 - WS



OVERALL DIMENSIONS



WS (Winch System)	m.s.	i.s.		
Stroke	mm	ft-in	11.300	37' 11"
Max. pull up force	kN	lbs	160	36,000
Max. pull down force	kN	lbs	160	36,000
Crowd speed (hoist-lowering)	mm/min	ft-in	36.000 - 36.000	118 - 118
Max. pile diameter	mm	ft-in	1.180 ¹ / 1.500 ²	3' 10" ¹ - 4' 11" ²
Operating weight w/o tool	ton		31,6 ³	

NOTES	1 - Tool in front of mast	2 - Tool below mast
	3 - c/w 4 x 9.000 mm (4 x 29' 6") long 355 mm (14") dia. Kelly bar; rotary c/w bucket opening flange	

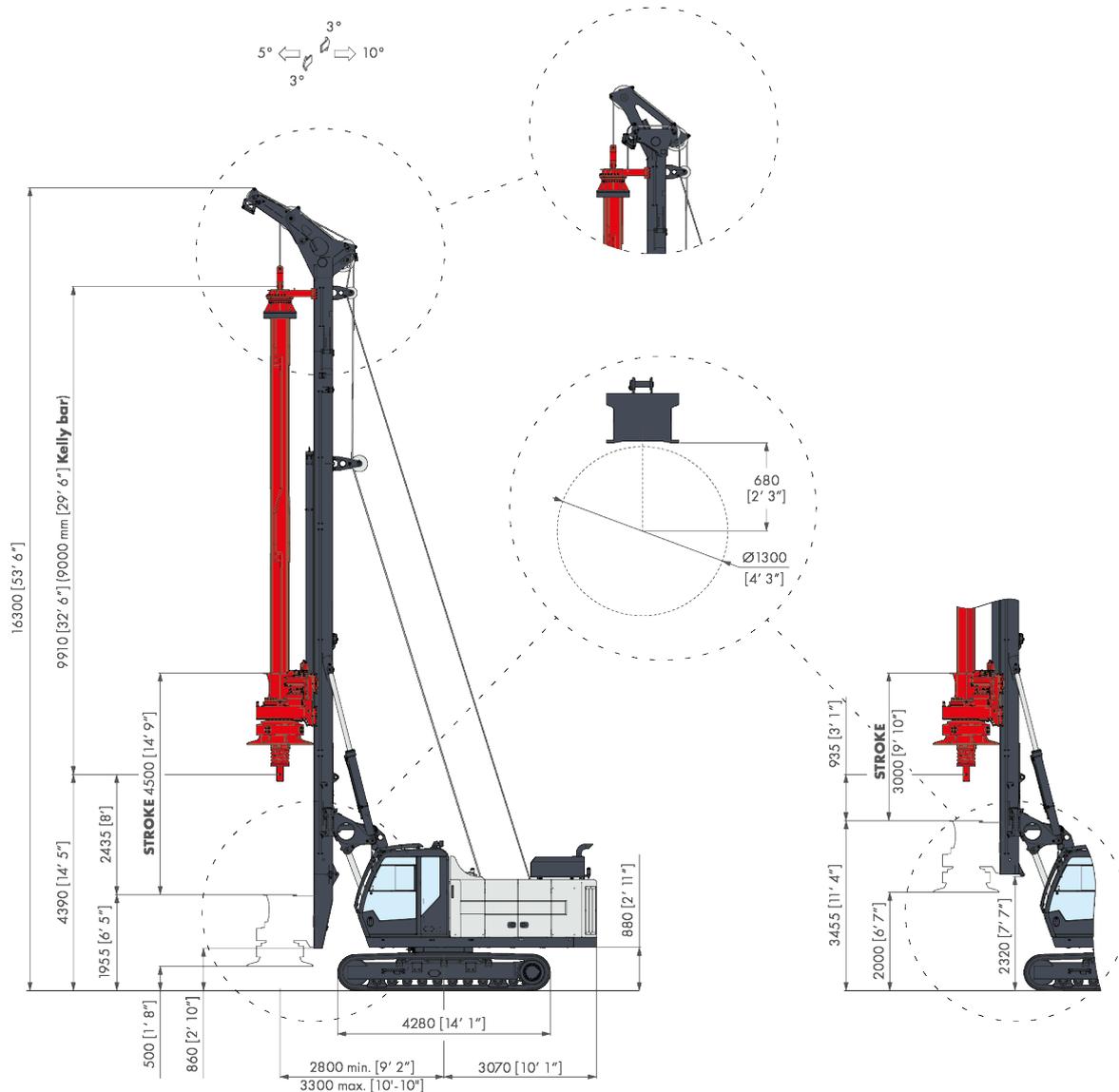
BORED PILES



CH 12 - CS



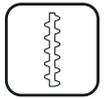
OVERALL DIMENSIONS



CS (Cylinder System)	m.s.	i.s.		
Stroke	mm	ft-in	4.500	14' 9"
Max. pull up force	kN	lbs	148	33,270
Max. pull down force	kN	lbs	95	21,350
Crowd speed (hoist-lowering)	mm/min	ft-in	22.000 - 25.000	72' 2" - 82'
Max. pile diameter	mm	ft-in	1.300 ¹ / 1.500 ²	4' 3" ¹ - 4' 11" ²
Operating weight w/o tool	ton		29,85 ³	

NOTES	1 - Tool in front of mast	2 - Tool below mast
	3 - c/w 4 x 9.000 mm (4 x 29' 6") long 355 mm (14") dia. Kelly bar; rotary c/w bucket opening flange	

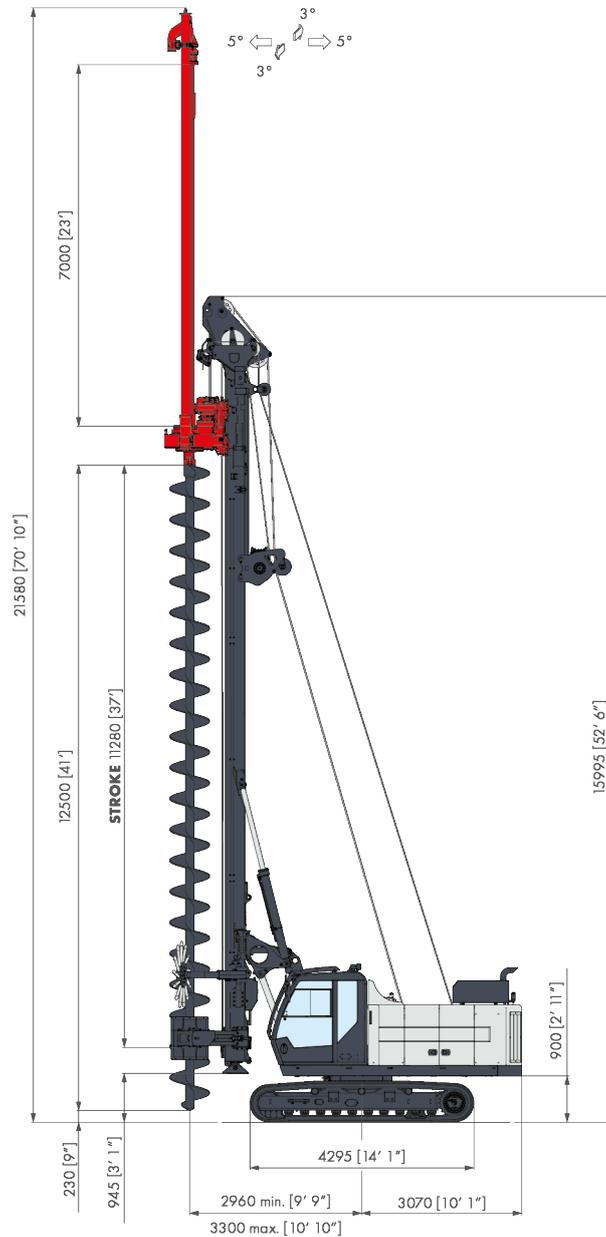
CFA



CH 12 - CFA/WS



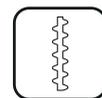
OVERALL DIMENSIONS



CFA (Continuous Flight Auger)	m.s.	i.s.	CFA/WS (Quick Conversion CFA)	
Max. pile diameter	mm	ft-in	800	2' 7"
Max. length of augers	mm	ft-in	12.500	41'
Max. length of auger extension	mm	ft-in	7.000	23'
Max. pile depth	mm	ft-in	11.000 + 7.000 = 18.000	36' 1" + 23' = 59' 1"
Extraction force	kN	lbs	250	56,200
Crowd force on auger	kN	lbs	100	22,500
Operating weight w/o tool	ton		27,2 ¹	
Max. drill string weight	ton		4,3	

NOTE 1 - With 7.000 mm (23') auger extension & star cleaner; without pull down winch on rotary

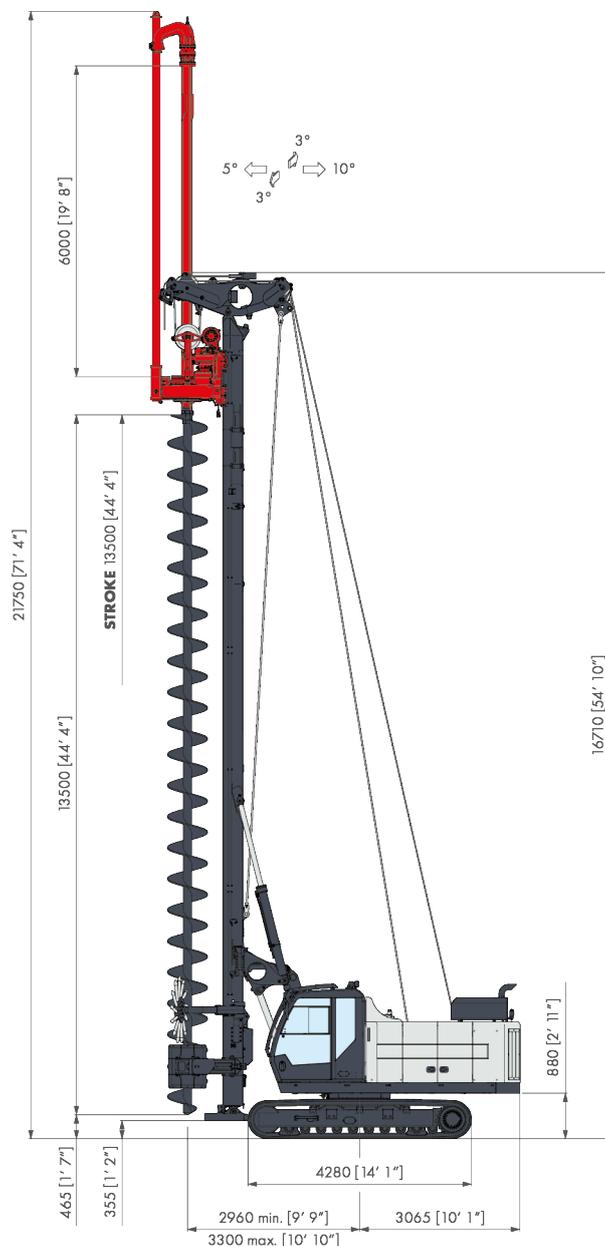
CFA



CH 12 - CFA



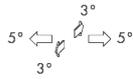
OVERALL DIMENSIONS



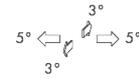
CFA (Continuous Flight Auger)	m.s.	i.s.	T4	
Max. pile diameter	mm	ft-in	800	2' 7"
Max. length of augers	mm	ft-in	13.500	44' 3"
Max. length of auger extension	mm	ft-in	6.000	19' 8"
Max. pile depth	mm	ft-in	13.000 + 6.000 = 19.000	42' 8'' + 19' 8'' = 62' 4"
Extraction force	kN	lbs	320	71,900
Crowd force on auger (optional)	kN	lbs	45 - 100	22,500
Operating weight w/o tool	ton		29,55 ¹	
Max. drill string weight	ton		4,3	

NOTE 1 - With 6.000 mm (19' 8") auger extension, additional counterweight & star cleaner; without pull down winch on rotary

CH 12 - DP/SM



OVERALL DIMENSIONS



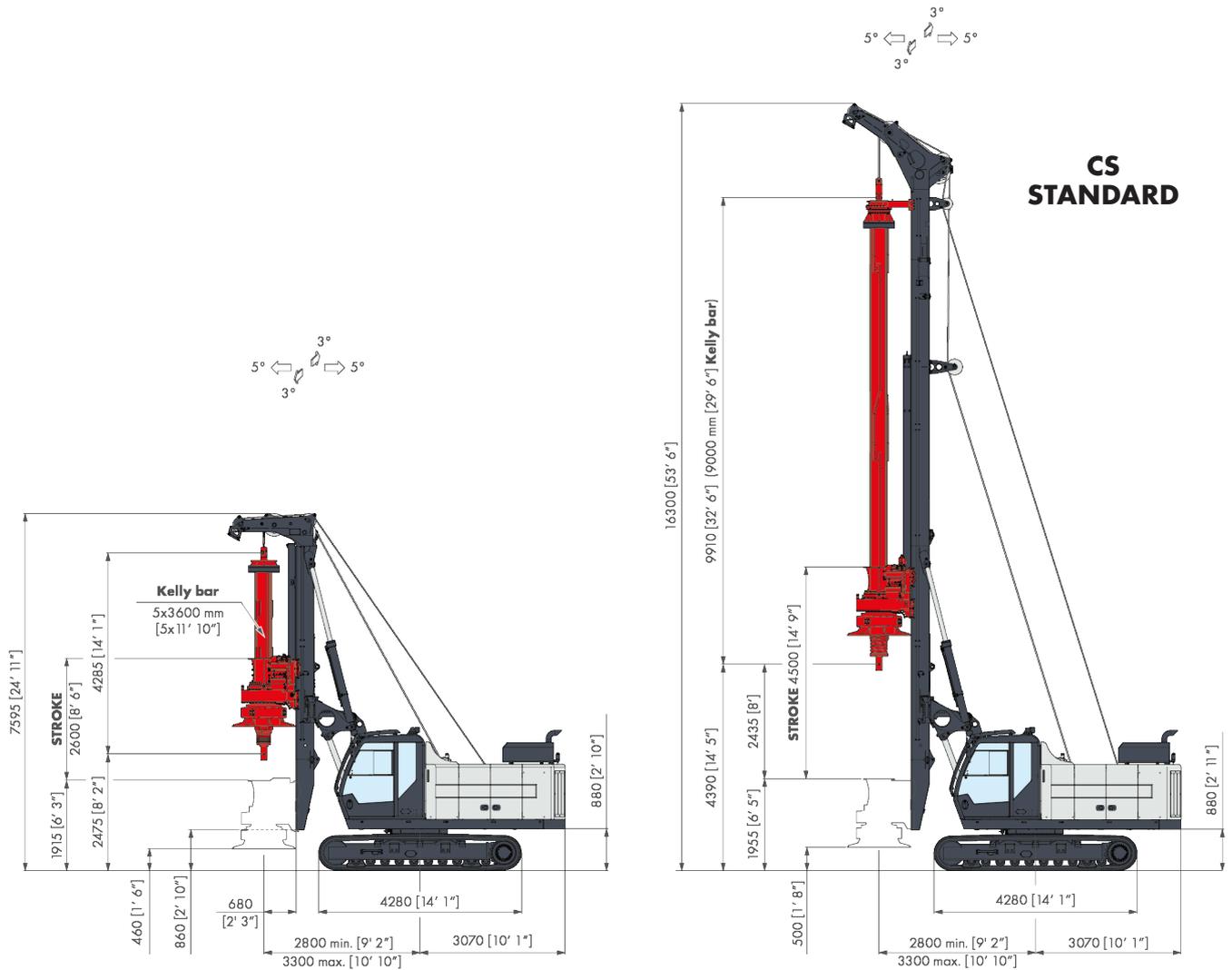
WS (Winch System) / DP-SM	m.s.		i.s.		DP (Displacement Piles)		SM (Soil Mixing)	
	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
Max. pile diameter			450	18"	400-1.100/2.000 ¹	16" - 3' 7" / 6' 7" ¹		
Max. drill string length			12.500	41"				
Max. length of drill string extension			7.000	23'				
Max. pile depth			10.500 + 7.000 = 17.500	34' 5" + 23' = 57' 5"				
Extraction force			250	56,200				
Max. pull down force			160	36,000				
Operating weight w/o tool			ton		27			

NOTE 1 - Tool below mast

CH 12 - LHR



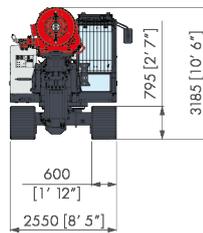
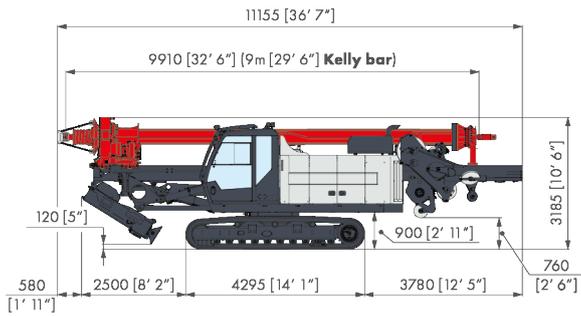
OVERALL DIMENSIONS



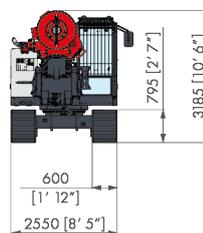
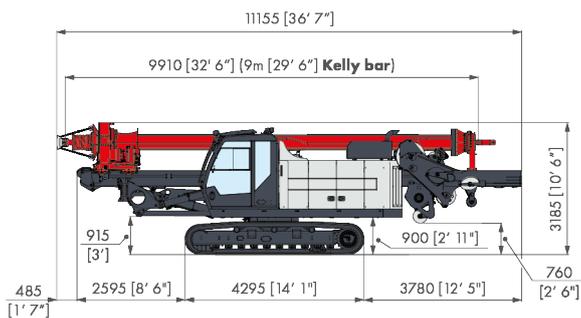
LHR (Low Head Room)	m.s.	i.s.	7.600 mm / 25'		CS standard	
Min. height	mm	ft-in	7.595	24' 11"	16.300	53' 6"
Max. kelly bar length	mm	ft-in	3.900	12' 10"	10.500	34' 5"
Stroke of pull down cylinder (with / without lower mast ext.)	mm	ft-in	2.600 - 1.100	8' 6" - 3' 7"	4.500 - 3.000	14' 9" - 9' 10"
Max. pile diameter (in front of mast / below mast)	mm	ft-in	1.300 - 1.500	4' 3" - 4' 11"	1.300 - 1.500	4' 3" - 4' 11"
Max. pile depth with 4-element kelly bar	mm	ft-in	12.500	41'	38.400	126'
Max. pile depth with 5-element kelly bar	mm	ft-in	15.300	50' 2"	47.700	156' 6"
Operating weight w/o tool	ton		26,85 ¹		29,85 ²	

NOTES	
1	- c/w 5 x 3.600 mm (5 x 11' 10") 343 mm (13" 1/2) dia. kelly bar; rotary c/w bucket opening flange
2	- c/w 4 x 9.000 mm (4 x 29' 6") 355 mm (14") dia. kelly bar; rotary c/w bucket opening flange

TRANSPORT DIMENSIONS



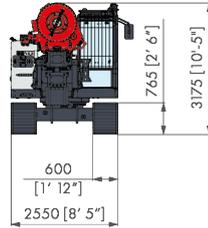
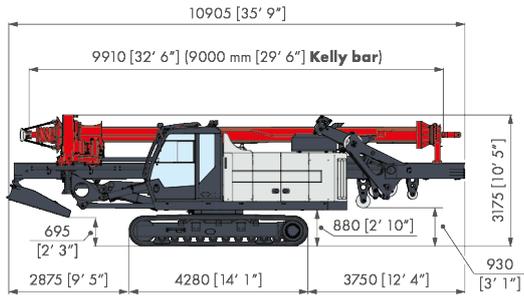
	m.s.	WS
Transport weight	ton	31,6 ¹



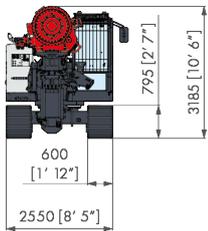
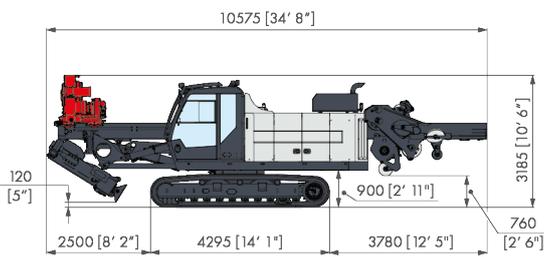
	m.s.	WS w/o mast foot
Transport weight	ton	30,9 ¹

NOTE 1 - c/w 4 x 9.000 mm (4 x 29' 6") long Kelly bar; rotary c/w bucket opening flange

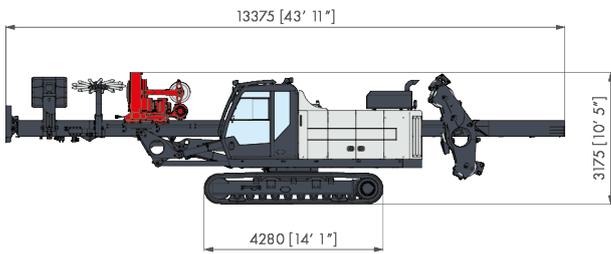
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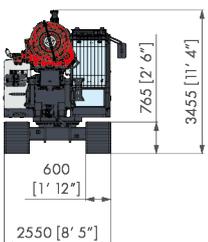
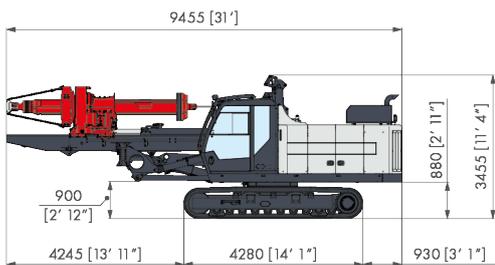
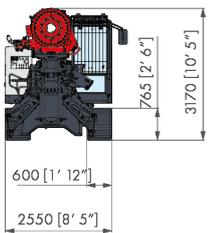
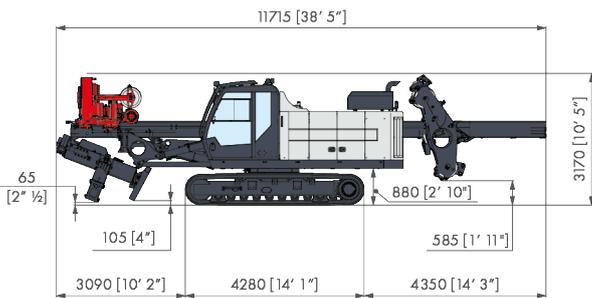
	m.s.	CS
Transport weight	ton	29,85 ¹



	m.s.	CFA/WS
Transport weight	ton	27,2 ²



	m.s.	CFA T4
Transport weight	ton	27,85 ²



	m.s.	LHR 7,6 m
Transport weight	ton	27,3 ³

NOTES	
1 - c/w 4 x 9.000 mm (4 x 29' 6") long Kelly bar; rotary c/w bucket opening flange	
2 - w/o augers, auger extension, auger cleaner, auger guide	
3 - c/w 5 x 3.600 mm (5 x 11' 10") 343 mm (13" 1/2) dia. kelly bar; rotary c/w bucket opening flange	



SELF-ERECTING HYDRAULIC PILING RIG



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