

# PILING EQUIPMENT

DEEP FOUNDATIONS  
& GROUND IMPROVEMENT



# THE MULTIPURPOSE RIGS

# CH

The **Comacchio CH** range of piling rigs currently includes **5 models of multipurpose machines** (in a weight range from **15 to 100 tons**), that can be configured to cover a wide range of applications, such as **BORED PILES, CFA, DP and Soil Mixing**, and much more.

The range also includes **models of dedicated CFA rigs**, in the weight class of **50 and 90 tons**.

The **CH rigs** can be also offered in different **LHR** (low head room) configurations, designed for the construction of bored piles in challenging access sites



CH RANGE/TECHNOLOGIES		CH 4	CH 12	CH 18	CHF 50
	<b>BP</b> (Bored Piles)	• 1	•	•	-
	<b>CFA</b> (Continuous Flight Auger)	<b>T4</b>	• 1	•	•
		<b>Quick Conversion</b>	-	•	•
	<b>DP</b> (Displacement Piles)	-	•	•	-
	<b>SM</b> (Soil Mixing)	-	•	•	-
	<b>LDTH</b> (Large DTH)	-	•	•	-
	<b>SC</b> (Stone Columns)	-	-	•	-
	<b>MP</b> (Micropiles)	-	•	•	-
<b>CLASS WEIGHT</b> With Kelly, rotary & w/o tool		<b>15 TON</b>	<b>32 TON</b>	<b>45 TON</b>	<b>50 TON</b>

**NOTE** | 1 - Only in **CS** (Cylinder System) configuration



CH 23	CH 36	CHF 90	MULTIPURPOSE PILING RIGS CH	
•	•	-		<b>BP</b> (Bored Piles) 
-	-	•	<b>T4</b> <b>Quick Conversion</b>	<b>CFA</b> (Continuous Flight Auger) 
•	•	-		
•	•	•		<b>DP</b> (Displacement Piles) 
•	•	•		<b>SM</b> (Soil Mixing) 
•	-	-		<b>LDTH</b> (Large DTH) 
-	-	-		<b>SC</b> (Stone Columns) 
•	-	-		<b>MP</b> (Micropiles) 
<b>65 TON</b>	<b>100 TON</b>	<b>90 TON</b>	<b>CLASS WEIGHT</b> With kelly, rotary & w/o tool	

**EFFICIENCY.  
HIGH PERFORMANCE.  
SUSTAINABILITY.**

CH



	<p><b>ENERGY EFFICIENCY &amp; SUSTAINABILITY</b></p>	<ul style="list-style-type: none"> <li>• <b>Stage V technology</b> (EPA Tier 4 Final) for exhaust aftertreatment and engine control</li> <li>• <b>HPE</b> (High Power Efficiency) <b>system</b> reducing energy dissipation</li> <li>• <b>Optimized engine</b> and <b>hydraulic oil cooling system</b></li> <li>• <b>Low-noise</b> rotary head</li> <li>• <b>Reduced fuel consumption</b> and <b>lower noise levels</b></li> </ul>
	<p><b>FLEXIBILITY &amp; HIGH PRODUCTIVITY</b></p>	<ul style="list-style-type: none"> <li>• Two types of crowd system (<b>cylinder / winch</b>)</li> <li>• Easy-to-install <b>conversion kits &amp; counterweights</b></li> <li>• <b>Modular mast</b> design</li> <li>• <b>Multipurpose</b> design of <b>rotary head</b></li> <li>• <b>Operational flexibility</b> in all piling and soil consolidation techniques</li> </ul>
	<p><b>EASY TRANSPORT &amp; RIG-UP</b></p>	<ul style="list-style-type: none"> <li>• <b>Compact</b> design</li> <li>• <b>Reduced</b> mobilization <b>costs</b></li> <li>• <b>Sort rig-up/ rig-down times</b></li> <li>• <b>Assisted</b> and <b>automated rig-up</b> functions</li> <li>• <b>Radio control</b> for track functions</li> </ul>
	<p><b>EASY OPERATION &amp; FLEET MANAGEMENT</b></p> <p><b>ComNect</b> </p>	<ul style="list-style-type: none"> <li>• <b>Comacchio Controlling System (CCS)</b></li> <li>• Highly <b>ergonomic cabin</b> design</li> <li>• User-friendly interface ensuring complete <b>interactive control</b></li> <li>• Assisted and automated <b>drilling functions</b></li> <li>• <b>ComNect</b> fleet management software</li> </ul>
	<p><b>SAFETY &amp; MAINTENANCE</b></p>	<ul style="list-style-type: none"> <li>• Designed and manufactured entirely <b>in Italy</b></li> <li>• Optimal material selection and state of the <b>art high-quality components</b></li> <li>• <b>Clean uncluttered layout</b> of all components</li> <li>• Tops and Fops-1 <b>certified cabin</b></li> <li>• <b>Scalable design of the base carriers</b></li> <li>• <b>Safety features</b> in line with the strictest <b>EU regulations</b></li> </ul>
	<p><b>LIVE THE EXPERIENCE</b></p>	

# SAFETY. COMFORT. TECHNOLOGY.



The concept of the CH range starts from the idea of a consistent development of all models, given by the **modular design of the base carriers**, the **common concept of the hydraulic and electrical systems**, **electronically controlled through the CCS software**, and the **cab project**, developed in-house by **Comacchio**.

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**.





## ENHANCED SAFETY

- **Tops & Fops-1** Certified
- Front & top cab **protective grate**



## HIGH VISIBILITY

- Fully glazed with **automatic sliding door**
- **Set of 4 cameras** with in-cab monitor for all-around view
- **LED work lights**



## WORKPLACE COMFORT

- Heating and **air conditioning**
- **Radio / Bluetooth system**, phone charger, refrigerated bottle-holder
- **Storage** compartments



## USER-FRIENDLY INTERACTIVE CONTROL

- **12" color touch screen display** for the **monitoring and control** of the operating parameters via **CCS software**



## CCS - COMACCHIO CONTROLLING SYSTEM

- Managing and controlling of all the **electrically actuated functions**
- **Diagnosis check control** and errors display
- **Pump pressures display**
- **Mast verticality control** by means of an electronic inclinometer
- **Drilling depth display**
- Rotary **speed and pressure display**
- **Crowd pressure display**
- **Automatic rotary speed management (ASM)** setting allowing the drilling in constant power mode
- **Interactive rotary multiple gear system (IMGS)**, allowing the operator to manually adjust the gear speed
- **Automatic winches control** on rigging and derigging phases
- **Slewing back to centre hole** with automatic stop
- **Diesel engine interface** on a separate display



## SOUND INSULATION

- In-cab **soundproofing**



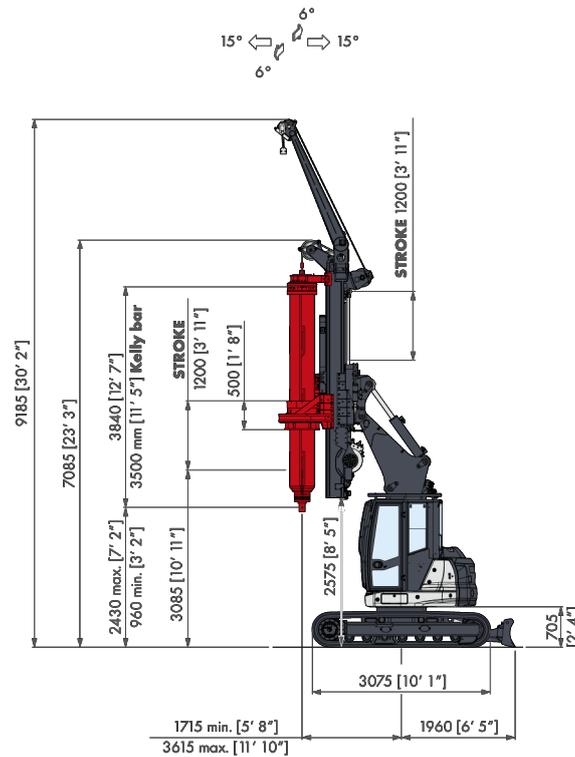
## IMPROVED ERGONOMICS

- **Roomy inner space**
- **Fully adjustable working seat** with **dynamic suspension system**
- Ergonomic arrangement and **design of multifunction controls**

# BORED PILES



# CH 4



CS (Cylinder System)	m.s.	i.s.		
<b>Nominal max. torque</b>	<b>kNm</b>	lbf-ft	<b>44 at 35 MPa</b>	32,450 at 5,076 psi
<b>Max. torque</b>	<b>kNm</b>	lbf-ft	<b>35 at 28 MPa</b>	25,800 at 4,060 psi
<b>Engine power rating</b>	<b>kW</b>	hp	<b>54 at 2100 rpm</b>	73 at 2100 rpm
<b>Max. pile diameter</b>	<b>mm</b>	ft-in	<b>750 - 1.000<sup>1</sup></b>	2' 6" - 3' 3" <sup>1</sup>
<b>Max. pile depth</b>	<b>mm</b>	ft-in	<b>27.800<sup>2</sup></b>	91' 2" <sup>2</sup>
<b>Operating weight w/o tool</b>	<b>ton</b>			<b>15<sup>3</sup></b>

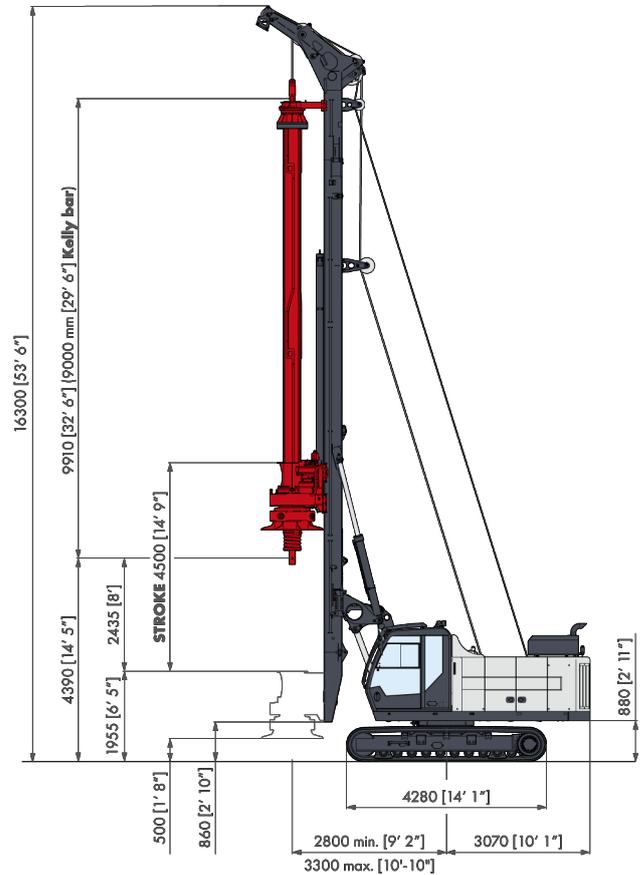
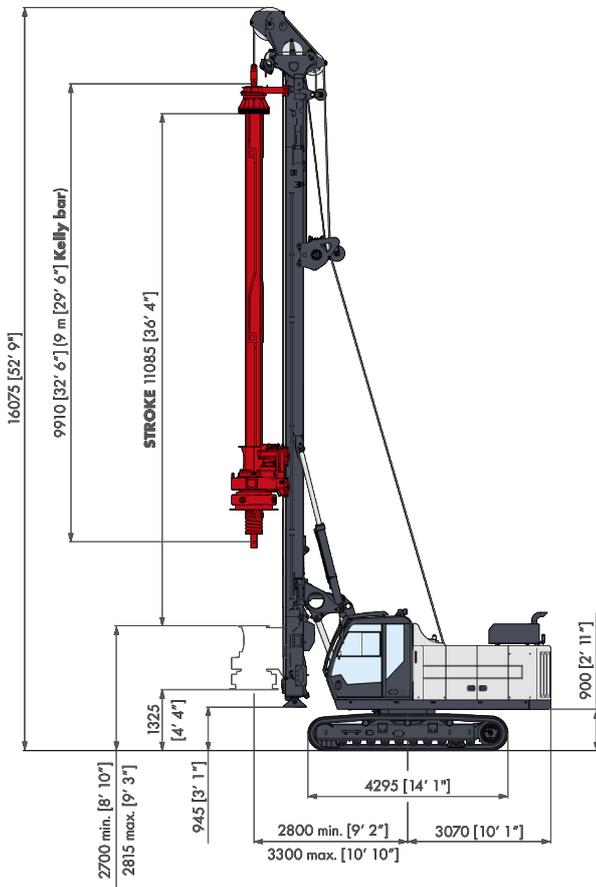
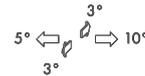
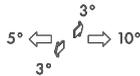
NOTES		
1 - Tool under mast		3 - c/w 7 x 2.700 mm (7 x 8' 10") long Kelly bar
2 - Using 9 elements locking kelly bar		

# CH 12



## WS

## CS



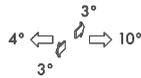
	m.s.	i.s.	WS (Winch System)		CS (Cylinder System)	
Nominal max. torque	kNm	lbf-ft	132 at 35 MPa		97,300 at 5,076 psi	
Max. torque	kNm	lbf-ft	113 at 30 MPa		83,300 at 4,350 psi	
Engine power rating	kW	hp	123 - 142 at 2000 rpm		165 - 190 at 2000 rpm	
Max. pile diameter	mm	ft-in	1.180 <sup>1</sup> / 1.500 <sup>2</sup>		1.300 <sup>1</sup> / 1.500 <sup>2</sup>	
			3' 10" <sup>1</sup> / 4' 11" <sup>2</sup>		4' 3" <sup>1</sup> / 4' 11" <sup>2</sup>	
Max. pile depth	mm	ft-in	47.000 <sup>3</sup>		47.700 <sup>3</sup>	
			154' 2" <sup>3</sup>		156' 6" <sup>3</sup>	
Operating weight w/o tool	ton		31,6 <sup>4</sup>		29,85 <sup>4</sup>	

NOTES	1 - Tool in front of mast	3 - Using 5 elements Kelly bar
	2 - Tool below mast	4 - c/w 4 x 9.000 mm (4 x 29'6") long 355 mm (14") dia. Kelly bar

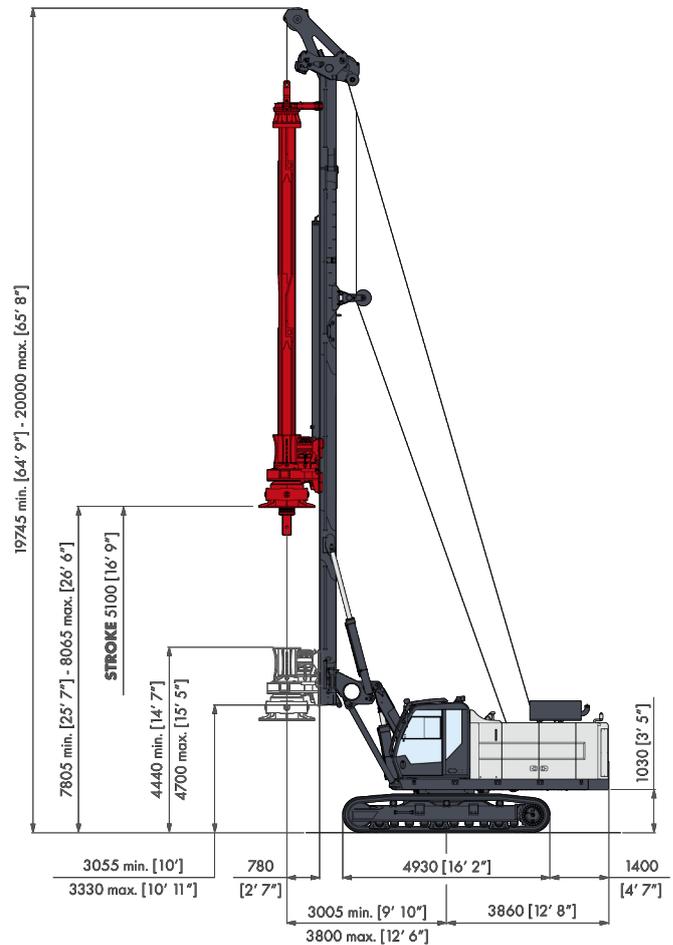
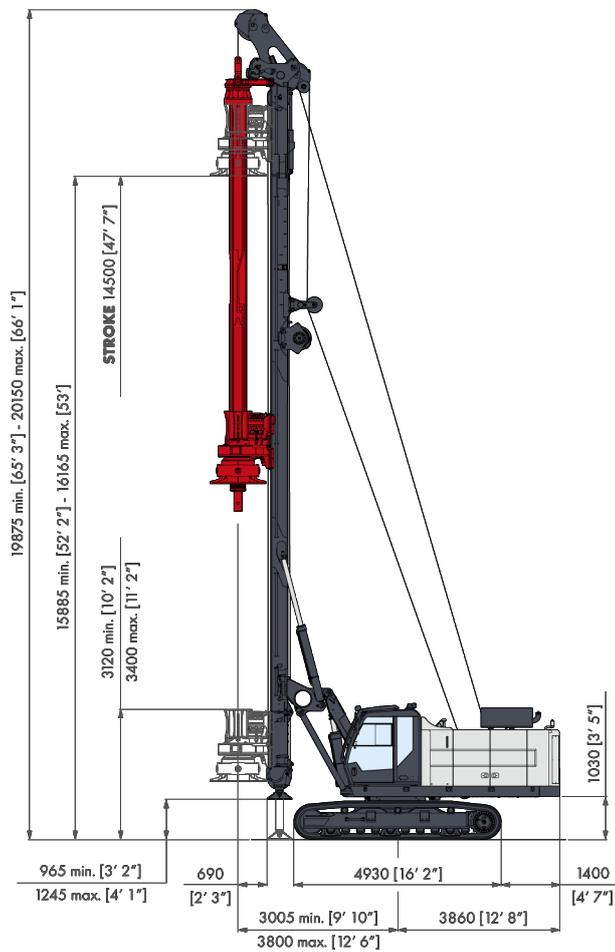
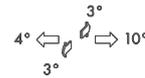
## CH 18



## WS



## CS



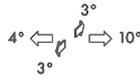
	m.s.	i.s.	WS (Winch System)		CS (Cylinder System)	
Nominal max. torque	kNm	lbf-ft	190 at 33 MPa		140.000 at 4.800 psi	
Max. torque	kNm	lbf-ft	170 at 31 MPa		125,400 at 4,500 psi	
Engine power rating	kW	hp	201 - 209 at 2000 rpm		274 - 284 at 2000 rpm	
Max. pile diameter	mm	ft-in	1.300 / 2.000 <sup>1</sup>	4' 3" - 6' 7" <sup>1</sup>	1.500 <sup>4</sup> / 2.000 <sup>5</sup>	4' 11" <sup>4</sup> / 6' 7" <sup>5</sup>
Max. pile depth	mm	ft-in	60.500 <sup>2</sup>	198' 6" <sup>2</sup>	54.500 <sup>2</sup>	178' 10" <sup>2</sup>
Operating weight w/o tool	ton		44,8 <sup>3</sup>		43,1 <sup>3</sup>	

NOTES	1 - With - without bottom mast element	3 - c/w 4 x 9.000 mm (4 x 29'6") long 368 mm (14 1/2") dia. Kelly bar
	2 - Using self mounting kelly bar	4 - Tool in front of mast
		5 - Tool below mast

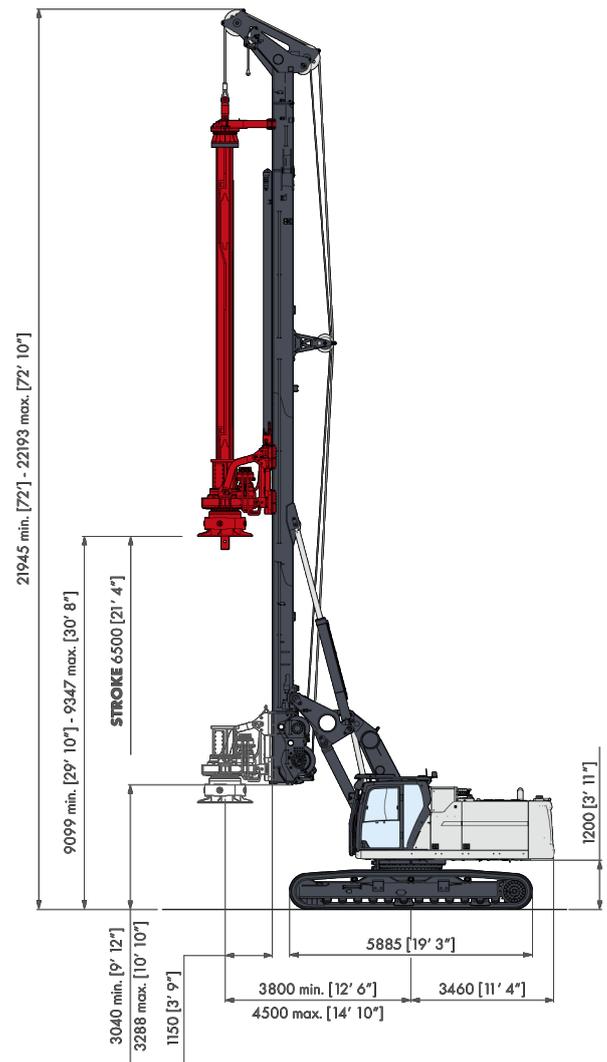
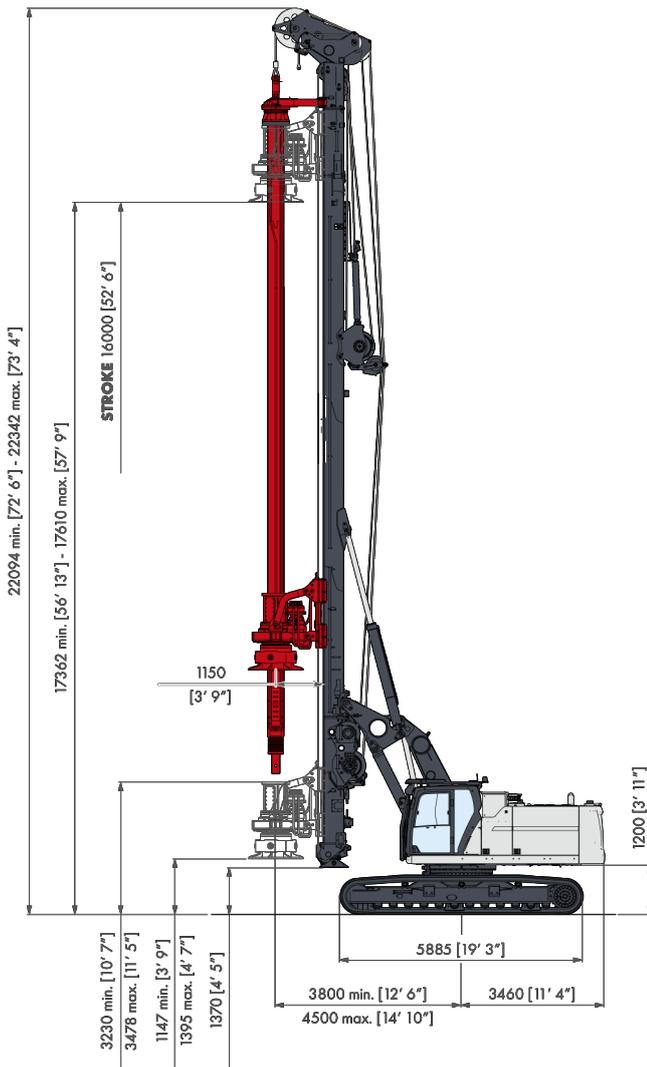
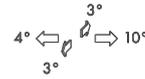
# CH 23



## WS



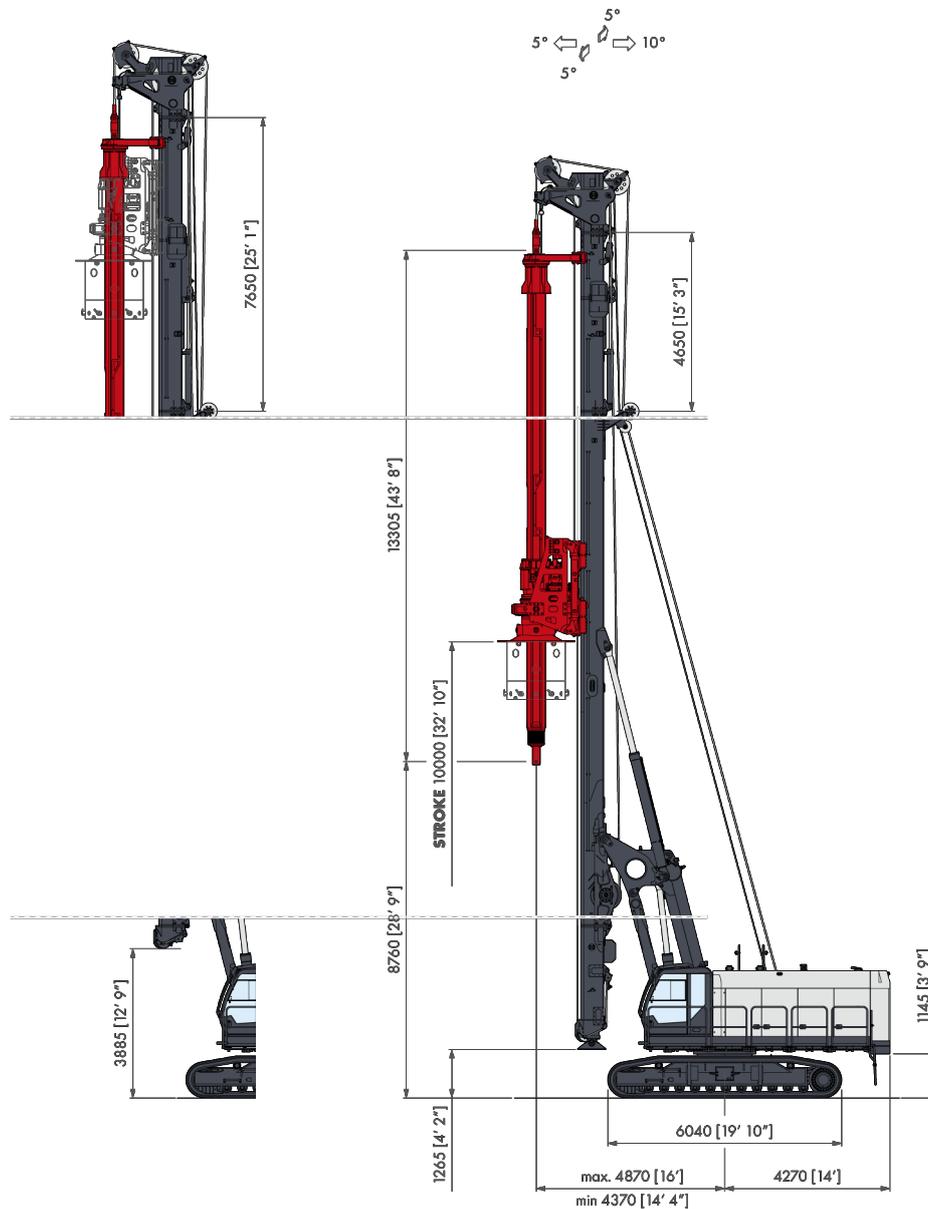
## CS



	m.s.	i.s.	WS (Winch System)		CS (Cylinder System)	
Nominal max. torque	kNm	lbf-ft	262 at 35 MPa		193.200 at 5.080 psi	
Max. torque	kNm	lbf-ft	225 at 30 MPa		166,000 at 4,350 psi	
Engine power rating	kW	hp	234 - 261 at 1550 - 1800 rpm		314 - 350 at 1550 - 1800 rpm	
Max. pile diameter	mm	ft-in	2.000 / 2.500 <sup>1</sup>	6' 7" - 8' 2" <sup>1</sup>	2.000 <sup>4</sup> / 2.500 <sup>5</sup>	6' 7" <sup>4</sup> / 8' 2" <sup>5</sup>
Max. pile depth	mm	ft-in	67.300 <sup>2</sup>	220' 10" <sup>2</sup>	67.700 <sup>2</sup>	222' 1" <sup>2</sup>
Operating weight w/o tool	ton		69,5 <sup>3</sup>		67,8 <sup>3</sup>	

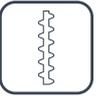
NOTES	1 - With - without bottom mast element	3 - c/w kelly bar 4 x 10.500 mm (4 x 34' 5") Ø 406 (16")
	2 - Using self mounting kelly bar	4 - Tool in front of mast
		5 - Tool below mast

# CH 36

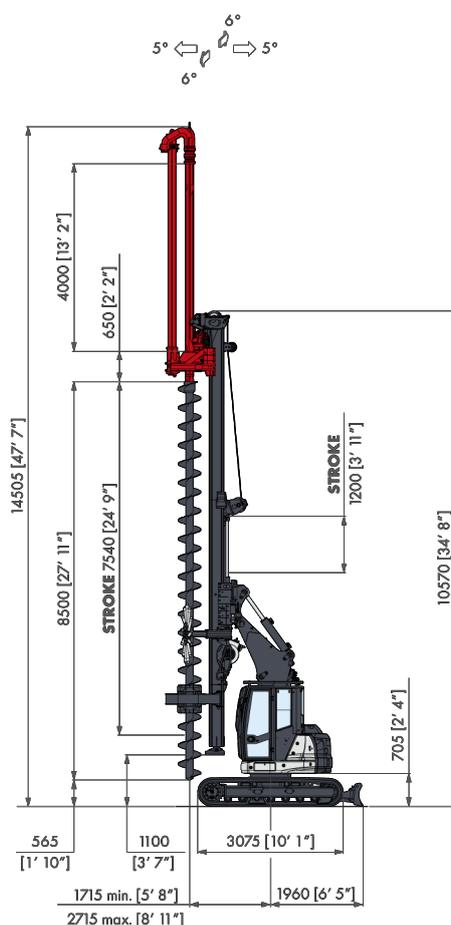


<b>WS</b> (Winch System)	m.s.	i.s.		
<b>Nominal max. torque</b>	kNm	lbf-ft	<b>360 at 32 MPa</b>	265,522 at 4,641 psi
<b>Max. torque</b>	kNm	lbf-ft	<b>320 at 28,5 MPa</b>	236,020 at 4,134 psi
<b>Engine power rating</b>	kW	hp	<b>345 - 405 at 1700 rpm</b>	436 - 543 at 1700 rpm
<b>Max. pile diameter</b>	mm	ft-in	<b>2.000 - 2.500<sup>1</sup></b>	6' 7" - 8' 2" <sup>1</sup>
<b>Max. pile depth</b>	mm	ft-in	<b>86.800<sup>2</sup></b>	284' 9" <sup>2</sup>
<b>Operating weight w/o tool</b>	ton		<b>102,5<sup>3</sup></b>	
<b>NOTES</b>	1 - With - without bottom mast element		3 - c/w 4 x 12 m (4 x 39' 4") long 455 mm (17 1/2") dia. Kelly bar	
	2 - Using self mounting 5 elements kelly bar			

# CFA



# CH 4



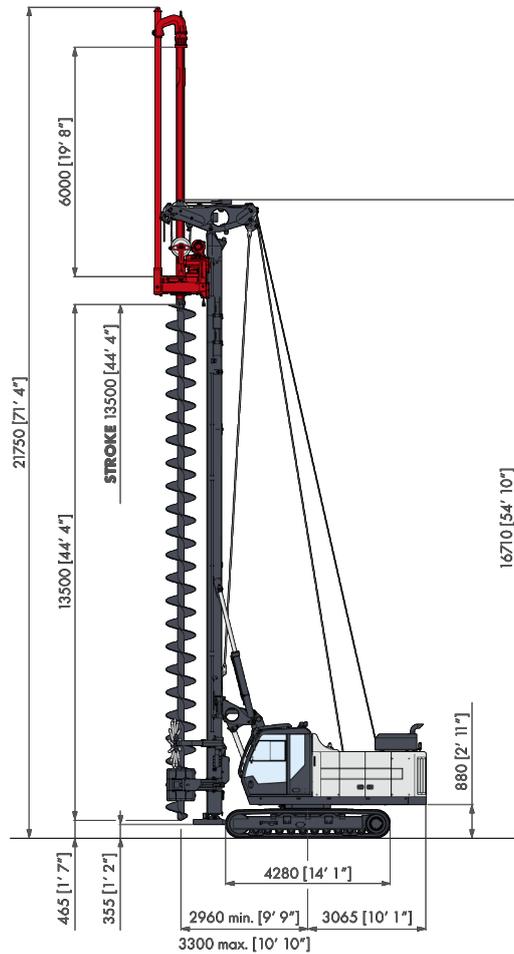
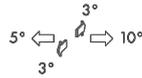
CFA (Continuous Flight Auger)	m.s.	i.s.	T4	
Nominal max. torque	kNm	lbf-ft	44 at 35 MPa	32,450 at 5,076 psi
Max. torque	kNm	lbf-ft	35 at 28 MPa	166,000 at 4,350 psi
Engine power rating	kW	hp	54 at 2100 rpm	73 at 2100 rpm
Max. pile diameter	mm	ft-in	750	2' 6"
Max. length of augers	mm	ft-in	8.500	27' 11"
Max. pile depth	mm	ft-in	8.100 + 4.000 = 12.100	26' 7" + 13' 1" = 39' 8"
Extraction force	kN	lbs	170	37,217
Crowd force on auger (optional)	kN	lbs	60	13,500
Operating weight w/o tool	ton		15,5 <sup>1</sup>	

**NOTE** | 1 - c/w 4.000 mm (13' 1") auger extension

# CH 12



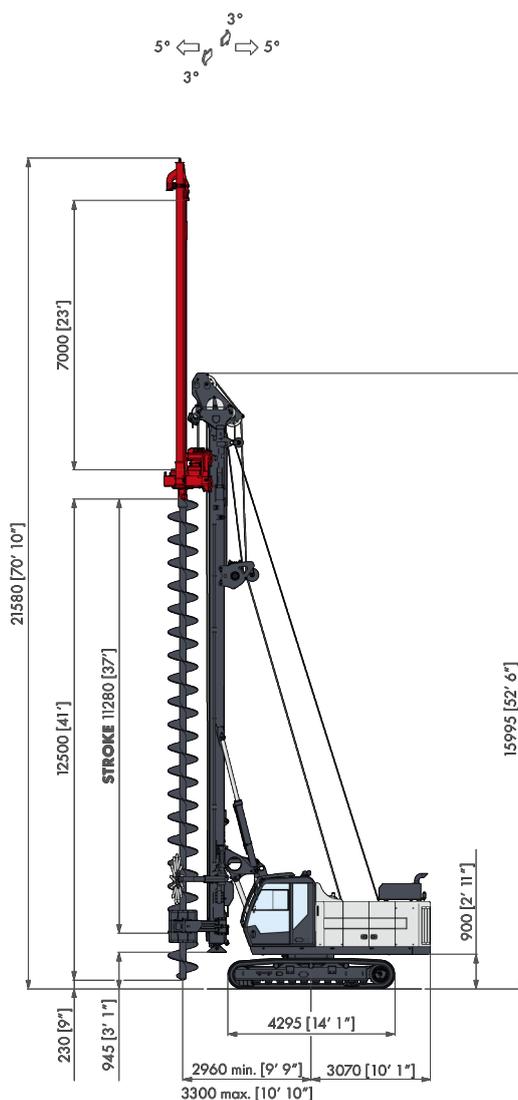
## T4



CFA (Continuous Flight Auger)	m.s.	i.s.	T4	
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
Engine power rating	kW	hp	123 - 142 at 2000 rpm	165 - 190 at 2000 rpm
Max. pile diameter	mm	ft-in	800	2' 7"
Max. length of augers	mm	ft-in	13.500	44' 4"
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	kN	lbs	45 - 100	10,100 - 22,480
Operating weight w/o tool	ton		29,5 <sup>1</sup>	

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

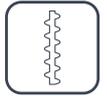
## CH 12



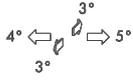
CFA (Continuous Flight Auger)	m.s.	i.s.	CFA/WS (Quick Conversion CFA)	
Nominal max. torque	kNm	lbf-ft	132 at 35 MPa	97,300 at 5,076 psi
Max. torque	kNm	lbf-ft	113 at 30 MPa	83,300 at 4,350 psi
Engine power rating	kW	hp	123 - 142 at 2000 rpm	165 - 190 at 2000 rpm
Max. pile diameter	mm	ft-in	800	2' 7"
Max. length of augers	mm	ft-in	12.500	41'
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 <sup>1</sup>	

**NOTE** | 1 - c/w 7.000 mm (23') auger extension & star cleaner

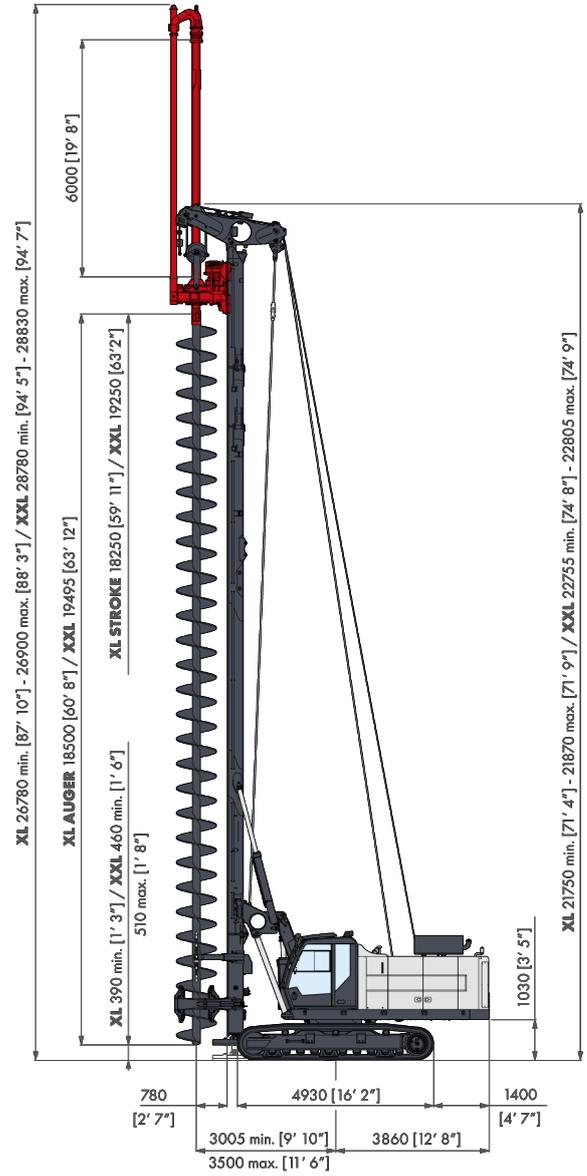
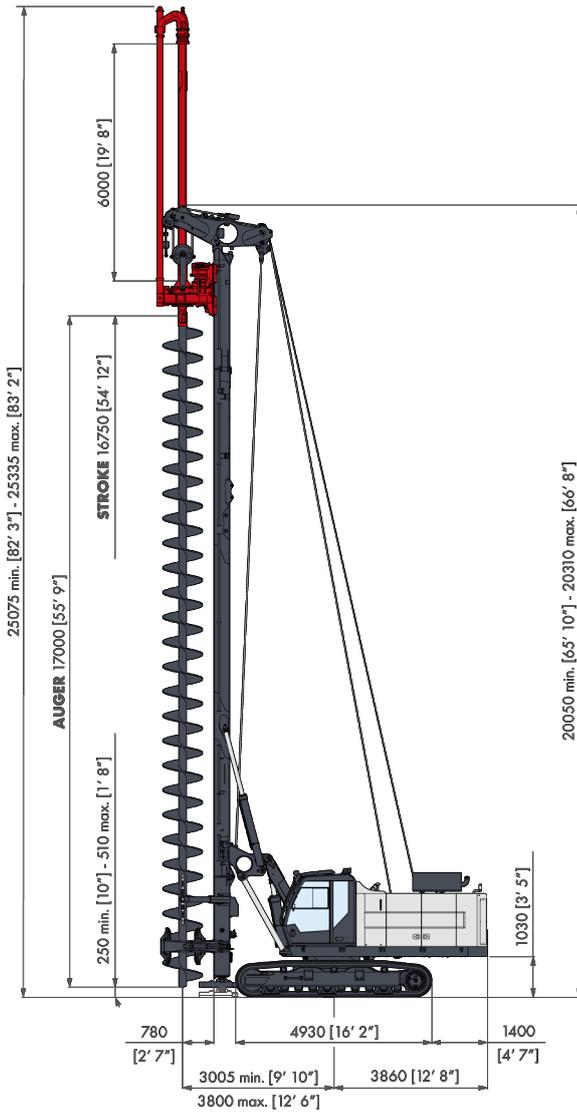
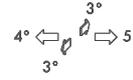
# CH 18



**T4**



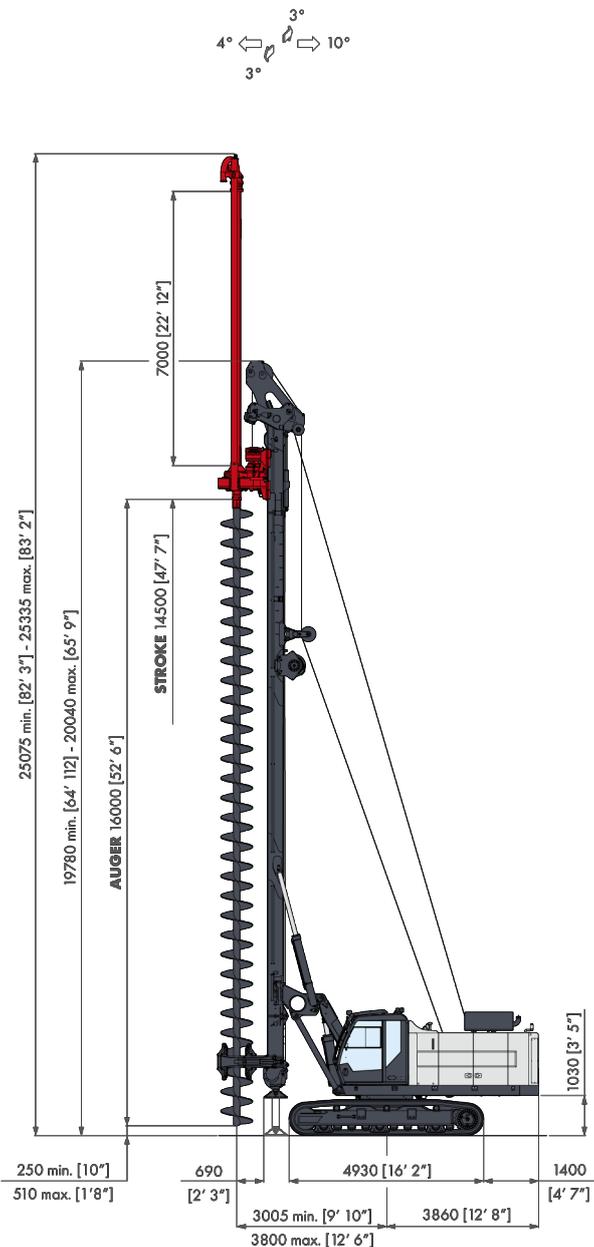
**T4 XL - XXL**



CFA (Continuous Flight Auger)	m.s.	i.s.	T4		T4 XL		T4 XXL	
Nominal max. torque	kNm	lbf-ft	190 at 33 MPa		140,000 at 4,800 psi			
Max. torque	kNm	lbf-ft	170 at 31 MPa		125,400 at 4,500 psi			
Engine power rating	kW	hp	201 - 209 at 2000 rpm				274 - 284 at 2000 rpm	
Max. pile diameter	mm	ft-in	1.000	3' 3"	1.000	3' 3"	1.000	3' 3"
Max. length of augers	mm	ft-in	17.000	55' 9"	18.500	60' 8"	19.500	63' 11"
Max. pile depth	mm	ft-in	16.500 + 6.000 = 22.500	54' 2" + 19' 8" = 73' 10"	18.000 + 6.000 = 24.000	59' 1" + 19' 8" = 78' 9"	19.000 + 6.000 = 25.000	62' 4" + 19' 8" = 81' 12"
Extraction force	kN	lbs	480	107,900	480	107,900	480	107,900
Crowd force on auger	kN	lbs	45 <sup>1</sup>	10,200 <sup>1</sup>	45 <sup>1</sup>	10,200 <sup>1</sup>	45 <sup>1</sup>	10,200 <sup>1</sup>
Operating weight w/o tool	ton		42,5 <sup>2</sup>		43,5 <sup>2</sup>		43,7 <sup>2</sup>	

**NOTE** | 1 - Optional 100 kN (22,480 lbs) | 2 - c/w auger extension, auger cleaner; swivel and swan neck

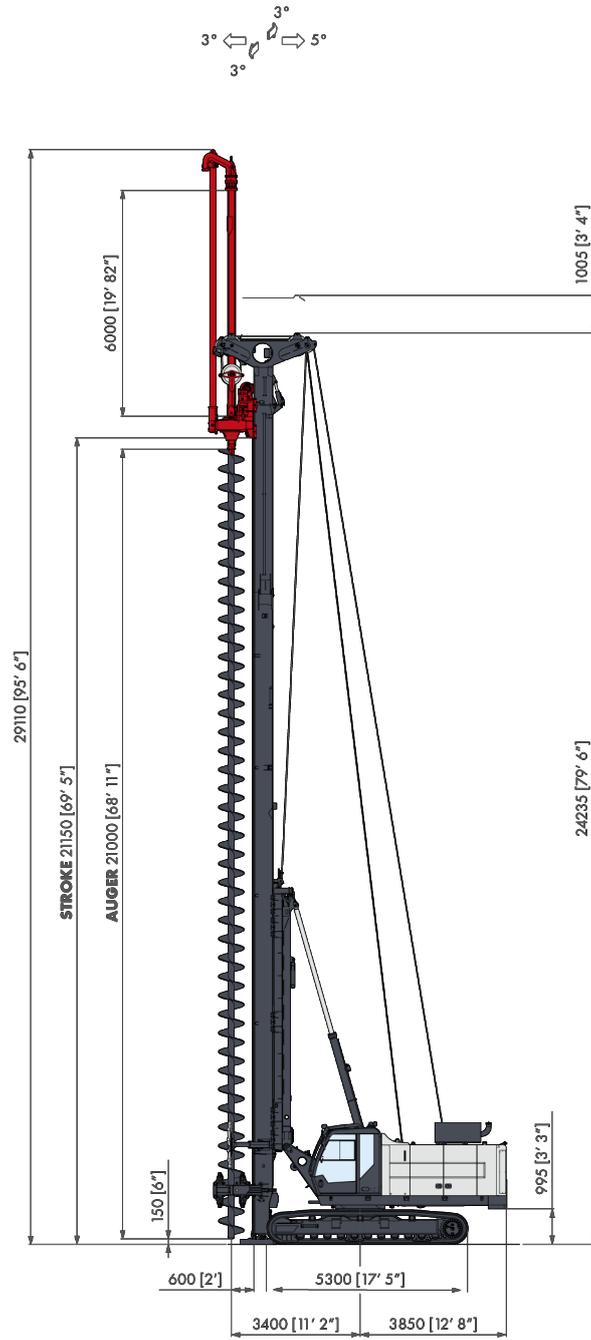
# CH 18



CFA (Continuous Flight Auger)	m.s.	i.s.	CFA/WS (Quick Conversion CFA)	
Nominal max. torque	kNm	lbf-ft	190 at 33 MPa	140,000 at 4,800 psi
Max. torque	kNm	lbf-ft	170 at 31 MPa	125,400 at 4,500 psi
Engine power rating	kW	hp	201 - 209 at 2000 rpm	274 - 284 at 2000 rpm
Max. pile diameter	mm	ft-in	1.000	3' 3"
Max. length of augers	mm	ft-in	16.000	52' 6"
Max. pile depth	mm	ft-in	14.000 + 7.000 = 21.000	46' + 23' = 69'
Extraction force	kN	lbs	330	74,200
Crowd force on auger	kN	lbs	140	31,470
Operating weight w/o tool	ton		41,5 <sup>1</sup>	

**NOTE** | 1 - c/w auger extension, auger cleaner; swivel and swan neck

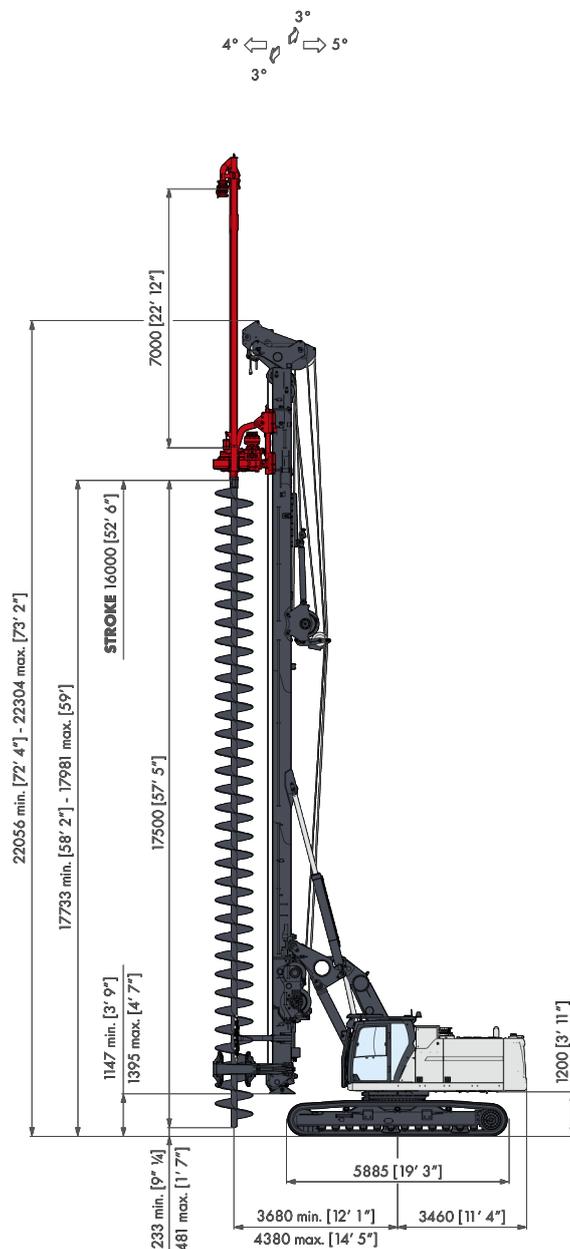
# CHF 50



CFA (Continuous Flight Auger)	m.s.	i.s.	T4	
Nominal max. torque	kNm	lbf-ft	184 at 35 MPa	135,700 at 5,080 psi
Max. torque	kNm	lbf-ft	152 at 29 MPa	112,000 at 4,200 psi
Engine power rating	kW	hp	201 - 231 at 2000 rpm	270 - 310 at 2000 rpm
Max. pile diameter	mm	ft-in	1.000	3' 3"
Max. length of augers	mm	ft-in	21.000	69'
Max. pile depth	mm	ft-in	21.000 + 6.000 = 27.000	69' + 19' 8" = 89'
Extraction force	kN	lbs	540	121,400
Crowd force on auger (optional)	kN	lbs	45 - 100	10,120 - 22,480
Operating weight w/o tool	ton		46 <sup>1</sup>	

**NOTE** | 1 - c/w auger extension, auger cleaner, swivel and swan neck

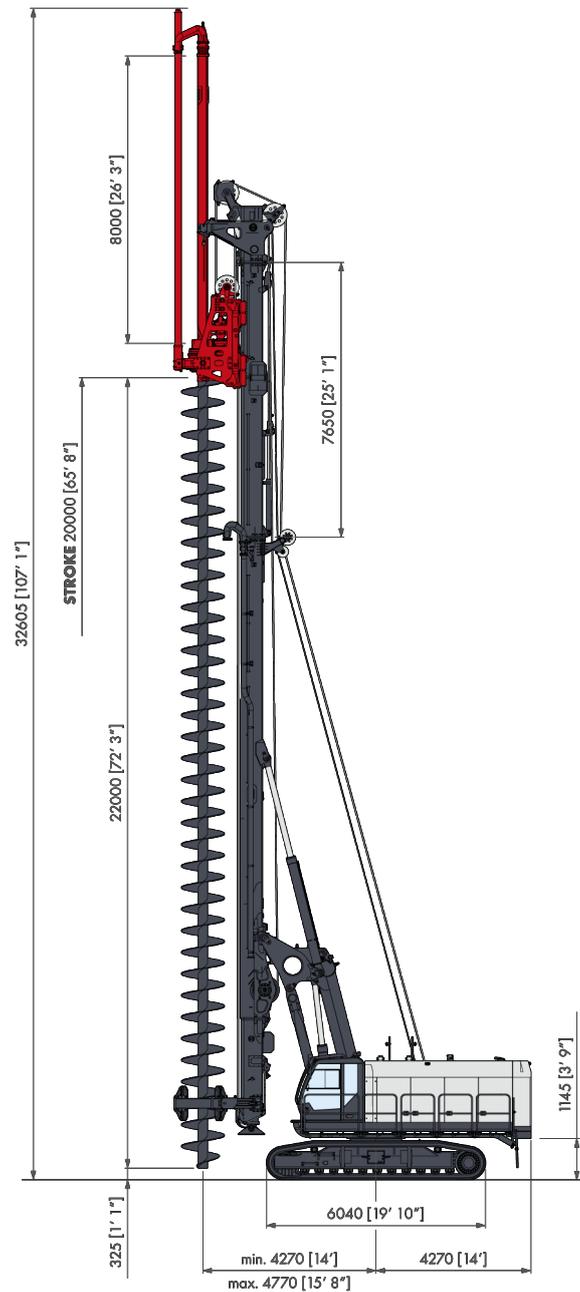
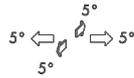
# CH 23



CFA (Continuous Flight Auger)	m.s.	i.s.	CFA/WS (Quick Conversion CFA)	
Nominal max. torque	kNm	lbf-ft	262 at 35 MPa	193,200 at 5,080 psi
Max. torque	kNm	lbf-ft	225 at 30 MPa	166,000 at 4,350 psi
Engine power rating	kW	hp	234 - 261 at 1550 - 1800 rpm	314 - 350 at 1550 - 1800 rpm
Max. pile diameter	mm	ft-in	1.000	3' 3"
Max. length of augers	mm	ft-in	17.500	57' 5"
Max. pile depth	mm	ft-in	15.500 + 7.000 = 22.500	50' 10" + 22' 11" = 73' 10"
Extraction force	kN	lbs	580	130,400
Crowd force on auger	kN	lbs	140	31,500
Operating weight w/o tool	ton		63,5 <sup>1</sup>	

**NOTE** | 1 - c/w auger extension, auger cleaner, swivel and swan neck

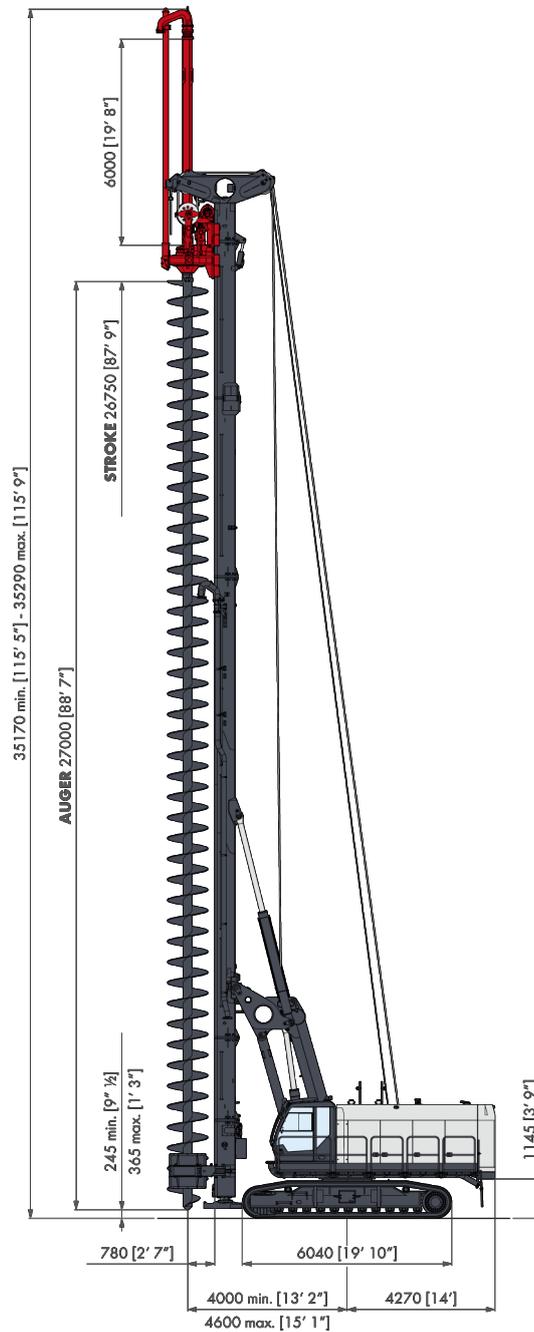
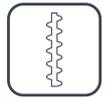
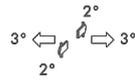
# CH 36



CFA (Continuous Flight Auger)	m.s.	i.s.	CFA/WS (Quick Conversion CFA)	
Nominal max. torque	kNm	lbf-ft	360 at 32 MPa	265,522 at 4,641 psi
Max. torque	kNm	lbf-ft	320 at 28,5 MPa	236,020 at 4,134 psi
Engine power rating	kW	hp	345 - 405 at 1700 rpm	436 - 543 at 1700 rpm
Max. pile diameter	mm	ft-in	1.200	3' 11"
Max. length of augers	mm	ft-in	22.000 <sup>1</sup>	72' 2" <sup>1</sup>
Max. pile depth	mm	ft-in	19.700 + 8.000 = 27.700 <sup>1</sup>	64' 7" + 26' 3" = 90' 10" <sup>1</sup>
Extraction force	kN	lbs	945	212,444
Crowd force on auger	kN	lbs	300	67,443
Operating weight w/o tool	ton		96 <sup>2</sup>	

**NOTE** | 1 - c/w 7.650 mm (25' 1") mast extension | 2 - c/w auger extension, auger cleaner, swivel and swan neck

# CHF 90



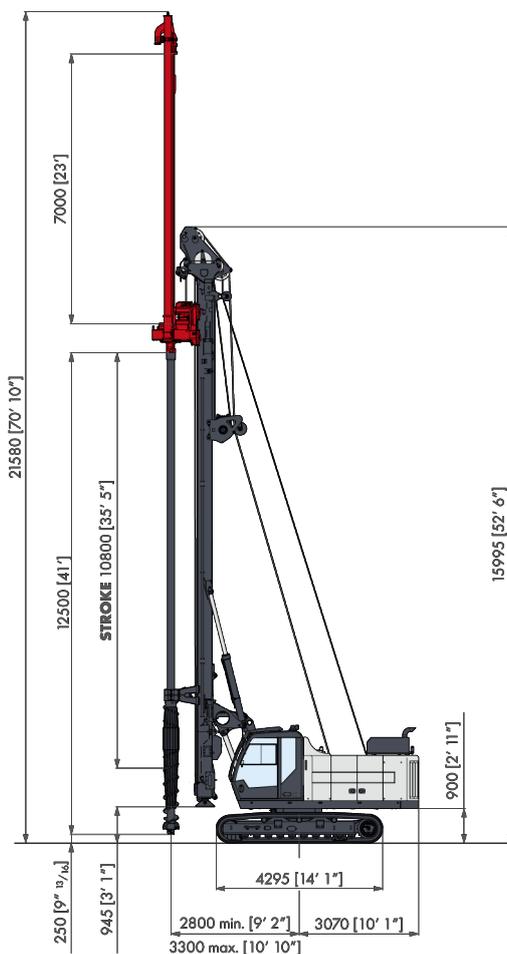
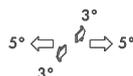
CFA (Continuous Flight Auger)	m.s.	i.s.	T4	
Nominal max. torque	kNm	lbf-ft	280 at 35 MPa	206,500 at 5,080 psi
Max. torque	kNm	lbf-ft	256 at 32 MPa	188,800 at 4,640 psi
Engine power rating	kW	hp	345 - 405 at 1700 rpm	462 - 543 at 1700 rpm
Max. pile diameter	mm	ft-in	1.200	3' 11"
Max. length of augers	mm	ft-in	27.000	88' 7"
Max. pile depth	mm	ft-in	26.500 + 6.000 = 32.500	87' + 19' 8" = 106' 82
Extraction force	kN	lbs	1.120	251,800
Crowd force on auger (optional)	kN	lbs	100	22,480
Operating weight w/o tool	ton		89,8 <sup>1</sup>	

**NOTE** | 1 - c/w auger extension, bottom opening gate and star type auger cleaner

# DP/SM



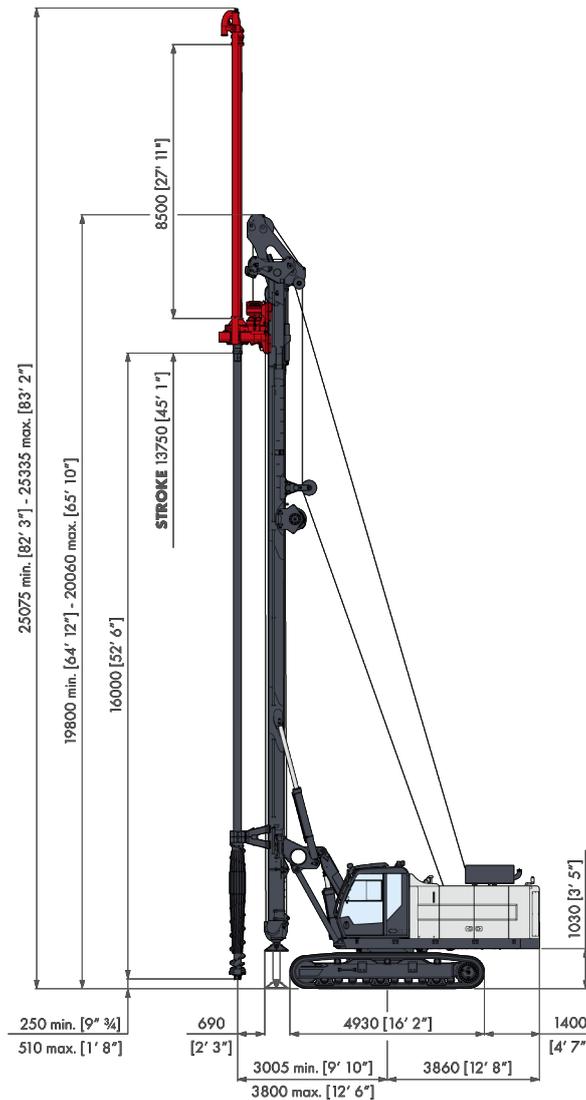
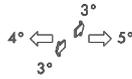
# CH 12



DP (Displacement Piles) SM (Soil Mixing)	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
Engine power rating	kW	hp	123 - 142 at 2000 rpm	165 - 190 at 2000 rpm
Max. drill string length	mm	ft-in	12.500	41'
Max. length of drill string extension	mm	ft-in	7.000	23'
Max. pile depth	mm	ft-in	10.500 + 7.000 = 17.500	34' 5" + 23' = 57' 5"
Extraction force	kN	lbs	250	56,200
Max. pull down force	kN	lbs	160	36,000
Operating weight w/o tool	ton		27 <sup>1</sup>	

**NOTE** | 1 - c/w 7.000 mm (23') drill string extension

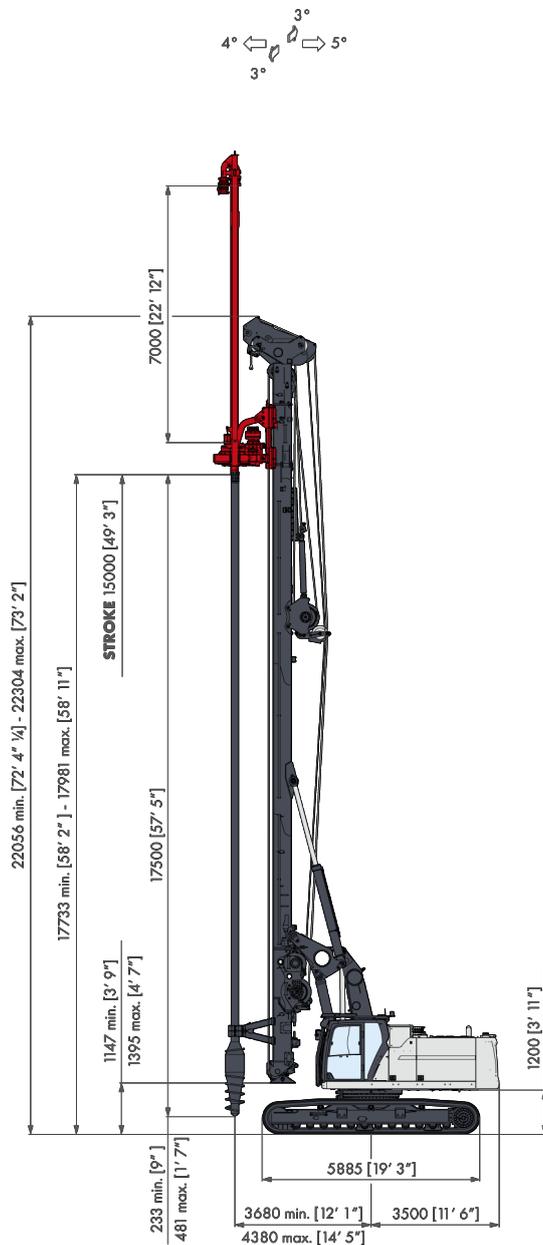
# CH 18



DP (Displacement Piles) SM (Soil Mixing)	m.s.	i.s.		
<b>Nominal max. torque</b>	<b>kNm</b>	<b>lbf-ft</b>	<b>190 at 33 MPa</b>	140,000 at 4,800 psi
<b>Max. torque</b>	<b>kNm</b>	<b>lbf-ft</b>	<b>170 at 31 MPa</b>	125,400 at 4,500 psi
<b>Engine power rating</b>	<b>kW</b>	<b>hp</b>	<b>201 - 209 at 2000 rpm</b>	274 - 284 at 2000 rpm
<b>Max. drill string length</b>	<b>mm</b>	<b>ft-in</b>	<b>16.000</b>	52' 6"
<b>Max. length of drill string extension</b>	<b>mm</b>	<b>ft-in</b>	<b>8.500</b>	27' 11"
<b>Max. pile depth</b>	<b>mm</b>	<b>ft-in</b>	<b>13.500 + 8.500 = 22.000</b>	44' 3" + 27' 11" = 72' 2"
<b>Extraction force</b>	<b>kN</b>	<b>lbs</b>	<b>330</b>	74,200
<b>Max. pull down force</b>	<b>kN</b>	<b>lbs</b>	<b>240</b>	53,954
<b>Operating weight w/o tool</b>	<b>ton</b>		<b>41,5<sup>1</sup></b>	

**NOTE** | 1 - c/w 8.500 mm (27' 11") drill string extension

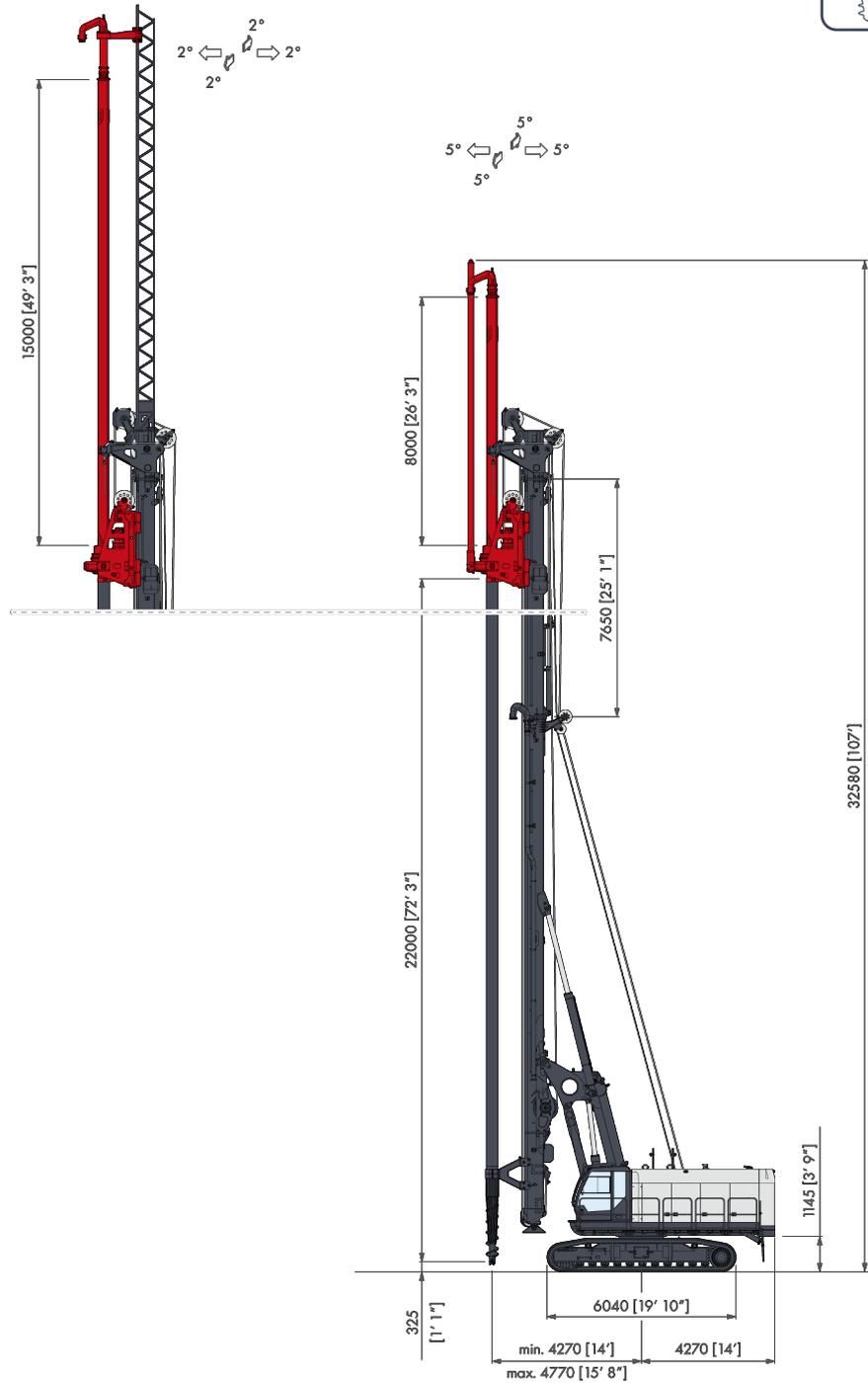
# CH 23



DP (Displacement Piles) SM (Soil Mixing)	m.s.	i.s.		
Nominal max. torque	kNm	lbf-ft	262 at 35 MPa	93,200 at 5,080 psi
Max. torque	kNm	lbf-ft	225 at 30 MPa	166,000 at 4,350 psi
Engine power rating	kW	hp	234 - 261 at 1550 - 1800 rpm	314 - 350 at 1550 - 1800 rpm
Max. drill string length	mm	ft-in	17.500	57' 5"
Max. length of drill string extension	mm	ft-in	7.000	22' 11"
Max. pile depth	mm	ft-in	14.500 + 7.000 = 21.500	47' 7" + 22' 11" = 70' 6"
Extraction force	kN	lbs	580	130,400
Max. pull down force	kN	lbs	140	31,500
Operating weight w/o tool	ton		58 <sup>2</sup>	

**NOTE** | 1 - c/w 7.000 mm (23') drill string extension

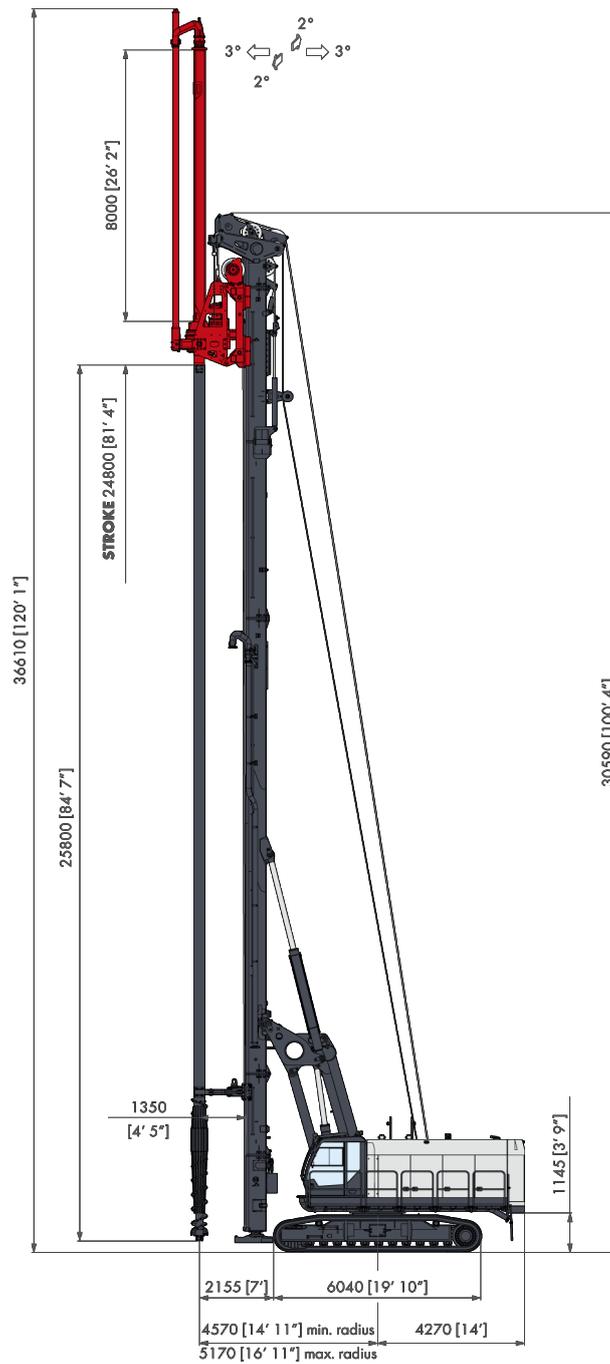
# CH 36



<b>DP</b> (Displacement Piles) <b>SM</b> (Soil Mixing)	m.s.	i.s.		
<b>Nominal max. torque</b>	kNm	lbf-ft	<b>360 at 32 MPa</b>	265,522 at 4,641 psi
<b>Max. torque</b>	kNm	lbf-ft	<b>320 at 28,5 MPa</b>	236,020 at 4,134 psi
<b>Engine power rating</b>	kW	hp	<b>345 - 405 at 1700 rpm</b>	436 - 543 at 1700 rpm
<b>Max. drill string length</b>	mm	ft-in	<b>22.000</b> <sup>1</sup>	72' 3" <sup>1</sup>
<b>Max. length of drill string extension</b>	mm	ft-in	<b>15.000</b>	49' 2"
<b>Max. pile depth</b>	mm	ft-in	<b>18.700 + 15.000 = 33.700</b> <sup>1</sup>	61' 4" + 49' 2" = 110' 6" <sup>1</sup>
<b>Extraction force</b>	kN	lbs	<b>945</b>	212,444
<b>Max. pull down force</b>	kN	lbs	<b>300</b>	67,443
<b>Operating weight w/o tool</b>	ton		<b>95,5</b> <sup>2</sup>	

**NOTE** | 1 - c/w 7.650 mm (25' 1") mast extension | 2 - c/w 8.000 mm (26' 3") drill string extension

# CHF 90



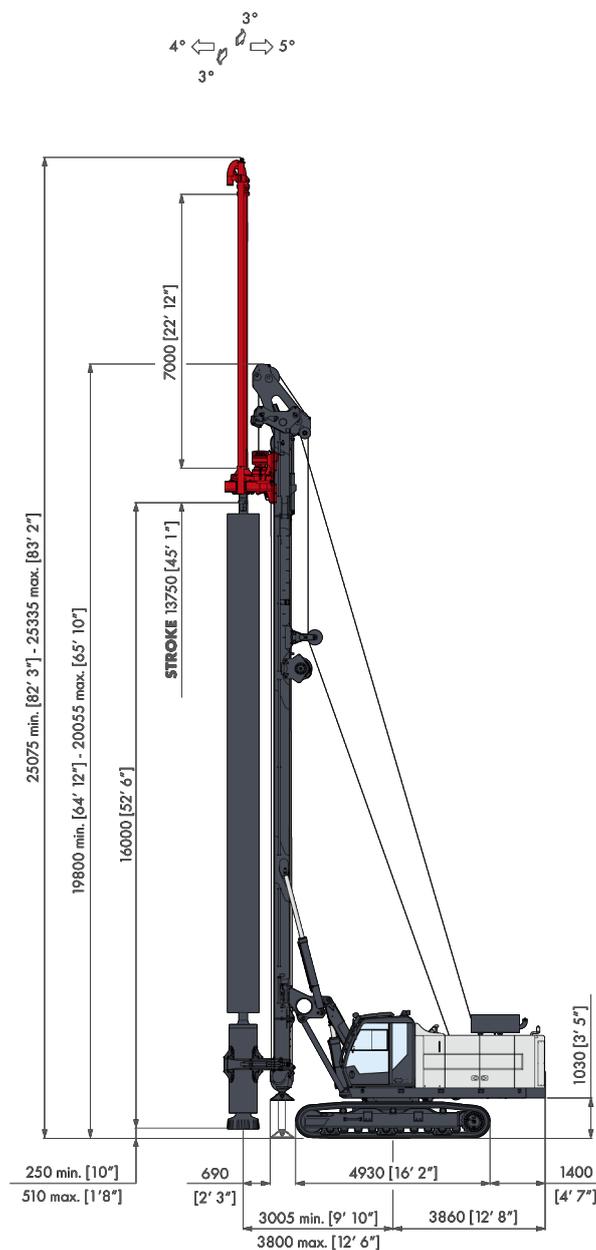
DP (Displacement Piles) SM (Soil Mixing)	m.s.	i.s.		
Nominal max. torque	kNm	lbf-ft	360 at 32 MPa	265,522 at 4,641 psi
Max. torque	kNm	lbf-ft	320 at 28,5 MPa	236,020 at 4,134 psi
Engine power rating	kW	hp	345 - 405 at 2000 rpm	436 - 543 at 2000 rpm
Max. drill string length	mm	ft-in	25.800	84' 7"
Max. length of drill string extension	mm	ft-in	8.000	26' 2"
Max. pile depth	mm	ft-in	24.500 + 8.000 = 32.500	80' 5" + 26' 2" = 106' 7"
Extraction force	kN	lbs	442	99,365
Max. pull down force	kN	lbs	210	47,210
Operating weight w/o tool	ton		95 <sup>1</sup>	

**NOTE** | 1 - c/w 8.000 mm (26' 3") drill string extension

# LDTH



# CH 18



LDTH (Large DTH)	m.s.	i.s.	CH 12		CH 18		CH 23	
Max. pile diameter	mm	ft-in	800	2' 8"	1.000	3' 3"	1.000	3' 3"
Stroke c/w mast foot	mm	ft-in	11.200	36' 8"	14.500	47' 7"	16.000	52' 5"
Max. pile depth	mm	ft-in	Approx. 40.000 - 50.000 <sup>1</sup>	Approx. 131' 2" - 165" <sup>1</sup>	Approx. 50.000 - 60.000 <sup>1</sup>	Approx. 164' - 196' <sup>1</sup>	Approx. 60.000 - 70.000 <sup>1</sup>	Approx. 196' - 229' 7" <sup>1</sup>
Extraction force	kN	lbs	250	56,200	330	74,200	580	130,400
Operating weight w/o tool	ton		27 <sup>2</sup>		41,5 <sup>2</sup>		65,6 <sup>2</sup>	

**NOTE**

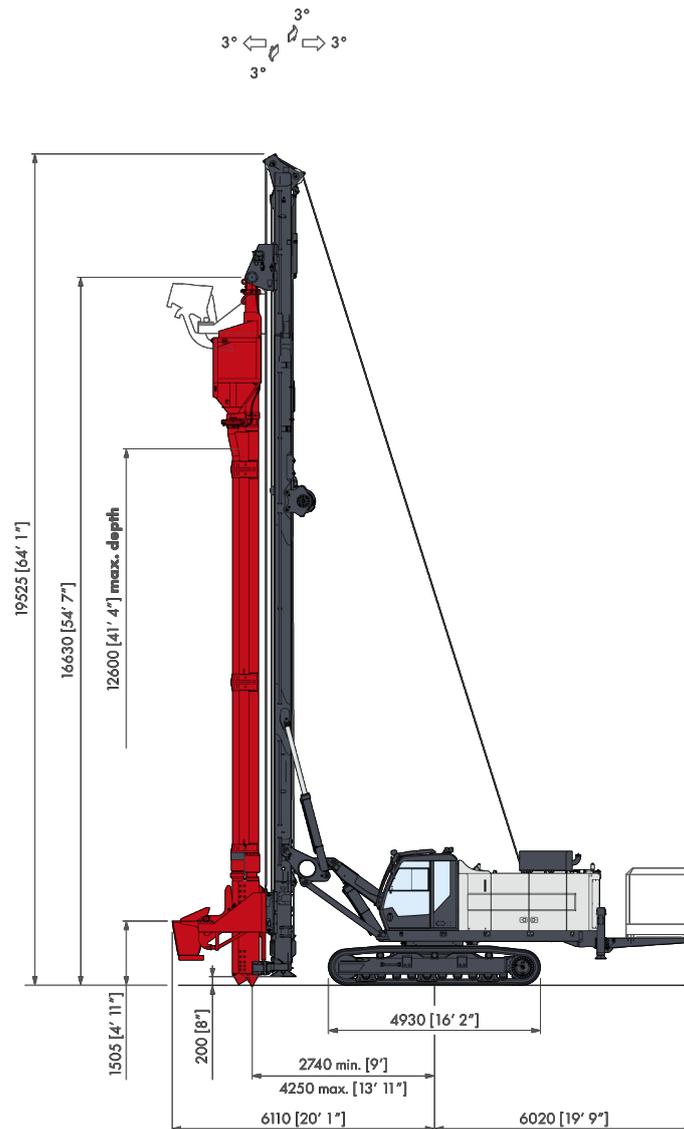
1 - Max. depth is upon drill string weight and diameter

2 - c/w drill string extension

# STONE COLUMNS



# CH 18



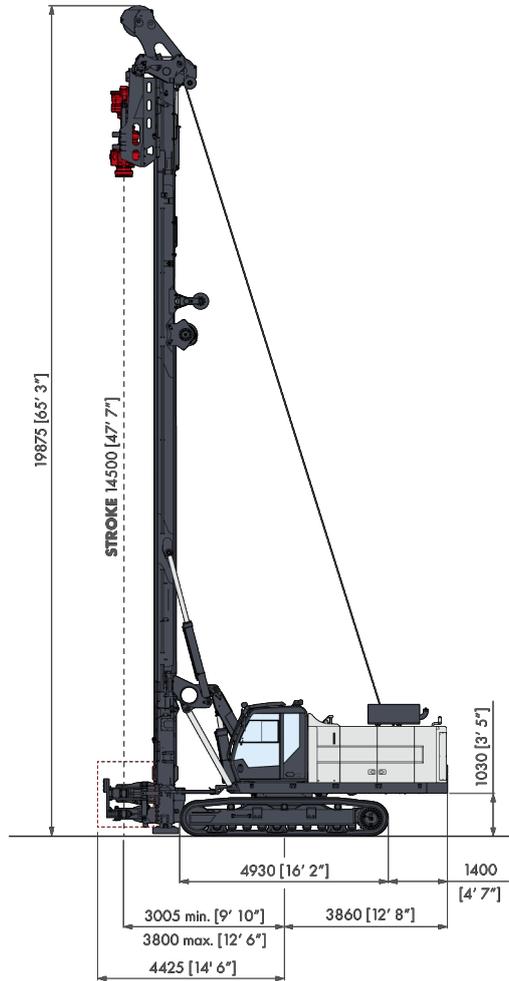
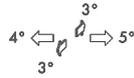
WS (Winch System)	m.s.	i.s.		
<b>Vibroflotation unit length</b>	mm	ft-in	<b>16.630</b>	54' 7"
<b>Max. pile depth</b>	mm	ft-in	<b>12.600</b>	41' 4"
<b>Vibration frequency</b>	<b>Hz</b>		<b>50</b>	
<b>Extraction force</b>	kN	lbs	<b>240</b>	54,000
<b>Pull down force</b>	kN	lbs	<b>240</b>	54,000
<b>Operating weight w/o tool</b>	<b>ton</b>		<b>44,2<sup>1</sup></b>	

**NOTE** | 1 - c/w 2.2 ton compressor unit; w/o weight of gravel

# MP



# CH 18



MP (Micropiles)	m.s.	i.s.	DOUBLE HEAD		SINGLE HEAD	
Max. feed force	kN	lbs	93	20,900	240	53,900
Max. retract force	kN	lbs	204	45,800	240	53,900
<b>MAST</b>						
Feed Stroke	mm	ft-in	14.500	47' 6"	14.500	47' 6"
<b>DOUBLE CLAMP WITH CASING EXTRACTOR</b>						
Clamping range	mm	in	120 - 620	4 3/4" - 24"	120 - 620	4 3/4" - 24"
<b>ROTARY HEAD</b>						
Gears	-	-	3		2	
Max. torque	kNm	lbs-ft	24.7	18,200	106.2	78,300
Max. speed	rpm	rpm	97		36	
<b>OPERATING WEIGHT W/O TOOL</b>						
ton			43,7		43,4	

**NOTE** | MP Configuration is also available for CH 12 & CH 23 piling rig



## DEEP FOUNDATIONS & GROUND IMPROVEMENT



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