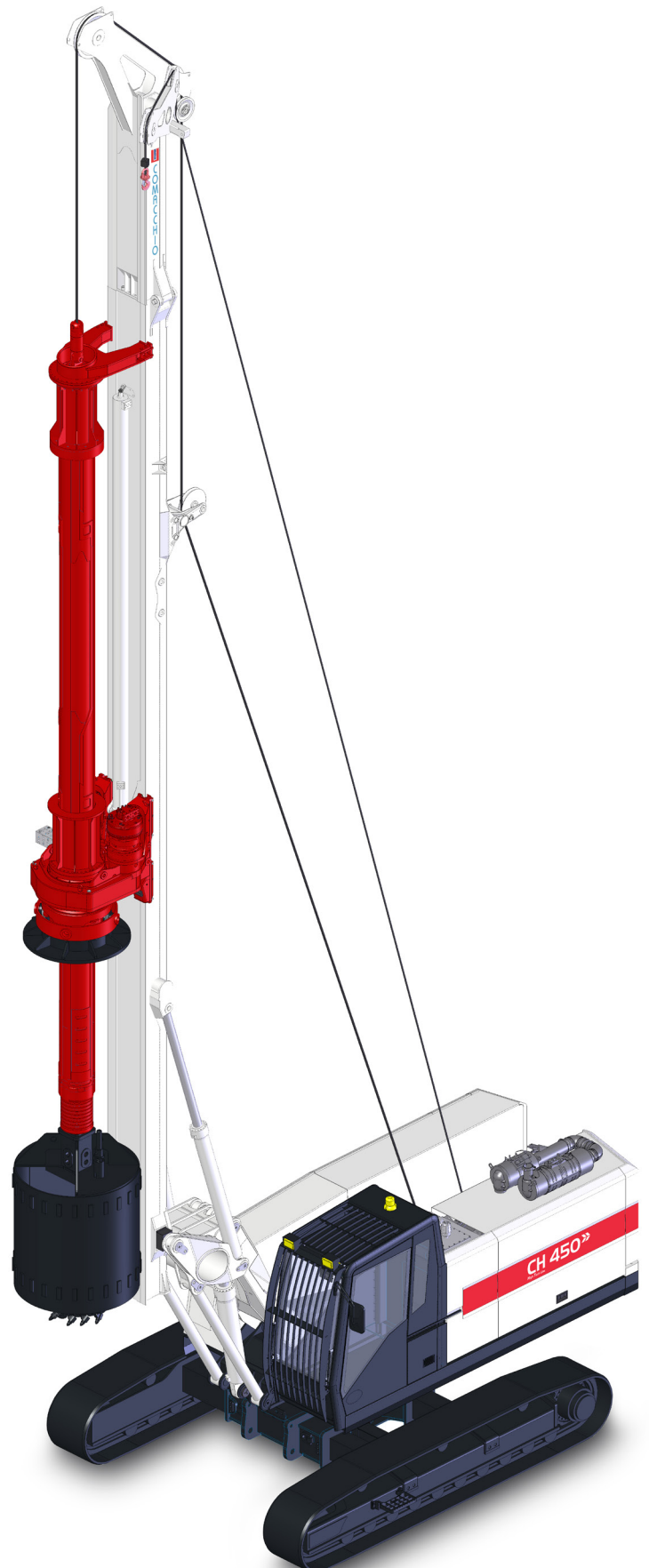




COMACCHIO

DRILLING HI-TECH



CH 450

High Tech Line

Self-Erecting Hydraulic Piling Rig

CH 450

The **Comacchio** self-erecting rigs are available in **CPD** (Cylinder Pull Down) and **WPD** (Winch Pull Down) versions and both are designed for easy transport as well as the best drilling performance.

- **CBP** (Cased Bored Piles) cased bored piles with casing driven directly by rotary head or optionally by casing oscillator powered by the base carrier;
- **BP** (Bored Piles) deep uncased bored piles stabilized by drilling fluid or dry hole;
- **LHR** (Low Head Room) special short mast arrangement suitable for large diameter bored piles;
- **CFA** (Continuous Flight Auger) piles by means of long auger string;
- **DP** (Displacement Piles);
- **MP** (Micropiles).

The **CH 450** is equipped with the **CCS** (Comacchio Controlling System) on 12' 1/8" full touch screen for monitoring and control of the rig performances and operating parameters.

Technical Data

Undercarriage	
Type	Variable gauge, telescoping side frames
Removable tracks	No
Track shoe width	600 mm / 1' 11 3/8"
Track shoe type	Triple grouser
Overall width (retracted side frames)	2550 mm / 8' 4 3/8"
Overall width (extended side frames)	4000 mm / 13' 1 1/2"
Overall length	4930 mm / 16' 2"
Centre idler to centre sprocket	4100 mm / 13' 5 3/8"
Upperframe	
Width	2550 mm / 8' 4 3/8"
Operators' cabin	TOPS & FOPS-1 certified, 980 mm (3' 2 1/2") wide
Control system type	CAN-BUS
Control system interface	12' 1/8" Touch Screen
Tail swing radius	3800 mm / 12' 5 3/8"
Diesel engine	
Make and model	Cummins QSB6.7
Emission certification	EU stage IV / US EPA Tier 4f EU stage IIIA / US EPA Tier 3
Aspiration	Turbocharged and charge air cooled
Power rating	201 kW (269 HP) / 2000 rpm
Displacement	6700 cc / 408 in ³
Fuel consumption rate (100% power, rated speed)	202 g/kWh - 0.331 lb/hp-hr 222 g/kWh - 0.365 lb/hp-hr
Average fuel consumption approx.	31.5 l/hr / 8.3 gal/hr 34,5 l/hr / 9.1 gal/hr

Hydraulic system		
Main pumps flow	2 x 214 l/min / 2 x 56.5 gal/min	
Third pump flow	160 l/min / 42.3 gal/min	
Kelly bars		
Outer element diameter (three options available)	355 - 368 - 394 mm / 14" - 14 1/2" - 15 1/2"	
Max length (self-mounting) CPD - WPD	13.0 - 13.5 m / 42' 8" - 44' 3" ⁽¹⁾	
Main winch		
Type	Controlled descent	
1 st layer line pull	160 kN / 36,000 lbs	
1 st layer rope speed	80 m/min / 263 ft/min	
Rope diameter	24 mm / 15/16"	
Rope layers	2	
Useful rope length with 1 / 2 / .. full layers	38 - 84 m / 124' 8" - 275' 7"	
FEM classification	M6 - L3 - T5	
Service winch		
Type	Controlled descent	Free fall
1 st layer line pull	72 kN / 16,200 lbs	
1 st layer rope speed	55 m/min / 181 ft/min	49 m/min / 161 ft/min
Rope diameter	18 mm / 11/16"	
Rope layers	3	4
Useful rope length with 1 / 2 / .. full layers	17 - 39 - 62 m 55' 9" - 127' 11" - 203' 5"	13 - 31 - 51 - 73 m 42' 8" - 101' 8" - 167' 4" - 239' 6"
FEM classification	M5 - L2 - T5	M6 - L3 - T5
Bored Piles (BP)		
Drilling radius min - max	3000 - 3800 mm / 9' 10" - 12' 5 1/2"	
Max pile diameter, CPD (Cylinder pull down)	1500 - 2000 mm / 4' 11" - 6' 6 3/4" ⁽²⁾	
Max pile diameter, WPD (Winch pull down)	1300 - 2000 mm / 4' 3 1/4" - 6' 6 3/4" ⁽³⁾	
Max pile depth friction kelly CPD - WPD	59 - 62,5 m / 193' 7" - 205' 1" ⁽⁴⁾	
Max pile depth locking kelly CPD - WPD	47 - 49,5 m / 154' 2" - 162' 5" ⁽⁴⁾	
Operating weight w/o tool, CPD	41000 kg / 90,400 lbs ⁽⁵⁾	
Operating weight w/o tool, WPD	42500 kg / 93,700 lbs ⁽⁵⁾	

Notes

- (1) up to 14 m (45' 11") self-erecting non-self-mounting
- (2) tool in front of mast - below mast
- (3) with - without bottom mast element
- (4) using self-mounting kelly bar
- (5) c/w 4x9 m 355 mm OD (4x29' 6", 14" OD) kelly bar

CH 450

Options and Accessories

Standard equipment

Main winch with special grooving

Hoist limit switch on main rope and service rope

Swivel for main rope

Service rope parking point

Mast inclination measurement on X & Y axes (digital and analog display)

Automatic vertical mast alignment

Depth measuring device on main winch

Rpm measuring device on rotary

Main and aux winch load cell (CE)

Crowd pressure setting

Oscillator attachment brackets

Air conditioning system

Emergency mode of operation for engine

Engine diagnostic system

Diagnostic panel for hydraulic functions

Transport securing lugs on crawler unit

On board lighting set

On board tool set

Electric refuelling pump and hydraulic oil refilling

Protective roof grate (FOPS compliant)

Radio and music player C/W bluetooth

Phone charger

CCS Comacchio Controlling System

Videocamera set

Optional equipment

Biodegradable oil

Freefall auxiliary winch

Central lubrication system

Swivel for auxiliary rope

Three kelly bar sizes in diameter

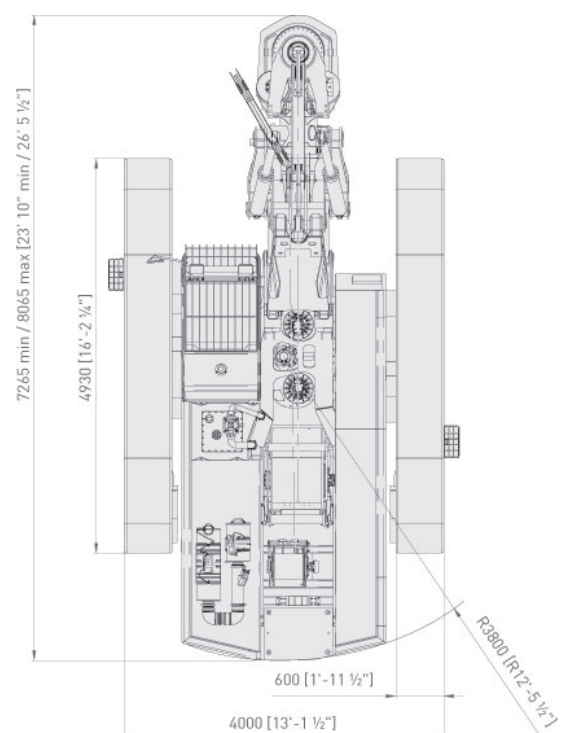
HT Line

Kelly Bars

Comacchio developed an innovative kelly bar system. Three bar sizes are available with minor changes on the rotary head.

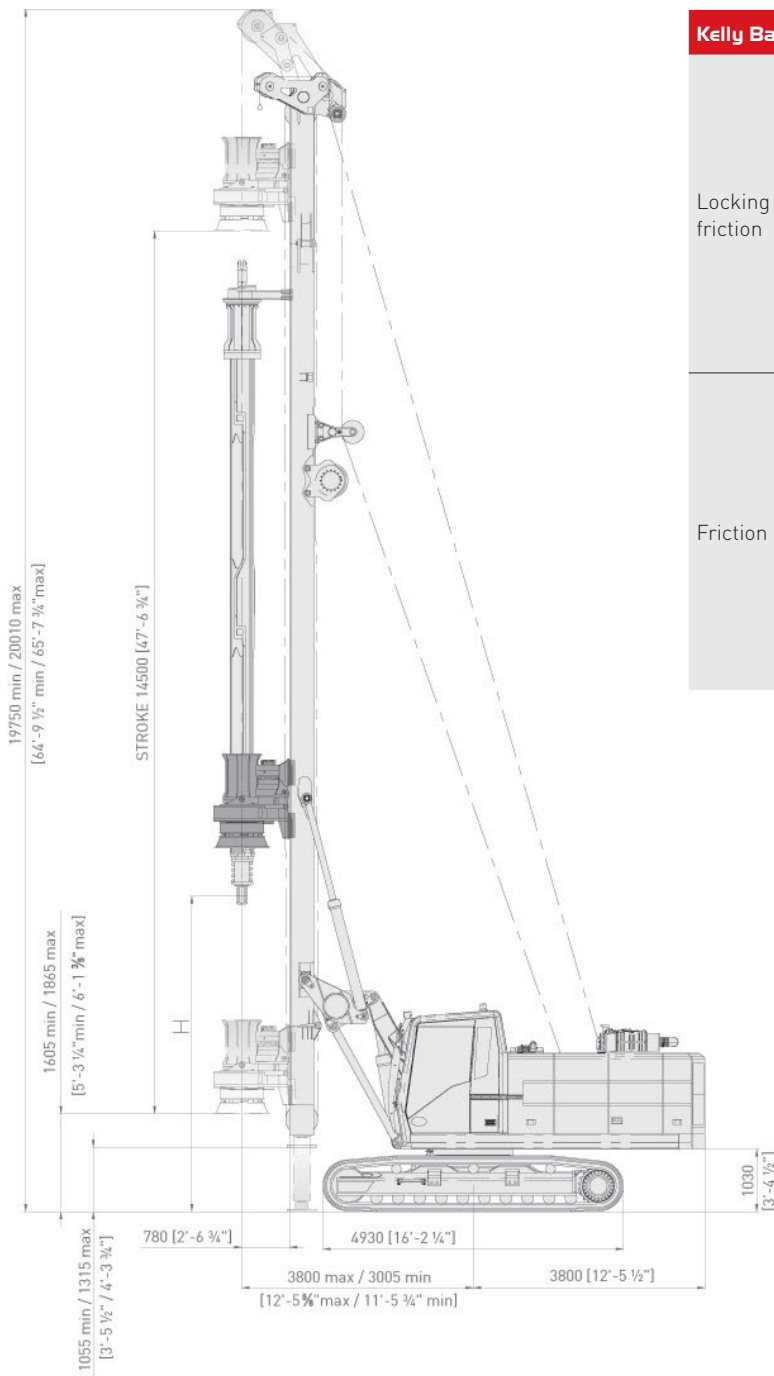


Kelly bar sizes	Outer diameter
L (light)	355 mm / 14"
HD (Heavy Duty)	368 mm / 14 1/2"
XHD (Extra Heavy Duty)	394 mm / 15 1/2"

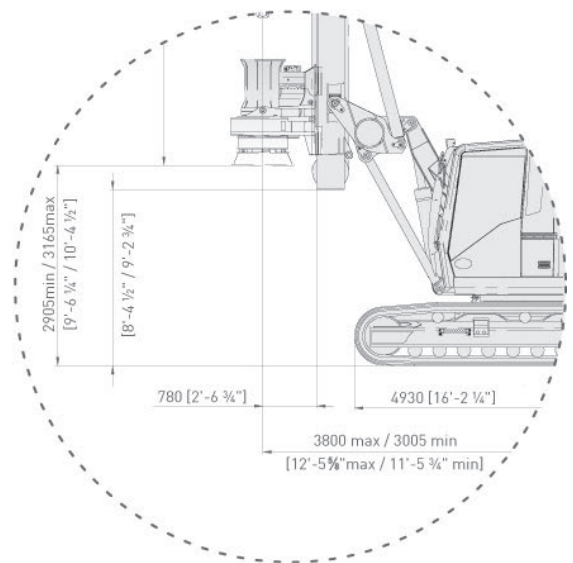


CH 450 - WPD

Overall dimensions



	Kelly Bars	Depth (m)	H (m)	Depth (ft-in)	H (ft-in)
Locking or friction	4 x 8	27,5	9,10	90' 3"	29' 10"
	4 x 9	31,5	8,10	103' 4"	26' 7"
	4 x 10,5	37,5	6,60	123'	21' 8"
	4 x 12	43,5	5,10	142' 9"	16' 9"
	4 x 13	47,5	4,10	155' 10"	13' 5"
	4 x 13,5	49,5	3,60	162' 5"	11' 10"
	4 x 14	51,5	3,10	168' 12"	10' 2"
Friction	5 x 8	34,5	9,10	113' 2"	29' 10"
	5 x 9	39,5	8,10	129' 7"	26' 7"
	5 x 10,5	47,0	6,60	154' 2"	21' 8"
	4 x 12	54,5	5,10	178' 10"	16' 9"
	5 x 13	59,5	4,10	195' 3"	13' 5"
	5 x 13,5	62,0	3,60	203' 5"	11' 10"
	5 x 14	64,5	3,10	211' 7"	10' 2"

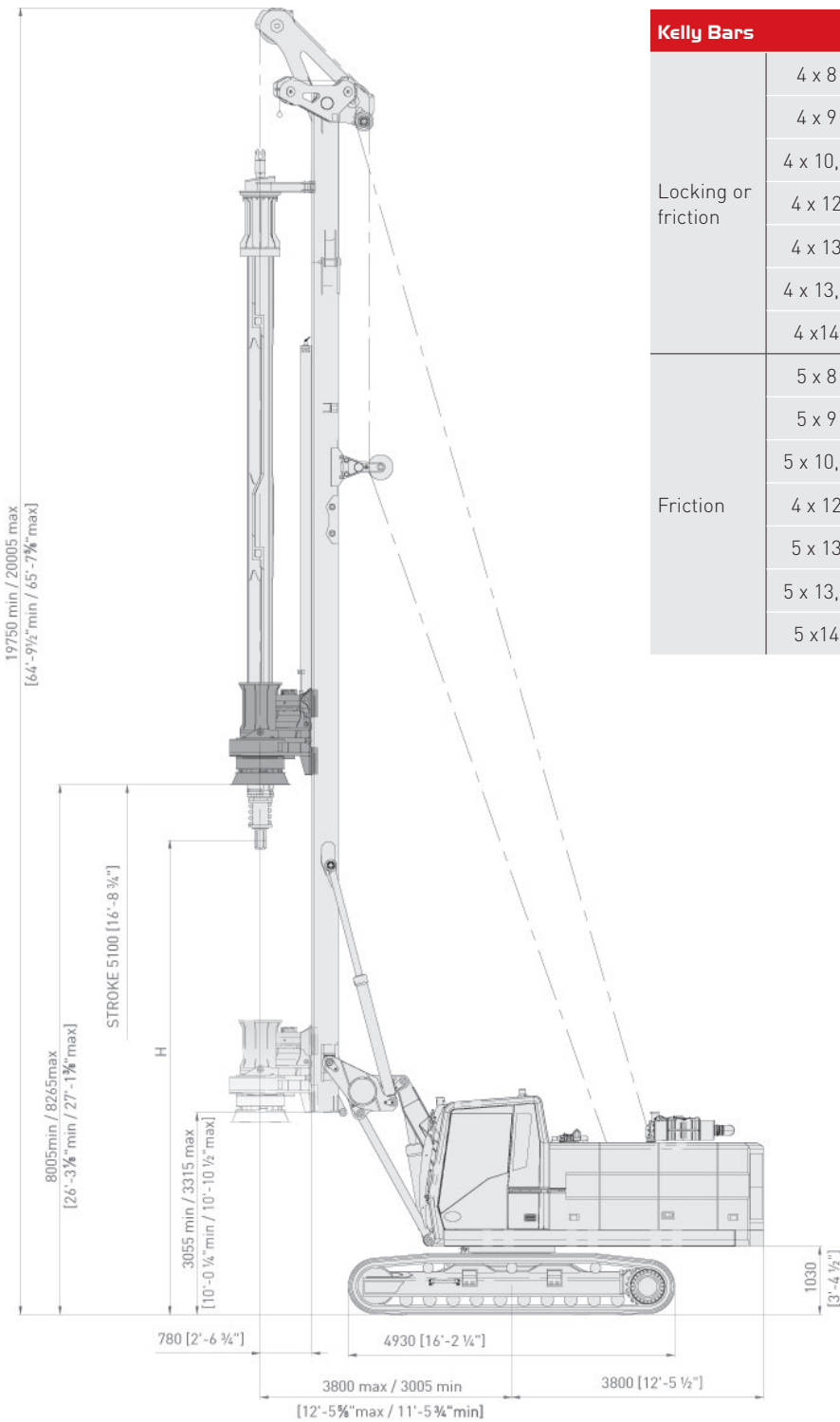


WPD (Winch Pull Down)

Stroke	14500 mm / 47' 6 3/4"
Max pull up force	240 kN / 53,950 lbs
Max pull down force	240 kN / 53,950 lbs
Max pull down force on kelly	140 kN / 31,470 lbs
Speed up	36 m/min / 118 ft/min
Speed down	36 m/min / 118 ft/min

CH 450 - CPD

Overall dimensions



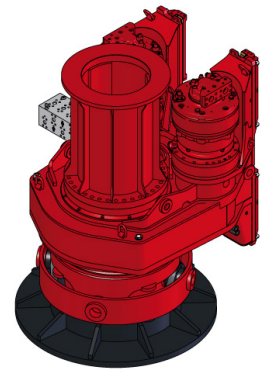
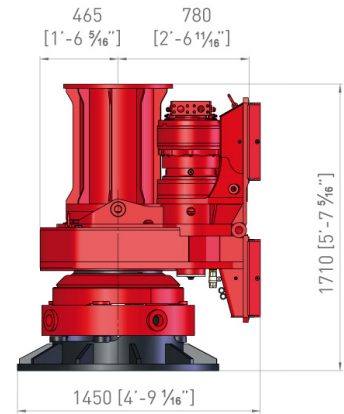
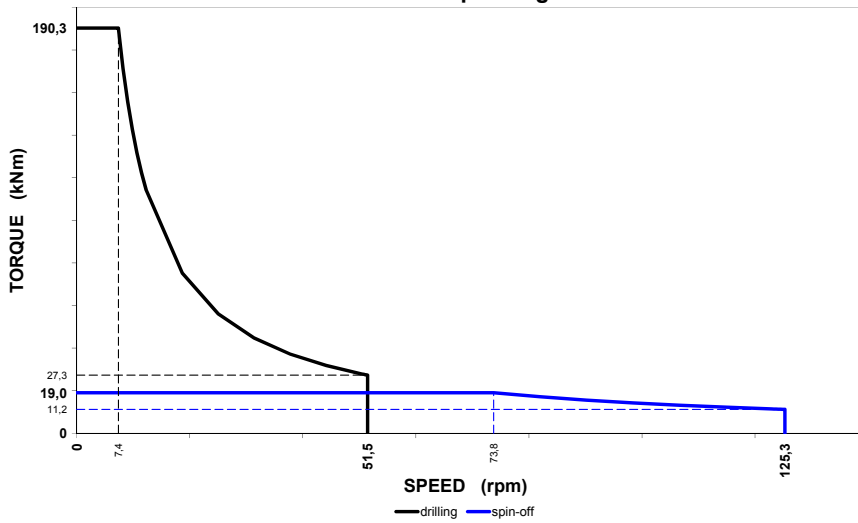
Kelly Bars	Depth (m)	H (m)	Depth (ft-in)	H (ft-in)	
Locking or friction	4 x 8	26,1	7,30	85' 8"	23' 11"
	4 x 9	30,1	7,30	98' 9"	23' 11"
	4 x 10,5	36,1	6,60	118' 5"	21' 8"
	4 x 12	42,1	5,10	138' 1"	16' 9"
	4 x 13	46,1	4,10	151' 3"	13' 5"
	4 x 13,5	48,1	3,60	157' 10"	11' 10"
	4 x 14	50,1	3,10	164' 4"	10' 2"
Friction	5 x 8	33,1	7,30	108' 7"	23' 11"
	5 x 9	38,1	7,30	125' 0"	23' 11"
	5 x 10,5	45,6	6,60	149' 7"	21' 8"
	4 x 12	53,1	5,10	174' 3"	16' 9"
	5 x 13	58,1	4,10	190' 7"	13' 5"
	5 x 13,5	60,6	3,60	198' 10"	11' 10"
	5 x 14	63,1	3,10	207'	10' 2"

CPD (Cylinder Pull Down)	
Stroke	5100 mm / 16' 8 3/4" ft
Max pull up force	226 kN / 50,800 lbs
Max pull down force	141 kN / 31,700 lbs
Max pull down force on kelly	141 kN / 31,700 lbs
Speed up	21 m/min / 69 ft/min
Speed down	20 m/min / 66 ft/min

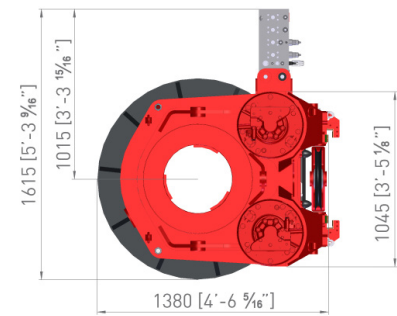
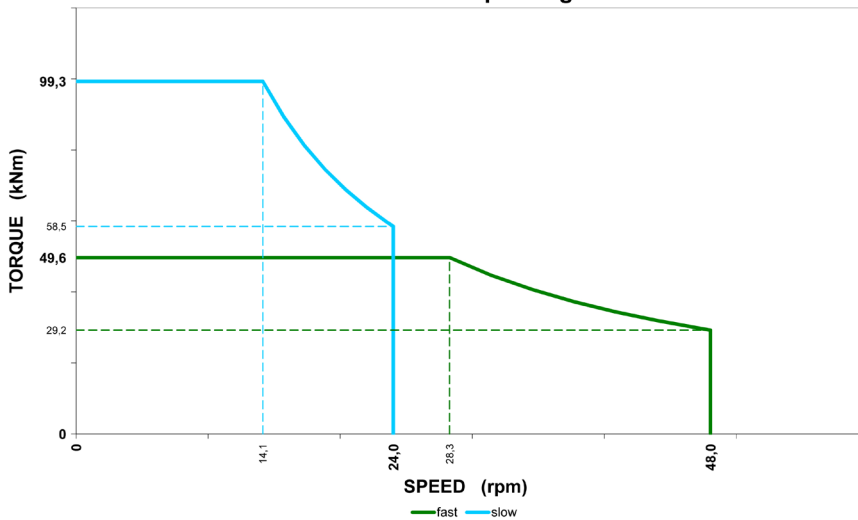
Rotary Head

Overall dimensions

CH 450 - Torque Diagram



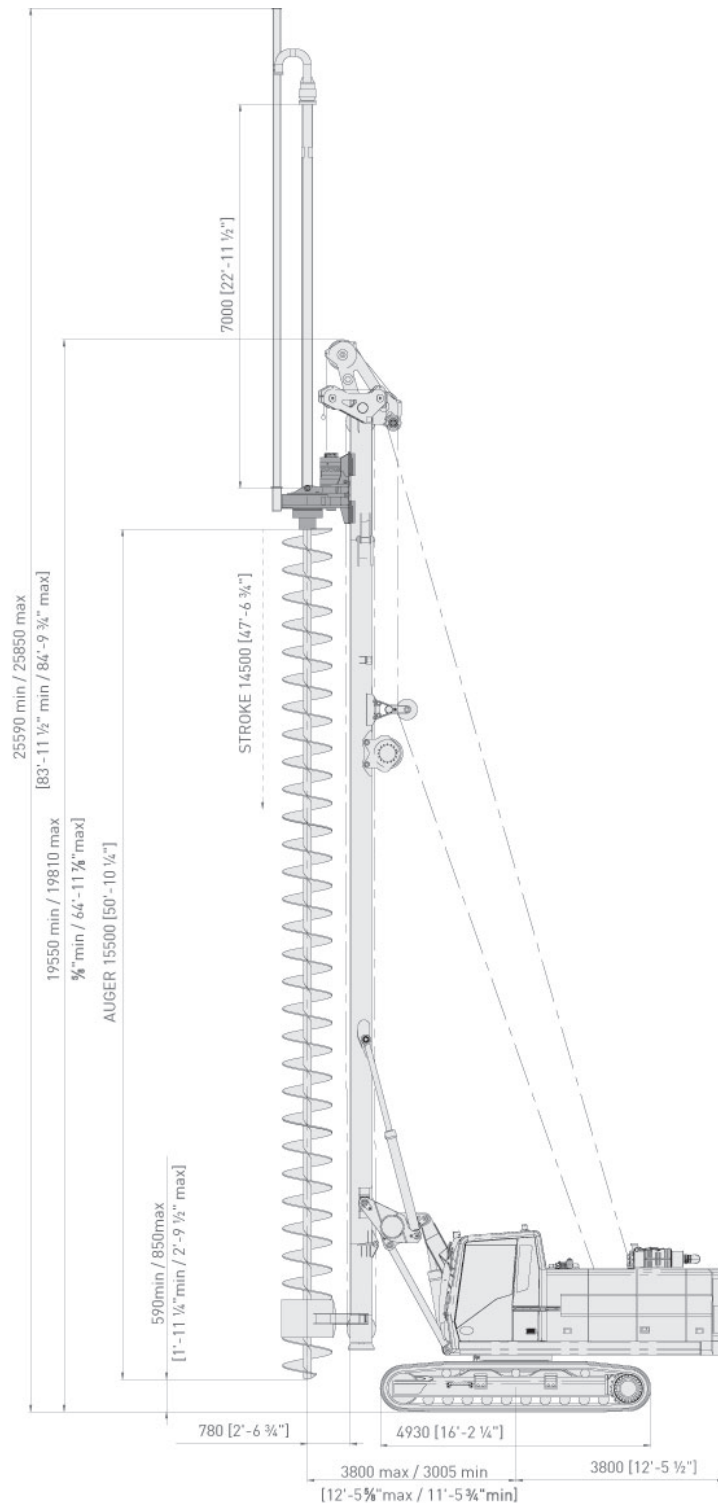
CH 450 MIX - Torque Diagram



Rotary table	
Max torque	190 kNm / 140137 lbf-ft
Rated pressure	35 MPa / 5076 psi
Max drilling speed	51 rpm
Hydraulic power	147 kW / 197 HP
Spin-off speed	125 rpm
Replaceable drive sleeve	Yes, standard
Replaceable drive keys	Yes, option

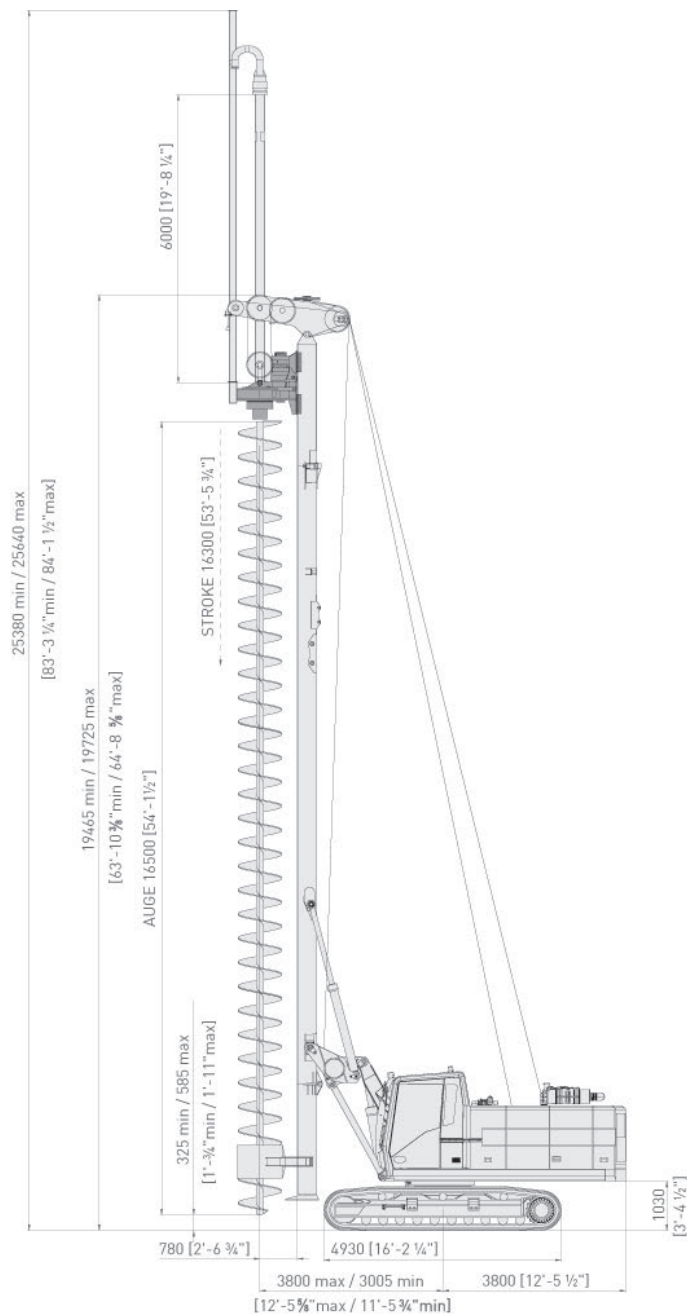
CH 450 - CFA/WPD

Overall dimensions



CFA/WPD (Quick Conversion CFA)

Max pile diameter	1.000 mm / 3' 3 1/2"
Max length of augers	15,5 m / 50' 10"
Max length of auger extension	7 m / 23'
Max pile depth	14 + 7 = 21 m / 45' 11" + 23' = 68' 11"
Max pile depth with auger cleaner	13 + 7 = 20 m / 42' 8" + 23' = 65' 7"
Extraction force	390 kN / 87,675 lbs
Crowd force on auger	140 kN / 31,470 lbs



CFA (Continuous Flight Auger)

Max pile diameter	1.000 mm / 3' 3 1/2"
Max length of augers	16,5 m / 54' 2" ⁽⁷⁾
Max length of auger extension	6,0 m / 19' 8"
Max pile depth	15,5 + 6,0 = 21,5 m / 50' 10" + 19' 8" = 70' 6" ⁽⁷⁾
Max pile depth with auger cleaner	14,5 + 6,0 = 20,5 m / 47' 7" + 19' 8" = 67' 3"
Extraction force	480 kN / 107,900 lbs
Crowd force on auger (option)	100 kN / 22,480 lbs ⁽⁸⁾

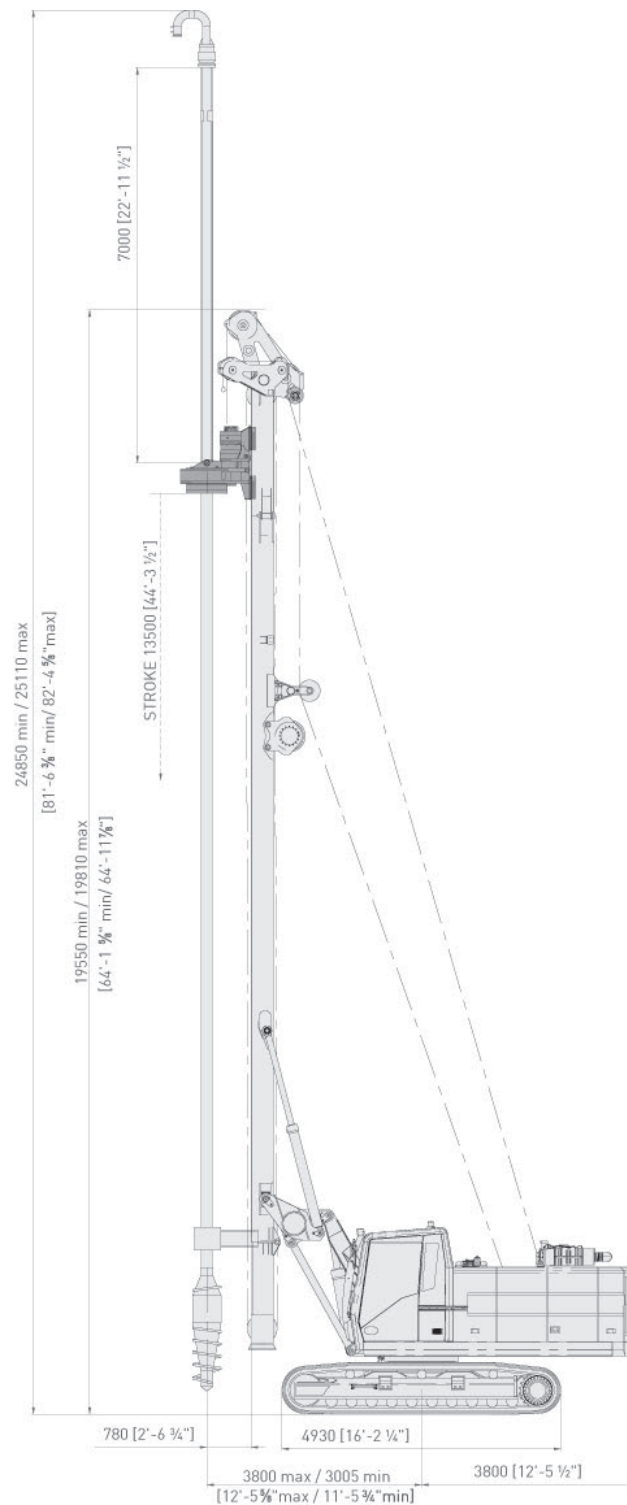
Notes

(7) also available 2.5 m (8' 2") mast extn and add'l cwt for 18.5 m (60' 8") auger; 18.0+6.0 = 24.0 m (59' 1" + 19' 8" = 78' 9") depth

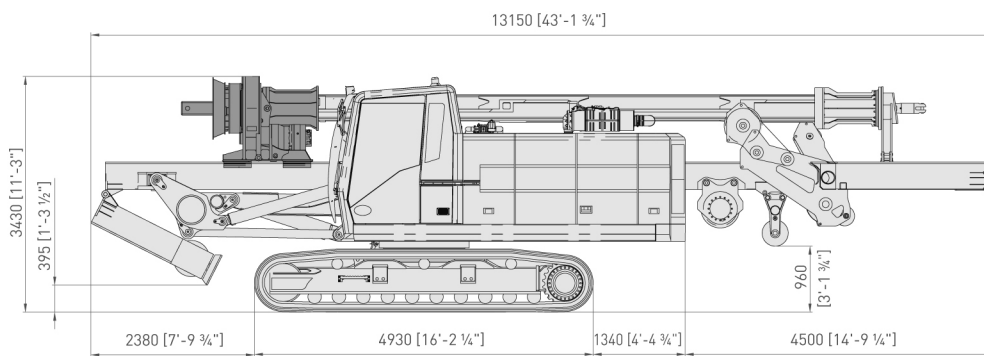
(8) depth reduced by 1.0 m (3' 3 1/2")

CH 450 - DP

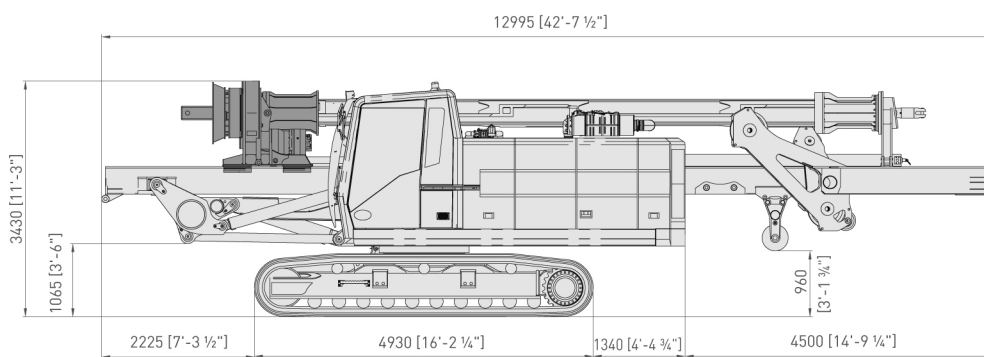
Overall dimensions



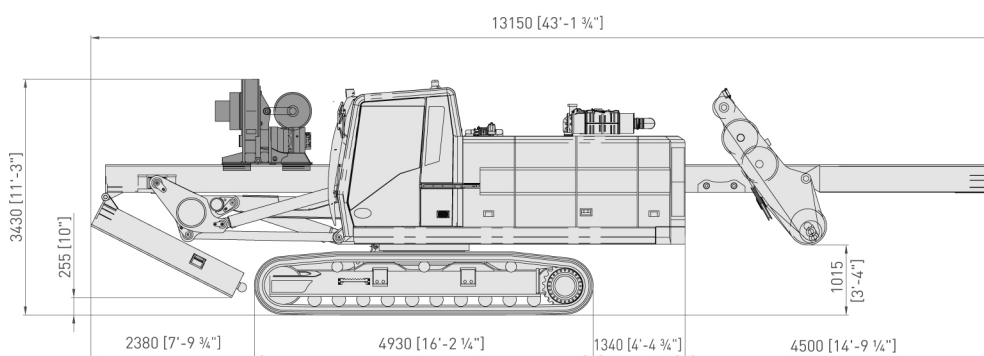
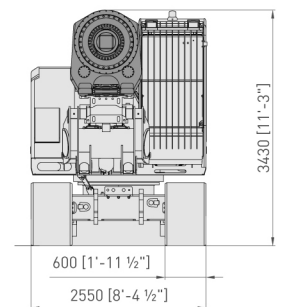
DP (Displacement Piles)	
Max diameter	350 mm / 13'
Max drill string length	15,5 m / 50' 10"
Max length of string extension	7 m / 23'
Max depth	13 + 7 = 20 m / 42' 8" + 23' = 65' 7"
Max pull down force	140 kN / 31,470 lb



WPD



CPD



CFA

Weights and dimensions	
Transport width	2550 mm / 8' 4 1/2"
Transport height	3430 mm / 11' 3"
Transport length WPD - CPD	13150 - 12995 mm / 43' 2" - 42' 7 1/2" ^[9]
Transport weight CPD	44500 kg / 98,100 lbs
Transport weight WPD	42500 kg / 93,700 lbs

Notes CPD and WPD

[9] Kelly <11 m [36' 1"]



Comacchio s.r.l.

Via Callalta, 24/B - 31039 Riese Pio X (TV) (Italy)

Tel +39 0423 7585 - Fax + 39 0423 755592

sales@comacchio-industries.it - www.comacchio-industries.it