# CB20

## PILING RIG


casagrande
Since 1963

# CB20

## HYDRAULIC PILING RIG

**3.000 mm**
Max. drilling diameter

**57 m**
Max. drilling depth

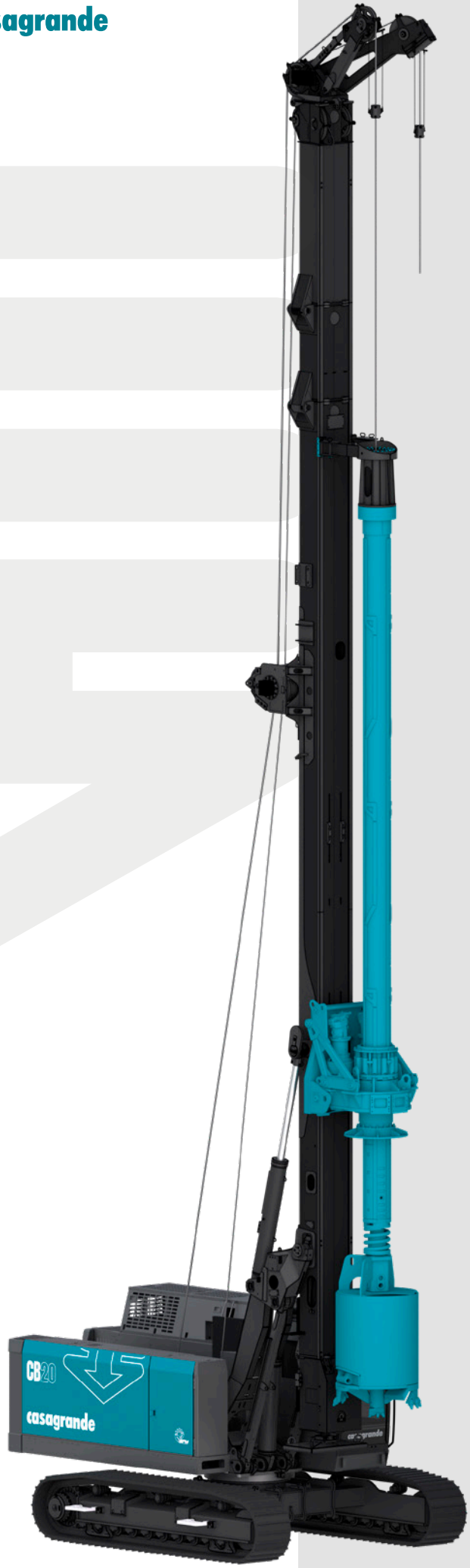
**204 kNm**
Max. torque

**231kW**
Diesel engine power

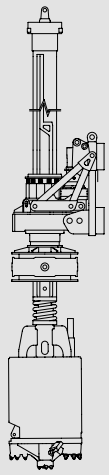
**46 t**
Operating weight

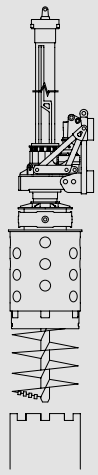
Maximum values vary according to the set-up

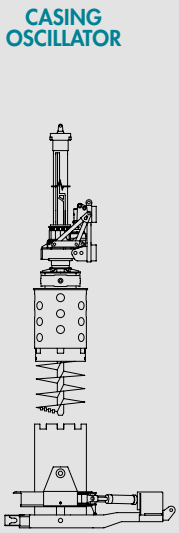

1 – Undercarriage
2 – Upperstructure
3 – Counterweight
4 – Parallelogram
5 – Main winch
6 – Crowd winch
7 – Auxiliary winch
8 – Mast
9 – Jib
10 – Rotary head
11 – Kelly bars
12 – Tool




## BORED PILES

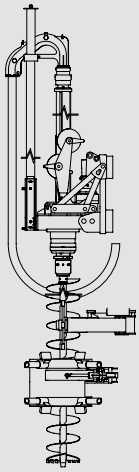


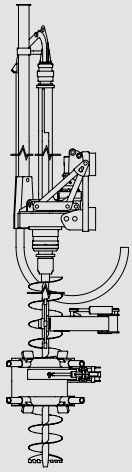



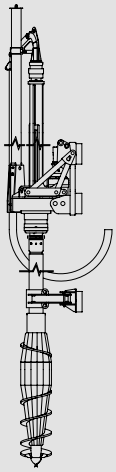



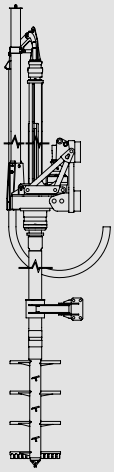

| | | | |
|---|---|---|---|
| CROWD RAM | Ø 3.000 mm Depth 50 m | Ø 1.500 mm Depth 50 m | Ø 1.300 mm |
| CROWD WINCH | Ø 1.500 mm Depth 57 m | Ø 1.180 mm Depth 57 m | Ø 1.300 mm |

## SINGLE PASS



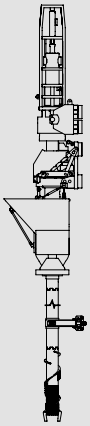



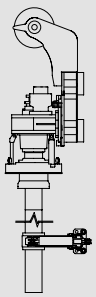



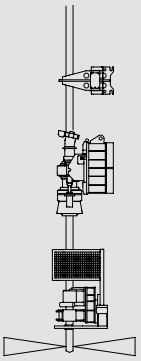



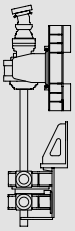

| | | | |
|---|---|---|---|
| Ø 900 mm Depth 28 m | Ø 900 mm Depth 23 m | Ø 420 mm Depth 22,5 m | Depth 22,5 m |

## SPECIAL ARRANGEMENTS




| | | | |
|---|---|---|---|
| Depth 12 m | Stroke 15,5 m | Depth 68 m | Depth 16 m |

# 12 VALUABLE REASONS TO CHOOSE CB20

## 3-YEAR WARRANTY 4,500 HOURS OF GUARANTEED OPERATION

The peace of mind of owning equipment designed for long-lasting durability, covered by a 36-month warranty and guaranteed to deliver at least 4.500 hours of flawless operation. This is one of the many ways we ensure that those who choose us can always rely on our unwavering support.

## SPM SMART POWER MANAGEMENT

The ability to intelligently manage engine power according to each specific function translates into greater efficiency and productivity. A dedicated system continuously detects the required power, increasing it to its maximum level only when necessary. This ensures a more responsible and sustainable use of energy.

## CFM - CASAGRANDE FLEET MASTER

The CFM system, developed and refined in collaboration with Vodafone, instantly detects any alarms or malfunctions through an online platform accessible from PCs, tablets, and smartphones. Thanks to the standard integration of **Vodafone Business** connectivity, real-time monitoring enables immediate intervention in case of failures, significantly reducing downtime and optimizing the rig productivity.

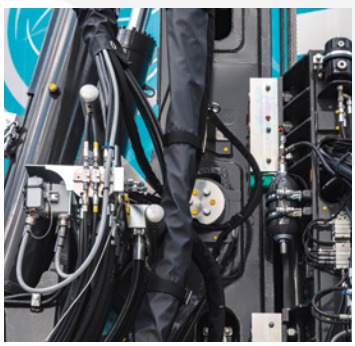
## CDR - CASAGRANDE DATA RECORDER

The CDR monitoring system of the drilling process, allows for the detection and recording of the working parameters. These data can be analyzed and processed to generate detailed jobsite reports.

## ENVIRONMENT AWARENESS

The latest-generation Stage V diesel engines reduce pollutant emissions and allow operation with both low-sulfur fuels and HVO (Hydrotreated Vegetable Oil)—a high-performance, low $CO_2$ emission fuel taken from waste animal fats and used vegetable oils. Like many other Casagrande rigs, the CB20 is also available in full-electric and hybrid versions.



## ERGONOMIC CABIN WITH HIGH VISIBILITY AND ACOUSTIC COMFORT

The cabin is designed to enhance operator comfort, reducing fatigue and increasing productivity while ensuring excellent visibility. It is also soundproofed to ensure optimal acoustic comfort and equipped with a new climate control system, which is quieter, more powerful, and specifically directed at the most exposed body areas. Additionally, the rig's intelligent heat exchangers significantly reduce the noise generated by the cooling system.

## EASIER AND SAFER MAINTENANCE

The hydraulically lifting cover panels provide easy access to components for inspection and maintenance. Additionally, the optional platforms and safety railings further enhance operator safety during these tasks. Optional cameras offer a detailed view of the work area, improving visibility and facilitating maintenance operations.

## AUTOMATED DRILLING WITH REAL-TIME PROGRESS VERIFICATION

The automated drilling functions available on the rig, in addition to simplifying its operation, allow the operator to stay updated in real-time on the drilling process progress through an in-cabin display. The process is continuously monitored through precise data on depth, torque, pressure, and verticality.

## SIMPLIFIED AND CUSTOMIZED USABILITY

The controls, in addition to being characterized by simple and intuitive functionality, are customizable. Thanks to this, each operator can create their preferred control system, avoiding potential operational errors and enhancing the safety of the operations.

## AUTOMATIC GREASING SYSTEM

The automatic greasing system continuously ensures optimal lubrication of all moving mechanical parts, helping them function perfectly and extending their life.

## REMOTE CONTROL

The remote control, which allows to perfectly manage all rig movements, enhances the operator's safety during loading and unloading operations from transport vehicles and during the setup phases for work.

## OPTIMAL OPERATION IN COLD ENVIRONMENTS

The rig can be equipped with a kit that ensures optimal machine performance and maximum efficiency even in particularly cold environments. This includes hydraulic oil with stable viscosity and thermal properties, a hydraulic oil preheating device, and an enhanced climate control system for the cabin.

# EQUIPMENT SETUP

## BASE CARRIER

### STANDARD

- SPM control system – Smart Power Management
- 12" touch screen display for visualization and setting of drilling parameters 7"auxiliary display to manage diesel engine, cameras and auxiliary systems of the cabin
- Mast lifting and lowering aid
- Drilling depth measurement and automatic mast verticality control
- Automatic idling mode with engine start/stop for fuel saving
- Hook on auxiliary line
- Protective roof guard (FOPS compliant)
- Air conditioning system
- Front platform for service toolbox
- Cabin platform
- Electric refueling pump
- Casagrande Fleet Master remote rig control and monitoring via internet

### OPTIONAL

- Lateral platform and handrails
- Handrails on upper structure
- Water pre-heating system for starting engine at low - temperatures
- Automatic centralized greasing system
- Radio remote control for rigging, derigging, rig movement and positioning
- Camera for panoramic view of the area around the rig
- Automatic self-alignment of drilling axis
- Transport kit according to required transport configuration
- Smart lowering and overload protection for main winch
- Load cell an auxiliary winch for line pull monitoring

## ROTARY PILING EQUIPMENT

### OPTIONAL

- Drilling axis extensions for larger diameter tools
- Cardanic joint for rotary head
- Pull control and overload protection for pull-down winch
- Arrangement for casing oscillator
- Casing oscillator GCL 1300

## CFA/DP EQUIPMENT

### OPTIONAL

- Measurement and visualization of extraction force
- Rotating cleaner hydraulically operated
- Star cleaner
- Lower guide with hydraulic opening
- Hydraulic vibrator for cages
- Feed control
- Instrument for measuring, displaying and recording of drilling parameters. Complete with software for processing data on PC
- Instrument for continuous extraction

# NEXT-GENERATION ASSISTANCE SYSTEMS

## *AUTOMATIC IMPACT PROTECTION FOR THE KELLY BARS*

An automatic control system slows down the rig main winch when the joints between the elements of the kelly bars meet. This ensures that the contact occurs at a reduced speed, preventing damage to the connection components.

## *INTERLOCKS IDENTIFICATION SYSTEM*

The rig's display provides an accurate visualization of the kelly bar interlocks' position in relation to the rotary head. As a result, the operator can identify the correct interlock position, optimizing work time and reducing wear and damage to the kelly bar.

## *ADAPTIVE MACHINE CONTROL SYSTEM*

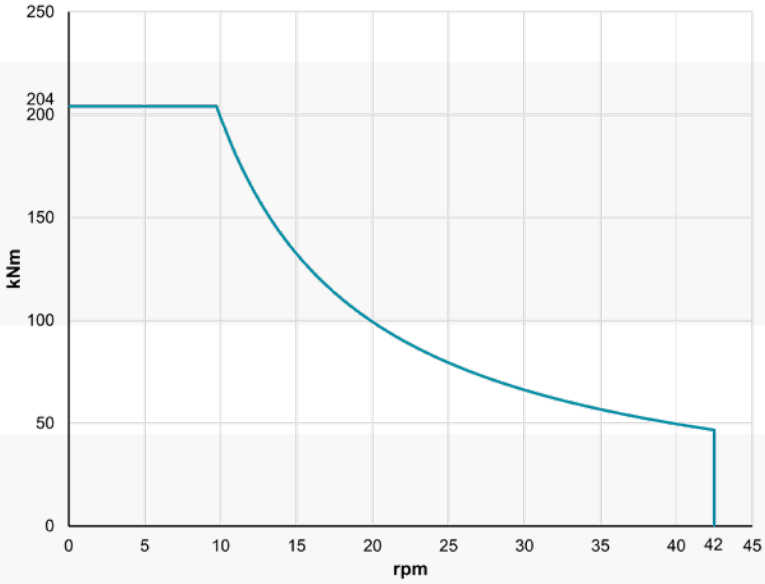
A dedicated electronic system, available on all Casagrande machines, allows for adjusting the drill rig's response to the control activation speed, providing either a more immediate or relaxed operation depending on the operator's preferences and the type of excavation technology used.

## *AUTOMATIC DRILLING AND EXTRACTION CONTROL*

In single-pass drilling systems (CFA, soil mixing, displacement), the advancement and extraction speeds of the tool can be automatically controlled, without the need for operator intervention. This optimizes concrete consumption and ensures the perfect execution of the pile, while simultaneously increasing the machine's productivity.

## *CPS – CASAGRANDE POSITIONING SYSTEM*

The CPS satellite positioning system allows for locating the position of the pile to be drilled without the need for a ground-based visual reference. The precision is such that the system can be used in any condition, even in cases where physical staking cannot be followed, such as for piles drilled at sea.

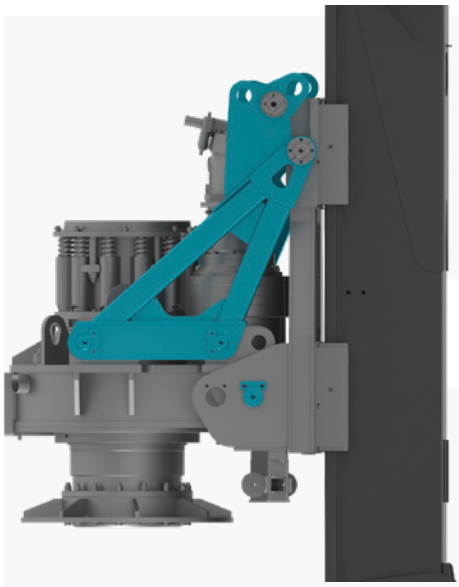



# ROTARY R20.355

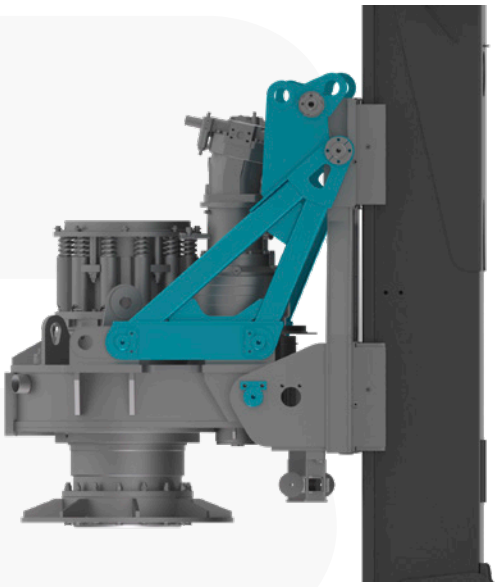
## SPECIFICATIONS

**Max. torque: 204 kNm**
**Max. speed: 42 RPM**
**Max. torque at 10 rpm: 199 kNm**

# EXTENDED DRILLING AXIS

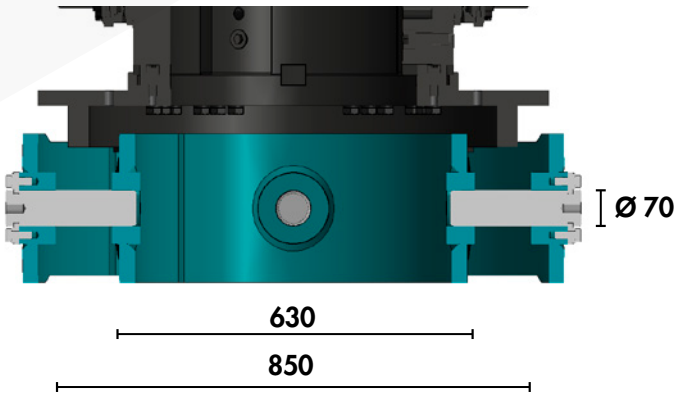


Drilling axis 800



Drilling axis 950

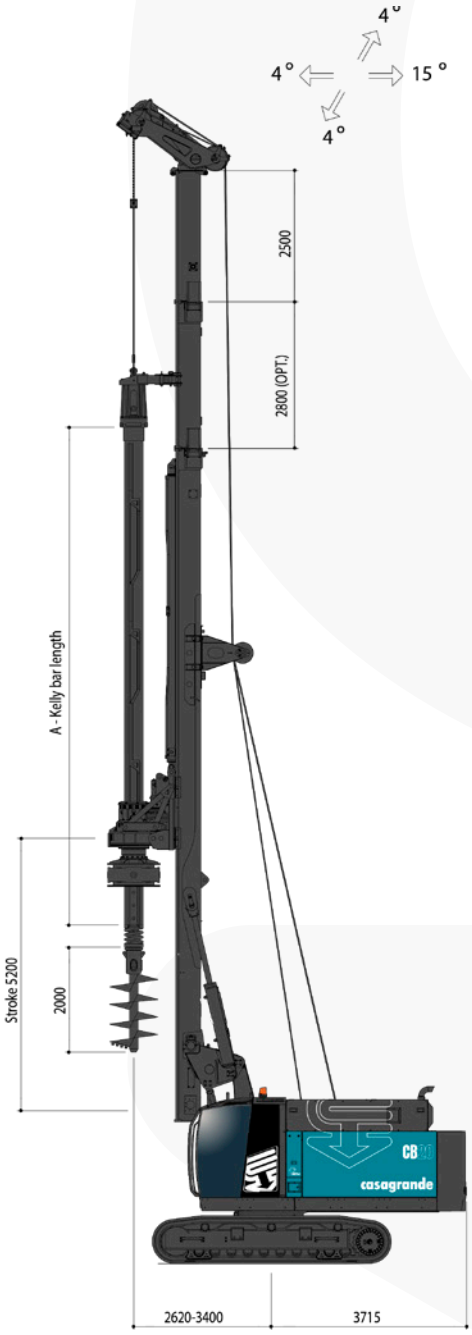
# CARDANIC JOINT TYPE "C1"



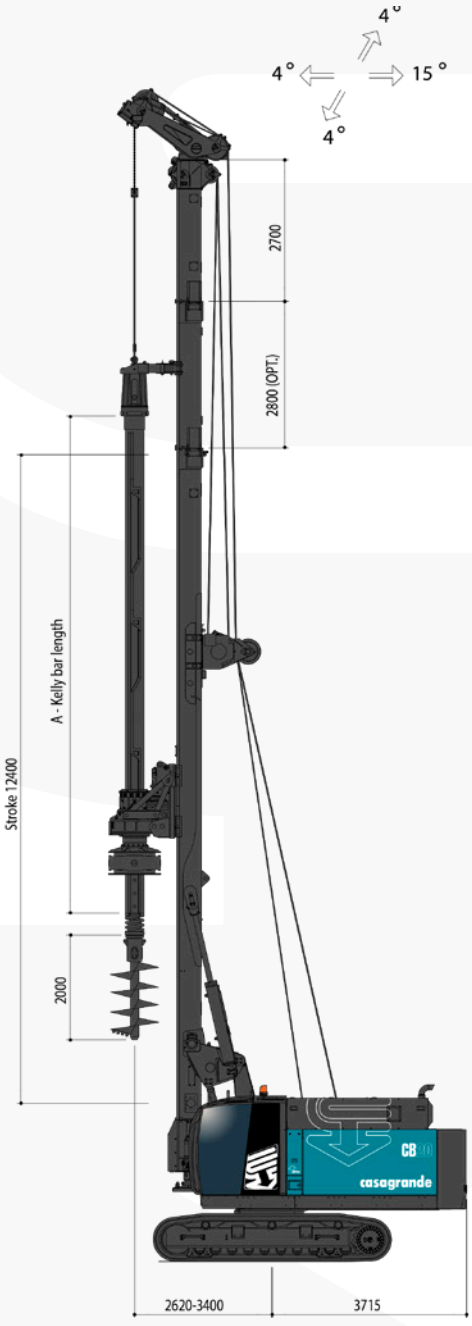
| TECHNICAL SPECIFICATIONS | | |
|---|---|---|
| **BASE CARRIER** | **STAGE III-TIER 3** | **STAGE V-TIER 4** |
| Diesel engine | CUMMINS QSB 6.7 | CUMMINS B 6.7 |
| Rated output | 201 kW | 231 kW |
| Diesel tank capacity | 280 l | 280 l |
| Urea tank capacity | - | 57 l |
| **HYDRAULIC SYSTEM** | | |
| Hydraulic power | 208 kW | |
| Hydraulic pressure | 350 bar | |
| Main pumps flow rate | 2 X 214 l/min + 1 X 214 l/min | |
| Hydraulic oil tank capacity | 360 l | |
| **UNDERCARRIAGE** | **STANDARD** | **OPTIONAL** |
| Width of triple grouser track shoes | 600 mm | 800 mm |
| Undercarriage width with retracted/extended tracks | 2.500/3.700 mm | 2.850/3.900 mm |
| Overall tracks length | 4.550 mm | |
| Travel speed | 0-1,4 km/h | |
| Traction force-nominal/effective | 450/365 kN | |
| Weight of base machine without attachment | 26,2 t | 26,6 t |
| **MAIN WINCH** | | |
| Line pull on 1st layer nominal/effective | 165/135 kN | |
| Max. line speed | 87 m/min | |
| Rope diameter | 24 mm | |
| **AUXILIARY WINCH** | | |
| Line pull on 1st layer nominal/effective | 73/60 kN | |
| Max. line speed | 88 m/min | |
| Rope diameter | 18 mm | |
| **CROWD WINCH** | | |
| Extraction force nominal/effective | 343/274 kN | |
| Crowd force nominal/effective | 343/274 kN | |
| Extraction/Crowd speed | 20 m/min | |
| Extraction/Crowd fast speed | 38 m/min | |
| Rope diameter | 24 mm | |
| Stroke max. | 15,5 m | |

# BORED PILING

## CROWD RAM ARRANGEMENT




## CROWD WINCH ARRANGEMENT



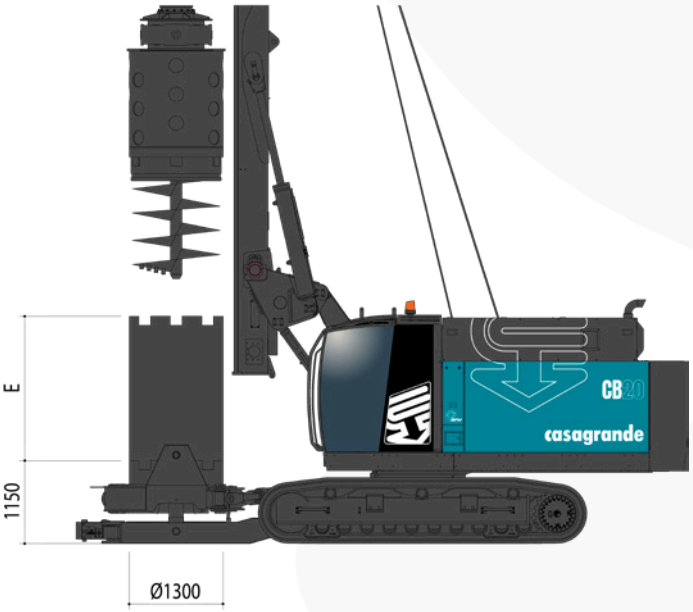

| 800 | 950 | DRILLING AXIS | 800 | 950 |
|---|---|---|---|---|
| | | Max. drilling diameter | | |
| 1.500 mm | 1.800 mm | - uncased | 1.200 mm | 1.500 mm |
| 1.180 mm | 1.500 mm | - cased | 880 mm | 1.180 mm |
| 46 t | | Operating weight with kelly bar 3x7500 | 48 t | |

| Type | CROWD RAM | | | CROWD WINCH | | |
|---|---|---|---|---|---|---|
| | Nominal length A | Drilling depth P(m) | Max. ground clearance CR(m) | Drilling depth P(m) | Max. ground clearance CW(m) | Weight (kg) |
| D-355-3-A-260-200 | 7.500 | 19,2 | 8,4 | 19,1 | 9,0 | 3.510 |
| | 9.500 | 25,2 | 6,8 | 25,1 | 7,0 | 4.310 |
| | 11.000 | 29,7 | 5,3 | 29,6 | 5,5 | 4.910 |
| | 12.500 | 34,2 | 3,8 | 34,1 | 4,0 | 5.500 |
| D-355-4-A-220-200 | 7.500 | 25,7 | 8,4 | 25,6 | 9,0 | 3.650 |
| | 9.500 | 33,7 | 6,8 | 33,6 | 7,0 | 4.490 |
| | 11.000 | 39,7 | 5,3 | 39,6 | 5,5 | 5.110 |
| | 12.500 | 45,7 | 3,8 | 45,6 | 4,0 | 5.110 |
| F-355-5-A-105-200 | 7.500 | 32,2 | 8,4 | 32,1 | 9,0 | 5.730 |
| | 9.500 | 42,2 | 6,8 | 42,1 | 7,0 | 4.500 |
| | 11.000 | 49,7 | 5,3 | 49,6 | 5,5 | 5.260 |
| | 12.500 | 57,2 | 3,8 | 57,1 | 4,0 | 5.760 |

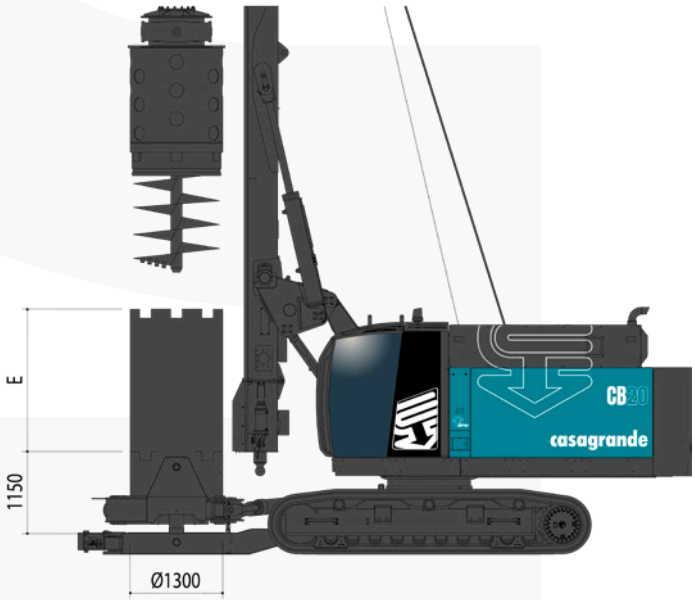
# BORED PILING

## ARRANGEMENT WITH CASING OSCILLATOR

### CROWD RAM ARRANGEMENT



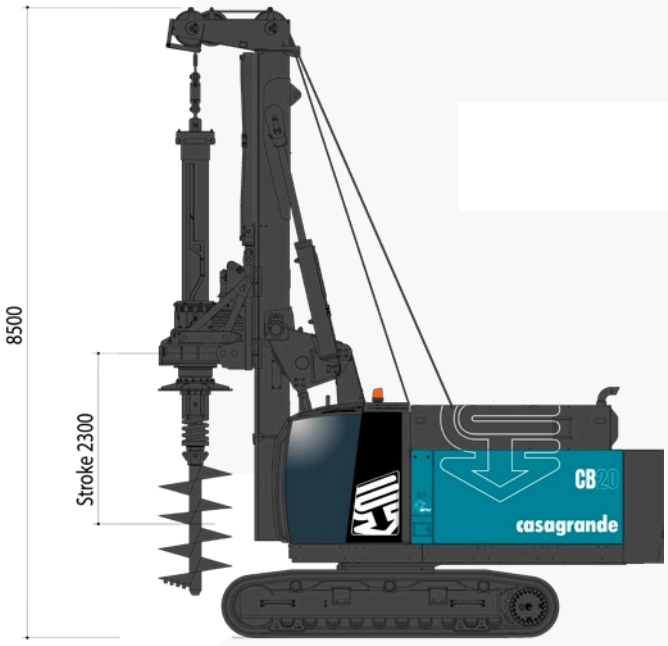

### CROWD WINCH ARRANGEMENT



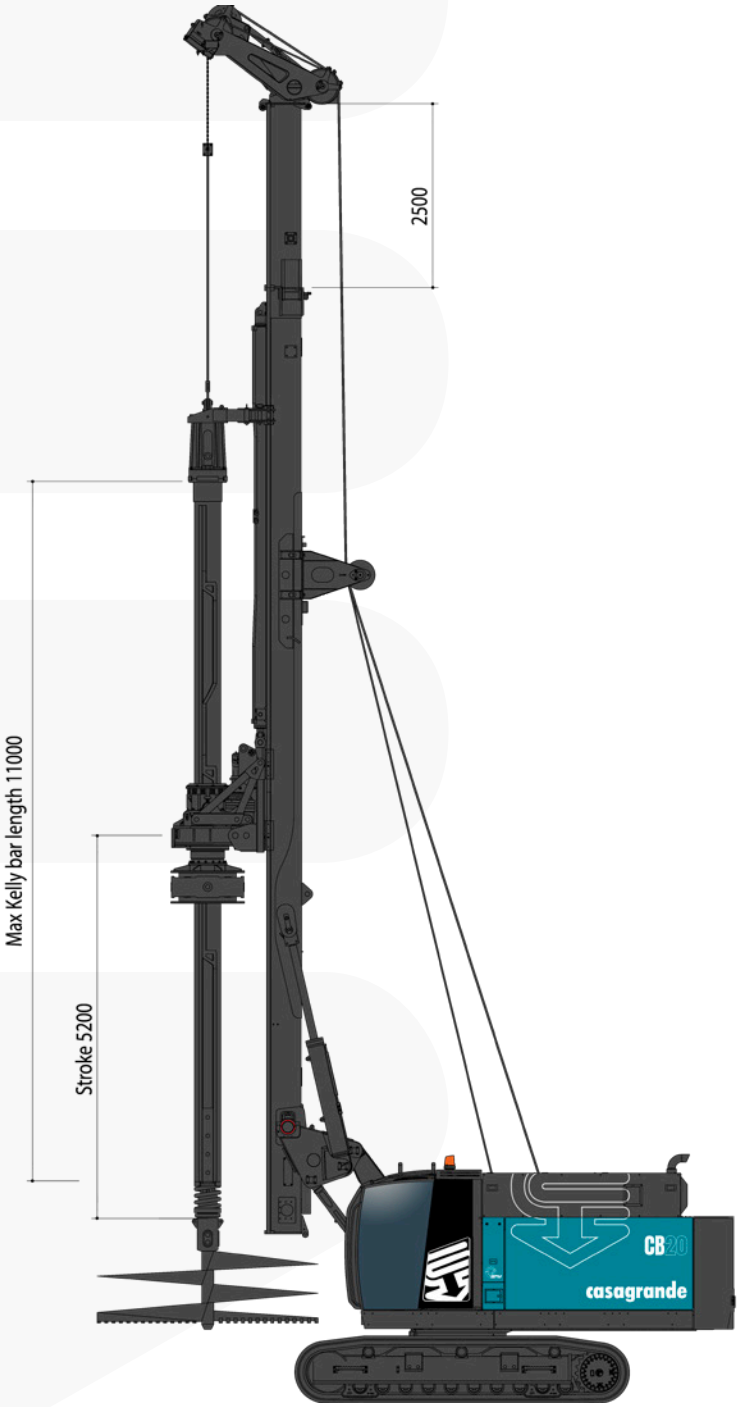

| Kelly bar length (nominal) | 7.500 | 9.500 |
|---|---|---|
| E | 3.000 mm | 2.000 mm |
| Length of casing without oscillator | 4.000 mm | 3.000 mm |

| Kelly bar length (nominal) | 7.500 | 9.500 |
|---|---|---|
| E | 4.000 mm | 2.000 mm |
| Length of casing without oscillator | 5.000 mm | 3.000 mm |

## LOW HEADROOM




## UNDERMAST

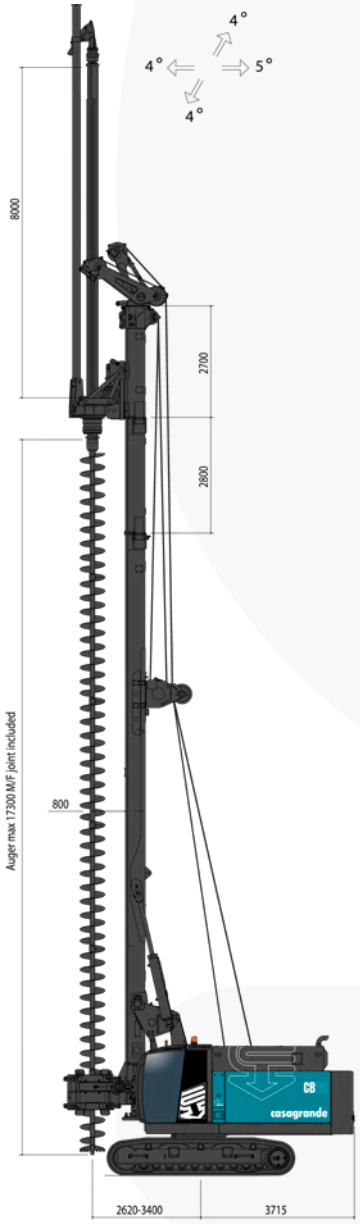



| DRILLING DATA | |
|---|---|
| Max. drilling diameter | 1.500 mm |
| Max. drilling depth | 14,7 m |

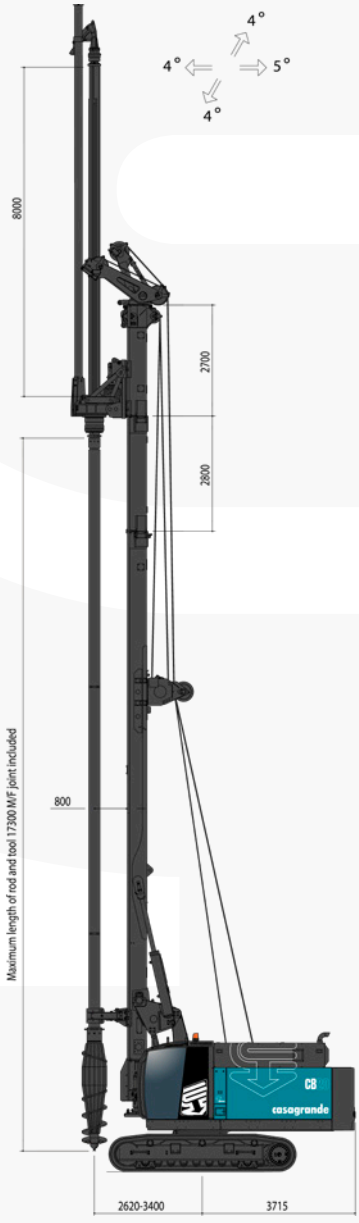
| DRILLING DATA | |
|---|---|
| Max. drilling diameter | 3.000 mm |
| Max. drilling depth | 50 m |

# CFA AND DISPLACEMENT PILING

## CFA-R ARRANGEMENT



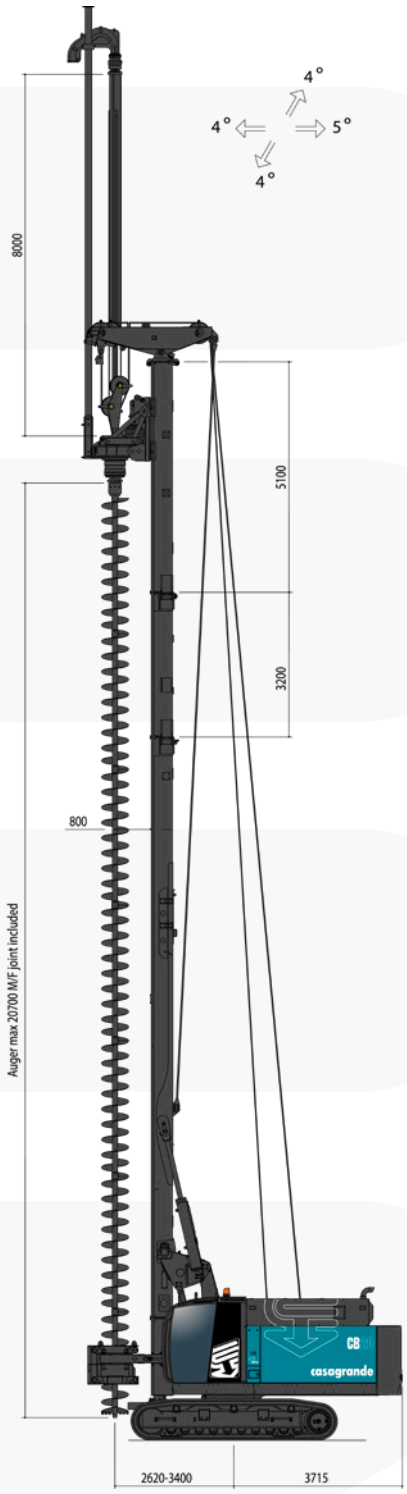

## DISPLACEMENT ARRANGAMENT




| CFA-R | DRILLING DATA | DISPLACEMENT |
|---|---|---|
| 900 mm | Max. diameter | 420 mm |
| 23 m | Max. depth | 22,5 m |
| 21,8 m | Max. depth with rotating auger cleaner | - |
| 343/274 kN | Extraction force nominal/effective | 343/274 kN |
| 670/536 kN | Extraction force (upgraded version) nominal/effective | 670/536 kN |
| 343/274 kN | Crowd force nominal/effective | 343/274 kN |
| 46,5 t | Weight w/o tool | 46,5 t |

# CFA PILING

## FOUR LINES PULL ARRANGEMENT



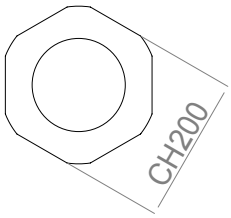

| DRILLING DATA | |
|---|---|
| Max. diameter | 900 mm |
| Max. depth | 28 m |
| Max. depth with rotating auger cleaner | 26,8 m |
| Extraction force nominal/effective | 560/450 kN |
| Crowd force nominal/effective | 106/86 kN |
| Weight w/o auger | 48 t |

# CFA PILING

**CONCRETE SWIVEL**
**Max. pressure: 50 bar**
**Max. speed: 50 rpm**

**MALE JOINT**
**Max. torque: 220 kNm**

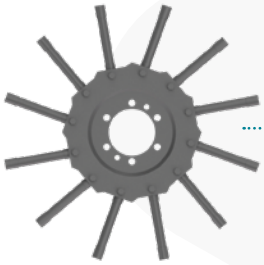
**8-METER KELLY EXTENSION**




**SHORT DRIVE SLEEVE**


**WHEEL WITH ROPE INSERTS**

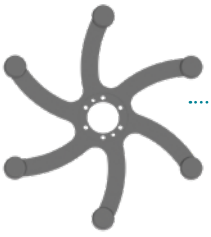
| TYPE | AUGER DIAMETER |
|---|---|
| A | 350 |
| B | 400 |
| A | 420 |
| B | 450 |
| C | 500 |
| C | 600 |
| C | 800 |
| C | 1000 |

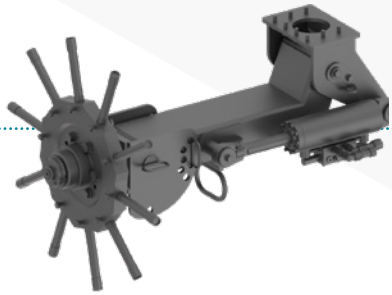


**ROTATING AUGER CLEANER**

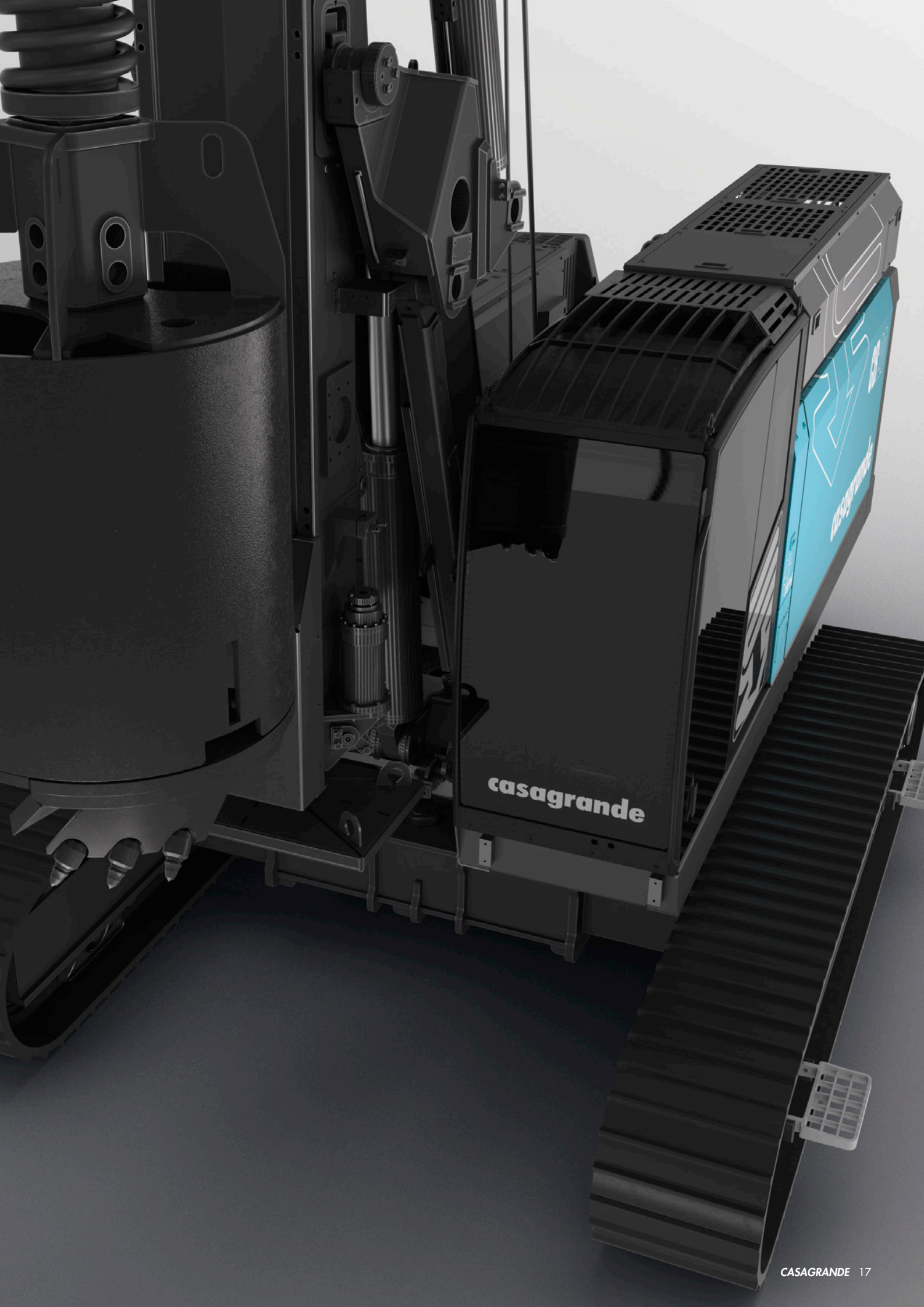
**RIGID WHEEL**

| TYPE | AUGER DIAMETER |
|---|---|
| A | 500 |
| B | 600 |
| C | 700 |
| B | 750 |
| C | 800 |
| C | 900 |
| C | 1000 |





**START TYPE AUGER CLEANER**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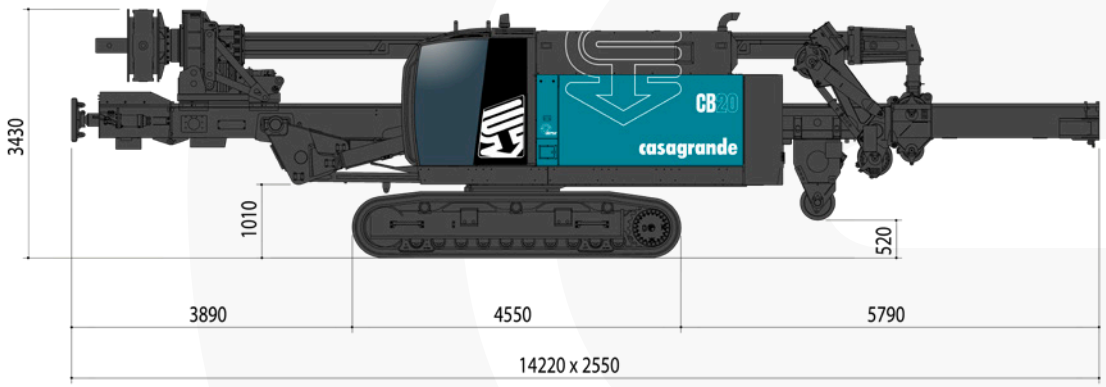
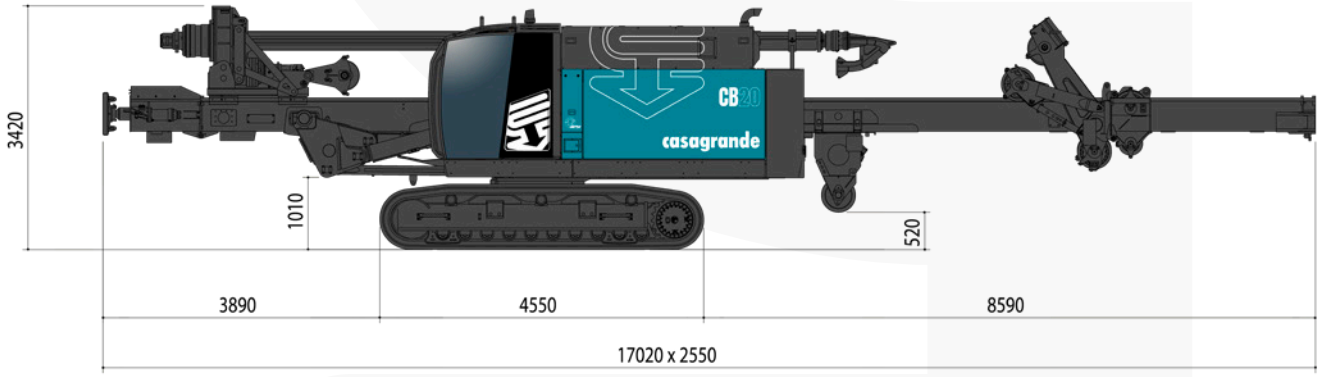
# TRANSPORT DATA

## CROWD WINCH ARRANGEMENT



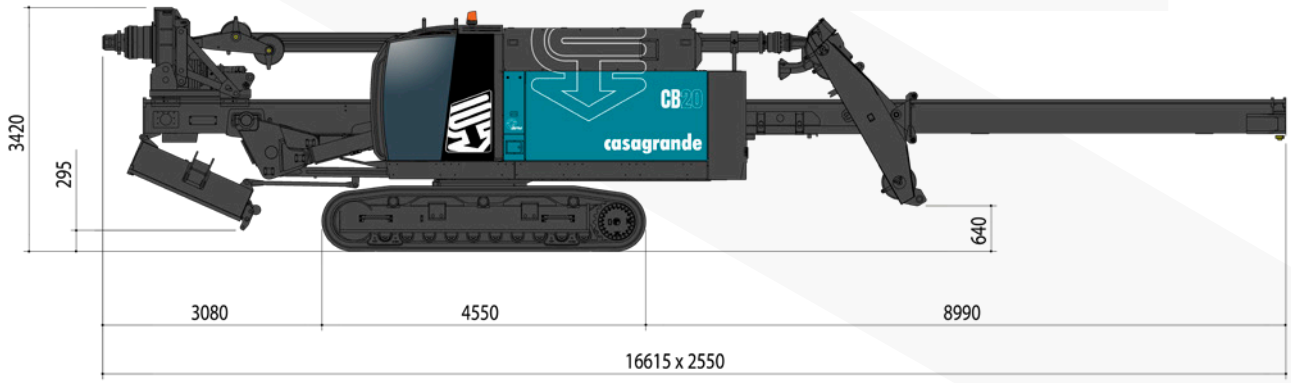

**Mass of equipment in transport: 46.000kg (with 3x7.500 friction kelly bars, kelly bars guide)**
**Max. kelly length 11.000 for on board transport**

## CFA-R ARRANGEMENT




**Mass of equipment in transport: 46.500kg (with 8m CFA kelly extension, swan neck for concrete pipes)**

## FOUR LINES PULL CFA ARRANGEMENT




**Mass of equipment in transport: 48.000kg (with 8m CFA kelly extension, swan neck for concrete pipes)**

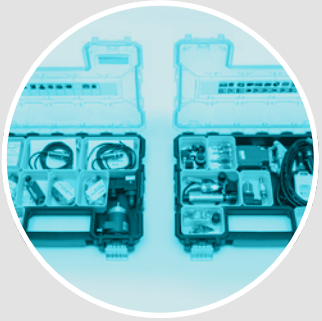
# casagrande
## after - sales service

**TECHNICAL ASSISTANCE**


**WARRANTY & SERVICING**

**TRAINING COURSES**

**FLEET MASTER**



**SERVICE BOXES**

**SPARE PARTS**

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