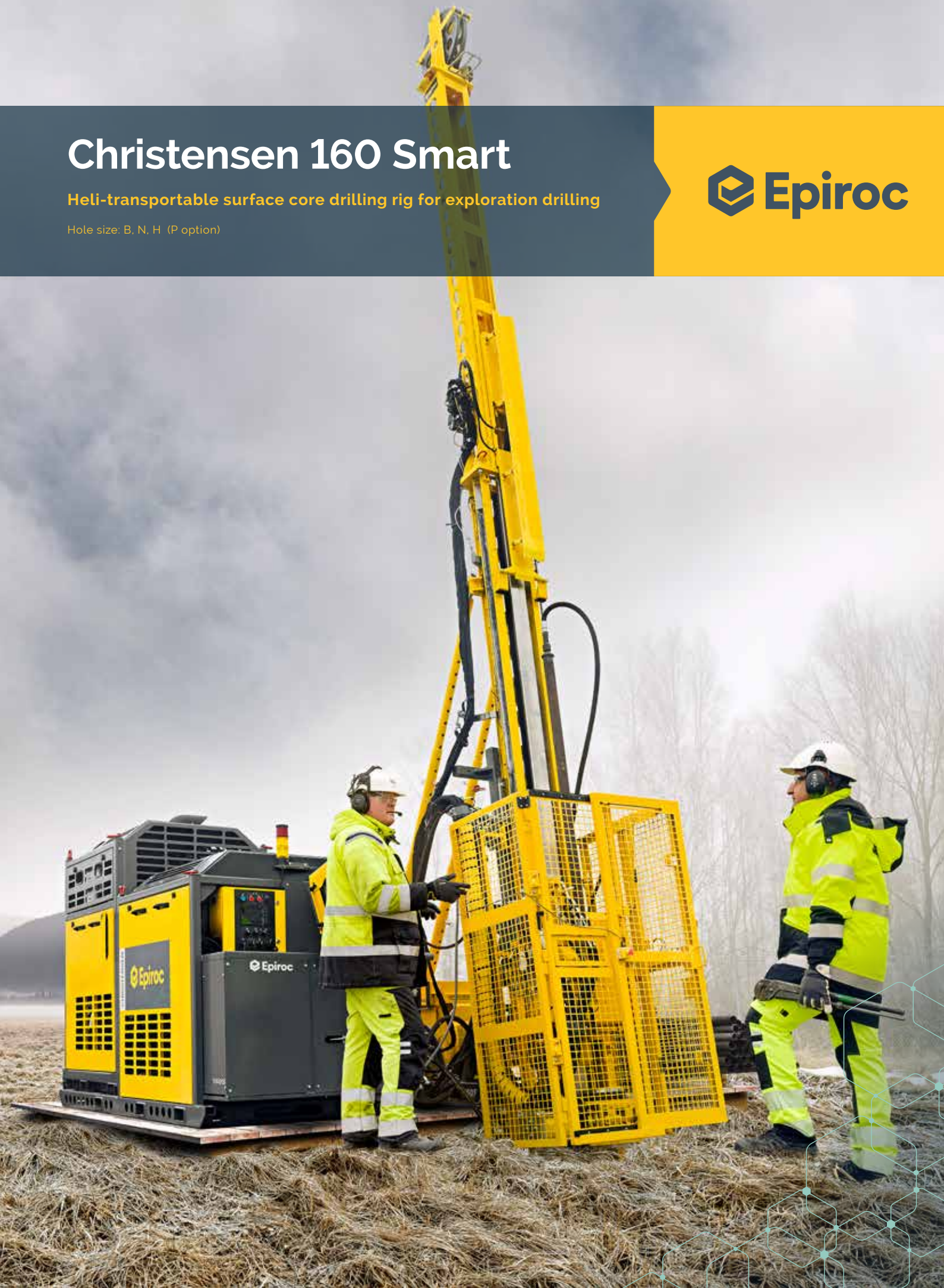
Christensen 160 Smart

Heli-transportable surface core drilling rig for exploration drilling

Hole size: B, N, H (P option)

Epiroc



Pushing boundaries

Exploration drilling is tough. From time to time, it's necessary to really push boundaries and move well outside any comfort zones. The Christensen 160 Smart has been designed by exploration drillers. It will bring home core samples in the toughest, remotest areas where transport is a real challenge.

The Christensen 160 Smart is fitted with safety features which enhance operator safety without hindering productivity. It also includes a power unit equipped with a reliable Cummins diesel engine which meets the very latest emission standards.

If you need to blaze a trail into the unknown, then this core drilling rig is the perfect partner.

Main benefits

Heli-portable modular design which is compact, reliable and powerful.

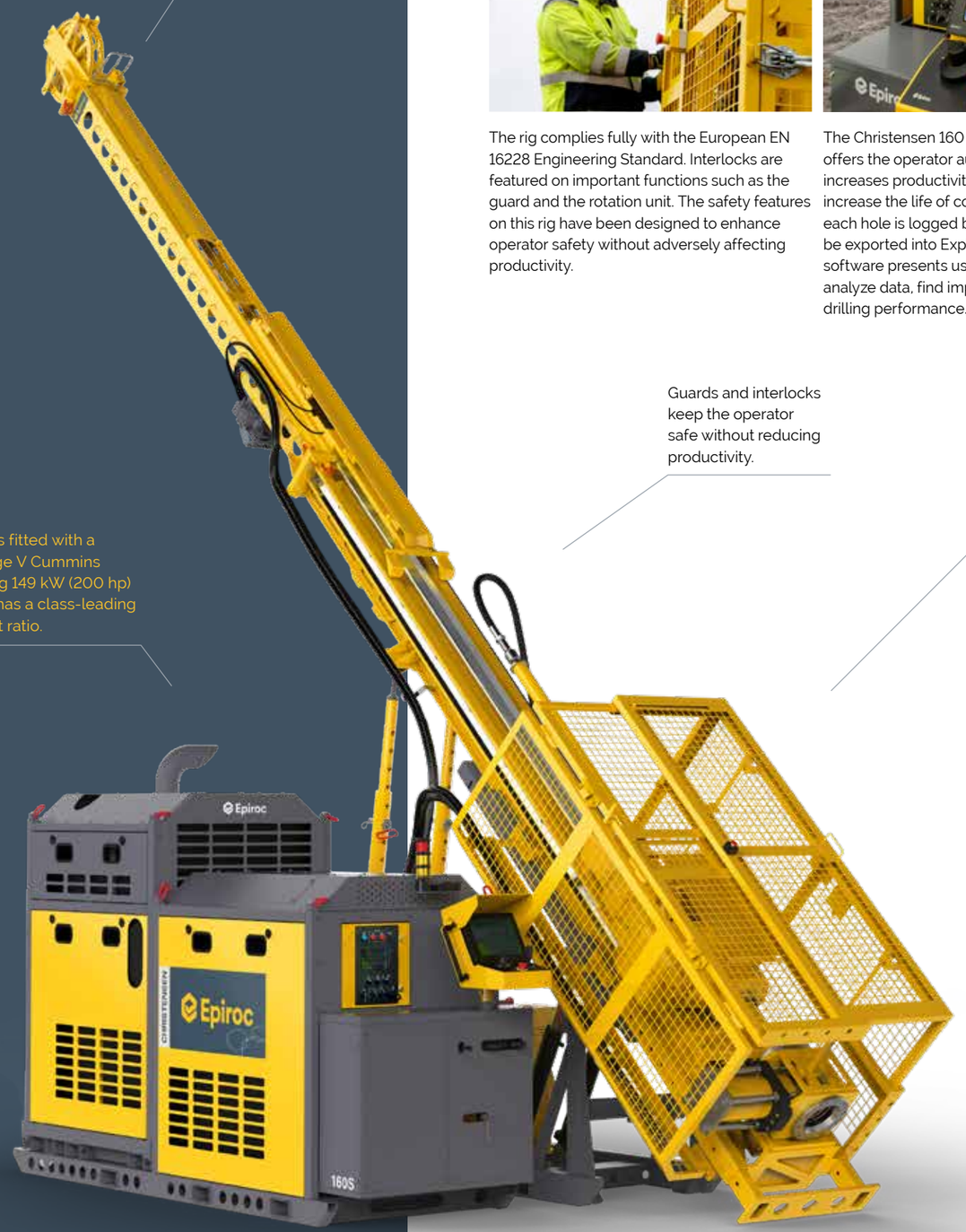
Enhanced safety features which assist productivity.

Smart control system which is well-proven and features on other Smart core-drilling exploration rigs from Epiroc

The rig features a 6 meter long mast (20 ft) and offers a feed cylinder stroke of 3.3 meters (10.8 ft).

The power unit is fitted with a Tier 4 Final/Stage V Cummins diesel generating 149 kW (200 hp) at 2 200 rpm. It has a class-leading power-to-weight ratio.

The rig breaks into separate modules fitting with lifting brackets. Each is designed for heli-transport between remote drill sites.



NOTE: The appearance and specifications of the rig may differ from the images and data presented in this document.

The rig complies fully with the European EN 16228 Engineering Standard. Interlocks are featured on important functions such as the guard and the rotation unit. The safety features on this rig have been designed to enhance operator safety without adversely affecting productivity.

The Christensen 160 Smart control system offers the operator automated drilling. This increases productivity and can dramatically increase the life of consumables. Data from each hole is logged by the system and can be exported into Exploration Manager. This software presents users with the ability to analyze data, find improvements and optimize drilling performance.

The B-H rotation unit is standard on this rig with the P rotation unit available as an option. These are well-known and proven units which offer high reliability and an impressive level of torque. The P-size also allows for core barrels to pass though the head.

Discover more about the Christensen 160 Smart.

Guards and interlocks keep the operator safe without reducing productivity.

A support tray helps with drill rod alignment.

The rods are extracted by the head (pull-by-head) which offers increased automation and safety as well as boosting reliability.

6th Sense

Smart. Safe. Seamless.

Christensen 160 Smart is a 6th Sense product.

6th Sense is the Epiroc way of optimizing your value chain through automation, system integration and information management.

Scan to read more about 6th Sense

Made in Canada

Christensen 160 Smart has been designed to meet the demands of a tough climate by a team of experts well-used to working in extreme conditions. It has been assembled around high quality components to maximize drilling time. An experienced team of service technicians is ready to help with service and support when you need it.

+ Portable, compact and smart

The Christensen 160 Smart consists of a small number of heli-transportable modules to keep the number of round trips to new locations to a minimum. Each is fitted with lifting points designed for heli-transport. The individual modules can be assembled rapidly and easily on arrival. The Smart control system is well-liked by drillers. Its intelligent features help to extend the life of consumables, as well as ensuring that operations go smoothly and efficiently.

+ Built to take on the cold

The Christensen 160 Smart is ready to work in cold climates. For example, the hydraulic system can handle temperatures down to -40°C (-40°F). The RCS is a proven performer in really cold conditions. Epiroc also offers an Arctic kit as an option to help ensure that you can bring up core samples even during the worst winter conditions.

+ Even greater than the sum of its parts

Extreme care has been taken when choosing which parts to use within the Christensen 160 Smart. This is in order to maintain high quality and power whilst keeping the weight as low as possible to aid transport. A good case in point is the Cummins B4.5 engine. It generates 149 kW (200 hp) at 2 200 rpm. This 4 cylinder unit meets both EPA Tier 4F and EU Stage V standards. It has the best power to weight ratio on the market whilst keeping fuel burn at a class-leading minimum.

A comprehensive service offering

Even the best equipment needs to be serviced regularly to make sure it sustains peak performance. An Epiroc service solution offers peace of mind, maximizing availability and performance throughout the lifetime of your equipment. We focus on safety, productivity and reliability.

By combining genuine parts and an Epiroc service from our certified technicians, we safeguard your productivity – wherever you are.

+ Data logging and Exploration Manager

Christensen Smart rigs offer added value via a standard data logging feature, Measure While Drilling (MWD) which records drilling parameters. The optional added operational data logging feature enables the logging of activities directly on the rig screen plus automatic logging of key functions during drilling. Rigs also create a log file for major events and warnings. The optional Exploration Manager software presents all this data in a comprehensive way. It provides a full overview of the drilling process. Users have the ability to analyze data, find improvements and generate various reports. Exploration Manager improves productivity, lowers operational costs and provides fast and professional fleet management.

Technical specifications

Selection of features and options

● = Standard ○ = Option

Guards and integrated safety features	●
P-rotation unit	○
B-H rotation unit (for lower weight)	●
Arctic kit for cold climates (planned future option — contact Epiroc)	○
Hose ladder and guard (planned future option — contact Epiroc)	○
Rod handler (planned future option — contact Epiroc)	○
Trido 140H pump with 140 l/min flow (37 US gal/min) and 69 bar (1000 psi)	○
Mud mixer	○
Pilot Hydraulic Control version (planned future option — contact Epiroc)	○
Crawler (planned future option — contact Epiroc for latest info)	○

Fuel system

Fuel tank	350 liters (92 US gals)
DEF tank	38 liters (10 US gals)

Depth capacity

Hole size	Metric	US
B	2 363 m	7 753 ft
N	1 751 m	5 745 ft
H	1 023 m	3 356 ft
P	471 m	1 545 ft

These the figures serve as guidelines only. Epiroc cannot guarantee these capacities will be reached in all working conditions due to varying factors such as ITH used, conditions of the ground and differences in operation.

Rotation unit (B-H unit — standard)

Weight	282 kg (622 lbs)
Spindle (inner diameter)	101 mm (4.98 in)
Max rotation output torque	2 317 Nm (1 709 ft lbs)
Rotation rpm at full oil flow	1 320 RPM
Max oil pressure	315 bar
Max oil flow	175 l/min
Drill type	Chuck drive
Drilling angle	45° to 90°
Gear type	1 gear, variable motor deplacement

Christensen 160 Smart control system and interface

Control system type	Epiroc Rig Control System (RCS)
Display	12" touch screen
Controls	Joysticks, control knobs and foot pedal
Data logging	Internal memory
Data export	USB port

Service winch

	Metric	US
Drum capacity, wire diameter = 8 mm (5/16")	16.3 m	53 ft
Line pull capacity, bare drum	11 kN	2 472 lbf
Line pull capacity, full drum	10 kN	2 248 lbf
Max line speed, bare drum	16 m/min	52.49 ft/min
Max line speed, full drum	17.5 m/min	57.4 ft/min
Max pressure	165 bar	2 393 psi
Maximum flow	20 l/min	5.2 gal/min

Hydraulic system

Oil capacity	120 l (31.7 gal)
Main pump	LS 145 cc
Water pump	LS 45 cc
Aux pump	CP 45 cc

Power unit

Manufacture	Cummins
Model	B4.5 EPA Tier 4 Final / EU Stage V
Power	149 kW (200 hp) at 2 200 RPM

Water pump

Model	Trido 140H
Flow	140 l/min (37 gal/min)
Pressure	69 bar (1 000 psi)

Feed system

Feed beam	Steel mast
Feed driving mechanism	Cylinder
Cradle for rock drill	Swingable
Feed extension (min)	915 mm / 26"
Feed rate	0.003 meters per sec (0.0098 ft per sec)
Hose guide system	Hose chain
Total feed length	9 400 mm (370")
Feed stroke (cradle travel length)	3 300 mm (130")
Starter drill steel length, max	6 m (20 ft)
Drilling angle	45-90°
Feed force	60.3 kN at 240 bar / 13 556 lbf at 3 481 psi
Tractive pull force	149 kN / 33 497 lbf

Wireline winch

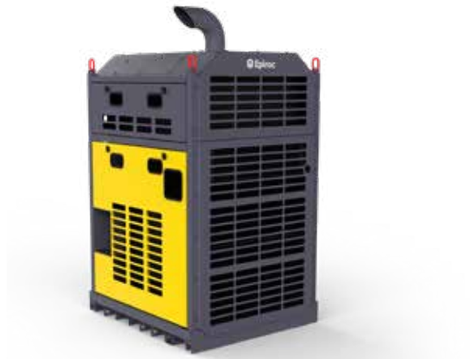
	Metric	US
Drum capacity, wire diameter = 4.76 mm (3/16")	2 600 m	8 530 ft
Drum capacity, wire diameter = 6.35 mm (1/4")	1 475 m	4 839 ft
Line pull capacity, bare drum 4.76 mm (3/16")	12.18 kN	2737.5 lbf
Line pull capacity, full drum	3.12 kN	862.2 lbf
Line pull capacity, bare drum 6.35mm (3/16")	12.04 kN	2 707 lbf
Line pull capacity, full drum	3.11 kN	699 lbf
Max line speed, bare drum	169 m/min	555 ft/min
Max line speed, full drum	654 m/min	2 418 ft/min
Max pressure	200 bar	2 900 psi
Max flow	100 l/min	26.4 gal/min

Technical specifications

The Christensen 160 Smart is designed for pioneering work. The rig is split into a small number of units which have all been designed to be as light as possible without compromising durability and strength. Each unit is fitted with sturdy lifting points to make heli-transport as easy as possible. Once on site, the Christensen 160 Smart can be assembled rapidly to ensure that you get on with drilling as soon as possible.

Once put together on site, the rig is compact and has a small footprint — but it packs an impressive punch, being able to drill B-size holes of 1 900 m (6 234 ft) in length.

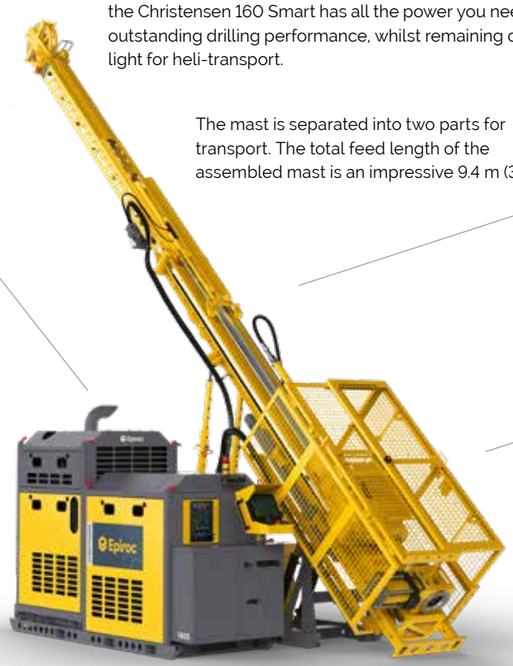
The Cumins B4.5 diesel engine fitted in the power pack has a class-leading power-to-weight ratio. This ensures that the Christensen 160 Smart has all the power you need for outstanding drilling performance, whilst remaining compact and light for heli-transport.

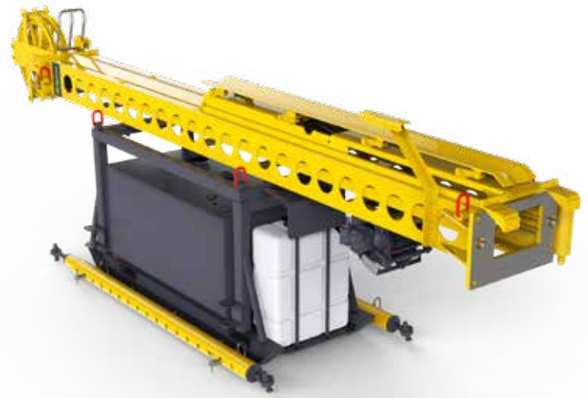


Power pack

Weight	1 047 kg / 2 308 lbs (approx)
Output	149 kW (200 hp) at 2 200 rpm

The mast is separated into two parts for transport. The total feed length of the assembled mast is an impressive 9.4 m (31 ft).



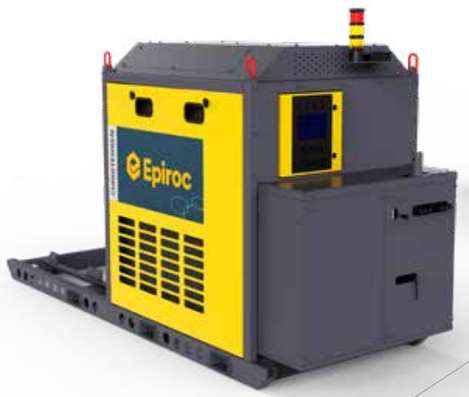


Feed beam carrier

Fuel tank volume	350 liters (92.4 US gal)
DEF tank volume	38 liters (10 gals)

Rotation unit P-head

Weight	546 kg / 1 204 lbs (approx)



Hydraulic unit

Weight	1 011 kg / 2 229 lbs (approx)
Pump unit	145 cc + 45 cc + 45 cc variable pumps
Oil capacity	120 liter

Feed module

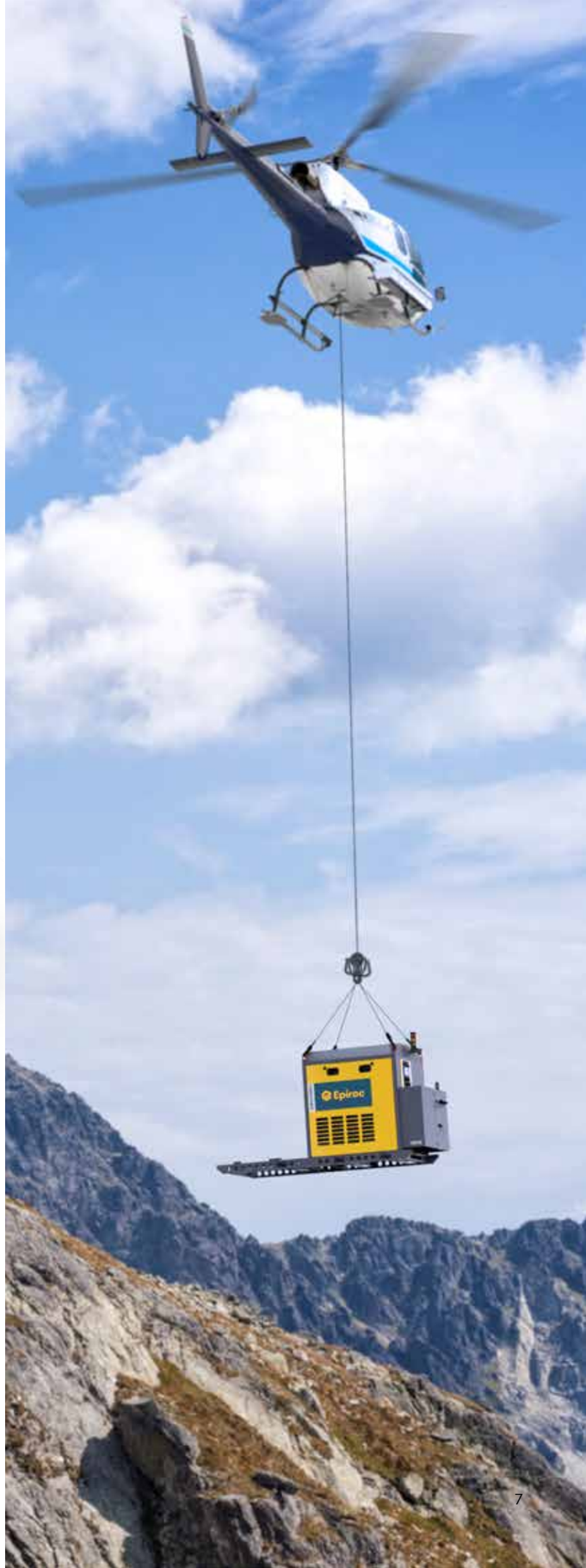
Weight	1 118 kg / 2465 lbs (approx)

Guard unit

Weight	201 kg / 443 lbs (approx)

Feed carrier

Weight	1 086 kg (with 2600 m wire/8 530 ft)



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