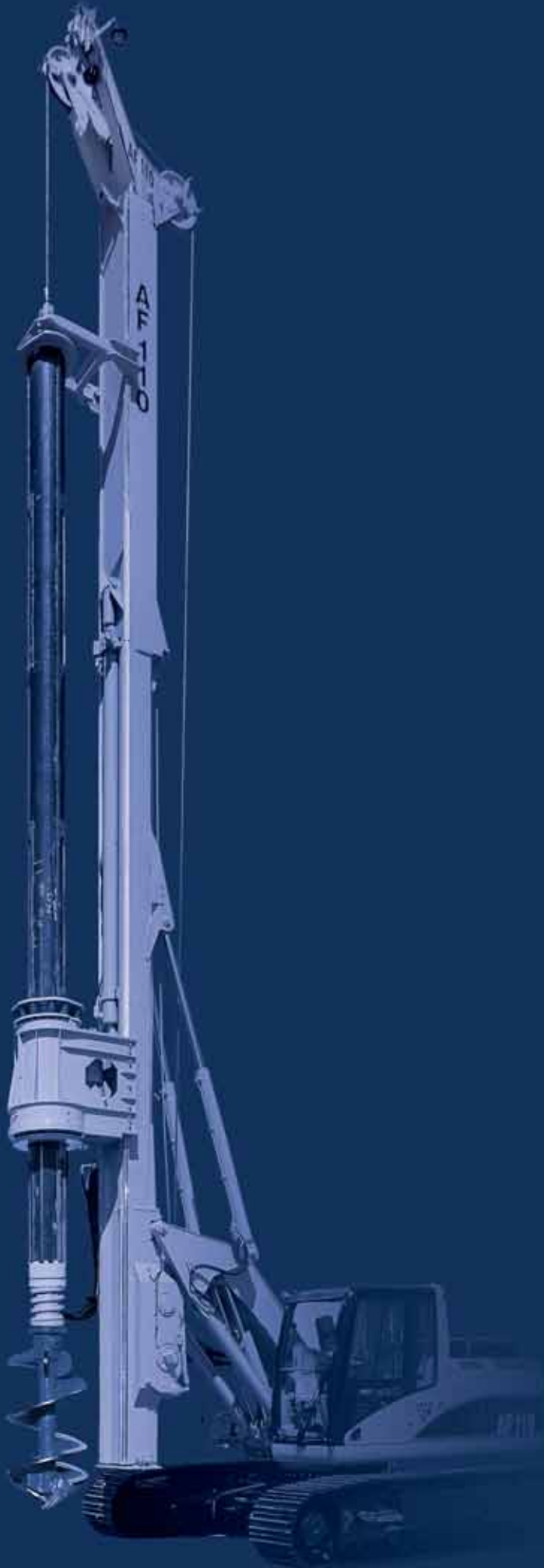


# AF 110

## HYDRAULIC DRILL RIG



INTERNATIONAL

# AF 110



## THE PERFECT BLEND OF TECHNOLOGY AND PERFORMANCE

The AF 110 is a very reliable machine that has been created for customers who want a small-sized machine with low dimensions capable of giving top performance together with high manoeuvrability. It is the result of several years of research and study by the entire IMT technical staff, carried out in order to achieve a top-quality product that satisfies every customer's requirements. Every suggestion received by IMT customers all over the world were taken into consideration during the designing and development of this machine. The rig has been conceived for foundation piles for diameters up to 1500 mm and a depth up to 38 m and it is mounted on a Caterpillar 318 C II excavator with lowers undercarriages extensible from 2,5m to 3,6m. IMT has studied every part in detail to ensure maximum reliability and performance.







# OPERATOR STATION

The operator station of the AF 110 is a particular example of comfort and rationality. Besides the comfort available on the CAT base (adjustable seat, air conditioning, etc) all the controls are properly placed so as to give the operator maximum control on the machine operations. The main controls, such as main winch, swing, rotary and crowd system are operated by means of two main joysticks. The drilling depth and pile verticality control systems are foreseen in the cabin.





## UNDERCARRIAGE

Manufactured by Caterpillar on the basis of our specifications, the crawler track undercarriage used on the AF 110 has the following characteristics:

- it has a central "H" type frame which can widen the lowers from 2,55m (for transportation) to 3,65m (working phase) and guarantees maximum operation and resistance.
- the lowers have a length of 4,66m and a width of 3,6m which guarantee exception stability in any type of ground. It has considerable traction force which allows easy movement even in the most difficult job sites (maximum superable gradient 75%).

## BASE

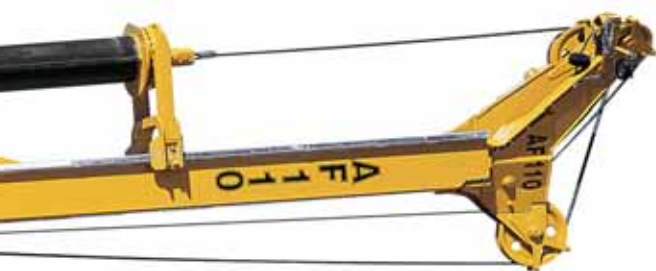
The AF 110 uses a CAT 318 C II base. Caterpillar installs a CAT 3066 T motor on this base which is set to supply a power of 130 HP (97 KW) at 1800 rpm. The hydraulic system is made in order to exploit the power of the diesel to the most and in order to guarantee maximum performance.





## ROTARY

The rotary of the AF 110 is extremely reliable. It has been designed in order to guarantee a very compact, efficient and powerful rotary. IMT has developed a rotary with a single transmission group. The transmission group is made up of a hydraulic motor and a new power shift purposely studied and designed to obtain maximum performance. The tooth crown and the pinion are always in oil bath supported by two large bearings. The rotary is capable of transmitting an effective torque of 98 kNm to the tool. The working speeds vary from 7,5 to 32 rpm. The unloading speed is 45 – 125 rpm. During the drilling phase, the rotary has the entire power of the diesel at its complete disposal. The rotary is equipped with a sliding adapter that is essential to absorb the considerable shock connected to the high speed of the main winch.









## WINCHES

The winches are positioned in the lower part of the mast, in front of the cabin, so that the operator can constantly check the proper operation. Thanks to the fact that the cable moves parallelly to the mast, flexion is not created on the upper part of the mast and the operating life of the cable is therefore much longer.

During the lifting and lowering phase, the main winch has the entire power of the diesel at its disposal; this gives the machine considerable speed and therefore maximum productivity. It has a hydraulic "down the hole" system which prevents the unwinding of the cable when the tool reaches the ground.

Another system, called "free flow", allows the cable to advance in the drilling phase when the rotary advances. The main winch has a maximum pullback of 120 kN and a speed of 90m/min. and the auxiliary winch has a maximum pulling force of 60 kN and a speed of 90m/min.

## ARTICULATION

All the articulations of the AF 110 use case hardened pins and bushings of large dimensions which guarantee maximum precision in time. This kind of articulation offers the following advantages:

- possibility of moving the working axis accurately without losing the verticality of the mast
- possibility of working in a large range (essential when working with casing oscillator)
- correct anchoring of the mast by means of a hinge and tilting cylinder anchored at the top
- correct division of the machine weight in transportation configuration





# MAST

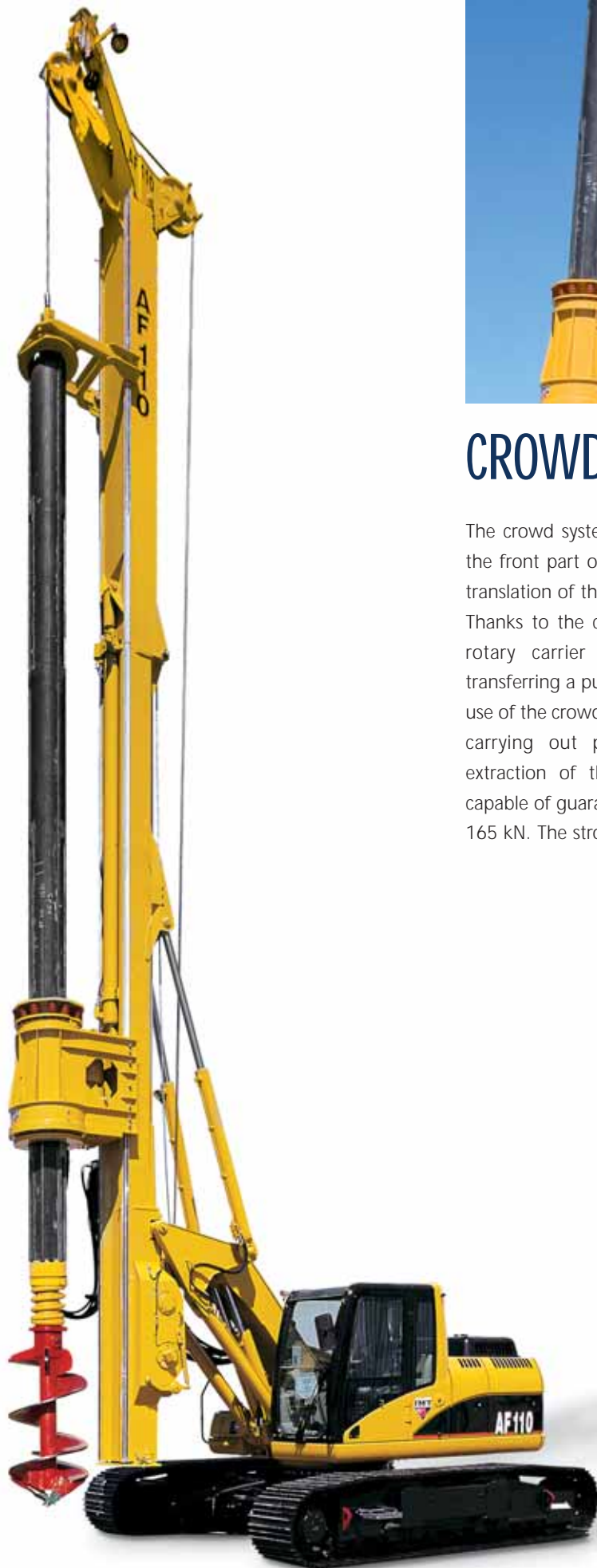
It is built with high-resistance material, capable of supporting considerable stress with reduced weights (and therefore inertial force). The verticalization of the mast is controlled by an electronic level located in the cabin.

The head of the mast has a "Y" shape for the pulleys of the main and secondary winches in order to position steel cages without moving the parallelogram.

The particular conformation of the mast, made up of two moveable parts, allows you to transport the Kelly bar with the machine, by means of a hydraulic cylinder, thereby reducing the time it takes for the opening.

# KELLY BAR

The standard kelly bar associated with the machine is a J-type, 4-element kelly bar with a square joint of 130x130mm and a depth of 38m. It is also possible to supply a 5-element kelly bar with a depth of 47m or a kelly bar that is slightly shorter than the standard kelly bar (4/33) that is useful when utilizing casings or an IMT full interlocking kelly bar (to use this type of kelly bar it is necessary to replace the sliding adapter of the rotary).



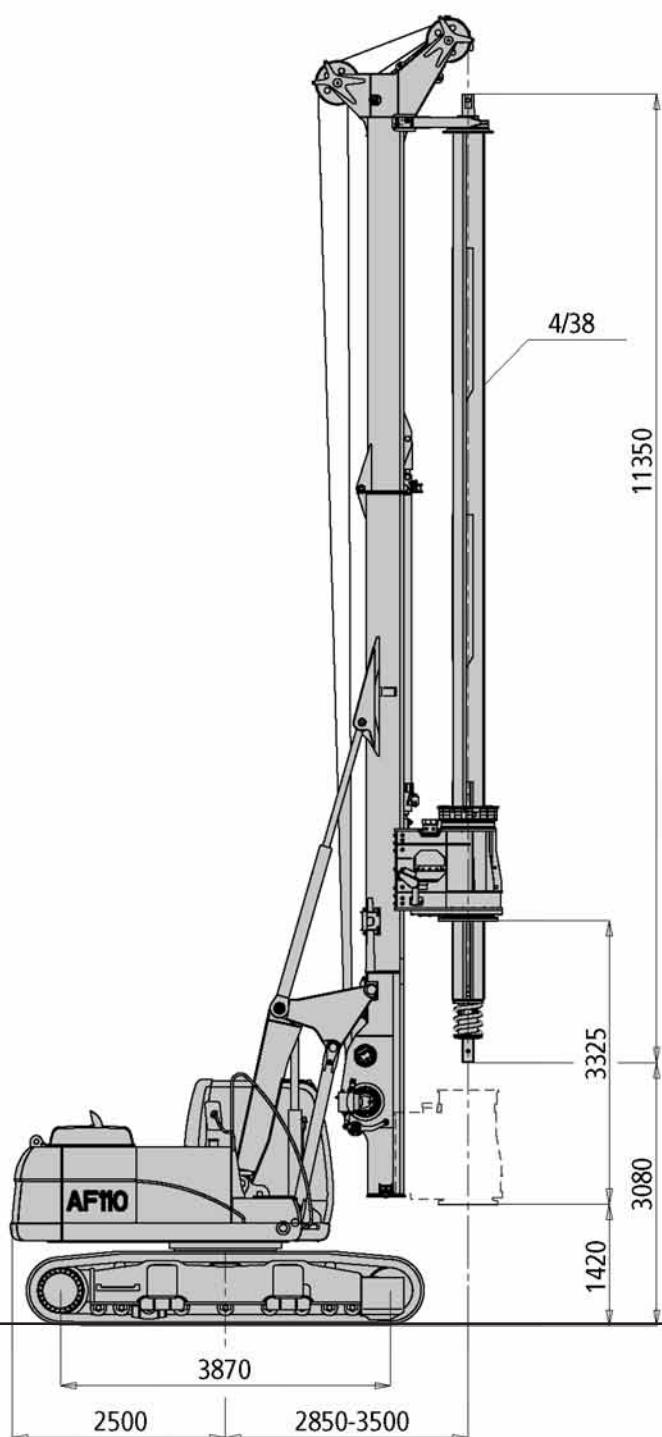
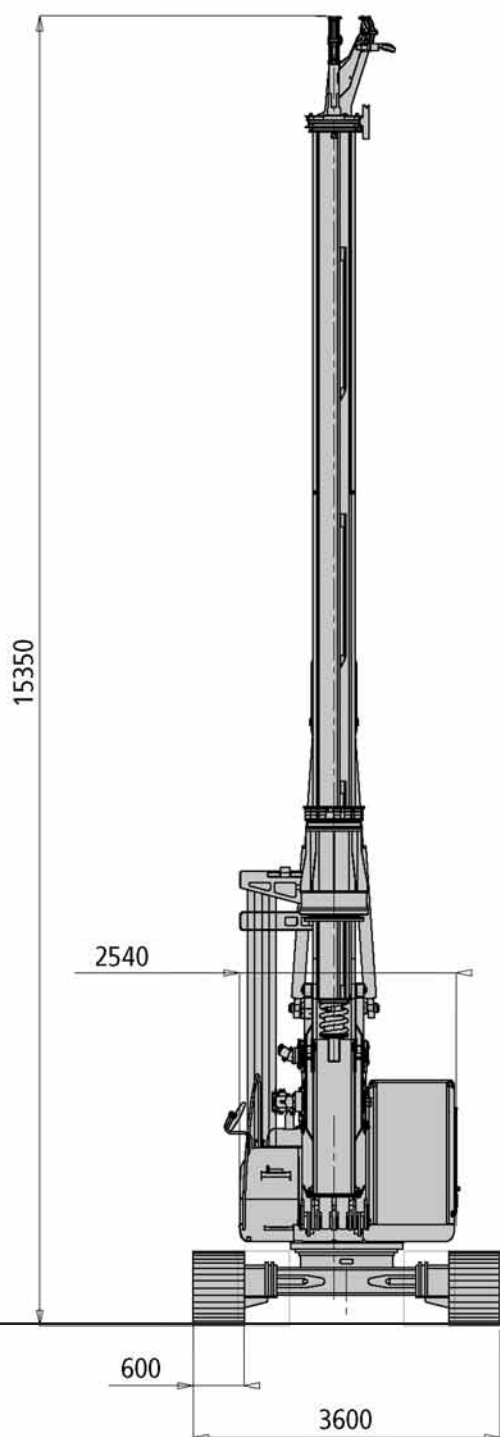
## CROWD SYSTEM

The crowd system of the AF 110, located on the front part of the mast, allows the vertical translation of the rotary.

Thanks to the crowd system, located on the rotary carrier slide, we are capable of transferring a push of 100 kN on the tool. The use of the crowd system is also exploited when carrying out piles with the driving and extraction of the cylinder. In fact, we are capable of guaranteeing an extraction force of 165 kN. The stroke is 3325 mm.

# AF 110

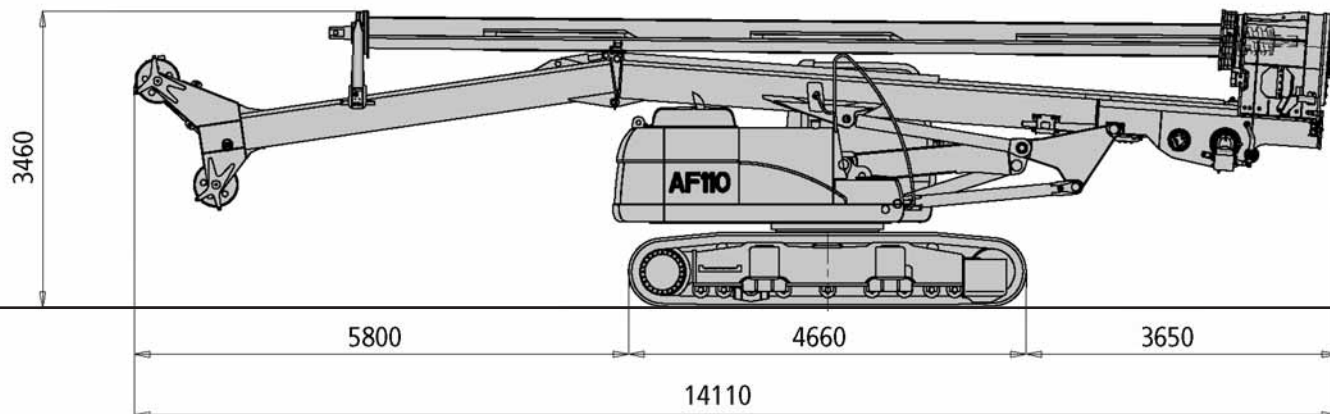
TECHNICAL DATA





<b>Base</b>		Caterpillar 318 CII	Caterpillar 318 CII
Undercarriage length / widening range / shoe	mm	CAT 4660/2550 - 3650/600	in 183/100 - 144/23,6
Engine type		CAT 3066 T	CAT 3066 T
Power		97 KW (130 HP) @1800 rpm	97 KW (130 HP) @1800 rpm
<b>Rotary</b>			
Installed torque	kNm	98	lbf ft 72285
Working speed	rpm	7,5 - 32	rpm 7,5 - 32
Discharge speed	rpm	45 - 125	rpm 45 - 125
<b>Winches</b>			
Main winch pull force	kN	120	lbf 26980
Main winch speed	m/min	90	ft/min 295
Main winch Cable diameter	mm	22	in /
Auxiliary winch pull force	kN	60	lbf 13490
Auxiliary winch Speed	m/min	90	ft/min 295
Auxiliary winch Cable diameter	mm	15	in /
<b>Crowd system</b>			
Kelly crowd push	kN	100	lbf 22485
Kelly crowd pull	kN	165	lbf 37095
Stroke	mm	3325	in 131
<b>Mast</b>			
Mast raking forward		5°	5°
Mast side raking		±5°	±5°
Mast raking backwards		15°	15°
Pile max. diameter	mm	1500	in 60
<b>Kelly bar</b>			
Standard		3/28 - 4/38	3/28 - 4/38
Options available		4/33 - 5/47	4/33 - 5/47
Operating Weight w/standard kelly bar	t (metric)	31	lbs 68345

All technical data are indicatives  
and subject to change without notice



# WORLDWIDE SALES AND ASSISTANCE NETWORK



## **IMT dealers, a global network at your service**

IMT, like very few other companies in the field, has a global commercial and assistance network which is present in over 30 countries. From any part of the world, IMT clients know that they can always count on fast and efficient service.

Furthermore, since 1997 IMT drill rigs are sold and supported on the American market by Kelly Tractor, one of the biggest Caterpillar dealers in the world.

This is an important goal for the further reinforcement of the presence of IMT in international markets.



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