



# AF 460

hydraulic drill rig





# 1974

IMT is founded by Mr. Giulio Accorroni.

**1975**

The first innovative hydraulic drill rig (model 75 type G) is patented. Capable of drilling up to a depth of 30 meters (best market performance at the time)

**1978**

The Accorroni family buys 100% of IMT shares and Giulio Accorroni is appointed IMT's sole Director.

**1984**

Andrea Accorroni takes over IMT management following the death of his older brother, (Fabio Accorroni, Giulio's first son)

**1985**

The company introduces the 805 model, which soon becomes very successful and used for big construction projects, such as the Sagrada Familia in Barcelona, Spain.

**1992**

New innovative models are launched (i.e., sound-proof machine and model AF12, assembled on a crawler base completely produced by IMT).

**1993**

Beginning of co-operation with Caterpillar (CAT): IMT starts assembling drill rigs on CAT bases (IMT is the first drill rig manufacturer to do this; other manufacturers will soon follow the example); IMT starts a distribution agreement in North America and Canada for its drill rigs mounted on CAT bases through the CAT dealer in Miami, Kelly Tractor Company. In the same period, the technology for driven piles used in the U.S. until then starts moving towards the European piling system and the drilling equipment demand in the US market for all European manufacturers starts growing.

**1997**

IMT produces the AF50, the biggest drill rig in the world at the time, and sells no. 7 units to the Japanese multi-national company Sumitomo. Giulio and Andrea Accorroni are invited to Osaka for a lecture on the technical characteristics of the rig. The lecture is attended by the owners/directors of the biggest Japanese construction companies.

**2005**

IMT patents an innovative drilling system related to highly seismic grounds, the "Multi Rotary driven Soil Mixing Pile".

**2006-2008**

IMT increases its production range and doubles its sales. Andrea Accorroni, current President of IMT INTERNATIONAL S.p.A

**2009-2010**

IMT reacts to the global economic crisis by launching 2 new product lines in the market with traditional technology (the "AG" series, assembled on HITACHI base, and the "A" series, mounted on IMT base), and completes the first prototype of drill rig for seismic grounds, the AF460 model, which uses the patented "Multi Rotary driven Soil Mixing Pile" system. The prototype is presented at BAUMA 2010, the most important international exhibition for construction machinery. The complete production range is developed thereafter.

**2011**

IMT AGM appoints a new Board of Directors.

**2011/2013**

IMT develops the prototypes for the full range of the AF series drilling rigs with Tier 4 engines, as well as the newly-born A125 and A150 models, mounted on IMT base and powered by CAT.

**2014/2015**

IMT upgrades the A-series machines with new engines and design, and develops its own particular water well technology system.

**2016/2017**

The brand new range of A-series rigs with Tier 3 engines, completely designed and developed by IMT, and launched into the market, as well as the AF-series machines, mounted on CAT bases with Tier 4 Final engines

*Andrea Accorroni*



# AF 460



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The AF460 is a drill rig that can easily overcome any kind of problem on the job site, even the most difficult ones.

The rig has been conceived for foundation piles, and even cased piles, for diameters up to 4000 mm and a depth of 110 m.

The AF460 is mounted on Caterpillar 385C hydraulic excavator with lowers undercarriages, dismountable with the aid of stabilizers, width 5,9 m. IMT has studied every part in detail to ensure maximum reliability and performance.



# OPERATOR STATION

Besides the comforts available on the CAT base (adjustable seat, air conditioning, etc.) the rig controls in the cabin of the AF460 are rationally distributed.

The main controls, such as main winch, upper rotation, rotary, pull down, speed change, foot mast are operated by means of two main joysticks. The vertical position of the mast can be obtained automatically with a button situated above the cylinder joystick.

The computer gives all the information on the base functions as well as data on the soil resistance. It is possible to check verticality of the mast on the computer at any moment.

The computer also shows the upper rotation position with respect to the rig. It is also possible to rotate the upper automatically to go back to the exact drilling position by using a button located on the upper rotation joystick.



# BASE AND UNDERCARRIAGE

The AF460 uses a CAT 385C base. Caterpillar installs a CAT C18 Acert Tier 3 type engine on this base which is set to supply a power of 390 kW (530 HP) at 1800 rpm.

In order to utilize the power of the diesel to the most so as to guarantee maximum performance, IMT installs a load sensing hydraulic system, together with the Caterpillar original for pull down (as well as for services); this translates into extremely high productivity.

The undercarriage of the AF460, manufactured by Caterpillar on the basis of IMT with lowers length at 7.300 mm and at width of 5900 mm which guarantee exception stability in any type of ground; the track shoes have a width of 900 mm





## ROTARY

The rotary of the AF460 was conceived for unlimited duration. To the side of the rotary, three transmission groups, formed by hydraulic motor, gear and reducer moves the two pinions. The rotary is capable of transmitting a torque of 460 kNm to the tool.

The operator can change speeds from inside the cabin; there are six different speeds to choose from. The working speeds vary from 7 to 16 rpm. The unloading speed can vary from 32 to 75 rpm. During the drilling phase, the rotary has the entire power of the diesel at its complete disposal. The rotation speed and effective torque on the tool are continuously recorded by the on-board computer.

With the rotary is supplied a universal joint for the direct installation of casings.

## KELLY BAR

The standard Kelly bar is 4/74. The 4/60, 4/90 and 5/110 types are also available. The square joint is available with sides of 200 mm. All kelly bars have automatic blocking patented by IMT; this allows the blocking of the telescopic elements in any position, permitting the transfer of pull down, pull back and torque very quickly.







## WINCHES

The winches are positioned on the base (main winch) and on the mast articulation (auxiliary winch), in front of the cabin, so that the operator can constantly check the proper operation. 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 on-board computer constantly displays pullback, speed and tool position. The main winch has a maximum pull of 450 kN and a speed of 54 m/min. The auxiliary winch has a maximum pull of 180kN and a speed of 80m/min.

## 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 can be obtained automatically at any moment.

The head of the mast is positioned at the top and has a "Y" shape for the pulleys of the main and secondary winches. The lower extremity can be disassembled when working with casing oscillators of considerable size. The mast housing cylinder is positioned on the lower part.



## ARTICULATION

The AF460 utilizes a parallelogram type articulation.

All the articulations of the machine use casehardened pins and bushings of large dimensions which guarantee maximum precision in time. The parallelogram type 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.



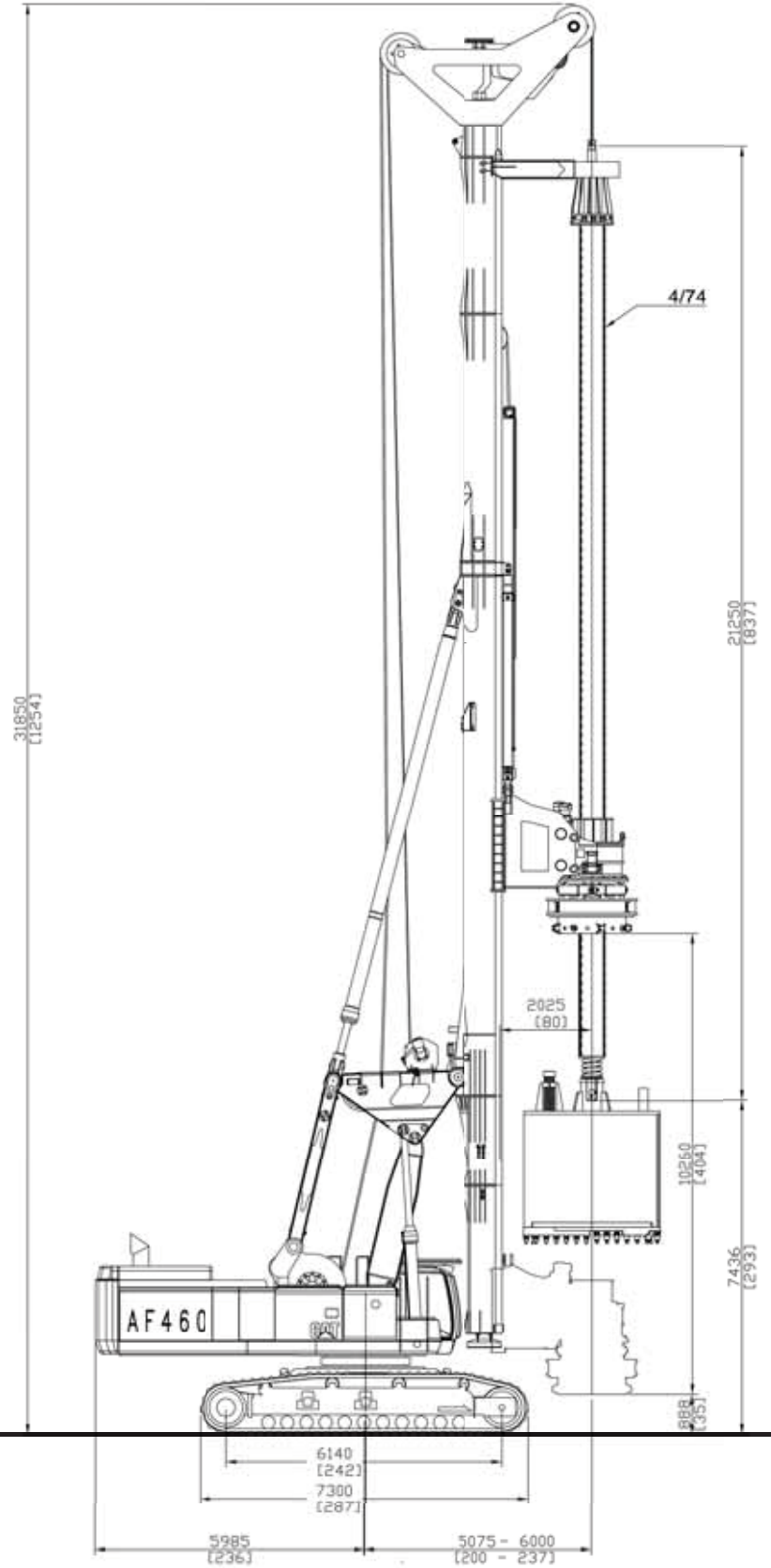
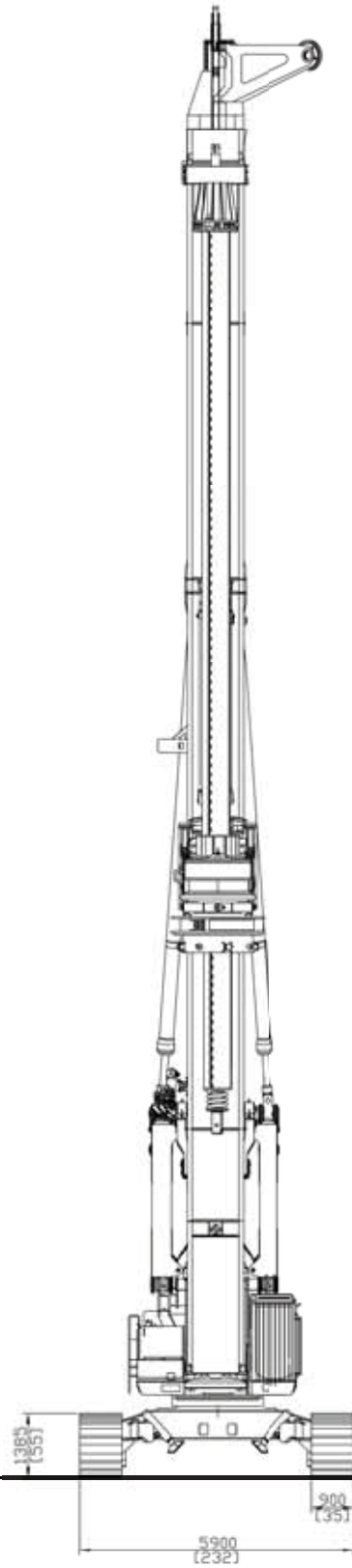
## CROWD SYSTEM

The patented 3 crowd cylinders system of the AF460 is positioned on the mast and it is used to transfer push and pull on the rotary. Thanks to the automatic blocking system patented by IMT, the push of 620 KN and pull of 710 KN are transferred directly to the tool with a stroke of 10260 mm

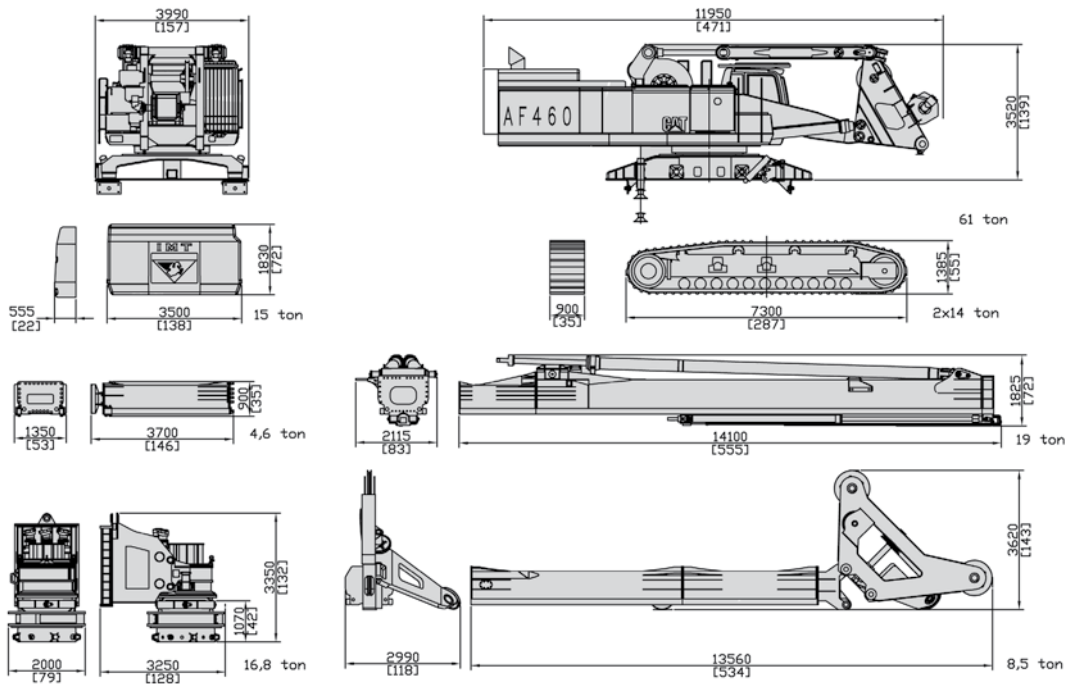


# AF 460

TECHNICAL DATA



| <b>Base</b>                                  |            | <b>CAT 385 C</b>         |        | <b>CAT 385 C</b>    |                          |
|--|------------|--------------------------|--------|---------------------|--------------------------|
| Undercarriage length / widening range / shoe | mm         | 7300/5900/900            | in     | 287/232/35          |                          |
| Engine type                                  |            | <b>CAT C18</b>           |        | <b>CAT C18</b>      |                          |
| Power  | Kw         | 390 KW (530HP) @ 1800rpm |        | Kw                  | 390 KW (530HP) @ 1800rpm |
| <b>Rotary</b>                                |            |                          |        |                     |                          |
| Installed torque                             | kNm        | 460                      | lbf ft | 340000              |                          |
| Working speed                                | rpm        | 7 - 16                   | rpm    | 7 - 16              |                          |
| Discharge speed                              | rpm        | 32 - 75                  | rpm    | 32 - 75             |                          |
| <b>Winches</b>                               |            |                          |        |                     |                          |
| Main winch pull force                        | kN         | 450                      | lbf    | 101000              |                          |
| Main winch speed                             | m/min      | 54                       | ft/min | 177                 |                          |
| Main winch Cable diameter                    | mm         | 40                       | in     | 1.6                 |                          |
| Auxiliary winch pull force                   | kN         | 180                      | lbf    | 40500               |                          |
| Auxiliary winch Speed                        | m/min      | 80                       | ft/min | 262                 |                          |
| Auxiliary winch Cable diameter               | mm         | 26                       | in     | 1                   |                          |
| <b>Crowd system</b>                          |            |                          |        |                     |                          |
| Kelly crowd push                             | kN         | 620                      | lbf    | 140000              |                          |
| Kelly crowd pull                             | kN         | 710                      | lbf    | 160000              |                          |
| Stroke                                       | mm         | 10260                    | in     | 404                 |                          |
| <b>Mast</b>                                  |            |                          |        |                     |                          |
| Mast raking forward                          |            | 15°                      |        | 15°                 |                          |
| Mast side raking                             |            | 5°                       |        | 5°                  |                          |
| Mast raking backwards                        |            | 15°                      |        | 15°                 |                          |
| Pile max. diameter                           | mm         | 4000                     | in     | 157                 |                          |
| <b>Kelly bar</b>                             |            |                          |        |                     |                          |
| Standard                                     |            | 4/74                     |        | 4/74                |                          |
| Options available                            |            | 4/60 - 4/90 - 5/110      |        | 4/60 - 4/90 - 5/110 |                          |
| Operating Weight w/standard kelly bar        | t (metric) | 165                      | lbs    | 363762              |                          |



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## 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 which they  
can always count on fast and efficient service.



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