



DELMAG

Pile Driving Equipment and Accessories





Delmag Compactor working in the mountains (1934).



Delmag 2500 kg „Frog“ (1939).



Delmag Compactor driving sheet piles (1942).

DELMAG was established in 1922 and has been manufacturing construction equipment since 1927, when DELMAG introduced the patented combustion powered impact hammers. In the following years different types of Hammers and Compactors were developed, like the „frog“ with a weight of 2500 kg shown above. In 1940 the first D 5 Diesel Pile Hammer (piston weight of 500 kg), was built, working after the principle of impact atomization (see page 5). These Hammers were self-contained and therefore they did not need an additional power pack. The Diesel Pile Hammers of our day still work on this same principle. In the fifties, DELMAG started to manufacture a variety of Lead Systems fitting any type of Diesel Pile Hammer and any jobsite situation.

Today DELMAG manufactures Diesel Pile Hammers from sizes D 6 (600 kg piston weight) up to D 200 with a piston weight of 20.000 kg (see separate Technical Data brochure). DELMAG also builds a variety of rope suspended, swinging or fixed leads fitting any size of hammer. Additionally DELMAG offers different types of Lead and Hammer Accessories like hydraulic starting devices, power packs, drive caps, etc.



Diesel Pile Hammer attached to a DELMAG Piling Rig (1950).



16 Delmag Swinging Leads working on a jobsite in Emden, Germany (1952).

DELMAG Diesel Pile Hammers are single acting free fall hammers utilizing the principle of impact atomization.

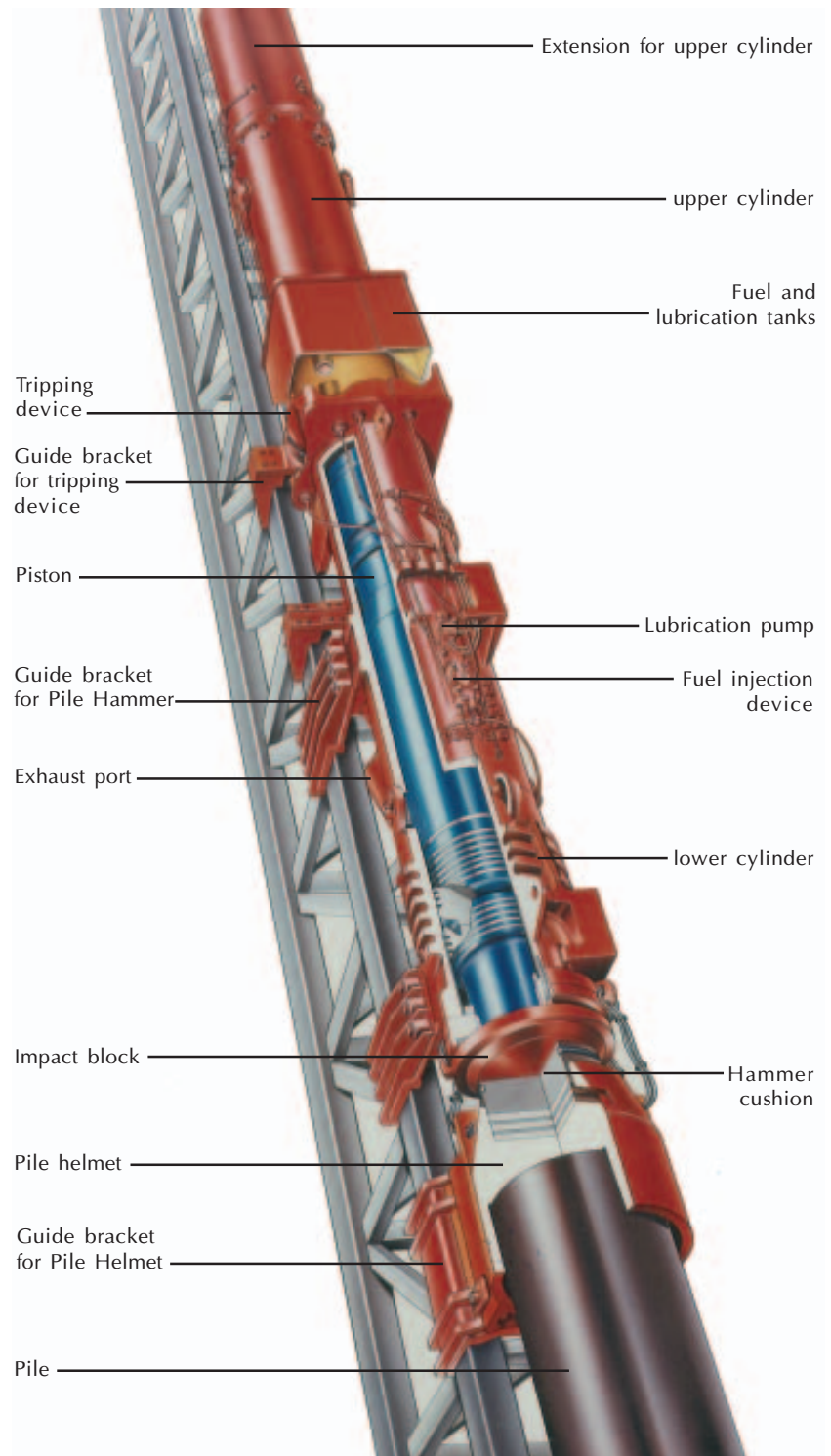
The Diesel Pile Hammer consists of upper and lower cylinder in which the piston is led. The Hammer is equipped with a rope controlled adjustable fuel pump with 4 settings. This serves to regulate the stroke of the piston and therefore the impact energy. This is a particular advantage when soil formations change. Optionally a hydraulically actuated fuel pump with infinite settings is available. The maximum stroke of a piston is up to 3.7 m, depending on soil conditions.

The Diesel Pile Hammer utilizes a tripping device to lift the piston and start the hammer. Usually the tripping device is lifted with a wire rope. In any case where no wire rope is present a hydraulic, hammer mounted tripping device is available.

Since Diesel Pile Hammers do not have any piston rods, crankshafts, cams or bearings they do have little wear and are very reliable. They are almost maintenance free and can be used on different pile types like batter piles, H-Beams, sheet piles, etc.

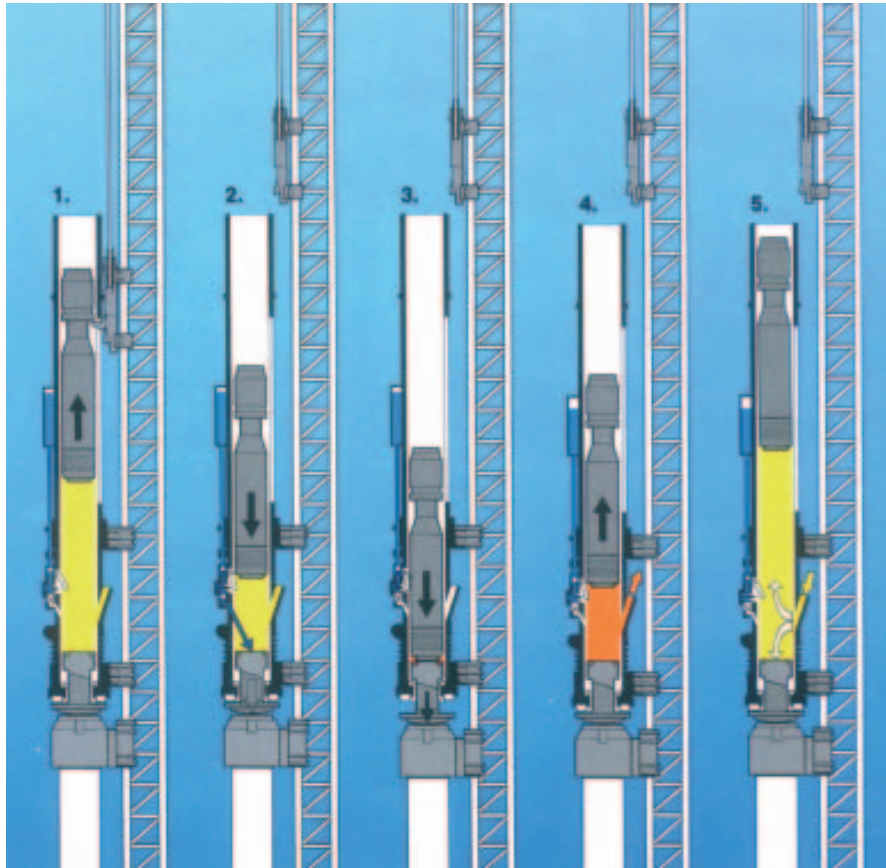
Other advantages are the unmatched ratio of total weight to impact energy (which allows the use of lighter rigs) and the extremely low fuel consumption.

The rugged design, the reliability and the low maintenance and operating costs have convinced thousands of customers around the world that a DELMAG Diesel Pile Hammer is always the right choice.



Delmag Diesel Pile Hammer D 30-32 for batter piling up to 1:1 (45°)

The principle of the Delmag Diesel Pile Hammer



1. Lifting of the piston (starting)

To start the Delmag Diesel Pile Hammer the piston is lifted by means of a mechanical or hydraulic tripping device and is automatically released at a given height.

2. Injection of Diesel fuel and compression

While dropping, the piston actuates the pump lever, so that a certain quantity of Diesel fuel is sprayed on top of the impact block. After passing the exhaust ports, the piston starts compressing the air in the combustion chamber.

3. Impact and Combustion

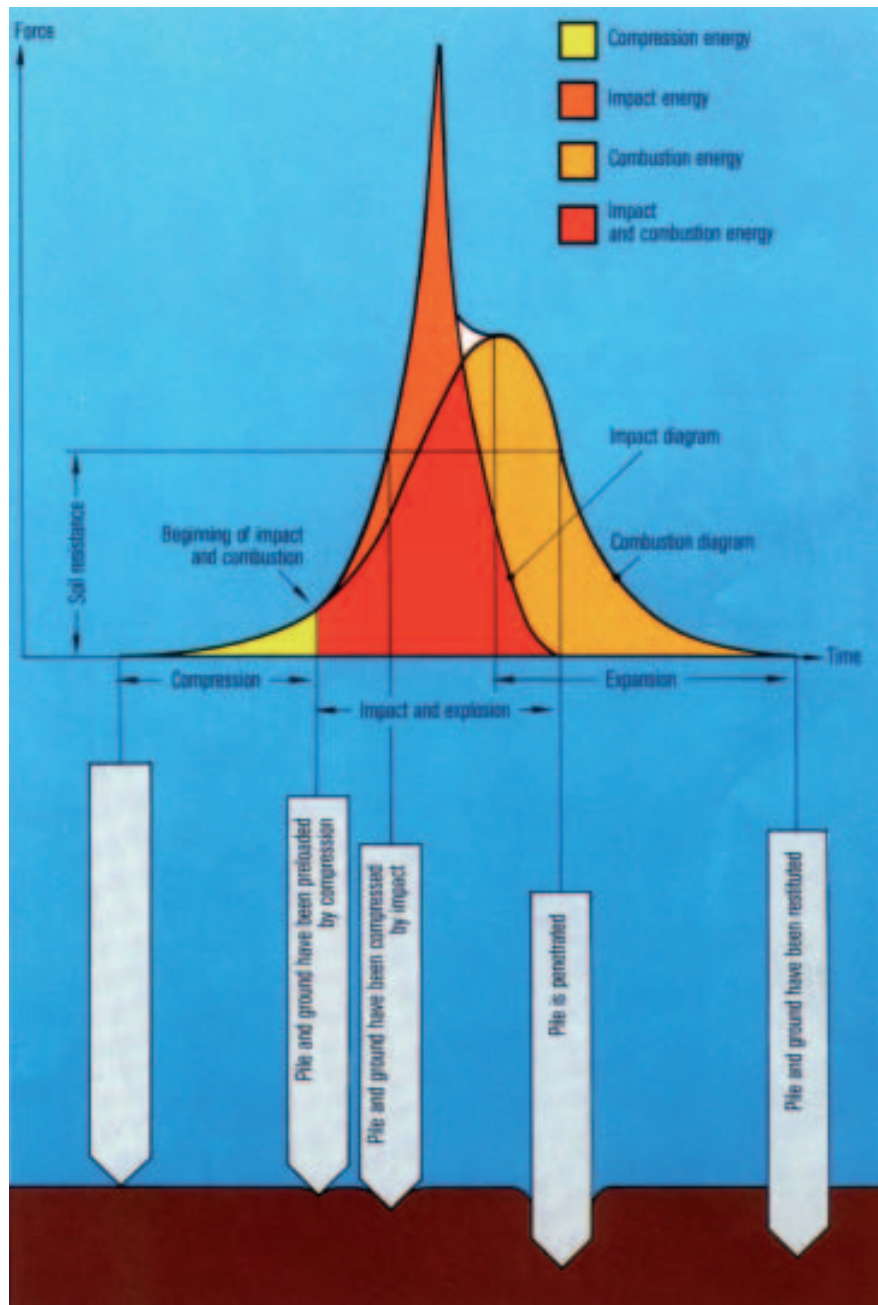
The impact of the piston on the impact block atomizes the Diesel fuel in the combustion chamber. The atomized fuel ignites in the highly compressed air. The combustion energy moves the piston upwards.

4. Exhaust

While moving upwards, the piston passes and thus opens the exhaust ports. The exhaust gases escape and the pressure in the cylinder is equalized with the atmosphere.

5. Flushing

As the piston continues to move upwards, fresh air is drawn through the exhaust/intake ports for flushing the cylinder while also releasing the pump lever. The pump lever returns to its starting position and the pump is charged with fuel again.



Delmag Diesel Pile Hammers operate on the principle of impact atomization. Three different energies are acting on the pile:

Compression + Impact + Combustion

which are united to an effective cumulative energy. The compression energy will force the impact block with the helmet tightly against the butt of the pile. The next blow will then encounter a preloaded pile. Thus the pile head is protected and the impact energy is effectively transmitted onto the entire pile. On piles sensitive to stress, the risk of cracks will be reduced, since the tension imposed on the pile relaxes in upward direction and is retarded by the pressure of the expanding gases.

Various applications in the foundation business require economical machines. Therefore DELMAG offers a variety of compact solutions like Lead Systems fitting any model of Hammer. They are light and nevertheless stabil. Exchangeable guide parts enable easy adaption to swinging, rope suspended, hanging, swivelling and other leader types.

DELMAG Swinging Leads can be attached to any model of crane with the proper capacity. Since the Lead is not connected to the crane's upper carriage, it can be rotated 360° around its vertical axis. When using an adapter with rope pulleys to reeve in the crane rope, batter piles with an inclination up to 1:1 (45°) can be driven.



Swinging Lead for beams, pipe piles or sheet piles.



Swinging U-Lead.

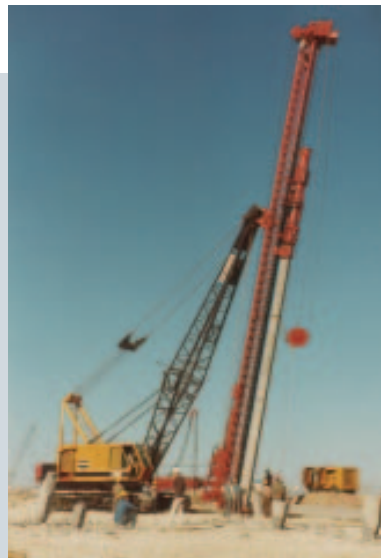


Swinging U-Lead.

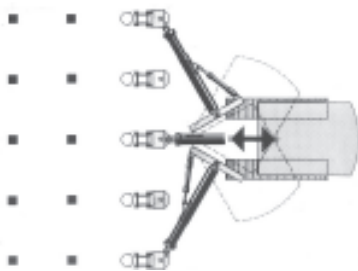


MH 37107 with Diesel Pile Hammer D 62-22.

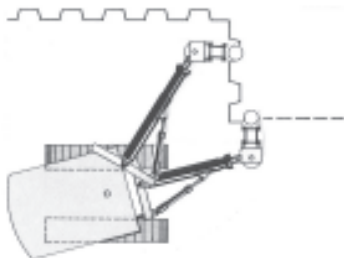
DELMAG Fixed Leads can easily be attached to the boom point of crawler cranes. Usually a spotter, which connects the lower part of the Lead with the upper carriage of the crane, is used to control the mast inclinations to the front, rear or side. Optionally a hydraulic mast slewing device which slews the mast $\pm 90^\circ$ around the longitudinal axis and a hydraulic mast lowering system which lowers the mast up to 8 m below the ground are available. These features make it possible to work under restrained jobsite conditions and to drive piles to any required angle. Different adaption systems also give the possibility to operate other tools like drill heads or vibratory hammers.



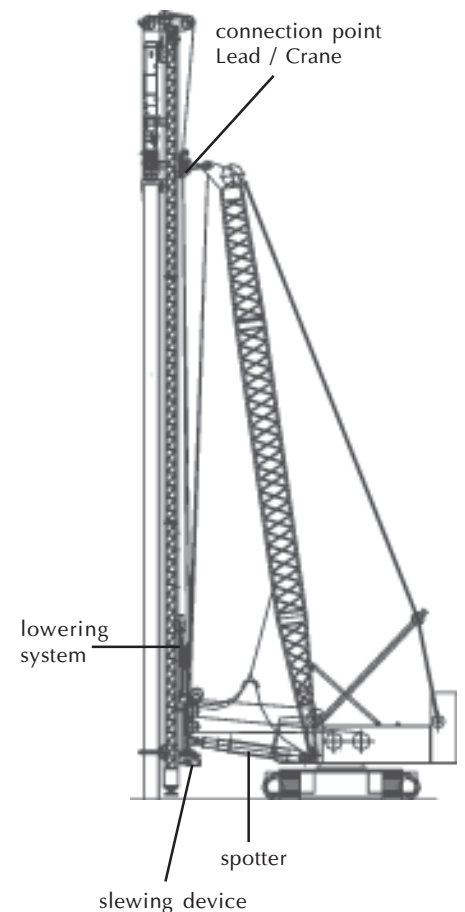
MDG 6204.



Pile driving of piles in one direction.



Piling of corners or connections at any angle without re-locating the crane.



MDG 6204 with Diesel Pile Hammer D 30-32 driving sheet piles.

DELMAG Rope Suspended Leads

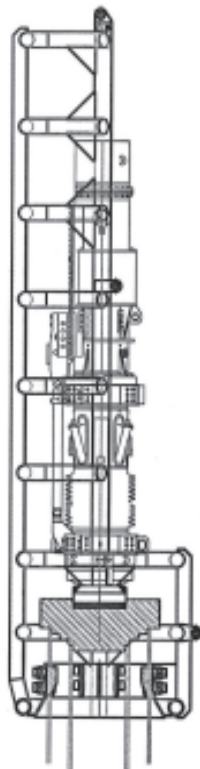
DELMAG Rope Suspended Leads guide the Hammer in „riding-hammer“ applications, either for driving sheet piles, H-Beams or pipe piles on Land-Based or Off-Shore projects. Various models are available for pile sizes up to 4.200 mm of diameter.



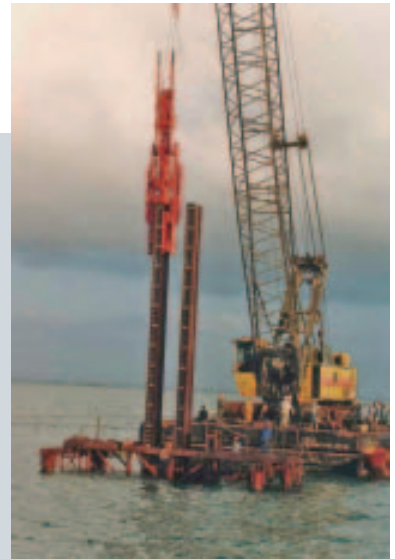
EU-Type Lead for pipe piles with striker plate for piles up to 1.500 mm of diameter.



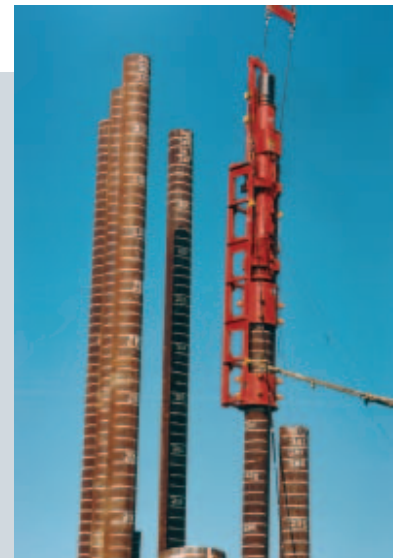
MAR-Type Lead with floating striker plate for piles up to 4.200 mm of diameter.



EU-Type Lead with stepped male helmet for piles up to 2.100 mm of diameter.



MAS-Type Lead for beams, pipe piles or sheet piles with changeable inserts for vertical piling.



EU-Type Lead with D 100.



Hydraulically adjustable Fuel Injection Pump.



Pile Gate attached to a Fixed Lead.

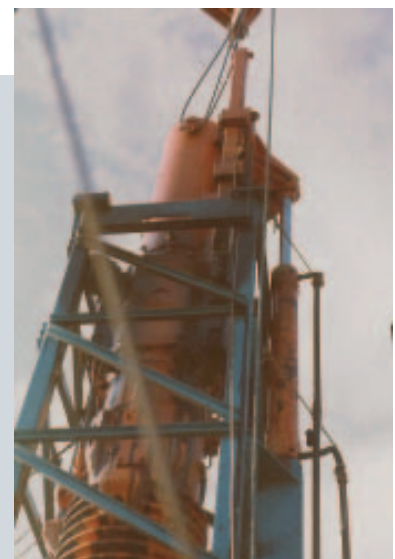


DELMAG Pile Helmet.

DELMAG also offers a variety of Lead and Hammer accessories like hydraulically adjustable Fuel Injection Pumps with infinite settings and Pile Gates for use with either Fixed or Swinging Leads. Further DELMAG offers a variety of Pile Helmets to fit any size of hammer and pile. Hydraulic Starting Devices are available if it is not possible to start the Diesel Pile Hammer with a wire rope. In addition, DELMAG builds hydraulic power packs to run the accessories.



Hydraulic Power Pack.



Hydraulic starting device.



Pontoon mounted Piling Rig with D 8-22.



Piling Unit MY 17 on a truck with D 12-32.

In addition to standard machines, DELMAG manufactures a variety of special machines, designed after customer's requests such as Piling Rigs for railway related applications, Piling Units attached to standard trucks to operate in nearly any terrain and pontoon mounted rigs. Further a variety of adaption systems are available to connect Diesel Pile Hammers to different Drilling or Piling Rigs.



ABI - MOBILRAM with Diesel Pile Hammer D19-52 with hydraulic starting device.



Diesel Pile Hammer attached to a DELMAG Drilling Rig RH 1413.



Railway-Piling-Rig G41.



Machine Shop.



Machine Shop.



Machine Shop.

At DELMAG almost all equipment is designed, fabricated, machined, assembled and tested in-house, using the latest technologies in manufacturing. Components and raw materials that cannot be manufactured at DELMAG are purchased from top ranking suppliers and are examined thoroughly by our quality control department. This is how we can assure that only products built to the highest quality standards leave our factory.



Welding shop.



Quality control.



For further informations please contact your DELMAG dealer. Or you visit us on the Internet at www.delmag.de. Design subject to modifications. The details in this leaflet have to be regarded as approximate. The illustrations also can contain special outfits which are not part of the standard scope of supply.



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