

DELMAG Pile Driving Equipment



Technical data



DELMAG 2500 kg „Frog“ (1939).



16 DELMAG lead systems working on a jobsite in Emden, Germany (1952).

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 as 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. 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 the same, yet refined, principle. In order to round up the product line, DELMAG started to manufacture a variety of lead systems and accessories in the 1950's.

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. DELMAG also builds a variety of hanging, swinging or offshore leads fitting any size of hammer and any jobsite situation. Additionally DELMAG offers different types of lead and hammer accessories like hydraulic starting devices, power packs, drive caps, etc.



DELMAG diesel pile hammer D200-42 driving 84" pipe piles in Caspian Sea



DELMAG diesel pile hammer D62-22 on hanging lead MH 8007 in Belgium



DELMAG diesel pile hammer D46-32 on piling rig BANUT 655 in Slovenia

DELMAG diesel pile hammers are single acting free fall hammers utilizing the principle of impact atomization.

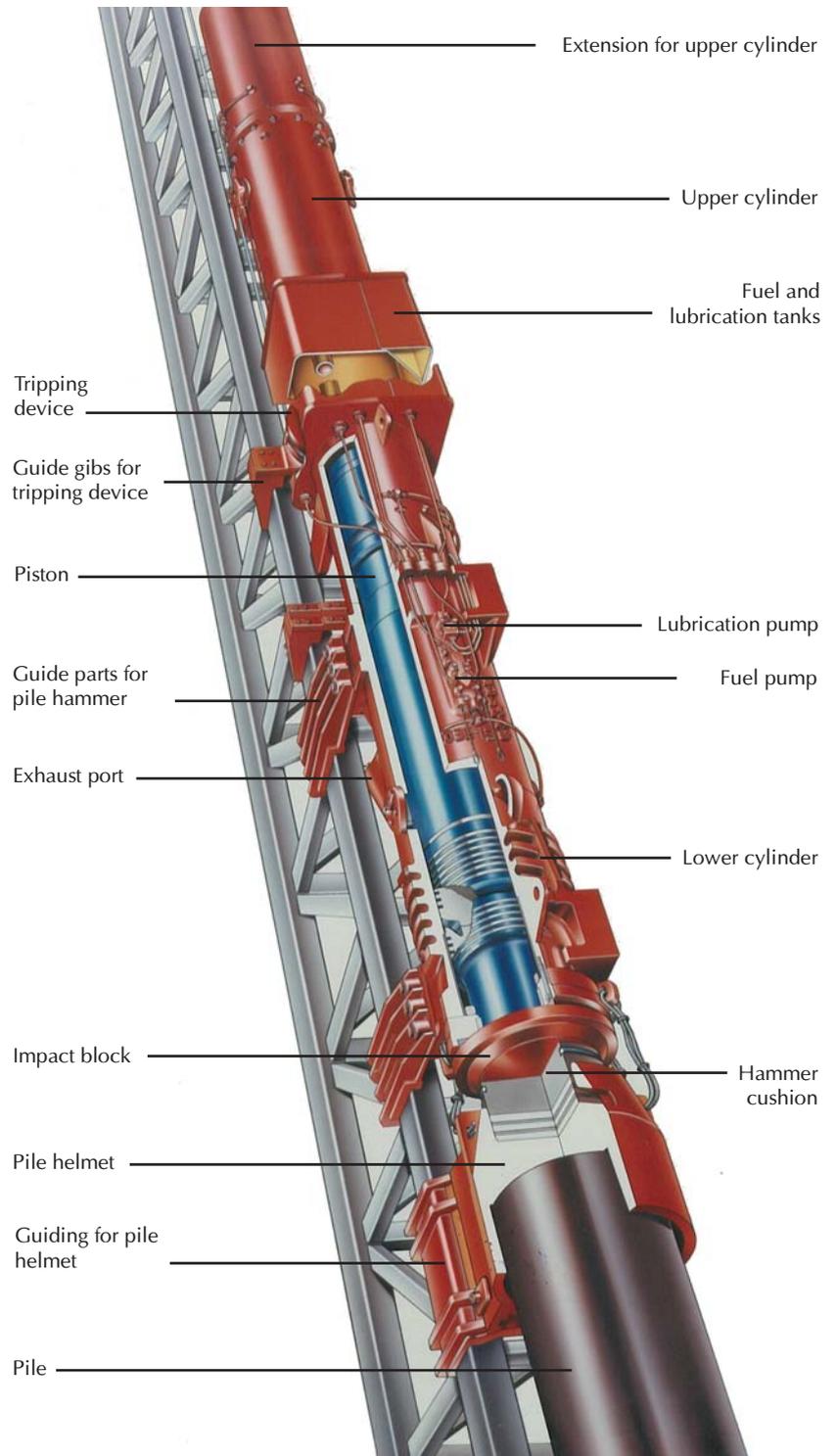
The diesel pile hammer consists of upper and lower cylinder in which the piston is led. The hammer is equipped with a rope controlled adjustable fuel pump with 4 settings. This serves to regulate the stroke of the piston and therefore the impact energy. This is a particular advantage when soil formations 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 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 concrete 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°)

How the diesel pile hammer works?

1. Lifting of the piston (starting)

To start the 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.

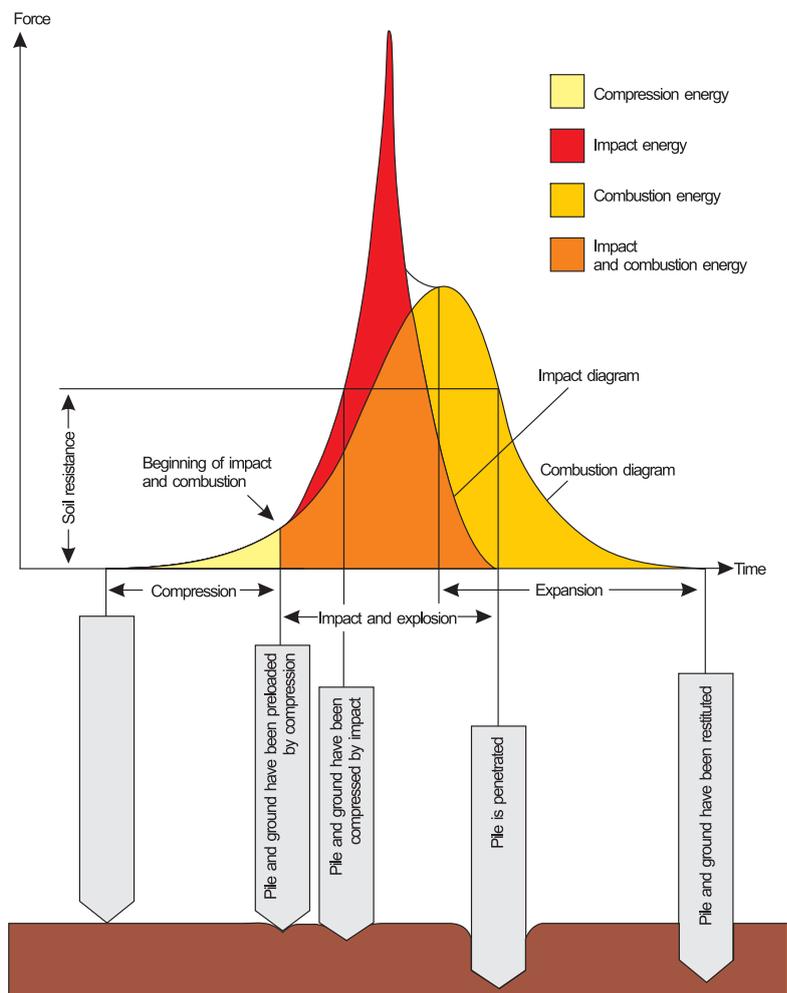
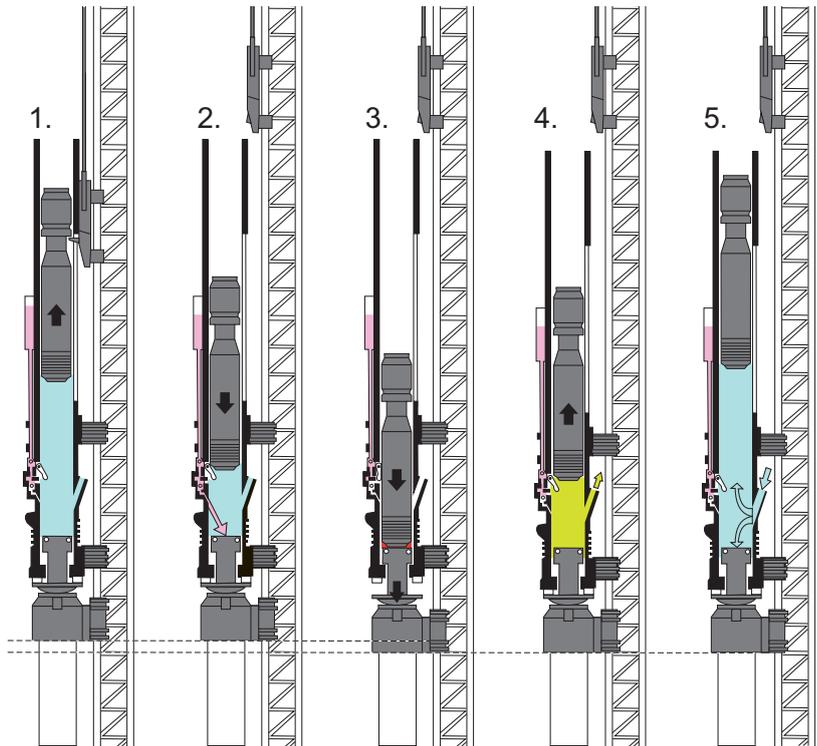
5. Flushing

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

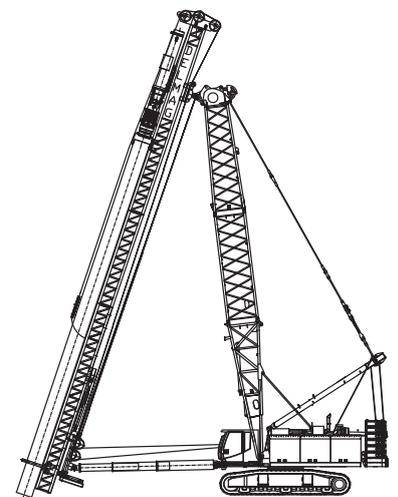
which are united to an effective cumulative energy. The compression energy will force the impact block with the helmet tightly against the butt of the pile. The next blow will then encounter a preloaded pile. Thus the pile head is protected and the impact energy is effectively transmitted onto the entire 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.



Leads		MH 1202	MH 3003	MH 6204	MH 8007
Suitable diesel pile hammer (max. size)		D12-42	D30-32	D62-22	D80-23
Max. length of the lead system	m	20	28	32	30
Max. usable length (with max. size hammer)	m	14	22	26	22
Weight cpl. in kg*	kg	3000	6000	8000	12000
Recommended carrier (lifting capacity)	t	40	50	100	120

* at max. length, without hammer and without slewing device and a lowering system

DELMAG hanging 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 and a hydraulic mast lowering system are available.



Hanging lead MH 6204 with diesel pile hammer D30-32 at the Dortmund -Ems channel in Germany

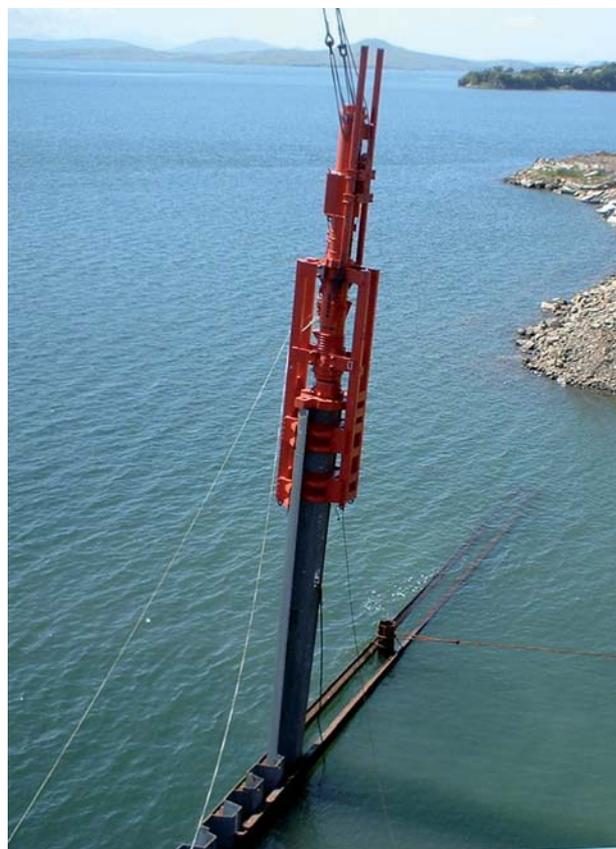
DELMAG Rope Suspended Leads

DELMAG „EU-type“ offshore leads guide the hammer in „riding-hammer“ applications, such as driving of single piles (pipe piles, king piles, etc.). For inclined pile driving (max. 1:4) a hydraulic tripping device is recommended.

Leads		EU 62-36	EU 62-42	EU 100-48	EU 100-60	EU 150-60	EU 200-60	EU 200-84
Suitable diesel pile hammer (max. size)		D62-22	D62-22	D100-13	D100-13	D150-42	D200-42	D200-42
Max. pipe diameter	mm	915	1076	1220	1524	1524	1524	2135
Weight of lead system without hammer	kg	7300	8200	9300	11400	17000	28500	40200



Rope suspended lead EU 62-42 with diesel pile hammer D62-22 in England



Rope suspended lead MAS 3000 with diesel pile hammer D25-32 in Russia

Leads		MAS 3000	MAS 4600	MAS 6200
Suitable diesel pile hammer		D25-32 D30-32	D36-32 D46-32	D62-22
Max. pile diameter	mm	1067	1067	1220
Max. pile weight	kg	3600	5000	7000
Weight of lead system without hammer	kg	4400	4600	5600

DELMAG „MAS-type“ rope suspended leads are designed to drive various types of vertical piles, such as interlocking sheet piles and single piles.

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.

Leads		MS 1202	MS 3003	MS 6204
Suitable diesel pile hammer (max. size)		D12-42	D30-32	D62-22
Length of the lead system	m	8 - 20	8 - 28	10 - 30
Usable length (with max. size hammer)	m	2 - 14	2 - 22	4 - 24
Weight of lead system at max. length, without hammer	kg	2000	4000	5500

DELMAG „MS-type“ swinging leads are mainly used for „back-driving“ of interlocking sheet piles and single piles.



Swinging lead MS 3003 with DELMAG diesel pile hammer D25-32 in Germany



Swinging lead MU 6200 with DELMAG diesel pile hammer D36-32 in the USA

Leads		MU 1900	MU 3000	MU 6200
Suitable diesel pile hammer (max. size)		D19-42	D30-32	D62-22
Max. length of the lead system	m	30	30	30
Max. usable length (with max. size hammer)	m	22	22	20
Weight of lead system at max. length, without hammer	kg	4000	6000	6600

The typical application for DELMAG „MU-type“ swinging leads is driving of single piles (concrete piles, steel piles, etc.).

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