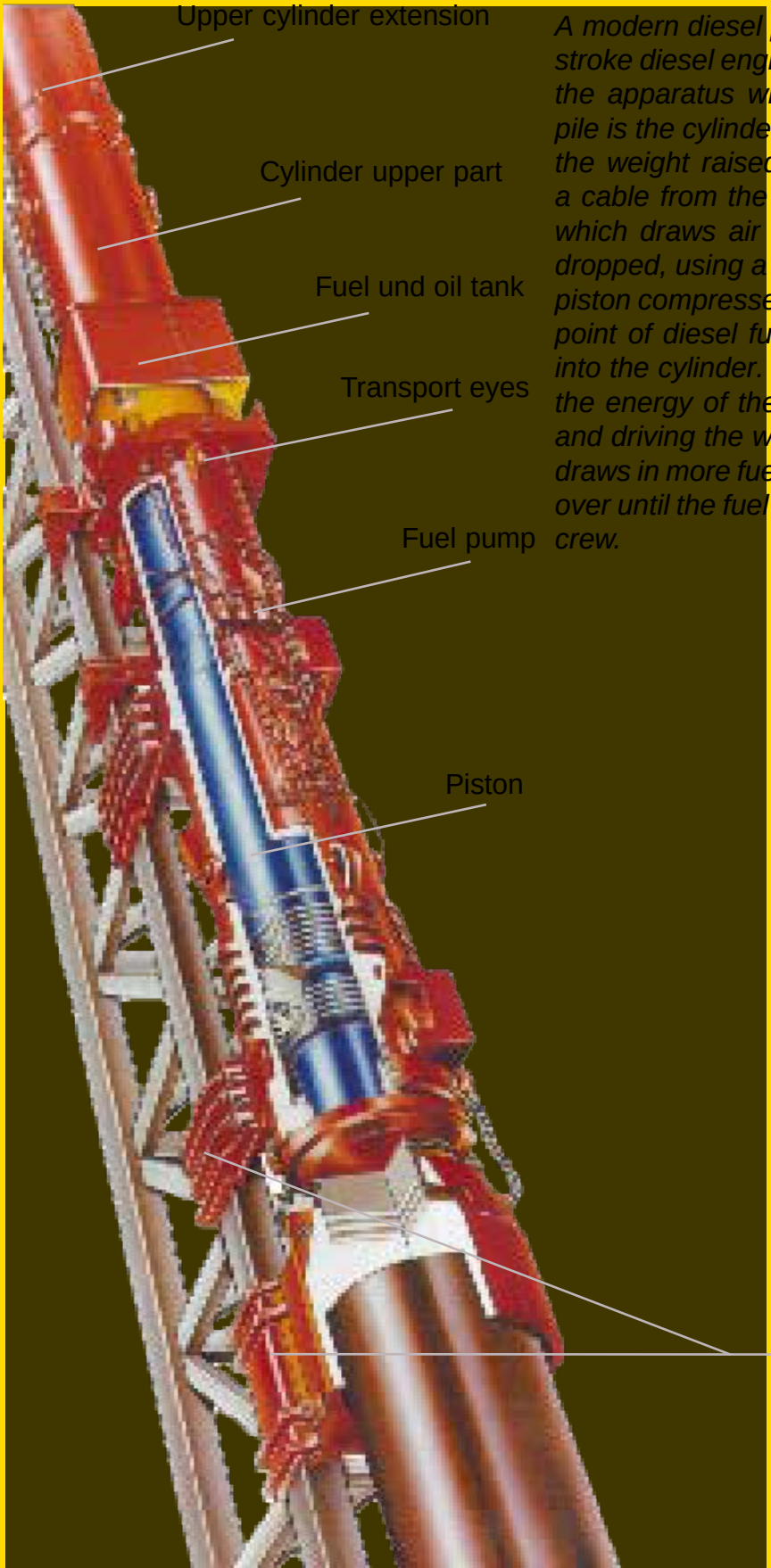
Diesel Hammers

Range of activities:

sales, rental and service for new and used drilling and piling machines:

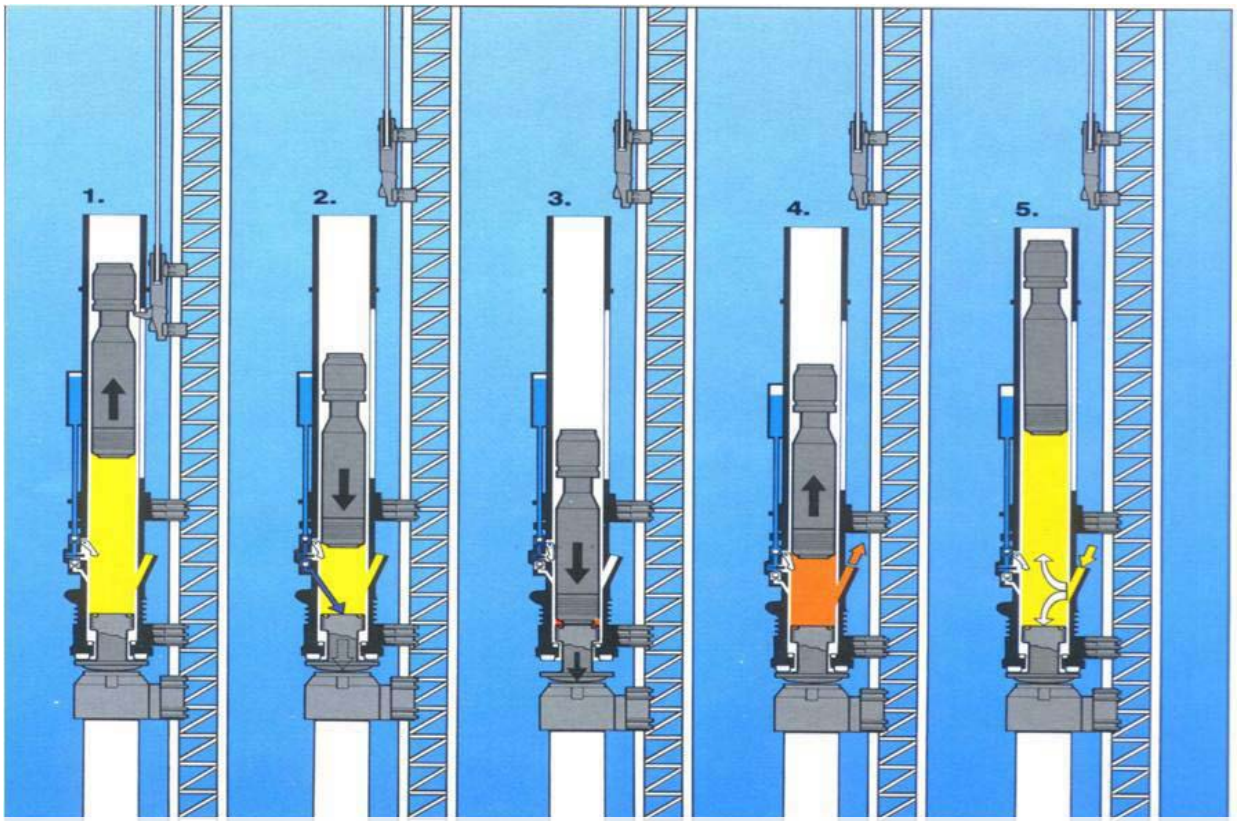
- piling and rotary drilling rigs for Special Civil Engineering
- drilling rigs for well sinking, hydraulic engineering, geothermal energy
- anchor drilling rigs
- blast hole drilling rigs
- exploration equipment (water, gas, oil)
- drilling and piling tools and equipment in different applications
- foundation crane with a capacity of 30 up to 250 to
- crawler cranes in each size range
- technics for diaphragm wall grabs

We are glad to get your detailed inquiry.



A modern diesel pile hammer is a very large two-stroke diesel engine. The weight is the piston, and the apparatus which connects to the top of the pile is the cylinder. Piledriving is started by having the weight raised by auxiliary means — usually a cable from the crane holding the pile driver — which draws air into the cylinder. The weight is dropped, using a quick-release. The weight of the piston compresses the air, heating it to the ignition point of diesel fuel. Diesel fuel is added/injected into the cylinder. The mixture ignites, transferring the energy of the falling weight to the pile head, and driving the weight back up. The rising weight draws in more fuel-air mixture, and the cycle starts over until the fuel runs out or is stopped by the pile crew.

Function of a diesel hammer



1) Raising of piston (starting)
For starting the Diesel hammer, the piston (ram) is raised by means of a mechanical trip ping device and is automatically released at a given height.

2) Injection of diesel fuel and compression
As the piston falls through the cylinders it activates a lever on the back of the fuel pump, which injects a measured amount of diesel fuel onto the top of the impact block. Shortly after this, the exhaust ports are closed.

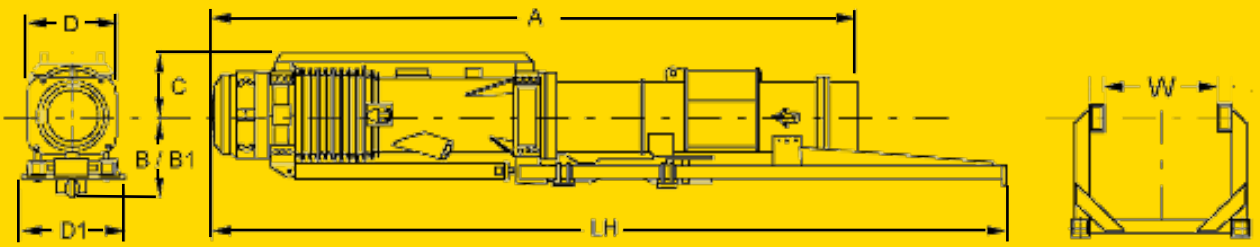
3) Impact and atomization
Compressing all the air between the exhaust ports and the top of the impact block, the pis ton continues falling until it strikes the top of the impact block. The heat generated by the compression of air in the presence of atomized fuel, causes an explosion of the fuel, throwing the piston upward and forcing the impact block downward against the pile

4) Exhaust
While moving upwards, the piston will pass and open the exhaust ports. Exhaust gases will escape and the pressure in the cylinder will equalize

5) Scavenging
The piston continues its upward momentum which draws in fresh air for the next cycle, cools the cylinders, and releases the pump lever. The pump lever returns to its starting position, so that the pump will again be charged with fuel. Gravity stops the upward motion of the piston and it starts falling through the cylinders once again.

Manufacturing / Application

Technical Data



Model		D6-42 D8-42	D12-42	D19-42	D25-32 D30-32
App. piston weight	kg	600 / 800	1280	1820	2500 / 3000
Blows per min 1)					
Minimum	1/min	39 / 37	37	37	37
Maximum	1/min	52	52	52	52
Energy per blow 2), adjustable					
Maximum	kNm	17.0 25.4	40.4	57.6	79.0 94.9
Minimum	kNm	9.6 12.8	20.3	29.1	40.0 48.0
Consumption 3)					
Diesel fuel	l./hr.	3.7 / 3.8	4.5	7.6	8.0 / 10.0
Lubrication oil	l./hr.	0.25 / 0.5	0.5	0.6	1.0 / 1.0
Capacity					
Diesel fuel	l	19 / 20	24	75	67
Lubrication oil	l	5 / 6	6.5	19	19
Weight					
Hammer	kg	1620 1815	2600	3795	5610 6110
Hammer, standard operating	kg	 2426	3220	4400	6710 7210
Dimensions					
A – Length	mm	4300 / 4695	5580	5610	5425
LH – Length , standard	mm	5790	5850	5850	6490
– Length with hydr.start	mm	-	-	-	6860
B – Center to trip	mm	330	356	356	445
B1 – Center to trip cylinder	mm	-	-	559	610
C – Center to pump guard	mm	381	381	406	482
D – Width of hammer	mm	465 / 420	482	495	635
D1 – Width of trip	mm	622	622	622	812
W – Min. lead width	mm	534	534	534	660

1) Depends on fuel pump setting, kind of soil and kind of pile

2) Potential energy calculated by multiplying piston weight and stroke. The stroke of the ram is a result of the blow rate and does not consider any pile driving conditions, neither loss by compression or friction

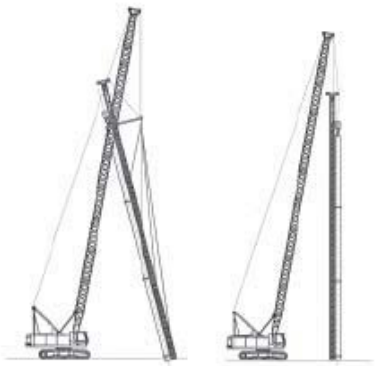
3) Consumption and weights are approximate, weight of guiding depends on type and size of diesel hammer guiding

Technical Data

D36-32 D46-32	D62-22	D80-23 D100-13	D125-32 D138-32	D160-32 D180-32
3600 / 4600	6200	8000 / 10000	12500 / 13800	16000 / 18000
37 52	35 50	36 45	36 45	36 46
113.8 145.5 57.6 73.6	219.1 107.4 	267.3 334.0 171.1 213.8	417.6 460.9 267.3 295.0	534.5 601.3 327.4 368.3
11.5 / 16.0 1.5 / 1.5	20.0 2.0	25.0 / 30.0 2.6 / 2.6	36.0 / 38.6 3.6 / 3.6	45.0 / 49.6 5.0 / 5.0
89 17	98 31	155 32	189 60	238 80
7880 8888 9026 10025	12282 13290 	16907 20364 18690 22135	24320 26020 27330 29030	31200 34340 33800 37470
5580	6890	7195 / 7345	7772 / 7894	7864 / 8047
6490 6860	7560 7864	8565 8565	8475 8475	7864 7864
482 660	508 686	660 838	775 788	856 856
521	648	584	572	622
724 940	825 902	890 1206	1042 1206	1156 1300
812	812	1067*	1067*	1220*
			Dimensions round up to one centimetre All data subject to change without notification	

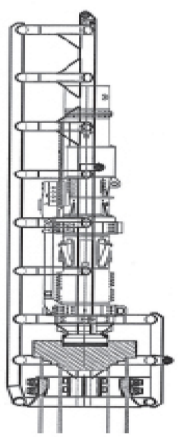
The Different Systems

Swinging Leads

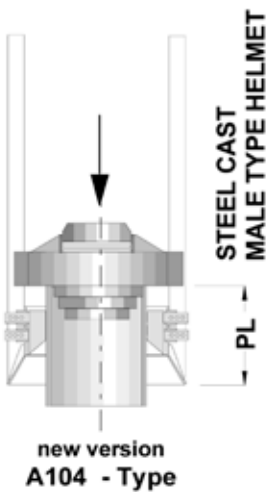


Fixed Leads

Rope Suspended Leads



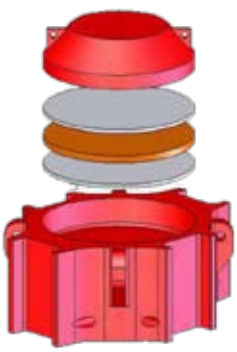
Offshore Type Lead Systems



Offshore type leads used first in the oil industry to drive conductor piles and oil platform legs. Onshore projects adapt this systems too for appropriate projects

PROGRESS OVER THE YEARS LEADING TO :

- **higher driving efficiency for pipe piles with male type helmets**
- **longer lifetime / less maintenance by using less moving parts (carrier eliminated)**
- **minimized outstanding pile length**

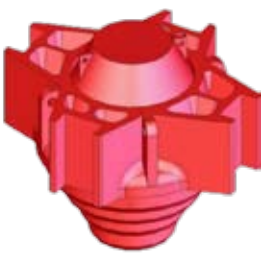


Striker Plate

Hammer Cushion

Primary Helmet up to U42 leads

Pile insert for various pile types available

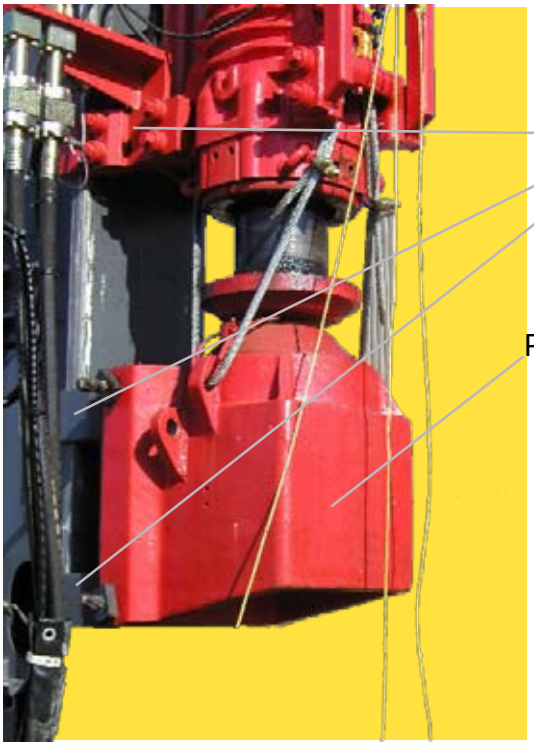


Steel cast male type Pipe Helmet up to ø 1680 mm

Square Concrete Pile Helmet up to size 900 mm

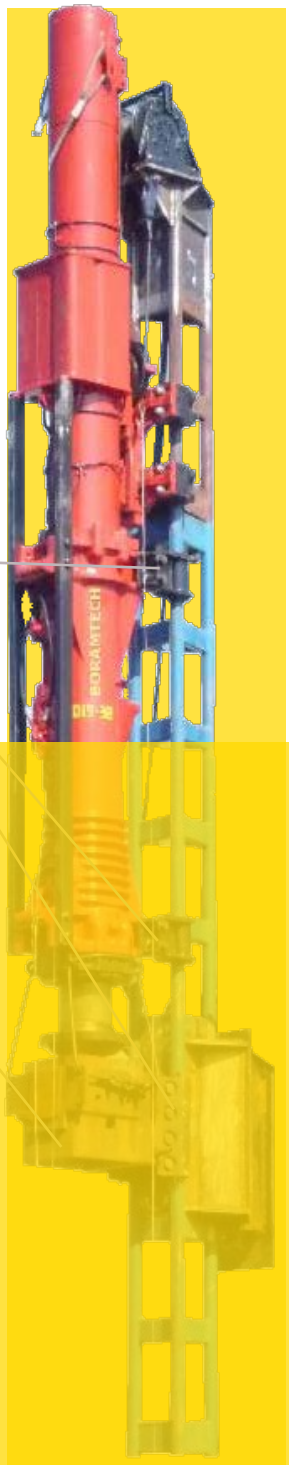
The job sites

DIESEL HAMMERS



Guiding jibs

Pile helmet



Guiding jaws

Pile helmet