

# BSP CX and CG Range of Hydraulic Piling Hammers

## Introduction

The CX and CG range of hammers have been developed by BSP after many years experience of producing hydraulic piling hammers – the range now embodies the following principles.

## Versatility

Designed to operate from piling rig leaders or crane suspended, CX & CG hammers are suitable to drive the following pile types:

- Steel sheet piles in pairs
- Steel tubular bearing piles
- Steel 'H' piles
- Steel combi piles
- Reinforced concrete RC piles
- Cast in situ CIS piles
- Timber piles

To drive sheet piles with the CX range when crane suspended, legs with pile inserts are added to the hammer and the blow transferred through a wide driving cap to spread the impact. Bearing piles may be driven by a crane suspended hammer fitted with an insert to suit the pile size.

For driving tubular bearing piles over 762mm diameter when crane suspended, the legs can be replaced by a tubular pile guide.

The CX and CG range can be used in conventional piling rigs with the addition of hinged type back-guides. Guides to suit any leader section are available allowing speedy installation on the mast.

A detachable trip is available to allow the hammer to follow the pile without the continual paying out of the hammer rope.

## Efficiency

The BSP hydraulic actuator is designed to be highly efficient which for a given blow rate and energy transference gives the operator lower fuel costs and less exhaust emissions.

With the hydraulic control valve on the hammer the CX and CG range can



be connected into an existing hydraulic power supply from a hydraulic pile rig crawler base.

Where there is insufficient hydraulic power available, a range of skid mounted EU compliant power packs have been designed for use with these hammers.

## Minimum Hammer Length

The CX hydraulic actuator features controlled acceleration and impact to the down stroke, equivalent to 1.2m freefall. This feature plus the unique drop weight connection reduces overall length compared to similar conventional hammers.

## Minimum Hammer Weight

A careful balance between the ram mass and the cage design results in the all up weight being minimised.

## Controllability

The proven BSP remote control panel, provides these hammers with an infinitely variable stroke and blow rate. The precise delivery of energy to the pile, enables the contractor to maximise production rates, avoid pile damage and problems of pile runaway.

## Environmentally Friendly

The relatively low hydraulic demand of the CX and CG actuator reduces fuel consumption, and combined with today's more efficient diesel engines, gives less exhaust emissions.

Noise emissions are reduced with improved dolly material, sound attenuating panels and helmet shrouding.

## Reliability

BSP have been designing and manufacturing piling hammers for 95 years – the CX and CG range draws on this experience. The range has been extensively site tested, driving a wide range of piles under varying conditions.

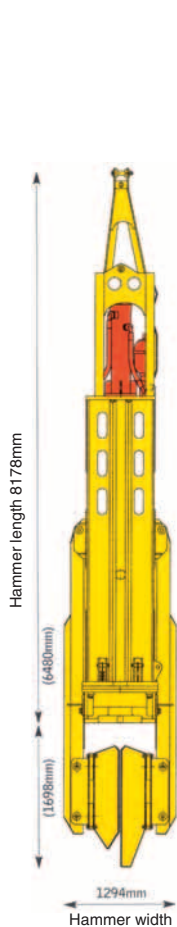


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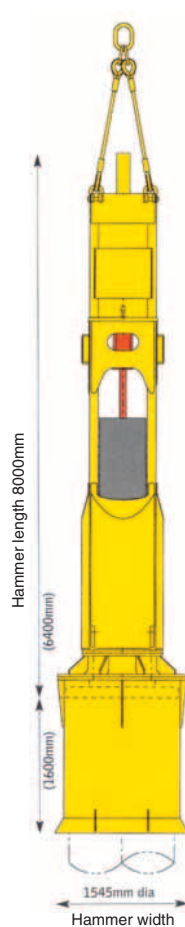
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# Technical Data (Hammers)

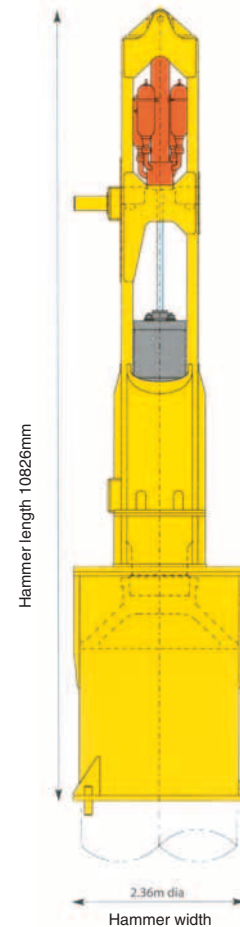
| Model | Ram Mass<br>kg | Ram Stroke<br>m | Max Impact Energy<br>kJ | Blow Rate<br>bpm | Basic Hammer Weight Less Helmet<br>kg | Approx total Hammer Weight with legs & inserts for sheet piles<br>kg | Approx total Hammer Weight with tubular insert<br>kg | Basic Hammer |             |             | Typical Stand-off C/L Hammer to Leader Face<br>mm | Hydraulic requirements |                    |
|-------|----------------|-----------------|-------------------------|------------------|---------------------------------------|--|--|--------------|-------------|-------------|---|------------------------|--------------------|
|       |                |                 |                         |                  |                                       |  |  | Length<br>mm | Width<br>mm | Depth<br>mm |   | Pressure<br>bar        | Flow rate<br>l/min |
| CX40  | 3,000          | equiv 0.1-1.2   | 40                      | 45 / 100         | 5,100                                 | 8,050  | N/A  | 4,022        | 870         | 970         | 500   | 200                    | 180                |
| CX50  | 4,000          | equiv 0.1-1.2   | 51                      | 45 / 100         | 6,100                                 | 9,050  | N/A  | 4,022        | 870         | 970         | 500   | 225                    | 180                |
| CX60  | 5,000          | equiv 0.1-1.2   | 60                      | 43 / 100         | 7,600                                 | 10,550   | 11,600   | 4,975        | 820         | 970         | 500   | 200                    | 200                |
| CX75  | 6,000          | equiv 0.1-1.2   | 71                      | 40 / 100         | 8,700                                 | 11,650   | 12,700   | 4,975        | 820         | 970         | 500   | 220                    | 200                |
| CX85  | 7,000          | equiv 0.1-1.2   | 83                      | 40 / 100         | 9,800                                 | 12,750   | 13,800   | 4,975        | 820         | 970         | 500   | 240                    | 200                |
| CX110 | 9,000          | equiv 0.1-1.2   | 106                     | 36 / 100         | 12,050                                | 15,000   | 16,050   | 5,475        | 820         | 970         | 500   | 250                    | 215                |
| CG165 | 11,000         | 0.2-1.52        | 165                     | 34 / 100         | 17,240                                | N/A  | 28,740   | 7,000        | 1,225       | 1,300       | 700   | 260                    | 385                |
| CG210 | 14,000         | 0.2-1.52        | 210                     | 32 / 100         | 20,430                                | N/A  | 31,930   | 7,450        | 1,225       | 1,300       | 700   | 260                    | 375                |
| CG240 | 16,000         | 0.2-1.52        | 240                     | 31 / 100         | 22,760                                | N/A  | 34,260   | 7,750        | 1,225       | 1,300       | 700   | 285                    | 370                |
| CG270 | 18,000         | 0.2-1.52        | 270                     | 31 / 100         | 25,110                                | N/A  | 36,610   | 8,050        | 1,225       | 1,300       | 700   | 270                    | 425                |
| CG300 | 20,000         | 0.2-1.52        | 300                     | 29 / 100         | 27,460                                | N/A  | 38,960   | 8,350        | 1,225       | 1,300       | 700   | 290                    | 415                |



CX60/75/85 shown with legs and inserts for sheet piles



CX110 shown with tubular insert max O/dia tubular pile 1220mm



CG300 shown with tubular insert max O/dia pile 2000mm

# Technical Data (Power Packs)

## Diesel Powered 'Open Circuit' Hydraulic Hydrpacks.

### Models 125 and 250

Dedicated to the operation of the BSP CX and CG range of hammers, these Hydropacks come with turbo-charged diesel engines and bent axis pumps.

The engine management system on the control panel, allows the hammer to be operated in manual mode.

Filtration is provided by a tank-mounted filter with a sensor providing warning in the event of a blockage.

Engine cooling is provided by a radiator fan, and hydraulic oil temperature is controlled by an independent air blast cooler.

The base and frame are of welded construction. Lockable doors, lined with sound dampening material, give security and service access. The control panel is positioned at one end of the pack.



Model 125

| Hydro Pack Models      | Hydro Pack 125<br>(for hammer range CX40-CX110) | Hydro Pack 250<br>(for hammer range CX110-CG300) |
|------------------------|---|--|
| Engine Type            | Perkins 1106TC-E60TA                            | CAT C9   |
| Engine Output          | 127kW @ 2100rpm                                 | 250kW @ 1800rpm                                  |
| Max. Oil Flow          | 215 L/min                                       | 430 L/min  |
| Max. Pressure          | 300bar  | 300bar   |
| Fuel Tank Capacity     | 260 Litres                                      | 315 Litres                                       |
| Hyd. Oil Tank Capacity | 345 Litres                                      | 950 Litres                                       |
| Length                 | 2.5m  | 3.6m   |
| Width                  | 1.1m  | 1.55m  |
| Height                 | 2.15m   | 2.2m   |
| Weight Dry             | 1900kg  | 4200kg   |
| Weight Full            | 2300kg  | 5200kg   |

| Noise Data           | Sound Power Level<br>Lwa (at source) | Sound Pressure Level<br>Lpa (4m R) | Sound Pressure Level<br>Lpa (15m R) |
|----------------------|--------------------------------------|------------------------------------|-------------------------------------|
| <b>Hammers:</b>      |                                      |                                    |                                     |
| CX Range Standard    | 126 dB(A)                            | 106 dB(A)                          | 94 dB(A)                            |
| CX Range Shrouded    | 113 dB(A)                            | 93 dB(A)                           | 81 dB(A)                            |
| CX Range             | 122 dB(A)                            | 102 dB(A)                          | 90 dB(A)                            |
| <b>Power Packs::</b> |                                      |                                    |                                     |
| Hydro Pack 125       | 105 dB(A)                            | 95 dB(A)                           | 73 dB(A)                            |
| Hydro Pack 250       | 104 dB(A)                            | 94 dB(A)                           | 72 dB(A)                            |

NB. Noise emissions will vary depending on type of pile being installed i.e. panel of sheet piles or single bearing pile, method of installation, site location and ambient noise.

Cyclical operations will result in an overall reduction of noise (leq).

To calculate the noise level at further distances, reduce the noise level by 6dB(A) each time the distance is doubled.



BSP CX85



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