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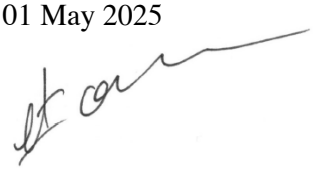
01 May 2025

BASEMENT CONSTRUCTION IMPACT ASSESSMENT

FOR

14 FROGNAL LONDON NW3 6AG

Prepared By
Mr Ender Targan
Structural Engineer (member of IStructE)
01 May 2025



Contents

1.0 DESCRIPTION OF PROPOSALS

This impact assessment has been produced for construction of a Lower ground rear extension to a property with an existing basement and reconfiguration internally to accommodate 3 residential flats at 14 Frognal, London, NW3 6AG.

Proposed development consists of a basement level and ground floor rear extensions. The Proposed Basement will be formed using reinforced concrete walls and concrete slab. Basement ceiling level (suspended ground floor slab) will adapt Beam & Block concrete flooring system. Traditional construction methods will be used for superstructure. Walls will be masonry cavity walls and suspended floors and roof will be timber framed. There are existing lightwells to the front of the property which will be enlarged this requires no structural works and will be formed using brick retaining walls as existing same applies to the lightwell to the flank wall of the existing property

This document provides an impact assessment for the construction of basement and superstructure.

2.0 BASEMENT DESIGN

Basement and superstructure design has been carried out by an experienced Structural Engineer. Refer to structural drawings AH04

Reinforced concrete retaining walls will be used to provide soil stability and provide vertical support for the proposed superstructure at permanent state. Giken silent vibrationless sheet piling will be used to provide soil stability at construction stage.

· BS 8110 - Structural use of Concrete.
· BS 8002 – Code of Practice for Earth Retaining Structures.
The Structural Design is in accordance with the following documents and approval will be obtained from the appointed Building Control officer

3 EXCAVATION

Workmanship for excavating is to comply with BS 8000: Part 1 section 3.1, 3.2 and 3.3.

Giken silent vibrationless sheet piling is proposed as temporary shoring wall for excavations. After sheet piling work is completed, excavation works will be undertaken safely. 300mm thick RC retaining walls will be cast against the sheet piles to complete basement construction.

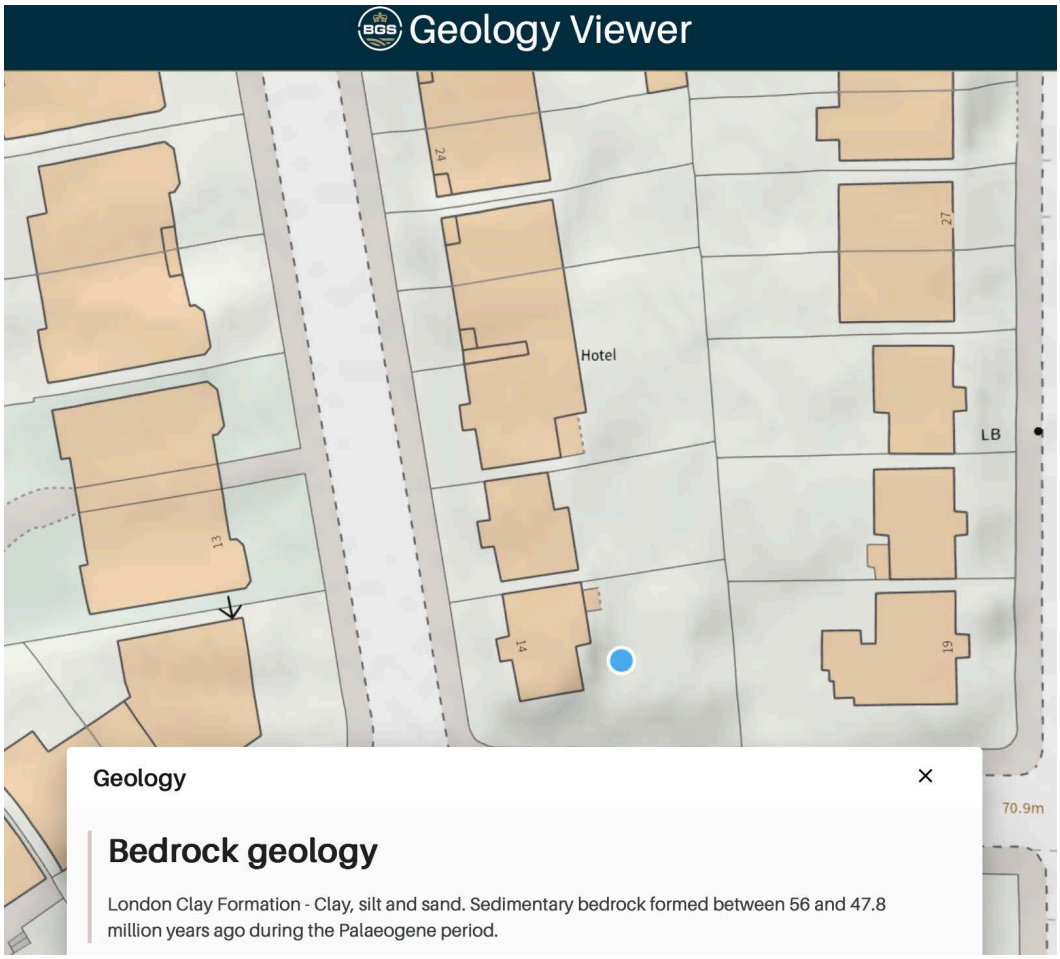
Conventionally sheet piles are pounded or vibrated into the ground. Such methods inevitably generate excessive noise and vibration. Press-in Method by Giken is based on the principle of non-pollutive pile installation.

Press-in Method by Giken:

Pile penetration methods can be classified in either dynamic penetration method or static penetration method. Dynamic penetration method inevitably generates excessive noise and vibration due to their reliance on percussive or vibratory energy. On the other hand, static penetration method does not generate such construction pollution. In the Press-in Method, piles are installed with static load generated from hydraulic rams. The reaction for the press-in force is derived from extraction resistance of previously driven piles. That is why a small press-in machine can generate greater force by integrated with the Earth. Such compact machines can work under physically restricted work conditions. Refer to Appendix B and Appendix C for further information on Giken silent vibrationless sheet piling. Press-in Method of sheet piling cause virtually no noise or vibration.

4.0 GEOLOGY

The British Geological Survey 1:50,000 scale map of the area indicates the site to be underlain by Bedrock Geology



The founding depth for the basement walls will be approximately 3.0m below ground level. Hence, basement slab will be resting on London clay (stiff, grey, brown silty clay). Therefore, an allowable bearing pressure of 100 kN/m^2 (below 3.0m ground level) can be adopted. The existing geology at the depth of the proposed basement would be capable of withstanding the new vertical loads.

5.0 IMPACT ON ADJACENT BUILDINGS

The proposed method of construction will not affect the adjacent buildings. This is due to the facts given below.

a-) No construction method will be adopted which would introduce vibration to soil. Giken silent vibrationless sheet piling will be used in order not to impact adjacent buildings adversely. Proposed piling method produce virtually no noise or vibration (refer to Appendix B and Appendix C). Traditional construction methods will be used for the rest of the construction. Backhoe or excavator will be used for excavation works after Giken silent vibrationless sheet piling works are completed. Since, soil vibration is not present, it can be said that adjacent buildings are not affected by the proposed development.

b-) Proposed development does not increase soil stress as the total weight of the proposed building is less than the weight of the removed soil (due to basement construction/excavation). Therefore, it can be said that adjacent buildings foundations are not affected as soil stress is not increased.

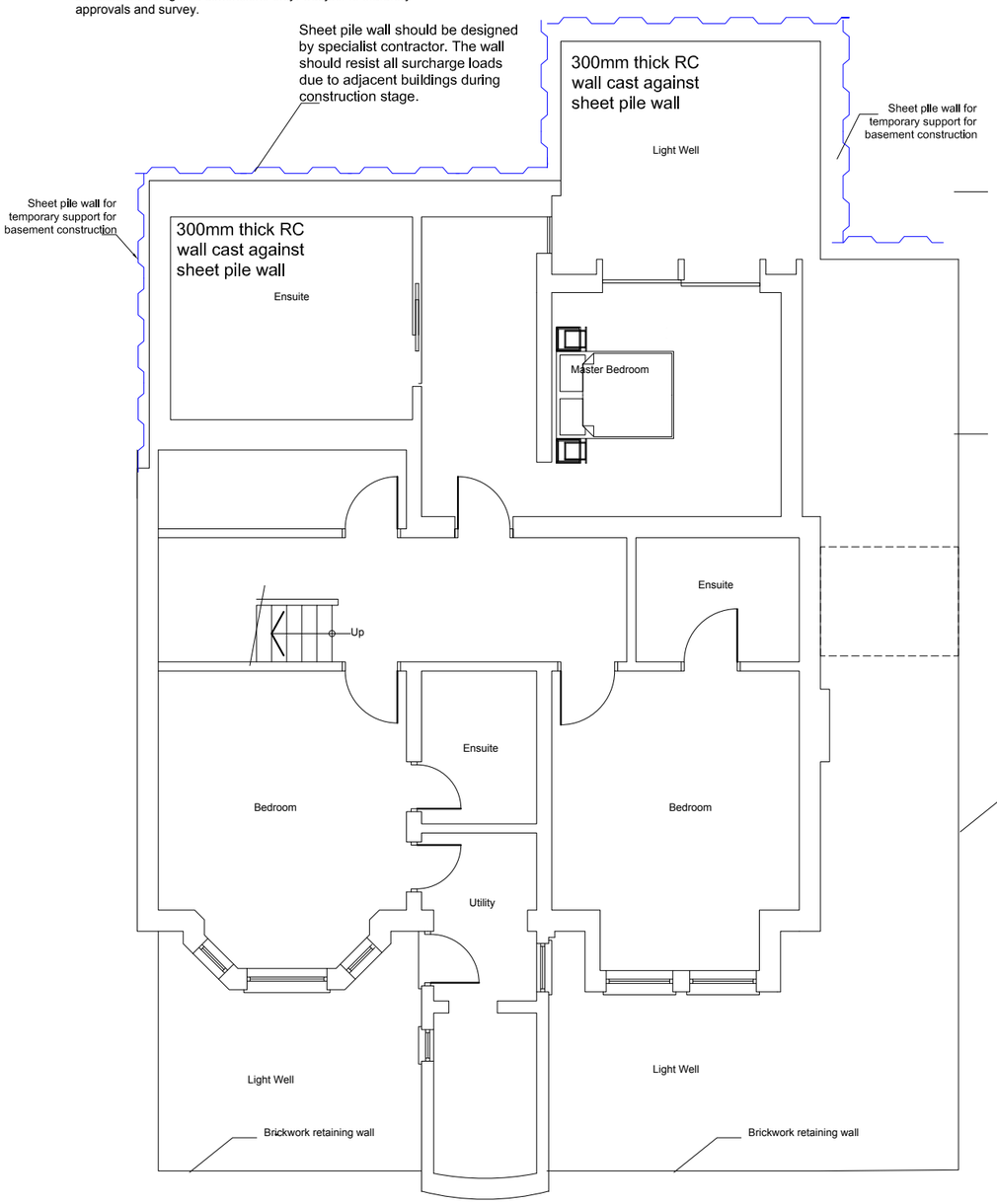
c-) Moreover, reinforced concrete retaining walls will be constructed to provide soil stability and to avoid any soil movements.

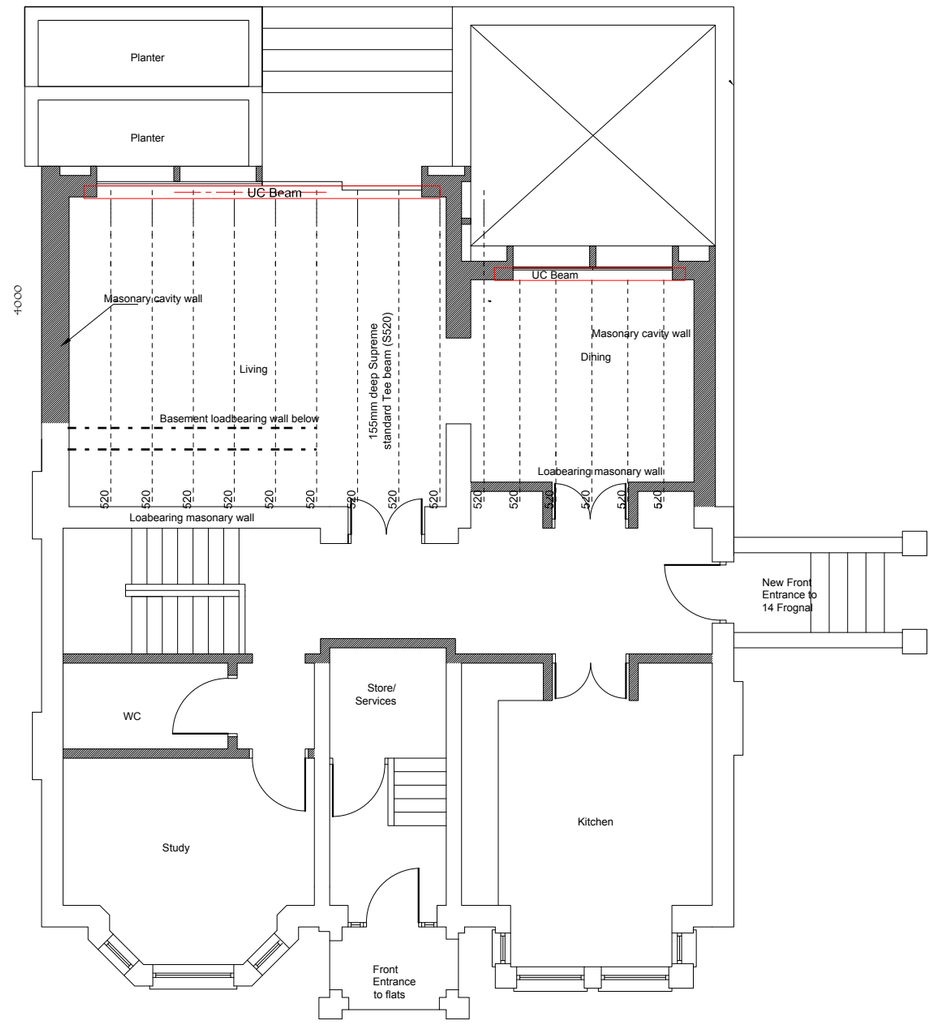
To sum up, it can be concluded that the proposed development has no negative effect on the adjacent buildings. Therefore, it is safe to undertake construction works according to structural drawings shown in Appendix A

Appendix A

Structural Drawings

Notes:
Contractors must verify all dimensions on site before commencing any work or shop drawings. This drawing must not be scaled. Use figured dimensions only. Subject to statutory approvals and survey.





Proposed Basement Plan

Proposed Ground Floor Plan

0 2 4 6 8 10m

SCALE: 1/ 100 @ A3

This is a '**Scheme Level Drawing**' and is intended to illustrate the general arrangement of the project proposals. As it stands this drawing does not include all of the detail necessary for a full plans building regulations application.

While this drawing can be used as a base drawing for construction purposes, your building contractor may require more information. It is therefore important to discuss, with your architect & builder together, where more detail would be appropriate.

1. This drawing has been based upon a measured survey drawing by others. As a result, the precision of the dimensions indicated is dependent upon the information supplied.
2. While this drawing can be used as a base drawing for construction purposes, it is VERY IMPORTANT that all dimensions are checked carefully before any work commences or any materials are ordered.
3. This drawing can be used as part of a planning application, although your planning officer may ask for more specific information about some aspects of the design. Ask your architect for more information on planning applications.
4. Where applicable, a suitable Structural Engineer and/or a Party Wall Surveyor should be consulted. Although as far as possible these instances have been indicated, this is not necessarily exhaustive and the whole scope of proposed works should be reviewed.
5. Unless other arrangements have been specifically made, your building contractor should serve a Building Notice, as and where applicable, to your local authority to satisfy the requirements of the Building Regulations. Your building contractor should also liaise with the Building Control Officer regarding routine inspections of the work.

Further detailed design / dwgs may be needed for this section.

This symbol indicates that it may be beneficial to have more detailed design drawings prepared to illustrate elements of the proposal in more detail so that your building contractor can more fully understand the intention of the design.

You may need to consult a Party Wall Surveyor for this section.

This symbol indicates that you may need to take action in order to comply with the Party Wall Act and it may ne wise to consult a suitable Party Wall surveyor. Your architect can help point you in the right direction.

You may need a Structural Engineer for this section.

This symbol indicates that structural calculations / structural design may be required, both of which should be undertaken by a suitable structural engineer. Your architect can help point you in the right direction.

Revisions:
a. date.

All dimensions are in millimetres
All dimensions to be checked on site

AH ARCHITECTURE
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Southall Middlesex
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Tel: 020 8797 4176
Email: Info@ah-architecture.co.uk

Project name:
14 Frognal, London, NW3 6AG

Drawing name:
Proposed Floor Plans

Job no:	Drawing no:	Revision:
AH 730	**04**	**-**
Scale:	Date:	Drawn by:
1/100 @ A3	**01/03/2025**	**AH**

Appendix B

Silent & vibration free piling technical Guidance

SHEET PILING (UK) LTD

SILENT & VIBRATION FREE PILING TECHNICAL GUIDANCE

THE FIVE PRINCIPAL BENEFITS OF PILE PRESS-IN TECHNOLOGY

1. Safety

- No machine instability.
- Fully hydraulic clamping system.
- Remote control operation.
- Eliminates 'working at height'.

2. Environmental

- Vibration free.
- Noise free.
- Minimise influence on surrounding environment.
- Minimise temporary works.
- Effective for pile extraction allowing re-use.

3. Quality

- Accurate pile alignment and installation tolerances.
- Pre-formed quality controlled steel pile product.
- Various aesthetical finishes available.

4. Programme

- Self-walking system reduces construction programme.
- No limitation on working hours.
- 'One-Stop' construction method.

5. Cost

- Reduced temporary works (temporary platforms, earth works, road diversions).
- Minimal labour requirement.
- Maximise off-site design and fabrication.

"As one of the UK's leading driven steel piling contractors, Sheet Piling (UK) Ltd has built its reputation on solid foundations."

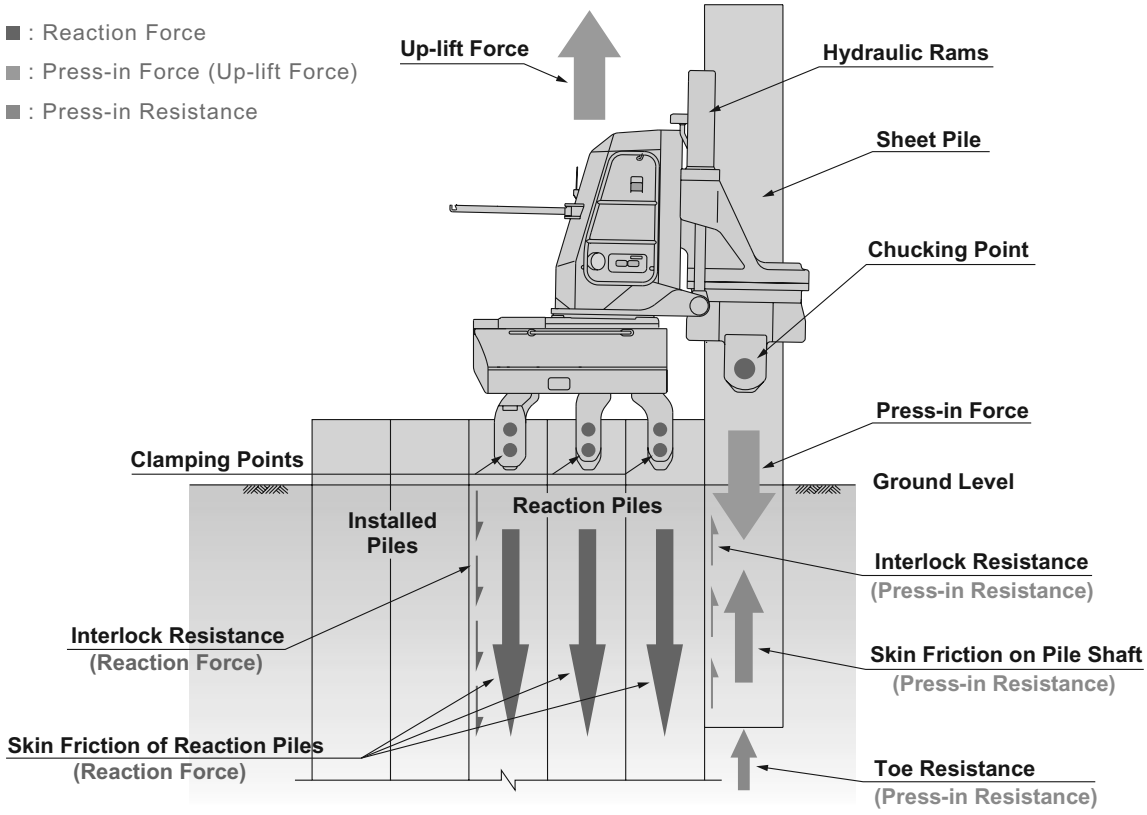
PRESS-IN METHOD

Press-in Method

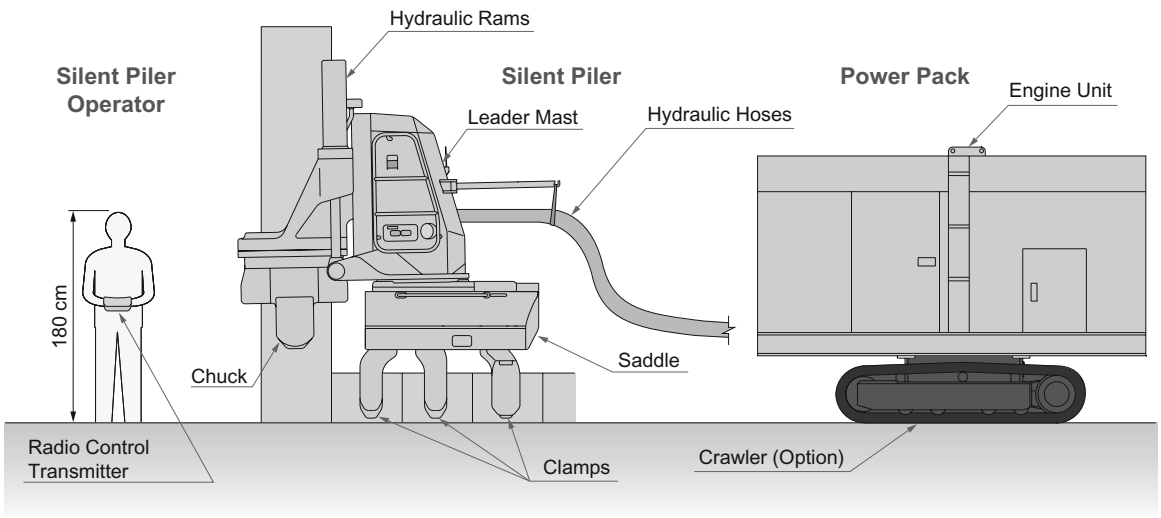
Conventionally prefabricated sheet piles have been hammered or vibrated into the ground. Such methods inevitably generate excessive noise and vibration because of their reliance on percussive or vibratory energy. Giken has developed the reaction-based press-in machine the 'Silent Piler' and established the "Press-in Method" based on the principle of silent, vibration free pile installation.

In practical terms, the Silent Piler clamps previously installed piles and generates a reaction force from the negative skin friction and interlock resistance of these reaction piles. This reaction force provides press-in force to hydraulically jack subsequent piles into the ground.

Since the piles are pressed-in, the Silent Piler minimises any damage to the environment including neighbouring structures and local residents through noise and vibration. The Press-in Method allows pile installation in areas where environmental disruption is strictly precluded.



Main Components of The Silent Piler

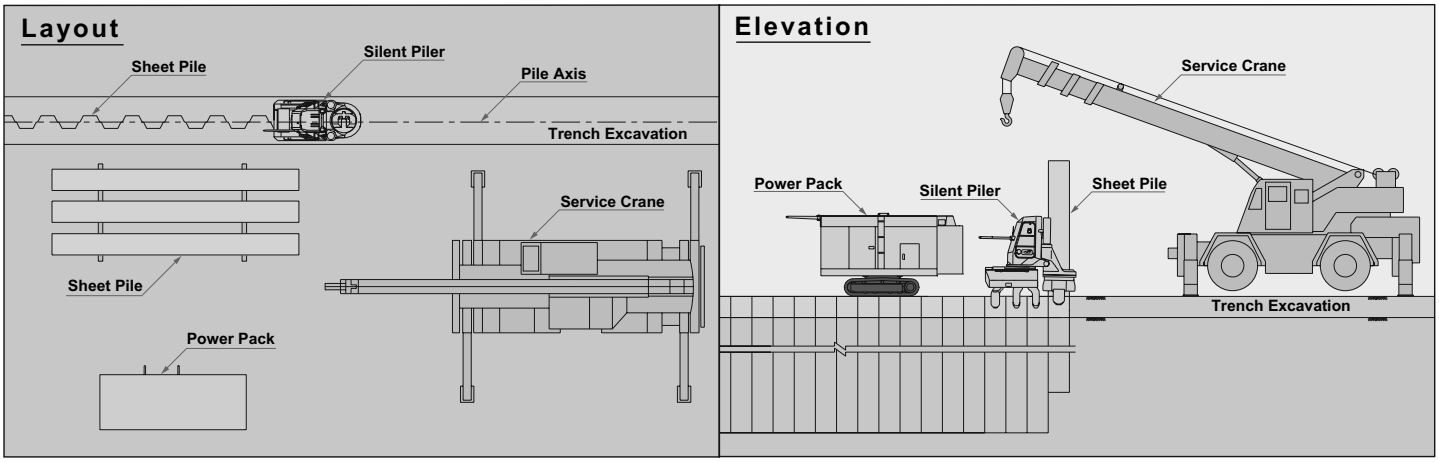


Note: Hydraulic hoses are omitted to show for simplifying Silent Piler pictures in all other pages.

Standard Equipment

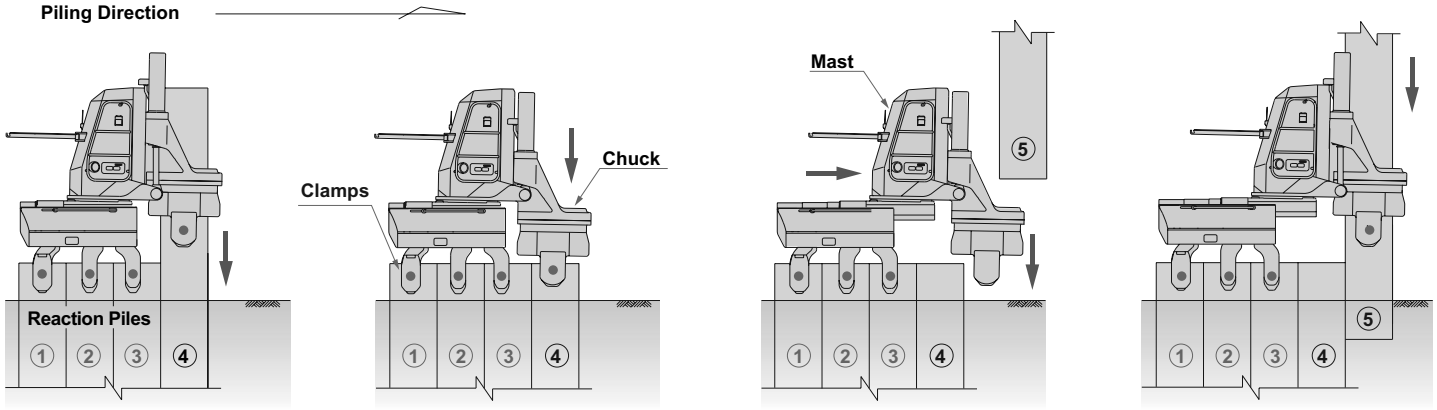
Under normal working conditions, the Silent Piler can operate with just one crane to pitch piles. When a pile being pressed-in is sufficiently stable, the Silent Piler releases its clamps from the reaction piles and use this pile to raise itself and travel forwards.

This "Self-moving" system eliminates the need for support by a crane during the piling operation. In other words, even where a site requires a large jib radius for pitching, a relatively light-weight crane can be used.



Press-in Procedure & Self-moving

● shows hydraulic jaws of Chuck and Clamps closed.

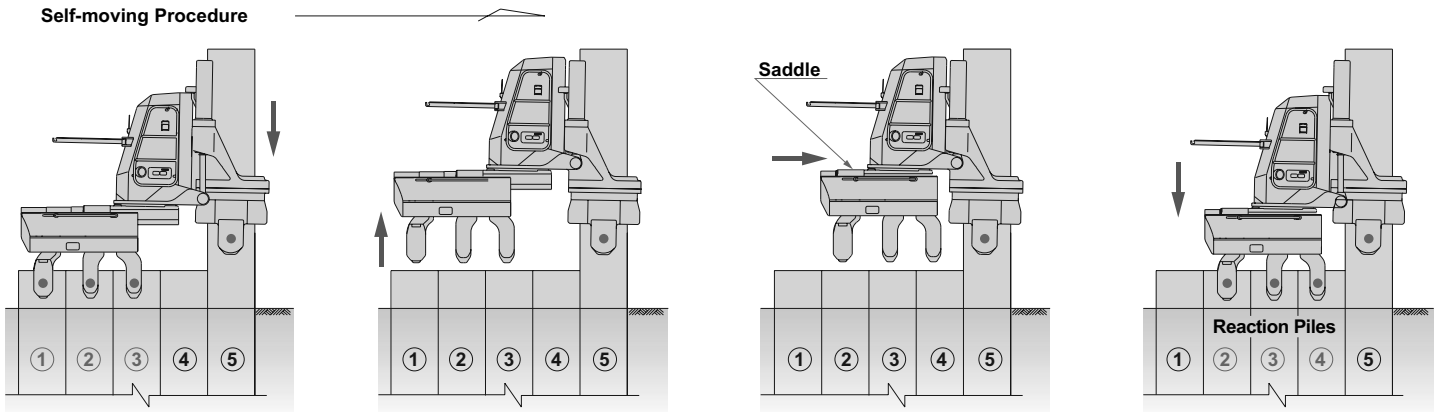


1. The Silent Piler clamps reaction piles No1-3 and presses-in pile No4.

2. Complete pressing-in pile No4 to the specified height and open Chuck.

3. Move Mast forward and lower Chuck turning it for pile No5.

4. Insert pile No5 into Chuck, align the pile and start pressing-in.



5. Press-in pile No5 until the pile is sufficiently stable.

6. Release Clamps from the reaction piles and raise the main body.

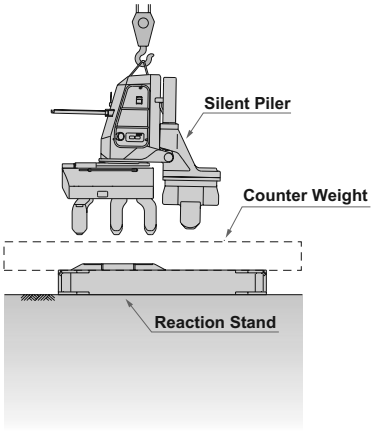
7. Move Saddle forward to the next position on the reaction piles.

8. Lower the main body onto reaction piles No2-4 and clamp them to complete pressing-in pile No5.

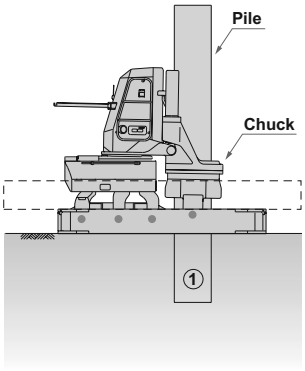
Initial Press-in

At the very beginning of press-in work, if there is no completed pile, "Reaction Stand" is usually used for initial piling work. Press-in Machine is horizontally set onto the Reaction Stand and then counter weights are loaded onto the Reaction Stand. It depends on soil conditions and pile length how heavy the counter weight should be. Then the first pile is pressed-in utilising all weights of machine and counter weight as reaction. After installing the first pile, the installed pile becomes the first reaction pile for installing second pile. Once Press-in Machine completely sits on reaction piles and Reaction Stand is removed as well as counter weight, the initial piling work is completed.

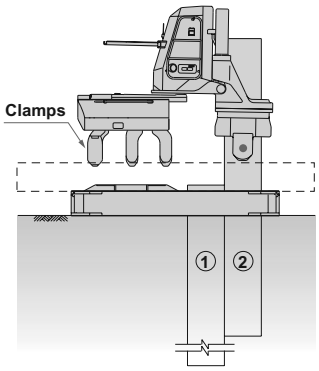
● shows hydraulic jaws of Chuck and Clamps closed.



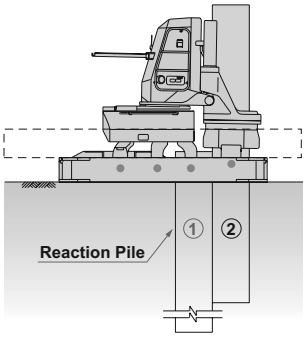
1. The Silent Piler is set up on the reaction stand with an appropriate amount of counter weight.



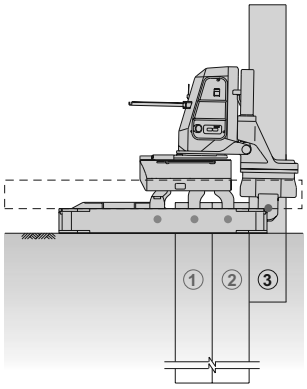
2. Pitch pile No1 into Chuck, align the pile and start pressing-in.



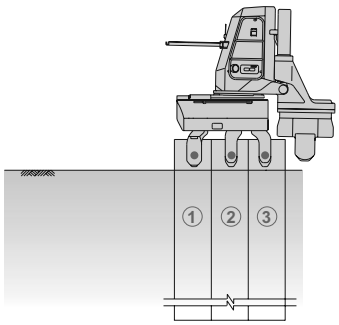
3. Prior to completion of pile No2 pressing-in, the Silent Piler self-moves (with crane support).



4. Clamp pile No1 with the reaction stand increasing available reaction force and continue pressing-in.

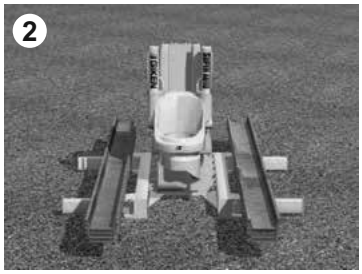


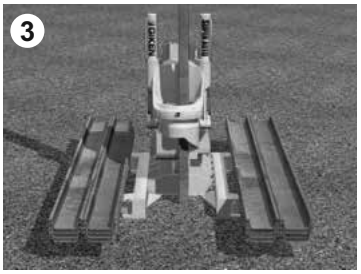
5. Repeat the previous procedure until pile No3 is fully installed to the specified height.

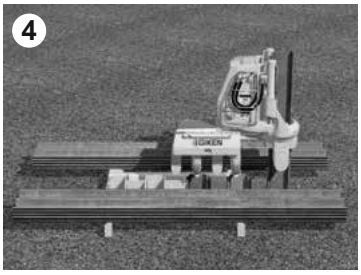


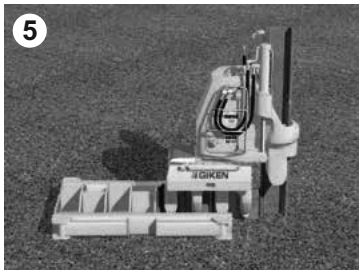
6. When initial reaction piles are installed, the Silent Piler moves off the reaction stand.

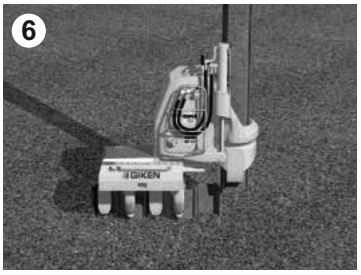
Initial Press-in (setting up and removal of the counter weight)







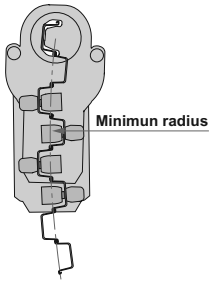




PRESS-IN METHOD

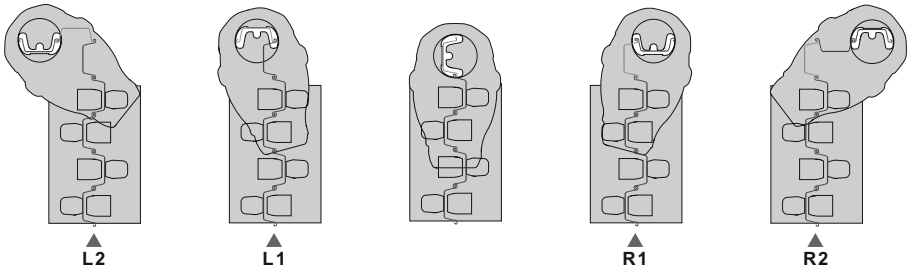
Curve Installation

Chuck rotation, mast revolution and clamp right-left mechanisms are equipped on the press-in machine main body. These functions enable to install piles on curved or complicated alignments. The minimal piling radius differs from the pile sections and press-in machine models.



Corner Installation

The press-in machine (U-Piler) has "Corner Four (C4)" function which can install 2 piles for both sides on perpendicular alignment from a machine position. The 2 piles are installed on the pile alignment and the other 2 piles are installed as dummy piles for reaction piles. This Corner 4 function make piling work at narrow site condition safe and efficient for cofferdam works.



SHEET PILING VIDEOS

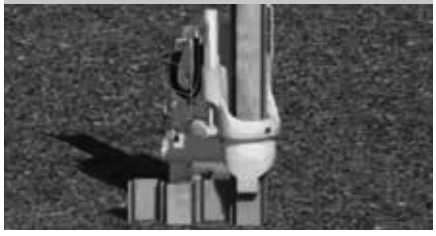
To watch these videos please visit our website: https://www.sheetpilinguk.com/about/useful-videos/

Vibration Free Piling (HD)

Vibration Free Piling Press

Initial Setup

Corner Sheet Piling

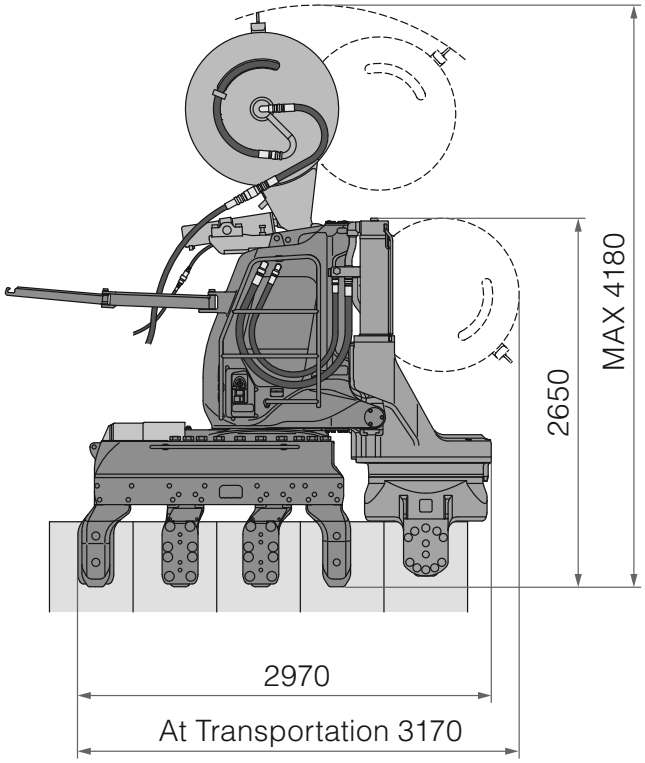


Initial Set Up - Reaction Stand

Water Jetting Sheet Piles

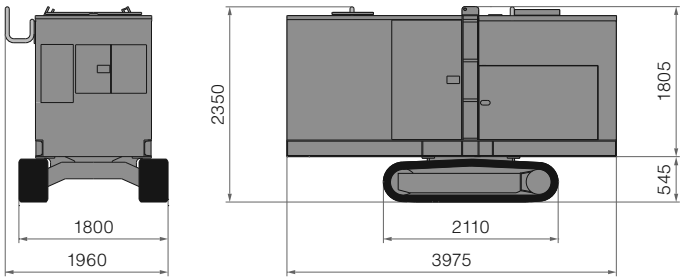
F201 SILENT PILER

Silent Piler



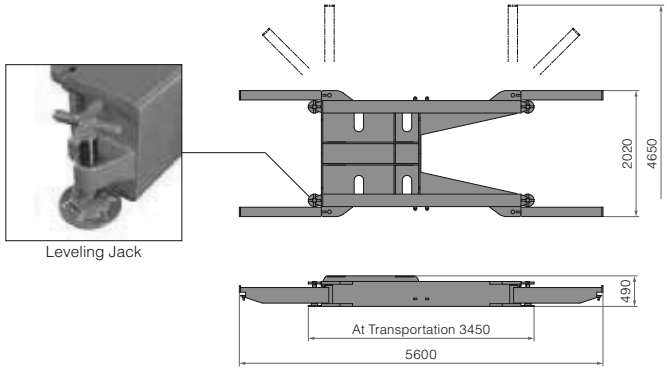
F201 Silent Piler	
Silent Pile Range	U Profile 600 mm
Max. Installation Force	1,500 kN
Max Extraction Force	1,600 kN
Stroke	850 mm
Pressing-in Speed	1.4 - 30.0 m/min
Drawing-out Speed	1.1 - 23.2 m/min
Operation	Radio Control
Movement	Self-moving
Power Unit Type	EU 300 Crawler Unit
Silent Piler Weight	11,120 kg
Super Jet Reel Weight	820 kg
Total Machine Weight	11,940 kg

Power Pack



Power Pack	
Engine Unit Type	EU 300
Power Source	Diesel Engine (Tier 111B)
Rated Output	230 kW (313 PS)
Fuel Tank	500 L
Hydraulic Oil	490 L
Noise Level at 7m	69 dB (A)
Weight	6,400 kg

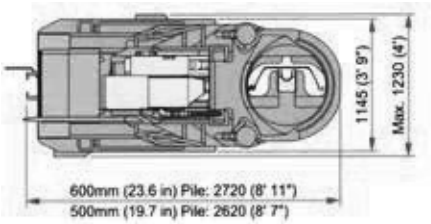
Reaction Stand

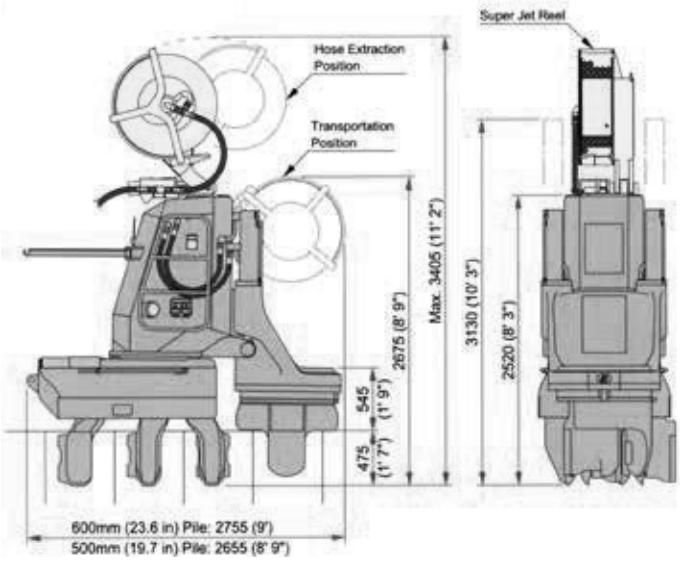


Reaction Stand	
Weight	1,900 kg

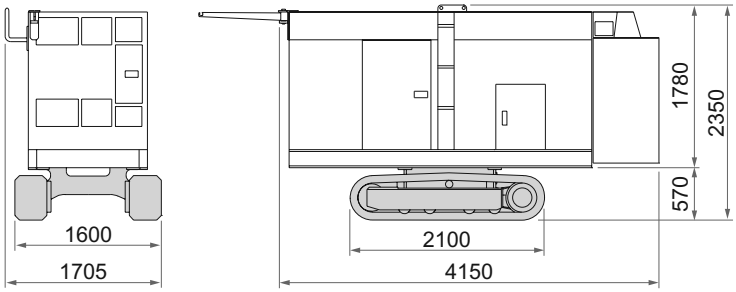
SW100 SILENT PILER

Silent Piler

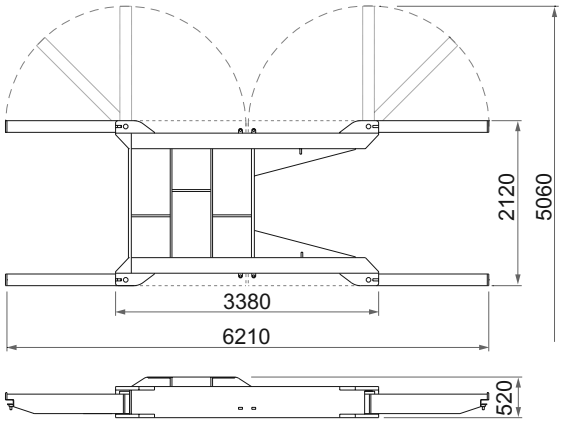




Power Pack



Reaction Stand



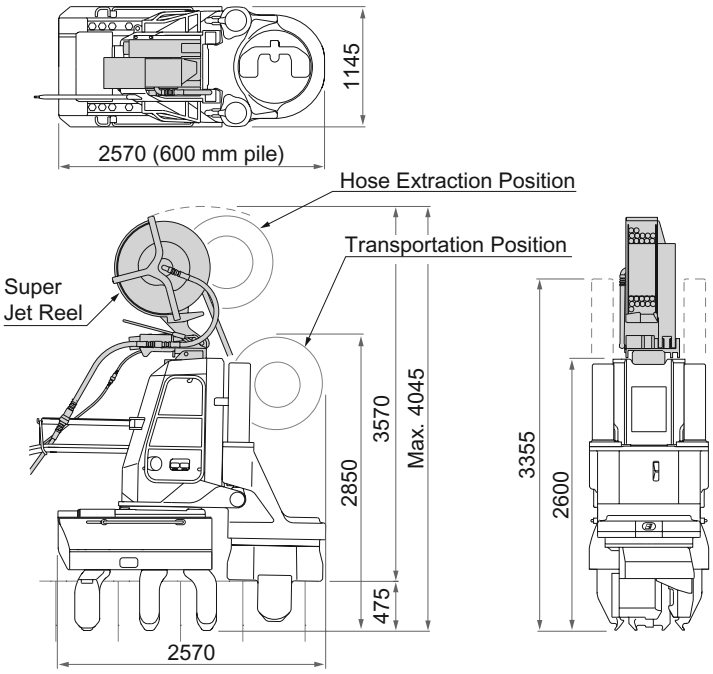
SW100 Silent Piler	
Silent Pile Range	U Profile 500, 525, 600 mm
Max. Installation Force	1,000 kN
Max Extraction Force	1,100 kN
Stroke	750 mm
Pressing-in Speed	1.5 - 35.2 m/min
Drawing-out Speed	3.2 - 27.5 m/min
Operation	Radio Control
Movement	Self-moving
Power Unit Type	EU200 / 200A Crawler Unit
Silent Piler Weight	8,200 kg
Super Jet Reel Weight	550 kg
Total Machine Weight	8,750 kg

Power Pack	
Engine Unit Type	EU 200
Power Source	Diesel Engine
Rated Output	147 kW (200 PS)
Fuel Tank	350 L
Hydraulic Oil	550 L
Noise Level at 7m	69 dB (A)
Weight	4,900 kg
Crawler Type	GT1 (optional)
Crawler Operation	Remote Control
Power Source	2 Pumps x 2 Motors
Moving Speed	1.4 km/h
Weight	1,000 kg
Total Weight	5,900 kg

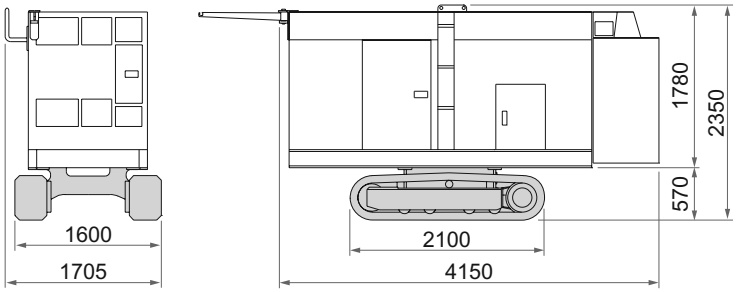
Reaction Stand	
Weight	2,000 kg

UP150 SILENT PILER

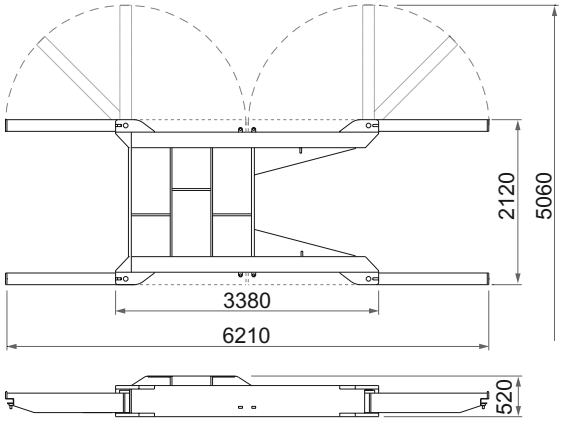
Silent Piler



Power Pack



Reaction Stand



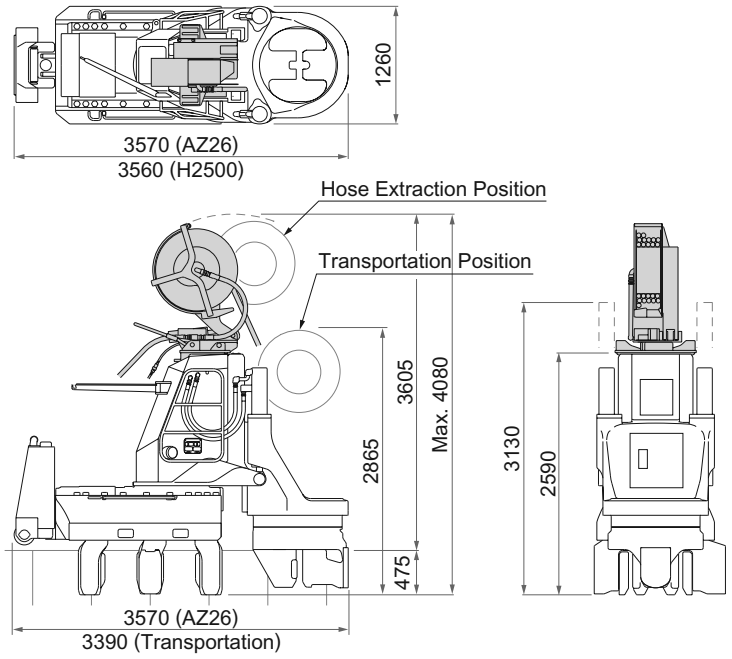
UP150 Silent Piler	
Silent Pile Range	U Profile 500, 525, 600 mm
Max. Installation Force	1,500 kN
Max Extraction Force	1,600 kN
Stroke	800 mm
Pressing-in Speed	1.4 - 22.7 m/min
Drawing-out Speed	2.2 - 17.6 m/min
Operation	Radio Control
Movement	Self-moving
Power Unit Type	EU200 / 200A Crawler Unit
Silent Piler Weight	9,400 kg
Super Jet Reel Weight	620 kg
Total Machine Weight	10,020 kg

Power Pack	
Engine Unit Type	EU 200
Power Source	Diesel Engine
Rated Output	147 kW (200 PS)
Fuel Tank	350 L
Hydraulic Oil	550 L
Noise Level at 7m	69 dB (A)
Weight	4,900 kg
Crawler Type	GT1 (optional)
Crawler Operation	Remote Control
Power Source	2 Pumps x 2 Motors
Moving Speed	1.4 km/h
Weight	1,000 kg
Total Weight	5,900 kg

Reaction Stand	
Weight	2,000 kg

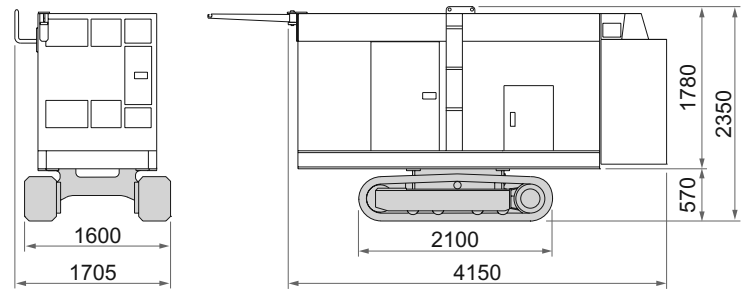
ZP100 SILENT PILER

Silent Piler



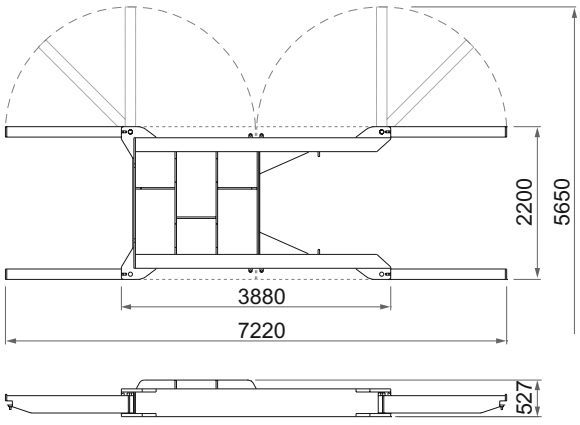
ZP100 Silent Piler	
Silent Pile Range	Z Profile 630 mm
Max. Installation Force	1,000 kN
Max Extraction Force	1,200 kN
Stroke	700 mm
Pressing-in Speed	1.5 - 35.2 m/min
Drawing-out Speed	2.6 - 27.5 m/min
Operation	Radio Control
Movement	Self-moving
Power Unit Type	EU200 Crawler Unit
Silent Piler Weight	11,450 kg
Super Jet Reel Weight	680 kg
Total Machine Weight	12,130 kg

Power Pack



Power Pack	
Engine Unit Type	EU 200
Power Source	Diesel Engine
Rated Output	147 kW (200 PS)
Fuel Tank	350 L
Hydraulic Oil	550 L
Noise Level at 7m	69 dB (A)
Weight	4,900 kg
Crawler Type	GT1 (optional)
Crawler Operation	Remote Control
Power Source	2 Pumps x 2 Motors
Moving Speed	1.4 km/h
Weight	1,000 kg
Total Weight	5,900 kg

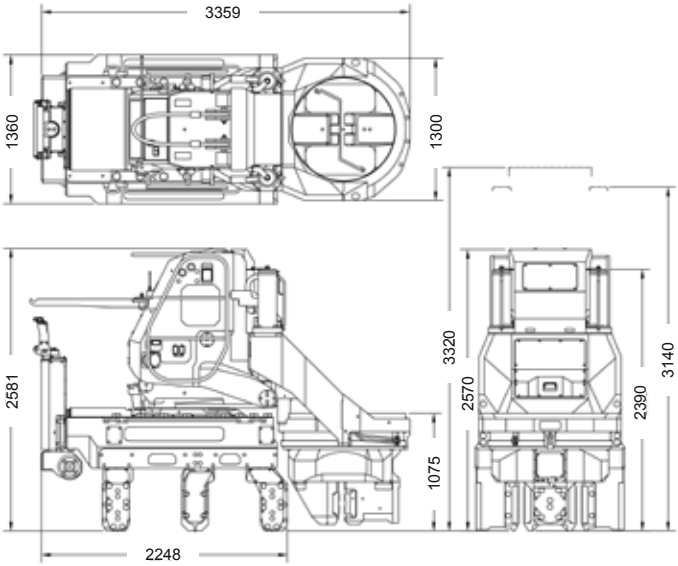
Reaction Stand



Reaction Stand	
Weight	2,100 kg

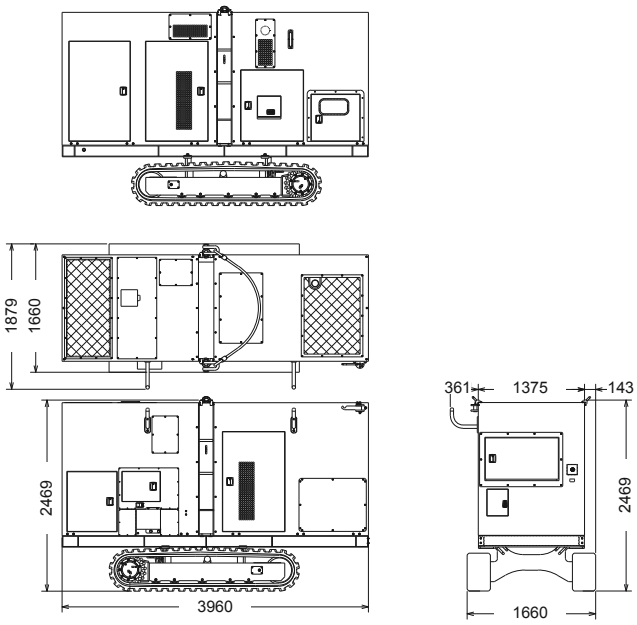
ZU100 SILENT PILER

Silent Piler



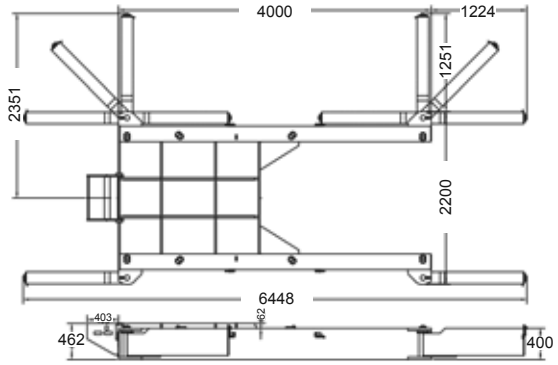
ZU100 Silent Piler	
Silent Pile Range	U Profile 600 - 750 mm Z Profile 585 - 700 mm
Max. Installation Force	1,000 kN
Max Extraction Force	1,100 kN
Stroke	750 mm
Pressing-in Speed	3.0 - 36.0 m/min
Drawing-out Speed	2.4 - 28.0 m/min
Operation	Radio Control
Movement	Self-moving
Power Unit Type	TE - 200C
Silent Piler Weight	12,200 kg

Power Pack



Power Pack	
Engine Unit Type	CAT C7
Power Source	Diesel Engine
Rated Output	168 kW
Fuel Tank	350 L
Hydraulic Oil	500 L
Noise Level at 7m	69 dB (A)
Weight	5,500 kg

Reaction Stand



Reaction Stand	
Weight	2,400 kg

AUXILIARY SHEET PILING TECHNIQUES

Water Jetting

Water Jetting is primarily used to enable sheet piles to be pressed into difficult ground conditions which might otherwise be deemed unsuitable.

Water Jetting is effected by means of a High Strength Jetting Pipe (lance) attached to the inner face of the sheet pile.

The jet pressure is kept to the minimum required that allows the pile to continue to penetrate the ground and prevent the lance needle from becoming blocked during installation.

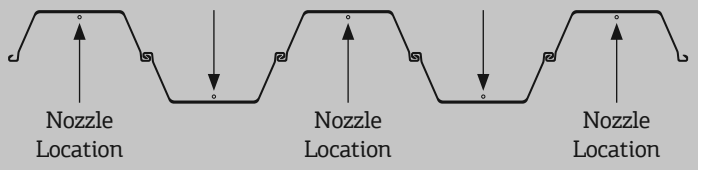
In "Coarse Granular" soils, the main action of the water jet is to oscillate the particles reducing the resistance to pile penetration.

When sheet piles are installed into cohesive soils, the lubricating actions of the water reduces the amount of adhesion contributing to the pressing resistance whilst at the toe the water reduces the end resistance to ease the penetration of the piles.

The volume and pressure of water can be adjusted according to the ground conditions; thus, water is only applied where needed and large voids are not produced. Soils parameters quickly return to their normal state as is evidenced by the adequacy of the reaction force available for pressing the subsequent pile.

As an additional benefit, water jetting can significantly improve installation production as well as optimise the sheet pile section required.

Water Jetting for 'Z' Piles



Water Jetting for 'U' Piles

THE PROBLEM

HEAVY GROUND
Dense/Cohesive Soils

=

HEAVY PILE SECTION

+

LARGE PRESS-IN FORCE

THE SOLUTION

MODIFIED GROUND
by Water Jetting

=

OPTIMISED PILE SECTION

+

REDUCED PRESS-IN FORCE

THE BENEFITS

✓ **Improved Productivity**

✓ **Improved Quality**

✓ **Optimal Pile Section**

✓ **Reduced Costs**

Pre-Augering

If dense soils are anticipated, then pre-augering of the sheet pile line in advance of sheet pile installation, to reduce the in-situ ground density, can enable piles to be driven into ground conditions that might otherwise be deemed unsuitable.

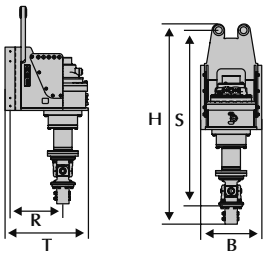
Selective Sheet Piling (UK) LTd Telescopic Leader Rigs can be fitted with the MBDA 3000/MBDA 4200 auger motor. A 450mm/600mm diameter auger flight is attached to the auger motor and the ground is then augered through the dense soils. The auger flights are rotated into the ground in one direction and counter-rotated out of the ground leaving the soil in place without flighting the material. Only a small amount of spoil is generated to displace the volume of the auger flight itself.

Use of pre-augering reduces the in-situ density of the soils and prevents a large pressure bulb from forming during driving. The depth of pre-augering is dependant on both method of installation and ground conditions anticipated. Pre-augering can also help identify underground obstructions in advance of pile installation and the system minimises disturbance to the surrounding subsoil.

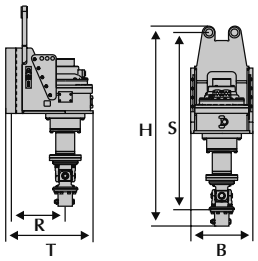
Technical Data	Unit	3000	4200-2*	BA2200
Torque	daNm	3000	2100	2200
Revolutions (max.)	min^{-1}	70	120	50
Hydraulic flow rate	l/min	450	540	220
Required oil quantity per rotation	l	6,3	4,4	4,4
Required hydraulic power at auger drive	kW	225	270	60
Static extraction force (max.)	kN	200	200	200
Nominal oil pressure	MPa	30	30	32
Total weight (incl. cardanic joint)	kg	1350	1400	600
Transport weight	kg	1580	1630	700
Hexagon connection (SW - M Socket/Female)	mm	80	100	80

Dimensions (mm)	3000	4200-2*	BA2200
H - Height/with swivel	2260/2015	2225/2050	1180
B - Width/with swivel	690/910	690/910	710
T - Depth	950	970	510
R - Guide to drilling axle	600	600	N/A
S - Locking to bottom	1970	1970	1050
Transport dimensions (without swivel) height (h)/width (b)/depth (t)	2470/1020/1120	2470/1020/1120	N/A

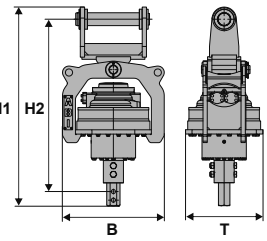
MBDA 3000

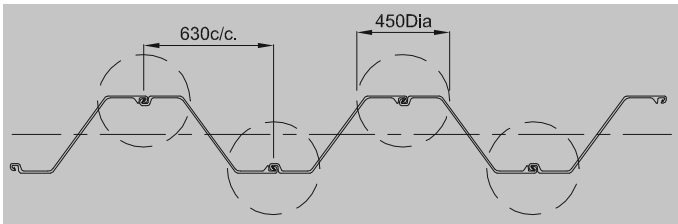


MBDA 4200-2*

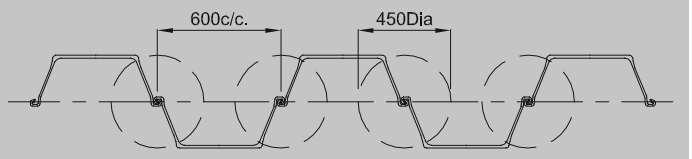


BA2200

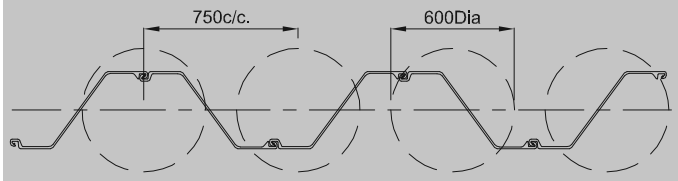




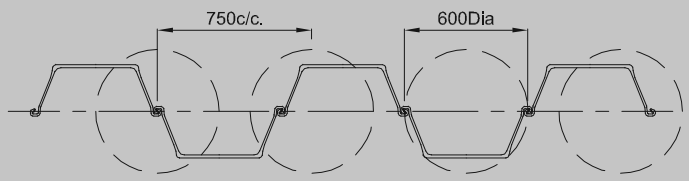
Pre-Augering for 'Z' Piles - 450dia



Pre-Augering for 'U' Piles - 450dia



Pre-Augering for 'Z' Piles - 600dia



Pre-Augering for 'U' Piles - 600dia

THE PROBLEM

HEAVY GROUND
Dense/Cohesive Soils or Boulders/Rock

=

HEAVY PILE SECTION

+

LARGE INSTALLATION FORCE

THE SOLUTION

MODIFIED GROUND
by Pre-Augering

=

OPTIMISED PILE SECTION

+

REDUCED INSTALLATION FORCE

THE BENEFITS

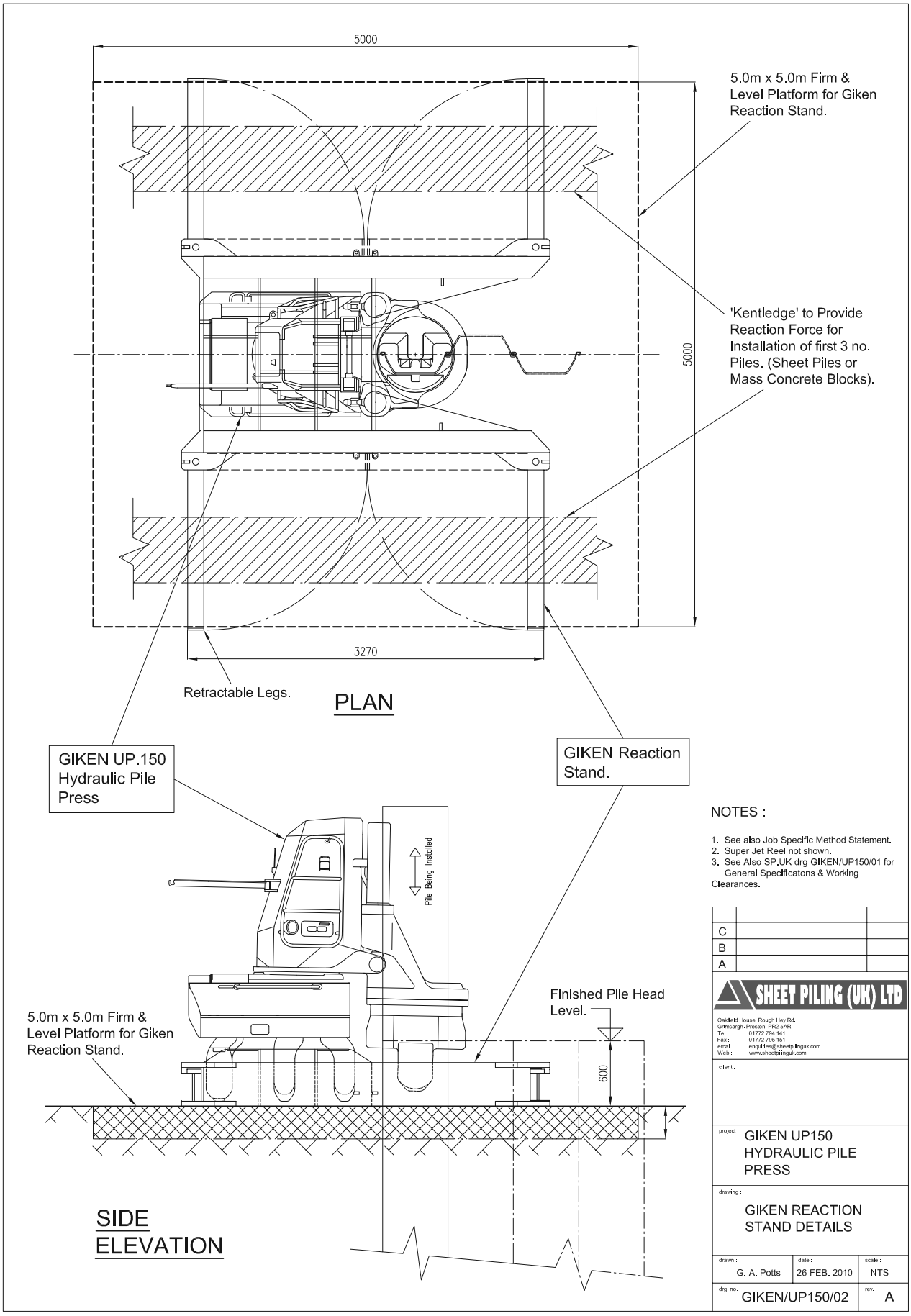
✓ Improved Productivity

✓ Improved Quality

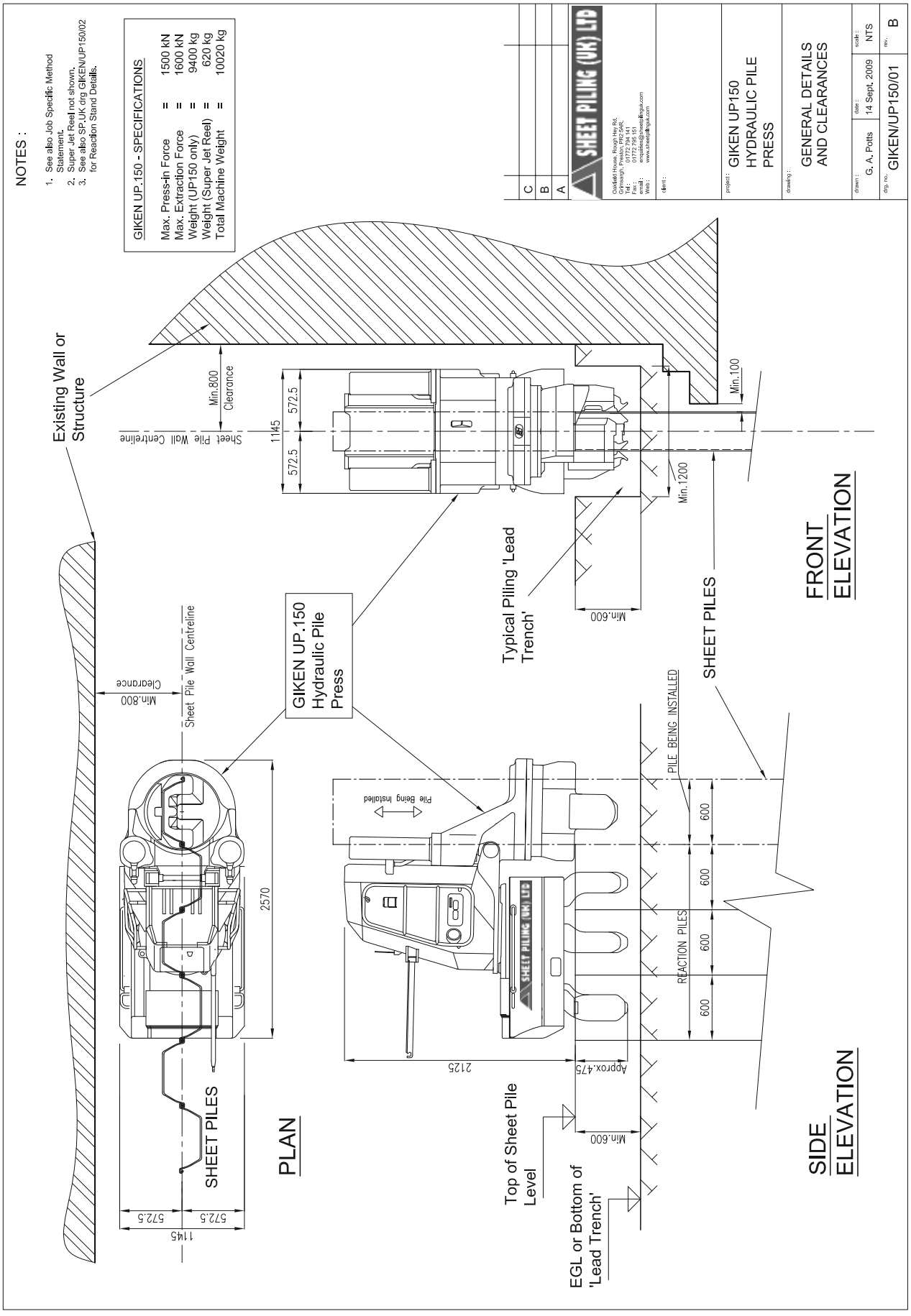
✓ Optimal Pile Section

✓ Reduced Noise and Ground-bourne vibration

Giken Reaction Stand Details



General Details and Clearances



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Appendix C

Specification of Press-in Method

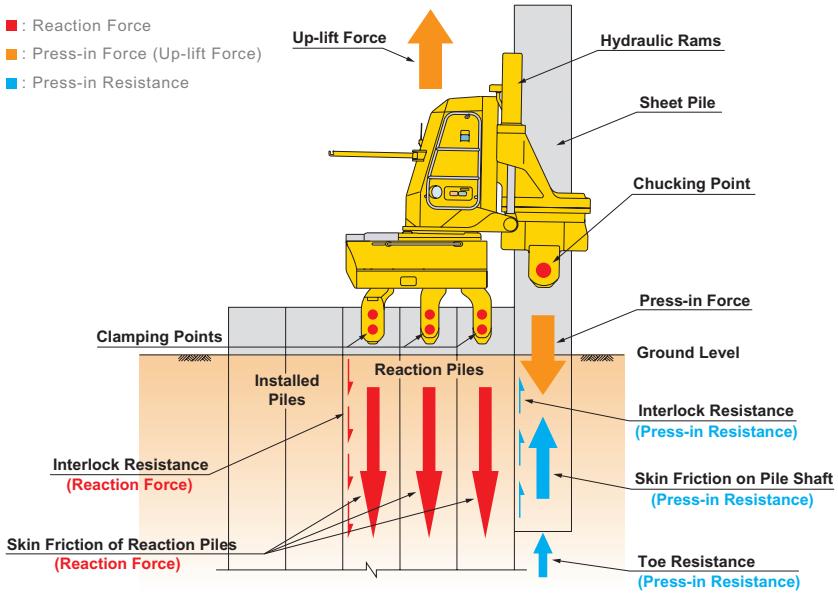
Construction Revolution Guide Vol. 1

Giken advocates and promotes the **"Construction Revolution"** to establish a new standard which surpasses the convention of the current construction industry. The fundamental concept of our Construction Revolution is the environmentally friendly **"Press-in Method"** that hydraulically installs piles silently and without vibration by static load making use of the **"Reaction Force"** principle.

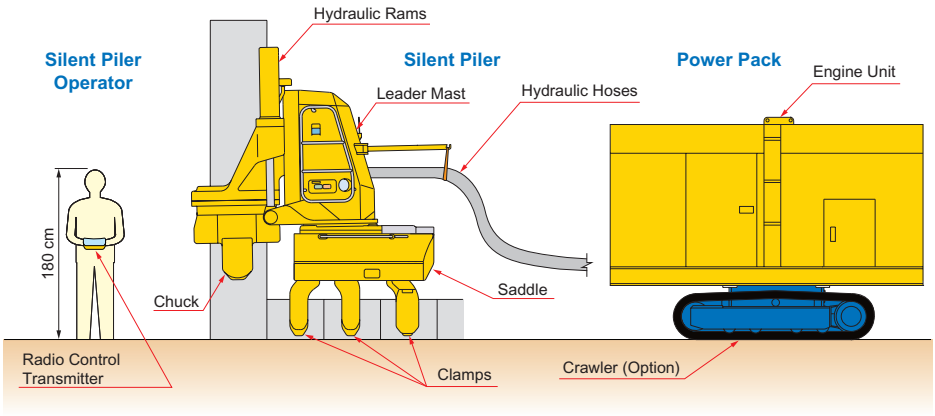
Press-in Method

Press-in Method

Conventionally prefabricated piles have been pounded or vibrated into the ground. Such methods inevitably generate excessive noise and vibration because of their reliance on percussive or vibratory energy. Giken has developed the reaction-based press-in machine the **"Silent Piler"** and established the **"Press-in Method"** based on the principle of non-pollutive pile installation. In practical terms, the Silent Piler grasps previously installed piles and derives reaction force from the negative skin friction and interlock resistance of these reaction piles. This reaction force provides press-in force to hydraulically jack subsequent piles into the ground. Since the piles are pressed-in, the Silent Piler does not cause any damage to the environment including neighboring structures and local residents through noise and vibration. The Press-in Method allows pile installation in areas where environmental disruption is strictly precluded.



Main Components of The Silent Piler



Remarks: Hydraulic hoses are omitted to show for simplifying Silent Piler pictures in all other pages.

SILENT PILER

U Piler

Z Piler

Zero Piler

Tubular Piler

Specifications are available at Giken's corporate homepage.

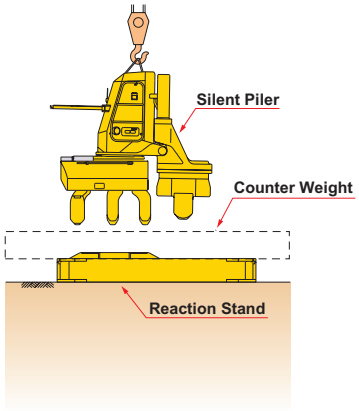
Construction Revolution Guide Vol. 1

Press-in Method 2/4

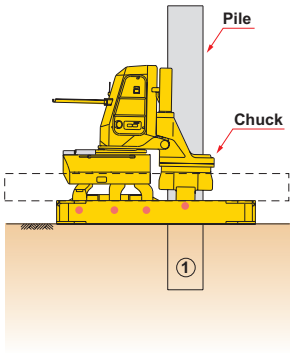
Initial Press-in

When you begin a job, there are usually no piles in the ground from which to start off. The Silent Piler is set up on a **"Reaction Stand"**. An appropriate amount of counterweight, determined by the ground conditions and length of piles, is placed on the Reaction Stand. The first pile is then pressed-in deriving reaction force from this combined weight. As each of the initial piles is driven, the Silent PIler moves forward and clamps onto that pile, thus increasing the available reaction force. The initial press-in phase is completed when all the initial piles have been installed and the Piler has moved off the Reaction Stand onto these piles.

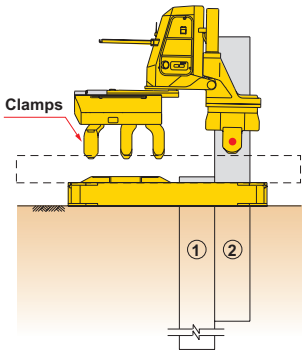
● shows hydraulic jaws of Chuck and Clamps closed.



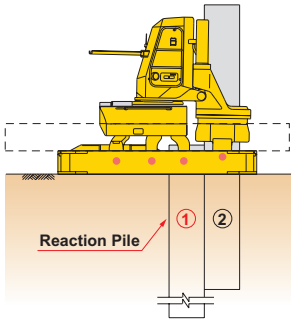
1. The Silent Piler is set up on the reaction stand with an appropriate amount of counter weight.



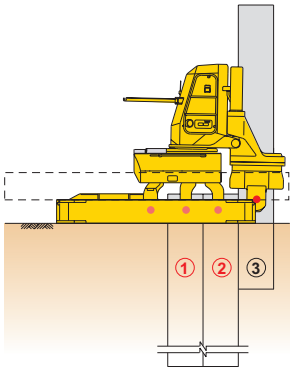
2. Pitch pile No1 into Chuck, align the pile and start pressing-in.



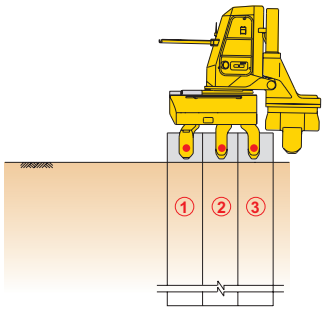
3. Prior to completion of pile No2 pressing-in, the Silent Piler self-moves (with crane support).



4. Clamp pile No1 with the reaction stand increasing available reaction force and continue pressing-in.

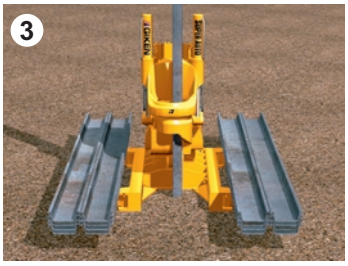


5. Repeat the previous procedure until pile No3 is fully installed to the specified height.



6. When initial reaction piles are installed, the Silent Piler moves off the reaction stand.

Initial Press-in (setting up and removal of the counter weight)

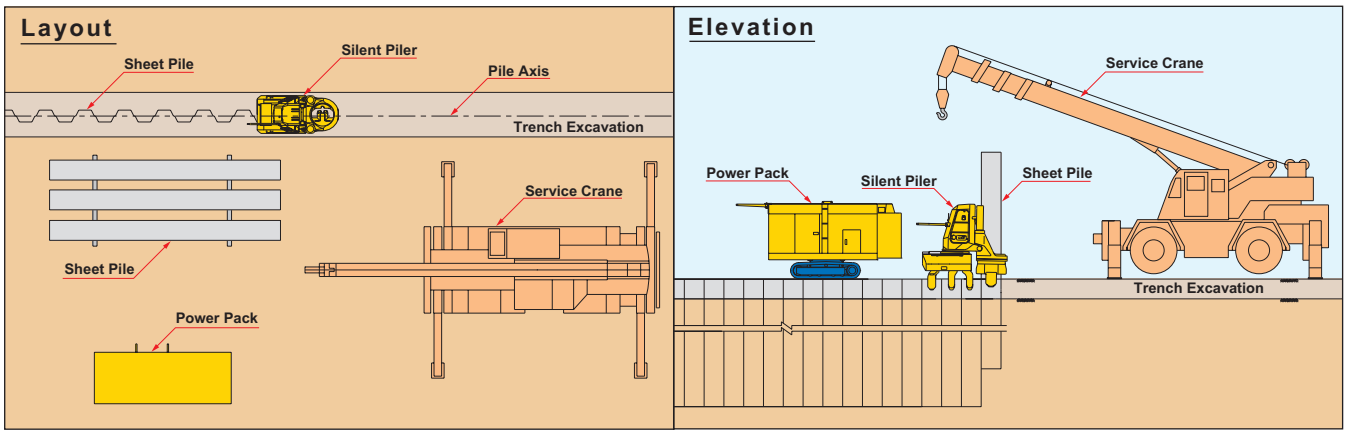


Construction Revolution Guide Vol. 1

Press-in Method 3/4

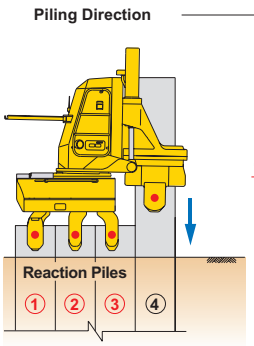
Standard Equipment

Under normal working conditions, the Silent Piler can operate with just one crane to pitch piles. When a pile being pressed-in is sufficiently stable, the Silent Piler releases its clamps from the reaction piles and use this pile to raise itself and travel forwards. This **"Self-moving"** system eliminates the need for support by a crane during the piling operation. In other words, even where a site requires a large jib radius for pitching, a relatively light-weight crane can be used.

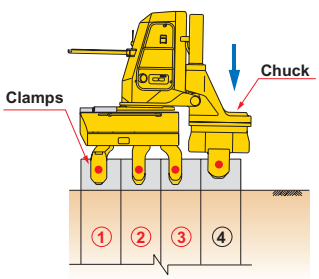


Press-in Procedure & Self-moving

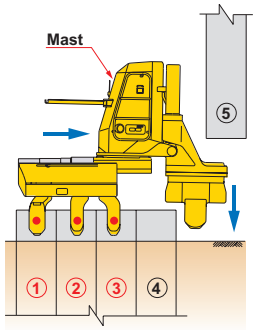
● shows hydraulic jaws of Chuck and Clamps closed.



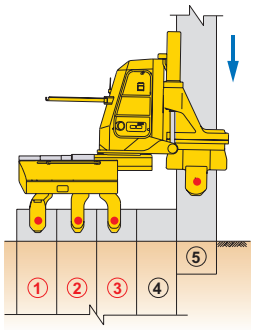
1. The Silent Piler clamps reaction piles No1-3 and presses-in pile No4.



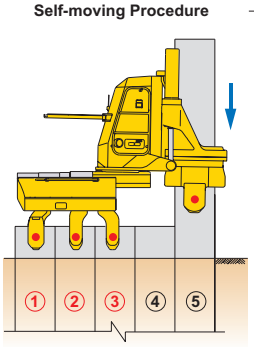
2. Complete pressing-in pile No4 to the specified height and open Chuck.



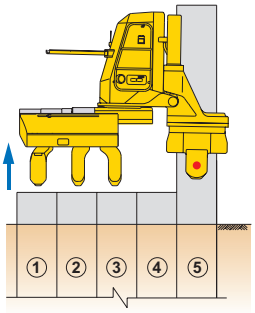
3. Move Mast forward and lower Chuck turning it for pile No5.



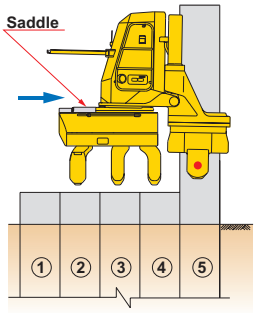
4. Insert pile No5 into Chuck, align the pile and start pressing-in.



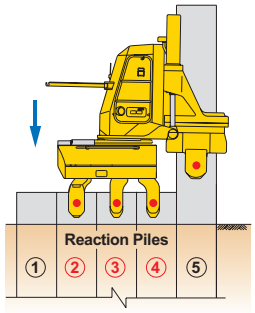
5. Press-in pile No5 until the pile is sufficiently stable.



6. Release Clamps from the reaction piles and raise the main body.



7. Move Saddle forward to the next position on the reaction piles.



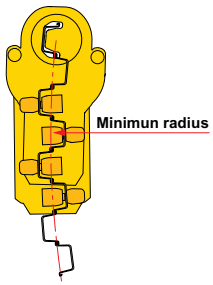
8. Lower the main body onto reaction piles No2-4 and clamp them to complete pressing-in pile No5.

Construction Revolution Guide Vol. 1

Press-in Method 4/4

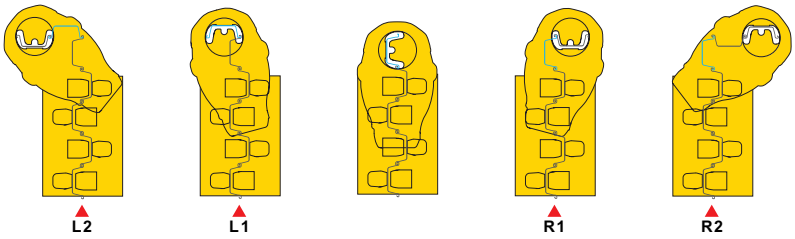
Curve Installation

Through the use of the revolving mechanism of the Chuck and Mast, the Silent Piler can construct a curve or other complicated configurations. The minimum radius of the curve varies according to the pile specifications and Silent Piler model.



Corner Installation

The "Corner Four (C4)" function allows the Silent Piler to install up to two piles at right angles to and on each side of the proposed corner position. Once sufficient numbers of reaction piles are installed, a service crane simply lifts the Silent Piler off the initial line onto the new line.



Auxiliary Techniques : Water Jetting

Auxiliary techniques are primarily used to enable piles to be pressed into difficult ground conditions. Additionally, they can be utilized as a means to significantly improve productivity and hence costs, as well as optimizing the sheet pile section required. Water jetting is effected by means of either a high strength steel jetting pipe (lance) or by utilizing the newly developed high pressure flexible hose supplied from a reel system (Super Jet Reel) atop the Silent Piler, attached to the inner face of the sheet pile.

Effect of water jetting :

1. Water jetting loosens granular soils and softens cohesive soils at the pile toe locally and temporarily to reduce toe resistance.
2. Water jetting lubricates the surface of pile to reduce skin friction.

Water jetting does not

1. create large voids in the soil.
2. have any long term effects on soil strength.

For further information on **The Press-in Method**, please access ***http://www.giken-smp.com/*** or contact your nearest Giken office ;

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