The F301 is the next generation piler featuring a new modular design, IT control system and is environmentally friendly. All the parts are optimised by drastically modifying the structure, shape, and material. Not only are the main component parts more versatile, it is also equipped with a cutting-edge control system, realising high functionality and longer operation life.

The F301 is applicable to Hat Sheet Piles (900mm wide), which have advantages over conventional U sheet piles in terms of material costs and production rate. Also, it is able to overcome difficult ground conditions by utilising the Super Crush System (Simultaneous Augering System).

Hence, the F301 can cover soft to very hard ground conditions. Suitable penetration modes can be selected depending on ground conditions:- Standard Mode, Water Jetting Mode and Super Crush Mode.

The F301 and hat sheet piles will create a new field in the foundation industry due to its advantages.

This brochure fully explains the specifications of the Silent Piler F301 and we hope you will recognise the advantages of the functions and press-in mechanism of this Silent Piler.

**Outline of Silent Piler F301 for Hat Sheet Pile (900 mm wide)**

- Pile Installation into Hard Ground
- Advantages of the Press-in Method under difficult working conditions
- Typical Machine Layout
- Typical Piling Sequences: Initial Piling
- Typical Piling Sequences: Pile Installation
- Three Penetration Techniques Available

- Optimising Work Efficiency with Modular Design
- Longer Operational Life and Higher Functionality by New Control System
- Advanced Principles for Higher Accuracy
- Locking Function
- Super Crush Mode Chuck / Standard Mode Chuck
- Piler Jet Reel
- Radio Controller
- Multi-Function Monitor
- Configuration and Elevation of Sheet Piles

- Outstanding Environmentally-Friendly Design
- Piler Stage
- Chuck Stage (for Super Crush Mode Chuck)
- Auger Head Replacement Attachment
- Pile Roller
- Pile Laser
- Casing Scraper
- Hose Roller
- Module Box

- Scientific Execution of Press-in Work & Advanced IT Functions
- GIKEN IT System
- Tablet PC
- Press-in Monitoring and Data Logging System

- Auxiliary Equipment for Better and Safety Working Environment with Higher Efficiency
- Hard Ground Press-in Method - Project Project Data Sheets
The F301 features a new modular design developed by optimising all the parts and drastically modifying the structure, shape, and material. Not only are the main component parts more versatile, it is also equipped with a cutting-edge control system, and realising high functionality and longer operation life.

**Flexible and Functional Formula**

The F301 is designed to be compatible with Hat Sheet Piles (900mm wide), making it a versatile option for various construction projects. It includes the Super Crush Mode, Standard Mode, and Water Jetting Mode for different applications.

**Pile Installation into Hard Ground**

When sheet piles need to be installed into hard ground, such as cobble or boulder mixed soil and rock, a pile driver and an additional drilling rig are conventionally used, which may require a long construction period and extensive costs and involve potential concerns about the environment and safety issues. GIKEN has developed the “Hard Ground Press-in Method” to overcome these negative aspects. Noise and vibration generated from piling work can be minimised by press-in sheet piles with simultaneous augering. The Silent Piler F301 is so compact and light that it can eliminate the negative psychological impact that massive conventional piling machines give to neighbours. It is also possible to carry out piling works on slopes or on the water, which require large temporary platforms with conventional piling methods. Because such temporary facility is not necessary for Giken’s system technologies (GRB System), the environmental burden of the piling work is greatly reduced.

**Advantages of the Press-in Method**

- Noise and vibration free
- No risk of piler overturning
- Compact and light machinery
- Load bearing capacity can be monitored during installation
- High accuracy of pile installation

**The Directional Coring Theory**

“The Directional Coring Theory”, GIKEN’s original theory for press-in with integrated simultaneous augering, makes sheet piling into hard ground possible without losing the advantages of the Press-in Method.

**Further Advantages**

- Can install sheet piles into hard ground such as gravelly soil, cobble or boulder mixed soil and rock.
- No risk of piler overturning and no psychological impact that massive conventional machines have.
- Compact and light machinery makes piling work possible in limited working areas and on slopes.
- The augering area is minimised just for sheet pile installation, so the amount of arising (spoil of disturbed soil) can be minimised. It provides proper stability on the sheet pile wall.
- The unique systemised construction technology, the GRB System, realises an environmentally-friendly “Green Construction Method”.

---

1

Silent Piler F301

Modular model applicable to Hat Sheet Piles (900mm wide)
The Five Construction Principles

Construction of infrastructure and buildings is indispensable to create affluent societies with high living standards. On the other hand, sustainable development is necessary to minimise the impact on the limited natural environment. In order to achieve this, appropriate and balanced construction methods and quality standards need to be established at the design stage taking account of requirements through from the construction stage to the operational stage. Giken prescribes these evaluation guidelines as “the Five Construction Principles”, which ideal construction needs to satisfy.

**Environmental Protection**
Construction work should be environmentally friendly and free from pollution.
- Press-in sheet piles are installed with static loading, so there is no construction pollution such as noise and vibration.
- The Silent Piler is so light and compact that the site of piling activities can be minimised.
- GIKEN's system technologies don't require temporary platforms so that the environmental burden of construction work is minimised.
- Due to the minimum required augering area, ground disturbance and the amount of arising (spoil of disturbed soil) can be minimised.

**Safety**
Construction work has to be carried out in safety and comfort with a method implementing the highest criteria.
- The compact Silent Piler doesn't have any risk of overturning, because the clamps grip the reaction piles firmly.
- Both the Pile Auger and sheet piles are firmly gripped by the Silent Piler to achieve a high standard of safety.
- The Silent Piler can be controlled by a radio control system, so the operator can control the Silent Piler from a safe position.

**Speed**
Construction work should be completed in as short a period as possible.
- The construction duration can be minimised with systemised machinery and equipment.
- Multiple sets of compact machines and equipment can be used at the same time to greatly shorten the construction period.
- Even in highly restricted areas and at night, where working hours are limited, the piling progress is faster.

**Economy**
Construction work must be done effectively with an inventive mind to overcome all constraints at the lowest cost.
- GIKEN's system technologies don't require temporary platforms so construction cost is greatly reduced.
- The systemised machinery and equipment can minimise the required workforce so that labour costs are greatly reduced.
- The compact system hardly interferes with public activities.

**Aesthetics**
Construction work must proceed smoothly and the finished product should portray cultural and artistic flavour.
- Smooth piling works are available by selecting the most effective package of machinery and equipment for individual project conditions.
- Pleasant looking structure is available by installing decoration panels on sheet pile walls.
- With the advantages of the Press-in Method, highly accurate and high quality sheet pile walls are available.
Machine Specifications

**Super Crush Mode**

- **F301-C900**

<table>
<thead>
<tr>
<th>Power Source</th>
<th>Rated Output</th>
<th>Fuel Tank Capacity</th>
<th>Hydraulic Reservoir</th>
<th>Moving Speed</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel Engine</td>
<td>230 kW (313 ps) /1800 min-1</td>
<td>500 L</td>
<td>Piler ECO Oil 490 L</td>
<td>1.4 km/h</td>
<td>6800 kg (with 30m Hose)</td>
</tr>
</tbody>
</table>

- **Machine Specifications**
  - **Super Crush Mode**
    - **F301-C900**
      - **Super Crush Mode Chuck**
        - Hat Sheet Pile (900mm wide)
          - Applicable sheet piles: (10H, 25H, 45H and 50H)
        - Max. Press-in Force: 800 kN (Super Crush Mode)
          - Max. Extraction Force: 900 kN (Super Crush Mode)
        - Stroke: 850 mm
          - Press-in Speed: 2.0 ~ 43.5 m/min
          - Extraction Speed: 1.5 ~ 32.3 m/min
        - Control System: Radio Control
        - Movement: Self-Moving
        - Hose Reel: Mass (Standard) 2780 kg (including Hose Reel Bracket)
        - Piler Auger: Max 24 m
          - Mass (Piler Auger): 1850 kg*
            - Mass (Casing Auger): 1050 kg
          - Total Mass: 11900 kg* (Up to 30m with extension)
        - **Total Mass**: 11900 kg* (Up to 30m with extension)

- **Water Jetting Mode**
  - **F301-900**
    - **Super ECO Mode Chuck**
      - At Extraction: 14880 kg (Main Body & Hose Reel)
        - Hose Reel: Mass (Standard) 12250 kg
        - Piler Auger: Max 24 m
          - Mass (Piler Auger): 1850 kg*
            - Mass (Casing Auger): 1050 kg
          - Total Mass: 11900 kg* (Up to 30m with extension)
        - **Total Mass**: 11900 kg* (Up to 30m with extension)

- **Standard Mode**
  - **F301-900**
    - **Standard Mode Chuck**
      - At Extraction: 14880 kg (Main Body & Hose Reel)
        - Hose Reel: Mass (Standard) 12250 kg
        - Piler Auger: Max 24 m
          - Mass (Piler Auger): 1850 kg*
            - Mass (Casing Auger): 1050 kg
          - Total Mass: 11900 kg* (Up to 30m with extension)
        - **Total Mass**: 11900 kg* (Up to 30m with extension)

* Piler Jet Reel is an optional item

We are constantly improving our products and therefore reserve the right to change designs and specifications without notice.

The above specifications are subject to alteration without prior notice.
Pile Installation into Hard Ground

### Directional Coring Technique

The "Directional Coring Theory", GIKEN's original theory, makes the Hard Ground Press-in Method able to install sheet piles into difficult ground conditions such as gravelly soil and cobble or boulder mixed soil without losing the advantages of the Press-in Method. The augering area can be reduced to assist pile installation, minimising volume of spoil and disturbance to the soil strata. Hence, high bearing capacity is available from sheet piles which are installed by the Hard Ground Press-in Method.

1. **Press-in with the Pile Auger**
2. **Extracting the Pile Auger after completion of sheet pile installation**

### Advantages of the Press-in Method under difficult working conditions

- **Working on slopes**: No temporary working platform is required, shortening construction duration and reducing construction cost.
- **Working above water**: No temporary working platform is required, shortening construction duration and reducing construction cost.
- **Close to Existing Infrastructure**: Working hours can be maximised even near railway tracks due to no risk of piler overturning.

**Press-in work in progress**

- Cobble mixed soil
- Press-in area
- Pre-augering in progress
- Extracting the Pile Auger after completion of sheet pile installation
- Cobble mixed soil
- Press-in area

**Working on slopes**

- **Press-in Method**
- Conventional Method

**Working above water**

- **Hard Ground Press-in Method**
- Conventional Method

**Close to Existing Infrastructure**

- **Hard Ground Press-in Method**
- Conventional Method (Night Shift)
The GRB System (Clamp Crane, Unit Runner and Pile Runner) enables piling works to be carried out above previously installed piles.
Initial Piling

1. Setting-up Reaction Stand, Silent Piler, Counter Weight and Pile Auger onto commencing surface.
2. Pitching sheet pile into the Chuck.
3. Start installation of sheet pile after checking the alignment and vertically.
4. Installing sheet pile to the specified depth and extracting the Pile Auger. Repeat sequences 2 and 3 until sheet pile has sufficient bearing capacity for machine self-moving.
5. Self-moving the Silent Piler and installing sheet pile to the specified depth.
6. Repeat sequences 2 - 5 to install the first 3-4 sheet piles. Removing the Counter Weight and the Reaction Stand.

Typical Piling Sequences

Pile Installation

1. Pitching sheet pile into the Chuck.
2. Installation of sheet pile with simultaneous augering.
3. After installing the pile until the pile has sufficient bearing capacity, self-moving the Silent Piler.
4. Installing the sheet pile to the specified depth.
5. Extracting the Pile Auger. Repeat sequences 1 - 5.
**Typical Piling Sequences (Overhead Clearance Method)**

**Sheet Pile Installation under Overhead Obstruction**

Even within restricted headroom, pile installation is feasible by jointing the casing augers and splicing the sheet piles.

- Casing Augers for exclusive use in restricted headroom are required.
- Applicable overhead clearance is generally 11m or greater depending on lifting height of service crane to be used.
- In case the overhead clearance is less than 11m, please contact the nearest GIKEN office for individual consultation.

1. Pitching the bottom pile into the Chuck.
2. Installation of the sheet pile into the ground with simultaneous augering.
3. Disconnecting the auger motor.
4. Connecting the auger motor and the middle auger with bolts in the horizontal position.
5. Connecting the middle auger and the bottom auger with bolts in the vertical position.
6. Pitching the middle pile into the Chuck and splicing the bottom pile and the middle pile by welding.
7. Installation of the sheet pile into the ground with simultaneous augering. Repeat sequences 3 - 7 until completion.

**Applicable Ground Conditions**

**Applicable Ground Conditions and Pile Depth**

- *GIKEN has many achievements in areas defined “Special consultation required”. Please contact the nearest GIKEN office for detailed information.*

**Hat Sheet Piles (900mm wide) - 10H**

- Standard Mode
- Water Jetting Mode
- Super Crush Mode

**Hat Sheet Piles (900mm wide) - 25H, 45H and 50H**

- Standard Mode
- Water Jetting Mode
- Super Crush Mode

Note: 1. "Pile Depth" means embedded depth of the pile, not pile length.
2. Standard minimum pile depth is 4.0m.

* GIKEN has many achievements in areas defined “Special consultation required”. Please contact the nearest GIKEN office for detailed information.
Three Penetration Techniques Available

**Optimising Work Efficiency with Modular Design**
Silent Piler F301 is applicable to standard, water jetting, and super crush press-in works by changing the chuck and chuck frame, and equipping attachments. The machine can be utilised more efficiently because it is adjustable to various soil conditions and working conditions.

**Ground Conditions**

**Site Conditions**

**Method Selection**

- Super Crush Mode
- Water Jetting Mode
- Standard Mode

**Longer Operational Life and Higher Functionality by New Control System**
The new control system manages the position of the press-in machine and controls load generation from press-in work during operation, maximising the durability of each part. Also, control of the machine is remarkably improved by the Press-in Force Control System and the Phaseless Linear Auger Torque Control System.

**Advanced Principles for Higher Accuracy**
The combination of Silent Piler F301 and Hat Sheet Pile achieves high quality installation.

**Two Press-in Points**
Press-in force can be transferred efficiently by gripping the pile with two points.

**High Stability of Reaction Base**
Clamping reaction piles at Interlock positions optimises the stability of the reaction base.

**Locking Function**
Lock functions in the leader mast, chuck and clamps secure Silent Piler against drilling torque and increase drilling efficiency and accuracy of pile installation.

**Locking Function Features**
- Securing position of Silent Piler against drilling torque.
- Increasing drilling efficiency.
- Increasing accuracy of pile installation.
- Reducing stress at movable parts of the Silent Piler to achieve longer product life.

* The locking function is automatically activated for each operation in Super Crush Mode.
* Each lock is automatically released, if Chuck Rotation or Leader Mast Swing switch is pressed.
* Each lock is automatically released at machine self-moving.
### Three Penetration Techniques Available

Silent Piler F301 is compatible with various operation modes by changing the chuck without losing efficiency.

#### Super Crush Mode Chuck / Standard Mode Chuck

Silent Piler F301 is compatible with various operation modes by changing the chuck without losing efficiency.

![Super Crush Mode Chuck](image1)

Super Crush Mode Chuck: 4300 kg

![Standard Mode Chuck](image2)

Standard Mode Chuck: 3200 kg

#### Piler Jet Reel

This is an Auto Hose Rewind/Feed Reel for water jetting mode. Giken developed a new high tensile and abrasion resistant jet hose. Applicable sheet pile length is up to 17m as the standard and 27m with hose extension.

![Piler Jet Reel](image3)

- Water Flow: Max. 700 l/min
- Water Pressure: Max. 14.7 MPa
- Mass: 1250 kg

#### Jet Lock & Jet Nozzle

Jet Lock is welded onto the sheet pile toe to fix Jet Nozzle in place with a Lock Pin.

![Jet Lock & Jet Nozzle](image4)

- Jet Nozzle detaching from Jet Lock
- Jet Lock detaching from sheet pile

#### Dual Safety

If the Jet Nozzle accidentally detaches from the Jet Lock or the Jet Lock itself accidentally detaches from the sheet pile, the reverse jetting function maintains the control of jet nozzle.

- Nozzle detaching from Jet Lock
- Jet Lock detaching from sheet pile

#### Radio Controller

All operations in Standard Mode, Water Jetting Mode and Super Crush Mode can be controlled by a single radio controller. Operation mode is automatically selected when attaching Jet Reel or Hose Reel.

#### Multi-Function Monitor

This Multi-Function Monitor displays information for every press-in mode.

- Clear visibility with high luminous LEDs, adjustable over 10 levels of brightness

- Axial Force Indicator
  - Down-stroke force and up-stroke force are indicated by bar chart. *Corresponding with the digital indicator below

- Machine Inclination Display
  - Lateral and forward/backward inclinations are displayed in 0.1 degree increments. *Corresponding with the digital indicator below

- IT Indicator
  - Status (active or inactive) is indicated

- Working Mode Display
  - The selected working mode is displayed

- Operation Mode Display
  - The selected operation mode is displayed

- Clamp Selector
  - Status (active or inactive) of clamp selector is indicated

- Auger Rotation Mode Display
  - Auger rotation mode (rotation, reverse or stopped) is displayed

- Setting Menu Display
  - Selected functions are displayed

- Machine Status Display
  - Status of Silent Piler is displayed

- Digital Display
  - Selected information is displayed with digital figures

- Auger Rotation Speed Indicator
  - The set speed of normal rotation and reverse rotation is indicated

- Chuck Up/Down Speed Indicator
  - The set speed of Chuck Up/Down is indicated

### Changes

Jet Lock & Jet Nozzle

- Super Crush Mode Chuck: 4300 kg
- Standard Mode Chuck: 3200 kg

### Optional Features

- Water Flow: Max. 700 l/min
- Water Pressure: Max. 14.7 MPa
- Mass: 1250 kg

### Performance Specifications

- Super Crush Mode Chuck: 4300 kg
- Standard Mode Chuck: 3200 kg

### Additional Information

- This is an Auto Hose Rewind/Feed Reel for water jetting mode. Giken developed a new high tensile and abrasion resistant jet hose. Applicable sheet pile length is up to 17m as the standard and 27m with hose extension.

- Silent Piler F301 is compatible with various operation modes by changing the chuck without losing efficiency.

- The Jet Real mounts atop the Silent Piler to achieve high efficiency and save labour.

- Jet Nozzle detaching from Jet Lock
- Jet Lock detaching from sheet pile

- If the Jet Nozzle accidentally detaches from the Jet Lock or the Jet Lock itself accidentally detaches from the sheet pile, the reverse jetting function maintains the control of jet nozzle.

- The selected working mode is displayed.

- The selected operation mode is displayed.

- Status of Silent Piler is displayed.

- Selected information is displayed with digital figures.

- The set speed of normal rotation and reverse rotation is indicated.

- The set speed of Chuck Up/Down is indicated.
The Power Unit was developed following the concept of environmentally-friendly design.

Outstanding Environmentally-Friendly Design

Power Unit

The Power Unit of the F301 is a new Biodegradable Oil generation model and has environmentally-friendly specifications. It is designed with strict concepts for clean emissions with high combustion efficiency and GIKEN’s original hydraulic control technologies.

Low Emission Engine

The Power Unit of the F301 is a new Biodegradable Oil generation model and has environmentally-friendly specifications. It is designed with strict concepts for clean emissions with high combustion efficiency and GIKEN’s original hydraulic control technologies.

Ultra Low Noise Level

It clears allowable construction noise levels in many industrialised countries.

Configuration and Elevation of Sheet Piles

- **Corner Installation**
- **Curve Installation**
- **Stepped Sheet Piling**

* Maximum height difference between adjacent sheet piles depends on ground conditions, projection and embedment depth of the sheet piles.

<table>
<thead>
<tr>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
</tr>
</thead>
</table>

- **Corner Pile**
- **Installation Order**
- **Corner Dummy Pile**

Achievable Minimum Radius R=13,000mm

* Individual consultation is required in case of R<13,000mm.

Max. 50mm

Max. 30mm

- **Incline**
- **Decline**

* e.g. Noise Limit in Urban Area (BS5228)

**Busy Office** -65 dB(A)

**Power Mode** -64.3 dB(A)

**Conversation Speech** -55-65 dB(A)

**Eco Mode** -62.7 dB(A)

**Super Eco Mode** -61.8 dB(A)

* Noise Level at 16m dB(A): A-weighted Decibels
Standard Application of Biodegradable Oil

The F301 uses bio-degradable Piler Eco Oil and Piler Eco Grease. Hence, if hydraulic oil or grease is spilled into soil or water, there will be no environmental damage to the surrounding ecosystem.

No risk of environmental damage

High Biodegradation

Biodegradation Test: OECD*1 301C

Activated sludge was used as microorganism source. Biochemical oxygen consumption (BOD) of test chemical (Piler Eco Oil & Piler Eco Grease 100mg/L) was continuously assayed by automatic assay system to evaluate biodegradability (percentage of volume of degrade into carbon dioxide and water) after 28 days.

*1: The Organization for Economic Co-operation and Development Standards.

Required degradation rate ≥ 60% after 28 days

Avirulence is certified by Fish Toxicity Test.

Acute Toxicity Test for Fish: JIS*2 K0102

The purpose of this test is to determine the acute lethal toxicity of a substance to fish in fresh water. The fish are exposed to the test substance added to water at 110 mg per litre concentrations for a period of 96 hours. The percentage mortality for exposure period of 96 hours against concentration is recorded.

*2: Japan Industrial Standards

Required mortality rate ≤ 50% after 96 hours

Scientific Execution of Press-in Work & Advanced IT Functions

GIKEN IT System

GIKEN’s engineers can monitor individual Silent Pilers, such as operating condition, maintenance records and location. Quick advice for any technical troubles is available promptly and appropriate information can also be provided to prevent troubles. For example, information from the Press-in Monitoring System can be used for advice to improve piling procedure, and Maintenance Information can be used for advice to prevent machine trouble and to reduce repair time.

* The system is not available in the countries where authorization for usage cannot be acquired.
Press-in Monitoring and Data Logging System

Press-in Monitoring Data of each pile installation, such as press-in force, auger torque and time spent, can be recorded and scientifically used for quality control. Such data can be linked to borehole data to optimise operation settings for particular ground conditions. Also, change in soil strata and presence of underground obstacles can be detected from the monitoring record.

The thorough monitoring record can be used as reliable real-time record of the piling works.

### Main Functions

**Press-in Monitoring and Data Logging System**

- **Profile Mode**
  - Display the details of Press-in Monitoring Data.

- **Comparison Mode**
  - Compare the current data to the previous monitoring results.

**Machine Setting Profile**

Display the details of the machine setting and status during press-in work.

- **Elapsed Time**
- **GPS Coordinates**
- **Extraction Force (x 10kN)**
- **Press-in force (x 10kN)**
- **Auger Torque (kN・m)**
- **Press-in Speed Setting (x 1/10)**

### Tablet PC

The real-time information of piling operations can be displayed on a tablet PC which can be attached to the side of the Silent Piler.

**Main Functions**

- **Scientific Execution of Press-in Work & Advanced IT Functions**
- **Press-in Monitoring and Data Logging System**
- **Machine Setting Profile**
- **Comparison Mode**
Auxiliary Equipment for Better and Safer Working Environment with Higher Efficiency

In general, many piling works are carried out where working platform is necessary, such as working above water, on slopes and at height. Under such difficult working conditions, GIKEN’s Piler Stage and Auger Head Replacing Attachment make piling work safer and more efficient. In addition, there are many other auxiliary equipment in our line-up to improve the working environment and efficiency.

### Piler Stage
- Easy to assemble
- Easy to attach to or detach from the Silent Piler and can be attached to one-side only
- Rails can be used as a gate for easy access.

**Locking Function for safety**
Each junction has a locking function so the stage and rails won’t come off due to unexpected shocks.

### Auger Head Replacement Attachment
Type of auger head is selected in accordance with ground conditions. This compact auger head replacing attachment makes replacement work much faster and safer.

**Stage Lock → Fixing Boards**
**Rail Clip → Fixing Rails**
**Post Lock → Fixing Posts**

**Piler Stage**

<table>
<thead>
<tr>
<th>Component</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader Mast Stage</td>
<td>400 kg</td>
</tr>
<tr>
<td>One Side Stage</td>
<td>300 kg</td>
</tr>
<tr>
<td>Saddle Stage</td>
<td>300 kg</td>
</tr>
<tr>
<td>Single Stage Component</td>
<td>200 kg</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>980 kg</strong></td>
</tr>
</tbody>
</table>

**Rails**

<table>
<thead>
<tr>
<th>Component</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rails</td>
<td>190 kg</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>980 kg</strong></td>
</tr>
</tbody>
</table>

**Stage Lock**

<table>
<thead>
<tr>
<th>Component</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage Lock</td>
<td>790 kg</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>980 kg</strong></td>
</tr>
</tbody>
</table>

**Rail Rack**

<table>
<thead>
<tr>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 kg</td>
</tr>
</tbody>
</table>

**Chuck Stage (for Super Crush Mode Chuck)**

**Maximum Load**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper</td>
<td>15 kg</td>
</tr>
<tr>
<td>Base</td>
<td>30 kg</td>
</tr>
<tr>
<td>Rails</td>
<td>70 kg</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>145 kg</strong></td>
</tr>
</tbody>
</table>

**Chuck Stage**

<table>
<thead>
<tr>
<th>Mass</th>
<th>Mass per unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack</td>
<td>25 kg</td>
</tr>
</tbody>
</table>

**Stage Bracket**

**Mounted onto Silent Piler**

**Rotation**

**Mounted onto Piler Stage**

**Rotation**
### Auxiliary Equipment for Better and Safer Working Environment with Higher Efficiency

#### Pile Roller

Pile Roller eliminates grating noise from a pile bundle while the sheet pile is being lifted by crane. The working radius of the crane can be minimised for safer lifting works.

<table>
<thead>
<tr>
<th>Pile Roller</th>
<th>OPS8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass</td>
<td>Pile Roller 13 kg</td>
</tr>
<tr>
<td>Applicable Shaft Pile</td>
<td>Flat Sheet Pile (900mm wide)</td>
</tr>
<tr>
<td>Applicable Pile Length</td>
<td>Max. 16 m *</td>
</tr>
</tbody>
</table>

* Up to 20m without Roller Holder

#### Pile Laser

Sheet pile alignment is quickly and accurately set by the Pile Laser. The laser line is clearly visible even under sunlight, and the universal joint arm allows quick set up.

<table>
<thead>
<tr>
<th>Pile Laser</th>
<th>PL3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass</td>
<td>1.5 kg (3.5kg with carrying case)</td>
</tr>
<tr>
<td>Power Source</td>
<td>1no. D Battery</td>
</tr>
<tr>
<td></td>
<td>More than 50 hours</td>
</tr>
</tbody>
</table>

#### Casing Scraper

Automatically remove soils on the casing and manual cleaning work is no longer necessary.

#### Hose Roller

The Hose Roller prevents the hydraulic hoses and the power cable from being damaged.

<table>
<thead>
<tr>
<th>Hose Roller</th>
<th>Mass 8 kg</th>
</tr>
</thead>
</table>

#### Module Box

Tools can be stored at designated positions with the Module Boxes, each box is designed for a particular operation mode.

<table>
<thead>
<tr>
<th>Module Box</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB10 (SMP Box)</td>
<td>670 kg</td>
</tr>
<tr>
<td>MB11 (Crush Box)</td>
<td>480 kg</td>
</tr>
<tr>
<td>MB12 (Sub Box)</td>
<td>380 kg</td>
</tr>
<tr>
<td>Total</td>
<td>1530 kg</td>
</tr>
</tbody>
</table>

(*) Including all tools and spare parts.
Hard Ground Press-in Method Project Data Sheets

Hat Sheet Pile (900mm wide) .................................................. 30
Other Pile Sections ................................................................. 32

Visit the following URL for more details.
GIKEN Project Leaflet Database
http://www.gtoss.net/en/pressin-archive

Data sheets can be searched and downloaded by category.
If we analyse all the parties involved in any construction work, we can categorise them into three main groups: the client, the contractor and the general public. The ideal situation is when all three parties are in agreement and satisfied with the successful outcome of the construction work. Problems arise when one of the parties becomes a victim of imbalance in this relationship. The conventional construction methods based upon principles that "more is paid for less efficient work" are no longer appropriate to present-day society. Universally acceptable construction methods must embody the Five Construction Principles.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Protection</td>
<td>Construction work should be environmentally friendly and free from pollution.</td>
</tr>
<tr>
<td>Safety</td>
<td>Construction work has to be carried out in safety and comfort with a method implementing the highest safety criteria.</td>
</tr>
<tr>
<td>Speed</td>
<td>Construction work should be completed in the shortest possible period of time.</td>
</tr>
<tr>
<td>Economy</td>
<td>Construction work must be done rationally with an inventive mind to overcome all constraints at the lowest cost.</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>Construction work must proceed smoothly and the finished product should portray cultural and artistic flavour.</td>
</tr>
</tbody>
</table>