POWERSHORE
Holmatro PowerShore is a versatile and easy to assemble emergency shoring system providing quick and reliable stabilization for every rescue situation. No matter what type of operation you are faced with – more regular but less complex or less regular but more complex (see graph) – this system meets any shoring requirement. In all of these situations and environments stabilization with Holmatro PowerShore prevents further injury of those entrapped and creates rapid safe areas for rescuers to work in.

One system for every rescue situation

Consisting of various lightweight, fully compatible components with snap-lock connection, Holmatro Power-Shore™ can be assembled in a minimum amount of time. With the help of many different extension lengths and accessories virtually any object can be shored at various angles. The load is safely secured by means of a manual or automatic locking system. Holmatro PowerShore is also available with integrated pneumatic or, for even more power, hydraulic lifting cylinders. This allows for a combination of shoring and lifting operations in situations where potentially life saving ‘working space’ needs to be created.

Quick and easy assembly in emergency situations.

The PowerShore system consists of various lightweight components.

One system for shoring and lifting

Complexity

Regularity

Collapsed structure rescue (USAR)

Trench rescue

Heavy vehicle rescue

Light vehicle rescue

Holmatro PowerShore 2

The solution for every rescue situation 3
Features & benefits

**Versatile**
- One system for every rescue situation, enabling both shoring and lifting
- Shoring at various angles possible

![Shores can be positioned at various angles.](image1)

**Safe**
- Load is secured by manual “Locknut” or automatic locking “Auto-lock” system
- Auto-lock pneumatic or hydraulic systems enable ‘remote shoring’, i.e. when a shore is positioned in an unsafe area and then extended from a remote safe location by either pneumatic or hydraulic pressure

![Load secured by manual Locknut.](image2)

**Powerful**
- 100 kN / 10.1 t max. load capacity, depending on the shore length
- 100 kN / 10.1 t max. lifting capacity with integrated hydraulic lifting modules

![The Auto-lock system enables remote shoring.](image3)

**Lightweight**
- Easy to carry
- Easy to assemble and position

![Lightweight components are easy to carry, assemble and position.](image4)

**Smooth edges**
- No loose parts sticking out that may catch your clothes.

![No protruding parts.](image5)

**Fast**
- Male-female snap-lock (dis)connection system for extremely fast coupling and uncoupling
- Fully compatible components ensure quick assembly
- Reflecting colour codes enable quick length assessment, even in the dark

![Snap-lock system: all items can be (dis)connected within seconds.](image6)

**Safe**
- Male-female snap-lock (dis)connection system for extremely fast coupling and uncoupling
- Fully compatible components ensure quick assembly
- Reflecting colour codes enable quick length assessment, even in the dark

![Reflecting colour codes indicate the length and illuminate in the dark.](image7)

**Smooth edges**
- No protruding parts.

![Smooth edges will not catch your clothes.](image8)

**Powerful**
- 100 kN / 10.1 t max. load capacity, depending on the shore length
- 100 kN / 10.1 t max. lifting capacity with integrated hydraulic lifting modules

![Heavy goods vehicle shoring and lifting with a hydraulic PowerShore system.](image9)
What is a shore made up of?

Shore components

When we look at a single shore, it is usually built of the following components:

1) a strut
2) one or more extensions
3) heads and accessories

All shores, depending on their length, have a max. load capacity of 100 kN / 10.1 t with a safety factor of 4:1 (see the graph page 20).

Struts (1)

With a stroke of 120 - 252 mm the strut is the extendable part of the shore. There are different types of struts which can be operated manually or by means of pneumatic or hydraulic pressure (see "strut operating systems" page 7).

Extensions (2)

The extensions are used to customize the length of the shore you need to create. Each extension has a reflecting colour code so that it can easily be identified, even in the dark! Commonly used lengths are: 125 mm (white), 250 mm (blue), 500 mm (yellow), 1000 mm (green) and 1500 mm (red, not in picture).

Heads & accessories (3)

Holmatro offers a wide variety of heads to complete your shore. Some examples are swivel heads enabling shore positioning at various angles, cross heads that grip well on the underside of vehicles, and beam support heads to combine your shoring system with wooden beams (e.g. to shore doorways and windows). Whether dealing with vehicle, trench or collapsed structure rescue you can choose between many different head types to meet specific application and environment requirements. Other accessories to finish your shoring system, such as support plates and tensioning belts, are also available in the PowerShore range.

100% compatibility

All Holmatro PowerShore components are universally compatible. In other words: all of the struts can be used with any of the extensions and heads to develop the exact system required for a specific shoring application. The male-female snap-lock connection system enables fast and easy coupling.

For more detailed specifications of all components see pages 19-21.

Manual (mechanical) operation

Manual struts are extended manually.
Load capacity: 100 kN / 10.1 t

Pneumatic operation

Pneumatic struts are operated by means of an 8 bar pneumatic system, consisting of an air bottle, a pressure reducer, a control unit and air hoses.
Load capacity: 100 kN / 10.1 t. Lifting capacity: 4.0 kN / 0.4 t

Hydraulic operation

Hydraulic struts are operated by means of a 720 bar hydraulic hand pump with hose and pressure gauge. The pressure gauge clearly indicates the max. allowed pressure for every shore length. Load and lifting capacity: 100 kN / 10.1 t

Available combinations

Combining the three operating and two locking systems results in five different strut types:

<table>
<thead>
<tr>
<th></th>
<th>Manual (mechanical)</th>
<th>Pneumatic (air)</th>
<th>Hydraulic (oil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locknut</td>
<td>Manual Locknut strut</td>
<td>Pneumatic Locknut strut</td>
<td>Hydraulic Locknut strut</td>
</tr>
<tr>
<td>Auto-lock</td>
<td>Pneumatic Auto-lock strut</td>
<td>Hydraulic Auto-lock strut</td>
<td></td>
</tr>
</tbody>
</table>
On the following pages we will compare applications suiting the five different strut types. It must be said, that the application possibilities are not strictly limited to the examples mentioned for each strut type.

**Manual Locknut type.**

The manual threaded type, with self-retaining thread acting as a Locknut, has a very small retracted length (250 mm with 120 mm stroke) which makes it ideal for shoring small gaps or any situation where a small insertion space is required.

Together with the manual threaded type, the manual Locknut type has the advantage of not requiring additional pneumatic or hydraulic operating equipment to set the system in place. It is therefore very suitable for use in remote areas, confined spaces and simple vehicle stabilization scenarios.

**Application examples:**
- Narrow trench shoring
- Collapsed structure shoring, especially in confined and remote areas
- Light vehicle stabilization

**Manual or automatic follow-up shoring:** Shoring used to follow a load that is being lifted by other equipment, such as lifting bags or jacks. The shore is extended automatically (due to compressed air inside the strut) as the load is lifted. It can be secured manually (Locknut system) or automatically (Auto-lock system). Follow-up shoring is intended to hold the load in the event of lifting equipment failure.

**Definition of terms**

**Remote shoring:** The process by which a shore is positioned in an unsafe area and then extended from a remote safe location by either pneumatic or hydraulic pressure.

**Manual or automatic follow-up shoring:** Shoring used to follow a load that is being lifted by other equipment, such as lifting bags or jacks. The shore is extended automatically (due to compressed air inside the strut) as the load is lifted. It can be secured manually (Locknut system) or automatically (Auto-lock system). Follow-up shoring is intended to hold the load in the event of lifting equipment failure.

**Vehicle stabilization with manual Locknut struts.**

**Pneumatic Locknut strut.**

This strut can be used for vehicle, trench or collapsed structure rescue when there is no need for remote shoring (it is locked manually). In situations where compressed air is not available or required it can also be used as a manual strut.

**Application examples:**
- Manual follow-up shoring in (heavy) vehicle and collapsed structure lifting operations
- Light vehicle stabilization
- Trench shoring (also secondary / replacement shoring)
- Collapsed structure shoring, as a manual strut

**Pneumatic Auto-lock strut.**

Thanks to its automatic locking system this strut can be used in situations where remote shoring or automatic follow-up shoring is required.

**Application examples:**
- Automatic follow-up shoring in (heavy) vehicle lifting operations
- Automatic follow-up shoring in collapsed structure lifting operations
- Remote shoring in trench rescue

**Vehicle stabilization with Pneumatic Locknut struts.**

**Pneumatic Auto-lock strut.**

Pneumatic Auto-lock struts are very suitable for remote shoring in trench rescue.

**Auto-lock strut used to back up a lifting bag.**

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**Manual Locknut struts vs. Pneumatic Locknut struts vs. Hydraulic Locknut struts**

<table>
<thead>
<tr>
<th>Manual (mechanical)</th>
<th>Pneumatic (air)</th>
<th>Hydraulic (oil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locknut</td>
<td>Pneumatic Locknut strut</td>
<td>Hydraulic Locknut strut</td>
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<tr>
<td>Auto-lock</td>
<td>Pneumatic Auto-lock strut</td>
<td>Hydraulic Auto-lock strut</td>
</tr>
</tbody>
</table>
Combining a 100 kN / 10.1 t holding capacity with a 100 kN / 10.1 t lifting capacity, this powerful strut can be used for lifting and stabilization in one, with a second hydraulic strut acting as a backup. It is a good choice for heavy vehicle and collapsed structure shoring and lifting. Although being a little heavier than the pneumatic type, it is also suitable for trench shoring.

**Application examples:**
- (Heavy) vehicle stabilization and lifting, also simultaneously
- Collapsed structure stabilization and lifting, also simultaneously
- Trench shoring

**Hydraulic Auto-lock strut**

Being a hydraulic powered strut that locks automatically, this type is suitable for remote shoring and lifting operations in (heavy) vehicle and collapsed structure rescue. When used together with a second hydraulic strut, the lifting and shoring can be performed simultaneously. Although being a little heavier than the pneumatic type, it is also a good strut for remote shoring in trench rescue.

**Application examples:**
- Remote shoring and lifting of (heavy) vehicles, also simultaneously
- Remote lifting in collapsed structure situations
- Remote shoring of trenches

It is very important to rapidly stabilize a vehicle in the position it is found in before starting extraction rescue efforts. The reason for this is that any movement of the vehicle during these efforts may lead to further injury of those trapped inside. In some cases it may also be necessary to carefully lift a (heavy goods) vehicle, e.g. in car under-run situations or to free a trapped limb. The Holmatro PowerShore system can be used for both stabilization and controlled lifting of (heavy) vehicles.

**Vehicle rescue**

Extensions, heads, and base plate used for light vehicle stabilization.

Pneumatic Auto-lock strut used for follow-up shoring in heavy vehicle lifting operations.

Heavy vehicle stabilization with hydraulic Locknut strut.

Heavy vehicle stabilization with hydraulic Locknut strut.

Heavy vehicle stabilization with hydraulic Locknut strut.

Two hydraulic struts used for light vehicle stabilization and, if required, controlled lifting.
Trench rescue

Trenches are dug for various reasons, such as the laying of pipes and cables. The main cause of trench collapses is inadequate shoring. After a collapse, the trench needs to be shored quickly and properly, in order to prevent further injury of those entrapped, and to create a rapid safe area for rescuers to work in. The Holmatro PowerShore system can be used for all trench rescue operations, including remote shoring.

PowerShore applications

Trench shoring with pneumatic Auto-lock struts.

Collapsed structure rescue

During collapsed structure rescue operations good emergency shoring is essential. It is used to protect access and exit routes to and from entrapped victims, and to create rapid safe areas for rescuers to work in. The Holmatro PowerShore system is very suitable for emergency shoring and controlled lifting of collapsed structures.

Remote shoring with Auto-lock struts.

Hydraulic Auto-lock struts used for remote shoring.

Positioning two shores with beam support heads and a beam, to stabilize a building. The hydraulic Locknut struts will be carefully extended by means of a hand pump.

Pneumatic Auto-lock struts positioned in a trench.

Collapsed structure stabilization and lifting with a hydraulic Locknut system.

Manual struts with extensions, beam support heads and timber to stabilize a window.

Shores combined with timber to protect the access and exit route of a collapsed building.
The broad range of Holmatro PowerShore components allows you to select a combination that will match your rescue operations in the best possible way. Alternatively, you can choose between a number of advisory sets: logical groupings of components which are suitable for certain applications. These sets and their applications will be described on the next couple of pages.

### Application examples

The following examples are some of the applications that can be achieved with these sets. For a more detailed description of all possible applications, please contact your local Holmatro sales representative.

#### Vehicle extrication rescue
- Stabilization of vehicle on its side (see picture below table)
- Stabilization of vehicle on its roof
- Stabilization in 'light vehicle' scenarios

#### Collapsed structure rescue (USAR)
- Creation of safe areas using single spot shores (see picture below table)
- Creation of door or window shores
- Follow-up shoring of lifted loads

#### Trench collapse rescue
- Creation of safe working zones in shallow trenches
- Creation of safe working zones in trenches using remote shoring

### Mechanical shoring sets

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<th>PSM 2*</th>
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</tbody>
</table>

* The numbers listed in these columns represent the number of components as included in the set.

### PSM 1

- **Basic mechanical shoring set**
- set art. no.: 150.062.097

### PSM 2

- **Advanced mechanical shoring set**
- set art. no.: 150.062.098

### Hydraulic shoring sets

<table>
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<th>PSM 3*</th>
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<td>150.011.525</td>
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<tr>
<td>11</td>
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<td>12</td>
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<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

### PSM 1

- **Basic hydraulic shoring set**
- set art. no.: 150.062.097

### PSM 2

- **Advanced hydraulic shoring set**
- set art. no.: 150.062.098

### PSM 3

- **Heavy duty hydraulic shoring set**
- set art. no.: 150.062.101

### Application examples

The following examples are some of the applications that can be achieved with these sets. For a more detailed description of all possible applications, please contact your local Holmatro sales representative.

#### Vehicle extrication rescue
- Stabilization of vehicle on its side
- Stabilization of vehicle on its roof
- Stabilization in 'light vehicle' scenarios
- Stabilization in 'heavy vehicle' scenarios
- Controlled lifting of vehicles
- Stabilization of heavy goods vehicles

#### Collapsed structure rescue (USAR)
- Creation of safe areas using single spot shores (see picture page 14)
- Creation of door or window shores
- Follow-up shoring of lifted loads
- Combined shoring / lifting operations

#### Trench collapse rescue
- Creation of safe working zones in shallow trenches
- Creation of safe working zones in trenches using remote shoring

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Stabilization of a vehicle on its side.

Spot shore used to protect an exit route.
### Pneumatic shoring sets

**PSP 1**  
Basic pneumatic shoring set  
set art. no.: 150.062.102

**PSP 2**  
advanced pneumatic shoring set  
set art. no.: 150.062.103

### Combined shoring sets

**PSX 1**  
basic combined shoring set  
set art. no.: 150.062.104

**PSX 2**  
advanced combined shoring set  
set art. no.: 150.062.105

**PSX 3**  
heavy duty combined shoring set  
set art. no.: 150.062.106

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### Application examples

The following examples are some of the applications that can be achieved with these sets. For a more detailed description of all possible applications please contact your local Holmatro sales representative.

**Vehicle extraction rescue**  
- Stabilization of vehicle on its side  
- Stabilization of vehicle in its roof  
- Stabilization in ‘light vehicle’ under heavy vehicle’ scenarios  
- Stabilization of heavy goods vehicles

**Collapsed structure rescue (USAR)**  
- Creation of safe areas using single spot shores  
- Creation of door or window (see picture page 14)  
- Follow-up shoring of lifted loads

**Trench collapse rescue**  
- Creation of safe working zones in trenches using remote shoring

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### Advisory shoring sets

The following examples are some of the applications that can be achieved with these sets. For a more detailed description of all possible applications please contact your local Holmatro sales representative.

**Vehicle extraction rescue**  
- Stabilization of vehicle on its side  
- Stabilization of vehicle in its roof  
- Stabilization in ‘light vehicle’ under heavy vehicle’ scenarios  
- Stabilization of heavy goods vehicles

**Collapsed structure rescue (USAR)**  
- Creation of safe areas using single spot shores  
- Creation of door or window (see picture page 14)  
- Follow-up shoring of lifted loads  
- Combined shoring / lifting operations

**Trench collapse rescue**  
- Creation of safe working zones in trenches using remote shoring

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### Advisory shoring sets

The following examples are some of the applications that can be achieved with these sets. For a more detailed description of all possible applications please contact your local Holmatro sales representative.

**Vehicle extraction rescue**  
- Stabilization of vehicle on its side  
- Stabilization of vehicle in its roof  
- Stabilization in ‘light vehicle’ under heavy vehicle’ scenarios  
- Stabilization of heavy goods vehicles

**Collapsed structure rescue (USAR)**  
- Creation of safe areas using single spot shores  
- Creation of door or window (see picture page 14)  
- Follow-up shoring of lifted loads  
- Combined shoring / lifting operations

**Trench collapse rescue**  
- Creation of safe working zones in trenches using remote shoring
Technical specifications

Advisory

Trench collapse rescue

• Creation of safe working zones in trenches using remote shoring
• Stabilization of unsecured installations (pipes etc.) in collapsed trenches

Trench shoring sets

PST 1

- basic trench shoring set
- set art. no.: 150.062.107

PST 2

- advanced trench shoring set
- set art. no.: 150.062.108

Application examples

The following examples can be achieved with these sets. For a more detailed description of all possible applications please contact your local Holmatro sales representative.

Remote shoring of a trench.

Remote shoring of a trench. Trench shoring with pneumatic Auto-lock struts.

PowerShore™ stored in a container.

PowerShore™ stored in a rescue truck.

PowerShore struts with hydraulic cylinder

<table>
<thead>
<tr>
<th>model</th>
<th>art. no.</th>
<th>locking system</th>
<th>retracted length mm</th>
<th>stroke mm</th>
<th>weight kg</th>
<th>working pressure bar / Mpa</th>
<th>force at working pressure kN / t</th>
<th>oil content at max. stroke cc</th>
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</thead>
<tbody>
<tr>
<td>HS 1 Q 6 FL</td>
<td>150.011.547</td>
<td>Auto-lock</td>
<td>632</td>
<td>252</td>
<td>10.3</td>
<td>720 / 72</td>
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<td>400</td>
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<td>HS 1 Q 10 FL</td>
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<td>Auto-lock</td>
<td>1092</td>
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<td>100 / 10.1</td>
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<tr>
<td>HS 1 L 5+</td>
<td>150.011.543</td>
<td>Locknut</td>
<td>575</td>
<td>252</td>
<td>9.2</td>
<td>720 / 72</td>
<td>100 / 10.1</td>
<td>400</td>
</tr>
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<td>1035</td>
<td>252</td>
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<td>100 / 10.1</td>
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PowerShore struts with pneumatic cylinder

<table>
<thead>
<tr>
<th>model</th>
<th>art. no.</th>
<th>locking system</th>
<th>retracted length mm</th>
<th>stroke mm</th>
<th>weight kg</th>
<th>working pressure bar / Mpa</th>
<th>force at working pressure kN / t</th>
<th>max. air / water content in litres</th>
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</thead>
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<tr>
<td>AS 3 Q 5 FL</td>
<td>150.011.546</td>
<td>Auto-lock</td>
<td>632</td>
<td>252</td>
<td>8.4</td>
<td>8</td>
<td>4.0 / 0.4</td>
<td>20.4 / 2.3</td>
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<tr>
<td>AS 3 Q 10 FL</td>
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<td>Auto-lock</td>
<td>1092</td>
<td>252</td>
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<td>20.4 / 2.3</td>
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<td>Locknut</td>
<td>1035</td>
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<td>10.1</td>
<td>8</td>
<td>4.0 / 0.4</td>
<td>20.4 / 2.3</td>
</tr>
</tbody>
</table>

Auto-lock with integrated spacer: plunger with automatic locking mechanism that locks in steps of 9 mm. Retracting the plunger is only possible after releasing the locking mechanism. The integrated spacer, a spring operated flex mechanism with 13 mm stroke, is used to overcome one 9 mm step of the Auto-lock system and creates a max. pretension in the strut of 4.0 kN.

Locknut: plunger with thread and Locknut. When the plunger is extended the Locknut can be secured. The pressure can then be released. Axial displacement per rotation is 16.5 mm.

All struts are equipped on both sides with a female snap-lock system. Cylinders are angle acting with spring return. All struts can be used with all extensions and heads.

PowerShore™ manual (mechanical) struts

<table>
<thead>
<tr>
<th>model</th>
<th>art. no.</th>
<th>locking system</th>
<th>retracted length mm</th>
<th>stroke mm</th>
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<td>Thread</td>
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<td>Locknut</td>
<td>575</td>
<td>250</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Thread: plunger with thread. When the plunger is extended the thread is self-releasing. Axial displacement per rotation is 16.5 mm.

Locknut: plunger with thread and a Locknut. When the plunger is extended the Locknut can be secured. Axial displacement per rotation is 16.5 mm.

These struts are also equipped with a female snap-lock system on both sides, and can be used with all extensions and heads.

<table>
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<tr>
<th>no.</th>
<th>art.nr.</th>
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<td>AS 3 Q 5 FL (pneumatic Auto-lock strut)</td>
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<td>SX 1 (extension 125 mm)</td>
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<td>SX 2 (extension 250 mm)</td>
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<td>SX 5 (extension 500 mm)</td>
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<td>SX 10 (extension 1000 mm)</td>
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<td>8</td>
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<td>2-way block</td>
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<td>Locknut</td>
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<td>Locknut</td>
<td>1035</td>
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* The numbers listed in these columns represent the number of components as included in the set.
Maximum load vs. shore length

The overall strength of the system depends on its length once it is in place. Each strut has a yellow sticker indicating the load-to-length ratio. If it is a hydraulic strut, the sticker also shows the corresponding max. pressure. The max. holding capacity of 100 kN / 10.1 t applies to shore lengths up to 1,325 m, as shown in the graph below.

![Graph showing maximum load vs. shore length](image)

Yellow sticker on a strut indicating the load-to-length ratio.
The versatility of Holmatro’s PowerShore™ system is not limited to the wide variety of rescue applications described. Marine forces too, value the benefits of this system, as it can also be used for sealing leaks onboard ships. To meet the different conditions of emergency situations at sea Holmatro adapted their standard PowerShore components. This has resulted in a special naval damage control set offering solutions for various scenarios, such as sealing a leak in a dividing wall.

Naval damage control set.

A 3-way swivel head and a 2-way block used for shoring lines in various directions.

Hydraulic-powered struts used together with extensions, heads and timber to seal a leak inside a marine ship.

Sealing a leak in a dividing wall with the hydraulic PowerShore naval damage control system.

The PowerShore system can also be used to seal leaks onboard marine ships.

Also available from Holmatro is a new guide to equipment handling and techniques for use in emergency shoring and lifting operations. This book describes the various rescue operations where systems such as Holmatro PowerShore are commonly used. These include light and heavy vehicle rescue, collapsed structure rescue and trench rescue. Subjects like hazard and load management principles alternate with situational approaches in Holmatro’s Emergency Shoring & Lifting Techniques. The guide offers a well-balanced mix of theory and practice, and is therefore a valuable training tool.
Important safety notice

This brochure contains information on rescue tools and rescue techniques that can be employed in different emergency shoring and lifting situations. The situations shown in this brochure are examples only and merely meant to assist the user of this brochure in understanding certain basic emergency shoring techniques and rescue tools available.

Holmatro disclaims any liability for any damage or injury, whether direct, indirect or otherwise, and whether asserted in contract, tort, warranty or otherwise, incurred as a result of the use of rescue techniques and/or rescue tools described in this brochure or the use of any other rescue techniques and/or rescue tools that are employed in any training or emergency situation, except to the extent, and limited to, the terms of any warranty provided by Holmatro for its own equipment. Holmatro makes no warranty, expressed or implied, with respect to its own equipment from the contents of this brochure, including without limitation, any warranty of merchantability or warranty of fitness for a particular purpose.