



**FS 2001**

Trapezoid-profiled



**FS 2001G**

Smooth and multiple uses



**FS 2001 light**

Shaft-profiled



**FS 2050**

Shaft-profiled reinforced



**FS 2040**

One-sided foundation and round casing trapezoid-profiled



**FS-U-Form**

Shaft-profiled girder casing

**FSL-U-Form**

Shaft-profiled perforated hole casing

## Foundation Formwork Systems

## MSL works in two core areas:

### The area of casing systems with specialization in these areas:

- Tubular casings
- Recess frames
- Foundation lateral casings
- Sole and ceiling edge casing
- Work joint systems such as siding and edging
- Recess pipes, displacement pipes and casing pipes
- Special casing according to diagrams

### The area of ventilation components:

- Folded spiral pipes to a diameter of 2000 mm
- The formed shape product range includes all parts required for ventilation systems

With our logistics partners we are able to fill the majority of our orders in less than one week after receipt of the order.

**Send us your queries. We will be happy to send you our detailed product documents.**

**WE ARE THERE FOR YOU!**

## System description of the MSL foundation casing Type: FS





The first foundation casing (Type FS) was developed at our company in 1988 and registered with the German patent office in Munich. In this information brochure, MSL presents 7 foundation lateral casings of different designs. Each of these MSL systems only consists of 1-3 components. This ensures that the MSL systems can be installed on site without special instruction even by temporary workers. See our installation examples on page 6.

Due to the large element lengths with a low weight and the elements pre-fabricated at the MSL factory, the installation times end up being very short. Formed parts can be manufactured with no problem on site, e.g. by cutting into the cross-sections. An extensive accessory range allows you to use MSL systems for virtually all applications. Even casing systems for round foundation shapes with simultaneous laying of the base plate can be manufactured by MSL. Every system, whether with a shaft profile, a trapezoid profile or smooth, has its own advantages.

Decide for yourself which MSL casing system is the most cost effective for your construction project. Detailed system descriptions are available in the pages below. The assembly times indicated in the comparison are approximate values which depend on the construction circumstances and the experience of the construction workers.

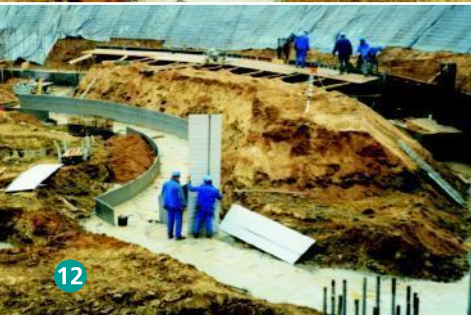
**We are happy to send you videos or DVDs of construction sites.**

your specifications or according to a diagram. The diagram can also be sent by email. [Zentrale@msl-bauartikel.de](mailto:Zentrale@msl-bauartikel.de)

FS 2050 Corrugated profile reinforced	FS 2040 Trapezoid profiled one-side	FS-U-Form Corrugated profile girder casing	FSL-U-Form Corrugated profile perforated plate casing
			
3.5 m	2.53 m	0.9 m	0.87 m
3.45 m	2.50 m	0.85 m	0.82 m
According to specifications	According to specifications	According to specifications	According to specifications
Approx 10 x 26 mm	35-61/25 mm	10 x 26 mm	10 x 26 mm
∅ 6 mm	--	∅ 8 as accessory	∅ 8 as accessory
Approx. 35 cm depending on height	--	Approx. 1 m	Approx. 1 m
2 (Casing + bracket )	1 (Casing + bracket )	1 (Casing)	1 (Casing)
Approx. 6 kg	Approx. 11 kg	Approx. 4.5 kg	Approx. 4.3 kg
To 1 m	To 0.5 m	To 0.4 m with distance bracket	To 0.4 m with distance bracket
Upon request	no	no	no
Yes	no	Yes	Yes
Approx. 5 work days (By arrangement)	By arrangement	Short-term	Short-term
Approx. 0.12 h/qm	Approx. 0.1 h/qm	Approx. 0.1 h/qm	Approx. 0.1 h/qm



## System description foundation lateral casing MSL Type: FS 2001 Light



**MSL** uses the name **FS 2001 light** to describe the thick and shaft-profile model. The foundation was set for this system as early as 1998. With an element length of 3.45 m, the element is 0.4 m longer than the trapezoid-profile model **FS 2001**.

Due to the thickness of the material, the weight of the light model per  $m^2$  is clearly under that of the trapezoid model and can therefore be erected with no problem even with an element length of 3.45 m by one man. See Photo 10.

The system **FS 2001 light** also consists of only 2 components:

- 1) Corrugated-profile foundation lateral walls for inside and out (same construction)
- 2) Upper and lower spacers (same construction)

The foundation lateral sections (Photo 2) which are pre-bent at the factory are delivered on pallets. The reinforcement can be installed after the bottom spacers are laid (Photo 5), after erection of the lateral wall with inserted lower spacers (Photo 6, 7) or after erection of both lateral walls, from above.

Nailing an anti-penetration strip on the blinding layer has proven to be advantageous. As a result, it is guaranteed that the foundation will run straight on the floor-side. By using squared timber, the casing can be fixed at the top (Photos 6, 8).

Because it is a matter of a lost casing here, we recommend that the casing be propped up by filling it up with dirt in the conventional manner (Photos 9, 10, 11). In the overlap area, approx. every 3.4 m., we commend that the customer secure the elements with 3-4 tapping screws.



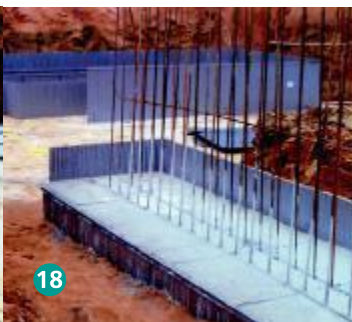
Formed pieces, e.g. angled elements (Photo 17), are produced quickly and easily by cutting into the cross-sections and bending to the required position on site.

The system can be supplied with base plate laying. Here an additional cross-section is welded onto the interior of the exterior casing at the plant for insertion into the upper spacer (Photo 14-17).

Photo 18-21 shows how to lay a base plate after concrete has already been poured onto the foundation. Because the base plate was encased with the foundation in one step, there is a major advantage in terms of work time compared to base plates laid in the conventional manner.

## Advantages

- MSL** Tremendous amount of time saved
- MSL** Uninhibited installation of reinforcements
- MSL** Large element length with less weight
- MSL** No need for cranes
- MSL** No need to sort casing equipment
- MSL** Casing element can be used for internal or external foundation
- MSL** The system only consists of side walls and top and bottom push-in brackets
- MSL** Formed parts are manufactured on site with no problem
- MSL** No removal of casings
- MSL** No transfer of casings
- MSL** Short delivery time



## MSL – type FS 2001 foundation shuttering system specifications



MSL FS 2001 foundation shuttering consists of only two components. **1)** Foundation wall shuttering element **2)** Insertible connector



The 3.1 meter lightweight foundation wall shuttering element adheres to its shape thanks to 27 vertical trapezoidal profiles.

A trapezoidal cross profile is permanently welded to the upper and lower parts of the shuttering exterior. Inserting the connectors in the trapezoidal profiling at top and bottom fixes the foundation wall shuttering elements in their pre-determined spacing.

A major advantage of this shuttering is that the reinforcement can be installed on the foundation course without hindrance in advance once the lower connector has been inserted. Reinforcement can also be installed after the first wall has been put up (see illustration 4).

Shaped parts such as e.g. corner elements can be easily and quickly made by the client making cuts in the two permanently welded cross profiles.

Radial design is feasible by making cuts in the cross profiles (see illustration 8). After cutting the cross profiles the elements are simply bent into the shape desired (see illustrations 5 to 7).

The freestanding shuttering can be filled with concrete all round in two to three steps up to an element height of one meter.

We recommend the client connect the shuttering overlaps with three or four self-tapping screws in each case.

Since the shuttering is temporary we recommend supporting it externally using normal earth fill.

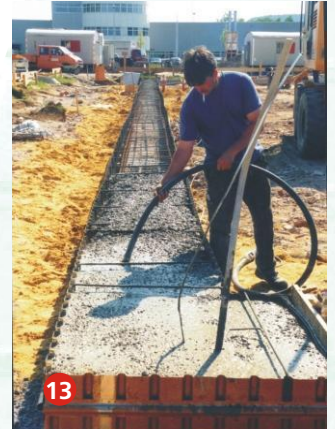


The base plate and the foundations can be shuttered simultaneously (please refer to the **FS 2001** light specifications on this). Another client variation for base plates is shown in photos 9 to 11.

Client affixing in place of shuttering is by a connecting bracket developed by **MSL** that is inserted in the upper trapezoidal profiling.

Photo 12 shows foundation insulation installed by a client.

The freestanding shuttering can be filled with concrete all round in two to three steps up to an element height of one meter (see photos 13 to 16).



# Advantages

- MSL** saves a lot of time
- MSL** allows reinforcement installation without hindrance
- MSL** elements are long but light
- MSL** makes cranes unnecessary
- MSL** makes sorting shuttering accessories unnecessary
- MSL** shuttering elements can be used for interior and exterior foundations
- MSL** system consists solely of walls and the upper and lower insertable connectors
- MSL** parts can easily be shaped on site
- MSL** no need to strip the framework after use
- MSL** no need to move shuttering
- MSL** is very quickly supplied

## MSL type FS 2001 G foundation shuttering system specifications



### MSL - Typ: FS 2001 G system specifications

The **MSL FS 2001 G** system is an innovative development of the **FS 2001 system**.

The **FS 2001 G** system consists of only 3 components.

- ① trapezoidally profiled interior and exterior foundation walls (of identical design)
- ② upper and lower gapping means (of identical design)
- ③ angle brackets as connecting elements for shaped parts such as interior and exterior corners

By contrast with the well-proven type **FS 2001** the **FS 2001 G** has a smooth inner side.

This has the advantage that the shuttering can be removed from the foundations and multiply reused once the concrete has set.

Furthermore, this saves concrete by comparison with profiled foundation walls as there is no concrete loss due to the profile.

Once the shuttering has been removed the foundation wall can easily be insulated and/or damp proofed. This design allows you to build up reinforcement before installing the shuttering (see photo 9).

Shaped parts as in photo 12 are created using the brackets supplied (photos 10 & 11). Self-tapping screws are used to join the brackets with the shuttering.

We recommend that shuttering overlaps be fastened together using self-tapping screws.



# FS 2001 G Multiply reusable foundation wall shuttering with smooth inner sides

FS 2001 G



The overlaps should always be secured top and bottom with separators as shown in photos 4 to 6.

Once the concrete has set the upper separators are removed from the foundation shuttering. The shuttering walls are then separated from the foundations and pulled off upwards through the upper separators (see photos 13 to 15).

Photos 16-18 show various foundation sections with the shuttering wholly or partially removed.

The mounting device in photo 15 can be loaned from **MSL**.

The photos show of a construction project in Dachau. Shuttering elements 0.8 to 1.2 meters high were used. Each element was used up to 4 times.

We recommend this type for major building projects involving foundations made in sections.

Please refer to the table and the building recommendation for further technical details.





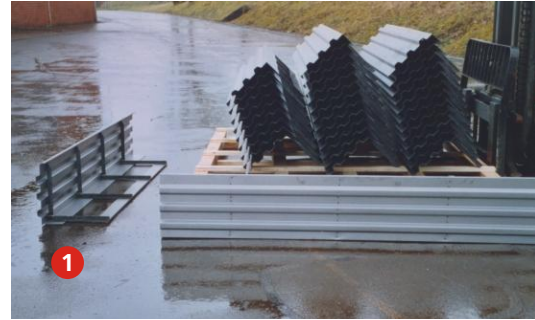
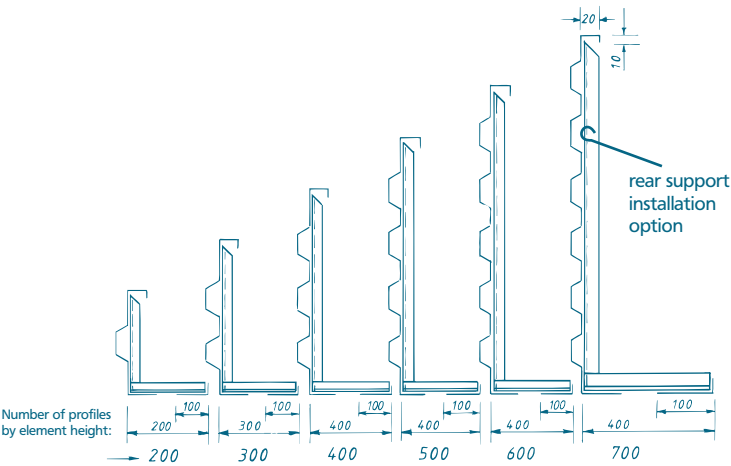


## System specifications

A 0.5 mm thick type with corrugated profiling is designated **FS 2050** by **MSL**. This foundation wall shuttering element type consists of the same corrugated metal sheeting as **MSL FS 2001 light**.

As it has additional reinforcement welded onto its inner wall **FS 2050** elements can be filled with concrete to a height of 1.0 meter when standing by themselves. The photos show foundation shuttering for a prefabricated house with the base plate installed at the same time. Foundations and base plate were concreted in a single work step. Shaped parts such as the inner and outer corners (photos 4 to 8) were easily and quickly created in their correct positions by cutting by the client (photos 1 & 2). Photos 7 and 8 show the additional reinforcing half way up the foundations with separators installed. Photo 11 shows client insulation on the foundation exterior. As in the **FS 2050** additional separators are installed half way up the foundations to deal with the fresh concrete pressure assembly time increases by comparison with the **FS 2001 light** (see diagram pages 1-2). If there is little space due to very thick reinforcement we recommend **FS 2001** or **FS 2001 light** shuttering. A pressure board can be nailed to the foundation course to ensure a straight foundation base. Since the shuttering is temporary we recommend filling it from the outside with soil before concreting.

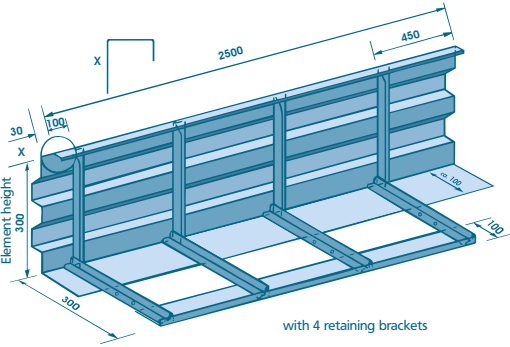




The **MSL FS 2040** system was developed as base edge shuttering and single-sided foundation wall shuttering. The 2.53 m long shuttering elements consist merely of 0.5 mm thick sheet metal that is greatly reinforced by **MSL** trapezoidal profiling. On the upper shuttering parts the **MSL** elements are canted approximately 2.0 cm inwards and 1.0 cm downwards. This improves stability but primarily forms a safety edging preventing cut injuries when climbing over the shuttering. The elements are very light due to the trapezoidal sheet metal being a mere 0.5 mm thick.

The wide element base of 20 cm to 40 cm width depending on height makes for stability of positioning.

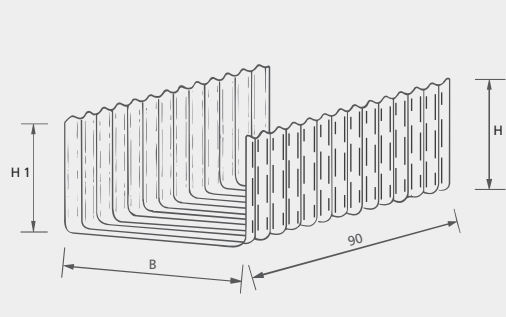
To make sure this surface does not act over the entire width like a separating piece of metal sheeting between foundation course and base or foundations themselves it is split into at least two parts. The gap ensures that a one-piece concrete core lies between the pressure compensation metal sheeting and the lateral edging shuttering sheet metal.



The nominal length of the **FS 2040** is 2.5 m. The 3 cm overlap at the joint is not included in **MSL** dimensional calculations. At corners the elements are butt jointed. **MSL** can supply special corner connection sectioning on request. The circular type in photos 2 and 3 was created by the client cutting the installation base area and upper canting. The **FS 2040** system is called **SRA** by **MSL** when used as base edge shuttering. Please refer to the **MSL DRA SRA** brochure or our [www.msl-bauartikel.de](http://www.msl-bauartikel.de) Internet site for further details.



Also available in shaft-profile, perforated expanded metal models for ground tables **Type FSL-U**



### MSL - girder casing system Type FS-U-Shaped

The **MSL** girder casing system is closed to the bottom. It consists of individual shaft-profile elements which are manufactured bent in a U-shape in lengths of approx. 90 cm. When laying, 1-2 shafts are overlapped. Angled models can be created with no problem by cutting on site. The fittings are assembled using squared timber by nailing it onto impact points. A straight foundation is achieved by nailing long pieces of squared timber at the top (Photo 2, 3, 4 and 6).



Top spacers with a support have proven to be beneficial for squared timber (Photos 5, 7, 8). In the pile foundation area (Photo 5a), the required openings of the construction steel lead-through can be created easily with a Flex. The 0.5 mm thick shaft-profiled casing elements are very dimensionally stable while the light weight remains the same.

The elements are combined with a minimal freight volume and shipped on a pallet (Photo 1). Before pouring the concrete, the casing should be filled with dirt to better absorb the pressure from the fresh concrete from outside or should be stayed with conventional supports. The elements are manufactured in width and height  $H1 + H2$  according to your specifications.

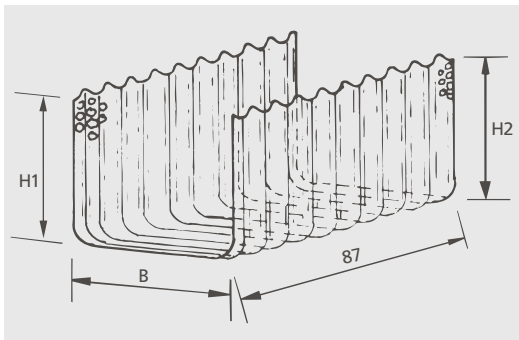
Photos 7+8 show two-part recess frames made of shaft-profile steel plates. The casing is bent into a U-shape at the factory and has two perforations each. On site the casing is bent and attached to the girder or strap casing (Photo 8, 8a). The system FS-U is the most affordable **MSL** model.

# Foundation shuttering system for strip and single foundations

FSL - U Form



The **MSL** type **FSL-U** is comparable with the **FS-U** type in the system employed. The elements have corrugated profiling and are perforated and bent into a U shape ex works. They are made of 0.75 mm thick sheet metal. Element length is approximately 37 cm. The perforated sheet metal with corrugated profiling is identical to the **MSL** material used in joints between walls and for bases. We would be happy to send you test reports on it from the **University of Rostock's** "Institut fuer Baukonstruktion und Bauphysik" on request.



Corners can easily be made by the client by cutting and tying with wire on site. Photos 1, 3 and 4 show a building section with shuttering partially filled with concrete, soil or still freestanding.

Photo 10 shows client foundation insulation. Shuttering support is done as for the **FS-U** type.



# MSL - Montageanleitung

## MSL Assembly Instructions

There are several ways to install the MSL casing system, depending on the local conditions. The trapezoid-profiled models FS 2001 and FS2001 G, for example, can be erected as in the following photos 1-5. This version makes it easier to insert the spacer. Photos 6-11 show an assembly variation for erecting the shaft profile model FS2001 light and Fs2050.



1 The casing element should be placed flat on the outside, then the lower brackets are to be fit into the profiling. 2 After you have tipped the casing at a 90 degree angle, it should stand on the lower brackets without additional help (Then the reinforcement can be attached). 3 The casing element is standing. 4 The 2nd element is fit into place 5 Finally, the upper press-in brackets are fit into place. They keep the lateral sections fixed at the prescribed distance.



6 2 casing elements are stood up with the insides touching each other (Attention: both cross-sections are on the outside in each case.) Both lateral sections are placed overlapped by the length of the bracket. 7 The casing is laid and placed onto the side with the hung brackets. 8 9 10 Both lateral sections are moved into 2 different directions until the ends are parallel. Then the brackets act like a joint. 11 The casing is standing, now finally the upper brackets are placed. They keep the lateral sections fixed at the prescribed distance.



Formed parts, such as interior or exterior edges, are created with a right angle grinder through cuts into the cross-sections and bending them to the desired shape. See pictures from 12 to 16

# Offer texts

## 1 MSL foundation wall shuttering systems of type FS 2001

To supplying \_\_\_\_\_ square meters of foundation shuttering of 3.1 m long pre-fab trapezoidally profiled elements with reinforcement welded on ex works and installing same in the foundation ditching as specified by the maker.

Make: **MSL**

Dimensions:  
Height 1 \_\_\_\_\_ cm  
Height 2 \_\_\_\_\_ cm  
Foundation width \_\_\_\_\_ cm  
Total \_\_\_\_\_ running meters.

Labour EUR / running meter:  
sqm shuttering total: \_\_\_\_\_  
Grand total \_\_\_\_\_

## 2 MSL foundation wall shuttering systems of type FS 2001 G

To supplying \_\_\_\_\_ square meters of pre-fab foundation shuttering of 3.1 m long elements with smooth inner walls that is multiply reusable and installing same in foundation ditching as specified by the maker.

Make: **MSL**

Dimensions:  
Height 1 \_\_\_\_\_ cm  
Height 2 \_\_\_\_\_ cm  
Foundation width \_\_\_\_\_ cm  
Total \_\_\_\_\_ running meters.

Labour EUR / running meter:  
sqm shuttering total: \_\_\_\_\_  
Grand total \_\_\_\_\_

## 3 MSL foundation wall shuttering systems of type FS 2001 light

To supplying \_\_\_\_\_ square meters of foundation shuttering of 3.5 m long pre-fab corrugated elements with reinforcement welded on ex works and installing same in the foundation ditching as specified by the maker.

Make: **MSL**

Dimensions:  
Height 1 \_\_\_\_\_ cm  
Height 2 \_\_\_\_\_ cm  
Foundation width \_\_\_\_\_ cm  
Total \_\_\_\_\_ running meters.

Labour EUR / running meter:  
sqm shuttering total: \_\_\_\_\_  
Grand total \_\_\_\_\_

## 4 MSL foundation wall shuttering systems of type FS 2050

To supplying \_\_\_\_\_ square meters of foundation shuttering of 3.5 m long pre-fab corrugated elements with reinforcement welded on both inner and outer sides ex works and installing same in the foundation ditching as specified by the maker.

Make: **MSL**

Dimensions:  
Height 1 \_\_\_\_\_ cm  
Height 2 \_\_\_\_\_ cm  
Foundation width \_\_\_\_\_ cm  
Total \_\_\_\_\_ running meters.

Labour EUR / running meter:  
sqm shuttering total: \_\_\_\_\_  
Grand total \_\_\_\_\_

## 5 MSL foundation wall shuttering systems of type FS 2040

To supplying \_\_\_\_\_ square meters of 2.53 m long foundation shuttering elements and installing same in foundation ditching as specified by the maker.

Make: **MSL**

Dimensions:  
Height \_\_\_\_\_ cm  
Total \_\_\_\_\_ running meters.

Labour EUR / running meter:  
sqm shuttering total: \_\_\_\_\_  
Grand total \_\_\_\_\_

## 6 MSL foundation beam shuttering type FS-U-shaped

To supplying \_\_\_\_\_ square meters of foundation beam shuttering in elements u-shaped ex works of 90 cm length and installing same as specified by the maker.

Make: **MSL**

Material  
Corrugated sheet metal

Dimensions:  
Height 1 \_\_\_\_\_ cm  
Height 2 \_\_\_\_\_ cm  
Foundation width \_\_\_\_\_ cm  
Total \_\_\_\_\_ running meters.

Labour EUR / running meter:  
sqm shuttering total: \_\_\_\_\_  
Grand total \_\_\_\_\_



## 7 MSL foundation shuttering type FSL-U-shaped

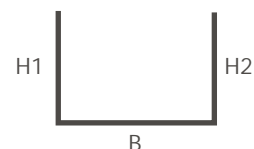
To supplying \_\_\_\_\_ square meters of foundation shuttering in elements u-shaped ex works of 87 cm length and installing same as specified by the maker.

Make: **MSL**

Material:  
Corrugated perforated sheet metal

Dimensions:  
Height 1 \_\_\_\_\_ cm  
Height 2 \_\_\_\_\_ cm  
Foundation width \_\_\_\_\_ cm  
Total \_\_\_\_\_ running meters.

Labour EUR / running meter:  
sqm shuttering total: \_\_\_\_\_  
Grand total \_\_\_\_\_



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MSL -Type	Foundation height H1 cm	Foundation width cm	With laid base plate H2 cm	Total foundation length m	Requirement/ Due date	Calculation/ Due date
<b>FS 2001</b>						
<b>FS 2001 G</b>						
<b>FS 2001 light</b>						
<b>FS 2050</b>						
<b>FS 2040</b>						
<b>FS U-Form</b>						
<b>FSL U-Form</b>						
Company	.....					
Contact person	..... E-Mail: .....					
Phone/Fax no.	.....					
Delivery address	Company: .....					
	Street: .....		Zip: .....		City: .....	
	Contact person: .....			Tel: .....		

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**MSL** Fundamentseitenschalungssysteme im Baustelleneinsatz

- FS 2001 4 min.
- FS 2001 G 10 min.
- FS 2001 light 9 min.
- FS 2050 11 min.
- (Ges. Länge 34 min.)

**MSL** Fundamentseitenschalung Typ FS 2001 und FS 2001 light im Baustelleneinsatz (Filmlänge 7,5 min.)

**MSL** Fundamentseitenschalung Typ FS 2001 light mit Bodenplattenabstellung im Radius. Bauvorhaben Fachhochschule Schweinfurt (Filmlänge 25 min.)

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