

# PHILIPPGROUP

## PHILIPP Fixing sockets



VB3-B-001-en - 01/16

**Installation and Application Instruction**

## Transport and mounting systems for prefabricated building

### ■ Technical department

Our staff will be pleased to support your planning phase with suggestions for the installation and use of our transport and mounting systems for precast concrete construction.

### ■ Special designs

Customized to your particular needs.

### ■ Practical tests on site

We ensure that our concepts are tailored precisely to your requirements.

### ■ Inspection reports

For documentation purposes and your safety.

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Our engineers will be pleased to instruct your technicians and production personnel at your plant, to advise on the installation of precast concrete parts and to assist you in the optimisation of your production processes.

### ■ High safety level when using our products

Close cooperation with federal materials testing institutes (MTIs), and official approvals for the use of our products and solutions whenever necessary.

### ■ Software solutions

The latest design software, animated videos and CAD libraries can always be found under [www.philipp-gruppe.de](http://www.philipp-gruppe.de).

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## General notes

This fixing system is suitable for all fixations a special approval is not required for. To determine the forces which act in the fixing system in the precast concrete unit and therefore to choose the correct fixing socket this Installation and Application Instruction is of some help.

Typical applications are e.g. the fixation of push-pull props, windows, doors etc.

All given loads are valid for a min. concrete strength of **25 N/mm<sup>2</sup>**.



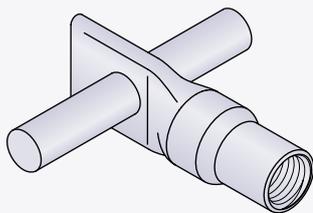
Fixing sockets must not be taken for the transport of precast concrete units. For the transport of precast concrete units we recommend to use special transport anchor systems.

## Fixing socket specification

- The sockets of all fixing sockets are made of a high precision steel tube
- Fixing sockets are electro-galvanised
- Most of the fixing sockets are also available in stainless steel
- Fixing sockets have a metric thread

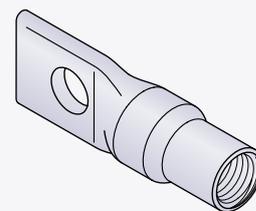
## System overview

The fixing system consists of the following four different socket types.



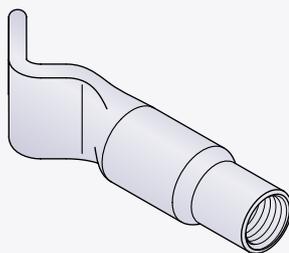
### ■ Fixing socket with cross pin

Load transmission into the concrete is ensured by the cross pin.



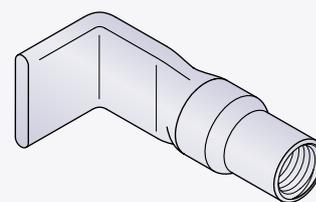
### ■ Fixing socket with cross hole

Load transmission into the concrete is ensured by a stirrup, which has to be installed by the customer.



### ■ Fixing socket with waved end

Load transfer into the concrete is ensured by the waved end of the socket.



### ■ Fixing socket with angular end

Load transfer into the concrete is ensured by the angular end of the socket.

Special designs are possible at any time.

### Fixing socket with cross pin

**Table 1: Load classes and dimensions**

Ref.-No. electro- galvanised	Type M	Load class	Perm. F [kN]	Dimensions [mm]					Weight [kg/100 pcs.]
				ØD	h	e	d	f	
6807212060	12	5.0	5.0	17.0	60	13.0	50.0	10	7.5
6807216080	16	8.0	8.0	22.5	80	19.0	50.0	12	14.6
6807216100	16	10.0	10.0	22.5	100	19.0	50.0	12	16.5
6807220095	20	12.5	12.0	27.0	95	20.0	85.0	14	27.3
6807220115	20	14.0	13.0	27.0	115	20.0	85.0	14	30.8
6807224120	24	18.0	18.0	32.0	120	24.0	85.0	14	46.0

The weight of 1.0 t corresponds to 10.0 kN.

#### Minimum centre distance

If fixing sockets are installed the centre distance must be at least  $2 \times \min. a_r$  resp.  $2 \times \min. b_r$  (see Table 2). Depending on the application in slabs or walls the corresponding minimum centre distance has to be chosen (see Picture 2 and 3).

#### Edge distance

Fixing sockets can be installed with the min. distance  $a_r$  resp.  $b_r$  (Table 2) to the edge. Depending on the application in slabs or walls the corresponding minimum edge distance has to be chosen (see Picture 2 and 3).

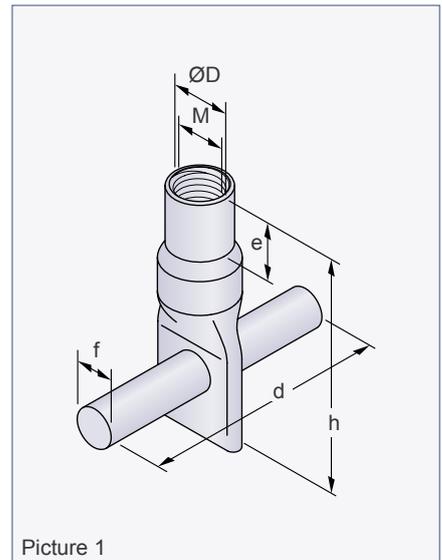
**Table 2: Centre/edge distances, minimum element thicknesses**

Type	Edge distance min. $a_r$ [mm]	Edge distance min. $b_r$ [mm]	Element thickness d [mm]
6807212060	90	120	85
6807216080	120	160	105
6807216100	150	200	125
6807220095	150	200	125
6807220115	180	240	145
6807224120	180	240	145

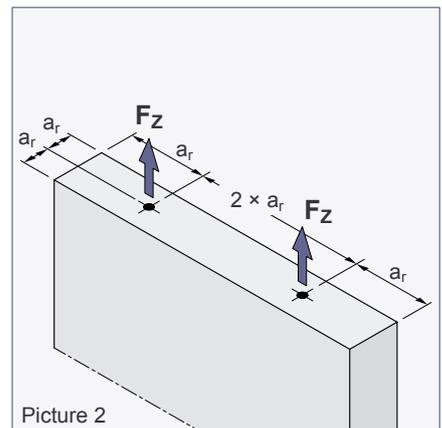
In order to ensure a save load transmission by the installed Fixing socket the basic conditions given in Table 2 must be paid attention to. If a higher concrete cover is required, the dimensions of the concrete element must be adapted accordingly.

It has to be paid attention to the fact that a minimum strength of **25 N/mm<sup>2</sup>** at the first time of loading the concrete must have when Fixing sockets are used.

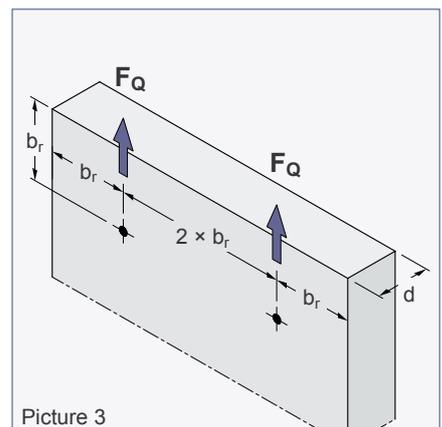
In case of diagonal tension axial as well as lateral tension act simultaneously on the Fixing socket. Thereby both force components have to fulfil the adjoining equation. This means that for an angle of load application between 0° to 90° the same permissible force is valid.



Picture 1



Picture 2



Picture 3

$$\sqrt{F_z^2 + F_Q^2} \leq \text{perm. } F$$

## Fixing socket with cross hole

**Table 3: Load classes and dimensions**

Ref.-No. electro- galvanised	Type	Load class	Perm. F [kN]	Dimensions				Weight [kg/100 pcs.]
	M			ØD [mm]	h [mm]	e [mm]	Ød [mm]	
6801206040	6	1.5	1.5	9.0	40	8	6.3	1.0
6801208040	8	2.0	2.0	11.0	40	10	8.3	1.0
6801208050	8	2.5	2.5	11.0	50	10	8.3	1.4
6801210050	10	3.5	3.5	13.5	50	11	8.3	1.9
6801212060	12	5.0	5.0	17.0	60	13	12.2	3.8
6801212070	12	6.0	6.0	17.0	70	13	12.2	4.3
6801216070	16	7.0	7.0	22.5	70	19	12.2	9.4
6801216080	16	8.0	8.0	22.5	80	19	12.2	10.8
6801216100	16	10.0	10.0	22.5	100	19	12.2	12.4
6801216120	16	12.0	12.0	22.5	120	19	12.2	14.4
6801220100	20	12.5	12.5	27.0	100	20	14.3	17.0
6801220120	20	14.0	14.0	27.0	120	20	14.3	21.3
6801224120	24	18.0	18.0	32.0	120	24	14.3	28.0
6801230150	30	27.5	27.5	42.0	150	30	17.2	66.0

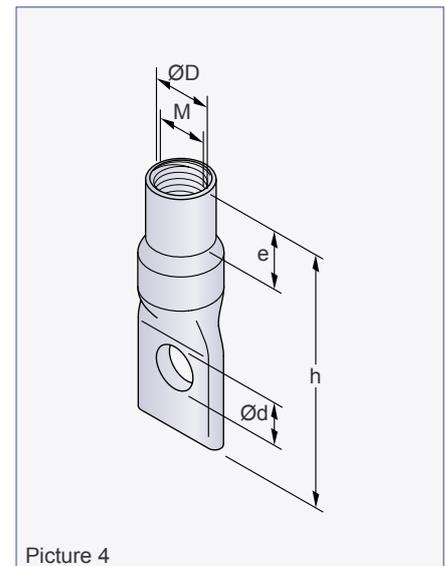
The weight of 1.0 t corresponds to 10.0 kN.

### Minimum centre distance

If fixing sockets are installed the centre distance must be at least  $2 \times \min. a_r$  resp.  $2 \times \min. b_r$  (see Table 4). Depending on the application in slabs or walls the corresponding minimum centre distance has to be chosen (see Picture 5 and 6).

### Edge distance

Fixing sockets can be installed with the min. distance  $a_r$  resp.  $b_r$  (Table 4) to the edge. Depending on the application in slabs or walls the corresponding minimum edge distance has to be chosen (see Picture 5 and 6).



Picture 4

Fixing socket with cross hole

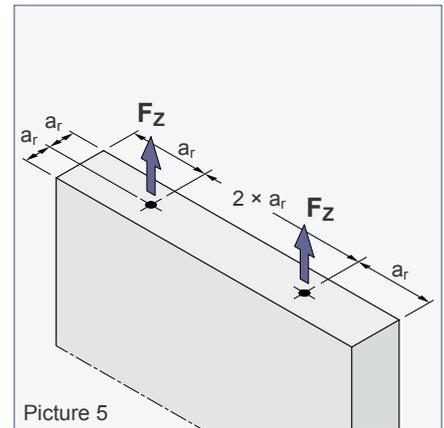
Table 4: Centre/edge distances, minimum element thicknesses

Ref.-No. electro-galvanised	Edge distance min. $a_r$ [mm]	Edge distance min. $b_r$ [mm]	Element thickness d [mm]
6801206040	60	80	65
6801208040	60	80	65
6801208050	75	100	75
6801210050	75	100	75
6801212060	90	120	85
6801212070	105	140	95
6801216070	105	140	95
6801216080	120	160	105
6801216100	150	200	125
6801216120	180	240	145
6801220100	150	200	125
6801220120	180	240	145
6801224120	180	240	145
6801230150	225	300	175

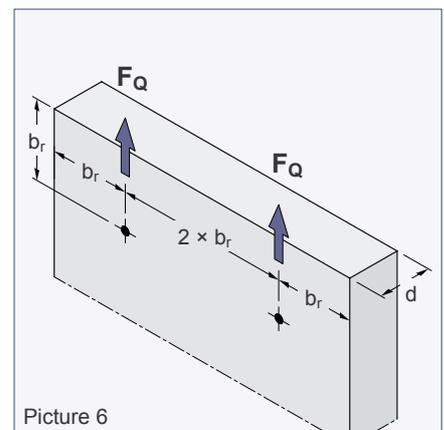
In order to ensure a save load transmission by the installed Fixing socket the basic conditions given in Table 4 must be paid attention to. If a higher concrete covering is required, the dimensions of the concrete element must be changed accordingly.

It has to be paid attention to the fact that a minimum strength of **25 N/mm<sup>2</sup>** at the first time of loading the concrete must have when Fixing sockets are used.

In case of diagonal tension axial as well as lateral tension act simultaneously on the Fixing socket. Thereby both force components have to fulfil the adjoining equation. This means that for an angle of load application between 0° to 90° the same permissible force is valid.



Picture 5



Picture 6

$$\sqrt{F_z^2 + F_Q^2} \leq \text{perm. } F$$

## Fixing socket with waved end

**Table 5: Load classes and dimensions**

Ref.-No. electro- galvanised	Type	Load class	Perm. F [kN]	Dimensions [mm]			Weight [kg/100 pcs.]
	M			$\varnothing D$	h	e	
6803210040	10	3.0	3.0	13.5	40	11.0	1.7
6803210060	10	4.0	4.0	13.5	60	11.0	3.2
6803212050	12	4.0	4.0	17.0	50	13.0	3.8
6803212070	12	6.0	6.0	17.0	70	13.0	4.3
6803216070	16	7.0	7.0	22.5	70	19.0	8.1
6803216100	16	10.0	10.0	22.5	100	19.0	14.7
6803220100	20	12.5	12.5	27.0	100	20.0	17.5
6803224100	24	16.0	16.0	32.0	100	24.0	25.8

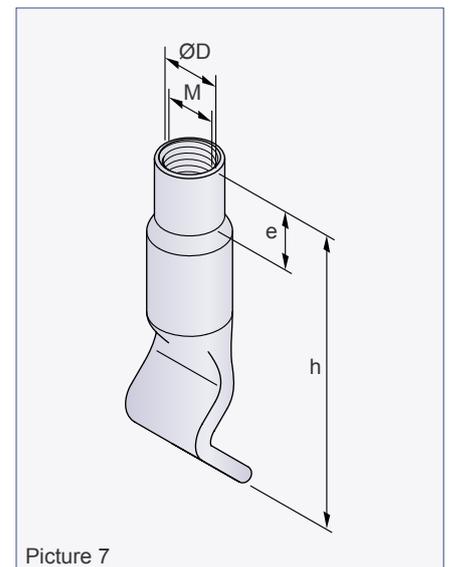
The weight of 1.0 t corresponds to 10.0 kN.

### Minimum centre distance

If Fixing sockets are installed the centre distance must be at least  $2 \times \min. a_r$  resp.  $2 \times \min. b_r$  (see Table 6). Depending on the application in slabs or walls the corresponding minimum centre distance has to be chosen (see Picture 8 and 9).

### Edge distance

Fixing sockets can be installed with the min. distance  $a_r$  resp.  $b_r$  (Table 6) to the edge. Depending on the application in slabs or walls the corresponding minimum edge distance has to be chosen (see Picture 8 and 9).

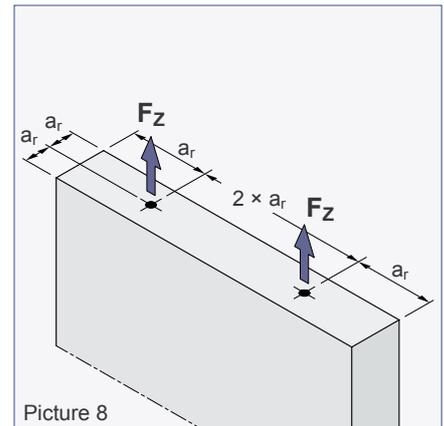


Picture 7

### Fixing socket with waved end

**Table 6: Centre/edge distances, minimum element thicknesses**

Ref.-No. electro- galvanised	Edge distance min. $a_r$ [mm]	Edge distance min. $b_r$ [mm]	Element thickness $d$ [mm]
6803210040	75	100	75
6803210060	90	120	85
6803212050	75	120	75
6803212070	105	140	95
6803216070	105	140	95
6803216100	150	200	125
6803220100	150	200	125
6803224100	180	240	145

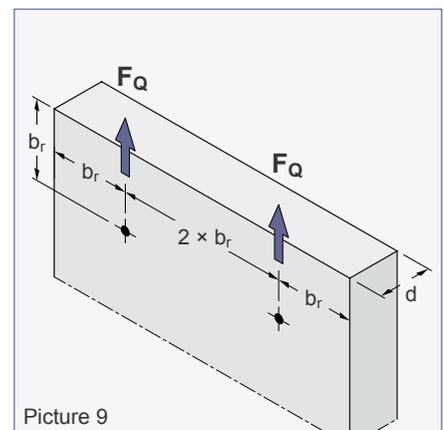


Picture 8

In order to ensure a save load transmission by the installed Fixing socket the basic conditions given in Table 6 must be paid attention to. If a higher concrete covering is required, the dimensions of the concrete element must be changed accordingly.

It has to be paid attention to the fact that a minimum strength of **25 N/mm<sup>2</sup>** at the first time of loading the concrete must have when Fixing sockets are used.

In case of diagonal tension axial as well as lateral tension act simultaneously on the Fixing socket. Thereby both force components have to fulfil the adjoining equation. This means that for an angle of load application between 0° to 90° the same permissible force is valid.



Picture 9

$$\sqrt{F_z^2 + F_Q^2} \leq \text{perm. } F$$

## Fixing socket with angular end

**Table 7: Load classes and dimensions**

Ref.-No. electro- galvanised	Type M	Load class	perm. F [kN]	Dimensions [mm]				Weight [kg/100 pcs.]
				ØD	h	e	d	
6805208035	8	1.8	1.8	11.0	35	10	25	1.9
6805210060	10	4.0	4.0	13.5	60	11	25	4.6
6805212045	12	3.5	3.5	17.0	45	13	25	4.8
6805212070	12	6.0	6.0	17.0	70	13	25	7.4
6805216060	16	6.0	6.0	22.5	60	19	35	10.1
6805216100	16	10.0	10.0	22.5	100	19	35	14.8
6805216130	16	12.0	12.0	22.5	130	19	35	17.9
6805220100	20	12.5	12.5	27.0	100	20	35	24.0

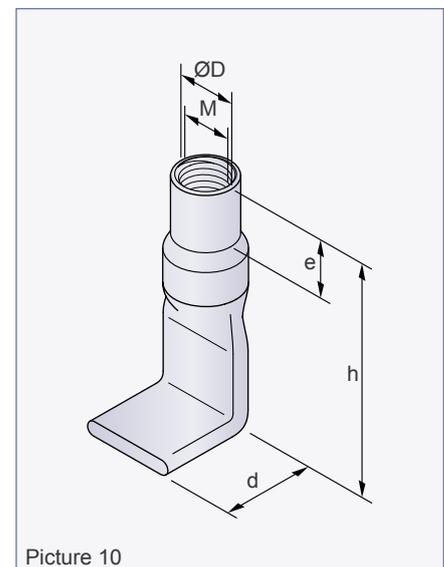
The weight of 1.0 t corresponds to 10.0 kN.

### Minimum centre distance

If Fixing sockets are installed the centre distance must be at least  $2 \times \min. a_r$  resp.  $2 \times \min. b_r$  (see Table 8). Depending on the application in slabs or walls the corresponding minimum centre distance has to be chosen (see Picture 11 and 12).

### Edge distance

Fixing sockets can be installed with the min. distance  $a_r$  resp.  $b_r$  (Table 8) to the edge. Depending on the application in slabs or walls the corresponding minimum edge distance has to be chosen (see Picture 11 and 12).

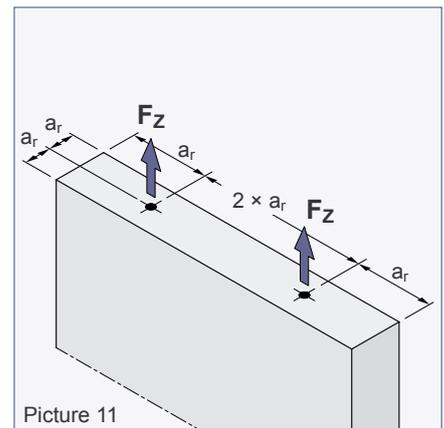


Picture 10

Fixing socket with angular end

Table 8: Centre/edge distances, minimum element thicknesses

Ref.-No. electro- galvanised	Edge distance min. $a_r$ [mm]	Edge distance min. $b_r$ [mm]	Element thickness $d$ [mm]
6805208035	60	80	55
6805210060	75	120	85
6805212045	90	120	65
6805212070	105	140	95
6805216060	105	140	85
6805216100	150	200	125
6805216130	200	250	155
6805220100	150	200	125

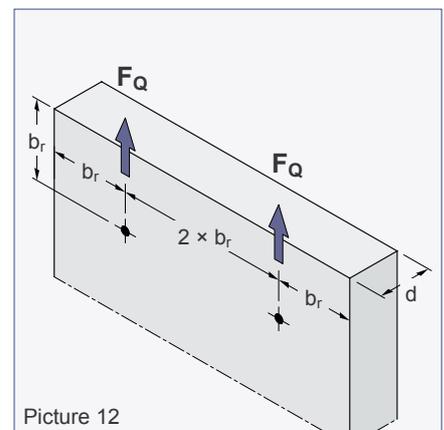


Picture 11

In order to ensure a save load transmission by the installed Fixing socket the basic conditions given in table 8 must be paid attention to. If a higher concrete covering is required, the dimensions of the concrete element must be changed accordingly.

It has to be paid attention to the fact that a minimum strength of **25 N/mm<sup>2</sup>** at the first time of loading the concrete must have when Fixing sockets are used.

In case of diagonal tension axial as well as lateral tension act simultaneously on the Fixing socket. Thereby both force components have to fulfil the adjoining equation. This means that for an angle of load application between 0° to 90° the same permissible force is valid.



Picture 12

$$\sqrt{F_z^2 + F_Q^2} \leq \text{perm. } F$$

Our customers trust us to deliver. We do everything in our power to reward their faith and we start each day intending to do better than the last. We provide strength and stability in an ever-changing world.

## Welcome to the PHILIPP Group

Sustainable  
solutions



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