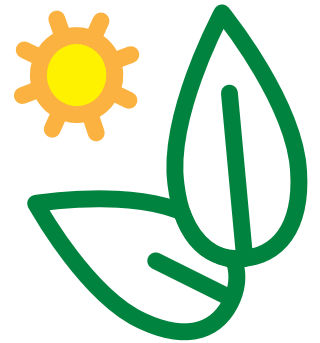


# Collectors

The Energy To Meet Your Needs



In the thermal solar energy range A.O. Smith can offer you 2 kinds of installations.

Firstly the solar systems that use thermal solar energy combined with an intelligent control system that makes the installation very energy efficient. This kind of installation is controlled by a high efficiency solar gas water heater. The combination of condensing high efficiency with thermal solar energy integrated in one solution minimizes the gas consumption of the installation.

A.O. Smith also provides installations for smaller applications in the configuration of indirect solar systems. These solar systems consist of an indirect tank which is connected to an already existing central heating system or boiler.

For any system you choose, A.O. Smith can deliver the required parts and several accessories.

# Collectors and Drain back system

Sustainability, efficiency and environmental friendliness are the main focus of A.O. Smith's renewable product range and especially our solar collectors. The heart of an A.O. Smith solar collector is a full-plate copper absorber with an eco-friendly vacuum coating. The guaranteed quality of the coating ensures an exceptionally long life of the collector, together with a glass seal set in the frame which prevents the ingress of moisture and dirt into these high-performance collectors. An aluminum casing makes the solar collectors suitable for use in any environment.

To increase the life of the collectors and prevent extremely high temperatures a drain back module is available as an option. By mounting the drain back module directly below the collectors the required pump capacity is reduced and thus the power consumption of the fully modulating solar pump is reduced to an absolute minimum.

The modular constructions of our collectors allow for a variety of ways to be integrated into the roof design: roof build-on, roof build-in, flat roof frames or wall mounting frames are available. The flat roof frame sets and the wall mounting frame sets are based on the angle they are positioned. Dependant on the roof and the way of mounting the flat roof frames are available with or without concrete blocks. All the sets can be equipped with a drain back system.

A.O. Smith solar collectors are supplied in sets that include all necessary tools and parts. A.O. Smith solar collectors meet the highest standards and are Solar Keymark certified to be in full compliance with all major incentive and Tax-programs.

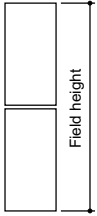
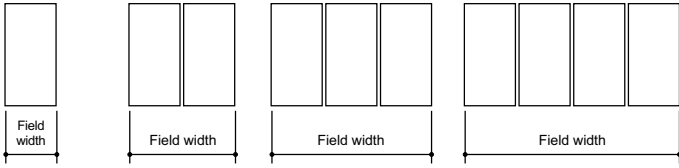


Collectors are an essential part of the solar system. Therefore A.O. Smith offers several application options. By using the A.O. Smith Sizing program you can calculate the perfect solution, including collectors. You can find the program at [www.aosmith.co.uk](http://www.aosmith.co.uk).



# Technical specifications and dimensions

## Vertical collectors



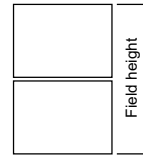
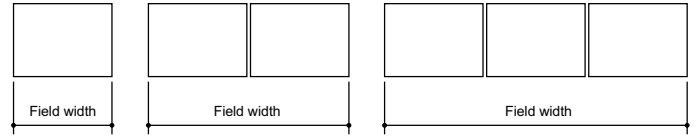
| FIELD WIDTH        |                      |       |       |       |       |                          |      |
|--------------------|----------------------|-------|-------|-------|-------|--------------------------|------|
|                    | Number of collectors |       |       |       |       | For each extra collector |      |
| Vertical collector | 1                    | 2     | 3     | 4     | 5     |                          | +122 |
| in cm              | 116.7                | 238.7 | 360.7 | 482.7 | 604.7 |                          |      |

| FIELD HEIGHT       |                      |       |  |
|--------------------|----------------------|-------|--|
|                    | Number of collectors |       |  |
| Vertical collector | 1                    | 2     |  |
| in cm              | 206.7                | 418.7 |  |

| TECHNICAL SPECIFICATIONS       |                |                   |
|--------------------------------|----------------|-------------------|
| Net collector surface          | m <sup>2</sup> | 2.20              |
| Total collector surface        | m <sup>2</sup> | 2.52              |
| Length                         | mm             | 2100              |
| Width                          | mm             | 1200              |
| Height                         | mm             | 110               |
| Frame material                 |                | Aluminium         |
| Glass                          |                | ESG Sun glass     |
| Insulation                     |                | 60 mm Rockwool    |
| Heat absorber                  |                | 100% Copper plate |
| Maximum working pressure       | kPa            | 600               |
| Test pressure                  | kPa            | 1000              |
| Capacity unit of solar fluid   | l              | 2.2               |
| Flow of solar fluid            | l/h            | 15 tot 40         |
| Maximum admissible temperature | °C             | 208               |

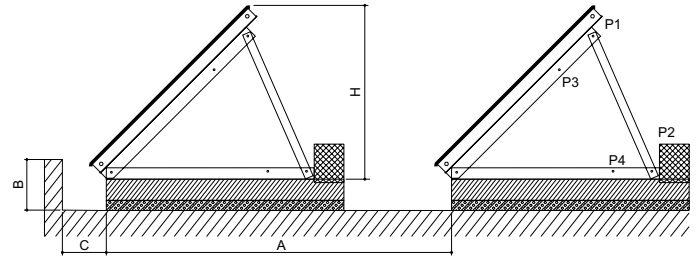
| SPECIFICATIONS       |          |          |           |        |                    |
|----------------------|----------|----------|-----------|--------|--------------------|
| Collector type       | Width    | Height   | Thickness | Weight | Capacity of liquid |
| Vertical collector   | 116.7 cm | 206.7 cm | 11 cm     | 44 kg  | 2.2 L              |
| Horizontal collector | 206.7 cm | 116.7 cm | 11 cm     | 44 kg  | 2.2 L              |

## Horizontal collectors



| FIELD WIDTH          |                      |       |       |       |                          |
|----------------------|----------------------|-------|-------|-------|--------------------------|
|                      | Number of collectors |       |       |       | For each extra collector |
| Horizontal collector | 1                    | 2     | 3     | 4     |                          |
| in cm                | 206.7                | 418.7 | 630.7 | 842.7 |                          |

| FIELD HEIGHT         |                      |       |
|----------------------|----------------------|-------|
|                      | Number of collectors |       |
| Horizontal collector | 1                    | 2     |
| in cm                | 116.7                | 238.7 |



| DISTANCE BETWEEN COLLECTORS |            |     |     |     |
|-----------------------------|------------|-----|-----|-----|
| Collector type              | Distance A |     |     |     |
|                             | 20°        | 30° | 45° | 60° |
| Horizontal collector        | 270        | 310 | 320 | 330 |
| Vertical collector          | 440        | 515 | 600 | 650 |

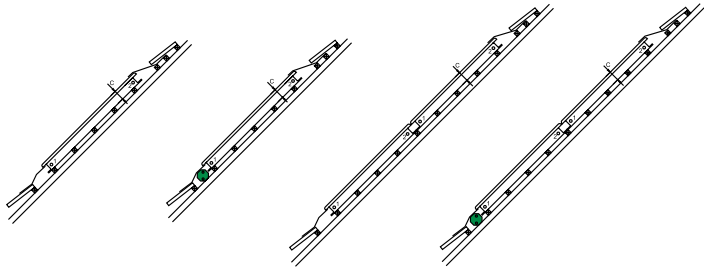
| HEIGHT ASSEMBLED COLLECTORS |          |     |     |     |
|-----------------------------|----------|-----|-----|-----|
| Collector type              | Height H |     |     |     |
|                             | 20°      | 30° | 45° | 60° |
| Horizontal collector        | 53       | 71  | 93  | 110 |
| Vertical collector          | 71       | 104 | 147 | 180 |

| DISTANCE TO FRAME |            |
|-------------------|------------|
| Height balustrade | Distance C |
| 30                | 20         |
| 40                | 40         |
| 50                | 70         |
| 60                | 100        |
| 70                | 125        |
| 80                | 150        |
| 90                | 180        |
| 100               | 205        |
| 110               | 230        |

| POSITION STAND        |          |
|-----------------------|----------|
| Angle                 | Position |
| <b>SHORT TRAVERSE</b> |          |
| 20°                   | P1-P2    |
| 30°                   | P3-P4    |
| <b>LONG TRAVERSE</b>  |          |
| 45°                   | P1-P2    |
| 60°                   | P3-P4    |



# Collectors roof-build in construction



| ROOF MOUNTING KIT<br>SINGLE ROW / HORIZONTAL / WITHOUT DRAIN BACK |                      |                |    |           |   |  |
|---|----------------------|----------------|----|-----------|---|--|
| Art. No   | Number of collectors | Number of rows | DB | Direction |   |  |
|   |                      |                |    | H         | V |  |
| SPBI 01 1 H   | 1                    | 1              | -  | X         | - |  |
| SPBI 02 1 H   | 2                    | 1              | -  | X         | - |  |
| SPBI 03 1 H   | 3                    | 1              | -  | X         | - |  |
| SPBI 04 1 H   | 4                    | 1              | -  | X         | - |  |
| SPBI 05 1 H   | 5                    | 1              | -  | X         | - |  |
| SPBI 06 1 H   | 6                    | 1              | -  | X         | - |  |
| SPBI 07 1 H   | 7                    | 1              | -  | X         | - |  |
| SPBI 08 1 H   | 8                    | 1              | -  | X         | - |  |
| SPBI 09 1 H   | 9                    | 1              | -  | X         | - |  |
| SPBI 10 1 H   | 10                   | 1              | -  | X         | - |  |
| SPBI 11 1 H   | 11                   | 1              | -  | X         | - |  |
| SPBI 12 1 H   | 12                   | 1              | -  | X         | - |  |
| SPBI 13 1 H   | 13                   | 1              | -  | X         | - |  |
| SPBI 14 1 H   | 14                   | 1              | -  | X         | - |  |
| SPBI 15 1 H   | 15                   | 1              | -  | X         | - |  |

| ROOF MOUNTING KIT<br>SINGLE ROW / VERTICAL / WITHOUT DRAIN BACK |                      |                |    |           |   |  |
|---|----------------------|----------------|----|-----------|---|--|
| Art. No   | Number of collectors | Number of rows | DB | Direction |   |  |
|   |                      |                |    | H         | V |  |
| SPBI 01 1 V   | 1                    | 1              | -  | -         | X |  |
| SPBI 02 1 V   | 2                    | 1              | -  | -         | X |  |
| SPBI 03 1 V   | 3                    | 1              | -  | -         | X |  |
| SPBI 04 1 V   | 4                    | 1              | -  | -         | X |  |
| SPBI 05 1 V   | 5                    | 1              | -  | -         | X |  |
| SPBI 06 1 V   | 6                    | 1              | -  | -         | X |  |
| SPBI 07 1 V   | 7                    | 1              | -  | -         | X |  |
| SPBI 08 1 V   | 8                    | 1              | -  | -         | X |  |
| SPBI 09 1 V   | 9                    | 1              | -  | -         | X |  |
| SPBI 10 1 V   | 10                   | 1              | -  | -         | X |  |
| SPBI 11 1 V   | 11                   | 1              | -  | -         | X |  |
| SPBI 12 1 V   | 12                   | 1              | -  | -         | X |  |
| SPBI 13 1 V   | 13                   | 1              | -  | -         | X |  |
| SPBI 14 1 V   | 14                   | 1              | -  | -         | X |  |
| SPBI 15 1 V   | 15                   | 1              | -  | -         | X |  |

| ROOF MOUNTING KIT<br>SINGLE ROW / HORIZONTAL / WITH DRAIN BACK |                      |                |    |           |   |  |
|--|----------------------|----------------|----|-----------|---|--|
| Art. No  | Number of collectors | Number of rows | DB | Direction |   |  |
|  |                      |                |    | H         | V |  |
| SPBI 01 1 DB H   | 1                    | 1              | X  | X         | - |  |
| SPBI 02 1 DB H   | 2                    | 1              | X  | X         | - |  |
| SPBI 03 1 DB H   | 3                    | 1              | X  | X         | - |  |
| SPBI 04 1 DB H   | 4                    | 1              | X  | X         | - |  |
| SPBI 05 1 DB H   | 5                    | 1              | X  | X         | - |  |
| SPBI 06 1 DB H   | 6                    | 1              | X  | X         | - |  |
| SPBI 07 1 DB H   | 7                    | 1              | X  | X         | - |  |
| SPBI 08 1 DB H   | 8                    | 1              | X  | X         | - |  |
| SPBI 09 1 DB H   | 9                    | 1              | X  | X         | - |  |
| SPBI 10 1 DB H   | 10                   | 1              | X  | X         | - |  |
| SPBI 11 1 DB H   | 11                   | 1              | X  | X         | - |  |
| SPBI 12 1 DB H   | 12                   | 1              | X  | X         | - |  |
| SPBI 13 1 DB H   | 13                   | 1              | X  | X         | - |  |
| SPBI 14 1 DB H   | 14                   | 1              | X  | X         | - |  |
| SPBI 15 1 DB H   | 15                   | 1              | X  | X         | - |  |

| ROOF MOUNTING KIT<br>SINGLE ROW / VERTICAL / WITH DRAIN BACK |                      |                |    |           |   |  |
|--|----------------------|----------------|----|-----------|---|--|
| Art. No  | Number of collectors | Number of rows | DB | Direction |   |  |
|  |                      |                |    | H         | V |  |
| SPBI 01 1 DB V   | 1                    | 1              | X  | -         | X |  |
| SPBI 02 1 DB V   | 2                    | 1              | X  | -         | X |  |
| SPBI 03 1 DB V   | 3                    | 1              | X  | -         | X |  |
| SPBI 04 1 DB V   | 4                    | 1              | X  | -         | X |  |
| SPBI 05 1 DB V   | 5                    | 1              | X  | -         | X |  |
| SPBI 06 1 DB V   | 6                    | 1              | X  | -         | X |  |
| SPBI 07 1 DB V   | 7                    | 1              | X  | -         | X |  |
| SPBI 08 1 DB V   | 8                    | 1              | X  | -         | X |  |
| SPBI 09 1 DB V   | 9                    | 1              | X  | -         | X |  |
| SPBI 10 1 DB V   | 10                   | 1              | X  | -         | X |  |
| SPBI 11 1 DB V   | 11                   | 1              | X  | -         | X |  |
| SPBI 12 1 DB V   | 12                   | 1              | X  | -         | X |  |
| SPBI 13 1 DB V   | 13                   | 1              | X  | -         | X |  |
| SPBI 14 1 DB V   | 14                   | 1              | X  | -         | X |  |
| SPBI 15 1 DB V   | 15                   | 1              | X  | -         | X |  |

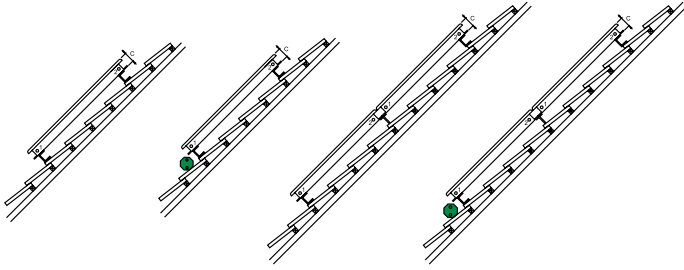
| ROOF MOUNTING KIT<br>DOUBLE ROW / HORIZONTAL / WITHOUT DRAIN BACK |                      |                |    |           |   |  |
|---|----------------------|----------------|----|-----------|---|--|
| Art. No   | Number of collectors | Number of rows | DB | Direction |   |  |
|   |                      |                |    | H         | V |  |
| SPBI 02 2 H   | 2                    | 2              | -  | X         | - |  |
| SPBI 04 2 H   | 4                    | 2              | -  | X         | - |  |
| SPBI 06 2 H   | 6                    | 2              | -  | X         | - |  |
| SPBI 08 2 H   | 8                    | 2              | -  | X         | - |  |
| SPBI 10 2 H   | 10                   | 2              | -  | X         | - |  |
| SPBI 12 2 H   | 12                   | 2              | -  | X         | - |  |
| SPBI 14 2 H   | 14                   | 2              | -  | X         | - |  |

| ROOF MOUNTING KIT<br>DOUBLE ROW / VERTICAL / WITHOUT DRAIN BACK |                      |                |    |           |   |  |
|---|----------------------|----------------|----|-----------|---|--|
| Art. No   | Number of collectors | Number of rows | DB | Direction |   |  |
|   |                      |                |    | H         | V |  |
| SPBI 02 2 V   | 2                    | 2              | -  | -         | X |  |
| SPBI 04 2 V   | 4                    | 2              | -  | -         | X |  |
| SPBI 06 2 V   | 6                    | 2              | -  | -         | X |  |
| SPBI 08 2 V   | 8                    | 2              | -  | -         | X |  |
| SPBI 10 2 V   | 10                   | 2              | -  | -         | X |  |
| SPBI 12 2 V   | 12                   | 2              | -  | -         | X |  |
| SPBI 14 2 V   | 14                   | 2              | -  | -         | X |  |

| ROOF MOUNTING KIT<br>DOUBLE ROW / HORIZONTAL / WITH DRAIN BACK |                      |                |    |           |   |  |
|--|----------------------|----------------|----|-----------|---|--|
| Art. No  | Number of collectors | Number of rows | DB | Direction |   |  |
|  |                      |                |    | H         | V |  |
| SPBI 06 2 DB H   | 6                    | 2              | X  | X         | - |  |
| SPBI 08 2 DB H   | 8                    | 2              | X  | X         | - |  |
| SPBI 10 2 DB H   | 10                   | 2              | X  | X         | - |  |
| SPBI 12 2 DB H   | 12                   | 2              | X  | X         | - |  |
| SPBI 14 2 DB H   | 14                   | 2              | X  | X         | - |  |

| ROOF MOUNTING KIT<br>DOUBLE ROW / VERTICAL / WITH DRAIN BACK |                      |                |    |           |   |  |
|--|----------------------|----------------|----|-----------|---|--|
| Art. No  | Number of collectors | Number of rows | DB | Direction |   |  |
|  |                      |                |    | H         | V |  |
| SPBI 06 2 DB V   | 6                    | 2              | X  | -         | X |  |
| SPBI 08 2 DB V   | 8                    | 2              | X  | -         | X |  |
| SPBI 10 2 DB V   | 10                   | 2              | X  | -         | X |  |
| SPBI 12 2 DB V   | 12                   | 2              | X  | -         | X |  |
| SPBI 14 2 DB V   | 14                   | 2              | X  | -         | X |  |

# Collectors roof-build on construction



| ROOF MOUNTING KIT<br>SINGLE ROW / HORIZONTAL / WITHOUT DRAIN BACK |                      |                |    |           |   |  |
|---|----------------------|----------------|----|-----------|---|--|
| Art. No   | Number of collectors | Number of rows | DB | Direction |   |  |
|   |                      |                |    | H         | V |  |
| SPBO 01 1 H   | 1                    | 1              | -  | X         | - |  |
| SPBO 02 1 H   | 2                    | 1              | -  | X         | - |  |
| SPBO 03 1 H   | 3                    | 1              | -  | X         | - |  |
| SPBO 04 1 H   | 4                    | 1              | -  | X         | - |  |
| SPBO 05 1 H   | 5                    | 1              | -  | X         | - |  |
| SPBO 06 1 H   | 6                    | 1              | -  | X         | - |  |
| SPBO 07 1 H   | 7                    | 1              | -  | X         | - |  |
| SPBO 08 1 H   | 8                    | 1              | -  | X         | - |  |
| SPBO 09 1 H   | 9                    | 1              | -  | X         | - |  |
| SPBO 10 1 H   | 10                   | 1              | -  | X         | - |  |
| SPBO 11 1 H   | 11                   | 1              | -  | X         | - |  |
| SPBO 12 1 H   | 12                   | 1              | -  | X         | - |  |
| SPBO 13 1 H   | 13                   | 1              | -  | X         | - |  |
| SPBO 14 1 H   | 14                   | 1              | -  | X         | - |  |
| SPBO 15 1 H   | 15                   | 1              | -  | X         | - |  |

| ROOF MOUNTING KIT<br>SINGLE ROW / VERTICAL / WITHOUT DRAIN BACK |                      |                |    |           |   |  |
|---|----------------------|----------------|----|-----------|---|--|
| Art. No   | Number of collectors | Number of rows | DB | Direction |   |  |
|   |                      |                |    | H         | V |  |
| SPBO 01 1 V   | 1                    | 1              | -  | -         | X |  |
| SPBO 02 1 V   | 2                    | 1              | -  | -         | X |  |
| SPBO 03 1 V   | 3                    | 1              | -  | -         | X |  |
| SPBO 04 1 V   | 4                    | 1              | -  | -         | X |  |
| SPBO 05 1 V   | 5                    | 1              | -  | -         | X |  |
| SPBO 06 1 V   | 6                    | 1              | -  | -         | X |  |
| SPBO 07 1 V   | 7                    | 1              | -  | -         | X |  |
| SPBO 08 1 V   | 8                    | 1              | -  | -         | X |  |
| SPBO 09 1 V   | 9                    | 1              | -  | -         | X |  |
| SPBO 10 1 V   | 10                   | 1              | -  | -         | X |  |
| SPBO 11 1 V   | 11                   | 1              | -  | -         | X |  |
| SPBO 12 1 V   | 12                   | 1              | -  | -         | X |  |
| SPBO 13 1 V   | 13                   | 1              | -  | -         | X |  |
| SPBO 14 1 V   | 14                   | 1              | -  | -         | X |  |
| SPBO 15 1 V   | 15                   | 1              | -  | -         | X |  |

| ROOF MOUNTING KIT<br>SINGLE ROW / HORIZONTAL / WITH DRAIN BACK |                      |                |    |           |   |  |
|--|----------------------|----------------|----|-----------|---|--|
| Art. No  | Number of collectors | Number of rows | DB | Direction |   |  |
|  |                      |                |    | H         | V |  |
| SPBO 01 1 DB H   | 1                    | 1              | X  | X         | - |  |
| SPBO 02 1 DB H   | 2                    | 1              | X  | X         | - |  |
| SPBO 03 1 DB H   | 3                    | 1              | X  | X         | - |  |
| SPBO 04 1 DB H   | 4                    | 1              | X  | X         | - |  |
| SPBO 05 1 DB H   | 5                    | 1              | X  | X         | - |  |
| SPBO 06 1 DB H   | 6                    | 1              | X  | X         | - |  |
| SPBO 07 1 DB H   | 7                    | 1              | X  | X         | - |  |
| SPBO 08 1 DB H   | 8                    | 1              | X  | X         | - |  |
| SPBO 09 1 DB H   | 9                    | 1              | X  | X         | - |  |
| SPBO 10 1 DB H   | 10                   | 1              | X  | X         | - |  |
| SPBO 11 1 DB H   | 11                   | 1              | X  | X         | - |  |
| SPBO 12 1 DB H   | 12                   | 1              | X  | X         | - |  |
| SPBO 13 1 DB H   | 13                   | 1              | X  | X         | - |  |
| SPBO 14 1 DB H   | 14                   | 1              | X  | X         | - |  |
| SPBO 15 1 DB H   | 15                   | 1              | X  | X         | - |  |

| ROOF MOUNTING KIT<br>SINGLE ROW / VERTICAL / WITH DRAIN BACK |                      |                |    |           |   |  |
|--|----------------------|----------------|----|-----------|---|--|
| Art. No  | Number of collectors | Number of rows | DB | Direction |   |  |
|  |                      |                |    | H         | V |  |
| SPBO 01 1 DB V   | 1                    | 1              | X  | -         | X |  |
| SPBO 02 1 DB V   | 2                    | 1              | X  | -         | X |  |
| SPBO 03 1 DB V   | 3                    | 1              | X  | -         | X |  |
| SPBO 04 1 DB V   | 4                    | 1              | X  | -         | X |  |
| SPBO 05 1 DB V   | 5                    | 1              | X  | -         | X |  |
| SPBO 06 1 DB V   | 6                    | 1              | X  | -         | X |  |
| SPBO 07 1 DB V   | 7                    | 1              | X  | -         | X |  |
| SPBO 08 1 DB V   | 8                    | 1              | X  | -         | X |  |
| SPBO 09 1 DB V   | 9                    | 1              | X  | -         | X |  |
| SPBO 10 1 DB V   | 10                   | 1              | X  | -         | X |  |
| SPBO 11 1 DB V   | 11                   | 1              | X  | -         | X |  |
| SPBO 12 1 DB V   | 12                   | 1              | X  | -         | X |  |
| SPBO 13 1 DB V   | 13                   | 1              | X  | -         | X |  |
| SPBO 14 1 DB V   | 14                   | 1              | X  | -         | X |  |
| SPBO 15 1 DB V   | 15                   | 1              | X  | -         | X |  |

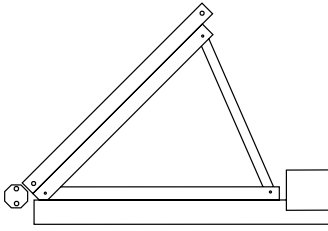
| ROOF MOUNTING KIT<br>DOUBLE ROW / HORIZONTAL / WITHOUT DRAIN BACK |                      |                |    |           |   |  |
|---|----------------------|----------------|----|-----------|---|--|
| Art. No   | Number of collectors | Number of rows | DB | Direction |   |  |
|   |                      |                |    | H         | V |  |
| SPBO 02 2 H   | 2                    | 2              | -  | X         | - |  |
| SPBO 04 2 H   | 4                    | 2              | -  | X         | - |  |
| SPBO 06 2 H   | 6                    | 2              | -  | X         | - |  |
| SPBO 08 2 H   | 8                    | 2              | -  | X         | - |  |
| SPBO 10 2 H   | 10                   | 2              | -  | X         | - |  |
| SPBO 12 2 H   | 12                   | 2              | -  | X         | - |  |
| SPBO 14 2 H   | 14                   | 2              | -  | X         | - |  |

| ROOF MOUNTING KIT<br>DOUBLE ROW / VERTICAL / WITHOUT DRAIN BACK |                      |                |    |           |   |  |
|---|----------------------|----------------|----|-----------|---|--|
| Art. No   | Number of collectors | Number of rows | DB | Direction |   |  |
|   |                      |                |    | H         | V |  |
| SPBO 02 2 V   | 2                    | 2              | -  | -         | X |  |
| SPBO 04 2 V   | 4                    | 2              | -  | -         | X |  |
| SPBO 06 2 V   | 6                    | 2              | -  | -         | X |  |
| SPBO 08 2 V   | 8                    | 2              | -  | -         | X |  |
| SPBO 10 2 V   | 10                   | 2              | -  | -         | X |  |
| SPBO 12 2 V   | 12                   | 2              | -  | -         | X |  |
| SPBO 14 2 V   | 14                   | 2              | -  | -         | X |  |

| ROOF MOUNTING KIT<br>DOUBLE ROW / HORIZONTAL / WITH DRAIN BACK |                      |                |    |           |   |  |
|--|----------------------|----------------|----|-----------|---|--|
| Art. No  | Number of collectors | Number of rows | DB | Direction |   |  |
|  |                      |                |    | H         | V |  |
| SPBO 06 2 DB H   | 6                    | 2              | X  | X         | - |  |
| SPBO 08 2 DB H   | 8                    | 2              | X  | X         | - |  |
| SPBO 10 2 DB H   | 10                   | 2              | X  | X         | - |  |
| SPBO 12 2 DB H   | 12                   | 2              | X  | X         | - |  |
| SPBO 14 2 DB H   | 14                   | 2              | X  | X         | - |  |

| ROOF MOUNTING KIT<br>DOUBLE ROW / VERTICAL / WITH DRAIN BACK |                      |                |    |           |   |  |
|--|----------------------|----------------|----|-----------|---|--|
| Art. No  | Number of collectors | Number of rows | DB | Direction |   |  |
|  |                      |                |    | H         | V |  |
| SPBO 06 2 DB V   | 6                    | 2              | X  | -         | X |  |
| SPBO 08 2 DB V   | 8                    | 2              | X  | -         | X |  |
| SPBO 10 2 DB V   | 10                   | 2              | X  | -         | X |  |
| SPBO 12 2 DB V   | 12                   | 2              | X  | -         | X |  |
| SPBO 14 2 DB V   | 14                   | 2              | X  | -         | X |  |

# Collectors frame construction with concrete blocks



| FRAME-SET 20/30<br>HORIZONTAL / WITH CONCRETE BLOCKS |                      |        |        |    |           |   |       |
|--|----------------------|--------|--------|----|-----------|---|-------|
| Art. No  | Number of collectors | Angle  |        | DB | Direction |   | Block |
|  |                      | 20/30° | 45/60° |    | H         | V |       |
| SPFR 01 F20/30 H B                                   | 1                    | X      | -      | -  | X         | - | X     |
| SPFR 02 F20/30 H B                                   | 2                    | X      | -      | -  | X         | - | X     |
| SPFR 03 F20/30 H B                                   | 3                    | X      | -      | -  | X         | - | X     |
| SPFR 04 F20/30 H B                                   | 4                    | X      | -      | -  | X         | - | X     |
| SPFR 05 F20/30 H B                                   | 5                    | X      | -      | -  | X         | - | X     |
| SPFR 06 F20/30 H B                                   | 6                    | X      | -      | -  | X         | - | X     |
| SPFR 07 F20/30 H B                                   | 7                    | X      | -      | -  | X         | - | X     |
| SPFR 08 F20/30 H B                                   | 8                    | X      | -      | -  | X         | - | X     |
| SPFR 09 F20/30 H B                                   | 9                    | X      | -      | -  | X         | - | X     |
| SPFR 10 F20/30 H B                                   | 10                   | X      | -      | -  | X         | - | X     |
| SPFR 11 F20/30 H B                                   | 11                   | X      | -      | -  | X         | - | X     |
| SPFR 12 F20/30 H B                                   | 12                   | X      | -      | -  | X         | - | X     |
| SPFR 13 F20/30 H B                                   | 13                   | X      | -      | -  | X         | - | X     |
| SPFR 14 F20/30 H B                                   | 14                   | X      | -      | -  | X         | - | X     |
| SPFR 15 F20/30 H B                                   | 15                   | X      | -      | -  | X         | - | X     |

| FRAME-SET 45/60<br>HORIZONTAL / WITH CONCRETE BLOCKS |                      |        |        |    |           |   |       |
|--|----------------------|--------|--------|----|-----------|---|-------|
| Art. No  | Number of collectors | Angle  |        | DB | Direction |   | Block |
|  |                      | 20/30° | 45/60° |    | H         | V |       |
| SPFR 01 F45/60 H B                                   | 1                    | -      | X      | -  | X         | - | X     |
| SPFR 02 F45/60 H B                                   | 2                    | -      | X      | -  | X         | - | X     |
| SPFR 03 F45/60 H B                                   | 3                    | -      | X      | -  | X         | - | X     |
| SPFR 04 F45/60 H B                                   | 4                    | -      | X      | -  | X         | - | X     |
| SPFR 05 F45/60 H B                                   | 5                    | -      | X      | -  | X         | - | X     |
| SPFR 06 F45/60 H B                                   | 6                    | -      | X      | -  | X         | - | X     |
| SPFR 07 F45/60 H B                                   | 7                    | -      | X      | -  | X         | - | X     |
| SPFR 08 F45/60 H B                                   | 8                    | -      | X      | -  | X         | - | X     |
| SPFR 09 F45/60 H B                                   | 9                    | -      | X      | -  | X         | - | X     |
| SPFR 10 F45/60 H B                                   | 10                   | -      | X      | -  | X         | - | X     |
| SPFR 11 F45/60 H B                                   | 11                   | -      | X      | -  | X         | - | X     |
| SPFR 12 F45/60 H B                                   | 12                   | -      | X      | -  | X         | - | X     |
| SPFR 13 F45/60 H B                                   | 13                   | -      | X      | -  | X         | - | X     |
| SPFR 14 F45/60 H B                                   | 14                   | -      | X      | -  | X         | - | X     |
| SPFR 15 F45/60 H B                                   | 15                   | -      | X      | -  | X         | - | X     |

| FRAME-SET 20/30<br>HORIZONTAL / WITH CONCRETE BLOCKS / WITH DRAIN BACK |                      |        |        |    |           |   |       |
|--|----------------------|--------|--------|----|-----------|---|-------|
| Art. No  | Number of collectors | Angle  |        | DB | Direction |   | Block |
|  |                      | 20/30° | 45/60° |    | H         | V |       |
| SPFR 01 F20/30 DB H B  | 1                    | X      | -      | X  | X         | - | X     |
| SPFR 02 F20/30 DB H B  | 2                    | X      | -      | X  | X         | - | X     |
| SPFR 03 F20/30 DB H B  | 3                    | X      | -      | X  | X         | - | X     |
| SPFR 04 F20/30 DB H B  | 4                    | X      | -      | X  | X         | - | X     |
| SPFR 05 F20/30 DB H B  | 5                    | X      | -      | X  | X         | - | X     |
| SPFR 06 F20/30 DB H B  | 6                    | X      | -      | X  | X         | - | X     |
| SPFR 07 F20/30 DB H B  | 7                    | X      | -      | X  | X         | - | X     |
| SPFR 08 F20/30 DB H B  | 8                    | X      | -      | X  | X         | - | X     |
| SPFR 09 F20/30 DB H B  | 9                    | X      | -      | X  | X         | - | X     |
| SPFR 10 F20/30 DB H B  | 10                   | X      | -      | X  | X         | - | X     |
| SPFR 11 F20/30 DB H B  | 11                   | X      | -      | X  | X         | - | X     |
| SPFR 12 F20/30 DB H B  | 12                   | X      | -      | X  | X         | - | X     |
| SPFR 13 F20/30 DB H B  | 13                   | X      | -      | X  | X         | - | X     |
| SPFR 14 F20/30 DB H B  | 14                   | X      | -      | X  | X         | - | X     |
| SPFR 15 F20/30 DB H B  | 15                   | X      | -      | X  | X         | - | X     |

| FRAME-SET 45/60<br>HORIZONTAL / WITH CONCRETE BLOCKS / WITH DRAIN BACK |                      |        |        |    |           |   |       |
|--|----------------------|--------|--------|----|-----------|---|-------|
| Art. No  | Number of collectors | Angle  |        | DB | Direction |   | Block |
|  |                      | 20/30° | 45/60° |    | H         | V |       |
| SPFR 01 F45/60 DB H B  | 1                    | -      | X      | X  | X         | - | X     |
| SPFR 02 F45/60 DB H B  | 2                    | -      | X      | X  | X         | - | X     |
| SPFR 03 F45/60 DB H B  | 3                    | -      | X      | X  | X         | - | X     |
| SPFR 04 F45/60 DB H B  | 4                    | -      | X      | X  | X         | - | X     |
| SPFR 05 F45/60 DB H B  | 5                    | -      | X      | X  | X         | - | X     |
| SPFR 06 F45/60 DB H B  | 6                    | -      | X      | X  | X         | - | X     |
| SPFR 07 F45/60 DB H B  | 7                    | -      | X      | X  | X         | - | X     |
| SPFR 08 F45/60 DB H B  | 8                    | -      | X      | X  | X         | - | X     |
| SPFR 09 F45/60 DB H B  | 9                    | -      | X      | X  | X         | - | X     |
| SPFR 10 F45/60 DB H B  | 10                   | -      | X      | X  | X         | - | X     |
| SPFR 11 F45/60 DB H B  | 11                   | -      | X      | X  | X         | - | X     |
| SPFR 12 F45/60 DB H B  | 12                   | -      | X      | X  | X         | - | X     |
| SPFR 13 F45/60 DB H B  | 13                   | -      | X      | X  | X         | - | X     |
| SPFR 14 F45/60 DB H B  | 14                   | -      | X      | X  | X         | - | X     |
| SPFR 15 F45/60 DB H B  | 15                   | -      | X      | X  | X         | - | X     |

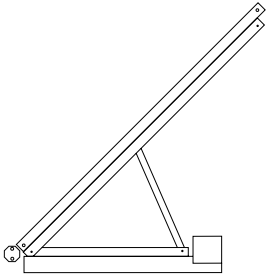
## Solar collector

- Approved by EN12975-2-2006
- CE and Solar Keymark certified
- Temperature resistant up to 200°C
- Installation options: roof build on, roof build in, frame construction for flat roof and wall mounting
- Simple installation system for multiple panels
- Complete installation is delivered in 1 package including assembly materials

## Drain back system

- To prevent stagnation temperatures
- Reduces required pump capacity and energy use of pump station to a minimum
- Patented drain back system, available as accessory

# Collectors frame construction with concrete blocks



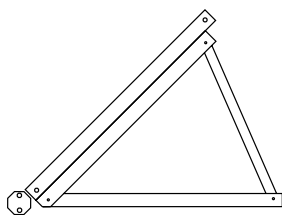
| FRAME-SET 20/30<br>VERTICAL / WITH CONCRETE BLOCKS |                      |        |        |    |           |   |       |  |  |
|--|----------------------|--------|--------|----|-----------|---|-------|--|--|
| Art. No  | Number of collectors | Angle  |        | DB | Direction |   | Block |  |  |
|  |                      | 20/30° | 45/60° |    | H         | V |       |  |  |
| SPFR 01 F20/30 V B                                 | 1                    | X      | -      | -  | -         | X | X     |  |  |
| SPFR 02 F20/30 V B                                 | 2                    | X      | -      | -  | -         | X | X     |  |  |
| SPFR 03 F20/30 V B                                 | 3                    | X      | -      | -  | -         | X | X     |  |  |
| SPFR 04 F20/30 V B                                 | 4                    | X      | -      | -  | -         | X | X     |  |  |
| SPFR 05 F20/30 V B                                 | 5                    | X      | -      | -  | -         | X | X     |  |  |
| SPFR 06 F20/30 V B                                 | 6                    | X      | -      | -  | -         | X | X     |  |  |
| SPFR 07 F20/30 V B                                 | 7                    | X      | -      | -  | -         | X | X     |  |  |
| SPFR 08 F20/30 V B                                 | 8                    | X      | -      | -  | -         | X | X     |  |  |
| SPFR 09 F20/30 V B                                 | 9                    | X      | -      | -  | -         | X | X     |  |  |
| SPFR 10 F20/30 V B                                 | 10                   | X      | -      | -  | -         | X | X     |  |  |
| SPFR 11 F20/30 V B                                 | 11                   | X      | -      | -  | -         | X | X     |  |  |
| SPFR 12 F20/30 V B                                 | 12                   | X      | -      | -  | -         | X | X     |  |  |
| SPFR 13 F20/30 V B                                 | 13                   | X      | -      | -  | -         | X | X     |  |  |
| SPFR 14 F20/30 V B                                 | 14                   | X      | -      | -  | -         | X | X     |  |  |
| SPFR 15 F20/30 V B                                 | 15                   | X      | -      | -  | -         | X | X     |  |  |

| FRAME-SET 45/60<br>VERTICAL / WITH CONCRETE BLOCKS |                      |        |        |    |           |   |       |  |  |
|--|----------------------|--------|--------|----|-----------|---|-------|--|--|
| Art. No  | Number of collectors | Angle  |        | DB | Direction |   | Block |  |  |
|  |                      | 20/30° | 45/60° |    | H         | V |       |  |  |
| SPFR 01 F45/60 V B                                 | 1                    | -      | X      | -  | -         | X | X     |  |  |
| SPFR 02 F45/60 V B                                 | 2                    | -      | X      | -  | -         | X | X     |  |  |
| SPFR 03 F45/60 V B                                 | 3                    | -      | X      | -  | -         | X | X     |  |  |
| SPFR 04 F45/60 V B                                 | 4                    | -      | X      | -  | -         | X | X     |  |  |
| SPFR 05 F45/60 V B                                 | 5                    | -      | X      | -  | -         | X | X     |  |  |
| SPFR 06 F45/60 V B                                 | 6                    | -      | X      | -  | -         | X | X     |  |  |
| SPFR 07 F45/60 V B                                 | 7                    | -      | X      | -  | -         | X | X     |  |  |
| SPFR 08 F45/60 V B                                 | 8                    | -      | X      | -  | -         | X | X     |  |  |
| SPFR 09 F45/60 V B                                 | 9                    | -      | X      | -  | -         | X | X     |  |  |
| SPFR 10 F45/60 V B                                 | 10                   | -      | X      | -  | -         | X | X     |  |  |
| SPFR 11 F45/60 V B                                 | 11                   | -      | X      | -  | -         | X | X     |  |  |
| SPFR 12 F45/60 V B                                 | 12                   | -      | X      | -  | -         | X | X     |  |  |
| SPFR 13 F45/60 V B                                 | 13                   | -      | X      | -  | -         | X | X     |  |  |
| SPFR 14 F45/60 V B                                 | 14                   | -      | X      | -  | -         | X | X     |  |  |
| SPFR 15 F45/60 V B                                 | 15                   | -      | X      | -  | -         | X | X     |  |  |

| FRAME-SET 20/30<br>VERTICAL / WITH CONCRETE BLOCKS / WITH DRAIN BACK |                      |        |        |    |           |   |       |  |  |
|--|----------------------|--------|--------|----|-----------|---|-------|--|--|
| Art. No  | Number of collectors | Angle  |        | DB | Direction |   | Block |  |  |
|  |                      | 20/30° | 45/60° |    | H         | V |       |  |  |
| SPFR 01 F20/30 DB V B  | 1                    | X      | -      | X  | -         | X | X     |  |  |
| SPFR 02 F20/30 DB V B  | 2                    | X      | -      | X  | -         | X | X     |  |  |
| SPFR 03 F20/30 DB V B  | 3                    | X      | -      | X  | -         | X | X     |  |  |
| SPFR 04 F20/30 DB V B  | 4                    | X      | -      | X  | -         | X | X     |  |  |
| SPFR 05 F20/30 DB V B  | 5                    | X      | -      | X  | -         | X | X     |  |  |
| SPFR 06 F20/30 DB V B  | 6                    | X      | -      | X  | -         | X | X     |  |  |
| SPFR 07 F20/30 DB V B  | 7                    | X      | -      | X  | -         | X | X     |  |  |
| SPFR 08 F20/30 DB V B  | 8                    | X      | -      | X  | -         | X | X     |  |  |
| SPFR 09 F20/30 DB V B  | 9                    | X      | -      | X  | -         | X | X     |  |  |
| SPFR 10 F20/30 DB V B  | 10                   | X      | -      | X  | -         | X | X     |  |  |
| SPFR 11 F20/30 DB V B  | 11                   | X      | -      | X  | -         | X | X     |  |  |
| SPFR 12 F20/30 DB V B  | 12                   | X      | -      | X  | -         | X | X     |  |  |
| SPFR 13 F20/30 DB V B  | 13                   | X      | -      | X  | -         | X | X     |  |  |
| SPFR 14 F20/30 DB V B  | 14                   | X      | -      | X  | -         | X | X     |  |  |
| SPFR 15 F20/30 DB V B  | 15                   | X      | -      | X  | -         | X | X     |  |  |

| FRAME-SET 45/60<br>VERTICAL / WITH CONCRETE BLOCKS / WITH DRAIN BACK |                      |        |        |    |           |   |       |  |  |
|--|----------------------|--------|--------|----|-----------|---|-------|--|--|
| Art. No  | Number of collectors | Angle  |        | DB | Direction |   | Block |  |  |
|  |                      | 20/30° | 45/60° |    | H         | V |       |  |  |
| SPFR 01 F45/60 DB V B  | 1                    | -      | X      | X  | -         | X | X     |  |  |
| SPFR 02 F45/60 DB V B  | 2                    | -      | X      | X  | -         | X | X     |  |  |
| SPFR 03 F45/60 DB V B  | 3                    | -      | X      | X  | -         | X | X     |  |  |
| SPFR 04 F45/60 DB V B  | 4                    | -      | X      | X  | -         | X | X     |  |  |
| SPFR 05 F45/60 DB V B  | 5                    | -      | X      | X  | -         | X | X     |  |  |
| SPFR 06 F45/60 DB V B  | 6                    | -      | X      | X  | -         | X | X     |  |  |
| SPFR 07 F45/60 DB V B  | 7                    | -      | X      | X  | -         | X | X     |  |  |
| SPFR 08 F45/60 DB V B  | 8                    | -      | X      | X  | -         | X | X     |  |  |
| SPFR 09 F45/60 DB V B  | 9                    | -      | X      | X  | -         | X | X     |  |  |
| SPFR 10 F45/60 DB V B  | 10                   | -      | X      | X  | -         | X | X     |  |  |
| SPFR 11 F45/60 DB V B  | 11                   | -      | X      | X  | -         | X | X     |  |  |
| SPFR 12 F45/60 DB V B  | 12                   | -      | X      | X  | -         | X | X     |  |  |
| SPFR 13 F45/60 DB V B  | 13                   | -      | X      | X  | -         | X | X     |  |  |
| SPFR 14 F45/60 DB V B  | 14                   | -      | X      | X  | -         | X | X     |  |  |
| SPFR 15 F45/60 DB V B  | 15                   | -      | X      | X  | -         | X | X     |  |  |

# Collectors frame construction without concrete blocks



| FRAME-SET 20/30<br>HORIZONTAL / WITHOUT CONCRETE BLOCKS |                      |        |        |    |           |   |       |  |
|---|----------------------|--------|--------|----|-----------|---|-------|--|
| Art. No   | Number of collectors | Angle  |        | DB | Direction |   | Block |  |
|   |                      | 20/30° | 45/60° |    | H         | V |       |  |
| SPFR 01 F20/30 H  | 1                    | X      | -      | -  | X         | - | -     |  |
| SPFR 02 F20/30 H  | 2                    | X      | -      | -  | X         | - | -     |  |
| SPFR 03 F20/30 H  | 3                    | X      | -      | -  | X         | - | -     |  |
| SPFR 04 F20/30 H  | 4                    | X      | -      | -  | X         | - | -     |  |
| SPFR 05 F20/30 H  | 5                    | X      | -      | -  | X         | - | -     |  |
| SPFR 06 F20/30 H  | 6                    | X      | -      | -  | X         | - | -     |  |
| SPFR 07 F20/30 H  | 7                    | X      | -      | -  | X         | - | -     |  |
| SPFR 08 F20/30 H  | 8                    | X      | -      | -  | X         | - | -     |  |
| SPFR 09 F20/30 H  | 9                    | X      | -      | -  | X         | - | -     |  |
| SPFR 10 F20/30 H  | 10                   | X      | -      | -  | X         | - | -     |  |
| SPFR 11 F20/30 H  | 11                   | X      | -      | -  | X         | - | -     |  |
| SPFR 12 F20/30 H  | 12                   | X      | -      | -  | X         | - | -     |  |
| SPFR 13 F20/30 H  | 13                   | X      | -      | -  | X         | - | -     |  |
| SPFR 14 F20/30 H  | 14                   | X      | -      | -  | X         | - | -     |  |
| SPFR 15 F20/30 H  | 15                   | X      | -      | -  | X         | - | -     |  |

| FRAME-SET 45/60<br>HORIZONTAL / WITHOUT CONCRETE BLOCKS |                      |        |        |    |           |   |       |  |
|---|----------------------|--------|--------|----|-----------|---|-------|--|
| Art. No   | Number of collectors | Angle  |        | DB | Direction |   | Block |  |
|   |                      | 20/30° | 45/60° |    | H         | V |       |  |
| SPFR 01 F45/60 H  | 1                    | -      | X      | -  | X         | - | -     |  |
| SPFR 02 F45/60 H  | 2                    | -      | X      | -  | X         | - | -     |  |
| SPFR 03 F45/60 H  | 3                    | -      | X      | -  | X         | - | -     |  |
| SPFR 04 F45/60 H  | 4                    | -      | X      | -  | X         | - | -     |  |
| SPFR 05 F45/60 H  | 5                    | -      | X      | -  | X         | - | -     |  |
| SPFR 06 F45/60 H  | 6                    | -      | X      | -  | X         | - | -     |  |
| SPFR 07 F45/60 H  | 7                    | -      | X      | -  | X         | - | -     |  |
| SPFR 08 F45/60 H  | 8                    | -      | X      | -  | X         | - | -     |  |
| SPFR 09 F45/60 H  | 9                    | -      | X      | -  | X         | - | -     |  |
| SPFR 10 F45/60 H  | 10                   | -      | X      | -  | X         | - | -     |  |
| SPFR 11 F45/60 H  | 11                   | -      | X      | -  | X         | - | -     |  |
| SPFR 12 F45/60 H  | 12                   | -      | X      | -  | X         | - | -     |  |
| SPFR 13 F45/60 H  | 13                   | -      | X      | -  | X         | - | -     |  |
| SPFR 14 F45/60 H  | 14                   | -      | X      | -  | X         | - | -     |  |
| SPFR 15 F45/60 H  | 15                   | -      | X      | -  | X         | - | -     |  |

| FRAME-SET 20/30<br>HORIZONTAL / WITHOUT CONCRETE BLOCKS / WITH DRAIN BACK |                      |        |        |    |           |   |       |  |
|---|----------------------|--------|--------|----|-----------|---|-------|--|
| Art. No   | Number of collectors | Angle  |        | DB | Direction |   | Block |  |
|   |                      | 20/30° | 45/60° |    | H         | V |       |  |
| SPFR 01 F20/30 DB H   | 1                    | X      | -      | X  | X         | - | -     |  |
| SPFR 02 F20/30 DB H   | 2                    | X      | -      | X  | X         | - | -     |  |
| SPFR 03 F20/30 DB H   | 3                    | X      | -      | X  | X         | - | -     |  |
| SPFR 04 F20/30 DB H   | 4                    | X      | -      | X  | X         | - | -     |  |
| SPFR 05 F20/30 DB H   | 5                    | X      | -      | X  | X         | - | -     |  |
| SPFR 06 F20/30 DB H   | 6                    | X      | -      | X  | X         | - | -     |  |
| SPFR 07 F20/30 DB H   | 7                    | X      | -      | X  | X         | - | -     |  |
| SPFR 08 F20/30 DB H   | 8                    | X      | -      | X  | X         | - | -     |  |
| SPFR 09 F20/30 DB H   | 9                    | X      | -      | X  | X         | - | -     |  |
| SPFR 10 F20/30 DB H   | 10                   | X      | -      | X  | X         | - | -     |  |
| SPFR 11 F20/30 DB H   | 11                   | X      | -      | X  | X         | - | -     |  |
| SPFR 12 F20/30 DB H   | 12                   | X      | -      | X  | X         | - | -     |  |
| SPFR 13 F20/30 DB H   | 13                   | X      | -      | X  | X         | - | -     |  |
| SPFR 14 F20/30 DB H   | 14                   | X      | -      | X  | X         | - | -     |  |
| SPFR 15 F20/30 DB H   | 15                   | X      | -      | X  | X         | - | -     |  |

| FRAME-SET 45/60<br>HORIZONTAL / WITHOUT CONCRETE BLOCKS / WITH DRAIN BACK |                      |        |        |    |           |   |       |  |
|---|----------------------|--------|--------|----|-----------|---|-------|--|
| Art. No   | Number of collectors | Angle  |        | DB | Direction |   | Block |  |
|   |                      | 20/30° | 45/60° |    | H         | V |       |  |
| SPFR 01 F45/60 DB H   | 1                    | -      | X      | X  | X         | - | -     |  |
| SPFR 02 F45/60 DB H   | 2                    | -      | X      | X  | X         | - | -     |  |
| SPFR 03 F45/60 DB H   | 3                    | -      | X      | X  | X         | - | -     |  |
| SPFR 04 F45/60 DB H   | 4                    | -      | X      | X  | X         | - | -     |  |
| SPFR 05 F45/60 DB H   | 5                    | -      | X      | X  | X         | - | -     |  |
| SPFR 06 F45/60 DB H   | 6                    | -      | X      | X  | X         | - | -     |  |
| SPFR 07 F45/60 DB H   | 7                    | -      | X      | X  | X         | - | -     |  |
| SPFR 08 F45/60 DB H   | 8                    | -      | X      | X  | X         | - | -     |  |
| SPFR 09 F45/60 DB H   | 9                    | -      | X      | X  | X         | - | -     |  |
| SPFR 10 F45/60 DB H   | 10                   | -      | X      | X  | X         | - | -     |  |
| SPFR 11 F45/60 DB H   | 11                   | -      | X      | X  | X         | - | -     |  |
| SPFR 12 F45/60 DB H   | 12                   | -      | X      | X  | X         | - | -     |  |
| SPFR 13 F45/60 DB H   | 13                   | -      | X      | X  | X         | - | -     |  |
| SPFR 14 F45/60 DB H   | 14                   | -      | X      | X  | X         | - | -     |  |
| SPFR 15 F45/60 DB H   | 15                   | -      | X      | X  | X         | - | -     |  |

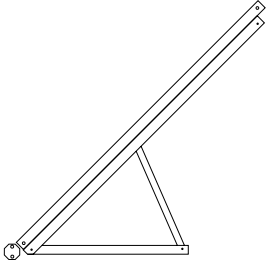
## Solar collector

- Approved by EN12975-2-2006
- CE and Solar Keymark certified
- Temperature resistant up to 200°C
- Installation options: roof build on, roof build in, frame construction for flat roof and wall mounting
- Simple installation system for multiple panels
- Complete installation is delivered in 1 package including assembly materials

## Drain back system

- To prevent stagnation temperatures
- Reduces required pump capacity and energy use of pump station to a minimum
- Patented drain back system, available as accessory

## Collectors frame construction without concrete blocks



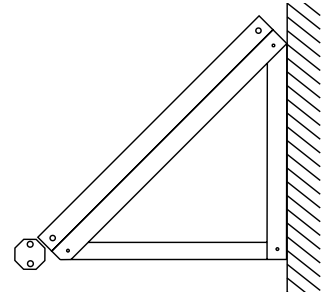
| FRAME-SET 20/30<br>VERTICAL / WITHOUT CONCRETE BLOCKS |                      |        |        |    |           |   |       |  |
|---|----------------------|--------|--------|----|-----------|---|-------|--|
| Art. No   | Number of collectors | Angle  |        | DB | Direction |   | Block |  |
|   |                      | 20/30° | 45/60° |    | H         | V |       |  |
| SPFR 01 F20/30 V                                      | 1                    | X      | -      | -  | -         | X | -     |  |
| SPFR 02 F20/30 V                                      | 2                    | X      | -      | -  | -         | X | -     |  |
| SPFR 03 F20/30 V                                      | 3                    | X      | -      | -  | -         | X | -     |  |
| SPFR 04 F20/30 V                                      | 4                    | X      | -      | -  | -         | X | -     |  |
| SPFR 05 F20/30 V                                      | 5                    | X      | -      | -  | -         | X | -     |  |
| SPFR 06 F20/30 V                                      | 6                    | X      | -      | -  | -         | X | -     |  |
| SPFR 07 F20/30 V                                      | 7                    | X      | -      | -  | -         | X | -     |  |
| SPFR 08 F20/30 V                                      | 8                    | X      | -      | -  | -         | X | -     |  |
| SPFR 09 F20/30 V                                      | 9                    | X      | -      | -  | -         | X | -     |  |
| SPFR 10 F20/30 V                                      | 10                   | X      | -      | -  | -         | X | -     |  |
| SPFR 11 F20/30 V                                      | 11                   | X      | -      | -  | -         | X | -     |  |
| SPFR 12 F20/30 V                                      | 12                   | X      | -      | -  | -         | X | -     |  |
| SPFR 13 F20/30 V                                      | 13                   | X      | -      | -  | -         | X | -     |  |
| SPFR 14 F20/30 V                                      | 14                   | X      | -      | -  | -         | X | -     |  |
| SPFR 15 F20/30 V                                      | 15                   | X      | -      | -  | -         | X | -     |  |

| FRAME-SET 45/60<br>VERTICAL / WITHOUT CONCRETE BLOCKS |                      |        |        |    |           |   |       |  |
|---|----------------------|--------|--------|----|-----------|---|-------|--|
| Art. No   | Number of collectors | Angle  |        | DB | Direction |   | Block |  |
|   |                      | 20/30° | 45/60° |    | H         | V |       |  |
| SPFR 01 F45/60 V                                      | 1                    | -      | X      | -  | -         | X | -     |  |
| SPFR 02 F45/60 V                                      | 2                    | -      | X      | -  | -         | X | -     |  |
| SPFR 03 F45/60 V                                      | 3                    | -      | X      | -  | -         | X | -     |  |
| SPFR 04 F45/60 V                                      | 4                    | -      | X      | -  | -         | X | -     |  |
| SPFR 05 F45/60 V                                      | 5                    | -      | X      | -  | -         | X | -     |  |
| SPFR 06 F45/60 V                                      | 6                    | -      | X      | -  | -         | X | -     |  |
| SPFR 07 F45/60 V                                      | 7                    | -      | X      | -  | -         | X | -     |  |
| SPFR 08 F45/60 V                                      | 8                    | -      | X      | -  | -         | X | -     |  |
| SPFR 09 F45/60 V                                      | 9                    | -      | X      | -  | -         | X | -     |  |
| SPFR 10 F45/60 V                                      | 10                   | -      | X      | -  | -         | X | -     |  |
| SPFR 11 F45/60 V                                      | 11                   | -      | X      | -  | -         | X | -     |  |
| SPFR 12 F45/60 V                                      | 12                   | -      | X      | -  | -         | X | -     |  |
| SPFR 13 F45/60 V                                      | 13                   | -      | X      | -  | -         | X | -     |  |
| SPFR 14 F45/60 V                                      | 14                   | -      | X      | -  | -         | X | -     |  |
| SPFR 15 F45/60 V                                      | 15                   | -      | X      | -  | -         | X | -     |  |

| FRAME-SET 20/30<br>VERTICAL / WITHOUT CONCRETE BLOCKS / WITH DRAIN BACK |                      |        |        |    |           |   |       |  |
|---|----------------------|--------|--------|----|-----------|---|-------|--|
| Art. No   | Number of collectors | Angle  |        | DB | Direction |   | Block |  |
|   |                      | 20/30° | 45/60° |    | H         | V |       |  |
| SPFR 01 F20/30 DB V   | 1                    | X      | -      | X  | -         | X | -     |  |
| SPFR 02 F20/30 DB V   | 2                    | X      | -      | X  | -         | X | -     |  |
| SPFR 03 F20/30 DB V   | 3                    | X      | -      | X  | -         | X | -     |  |
| SPFR 04 F20/30 DB V   | 4                    | X      | -      | X  | -         | X | -     |  |
| SPFR 05 F20/30 DB V   | 5                    | X      | -      | X  | -         | X | -     |  |
| SPFR 06 F20/30 DB V   | 6                    | X      | -      | X  | -         | X | -     |  |
| SPFR 07 F20/30 DB V   | 7                    | X      | -      | X  | -         | X | -     |  |
| SPFR 08 F20/30 DB V   | 8                    | X      | -      | X  | -         | X | -     |  |
| SPFR 09 F20/30 DB V   | 9                    | X      | -      | X  | -         | X | -     |  |
| SPFR 10 F20/30 DB V   | 10                   | X      | -      | X  | -         | X | -     |  |
| SPFR 11 F20/30 DB V   | 11                   | X      | -      | X  | -         | X | -     |  |
| SPFR 12 F20/30 DB V   | 12                   | X      | -      | X  | -         | X | -     |  |
| SPFR 13 F20/30 DB V   | 13                   | X      | -      | X  | -         | X | -     |  |
| SPFR 14 F20/30 DB V   | 14                   | X      | -      | X  | -         | X | -     |  |
| SPFR 15 F20/30 DB V   | 15                   | X      | -      | X  | -         | X | -     |  |

| FRAME-SET 45/60<br>VERTICAL / WITHOUT CONCRETE BLOCKS / WITH DRAIN BACK |                      |        |        |    |           |   |       |  |
|---|----------------------|--------|--------|----|-----------|---|-------|--|
| Art. No   | Number of collectors | Angle  |        | DB | Direction |   | Block |  |
|   |                      | 20/30° | 45/60° |    | H         | V |       |  |
| SPFR 01 F45/60 DB V   | 1                    | -      | X      | X  | -         | X | -     |  |
| SPFR 02 F45/60 DB V   | 2                    | -      | X      | X  | -         | X | -     |  |
| SPFR 03 F45/60 DB V   | 3                    | -      | X      | X  | -         | X | -     |  |
| SPFR 04 F45/60 DB V   | 4                    | -      | X      | X  | -         | X | -     |  |
| SPFR 05 F45/60 DB V   | 5                    | -      | X      | X  | -         | X | -     |  |
| SPFR 06 F45/60 DB V   | 6                    | -      | X      | X  | -         | X | -     |  |
| SPFR 07 F45/60 DB V   | 7                    | -      | X      | X  | -         | X | -     |  |
| SPFR 08 F45/60 DB V   | 8                    | -      | X      | X  | -         | X | -     |  |
| SPFR 09 F45/60 DB V   | 9                    | -      | X      | X  | -         | X | -     |  |
| SPFR 10 F45/60 DB V   | 10                   | -      | X      | X  | -         | X | -     |  |
| SPFR 11 F45/60 DB V   | 11                   | -      | X      | X  | -         | X | -     |  |
| SPFR 12 F45/60 DB V   | 12                   | -      | X      | X  | -         | X | -     |  |
| SPFR 13 F45/60 DB V   | 13                   | -      | X      | X  | -         | X | -     |  |
| SPFR 14 F45/60 DB V   | 14                   | -      | X      | X  | -         | X | -     |  |
| SPFR 15 F45/60 DB V   | 15                   | -      | X      | X  | -         | X | -     |  |

# Collectors wall build in construction



| WALL MOUNTING FRAME-SET 45 HORIZONTAL |                      |       |     |     |    |           |   |  |
|---------------------------------------|----------------------|-------|-----|-----|----|-----------|---|--|
| Art. No                               | Number of collectors | Angle |     |     | DB | Direction |   |  |
|                                       |                      | 45°   | 60° | 70° |    | H         | V |  |
| SPWL 01 F45 H                         | 1                    | X     | -   | -   | -  | X         | - |  |
| SPWL 02 F45 H                         | 2                    | X     | -   | -   | -  | X         | - |  |
| SPWL 03 F45 H                         | 3                    | X     | -   | -   | -  | X         | - |  |
| SPWL 04 F45 H                         | 4                    | X     | -   | -   | -  | X         | - |  |
| SPWL 05 F45 H                         | 5                    | X     | -   | -   | -  | X         | - |  |
| SPWL 06 F45 H                         | 6                    | X     | -   | -   | -  | X         | - |  |
| SPWL 07 F45 H                         | 7                    | X     | -   | -   | -  | X         | - |  |
| SPWL 08 F45 H                         | 8                    | X     | -   | -   | -  | X         | - |  |
| SPWL 09 F45 H                         | 9                    | X     | -   | -   | -  | X         | - |  |
| SPWL 10 F45 H                         | 10                   | X     | -   | -   | -  | X         | - |  |
| SPWL 11 F45 H                         | 11                   | X     | -   | -   | -  | X         | - |  |
| SPWL 12 F45 H                         | 12                   | X     | -   | -   | -  | X         | - |  |
| SPWL 13 F45 H                         | 13                   | X     | -   | -   | -  | X         | - |  |
| SPWL 14 F45 H                         | 14                   | X     | -   | -   | -  | X         | - |  |
| SPWL 15 F45 H                         | 15                   | X     | -   | -   | -  | X         | - |  |

| WALL MOUNTING FRAME-SET 45 HORIZONTAL / WITH DRAIN BACK |                      |       |     |     |    |           |   |  |
|---|----------------------|-------|-----|-----|----|-----------|---|--|
| Art. No   | Number of collectors | Angle |     |     | DB | Direction |   |  |
|   |                      | 45°   | 60° | 70° |    | H         | V |  |
| SPWL 01 F45 DB H  | 1                    | X     | -   | -   | X  | X         | - |  |
| SPWL 02 F45 DB H  | 2                    | X     | -   | -   | X  | X         | - |  |
| SPWL 03 F45 DB H  | 3                    | X     | -   | -   | X  | X         | - |  |
| SPWL 04 F45 DB H  | 4                    | X     | -   | -   | X  | X         | - |  |
| SPWL 05 F45 DB H  | 5                    | X     | -   | -   | X  | X         | - |  |
| SPWL 06 F45 DB H  | 6                    | X     | -   | -   | X  | X         | - |  |
| SPWL 07 F45 DB H  | 7                    | X     | -   | -   | X  | X         | - |  |
| SPWL 08 F45 DB H  | 8                    | X     | -   | -   | X  | X         | - |  |
| SPWL 09 F45 DB H  | 9                    | X     | -   | -   | X  | X         | - |  |
| SPWL 10 F45 DB H  | 10                   | X     | -   | -   | X  | X         | - |  |
| SPWL 11 F45 DB H  | 11                   | X     | -   | -   | X  | X         | - |  |
| SPWL 12 F45 DB H  | 12                   | X     | -   | -   | X  | X         | - |  |
| SPWL 13 F45 DB H  | 13                   | X     | -   | -   | X  | X         | - |  |
| SPWL 14 F45 DB H  | 14                   | X     | -   | -   | X  | X         | - |  |
| SPWL 15 F45 DB H  | 15                   | X     | -   | -   | X  | X         | - |  |

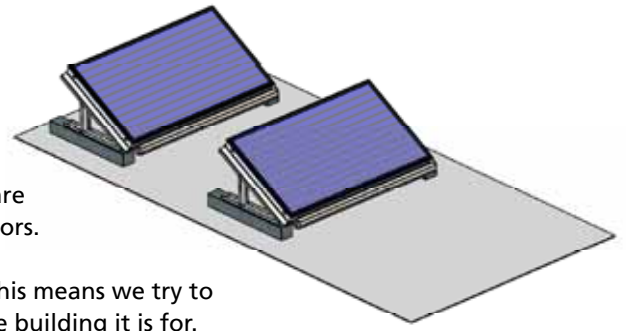
| WALL MOUNTING FRAME-SET 60 HORIZONTAL |                      |       |     |     |    |           |   |  |
|---------------------------------------|----------------------|-------|-----|-----|----|-----------|---|--|
| Art. No                               | Number of collectors | Angle |     |     | DB | Direction |   |  |
|                                       |                      | 45°   | 60° | 70° |    | H         | V |  |
| SPWL 01 F60 H                         | 1                    | -     | X   | -   | -  | X         | - |  |
| SPWL 02 F60 H                         | 2                    | -     | X   | -   | -  | X         | - |  |
| SPWL 03 F60 H                         | 3                    | -     | X   | -   | -  | X         | - |  |
| SPWL 04 F60 H                         | 4                    | -     | X   | -   | -  | X         | - |  |
| SPWL 05 F60 H                         | 5                    | -     | X   | -   | -  | X         | - |  |
| SPWL 06 F60 H                         | 6                    | -     | X   | -   | -  | X         | - |  |
| SPWL 07 F60 H                         | 7                    | -     | X   | -   | -  | X         | - |  |
| SPWL 08 F60 H                         | 8                    | -     | X   | -   | -  | X         | - |  |
| SPWL 09 F60 H                         | 9                    | -     | X   | -   | -  | X         | - |  |
| SPWL 10 F60 H                         | 10                   | -     | X   | -   | -  | X         | - |  |
| SPWL 11 F60 H                         | 11                   | -     | X   | -   | -  | X         | - |  |
| SPWL 12 F60 H                         | 12                   | -     | X   | -   | -  | X         | - |  |
| SPWL 13 F60 H                         | 13                   | -     | X   | -   | -  | X         | - |  |
| SPWL 14 F60 H                         | 14                   | -     | X   | -   | -  | X         | - |  |
| SPWL 15 F60 H                         | 15                   | -     | X   | -   | -  | X         | - |  |

| WALL MOUNTING FRAME-SET 60 HORIZONTAL / WITH DRAIN BACK |                      |       |     |     |    |           |   |  |
|---|----------------------|-------|-----|-----|----|-----------|---|--|
| Art. No   | Number of collectors | Angle |     |     | DB | Direction |   |  |
|   |                      | 45°   | 60° | 70° |    | H         | V |  |
| SPWL 01 F60 DB H  | 1                    | -     | X   | -   | X  | X         | - |  |
| SPWL 02 F60 DB H  | 2                    | -     | X   | -   | X  | X         | - |  |
| SPWL 03 F60 DB H  | 3                    | -     | X   | -   | X  | X         | - |  |
| SPWL 04 F60 DB H  | 4                    | -     | X   | -   | X  | X         | - |  |
| SPWL 05 F60 DB H  | 5                    | -     | X   | -   | X  | X         | - |  |
| SPWL 06 F60 DB H  | 6                    | -     | X   | -   | X  | X         | - |  |
| SPWL 07 F60 DB H  | 7                    | -     | X   | -   | X  | X         | - |  |
| SPWL 08 F60 DB H  | 8                    | -     | X   | -   | X  | X         | - |  |
| SPWL 09 F60 DB H  | 9                    | -     | X   | -   | X  | X         | - |  |
| SPWL 10 F60 DB H  | 10                   | -     | X   | -   | X  | X         | - |  |
| SPWL 11 F60 DB H  | 11                   | -     | X   | -   | X  | X         | - |  |
| SPWL 12 F60 DB H  | 12                   | -     | X   | -   | X  | X         | - |  |
| SPWL 13 F60 DB H  | 13                   | -     | X   | -   | X  | X         | - |  |
| SPWL 14 F60 DB H  | 14                   | -     | X   | -   | X  | X         | - |  |
| SPWL 15 F60 DB H  | 15                   | -     | X   | -   | X  | X         | - |  |

| WALL MOUNTING FRAME-SET 70 HORIZONTAL |                      |       |     |     |    |           |   |  |
|---------------------------------------|----------------------|-------|-----|-----|----|-----------|---|--|
| Art. No                               | Number of collectors | Angle |     |     | DB | Direction |   |  |
|                                       |                      | 45°   | 60° | 70° |    | H         | V |  |
| SPWL 01 F70 H                         | 1                    | -     | -   | X   | -  | X         | - |  |
| SPWL 02 F70 H                         | 2                    | -     | -   | X   | -  | X         | - |  |
| SPWL 03 F70 H                         | 3                    | -     | -   | X   | -  | X         | - |  |
| SPWL 04 F70 H                         | 4                    | -     | -   | X   | -  | X         | - |  |
| SPWL 05 F70 H                         | 5                    | -     | -   | X   | -  | X         | - |  |
| SPWL 06 F70 H                         | 6                    | -     | -   | X   | -  | X         | - |  |
| SPWL 07 F70 H                         | 7                    | -     | -   | X   | -  | X         | - |  |
| SPWL 08 F70 H                         | 8                    | -     | -   | X   | -  | X         | - |  |
| SPWL 09 F70 H                         | 9                    | -     | -   | X   | -  | X         | - |  |
| SPWL 10 F70 H                         | 10                   | -     | -   | X   | -  | X         | - |  |
| SPWL 11 F70 H                         | 11                   | -     | -   | X   | -  | X         | - |  |
| SPWL 12 F70 H                         | 12                   | -     | -   | X   | -  | X         | - |  |
| SPWL 13 F70 H                         | 13                   | -     | -   | X   | -  | X         | - |  |
| SPWL 14 F70 H                         | 14                   | -     | -   | X   | -  | X         | - |  |
| SPWL 15 F70 H                         | 15                   | -     | -   | X   | -  | X         | - |  |

| WALL MOUNTING FRAME-SET 70 HORIZONTAL / WITH DRAIN BACK |                      |       |     |     |    |           |   |  |
|---|----------------------|-------|-----|-----|----|-----------|---|--|
| Art. No   | Number of collectors | Angle |     |     | DB | Direction |   |  |
|   |                      | 45°   | 60° | 70° |    | H         | V |  |
| SPWL 01 F70 DB H  | 1                    | -     | -   | X   | X  | X         | - |  |
| SPWL 02 F70 DB H  | 2                    | -     | -   | X   | X  | X         | - |  |
| SPWL 03 F70 DB H  | 3                    | -     | -   | X   | X  | X         | - |  |
| SPWL 04 F70 DB H  | 4                    | -     | -   | X   | X  | X         | - |  |
| SPWL 05 F70 DB H  | 5                    | -     | -   | X   | X  | X         | - |  |
| SPWL 06 F70 DB H  | 6                    | -     | -   | X   | X  | X         | - |  |
| SPWL 07 F70 DB H  | 7                    | -     | -   | X   | X  | X         | - |  |
| SPWL 08 F70 DB H  | 8                    | -     | -   | X   | X  | X         | - |  |
| SPWL 09 F70 DB H  | 9                    | -     | -   | X   | X  | X         | - |  |
| SPWL 10 F70 DB H  | 10                   | -     | -   | X   | X  | X         | - |  |
| SPWL 11 F70 DB H  | 11                   | -     | -   | X   | X  | X         | - |  |
| SPWL 12 F70 DB H  | 12                   | -     | -   | X   | X  | X         | - |  |
| SPWL 13 F70 DB H  | 13                   | -     | -   | X   | X  | X         | - |  |
| SPWL 14 F70 DB H  | 14                   | -     | -   | X   | X  | X         | - |  |
| SPWL 15 F70 DB H  | 15                   | -     | -   | X   | X  | X         | - |  |

# Custom solutions



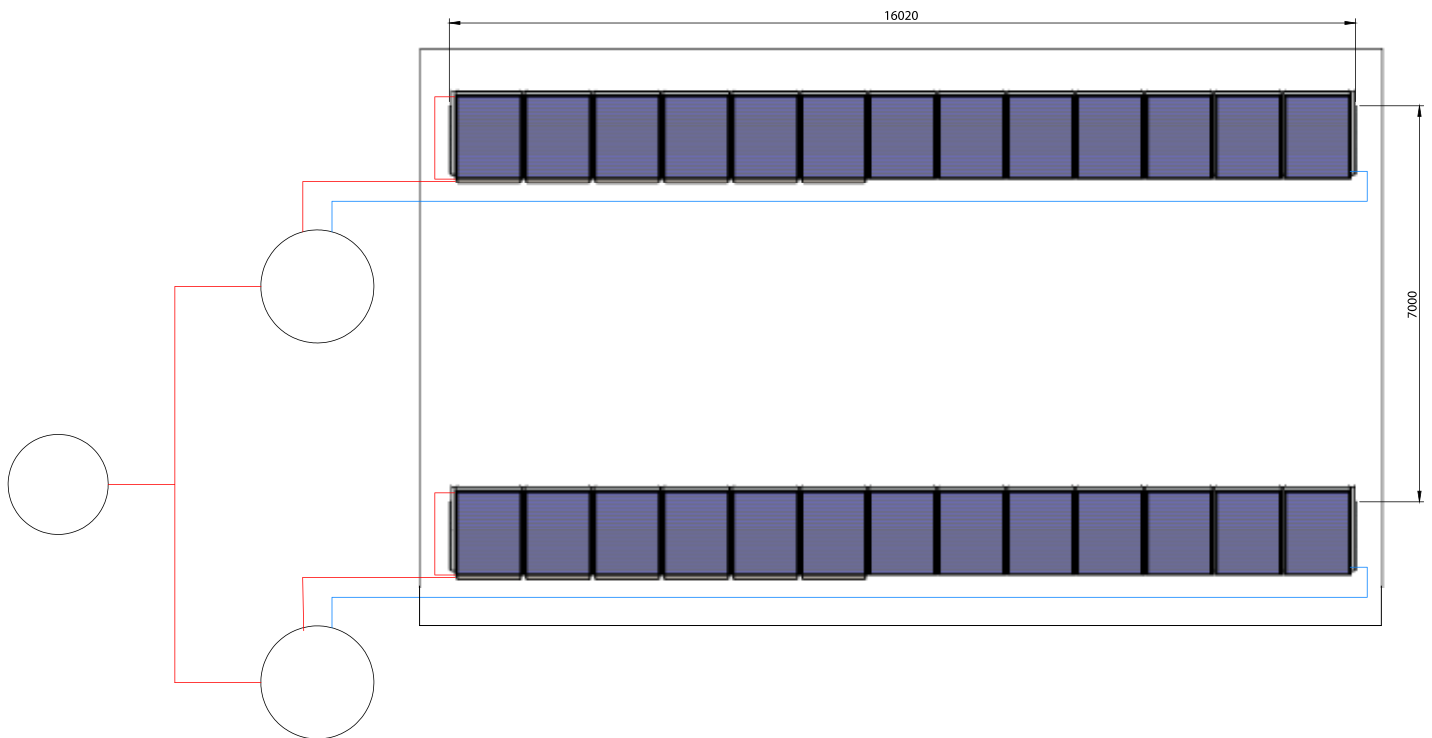
A.O. Smith has an extensive assortment collector sets. But we are also aware of the unique situation that arises when placing a solar system and collectors.

Our goal is to optimise the benefit the user gains from the solar system. This means we try to create an installation which meets the hot water requirements and fits the building it is for.

This means we try to fit our products in the best possible solution. Our Sales Engineers can help you to create this. Besides that we can provide you with (building) drawings or special applications.

We can provide drawings for the positioning of the collectors on the roof. Or provide you with a principle – scheme of the application of the installation. And we can help you create the best possible frame construction for the collectors on the roof.

A.O. Smith is your partner in creating the best solar installation for every application.



# Wind load on flat roof frame constructed collectors

The A.O. Smith flat roof frame construction collector sets are equipped with all the parts withstand a maximum of Gale wind force 7, measured at the collector. In case you want to ensure safety for higher wind load, we advice to add extra concrete blocks (C) at the frames of the collectors.

The tables below show the required weight that is needed to withstand several wind forces. The first table is regarding horizontal collectors, the second regarding vertically installed collectors. Please consider the maximum load the roof can handle, when adding weight to the collector array.

No rights or claims can be derived from the information in the tables below. We strongly advise to consult a local specifier before installing the extra weight on a roof.

A.O. Smith can deliver an extra concrete block, this block weighs 45 kg. The article number for this extra block is 0308762.

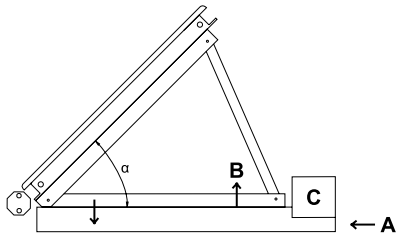


Table for horizontal collectors including a safety factor of 50%

| HORIZONTAL COLLECTOR AT 30° FRAME |                  |                            |                        |                              |
|-----------------------------------|------------------|----------------------------|------------------------|------------------------------|
| Gale Force                        | Wind speed (m/s) | A<br>Horizontal force (kN) | B<br>Max pull off (kN) | C<br>Weight extra block (kg) |
| 8                                 | 17.2 – 20.7      | 1.26                       | 0.70                   | 16                           |
| 9                                 | 20.8 – 24.4      | 1.87                       | 1.03                   | 43                           |
| 10                                | 24.5 – 28.4      | 2.39                       | 1.32                   | 65                           |
| 11                                | 28.5 – 32.6      | 3.14                       | 1.73                   | 97                           |
| >11                               | 40               | 3.51                       | 1.94                   | 113                          |
| HORIZONTAL COLLECTOR AT 45° FRAME |                  |                            |                        |                              |
| 8                                 | 17.2 – 20.7      | 1.34                       | 0.87                   | 30                           |
| 9                                 | 20.8 – 24.4      | 1.98                       | 1.29                   | 63                           |
| 10                                | 24.5 – 28.4      | 2.52                       | 1.64                   | 90                           |
| 11                                | 28.5 – 32.6      | 3.32                       | 2.16                   | 131                          |
| >11                               | 40               | 3.72                       | 2.42                   | 151                          |
| HORIZONTAL COLLECTOR AT 60° FRAME |                  |                            |                        |                              |
| 8                                 | 17.2 – 20.7      | 1.41                       | 1.02                   | 41                           |
| 9                                 | 20.8 – 24.4      | 2.08                       | 1.51                   | 80                           |
| 10                                | 24.5 – 28.4      | 2.65                       | 1.92                   | 112                          |
| 11                                | 28.5 – 32.6      | 3.49                       | 2.52                   | 159                          |
| >11                               | 40               | 3.92                       | 2.82                   | 182                          |

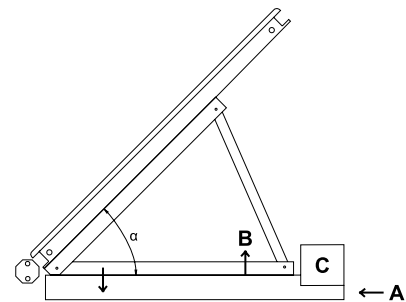


Table for vertical collectors including a safety factor of 50%

| VERTICAL COLLECTOR AT 30° FRAME |                  |                            |                        |                              |
|---------------------------------|------------------|----------------------------|------------------------|------------------------------|
| Gale Force                      | Wind speed (m/s) | A<br>Horizontal force (kN) | B<br>Max pull off (kN) | C<br>Weight extra block (kg) |
| 8                               | 17.2 – 20.7      | 1.27                       | 1.27                   | 61                           |
| 9                               | 20.8 – 24.4      | 1.88                       | 1.88                   | 109                          |
| 10                              | 24.5 – 28.4      | 2.39                       | 2.39                   | 149                          |
| 11                              | 28.5 – 32.6      | 3.15                       | 3.15                   | 208                          |
| >11                             | 40               | 3.52                       | 3.52                   | 237                          |
| VERTICAL COLLECTOR AT 45° FRAME |                  |                            |                        |                              |
| 8                               | 17.2 – 20.7      | 1.36                       | 1.58                   | 85                           |
| 9                               | 20.8 – 24.4      | 2.01                       | 2.34                   | 145                          |
| 10                              | 24.5 – 28.4      | 2.56                       | 2.98                   | 195                          |
| 11                              | 28.5 – 32.6      | 3.37                       | 3.92                   | 268                          |
| >11                             | 40               | 3.77                       | 4.39                   | 305                          |
| VERTICAL COLLECTOR AT 60° FRAME |                  |                            |                        |                              |
| 8                               | 17.2 – 20.7      | 1.42                       | 1.82                   | 104                          |
| 9                               | 20.8 – 24.4      | 2.11                       | 2.70                   | 173                          |
| 10                              | 24.5 – 28.4      | 2.69                       | 3.44                   | 231                          |
| 11                              | 28.5 – 32.6      | 3.53                       | 4.52                   | 315                          |
| >11                             | 40               | 3.95                       | 5.06                   | 358                          |

Data subject to change