

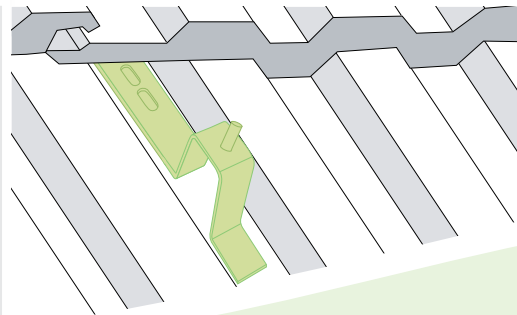
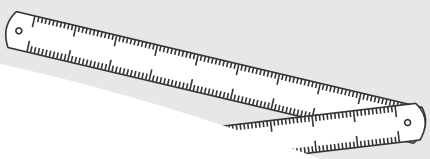
s power

Entwicklungs- & Vertriebs GmbH
Vacuum tube collectors HighTech "Made in Germany"



Innovation prize 2008
for the NARVA vacuum tubes.

From glass factory to finished
high performance vacuum tubes,
HighTech "Made in Germany".



Installation instructions

Installation instructions for:

s-power DF 10 1000 TPS inside + **s-power DF 20** 2000 TPS inside + **s-power DF 30** 3000 TPS inside



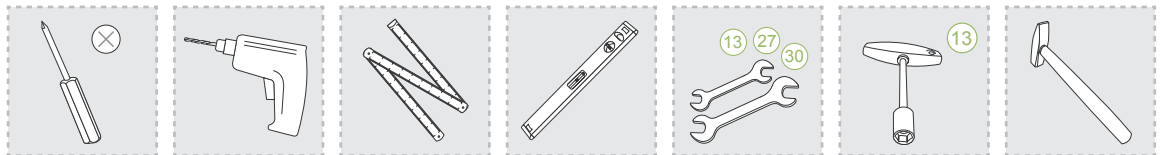
General information:

The tube sets should be transported horizontally. Only up to max. 7 cartons may be stacked on top of one and other. Our installation sets are valid for all snow load zones (except Zone 3). In storm areas, special structural analyses must be carried out.

Work safety information:

Wear a helmet, hearing protection and protective glasses! Attach fall protection equipment! Handle glass tubes only while wearing gloves (are included)

Required tools:



Possible installation types:

Flat roof, facade, tiled roof (roofing tile), corrugated metal roof

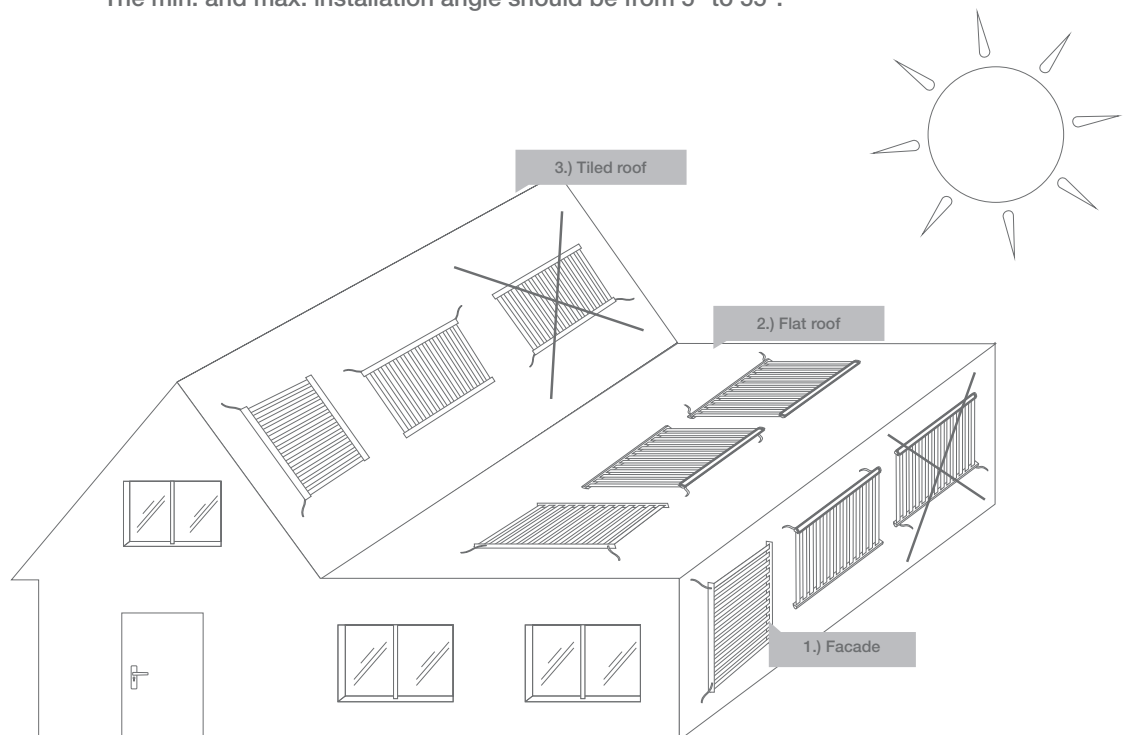


Caution!

The collectors are to be installed so that the distributor tube is in position at either the top or on the left or right hand side.

Please make sure that the tubes can be oriented towards the sun.

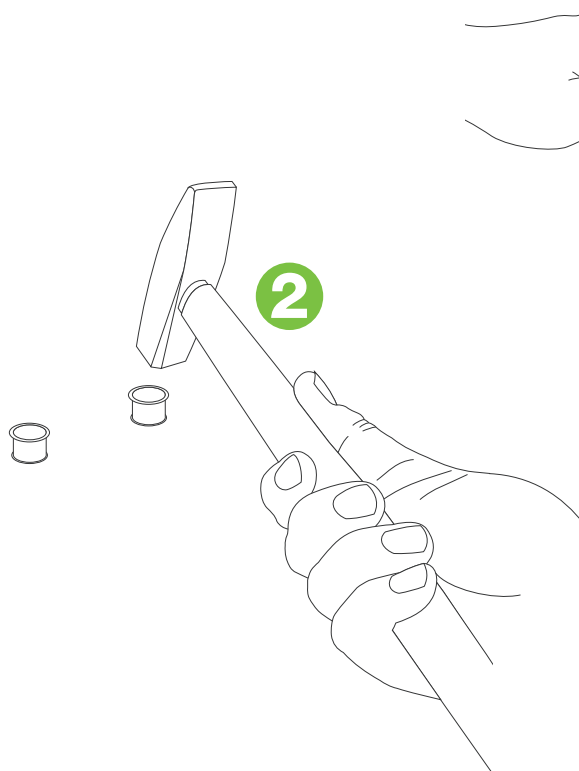
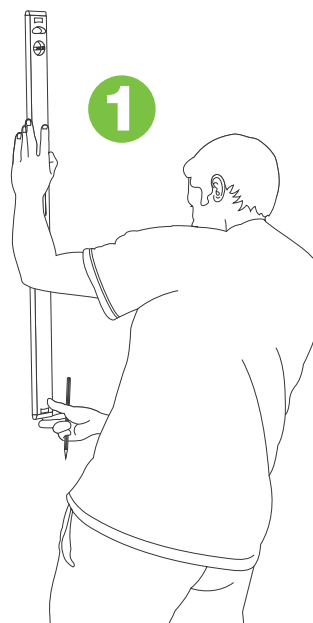
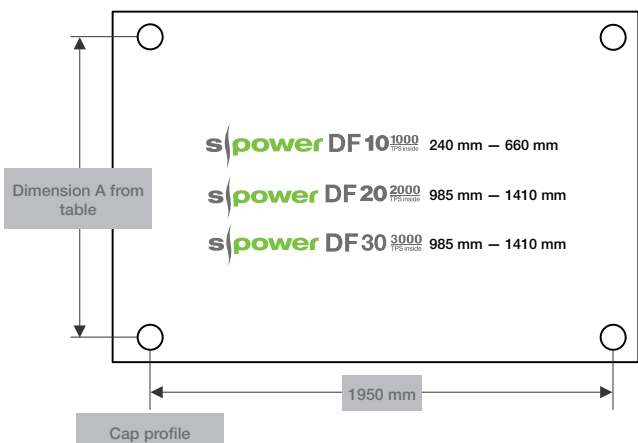
The min. and max. installation angle should be from 5° to 55°.





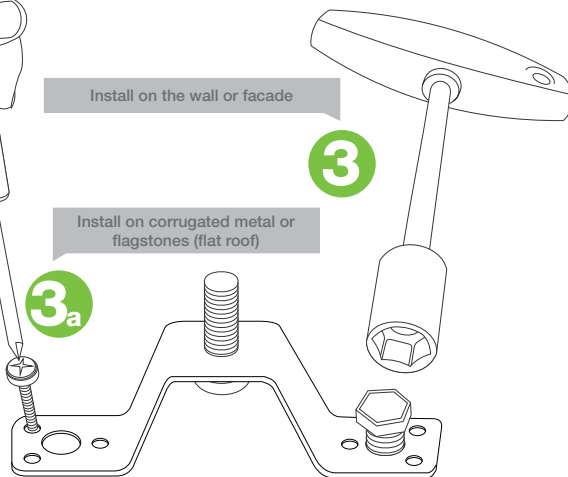
Set the cap profile in the facade or elevated track.
For wall/facade installation, the cap profile is to be vertically mounted.

**Wall/facade, flat roof and corrugated metal installation
(Roof and wall):**



Install on the wall or facade

Install on corrugated metal or flagstones (flat roof)



Mark **1**, drill, insert wall plug **2**, install cap profile with key screw NW 13 mm **3**, mount with suitable screws for corrugated metal and flat roof installation **3_a**. Slide reflectors - if available - onto the cap profile and secure with nuts.

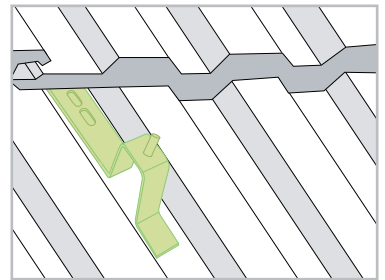
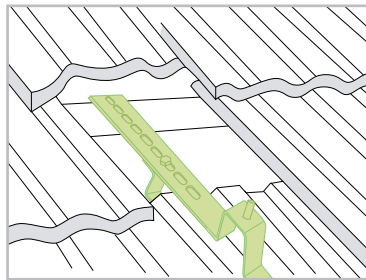
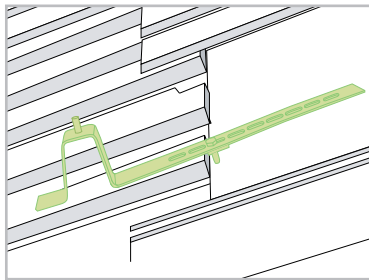
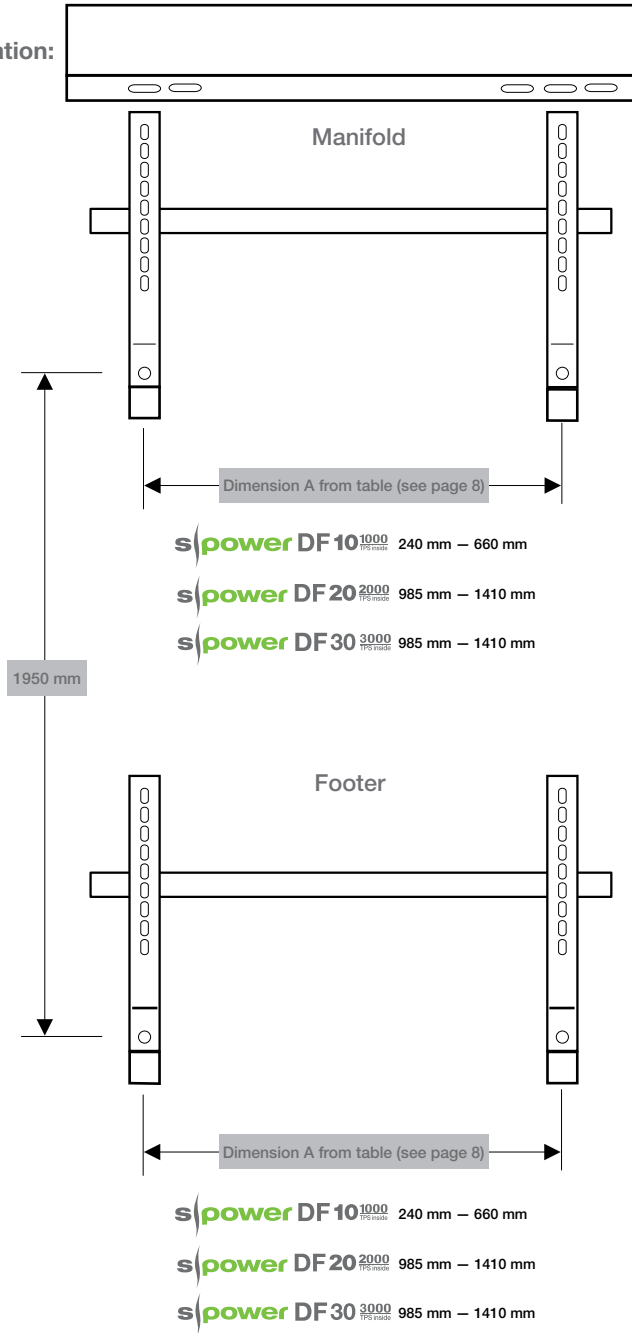
• **Flat roof installation:**

For flat roof installation, the cap profile is to be mounted on approx. 40x40 cm flagstones and laid flat on the roof.

• **Corrugated metal installation (roof+wall):**

Screw the cap profile onto the trapezoid tin using self-cutting drill screws (sealing: Silicone among others). Collector installation same as all other types of fastenings.

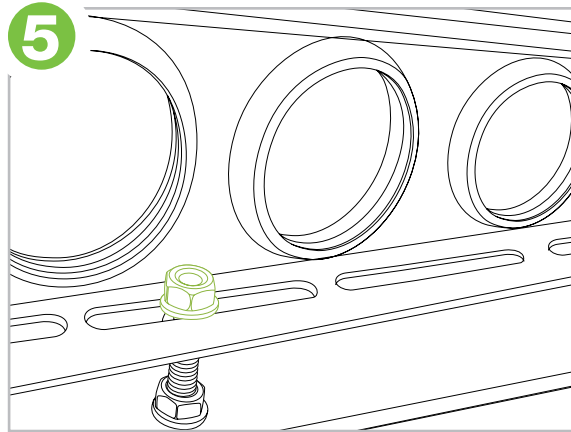
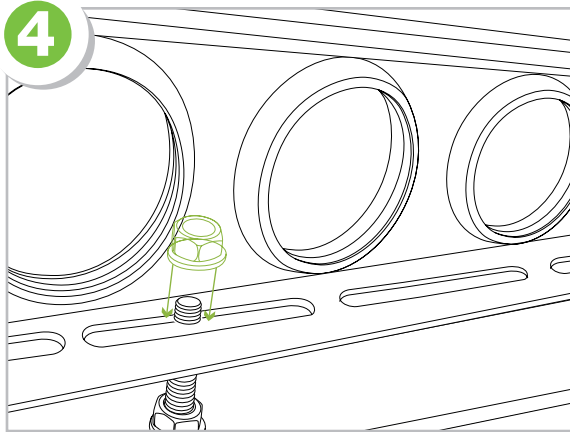
• Tiled roof installation:



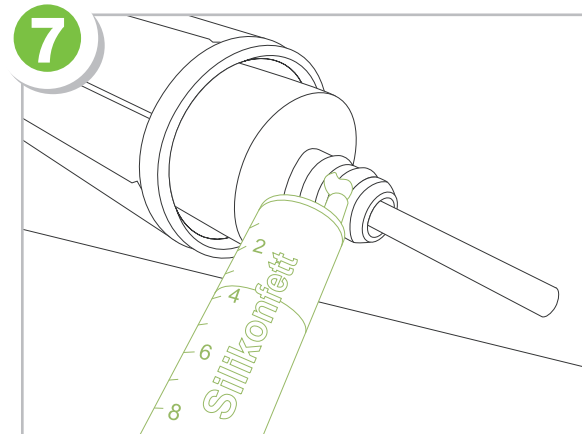
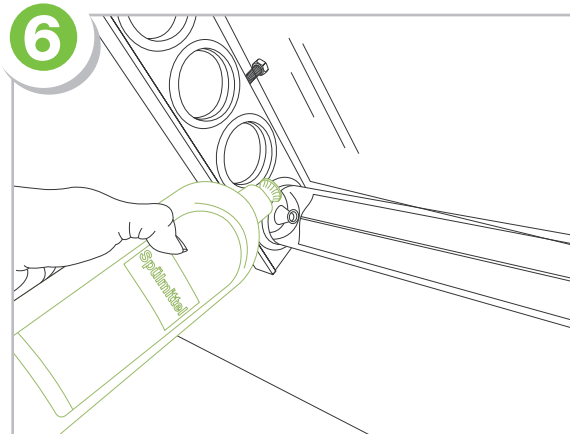
Install the supporting bracket:

Attach with Locking nut - screw nut M8. **4+5**

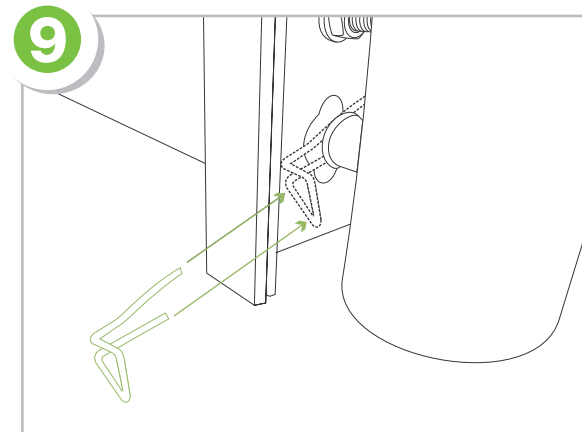
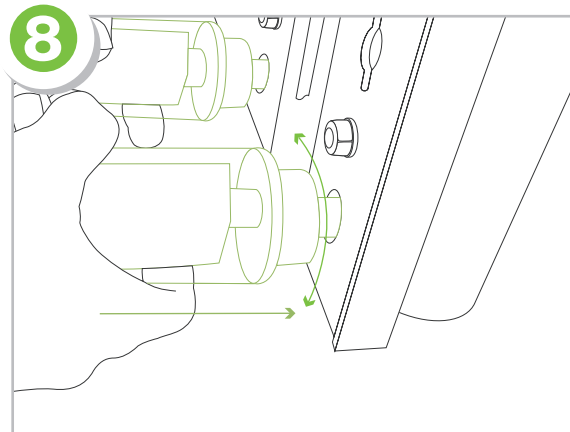
When installing multiple collectors in series, make sure that the o-ring connector is completely inserted into both collectors. Collector casing and drum must be mounted straight and flush with each other.



Following this insert the tubes. **Important!** Lubricate the rubber rings on the foot with dishwashing detergent so that the vacuum tube can be easily inserted. **6**

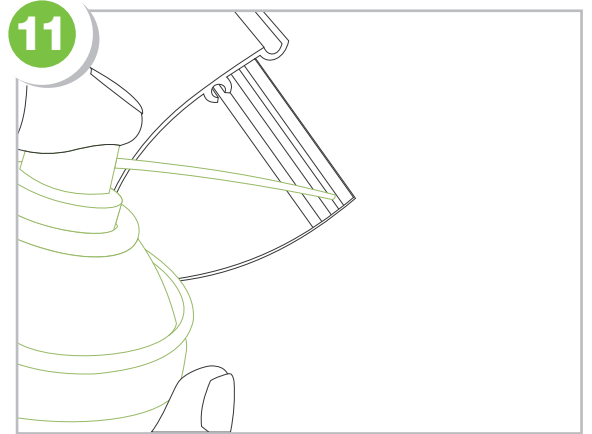
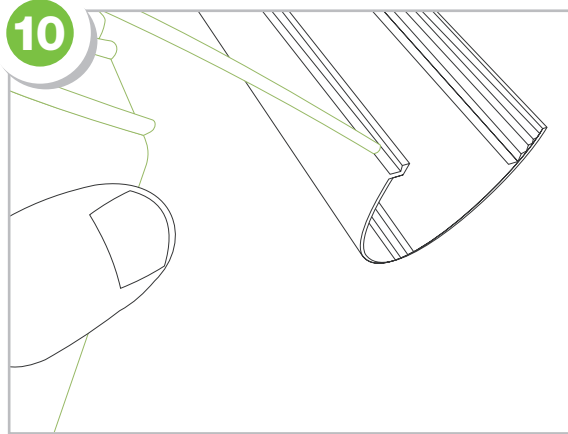


Important! Grease the O-rings of the tubes with silicone grease **7** (use only the enclosed acid free silicone grease). Constantly rotate the vacuum tube while inserting. **8** Then insert the tube into the other supporting bracket/drum and secure with clip connectors! **9**

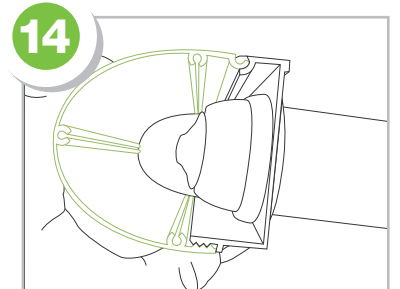
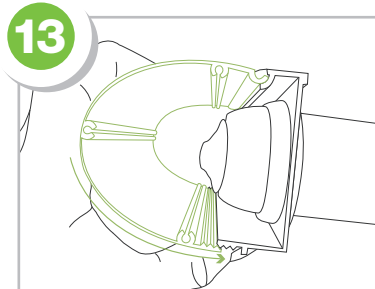
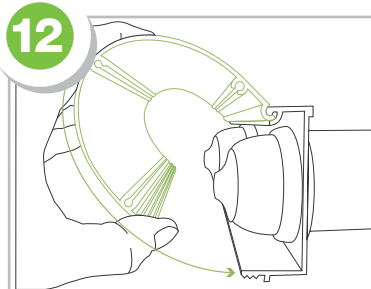


Mount the end cap and connection tube **10 + 11** :

Spray the screw-in connection and cogging of the supporting bracket with e.g. WD 40 or LM 40!

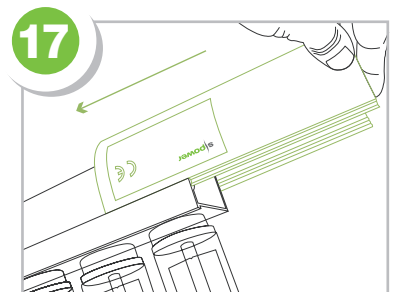
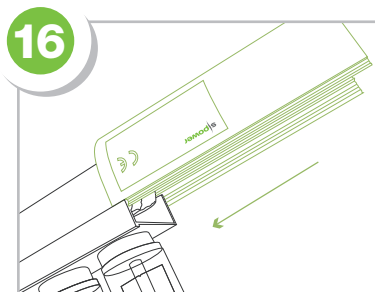
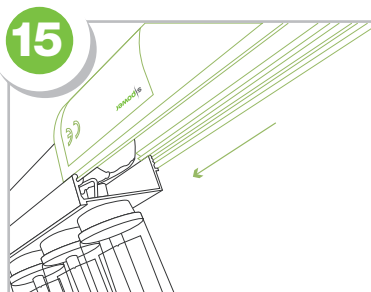


Foot:

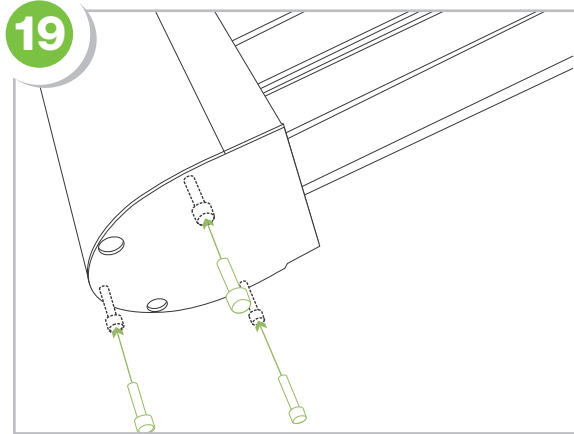
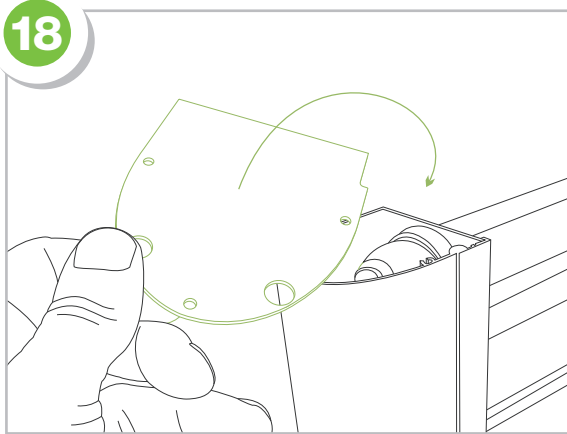


Drum:

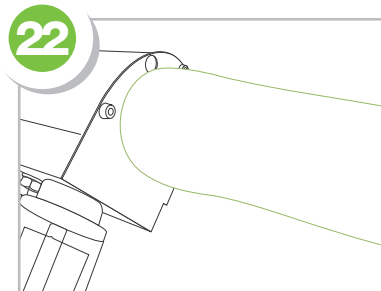
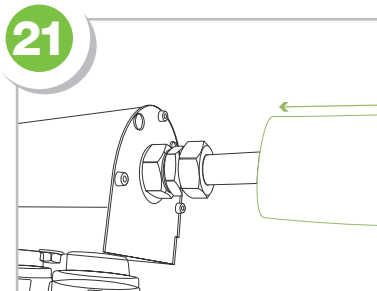
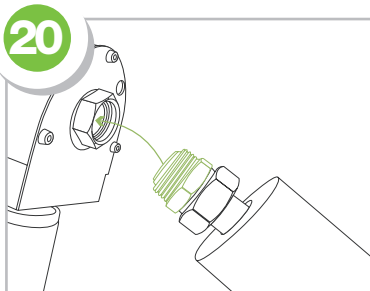
Push the casing of the drum over the supporting bracket! **15 + 16 + 17**



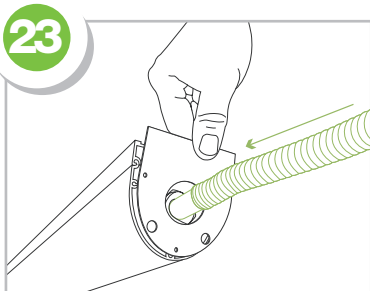
For all types of installations:
Mount the end cap. 18 + 19



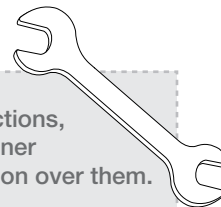
Caution! The Euro-conus connector or the sensor T-piece should always be mounted on the collector discharge side. For laterally-inverted connections, the adapter (Art.-No. 791104) should be used.



On the left hand side: Grease the O-ring of the collector connection with silicone grease, connect the corrugated hose, push the side cap over the corrugated hose and mount. Following this pull the insulation over the hose. 23



Screw on the connections,
pull tight with a spanner
and push the insulation over them.





Technical Data:

s-power DF 10 ¹⁰⁰⁰TPS inside s-power DF 20 ²⁰⁰⁰TPS inside s-power DF 30 ³⁰⁰⁰TPS inside

[W _{peak}] with reflection radiation*1	1104 W _p	1000 S <small>TPS inside</small>	2208 W _p	2000 S <small>TPS inside</small>	3312 W _p	3000 S <small>TPS inside</small>
[W _{peak}] without reflection radiation*1	789 W _p	1000 <small>TPS inside</small>	1578 W _p	2000 <small>TPS inside</small>	2367 W _p	3000 <small>TPS inside</small>
Number of tubes in pcs.*2	10		20		30	
aperture area	1.02 m ² / 1.46 m ² m.S.		2.03 m ² / 2.92 m ² m.S.		3.05 m ² / 4.44 m ² m.S.	
η ₀ with reflection radiation*3	0.988		0.988		0.988	
η ₀ without reflection radiation*3	0.787		0.787		0.787	
Max. operating pressure in bar	10		10		10	
Inspection pressure in bar	15		15		15	
Max. stagnancy temperature	192°C		192°C		192°C	
Fluid volume in liter	1,36		2,72		4,08	
Weight in mm	19,2		38,2		54,4	
Length in mm	2164		2164		2164	
Width in mm	750		1500		2250	
Height in mm	88		88		88	
Gross surface area in m ²	1,62		3,25		4,87	

*1 Max. Power as Keymark about solar radiation of 1000 W/m²

*2 Absorber of the vacuum tubes both side coating

*3 In terms of aperture area of vacuum tubes

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We are available for questions concerning the installation of our high quality vacuum tube collectors at any time:

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