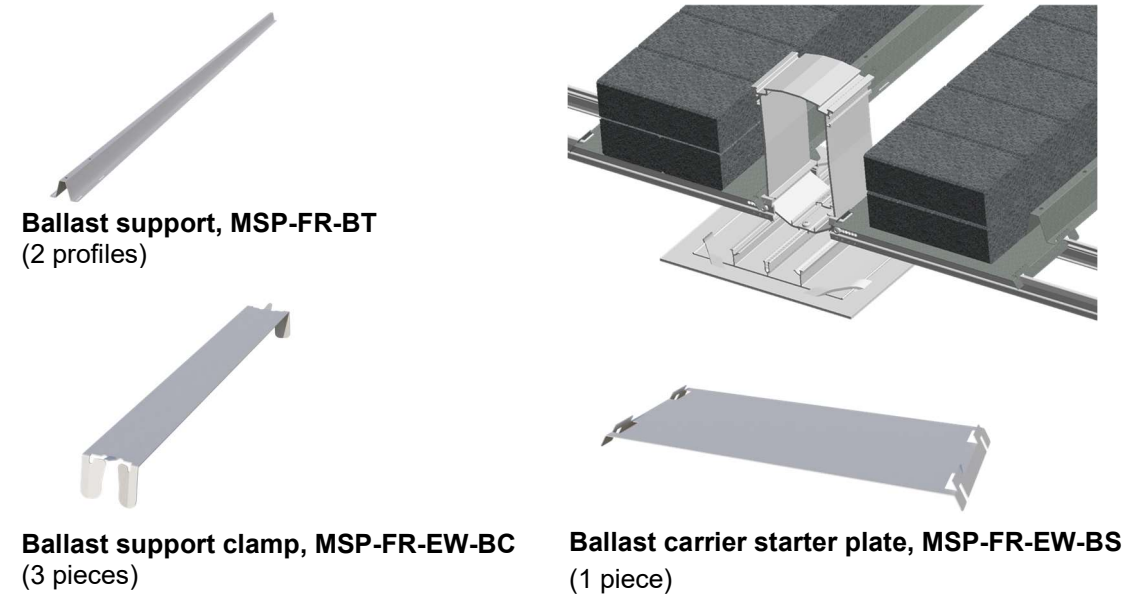


Solarsystems by Schweizer

Infolyer - new ballast system MSP-FR

New ballast system

All module sizes are covered by a few parts



Ballast support, MSP-FR-BT
(2 profiles)




Ballast support clamp, MSP-FR-EW-BC
(3 pieces)

Ballast carrier starter plate, MSP-FR-EW-BS
(1 piece)

Fig. 1: Overview of components (quantity required for 1 set/field)

The advantages at a glance

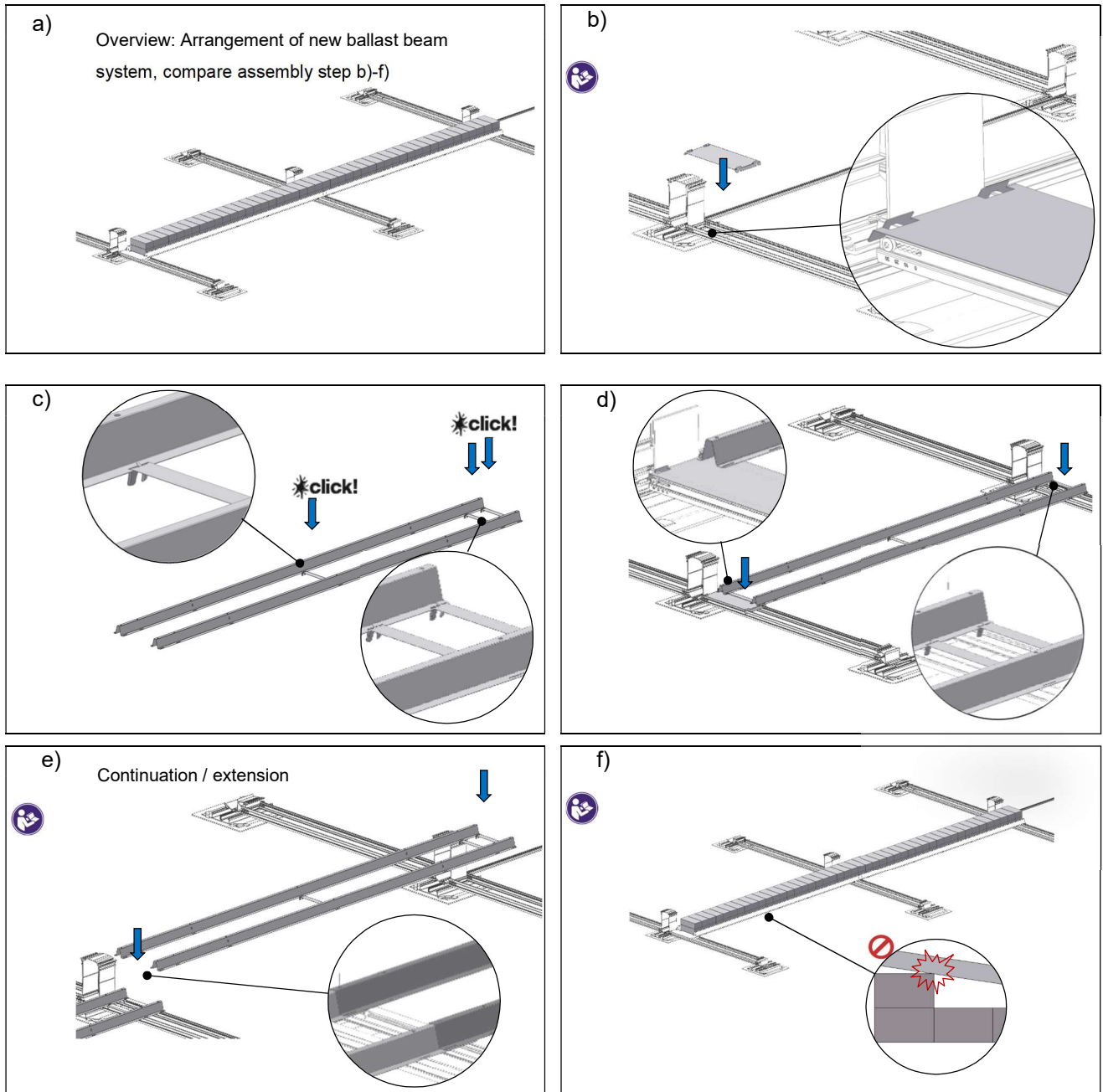
- Fast, tool-free assembly
- Easy handling thanks to plug-in system
- Improved ballast carrying capacity
- High load-bearing capacity with optimised use of materials

Description	Figure	Material	Name	PU	Article no.
Ballast support MSP-FR-BT		Sheet steel ZM-coated	MSP-FR-BT 2270-2399	8	22964 N
			MSP-FR-BT 2140-2269	8	22965 N
			MSP-FR-BT 2010-2139	8	22966 N
			MSP-FR-BT 1880-2009	8	22967 N
			MSP-FR-BT 1750-1879	8	22968 N
			MSP-FR-BT 1620-1749	8	22969 N
Ballast support clamp MPS-FR-BC		Stainless steel	MSP-FR-BC	60	22970 N
Ballast carrier starter plate MSP-FR-EW-BS		Sheet steel ZM-coated	MSP-FR-EW-BS	10	22972 N

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Assembly procedure and important instructions



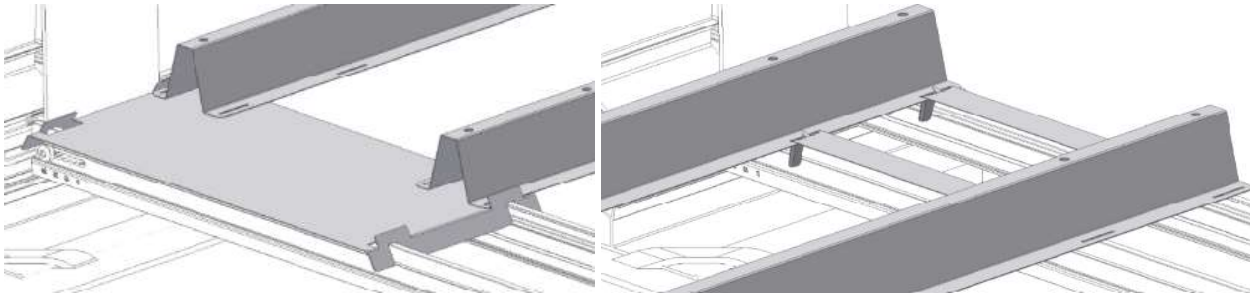
Note: No clamp is required for slot position **S** !



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Design resistance of the ballast support beam pair MSP-FR-BT (connecting rails stiffened)



Stiffening of the connecting rails by start plate and brackets

Load capacity: ballast support beam without centre support MSP-FR-BT

Connecting rail / Module length range	Art. / mm	2072369 950-1010	21464 1011-1075	21872 1076-1140	21873 1141-1205	22250 1206-1270	22277 1271-1335
Pressure resistance (two supports)	N_{Rd} in kN	1.12	1.04	0.96	0.90	0.86	0.82

The loads are limited by the load-bearing capacity of the connecting rails.

Load capacity: ballast support beam with centre support MSP-FR-BT

Connecting rail / Module length range	Art. / mm	Alle 950-1335	
Pressure resistance (three supports)	N_{Rd} in kN	1.16	

Support is divided between 3 connecting rails. Maximum given by ballast beam.

Note: When using middle support, no middle clamp.

Certification

The addition to the already certified substructure does not require any additional certification of the new individual parts. A new structural verification according to EC1&EC3 (EN1990/EN1993-1-1&3) and EN1090 was provided for their load-bearing capacity.

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Equipotential bonding

Not every small part has to be connected to the equipotential bonding, especially where solar modules of protection class 2 are used.

The NIN (EN, IEC and NIN are harmonised) states that the mounting structure must be connected to the potential equalisation. Thus, one connection point is sufficient if the systems are metallically connected to each other.

Conclusion from the NIN 2020

No requirements have been defined for the quality of the connections within the array, except when a solar module array is part of the mesh network for lightning protection.

Our concept fulfils this metallic and geometric contact. Between the trapezoidal profiles we have a sufficiently large surface overlap and towards the connecting rails we also have defined contact points that are held by the clamp, even "clipped". In addition, each point is pressed on with approx. 200-300N when the ballast tray is loaded. The parts are not in direct contact with the PV modules.