STÄUBLI

Tools and accessories

Renewable Energy | Solar Photovoltaics

EN

Content

ASSEMBLY TOOLS

Crimping pliers for MC4 and MC4-Evo 2

Crimping pliers for MC4 and MC4-Evo 2
(PV-CZM...)

Locator (PV-LOC-MC4-EVO 2...)

Locator (PV-LOC-MC4...)

Crimping die (PV-ES-CZM...)

- One crimping pliers for crimping on both MC4 and MC4-Evo 2.
- Designed to be used for all open B-crimps (not applicable for closed crimp contacts).
- The crimping tool can process the following conductor cross-sections with one crimping die:
  - Size 1: 2.5 mm², 4 mm² and 6 mm²
  - Size 2: 4 mm², 6 mm² and 10 mm²
- TÜV and UL certified product.
- Registered design feature providing traceability information about crimping tool on each individual crimp.

How to verify that each crimp is made using the suitable tool and die?

The registered design of the crimp traceability concept is providing information about the conductor size, crimp height and crimp width. For further information about this feature please refer to assembly instruction MA704.

Crimping die

Finished crimp indent
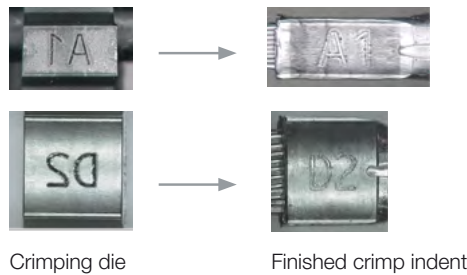
Usage matrix

Connector type	Conductor cross section	Open crimp contacts **B-Crimp**	Closed crimp contacts* **O-Crimp**	Crimping pliers PV-CZM-60100 **32.6020-60100**	Crimping pliers PV-CZM-61100 **32.6020-61100**	Crimping dies PV-ES-CZM-60100 **32.6021-60100**	Crimping dies PV-ES-CZM-61100 **32.6021-61100**	Locators PV-LOC-MC4 **32.6081** 4 mm²; 6 mm²; 10 mm²	Locators PV-LOC-MC4 **32.6082** 2.5 mm²; 4 mm²; 6 mm²	Locators PV-LOC-MC4-EVO 2 **32.6083** 4 mm²; 6 mm²; 10 mm²	Locators PV-LOC-MC4-EVO 2 **32.6084** 2.5 mm²; 4 mm²; 6 mm²
PV-KBT4/2,5...-UR PV-KST4/2,5...-UR	2.5 mm²	✓	✗		✓		✓		✓		
	14 AWG	✓	✗		✓		✓		✓		
PV-KBT4/6...-UR PV-KST4/6...-UR	4 mm²	✓	✗	✓	✓	✓	✓	✓	✓		
	12 AWG	✓	✗	✓	✓	✓	✓	✓	✓		
	6 mm²	✓	✗	✓	✓	✓	✓	✓	✓		
	10 AWG	✓	✗	✓	✓	✓	✓	✓	✓		
PV-KBT4/10... PV-KST4/10...	10 mm²	✓	✗	✓		✓		✓			
PV-KST4-EVO 2/2.5...-UR PV-KBT4-EVO 2/2.5...-UR	2.5 mm²	✓	✗		✓		✓				✓
	14 AWG	✓	✗		✓		✓				✓
PV-KST4-EVO 2/6...-UR PV-KBT4-EVO 2/6...-UR	4 mm²	✓	✗	✓	✓	✓	✓			✓	✓
	12 AWG	✓	✗	✓	✓	✓	✓			✓	✓
	6 mm²	✓	✗	✓	✓	✓	✓			✓	✓
	10 AWG	✓	✗	✓	✓	✓	✓			✓	✓
PV-KST4-EVO 2A/6... PV-KBT4-EVO 2A/6...	4 mm²	✓	✗	✓	✓	✓	✓			✓	✓
	12 AWG	✓	✗	✓	✓	✓	✓			✓	✓
	6 mm²	✓	✗	✓	✓	✓	✓			✓	✓
	10 AWG	✓	✗	✓	✓	✓	✓			✓	✓
PV-KST4-EVO 2A/10... PV-KBT4-EVO 2A/10...	10 mm²	✓	✗	✓		✓				✓	
	8 AWG	✓	✗	✓		✓				✓	

* The crimping pliers for MC4 and MC4-Evo 2 along with the available crimping dies listed in the above table do not provide any feasible crimping for closed crimps. Closed crimps will become unuseable.

Ordering information

Order-No.	Type	Description	Crimping range
			mm²
32.6020-61100	PV-CZM-61100	**Size 1:** Crimping pliers incl. locator for MC4 and MC4-Evo 2	2.5; 4; 6
Consisting of:			
32.6082	PV-LOC-MC4 2.5/4/6	Locator for MC4	
32.6084	PV-LOC-MC4-EVO 2 2.5/4/6	Locator for MC4-Evo 2	2.5; 4; 6
32.6021-61100	PV-ES-CZM-61100	Crimping die	
32.6020-60100	PV-CZM-60100	**Size 2:** Crimping pliers incl. locator for MC4 and MC4-Evo 2	4; 6; 10
Consisting of:			
32.6081	PV-LOC-MC4 4/6/10	Locator for MC4	
32.6083	PV-LOC-MC4-EVO 2 4/6/10	Locator for MC4-Evo 2	4; 6; 10
32.6021-60100	PV-ES-CZM-60100	Crimping die	

Further information

Assembly instructions

For assembly instructions for "Crimping pliers for MC4 and MC4-Evo 2" please consult:
www.staubli.com/re-downloads.html ➞ English ➞ Assembly info ➞ **MA704**

Crimping pliers for closed crimp contacts MC4

Crimping pliers for closed crimp contacts MC4
(PV-CZM...)

- These tools are to be used for the assembly of UL- and TÜV-approved products.
- These are suited for the processing of high numbers of pieces and can be adjusted to the product to be processed with the help of changeable locators and crimp inserts.

Ordering information

Order No.	Type	Designation	Connector system	Crimp range		Crimptype	
				mm²	AWG	Open crimp AWG	Closed crimp AWG
32.6020-16100A	PV-CZM-16100A	Crimping pliers incl. locator and crimping die	MC4	2.5; 4; 6	14; 12; 10		14; 12; 10
32.6020-22100	PV-CZM-22100		MC4		12; 10; 8	12; 10	8
32.6020-23100	PV-CZM-23100		MC4		14; 12; 10; 8		14; 12; 10; 8

Individual parts

32.6021-18100	PV-ES-CZM-18100	Crimping die	MC4	2.5	14; 12		14; 12
32.6021-22100	PV-ES-CZM-22100	Crimping die	MC4		12; 10; 8	12; 10	8
32.6021-23100	PV-ES-CZM-23100	Crimping die	MC4		14; 12; 10; 8		14; 12; 10; 8
32.6055	PV-LOC-B	Locator	MC4		12; 10; 8	12; 10	8
32.6074	PV-LOC-D	Locator	MC4		14; 12; 10; 8		14; 12; 10; 8

Note

Please contact us for information on pneumatic crimp station options.

Note

For applications on the MC4 test socket and plug (order no. 32.0044 and 32.0045), please use the type PV-CZM-16100.

Further information

Assembly instructions

For assembly instructions for "Crimping pliers for closed crimp contacts MC4 (PV-CZM...)" please consult:
www.staubli.com/re-downloads.html ➜ English ➜ Assembly info ➜ **MA251**

Crimping pliers for closed crimp contacts MC4

Crimping pliers for closed crimp contacts MC4 (PV-CZLX/6AWG...)

- Manual crimping pliers for MC4 cable couplers with 6 AWG closed crimp terminals (PV-KBT4/13II-UR and PV-KST/13II-UR).
- Locator included for correct positioning of crimp.

Ordering information

Order No.	Type	Designation	Connector system	Crimp range		Crimptype	
				mm²	AWG	Open crimp AWG	Closed crimp AWG
32.0349	PV-CZLX/6AWG	Crimping pliers, incl. locator	MC4		6		6
Individual parts							
32.0350	PV-CZL/6AWG-LOC	Locator	MC4		6		6

Note

Please contact us for information on pneumatic crimp station options.

Further information

Assembly instructions

For assembly instructions for "Crimping pliers for closed crimp contacts MC4 (PV-CZLX/6AWG)" please consult: www.staubli.com/re-downloads.html ➜ English ➜ Assembly info ➜ **MA710**

Crimping pliers for semi-professional use MC4

Crimping pliers for semi-professional use MC4
(PV-CZM-BS)

- Suitable for the assembly of products approved by TÜV in small amounts.
- Complete tool for the assembly of the original MC4.

Ordering information

Order No.	Type	Designation	Pliers cross sections		Connector system
			mm²	AWG	
32.6025	PV-CZM-BS	Crimping pliers, complete	2.5; 4; 6		MC4

Further information

Assembly instructions

For assembly instructions for "Crimping pliers for semi-professional use MC4" please consult:
www.staubli.com/re-downloads.html ➜ English ➜ Assembly info ➜ **MA289**

Stripping pliers

Stripping pliers (PV-AZM...)

- Specially adapted for the Flex-Sol-Evo PV cable.
- For stripping small cable quantities.
- With length stop.

Ordering information

Order No.	Type	Designation	Pliers cross sections
			mm²
32.6027-156	PV-AZM-156	Stripping pliers incl. built-in stripping blades	1.5; 2.5; 4; 6
32.6027-410	PV-AZM-410	Stripping pliers incl. built-in stripping blades	4; 6; 10
32.6057-156	PV-M-AZM-156	Stripping blades set	1.5; 2.5; 4; 6
32.6057-410	PV-M-AZM-410	Stripping blades set	4; 6; 10

Further information

Assembly instructions

For assembly instructions for "Stripping pliers" please consult:
www.staubli.com/re-downloads.html ➜ English ➜ Assembly info ➜ **MA267**

Open-end spanner and unlocking tool

Open-end spanner set for MC4 (PV-MS)

Open-end spanner set for MC4 and
MC4-Evo 2 (PV-MS-PLS)

Unlocking tool for MC4-Evo 2
(PV-MS-MC4-EVO 2)

Unlocking tool for MC4-Evo AC
(PV-MS-EVO AC)

- To tighten and unscrew the cable gland and to open the locking device of the connection.

Ordering information

Order No.	Type	Designation
32.6024	PV-MS	Open-end spanner set for MC4 (2 pcs.), plastic
32.6058	PV-MS-PLS	Open-end spanner set for MC4 and MC4-Evo 2 (2 pcs.), metal
32.6066	PV-MS-MC4-Evo 2	Unlocking tool for MC4-Evo 2, plastic
32.6075	PV-MS-EVO AC	Unlocking tool for MC4-Evo AC, plastic

Further information

Assembly instructions

For assembly instructions for "Open-end spanner set for MC4 and MC4-Evo 2" please consult:
www.staubli.com/re-downloads.html ➜ English ➜ Assembly info ➜ **MA270**

Cable cutter

Cable cutter (PV-WZ-KS)

- Cable cutter with a special cutting blade geometry for easy, clean cuts with an opening spring.
- Ergonomic one-hand operation.
- No crushing or deformation of wire.
- For cutting solid, stranded and flexible copper- and aluminum cables and wires.
- Not to be used on steel wire, wire rope, and hard-drawn cop per cable.

Ordering information

Order No.	Type	Designation	Max. wire diameter
32.6080	PV-WZ-KS	Cable cutter	15 mm

Further information

Assembly instructions
For assembly instructions for "Cable cutter" please consult:
www.staubli.com/re-downloads.html ➜ English ➜ Assembly info ➜ **MA705**

![Torque tool set image]

Torque tool set

Torque tool set (PV-WZ-TORQUE-SET)

- Adjustable torque tool set with special design: easy-in, easy-out, universal hold and one-hand use.
- For manual assembly of Original MC4 and MC4-Evo 2 cable couplers.
- Comes with a multi-component special pistol grip which provides a safe and comfortable fit in the hand and high-power transfer.

Technical data

Technical data	
Range	3.0 N m – 6.0 N m
Accuracy	Accuracy: ±6 % (EN ISO 6789)
Scale	Numerical torque value scale

Ordering information

Order No.	Type	Description
32.0065	PV-WZ-TORQUE-SET	Torque tool set: consisting of torque tool (incl. extra tool integrated in handle to set torque), adapter and socket wrench insert

Tool case MC4 and MC4-Evo 2

Tool case MC4 and MC4-Evo 2
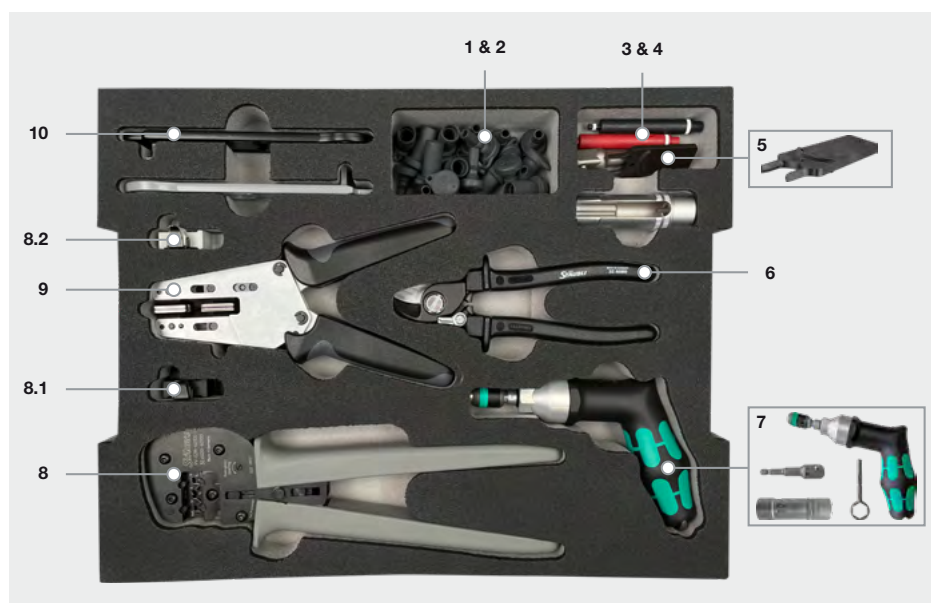
- Robust plastic case with tools for assembly of PV-KxT4 and PV-KxT4-Evo 2.
- Configured for open crimp contacts (4 mm², 6 mm², 10 mm²).

Ordering information

Pos.	Order No.	Type	Description	Dimensions
	32.6126	PV-Installer Tool Case SET	Tool case MC4 and MC4-Evo 2	444 mm × 118 mm × 350 mm

Consisting of:

Pos.	Order No.	Type	Description	Dimensions
1	**32.0716**	PV-BVK4	Sealing caps socket, 10 ×	
2	**32.0717**	PV-SVK4	Sealing caps plug, 10 ×	
3	**32.6028**	PV-PST	Test plug MC4	
4	**32.6073**	PV-EVO-PST	Test plug MC4-Evo 2	
5	**32.6066**	PV-MS-MC4-EVO	Unlocking tool	
6	**32.6080**	PV-WZ-KS	Cable cutter	
7	**32.0065**	PV-WZ-TORQUE-SET	Torque tool	
8	**32.6020-60100**	PV-CZM-60100	Crimping pliers for MC4, MC4-Evo 2	
8.1	**32.6081**	PV-LOC-MC4	Locator for MC4	
8.2	**32.6083**	PV-LOC-MC4-Evo 2	Locator for MC4-Evo 2	
9	**32.6027-410**	PV-AZM-410	Stripping pliers	
10	**32.6058**	PV-MS-PLS	Assembly and unlocking tool	

ACCESSORIES
Adapter test lead MC4

Adapter test lead with female MC4
(PV-AMLB4/150)

Adapter test lead with male MC4
(PV-AMLS4/150)

- The adapter test lead MC4 is suitable for safe current and voltage measuring on PV modules and systems.
- Suitable for connecting connectors of the MC4 connector system to measuring instruments with Ø 4 mm safety sockets.

Technical data

Technical data	
Connector system	MC4
Rated voltage	1000 V
Rated current	19 A
Category	CAT III
Degree of pollution	2
Lead cross section	1 mm^2
Lead length	150 mm
Lead insulation	PVC

Ordering information

Order No.	Type	Socket	Plug	Connector system	Colour
32.1198-15021	PV-AMLB4/150	x		MC4	21
32.1198-15023	PV-AMLB4/150	x		MC4	23
32.1199-15021	PV-AMLS4/150		x	MC4	21
32.1199-15022	PV-AMLS4/150		x	MC4	22

Note

Unmated connectors must be protected from any contamination using Stäubli sealing caps. For ordering information concerning Stäubli sealing caps, please consult "Sealing caps" on page 19.

Test socket and plug MC4

Test socket MC4 (PV-KBT4II-P AU)

Test plug MC4 (PV-KST4II-P AU)

- Special construction with gold plated contacts for test and measurement to achieve higher mating cycles.
- Without locking system.

Technical data

Technical data	
Connector system	MC4
Rated voltage	DC 1000 V (IEC)
Rated current	30 A
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	2
Max. contact resistance of the connector	0.25 mΩ
Contact material	Copper, gold plated
Lead cross section	2.5 mm²; 4 mm² (12 AWG; 14 AWG)
Insulation material	PC/PA

Ordering information

Order No.	Type	Socket	Plug	Connector system
32.0044	PV-KBT4II-P AU	x		MC4
32.0045	PV-KST4II-P AU		x	MC4

Further information

Assembly instructions

For assembly instructions for "Test socket and plug MC4" please consult:
www.staubli.com/re-downloads.html ➜ English ➜ Assembly info ➜ **MA260**
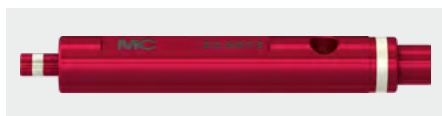
Test plug MC4

Test plug MC4 (PV-PST)

- This test plug is used to control the correct location of the MC4 contact in the insulation.

Ordering information

Order No.	Type
32.6028	PV-PST

Test plug MC4-Evo 2

Test plug MC4-Evo 2 (PV-EVO-PST)

- This test plug is used to control the correct location of the MC4-Evo 2 contact in the insulation.

Ordering information

Order No.	Type
32.6073	PV-EVO-PST

Sealing caps MC4 and MC4-Evo 2

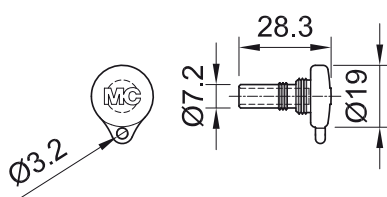Sealing cap for female cable couplers
(PV-BVK4)

Sealing cap for male cable couplers
(PV-SVK4)

- Sealing caps for protective purpose of unplugged PV connectors.

Dimensional drawings
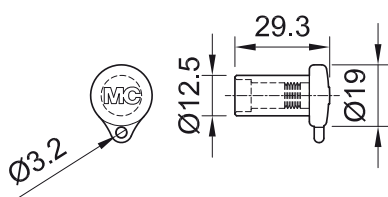
Sealing cap for female cable couplers
(PV-BVK4)

Sealing cap for male cable couplers
(PV-SVK4)

Ordering information

Order No.	Type	Suitable for socket side	Suitable for plug side	Material	Connector system
32.0716	PV-BVK4	x		TPE	MC4/MC4-Evo 2
32.0717	PV-SVK4		x	TPE	MC4/MC4-Evo 2

Further information

Assembly instructions

For assembly instructions for "Sealing caps MC4 and MC4-Evo 2" please consult:
www.staubli.com/re-downloads.html ➜ English ➜ Assembly info ➜ **MA258**

Safety lock clip

Safety lock clip (PV-SSH4)

- The pluggable safety lock clip secures the PV plug connection. The plug connection can only be unlocked with the open-end spanner set (PV-MS or PV-MS-PLS).
- The safety lock clip is suitable for MC4 connector systems.

Ordering information

Order No.	Type	Description	Connector system
32.5280	PV-SSH4	Safety lock clip	MC4

Further information

Assembly instructions

For assembly instructions for "Safety lock clip" please consult:
www.staubli.com/re-downloads.html ➡ English ➡ Assembly info ➡ **MA252**
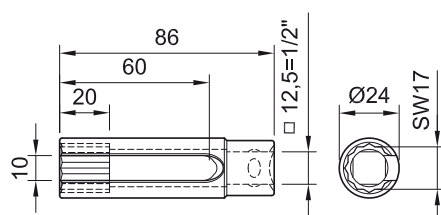
Socket wrench insert

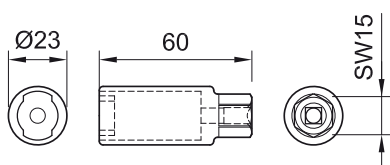Socket wrench insert to tighten
(PV-WZ-AD/GWD)

Socket wrench insert to secure (PV-SSE-AD4)

- Stäubli recommends these socket wrench inserts for a simple and safe assembly of the panel receptacles.

Dimensional drawings

Socket wrench insert to tighten
(PV-WZ-AD/GWD)

Socket wrench insert to secure (PV-SSE-AD4)

Ordering information

Order No.	Type	Description
32.6006	PV-WZ-AD/GWD	Socket wrench insert to tighten
32.6026	PV-SSE-AD4	Socket wrench insert to secure

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