

FAST MOVING TECHNOLOGY

*STÄUBLI*

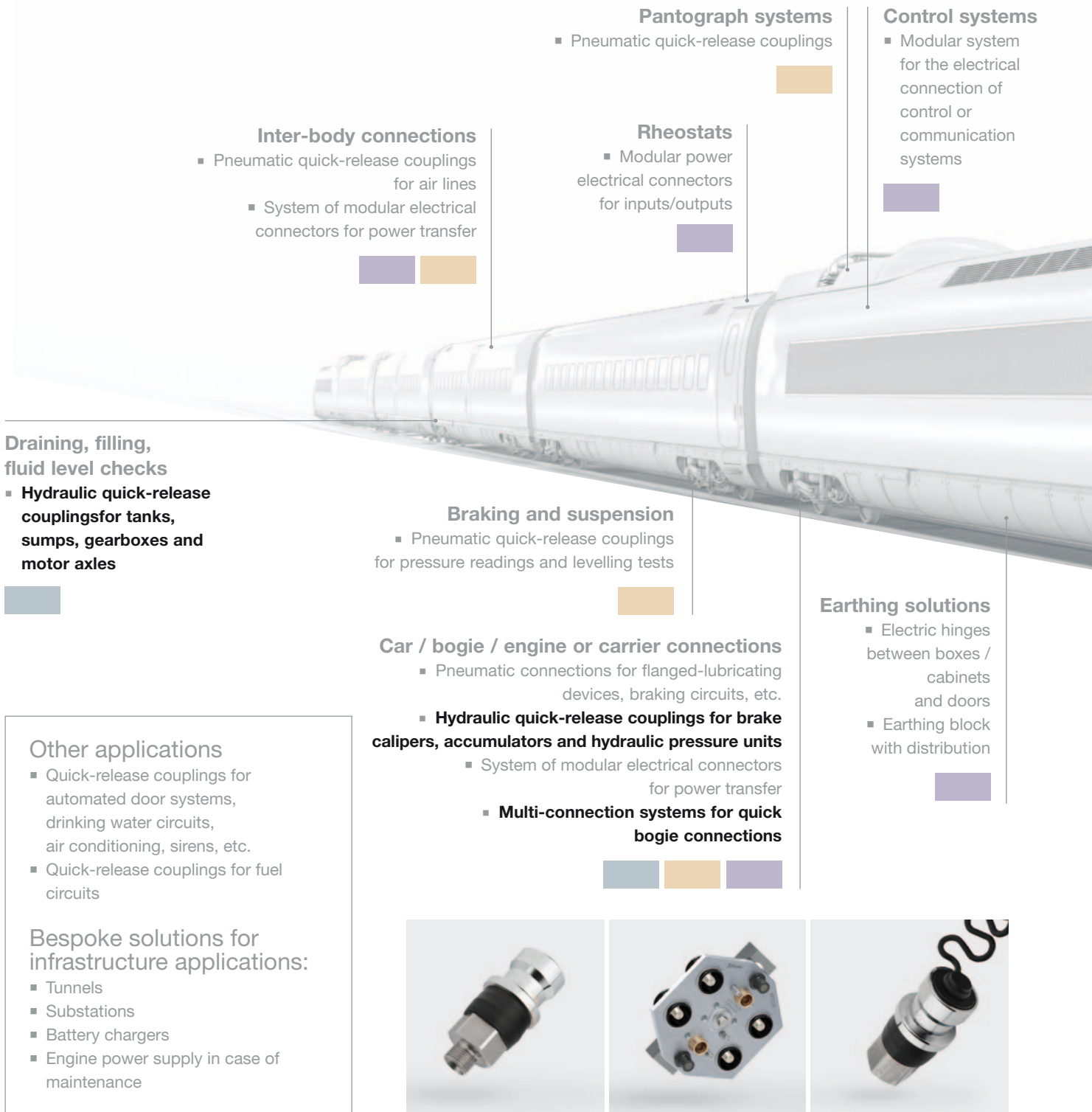
# Hydraulic applications

Connectors | Railway



## OUR APPLICATIONS

# Connections: a key link in the railway transport chain



**Inter-body connections**

- Pneumatic quick-release couplings for air lines
- System of modular electrical connectors for power transfer

**Pantograph systems**

- Pneumatic quick-release couplings

**Rheostats**

- Modular power electrical connectors for inputs/outputs

**Control systems**

- Modular system for the electrical connection of control or communication systems

**Draining, filling, fluid level checks**

- Hydraulic quick-release couplings for tanks, sumps, gearboxes and motor axles

**Braking and suspension**

- Pneumatic quick-release couplings for pressure readings and levelling tests

**Car / bogie / engine or carrier connections**

- Pneumatic connections for flanged-lubricating devices, braking circuits, etc.
- Hydraulic quick-release couplings for brake calipers, accumulators and hydraulic pressure units
- System of modular electrical connectors for power transfer
- Multi-connection systems for quick bogie connections

**Earthing solutions**

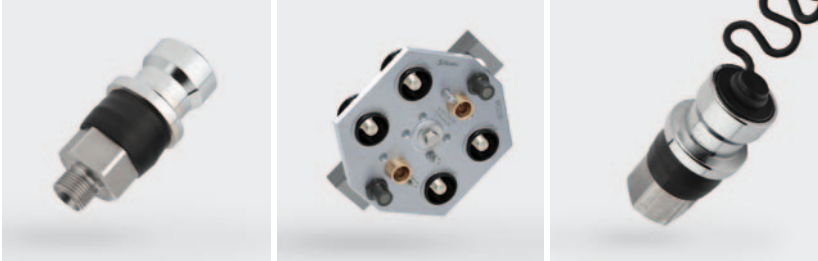
- Electric hinges between boxes / cabinets and doors
- Earthing block with distribution

**Other applications**

- Quick-release couplings for automated door systems, drinking water circuits, air conditioning, sirens, etc.
- Quick-release couplings for fuel circuits

**Bespoke solutions for infrastructure applications:**





- Tunnels
- Substations
- Battery chargers
- Engine power supply in case of maintenance

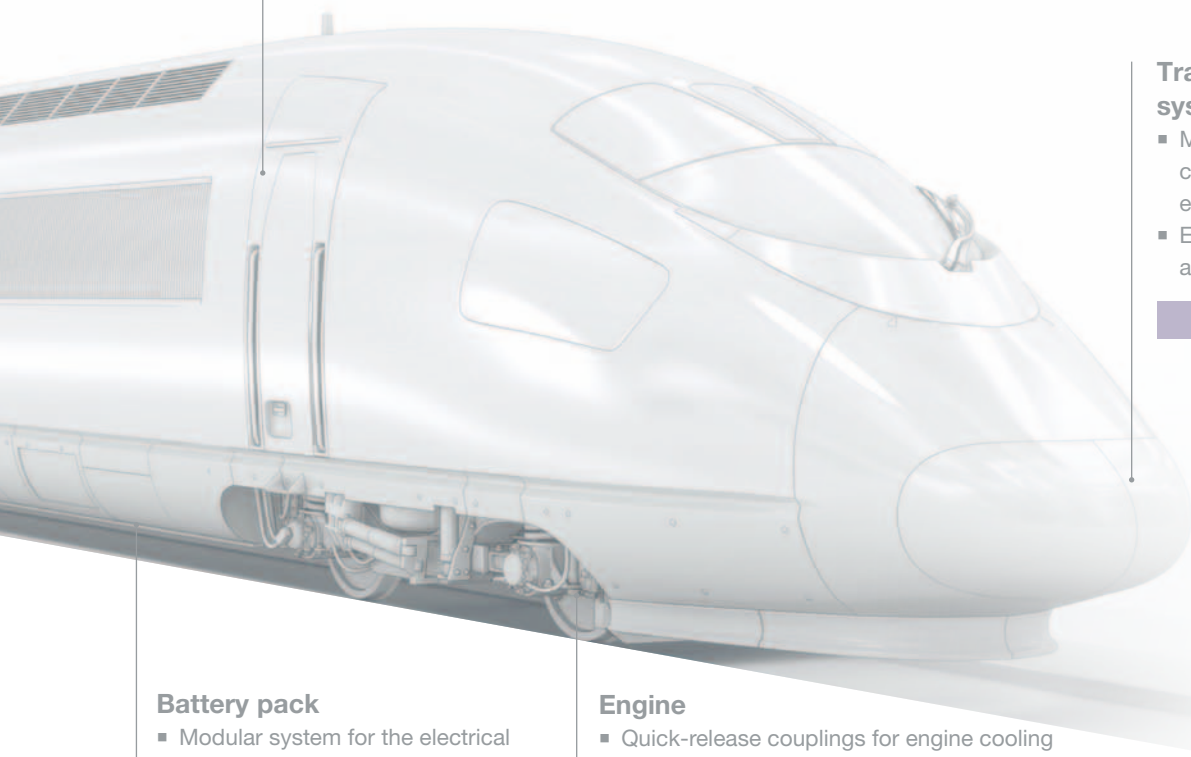


**Power converter / auxiliary converters / transformers**

- Quick-release mono or multi-connections for cooling on-board electronic circuits
- Connection solutions for laminated insulated bipolar busbars
- Insulated and uninsulated fork connectors for quick connections to bays
- Pin / socket assemblies for the quick connection of power modules
- Modular power electrical connectors for converter inputs / outputs



	Hydraulic
	Electric
	Compressed Air
	Cooling



**Trainset coupling systems**

- Multi-pole electrical connectors for extreme environments
- Electrical contacts for automatic couplers



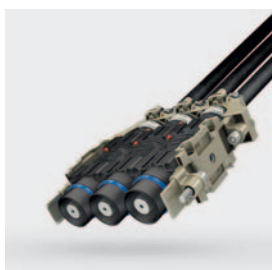
**Battery pack**

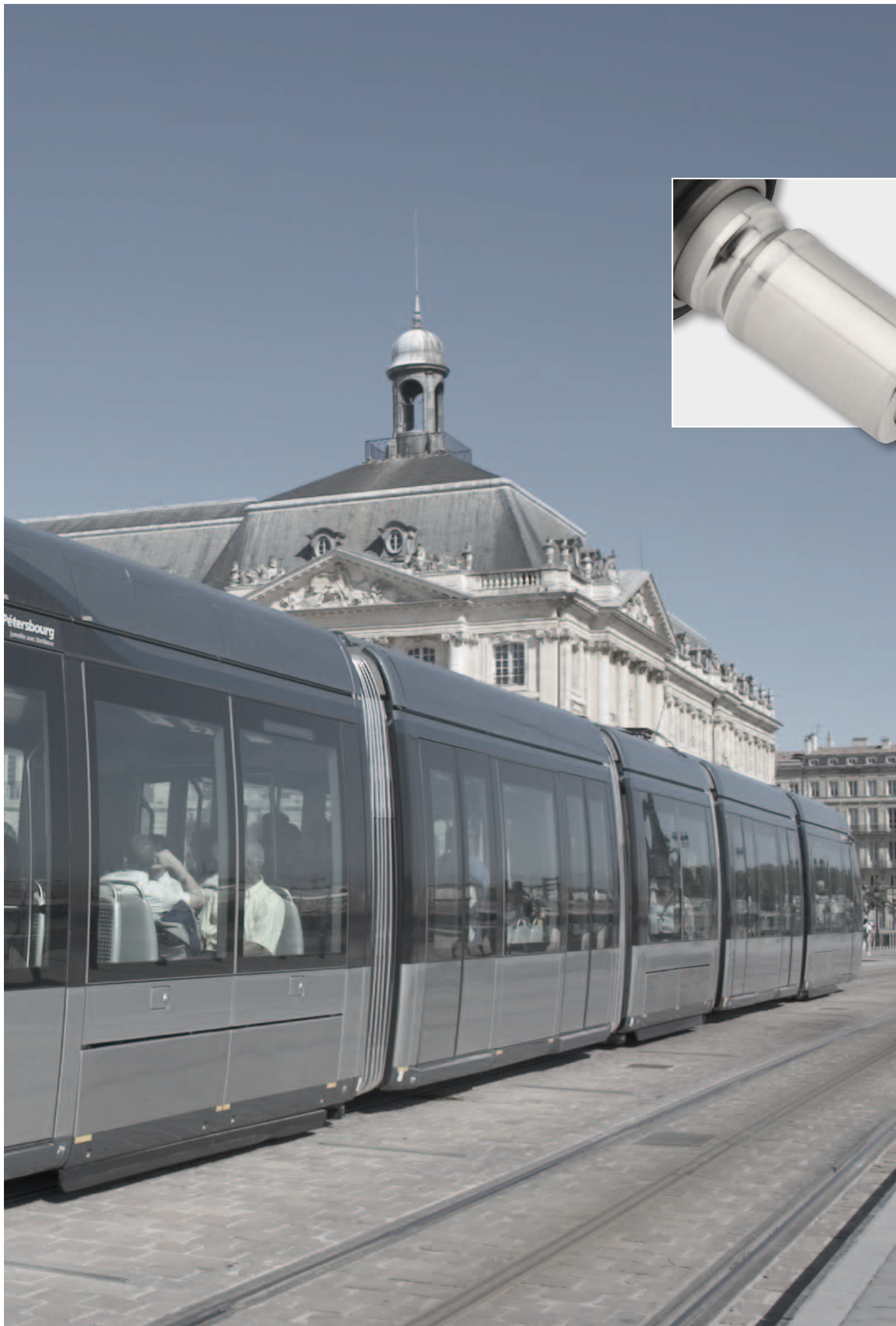
- Modular system for the electrical connection and inspection of battery packs
- Quick-release couplings for battery cooling

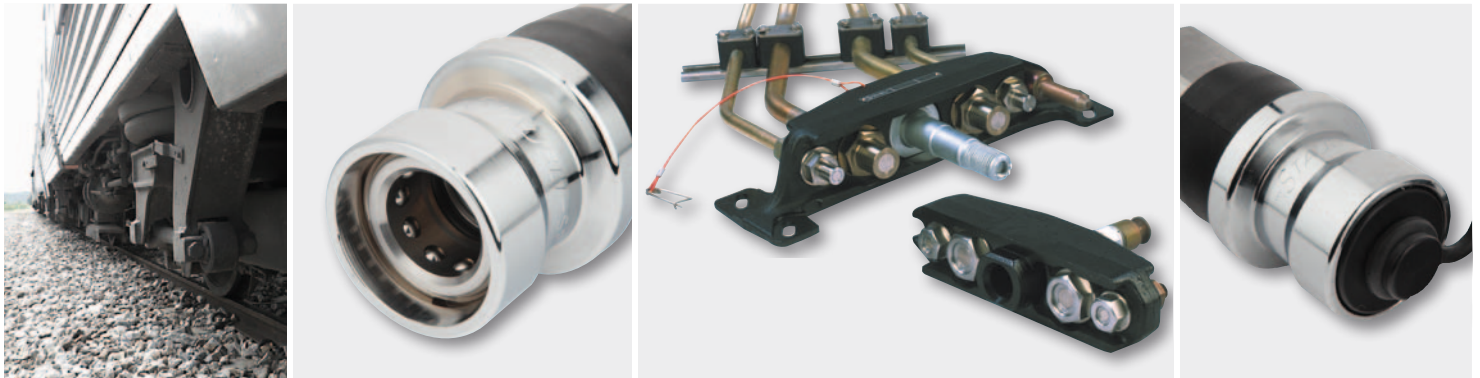


**Engine**

- Quick-release couplings for engine cooling systems
- Modular electrical connectors for power transfer
- Junction boxes for the quick connection of converter inputs / engine outputs







# Go up a gear

## SPI with protector couplings range

### Applications

#### ■ Car / bogie connections:

- Hydraulic quick-release couplings for brake calipers, accumulators and hydraulic pressure units, etc.
- Multi-connection for hydraulic tilting system, quick bogie connections.

#### ■ Draining, filling, fluid level checks:

- Hydraulic quick-release couplings for tanks, sumps, gearboxes and motor axles.

### Non-spill, flat faces

No lost of liquid on disconnection.

### Safe locking

Quick and safe locking with a large number of locking balls for high strength under severe conditions of use (vibrations, oscillations).

### Long guiding of plug into the socket

for a constant tightness even under severe conditions of use.

### Protected sealing and locking

Chloroprene protection avoids any penetration of external agents: water, dust, that could block the locking mechanism.

### Easy to handle

Ergonomic locking sleeve for excellent grip even with gloves.

### Visual circuit identification

thanks to coloured rings.

### Complete connection solutions

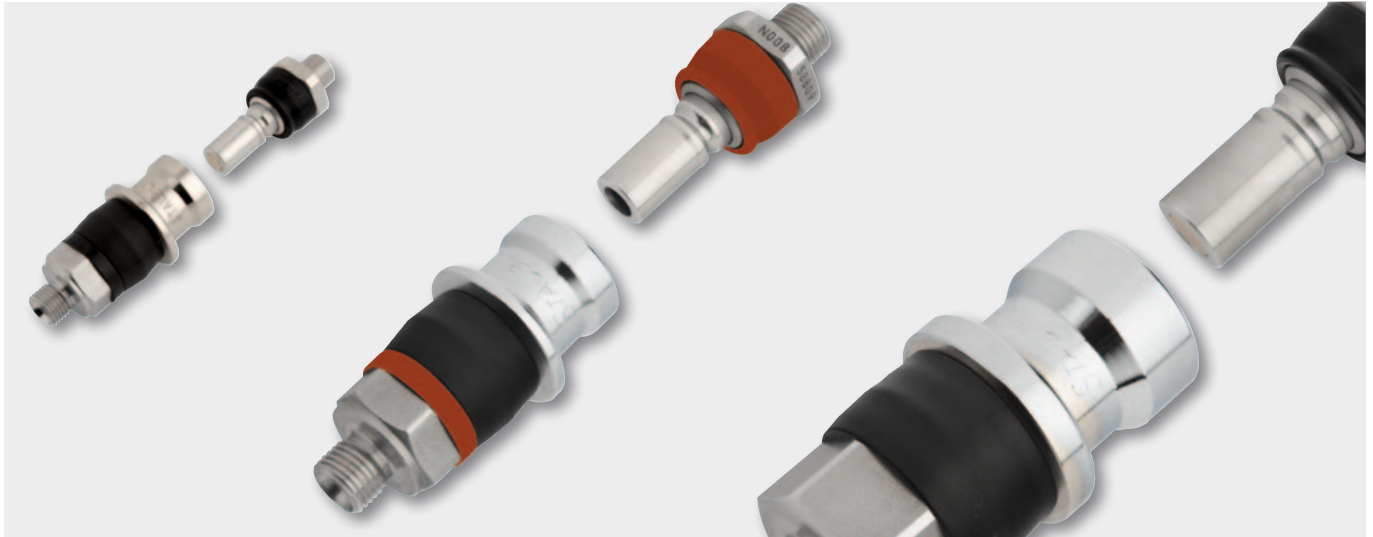
Quick-release couplings also available directly assembled on hoses (see pages 10-11 ).

### Multi-connection solutions for simultaneous connection of several circuits

Stäubli analyses, designs and manufactures multi-connection systems comprising fluid and electric connections, guiding and centring elements, coupling and locking systems, perfectly integrated into your applications.

# Technical characteristics

## SPI/PP couplings (with protector)



		SPI 03/PP	SPI 06/PP	SPI 09/PP	SPI 12/PP
<b>Nominal diameter DN (mm)</b>		3	6	9	12
<b>Maximum allowable pressure PS<sup>(1)</sup> (bar)</b>		160	160	160	160
<b>Shut-off</b>	double				

### KES sealing-kit



Available on all the BSP parallel male threads.



Part-numbers of the KES sealing-kits:

G 1/8 .....	KES 01.9100
G 1/4 .....	KES 01.9101
G 3/8 .....	KES 01.9102

### Construction

- Stainless steel and brass.
- Protective dust caps:
  - socket: aluminium with black treatment + Chloroprene (CR)
  - plug: Chloroprene (CR)

### Sealing

Nitrile seals (NBR).  
Other seal materials available on request.

### Minimum and maximum allowable temperatures TS

-25 and +80 °C <sup>(2)</sup>

<sup>(1)</sup> Other possible pressures: consult us

<sup>(2)</sup> For use outside the indicated temperature range: consult us.

The working pressures and temperatures are given for the Stäubli socket / plug set only. It is essential to ensure that the other components of the circuit (hoses, connections...) are appropriate for the application.

### End connection standards

- BSP parallel male thread with 60° cone: profile according to the ISO 8434-6 standard.
- Metric male thread with 24° cone: profile according to the ISO 8434-1/L standard.
- UN JIC male thread: profile according to the ISO 8434-2 standard.

### Coloured rings for visual circuit identification

Only available for 6 mm diameter:

- Black ..... standard
- Blue ..... consult us
- Red ..... consult us
- Green ..... consult us

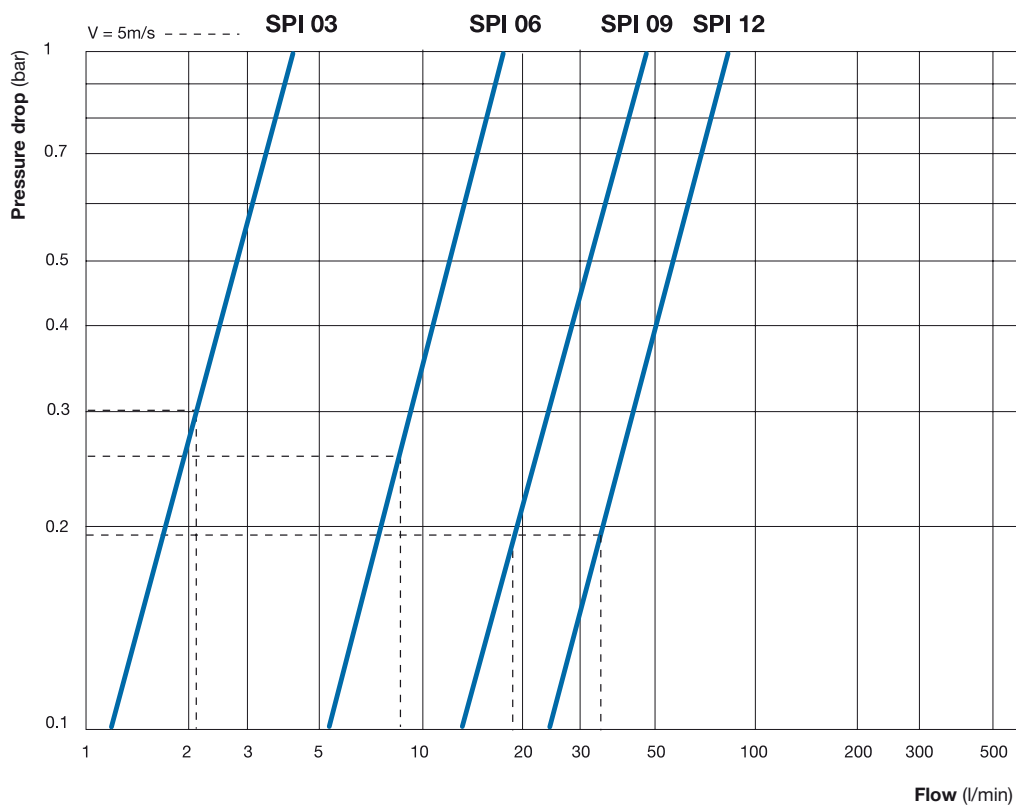
### Safety key

Option only available for 6 mm diameter: consult us.

### Standard for shock and vibration tests

Compliant with CEI 61373 : 2010 Category 2 standard.

Flow rate / pressure drop charts

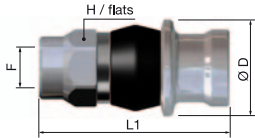


**Test conditions:**  
 - Fluid: water  
 - Direction of flow: plug → socket

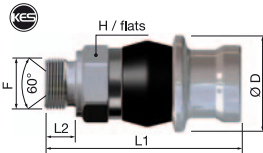
# Part-numbers

## SPI/PP sockets (with protector)

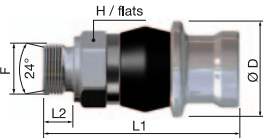
Designation	Model	End connection F or Ø	Dimensions (mm)					Part-numbers	
			Ø D	L1	L2	H/flats	L3		L4
<b>Female thread</b>	<b>SPI 06/PP *</b>	G 1/4	34	67,5		24			<b>N 008 585 09</b>



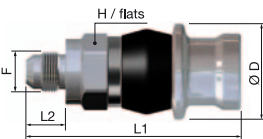
<b>BSP male thread according to the ISO 8434-6 (60° cone) standard</b>	<b>SPI 03/PP</b>	G 1/8	20	50.5	8	16			<b>N 002 516 09</b>
	<b>SPI 06/PP *</b>	G 1/4	34	68.5	11	24			<b>N 008 578 09</b>
	<b>SPI 09/PP</b>	G 3/8	39	82	12	29			<b>N 008 606 09</b>
	<b>SPI 12/PP</b>	G 3/4	53	119	16	34			<b>N 006 551 18</b>



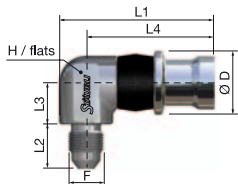
<b>BSP male thread according to the ISO 8434-1/L (24° cone) standard</b>	<b>SPI 03/PP</b>	M 12 x 1,5 for tube Ø 6 mm	20	52.5	10	16			<b>N 008 562 09</b>
	<b>SPI 06/PP *</b>	M 14 x 1,5 for tube Ø 8 mm	34	66.5	10	24			<b>N 002 654 08</b>
		M 16 x 1,5 for tube Ø 10 mm	34	67.5	11	24			<b>N 001 575 09</b>
		M 18 x 1,5 for tube Ø 12 mm	34	69.5	11	24			<b>N 006 167 09</b>
	<b>SPI 09/PP</b>	M 18 x 1,5 for tube Ø 12 mm	39	80	11	29			<b>N 008 608 09</b>
		M 22 x 1,5 for tube Ø 15 mm	39	81	12	29			<b>N 001 519 09</b>
<b>SPI 12/PP</b>	M 26 x 1,5 for tube Ø 18 mm	53	115	12	34			<b>N 006 555 18</b>	



<b>JIC male thread according to the ISO 8434-2 standard</b>	<b>SPI 03/PP</b>	UN 7/16-20 for tube 1/4	20	56.5	14	16			<b>N 008 565 09</b>
	<b>SPI 06/PP *</b>	UN 9/16-18 for tube 3/8	34	76	14	24			<b>N 008 583 09</b>
	<b>SPI 09/PP</b>	UN 3/4-16 for tube 1/2	39	88.5	16.5	29			<b>N 008 611 09</b>



<b>90° JIC male thread according to the ISO 8434-2 standard</b>	<b>SPI 03/PP</b>	UN 7/16-20 for tube 1/4	20	49	14	17	13	40.5	<b>N 008 567 09</b>
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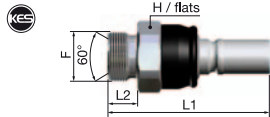
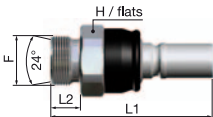
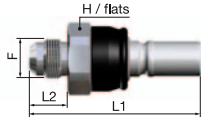
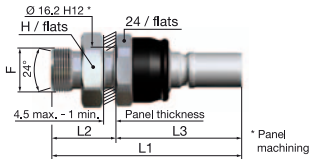
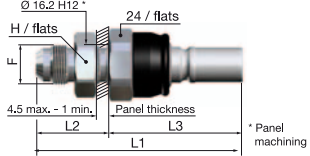


Other end connections, consult us.  
Overall dimensions in coupled position: see page 9.

\* Coloured rings for visual identification of available circuits: contact us.



## SPI/PP plugs (with protector)

Designation	Model	End connection F or Ø	Dimensions (mm)					Part-numbers	
			Ø D	L1	L2	H/flats	L3		L4
<b>BSP male thread according to the ISO 8434-6 (60° cone) standard</b> 	SPI 03/PP	G 1/8 for tube Ø 6 mm		41	8	16			N 002 515 09
	SPI 06/PP *	G 1/4 for tube Ø 8 mm		57	11	24			N 008 588 09
	SPI 09/PP	G 3/8 for tube Ø 10 mm		69	12	29			N 008 614 09
	SPI 12/PP	G 3/4 for tube Ø 20 mm		93	16	36			N 006 556 18
<b>BSP male thread according to the ISO 8434-1/L (24° cone) standard</b> 	SPI 03/PP	M 12 x 1,5 for tube Ø 6 mm		43	10	16			N 008 570 09
	SPI 06/PP *	M 14 x 1,5 for tube Ø 8 mm		56	10	24			N 009 960 08
		M 16 x 1,5 for tube Ø 10 mm		57	11	24			N 008 593 09
		M 18 x 1,5 for tube Ø 12 mm		59.5	11	24			N 008 598 09
	SPI 09/PP	M 18 x 1,5 for tube Ø 12 mm		68	11	29			N 008 617 09
		M 22 x 1,5 for tube Ø 15 mm		71	12	29			N 008 620 09
SPI 12/PP	M 26 x 1,5 for tube Ø 18 mm		89	12	36			N 006 557 18	
<b>JIC male thread according to the ISO 8434-2 standard</b> 	SPI 03/PP	UN 7/16-20 for tube 1/4		44	11	16			N 005 503 09
	SPI 06/PP *	UN 9/16-18 for tube 3/8		60.5	12	24			N 008 601 09
	SPI 09/PP	UN 3/4-16 for tube 1/2		71	14	29			N 008 626 09
<b>Panel mount BSP male thread according to the ISO 8434-1/L (24° cone) standard</b> 	SPI 03/PP	M 12 x 1,5 for tube Ø 6 mm		54	21	17	33		N 008 573 09
	SPI 06/PP *	M 16 x 1,5 for tube Ø 10 mm		69.5	23.5	24	46		N 005 351 09
	SP 09I/PP	M 22 x 1,5 for tube Ø 15 mm		85	27.5	32	57		N 008 623 09
<b>Panel mount JIC male thread according to the ISO 8434-2 standard</b> 	SPI 03/PP	UN 7/16-20 for tube 1/4		58	25	17	33		N 008 576 09
	SPI 06/PP *	UN 9/16-18 for tube 3/8		75	26.5	21	48.5		N 008 604 09
	SPI 09/PP	UN 3/4-16 for tube 1/2		87	29.5	27	57		N 008 629 09

Other end connections, consult us.

\* Coloured rings for visual identification of available circuits: contact us.

## Protective dust caps

Available for all the models.

Max. working temperature: 100 °C

Part-numbers: - socket dust cap: CBI xx.8500

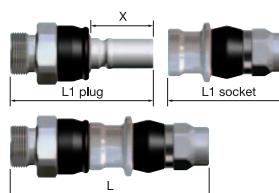
- plug dust cap: CBI xx.8550

xx = passage flow diameter.

Ex. : CBI 03.8500 = dust cap for 3 mm passage flow diameter SPI socket.

## Overall length in coupled position

$$L = (L1 \text{ socket} + L1 \text{ plug}) - X$$



Model	X (mm)
SPI 03	22
SPI 06	30.1
SPI 09	38.1

# Complete connection solutions



**Stäubli provide you with flexible hoses with or without protection against ballast impacts equipped with quick-release couplings**

and ensures:

- **safety:** each complete system supplied is submitted to a unit test for function and tightness.
- **convenience,** secure supply from a single source supplier.

**Full equipped flexible hoses, according to certification**

- **EN 45545-2 and ISO 15540**

These flexible hoses meet the specific requirements of railway vehicles.

- **Others certifications** on request.

We are able to produce other types of complete flexible hoses according to your requirements (consult us).





■ Stäubli units    ○ Agents

# Global presence of the Stäubli Group

[www.staubli.com](http://www.staubli.com)