BEISIT®

BEISIT ELECTRIC TECH (HANGZHOU) CO.,LTD.

# Liquid-cooled fluid connector



BCN0125

BEISIT®

# Liquid Cooling Solution

# Liquid Cooling Quick Connector

## Features

- Safe, stable and reliable
  ① Integrated structural design: avoids leakage risks caused by multiple connections and improves product safety.
  ② Built-in waterproof ring design: Reduce scratches, contamination and aging of the O-ring due to exposure, prevent systemic failure; improve the stability and reliability of the product throughout its life cycle.
  ③ Double-layer sealing design: ensures no leakage risk when connected/disconnected, and improves product sealing reliability.
- Economical: Relying on the precision high-speed molding process, it ensures the "two-way cut-off" function while having higher economic efficiency in mass production.
- Function: Support plugging and unplugging under pressure (0.3Mpa); low flow resistance
- Convenient: can be plugged in and out with one hand; light weight

## Application Field

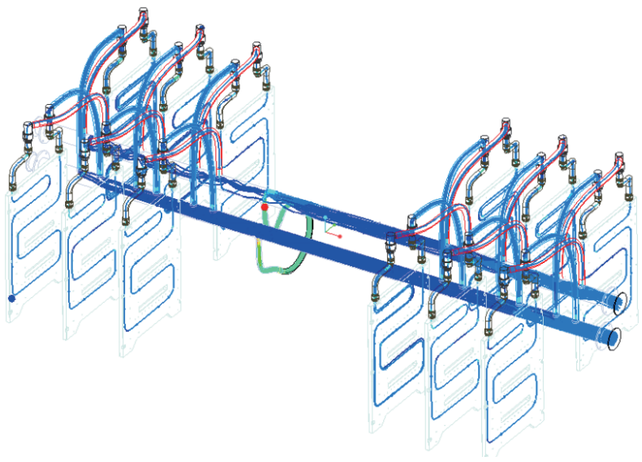
- Energy storage (PACK, PCS), Super charging piles, high-power supplies, high-voltage inverters, etc.

- The product has completely independent and controllable intellectual property rights and is a standard setting unit in the industry.

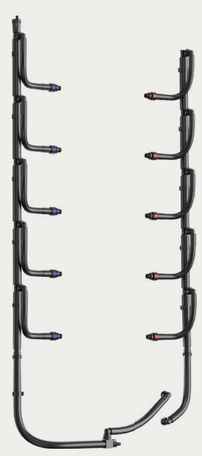
- Medium: Coolant, water-glycol, immersion coolant, etc.

- Beisit provides the overall solution of fluid quick connectors and secondary and tertiary liquid cooling pipelines for the liquid cooling industry, We can provide customers with simulation analysis and testing verification.

## Simulation



## Cooling Pipeline Assembly





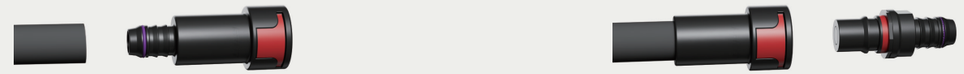




## Connection methods of sockets

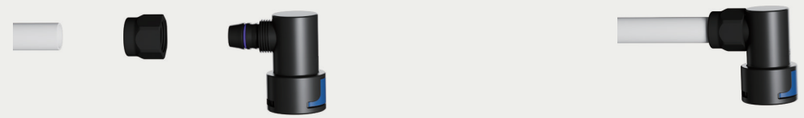
### 1 Cold - press riveting method

Connect the nylon pipeline. The nylon tube can be connected to those with inner diameters of 12mm, 14mm, 16mm, etc.



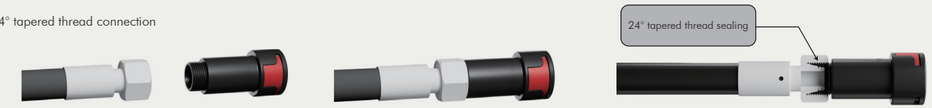
### 2 Connection methods of flexible hoses

Connect with FEP (transparent) flexible hose and tighten it with a compression cap



### 3 The socket is connected to the rubber tube (development can be carried out according to customer requirements)

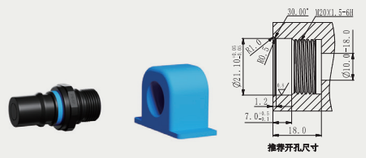
24° tapered thread connection




MDC interface - clamp connection

## Connection methods of plugs

### Internal Thread

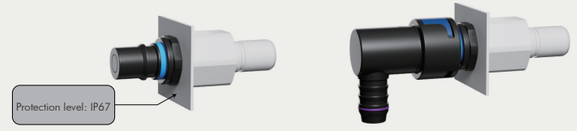



Tap threads on the liquid cooling plate and directly connect it to the plug end

### Through-plate

The plate thickness is 1.5 - 2.5mm.
Special plate thicknesses can be customized

Through-plate sealing: Various quick-connect fittings (such as CQC, SAE, NW, etc.) are used inside the box




### CQC18

Standard CQC18 male terminal

Weld the CQC18 standard interface onto the liquid cooling plate, and connect the plug end to the CQC18 interface

→ PB-8

| Plug Item No. | Plug interface contour drawing | Plug and socket connection diagram | Socket interface contour drawing | Socket Item No. |
|---|---|---|---|---|
| BST-PB-8PPAER2G14AL |  |  |  | BST-PB-8SPAER312 |
| BST-PB-8PPAER2G38AL |  | |  | BST-PB-8SPAER5312 |
| BST-PB-8PPAER2G12AL |  | |  | BST-PB-8SPAER314 |
| BST-PB-8PPAER2M20 |  | |  | BST-PB-8SPAER5314 |
| BST-PB-8PALE2M20 |  | |  | BST-PB-8SPAER5316 |
| BST-PB-8PPAER314 |  | |  | BST-PB-8SPAER2M22 |
| BST-PB-8PPAEBCQC18 |  | |  | BST-PB-8SPAEB5314A |

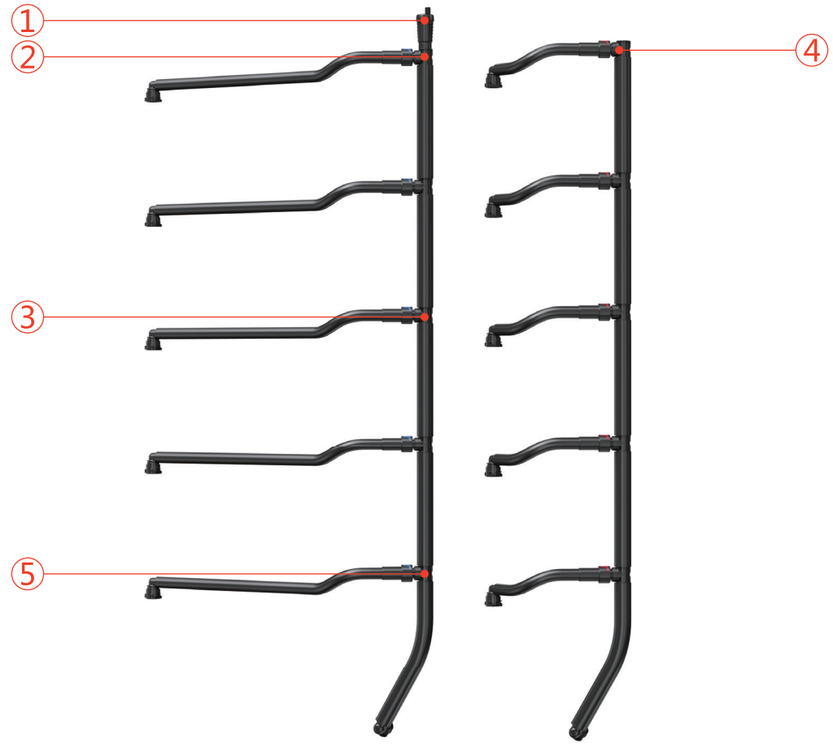
| Plug Item No. | Plug interface number | Total length L1 (mm) | Interface length L3 (mm) | Maximum diameter ΦD1 (mm) | Interface form |
|---|---|---|---|---|---|
| PB-8PPAER2G14AL | 2G14AL | 47.9 | 8 | 29 | G1/4'' |
| PB-8PPAER2G38AL | 2G38AL | 47.9 | 8 | 29 | G3/8'' |
| PB-8PPAER2G12AL | 2G12AL | 47.9 | 8 | 29 | G1/2'' |
| PB-8PPAER2M20 | 2M20 | 52.5 | 17.2 | 29 | M20X1.5 |
| BST-PB-8PALE2M20 | 2M20 | 51.9 | 17.1 | 29 | M20X1.5 |
| BST-PB-8PPAER314 | 314 | 65 | 25 | 27 | 14mm |
| BST-PB-8PPAEBCQC18 | CQC18 | 65 | / | 33.7 | CQC18 |

| Socket Item No. | Socket interface number | Total l ength L2 (mm) | Interface length L4 (mm) | Maximum external dimensionL5 (mm) | Maximum diameter ΦD2 (mm) | Interface form |
|---|---|---|---|---|---|---|
| BST-PB-8SPAER5314 | 5314 | 57.2 | 25 | 57 | 35 | 14mm |
| BST-PB-8SPAER5312 | 5312 | 57.2 | 25 | 57 | 35 | 12mm |
| BST-PB-8SPAER5310 | 5310 | 57.2 | 25 | 57 | 35 | 10mm |
| BST-PB-8SPAER5308 | 5308 | 57.2 | 25 | 57 | 35 | 8mm |
| BST-PB-8SPAER314 | 314 | 87.2 | 25 | / | 35 | 14mm |
| BST-PB-8SPAER312 | 312 | 82.5 | 25.8 | / | 35 | 12mm |
| BST-PB-8SPAER310 | 310 | 86 | 23.5 | / | 35 | 10mm |
| BST-PB-8SPAER308 | 308 | 86 | 23.5 | / | 35 | 8mm |

The above parameters are for reference only,the specific parameters shall be subject to the product specifications.








1

Exhaust valve: according to the requirements of application, we can use interface of non-metallic or metal exhaust valve with bottom thread.

2

L-type (G thread on top):
According to the bottom thread of the exhaust valve, the G3/8 and G1/2 threaded interfaces are connected to non-metallic fluid connectors on the sides and nylon tubes on the bottom.

4

L-type:
The side is connected to a non-metallic fluid connector and the bottom is connected to a nylon tube. When it is at the bottom, it can be equipped with a socket tube for drainage.

3

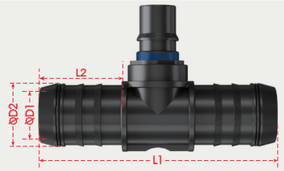
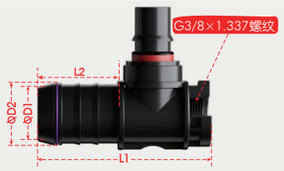
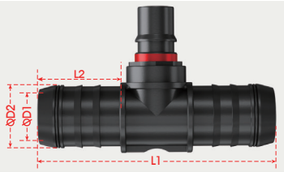
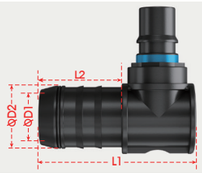
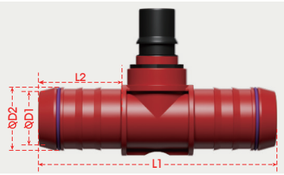
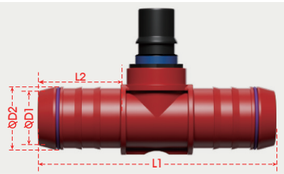
Three ways:
A non-metallic fluid connector connected on the side and nylon tubes on both ends.

5

Three ways:
The side is connected to a non-metallic fluid connector, and both ends are connected to nylon tubes to increase flow limiting treatment to ensure system flow uniformity.

Equipped with color rings to distinguish water inlet and outlet.

## → PB-8 T distributors，Y distributors

| Plug Item No. | Plug interface contour drawing | Plug interface contour drawing | Plug Item No. |
|---|---|---|---|
| BST-PB-8PPAEBT25 |  |  | BST-PB-8PPAEG3825 |
| BST-PB-8PPAERT25 |  |  | BST-PB-8PPAEG1225 |
| BST-PB-8PPAEL25 |  |  | BST-PB-8PPAERT25-8 |
| | |  | BST-PB-8PPAEBT25-8 |

Instructions for use

| Plug Item No. | Total length L1 (mm) | Interface length L2 (mm) | Inside diameter D1 (mm) | Max external diameter ΦD2 (mm) | Interface form | 说明 Illustrationform |
|---|---|---|---|---|---|---|
| BST-PB-8PPAERT25 | 115 | 40 | 25 | 31 | 25mm | |
| BST-PB-8PPAEBT25 | 115 | 40 | 25 | 31 | 25mm | |
| BST-PB-8PPAEL25 | 75 | 40 | 25 | 31 | 25mm | |
| BST-PB-8PPAEG3825 | 86 | 40 | 25 | 31 | 25mm | |
| BST-PB-8PPAEG1225 | 86 | 40 | 25 | 31 | 25mm | |
| BST-PB-8PPAERT25-8 | 115 | 40 | 25 | 31 | 25mm | (8mm) |
| BST-PB-8PPAEBT25-8 | 115 | 40 | 25 | 31 | 25mm | (8mm) |

The above parameters are for reference only,the specific parameters shall be subject to the product specifications.

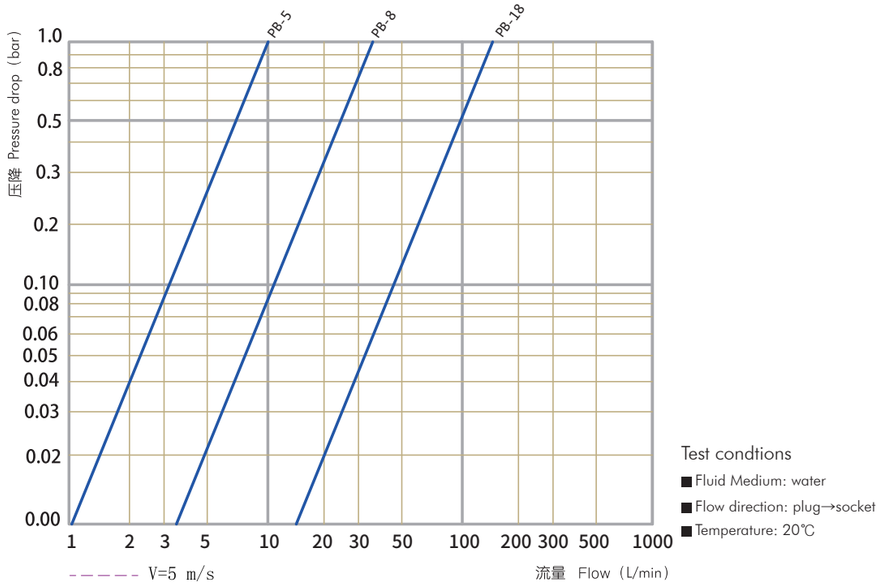


## → Future new product development

| | | | |
|---|---|---|---|
| PB-5 |  |  |  |
| PB-10 |  |  |  |
| PB-18 |  |  |  |

| Product Model | PB-05 | PB-08 | PB-10 | PB-18 |
|---|---|---|---|---|
| Flow | 5.89 | 15 | 23.56 | 72.9 |
| Working Temperature | -40℃-85℃ | -40℃-85℃ | -40℃-85℃ | -40℃-85℃ |
| Medium | 50% | 50% ethylene glycol and water solution | 50% ethylene glycol and water solution | 50% ethylene glycol and water solution |
| Max Operating Pressure | 2Mpa | 2Mpa | 2Mpa | 2Mpa |
| Insertion and Extraction Lifespan | >500 | >500 | >500 | >500 |

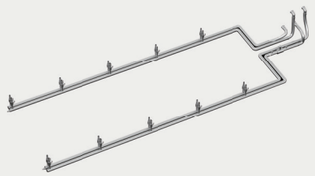
Flow Chart




The above parameters are for reference only,the specific parameters shall be subject to the product specifications.

## Primary Pipeline

The liquid cooling primary pipeline is mainly used to connect the liquid cooling source with the equipment. The use of metal hard pipes in the primary pipeline can better adapt to various operating conditions, have a longer service life, and be more convenient in installation and maintenance.

| Image | Name | Parameter |
|---|---|---|
|  | Material of main body | Stainless steel （304,316L） |
| | Working temp | -40℃~+85℃ |
| | Maximum working pressure | ≥10bar |
| | Flame retardant class | UL 94HB |
| | Thickness of thermal insulation foam | ≥10 mm |
| | Material of thermal insulation cotton | EPDM |
| | Material of thermal insulation foam surface winding | PET |
| | Medium | 50%water+50%ethylene |
| | Specification | glycolDN50 |

## Secondary and Tertiary  Pipeline

The coolant in the cooling pipeline takes away the heat of the battery and the electronic equipment, ensuring the normal operation of the equipment. The corresponding module can be quickly maintained or replaced only by disconnecting the self-sealing connector. Ensure the quick and safe connection between the connectors.

| Image | Name | Parameter |
|---|---|---|
|  | Material of main body | PA |
| | Working temp | -40℃~85℃ |
| | Maximum working pressure | ≥10 bar |
| | Flame retardant class | UL 94HB |
| | Rate of combustion | ≤40 mm/min |
| | Pull force of secondary and tertiary pipe joint | ≥450 N |
| | Thickness of thermal insulation foam | 3.5 mm |
| | Material of thermal insulation cotton | EPDM |
| | Material of thermal insulation foam surface winding | PET |
| | Medium | 50%water+50%ethylene glycol |
| | The specification of secondary  pipeline | DN25 |

## Tertiary Pipeline

| Image | Name | Parameter |
|---|---|---|
|  | Material of main body | PA |
| | Working temp | -40℃~85℃ |
| | Maximum working pressure | ≥10 bar |
| | Flame retardant class | UL 94HB |
| | Rate of combustion | ≤40 mm/min |
| | Pull force of tertiary pipe joint | ≥450 N |
| | Thickness of thermal insulation foam | 3.5 mm |
| | Material of thermal insulation cotton | EPDM |
| | Material of thermal insulation foam surface winding | PET |
| | Medium | 50%水+50%乙二醇 |