



## Heat exchangers BWT-N

Hydraulic drives and lubricating systems are indispensable in machine construction, raw material production, navigation and many other areas.

Both as a power transfer medium and lubricant oil is heated by friction losses during operation.

Since the viscosity of the oil changes along with the temperature, precise temperature stabilisation using coolers is a vital requirement for systems and drives for consistent power. In addition to the unlimited supply of ambient air, water is also used as a coolant. The advantage of water is the low susceptibility to seasonal temperature fluctuations and large companies often use it as a central circulation coolant.

BWT plate heat exchangers are a particularly efficient solution in these cases. They're extremely compact, practically maintenance-free and easy to install.

Particularly suited for corrosive mediums

Equally distributed turbulent flow

High exchange efficiency

Low water consumption

Small installation space

Maintenance free

Broad temperature range

Easy installation

Cu-free soldering material



## Introduction and description

### Why coolers?

There are basically two main concepts in the development of fluid power systems.

One is to design systems without using a cooler, and if operational conditions show that the system needs a cooler, install it later at additional costs. This understandably then often calls for compromises, making the system more expensive.

The other concept recognizes that a system originally designed with an integrated cooler needs less installation space and is a better choice with respect to construction and system costs.

### Why Bühler?

Using an oil/water cooler nowadays requires paying great attention to low water consumption. The tube bundle heat exchangers Bühler had been selling for decades could not meet this requirements, resulting in our search for a new exchanger concept for hydraulics.

Soldered plate heat exchangers meet these requirements outstandingly and further offer other advantages such as requiring little installation space and the high pressure resistance.

Together with a well-known manufacturer, Bühler implemented these findings in a comprehensive product line customised for the requirements in fluid control.

If our standard range of products does not include the right solution for your application, we will gladly develop a custom solution for you.

Use the data in this leaflet to determine a suitable cooler for your application. However, we do recommend using our calculator to configure your cooler. This will allow you to optimise it whilst incorporating various parameters.



### Typical application

- Oil cooling or heating high in sulphur (which reacts to sulphur)
- Pharmaceutical and chemical application where copper-soldered heat exchangers are sensitive to acids and bases
- High-temperature application

### Construction and application

BWT plate heat exchangers are made from patterned stainless steel plates. The direction of the pattern varies from plate to plate, yielding a large number of contacts on the back of the pattern. When the plates are soldered the contacts also connect, forming an extremely compact, pressure-resistant set of plates. And yet virtually the entire material is available for heat exchange. In this series the copper solder was replaced with a special nickel-based solder, which in addition to nickel and chromium, also contains silicon, boron and other elements. The basic materials, the duct plates, cover plates, connections, etc. are the same as in copper-soldered BWTs. Our copper-free heat exchangers are much more resistant to aggressive mediums. In addition, the temperature resistance in the BWT-N series is significantly higher than copper-soldered compact heat exchangers. The thermal efficiency corresponds to that of the copper-soldered BWT.

### Function

Compared to other systems the interior geometry of the BWT ensures a turbulent flow, yielding high heat transfer coefficients when using the limits for low flow rates, thus flow speeds, in the configuration. This excludes Zones with a low speed, maintaining an extremely equally distributed flow across the entire exchanger surface. The materials used result in dense, smooth exchanger plate surfaces, significantly reducing the risk of possible corrosion.

These design features of the BWT plate heat exchangers virtually eliminate the risk of deposits within the exchanger.

### Planning information

#### Set-up

The coolers should be installed providing easy accessible and visibility. Any installation position is permitted and may be adapted to the installation conditions. However, the cooler should not be installed on its back.

Secure the plate heat exchanger with the bracket sold as an accessory. The connection lines must be installed free from tension and vibration. We recommend installing tubes or compensators.

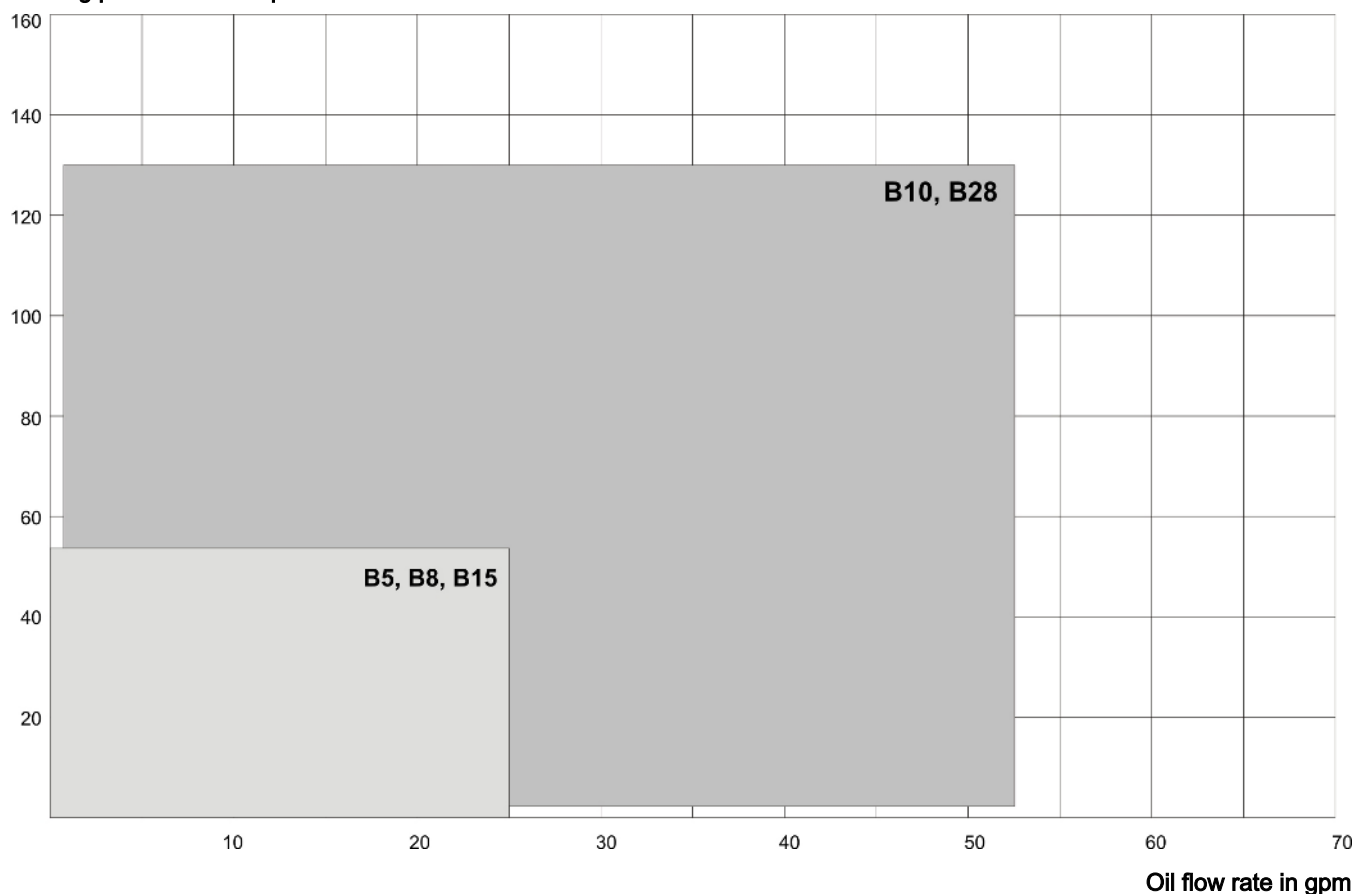
Prevent freezing when installed outdoors.

#### Flow

Oil and water flow in opposite directions inside the heat exchanger (oil inlet F1 → F3, water inlet F4 → F2). The connections can alternatively be switched (oil inlet F3 → F1, water inlet F2 → F4).

## Cooling capacity comparison for the various BWT-N lines

## Cooling performance in hp



The diagram above shows the applications of the various base types.

## Approvals

BWT plate coolers are approved by the following authorities:

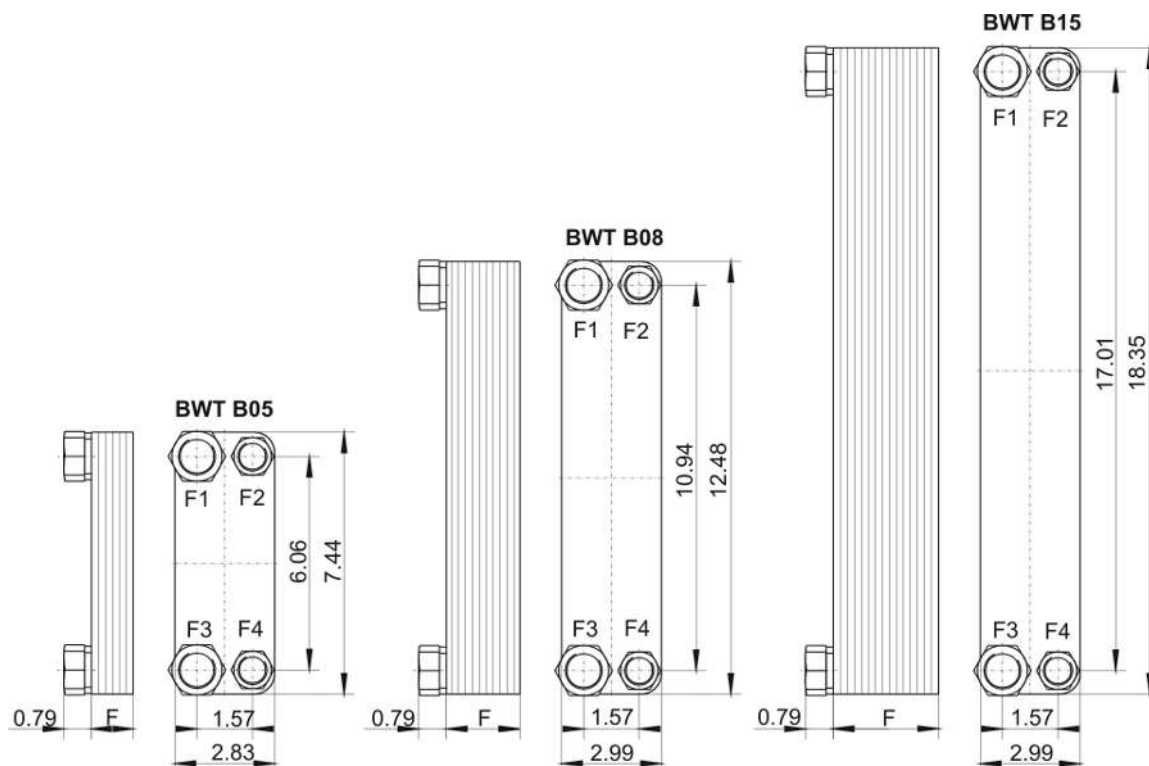
Sweden	Statens Anläggningsprovning (SA)
Norway	Kjelkontrollen
Canada	Canadian Standard Association (CSA)
Germany	Technischer Überwachungsverein (TÜV)
USA	Underwriters Laboratories (UL)
Finland	Teknillinen Tarkastuskeskus (TK)
Switzerland	Schweizerischer Verein des Gas- und Wasserfaches (SVGW)
EU	TRB801 No. 25

Bühler is ISO 9001 certified

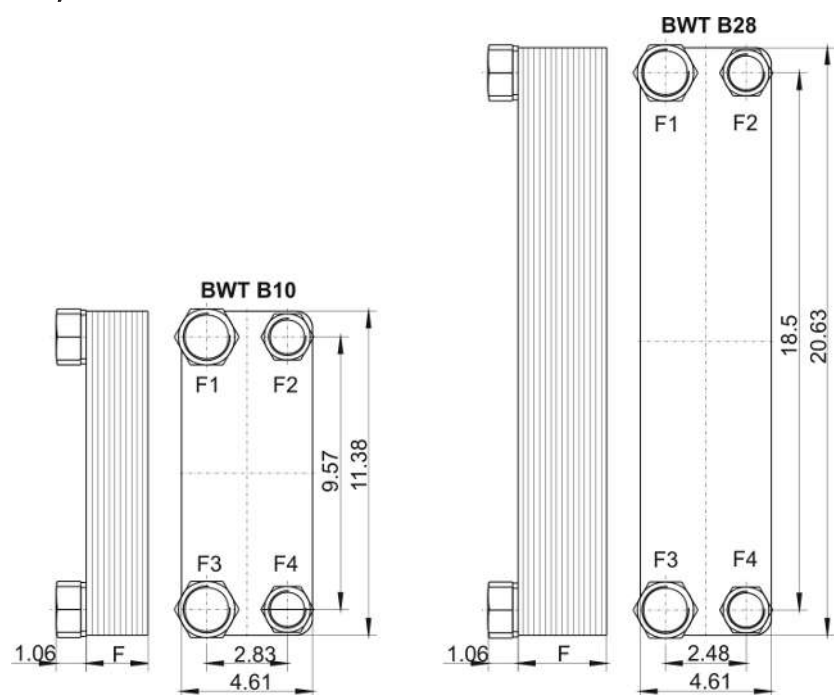
## Technical data BWT-N

## Technical Data

<b>Material</b>	Stainless steel 1.4401, Cu-free soldering material (nickel-based solder)
<b>Operating pressure</b>	
static:	max. 145 psi
<b>Operating oil temperature</b>	+662 °F

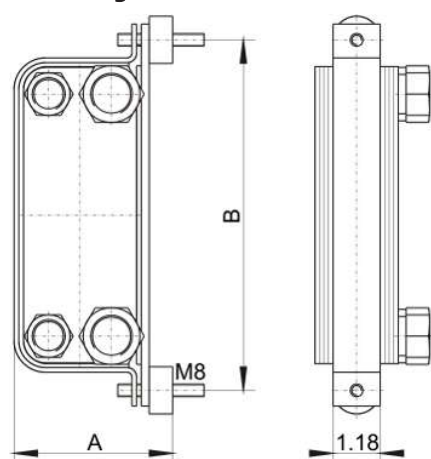


Type	Item no.	F (in)	Cooling capacity (hp)	Oil connection F3, F1	Water connection F2, F4	Weight (lb – net)	Volume (gal)
BWT B05x010N	3405010N	1.18	2 - 6.7	G $\frac{3}{4}$ 36 mm	G $\frac{1}{2}$ 27 mm	2.2	0.03
BWT B05x020N	3405020N	2.09	2 - 14.8	G $\frac{3}{4}$ 36 mm	G $\frac{1}{2}$ 27 mm	3.3	0.05
BWT B08x010N	34080100N	1.18	3 - 8	G $\frac{3}{4}$ 36 mm	G $\frac{1}{2}$ 27 mm	3.5	0.13
BWT B08x020N	34080200N	2.09	6.7 - 21.5	G $\frac{3}{4}$ 36 mm	G $\frac{1}{2}$ 27 mm	4.4	0.26
BWT B08x030N	34080300N	2.99	13.4 - 33.5	G $\frac{3}{4}$ 36 mm	G $\frac{1}{2}$ 27 mm	6.6	0.40
BWT B15x030N	3415030N	2.99	8 - 40	G $\frac{3}{4}$ 36 mm	G $\frac{1}{2}$ 27 mm	8.8	0.53



Type	Item no.	F (in)	Cooling capacity (hp)	Oil connection F3, F1	Water connection F2, F4	Weight (lb – net)	Volume (gal)
BWT B10x020N	3410020N	2.17	6 - 34	G 1 1/4 36 mm	G 3/4 36 mm	8.8	0.26
BWT B10x030N	3410030N	3.11	13 - 52	G 1 1/4 36 mm	G 3/4 36 mm	11	0.40
BWT B10x040N	3410040N	4.06	13 - 67	G 1 1/4 36 mm	G 3/4 36 mm	15.4	0.53
BWT B10x054N	3410054N	5.39	21 - 80	G 1 1/2 41 mm	G 3/4 41 mm	18	0.79
BWT B10x070N	3410070N	6.89	27 - 87	G 1 1/2 41 mm	G 3/4 41 mm	22	0.92
BWT B10x090N	3410090N	8.78	27 - 107	G 1 1/2 41 mm	G 3/4 41 mm	29	1.06
BWT B28x030N	3428030N	3.11	17 - 60	G 1 1/4 50 mm	G 1 1/4 36 mm	22	0.53
BWT B28x040N	3428040N	4.06	17 - 87	G 1 1/4 50 mm	G 1 1/4 36 mm	26.5	0.79
BWT B28x060N	3428060N	5.94	27 - 121	G 1 1/4 50 mm	G 1 1/4 41 mm	37.5	1.32
BWT B28x080N	3428080N	7.83	34 - 141	G 1 1/4 50 mm	G 1 1/4 41 mm	46.3	1.85

### Mounting brackets



Type	Part no.	A	B
BB05	34BB05	4.09	8.78
BB08	34BB080	4.25	13.98
BB15	34BB15	4.09	19.72
BB10	34BB10	5.94	12.72
BB25 / BB28	34BB25	5.94	22.09