

Fluitec Documentation No. 11.116 Rev. 1

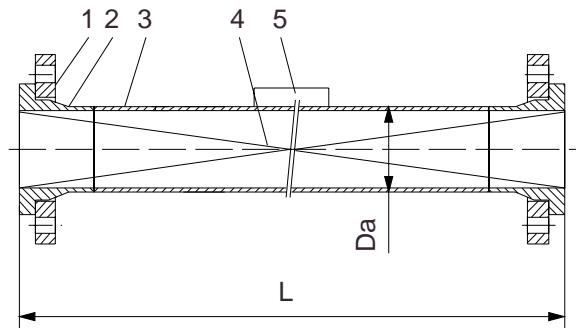
## Static mixers for turbulent flow **CSE-B<sup>®</sup>/X<sup>®</sup>, material PP or PE**

The Fluitec mixer type CSE-B and type CSE-X/2 (according DIN2501, type "T"-series) are manufactured in diameters of DN25 to DN300. They are reasonable priced devices predestinated for neutralization and flocculation tasks in aqueous solutions. The well known high mixing quality is even achieved at flow ratios of additive/main-stream of up to 1:10<sup>6</sup>.

### Field of application of the CSE-B/X mixer

The CSE-B/X mixer type "T" is particularly suitable for mixing tasks with aqueous solutions. CSE-B mixers are mainly used in applications such as:

- adjusting of pH
- mixing of additives with turbulent current
- mixing of flocculation agents
- mixing of flocculent aids
- gasification using O<sub>3</sub>, air, CO<sub>2</sub> or O<sub>2</sub>



### Assembly

1. Slip on flange DIN 16962 / 16963, nominal pressure 10
2. Welding neck made of PP or PE
3. Pipe made of PP or PE
4. Mixing elements made of PP or PE
5. Name plate

Standard - materials:

PP according to DIN 8078 type 1, GKR guideline R9.4.1

PE-HD according to DIN 8075, GKR guideline R1.3.2 KRV guideline R 1,3,0

All flanges are equipped with steel cores for applications at temperatures up to about 60°C. For applications with temperatures above 60°C, however, Fluitec recommends mixers made of PVDF or PTFE lined steel. Temperature, pressure and long-term stability of all materials must strongly be considered.

### Measures of Fluitec mixers made of PP or PE

In water treatment, the following Fluitec mixers made of PP or PE are used:

- Fluitec mixer CSE-X/2 type "T-PP(PE)"
- Fluitec mixer CSE-B type "T-PP(PE)"

Both mixer types show identical lengths, despite of the different mixer geometries. Standard dimensions are listed in table 1.

DN	Da	L
(-)	(mm)	(mm)
25	32	200
32	40	240
40	50	290
50	63	330
65	75	365
80	90	455
100	110	520
100	125	575
125	140	635
150	180	750
200	225	935
250	280	1120
300	315	1230

Tab. 1: Dimension of the Fluitec mixers made of PP or PE



Fig. 1: Fluitec mixer made of PP or PE

### Fluitec mixer CSE-X/2 type "T"

Dosing aqueous additives the Fluitec mixer CSE-X/2 type "T" is used for flow ratios of additive/main-stream of up to 1:10'000. A homogeneity smaller than 1 to 5% at low pressure drop is even achieved when dosing an additive of a viscosity of 100 mPas into an aqueous stream. The most suitable site for installation and the appropriate dosing device should be evaluated with your mixer specialist. On request the Fluitec mixer CSE-X/2 type "T" can be equipped with an integrated dosage device. Simultaneous mixing of several additives is possible with only one mixer.



Fig. 2: Fluitec mixer with 2 dosage devices

### Fluitec mixer CSE-B type "T"

The Fluitec mixer CSE-B type "T" is used for complex mixing tasks in turbulent flow. The unique geometry of the CSE-B type "T" copes successfully with flow ratios of additive/main-stream of up to 1:10<sup>6</sup> or with fluids with a viscosity ratio of up to 1:400. Thereby, a homogeneity of < 1 to 5% is achieved already at low pressure drop. The most suitable site for installation and the appropriate dosing device should be evaluated with your mixer specialist. On request the Fluitec mixer CSE-X/2 type "T" can be equipped with an integrated but removable dosage device. The fittings of the feeding devices are usually inch-threads, flanges or welding necks.

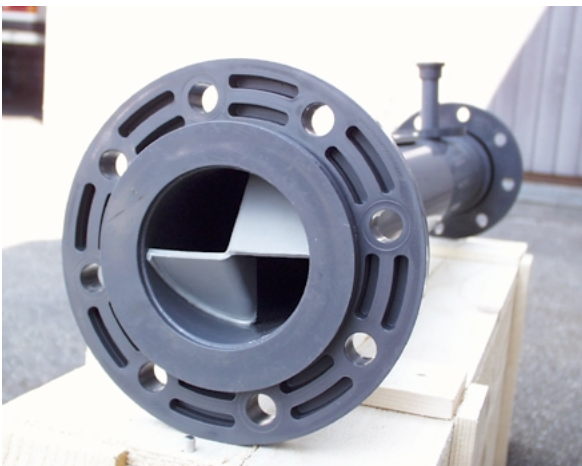
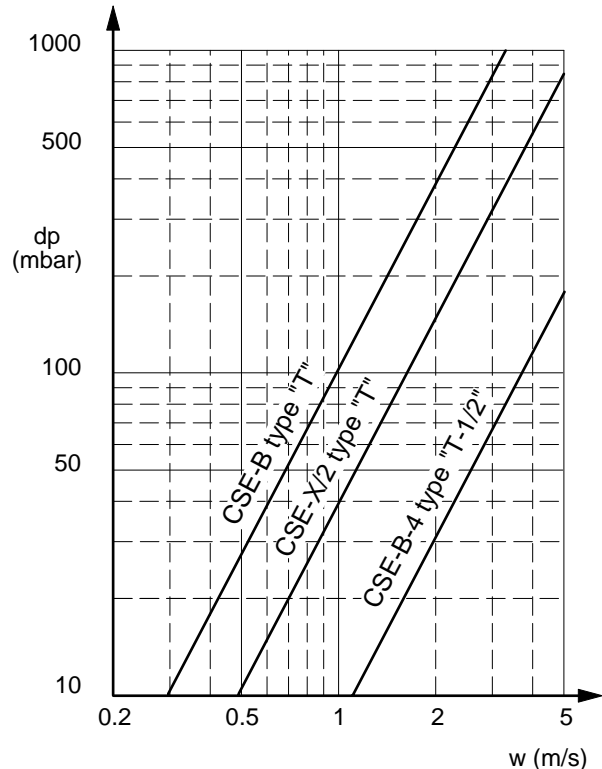


Fig. 3: Fluitec mixer CSE-B made of PP

### Pressure drop

Pressure drops of the Fluitec mixers are represented in table 2. The CSE-B-4 Typ "T-1/2" shows the smallest pressure drop and is therefore suitable for mixing tasks with high flow velocities of up to 1,5 - 4 m s<sup>-1</sup>. Standard mixing operations are realized at flow velocities of 0,5 - 1,5 m s<sup>-1</sup>. Basically, the pressure drop generated is in direct proportion to the liquids density. With table 2 the pressure drop of a mixing operation can roughly be quantified and converted to the medium of request.



Tab. 2: Pressure drop of the Fluitec mixers for water

### Customized equipment

Flanges according to DIN 2501 PN10 (water treatment) are standard for Fluitec mixer made of PP/PE. On request, however, they are equipped with flanges according to DIN 2501 PN6. Mixers out of other materials such as different kind of steel, Hastelloy, titanium, PTFE lined steel tubes, glass, ceramics or plastics like PVC and PVDF are also available. A separate documentation for Fluitec Mixer out of special materials is available.



Fig. 4: Fluitec mixers with Teflon lining