

# Static Mixer

## ----introduction and maintenance

### 1. Introduction

ETERNOO MACHINERY CO., LTD is an international company combining design, manufacture, sale. We are very professional on mixing, separation, and filtration equipment. Now we mainly produce 6 series of static mixer, which is SV, SK, SH, SL, SX, SD series, and all kinds of pipe-line filters, precision filters, automatic self cleaning and back washing filters and the other water treatment equipment and accessories.

Static mixer product is widely used for petroleum industry, chemical industry, pesticide, paints, food industry, paper making, environment protection industry, mining and so on, mixing, extraction and reaction.

Static Mixer is precision engineered device for the continuous mixing of fluid materials. Normally the fluids to be mixed are liquid, but static mixers can also be used to mix gas streams, disperse gas into liquid or blend immiscible liquids. The energy needed for mixing comes from a loss in pressure as fluids flow through the static mixer. One design of static mixer is the plate-type mixer and another common device type consists of mixer elements contained in a cylindrical (tube) or squared housing. Mixer size can vary from about 6 mm to 6 meters diameter. Typical construction materials for static mixer components included :  
SS304, SS316L, PP, TEFLON, PVDF, PVC, CPVC, Acetal Resin etc.

Static Mixer are manufacturing according to JB/T7660-1995<static mixer standards>, to design, produce and test.

### 2. Working principle

#### Models



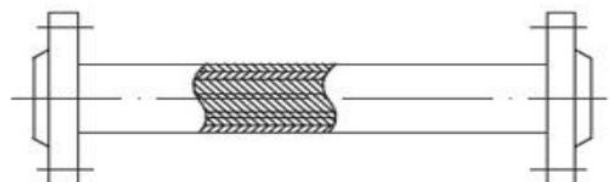
- 1 Static mixer model series: SV、SK、SX、SH、SL、SD
- 2 Element type
- 3 Hydraulic diameter
- 4 Pressure (MPa)
- 5 Length (mm)
- 6 Pipe material: carbon steel: A stainless steel: B
- 7 Flange material: carbon steel : A stainless steel : B
- 8 Jacket : F

For example: SX-50/200-1500AA

But for simplify expression, we write model with only 1 and 3. For example, SX-50.

### 3. Technical parameters:

#### (1) SV static mixer



### A. Product feature

SV element is cylinder made of specific bellow plates, the max. Dispersion:1~2um, fluid to fluid uniformity coefficient <5%

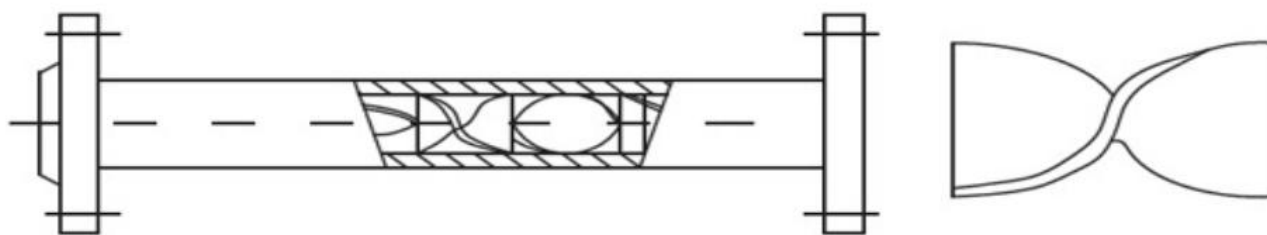
### B. parameters

model	DN	Hydraulic diameter (dn)	Flow rate (m <sup>3</sup> /h)	model	DN	Hydraulic diameter (dn)	Flow rate (m <sup>3</sup> /h)
SV-2.3/20	20	2.3	0.5-1.2	SV-5~20/200	200	5~20	22-110
SV-2.3/25	25	2.3	0.9-1.8	SV-5~20/250	250	5~20	88-176
SV-3.5/32	32	3.5	1.4-2.9	SV-5~30/300	300	5~30	125-200
SV-3.5/40	40	3.5	2.2-4.5	SV-7~30/350	350	7~30	250-340
SV-3.5/50	50	3.5	3.5-7	SV-7~30/400	400	7~30	225-452
SV-3.5/65	65	3.5	5-12	SV-7~30/450	450	7~30	270-550
SV-5/80	80	5	9-18	SV-7~30/500	500	7~30	350-650
SV-5/100	100	5	14-28	SV-7~30/600	600	7~30	550-900
SV-5~7/125	100	5~7	24-34	SV-7~30/1000	1000	7~30	1200-2500
SV-5~7/150	150	5~7	30-60	SV-15~30/1200	1200	15~30	1500-3000

### C. function

Applicable to viscosity <10<sup>2</sup> CP Liquid to liquid, Gas to gas, Liquid to gas mixing, emulsification, reaction, absorb, extraction, heat transfer etc.

## (2) SK static mixer



### A. Product feature

SK element is welded by single pore left and right twisted spiral plate. Max. dispersion:10um, fluid to fluid and fluid to solids uniformity coefficient <5%

### B. Function

Applicable to mixing, emulsification, reaction, absorb, extraction, heat transfer of Chemical, petroleum, medic ion, precision chemical, plastics, color matching, environment protecting, synthetic fibre etc. departments. Especially suitable to small flow along with impurity and high viscosity medium <10<sup>6</sup>CP.

### C. Parameters

model	DN	Hydraulic Diameter	Flow rate (m <sup>3</sup> /h)	Model	DN	Hydraulic diameter	Flow rate (m <sup>3</sup> /h)
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ООО «ТИ-СИСТЕМС» ИНЖИНИРИНГ И ПОСТАВКА ТЕХНОЛОГИЧЕСКОГО ОБОРУДОВАНИЯ

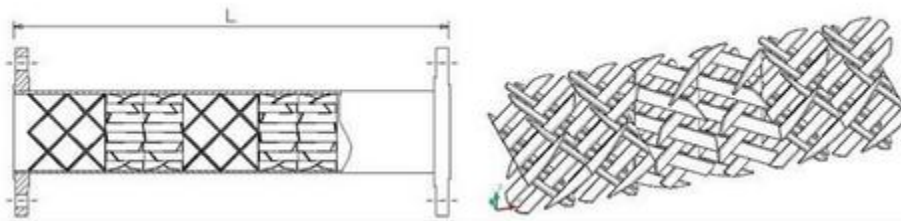
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SK-5/10	10	5	0.15-0.3	SK-50/100	100	50	14-28
SK-7.5/15	15	7.5	0.3-0.6	SK-62.5/125	125	62.5	22-44
SK-10/20	20	10	0.6-1.2	SK-75/150	150	75	31-66
SK-12.5/25	25	12.5	0.9-1.8	SK-100/200	200	100	56-110
SK-16/32	32	16	1.4-3.2	SK-125/250	250	125	88-177
SK-20/40	40	20	2.2-4.5	SK-150/300	300	150	127-250
SK-25/50	50	25	3.5-7	SK-175/350	350	175	173-340
SK-32.5/65	65	32.5	5.9-12	SK-200/400	400	200	226-450
SK-40/80	80	40	9-18	SK-250/500	500	250	353-700

### (3) SX static mixer



#### A. Product feature

SX element is made of many X shape cross elements. uniformity coefficient < 5%.

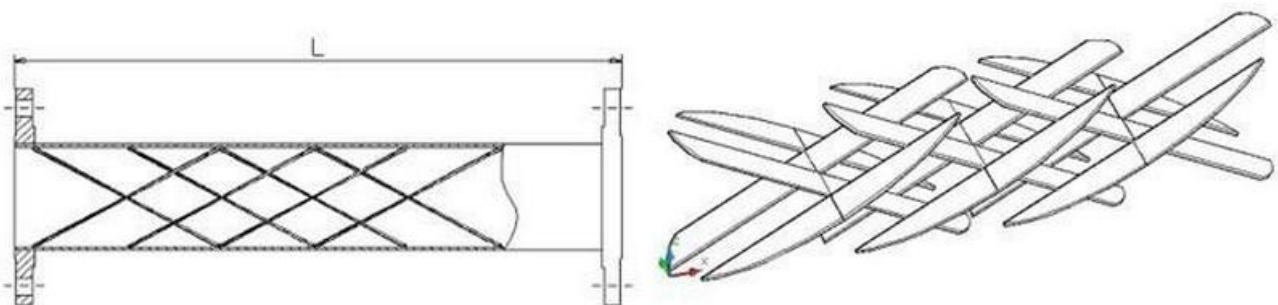
#### B. Parameters

Model	DN	Hydraulic diameter	Flow rate (m <sup>3</sup> /h)	Model	DN	Hydraulic diameter	Flow rate (m <sup>3</sup> /h)
SX-12.5/50	50	12.5	3.5-7	SX-50/200	200	50	56-110
SX-16.25/65	65	16.25	6-12.25	SX-62.5/250	250	62.5	88-176
SX-20/80	80	20	9-18	SX-75/300	300	75	125-250
SX-25/100	100	25	14-28	SX-87.5/350	350	87.5	173-340
SX-31.25/125	125	31.25	22-44	SX-100/400	400	100	226-450
SX-37.5/150	150	37.5	30-60	SX-125/500	500	125	350-700

#### C. Function

Applicable to middle and high viscosity < 10<sup>4</sup>CP fluid to fluid reaction, mixing, absorb process or liquids who producing high polymer products, especially for bigger capacity.

### (4) SL static mixer



#### A. Feature

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SL element is made of half side of X shape element. fluid to fluid and fluid to solids uniformity coefficient <5%

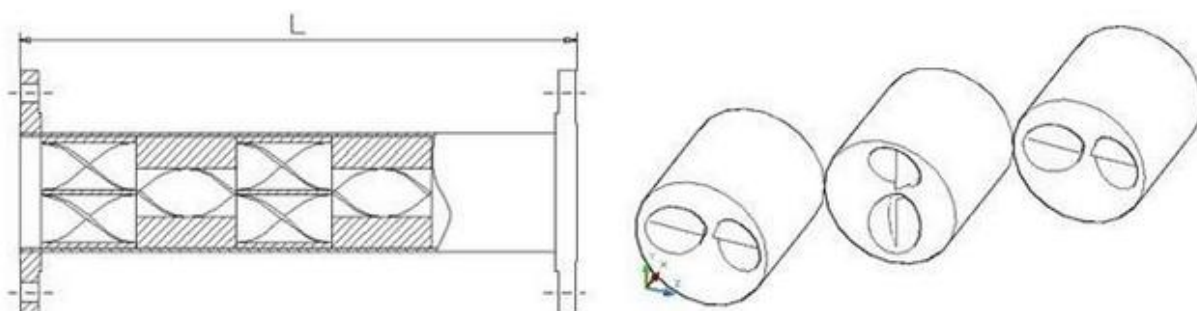
### B. parameters

model	DN	Hydraulic diameter	Flow rate (m <sup>3</sup> /h)	Model	DN	Hydraulic diameter	Flow rate (m <sup>3</sup> /h)
SL-12.5/25	25	12.5	0.7-1.4	SL-100/200	200	100	56-110
SL-16/32	32	16	1.4-2.9	SL-125/250	250	125	88-176
SL-20/40	40	20	2.3-4.6	SL-150/300	300	150	125-250
SL-25/50	50	25	3.5-7	SL-175/350	350	175	173-340
SL-40/80	80	40	9-18	SL-200/400	400	200	226-450
SL-50/100	100	50	14-28	SL-250/500	500	250	350-700
SL-75/150	150	75	32-64	SL-300/600	600	300	350-700

### C. Function

Applicable to chemical, petroleum and greese industry, viscosity < 10<sup>6</sup>CP or high polymer mixing, and heat exchanging, mixing at same time.

## (5) SH static mixer



### A. Feature

SH element is made of double pores, there is fluid re-distribute space between elements. Fluid to fluid and fluid to solids uniformity coefficient <5%

### B. Function

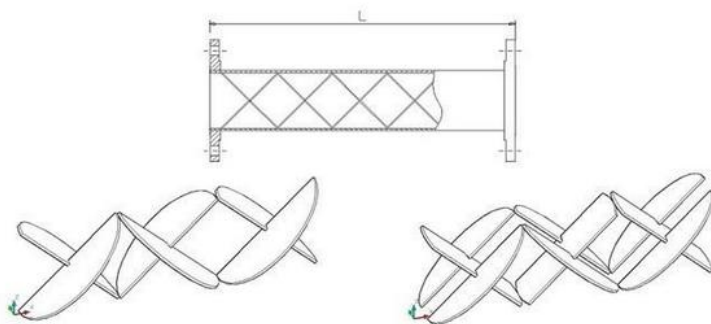
Applicable to mixing, emulsification, color matching, plastic injection, heat exchanging process of precision chemical industry, petroleum, greese, plastics, synthetic fibre, mining industry. Especially for clean medium with higher mixing requirements viscosity < 10<sup>6</sup>CP.

### 3、 parameters

Model	DN	Hydraulic diameter	Flow rate (m <sup>3</sup> /h)	model	DN	Hydraulic diameter	Flow rate (m <sup>3</sup> /h)
SH-3/15	15	3	0.1-0.2	SH-19/80	80	19	4-8

SH-4.5/20	20	4.5	0.2-0.4	SH-24/100	100	19	6.5-13
SH-5/25	25	5	0.5-1.1	SH-36/150	150	36	31-63
SH-7/32	32	7	0.9-1.8	SH-49/200	200	49	54-180
SH-9/40	40	9	1.6-3.2	SH-74/300	300	74	124-248
SH-12/50	50	12	2.3-4.6	SH-124/500	500	124	174-348

## (6) SD static mixer



Model	DN(mm)	Hydraulic diameter(mm)	Flow rate (m <sup>3</sup> /h)	model	DN	Hydraulic diameter	Flow rate (m <sup>3</sup> /h)
<b>SD-5/10</b>	10	5	0.15-0.3	<b>SD-25/50</b>	50	25	3.5-7
<b>SD-7.5/15</b>	15	7.5	0.3-0.6	<b>SD-32.5/65</b>	65	32.5	5.9-12
<b>SD-10/20</b>	20	10	0.6-1.2	<b>SD-40/80</b>	80	40	9-18
<b>SD-12.5/25</b>	25	12.5	0.9-1.8	<b>SD-50/100</b>	100	50	14-28
<b>SD-16/32</b>	32	16	1.4-3.2	<b>SD-62.5/125</b>	125	62.5	22-44
<b>SD-20/40</b>	40	20	2.2-4.5	<b>SD-75/150</b>	150	75	31-64

## Installation and maintenance

1. There is no flow direction require on our standard general equipment. But if they are specially customized model or matched with distributor, then customer should install them under flow direction indicate.
2. Our static mixer is flange connection. Before install, customer should clear the oil stain on flange sealing surface, and be careful about the sealing gasket.
3. Our static mixer could be installed both vertical and horizontal.
4. If the mixing element is non-removable, we would use welded stopper to fix.

## Attention

1. General project design always use single unit or tandem mixer to work. If customer would like two static mixers to be parallel, then the pipes should guarantee fluid distributed uniformly.
2. When use small type SV mixer, if there is impurity in mixing material, then customer should set 2 filters, which installed in parallel and switch over working. The filter element screen choose 40-20 mesh stainless steel screen.
3. If possible, please don't install any flow rate, temperature, pressure indicator panel or monitoring point. If there is special requirements, it should be designed and explained on the drawing before order.
4. Please inform us in advance of placing order, if customer needs to install heat exchanger casing pipe outside of static mixer housing body.
5. To SH series static mixer, because of its high precision, and hard maintenance, customer should place it upside down and use solvent to clean, or use the cleaning medium which could be melt under high temperature.
6. To SV series static mixer, if it is stocked by impurity in the fluid, customer could disassemble the mixer, cleaning by upside down position with water vapour or solvent. Also customer could take down the inner mixing element, and take out the blockage.
7. To SK series element-non-fixed mixer, customer could take out all the elements and get cleaned. But please take attention, don't knock it roughly, in case the elements out of shape.
8. Generally, based on different requirement of different customers, we design accordingly. With choosing right product and right material, our static mixer could avoid repairing.