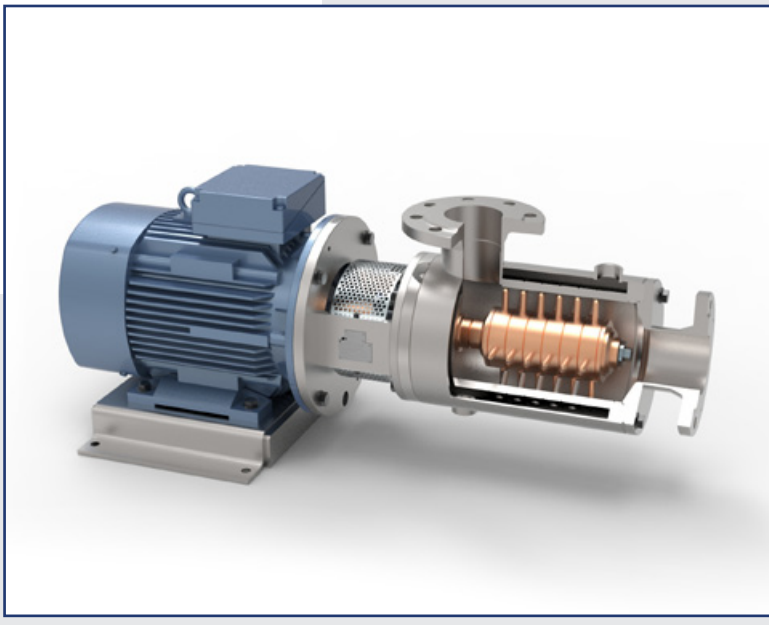
INDAG
Maschinenbau GmbH

The FlowMix®-Company

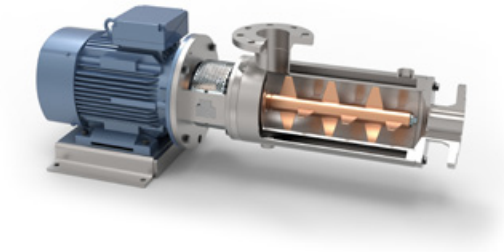




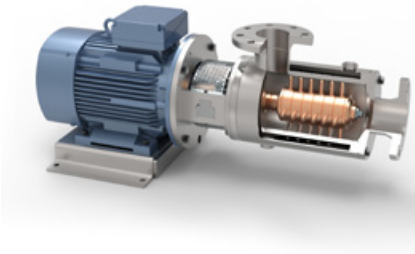
Dynamic Inline Mixer
Typ DLM/P

Dynamic mixing with pin mixing elements
for shear sensitive products

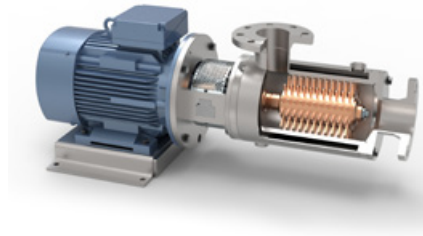
Gentle Inline Mixer Type DLM/M



Dynamic Inline Mixer Type DLM/P



Intensive Inline Mixer Type DLM/S



Inline Homogenizer Type DLM/H



Shear rate

-

+

Function and applications of DLM/P

The INDAG Dynamic Inline Mixer type DLM/P is used for homogeneous mixing of shear sensitive liquids with additives. Additives can be homogeneously mixed in the smallest quantity ratios of less than 0.01%. Also, due to the shape of the mixing elements, the heat input into the product stream is reduced to a minimum. Temperature increases of less than 1°C can thus be kept to a minimum. Temperature-sensitive products can be mixed homogenously in a gentle manner. Some examples from a range of applications are: The mixing of reactive additives with adhesives; the dilution of polymer emulsions; the mixing of polymers with hot water or steam, e.g. for the separation of solvents.

Technology of DLM/P

INDAG Dynamic Inline Mixer type DLM/P consists of round shape mixing elements on rotor and in stator (mixer casing). Round shape mixing elements are extremely robust to allow mixing of highly viscous products (> 10,000,000 mPas). Mixing energy is introduced efficiently into product. It is possible (as an option) to heat or cool rotor and stator. The DLM/P is offered in compact design (KB) and in bearing block design (LB). In the compact design, the rotor is mounted by the output shaft of the motor. In the bearing block design, the rotor is mounted by its own bearing block. With a separate bearing block, longer rotors and thus larger mixing volumes can be realized. Furthermore, this design is also suitable for mixing under high pressure or high temperature. The type of rotor seal is selected to suit each application. For the supply of the double acting mechanical seal INDAG offers the suitable barrier fluid system. INDAG mixers are designed likewise for explosive areas and substances (ATEX).

Positioning
horizontal or vertical position of mixer is possible

Pressure levels
6 bar, 10 bar, 16 bar, 25 bar, 40 bar, 100 bar

Materials
1.4301 (AISI 304), 1.4404 (AISI 316L), 1.4462 (AISI 318), Teflon coated, Tantal coated

Seals
Single acting mechanical seal; double acting mechanical seal; stuffing box seal, visco seal

Connections
EN, DIN, ANSI flange and various others on request

Rotational speed
100 rpm to 1,500 rpm

Capacities
50 l/h to 60,000 l/h

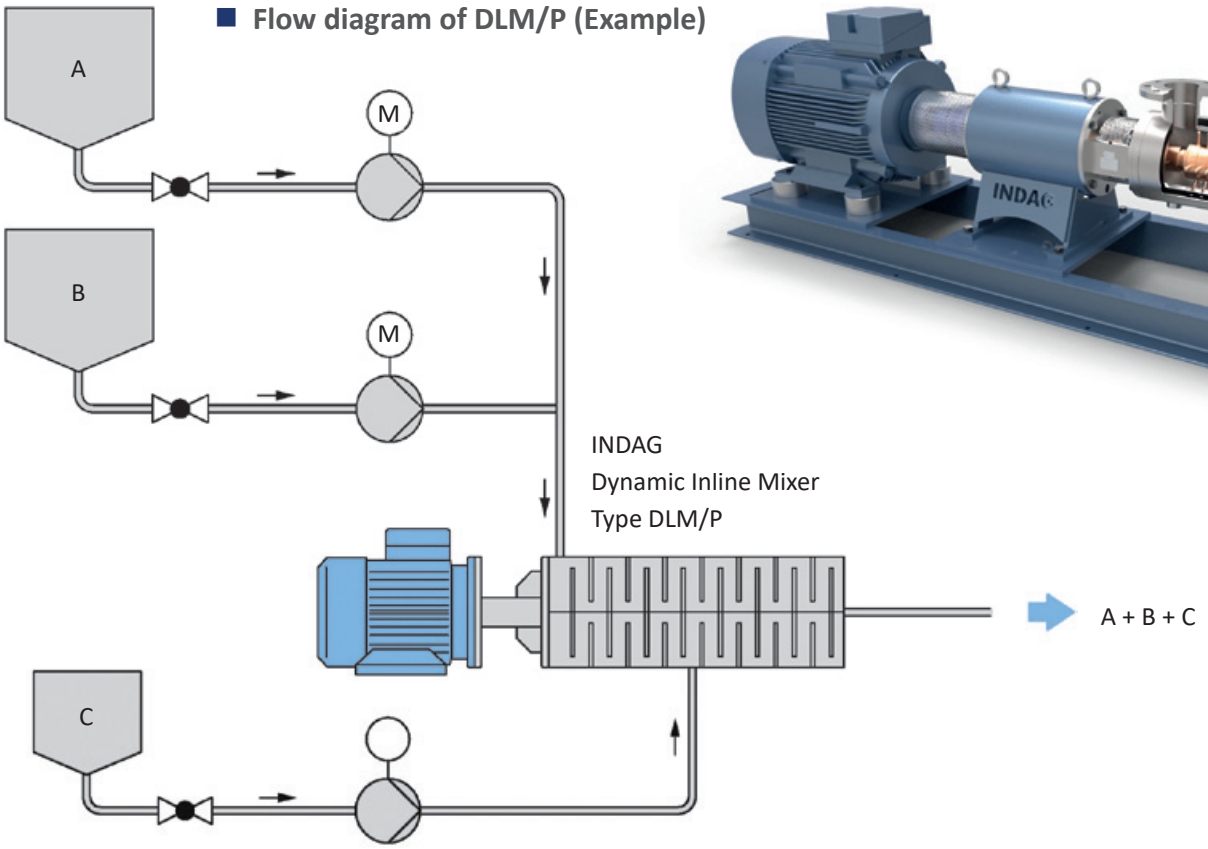
Temperatures
0 °C to 250 °C

Viscosities
1 mPas to 10,000,000 mPas

Advantages of DLM/P

- Very good self-cleaning during CIP-cleaning
- No pressure loss
- Very good homogeneous mixing result even when mixing in smallest quantities (0.01 %)
- Efficient introduction of mixing energy
- Variable mixing energy by speed change via frequency converter
- Temperature increase of the products less than 1 °C
- Applicable at high pressures and high temperatures

Flow diagram of DLM/P (Example)



Mixer sizes and capacities of DLM/P

Type DLM/P	unit	2	3	4	5	6
capacity*	l/h	50-800	300-3,000	500-10,000	1,000-20,000	3,000-60,000
connection	DN	50	65	80	100	125
optional	ASME	2”	2,5”	3”	4”	5”
power*	kW	1.5-7.5	2.2-22	4-35	5.5-55	11-75
rotational speed*	1/min	200-1,500	200-1,500	200-1,500	100-1,000	100-1,000
mixing stages compact version		DLM/P-208 KB	DLM/P-308 KB	DLM/P-408 KB	DLM/P-508 KB	DLM/P-608 KB
mixing stages bearing block version		DLM/P-220 LB	DLM/P-320 LB	DLM/P-420 LB	DLM/P-520 LB	DLM/P-620 LB

*depends on product

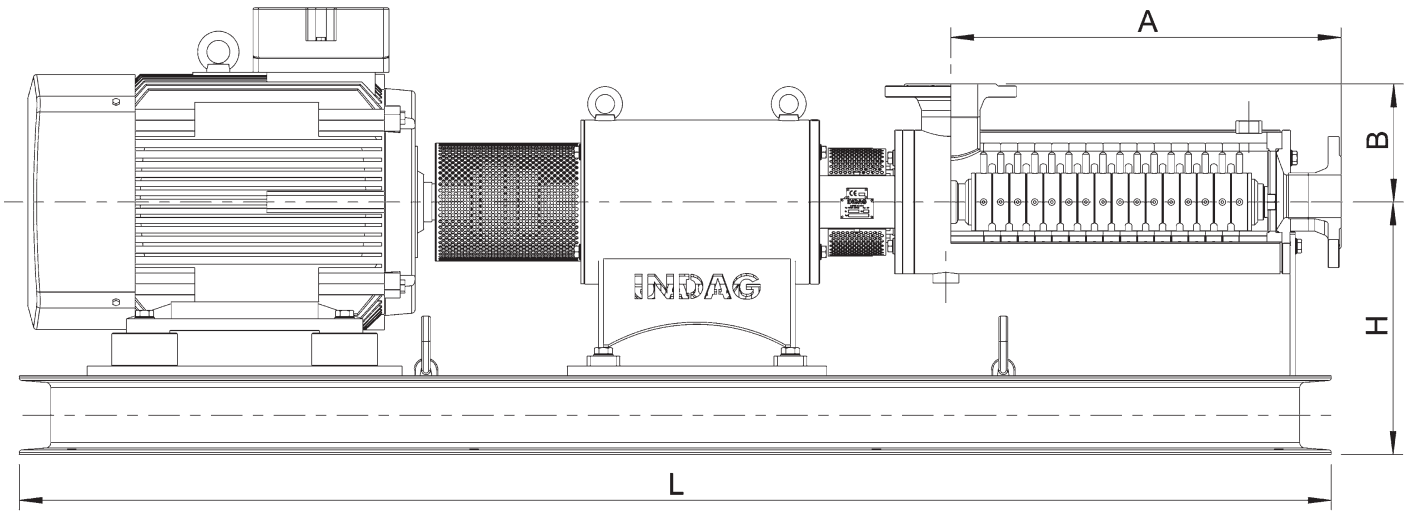


INDAG Dynamic Inline Mixer type DLM/P-308 ST HO LB

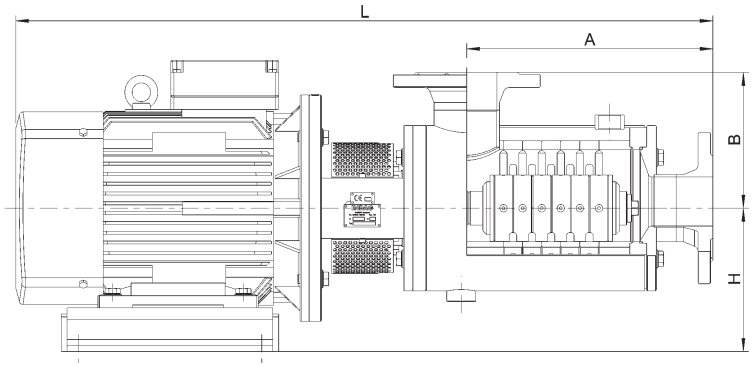


INDAG DLM/P Stator mixing elements

Dimension drawing of DLM/P (LB)



Dimension drawing of DLM/P (KB)



Dimension table of DLM/P

Type	unit	A	B	H*	L*
DLM/P-208 KB	mm	407	165	148	996
DLM/P-308 KB	mm	413	180	190	1027
DLM/P-408 KB	mm	446	210	190	1062
DLM/P-508 KB	mm	472	242	218	1104
DLM/P-220 LB	mm	589	165	312	1700
DLM/P-320 LB	mm	595	180	385	2000
DLM/P-420 LB	mm	628	210	460	2200
DLM/P-520 LB	mm	654	242	460	2300

* depends on the drive

Company profile

For more than 65 years, INDAG has been developing, designing and manufacturing dynamic inline mixers in Borsfleth near Hamburg.
INDAG mixers are designed to meet the highest quality and efficiency standards.

Product range and services

Our product range covers: Dynamic inline mixers for gentle, intensive, or high shear mixing. Possible applications are: Mixing, emulgating, dispersing and foaming.
Our services include: Commissioning, maintenance, and repair of INDAG mixers, spare parts service and customer support based on many years of experience.

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