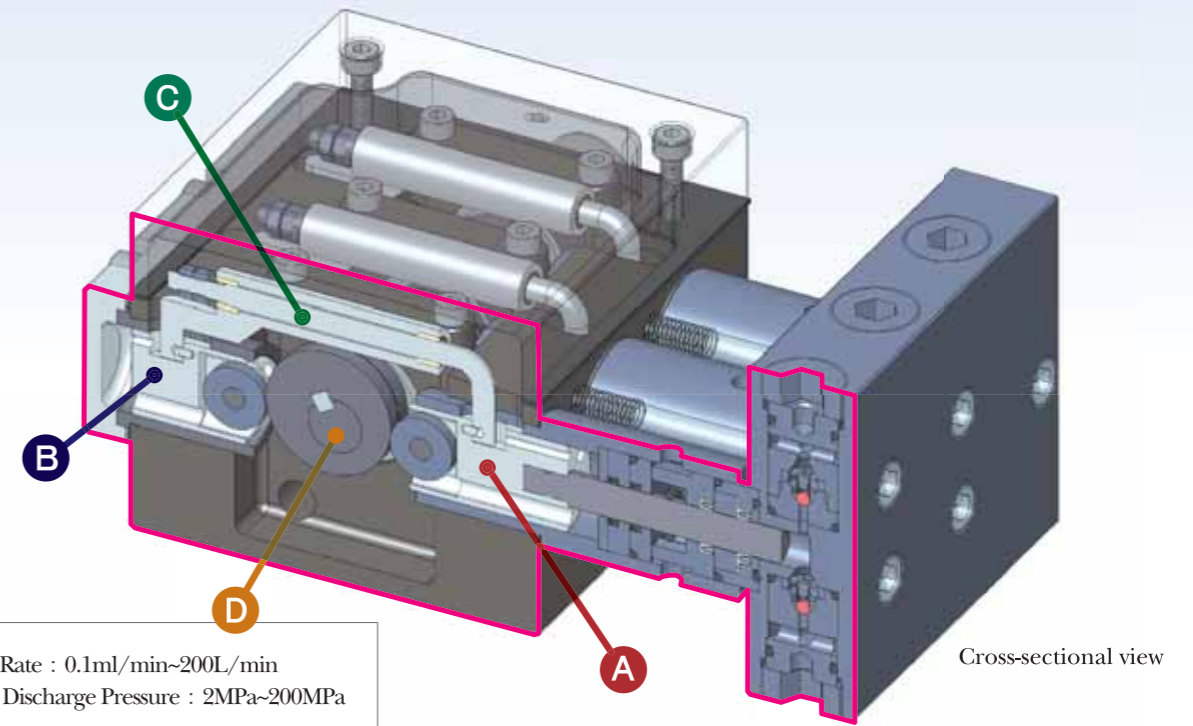


**SMP is a pulse free metering pump that is able to feed liquid ultraprecisely.**

SMP is the fruit of Fuji Techno's own idea and technical expertise in both designing and manufacturing. When it comes to ultraprecise and very fine control of liquid feeding, SMP is most useful.

Flow reproduction  
**±0.1%** or less  
throughout specified flow rate range



○Flow Rate : 0.1ml/min~200L/min  
○Max. Discharge Pressure : 2MPa~200MPa

**Explanation: How the super metering pump works.**

**Specially Designed Cams for the Triplex-plunger Drive**

Three specially designed cams **D** keep the total volume of fluid discharged from the three cylinders constant. In the discharge process, each plunger **A** moves in at three different speeds so that the flow rate is constant at all times regardless of the number of plungers in action. The combination of these movements ensures the discharge flow rate of the HY series of pumps is maintained constant at all times. Furthermore, the flow velocity at the suction end is kept constant which minimizes the occurrence of cavitations. Moreover, the design enables very smooth movement of the check valve ball resulting in minimal pulsation and leakage. This also results in little wear to the valve balls and the valve seats. Consequently, high accuracy and long durability is achieved. Because of ultraprecise processing of cams and liquid end parts in micron scale, flow reproduction is within ±0.1% .

**Return System of Plunger**

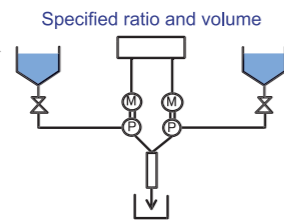
The mechanical return system, which enables the plunger to precisely follow the movement of the cam, makes the inlet and outlet flow rates identical. This mechanical return system has only been adopted for the special triplex-plunger cam drive system of the HY series. There is no delay in the return stroke of the plunger, even at high rotational speeds and for highly viscous fluids, due to the cam and cam-follower being fastened together as one unit.

In the discharge process the cam **D** pushes the plunger **A**, in front, forward. In the suction process the cam **D** pulls the plunger **B**, behind, backward. At the same time, since the plunger **A** and the plunger **B** are connected by the hanger rod **C**, the plunger **A** follows the movement of the plunger **B**.

**Applications**

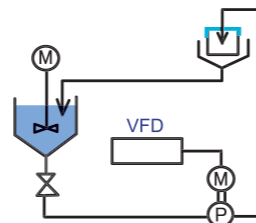
**Line mixing and emulsification**

Without pulsation, excellent property of constant volume and liquid transfer can be obtained in proportion to the pump speed. By using a line mixer and a line homogenizer, emulsification and mixing can be done instantaneously in the feed line. This will replace the need of a batch system in the past.



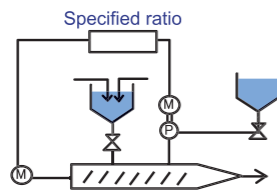
**Precision coating**

Uniform coating can be accomplished by the merit of no pulsation and constant volume. Pump performance is not affected by pressure change caused by change of suction head or clogging of a filter. Also there are no air bubbles mixed in a floating layer. Thus SMP is very useful in continuance coatings like dip coating and roll coating.



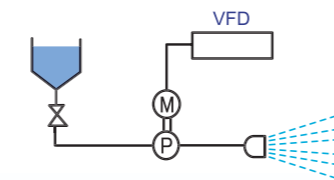
**Feeding additives in ratio to extruder**

Unlike other pumps, the discharge flow rate will not vary due to change in pressure because the pump has no pulsation and it is resistant to load change. The HY Series can precisely feed liquid to a kneader with constantly stable volume.



**Precision washing, Precision spraying, Spray drying**

Because of no pulsation and constant volume, the diameters of particles are uniform. Even in case of a low viscous liquid, pressure variation does not have a marked effect. Thus, SMP is an ideal pump for combustion tests.



**Dosing line**

Highly precise dosing can be achieved very easily by position control of servo motor.



**Materials**

	Liquid end	Plunger	Plunger Seal	Spring	Gasket (O-ring)
HYS HYSB HYS HYS	*Stainless-steel 316 Titanium Hastelloy-B,C(R)	*Stainless-steel 316 Ceramic	*Ultra-High-Molecule- Polyethylene PTFE	*Stainless-steel 316 Spron	*Viton(R) Kalrez(R) EPDM Silicon H-NBR
HYM	*Stainless-steel 316 Titanium Hastelloy-B,C(R) PTFE • PEEK	*Ceramic Stainless-steel 316	*Ultra-High-Molecule- Polyethylene PTFE	*Stainless-steel 316 Spron	*Viton(R) Kalrez(R) EPDM Silicon H-NBR

Note: Mark (\*) refers to maker's standard; others are option. Kalrez(R) and Viton(R) are registered trademarks of Du Pont Dow Elastomers. Hastelloy-B,C(R) is registered trademark of Haynes.