

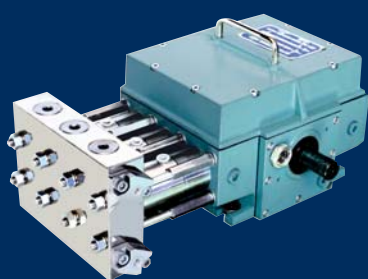
Standard product
Pump with metal free pump head
Liquefied carbon dioxide (LCD) injector
Precision feeding unit "Iretaro"
Portable unit

*Super
& Metering Pump*
product guide

Super Metering Pump

S M P

Wide variety of products available for numerous applications



Standard product



Pump with metal free pump head



Portable unit



Precision feeding unit "Iretaro"



Liquefied carbon dioxide (LCD) injector

The feature of a Super Metering Pump

- Discharge accuracy of less than $\pm 0.1\%$ (flow reproduction in units of time) throughout a specified flow rate range. More accurate than a flowmeter.
- Constant flow rate even under varying discharge pressure.
- Change of viscosity does not affect flow rate.
- Flow rate is perfectly proportional to pump speed.
- It is a reciprocating pump but pulse free.



Industrial use

Chemical

- Feeding additives in ratio to extruder
- Line mixing and emulsification
- Precision coating

Semiconductor

- Precision washing
- Precision coating

Pharmaceutical

- Line mixing and emulsification
- Fractionation

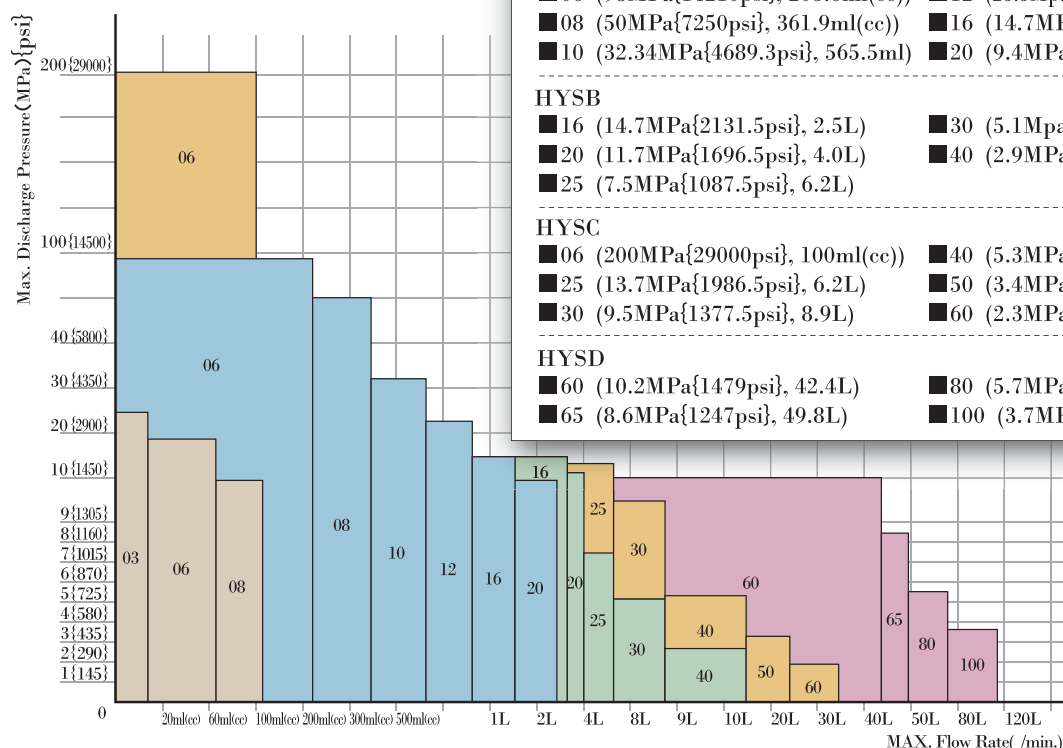
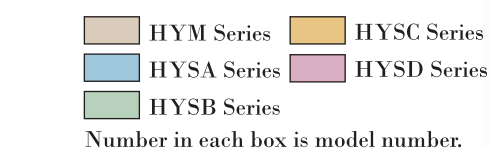
Energy

- Precision spraying under high pressure

Foods

- Spray drying
- Line mixing and emulsification

Super Metering Pump(Standard version)Performance distribution map



Max. Discharge pressure & Max. flow rate

HYM

- 03 (24.5MPa{3552.5psi}, 15.3ml(cc))
- 06 (19.6MPa{2842psi}, 61.1ml(cc))
- 08 (9.8MPa{1421psi}, 108.6ml(cc))

HYSA

- 06 (98MPa{14210psi}, 203.6ml(cc))
- 08 (50MPa{7250psi}, 361.9ml(cc))
- 10 (32.34MPa{4689.3psi}, 565.5ml)
- 12 (23.5MPa{3407.5psi}, 814.3ml(cc))
- 16 (14.7MPa{2131.5psi}, 1.4L)
- 20 (9.4MPa{1363psi}, 2.3L)

HYSB

- 16 (14.7MPa{2131.5psi}, 2.5L)
- 20 (11.7MPa{1696.5psi}, 4.0L)
- 25 (7.5MPa{1087.5psi}, 6.2L)
- 30 (5.1MPa{739.5psi}, 8.9L)
- 40 (2.9MPa{420.5psi}, 15.8L)

HYSC

- 06 (200MPa{29000psi}, 100ml(cc))
- 25 (13.7MPa{1986.5psi}, 6.2L)
- 30 (9.5MPa{1377.5psi}, 8.9L)
- 40 (5.3MPa{768.5psi}, 15.8L)
- 50 (3.4MPa{493psi}, 24.7L)
- 60 (2.3MPa{333.5psi}, 35.6L)

HYSD

- 60 (10.2MPa{1479psi}, 42.4L)
- 65 (8.6MPa{1247psi}, 49.8L)
- 80 (5.7MPa{826.5psi}, 75.4L)
- 100 (3.7MPa{536.5psi}, 117.8L)

● The max. flow rate of SMP with 2 pump heads is double of the above.

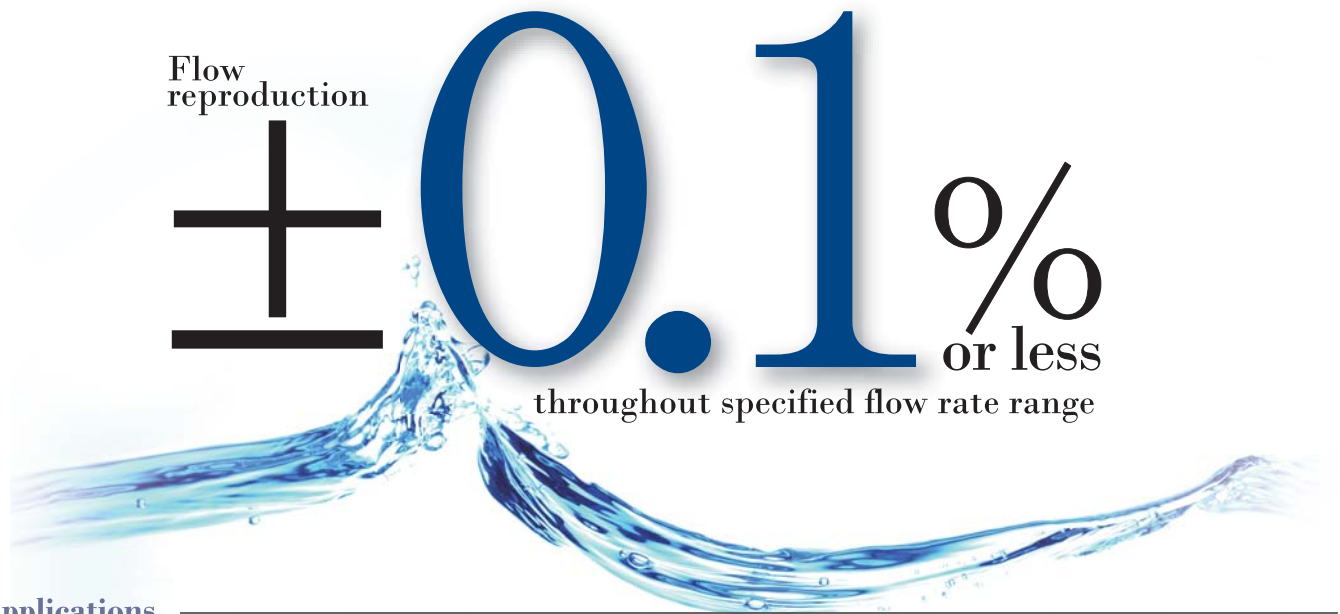
● Please refer to page 6 for details such as allowable flow rate and temperature ranges.

Contents

- Mechanical principle & applications ----- on page 3,4
- Options dimensions and Specs ----- on page 5,6
- Metal free specification ----- on page 7
- Precision feeding unit "Iretaro" ----- on page 8,9
- Liquefied carbon dioxide (LCD) injector ----- on page 10
- Portable specification ----- on page 11
- Control system ----- on page 12
- Measurement data ----- on page 13,14
- Inquiry Form ----- on page 14

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

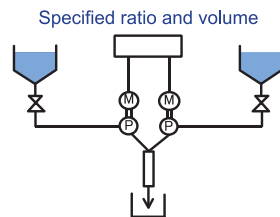
SMP is the fruit of Fuji Techno's own ideas and technical expertise in both design and manufacturing. When it comes to ultraprecise and very fine control of liquid feeding, SMP offers the solution.



Applications

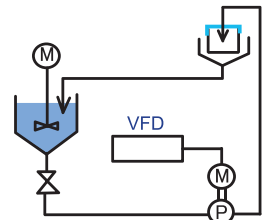
Line mixing and emulsification

Without pulsation, constant volume of 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 removes the need for a batch system as was typical in the past.



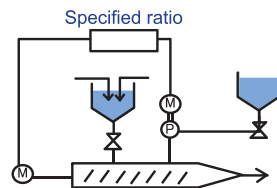
Precision coating

Uniform coating can be achieved due to the characteristics of no pulsation and constant volume. Pump performance is not affected by pressure variations caused by changing the 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.



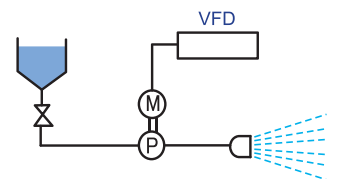
Feeding additives in ratio to extruder

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



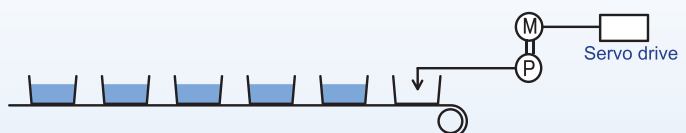
Precision washing, Precision spraying, Spray drying

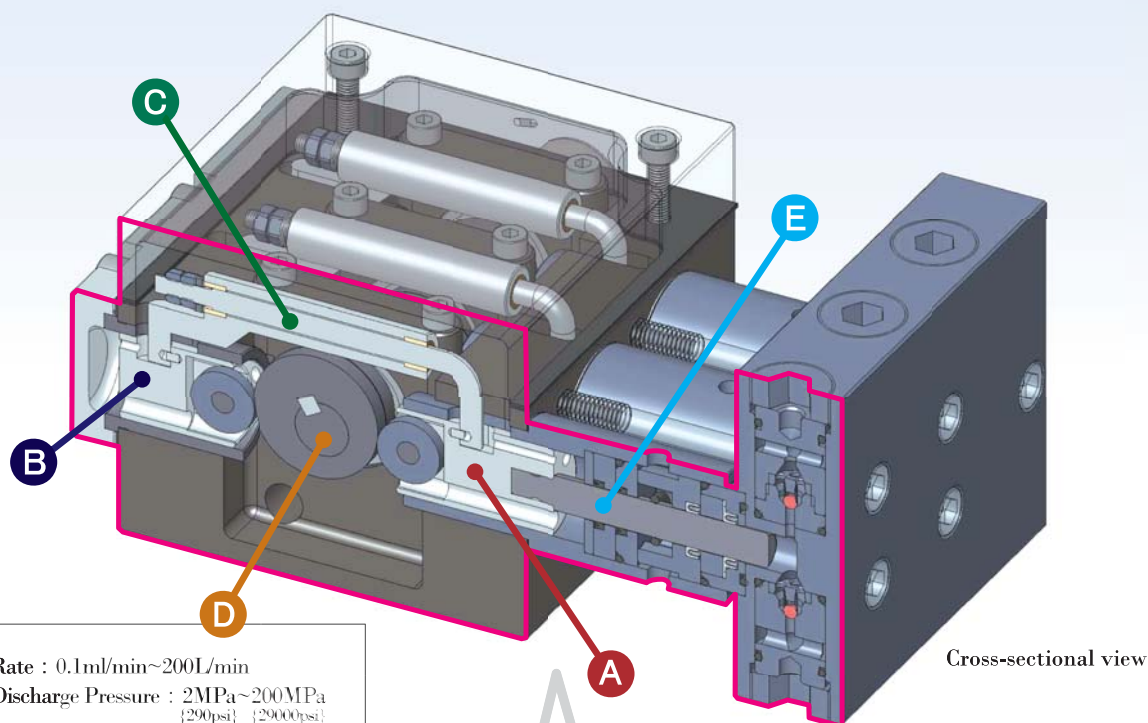
Because there is no pulsation and constant volume, the diameter of particles remain uniform. Even in case of a low viscous liquid, pressure variation does not have a marked effect. Thus, SMP is an ideal pump for combustion tests.



Dosing line

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





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 **E** moves 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. 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 the micron scale, flow reproduction is less than $\pm 0.1\%$.

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 guide piston **A**, in front, forward.

In the suction process the cam **D** pulls the guide piston **B**, behind, backward.

At the same time, since the guide piston **A** and the guide piston **B** are connected by the hanger rod **C**, the plunger **A** follows the movement of the guide piston **B**.

Materials

	Liquid end	Plunger	Plunger Seal	Spring	Gasket (O-ring)
HYSA HYSB HYSC HYSD	*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	*Spron Stainless-steel 316	*Viton(R) Kalrez(R) EPDM Silicon H-NBR

Note: Mark (*) refers to manufacturer's standard; others are optional.

Kalrez(R) and Viton(R) are registered trademarks of Du Pont Dow Elastomers.

Hastelloy-B,C(R) is registered trademark of Haynes.

Option

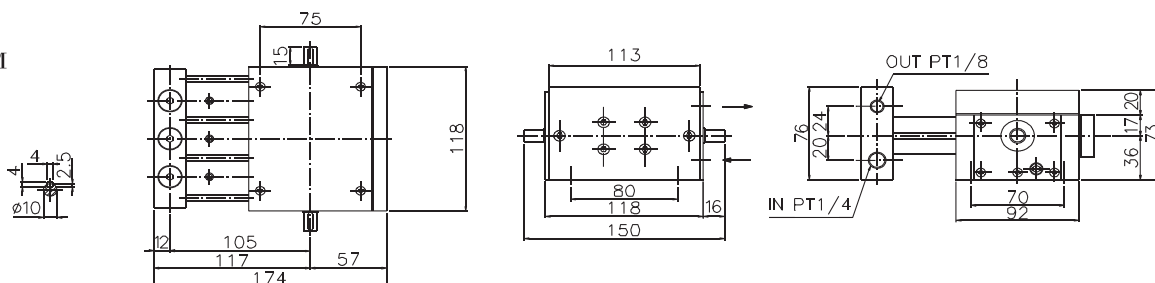
Stainless-steel 316(SUS316)is our standard material for the liquid end parts. Other materials are available as options. Please refer(page 4).

- In the case of a double head type pump, the discharge quantity is doubled compared with the standard pump.
- Max. Flow Rate and Speed Range are subject to change according to liquid viscosity.
- In addition to the aforementioned standard specifications, we also manufacture pumps with different capacities, discharge pressure and temperature range.
- Pumps with a heating / cooling jacket are also available, as well as pumps meeting sanitary specifications.
- To handle water or air reactive liquids and liquids with slurry, there are gas purge and washing systems available as options.

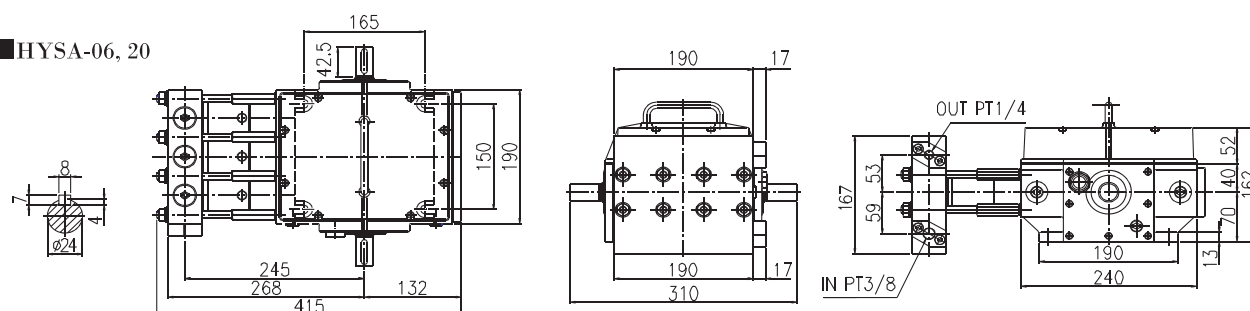


Dimensions (mm)

■HYM

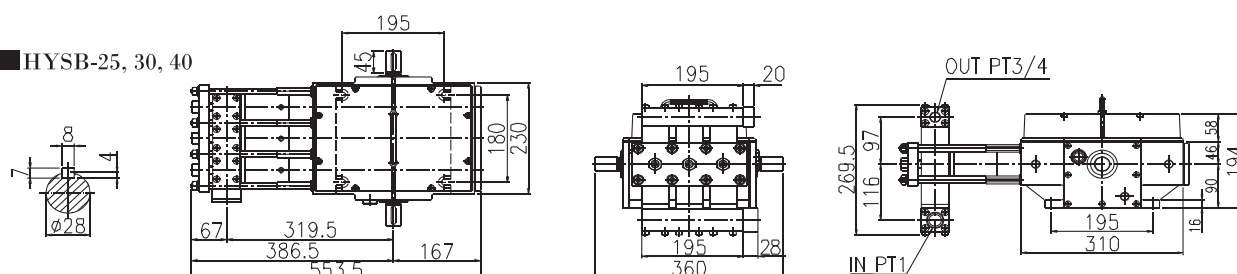


■HYSA-06, 20

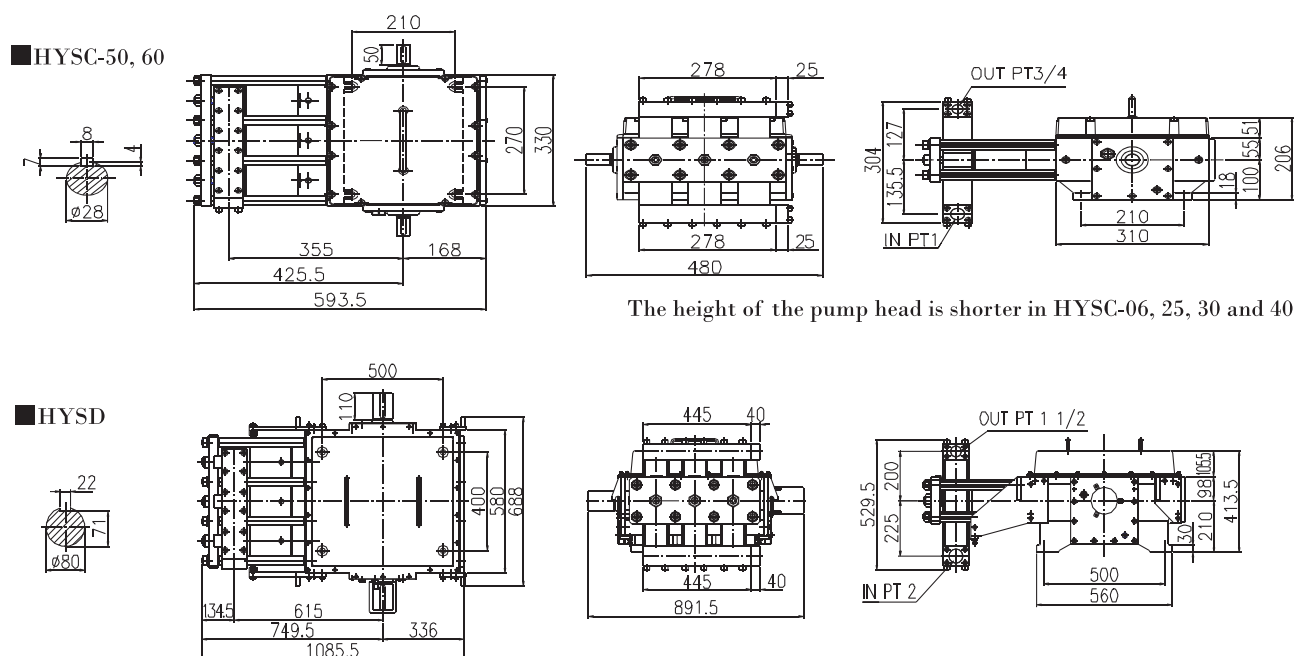


The height of the pump head is shorter in HYSA-06, 08, 10 and 12.

■HYSB-25, 30, 40



The height of the pump head is shorter in HYSB-16, 20.



Specifications

Type	MAX. Flow Rate (/min.)	Flow Rate (ml(cc)/rev.)	Max. Discharge Pressure [] : Special Spec.		Speed Range (R.P.M.)	Viscosity Range (mPa·s)	Temperature Range [] : Special Spec. (°C)	Weight (about kg)
			(MPa)	(psi)				
HYM-03	15.3ml(cc)	0.13	9.8[24.5]	1421 [3552.5]	1-120	1-20,000	-30~120 [200]	8
HYM-06	61.1ml(cc)	0.51	9.8 [19.6]	1421 [2842]	1-120	1-20,000	-30~120 [200]	8
HYM-08	108.6ml(cc)	0.90	9.8	1421	1-120	1-20,000	-30~120 [200]	8
HYSA-06	203.6ml(cc)	1.70	98	14210	1-120	1-40,000	-30~120 [200]	45
HYSA-08	361.9ml(cc)	3.02	23.5[50.0]	3407.5 [7250]	1-120	1-40,000	-30~120 [200]	45
HYSA-10	565.5ml(cc)	4.71	23.5[32.3]	3407.5 [4683.5]	1-120	1-40,000	-30~120 [200]	45
HYSA-12	814.3ml(cc)	6.79	23.5	3407.5	1-120	1-40,000	-30~120 [200]	45
HYSA-16	1.4L	12.06	14.7	2131.5	1-120	1-60,000	-30~120 [200]	48
HYSA-20	2.3L	18.85	9.4	1363	1-120	1-60,000	-30~120 [200]	48
HYSB-16	2.5L	21.11	14.7	2131.5	1-120	1-60,000	-30~120 [200]	90
HYSB-20	4.0L	32.99	11.7	1696.5	1-120	1-60,000	-30~120 [200]	90
HYSB-25	6.2L	51.54	7.5	1087.5	1-120	1-60,000	-30~120 [200]	105
HYSB-30	8.9L	74.22	5.1	739.5	1-120	1-60,000	-30~120 [200]	105
HYSB-40	15.8L	131.95	2.9	420.5	1-120	1-60,000	-30~120 [200]	105
HYSC-06	100ml(cc)	0.84	200	29000	1-120	1-60,000	-30~120 [200]	145
HYSC-25	6.2L	51.54	13.7	1986.5	1-120	1-60,000	-30~120 [200]	145
HYSC-30	8.9L	74.22	9.5	1377.5	1-120	1-60,000	-30~120 [200]	145
HYSC-40	15.8L	131.95	5.3	768.5	1-120	1-60,000	-30~120 [200]	145
HYSC-50	24.7L	206.17	3.4	493	1-120	1-60,000	-30~120 [200]	145
HYSC-60	35.6L	296.88	2.3	333.5	1-120	1-60,000	-30~120 [200]	145
HYSD-60	42.4L	424.12	10.2	1479	1-100	1-100,000	-30~120 [200]	840
HYSD-65	49.8L	497.75	8.6	1247	1-100	1-100,000	-30~120 [200]	840
HYSD-80	75.4L	753.98	5.7	826.5	1-100	1-100,000	-30~120 [200]	900
HYSD-100	117.8L	1178.1	3.7	536.5	1-100	1-100,000	-30~120 [200]	965

* In case that it is desirable to run a pump at a speed out of the above speed range, please consult Fuji Techno in advance.

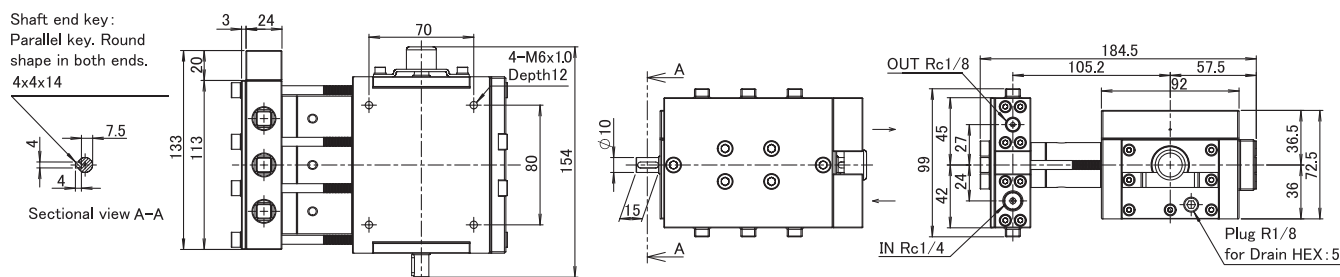
* If there is a plan to use liquid with a temperature colder than -10°C, please contact Fuji Techno for advice.

Feature

All liquid end parts are metal free, making the metal free version suitable for use with highly corrosive liquid (e.g. strong acid) or liquid, which must be kept away from iron ion. As a metal free head, the PEEK head can withstand an extreme high pressure of 8MPa{1160psi}.



Dimensions (mm)



Specifications

Note: The max. discharge pressures differ between the PEEK and the PTFE heads.

Type		MAX. Flow Rate (/min.)	Flow Rate (ml(cc)/rev.)	Max. Discharge Pressure		Speed Range (R.P.M.)	Viscosity Range (mPa.s)	Temperature Range (°C)
				(MPa)	(psi)			
HYM (PTFE)	03	15.3ml(cc)	0.13	2.0	290	5~120 *①	~10,000*②	-20~70*③*④
	06	61.1ml(cc)	0.51	2.0	290	5~120 *①	~10,000*②	-20~70*③*④
	08	108.6ml(cc)	0.90	2.0	290	5~120 *①	~10,000*②	-20~70*③*④
HYM (PEEK)	03	15.3ml(cc)	0.13	8.0	1160	5~120 *①	~10,000*②	-20~70*③*④
	06	61.1ml(cc)	0.51	8.0	1160	5~120 *①	~10,000*②	-20~70*③*④
	08	108.6ml(cc)	0.90	8.0	1160	5~120 *①	~10,000*②	-20~70*③*④

Please consult with Fuji Techno Industries Corporation in the following cases.

- *1. Pump speed of 5 r.p.m. or lower
- *2. Use of liquid with viscosity 100 mPa*s or higher
- *3. Temperature between 18~22°C. PTFE's coefficient of thermal expansion is high in this temperature range
- *4. Temperature is out of the spec. range

Feature

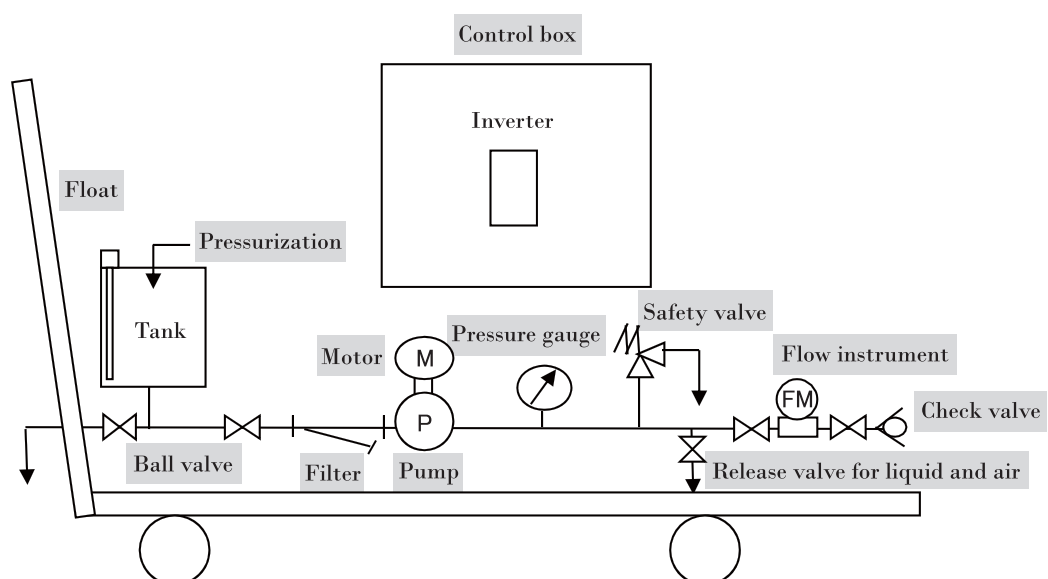
Iretaro is a unit, which consists of SMP(core), tank, control board, etc.
It is fixed on the hand cart for easy mobility.
There are special versions for explosion proof, high temperature, etc.
Iretaro can be equipped with a gas purge and/or a washing systems.



Specifications

- * Flow Range 5 pump models: 0.1ml(cc)/min - 100L/min.
(Max. pressure varies with the flow rate range of a pump Max. pressure of special version HYSC-60 is 200MPa {29000psi})
- * Max. pressure: 50MPa {7250psi}
- * Max temperature: 200°C
- * Fuji Techno is able to customize "Iretaro" in accordance with requirements of users.

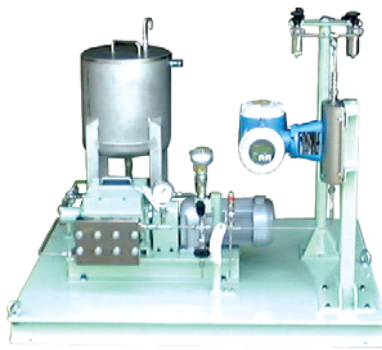
Basic model Flow chart



Examples of Iretaro



Standard Configuration



Standard Configuration



Compact Type



For feeding of
dissolution powder



For feeding of
Maleic Anhydride



With explosion proof terminal box



With two tanks
and an electric scale.



With two tanks
and a flow meter.



Control box with graphic operation
terminal to run multiple units.

Feature

Under increasing concern on environmental preservation, which is exemplified by a regulation on fleon, LCD attracts a great deal of attention because it is safe and efficient to use fleon, as compared with butane, pentane or methylen chloride.

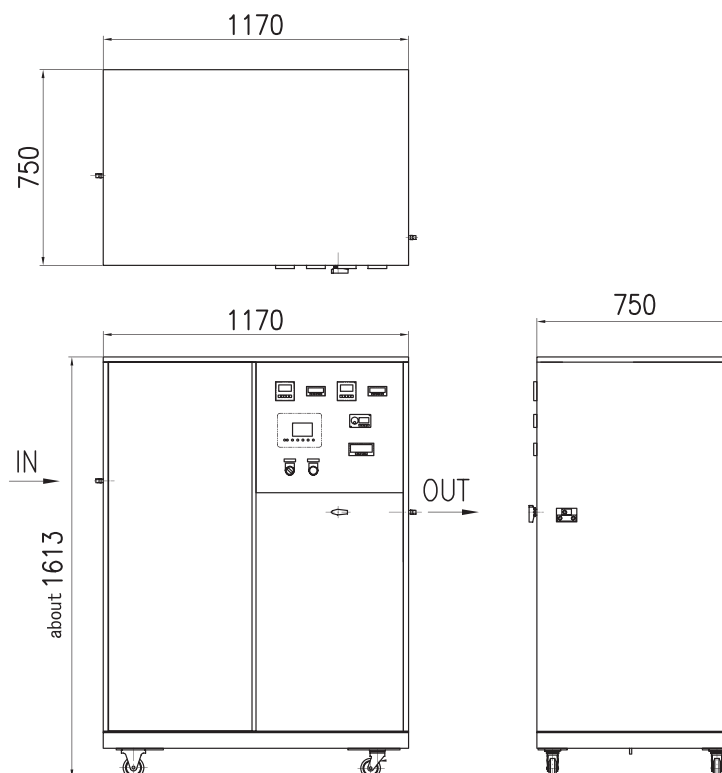
The LCD injector can feed LCD precisely and continuously without measurable pulsation for a long period. An injector to feed other types of liquefied gas can be developed.



Specifications

- * LCD Injector is a complete system from the supply of Liquid Carbon Dioxide contained in a cylinder to its injection into a certain device through Super Metering Pump.
- * Super Metering Pump is used for feeding, and it can pump liquid carbon dioxide with high accuracy.
- * Although Super Metering Pump is a plunger pump, leakage takes place very rarely because of special plunger seals. The special seals prevent an occurrence of dry ice and an abnormal abrasion of the plungers and the seals.
- * An explosion proof type and an outdoor type are available.
- * LCD injector consists of a pump, a temperature regulator, a controller, a flow meter (option) and a high-pressure cylinder. LCD injector can be used in a wide range of scales from a compact production facility to a large plant.
- * Flow Range 0.1ml(cc)/min. - 100L/min.
- * Max Discharge Pressure 50Mpa {7250psi} (Max discharge pressure varies with the type of the pump.
The high pressure version can handle up to 200MPa {29000psi})
- * Temperature Range: -30°C ~ +30°C

Dimensions (mm)



Super Metering Pump

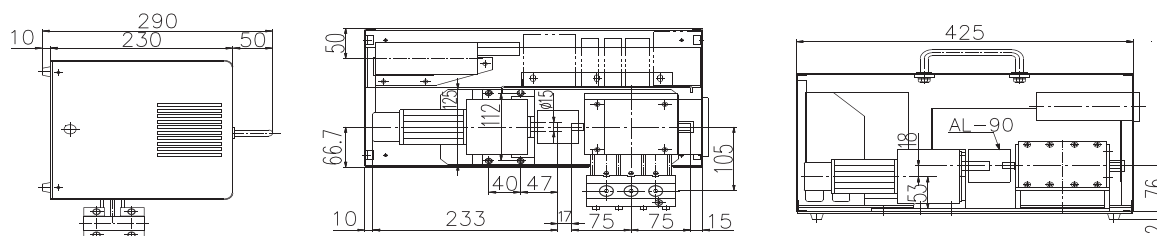
Portable unit

Feature

HYM portable unit consists of SMP HYM, motor, speed-controller, revolution-indicator and touch screen panel. Immediately after turning on the power, this product is ready to use. In comparison with HPLC pumps, the HYM has better accuracy and no pulsation. The portable unit adds mobility to these advantages.



Dimensions (mm)

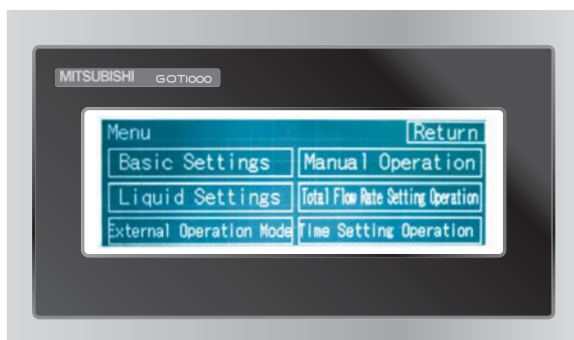


Performance

- *Excellent accuracy and consistency ($\pm 0.1\%$ or less)
 - *Perfect proportional flow with a variation in r.p.m.
- Flow rate can be controlled by adjusting r.p.m.
<Note> The portable unit is able to pass a qualifying examination on high pressure gas safety.

Operation

Sophisticated control can be done through the graphic operator terminal. There is a kit including software to remotely control the portable unit by PC.



Operation screen

Specifications

Pump head *Standard SUS 316

*Optional Titanium, Hastelloy, PTFE, PEEK

Model	Flow range	Max. Discharge Pressure	
		(MPa)	(psi)
HYM03-P	0.13ml(cc)/min~ 15.3ml(cc)/min	9.8 (24.5)	1421 (3552.5)
HYM06-P	0.51ml(cc)/min~ 61.1ml(cc)/min	9.8 (19.6)	1421 (2842)
HYM08-P	0.9ml/(cc)min~ 108.6ml(cc)/min	9.8	1421

() denotes the max. pressure of the high pressure version.
Power supply: 100Vac or 220-240Vac

Maintenance

- *Use of special plunger seals: Highly durable and great sealing capability
- *Simple work: Merely remove a pump head to replace the seals

Applications

- *Continuous reaction or synthesis by using HPLC or micro-reactor
- *Various analysis, separation and precise dosing

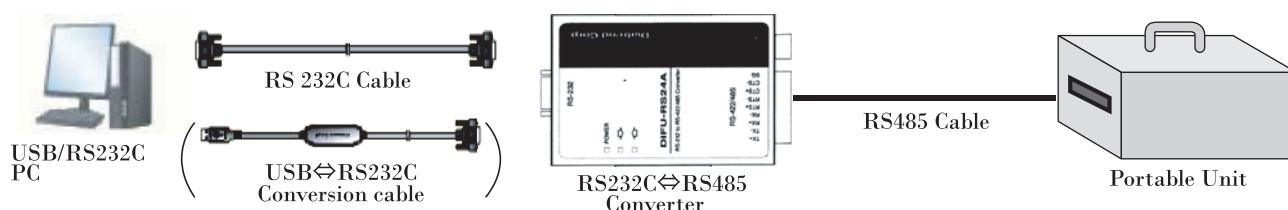
Feature

In case that a servo motor is used, Fuji Techno offers a control system to do a flow rate setting, a continuous operation, a time set operation and a jog operation through a touch screen panel. An accumulated volume and an elapsed time can be displayed on the panel. This control system is the standard of the portable unit. A customized control system can be made.

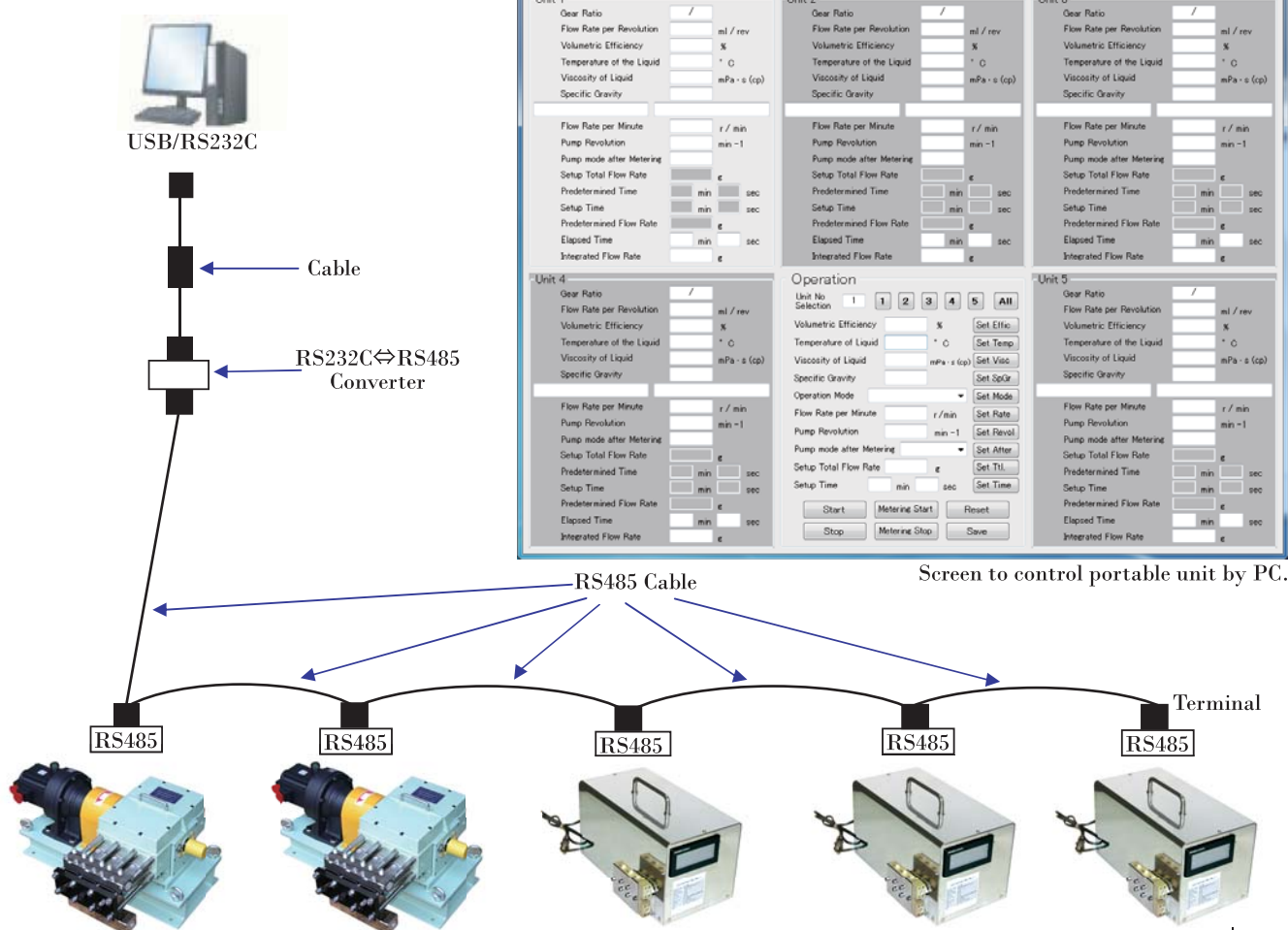
Remote control system

As described on page 11, the kit for remote control is available. The software enables a user to run Max. 5 pump units. Please see cascade connection below.

One to One Connection



Cascade Connection (Max. 5units)



Super Metering Pump

Measurement data

The following data was collected in tests using HYSB-40 and water.

1. Accuracy (Flow Reproduction.)

In case that water is used to measure flow reproductions, throughout the specified pump speed (1~120r.m.p. in HYSB), the flow reproductions are within $\pm 0.1\%$.

Depending on operating conditions, the flow reproduction can be as accurate as $\pm 0.1\%$ or less.

■ Data 1

□ Model: HYSB-40 □ Liquid: Water

NO.	Liquid Temp. (°C)	Discharge Pressure (MPa)	(psi)	Pump Speed (rpm)	Weight (g)	Hours (minute)	Specific Gravity	Discharge Quantity (ml(cc))	Theoretical Volume (ml(cc))	Volumetric Efficiency (%)
1	14	0.5	72.5	45.00	58645.02	10	1.0000	58645.02	59376.1050	98.77
2	14	0.5	72.5	45.00	58643.16	10	1.0000	58643.16	59376.1050	98.77
3	14	0.5	72.5	45.00	58643.50	10	1.0000	58643.50	59376.1050	98.77
4	14	0.5	72.5	45.00	58647.47	10	1.0000	58647.47	59376.1050	98.77
5	14	0.5	72.5	45.00	58640.26	10	1.0000	58640.26	59376.1050	98.76
6	14	0.5	72.5	45.00	58647.73	10	1.0000	58647.73	59376.1050	98.77
7	14	0.5	72.5	45.00	58648.56	10	1.0000	58648.56	59376.1050	98.77
8	14	0.5	72.5	45.00	58638.33	10	1.0000	58638.33	59376.1050	98.76
9	14	0.5	72.5	45.00	58643.44	10	1.0000	58643.44	59376.1050	98.77
10	14	0.5	72.5	45.00	58642.57	10	1.0000	58642.57	59376.1050	98.76
11	14	0.5	72.5	45.00	58643.62	10	1.0000	58643.62	59376.1050	98.77
12	14	0.5	72.5	45.00	58642.17	10	1.0000	58642.17	59376.1050	98.76
13	14	0.5	72.5	45.00	58647.86	10	1.0000	58647.86	59376.1050	98.77
14	14	0.5	72.5	45.00	58638.41	10	1.0000	58638.41	59376.1050	98.76
15	14	0.5	72.5	45.00	58640.67	10	1.0000	58640.67	59376.1050	98.76

Max. weight(Data 7) - Min. weight(Data 8) = 10.23g (Deviation)

$10.23\text{g}(\text{Deviation}) \div 58,643.52\text{g}(\text{Average weight}) \times 100 = 0.017\%$

2. Stability of flow rate under changing conditions.

The following data was measured by changing flow rates and discharge pressures with water. The pump speed varies from 1 to 90r.p.m. and the discharge pressure changed from 0.5 to 4MPa{72.5 to 580psi}.

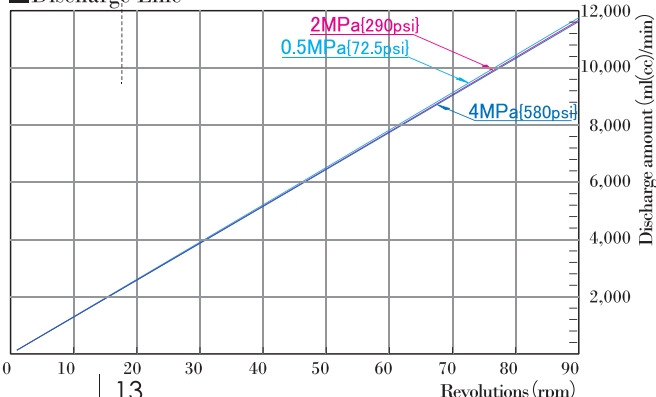
However, the difference in volumetric efficiencies (actual flow-rate \div theoretical flow-rate) is within 2%. Please see the discharge lines. It is obvious that the revolution and the flow-rate are proportional under the same discharge pressure. Data will vary depending on the model.

■ Data 2

□ Model: HYSB-40 □ Liquid: Water

NO.	Liquid Temp. (°C)	Discharge Pressure (MPa)	(psi)	Pump Speed (rpm)	Weight (g)	Hours (minute)	Specific Gravity	Discharge Quantity (ml(cc))	Theoretical Volume (ml(cc))	Volumetric Efficiency (%)
1	14	0.5	72.5	1.00	1301.94	10	1.0000	1301.94	1319.4690	98.67
2	14	2.0	290	1.00	1287.48	10	1.0000	1287.48	1319.4690	97.58
3	14	4.0	580	1.00	1280.18	10	1.0000	1280.18	1319.4690	97.02
4	14	0.5	72.5	10.00	13023.20	10	1.0000	13023.20	13194.6900	98.70
5	14	2.0	290	10.00	12910.90	10	1.0000	12910.90	13194.6900	97.85
6	14	4.0	580	10.00	12857.20	10	1.0000	12857.20	13194.6900	97.44
7	14	0.5	72.5	45.00	58645.35	10	1.0000	58645.35	59376.1050	98.77
8	14	2.0	290	45.00	58169.70	10	1.0000	58169.70	59376.1050	97.97
9	14	4.0	580	45.00	57992.40	10	1.0000	57992.40	59376.1050	97.67
10	14	0.5	72.5	90.00	117540.00	10	1.0000	117540.00	118752.2100	98.98
11	14	2.0	290	90.00	116708.40	10	1.0000	116708.40	118752.2100	98.28
12	14	4.0	580	90.00	116231.40	10	1.0000	116231.40	118752.2100	97.88

■ Discharge Line



3. Dosing operation

Data of a dosing operation using a HYSB-12 with water.

By controlling the position of the servo motor a very precise dosing operation can be executed.

□ Pump revolution : 30rpm □ Interval : 1 second □ Model : HYSB-12
□ Liquid : Water

□ Theoretical discharge amount per operation: 0.5ml(cc) (0.074 rotation)
□ Discharge Duration : 0.147 second

□ Theoretical discharge amount per operation: 1ml(cc) (0.147 rotation)
□ Discharge Duration : 0.294 second

NO.	Weight(g)	Discharge Quantity (ml(cc))	tolerance (%)
Initial	402.895		
1	403.387	0.492	
2	403.886	0.499	
3	404.381	0.495	
4	404.876	0.495	
5	405.374	0.498	
6	405.880	0.506	
7	406.374	0.494	
8	406.873	0.499	
9	407.375	0.502	
10	407.876	0.501	
11	408.371	0.495	
12	408.871	0.500	
13	409.369	0.498	
14	409.861	0.492	
15	410.356	0.495	
16	410.853	0.497	
17	411.351	0.498	
18	411.849	0.498	
19	412.354	0.505	
20	412.850	0.496	

NO.	Weight(g)	Discharge Quantity (ml(cc))	tolerance (%)
Initial	360.594		
1	360.594		
2	361.588	0.994	
3	362.578	0.990	
4	363.571	0.993	
5	364.567	0.996	
6	365.566	0.999	
7	366.570	1.004	
8	367.569	0.999	
9	368.564	0.995	
10	369.555	0.991	
11	370.549	0.994	
12	371.540	0.991	
13	372.545	1.005	
14	373.544	0.999	
15	374.545	1.001	
16	375.540	0.995	
17	376.530	0.990	
18	377.525	0.995	
19	378.522	0.997	
20	379.523	1.001	

□ Theoretical discharge amount per operation: 6.79ml(cc) (1 rotation)
□ Discharge Duration : 2 second

□ Theoretical discharge amount per operation: 27.16ml(cc) (4 rotation)
□ Discharge Duration : 8 second

NO.	Weight(g)	Discharge Quantity (ml(cc))	tolerance (%)
Initial	-100.568		
1	-93.791	6.777	
2	-87.023	6.768	
3	-80.252	6.771	
4	-73.482	6.770	
5	-66.710	6.772	
6	-59.939	6.771	
7	-53.163	6.776	
8	-46.394	6.769	
9	-39.626	6.768	
10	-32.853	6.773	
11	-26.081	6.772	
12	-19.308	6.773	
13	-12.540	6.768	
14	-5.767	6.773	
15	1.005	6.772	
16	7.775	6.770	
17	14.544	6.769	
18	21.317	6.773	
19	28.087	6.770	
20	34.861	6.774	

NO.	Weight(g)	Discharge Quantity (ml(cc))	tolerance (%)
Initial	-181.206		
1	-154.124	27.082	
2	-127.040	27.084	
3	-99.957	27.083	
4	-72.872	27.085	
5	-45.791	27.081	
6	-18.705	27.086	
7	8.377	27.082	
8	35.464	27.087	
9	62.545	27.081	
10	89.632	27.087	
11	116.716	27.084	
12	143.799	27.083	
13	170.881	27.082	
14	197.967	27.086	
15	225.051	27.084	
16	252.132	27.081	
17	279.215	27.083	
18	306.302	27.087	
19	333.382	27.080	
20	360.465	27.083	

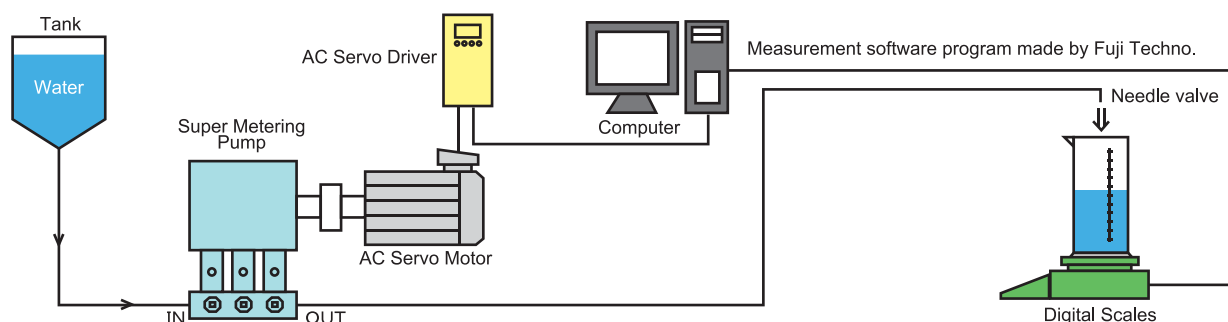
* The above data was collected by reading an electric scale after each cycle time.



ATEX Reference No.:

Sira IIXO63 , Sirall XO64 , Sirall XO65 , Sira IIXO66
Sira IIXO67

4. Measurement method.



SUPER METERING PUMP INQUIRY FORM

Please fill out and send this form by fax.
You can use the Inquiry form on our web site as well.

DATE

COMPANY NAME:	DEPT.:	IN CHARGE:
ADDRESS:	E-mail:	TEL:
		FAX:

OPERATING CONDITIONS

LIQUID NAME		CAPACITY (NOR)	Lit/Hr ~ Lit/Hr
SPEC. GRAVITY	/ °C F	DIS. PRESSURE	MPa psi
VISCOSITY	CP/ °C F	SUC. PRESSURE	MPa psi
SOLIDS SLURRY	YES() NO	NPSH AVAILABLE	m
PUMPING TEMP.	°C F	PRECISION	± %
VAPOR PRESS.	MPa psi	PULSATION	YES NO
CORROSION	YES NO	RUNNING HOURS	Hr/DAY DAY/ Yr

MATERIAL

PLUNGER		PLUNGER SEAL	
CHECK BALL		VALVE SEAT	
GASKETS O-RING		LIQUID END	

CONSTRUCTIONS (PLUNGER TYPE)

CONNECTION (SIZE)	SUCTION SIDE :	DISCHARGE SIDE :
FLOW CONTROL	INVERTOR (VFD) DEVICE	SERVO-MOTOR STEPLESS SPEED CHANGE
JACKET	YES NO	RELIEF VALVE YES NO
DRIVING MOTOR		
SOURCE	AC V HZ	EXP. PROOF YES () NO
LOCATION	IN DOOR OUT DOOR	REMOTE CONTROL YES NO
SPARE PARTS	PLUNGER SEAL O-RING	CHECK VALVE ()
PAINTING COLOR	STANDARD (LIGHT GREEN)	SPECIAL ORDER ()
PAINT MATERIAL	MAKER STANDARD	SPECIAL ORDER ()

REMARKS :

Super Metering Pump



Manufacturer

Fuji Techno

■ Head Office (Japanese)

Fuji Techno Industries Corporation

2-29-5, Kasuganishi-machi, Hirakata-shi, Osaka 573-0136, Japan
TEL: +81-72-858-5251 FAX: +81-72-858-5238
URL: <http://www.fuji-techno.co.jp/> E-mail: info@fuji-techno.co.jp

■ Overseas (China)

Jia Xing Xin Ren Precision Pump Corporation

510 Sheng tang Road, Jiaxing Southwest Economic Development Zone,
Jiaxing city, Zhejiang, P.R.C.
TEL: +86-573-8397-8611 FAX: +86-573-8397-8666

Authorized agent

■ North America



Integrated Control Solutions Inc.

28 Bridge Avenue Tower Building Scituate, MA 02066 U.S.A.
TEL: +1-781-545-5100 FAX: +1-781-545-1949 URL: www.icsonline.net/

■ North America



Proteaf Technologies LLC

904 Silver Spur Rd., #481 Palos Verdes Estates, CA 90274 U.S.A.
TEL: (845)536-4244 URL: www.proteaf.com/

■ Europe



Motor Technology Ltd.

Motec House, Chadkirk Business Park, Stockport, Cheshire SK6 3NE, U.K.
TEL: +44-161-217-7100 FAX: +44-161-217-7101
URL: www.controlinflow.com/

■ Europe



Flowid B.V.

Het Kraneveld Building 10, Matrix, 1.26-30 5612 AZ Eindhoven,
The Netherlands
TEL: +31-40-247-4545 URL: www.flowid.nl/

■ Israel



RTA Engineering LTD

Hashofim 66 Ramat-Hasharon Israel, 47210
TEL: +972- (0) -775503994 FAX: +972- (0) -776499964
URL: www.rtaeng.com

■ India



Pi-Process Intensification Experts LLP

Deepavali Bldg., Ground Floor S.V. Road, Andheri (West) Mumbai - 400058 India
TEL: +91-9321342022 FAX: +91-22-26248198
URL: www.pi-inc.co/

■ Korea



JoongWon SMET Co., Ltd.

#B-111, Anyang Mega-Valley, 799 Kwanyang-Dong, Dongan-Gu, Anyang-
City, Kyungki-Do, 431-804, Korea
TEL: +82-31-420-5789 FAX: +82-31-420-5799 URL: www.joongwon.com/

■ Korea



LK SYSTEC CO., LTD.

(Chung-Ang Circulation Complex)
Ra-3627, 15, Gyungin-ro 53gil, Guro-gu, Seoul, Korea, 152-721
TEL: +82-2-6679-4343 FAX: +82-2-6679-4344

■ Thailand



ANO Equipment And Supply Co., Ltd.

8/8 Soi Navamin 74 Yak3-7-1 Khwaeng Ram-Indra,
Khet Kannayao, Bangkok 10230 THAILAND.
TEL: +662-947-9318-20 FAX: +662-947-9317 URL: www.anopumps.com/

■ Taiwan

I-TAI Chemicals Inc.

12F-3, No. 880, Jung Jeng Road, Junghe City, Taipei Hsien, Taiwan
TEL: +886-2-82276118 FAX: +886-2-22232791