

# Precision Syringe Drive PSD/6



Precise dosing from  $\mu\text{l}$  to ml

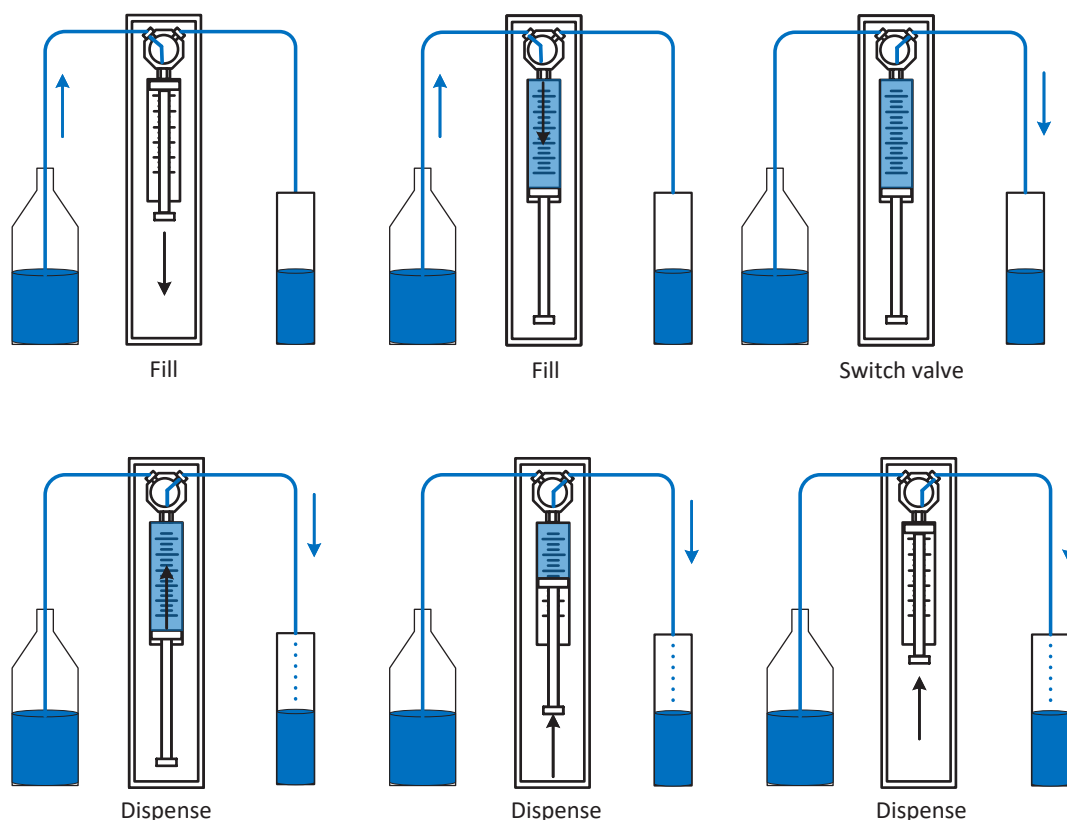
**DURATEC**  
Analysentechnik GmbH

# DURATEC Dosing System PSD/6

The PSD/6 is a high-precision syringe dosing system for laboratory, process engineering, R&D as well as for industrial use for dosing in the range of  $\mu\text{l}$  to ml. Due to the used materials, a variety of different media (aqueous, organic, aggressive, highly viscous, gaseous) can be transferred metal-free. Thus, the application field of PSD/6 covers from chemistry, pharmaceuticals, biotechnology, medical technology, food industry up to manufacturing industries.



## Operating Principle



The PSD module includes a syringe drive combined with a valve drive. The active valve controls the flow direction. The system is self-priming. The 6 cm stroke length of the syringe drive can be broken down into 48,000 steps by a stepper motor with a syringe speed of 2 sec to 100 min. Depending on the installed syringe, this enables dosing volumes (in one stroke) of 1µl to 50ml. The valve drive could be used with different valves (flow path, material). Syringes and valves can be assembled and disassembled in a very short time, allowing easy and quick change between different configurations.

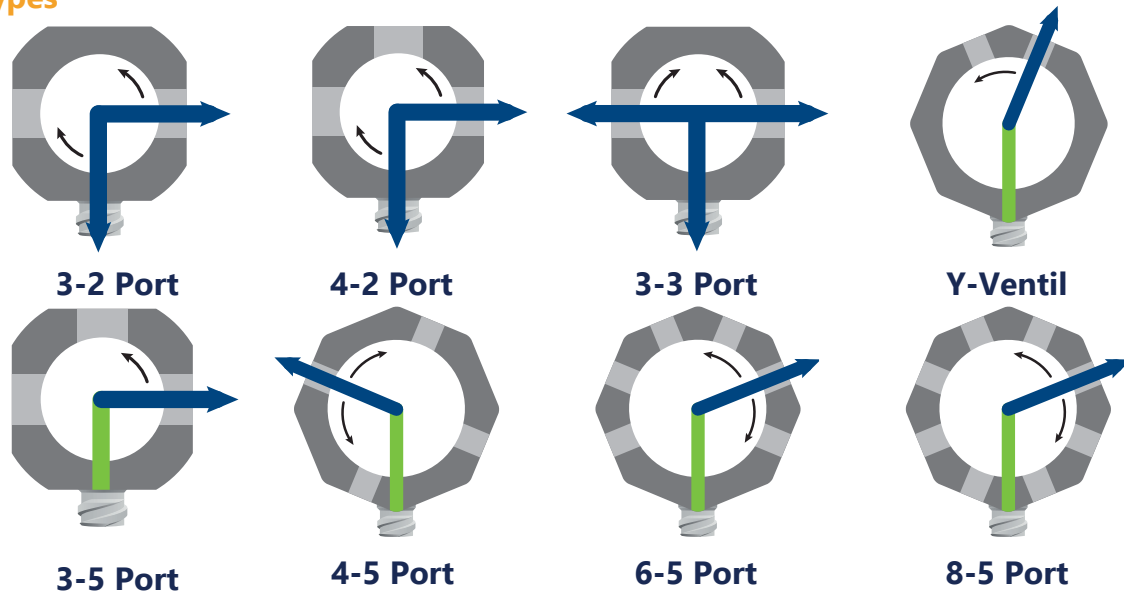
The PSD syringe dosing system is a direct displacement system, so it is possible to dose highly viscous, volatile liquids as well as liquids with different densities very precisely without having to calibrate the system before.

Depending on the model, the systems can be controlled and monitored via RS232, analog or TTL signals.

For complex assignments or multi-channel applications, it is possible to connect up to 15 systems with each other. They are also available as ready-to-use-dosing system with 2-, 3- and 6 units.

## Operating Principle - Fluidic Paths

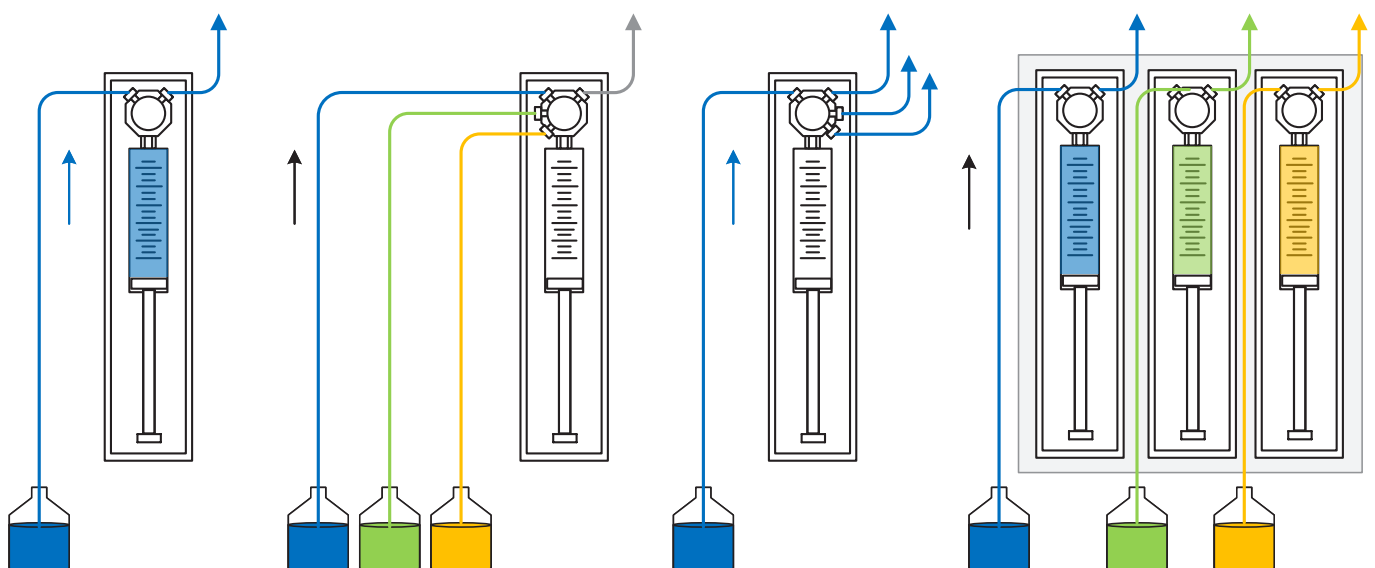
### Valve Types



### Valve Properties

- Pressure compatibility up to 100 psi
- Chemically inert fluid paths
- Flat-bottom connections with 1/4"-28 threads

### Single & Multiple Dosing Units



## Specifications

<b>Accuracy</b>	±1 % at 100 % full stroke
<b>Precision</b>	≤ 0.05 % at 100 % full stroke
<b>Fluid path</b>	PTFE, PCTFE, borosilicate glass, ceramic, PFA (depending on the version)
<b>Linear force capability</b>	9,98 kgf (kilogram-force)
<b>Resolution</b>	selectable 6,000 steps (standard) / 48,000 steps (high resolution mode) at 6 cm full stroke
<b>Syringe drive</b>	Stepper motor driven lead screw and optical encoder
<b>Syringe speed</b>	2 sec - 100 min per full stroke*
<b>Syringe volume</b>	10 µl - 50 ml (for further information see accessories)
<b>Valve drive</b>	stepper motor with optical encoder
<b>Valve drive speed</b>	250 ms per 120° rotation
<b>Interfaces</b>	RS232, RS-485 or CAN (depending on housing type)
<b>Operating temperature</b>	15°C - 40°C

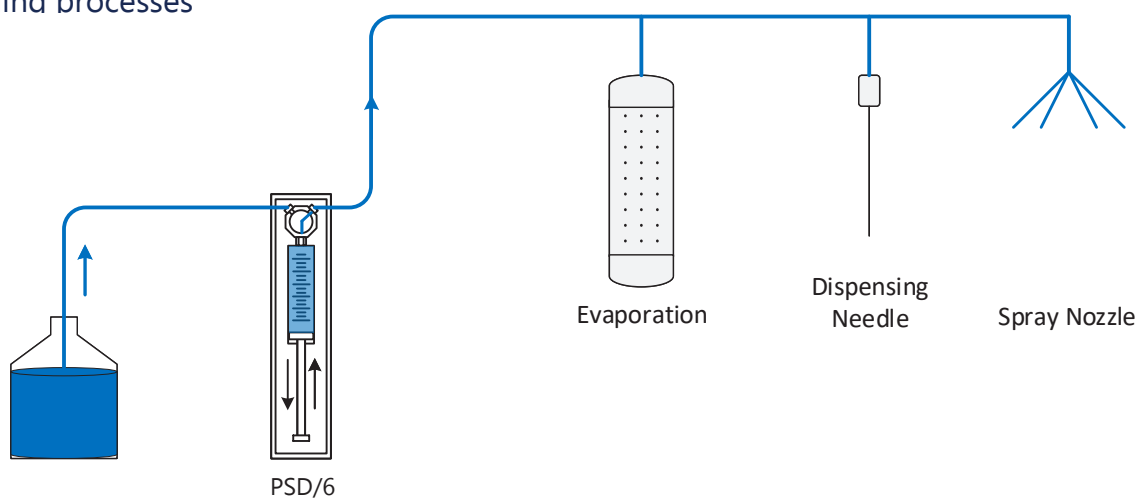
(\*)depends strongly on syringe size, back pressure and force required (therefore only theoretical values)

## Examples of Application

### Spread/ Spray/ Evaporate Liquids

Transportation of liquids to different dispensing systems for spreading, spraying or evaporation of liquids:

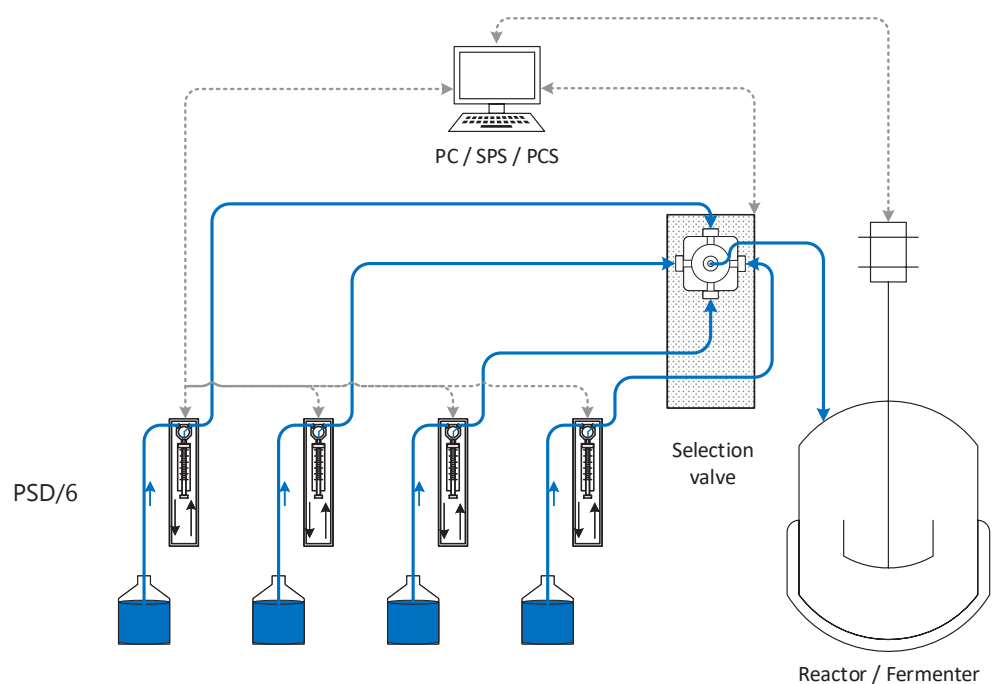
- Agent application in medical technology and medical diagnostics
- Test gas production via evaporation systems
- Cleaning processes semiconductor industry
- Gluing processes



### Reaction Technology / Fermentation – Multi-Media Dosing System

Dosing different media via selection valve in one reactor / fermenter.

- Reactant
- Catalyzer
- Acid / Base
- Substrate
- Nutrient solution
- Detergents

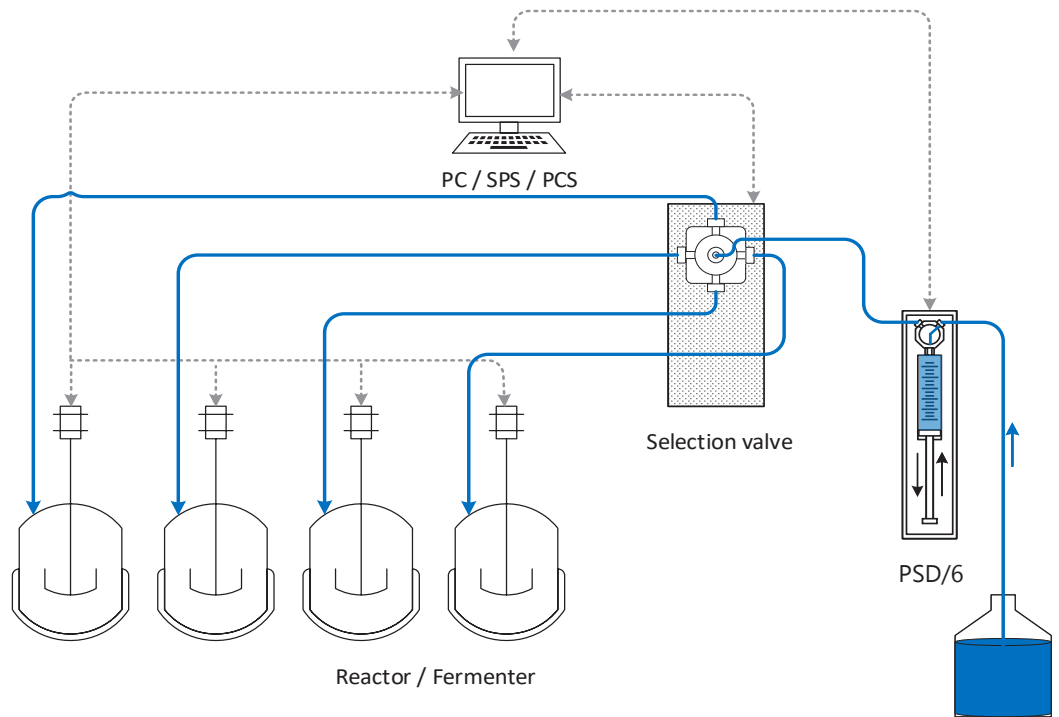


## Examples of Application

### Reaction Technology / Fermentation – Multi-Reactor Dosing System

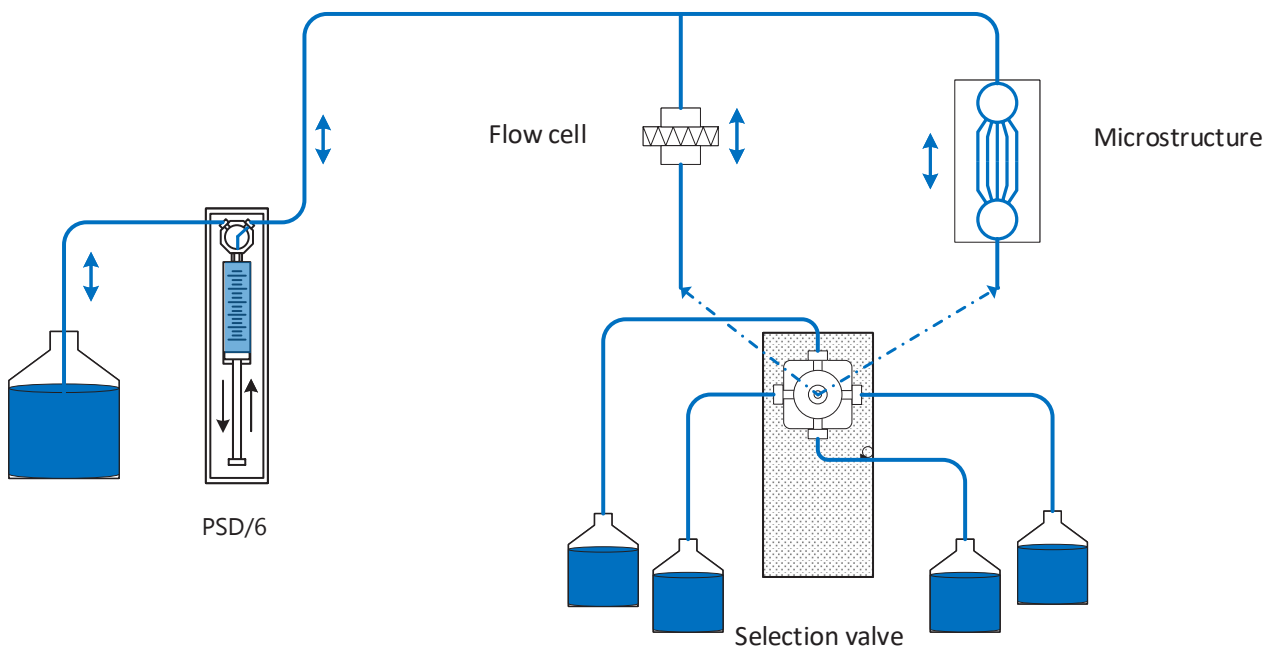
Dosing one medium via distribution valve in different reactors / fermenters.

- Reactant
- Catalyzer
- Acid / Base
- Substrate
- Nutrient solution
- Detergents



### Liquid Handling / Microfluidics

Duplex dosing of different media using small streams/quantities in and through microstructures, microfluidic chips, measuring cells, filtration systems etc.

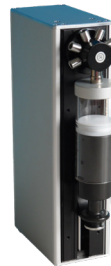


## Dosing Units

Part no.	Description
H63133-01	PSD/6 Syringe pump, 24VDC, RoHS (wo/housing, valve, syringe, connectors)
H63133-01-M1	PSD/6 Syringe pump w/housing (240x110x60mm), 24VDC, RoHS (wo/valve, syringe, connectors)
792134-G2	Housing (320x316x165mm) for 2 PSD/6 drives (not included) with power supply (100-240 VDC)
792134-G3	Housing (320x316x236mm) for 3 PSD/6 drives (not included) with power supply (100-240 VDC)
792134-G6	Housing (291x471x271mm) for 6 PSD/6 drives (not included) with power supply (100-240 VDC)
792134-01	Connecting cable for PSD/4 and PSD/6
792134-ER	Mounting frame for PSD/6
792134-AP	Cover for empty housing position



H63133-01



H63133-01-M1



792134-G2



792134-G3



792134-G6



## Valve & Syringes

Part no.	Description
H7427-01	Valve, HV 3-2 for PSD/4 and PSD/6, PTFE housing, 1.5 mm bore (for syringes > 10 ml valve adapter set H209651 is required)
H9234-01	Ceramic valve, HVC 4-2 for PSD/4 and PSD/6, Aluminium housing, 1.5 mm bore (not compatible with 25 ml & 50ml syringes)
H7991-01	Ceramic valve, HVC 3-5 for PSD/4 and PSD/6, Aluminium housing, 1.5 mm bore (not compatible with 25 ml & 50 ml syringes)
H8063-01	Ceramic valve, HVC 3-3 for PSD/4 and PSD/6, Aluminium housing, 1.5 mm bore (not compatible with 25 ml & 50 ml syringes)
H7992-01	Ceramic valve, HVC 4-5 for PSD/4 and PSD/6, Aluminium housing, 1.5 mm bore (not compatible with 10 - 50 ml syringes)
H9998-01	Ceramic valve, HVC 6-5 for PSD/4 and PSD/6, Aluminium housing, 1.5 mm bore
H59943-01	Ceramic valve, HVC 8-5 for PSD/4 and PSD/6, Aluminium housing, 1.5 mm bore
H7993-01	Ceramic valve, HVC 8-5 for PSD/4 and PSD/6, Aluminium housing, 1.3 mm bore

Note: Syringe connection TTL (LUER), Tubing connection ¼-28 UNF, Pressure 0 to 6.9 bar



H7427-01

H9234-01

H7991-01

H7992-01

H9998-01

H7993-01

## Valve & Syringes

Part no.	Description	
H80222	25 µl Syringe	TLLX
H80922	50 µl Syringe	TLLX
H81022	100 µl Syringe	TLLX
H81122	250 µl Syringe	TLLX
H81222	500 µl Syringe	TLLX
H81320	1 ml Syringe	TLL
H81420	2,5 ml Syringe	TLL
H81520	5 ml Syringe	TLL
H81620	10 ml Syringe	TLL
H82521	25 ml Syringe	TLL
H85021	50 ml Syringe	TLL



H81122



H81320



H82521

## Special Solutions

### 3-fold dispenser for preparation of cuvette test reagent mixture

System for in-house production of cuvette test reagent mixture for the determination of chemical oxygen requirement ST-CSB in water and wastewater. For this purpose, three test substances are dosed in different quantities into special reaction/measuring vessels according to a programmable dosing procedure.

