SANMOTION Application Case

# Syringe Pump

SANYO DENKI

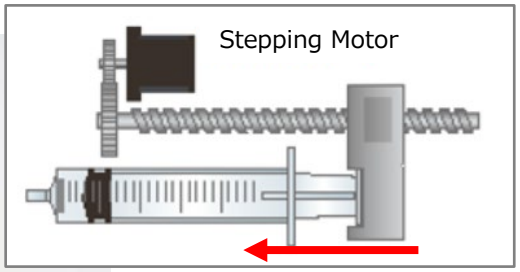
## Description

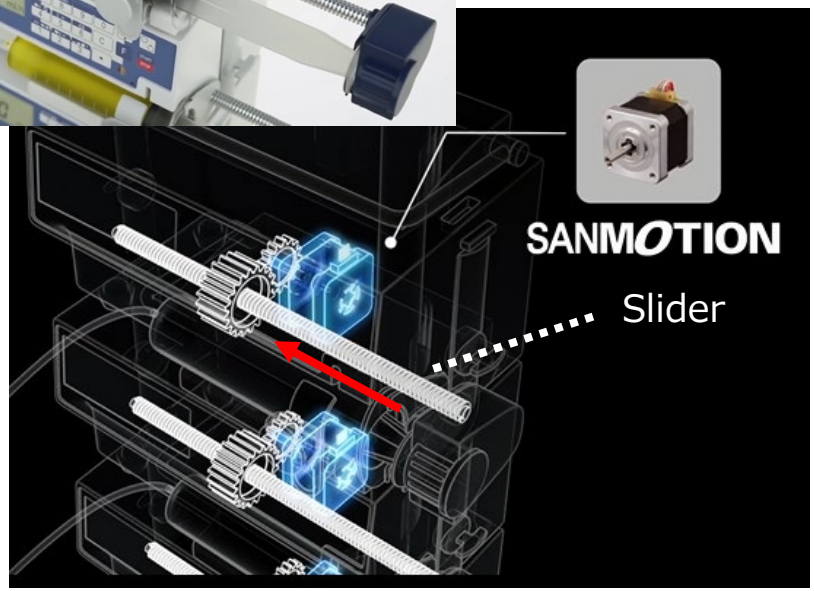
Syringe pumps inject fluid into patients while controlling the rate and volume of fluid. Peristaltic pumps (roller pumps) squeeze plastic tubing and push fluid forward through rollers in rotatory movement.

In a syringe pump (suction of medicine), a slider is linked to a motor, and the pump is pushed when the slider is moved by the motor. Syringe pump is more suitable for use in fluid injection than peristaltic pump in terms of volume accuracy. (Syringe pump: ±3%, peristaltic pump: ±10%)

Stepping motors are used in the injection axis of syringe pump. Quiet pump operation is required to ensure smooth injections, and reduce patient discomfort and pain.

- If applying to medical devices and other equipment affecting people's lives, please contact us beforehand and take appropriate safety measures.




## SANYO DENKI Proposal

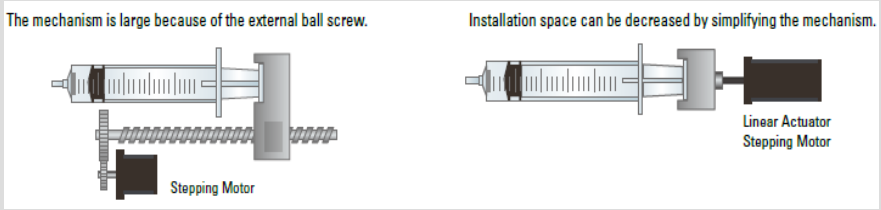
| Axis | Motor | Size | No. of Axis | Driver |
|---|---|---|---|---|
| Syringe pump | SANMOTION F<br>2-phase stepping motor<br>or<br>5-phase stepping motor | 42 mm sq. | 1 for each syringe | SANMOTION F DC Driver |

# Features

## ■2-/5-phase stepping motor + driver

### ■Wide range of motors

- We are the only manufacturer offering all types of stepping motors: 2-, 3-, and 5-phase.
- Motor size ranges from 14 mm sq. to Φ106 mm.
- Linear actuator motor with built-in ball screw is also available in our lineup.




### ■Drivers for different requirements

- 2- and 5-phase DC drivers are commonly used in medical inspection devices. Moreover, AC driver is also available for 5-phase system for devices requiring high speed and high torque.

2-phase driver Model No.: US1D200P10 Unipolar
BS1D200P10 Bipolar
5-phase driver Model No.: F5PAE140P00

### ■Customized products

- We customize motors with optimal windings that suit the unique requirements of customer devices such as current, rotation speed, and torque.

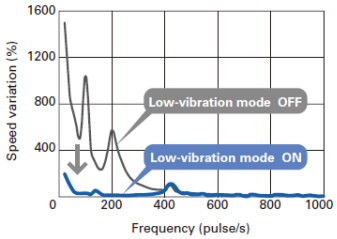
# Merits

## ■Wide range of products for different requirements

- To solve vibration problems caused by 2-phase motors, customers can switch to 3- or 5-phase motors with smaller and more precise steps.
- Customers can select the motor most suited for their application's unique torque and size requirements from our wide range of products.
- Using linear actuator motor can simplify device design, reduce assembly costs and make device size smaller.

## ■Solving vibration problems with stepping drivers

- 2-phase driver low vibration mode provides one (full step) or two (half step) division coarse resolution setting for smooth machine operation.




- Micro-step drive enables smooth equipment operation with low vibration. (2-phase: max. 16 divisions, 5-phase: max. 250 divisions.

## ■Lower vibration

- Customer application performance can be further improved with lower vibration and motor noise levels through optimized motor windings. Optimum torque performance can be achieved within the required rotation speed range.