



TOP Syringe Pump TOP-5520

High functionality in a single pump for both TIVA and PCA, thanks to new advances in IV anesthesia.



Equipped with two modes – for total intravenous anesthesia (TIVA), and for patient-controlled analgesia (PCA)



Automatically calculates flow rate when essential information such as patient weight and solution volume is input.

Automatic Flow Rate Calculating Function

When the pump is in the TIVA (total intravenous anesthesia) mode, in addition to ordinary flow rate settings in mL/h, the dosage can be set in $\mu\text{g/kg/min}$ or mg/kg/h . The pump automatically calculates the flow rate when the amount of medication to be administered, the solution volume, the patient weight and the dosage are input.

Unit Selection

1 mL/h
2 $\mu\text{g/kg/min}$
3 mg/kg/h

Select desired units.

Agent 2.0 mg
Solution 10.0 mL
Weight 62.0 kg

Set amount of medication, solution volume and body weight.

Rate 5.5 mL/h
Dosage 0.30 $\mu\text{g/kg/min}$
Dosage --- mg/kg/h
Vol. Limit 0.0 mL

To set dosage in $\mu\text{g/kg/min}$.

Rate 15.5 mL/h
Dosage --- $\mu\text{g/kg/min}$
Dosage 0.05 mg/kg/h
Vol. Limit 0.0 mL

To set dosage in mg/kg/h .

Allows Bolus Delivery and Flow Rate Changes During Infusion

The target blood concentration can be maintained or changed by delivering a bolus (manual bolus or fixed-volume bolus) or changing the flow rate without stopping infusion, enabling a stable anesthetic state to be achieved.

Bolus delivery during infusion

Bolus Vol. --- mL
Start
1 Volume change

To deliver a manual bolus.

Bolus Vol. 3.0 mL
Start
1 Volume change

To deliver a fixed-volume bolus.

Flow rate change during infusion

Rate 5.5 mL/h
Vol. Limit 50.0 mL
OK SILENCE CANCEL

To change the flow rate.

Rate 0.3 mL/h
Dosage 3.00 $\mu\text{g/kg/min}$
OK SILENCE CANCEL

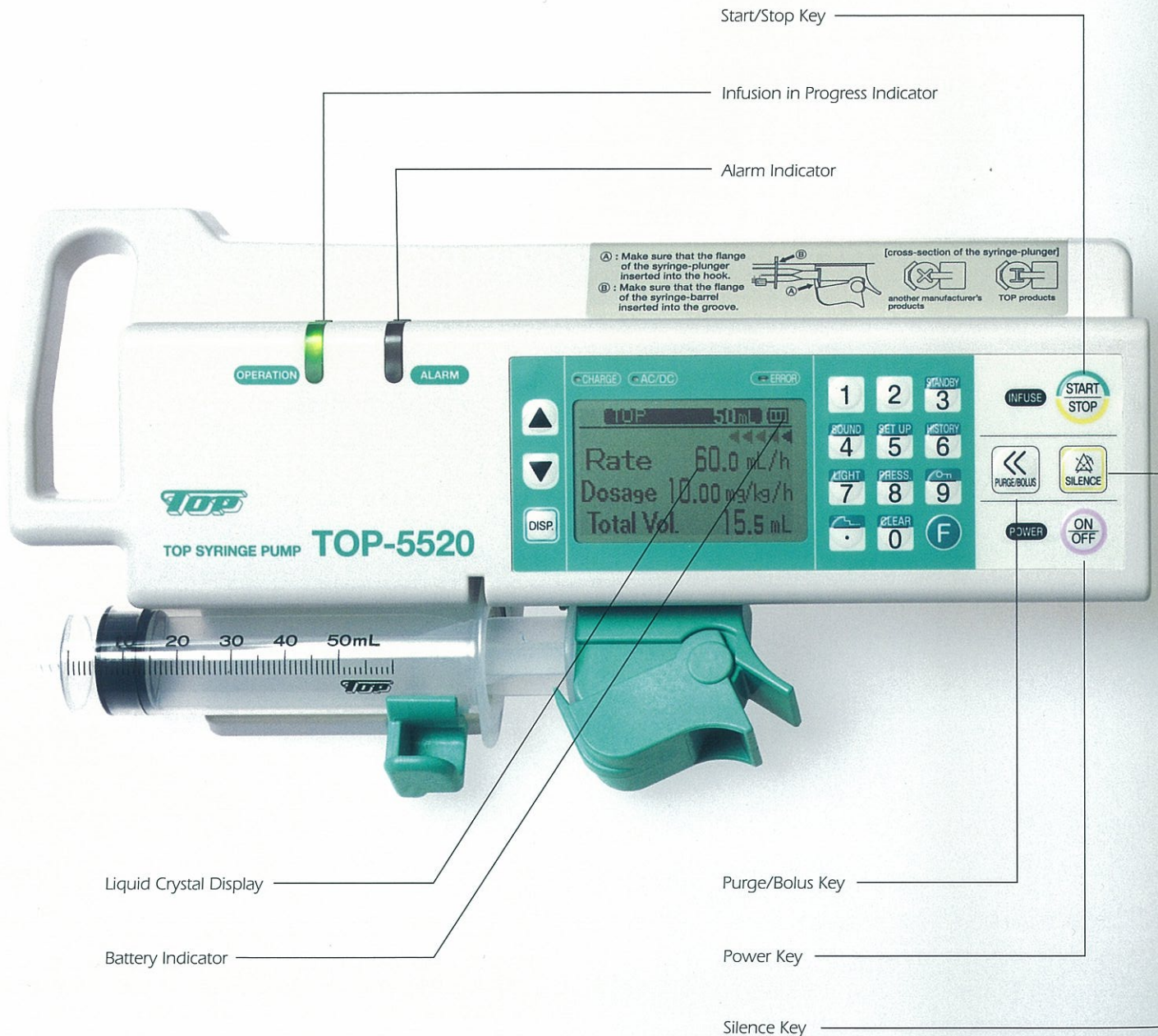
To change the dosage.

Propofol Kit Syringe Can Be Used

Allows the direct use of a propofol kit (1% Diprivan® Injection Kit), 20 mL or 50 mL syringe.



Functions common to TIVA mode and PCA mode



View of pump in TIVA mode

Extended Infusion on Battery Power

Fluid delivery can be carried out continuously not only on AC power, but for at least 12 hours on the internal battery or at least 24 hours on AA size alkaline batteries.*

* At a flow rate of 5 mL/h using a new internal battery in a fully charged state, or using new alkaline batteries.

Compatible with Range of Syringe Makes

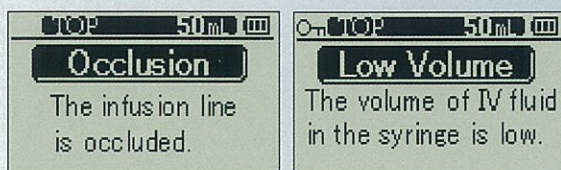
In addition to TOP syringes, this pump can use 10 mL, 20 mL, 30 mL and 50 mL syringes made by Terumo, Nipro, JMS, B-D, Monoject and B. Braun. One additional syringe of any make can also be registered for use per syringe size.

TOP Syringe Pump

TOP-5520

Alarm Messages

The LCD displays an explanatory message when an alarm or warning occurs.

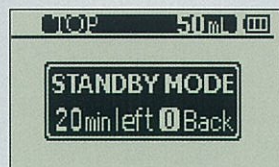


No Need for Grounded Cord

This is a Class II device which does not need to be connected to a protective ground.

Standby Function

By placing the pump in the standby mode, such as before surgery, the Operation Reminder alarm can be temporarily deactivated.



Maximum Flow Rate Setting Function

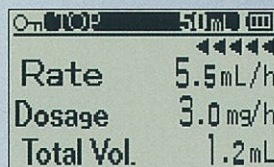
The risk of an overdose can be reduced by setting a maximum flow rate for each syringe size.

History Function

Enables up to 600 events in past operating history, including dosing schedules and alarm incidents, to be verified. Also allows operator to check up to 300 events in the PCA operating history, divided into one-hour intervals, from the start of infusion.

Key Lock Function

Comes with a key lock function which renders the control panel other than the On/Off key inoperable to prevent inadvertent or incorrect operation. (In the PCA mode, a password is needed to release the key lock.)

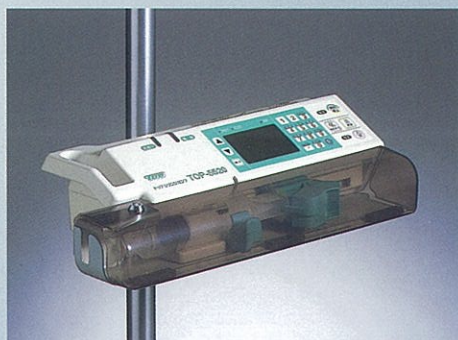


- A battery refresh function eliminates the memory effect in the internal battery.
- A maintenance timer function displays a message notifying the user when pump inspection is due.
- A buzzer volume setting function allows the sound level of operation tones and alarm tones to be adjusted.

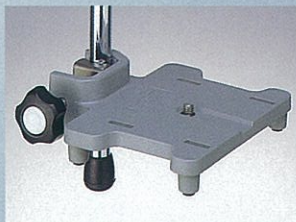
Optional

TOP Syringe Guard for TOP-5520

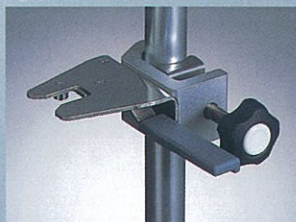
By attaching the optional syringe guard, inadvertent removal of the syringe can be prevented. Moreover, the guard can be locked, helping to ensure security when using an opioid in the PCA mode.



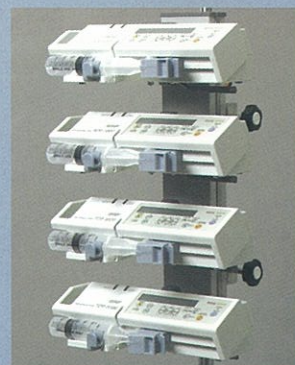
TOP Pole Clamp



TOP Pole Clamp Type-E2



TOP Multiple Pump Mount ST55-4





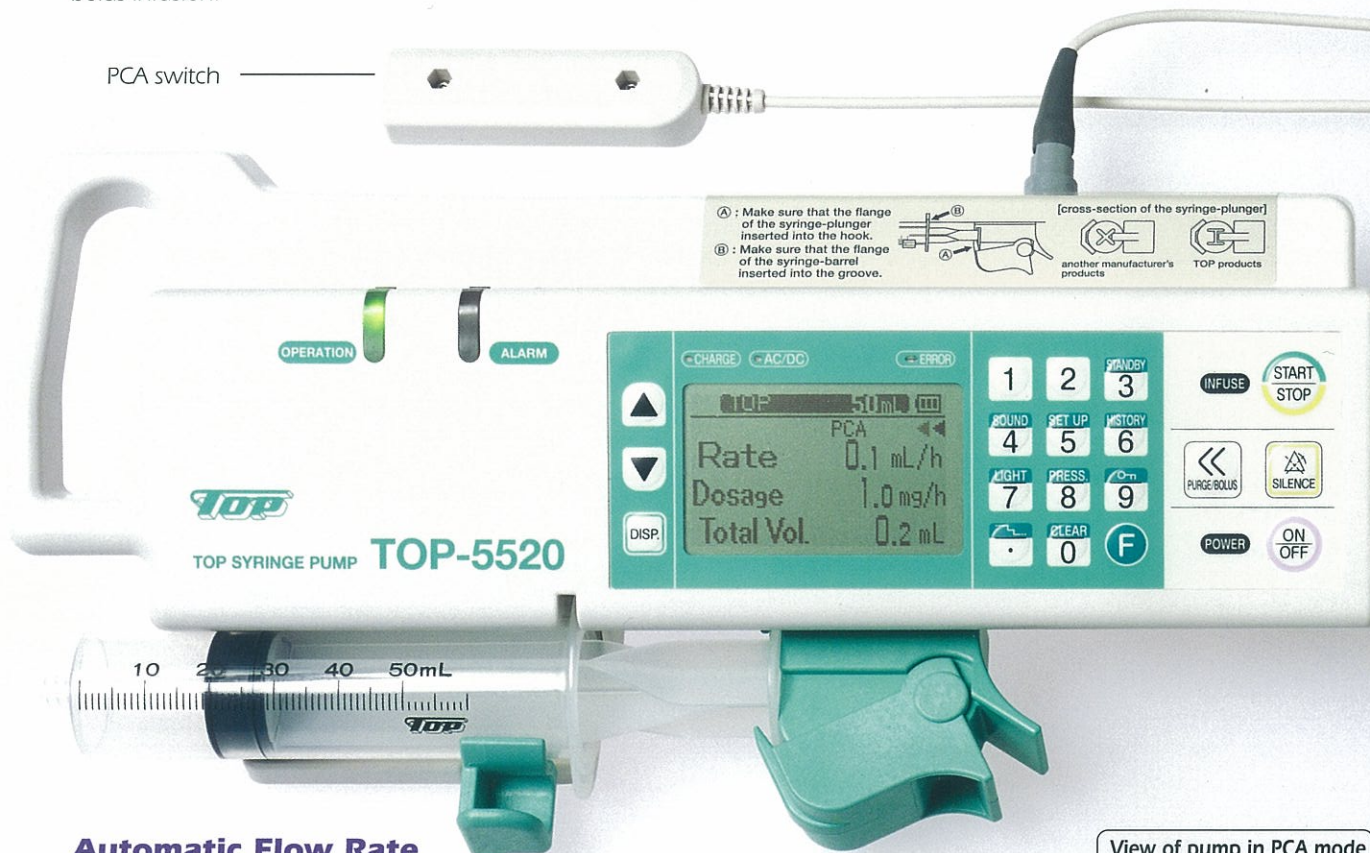
For smooth and reliable self-administered pain relief by the patient.

Enables Self-Administered Pain Relief

In the PCA (patient-controlled analgesia) mode, the patient can administer his or her own pain relief by operating the PCA switch provided and carrying out bolus infusion.

PCA History Print Function

RS-232C output enables a history of PCA operations to be printed out on a designated printer.



Automatic Flow Rate Calculating Function

When the pump is in the PCA mode, in addition to ordinary flow rate settings in mL/h, the dosage can be set in $\mu\text{g}/\text{kg}/\text{min}$ or $\text{mg}/\text{kg}/\text{h}$. The pump automatically calculates the flow rate when the amount of medication to be administered, the solution volume and the dosage are input.

▲ Unit Selection	
1	mL/h
2	$\mu\text{g}/\text{h}$
3	mg/h

Select desired units.

▲ Agent	2.0 mg
Solution	10.0 mL

Set amount of medication and solution volume.

▲ Rate	0.0 mL/h
Dosage	----- $\mu\text{g}/\text{h}$
Dosage	0.0 mg/h
Vol. Limit	0.0 mL

To set dosage in mg/h.

▲ Rate	0.0 mL/h
Dosage	0.0 $\mu\text{g}/\text{h}$
Dosage	----- mg/h
Vol. Limit	0.0 mL

To set dosage in $\mu\text{g}/\text{h}$.

Bolus Limiting Function

Bolus infusion can be limited by setting a lockout time, and also by limiting the bolus frequency or infusion volume within a set period of time.

▲ Bolus	0.0 mL
	----- μg
	----- mg
Lockout	0 min

Set lockout time.

▲ Period	0 hour
Frequency	0 times

To limit bolus frequency within a set period.

▲ Period	0 hour
Volume	0.0 mL
	----- μg
	----- mg

To limit infusion volume within a set period.

View of pump in PCA mode

TOP Syringe Pump

TOP-5520

Specifications

Description	TOP Syringe Pump	
Model	TOP-5520	
Applicable syringes	10, 20, 30 and 50mL syringes	
Syringe manufacturers (Syringes produced by TOP Corp. and designated manufacturers)	Top, Terumo, Nipro, JMS, B-D, MONOJECT, B.Braun, AstraZeneca Ltd. 1% Diphivan® Injection Kit 20mL and 50mL (Diphivan is a registered trademark of AstraZeneca Ltd.), user-registered syringes	
Infusion units	In TIVA mode: mL/h, µg/kg/min, mg/kg/h	In PCA mode: mL/h, µg/h, mg/h
Flow rate range	In TIVA mode: 0.1-200.0mL/h (10mL syringe) 0.1-400.0mL/h (20mL syringe) 0.1-500.0mL/h (30mL syringe) 0.1-800.0mL/h (50mL syringe) 0.1-800.0mL/h (1% Diphivan Kit 20mL/50mL) (settings adjustable in 0.1mL/h increments) Set to 0.1-150.0mL/h for all syringes when shipped from factory.	In PCA mode: 0.1-150.0mL/h (10mL syringe) 0.1-150.0mL/h (20mL syringe) 0.1-150.0mL/h (30mL syringe) 0.1-150.0mL/h (50mL syringe) (settings adjustable in 0.1mL/h increments) When performing only bolus infusion, set the flow rate to "—". Set to 0.1-150.0mL/h for all syringes when shipped from factory.
Volume limit setting range	0.1-1000.0mL	
Total volume display range	0.0-1000.0mL	
Infusion accuracy	Mechanical accuracy: ±1%; accuracy including the syringe: ±3% (For at least one hour of infusion at a flow rate of at least 1.0mL/h.)	
Purge rate	approx. 280mL/h (10mL TOP syringe); approx. 540mL/h (20mL TOP syringe); approx. 640mL/h (30mL TOP syringe); approx. 1,000mL/h (50mL TOP syringe)	
Bolus infusion rate	In TIVA mode: 10mL syringe: 200mL/h 20mL syringe: 400mL/h 30mL syringe: 500mL/h 50mL syringe: 800mL/h 1% Diphivan Kit (20mL, 50mL): 800mL/h	In PCA mode: base infusion flow rate + 125mL/h
Bolus volume	0.1-50.0mL	
Occlusion detection (can be set to any of four levels)	Very low: 20±10kPa (150±75 mmHg/0.2±0.1kgf/cm²); Low: 40±20kPa (300±150 mmHg/0.4±0.2kgf/cm²); Medium: 67±27kPa (500±200 mmHg/0.68±0.27kgf/cm²); High: 93±33kPa (700±250 mmHg/0.95±0.34kgf/cm²) (When using 50 mL TOP syringe for TOP syringe pumps.)	
Overload detection	10mL syringe: approx. 20N (2.0kgf) or more; 20mL syringe: approx. 40N (4.0kgf) or more; 30mL syringe: approx. 55N (5.5kgf) or more; 50mL syringe: approx. 80N (8.0kgf) or more	
Alarms/Warnings	Voltage drop, Low volume, Power supply switched, Infusion complete, Volume limit reached, Bolus stopped, Check settings, Maintenance timer, Standby mode, Bolus limit, Printer, Remote PCA switch, Occlusion, Overload, Sensor check, Syringe barrel clamp, Syringe barrel flange, Plunger clamp, Flow rate not set, Volume limit not set, Value not set, Operation reminder, Battery depleted, Battery not connected, Device malfunction	
Special functions	Auto power off: If the pump is left in a standby state when powered by the internal battery, the Operation Reminder alarm sounds. When the alarm is left to sound for 3 minutes, the power shuts off automatically. Alarm reminder: After an alarm has been shut off, if the cause of the alarm is not corrected within 2 minutes, the alarm will sound again to remind the operator of the problem. Buzzer setting: Audible indication of standby and key operation can be turned on or off. Power supply switch alarm: An alarm sounds when the pump has switched from AC power to battery power. History display: History of pump operation, including start/stop, alarms and bolus infusion, and PCA switch operation history can be checked. Print PCA history: PCA switch operation history can be printed out. Standby: The Operation Reminder alarm can be temporarily deactivated. KVO: After infusion to the volume limit is complete, the device continues to operate at 0.1mL/h to prevent thrombus formation. Key lock: Key operation can be inactivated during infusion. External communication: The status of pump can be remotely monitored. Syringe manufacturer limiting function: Limits the syringe manufacturers that can be selected. Infusion mode limiting function: Limits the infusion modes that can be selected. Dosage unit limiting function: Limits the dosage units that can be selected. Volume limit display switching function: Volume limit display can be turned on or off. Battery refresh function: Internal battery can be refreshed to ensure good performance. Maintenance timer function: When a set period of time has elapsed, a screen prompting the user to carry out a periodical inspection is displayed. Maximum flow rate setting: Sets the maximum flow rate. User syringe registration: User dedicated syringes not already registered in the device can be registered.	
Operating conditions	Ambient temperature: 5 to 40°C (10 to 30°C when charging battery); Relative humidity: 20-90% (noncondensing); Atmospheric pressure: 70-106kPa	
Transportation/Storage conditions	Ambient temperature: -20 to 45°C; Relative humidity: 10-95% (noncondensing); Atmospheric pressure: 50-106kPa	
Power supply	AC power supply: AC 100 to 127V±10%, 50/60Hz (for 100V regions) AC 200 to 240V±10%, 50/60Hz (for 200V regions) External DC power supply: DC 9 to 15V, 5W Internal battery: Rechargeable, DC 3.6V, 1500mAh NiMH (type: BP-55) Battery life is approx. 12 hours (at flow rate of 5mL/h using new battery in fully recharged state) Alkaline batteries: Uses four LR6 type, AA size alkaline batteries DC 6V Battery life is approx. 24 hours (at flow rate of 5mL/h using new battery)	
Classification	Class II □ and internally powered equipment, Type CF □, IPX1 (drip-proof)	
Fuse	TL 0.2A	
External dimensions	320(W) × 90(H) × 160(D) mm	
Weight	approx. 2.0kg	
Accessories	AC power cord, Remote PCA switch, Operation guide	
Optional	External DC power cable/ Communications cable/ TOP Pole Clamp/ TOP Pole Clamp Type-E2/ TOP Syringe Guard for TOP-5520/ TOP Multiple Pump Mount ST55-4/ TOP Infusion Pump Stand/ Printer	

● Product specifications and appearance are subject to change without prior notice.

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