New Era Pump Systems Inc.

Syringe PumpS.

2011 Catalog

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NE-1000 Fully Programmable Family of Syringe Pumps

NE-1000

NE-500

NE-4000

NE-1600

NE-1800

NE-1002X

NE-4500

NE-4002X

NE-1200

Dual-NE-1000

NE-9000 Peristaltic Dispensing Pump

Featuring "Learn & Repeat"™ for Fantastic Productivity!!!

- ✓ Pump from a reservoir through replaceable continuous tubing. Pump never comes into contact with fluid
- ✓ Continuous Pumping. Up to 900 ml/min.
- ✓ Measured dispenses for production filling of bottles.
- ✓ "Learn and Repeat"™ for quick setup of production dispenses.
- ✓ Computer and foot switch interface.

Description:

- Have a need to accurately fill multiple bottles, vials, or other containers with a liquid? The "learn and repeat"™ mode of the NE-9000 Peristaltic Pump from New Era Pump Systems Inc. makes even the smallest of businesses highly productive right from day one.
- The NE-9000 is equipped to be used in many settings from the small home based businesses to the large factory floor. The pump can be integrated into existing production lines or simply used stand alone.
- The NE-9000 comes fully programmable and can be operated manually or with a PC through a RS-232 communication port. Even the most novice of technology users can easily operate the pump stand alone or through the PC
- The pump's specialty is in small scale production dispensing. It will fill numerous bottles, vials, etc. with fluids of all types.
- Equipped for mass production dispensing at a price affordable for the home based business, this pump is a great deal no matter what your purchasing power is.
- The flow rates vary from a minimum of 0.041 ml/min to a maximum of 904.4 ml/min with 3/16 id tubing.
- Easy-to-use keypad interface
- Space Saving Chassis: Foot print size of only 7 3/4" x 5 1/4" Won't take up unnecessary space on your laboratory or production bench

Features:

- **Dispense or withdrawal pumping**
- "Learn and Repeat"™
- Foot Switch control available.
- Slow down mode to improve accuracy of dispenses
- Anti-Drip mode to stop oozing after dispenses
- Calibration mode to improve accuracy.
- Programmable dispense volumes. Store and select from up to 40 Dispenses.
- Non-volatile memory of all operating parameters and pumping program
- Programmable Phases allowing complex pumping applications and interaction with external devices.
- RS-232 bi-directional control for complete control from a PC. Network up to 100 pumps and other devices.
- Digital logic input: TTL I/O with software filtered control inputs to eliminate glitches and ringing on the control inputs. Configurable TTL operational trigger for foot switches and other devices
- Power Failure Mode: Restarts the Pumping Program after a power interruption
- Audible Alarm
- Two year warranty
- Includes all the advanced functions and programming features of the NE-1000 family.
- Worldwide power supplies available.
- Comes with 5ft of Norprene Industrial Grade Tubing. Other tubing available.

NE-300 "Just infusion"□

Just the features that you want, and none that you don't want to pay for. Similar to the NE-1000 with just the basic features.

- Holds small or big syringes up to 60 mL
- Pumps continuously until you stop the pump
- Variable infusion rate can be changed while pumping
- Remembers previous settings on power up
- Power failure mode allows pump to continue pumping after a reset
- Syringe purge mode
- Displays total volume dispensed in mL or µL units
- Maximum pumping rate of 1500 mL/hr with a 60 mL syringe
- Precise reproducible flow rates
- Selectable infusion rates units: mL/hr, µL/hr, mL/min, µL/min

"Infuses Only!"

-Does not withdraw, volume target, have computer interface or have programmability

-Just the features that you want and none that you don't want to pay for

NE-1000 Single Syringe Pump

High Pressure Syringe Pump
NE-1010

Continuous Infusion Syringe Pump System
Dual-NE-1000 - (pg. 11)

Microfluidics Double Syringe Pump
NE-1002X - (pg. 8)

NE-1000– Features

Accepts 1 syringe from the smallest size available up to 60 ml. A 140 ml syringe can be filled up to 120ml

NE-1000 & Dual-NE-1000 pumping rate as low as 1.459 ml/hr with a 1 mL syringe or as high as 35 ml/min with a 60 mL syringe

NE-1010 pumping rate as low as 1.459 ml/hr with a 1 mL syringe or as high as 102.3 ml/min with a 60 mL syringe

NE-1002X pumping rate as low as .008nL/hr with a 0.5 µL syringe or as high as 1555 µL/min with a 60 mL syringe

The NE-1000 Family of Syringe Pumps features

- Built for Automation
- Operates stand-alone or from a computer
- Infuses and withdraws
- Applications range from simple infusions to complex pumping programs
- Programmable preset protocols
- Program up to 41 pumping phases that change pumping rates, set dispensing volumes, insert pauses, control and respond to external signals, sound the buzzer
- RS-232 and TTL logic control interfaces
- Two pumps connected with a dual cable create a Dual Pump System allowing for continuous infusion or emulsification
- Network, control, and monitor up to 100 pumps with one computer
- Worldwide power supplies available
- Motor stall detection
- Non-volatile memory of all parameters and programming
- Upgradeable to the 'X and 'X2 advanced firmware versions for gradient pumping and increased program memory
- Plus many, many more features!!!
- Dispensing accuracy of +/-1%
- Unlimited lifetime technical support
- Two year warranty

*** Not for clinical use on humans ***

NE-4000 Double Syringe Pump

Continuous Infusion Double Syringe Pump System
Dual-NE-4000

Microfluidics Double Syringe Pump
NE-4002X

NE-1000 Family of Syringe Pumps

PROGRAMMABLE DOUBLE SYRINGE PUMP

– Built For Automation –

NE-4000– Features

Accepts 2 different syringes from the smallest size available up to 60 ml. A 140 ml syringe can be filled up to 120ml

2 different sized syringes can be used for proportional infusion

NE-4000 & Dual-NE-4000 pumping rate as low as 1.459 ml/hr with a 1 mL syringe or as high as 127.2 ml/min with a 60 mL syringe

NE-4002X pumping rate as low as .008nL/hr with a 0.5 µL syringe or as high as 1555 µL/min with a 60 mL syringe

Includes all of the NE-1000 Family of Syringe Pumps features

Built for Automation
Operates stand-alone or from a computer
Infuses and withdraws
Applications range from simple infusions to complex pumping programs
Programmable preset protocols
Program up to 41 pumping phases that change pumping rates, set dispensing volumes, insert pauses, control and respond to external signals, sound the buzzer
RS-232 and TTL logic control interfaces
Two pumps connected with a dual cable create a Dual Pump System allowing for continuous infusion or emulsification
Network, control, and monitor up to 100 pumps with one computer
Worldwide power supplies available
Motor stall detection
Non-volatile memory of all parameters and programming
Upgradeable to the 'X and 'X2 advanced firmware versions for increased program memory
Dispensing accuracy of +/-1%
Plus many, many more features!!!
Unlimited lifetime technical support

*** Not for clinical use on humans ***

Multi Syringe Pumps

NE-1600
(Dual-NE-1600

Holds 2, 4, or 6 syringes of up to 60 cc each or 2 or 4 syringes up to 140cc each

Infusion rates from 0.57 µL/hr (1 cc syringe) to 1337 ml/hr (60 cc syringe)

Higher flow rate models available

NE-1800
(Dual-NE-1800

Holds 2, 4, 6 or 8 syringes of up to 10 cc each

Infusion rates from 0.57 µL/hr (1 cc syringe) to 380 ml/hr (10 cc syringe)

Higher flow rate models available

NE-1200
(Dual-NE-1200

Holds 2, 4, 6, 8, 10 or 12 syringes of up to 3 cc each

Infusion rates from 0.57 µL/ (1 cc syringe) to 153.2 ml/h

Higher flow rate models available

Includes all of the NE-1000 Family of Syringe Pumps features

- Built for Automation
- Operates stand-alone or from a computer
- Infuses and withdraws
- Applications range from simple infusions to complex pumping programs
- Programmable preset protocols
- Program up to 41 pumping phases that change pumping rates, set dispensing volumes, insert pauses, control and respond to external signals, sound the buzzer
- RS-232 and TTL logic control interfaces
- Two pumps connected with a dual cable create a Dual Pump
- System allowing for continuous infusion or emulsification
- Network, control, and monitor up to 100 pumps with one computer
- Worldwide power supplies available
- Motor stall detection
- Non-volatile memory of all parameters and programming
- Upgradeable to the 'X and 'X2 advanced firmware versions for increased program memory
- Dispensing accuracy of +/-1%
- Plus many, many more features!!!
- Unlimited lifetime technical support

*** Not for clinical use on humans ***

NE-1002X Microfluidics Syringe Pump

Continuous Infusion Microfluidics Syringe Pump System
(Dual-NE-1002X: $3010)

OEM Microfluidics Syringe Pump
(NE-502X: $1100)

NE-1000 Family of Syringe Pumps
PROGRAMMABLE MICROFLUIDICS SYRINGE PUMP

NE-1002X Features

Advance Per Step: 4.252232 Nanometers

Smooth pumping at ultra low flow rates

Accepts syringes from the smallest size available up to 60 ml. A 140 ml syringe can be filled up to 120ml

Pumping rate as low as .008 nL/hr with a .5 µL syringe or as high as 1555 µL/min with a 60 mL syringe

Includes the X Upgrade Smooth Linear/Gradient increasing and decreasing pumping feature

Includes all of the NE-1000 Family of Syringe Pumps features

Built for Automation
Operates stand-alone or from a computer
Infuses and withdraws
Applications range from simple infusions to complex pumping programs
Programmable preset protocols
Program up to 41 pumping phases that change pumping rates, set dispensing volumes, insert pauses, control and respond to external signals, sound the buzzer
RS-232 and TTL logic control interfaces
Two pumps connected with a dual cable create a Dual Pump System allowing for continuous infusion or emulsification
Network, control, and monitor up to 100 pumps with one computer
Worldwide power supplies available
Motor stall detection
Non-volatile memory of all parameters and programming
Upgradeable to the 'X2 advanced firmware versions for increased program memory
Dispensing accuracy of +/-1%
Plus many, many more features!!!
Unlimited lifetime technical support
Two year warranty

*** Not for clinical use on humans ***

OEM Syringe Pumps NE-500

Model: NE-500 OEM Syringe Pump Price: $495

Model: NE-501 OEM Syringe Pump with Stall Detection Price: $550

Model: NE-510 High Pressure OEM Syringe Pump Price: $535

NE-511 High Pressure OEM Syringe Pump with Stall Detection Price: $535

NE-4500 Double OEM Syringe Pump - $625

NE-4501 Double OEM Syringe Pump with Stall Detection - $680

- **Computer controllable:** networkable up to 100 pumps
- **Stand-alone operation:** pre-program the pump with a dispensing program, then operate the pump from an attached Foot Switch, button, or I/O controller

Add the OEM Starter Kit to run as a fully functional, stand-alone pump.

Designed for OEM applications, this pump has the same mechanisms and electronics as the NE-1000 aside from the front panel controls.

- Built for Automation
- Operates from a computer or a foot switch
- Infusion and withdrawal
- Set a single pumping rate and/or dispensing volume
- Program up to 41 pumping phases that change pumping rates, set dispensing volumes, insert pauses, control and respond to external signals, sound the buzzer
- Network, control, and monitor up to 100 pumps with one computer
- Motor stall detection available in NE-501 model ($550)
- Dispensing accuracy of ± 1%
- Unlimited lifetime technical support
- Two year warranty

*** Not for clinical use on humans ***

Custom Designed OEM Syringe Pumps– Call or e-mail for a quote

-Custom Chassis
-Custom Firmware
-Custom Mechanical Design

You want it, we'll make it; ***no matter how simple or complex****. When others say it can't be done, we say of course* ***it can be done****. The limits are endless to what we can create for you. We here at New Era have been designing pumps for over ten years for all types of OEM*

OEM Syringe Pump Accessories

OEM Starter & Net Kits

Model: OEM-STARTER Price: $25

- Allows user to interactively communicate to the pump with a computer
- Includes: power supply, Pump-to-PC
- network cable, and user manual

Model: OEM-NET Price: $10

- Power supply and secondary cable only. For use when networking two or more OEM NE-500 syringe pumps together. Must use the secondary cable in order to complete this application.

Foot Switch

Model: ADPT-FOOTSW-2 Price: $25

- Start, stop, or send a signal to a pumping program
- Attach to any of the NE-1000 family pumps to allow remote operation
- Utilizes the TTL logic port on the pump
- Quick and simple

Netbook Syringe Pump

Description:

- User friendly netbook computer control of syringe pump
- Comes with all necessary components for full standalone usage out of the box

Includes:

- Basic netbook computer
- License copy of Syringe Pump Pro software
- NE-500 OEM Syringe Pump
- Small Syringe Kit
- RS-232 To USB Converter
- Pump-to-PC Network Cable
- Power Supply

Features of the Netbook:

- Intel Atom™ Processor
- Windows 7 Starter
- 10.1" Screen

Features of the NE-500 Syringe Pump

- Infusion and withdrawal
- Set a single pumping rate and/or dispensing volume
- Holds 1 syringe up to 60 cc
- Infusion rates from 0.73 µL/hr (1 cc syringe) to 2100 ml/hr (60 cc syringe)
- Dispensing accuracy of ± 1%
- Program up to 41 pumping phases that change pumping rates, set dispensing volumes, insert pauses, control and respond to external signals, sound the buzzer
- Includes all the advanced functions and programming features of the NE-1000 family
- Disposable, Glass, Stainless Steel Syringes and Plumbing Supplies are sold separately.
- Unlimited lifetime technical support
- Two year warranty

Upgrade Options

Do you want **Higher Pressure, Speed or Power**? Give us a call, we have other models available.

FirmWare Upgrade Options

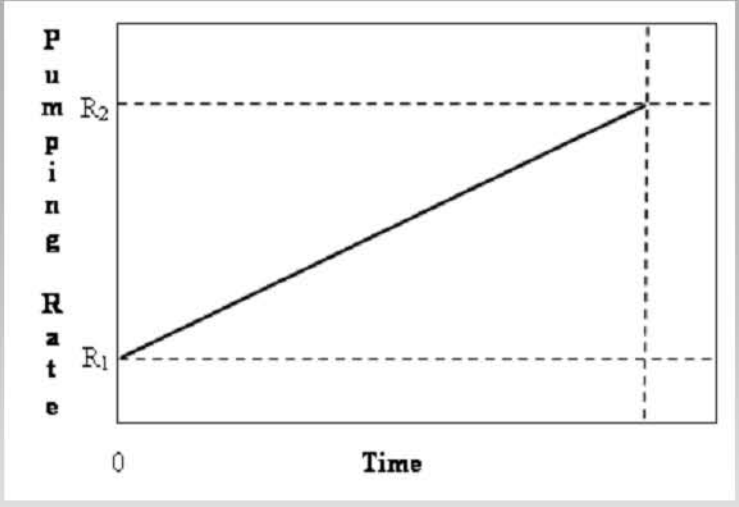
Available in all NE-1000 Family of Syringe Pumps

X (Linear Gradient Pumping)- $105 added to any NE-1000 family member

Features:

- Smooth linear increasing or decreasing gradient
- Set the starting rate, ending rate, and the time
- Pre-program multiple gradients plus any other NE-1000 programming feature

Linear Ramping



X2 (Gradient Pumping with increased program memory)-$205 added to any NE-1000 family member

Features:

- All of the features of the X model
- Increases the number of programmable phases from 41 to 340

Continuous Infusion/ Dual NE-1000 Syringe Pump

Description:

- Two NE-1000 Family of Pumps Syringe Pumps connected together
- The pumps are often used in dual-pump setups, possibly with check valves for continuous pumping or mixing so that one syringe dispenses while the other reloads.
- Gives customer flexibility to separate pumps for individual use.
- Dual NE-1010
- Dual NE-4000
- Dual NE-1600/1800
- Dual NE-1002X

Includes all of the features of the NE-1000 family of pumps

*** Not for clinical use on humans ***

Dual Pump Plumbing Kit

Description:

- For use with our continuous infusion system or dual infusion system
- Provides a dual check valve for two syringes, withdraw will pull fluid from a reservoir and infusion will output into a separate line
- The kit is pre-assembled, all you need to do is plug in the syringes
- Each dual check valve uses 6" of 1/8" tubing to connect to a Y connector, one for reservoir and one for output; each Y-connector has 5' of tubing to make connections to your application. Two 60cc Terumo syringes are included

Individual parts are also available

Model:
P-DKIT

Syringe Pump Accessories

Syringe Heater Kit

Description

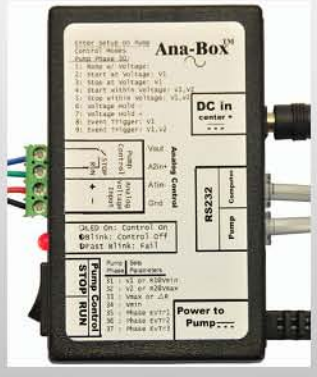
- Heating device for syringes that requires temperature-controlled dispensing
- Heats syringes to up to 220° Celsius
- Digitally set the heater set point
- Temperature sensor in heating pad
- Setpoint retained in memory
- Controller will heat the syringe and hold the set temperature using an on/off or PID control algorithm
- Multiple syringe heater pads can be attached to the control unit
- Heated syringe can be mounted on a syringe pump
- Syringe Heater Kit includes Control-Unit power cable and Primary-Syringe-Heater-Pad
- Heating syringes over 100°C with NE-300, NE-500, NE-1000 & NE-4000 model syringe pumps requires an affordable customized pump. Call or e-mail for details.
- If you are in a country where the voltage is above 120V, you must purchase a step-down transformer with the Syringe Heater.

Syringe Heating Pad 2+

Description

- For adding additional, up to sixteen, heating pads HEATING-PAD2+
- Temperature sensed in primary heating pad only

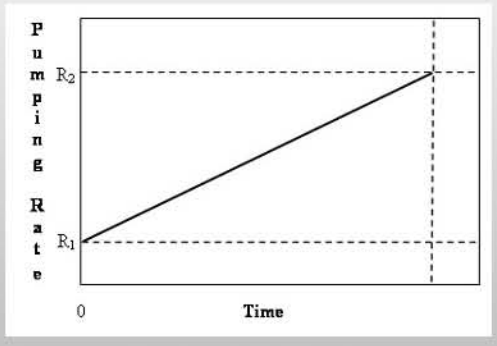
Featured Accessory: Anabox Analog Sensor Interface



Model:
ADPT-ANABOX-11
Price: $99

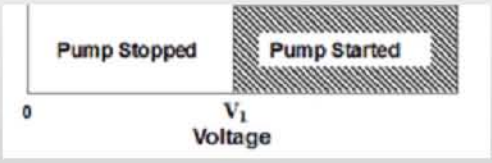
Sample Anabox Operational Modes:

Ramping (gradient) with Voltage

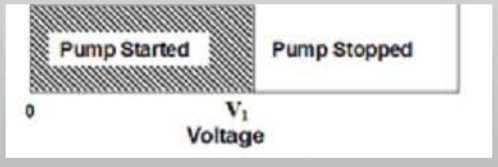


Pressure Controlled Infusion
Automatically varies the pumping rate to maintain a pressure by utilizing your pressure sensor with a voltage output.

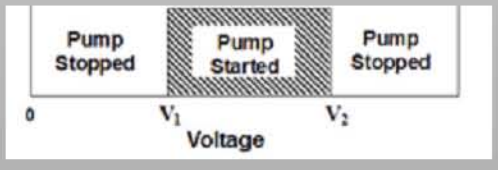
Start Pump at Voltage Trigger



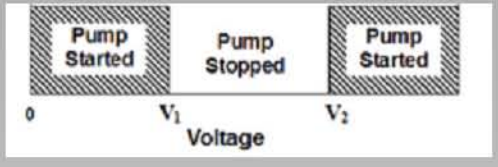
Stop Pump at Voltage Trigger



Start Pump within Voltage



Stop Pump within Voltage



ANABOX CLOSED LOOP ANALOG SENSOR INTERFACE

- Vary the pumping rate in proportion to a variable voltage input
- Start or stop pump at set voltages
- Vary the pumping rate to maintain a voltage window
  -I.e. maintain a pressure or pH level
- Attaches to any pump in the NE-1000 Family
- Operates stand alone. Does not need a computer to operate
- Optionally outputs event data to a computer for data logging

Foot Switch

Part ID:
ADPT-FOOTSW-2

Description:

- Start, stop, or trigger the next phase on your syringe pump
- Attach to any of the NE-1000 family pumps to allow stand-alone operation
- Utilizes the TTL logic port on syringe pump
- Quick and simple setup

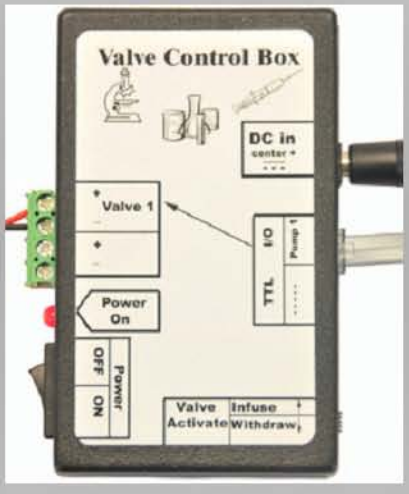
"Lockout Disable" Key

Description:

- For use with the syringe pump's "Lockout Mode"
- Prevent unauthorized or accidental changes to the settings by locking the keypad
- The "Lockout Disable" key unlocks the keypad and allows settings to be changed
- Utilizes the TTL logic port on syringe pump

Quick and simple setup

Part ID: ADPT-LOCKOUT



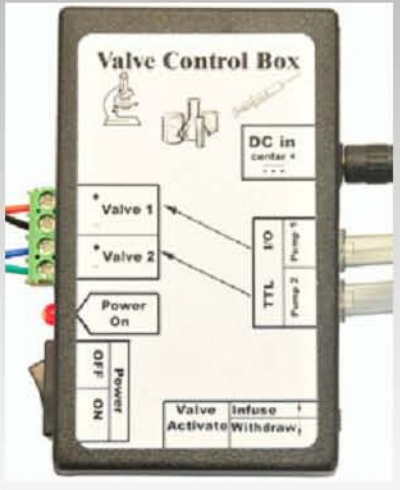
Single Valve Control Box

Description:

- Attach your 12V DC valve and the control box will open or close your valv according to the pumping direction
- Utilizes the TTL logic port on syringe pump

Includes power supply for valve

Part ID: ADPT-VALVE-INTERFACE-1



Dual Valve Control Box

Description:

- Attach your two 12V DC valves and the control box will open or close you valves according to the pumping directions of your two pumps
- Includes CBL-TTL-1 cable to allow synchronized pumping between two pumps
- Utilizes the TTL logic ports on both syringe pumps

Includes power supply for valves

Part ID: ADPT-VALVE-INTERFACE-2

Pump Cables

Pump-to-PC Primary Network Cable

Part ID:
CBL-PC-PUMP-25 (25ft. cable)
CBL-PC-PUMP-7 (7ft. cable)

Price:

Description:

- Allows full control over syringe pumps through your computer
- DB-9 adapter connects to 9-pin serial port (25-pin adapters available upon request)
- Utilizes the RS-232 communications port of syringe pump
- Available in 7' and 25' length cable
- Quick and simple setup

Pump-to-Pump Secondary Network Cable

Part ID:
CBL-NET-7 (7ft. cable)
CBL-NET-25 (25ft. cable)

Price:

Description:

- Allows networking of two or more syringe pumps to a single computer
- Quick and simple setup
- Utilizes the RS-232 communications port of syringe pump
- Available in 7' and 25' length cable
- Requires first pump to be connected with primary network cable

RS-232 to USB Converter

Part ID: **CBL-USB232**

Description:

- Adapter to add a DB-9 RS-232 serial port to your computer by using an USB port
- Includes software driver CD

Pump Sync Cable

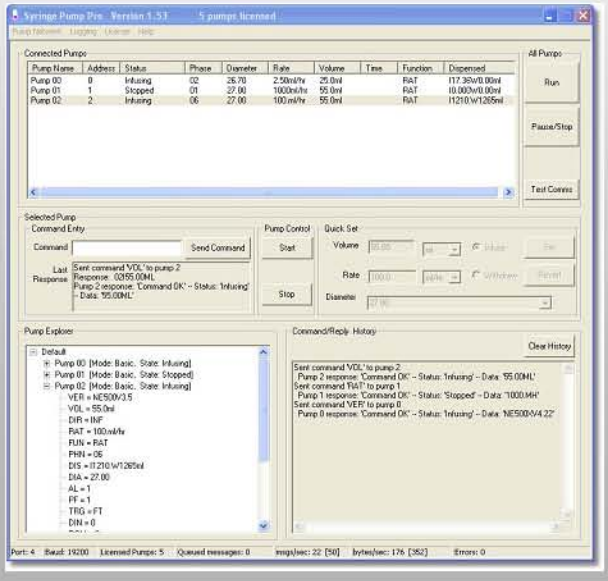
Part ID:
CBL-DUAL-3

Description:

- Used for creating a continuous infusion system or dual infusion system
- Establishes a communications link between two pumps to duplicate the exact or inverse commands issued to one pump.
- Utilizes the RS-232 logic port on syringe pump
- Quick and simple setup
- This is the new replacement cable for CBL-TTL-1 unless the use of the TTL ports for synchronization is preferred

Syringe Pump Pro

Syringe Pump Control Software



SyringePumpPro is an easy to use computer interface for programmable syringe pumps. It permits much faster programming and operation of one or more pumps. You can create pump programs and upload them to your pumps.

SyringePumpPro makes it easier and faster to change pump settings by directly entering settings using the user interface instead of working your way through the pumps internal menu system.

- Compatible with Netbook Syringe Pump & other Netbook screen sizes
- New epub manual format for ebook readers
- End front panel button mashing
- Configure and control multi-pump protocols
- Eliminates hours of manual pump operation
- OEM Pump? No Keypad? Use of pumps that do not have keypads
- Upload pump programs
- Send commands to one or many pumps
- No more re-typing of commands in terminal software
- Quick and easy to use interface for communicating with your pumps
- 30 Day Free Trial available at www.syringepumppro.com

Compatible with Syringe Pumps from the following brands

NEW ERA Pump Systems Inc. SyringePump.com

BRAINTREE SCIENTIFIC, INC.

WPI

YMC

TSE systems

Cole-Parmer® Delivering Solutions You Trust

NEXT ADVANCE Innovative Lab Products for the Life Sciences

Stoelting

Disposable Syringes &

New Era supplies an assortment of disposable plastic syringes between 1mL to 140mL from Monoject, NormJect, Terumo & Excel. You can receive discounts in box quantities.

USD Prices

Description (mL=CC)	Part #		Box Part #	Box Price
140 mL Luer Lock Non-Inert	SYR-MJ140LL	$4.95	SYR-MJ140LLBX	$85.00 (20 per Box)
60 mL Luer Lock Non-Inert	SYR-TER60LL	$1.25	SYR-TER60LLBX	$18.75 (25 per Box)
50 mL Luer Lock Inert	SYR-NJ50LL	$1.75	SYR-NJ50LLBX	$37.50 (30 per Box)
30 mL Luer Lock Inert	SYR-NJ30LL	$1.25	SYR-NJ30LLBX	$40.00 (50 per Box)
20 mL Luer Lock Inert	SYR-NJ20LL	$0.75	SYR-NJ20LLBX	$55.00 (100 per Box)
10 mL Luer Lock Inert	SYR-NJ10LL	$0.50	SYR-NJ10LLBX	$40.00 (100 per Box)
5 mL Luer Lock Inert	SYR-NJ5LL	$0.40	SYR-NJ5LLBX	$30.00 (100 per Box)
3 mL Luer Lock Inert	SYR-NJ3LL	$0.35	SYR-NJ3LLBX	$25.00 (100 per Box)
1 mL Luer-Lock Non-Inert	SYR-EX1LL	$0.40	SYR-EX1LLBX	$30.00 (100 per Box)
1 mL Tuberculin Inert	SYR-TB1	$0.25	SYR-EX1LLBX	$20.00 (100 per Box)
Large Syringe kit	P-SYRKIT-LG	$15	N/A	N/A
Small Syringe kit	P-SYRKIT-SM	$11.50	N/A	N/A
Dual Pump Plumbing Kit	P-DKIT	$20.00	N/A	N/A

Large Syringe Kit
Part ID: P-SYRKIT-LG

- (2) 20mL Luer Lock Inert
- (2) 30mL Luer Lock Inert
- (2) 60mL Terumo Luer Lock Non-Inert
- (6) Female Luer Barbs
- (3) Male Luer Barbs

Small Syringe Kit
Part ID: P-SYRKIT-SM

- (2) 1mL Luer Lock Inert
- (2) 3mL Luer Lock Inert
- (2) 5mL Luer Lock Inert
- (2) 10mL Luer Lock Inert
- (6) Female Luer Barbs

Dual Pump Plumbing Kit
P-DKIT

- For use with our continuous infusion system or dual infusion system (Dual-NE-1000). Provides a dual check valve for two syringes, withdraw will pull fluid from a reservoir and infusion will output into a separate line
- The kit is pre-assembled, all you need to do is plug in the syringes
- Each dual check valve uses 6" of 1/8" tubing to connect to a Y connector, one for reservoir and one for output; each Y-connector has 5' of tubing to make connections to your application. Two 60cc Terumo syringes are included

Glass Syringes: Standard & Gas Tight

New Era supplies a full range of glass syringes from 50µL to 100mL in gas tight quality and 1mL to 100mL in standard quality. Standard glass can handle between 22 to 43psi while the gas tight can handle from 100psi to upwards of 400psi depending on the syringe.

Standard Glass Syringes

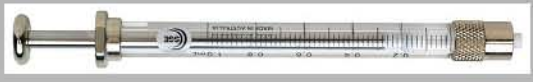
USD List Prices

Part #	Size	PSI/KPA Limits	Temp Limits	Price Each
SYR-GL1LL	1mL	43.5 / 300	200°C	
SYR-GL2LL	2mL	43.5 / 300	200°C	
SYR-GL3LL	3mL	43.5 / 300	200°C	
SYR-GL5LL	5mL	43.5 / 300	200°C	
SYR-GL10LL	10mL	29 / 200	200°C	
SYR-GL20LL	20mL	29 / 200	200°C	
SYR-GL30LL	30mL	29 / 200	200°C	
SYR-GL50LL	50mL	21.8 / 150	200°C	
SYR-GL100LL	100mL	21.8 / 150	200°C	

- Tips are Metal Luer Lock
- Barrel and plunger are made from Borosilicate Glass and are interchangeable
- Manufactured in Germany
- Chemically compatible for a wide range of applications
- Good basic reusable syringe

SGE Gas Tight Glass Syringes

Part #	Size	PSI/KPa Limits	Temp Limits	Price Each
SYR-GL50MCLL-S	50uL	400 / 2758	70°C	
SYR-GL100MCLL-S	100uL	400 / 2758	70°C	
SYR-GL250MCLL-S	250uL	400 / 2758	70°C	
SYR-GL500MCLL-S	500uL	400 / 2758	70°C	
SYR-GL1LL-S	1mL	400 / 2758	70°C	
SYR-GL2.5LL-S	2.5mL	400 / 2758	70°C	
SYR-GL5LL-S	5mL	400 / 2758	70°C	$51.90
SYR-GL10LL-S	10mL	200 / 1379	70°C	$71.50
SYR-GL25LL-S	25mL	100 / 689	70°C	$162.50
SYR-GL50LL-S	50mL	100 / 689	120°C	$205.00
SYR-GL100LL-S	100mL	100 / 689	120°C	$303.00



- Longest working life in the industry
- All SGE syringes come with metal Fixed Luer Lock Tips except for the 50 & 100 mL which are removable.
- Suitable for chromatography applications
- Barrel made from
- Borosilicate Glass
- PTFE tipped plunger
- Able to replace the plunger
- Nickel plated brass barrel flange
- Manufactured in Australia
- Chemically compatible for a wide range of applications.

Stainless Steel Syringes

New Era supplies a full range of stainless syringes from 1mL to 200mL. The syringes can handle 750psi (1500psi for the 8ml), high temperatures and highly corrosive chemicals. Highly corrosive chemicals may require an upgrade in O'Ring.

Part #	Size	PSI	Included Fitting	Price each
SYR-SS1	1 mL	750	None, 1/4-28 Thread	
SYR-SS1SL8	1 mL	750	1/8 SwageLok	
SYR-SS1SL16	1 mL	750	1/16 SwageLok	
SYR-SS1LL	1 mL	750	Luer-Lok	
SYR-SS3	3mL	750	None, 1/4-28 Thread	
SYR-SS3SL8	3mL	750	1/8 SwageLok	
SYR-SS3SL16	3mL	750	1/16 SwageLok	
SYR-SS3LL	3mL	750	Luer-Lok	
SYR-SS5	5 mL	750	None, 1/4-28 Thread	
SYR-SS5SL8	5 mL	750	1/8 SwageLok	
SYR-SS5SL16	5 mL	750	1/16 SwageLok	
SYR-SS5LL	5 mL	750	Luer-Lok	
SYR-SS8	8mL	1500	None, 1/4-28 Thread	
SYR-SS8SL8	8mL	1500	1/8 SwageLok	
SYR-SS8SL16	8mL	1500	1/16 SwageLok	
SYR-SS8LL	8mL	1500	Luer-Lok	
SYR-SS20	20mL	750	None, 3/8-24 Thread	
SYR-SS20SL4	20mL	750	1/4 SwageLok	
SYR-SS20SL8	20mL	750	1/8 SwageLok	
SYR-SS20SL16	20mL	750	1/16 SwageLok	
SYR-SS20LL	20mL	750	Luer-Lok	
SYR-SS50	50mL	750	None, 3/8-24 Thread	
SYR-SS50SL4	50mL	750	1/4 SwageLok	
SYR-SS50SL8	50mL	750	1/8 SwageLok	
SYR-SS50SL16	50mL	750	1/16 SwageLok	
SYR-SS50LL	50mL	750	Luer-Lok	
SYR-SS100	100mL	750	None, 3/8-24 Thread	
SYR-SS100SL4	100mL	750	1/4 SwageLok	
SYR-SS100SL8	100mL	750	1/8 SwageLok	
SYR-SS100SL16	100mL	750	1/16 SwageLok	
SYR-SS100LL	100mL	750	Luer-Lok	
SYR-SS200	200mL	750	None, 3/8-24 Thread	
SYR-SS200SL4	200mL	750	1/4 SwageLok	
SYR-SS200SL8	200mL	750	1/8 SwageLok	
SYR-SS200SL16	200mL	750	1/16 SwageLok	
SYR-SS200LL	200mL	750	Luer-Lok	

Stainless Steel Syringe O-Rings & Lubricant

Stainless steel syringes come standard wit a Viton O-Ring. Chemraz® O-Rings are ordered separately and are for applications requiring higher chemical resistance.

Part #	Description	Price each
SYRP-SSORV5	Viton, 5mL Replacement O'Rings	
SYRP-SSORK5	Chemraz® 5mL O'Rings	
SYRP-SSORV8	Viton 1, 3 & 8mL Replacement O'Rings	
SYRP-SSORK8	Chemraz® 1, 3 & 8mL O'Rings	
SYRP-SSORV20	Viton, 20mL Replacement O'Rings	
SYRP-SSORK20	Chemraz® 20mL O'Rings	
SYRP-SSORV50	Viton 50mL Replacement O'Rings	
SYRP-SSORK50	Chemraz® 50mL O'Rings	
SYRP-SSORV100	Viton 100mL Replacement O'Rings	
SYRP-SSORK100	Chemraz® 100mL O'Rings	
SYRP-SSORV200	Viton 200mL Replacement O'Rings	
SYRP-SSORK200	Chemraz® 200mL O'Rings	
SYRP-SSLUB	Syringe Lubricant, 1/2 oz. dropper	

Stainless Steel Syringe Fittings

You can buy stainless steel syringes with or without fittings. They are also available to be purchased separately if needed. All fittings are pressure rated for all syringes they connect to.

Need to heat your syringe?

The Syringe Heater Kit, you can find in the accessory section will heat all sizes of syringes up to 220° C.

NEW ERA PUMP SYSTEMS

AUD Prices ?

Introductory Offer : 2011 ONLY . . . or until withdrawn

Shown Prices are actually USD List Prices

AUSTRALIAN LIST PRICE - SAME $$$ Amount - NO Import Freight

THE NE-1000

THE PERFECT PUMP AT THE PERFECT PRICE

Feature-Loaded & Computer Controllable

The NE-1000 programmable syringe pump was developed by long-time experts in the industry. Our full line of pumps are among the most feature-loaded, stand-alone or (RS-232) computer controllable pumps on the market and cost significantly less.

The Perfect Price

Most syringe pumps on the market have retail prices of over $2000. Most labs and companies, however need to obtain authorization to purchase expensive items (over $1000). The NE-1000 is strategically priced at $995 to make it easier for customers to purchase the pump through their credit cards.

2-Year Warranty & Unlimited Technical Support

After the sale of a pump, never worry about it again. If there are any problems, we offer an extensive two-year warranty on all parts. We also provide excellent technical support to tackle any questions for the life of the pump.

NEW ERA PUMP SYSTEMS

NE-9000 PROGRAMMABLE PERISTALTIC PUMP

New Era's newest edition. Built-in programmability. The *Learn and Repeat*™ mode automates any small dispensing need from .5ml/hr to 1250ml/min

Model: NE-9000
Price: $500

NE-300 "JUST INFUSION"™ SYRINGE PUMP

A basic single syringe pump for customers that just want infusion at an affordable price. Has adjustable rates and dispensed volume display.

Model: NE-300
Retail Price: $275

NE-1000 SINGLE SYRINGE PUMP

Full featured single syringe programmable pump. Built-in easy to use programming features and an optional wide range of accessories, this syringe pump accepts one syringe up to 60cc. Operates stand-alone or can be computer controlled via RS-232.

Model: NE-1000
Retail Price: $750

Other models include: NE-1010, NE-1002X, NE-1050

NE-4000 DOUBLE SYRINGE PUMP

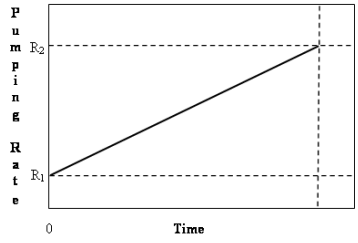
Holds 2 syringes up to 60cc. Has all of the same full featured programmable capabilities as the NE-1000.

Model: NE-4000
Retail Price: $975

NE-1600/NE-1800/1200 MULTI-SYRINGE PUMP

NE-1600 holds 2 or 4 syringes up to 140cc or 6 up to 60cc each
NE-1800 holds 2, 4, 6, or 8 syringes up to 10 cc
NE-1200 holds 2, 4, 6, 8, 10, 12 syringes up to 3cc each
Has all of the same full featured capabilities as the NE-1000.

Model: NE-1600/1800/1200
Retail Price: $1500
Model: NE-1650/1850/1250 High Speed
Retail Price: $1500



PUMP UPGRADES

X-Upgrade: Smooth linear increasing or decreasing gradient available on all NE-1000 family of pumps
X2-Upgrade: 340 programmable phases & X-upgrade

Retail Prices:
X Upgrade NE-1000 Series: $105
X Upgrade NE-500 Series: $55
X2 Upgrade NE-1000 Series: $205
X2 Upgrade NE-500 Series: $110

NEW ERA PUMP SYSTEMS

NE-500 OEM SYRINGE PUMP

The OEM design of the NE-500 is designed for easy system integration. With the addition of a starter kit, the NE-500 can function similar to the NE-1000.

Model: NE-500
Retail Price: $495 (Starter kit: $25)

Other Models include NE-501, NE-510, NE-511, NE-4500, NE-4501

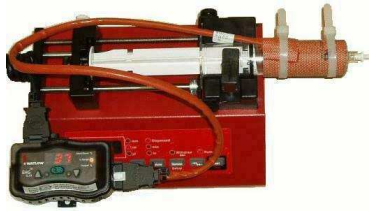
DUAL NE-1000

Two NE-1000 pumps connected into one system where one pump controls the other. For continuous and simultaneous flow and emulsification applications.

Model: DUAL-NE-1000
Retail Price: $1510

***Limited Inventory Price is enacted when 3 or more dual systems are purchased!!!**
****High Profit prices are enacted when 5 or more dual systems are purchased!!!**

Other Models include: Dualing any two same or different pumps in the NE-1000 family and the NE-500 series.



SYRINGE HEATER KIT

The syringe Heater Kit can heat liquids to over 100° C. Temperature sensor in heating pad. Multiple syringe heater pads can be attached to the control unit.

Model: Syringe-Heater-Kit
Retail Price: $399

SYRINGE PUMP ACCESSORIES, SYRINGES & PLUMBING SUPPLIES

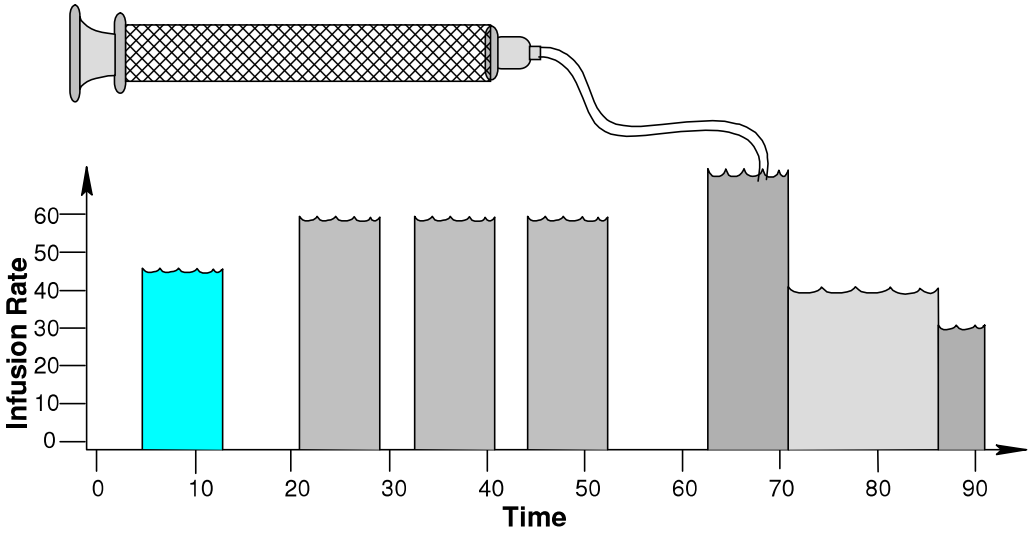
Accessories:
Syringes:
Plumbing Supplies:
Cables:
Starter Kits:
Syringe Kits:

Syringes : NormJect - always in stock Melb
Tubing. plastic fittings, Double Check Valves from ValuePlastics also in stock

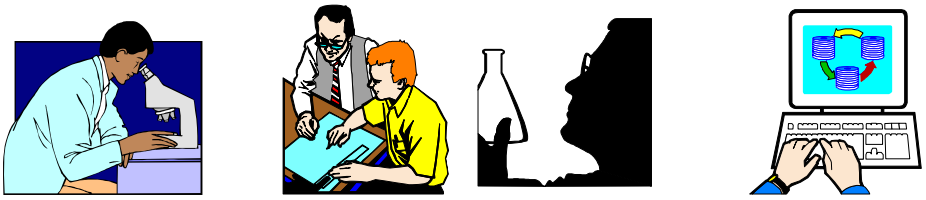
New Era
Pump Systems Inc.

Model: NE-300
"Just Infusion"™

NE-1000 Family of Programmable Syringe Pumps



"WHAT'S YOUR APPLICATION?"™



WARNING

NOT FOR CLINICAL

USE ON HUMANS

Quick Start Instructions

- Plug in the pump.
- Press the power switch to turn on power.
- Press any key to stop the display from blinking.

Setup Pumping Parameters

To Change Numbers:

- Use the arrow keys to increment individual digits.
- **To move the decimal point**: Press and hold the left-most arrow key for at least 1 second. When the digit increments from 9 to 0, the decimal point will begin to shift. Release the key when the decimal point is correct.
- Press any non-arrow key, or wait 2 seconds, to enter the new setting. The display will blink when a new value is entered and stored in memory.

Set the Syringe Inside Diameter:

- Momentarily press the 'Diameter' key. Set the inside diameter of the syringe in millimeters (mm).

Set the Pumping Rate.

- Momentarily press the 'Rate' key.
- To change the **pumping rate units**:
  - Momentarily press the 'Rate' key again. The display will show: 
  - Press any arrow key to select the next available rate units.
  - Press any non-arrow key, or wait 2 seconds, to set the rate units.
- Set the pumping rate. If the pumping rate is out of range, the display will show: 

Load the Syringe

- Press in the white drive-nut button to move the pusher block.
- Lift and turn the syringe clamp away from the syringe holder block
- Position the syringe on the pump with the flange to the left of the syringe holder block.
- Lift and turn the syringe clamp onto the syringe body.
- Move the pusher block next to the syringe plunger.

Purge: Press and hold the 'Start/Stop' key for one second. Release to stop.

Press and hold the direction button to reverse the pump and release the pusher block if jammed.

Start the Pump: Press and release the 'Start/Stop' key to start or stop the pump.

When Pumping

- The pumping rate can be changed.

PUMP RESET: *Press and hold the right-most arrow key while turning on power to the pump.*

Need more pumping features?

see our full-featured syringe pumps.

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1. General Information and Packing List

Thank you for purchasing the Model NE-300 "Just Infusion"™ Syringe Pump. With the NE-300 syringe pump you will be able digitally set an infusion rate for steady pumping.

Please familiarize yourself with the NE-300's operation by reading this user's manual. For future reference, record the serial number, located on the rear of the pump, and the date of purchase.

New Era Pump Systems Inc., located in Farmingdale, NY USA, can be contacted at:
Phone: (631) 249-1392 FAX: (707) 248-2089 Email: INFO@SYRINGEPUMP.COM
WWW.SYRINGEPUMP.COM

Packing List

Included with the NE-300 Syringe Pump are the following items:

- One of the following external unregulated power supply adapters:
  Input: One of: 120V AC 60 Hz, 220V AC 50 Hz, 240V AC 50 HZ
  Output: 12V DC @ 800 mA
- This Operating Manual

1.1 Warnings⚠ and Cautions(!)

(!) Read the user's manual

⚠ No user serviceable parts are inside.

⚠ Disconnect power from the pump when connecting or disconnecting cables.

⚠ Do not immerse the pump in liquid

⚠ Install on a stable surface.

⚠ Keep hands and loose clothing away from the pump's moving parts.

⚠ The pump can automatically start when the Pumping Parameters is operating or when attached to an external control device.

⚠ Prevent liquids from entering openings in the rear of the pump.

⚠ Use only with the supplied power supply connected to a power source as specified on the power supply label.

⚠ Do not push objects of any kind into the chassis openings, except for appropriate cables and connectors.

⚠ If the pump becomes damaged, do not use unless certified safe by a qualified technician. Damage includes, but is not excluded to, frayed cords and deterioration in performance.

(!) Discharge static from control cables before connecting by touching the cable to ground.

(!) Before touching the pump, discharge static by touching ground.

1.2 Disclaimer and Warranty

Disclaimer

New Era Pump Systems Inc. makes no representations or warranties, expressed, statutory or implied, regarding the fitness or merchantability of this product for any particular purpose. Further, New Era Pump Systems Inc. is not liable for any damages, including but not limited to, lost profits, lost savings, or other incidental or consequential damages arising from ownership or use of this product, or for any delay in the performance of its obligations under the warranty due to causes beyond its control. New Era Pump Systems Inc. also reserves the right to make any improvements or modifications to the product described in this manual at any time, without notice of these changes.
New Era Pump Systems Inc. products are not designed, intended, or authorized for use in applications or as system components intended to support or sustain human life, as a clinical medical device for humans, or for any application in which the failure of the product could create a situation where personal injury or death may occur.

All brand and product names used in this manual are the trademarks of their respective owners.

Warranty

New Era Pump Systems Inc. warranties this product and accessories for a period of two year, parts and labor, from the date of purchase. The repaired unit will be covered for the period of the remainder of the original warranty or 90 days, whichever is greater.

A return authorization number must be obtained from New Era Pump Systems Inc. before returning a unit for repair. Warranty covered repairs will not be performed without a return authorization number. At the option of New Era Pump Systems Inc., a defective unit will be either repaired or replaced.

This warranty does not cover damage by any cause including, but not limited to, any malfunction, defect or failure caused by or resulting from unauthorized service or parts, improper maintenance, operation contrary to furnished instructions, shipping or transit accidents, modifications or repair by the user, harsh environments, misuse, neglect, abuse, accident, incorrect line voltage, fire, flood, other natural disasters, or normal wear and tear. Changes or modifications not approved by New Era Pump Systems Inc. could void the warranty.

The foregoing is in lieu of all other expressed warranties and New Era Pump Systems Inc. does not assume or authorize any party to assume for it any other obligation or liability.

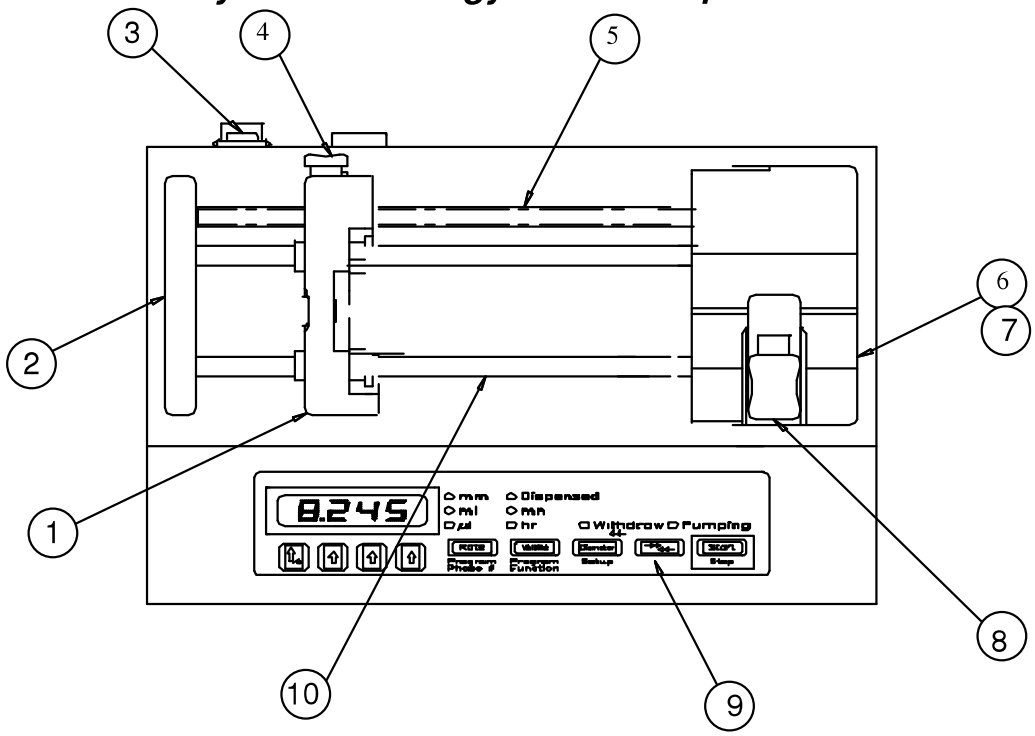
2. Overview

The NE-300 is a general purpose single syringe pump capable of infusing at digitally set pumping rates. It is controlled from a microcontroller based system which drives a step motor, allowing a wide range of pumping rates configured to the inside diameter of the loaded syringe. The syringe is driven from a drive-screw and drive-nut mechanism.

Features:

- Infusion pumping of syringes up to 60 cc.
- Pumping rates from 0.73 µl/hr with a 1 cc to 1500 ml/hr with a 60 cc.
- Display of infused volume.
- Non-volatile memory of all operating parameters.
- Power Failure Mode: Restarts the Pumping Parameters after a power interruption.

2.1 Glossary of Terminology and Concepts



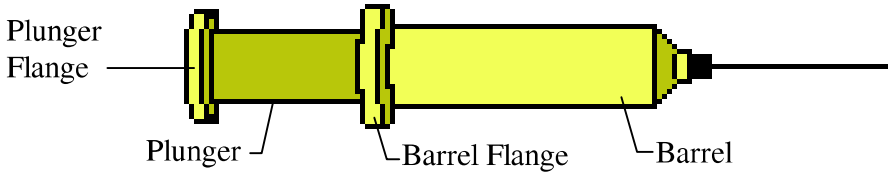
When a device has as many features as the NE-1000 family, understanding its operation could be a daunting task at first. By understanding the key concepts and terminology used in this manual, the

operation of the NE-300 will become quite intuitive. Every effort has been made to design the NE-300 with a consistent and intuitive user interface.
To facilitate and enhance your understanding of the NE-300's operation, please take the time to familiarize yourself with the basic concepts below:

Parts of the Pump

1) Pusher Block
2) End Plate
3) Power On/Off Switch
4) Drive-Nut Button
5) Drive-Screw
6) Syringe Holder Block
7) 'V' Slot (on Syringe Holder Block)
8) Syringe Holder
9) Keypad / User Interface
10) Guide Rod (2 guide rods)

Parts of a Syringe



Terminology

Momentary Press: A quick press, less then 1 second, then release of a key on the keypad.

Display Blink: A momentary blanking of the LCD display. This indicates that the new data entered by the user is valid and has taken affect.

3. Setup

- Place the pump on a stable surface.
- Plug the round connector end of the supplied power supply adapter into the power plug located on the lower right of the pump's rear. See section 8, Rear of Pump, for a diagram of the rear of the pump. Plug the other end of the power supply adapter into an appropriate electrical outlet. The pump will be powered when the bottom of the power switch, located on the upper right of the rear of the pump, labeled '1', is pressed. The red indicator on the switch is visible when the power switch is in the 'on' position. After power is applied to the pump, the pump's display will flash.
- Next the Pumping Parameters can be entered. Before the pump can be started, the pump needs the measurement of the inside diameter, in millimeters, of the syringe that will be loaded. The syringe diameter can be entered using the keypad on the front panel of the pump.
- Finally, the syringe can be loaded and the pump started.

4. Loading Syringes

The syringe is loaded by securing the barrel and the pusher flange as follows:

1: Press in fully the white **drive-nut button** on the **pusher block**, releasing the block. Taking care not to drag the drive-nut on the drive-screw, slide the block away from the syringe holder, providing sufficient space for the loaded syringe. Then release the white button.

2: Lift the **syringe holder** above the **syringe holder block**. Turn it 1/4 turn and then lower it onto the syringe holder block. The syringe holder should be out of the **'V' slot**.

3: Load the syringe with the **barrel** over the syringe holder and the syringe **plunger** towards the middle of the pump. Place the barrel on the syringe holder, in the 'V' slot, with the **barrel flange** to the left of the syringe holder block.

4: Lift the syringe holder to slightly above the height of the syringe barrel and turn the syringe holder 1/4 turn back to its original position and then lower it onto the syringe barrel.

5: Then press the white drive-nut button and slide the pusher block against the syringe plunger. Release the white drive-nut button.

⇒ To unload the syringe, reverse the instructions for syringe loading.

5. User Interface

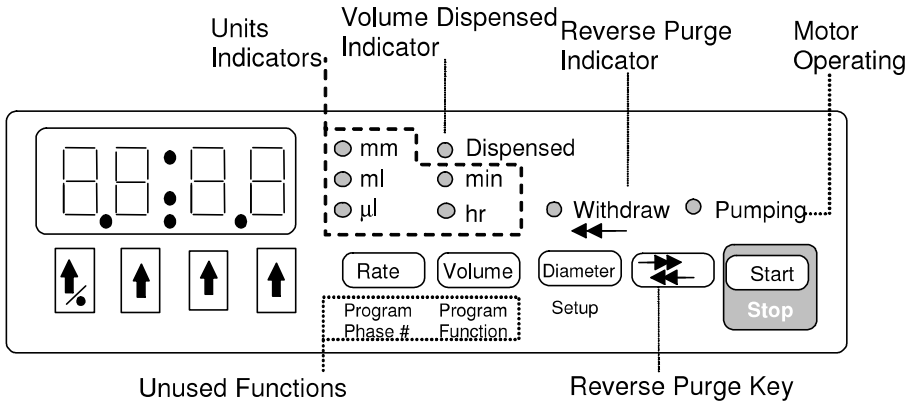


Figure 1: Front Panel

5.1 Entering Values

When applicable, values can be changed by displaying the current value, then using the arrow keys. The new value will be stored in the pump's non-volatile memory, meaning that the new value will not be lost the next time that power is applied to the pump.

A displayed value can be changed by pressing the arrow keys below each digit. If the value to be changed is not currently displayed, when applicable, press the key associated with the required value. The display will show the setting's current value and its units, if any.

While the current value is being changed, the units LEDs associated with the value, if any, will blink. Except where noted, the new value is stored, and/or the selected operation takes affect, when either

1) A non-arrow key is pressed or
2) After a 2 second delay since the last arrow key was pressed.

If the new value is valid and different from the original value, the display will blink, indicating that the new value was stored. Otherwise, if the value was invalid, an error message will be displayed. Pressing any key clears the error message and restores the original value.

In general, if a parameter has 2 values, 'off' and 'on', they are represented by the numbers '0' and '1', respectfully.

5.2 LCD Display

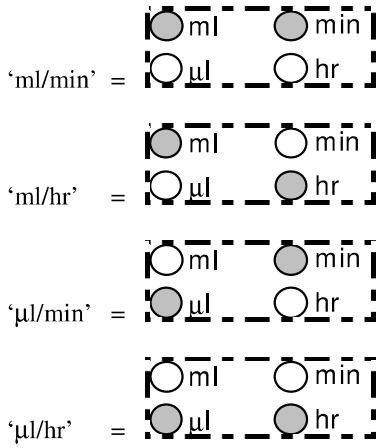
The display consists of a 4 digit reflective LCD display. This is the general purpose user display device for displaying floating point values, functions and parameters. The colon (:) is used for separating function abbreviations from their parameter values.

5.3 LEDs

To the right of the LCD are 8 red, round, LED indicators. The first 2 columns display the units of the displayed values. Units are expressed using 1 or 2 LEDs. For instance, 'ml / hr' is expressed by lighting the 'ml' and the 'hr' LEDs.

LED	Description
mm	Millimeters
ml	Milliliters
min	Minutes
µl	Microliters
hr	Hours
Withdraw ◄◄	Pumping Direction: Lit: Withdraw Purge Pumping
Dispensed	Displayed volume is dispensed volume
Pumping	Lit: Motor is operating Not lit: The Pump is stopped

Pumping rate units are expressed using 2 LEDs:



5.4 Arrow and Decimal Point Keys

Each of the four digits in the display is associated with the up arrow key directly below it. When applicable, the arrow key is used to increment the value of that digit, or advance to the next setting.

Each press of an up arrow key will increase the digit by 1, up to 9, and then back to 0. The arrow keys may also be held down for continuous incrementing of numbers. Some parameters have a fixed range of values, such as some setup parameters that are either turned on or off. In these cases, the arrow key will only scroll up to the maximum value for that parameter, then back to the minimum value.

When changing a value's units, each press of any arrow key will change the units LEDs to the next units selection.

When the display blinks, the new value is stored and takes affect. This will occur when a non-arrow key is pressed or after a 2 second delay since the last key press.

Decimal Point Key

There are 4 decimal point positions on the LCD display. Each decimal point position is to the right of a digit in the display. The last decimal point position, to the right of the right-most digit is not displayed, indicating whole numbers with no decimal point.

To change the position of the decimal point, use the left-most arrow key / decimal point key (↑/●). Press and hold this key for at least 1 second and wait until the left-most digit scrolls past '9' to '0'. While continuing to hold this key, the decimal point will shift 1 position to the right. After the right-most decimal point position, the decimal point will shift to the first decimal point position. Release the key when the decimal point is in the required position.

5.5 'Diameter' and 'Setup' Key

The 'Diameter' key allows the syringe inside diameter to be viewed and set. While displaying the diameter, the 'mm' LED is lit. With the Pump stopped, momentarily pressing this key will display the current diameter setting. Pressing the arrow keys will change the current diameter (see sec. 5.4, Arrow and Decimal Point Key). The 'mm' LED will blink while the diameter is being changed.

If the 'Diameter' key is pressed and held, 'Setup' mode will be entered. (see sec. 5.10, 'Setup').

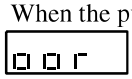
When the Pump is operating, pressing this key will display the current syringe diameter for review. When the key is released, the display returns to its previous display.

5.6 'Rate' Key

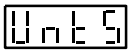
The 'Rate' key allows the pumping rate to be viewed or changed while pumping or stopped. While the pump is stopped, momentary presses of this key will switch between the 'Rate' display and the select rate units mode.

To change the pumping rate displayed, while pumping or stopped, use the arrow keys (see sec. 5.4, Arrow and Decimal Point Key). The rate units will blink while the rate is being changed. The new pumping rate is entered and takes affect immediately when the display blinks after a 2 second delay or when a non-

arrow key is pressed. The new pumping rate is stored in memory.

See section 9.5, "Syringe Diameters and Rate Limits", for a list of minimum and maximum pumping rates. A pumping rate of 0.0 will stop the pump. When the pumping rate is changed, if it is out of range of the pumping rate limits, the display will show  . Pressing any key clears the message and returns to the previous pumping rate.

5.6.1 Pumping Rate Units

The pumping rate units can only be changed when the Pump is stopped. A momentary press of the 'Rate' key will enter Rate Units Change mode. The 2 LEDs representing the units will blink and the display will show:  .

Each press of any arrow key selects the next rate units, as indicated by the blinking units LEDs. When the required rate units are blinking, press any non-arrow key or wait 2 seconds. The display will blink, indicating the rate units are stored in memory.

5.7 'Volume' Key

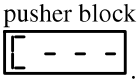
Pressing this key will display the "Volume Dispensed", as indicted by the 'Dispensed' LED. The units of the volume are set according to the syringe diameter, but can be changed.

5.7.1 Clearing "Volume Dispensed"

With the pump stopped and displaying the "Volume Dispensed", pressing and holding any arrow key for one second will reset the dispensed volume to 0.

Immediately after entering a new syringe diameter and before starting the pump, pressing any arrow key while displaying the "Volume Dispensed" will enter the "Set Volume Units" mode.

5.8 Reverse Purge Key

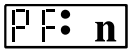
The direction key, '  ', is used to un-jam the pusher block after an over infusion, making it difficult to release the nut block. Press and hold this button for at lease 1 second to reverse purge the pump until the pusher block is released. Release this key to stop the pump. While this key is held, the display will show:  . The Withdraw and Pumping LED's will be lit during the reverse purge.

5.9 'Start'/'Stop' Key

The 'Start/Stop' key starts or stops the Pump's operation. Pressing this key switches between Pumping and the Pump stopped. The 'Pumping' LED will indicate that the Pump is pumping.

Pressing and holding this key while starting the Pump will start the purge mode. Purge will begin after the key is held for one second, and continue until the key is released. The pump stops after the key is released.

5.10 'Setup' Key

The secondary function of the 'Diameter' key is 'Setup'. While the Pump is stopped, press and hold the 'Diameter' key until the setup configuration parameter, "Power Failure Mode", is displayed:  .

The display will consecutively display (if applicable), for about 2 seconds, each Setup Configuration parameter and its current setting. Pressing any non-arrow key will immediately advance to the next Setup Configuration parameter, if any.

To change a Setup Configuration parameter, press an arrow key under the parameter's value. To store the new value, press any non-arrow key or wait 2 seconds. If the parameter value differs from its previous value, the display will blink. The new parameter value will be stored and the next parameter will be displayed, if any. See section 7, Setup Configuration for a complete description of the Setup Configurations.

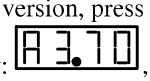
After the last configuration parameter is displayed, the display reverts back to displaying the syringe

diameter. Any new parameter value will take affect immediately upon being stored.

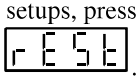
5.11 Special Power-Up Functions

The following special functions are accessed by pressing the relevant key, **while** turning on power to the pump.

5.11.1 Firmware Version Display

To display the pump's firmware version, press the **left-most arrow key** (↑/●) while turning on power to the pump. The display will show:  , or similar. Pressing any key will clear the display.

5.11.2 Reset Pumping Parameters

To clear out the current Pump setups, press the **right-most arrow key** (↑) while turning on power to the pump. The display will show  . Pressing any key will clear the display.

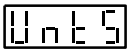
With a pump with as many complex features as the NE-1000 family, it is easy for a novice user experimenting with the pump's setup to get the pump into a 'weird' state. Performing this reset function will bring the pump out of a 'weird' state.

5.12 Error and Status Messages

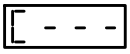

Value entered is 'Out Of Range' of the pump's operational limits. Check the pumping rate and/or the syringe inside diameter setting is correct.



Key pressed is not currently applicable.


Indicates pumping rate or volume units change mode. The units LED's will also be blinking. Press any arrow key to change the units.


Indicates that the pump is purging. Displayed while holding down the 'Start/Stop' key.


Displayed while holding down the direction key and while performing a reverse purge.

6. Operation

Before the pump can be operated, the pumping data must be setup. The syringe inside diameter and a non-zero pumping rate needs to be set. The operation of the pump can then be started by pressing the 'Start / Stop' key.

6.1 Syringe Inside Diameter

The syringe inside diameter can only be set while the Pump is stopped. Use the arrow keys to set the diameter value. While the diameter value is being set, the 'mm' LED will blink. The new diameter value is stored after pressing any non-arrow key, or after a 2 second delay.

Valid syringe diameters are from 0.1 mm to 50.0 mm. If the diameter is out of this range, the display will show 'oor'. Pressing any key restores the diameter display to its previous value. Changing the syringe diameter ***will not zero the pumping rate***. Section 9.5, "Syringe Diameters and Rate Limits", is a representative list, for reference, of syringe diameters for various syringe manufacturers and syringe sizes.

6.1.1 Volume Units: Default and How to Change

The units of the accumulated infusion volume is set according to the syringe diameter setting. If the default volume units are changed (see next section), the selected volume units will remain in effect until a reset function is performed.

From 0.1 to 14.0 mm	Syringes smaller than 10 ml:	Volume units are 'µl'
From 14.01 to 50.0 mm	Syringes greater than or equal to 10 ml:	Volume units are 'ml'

Changing Volume Units

The volume units used for the accumulated volume can be changed to either 'ml' or 'µl'. NOTE: Volume units can only be changed immediately after setting the syringe diameter and before the pump is started.

After the syringe diameter is entered, display the "Volume Dispensed" by pressing the "Volume" key. The current volume units and the "Dispensed" LED will be lit.

Pressing any arrow key will change the display to  and the current volume units will blink.

Then, press any arrow key to switch the volume units between 'ml' and 'µl'. Press any non-arrow key or wait 2 seconds to enter the new volume units. The display will blink when entered. The selected volume units will remain in effect and override the default volume units. Changing the diameter will no longer change the volume units. Performming a system reset will cancel the override and allow the volume units to change to the default volume units when setting the syringe diameter.

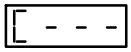
6.2 Operating the Pump

When the "Start/Stop" key is pressed, the Pump will begin pumping, and the 'Pumping' LED will be lit. The pump will pump continuously until stopped.

Either the pumping rate, "Volume Dispensed", or syringe diameter can be displayed while pumping. Press the relevant key to change the display. While displaying the pumping rate, press the arrow keys to change the pumping rate.

6.3 Purging

To purge the syringe, with the Pump stopped, press and hold the 'Start/Stop' key. The Pump will start pumping, then, after one second, purge will begin. The pump will pump at its top speed. Purging will continue until the 'Start/Stop' key is released, and then the pump will stop. While purging the display will show:  .

Press and hold the direction button, to perfrom a reverse purge. The display will show: 

6.4 Changing the Pumping Rate While Pumping

The pumping rate can be changed while the pump is operating. To change the pumping rate, display the current pumping rate by pressing the 'Rate' key, if needed. With the pumping rate displayed, press the arrow keys to change the rate. The rate units will blink while the rate is being changed. Rate units can not be changed while pumping.

The new rate is stored after a 2 second delay or by pressing a non-arrow key. If the new rate is within the operating range of the pump, the display will blink and the new rate will be stored in memory and the pump will begin pumping at the new rate. If the new rate is out of the operating range of the pump, the display will show  . Pressing any key clears the message and restore the previous rate.

6.5 Volume Dispensed

The accumulated Volume Dispensed can be displayed at any time by pressing the Volume key. The display will show the total accumulated volume pumped with the 'ml' or 'µl' LED lit and the 'Dispensed' LED lit. Volume is computed based upon the syringe inside diameter setting.

The "Volume Dispensed" accumulation is **reset to 0** when:

A) With the pump stopped, pressing and holding any arrow key while displaying the volume.
B) The syringe diameter is changed.
C) The accumulated Volume Dispensed rolls over from 9999 to 0.
D) The pump is powered on.

7. Setup Configuration: Set Power Failure Mode

To change or view the setup configuration, the Pump must be stopped. Press and hold the 'Diameter'/'Setup' key until the parameter, 'PF' is displayed. After 2 seconds, or when any non-arrow key is pressed, the next parameter will be displayed . (See sec. 5.10, 'Setup' Key). Pressing an arrow key under a value will increment the parameter. The following will be displayed:

PF: n **Power Failure Mode.** Where 'n' is the current setting.: '0' = Disabled, '1' = Enabled.

When enabled, if the Pump was pumping when power to the pump was disrupted, the Pump will automatically start pumping when power is reconnected to the pump. The accumulated volume will be reset to 0. Pressing any key on the keypad while powering up the pump will stop the Pump from starting in Power Failure Mode.

Ln: n **Low Noise Mode**, Where 'n' is the current setting.: '0' = Disabled, '1' = Enabled.

A side affect of the NE-300's high precision micro-stepped motor driver is a high frequency resonance sound at very low pumping speeds. This mode minimizes this sound by reducing the micro-stepping, increasing pulsations.

8. Rear of Pump

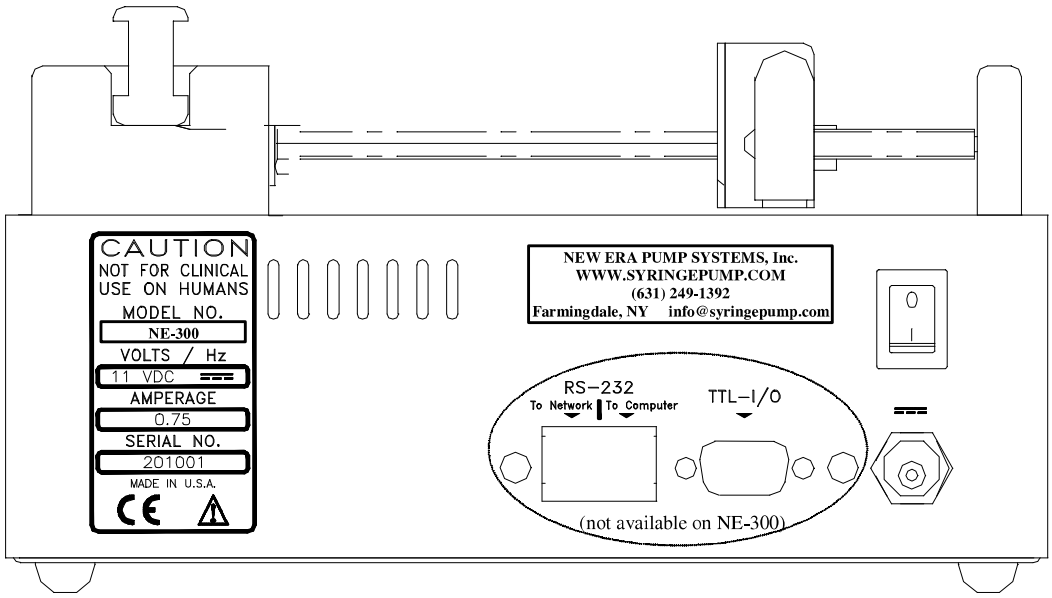


Figure 2: Rear of Pump

9. Appendix

9.1 Accessories

9.1.1 Syringe Heater

Part#: SYRINGE-HEATER, see www.SyringeHeater.com for details.

Flexible heating pad that wraps around the syringe. Digital PID controller will heat a syringe to a set temperature up to 100 C.

9.1.2 Firmware and Hardware Upgrade

Contact your dealer about upgrading your pump with other features from the NE-1000 Programmable Syringe Pump family. See www.SyringePump.com

9.2 Troubleshooting and Maintenance

Maintenance: Periodically, a small amount of all-purpose oil should be applied to the guide rods.

The mechanism should be kept clean to prevent impeded operation.

No other special maintenance or calibrations are needed

Pusher block makes a snap or click sound when the pump is started: This is a normal condition. When the pusher block is manually moved, the drive-nut may not have been fully engaged on the drive screw. The sound heard is the drive-nut engaging on the drive screw.

9.3 Specifications

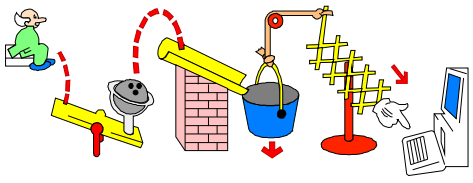
Mechanical & Electrical

Syringe sizes:	Up to 60 cc
Number of syringes:	1
Motor type:	Step motor
Motor steps per revolution:	400
Microstepping:	1/8 to 1/2 depending on motor speed
Advance per step:	0.2126 uM to 0.8504 uM depending on motor speed
Motor to drive screw ratio:	15/28
Drive screw pitch:	20 revolutions/"
DC connector:	2.1 mm, center positive
Voltage at DC connector:	12V DC at full load
Amperage:	750 mA at full load
Power supply type:	Unregulated linear external wall adapter, country and power source specific
Power supply output rating:	12V DC @ 800 mA
Dimensions:	8 3/4" x 5 3/4" x 4 1/2" High (22.86 cm x 14.605 cm x 11.43 cm)
Weight:	3.6 lbs. (1.63 kg)
Allen Wrench	3/32 Hex

Operational

Maximum speed:	3.7742 cm/min
Minimum speed:	0.004205 cm/hr
Maximum pumping rate:	1257 ml/hr with a B-D 60 cc syringe
Minimum pumping rate:	0.73 µl/hr with a B-D 1 cc syringe
Maximum force:	35 lbs. at minimum speed, 18 lbs. at maximum speed
Syringe inside diameter range:	0.100 to 50.00 mm

9.4 Custom Applications



For specialized and OEM applications, contact your dealer or New Era Pump Systems Inc. Custom modifications can be made to the mechanics or the firmware.

9.5 Syringe Diameters and Rate Limits

New Era Pump Systems Inc.
www.SyringePump.com

Model: NE-300 syringe pump

Maximum and minimum flow rates

Syringe Manufacturer	Syringe (cc)	Inside Diameter (mm)	Maximum Rate (mL/hr)	Minimum Rate (µl/hr)		Maximum Rate (mL/min)
B-D	1	4.699	39.27	0.73		0.6545
	3	8.585	131	2.434		2.184
	5	11.99	255.6	4.748		4.261
	10	14.43	370.3	6.876		6.172
	20	19.05	645.4	11.99		10.75
	30	21.59	829	15.4		13.81
	60	26.59	1257	23.35		20.95
HSW Norm-Ject	1	4.69	39.11	0.727		0.6519
	3	9.65	165.6	3.076		2.76
	5	12.45	275.6	5.119		4.594
	10	15.9	449.6	8.349		7.493
	20	20.05	714.9	13.28		11.91
	30	22.9	932.6	17.32		15.54
	50	29.2	1516	28.16		25.27
Monoject	1	5.74	58.59	1.088		0.9766
	3	8.941	142.1	2.64		2.369
	6	12.7	286.8	5.326		4.78
	12	15.72	439.4	8.161		7.324
	20	20.12	719.9	13.37		11.99
	35	23.52	983.8	18.27		16.39
	60	26.64	1262	23.44		21.03
	140	38.00		47.69		42.80
Terumo	1	4.7	39.28	0.73		0.6547
	3	8.95	142.4	2.646		2.374
	5	13	300.5	5.581		5.009
	10	15.8	443.9	8.244		7.399
	20	20.15	722.1	13.41		12.03
	30	23.1	949	17.63		15.81
	60	29.2	1516	28.16		25.27
Air-Tite	10	15.9	449.6	8.349		7.493
	20	20.25	729.2	13.55		12.15
	30	22.5	900.3	16.72		15
	50	29	1495	27.78		24.92

	Syringe (µL)	Inside Diameter (mm)	Maximum Rate (µl/hr)	Minimum Rate (µl/hr)
Hamilton Microliter	0.5	0.103	18.86	0.001
	1	0.146	37.91	0.001
	2	0.206	75.47	0.002
	5	0.326	189	0.004
SGE	0.5	0.1	17.78	0.001
	1	0.15	40.01	0.001

New Era Pump Systems, Inc.

Models

NE-1000 Single Syringe Pump

NE-4000 Double Syringe Pump

NE-1600/NE-1800 Multi-Syringe Pumps

NE-500 OEM Syringe Pump

NE-300 "Just Infusion"™

NE-1002X Microfluics Syringe Pump

NE-9000 Dispensing Peristaltic Pump

NE-7000 Adhesive Dispenser

Disruptor, Homogenizer & Rocker

Accessories

Syringes and Plumbing Supplies

Pump Accessories

Syringe Heater

Closed Loop Analog Sensor Interface

Example Applications

In the many years that we have been designing and manufacturing syringe pumps, we have come across hundreds of applications. If your application is not listed or if you have a new application, please give us a call.

High Pressure

Electrospinning

Microfluidics

Continuous Operation Dispensing System (Push-Pull)

Variable Concentration/Constant Flow

Automated Dispensing System

Anti-Drip

Design Services

Special Applications
Continuous Infusion, Dual Pump System
Linear / Gradient Pumping Upgrade
Pumping Program Memory Upgrade
OEM Pump & Other Design Services

Resources
Research Papers
Frequently Asked Questiions

High Pressure

Many end users deal with highly viscous fluids. For these applications, we have a few accomodations.

- We have a high pressure syringe pumps including the NE-1010 and NE-510, NE-511, NE-510L, NE-511L.
- Our Syringe Heater Kit, by heating up the fluid, can reduce the viscosity of your fluid.
- If you are heating your media, you will likely need either a Glass or Stainless Steel Syringe.

Electrospinning

Electrospinning uses an electrical charge to draw very fine (typically on the micro or nano scale) fibres from a liquid which is dispensed at a constant rate from a syringe pump. Common pumps used for electrospinning are the NE-300, NE-500 & NE-1000. You can reference some university studies on our research papers webpage which sites, among other topics, universities that have used our pumps for electrospinning research. Contact us to get information on properly performing electrospinning with our syringe pumps. Many electrospinning users need to heat their polymer. A great way to heat your polymer is with our market exclusive Syringe Heater Kit. Also, if you are heating your polymer, you will likely need either a Glass or Stainless Steel Syringe.

Microfluidics

Microfluidics deals with the behavior, precise control and manipulation of fluids that are geometrically constrained to a small, typically sub-millimeter, scale. Typically, micro means one of the following features:

- small volumes (nl, pl, fl)
- small size
- low energy consumption
- effects of the micro domain

It is a multidisciplinary field intersecting engineering, physics, chemistry, microtechnology and biotechnology, with practical applications to the design of systems in which such small volumes of fluids will be used. Microfluidics emerged

in the beginning of the 1980s and is used in the development of inkjet printheads, DNA chips, lab-on-a-chip technology, micro-propulsion, and micro-thermal technologies.

Many of New Era's pumps are used for microfluidics, however, we have a specific pump, the NE-1002X Microfluidics Syringe Pump, which has the specific capacity to smoothly deliver fluids in nl and pl amounts. The NE-1002X is the best in the market because it delivers the smoothest flow by having the least amount of pulses. You can reference some university studies on our research papers webpage which sites, among other topics, universities that have used our pumps for microfluidics research.

Continuous Operation Dispensing System (Push-Pull)

Quickly and economically create a continuous operation dispensing system with 2 pumps in reciprocating operation. With just an automation cable and a valve system, the pumps can be synchronized to infuse while the other is refilling, and start and stop simultaneously.

Variable Concentration/Constant Flow

Control a chemical's concentraion from an external voltage source. Using 2 pumps, one for the chemical and one for the dilution fluid, attach each pump to an AnaBox™ analog controller. With both pump systems attached to the same voltage control, as the chemcial pump changes flow rate, the dilution fluid compensates its flow rate to add up to a constant flow rate system.

Automated Dispensing System

The NE-1000 can be setup as an automated dispensing system which dispenses a set volume after a programmed time delay. Then after each dispense, a small volume can be sucked back to prevent dripping.

A multiple chemical dispensing application can be implemented with multiple pumps. The pumps can be configured to send signals between them to synchronize the dispense and react to changes in sensors.

Setup an infusion/withdrawal dispensing system to automatically synchronize itself after a power failure by attaching a refill sensor.

Pre-program an entire production shift's dispenses on an automated production line. Each dispense can be a different volume and flow rate. Change flow rates during dispenses. Synchronize the start of each dispense with an external signal from other equipment, the operator pressing the 'Start' button, pressing a foot switch, or automatically after a time delay. Have the pump sound a beep to alert the operator at any time.

Anti-Drip

Prevent dripping after a dispense by programming a volume to be sucked back after each dispense.