

Syringe Manufacturer (all names TM)	Syringe (mL)	Inside Diameter (mm)	Maximum Rate (µL/hr)	Minimum Rate (nL/hr)	Maximum Rate (µL/min)			
B-D	1	4.699	2141	13.38	35.69			
	3	8.585	7149	44.64	119.1			
	5	11.99	9999	87.07	232.4			
	10	14.43	9999	126.2	336.6			
	20	19.05	9999	219.8	586.7			
	30	21.59	9999	282.4	753.6			
HSW Norm-Ject	1	4.69	2133	13.33	35.56			
	3	9.65	9033	56.41	150.5			
	5	12.45	9999	93.88	250.5			
	10	15.9	9999	153.2	408.7			
	20	20.05	9999	243.5	649.9			
	30	22.9	9999	317.7	847.8			
Monoject	1	5.74	3196	19.96	53.26			
	3	8.941	7754	48.42	129.2			
	6	12.7	9999	97.69	260.7			
	12	15.72	9999	149.7	399.5			
	20	20.12	9999	245.2	654.4			
	35	23.52	9999	335.1	894.3			
	60	26.64	9999	429.9	1147			
	140	38	9999	874.6	2334			
Terumo	1	4.7	2142	13.38	35.71			
	3	8.95	7770	48.52	129.5			
	5	13	9999	102.4	273.2			
	10	15.8	9999	151.2	403.6			
	20	20.15	9999	246	656.4			
	30	23.1	9999	323.2	862.7			
Poulten & Graf (Glass)	1	6.7	4354	27.19	72.57			
	2	8.91	7700	48.09	128.3			
	3	9.06	7962	49.72	132.7			
	5	11.75	9999	83.62	223.2			
	10	14.67	9999	130.4	347.9			
	20	19.62	9999	233.2	622.3			
	30	22.69	9999	311.9	832.3			
	50	26.96	9999	440.3	1175			
Steel Syringes	1	9.538	8824	55.1	147			
	3	9.538	8824	55.1	147			
	5	12.7	9999	97.69	260.7			
	8	9.538	8824	55.1	147			
	20	19.13	9999	221.7	591.6			
	50	28.6	9999	495.5	1322			
SGE (Glass – Gas Tight)	Syringe (µL)	Inside Diameter (mm)	Maximum Rate (µL/hr)	Minimum Rate (nL/hr)	SGE Syringe (mL)	Inside Diameter (mm)	Maximum Rate (µL/min)	Minimum Rate (nL/hr)
	5	0.343	11.41	0.072	0.25	1.03	8.574	3.213
	10	0.485	22.81	0.143	0.5	3.257	17.15	6.425
	25	0.728	51.41	0.321	1	4.606	34.29	12.85
	50	1.03	102.9	0.643	2.5	7.284	85.77	32.14
100	1.457	205.9	1.286	5	10.3	171.5	64.26	
Hamilton Microliter (Glass)	0.5	0.103	1.029	0.007	10	14.57	343.2	128.6
	1	0.1457	2.067	0.013	25	23.03	857.4	321.3
	2	0.206	4.116	0.026	50	27.5	1222	458.1
	5	0.3257	10.3	0.065	100	34.99	1979	741.6

Specifications

Model	Style	Stall Detection	Number of Syringes	Maximum Syringe Size
NE-4002X	Stand-Alone	Yes	2	60 mL; 140 mL partially filled
NE-4502X	OEM	Yes	2	60 mL; 140 mL partially filled

Rate & Volume Units:

Rate Units: nL/hr, μ L/hr, nL/min, μ L/min

Volume Units: nL, μ L

RS-232 Command Modifications from Standard NE-1000 Series

Rate Command:

RAT [C | I] [<float> [NM | UM | NH | UH]]

Volume Target and Set Volume Units Command:

VOL [<float> | { NL | UL }]

NM = nL/min

UM = μ L/min

NH = nL/hr

UH = μ L/hr

NL = nL

UL = μ L

Mechanical

Motor type:	Step motor
Motor steps per revolution:	400
Motor gearbox reduction:	26.832:1
Motor to drive screw ratio:	15/28
Drive screw pitch:	20.32 revolutions/”
Micro-stepping:	1/16 to 1/2 depending on motor speed
Advance per step:	3.899511644 nm to 31.19609315 nm depending on motor speed
Dimensions:	8 3/4” x 5 3/4” x 4 1/2” (LxWxH) (Non-OEM versions) (22.86 cm x 14.605 cm x 11.43 cm)
Weight:	3.8 lbs. (1.63 kg)

Electrical

Power supply type:	External wall adapter, power source specific
Power supply output rating:	12V DC @ 1000 mA
Power connector:	2.1 mm, center positive, DC
Voltage at power connector:	12V DC at full load
Amperage:	750 mA at full load

Operational

Accuracy:	Within 1% error
Reproducibility:	Within 0.1% error
Maximum force:	150 lbs. at minimum speed, 28 lbs. at maximum speed
Syringe inside diameter range:	0.100 to 50.00 mm
Maximum speed:	0.205849543 cm/min
Minimum speed:	7.71144E-05 cm/hr
Maximum pumping rate:	1143 μ L/min with a B-D 60 mL syringe
Minimum pumping rate:	13.38 nL/hr with a B-D 1 mL syringe
Number of Program Phases:	41
RS-232 pump network:	100 pumps maximum
RS-232 selectable baud rates:	300, 1200, 2400, 9600, 19200