



Dual Resolution Syringe model **DRS 18/340** for Hamilton PSD4 type drive

CONCEPT by Spec sheet [DRD PN 81324-212-18/340]

Total height is 2.9" at the top compressed Home position, 3.3 at the resolution mode transition level (shown in photo) and 3.6" at the full extended bottom aspiration position. The resolution Multiplier is 25, corresponding to having resolution like a 100 uL syringe in the Differential mode and resolution/flow like a 2.5 mL syringe in the Single mode. The Hamilton PSD/4 drive has microstep mode resolution of 0.0000492"/microstep (subsequently referred to just as "steps"). Full excursion uses 16,700 steps and 250 microsteps backlash correction is recommended.

Motor drive resolution and speed are the same throughout for both the Differential and Single displacement modes.

0.0000492 inches per step

Slowest speed is 0.002 "/sec obtained from 41 steps/sec

Fastest speed is 1.14 "/sec obtained from 23,200 steps/sec

Differential Displacement: resolution is same as 100 uL syringe

8,660 steps (steps 0 - 8,600)

0.426 inches

42.4 uL/inch

2.08 nanoliters/step

Maximum volume 18 uL

Flow range 0.08 uL/sec min to 48.3 uL/sec max

Separation level (mode transition) is 9,400 steps = 0.46" down from Home.

No-Man's land is 1,478 steps (steps 8,661-10,139) = 0.073"

Single Displacement: resolution/flow same as a 2.5 mL syringe

6,560 steps (10,140- 16,700)

0.322 inches

1,058.4 uL/inch

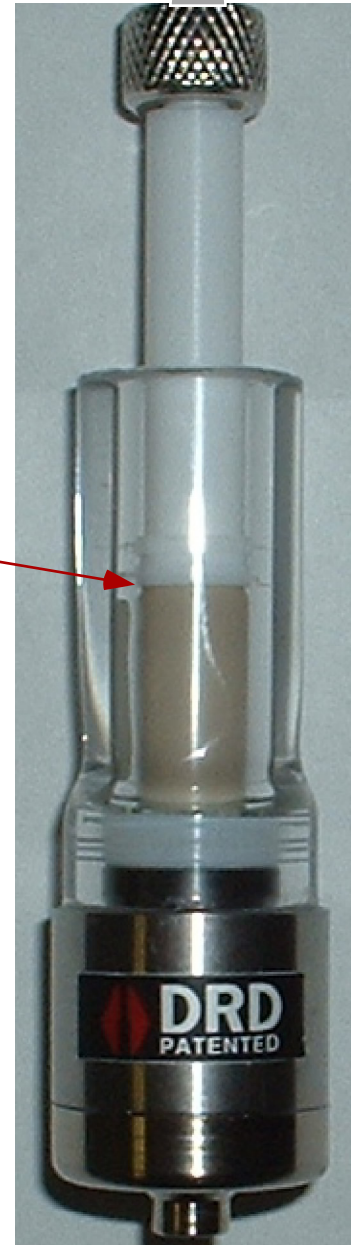
0.05208 uL/step

Maximum volume 342 uL

Flow range 2.12 uL/sec min to 1208.4 uL/sec max

Total steps used is 16,700 for 0.822 " total excursion

Blastoff tip escape velocity through 0.012" ID probe tip is 4 meters/sec at standard default speed (0.3 in/sec) and 16 m/sec at max speed (1.14 "/sec). With 0.016" ID probe tip, escape velocity is 2.3 m/sec at standard and 9 m/sec at max speed.



Mode Transition Level
scale 200%