



DRDTM
Liquid Handling

Dual Resolution Syringe model **DRS 15/300**
for Cavro XP 3000 type drive [DRD PN 81324-112]

CONCEPT by Spec sheet

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 Cavro XP3000 drive has microstep mode resolution of 0.0000492"/microstep (subsequently referred to just as "steps"). Full excursion uses 15,000 steps and 250 steps 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

7,300 steps (steps 0 - 7,300)

0.36 inches

42.4 uL/inch

2.08 nanoliters/step

Maximum volume 15 uL

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

Separation level (mode transition) is 8,200 steps = 0.40" down from Home.

No-Man's land is 1,798 steps (steps 7,301-9,099) = 0.089"

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

5,900 steps (9,100 - 15,000)

0.29 inches

1,058.4 uL/inch

0.05208 uL/step

Maximum volume 307 uL

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

Total steps used is 15,000 for 0.74 " total excursion

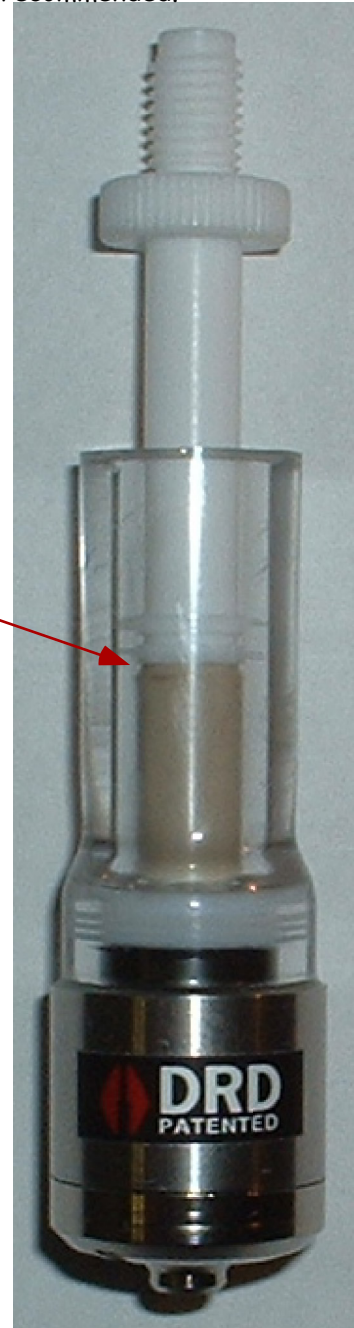
Blastoff tip escape velocity through 0.012" ID probe tip is

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%