```
clear;

g = 9.81; % gravity
P1 = 240000;
L = 0.5;
v_water = 1e-6;
D_bottle = 0.1;
D_tube = 0.01;
D_nozzle = 0.005;
rho = 1000;

h_L_minor = @(V) 0.5*(1-(D_tube/D_bottle)^2)*(D_nozzle/D_tube)^4*V.^2 / (2*g) + 0.5*(1 -
 (D_nozzle/D_tube)^2)*V.^2 / (2*g);

Re_old = 0;
Re_new = 1e9;
eps = 1e-2;
syms f_ positive
syms V_ positive
counter = 0;
while abs(Re_old - Re_new) > eps
    counter = counter + 1;
    Re_old = Re_new;
    f_calc = vpasolve(1/sqrt(f_) == 2.0*log10(Re_old*sqrt(f_)) - 0.8);

    % calculate V_out
    h_L_major = @(V) f_calc*L/D_tube * (D_nozzle/D_tube)^4*V.^2 / (2*g);

    bern_eq = @(V) P1 + 0.5*rho*(D_nozzle/D_bottle)^4 * V.^2 - rho*g*h_L_minor(V) - rho*
g*h_L_major(V) - 0.5*rho*V.^2;

    V_out = solve(bern_eq(V_) == 0,  V_);

    Re_new = V_out * D_tube / v_water;

end

V_out
counter
```

```
V_out =

18.158430017133708070925831898299


counter =

     5
```

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