Observations and Results:

Kinematic viscosity of air, υ (m^2/s)	0.0000148
Room Temp.	15◦C
Atm. Pressure	76cm of Hg
Angle of inclination of manometer 1 (pressure drop)	38
Angle of inclination of manometer 2 (velocity)	0
Diameter of pitot tube, d(cm)	7.87
Diameter of duct, D (cm)	13.97

Radial location (m)	**Total Head(cm)**	**Static Head(cm)**	**u(r) (m/s)**	**△u (m/s)**
0.06985	30	30	0.000	
0.0448	34.5	26.5	35.742	0.447
0.0384	35.9	25	41.720	0.383
0.032	36.2	24.1	43.956	0.363
0.0256	37	23.4	46.601	0.343
0.0192	37.4	22.9	48.119	0.332
0.0128	37.9	22.4	49.750	0.321
0.0064	38	22	50.546	0.316
0	38.2	21.9	51.018	0.313
-0.0064	38.1	22	50.704	0.315
-0.0128	37.9	22.1	50.229	0.318
-0.0192	37.5	22.7	48.614	0.328
-0.0256	37	23	47.282	0.338
-0.032	36.7	23.3	46.257	0.345
-0.0384	36	24	43.774	0.365
-0.0448	35	25	39.960	0.400
-0.06985	31	31	0	

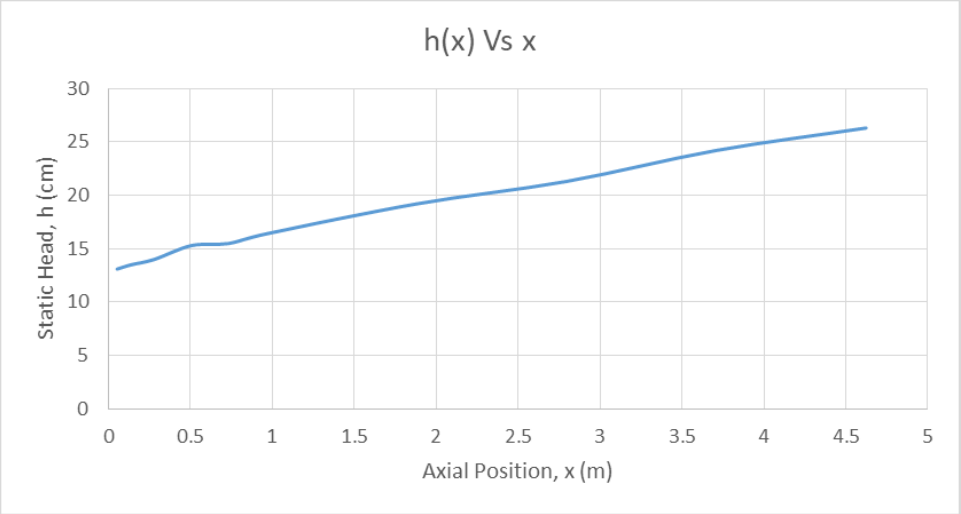
Axial Position, x (m)	Static Head, h(x) (cm)	Pressure, P (Pa)	dP/dx (Pa/m)	△(dp/dx) (Pa/m)	△P (Pa)
0.054	13.1	788.819			6.022
0.1397	13.5	812.905	281.051	141.181	6.022
0.2794	14	843.013	215.516	86.515	6.022
0.508	15.3	921.293	342.431	52.981	6.022
0.7366	15.5	933.336	52.682	52.728	6.022
0.9652	16.4	987.529	237.068	52.889	6.022
1.8796	19.2	1156.132	184.386	13.211	6.022
2.794	21.3	1282.584	138.290	13.201	6.022
3.7084	24.2	1457.208	190.971	13.212	6.022
4.6228	26.3	1583.660	138.290	13.201	6.022

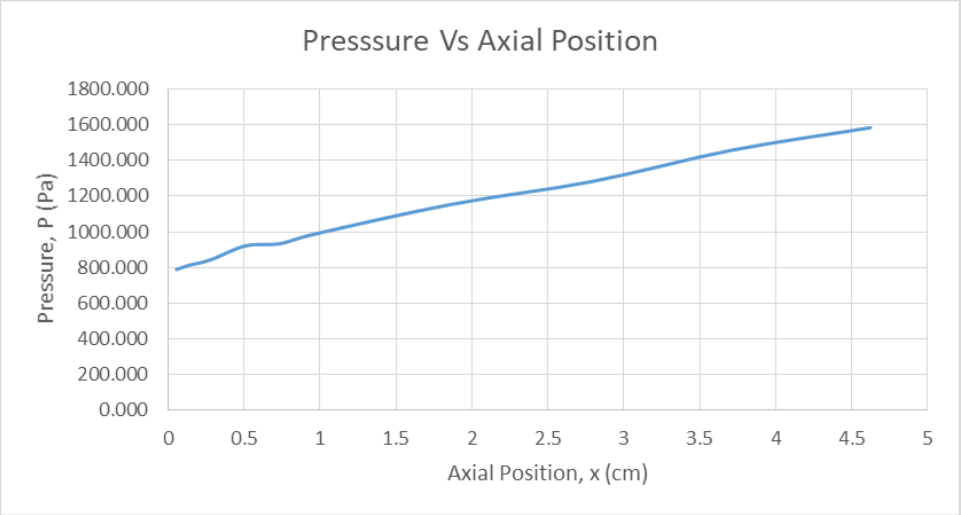
Average velocity, U (m/s)	28.150
Vol. Flow rate, Q (m^3/s)	0.431
K	1.812
Reynolds Number	265715.424
Blassius Friction Factor	0.014
dp/dx (Pa/m)	138.290
Experimental Friction Factor	0.040

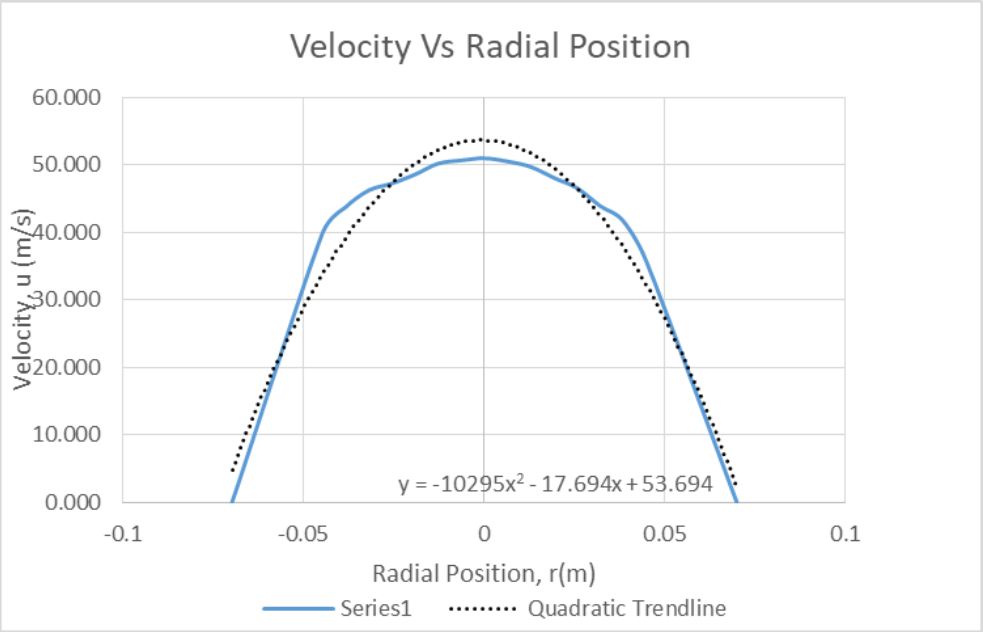
Error Analysis:

△U	4.171
△Q	0.064
△K	0.280
△Re	39366.795
△fbl	0.001
△dp/dx	13.212
△f	0.016

Plots:


h(x) Vs x
Static Head, h (cm)
30
25
20
15
10
5
0
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Axial Position, x (m)


Presssure Vs Axial Position
Pressure, P (Pa)
1800.000
1600.000
1400.000
1200.000
1000.000
800.000
600.000
400.000
200.000
0.000
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Axial Position, x (cm)


Velocity Vs Radial Position
Velocity, u (m/s)
60.000
50.000
40.000
30.000
20.000
10.000
0.000
y = -10295x² - 17.694x + 53.694
-0.1
-0.05
0
0.05
0.1
Radial Position, r(m)
Series1
Quadratic Trendline