NCSX Pumping Speed

Note: All pumping speeds and conductances are for air and in l/s
$1/C_T = 1/C_1 + 1/C_2 + \ldots + 1/C_n$ (for conductances and pumps in series)
$C_T = C_1 + C_2 + \ldots\ldots + C_n$ (for conductances and pumps in parallel)
Reference: A. Roth, Vacuum Technology 3rd Edition

Effective pumping speed of 2 TMPs in parallel to the large pumpduct

	1st pump to 24" main duct	2nd pump up to 24" main duct
TMP=	**1,450**	**1,450**
Component	TIV	TIV
Conductance diameter in inches=	10.0	10.0
Conductance length in inches=	5.5	5.5
Conductance=	**14,196**	**14,196**
Component	Elbow and Spool Piece	Elbow and Spool Piece
Conductance diameter in inches=	13.5	13.5
Conductance length in inches=	32.0	32.0
Conductance=	**6,003**	**6,003**
Effective pumping speed of each TMP to duct=	**1,079**	**1,079**

Effective pumping speed of 2 TMPs in parallel to main duct (S_1) = 2,158

Calculation of conductances in series

Component	Vertical 24" duct
Conductance diameter in inches=	23.25
Conductance length in inches=	90
Conductance=	**10,903**
Component	Transition to NB duct
Conductance diameter in inches=	13.5
Conductance length in inches=	22
Conductance=	**8,732**
Component	Vertical part of NB duct
Length of 1st side in inches=	13.5
Length of 2nd side in inches=	20.0
Conductance length in inches=	17
Conductance=	**29,848**

Component	Horizontal part of NB duct
Length of 1st side in inches=	13.5
Length of 2nd side in inches=	33
Conductance length in inches=	10
Conductance=	**99,522**

Component	NB port spool piece extension
Conductance diameter in inches=	23
Conductance length in inches=	23
Conductance=	**41,303**

Component	NB port spool piece
Conductance diameter in inches=	23
Conductance length in inches=	6
Conductance=	**158,330**

Effective conductance of components in series from 24" main duct to the VV (C_1) = 3567

Approximate effective NCSX pumping speed {$S_{eff}=(S_{1*} C_1)/(S_1+ C_1)$} = 1,345