Flow Volume Loop in Health and Disease

Obstructive
An obstructive ventilatory defect is a disproportionate reduction of maximal airflow from the lung in relation to the maximal volume (i.e., VC) that can be displaced from the lung. The degree of abnormality can be defined using the number of standard deviations from the norm (Z-scores), percentiles (1-5) from the reference value, lower limits of normal, or the percentage of the reference value.

step 1: identify presence of obstruction
ratio of FEV1 divided by VC (FEV1/VC)
is reduced or below the lower limits of normal

step 2: identify degree of obstruction

Restrictive
A restrictive ventilatory defect is the reduction of total lung volume. Since the airways are normal, the flow volume loop will have a normal shape, only smaller with a lower pointed peak flow and volume.

To obtain an accurate diagnosis and totally eliminate the opportunity for effort-related results, spirometry and plethysmography or nitrogen washout is strongly recommended. Spirometry with good expiratory effort and accurate measurement of volume can suggest restriction. If restriction is present, plethysmography or nitrogen washout can confirm the degree.