The hemiazygos vein, which forms part of the azygos system, varies in origin and level of anastomoses. It is formed by the left ascending lumbar and subcostal veins and ascends anterior to the bodies of the twelfth to eighth thoracic vertebrae posterior to the aorta. It passes behind the median arcuate ligament or through the left crus of the diaphragm where it passes to the right to join the azygos vein.

It receives the ninth to eleventh posterior intercostal veins and may join with the accessory hemiazygos vein before draining into the azygos vein.