```vb
Sub InsertManwayIntoAssembly()
        ' This code places the selected manway into our assembly, if applicable
        ' Manways are always place on the rear dish head plate
        ' We first need to calculate the Z-value to place our manway so it doesn't interfere with the dish head plate
        Dim dblHorizontalOffset As Double
        ' This calculates our initial horizontal offset based on the length of the tank, and placement on the dish head plate
        If MANWAY_VERT_OFF < 0 Then
                dblHorizontalOffset = -(TANK_L / 2 - (MANWAY_VERT_OFF / (TANK_OD / 2)) * DISH_DEPTH + MANWAY_HOR_OFF)
        Else
                dblHorizontalOffset = -(TANK_L / 2 + (MANWAY_VERT_OFF / (TANK_OD / 2)) * DISH_DEPTH + MANWAY_HOR_OFF)
        End If

        ' Even though we made an initial calculation for horizontal placement, there was some interference with the dish head plate
        ' With more time, I could have come up with a better calculation than the one above that would have been more accurate
        ' For the sake of timing and getting this done, I added different offset values based on empirical testing
        ' First, we start with the code to place a 21 inch manway, if that has been selected
        If MANWAY_SIZE = 21 in Then
                If TANK_OD >= 54 in  And TANK_OD <= 90 in   Then dblHorizontalOffset -= 6 in
                If TANK_OD >= 96 in  And TANK_OD <= 102 in   Then dblHorizontalOffset -= 4 in
                If TANK_OD >= 108 in  And TANK_OD <= 114 in   Then dblHorizontalOffset -= 2.5 in
                If TANK_OD = 120 Then dblHorizontalOffset -= 1 in
                If TANK_OD = 138 Then dblHorizontalOffset += 1 in
                If TANK_OD = 144 Then dblHorizontalOffset += 2 in
                ' In order to locate where to put the manway assembly in our master assembly file, we will use matrix positioning
                ' See presentation included in this kit that explains how matrix positioning works - it's easier than it looks or sounds
                Dim matrixD = ThisDoc.Geometry.Matrix(-1, 0, 0, 0, 0, 1, 0, MANWAY_VERT_OFF, 0, 0, -1, dblHorizontalOffset, 0, 0, 0, 1)
                ' This can be taken from an iLogic snippet, and is used to insert components into assemblies
                ' This code inserts the selected manway assembly into our master tank assembly file
                ' Instead of placing at the origin, it places it based on our input matrix we created (matrixD)
                ' Note that we are grounding all geometry, and we are not using any constraints to place the manway
                Dim componentD = Components.Add("Manway 21 Inch:1", LIBRARY_PATH & "Manways\21 Inch\21 in Manway.iam", _
                                                            position := matrixD, grounded := True, visible := True, appearance := Nothing)
        ' Next is the code to place the 22 inch manway, if that has been selected
        ElseIf MANWAY_SIZE = 22 in  Then
                If TANK_OD >= 54 in And TANK_OD <= 60 in Then dblHorizontalOffset -= 3 in
                If TANK_OD >= 66 in And TANK_OD <= 78 in Then dblHorizontalOffset -= 4 in
                If TANK_OD >= 84 in And TANK_OD <= 90 in Then dblHorizontalOffset -= 2 in
                If TANK_OD >= 96 in And TANK_OD <= 102 in Then dblHorizontalOffset -= 1 in
                If TANK_OD >= 132 in And TANK_OD <= 138 in Then dblHorizontalOffset += 2 in
                If TANK_OD = 144 Then dblHorizontalOffset += 3 in
                ' In order to locate where to put the manway assembly in our master assembly file, we will use matrix positioning
                ' See presentation included in this kit that explains how matrix positioning works - it's easier than it looks or sounds
                Dim matrixE = ThisDoc.Geometry.Matrix(0, 0, 1, 0, -1, 0, 0, MANWAY_VERT_OFF, 0, -1, 0, dblHorizontalOffset, 0, 0, 0, 1)
                ' This can be taken from an iLogic snippet, and is used to insert components into assemblies
                ' This code inserts the selected manway assembly into our master tank assembly file
                ' Instead of placing at the origin, it places it based on our input matrix we created (matrixE)
                ' Note that we are grounding all geometry, and we are not using any constraints to place the manway
                Dim componentE = Components.Add("Manway 22 Inch:1", LIBRARY_PATH & "Manways\22 Inch\22 in Manway.iam", _
                                                            position := matrixE, grounded := True, visible := True, appearance := Nothing)
        Else
                If TANK_OD >= 114 in And TANK_OD <= 126 in  Then dblHorizontalOffset += 2 in
                If TANK_OD >= 132 in And TANK_OD <= 138 in   Then dblHorizontalOffset += 3 in
                If TANK_OD = 144 in Then dblHorizontalOffset += 4.5 in
                ' In order to locate where to put the manway assembly in our master assembly file, we will use matrix positioning
                ' See presentation included in this kit that explains how matrix positioning works - it's easier than it looks or sounds
                Dim matrixF = ThisDoc.Geometry.Matrix(0, 0, 1, 0, -1, 0, 0, MANWAY_VERT_OFF, 0, -1, 0, dblHorizontalOffset, 0, 0, 0, 1)
```

```vb
            ' This can be taken from an iLogic snippet, and is used to insert components into assemblies
            ' This code inserts the selected manway assembly into our master tank assembly file
            ' Instead of placing at the origin, it places it based on our input matrix we created (matrixF)
            ' Note that we are grounding all geometry, and we are not using any constraints to place the manway
            Dim componentF = Components.Add("Manway 25 Inch:1", LIBRARY_PATH & "Manways\25 Inch\25 in Manway.iam", _
                                                position := matrixF, grounded := True, visible := True, appearance := Nothing)
        End If
End Sub
```