

Same obj ID as included in the line object

In order for a Measure object to work correctly, it needs to be within the Bounding box (BBox) of a /VP or viewport object. A list of all viewports for a given page are provided in the pages library.

```
5 0 obj<</Type/Page/Parent 4 0 R/MediaBox[0 0 612 792]/Annots 13 0 R/VP 18 0 R>>
```

The Lines Page is defined as an xref_key /P

The page will include a /VP which is a list of all viewports on a page

```
11 0 obj<</Subj(HSS4X4X1/4)/Type/Annot/P 5 0 R/F 4/C[1 1 0]/CreationDate(D:20240203173713-05'00')/T(nickc)/Subtype/Line/DS
(font: Helvetica 12pt; text-align:center; line-height:13.8pt; color:#0000FF)/BS<</W 5/S/S/Type/Border>>/IC[1 1 0]/LL 0.
1566228/LLE 2/Cap true/MeasurementTypes 130/SlopeType 0/PitchRun 12/IT/LineDimension/BM/Multiply/Measure 21 0 R/
BSIColumnData[( ) (336.87) (HSS4X4X1/4) (12.21) (1) ( ) ( ) ( ) ( ) ( ) ( ) (0.00) (No) (0.00) ( ) (No) (Error)]/M(D:20240203173720-05'00')/L
[138.8228 555.1846 511.2854 555.1846]/AP<</N 17 0 R>>/RC(<?xml version="1.0"?><body xmlns:xfa="http://www.xfa.org/schema/
xfa-data/1.0/" xfa:contentType="text/html" xfa:APIVersion="BluebeamPDFRevu:2018" xfa:spec="2.2.0" style="font:Helvetica
12pt; text-align:center; line-height:13.8pt; color:#0000FF" xmlns="http://www.w3.org/1999/xhtml"><p>HSS4X4X1/4</
p><p>27'-7"</p></body>>)/Label(HSS4X4X1/4)/Rect[129.3228 532.9412 520.7853 577.7411]/
Contents<feff00480053005300340058003400580031002f0034000d003200370027002d00370022>/NM(DISTBOOEWONMPMIH)>>
```

```
18 0 obj[19 0 R]
```

a list of all /VP objects contained within the page in this case, a single object 19 0

```
19 0 obj<</Type/Viewport/BBox[0 0 612 792]/Measure 20 0 R/NM(UGNDBUHQHFHDCJV)>>
```

Another Measure object which will define the /VPs units and scale

```
20 0 obj<</Type/Measure/Subtype/RL/R(0.1875 in = 1 ft' in")/X[<</Type/NumberFormat/U(')/C 0.07407407/F/F/D 1/FD
true/SS(>>]/D[<</Type/NumberFormat/U(')/C 1/F/F/D 1/FD true/PS()/SS(-)>><</Type/NumberFormat/U(')/C 12/F/F/D 1/FD
true/PS()/SS(>>]/A[<</Type/NumberFormat/U(sf)/C 1/D 1/FD true/SS(>>]/T[<</Type/NumberFormat/U(260)/C 1/D 1/FD
true/PS()/SS(>>]/V[<</Type/NumberFormat/U(cu ft)/C 1/D 1/FD true/SS(>>]/TargetUnitConversion 0.001157407>>
```

See PDF reference to understand the units etc included here

Which /VP a line annotation with a /Measure Dictionary is a part of is determined by which /VPs BBox contains the points stored in the lines /L array of points (more below)

A viewport (PDF 1.6) is a rectangular region of a page. The optional **VP** entry in a page dictionary (see Table 3.27) specifies an array of viewport dictionaries, whose entries are shown in Table 8.109. Viewports allow different measurement scales (specified by the **Measure** entry) to be used in different areas of a page, if necessary.

The dictionaries in the VP array are in drawing order. Since viewports might overlap, to determine the viewport to use for any point on a page, the dictionaries in the array are examined, starting with the last one and iterating in reverse, and the first one whose **BBox** entry contains the point is chosen.