



Understanding the Astigmatic Fan & Blocks

Dr Tony Hanks, Optometrist

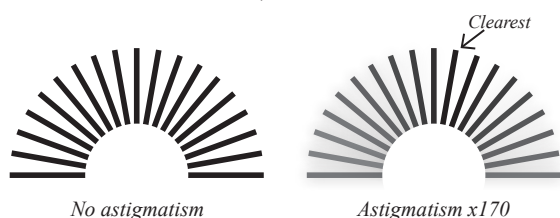
THE PRINCIPLE BEHIND THE ASTIGMATIC FAN:

In order to use this *Astigmatic Fan* properly, it is important to understand the concept behind the design of the chart.

The *Astigmatic Fan & Blocks* are designed to be used with the **plus lens “fogging” technique**. This discourages accommodation and for this test it brings all lines to positions that are in front of the retina.

If the patient has astigmatism, the lines will all be different distances away from the retina, so therefore with varying amounts of blur. The line that is seen clearest is the one that is closest to the retina (because the sides of that line are the closest to being in focus).

The most blurred line is the one that is perpendicular (at 90°) to the clearest line (because the sides of this line are the most out of focus).



Cylinder power along the clearest line will change the focus of the ends of that line, but it will not change the focus of the edges of that line. On the otherhand, it will change the focus of the sides of the most blurred line.

Therefore, to use the *Astigmatic Fan & Blocks* when measuring astigmatism, we need to reduce the plus power by adding minus cylinder power along the clearest line. **THUS the minus cylinder axis is perpendicular to the clearest line** IF the patient has been correctly “fogged”.

Avoid Misunderstanding

The minus axis of the astigmatism in the eye is not the same as the minus axis of the correcting cylinder . . .

*They are opposites
since one corrects the other*

A WARNING TO USE THE CORRECT FAN CHART:

There are 4 main different sets of markings on fan charts. Don't make interpretations using the wrong chart for your clinical situation:

1. Fan chart marked with standard axis locations for direct viewing
2. Fan chart marked with standard axis locations for indirect viewing through a mirror
3. Fan chart marked with indicated negative axis locations for direct viewing
4. Fan chart marked with indicated negative axis axis locations for indirect viewing through a mirror.

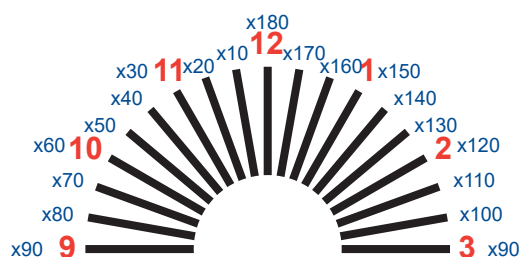
ASTIGMATISM CLOCK CHART:

The red numbers on the *Astigmatism Clock Chart* are designed for the patient, rather than for the clinician. They do NOT indicate the axis directly - for example 11 on the chart does not indicate an axis of 110.

The priority in the design of this chart is that they instead provide a familiar clockface reference for patients.

“Using the red clock numbers to name them, which lines look the clearest, blackest and most distinct?”.

When the patient is correctly fogged with plus lenses (*best sphere plus half the estimated cyl*) the power in the correcting minus cylinder needs to be along the clearest line. This means that **the axis of the correcting minus cylinder is perpendicular (at right angles) to the clearest line**.



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The practitioner is then able to use this subjective answer to determine the indicated minus cyl axis of astigmatism correction.

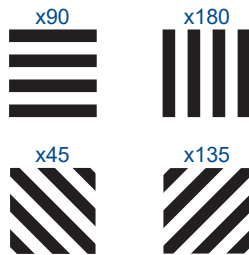
Hour Line	Rx -Cyl *
1	x150
2	x120
3	x90
9	x90
10	x60
11	x30
12	x180

★ Axis for the correcting [Minus Cyl](#)

ASTIGMATISM BLOCKS:

The *Astigmatic Blocks* are essentially a simplified representation of the 90°, 180°, 45° and 135° lines from the *Astigmatic Fan Chart*.

When the patient is again fogged, the blocks are used to give an indication of the general quadrant for the cylinder axis.



Blocks	Rx -Cyl *
Top Left (H)	x90
Top Right (V)	x180
Bottom Left	x45
Bottom Right	x135

★ Axis for the correcting [Minus Cyl](#)

WITH THE RULE vs AGAINST THE RULE ASTIGMATISM:

WTR and ATR are historical labels for vertical and horizontal astigmatism; not widely used today.

With The Rule Astigmatism (WTR)
 Lines clearest at 12 & 6 o'clock
 Indicated correcting minus cyl axis: x180

Against The Rule Astigmatism (ATR)
 Lines clearest at 3 & 9 o'clock
 Indicated correcting minus cyl axis: x90

ASTIGMATISM AXIS CHART:

By comparison, the *Astigmatism Axis Chart* is designed for the clinician and the labels do indicate the normal cylinder axis notation. (So if plus fogging is being used, the indicated minus cyl axis for correction will be different by 90°).

