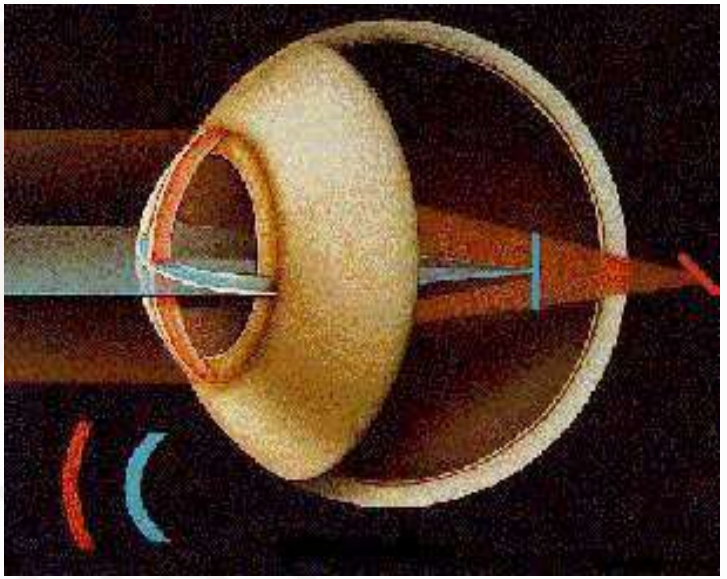
SOFT TORIC CONTACT LENS

Astigmatism

- Astigmatism occurs when the cornea does not have a spherical surface
- Two corneal curvatures produce two focal points in back of eye



Contact Lens Correction - Astigmatism

- Almost 45% to 50% of visually corrected population have significant amounts (-0.75D or more) of astigmatism

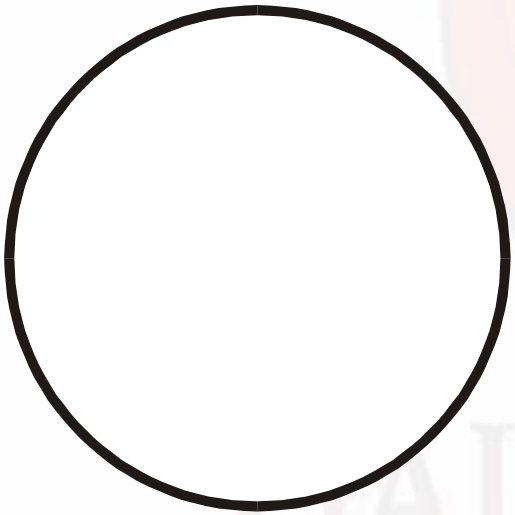
- There are essentially three ways astigmatism may be corrected with contact lenses:
  - Rigid Gas Permeable Lenses (RGPs)
  - Spherical Soft Lenses
  - Toric Soft Lenses

What is a Toric Lens ?

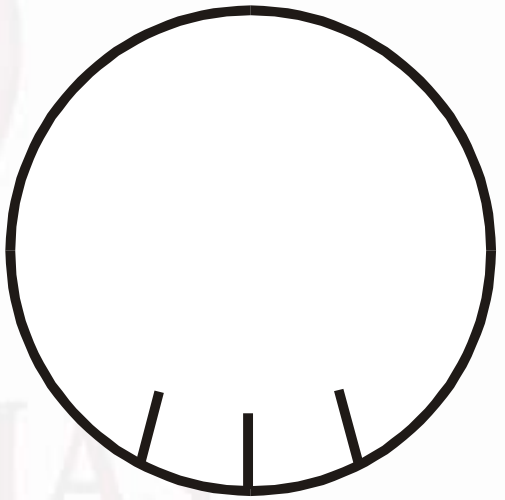
- Toric lens is a lens used to correct Astigmatism or Cylindrical number as it contains cylindrical component which standard soft contact lenses do not have.

Spherical & Toric lenses

SPHERICAL LENS



TORIC LENS



Indications

- Visual compromise from residual astigmatism
- Unsatisfactory V/A with best sphere
- High sphere to cylinder ratio
- RGPs not tolerated

Fitting Toric Lenses

Three fitting techniques:

- Diagnostic
- Trial
- Empirical

Toric lens stability and Stabilization techniques

- A Toric lens should remain stable or should not rotate in the eye to provide stable vision to the wearer.
- There are different method and design for stabilization
- Prism Ballasting
- Truncation
- Peri-ballasting
- Dynamic Stabilization/ double slab off
- Combination of all

Toric SCL Measurement Of Lens Rotation

- Rotation is measured by laser marks which are at 3, 6 and 9 o'clock positions
- Rotation can be measured by :-
- Narrow Slit – Lamp Beam
- Protractor Scale on the eye piece of K
- Spectacle Trial Frame

Toric lens fitting

- STEP 1- Refraction and cylinder in MINUS cylinder form

e.g- R/E - -3.00 /-2.50 x 170 degrees

- Step 2- Unlike spherical lenses there is no need to do spherical equivalent
- Step 3 -Do vertex distance compensation of the sphere & cylinder separately

Toric lens fitting

e.g- R/E - -3.00 /-2.50 x 170 degrees

-3.00 / -2.25 To be Decided

- Step 4- All Toric lenses have basecurve

Toric lens fitting

- Step5-Base curve is determined by doing Keratometry

  e.g- 7.60mm/7.80mm

- Step 6- Add 0.80 mm to the flattest meridian or the highest reading in mm. In the above example 7.80mm is flatter /higher than 7.60mm

Toric lens fitting

- 7.80mm + 0.80mm = 8.60mm
- The BC of the trial lens will be 8.60mm
- Step 7- You have the spherical,Cylindrical power as well as the Base curve of the trial lens to be tried on the patient
- Step 8- Choose a trial lens as close as possible to spectacle Cylindrical axis(i.e-170 degrees)

Toric lens fitting

- Step 9- Suppose the trial lens setwith the practitioner is as follows:-

-3.00/-1.75 x 180	8.60mm
-3.00 / -1.25 x 90	8.60mm
-3.00/ -1.75 x 180	8.30 mm
-3.00 / -2.25 x 90	8.30mm

Trial lens to be chosen from above set is

Toric lens fitting

- **−3.00/ -1.75 x 180 8.60 mm**

Toric lens fitting

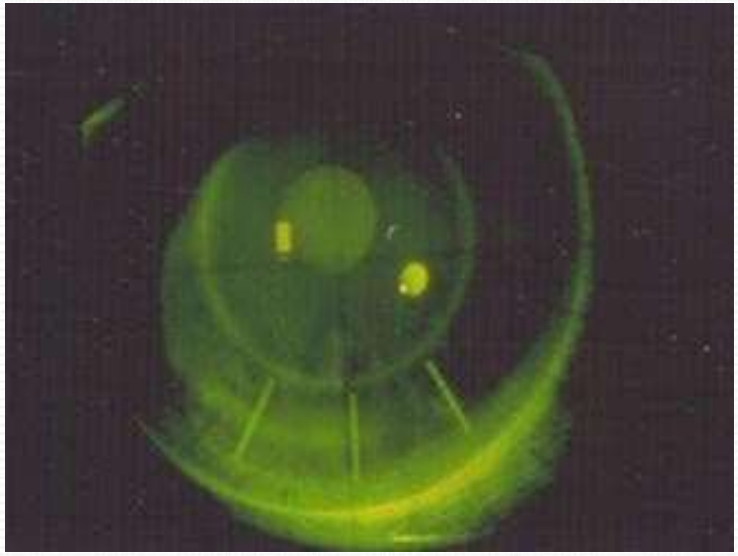
- **Step 10-** Give the trial to the patient - wait for 15-20 minutes before assessing fit of the lens
- **Step 11 -** Assess fit of the lens by assessing
  - Full corneal Coverage
  - Centration
  - Movement
  - Comfort
  - Stable vision

Toric lens fitting

- Step 12 - It is not always possible to show vision to a patient as trial lens axis might not match spectacle axis
- Step 13-If first 4 factors are fine then axis finalisation is done

Toric lens fitting

- Step 14 - for axis finalisation concentrate on the 3 laser guide marks at the inferior or lower portion of the lens



Toric axis finalization

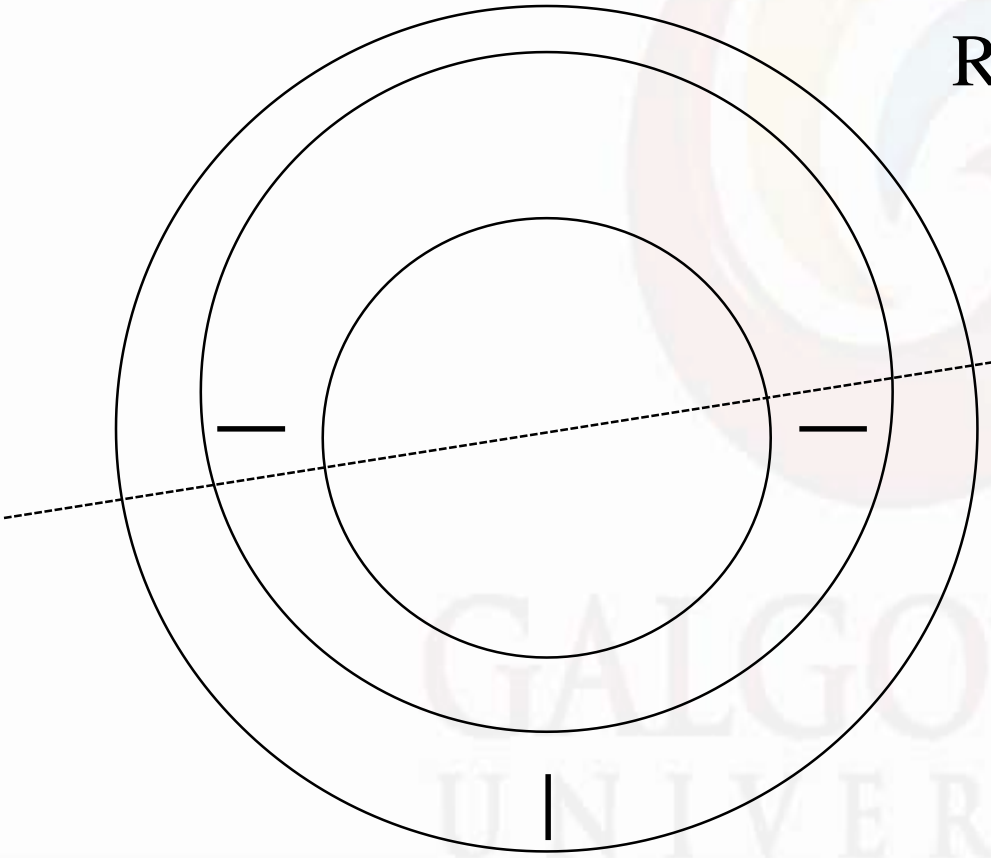
3 things can happen while assessing Toric lens rotation

- No rotation or minimal rotation of 5 degrees
- Rotation to L.H.S (with reference to Practitioner)
- Rotation to R.H.S (Practitioner)

Thumb Rule

L	A	R	S
LEFT	**ADD**	**RIGHT**	**SUBTRACT**

Lens rotation - 10°



Rx required -3.00/-1.00 x 10

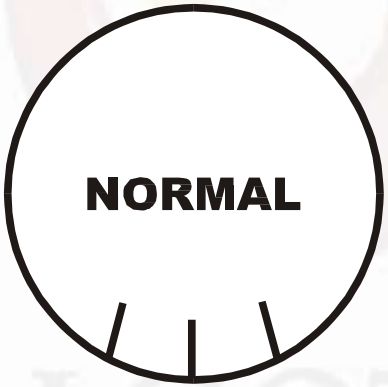
Anticlockwise - subtract
order -3.00/-1.00x180

Clockwise - add
order -3.00/-1.00x20

Toric axis finalization

- CASE 1

No Rotation or minimal rotation of 5degrees



Answer - No change in spectacle axis

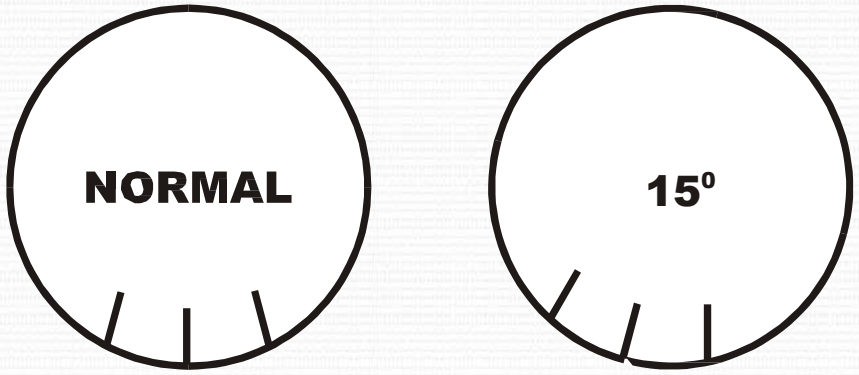
hence the prescription remains:-

-3.00/-2.25 X 170 8.60mm

Toric axis finalization

- CASE 2

Rotation to L.H.S by 15 degrees

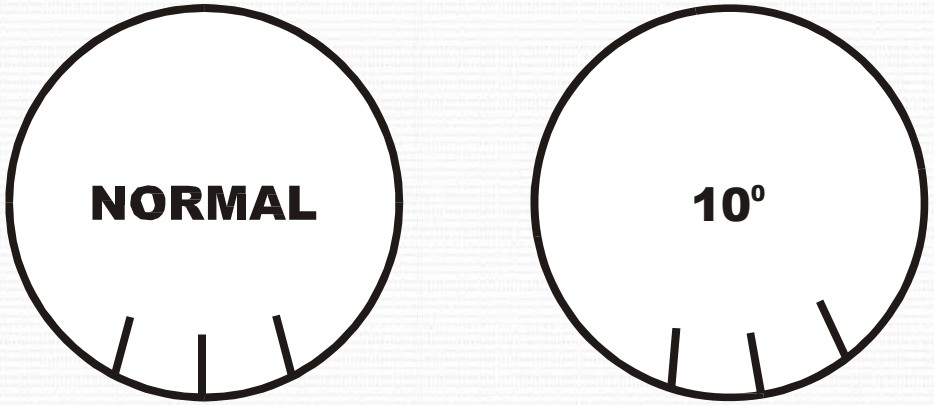


Answer -ADD 15 degrees to spectacle axis
hence the prescription becomes:-
-3.00/-2.25X (170 + 15 = 5 degrees) 8.60mm

Toric axis finalization

- CASE 3

Rotation to R.H.S by 10 degrees



Answer -subtract 10 deg. to spectacle axis
hence the prescription becomes:-
-3.00/-2.25 X (170 -10 =160 degrees) 8.60mm

Example 1

- Spectacle Pres. -6.00/-3.00 x 180
- Vertex Dist -5.50 / -2.50 x 180
- Trial lens - -3.00 /-1.25 X 180 @ 8.6mm
- Rotation to R.H.S by 15 degrees
- Subtract - 180 - 15= 165 degrees
- Final lens prescription:-

-5.50/-2.50 x 165 degrees @ 8.60mm

Example 2

- Spectacle pres.-0.00/-2.00 x160

Vertex Dist - -0.00 / -2.00 x 160

- Trial lens - -3.00 /0.75 X 180 @ 8.6mm

Rotation to L.H.S by 10 degrees

ADD - 160 +10= 170 degrees

- Final lens prescription:-

0.00/-1.75 x 170 degrees @ 8.60mm

Example 3

- Spectacle pres. -3.00/-1.75 x 20
  Vertex Dist - -3.00 / -1.50 x 20
- Trial lens - -0.00 /1.25 X 180 8.30 mm

- No Rotation

- Final lens prescription:-

-3.00/-1.50 x 20 degrees 8.30mm

Example 4

- Spectacle pres: -1.00/-3.00 x120
- Trial lens: -2.00/-0.75 x 90 8.30
- Rotation to R.H.S by10
- Answer - -1.00/-2.75 x110 8.30 mm

Toric lens fitting

- STEP 13 - After axis finalization the final Toric lens order is given to the manufacturer

TORIC SCL ASSESSMENT OF FIT

- GOOD FIT: FULL CORNEAL COVERAGE,
  GOOD CENTRATION AND MOVEMENT,
  QUICK RETURN TO AXIS IF MISLOCATED.

- TIGHT FIT: GOOD CENTRATION,
  INITIALLY COMFORTABLE,
  LITTLE OR NO MOVEMENT.
  SLOW RETURN TO AXIS IF MISLOCATED.

- LOOSE FIT: EXCESSIVE MOVEMENT,
  POOR CENTRATION,
  UNCOMFORTABLE.
  LENS ORIENTATION UNSTABLE AND
  INCONSISTENT.

Things to remember

- Do not make any changes in trial lens axis
- Trial lens (Diagnostic lens) fitting is a very reliable and scientific method of fitting Toric lenses
- Choose trial lens axis as close as possible to spectacle axis

Things to remember

- If trial lens axis & spectacle axis are different then do not attempt over refraction as it can lead to confusion
- Final lens Base Curve should be same as Trial lens Base Curve
- Like the trial lens, final lens would also show similar rotation

Care & Maintenance

- Similar to standard soft contact lenses
- Multipurpose solutions
- Proper insertion & removal to be taught to the patient to avoid lens damage

Care & Maintenance

- While removal the patient should either pinch the lens from the centre or else rotate the lens in either direction (L or R) to avoid lens damage along lens markings

Brands of Toric lenses

- Alcon
- Bausch + Lomb
- CooperVision
- J&J
- Custom made soft torics are also available from companies like Flexilens / Purecon etc.

References

- 1) IACLE Modules
- 2) CLIO modules
- 3) Clinical Refraction - Borish