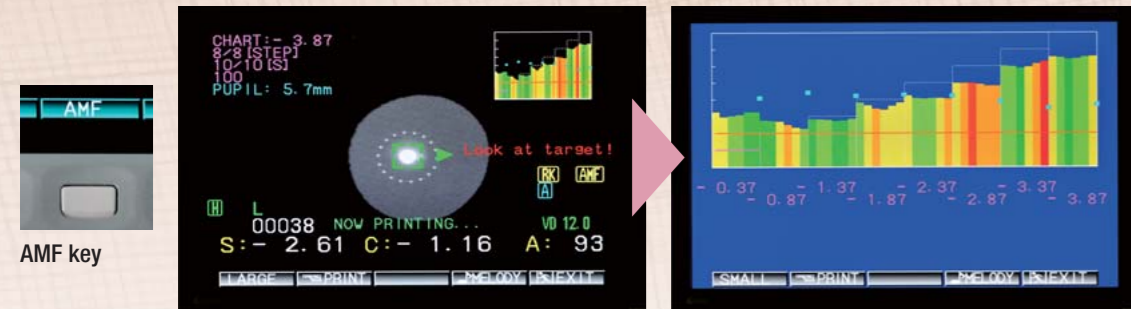


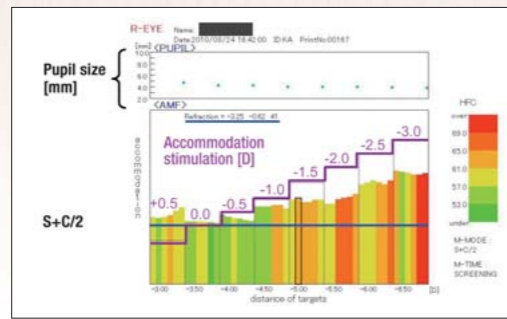
**NEW! Accommodation Test AMF (Accommodative Micro Fluctuation) mode**

Use for details checking if not satisfied with SCR result, or more precise evaluation measurement.



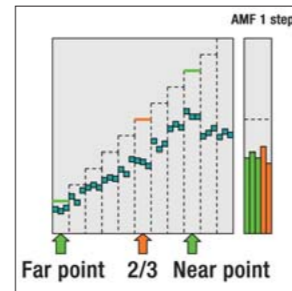
**How the AMF mode differs from SCR mode**

- One eye takes 101 seconds to test.
- Accommodation stimulation for a single test is 0.5 Dptr. The test is performed eight times in a row.
- The graph (FK map) appears in six colors on the monitor and three levels on the printout (Optional PC software "i-File" for data management.). (Red: over 69 db, dark orange: 65.01-69 db, orange: 63.01-65 db, yellow: 57.01-63 db, yellow green: 53.01- 57 db, green: 0-53 db)



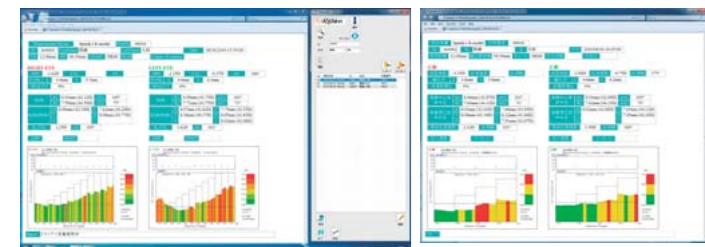
**NEW! ADD function (Additional Near Point Power)**

- The ADD function enable a patient's near point power to be measured objectively by applying accommodative stimulation. And auto AMF can detects if the power gives the patient eye strain or not by color indication.
- The ADD function is particularly helpful when examining the eyes of hearing impaired patients, especially for those who prescribe Progressive Lens for the first time.
- ADD = 1/near distance (m) - 2/3 accommodation power.
- Checks 11steps with 0.5D stimulation per one step.
- Both Line Graph and FK Map (HFC) will be indicated.
- Near point power measured in 63 seconds/one eye. The AMF check takes another 10 seconds.
- After both eye measurement, the inset amount will also indicated.

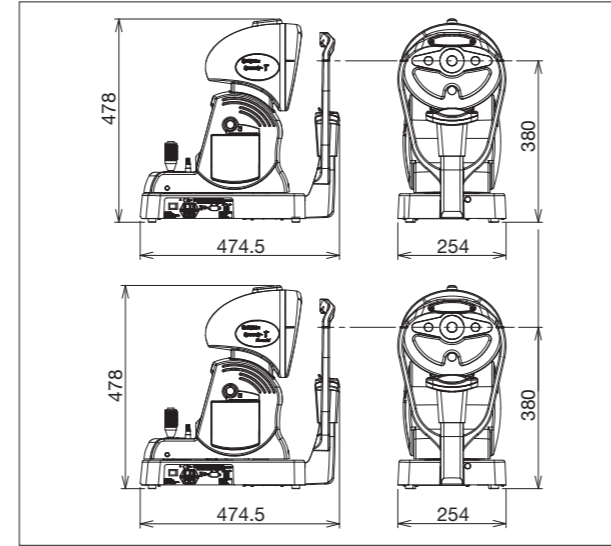


**NEW! Simple Software "i"-File (Option)**

- Data can be managed by using i-File and view saved record using Internet Explorer (ver 8.0 or above)
- A convenient way to search and review data especially for AMF mode 6 colors graph.



**Dimensions**



**Setting Possibilities**

- -5D stimulation
- AMF precise mode in 181 sec
- Change of threshold point in New Retro mode

**Printer**



The model eye, clamp screw and spare fuses can be housed in the printer.

**Specifications**

	Speedy-"i" K-Model	Speedy-"i"
Measurement range	S-20.00D - +23.00D retinoscopy principle C+/- 12.00D Axis 0-180°	S-20.00D - +23.00D retinoscopy principle C+/- 12.00D Axis 0-180°
Minimum required pupil size	ø 2.3 mm	ø 2.3 mm
Corneal size measurement	0 - 16.0 mm (manually)	—
Radius curvature	5.00 - 11.00 mm	—
Corneal astigmatism	0 - 12.00D	—
Axis	0 - 180°	—
Residual astigmatism range	0 - 12.00D	—
Residual astigmatism axis	0 - 180°	—
Measurement range (center of cornea)	ø 3.2 (R8.0 mm)	—
Measurement range (peripheral of cornea)	ø 6.8 (R8.0 mm)	—
PD range	1 to 83mm	1 to 83 mm
Fixation	Firework	Firework
Chin rest movement range	65 mm (From initial line of main body to chin table min. 61 mm max. 131 mm)	—
Pupil size measurement	2.0 mm - 12 mm	2.0 mm - 12 mm
Dimensions	254 (W) x 474.5 (L) x 478 (H) mm	254 (W) x 474.5 (L) x 478 (H) mm
Weight	14 kg	14 kg
Data storage	50 persons (100 eyes)	50 persons (100 eyes)
Output	Analog RGB RS232C, USB, infrared communication	Analog RGB RS232C, USB, infrared communication
Software for graph (FK map) data storage	Built-in	Built-in
Monitor	6.5-in. color VGA	6.5-in. color VGA

**WARNING:** To ensure correct usage, read all manuals carefully before using equipment

Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer.  
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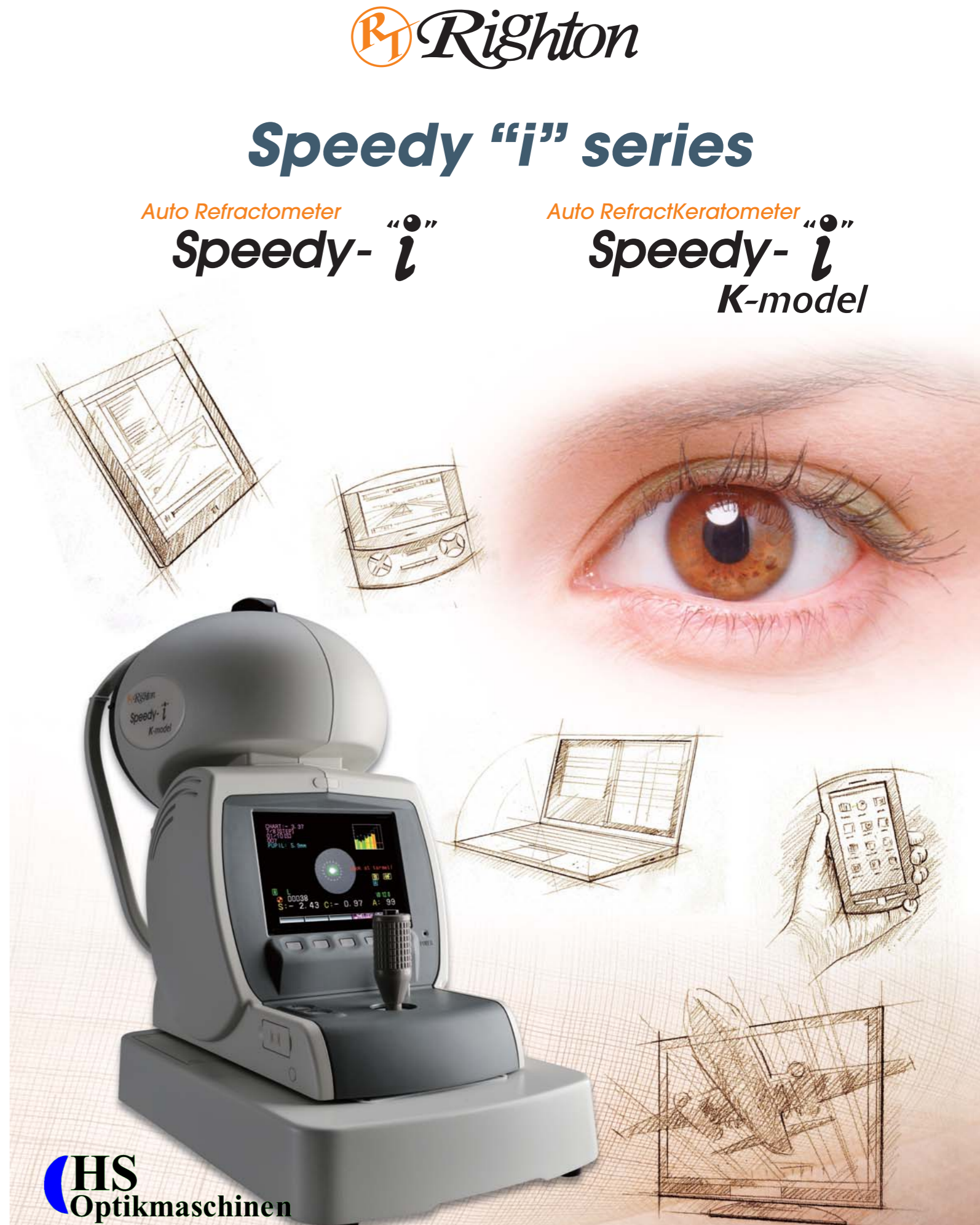


**Message imprint**

```

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Name:
VD: 12.0  PD: 63.0  CHART: H
-REF-
[R]  SPH  CYL  AX
  - 3.00 - 1.50 171
  - 3.00 - 1.50 172
  - 3.00 - 1.50 172
  - 3.00 - 1.25 173
  * - 3.00 - 1.50 172 10
    (S+C/2 = - 3.75)
    x: 5.4  y: 5.7
[L]  SPH  CYL  AX
  - 2.75 - 1.50 180
  - 2.75 - 1.50 178
  - 2.75 - 1.50 180
  - 2.75 - 1.50 1
  * - 2.75 - 1.50 180 10
    (S+C/2 = - 3.50)
    x: 5.7  y: 5.9
-KER-
[R]  R1  R2  AX1  AX2
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  * 41.25 43.62 157 87
  R1 8.19 41.25 157
  R2 7.74 43.62 87
  AX 7.98 42.37
  CYL - 2.37 157
[L]  R1  R2  AX1  AX2
  41.82 43.82 171 81
  * 41.82 43.82 171 81
  R1 8.12 41.82 171
  R2 7.73 43.82 81
  AV 7.92 42.82
  CYL - 2.00 171
-R CYL -
[R]  CYL  AX
  + 1.12 178
[L]  CYL  AX
  + 1.12 5
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[L]  0%
< SCR >
[R]
GREEN  - 57.00[db]
YELLOW 57.01 - 65.00[db]
RED 65.01 - [db]
PUPIL 2.0 - 10.0[mm]
[L]
GREEN  - 57.00[db]
YELLOW 57.01 - 65.00[db]
RED 65.01 - [db]
PUPIL 2.0 - 10.0[mm]

```



**Speedy "i" series**

Auto Refractometer

Speedy-*i*

Auto RefractKeratometer

Speedy-*i*  
K-model

New generation of Auto Refractometer Speedy-i series re-defined integration system with combination of Auto Refraction, Auto Find (Opaque Media) and Accommodative Micro Fluctuation test functionality. Aging society which joint to cataract incidence, growing use of LCD instruments and 3D entertainment system is believed to be leading to the increase of eye fatigue, all these problems will be discover by Speedy-i during screening bases. It is an epoch-making Auto Refractometer series which meets the generation needs.

By optimized Retinoscope principle, Speedy-i series provides faster reading, higher accuracy and stability performance. By implementing new AUTO FIND function, suspicious of Cataract (area within 3mm of center cornea) can be found easily during normal refraction. By picking up HFC (High Frequency Components 1.0-2.3 Hz) during accommodation tests, results are shown on LCD monitor and print out.

Meaningful 6.5 inch large LCD color display

Auto Refractometer  
**Speedy-i**

Auto RefractKeratometer  
**Speedy-i**  
K-model

### Enhanced Auto Refractometer Functions

- NEW!** When measurement can not be started in four seconds, the Auto Quick Mode automatically works and tries to take measurements.
- NEW!** Pupil diameter can be measured automatically during refraction reading.
- Improved** The motorized chin rest, with a working distance of 65 mm, can move 61 mm up and down from the window center. It is also suitable for use with children.
- NEW!** Residual astigmatism calculation, necessary for CYL contact lenses and CYL IOL prescriptions, is automatically conducted and results printed out (K-Model).
- Improved** Corneal size measurement (K-Model).
- Improved** Measurement speed increased 20% (Compare with previous model)

REF measuring Previous model = 220 ms Speedy "i" = 194 ms  
REF KER measuring Previous model = 591 ms Speedy "i" K-Model = 449 ms



Standard display for REF KER measuring

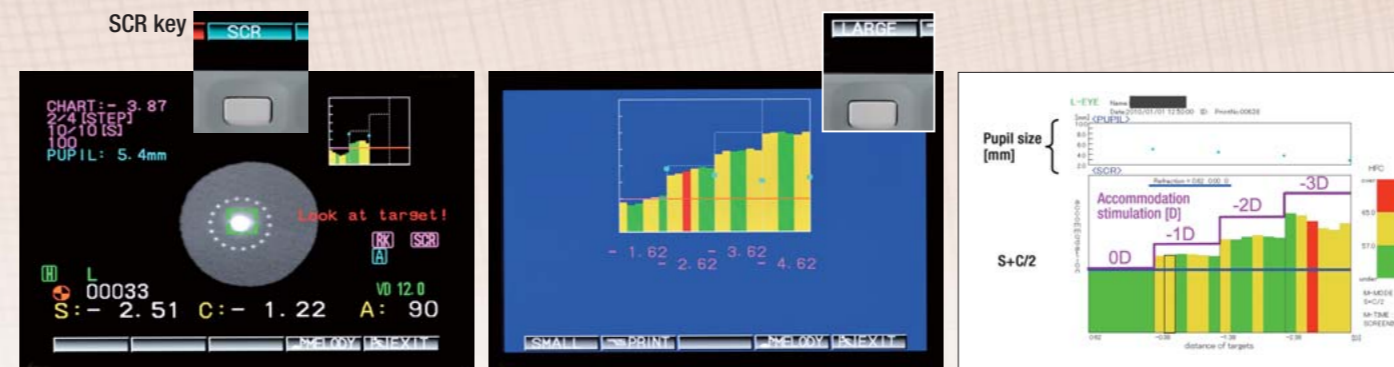


Standard display for Refract measuring

### NEW! Accommodation test, one eye only 49 sec.! Dramatically shortened SCR (Screening) mode check times

Patient's individual AMF (Accommodative Micro Fluctuation) value will be analyzed and from the data, High Frequency Components (1 – 2.3Hz) will be extracted and based on measurement data, chart location, accommodation reaction value and pupil size to formulate FK map (Frequency of Kinetic reaction).

With the new SCR (screening) mode, an eye can be tested in only 49 seconds (previously 101 seconds).



Display during measurement

FK map displayed after finishing measurement

Display of measured results

### SCR mode

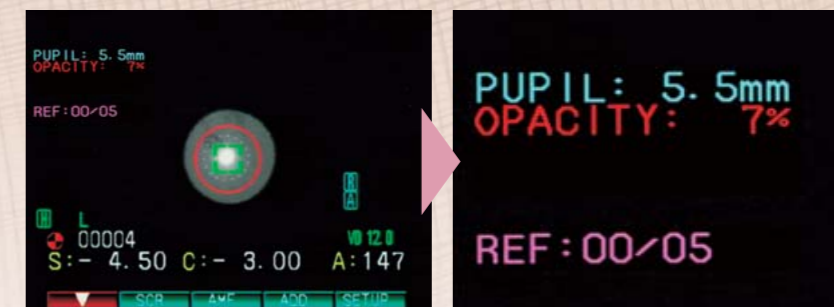
1. Take binocular refraction readings before accommodation tests.
2. A single eye test can be performed with the M-SCR key, which appears after refraction.
3. Data is obtained by equivalent spherical power (S+C/2).
4. The accommodation stimulation for a single test is -1.0 Dptr. The test is performed four times in a row.
5. The stimulation starting point (Dptr power) can be manually changed.
6. Pupil diameter is automatically measured and shown on a print out.
7. A choice of 25 melodies can be played during tests.
8. The graph uses three colors.  
Red – over 65.01 db of HFC appearance  
Yellow – 57.01 to 65 db HFC appearance  
Green – 0 to 57 db HFC appearance
9. The patient is required to keep track and focus on a fireworks target.



Friendly humanoid design

### NEW! The Speedy "i" series automatically detects opacity in the eye, enabling detection of cataracts in pupils.

#### Auto Find function



Early detection for delay of progress.

**Note** Eyelid, eyelash will affect measurement result. Keep an eye on patient's condition during measurement progress to obtain best results.

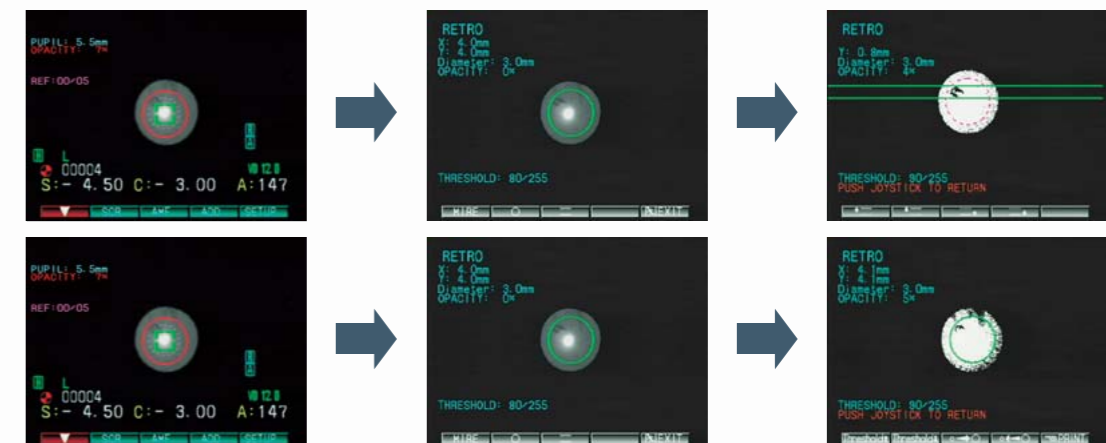
When Opaque Media (opacity) is detected within the center 3 mmΦ of a patient's cornea while refraction data is being read, a red circle appears and the degree of opacity will indicated as % percentage. Opacity is always shown as a percentage on the monitor and printout.

\* Although WHO regulation is 3mm of pupil, due to the movement of pupil will decentering during REF measurement, Speedy-i will define as 3mm of corneal instead of pupil.

#### NEW! New Retro Illumination

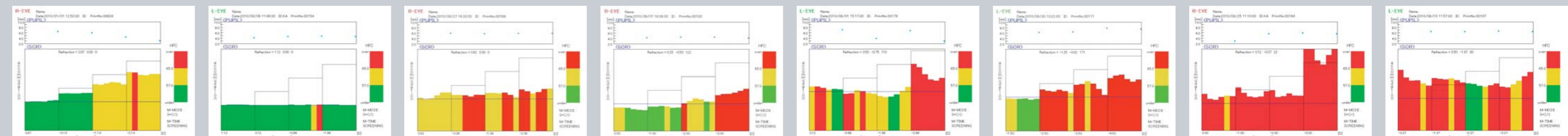
By pressing RETRO key after REF measurement (even Red circle appeared during measurement), you can check more details of the opacity condition, height of opacity area, or binarize the image for print out. When refraction data cannot be obtained due to the density or size of cataract, Speedy-i will automatically change to Auto Quick Mode. If still unable to measure, it will proceed to new RETRO MODE where you can manually operate or change the setting for observation.

The threshold is automatically adjusted for the best contrast, however depends on the condition, you can also manually change the threshold.



### Examples of SCR mode

HFC frequently appears → Graph becomes redder → Check the glasses or Contact lens if overcorrected → Check eye position → Check for dry eye → Check accommodation status



Normal eye

Presbyopia

Presbyopia with eye strain

CVS (Computer Vision Syndrome)

CVS with eye strain

Eye strain

Accommodation cramp

Accommodation panic

Supervised by Masayoshi Kajita PhD, MD