

## TESTS INCLUDED IN RV3D - OPTICS

Our 3D-Vision system allows administering 70 tests divided into 7 categories: **Basic, Optotypes, Accommodation, Astigmatism, Balance, Binocular, MKH.**

### BASIC

- **3D Airplane:** new binocular test in color to measure different levels of Global Stereopsis. Instruct the patient to hold and look at the Receiver. Select the desired image and ask the patient if he/she sees the image protruding from the screen, on the Controller the levels of Stereopsis of the various images' details are shown.
- **Amsler:** screening test to evaluate the presence of possible retinal anomalies. The test is executed in monocular mode. Instruct the patient to look at the central point of the image and refer if the lines appear straight, without blur and distortions, errors and missing parts.
- **Color Perception:** the Ishihara tables are used to measure the Color Perception of the patient. The test is executed in monocular mode. The examiner chooses on the Controller which eye to examine first and selects the patient's answers in each table. Then switch to the other eye and at the end of the test, the system automatically provides a graph of the results with an indication of the possible deficiency. Please remember that this test cannot substitute a specialist's exam.
- **Duane:** target to measure the near point of accommodation.
- **Fixation Dot:** white fixation dot useful to administer various tests such as the cover test at near.
- **Gabor:** test to measure the Contrast Sensitivity. Tests' tables present some lines tilted in three different ways and at different contrast levels. The examiner chooses on the Controller which eye to examine first and selects the patient's answers (right or wrong). The patient, while looking at the Receiver, must indicate if the lines are vertical or tilted to the right (toward the star) or to the left (circle). Then switch to the other eye and at the end of the test, the system automatically provides a graph of the results.
- **Preferential Looking:** this test uses a neurological involuntary reflex and measures the visual acuity of people with difficulty of communication (infants...). The test, executable either in monocular or binocular mode, has a series of lines (verticals or horizontals and of different depth according to the examiner choice) in half of the screen while the other half stays grey. The patient looks at the Receiver and at every click of the Black/White button on the Controller the test appears and disappears from the screen. When the test is visualized, the Controller button changes color and the Receiver emits a "beep" to help the examiner. The purpose of the test is to observe if the patient's eyes move toward the stimulus or not.
- **\*Random Dot:** binocular test to measure the Local Stereopsis. Instruct the patient to look at the Receiver and refer which images he/she can see. The examiner can change the images increasing the difficulty from 60" to 30" (seconds of arc).
- **Sine Bars:** test to measure the eye resolution power.
- **Worth:** test to examine the binocular status of the patient with anaglyph glasses.
- **Sensory Dominance:** the target is perceived differently by the two eyes and the test allows to determine the sensory dominance. Ask the patient to observe the image and refer if the target is "blurry" or "in focus". On the Controller it is possible to determine the dominant eye. Inverting the polarization a verification of the obtained result is achieved (the eye that firstly saw the image "in focus" now sees the image "blurry" or vice versa). The test is useful for comparison to the tests of motor dominance and in the balance of the patient's ophthalmic correction.
- **Recovery After Glare:** test for driving suitability. This test expresses the time needed to recover a sufficient level of acuity after being dazzled. The test is executed in monocular mode. Dazzle the patient using a penlight of 400lux at 20cm of distance for 10 seconds, switch off the penlight and ask the patient to read the letters on the screen. The minimum threshold is 2/10 in less than 60

**seconds and 4/10 in less than 30 seconds, depending on the type of driving license.**

- **Twilight vision: Test to verify the vision ability during twilight conditions. Lower the ambient lighting to minimum and ask the patient to refer until which visual acuity he/she can read the letters.**

## OPTOTYPES

All the tests of this section, excepting the Reading Test, are useful to measure the near Visual Acuity. It is possible to choose the Optotype according to need.

To isolate a single letter, a column or a line of a determined visual acuity, slide the finger on the desired letter, line (from left to right) or column (from the top to the bottom).

- **Albini**
- **Albini 3 m**
- **Kids Symbols**
- **Kolt**
- **Landolt**
- **Numbers**
- **\*Optotype for Binocular Vision: Binocular visual acuity polarized test that allows to check the suppression.**
- **\*Optotype with Stereo Characters: polarized binocular test to measure Stereopsis at different levels of Visual Acuity. It is possible to increase the Stereopsis levels for the different Acuity.**
- **Preschool**
- **Reading Test: the first frame of the test includes the different visual acuities standardized depending on the distance of the test. The following frames (telephone book, newspaper, sheet music...) are useful to check the potential ophthalmic prescription.**
- **Sloan**
- **Sloan 3 m**
- **Snellen**
- **Albini Psychometric: new test to measure the psychometric visual acuity with real crowding proportioned to dimension and seconds of arc of the selected target. Ask the patient to recognize the orientation of the E stimulus while the examiner decreases the visual acuity until the maximum perceived.**
- **Albini with Bars: test to measure the visual acuity with crowding, useful to identify and stimulate the amblyopic eye. The test is performed starting from the maximum level of acuity recognized with the bars at the minimum contrast and gradually increasing the contrast without altering the visus perception of the E stimuli until the patient refers to read the maximum acuity with maximum contrast of the bars.**
- **Flanker test symbols: test developed following the theories of the visual crowding with central/periphery integration. Test the central visual acuity of the patient, decreasing the level of acuity until the patient refers that he can perceive the central symbol. You can randomize the stimulus.**
- **Flanker test letters: test developed following the theories of the visual crowding with central/periphery integration. Test the central visual acuity of the patient decreasing the level of acuity until the patient refers to perceive the central letter. It is possible to randomize the stimulus.**
- **Hammill test letters: the test is based on the theories of Hammill concerning the figure/background vision and, it is useful in the quantification of the level of patient amblyopia. The test is monocular. Ask the patient to tell if the diagonal bars and the letter are perceived with the same intensity of black while decreasing the visual acuity level. If amblyopia is present it will be more difficult to discern the letter and the bars will be perceived as grey or, in some cases, it may happen that the color changes from black to grey intermittently. In these cases the amblyopia will not be central and stable and will allow an easier training intervention with good results of recovery. The classical evaluation obtained with the usual acuity targets can be less precise compared to this visual-**

perceptive test.

- **Hammill test symbols: see above.**
- **\*Optotype Stereo-Acuity: new test composed by three rows of letters in different levels of acuity: the two external rows (upper and lower ones) are stereoscopic, embossed, while the central one serves as reference. It's possible to modify the stereopsis levels and randomize the letters the test result, expressed in tenth of stereo/acuity, gives an important information about the quantity and quality of the patient's vision.**
- **MBC Sloan: new test for the measurement of the monocular visual acuity in binocular field using Sloan characters, useful to check the suppression and stabilize the visual function. In the upper part of the screen it is indicated which eye is seeing the optotype, while the other one is seeing a blank screen. Using the "switch polarization" button it is possible to change the eye that sees the letters.**
- **MBC Kids: new test for the measurement of the monocular visual acuity in binocular field using kids symbols, useful to check the suppression and stabilize the visual function. In the upper part of the screen it is indicated which eye is seeing the optotype, while the other one is seeing a blank screen. Using the "switch polarization" button it is possible to change the eye that sees the symbols.**

## ACCOMMODATION

- **Accommodative Amplitude:** target to measure the accommodative amplitude (test #19 OEP).
- **Boat Grid:** target to perform tests #14A and #14B of the OEP method to measure the near addition for the prescription.
- **Cross Grid:** target to perform test #14A and #14B of the OEP method to measure the near addition for the prescription.
- **Relative Accommodation +/-:** target to measure the positive and negative relative accommodation (test #20 and #21 OEP).

## ASTIGMATISM

- **\*Binocular:** to adjust the axis of the astigmatism of both eyes at the same time. The exam procedure is the same as the one with the classic targets (clock...) but without closing one of the two eyes.
- **\*Circular Optotypes:** to adjust the power of the astigmatism using the Crossed Cylinders.
- **Clock:** target for the identification of the astigmatism's axis.
- **Dial:** target for the identification of the astigmatism's axis.
- **Dots:** target for the identification of the astigmatism's axis.
- **\*Mono/Binocular:** to adjust the astigmatism monocular power when both eyes are open. The exam procedure is the same as the one with the classic targets (clock...) but without closing one of the two eyes.

## BALANCE

- **\*Balance:** binocular polarized target to balance the near correction.
- **\*Balance for Kids:** binocular polarized target with characters for kids to balance the near correction.
- **\*Binocular Radial:** binocular target to correct the astigmatism. The exam procedure is the same as the one with the classic targets (clock...) but without closing one of the two eyes.
- **\*Osterberg:** binocular test that unites the polarized filter to the red/green one, useful for the balance of the correction. Ask the patient what he/she sees, if the correction is balanced he/she should see the whole target without differences of resolution in the various parts of the target.
- **Red/Green:** filter for the balance of the correction.

## BINOCULAR

- **Lines Vertical/Horizontal:** line of vertical or horizontal letters useful for the execution of various near tests.
- **\*Mallet:** binocular polarized test to evaluate the quality of the patient's phoric status.
- **\*Osterberg Stereo:** binocular polarized test to evaluate the fixation disparity and the binocular balance.
- **\*Shober:** binocular polarized test to measure the phoric and tropic status of the patient.
- **Shober Red/Green:** binocular test to evaluate the phoric and tropic status of the patient. The test needs the use of the anaglyph glasses. The Red/Green is used to increase the dissociation level in case of profound suppression.
- **\*T Phoria:** useful test to measure the horizontal phoria. The test is performed following the classical

procedure with the use of 6Δ dissociative prism. Insert the prism base down in front of the right eye; the patient will refer to see two rulers. Ask the patient to tell the position of the upper arrow compared to the colored ruler placed below. If the arrow points a number on the red background we will have Eso, on the contrary, if the arrow points the green part we will have an Exo. It is also possible to modify the color of the test background: when the background is white we will have a measure of the phoric status with peripheral participation given from the black border of the tablet; when the background is black we will have a measure of the phoric status without peripheral participation.

- **\*Fixation Disparity:** test to measure the eso or exo disparity with central and peripheral fusion. The arrow position in correspondence of one of the colored lines at the right or left of the central red line will represent the value and type of disparity. It is also possible to invert the polarity of the test to obtain a comparison and more accurate measure. The left eye sees the colored lines whereas the right eye sees the arrow: if the arrow points to the right of the central red line we have Eso disparity; if the arrow points to the left of the central red line we have Exo disparity.

<b>Distance: 40 cm</b>		
	↑	<b>Fixation Disparity (min. arc)</b>
Black	0	0
	½	4.3'
Red	1	8.6'
	1 ½	12.9'
Green	2	17.2'
Black	3	25.8'
Black	4	34.4'

From afar the chart is represented at corresponding distance.

- **\*Central Fixation Disparity:** test useful to identify the fixation disparity (eso or exo) with central fusion. Ask the patient to observe the point of union of the two triangles and refer the possible misalignment and in which direction. Make sure that the patient perceives the upper triangle with the left eye and the lower one with the right eye; at this point if the upper triangle is misaligned toward the left we will have eso disparity, vice versa we have exo disparity.
- **Vertical/Horizontal Phoria:** target for the execution of the tests of vertical and horizontal phoria and OEP vergence method.
- **\*Cross Phoria with Fixation:** test to identify the vertical and horizontal phoria/disparity. Ask the patient to refer if he/she sees the cross aligned or not.

### **MKH METHOD OR HAASE SEQUENCE**

In the whole Haase sequence all tests are binocular and polarized \*.

- **Cross (K)**
- **Needle (Z,DZ)**
- **Coincidence (H)**
- **Stereo (St)**
- **Stereo Balance (V)**
- **Stereo Circles (D6)**
- **Stereo Lines (D8)**
- **Random Dot Step**
- **Cowen**
- **MKH Sequence**

### **APPLICATION FOR LENS CENTRATION**

**Eye Frame Assistant:** After inserting the frame width in mm, centre the frame worn by the customer within the red box and take the picture. Once the picture has been taken, it is possible to further adjust the reference lines. The values represent the ones for distance centring. There is no need for an additional calibration tool.

**REALVISION GROUP**

Sede legale P. da Cannobio, 9 -20122- Milano  
Sede operativa Via Oneda, 11  
21018 - Sesto Calende (VA) Italy

Tel.+39 0331 922 688 - info@realvision.it

**REALVISION 3D TECHNOLOGY (JIANGXI) CO.,LTD**

No.6 standard workshop building  
No.669 Huang Tang Street East, Airport  
economy zone,Nanchang City, Jiangxi Province  
Tel: 0791-83962819 0791-83962879



[WWW.3D-REALVISION.COM](http://WWW.3D-REALVISION.COM)