GOOD-LITE® INSTA-LINE PLUS™ INSTRUCTIONS

1. Introduction

The **INSTA-LINE PLUS™** is a “3-in-one” instrument designed to test visual acuity, hyperopia and muscle imbalance. It can be used to test visual acuity in preschool and school age populations. The **INSTA-LINE PLUS™** is housed in a sturdy carrying case to meet the rigid demands of active nurses or examiners who are often moving between locations. This self contained vision testing unit is a precision instrument with standardized illumination that is designed for use in a 10 foot testing lane.

2. Setup

The only requirements needed for vision testing with the **INSTA-LINE PLUS™** is a 10 foot testing lane, two chairs, a table and an electrical outlet. Place the instrument on a low table, remove top, remove front and back panels, insert test chart to be used and replace top. Remove the Remote Control Device (RCD) from back holder and unwind power cord.

The power cord which is used as a measuring device for setting up the testing lane has two white marks that are exactly ten feet apart. One white mark should be placed flush with the face of the chart and the other when the power cord is pulled tight should be located at the face of the child being tested. After completing testing lane setup plug power cord into a source of 120 VAC, 60 Hz outlet. The RCD should be placed on a table with a chair placed on each side of the table. The child faces the instrument while the examiner faces the child with their back to the chart (FIG. 1). This allows the examiner to observe the child

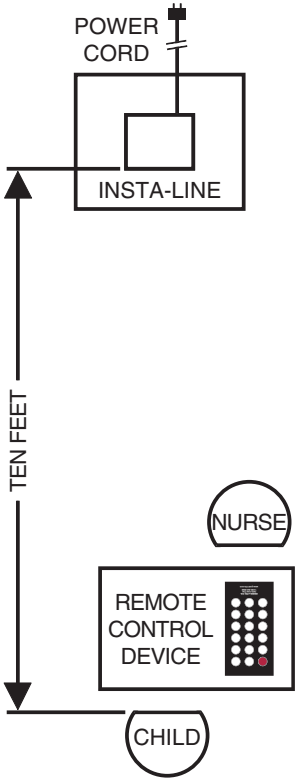


FIG. 1

at all times, to detect squinting or faulty head positions. No intense light sources should be within the field of vision as the child looks at the instrument from 10 feet away.

RCD overlays are provided with each chart. RCD overlays are also available separately (refer to section 20 for more information.). Attach RCD overlay with hook and loop fasteners noting bottom label on the RCD and back of overlay.

FIG. 2

3. Remote Control Device (RCD)

This remote control device (RCD) is **only compatible** with this test cabinet. It is important that you register your **GOOD-LITE®** product if you require technical support or service. This will ensure that we have the necessary information needed for replacements or repairs. Please fill in and return enclosed registration card.

The RCD has several features built into the electronic design to enhance the overall operation.

Depressing the keypad buttons will turn ON the respective light in the test cabinet. Although each frosted light bulb will turn OFF in approximately thirty seconds, the OFF button may be depressed to turn OFF earlier.

The RED muscle light bulbs will stay on for approximately one minute or may be turned OFF earlier by depressing the OFF button.

900540	HOTV RESPONSE PANEL
600501	SYMBOL FLASH CARDS (3)
600012	SYMBOL RESPONSE PANEL
900579	LEA SYMBOLS® RESPONSE PANEL
900580	LEA SYMBOLS® FLASH CARDS (4)

21. Legal Notices

FCC Notification

Changes or modifications not expressly approved by **GOOD-LITE®** may void the user's authority granted by the FCC to operate the subject equipment and should not be made. Replacement of any component not authorized by the FCC equipment authorization for this equipment could violate FCC rules.

Software Lincense

The **GOOD-LITE®** products described in this manual may include copyrighted **GOOD-LITE®** and third party software stored in semiconductor memories or other media. Laws in the United States and other countries preserve for **GOOD-LITE®** and third party software providers certain exclusive rights to distribute or reproduce the copyrighted software. Accordingly, any copyrighted software contained in the **GOOD-LITE®** products may not be modified, reverse-engineered, distributed, or reproduced in any manner to the extent allowed by law. Furthermore, the purchase of the **GOOD-LITE®** products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents, or patent applications of **GOOD-LITE®** or any third party software provider, except for the normal, non-exclusive, royalty-free license to use that arises by operation of law in the sale of a product.

GOOD-LITE®
The Quality Always Shines Through
P.O. Box 387
Streamwood, IL 60107-0387
Phone: 800-362-3860 Fax: 888-362-2576
www.good-lite.com

900706	20/25 HOTV CHART
900707	HOTV CHART (900-HO)
900708	LEA SYMBOLS® CHART

OVERLAYS

904003	OVERLAY FOR LETTER CHART #900700
904004	OVERLAY FOR E CHART #900702
904005	OVERLAY FOR HAND CHART #900703
904006	OVERLAY FOR SYMBOL CHART #900705
904007	OVERLAY FOR HOTV CHART #900707
904008	OVERLAY FOR 20/25 LETTER CHART #900704
904009	OVERLAY FOR 20/25 HOTV CHART #900706
904010	OVERLAY FOR LEA CHART #900708

CHARTS WITH OVERLAYS

904011	LETTER CHART #900700 WITH OVERLAY
904012	E CHART #900702 WITH OVERLAY
904013	HAND CHART #900703 WITH OVERLAY
904016	20/25 LETTER CHARTS #900704 WITH OVERLAY

CHART TEST SETS WITH OVERLAYS

904014	SYMBOL CHART #900705 WITH RESPONSE PANEL, FLASH CARDS & OVERLAY
904015	HOTV CHART #900707 WITH RESPONSE PANEL, FLASH CARDS & OVERLAY
904017	20/25 HOTV CHARTS #900706 WITH RESPONSE PANEL, FLASH CARDS & OVERLAY
904018	LEA SYMBOLS® CHART #900708 WITH RESPONSE PANEL, FLASH CARDS & OVERLAY

TEST SET PARTS

700515	HOTV FLASH CARDS (4)

The RCD resumes a low power mode after the pressed keypad button is released, to conserve battery life. However, the batteries will eventually become too low for proper operation. A built-in battery detector will cause multiple beeps when the keypad is depressed to alert the operator to replace the four (4) AA alkaline batteries. Rechargeable batteries should never be used. When the RCD will not be used for several weeks, the batteries should be removed to prevent unnecessary drain. Other than replacing batteries, there are no user serviceable parts inside the RCD.

Batteries are removed and replaced by sliding off the battery cover. Remove the batteries and replace the new ones with the proper polarity “+” and “-” as indicated inside the battery compartment. When the last battery is inserted into place, a single beep will be produced indicating the RCD is ready to operate. Replace battery cover.

Light Test Auto Run

The RCD also includes a light test auto run feature for a quick light test and demonstration purposes. The mode is entered by simultaneously depressing the two lower outside keypad buttons. The lights on the test cabinet will sequence continually until the OFF key is depressed.

4. Test Cabinet

The test cabinet is controlled by the RCD explained in Section 3.

Please note that test cabinet is always on when unit is plugged in.

When the unit is plugged into a source of 120 VAC, 60 Hz power, a short beep will be heard to signal it is ready to operate and receive signals from the RCD. If the beep is not heard, check the AC plug connection for power availability.

When plugged into power, the test cabinet will emit a short beep approximately every fifteen minutes (if a RCD command is not received) to alert the user power is still being applied. When the test cabinet receives a command from the RCD, the selected light will turn ON and unless commanded to turn OFF by the remote control, will stay ON for only 30 seconds for the frosted light bulbs or 60 seconds for the red muscle light bulbs. However, when the remote control sends the unique two key light test - auto run command, the auto run will continue to run until the OFF key is depressed on the remote control.

Other than replacing light bulbs or batteries, there are no user serviceable parts inside the test cabinet or the RCD. Bulbs can be replaced with the bulb changer included in repair kit.

WARNING:
The frosted light bulbs are different voltage than the red muscle light bulbs and should not be interchanged or damage could result which could terminate the warranty.

If service is necessary, return the entire unit with the RCD to the factory for authorized repair. See section 17 for more information.

Optional accessories can be purchased for your **INSTA-LINE PLUS™**, refer to section 20 for more information.

5. Screening Procedure

From birth to six years of age the vision process matures. If this developmental process is interrupted before six years of age, permanent changes may occur in the visual pathways resulting in amblyopia (lazy eye). Prevention of amblyopia through early identification of children with risk to develop amblyopia, with observable symptoms or visual acuity problems is of primary importance in vision screening. When screening preschool children it is important to find out, whether the infant/child uses both eyes together and how each eye is seeing independently.

20. Accessories and Replacement Parts

STOCK NO.	DESCRIPTION
904000	BASIC INSTA-LINE PLUS WITH MAINTENANCE KIT, OCCLUDER (NO CHARTS)
905000	COMPLETE INSTA-LINE PLUS-E CHART, LETTER CHART AND HOTV SET WITH OVERLAYS, MUSCLE TEST AND TWO PAIR OF HYPERPOIA GLASSES
906000	PRE-SCHOOL INSTA-LINE PLUS-INCLUDES HOTV SET WITH OVERLAY

ACCESSORIES

904001	REMOTE CONTROL DEVICE (RCD)
904526	INSTRUCTION BOOK
904024	MAINTENANCE KIT WITH BULB CHANGER, 1 FROSTED AND 1 RED BULB
900525	BULB CHANGER
900542	FROSTED BULBS (10 PACK)
904576	#63R RED MUSCLE BULBS (10 PACK)
900008	MUSCLE IMBALANCE TEST (PRISM, RECTANGLES & GRADING CARD)
900500	PRISM ONLY
900522	PLASTIC RED RECTANGLES ONLY
900550	MUSCLE TEST GRADING CARD
900002	PLUS 2.25 HYPEROPIA GLASSES
900003	PLUS 1.75 HYPEROPIA GLASSES
904527	BATTERIES SET OF 4 AA BATTERIES

CHARTS

900700	LETTER CHART (900-L)
900702	E CHART (900-E)
900703	HAND CHART (900-H)
900704	20/25 LETTER CHART
900705	SYMBOL CHART (900-S)

dampened with any NON-ABRASIVE commercially available cleaner. Cleaners or water should NEVER be sprayed directly on unit or RCD.

19. Frequently Asked Questions

Question: How many optotypes can an individual miss and still receive credit for a specific line on an eye chart?
Answer: Credit is given to a specific line of optotypes when 50% (e.g. 3 of 4, 4 of 6) or more have been correctly identified.

Question: What is an optotype anyway?
Answer: It is a character of uniform size and shape that is calibrated to a standard.

Question: How can I obtain replacement parts and repair service for my GOOD-LITE® product?
Answer: Replacement parts/service can be obtained by contacting GOOD-LITE®.
Phone: 1-800-362-3860
Fax: 1-888-362-2576
Web Site: www.good-lite.com

Question: Where should the eye chart be positioned?
Answer: It should be placed so that the patient's eyes are level with the center of the eye chart. Approximately at the 20/50 line.

Question: What is considered passing for near and far vision screening?
Answer: 3 - 4 years old 20/40 line, 5 year olds 20/30 line, 6 year olds 20/25, 7 years old 20/20 line

When testing adults it is customary to test distance vision first, followed by near vision. It is also customary to first test each eye separately, then binocularly. When testing children, better results are obtained by starting with near vision testing before proceeding to distance vision testing. This allows the child to learn the testing procedures and symbols. The examiner learns what to expect from the child under the most favorable conditions. Also, when testing children, it is important to create a pleasant play situation before testing near and distance vision. Test both eyes first, then each eye separately.

During visual acuity testing, near vision is measured first. The functionally important value is the value measured with both eyes open, because that is the vision the child uses in communication and learning.

Details about Testing

Start testing with binocular testing at near. Distance testing and monocular testing with occlusion of one eye follows naturally once confidence with the child is established. When testing monocularly, test the right eye (O.D.) first followed by the left eye (O.S.), unless there is an obvious negative response to occlusion of the left eye.

During measurement of distance vision the child should be seated in a chair facing the test cabinet (see FIG. 1). Visual acuity is first measured with both eyes open. Then the left eye is occluded and the right eye is tested. Tell the child you are going to cover one eye. Place your GOOD-LITE® plastic occluder over the left eye and instruct the child to hold it there. If the child has difficulty concentrating on more than one task at a time, have a helper or parent hold the occluder. Remember this is a monocular test, cover the eye well and watch for peekers! Illuminate the optotypes allowing response time between them. To pass the test, four of six presented optotypes should be correctly identified. If the child identifies the first four optotypes presented, he/she passes the test for that eye.

The fifth and sixth presentations have to be given only if the child failed to correctly identify one or two of the four originally shown optotypes. Repeating previously shown optotypes may be necessary. Six presentations are the maximum number of optotypes shown per eye. Repeat test procedure occluding right eye.

If the child becomes upset when the left eye is covered, quickly move the cover on the right eye and test the left eye first. The right eye may be amblyopic or near sighted.

Definition of Visual Acuity Threshold

According to the Visual Acuity Measurement Standard, "A line of optotypes is generally considered to have been read correctly when more than 50% (e.g., 3 of 5, 4 of 6) of the optotypes presented have been read correctly."

Suggested Passing

3 and 4 year olds use 20/40 optotypes
5 year olds use 20/30 optotypes
6 year olds use 20/25 optotypes
7 year olds use 20/20 optotypes
(Above are suggestions, please check your mandated criteria.)

6. Visual Acuity

Matching Objects (optotypes)
LEA SYMBOLS®, HOTV, Hand & "E"

Matching is a good method in determining visual acuity at an early age. The first step is to familiarize the child with the four optotypes prior to the vision screening. Before you begin screening, show the child the conditioning flash cards and ask the child to point to the same shape on the response panel. A verbal response

detection and correction, or help from special education can be the most rewarding function of our schools.

However, it is important to remember that there are children whose visual acuity and eye alignment are normal, yet they have major problems with the use of vision because of brain damage related vision impairments.

16. Reimbursement

The standard code for acuity vision screening is 99173 "screening test of visual acuity, quantitative, bilateral".

17. Warranty and Service

All **GOOD-LITE®** products are warranted for 1 year from date of original purchase against defects in materials or workmanship after normal use. **GOOD-LITE®** will, at its option repair or replace products found to be defective.

If service is necessary, return the entire unit with the remote control device (RCD) to the factory for authorized repair.

Other than replacing light bulbs there are no user serviceable parts inside the test cabinet. Bulbs can be replaced with the bulb changer included in repair kit.

A built-in battery detector will cause multiple beeps when the keypad on the RCD is pressed to alert the operator to replace the four (4) AA alkaline batteries. Rechargeable batteries should never be used. When the RCD will not be used for several weeks, the batteries should be removed to prevent unnecessary drain. See section 3 for more information on battery replacement.

18. Cleaning and Care of the Unit

Cabinet and charts may be wiped clean using a soft cloth

3. Special consideration in school, such as front seat, large print, selection of games suited for children without depth perception, etc.

14. Those Wearing Glasses

Many eye consultants prefer that the children wearing glasses should not be screened, but the advantages of testing children who are wearing glasses are as follows:

1. All children are tested equally
2. Children with glasses generally average poorer vision than those without, and some may require special classes or consideration
3. Errors such as wearing an old prescription or someone else's glasses can be checked.

HOWEVER, USUAL SCREENING PASS/FAIL LIMITS DO NOT APPLY IN THESE CASES BUT HAVE TO BE COMPARED WITH THE RESULT REPORTED BY THE CONSULTING DOCTOR.

15. An Ideal Eye Program

This program will require teamwork between the visual acuity examiner, parents, doctors and teachers.

1. Testing at near and at a distance with standard size equipment similar to that used by eye doctors.
2. Cooperation with the local eye doctor adjusting the referrals up or down to avoid under- and over-referrals.
3. Parents and teachers must understand each child's situation and follow the doctor's recommendation as to when and how much the glasses or other aids are to be worn.
4. Special education will be required for a few severely visually impaired children.

Visual acuity, faulty eye alignment, and other conditions are readily detectable in pre-school and school children. Their

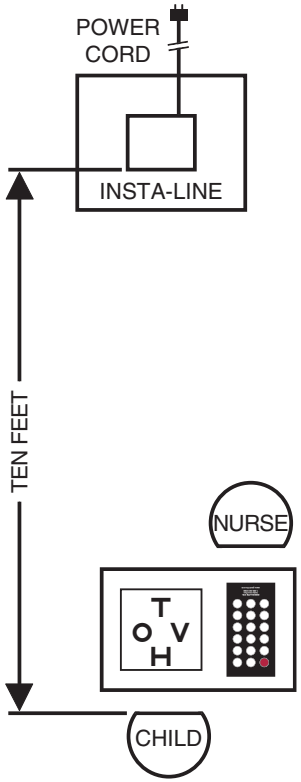


FIG. 3

is acceptable if the child is consistently accurate and knows his/her optotypes during the conditioning phase. Continue revealing or rotating the flash cards until you are confident the child can point to each shape or can verbally identify each optotype. When the child can match the optotypes without difficulty, it is time to transfer the matching task from the flash cards to the **INSTA-LINE PLUS™** test chart.

The child should be seated in a chair facing the instrument, with the response panel on the table in front of the child (see FIG. 3). The response panel, when placed on the table, should show all the optotypes in their normal upright position (FIG. 3). If the child has been adequately conditioned, show a few large optotypes on the test chart to make the transition from flash cards to test chart easier. Next, show optotypes of the appropriate size (20/40 optotypes for under 4 year olds and 20/30 for 5 year olds, 20/25 for 6 year olds and 20/20 for 7 year olds). Ask the child to match the lighted optotypes on the test chart with the ones on the response panel.

Once you are confident in the child's matching ability, the left eye is occluded and the right eye is tested. Tell the child you are going to cover one eye. Place your **GOOD-LITE®** plastic occluder over the left eye and instruct the child to hold it there. If the child has difficulty concentrating on more than one task at a time, have a helper or parent hold the occluder. Remember this is a monocular test, cover the eye well and watch for peekers! Illuminate the optotypes allowing response time between them. To pass the test, four of six presented optotypes

should be correctly identified. If the child identifies the first four optotypes presented, he/she passes the test for that eye. As there are only four responses possible, repeating previously shown optotypes may be necessary. The fifth and sixth presentations have to be given only if the child failed to correctly identify one or two of the four originally shown optotypes. Six presentations are the maximum number of optotypes shown per eye. Repeat test procedure occluding right eye.

Pass/Fail Criteria - Preschool (distance). The child must correctly identify 4 out of 6 optotypes in each eye to pass the screening test.

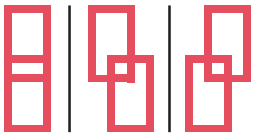
7. Muscle Imbalance

The following are required for the test:

1. The red rectangle target that is illuminated by pressing the red MSCL muscle button on the RCD.
2. An eight diopter prism in a plastic handle.
3. 5x9 inch plastic recognition panel with red rectangles on one side, and black rectangles showing those that pass and fail with explanation.
4. Two clear plastic rectangles with red borders.

Procedure

The subject is to keep BOTH EYES OPEN and look at the red target while the examiner holds the prism VERTICALLY over first one eye and then the other; allow at least 15 seconds for the subject's response. Older children are asked, "Do the red rectangles (squares) touch or overlap?" When the prism is placed over each eye. If they do, they pass.



The value of the test is to warn students, teachers and parents of this defect. For this test, we recommend **GOOD-LITE®** No. 730000 16 Plate Color Test. Its durable non-fading color plates are mounted in a loose-leaf binder and can easily be replaced if soiled. IT IS A VERY SENSITIVE SCREENING TEST AND DOES NOT REVEAL THE SEVERITY OF THE COLOR DEFICIENCY. SOMETIMES A PERSON WITH NORMAL COLOR VISION MAKES ERRORS IN THIS TEST. THEREFORE POSITIVE FINDINGS SHOULD BE CHECKED WITH A QUANTITATIVE TEST.

12. Near Vision (Near Point)

Near point reading cards are not generally used in the lower grades except to determine if a poor reader can really see small print. If a chid can COMFORTABLY read 4 point print or smaller, there is no near point visual problem.

Between the ages of 40 and 45 people lose their ability to read close or accommodate. **GOOD-LITE®** has a suitable reading card for testing reading vision.

13. Referral Slips

Each school has its own form for yearly health records and referral slips to doctors. The report to the doctors would be of greatest value if it gave the reason for referrals such as:

1. Poor distant vision
2. Reading difficulty
3. Failure of hyperopia test
4. Muscle imbalance
5. Inflamed eyes.

The form should then be returned to the school by the doctor indication:

1. Corrected vision in each eye
2. When glasses are to be worn

10. Pre-School and Kindergarten Acuity Testing

Testing pre-school and kindergarten children with the “E” is difficult. It requires two persons and often special preparation of the child.

Kindergarten and preschool children can be easily tested with the LEA SYMBOLS® by Lea Hyvärinen, M.D. or “HOTV” by Otto Lippmann, M.D. These optotypes adhere to recognized standards. They are not reversed when viewed in a mirror, so they can be used with children who have difficulty with mirrored images.

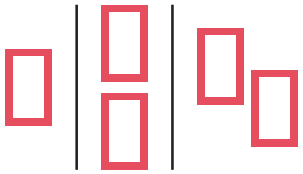
The LEA SYMBOLS® and “HOTV’ matching method will determine visual acuity more accurately and at a younger age than any other method. The first step is to familiarize the child with the four optotypes which are referred to as objects. Flash cards are provided with the tests for this purpose. It is suggested that the LEA TEST or “HOTV” be used with the **INSTA-LINE PLUS™** or with the **GOOD-LITE®** No. 600 Eye Cabinet with the No. 614 Linear Mask in order that one object may be shown at a time. When an object is shown on the chart, the child is asked to match it with an object on his response panel. The child may either point to or cover up the object on the response panel to indicate his choice. Vision is recorded at the line where 4 out of 6 responses are correct.

LEA SYMBOLS® and “HOTV” sets are also available for testing with portable charts.

11. Color Vision

During the last five years there has been an increased interest in color vision. Children are never color blind, but 5% or more of the boys are color deficient for red and/or green. They generally can state the color of objects but can not match colors in fine shades of orange-yellow-chartreuse, or blue green to purple. They have a congenital defect that is not correctable.

Younger children (6 years and under) do not understand touch or overlap so they are asked to place the two red border plastic rectangles as they saw them. The examiner then decides if they touch or overlap. Another method is to use the 5x9 inch recognition panel. Children may readily point to the one or pair of rectangles that are like what they saw.



Referrals are made for those who see only one rectangle (SUPPRESSION) and those who see two rectangles that DO NOT overlap.

School consultants, states and others differ on the need and method of testing eye alignment (muscles). It is relatively safe to say that this test was not done 25 years ago and that today many schools are referring children for this finding. This test is built into the **INSTA-LINE PLUS™** so it is readily available. It refers those with over 6 diopters eso or exophoria, 1 1/2 diopters hyperphoria and suppression. It has a very definite pass or fail response and agrees with the eye doctor’s findings.

These instructions for the muscle test are included with the accessories for the test.

8. Hyperopia

The visual acuity test does not detect hyperopia. Therefore, various plus strength sphere glasses are used to screen out different percentages of hyperopic children.

Glasses are used with this test and they vary in strength from 2.25 diopters for the youngest child to plus 1.75 diopters for adults. These glasses should be worn at least one minute prior to the test to allow for relaxation of accommodation.

Hyperopia is tested with BOTH EYES OPEN and is done with the 20/30 line on the test chart. If the child can read the 20/30 line on the chart he/she fails; if he/she can not, he/she passes.

Both eyes can be tested together, because the examiner is not required to determine if both or just one eye has excessive hyperopia. Individual eye testing would result in a higher number of failures. Also, since the longer the subject looks through the glasses the better he will see, he should wear the glasses one minute before final appraisal.

Those who can read the 20/30 line with both eyes open "fail". The number who fail is normally about 10 percent, and of this number, only those who are doing less than average work scholastically or who have an obvious positive response to the glasses should be referred.

Hyperopia is a normal condition for children and is harmful to the child only if it affects his muscle balance or reading ability. Hyperopia testing is of little value in the lower primary grades, because most children have as much as 10 diopters of accommodation, and because books are printed in very large type.

Test glasses plus 1.75 and plus 2.25 diopter strength are available from **GOOD-LITE®**.

9. Suggested Guide for Screening Programs with the use of GOOD-LITE® Equipment

During the past 30 years school testing of visual acuity has become almost universal. This has been due to the combined efforts of the school nurse, ophthalmologist, optometrist, public health officer, Prevent Blindness America, Lions' Club and others. Today the question is not whether to give the test, but rather how extensively, how frequently, and how accurately. Accuracy is important because erroneous referrals, over-referrals, will frequently discredit an otherwise splendid program. All new students are to be given all three tests according to their grade.

Adults over 40 years require a reading test.

Use age appropriate test charts. (LEA SYMBOLS®, Letter, HOTV, "E", Hand, etc.)

College students, office and exacting shop workers require 20/20 vision at near and at distance (the normal mean value is 20/16), an excessive hyperopia test and a muscle test.

The above high standards are designed to detect the students who may benefit from a professional examination, especially if their grades are below average. In addition, it must be kept in mind that any screening test for such complicated mechanisms as VISION, must be considered only a partial testing. Passing the tests does not mean that the eyes and vision are normal. SCREENING IS APPLICABLE TO SYMPTOM FREE INDIVIDUALS ONLY. Therefore, other factors such as poor grades, inflamed eyes, and faulty head and eyelid positions should be used as additional criteria for referrals.

Some of the reasons for doing these tests as outlined are:

1. Early detection of amblyopia is essential to successful treatment. The difference in the vision of each eye is important. For example, a child with 20/40 and 20/25 or 20/30 and 20/20 vision is the other eye is in greater need of referral than a child with 20/40 vision in each eye.
2. Children are almost never aware of their poor vision. Someone must point it out to them. The BIannual visual acuity test is ADVISABLE because myopia MAY RAPIDLY increase in the growing child. Generally a child is greatly handicapped for blackboard work when his vision is less than 20/30.
3. The reason for the hyperopia test is to save the far sighted child excessive eye strain. Eye glasses worn at least for study may be of great value.