

Title: **VISUAL SCREENING**
Ref Number: **9**
Location: **LIGHTING LABORATORY**
Supervisor: **JAFAR KHALID**
Academic: **JOSEPH PEKRIS**
Team Size: **~4**
Environment: **INDOORS**

OBJECTIVE

To experience a visual screening test, normally undertaken by opticians, to determine the quality of your vision, with respect to colour.

APPARATUS

Rapid Screening Sheet (OVS)

THEORY

You may for example have employees who are complaining about the lighting. If you suspect that lighting is not at fault- you may wish to suggest the employee is visually screened.

PROCEDURE: The Standard Battery Occupational Visual Service.

**For all tests use both eyes, binocular vision with visual aids (contact lenses or glasses).
Read the bold line out to your partner as you go through the tests and mark the record sheet**

Test Number 1: Vertical Imbalance (Farpoint) - OVS Card Number 9-1

Does the yellow line pass entirely above, entirely below, or through any part of the red ball?

This test shows whether the visual axes of the two eyes are in the same vertical plane. Although to be absolutely accurate the yellow line should pass through the centre of the red ball, the record form should be checked at “0” if the line passes through any part of the ball. If the yellow line is above or below the red ball, record the location in the corresponding diagram on the record form.

If, glasses are worn, and the line doesn’t pass through the ball, test again without glasses. It could be the glasses are out of alignment, and the artificial vertical imbalance will cause severe symptoms of ocular discomfort.

Test Number 2: Lateral Imbalance (Farpoint) – OVS Card Number 9-2

When the arrow comes to rest, to what numbers or between what numbers does it point?

If the arrow points anywhere between 7 and 11, acceptable lateral posture is indicated at far point. Seven and Eleven are doubtful.

Lateral imbalance is indicative of faulty posture of the eyes and of poor coordination between them, resulting in impaired visual skills.

Test Number 4: Far vision – Both Eyes – OVS Card Number 9-4

There are 10 signboards placed in the picture. In each signboard there are five white diamonds, and in one of these diamonds is a black dot. This dot is located either in the top, bottom, right or left diamond. Tell me the location of the location of the dot in each signboard, starting at Number 1.

This test has two purposes:

- i) It provides an indoctrination into the testing situation.
- ii) If scores are lower on the both eye test than on the “best eye” test either the right or left eye, some difficulty in binocular seeing may be indicated. As a rule, Test 2 and 3 or both are found unsatisfactory.

Snellen equivalent of Tests 4, 5 and 6 valid only for when 1 eye is occluded:

1	20/100
2	20/60
3	20/40
4	20/28
5	20/25
6	20/22
7	20/20
8	20/18
9	20/17
10	20/15 Vision

Test Number 5: Far vision – Right Eye – OVS Card Number 9-5

There are 10 signboards placed within the picture. In each signboard there are five white diamonds, and in one of these diamonds is a black dot. This dot is located either in the top, bottom, right or left diamond. Tell me the location of the location of the dot in each signboard, starting at Number 1.

Note: If subject cannot see the dot in 7th signboard, cover the left eyepiece of the instrument so that the right eye is in use. If more dots can now be seen than previously, indicate this on the record form by an “0” instead of a check mark.

It will be noted that this test, also is given with both eyes open, as they are used in life. Since the dots to be seen are only on the right side of the cards, the subject is being given, without their knowledge and with both eyes open, a test for the right eye only. Use a check mark on the record form to indicate the last correct reply.

By occluding the left eye so that the employee uses his right eye only, the visual acuity of this right eye frequently surpasses that which was possible when both eyes were used together. Instances will be found where there is apparently no vision at all in the one eye when both eyes are being used, but 20/20 vision is achieved when the opposite eye is occluded

This phenomenon is known as suppression. One instance of suppression that often develops is the case of a person, who, through the continued use of one eye in a microscope, a surveyor’s transit, or a jeweller’s loop, builds up a habit of suppressing vision in the opposite eye.

Since tests for visual acuity are usually made on the Snellen Chart and by occluding one eye, thus giving the test monocularly, it is obvious that these cases of suppression would not ordinarily be

discovered. Thus it is important for close cooperation between industry and the doctor to whom referrals are made, else misunderstandings will happen.

Test Number 6: Far vision – Left Eye – OVS Card Number 9-6

Repeat Test Number 5

Test Number 7: Depth Perception (Far Point) – OVS Card Number 9-7

On the line 1, you see a star, a square, a cross, a heart and a ball. Which one of these characters stands out towards you in the other lines? Line 2? Line 3? Etc

This is a test of the employee's depth perception or ability to judge distance with accuracy. Any employee operating moving vehicles, must be able to judge distances accurately and quickly. Depth perception is a highly developed visual skill and is the first one to be sacrificed when difficulty develops in the ocular behaviour.

The percentages of stereopsis represented by the different lines in the test are:

1 – 10%; 2—20%; 3—30%; 4—40%; 5—50%; 6—65%.

A high percentage of stereoscopic ability is required for dynamic work and as such at least Line 5 should be passed. These percentages are based on another Keystone Stereometric Series, which affords a more detailed test for depth perception.

Test Number 8: Colour Vision (Severe) – OVS Card Number 9-8

Do you see 3 circles? Tell me the number in each circle. Top? Lower Left? Lower Right?

This tests for severe colour deficiency. If the individual cannot quickly and easily give the numbers in two of the three circles, he may be considered severely colour deficient. Failure or doubt on Tests Number 8 or 9 may be further investigated on the Dvorine Pseudo – Isochromatic Plates. Available from the Keystone View Company.

Test Number 9: Colour Vision (Mild) – OVS Card Number 9-8

Do you see 3 circles? Tell me the number in each circle. Top? Lower Left? Lower Right?

This tests for mild colour deficiency. If the individual cannot quickly and easily give the numbers in one of the three circles, he may be considered mildly colour deficient. Failure or doubt on Tests Number 8 or 9 may be further investigated on the Dvorine Pseudo – Isochromatic Plates.

FOR NEAR POINT TESTS : POSITION AGAINST STOP ON SHAFT NEAR INSTRUMENT HEAD

Test Number 10: Vertical Balance (Near Point) – OSV Card Number 9-10

Does the yellow line pass entirely above, entirely below, or through any part of the red ball?

This test should be interpreted in the same manor as Test Number 1. If the subject is wearing bifocals, it may be that he will show a vertical imbalance at near but none at the far point. Persons who do not wear glasses are likely to show the same vertical posture in the near and far points.

Test Number 11: Lateral Imbalance (Near Point) OSV Card Number 9-11

To what number does the arrow point?

If the arrow points anywhere between 3 ½ and 7, an acceptable lateral posture is indicated for near point. 3 ½ and 7 are doubtful.

Test Number 13: Near Vision (Both Eyes) OSV Card Number 9-13

Notice the 22 circles making up the large circle. On some of the circles there are black lines, other have black dots, and others are gray, having neither lines nor dots. Beginning with Circle 1 identify each circle as having lines, dots or being gray. What do you see in Circle 1, Number 2, etc.

Note: If the subjects goes as far as Circle 9 it is feasible to try to start him on Circle 6 on Test Number **14 (Right Eye)** and **15 (Left Eye)** to save time

This is a test of the visual acuity of both eyes taken at the near point working distance of 16 inches (0.40 m) If the nature of the subject's work is such that it does not make any difference which eye sees, this will be the only near point acuity test necessary, skip Test Number 14 and 15.

Snellen equivalent of Test 13,14 and 15. Valid only when one eye is occluded:

- 1 —20/200
- 2 ---20 /100
- 3 —20/67
- 4 —20/50
- 5 and 6—20/40
- 7 and 8—20/33
- 9 and 10—20/28
- 11 and 12—20/25
- 13 and 14—20/22
- 15 and 16—20/20
- 17 and 18—20/18
- 19 and 20—20/17
- 21 and 22—20/15

The complete 3 card test for near point should be given to every employee who uses his eyes for critical seeing for prolonged periods. While the examiner may feel that the 70 seconds necessary to give the 3 tests is a long period, it serves a useful purpose. If near point vision is maintained with difficulty, the 3 tests will show up diminution of achievement through fatigue. An employee whose vision fatigues on a 1 minute test will have difficulty in maintaining visual efficiency over an entire working day.

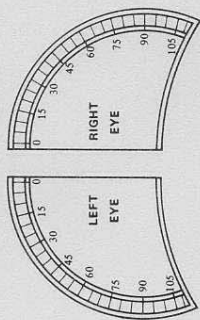
RESULTS

On the OSV sheet

DISCUSSION

Analysis the result of the OSV using the above information

PERIMETER
 LATERAL FIELD READING



RAPID SCREENING TESTS

FAR POINT TESTS	
O.V.S. Rapid Screening Test Card	
ACUITY	Upper Blocks 6/12
Col. 1 R.E.	P E C F D E D F C Z P
Col. 2 L.E.	F D P E C F C Z P E D
Col. 3 Both	D C F E P Z P E D F C
Right Eye 6/	Left Eye 6/
Pass	Both 6/
	Recheck
BINOCULAR COORDINATION - Depth Perception	
Top Line	Block 4 Symbol Closer
Middle Line	Block 5 Symbol Closer
Bottom Line	Block 6 Symbol Closer
	Recheck
All three symbols should be correctly located. If not, check on Standard O.V.S. Test No. 5.	
COLOUR PERCEPTION	
Correct Responses	
Block 5 - 1	Pass
Block 6 - 2	Recheck
Block 7 - 3	Pass
Block 8 - 4	Recheck

Blocks 5 and 6 check Red/Green. Block 7 and 8 check hues of Red and Green. Consider Colour blind only if Blocks 5 and 6 or either of them is missed. Check on Standard O.V.S. Card if any block cannot be identified.

NEAR POINT TESTS

Keystone Near Point Snellen Acuity Test Card	
7. Paragraph Reading - Both Eyes	
Top Line N/8 - Good vision is important to	
Middle Line N/6 - general health as well as	
Bottom Line N/4 - safety and job performance.	

Snellen Acuity Test, Near Point			
	Left Eye	Right Eye	Both Eyes
1 - N/18	A	E	C
2 - N/12	L P E	E D L	P E D
3 - N/10	C F D P E	F D P E C	P E C F D
4 - N/8	L O P Z D	E L O Z D	F E L O P
5 - N/6	P Z E O L	E P L Z O	L F E P O
6 - N/4	E D F C Z	Z P D F C	D F C Z P
	D F C Z P	Z P D F C	E D F C Z

Right Eye N		Left Eye N		Both N	
Pass	Recheck	Pass	Recheck	Pass	Recheck

Failure on any portion of these tests, should be re-checked on the Standard O.V.S. Tests.
 PASSED
 RAPID SCREENING TESTS

KEYSTONE

Occupational Visual Service

Self Scoring Form No. 9

NAME

DEPT.

MALE FEMALE	AGE	WEARS GLASSES	AT ALL TIMES	FAR VISION (Driving)	NEAR VISION (Reading)	NEVER

STANDARD O V S FAR POINT TESTS

JOB ASSIGNMENT	VISION REQUIREMENTS	NEAR POINT ONLY	BIFOCALS	TRIFOCALS	CONTACT LENS	READING GLASSES (Near Point Only)
GLASSES WORN DURING TEST	NONE	SINGLE VISION ONLY				

OVS	VERTICAL BALANCE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-1	4-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
OVS 9-3	FUSION	THREE														
OVS 9-4	VISION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-5	BOTH EYES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-6	VISION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-7	RIGHT EYE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-8	LEFT EYE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-9	DEPTH PERCEPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-10	COLOUR VISION-DEFECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-11	SEVERE DEFECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-12	COLOUR VISION-DEFECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-13	SEVERE DEFECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-14	COLOUR VISION-DEFECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-15	SEVERE DEFECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

STANDARD O V S NEAR POINT TESTS

OVS	VERTICAL BALANCE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-10	4-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
OVS 9-12	FUSION	THREE														
OVS 9-13	VISION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-14	BOTH EYES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-15	VISION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-16	RIGHT EYE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-17	LEFT EYE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-18	DEPTH PERCEPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-19	COLOUR VISION-DEFECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-20	SEVERE DEFECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-21	COLOUR VISION-DEFECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OVS 9-22	SEVERE DEFECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

PASSED _____ REFERRED FOR ATTENTION _____

TESTS ADMINISTERED BY

DATE: