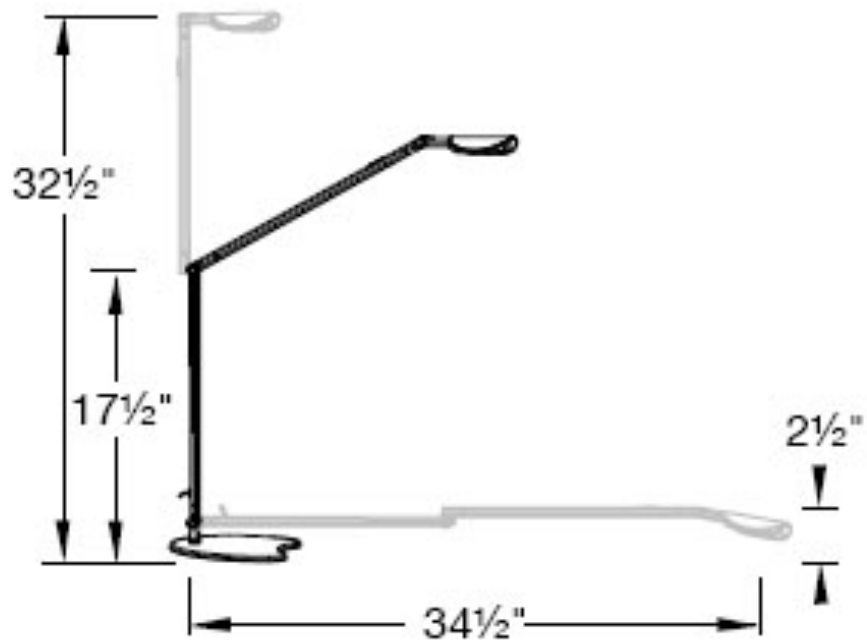


# LIGHTING & ERGONOMIC

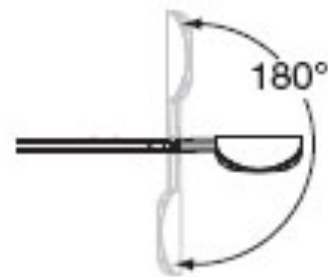
### **How is lighting ergonomic?**

Notice the position you are standing or sitting in as you read this. Did you move to get better lighting? Did you position your body in a way to help improve the visual contrast of the text, reduce glare or avoid a shadow? That very movement is the essence of ergonomics.

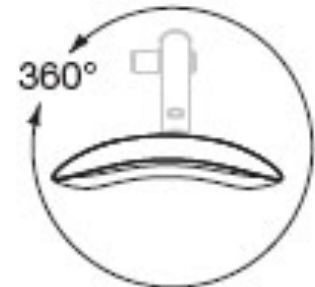
### Horizontal and vertical reach



### Shade pivot



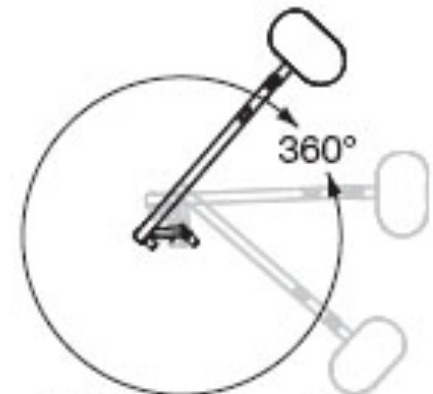
### Shade rotation



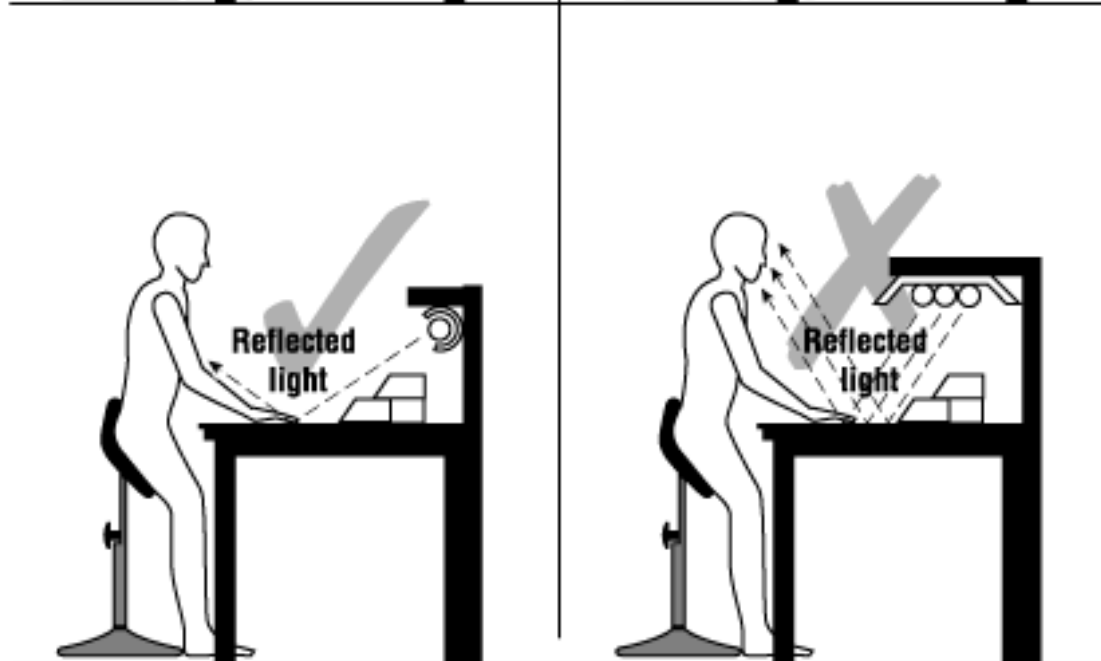
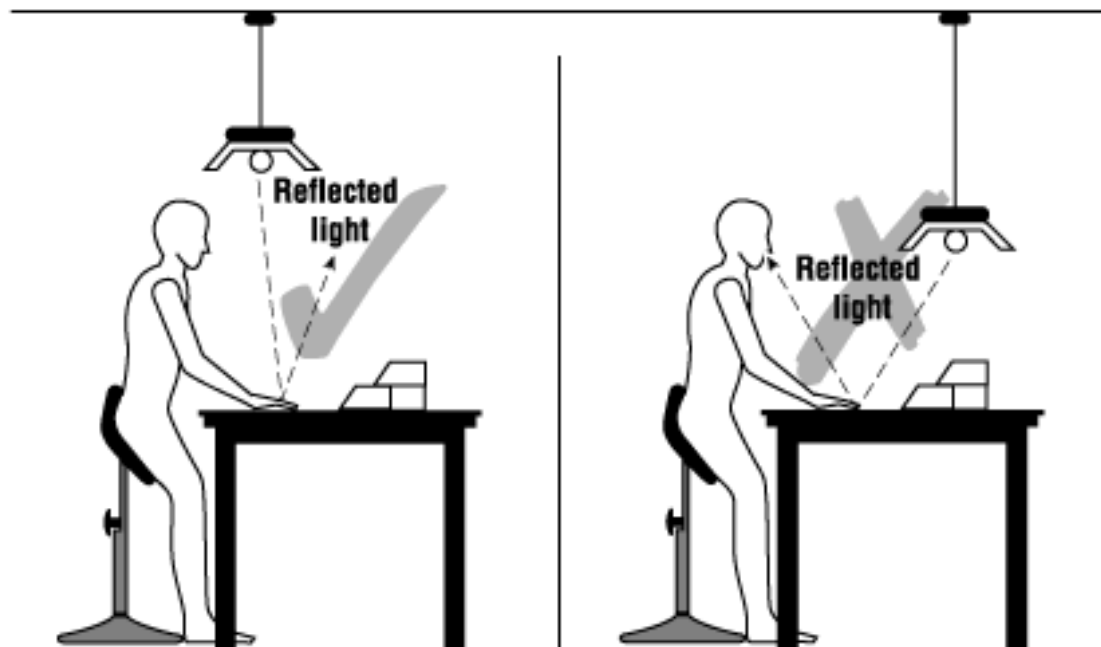
### Fixture rotation



Desk Base



All Other Mounts



## What are basic types of artificial lighting?

There are three basic types of lighting:

- General  
General lighting provides fairly uniform lighting. An example would be ceiling fixtures that light up large areas.
- Localized-general  
Localized-general lighting uses overhead fixtures in addition to ceiling fixtures to increase lighting levels for particular tasks.
- Local (or task)  
lighting increases light levels over the work and immediate surroundings. Local lighting often allows the user to adjust and control lighting and provides flexibility for each user

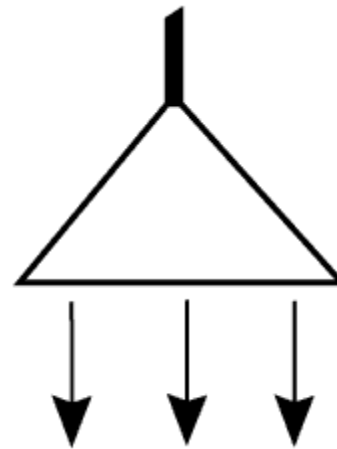


## What are different types of light fixtures?

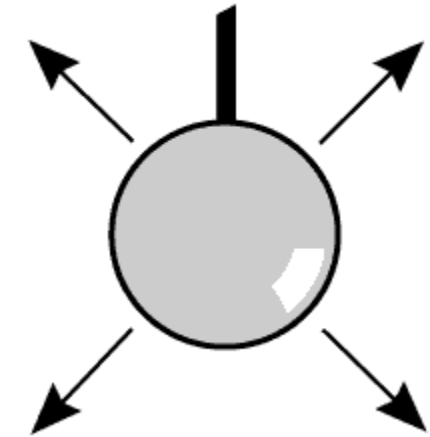
The complete lighting unit (also called the light fixture) controls and distributes the light. (Light fixtures are often referred to as "luminaires" in technical publications.) Various types of light fixtures are designed to distribute light in different ways. These fixtures are known as:

- Direct.
- Direct-indirect.
- Indirect.
- Shielded (various types).

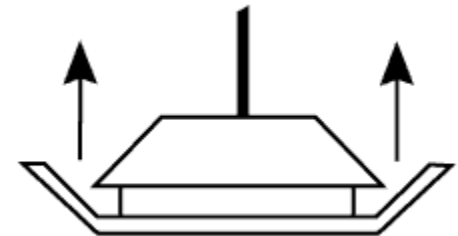
**Direct light fixtures** project 90 to 100 percent of their light downward toward the work area. Direct lighting tends to create shadows.



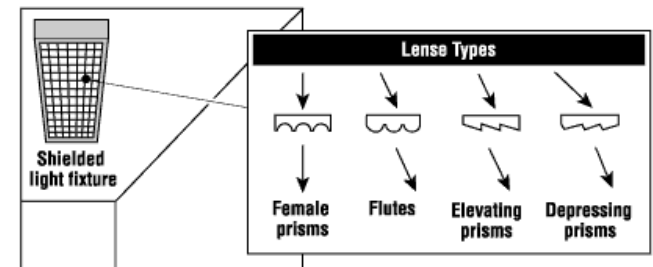
**Direct-indirect light fixtures** distribute light equally upward and downward. They reflect light off the ceiling and other room surfaces. Little light is emitted horizontally meaning direct glare is often reduced. They are usually used in "clean" manufacturing areas.



**Indirect light fixtures** distribute 90 to 100 percent of the light upward. The ceiling and upper walls must be clean and highly reflective to allow the light to reach the work area. They provide the most even illumination of all the types of fixtures and the least direct glare. Indirect light fixtures are usually used in offices.



**Shielded light fixtures** use diffusers, lenses and louvers to cover bulbs from direct view; therefore, helping to prevent glare and distribute light.



# LIGHTING ERGONOMICS - CHECKLIST

## General

- Enough light for the task.
- No troublesome reflections.
- No glare along or near normal line of sight
- No frequent transitions between extremes of light and dark or near and far.
- Lamps covered to diffuse light evenly.
- Adequate lighting of upper walls and ceilings.
- Shadows eliminated.
- Bright shiny objects out of view.
- Lights provide steady illumination (e.g., lights do not flicker)
- Workers do not complain of visual strains and/or headaches (check yes if there are no complaints)

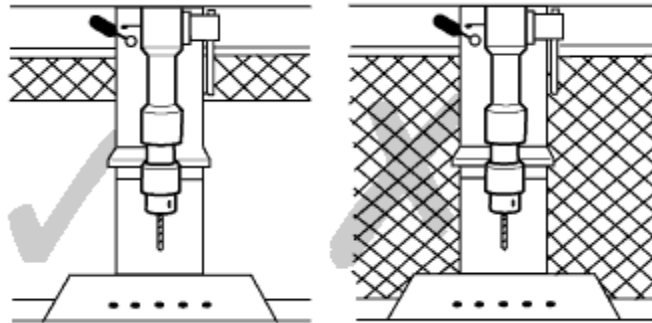


## Office

- Clear and readable images on VDT.
- Well-placed local lighting.
- Computer monitors are positioned to reduce glare from various sources (e.g., windows, overhead lighting, etc.)
- Matte finishes on furniture and equipment.
- Blinds or curtains on windows.
- Brightness and contrast controls are properly adjusted on VDTs.
- Appropriate size print, and good contrast is available for reading materials.

## Industry

- Very small objects are magnified in addition to good lighting.
- Moving machinery parts are painted a colour which contrasts with the background.
- Adequate lighting is available in storage rooms, stairways and hallways.
- Simple background is located behind tasks.



## Maintenance

Regular replacement of bulbs.

Regular cleaning of light fixtures.

Regular cleaning of upper walls, ceilings and task stations.



Reference :

[Canadian Centre for Occupational Health and Safety](#)

[http://www.ccohs.ca/oshanswers/ergonomics/lighting\\_survey.html](http://www.ccohs.ca/oshanswers/ergonomics/lighting_survey.html)

[http://www.ccohs.ca/oshanswers/ergonomics/lighting\\_general.html](http://www.ccohs.ca/oshanswers/ergonomics/lighting_general.html)

<http://www.lightingdeluxe.com/workplace-lighting-ergonomics.html>