

## Checklist for Computer Workstations

Please respond to every item of the checklist. To the right you find a corresponding explanation. A 'No'-response implies that you evaluate the corresponding design aspect as deficient. On [www.ergonetz.de](http://www.ergonetz.de) there is a program that allows practicing the application of the checklist.

### 1 General Aspects of the Workstation Facilities

Are all workstation facilities fully functional?  
m Yes m No

Possible workstation facilities are, for example:

- desk, chair, footrest, screen, computer (CPU unit), keyboard, mouse, digitizing board, printer, plotter, copy machine, document holder, phone, calculator, desk light.

Are the surfaces of the workstation facilities light and matt?  
m Yes m No

Light and matt surfaces are defined as follows:

- The shininess of the surfaces should be between medium-matt and silk-matt, the reflectance should range from 20 to 50%, correspondingly. (Can be determined, for example, by referring to a table of reflectance values.)
- Light colours are, for example, white, beige, silicic grey, or light grey.

### 2 Arrangement of the Workstation Facilities

Is the potential of accidents, like stumbling and knocking, eliminated?  
m Yes m No

To minimize the potential of accidents, the following aspects are relevant:

- no stumbling edges,
- no cables on the floor,
- no sharp edges,
- rounded edges,
- fixed supply pipes,
- no objects projecting in circulation areas,
- secure support of objects,
- cabinets and doors without squeezing and clamping points.

Are the space requirements taken into consideration?  
m Yes m No

The available space is sufficient if

- the area behind the desk has a depth of 100 cm, for all points along the desk width,
- a circulation space of 1.5 m<sup>2</sup> exists,
- space for the functional components of the furniture, for example, drawers and doors, exists, with an additional safety clearance of 50 cm,
- passageways for inspection and operation, for example, of windows and doors, have a width of 50 cm,
- the passageway to access the workstation has a width of 60 cm, with multiple users a width of at least 80 cm.

Is sufficient space available to place required task accessories?  
m Yes m No

The space for task accessories is sufficient if

- space for stowing personal properties exists,
- space for the spontaneous filing of documents and task accessories exists.

Is the monitor completely supported by the desk and does not project beyond its surface?  
m Yes m No

Regarding the installation of the monitor, the following aspects should be taken into consideration:

- Equipment should not project beyond the surface of the desk, unless this would not imply an accident potential (for example, if there is a wall behind the desk, rather than a passageway).
- The eye-screen distance is acceptable even if the monitor is completely supported by the desk.

Is the visual distance to the screen, the keyboard, and the document holder (if available) of equal magnitude?  
m Yes m No

The visual distance should be

- adjustable to the individual preferences or
- between 45 and 60 cm, in an upright sitting posture.

<p>Looking at the screen, is the line of vision parallel with the window? m Yes m No</p>	<p>With reference to the line of vision, the following aspects are essential:</p> <ul style="list-style-type: none"> <li>• If the employee is sitting in front of the screen, looking at it, one of his or her shoulders should point to the window.</li> <li>• There is no window in the back of the employee, as well as in his or her line of vision.</li> </ul>
<b>3 Chair</b>	
<p>Does the chair match the minimum requirements? m Yes m No</p>	<p>The following points are the minimum requirements for the chair:</p> <ul style="list-style-type: none"> <li>• 5 wheels, at least,</li> <li>• no tipping potential,</li> <li>• no accidental operation of the adjustment mechanisms,</li> <li>• infinitely variable height adjustability between 42 and 53 cm (with gas spring),</li> <li>• damping when sitting down (even in the lowest position),</li> <li>• no squeezing and clamping points,</li> <li>• seat depth up to 40 cm with backrest tilted forward, up to 42 cm with backrest tilted rearward,</li> <li>• seat width between 40 and 48 cm,</li> <li>• backrest width between 36 and 48 cm,</li> <li>• armrest height between 21 and 25 cm above the seat surface or height adjustable,</li> <li>• armrest length more than 20 cm or adjustable,</li> <li>• distance between armrests between 47 and 51 cm or adjustable,</li> <li>• distance between front edge of the seat surface and front edge of the armrest between 10 and 18 cm or adjustable,</li> <li>• breathable upholstery.</li> </ul>
<p>Is the chair adapted to the body dimensions? m Yes m No</p>	<p>A chair is adapted to the body dimensions of the employee if</p> <ul style="list-style-type: none"> <li>• with the feet resting comfortably, thigh and lower leg form a right angle,</li> <li>• the depth of the seat surface is utilized completely,</li> <li>• the lower edge of the backrest is shortly above the seat surface, in a way that the support of the backrest is at least 17 cm above the seat surface,</li> <li>• the upper edge of the backrest is at shoulder blade level,</li> <li>• in an upright posture and using the armrests, if available, the upper arms are in a relaxed position, upper and lower arms from a right angle, and the elbows are supported by the armrests.</li> </ul>
<b>4 Desks</b>	
<p>Do the desks match the minimum requirements? m Yes m No</p>	<p>The desks have to meet the following requirements:</p> <ul style="list-style-type: none"> <li>• a continuous workspace of at least 1.28 m<sup>2</sup>,</li> <li>• adjustable desk height between 68 and 76 cm or fixed height of 72 cm,</li> <li>• desk width of at least 160 cm (for plain data entry tasks 120 cm),</li> <li>• desk depth of at least 80 cm (as no equipment should project beyond the desk surface, in many cases a depth of 100 cm and more is required),</li> <li>• sufficient space for a flexible arrangement of workstation facilities,</li> <li>• thickness of table-top no more than 3 cm, if possible,</li> <li>• leg space width of at least 58 cm,</li> <li>• leg space height of at least 65 cm,</li> <li>• leg space depth of at least 60 cm (measured 12 cm above the floor),</li> <li>• the leg space should be free of supports and substructures, to allow a comfortable posture.</li> </ul>
<p>Are the desks adapted to the body dimensions? m Yes m No</p>	<p>A desk is adapted to the body height of an employee if</p> <ul style="list-style-type: none"> <li>• with no height adjustability of the desk, the chair is adjusted to the height of the desk,</li> <li>• a footrest is used, in case that the feet do not rest comfortably on the floor, because of the desk and chair heights,</li> <li>• the hands rest on the desk surface or the keyboard, respectively, such that the lower arms and the hands form a straight line, in an upright posture,</li> <li>• a sufficient height for the legs is available, with a minimum of 62 cm, measured at a depth of 20 cm from the front edge of the desk.</li> </ul>

<p>Is the space at and under the desks sufficient to allow adequate movements? m Yes m No</p>	<p>The movement space is sufficient under the following conditions:</p> <ul style="list-style-type: none"> <li>• At the workstation there is sufficient space to vary the sitting posture.</li> <li>• It is possible to alternate between a sitting and a standing work posture.</li> </ul>
<b>5 Keyboard</b>	
<p>Does the keyboard match the minimum requirements? m Yes m No</p>	<p>The keyboard has to meet the following requirements:</p> <ul style="list-style-type: none"> <li>• can be arranged separately from the screen,</li> <li>• tiltable (tilt angle of up to 15°),</li> <li>• non-slipping bottom side,</li> <li>• height at the central keyboard row maximum 3 cm,</li> <li>• matt and light surface,</li> <li>• adequate key size with concave surface,</li> <li>• clear, wear-resistant key labels with dark characters,</li> <li>• smooth but noticeable key depression.</li> </ul>
<p>Is the space in front of the keyboard sufficient to rest the hands? m Yes m No</p>	<p>The space in front of the keyboard is sufficient if</p> <ul style="list-style-type: none"> <li>• the space for resting the ball of the thumb - measured from the front edge of the desk to the keyboard - has a depth of about 10 cm.</li> </ul>
<b>6 Screen</b>	
<p>Is it possible to turn and tilt the monitor easily? m Yes m No</p>	<p>The screen has to comply with the following requirements:</p> <ul style="list-style-type: none"> <li>• The screen should be adjustable to the employee's line of vision.</li> <li>• Twisting of the head and long-term static postures should be avoided.</li> </ul>
<p>Is the screen size sufficient? m Yes m No</p>	<p>The screen size (visible screen diagonal) must correspond to the task. The minimum sizes for screens with cathode ray tube (CRT) are:</p> <ul style="list-style-type: none"> <li>• for word processors, spreadsheet programs, and database applications 38 cm (15 inch),</li> <li>• for graphic programs as well as video and image processing 48 cm (19 inch),</li> <li>• for CAD applications 54 cm (21 inch).</li> </ul> <p>Flat screens with LCD/TFT technology can have a screen diagonal that is 5 cm (2 inch) smaller.</p>
<p>Is the first row on the screen at eye level or below? m Yes m No</p>	<p>Regarding the height of the screen, the following aspects are essential:</p> <ul style="list-style-type: none"> <li>• It is possible to assume a comfortable head posture.</li> <li>• The first row on the screen is at eye level or below.</li> </ul>
<p>Does the screen produce a flickerfree image? m Yes m No</p>	<p>The screen does not show any flicker under the following conditions:</p> <ul style="list-style-type: none"> <li>• Looking at the screen, no flicker can be perceived.</li> <li>• Looking at the vicinity of the screen, no flicker is perceived in the lateral visual field.</li> <li>• The screen refresh rate is clearly above 75 Hz.</li> </ul>
<p>Is the screen without any glare and reflections? m Yes m No</p>	<p>The following requirements are essential:</p> <ul style="list-style-type: none"> <li>• The screen does not reflect luminaires or windows.</li> <li>• The screen does not show neither glare nor reflections at any viewing angle.</li> </ul>
<p>Are the displayed characters sufficiently large and well legible? m Yes m No</p>	<p>The characters are well legible under the following conditions:</p> <ul style="list-style-type: none"> <li>• Specific characters (like 0 and O, 5 and S, 8 and B) as well as uppercase and lowercase spelling are not confused.</li> <li>• The characters do not blend.</li> <li>• The characters are focused and without distortions, even in the fringe of the screen.</li> </ul>
<p>Is the display contrast between information and background comfortable? m Yes m No</p>	<p>Information should be presented in 'reverse video', that is as dark objects on a light background, to avoid reflections.</p>

<p>Are the screen settings easily adjusted? m Yes m No</p>	<p>If contrast, brightness, position, and size of the display are not set automatically to adequate values, the screen should have controls to adjust them to individual preferences. If separate control elements are provided, they should be placed at the front of the monitor, easy to handle, and labelled. So-called on-screen-displays should be designed in an analog way.</p>
<b>7 Illumination</b>	
<p>Is the illumination sufficient? m Yes m No</p>	<p>The requirements for the illumination are:</p> <ul style="list-style-type: none"> <li>• visual contact with external environment,</li> <li>• light intensity between 300 and 500 lux (in open-plan offices between 750 and 1000 lux),</li> <li>• periodic maintenance of the luminaires,</li> <li>• homogeneous colour spectrum of the luminaires,</li> <li>• homogeneous distribution of brightness,</li> <li>• acceptable luminance contrasts (between inner visual field, outer visual field, and environment at most 10 to 3 to 1).</li> </ul>
<p>Is it possible to adjust the illumination level individually? m Yes m No</p>	<p>The adjustment of the illumination should comply with the following requirements:</p> <ul style="list-style-type: none"> <li>• the employee can turn the luminaires on and off,</li> <li>• variable intensity,</li> <li>• adjustability to the individual eyesight conditions.</li> </ul>
<p>Does the illumination cause neither direct nor indirect glare? m Yes m No</p>	<p>Glare has to be avoided by the following measures:</p> <ul style="list-style-type: none"> <li>• The luminaires are arranged in parallel with the windows.</li> <li>• The luminaires are arranged in parallel with the line of sight.</li> <li>• Prismatic or mirror grid luminaires are used.</li> <li>• Walls and surfaces behind the screen have reflectance values between 30 and 50%.</li> </ul>
<p>Are efficient light protection facilities available? m Yes m No</p>	<p>The light protection facilities have to meet the following requirements:</p> <ul style="list-style-type: none"> <li>• The windows have appropriate light protection facilities (for example, interior lamellar louvers).</li> <li>• The light protection facilities do not reduce the general illumination below acceptable levels.</li> <li>• The light protection facilities do not alter the colour perception.</li> </ul>
<b>8 Other Environmental Factors</b>	
<p>Does the noise level allow to work with concentration? m Yes m No</p>	<p>Work with concentration requires the following:</p> <ul style="list-style-type: none"> <li>• The equipment is noise-reduced.</li> <li>• Sound-deadening material is used for floor, ceiling, and walls.</li> <li>• Noisy equipment is removed or shielded.</li> <li>• External noise does not penetrate the office with an unacceptable intensity.</li> </ul>
<p>Is the temperature level in the range of 21° and 26° C? m Yes m No</p>	<p>The indoor temperature should comply with the following requirements:</p> <ul style="list-style-type: none"> <li>• As a rule, the temperature should be between 21° and 22°C (with high outdoor temperatures, it should not exceed 26°C).</li> <li>• For sedentary work, at time when work begins, the temperature should be 19°C, at least.</li> <li>• The operation of equipment should not result in an uncomfortable increase of the temperature.</li> <li>• At the window panes, the effect of radiation should be low.</li> <li>• The temperature of the floor and the walls should not deviate from the mean indoor temperature by more than 4°C.</li> </ul>
<p>Is the humidity perceived as comfortable (between 50 and 65%, if measured)? m Yes m No</p>	<p>Regarding the air humidity, which can be measured using a hydrometer or can be computed from the values for the wet and dry temperature, the following has to be taken into consideration:</p> <ul style="list-style-type: none"> <li>• With high outside temperatures, the humidity should be close to the lower limits.</li> <li>• Plants are present, as a means to improve the indoor climate.</li> </ul>

<p>Is it possible to open the windows or is the air-conditioning maintained at regular intervals, respectively? m Yes m No</p>	<p>The following aspects are essential with regard to the ventilation:</p> <ul style="list-style-type: none"> <li>• No air-conditioning: windows should be opened at regular intervals to provide slight variations of the indoor climate, thereby preventing fatigue.</li> <li>• Air-conditioning available: should be maintained at regular intervals, to comply with the hygienic standards.</li> </ul>
<b>9 Software</b>	
<p>Is it easy to undo erroneous input? m Yes m No</p>	<p>The following means to handle errors should be available:</p> <ul style="list-style-type: none"> <li>• It is easy to undo erroneous input.</li> <li>• Errors do not result in a system crash.</li> <li>• Functions with severe consequences have to be confirmed.</li> </ul>
<p>Is it possible to select any choice and sequence of functions? m Yes m No</p>	<p>The functions should meet the following requirements:</p> <ul style="list-style-type: none"> <li>• The employee can select the sequence of functions.</li> <li>• Elements of the interaction can be skipped or added.</li> <li>• The software can be adapted to the employee's level of expertise.</li> </ul>
<p>Is the employee familiar with the computer system? m Yes m No</p>	<p>To allow an employee to familiarize himself or herself with the computer system, the following options should be available:</p> <ul style="list-style-type: none"> <li>• The software has a tutorial or help file.</li> <li>• The employee has been introduced to the system in a comprehensive way.</li> <li>• The employee has access to the manuals.</li> <li>• The employee knows an expert who is at his or her disposal, if necessary.</li> </ul>
<b>10 Work Characteristics</b>	
<p>Is it possible to meet other colleagues and/or to communicate with them? m Yes m No</p>	<p>The minimum level of opportunities to be in touch with other colleagues requires:</p> <ul style="list-style-type: none"> <li>• The workstation is not isolated from others.</li> <li>• The employee has the opportunity to get into touch with other colleagues, at any time.</li> </ul>
<p>Is the job content varied? m Yes m No</p>	<p>A job is considered as varied under the following conditions:</p> <ul style="list-style-type: none"> <li>• The tasks are diverse.</li> <li>• The work at the computer workstation can be interrupted in favour of other activities.</li> <li>• The tasks have different degrees of difficulty.</li> </ul>
<p>Is the time schedule for the tasks adequate? m Yes m No</p>	<p>The time schedule is sufficient under the following conditions:</p> <ul style="list-style-type: none"> <li>• The employee is not under time pressure.</li> <li>• More time would improve the results only marginally.</li> </ul>
<p>During the last 3 years, have the eyes been tested? m Yes m No</p>	<p>For the eye test the following aspects are relevant:</p> <ul style="list-style-type: none"> <li>• The eye test has been carried out by an oculist, optician, or the company physician.</li> <li>• The eye test was focused on the eye-screen distance.</li> </ul>