



Tips

## **Stay healthy when sewing**

Tips for ergonomic workplace design

# Good to know

Working height, legroom, work chair and sitting posture. Benefit from our tips on the ergonomic design of sewing work for your health.

## 1 Starting situation

If the height of the table, including the sewing machine, is too low, the worker must bend forward in order to properly view the sewing needle. Furthermore, if the treadle is placed too close to the chair, the worker cannot move far enough under the tabletop.

Then curved, twisted backs and considerably restricted leg room are frequently encountered. As a result we see headaches, spinal discomfort and tension in the shoulders and neck as well as pain in the hands, arms, legs and feet.



**Picture credits:** BG ETEM, Alexander Kaya/BG ETEM, illustrations: Jörg Block/BG ETEM

## 2 Possibilities for improvement

Sewing should comprise of as few one-sided physical stresses on the worker as possible. These stresses are caused by poor posture and by monotonous, repetitive movements.

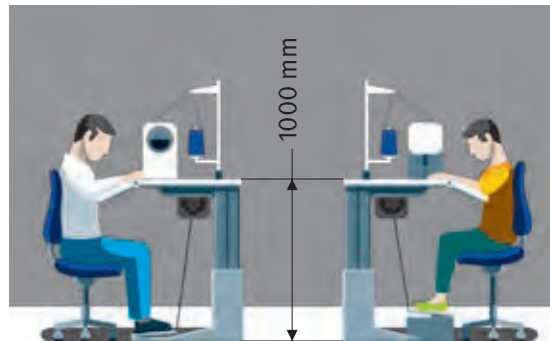
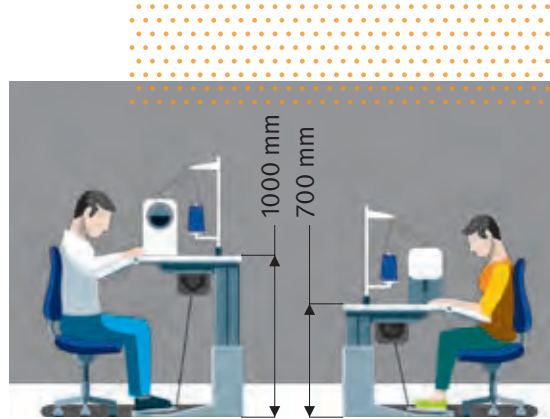
An ergonomically designed workstation makes working less tiring and avoids long-term physical damage to the musculoskeletal system.

Ergonomic improvements to existing workstations can often be achieved by taking a few corrective measures.

When rearranging or designing a new workstation, the size of the worker and the sewing task must be taken into account in addition to other factors.

**The following chapters provide guidance on:**

- Chair and posture
- Treadle and leg room
- Correct height of table
- Arm support
- Visibility and tilt-adjustable tables
- Lighting and surroundings
- Combination sit and stand sewing workstations



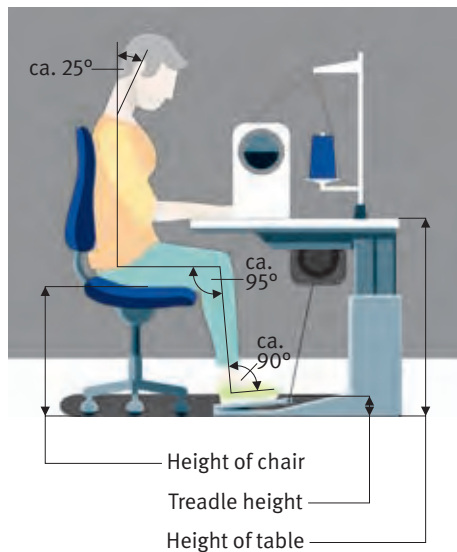
### 3 Chair and posture

Swivel chairs for workstations are well established. These chairs are adjustable in height, seat tilt and backrest position and their backrest and seat are padded. They facilitate the necessary work and support the worker's spine.

The seat height of the chair has to be adjusted taking into account the body height and the position of the treadle so that the worker can maintain a sitting posture that is as straight as possible.

The worker's foot should be able to easily operate the treadle. The angle of the knee should be slightly greater than 90 degrees and the thighs should be horizontal.

When sewing, one should not remain permanently in a certain position but rather be dynamic. This means to change sitting positions occasionally



from front to centre of the seat and to lean back to relax.

Of course moving in order to transport material and facilitate material flow, taking work breaks and changing work tasks, all help to alleviate the one-sided physical stress on the worker.

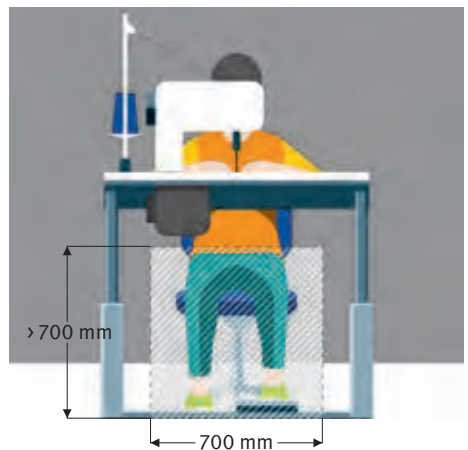
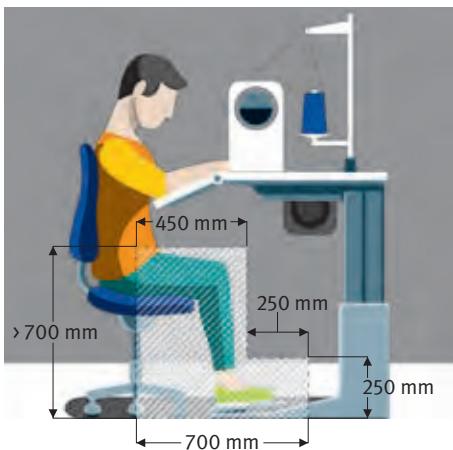
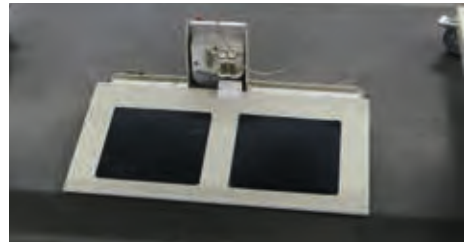
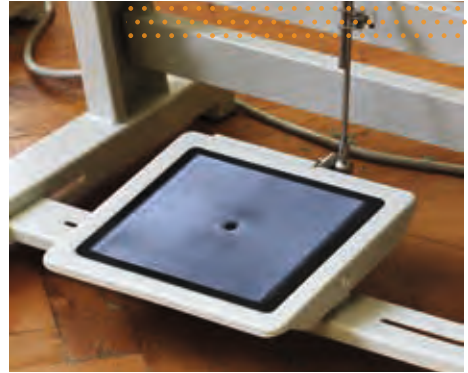


## 4 Treadle and leg room

Many sewing tables have a moveable treadle fixed on a traverse. Even with a medium sized worker, it may be necessary to move the traverse to the far edge of the table in order to permit the worker to have a comfortable leg position.

A treadle that can be moved freely under the table is even better. Sufficient space for the legs allows the worker to move far enough under the sewing table to avoid leaning the upper body more forward.

Hence, components such as the motor, operating devices or drawers should not be installed under the table top because they project into the leg area.



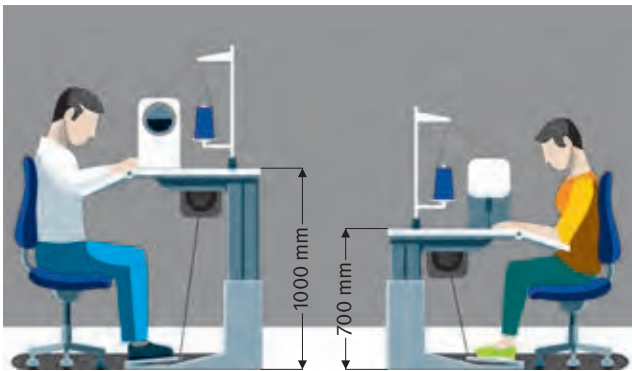
Recommended measurements for the leg room

## 5 Correct working height

Many sewing tables are adjustable in height through screws. However, a table frame with electronic infinite adjustment of the height is more comfortable. If the table is too low, workers will have to bend forward, putting strain on the back, neck and shoulders. If the table is too high, workers will have to raise their shoulders to get their arms high enough to work. This posture puts strain on the neck, shoulder and arms.

Therefore, the fitting of the table base and thus the working height of the table top should be fixed so that the worker can sit in an upright position and can reach and see all work areas, especially the sewing needle.

If the height of the table is too low and not adjustable, an increase of height by simple means is also possible (e.g. a foundation under the feet of the table or blocks).



Maximum and minimum height of table at a flatbed sewing machine when sitting down: to the left a tall person doing high-degree precision work, i.e. keeping a smaller distance between the eyes and the table – to the right a small person doing simple sewing work, i.e. keeping a larger distance between the eyes and the table.



## 6 Arm support

During sewing, the upper arms should hang down loosely, be slightly angled forward and, depending on the sewing task, be more or less extended from the shoulder (without force).

The worker should be able to comfortably rest their forearms without pressure on a large working area (with well-rounded table edges).

Newly developed, ergonomically designed sewing tables have adjustable arm supports where you can rest your forearm. This may be particularly useful for long and uniform sewing tasks and by high volume.

You may also have the option of attaching self-made arm supports to the tabletop.





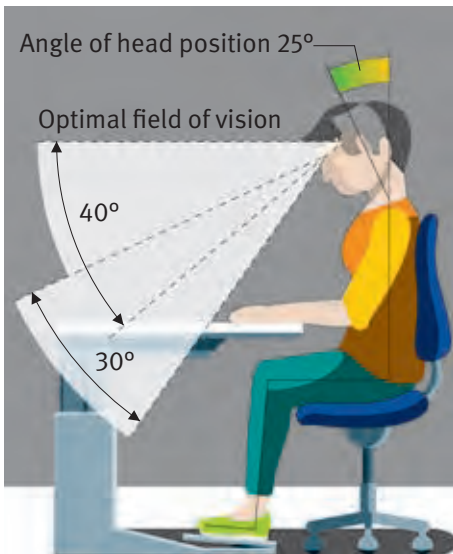
## 7 Visibility and tilt-adjustable tables

If the view of the sewing area is restricted by the head of the sewing machine, it may cause an unfavorable, strongly bent-forward seated posture.

New sewing tables can often be tilted to improve the visibility of the work area.

To obtain a slight tilt to your existing table, you can install a wedge between the table top and the base.

The most favorable position of the work area is achieved when the distance to the needle corresponds to the requirements for high-degree precision work (for small pieces/fine work approx. 30 cm, for larger pieces up to 50 cm distance) and the head is tilted forward up to max. 25° (see green area in the figure on the left).







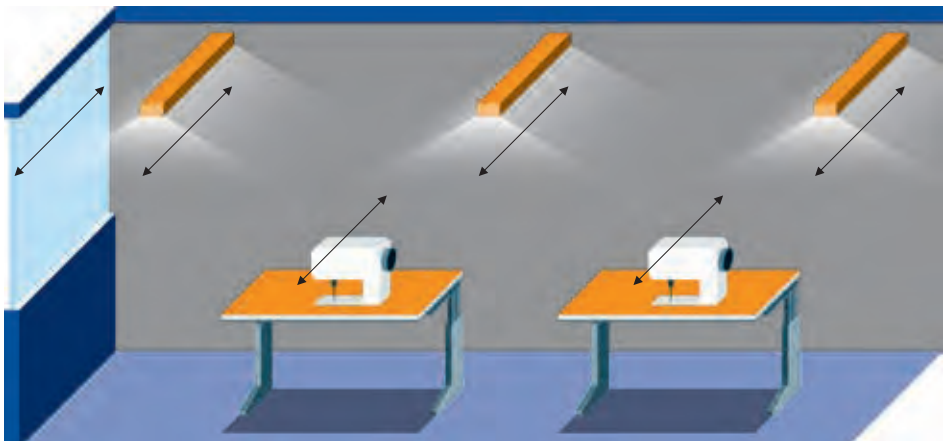
## 8 Lighting and ambient conditions

When setting up the sewing machine, the direction of view should be parallel to the front of the window and the ceiling light strips.

The ambient lighting should provide sufficient brightness in the work area (e. g. ceiling lighting, 500 lux).

It is recommended to have a minimum illumination of 1000 lux in the sewing area.

The brightness of the additional or workplace lights required for this purpose should be adjustable in order to avoid excessive contrasts (differences in brightness).



## 9 Combined sit and stand sewing workstations

A sewing machine frame that can be adjusted in height enables sewing alternately in a sitting and standing position and fulfills the requirements for an optimal sewing workstation. One-sided, predominantly static postures are thus reduced to a minimum.

Frequent changes of position during a work task as well as varying your tasks, reduces stress and eliminates strains and activates different groups of muscles. Movements such as these reduce fatigue and tension and enable regeneration.

This enhances the performance of the employee and brings economic benefits to the company.



**CHECK LIST FOR EVALUATING THE SEWING WORKSTATION****YES****NO**

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Is a suitable work chair with a dynamic backrest, when possible, being used?

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Is the work chair properly adjusted?

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Is the area for legs and feet free of impeding fixtures?

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Can the treadle be adjusted in depth?

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Is the treadle positioned far enough to the front and centered under the needle?

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Can both feet be placed on a sufficiently large area (foot pedal / auxiliary plate)?

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Can the work table be titled and adjusted in height?

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Is the height of the table properly adjusted for the worker?

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Has the form and size of the table been correctly determined for the sewing task?

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Can the sewing task be completed without excessive bending of the upper body and with changes in posture?

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Can work be comfortably completed within easy reach?

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Is overstraining of joints, arms as well as the shoulders, avoidable?

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Can the task be completed with different posture positions (sitting, standing, walking)?

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Does the task include activities which relieve strain?

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Can a comfortable viewing position be maintained?

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Is there sufficient lighting available?

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Is glare and shadow preventable?

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Is there enough leg and foot space available while sitting and standing?

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# Literature

**On the subject of Ergonomics, you can request further information from BG ETEM:**

- Brochure: „Ergonomie an Näharbeitsplätzen – Ratgeber für Praxis“ DGUV information 203-023. With extensive explanations, tables, pictures and images (only available in German)
- Brochure „Ergonomie“ (MB008). With extensive information on ergonomic aspects at different workplaces (only available in German)



## Further information

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- ▶ Content tips on the topic Ergonomics at:  
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