

## **Permanent Workstation Ergonomics on Board Merchant Ships**

Permanent workplaces are found throughout ships.

Examples which can be mentioned are: chart tables on the bridge, areas for cleaning machine parts in the engine room, preparation tables in the galley's cold and hot food areas, cooking areas, areas for rinsing pans in the scullery, check-outs in shops and cafeterias, counters in perfume boutiques, reception areas, exchange desks, office work stations for ships' administrative functions.

In this folder you can read about issues to take into consideration in order to make a good workplace. The folder is mainly aimed at passenger ships, but the principles discussed can be applied in all permanent workplaces, irrespective of the vessel type.

By a suitable design, you may avoid working in physical wearing postures. In this way you can reduce the risk of pains in muscles and joints from overtaxing them.

The information from the Danish Maritime Authority A, chapter I, on the Performance of Work lays down the following requirements for the ergonomic conditions:

- The design of workplaces, equipment, and technical equipment shall be adapted as far as possible to the persons applying them
- Suitable and efficient equipment such as lifting devices and transportation means shall be available to the extent necessary
- Unnecessary physical load and inappropriate postures and movements shall be avoided. The load during work shall be reduced to the lowest level reasonably practicable, taking into account technical progress. Stipulated limit values are kept.

This means that certain basic ergonomic requirements for equipment and the workplace itself must be met in order to avoid working for longer periods on your knees, with arms and shoulders raised, with back and neck bent etc., or to avoid repeating these postures and movements frequently.

Therefore, a risk assessment of your working duties is carried out, both while performing the work but also in the planning stages. The risk assessment must also include an evaluation of the equipment and other aids applied. The purpose is to remove the negative effects of the working environment while the work is carried out.

This risk assessment is performed by the ship owner or master in cooperation with the safety organization. On ships not having a mandatory safety organization, the risk assessment is carried out in cooperation with the employees. (See also the folder "Workplace Instructions").

### **Working distances**

Equipment at check-outs, in shops, and in the galley, etc., is arranged in such a way that work can be performed close to the body. See figure 1.

Most of your work functions should be performed at a distance of not more than 25 cm from the front edge of the equipment. When designing a permanent workplace, a working distance of 40 cm at the most – measured from the front edge of the equipment – shall be observed as far as possible.

For instance, when filling shelves with goods in kiosks and tax-free shops, the depth of the shelves and units should not exceed 50 cm, and the top of the highest shelf should not exceed 135 cm when filling it standing on the deck. When putting the goods in place, you should consider the best placement in relation to the weight and the number of articles sold. A lot of manual handling can be avoided if there is room for quarter euro-pallets to be put directly under the lowest shelf.

### **Working heights**

The equipment and technical aids applied by you must be suitable to you and the work you are to perform. This can easily be attained by using work tables that can be adjusted up and down easily.

In the vast majority of cases, work tasks consist of many part functions, meaning that flexible equipment normally is required.

If a number of different people work at the same workplace regularly, or if changes of work tasks occur regularly, the equipment, tables, etc., must be easily adjustable.

The Danish Maritime Authority recommends that a worktable has a height variation of 60 cm in an area from 60-120 cm, if you are to work at it in sitting as well as in standing positions.

Tables meant for use in a standing position shall be adjustable in heights from 85-120 cm, and tables for sedentary work from 60-85 cm. It is the practice of the Danish Maritime Authority that at least 1 or 2 easily adjustable worktables should be available in the galley area of large passenger ships. However, the exact number of tables is closely connected to the number of employees and the type of work.



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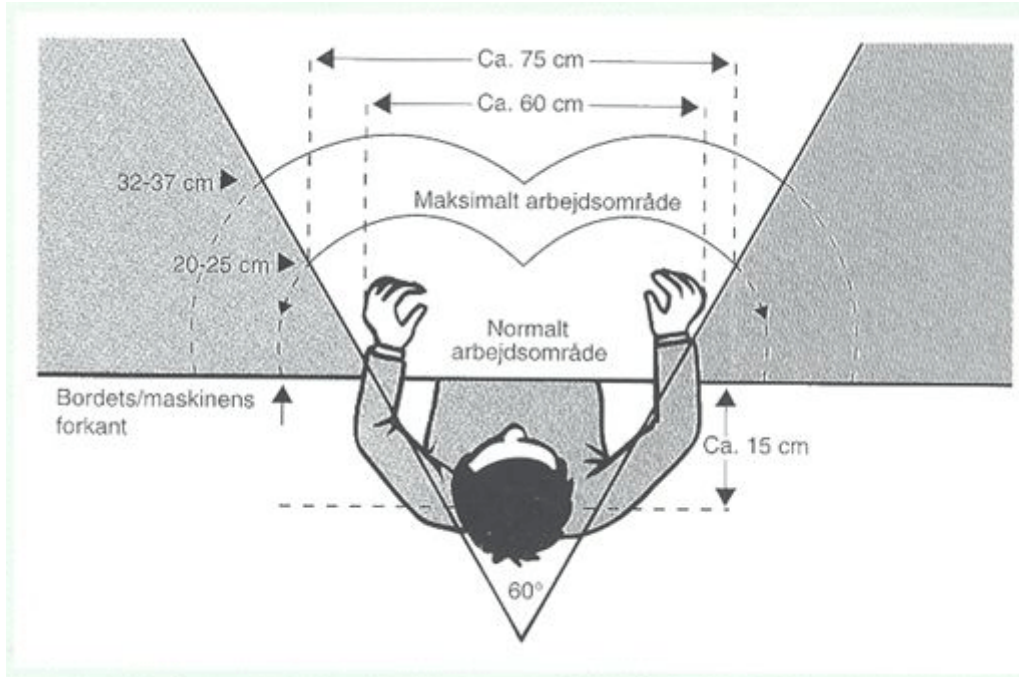
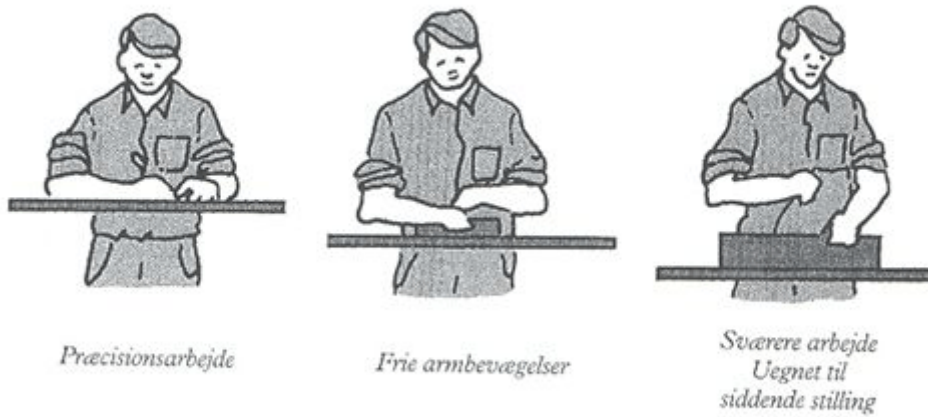


Figure 1. Normal and maximum working distances and working area.



### **What is a good working height?**

The working height means the place where your hands are working. Therefore, the height depends on what type of work you are carrying out. You should apply the following as guidelines:

- The normal working height in standing as well as in sitting positions is at the height of your elbow and 5 cm above and below this level.
- When performing precision work, the working height is 5-10 cm above your elbow to just below the level of your shoulder. Often it will be necessary to support your lower arms and elbows.
- By easier tasks, the working height is 5-(10) cm below the height of your elbows. However, if you are sitting at a table the best working height is elbow level and, at the most, 5 cm below this.
- By work requiring the use of strength, the working height is down to approximately 10 cm below the level of your elbows (this roughly corresponds to hip level). This type of work should always be performed from a standing position.

### **Space, deck surface, and lighting**

You must have plenty of space around your workplace, including sufficient room for feet and legs under tables or other equipment. In order to achieve this, the front edges of equipment must have a maximum thickness of 5-8 cm. Under the table, there must be 50-70 cm to the nearest object when you are in a sitting position. Pay attention to the fact that if your work requires you to be able to swivel your chair, it should also be possible to do so.

The deck surface must be plane, without holes, and with a suitable covering. Areas where work involves a lot of standing and/or walking must have a covering of suitable hardness. The covering shall reduce the physical strains involved in walking and standing work as much as possible, and be anti-slip where necessary.

In areas with a lot of standing and/or walking a chair that you may use during periods when there is a break in the work must be available.

Lighting shall be suitable and sufficient for the work in order for you to see and carry out your work. Good optical conditions shall ensure against unnecessary strains and risk of accidents.

**To ensure enough space during work the following space shall be aimed at in the working areas:**

Distance to other equipment for 1 person working in a standing or sitting position	100 cm
Distance to other equipment where 2 persons are working standing behind each other (back to back)	160-180 cm
Distance to other equipment where it is necessary to open doors and pull out drawers	100 cm + the space necessary to open doors and drawers
Room required for 2 persons to pass each other freely	120 cm
Room required for the passage of 1 person	65 cm

### **Work chairs**

The work chair shall suit you and your working tasks. In order to fulfil these requirements it is important that:

- the work chair is stable, i.e. that it does not overturn, move or slide away under you, when sitting on it,
- the seat makes it possible for you to vary your sitting position, e.g. by adjusting the height, depth, and tilt on the seat,
- the back of the chair fits the shape of your back and can be adjusted in height and tilt independently of the seat,
- the upholstery on the seat is of a suitable thickness and made of a material which allows the skin to breathe and prevents you from sliding forwards. It must be rounded at the front,
- the arms, if any, are adjustable. The arms must be easy to remove if they are in the way, and
- the chair should be easily adjustable while sitting on it.