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ROLLING BIN
PICK THE RIGHT ONE

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Association paritaire du textile

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Rolling bins are widely used in the textile and knitting industry. This bulletin provides some information on the type of rolling bins used to transport material between work stations or to store material at work stations.

Factors to consider

Every mill has its own fleet of rolling bins, which are often tailor-made to meet specific production and space requirements.

Some of these bins are easy to handle while others are more cumbersome and may cause injury. Solutions to eliminate such hazards at source include using conveyors or electric pallet trucks to transport material, or modifying workstation layouts to reduce material handling. Unfortunately, these solutions are sometimes impossible to implement. If this is the case, it will be useful to know the following information on criteria to consider in the purchase or design of rolling bins.

Many factors should be taken into consideration: the type of load (weight, size, shape), the features of the work area (width of lanes, floor surface), the distances to cover, as well as the access to material (bobbins or others) and the intensity of use.

Hazards associated with handling rolling bins increase in proportion to frequency of use. The more often workers handle material in unsafe conditions the greater the risk of injury. It is therefore of prime importance to improve conditions of use in order to reduce hazards at source. This is the solution we are proposing.

The bulletin is divided into two parts: the first deals with transportation of material between work stations and the second with the use of *rolling bins* as storage containers at work stations.

Transportation of material

Here are some given facts:

- The heavier the load is, the harder the bin will be to handle.
- Some bin designs require workers to exert greater force when handling.
- Even well-designed bins will be difficult to handle if lanes are not properly maintained.
- The longer the distance to cover, the greater the risks of injury.

Here are some solutions to eliminate those problems or at least to alleviate their impact.

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LOAD WEIGHT

It is always advisable to bring down load weight in order to reduce strain on operators.

GRIP

Workers also need to have a good grip on the bins to handle them safely. Bins should be designed to avoid risks of jammed fingers or hands, cuts on loose tin or plastic and splinters. Those hazards are eliminated with an adequate grip.

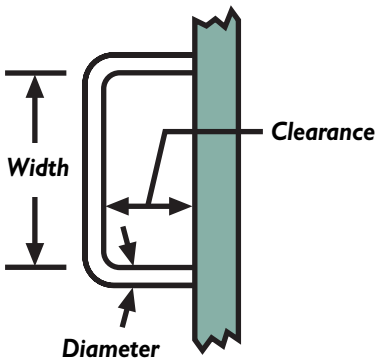
A good grip should allow workers to handle bins with their hands as closed as possible. Working with an open hand position forces operators to exercise pressure on extended wrists. As well, the grip should not be so small as to require localized pressure on a very limited area of the hand. In both cases workers are at risk of muskulo-skeletal injuries to the hands, wrists or elbows. Some bins have round edges, which reduce the risk of injury and provide a more comfortable grip.

Operators sometimes need to bend their backs to handle bins. In some cases this is because the grip is too low and in some others because operators need to use their thigh muscles to offset the strain on their back. This happens if bins are hard to move, especially when initially starting off, and is aggravated by heavy weight of load, debris stuck in the wheels, sloping terrain or cracks in the floor.

HANDLES

With other types of rolling bins, we suggest installing one horizontal handle or two vertical handles to make handling easier for workers. Note that vertical handles also accommodate all worker sizes.

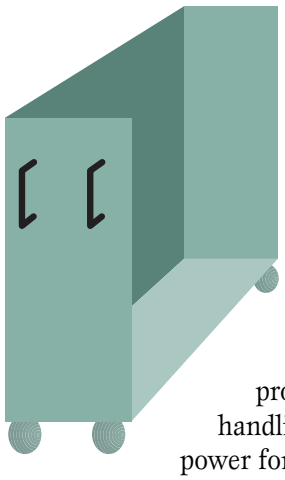
The following information can be used as reference in choosing and installing rolling bins handles.



Clearance : **6.4 cm**

Width : **12 cm (1 hand)**
24 cm (2 hands)

Diameter : **1.9 cm (minimum)**
3.8 cm (maximum)
(Load above 9 kg)



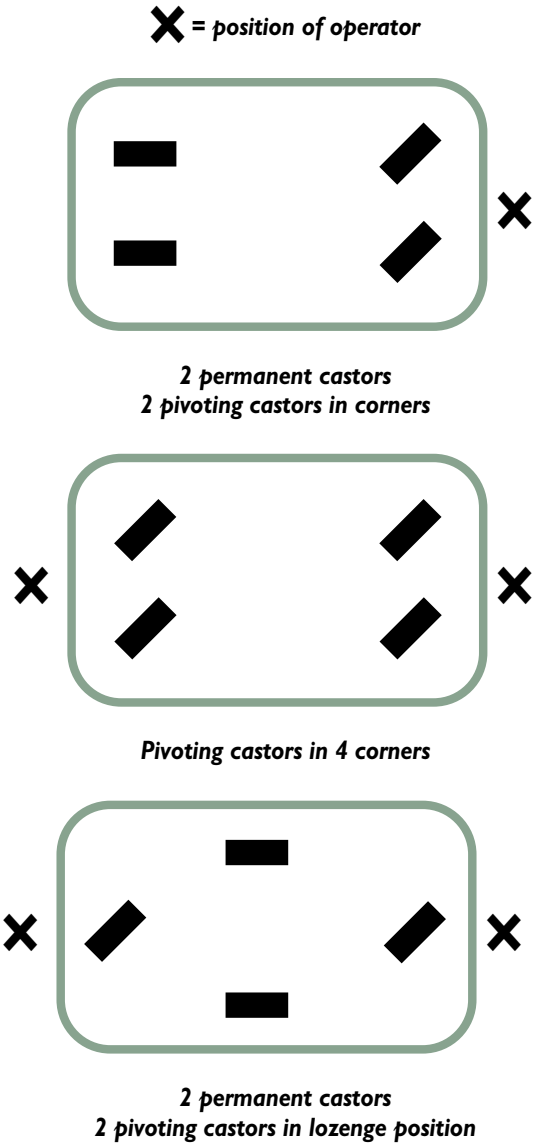
Handles should be located at the level of the load's center of gravity or slightly above. They should be spaced so that hands are directly in front of shoulders. This position provides optimal handling comfort and power for workers.

CASTORS

The choice of wheels or castors and their position under the bins also influence the degree of strain on operators. Here are some basic facts:

- The greater the castor diameters are, the lower the strain on bin operators.
- The harder the castors are, the lower the strain on bin operators.
- The narrower the castors are, the lower the strain on bin operators.
- The cleaner the castors are, the lower the strain on bin operators.

Some types of castors pivot and others do not. Most bins are equipped with two pivoting castors and two fixed ones. Pivoting castors serve to direct the bins and operators must hold bins on the side where pivoting castors are located. The following chart illustrates the right place to hold the bins according to the position of castors.



Some bins are equipped with four pivoting castors. They are easy to handle and particularly suitable for limited spaces, but harder to move along narrow lanes.

FLOOR SURFACE

Finally, to make handling easier, the floor surface has to be well-maintained and free of cracks, bumps, holes, oil residues, etc. In mills where the floor condition is less than adequate, it would be best to use castors with a larger diameter.

Uneven floors also cause problems: operators may have to lift the bins, which requires excessive strength. We recommend making the surface as even as possible.

Another source of hazards are steep slopes, where there is a danger of lower limbs getting crushed and/or jammed. In addition, workers need considerable force to pull or push bins on steep slopes. We recommend using quick-lifting platforms to overcome this type of obstacle.

The type of floor surface also affects the handling of bins. Smooth and slippery surfaces, for instance, do not provide stable footing for workers and increases the strain on back muscles. We recommend that floors be covered with non slippery material.

Finally, the width of circulation lanes should be taken into account when purchasing or designing bins. Narrow bins will be suitable for narrow lanes while wider lanes will accommodate any bin size.

Storage of material

Rolling bins can be used for temporary storage of material at work stations. They may hold material produced by specific machines or material to be processed. Loads are often heavy and to avoid injuries, the bins must be designed so that workers do not need to adopt extreme positions (back and shoulders) when loading or unloading them.

Before making your final choice of bin model, prepare a schedule of conditions listing all desirable features. Following are some of our recommendations.

First recommendation

Bins are rarely equipped with removable bottoms, yet all bins should be designed that way. Why should this recommendation be included in the schedule ? Because a lifting platform with springs appropriate to the load will keep material at an even height and within easy reach of operators, avoiding the need to bend down to pick up material at the bottom of the bin. However, the lifting mechanism should be inspected regularly to ensure proper operation.

Second recommendation

If the piles of stored material tend to become unstable and fall down, a separator should be installed in the center of the bin. The separator serves to hold material into place and prevent it from falling to the bottom, where workers have to bend their back and use upper limbs to reach it. If a large bin is used for storage it can be tipped sideways to reach material.

Let's make the right choice

To avoid injuries such as crushed and jammed limbs, back pain, shoulder pain, etc., make the right choice and purchase or design bins in accordance with the requirements listed in this bulletin.