

Hoisting Apparatus and Conveyors

never should exceed this

Breaking strengths of fiber ropes are shown in Chapter 23, "Ropes, Chains, and Slings." Safe working loads for rope used in block and tackle assemblies are, conversely $1/10$ of the block's breaking strength, based on a safety factor of 10, as before.

For new rope, to find the required breaking strength, proceed as follows. For each sheave

movable block. Friction loss (10 per cent for each sheave) = 40 per cent, or 800 pounds, $2000 + 800 = 2800$ pounds, which divided by 4 (the number of parts at the movable block) = 700. Applying the safety factor of 10 (10×700) gives 7000 pounds, the required breaking strength of the rope. New manila rope of $7/8$ -inch diameter has a breaking strength of 7700 pounds and therefore is the proper size for the load.

The safe working load for two double blocks made for rope of $7/8$ -inch diameter, as given by a prominent manufacturer for one series of its standard blocks (regular mortise, inside iron strapped blocks, with loose side hooks, intended for use with manila rope), is 2,000 pounds—the equivalent of the total load in the example.

The rope should be attached to the block with a thimble and a proper eye splice.

A mousing of yarn or small rope should be placed on the upper hook of a set of falls as a precaution against its accidental detachment.

Blocks should be inspected thoroughly and frequently, with particular attention to all parts subject to wear.

Fig. 20-23 shows how tackle blocks should be reeved.

If the sheave holes in blocks are too small to permit sufficient clearance, excessive surface wear of the rope will occur. Likewise, excessive internal frictional wear on the fibers will occur if the diameter of the sheave is too small for the rope.

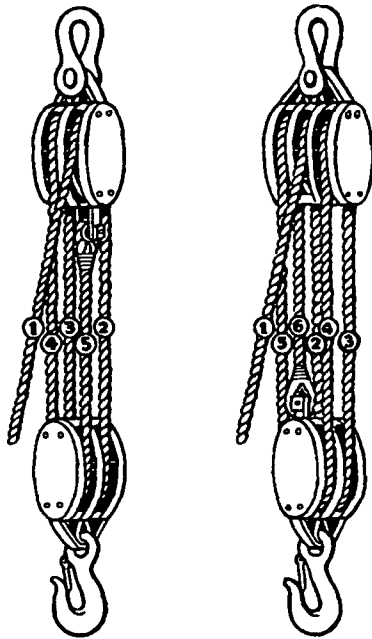
When men are using block and tackle in confined spaces, the pulley block must be guarded so that their hands cannot be caught between the pulley and the rope.

When blocks and falls are used to lift heavy materials or to hold heavy loads in suspension, as on heavy duty scaffolds, wire rope is more serviceable than fiber rope.

Portable floor cranes or hoists

Portable floor cranes or hoists are hoists mounted on wheels. They can be moved from place to place, either by hand power or under their own power. They can raise and lower loads in a vertical line but cannot rotate around a fixed point.

Portable floor hoists are useful where overhead construction, belting, or shafting prevents the use of overhead hoists or cranes and where more expensive equipment is not justifi-



Double and Double

Triple and Double

FIG 20-23 —Reeving tackle blocks. Lead line and becket line should come off a middle sheave when blocks contain more than two sheaves. The upper and lower blocks then will be at right angles to each other, eliminating the tendency to tip and the accompanying losses in efficiency.

3 in. in diameter or larger, add 10 per cent to the weight of the load to compensate for friction loss. Divide this figure by the number of ropes or parts running from the movable block, and multiply the resultant figure by a safety factor of 10.

For example, a load to be lifted weighs 2000 pounds and the tackle consists of two double blocks—four sheaves, four rope parts at the