

The heavy machinery and transportation industries involve the repetitive handling and manipulation of large workpieces and assemblies. These activities are extremely hazardous and can result in lifting injuries and lifting-related injuries from reaching, bending, stretching, and other physical contortions.

While a great deal of effort and attention has gone into programs designed to help reduce lifting injuries by teaching workers how to lift, back injuries are still the number one cause of lost time and insurance claims.

The right answer to the problem is to completely eliminate lifting, bending and stretching as a regular part of any factory job.

Statistics show approximately 5 million workplace injuries occur in the U.S. every year. Almost one-third of these are back injuries caused by lifting. These injuries result in direct costs ranging from \$20,000 - \$30,000 per claim, plus the indirect costs of lost productivity and increased insurance premiums. For this reason, the elimination of lifting has become important not only from the standpoint of worker consideration, but also as a cost-saving imperative for industry.

This booklet is designed to show how lifting and lifting-related injuries can be eliminated or reduced through the use of simple and inexpensive mechanical lifting and positioning equipment.

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# Heavy Machinery & Transportation Industries

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OPERATION	TYPICAL PROBLEMS	RECOMMENDATIONS	
Moving and positioning heavy coils, shafts, and rolls	The use of chain pulls, hoists, and slings for handling heavy coils, shafts, or rolls can be extremely hazardous. In addition to the danger of dropping the load, there are the potential injuries involved in twisting, turning, and swinging the heavy load in order to properly orient it for machine loading.	Coil cars which support the loads safely and allow them to be easily lifted and positioned for loading can eliminate both of these hazards.	
Accessing high work	It is hazardous to have people on ladders or climbing up and down from scaffolding or fixed height platforms. The danger of the worker falling or dropping a tool on another worker is always present.	Powered personnel lifts take the worker, the tools, and any parts required to the necessary height, both safely and efficiently.	
Taking the lifting out of transporting	Whenever flat bed trucks or dollies are used, workers frequently are required to lift material or equipment from the truck to a bench or machine.	The danger of lifting related injuries can be greatly reduced by using lifter/transporters which combine the functions of both a wheeled transporter and a lift table. They are inexpensive and are available in both manual and battery operated models.	
Feeding and offloading large workpieces	Lifting heavy workpieces such as castings on and off machine worktables can cause serious injury and fatigue for operators.	Hydraulic lift tables are ideal for this application. Since their height is infinitely adjustable within their range, they can be positioned so that the operator can move work on and off machines without lifting.	
Working on long assemblies	Long workpieces are a prime source of accidents in the workplace. Their manipulation is awkward and a threat to the handler and anyone else in the vicinity.	The use of tandem lift tables allows even the longest workpiece to be lifted and handled with ease and safety.	
Workpiece feeding and offloading	This process requires continual lifting and positioning of workpieces. These types of activities often lead to production -robbing fatigue and even more serious cumulative trauma disorders.	By using lift tables, lifter transporters, or level loaders to accomplish level (no lifting) feeding and offloading, many of these injuries and costly downtime can be avoided.	
Working out of parts baskets	Bending, reaching, stretching, and lifting can all be serious problems when removing parts from baskets. Since this is usually a repetitive process, the danger of injury increases with time.	By using lifting and tilting equipment, baskets can be positioned so that the worker can remove the parts from the top to the bottom of the basket with the same minimum effort.	
In-line assembly	Many assembly activities such as those in the transportation industry require workers to bend, stoop, squat, and stretch in order to reach various levels and sides of assemblies. Continuous activities of this type can lead to fatigue, decreased productivity, and possible injury.	Powered mechanical lifting equipment raises and lowers the workpiece to a more comfortable and productive working position. The addition of a turntable allows the worker to have access to all sides of the work without walking.	
Loading and unloading pallets	This is a common operation both at receiving and shipping locations. The bending, lifting, and reaching required is not only strenuous and fatiguing, it can also result in injury to the back or other parts of the body.	Spring-actuated level loaders automatically adjust in height as the load is progressively added or removed, allowing the operator to work with little or no lifting. Turntables rotate the pallet for near-side loading and unloading.	