

Vacuum Lift Technology

Solves “Hard to Handle” Lifting Problems

Vacuum lift tube systems rely on a vacuum of air to grip and lift a variety of items that are awkward to handle and often require more than one operator to lift manually. Perhaps you remember the TV commercial where they lift a bowling ball with a vacuum cleaner? This is an example of the power of vacuum lifting. Typical ‘problem items’ that are handled by vacuum lift systems include: heavy boxes, bags, pails, drums, cement blocks, and large sheets of wood, steel or glass. This technology can increase worker productivity while decreasing operator fatigue and injury.

The vacuum lift tube system consists of four basic components: vacuum blower with connector hose, lift tube assembly, vacuum control head, and lifting pad attachments. The vacuum pump station is powered by a regenerative blower that runs continuously. This creates a low pressure vacuum that is transferred to the lift tube assembly by the connector hoses. The lift tube assembly is a flexible accordion type tube that serves two functions. It supports the control head and lift pads that grab the product, and, when the vacuum is increased, it contracts, lifting the product. The control head has an operator handle, adjustments that set the amount of vacuum to balance the selected load and a variable control lever that increases or decreases the vacuum to raise or lower the product. The lifting pads are steel plates with flexible rubber edging that form the seal against the product for lifting.

The pads are a critical part of the system and are chosen from a wide selection of sizes and styles to adapt to the characteristics of the item to be lifted. Pads come in round, square and rectangular shape with varying degrees of stiffness, depending on the product lifted. Some smaller items, like a small box or bag, can be lifted with a single pad. Others, like large sheets of steel, may require an array of several pads joined together for a greater gripping force. Vacuum and pad combinations can be provided to lift objects that weigh from 35 to 650 pounds.

The lifting procedure is so easy and simple that anyone can be trained to operate a vacuum lifter safely. With the blower on, the vacuum controls are adjusted to balance the lifting pads with no load to rest at the desired height for the specific operation. Another adjustment balances the amount of lift with the load engaged. The operator can then, with the handle grip, easily move the head over the product and, by pressing the control lever down, lower the lifting pads onto the product. Releasing the control lever to neutral engages the suction and allows the pads to grip the product. The operator can then raise or lower the control lever and effortlessly move the product up or down.

In a typical manufacturing environment, the operator will also need lateral movement of the load, as well as the up and down lifting provided by the vacuum lifter. For example, a finished product could be lifted from a conveyor onto a pallet, or work in process lifted from one workstation to another. For this type of lateral movement, a support assembly is required above the lifting tube. For movement in a single direction, a monorail or fixed jib crane with a trolley could be used to support the lift tube assembly. Where movement in two directions is needed, a pivoting jib crane or bridge crane assembly can be used to allow movement over a larger area.

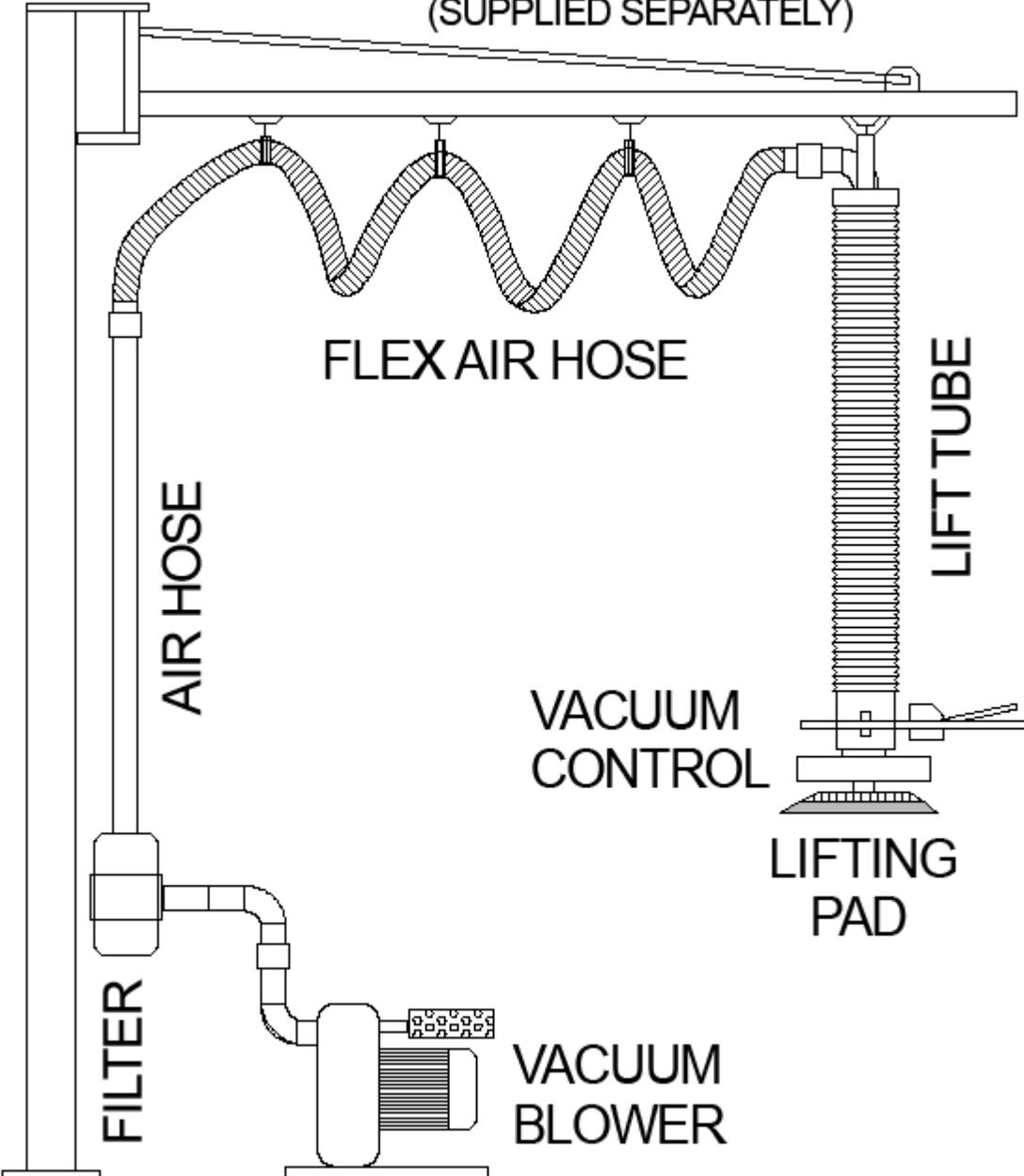
In any manufacturing environment, safety is always a concern. Vacuum Tube Lifting Systems are designed to be inherently safe while in use with several standard fail-safe features. First, the lifter will not lift if the vacuum level is too low to hold the load securely.

Unlike other types of lifters, if for any reason the vacuum level is too low to safely hold the load, it is also too low to allow lifting. Secondly, a vacuum check valve detects and prevents any sudden loss of vacuum. In case of a vacuum loss due to power failure or damaged supply hose, the check valve in the lift tube inlet prevents sudden loss of vacuum. This allows the load to be lowered gently to the full extended length of the lift tube before releasing the grip.

Vacuum Tube Lift systems can provide a safe and economical approach to lifting and moving a wide variety of products in the manufacturing environment. For questions or help with your specific lifting applications:

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