Brieser CONSTRUCTION

Section 15
Safety Health and Environmental Manual

2023

Material Handling & Storage

Material Handling & Storage

PURPOSE

Material Handling is the process of moving material using devices that are not classified as rigging and lifting tools. (i.e., be moving material using carts, forklifts, pallet jacks, dollies, jacks and rope). If any sort of rigging is involved in a job task, Section 33 must be followed.

Handling and storing materials involve diverse operations such as hoisting tons of steel with a crane; driving a truck loaded with concrete blocks; carrying bags or materials manually; and stacking palletized bricks or other materials such as drums, barrels, kegs, and lumber.

Brieser has a several other policies that are needed for safe execution of moving all the different types of materials. Please be advised to reference these documents to ensure all rules are being followed when moving materials. Those policies are:

- Section 27 Aerial Lifts
- Section 33 Lifting & Rigging
- Section 39 Best Practices
- Section 40 Powered Industrial Trucks
- Section 41 Materials Handling Equipment

This policy will focus on the manual lifting by oneself and using common assistive devices such as dollies and carts. In addition, all Jacks, Industrial Rollers, Air Casters and Hydraulic Gantries as well as other portable tools are covered here.

RESPONSIBILITIES

The Program Administrator: Brieser Safety Manager

This person is responsible for:

- Issuing and administering this program and making sure that it satisfies all applicable federal, state and local requirements.
- Ensuring all necessary inspections are maintained by conducting field audits.

Project Managers, Superintendents and Foremen

These people are responsible for:

- Review any current revision of the Material Handling policy prior to implementation.
- Ensuring personnel assigned to manually lift materials or utilize assistive devices outlined in this policy are sufficiently trained.
- Supervision must periodically evaluate work areas and employees' work techniques to assess the potential for and prevention of injuries. New operations should be evaluated to engineer out hazards before work processes are implemented.
- Performance of proper planning, pre-use inspection, safe and correct operating practices.

Employees

These people are responsible for:

- All equipment used to assist in manipulating materials must be trained and for the equipment that they operate.
- Not engaging in any practice that could divert attention while actually engaged in equipment operation.
- Being physically or otherwise fit for the proficient and safe lifting of materials under his/her controls.
- Always choose to team lift and never lift any material over 50 pounds.
- Defects observed in equipment shall be reported to a supervisor and must be repaired or replaced before being used again.
- Where the appropriate PPE for the task and material being handled.
- Avoid overloading equipment when moving materials mechanically by letting the weight, size, and shape of the material being moved dictate the type of equipment used.

DEFINITIONS

Ergonomics – Ergonomics is defined as the study of work and is based on the principle that the job should be adapted to fit the person rather than forcing the person to fit the job. Ergonomics focuses on the work environment, such as its design and function, as well as items—such as the design and function of workstations, controls, displays, safety devices, tools, and lighting to fit the employees' physical requirements and to ensure their health and well-being.

Ergonomics –continued

Ergonomics includes restructuring or changing workplace conditions, to make the job easier, and reducing stressors that cause musculoskeletal disorders. In the area of materials handling and storing, ergonomic principles may require controls such as reducing the size or weight of the objects lifted, installing a mechanical lifting aid, or changing the height of a pallet or shelf.

Although no approach eliminates back injuries resulting from lifting materials, you can prevent a substantial number of lifting injuries by implementing an effective ergonomics program and by training your employees in appropriate lifting techniques

GENERAL REQUIREMENTS

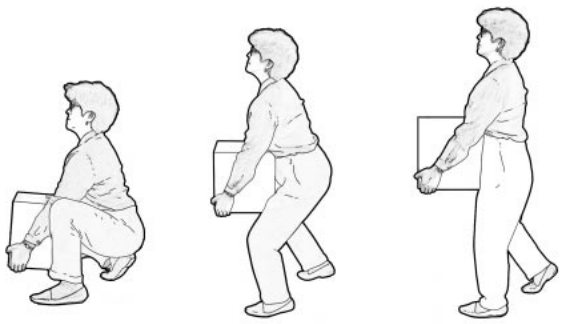
- Always choose to team lift and never lift any material over 50 pounds.
- Before manual lifting is performed, a hazard assessment must be completed. Brieser utilizes the TSTI or Total Safety Task Instruction (See Section 4 for details). The assessment must consider size, bulk, and weight of the object(s), if mechanical lifting equipment is required, if two-man lift is required, whether vision is obscured while carrying and the walking surface and path where the object is to be carried.
- Musculoskeletal injuries caused by improper lifting must be investigated and documented. Incorporation of investigation findings into work procedures must be accomplished to prevent future injuries.
- Manual lifting equipment such as dollies, hand trucks, lift-assist devices, jacks, carts, hoists are provided for employees. Other engineering controls such as conveyors, lift tables, and workstation design are considered and shall be assessed by field supervision. See section VI in this policy for more details.
- Manual lifting equipment should be used instead of manual lifting where possible. Field Supervisors shall enforce the use of lifting equipment.
- Defects observed in equipment shall be reported to a supervisor and must be repaired or replaced before being used again.
- Where the appropriate PPE for the task and material being handled.
- Avoid overloading equipment when moving materials mechanically by letting the weight, size, and shape of the material being moved dictate the type of equipment used.
- Inspect materials for slivers, jagged, or sharp edges, burns, rough, or slippery surface.
- Grasp the object with a firm grip.
- Keep fingers away from pinch and shear points, especially when setting down materials.
- Wipe off greasy, wet, slippery, or dirty objects before trying to handle them.

MANUAL LIFTING TECHNIQUES

- Squat/Power Lift:

1. Put one foot in front of the other using a wide stance
2. Keep your back straight, push your buttocks out and use your legs and hips to lower yourself down to the object
3. Move the load as close to you as possible
4. Grasp the object firmly with both hands
5. Prepare for the lift: look forward
6. Lift upwards following your head and shoulders. Hold the load close to your body. Lift by extending your legs with your back straight, your buttocks out (exaggerate this position), and breathe out as you lift.

- Basic Lift (Diagonal Lift)

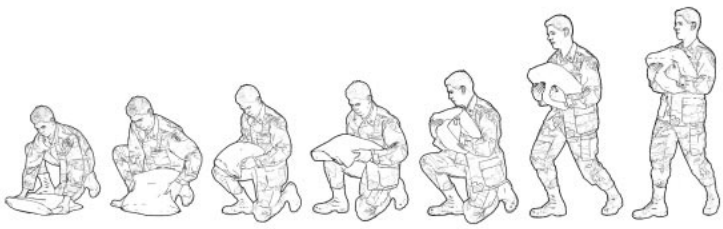


1. Get close to the object
2. Stand with a wide stance: put one foot forward and to the side of the object.
3. Keep your back straight, push your but-tocks out, and use your legs and hips to lower yourself down to the object.
4. Move the load as close to you as possible.
5. If the box has handles, grasp the handles firmly and go to step 9.

- Basic Lift (Diagonal Lift) continued

  6. Put the hand (that is on the same side of your body as the forward foot) on the side of the object furthest from you.
  7. Put the other hand on the side of the object closest to you. Your hands should be on opposite corners of the object.
  8. Grasp the object firmly with both hands.
  9. Prepare for the lift: look forward.
  10. Lift upwards following your head and shoulders. Hold the load close to your body. Lift by extending your legs with your back straight, your buttocks out, and breathe out as you lift.

- Tripod Lift – Use the tripod lift for object with uneven weight distribution (example: sacks of concrete or grout) *Recommended for people with decreased arm strength. Not recommended for people with bad knees*



  1. Put one foot next to the object. Keep your back straight, push your buttocks out and slowly lower yourself down onto one knee. (For support as you lower yourself down, put one hand on a stool or on your thigh for support)
  2. Position the object close to the knee on the ground.
  3. Grasp the object firmly with both hands.
  4. Slide the object from the knee on the ground to mid-thigh. Keep your head forward, your back straight, and your buttocks out, and lift the object onto the opposite thigh.
  5. Put both of your forearms under the object (with your palms facing upward) and hug the object to your stomach and chest.
  6. Prepare for the lift: look forward.
  7. Lift upwards following your head and shoulders. Hold the load close to your body. Lift by extending your legs with your back straight, your buttocks out, and breathe out as you lift.

- Team Lifting- When two or more people carry a load

    1. Both persons should be about the same height
    2. One person should be in charge of the lift so that you are working together not against each other
    3. Lift together, walk in step and lower the load together
    4. When carrying long sections of material such as rebar or lumber, they should carry the material on the same shoulder. This way, if a load must be abandoned, it will clear both persons

- Boxes, Cartons & Sacks
    1. Grasp the alternate top and bottom corners
    2. Draw a corner between legs
    3. Sacked materials should be grasped at opposite corners (see Tripod lift)
    4. Upon reaching an upright position
        1. Let the sack rest against the hip and belly
        2. Then swing the save to one shoulder
        3. As the sack reaches the shoulder, the worker should stoop slightly; put a hand on the hip so that the sack rest partly on the shoulder and partly on the arm and back.
- Barrels & Drums
    1. When handling a drum, one should request assistance or use a drum tilter or other mechanical assistance designed to move larger 55-gallon type of drums.
    2. If necessary to roll a barrel or drum, the worker should push against the sides with the hands, tipping the barrel on edge. This is only permitted for empty drums in desirable working conditions such as a level concrete floor or similar.

HAND TRUCKS, CARTS & DOLLIES

- Two-Wheeled Trucks

    1. Tip the load to be lifted forward slightly so that the tongue of the truck goes under the load.
    2. Push the truck all the way under the load to be moved.
    3. Keep the center of gravity of the load as low as possible. Place heavy objects below lighter objects.
    4. Place the load well forward so the weight will be carried by the axle, not by the handles.

- Two-Wheeled Trucks continued

5. Place the load so it will not slip, shift, or fall.
6. Load only to a height that will allow a clear view ahead.
7. Let the truck carry the load. The operator should only balance and push.
8. For extremely bulky items or pressurized items, such as gas cylinders, strap or chain the item to the truck.
9. When going down an incline, keep the truck ahead so that it can be always observed.

- Four-Wheeled Trucks or Cart
  1. Trucks or cart should be evenly loaded to prevent tipping
  2. Trucks should be pushed rather than pulled.
  3. They should be loaded so that the operators can see where they are going.
  4. Contents of load should be arranged so that they will not fall.

- Pallets
  1. Splintered, broken, or loose parts should be repaired or replaced. Loose nails or chunks of wood can cause injury to workers and damage to the trucks.
  2. Pallets should be neatly stacked so that they are stable and secure against falling.
  3. They should not be left standing on edge or in a leaning position from which they may topple onto our workers.
  4. Large stacks of pallets should be maintained outside.
  5. Pallets should be hoisted with powered or hand trucks.
  6. The pallets should be inspected before loading or stacking for defects by the operator.

LIFTING WITH EQUIPMENT

A Lifting & Rigging (Section 33) permit must be completed whenever a sling is attached to a piece of equipment or whenever a piece of equipment is used that is typically not used for lifting. (Ex. Backhoe Loader, Crawler Excavator). Section 40 Powered Industrial Trucks must be reference when utilizing a Forklift.

MATERIALS STORAGE

Stored materials must not create a hazard for employees. Employers should make workers aware of such factors as the materials' height and weight, how accessible the stored materials are to the user, and the condition of the containers where the materials are being stored when stacking and piling materials. To prevent creating hazards when storing materials, employers must do the following:

- Keep storage areas free from accumulated materials that cause tripping, fires, or explosions, or that may contribute to the harboring of rats and other pests.
- Place stored materials inside buildings that are under construction and at least 6 feet from hoist ways, or inside floor openings and at least 10 feet away from exterior walls.
    - Separate non-compatible material
- In addition, workers should consider placing bound material on racks, and secure it by stacking, blocking, or interlocking to prevent it from sliding, falling, or collapsing.

FLOOR JACKS

A jack is an appliance for lifting and lowering or moving horizontally a load by application of a pushing force.

Jacks may be of the following types:

- Lever
- Ratchet
- Screw
- Hydraulic

The rating of a jack is the maximum working load for which it is designed to lift safely that load throughout its specified amount of travel.

NOTE: To raise the rated load of a jack, the point of application of the load, the applied force, and the length of lever arm should be those designated by the manufacturer for the jack considered.

PROCEDURE

A. **Labeling**- all jacks shall be labeled with the rate load. If this information is compromised a replacement label shall be placed on the equipment immediately. The rating load shall be legibly and permanently marked in a prominent location on the jack by casting, stamping, or other suitable means.

B. **Before Use**:
1. The operator shall make sure that the jack used has a rating sufficient to lift and sustain the load.
2. Visually inspect jacks and keep them in good working order.
3. Make sure the jack is safe to lift the load

BASIC OPERATION & LIFTING

The most common hazard associated with jack use is collapse from trying to lift beyond the capacity of the jack; jack placement on uneven surfaces; and load slipping off the jack. The OSHA requirements are designed to minimize these hazards.

The fluid used in hydraulic power tools must be an approved fire-resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed. The exception to fire-resistant fluid involves all hydraulic fluids used for the insulated sections of Heavy Equipment, aerial lifts, and hydraulic tools that are used on or around energized lines. This hydraulic fluid shall be of the insulating type.

Brieser Construction will follow the manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings must not be exceeded.

All jacks—including lever and ratchet jacks, screw jacks, and hydraulic jacks—must have a stop indicator, and the stop limit must not be exceeded. Also, the manufacturer's load limit must be **permanently marked** in a prominent place on the jack, and the load limit must not be exceeded.

A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up. Place a block under the base of the jack when the foundation is not firm and place a block between the jack caps and load if the cap might slip.

TO SET UP A JACK:

1. The base of the jack shall rest on a firm, level surface.
2. The jack must be correctly centered.
3. The jack head must bear against a level surface; and
4. The lift force must be applied evenly.

JACKS-INSPECTION

Whether ratchet or hydraulic, all jacks should be inspected before each shift or use. Check for:

- improper engagement or extreme wear of pawl and rack
- cracked or broken rack teeth
- cracked or damaged plunger
- leaking hydraulic fluid
- scored or damaged plunger
- swivel heads and caps that don't function properly
- damaged or improperly assembled accessory equipment

All jacks must be lubricated regularly. Each jack must be inspected according to the following schedule:

Each jack shall be thoroughly inspected at times which depend upon the service conditions. Inspections must be not less frequent than the following:

- For constant or intermittent use at one locality, once every 6 months.
- For jacks sent out of Brieser Warehouse for special work, when sent out and when returned.
- For a jack subjected to abnormal load or shock, immediately before and immediately thereafter.
- Repair or replacement parts must be examined for possible defects.
- Jacks in need of repair must be tagged and immediately removed from service.

Remember: When using jacks always try to block as you go. Never use jacks for long-term support. Block properly instead.

STANDARD OPERATING PROCEDURE:	**Material Handling & Storage**
CROSS REFERENCE:	**29 CFR 1926, Construction Standards.** **ASME B30.1-2009 Jacks, Industrial Rollers, Air Casters, and Hydraulic Gantries** **29 CFR 1910.244, Other Portable Tools** **29 CFR 1926.305, Jack-Lever and Ratchet, Screw, and Hydraulic** **29 CFR 1926.250, Materials Handling, Storage, Use & Disposal**

JACKS – SELF INSPECTION CHECKLIST

Perform the following Pre-Use Inspection-(Any unsafe conditions listed below is cause for rejection)

YES	NO	N/A	
			Do the jacks in use have a rating sufficient to lift and sustain the loads? [29 CFR 1910.244(a)(1)(i)]
			Is the rated load for the jack legibly and permanently marked by casting, stamping or other suitable means in a prominent location on the jack? [29 CFR 1910.244(a)(1)(ii) and 1926.305(a)(1)]
			In the absence of a firm foundation, is the base of the jack blocked or cribbed? [29 CFR 1910.244(a)(2)(i) and 1926.305(c)]
			If the cap could slip, is a block placed between the cap and the load? [29 CFR 1910.244(a)(2)(i) and 1926.305(c)]
			Do all jacks have a positive stop to prevent over-travel? [29 CFR 1926.305(a)(2)]
			Are operators instructed to watch the stop indicator (which must be kept clean) in order to determine the limit of travel? [29 CFR 1910.244(a)(2)(ii)]
			After a load has been raised by a jack, is it immediately cribbed, blocked, or otherwise secured, as required? [29 CFR 1910.244(a)(2)(iii) and 1926.305(d)(1)(i)]
			Are hydraulic jacks that are exposed to freezing temperatures supplied with adequate antifreeze liquid? [29 CFR 1910.244(a)(2)(iv) and 1926.305(d)(1)(ii)]
			Are all jacks properly lubricated at regular intervals? [29 CFR 1910.244(a)(2)(v) and 1926.305(d)(1)(iii)]
			Is each jack thoroughly inspected? [29 CFR 1910.244(a)(2)(vi) and 1926.305(d)(1)(iv)]
			Are jacks that are used constantly or intermittently at one locality thoroughly inspected at least every six months? [29 CFR 1910.244(a)(2)(vi)(a) and 1926.305(d)(1)(iv)(a)]
			Are jacks that are sent out on jobs thoroughly inspected when they are returned? [29 CFR 1910.244(a)(2)(vi)(b) and 1926.305(d)(1)(iv)(b)]
			Are jacks that are subjected to abnormal loads or shock thoroughly inspected immediately before and after each use? [29 CFR 1910.244(a)(2)(vi)(c) and 1926.305(d)(1)(iv)(c)]
			Are repair or replacement parts for jacks examined for defects before installation? [29 CFR 1910.244(a)(2)(vii) and 1926.305(d)(1)(v)]
			Are repairs made on disabled jacks before they are used again? [29 CFR 1910.244(a)(2)(viii) and 1926.305(d)(1)(vi)]

Inspection Performed by: _____ Date: _____

If any unusual defects are detected during the inspection, CONTACT the Brieser Equipment Manager to ensure proper documentation and final disposition of the Jack.

RECORDKEEPING:

- Daily or Pre-use Inspections
    - All inspections to the material handling equipment reference in this policy shall at a minimum be documented on the Brieser TSTI
    - All Jacks shall be inspected by filling out the Self-Inspection Checklist located in within this policy

TRAINING PROCEDURE

1. Only authorized and trained personnel should be permitted to operate Material Handling Equipment defined in Section 41 of the Brieser Safety Manual.
2. Brieser Construction's Equipment Safety Training Manual will cover all other forms of equipment training. A current list is maintained on our company website. All Brieser employees have access to the site and its contents.
3. All Brieser field employees shall complete online training in General Ergonomics, Back Safety & Material Lifting & Storage.
    a. Training should include general principles of ergonomics, recognition of hazards and injuries, procedures for reporting hazardous conditions, and methods and procedures for early reporting of injuries. Additionally, job specific training should be given on safe lifting and work practices, hazards, and controls.