

DEPARTMENT OF CONSUMER AND INDUSTRY SERVICES  
BUREAU OF SAFETY AND REGULATION  
GENERAL INDUSTRY SAFETY STANDARDS COMMISSION

(By authority conferred on the general industry safety standards commission by sections 16 and 21 of Act No. 154 of the Public Acts of 1974, as amended, being SS408.1016 and 408.1021 of the Michigan Compiled Laws)

PART 17. REFUSE PACKER UNITS

GENERAL PROVISIONS

R 408.11701 Scope.

Rule 1701. This part applies to the safe design, use and maintenance of mobile and stationary equipment used in the collection and compaction of solid waste in, around, or about places of employment.

History: 1979 AC.

R 408.11704 Definitions; C to H.

Rule 1704. (1) "Container" means a bin used for collection of refuse at a point of origin.

(2) "Hopper" means a part on a refuse packer unit for receiving refuse.

(3) "Hydraulic piping" means flexible or rigid tubing used to transfer fluids under pressure.

History: 1979 AC.

R 408.11705 Definitions; L to P.

Rule 1705. (1) "Loading sill" means the ledge of a hopper over which refuse is deposited into the hopper.

(2) "Mobile refuse packer unit" means a motor powered vehicle equipped with a body which receives solid waste material and compacts it under pressure.

(3) "Packer blade or panel" means a metal plate which moves the solid waste material from a hopper into a holding unit.

(4) "Pinch point" means a point at which it is possible to be caught between moving parts of a machine or between moving and stationary parts of a machine.

History: 1979 AC.

R 408.11706 Definitions; R, S.

Rule 1706. (1) "Receiving box" means a receptacle which receives refuse from a stationary refuse packer unit.

(2) "Refuse" means putrescible and nonputrescible solid wastes, except body wastes, and includes garbage, rubbish, ashes, incinerator ash, incinerator residue, street cleanings, and solid market and industrial wastes.

(3) "Safety factor" means the ratio of the breaking strength of a piece of material or object to the maximum designed load or stress applied when in use.

(4) "Stationary refuse packer unit" means a unit which remains at 1 location and receives solid waste material and compacts it under pressure.

History: 1979 AC.

R 408.11711 Employer responsibilities.

Rule 1711. An employer shall:

- (a) Provide instruction and training before assigning an employee to a refuse packer unit.
- (b) Use a refuse packer unit within its maximum rated capacity.
- (c) Maintain a refuse packer unit within its maximum rated capacity.
- (d) Establish and maintain a lockout procedure as prescribed in subrules (3) and (4) of R 408.11715.

History: 1979 AC.

R 408.11713 Employee responsibilities.

Rule 1713. An employee shall:

- (a) Use the guards and other safety features provided on a refuse packer unit.
- (b) Use personal protective devices provided by the employer.
- (c) Use a refuse packer unit only after he is instructed and trained in its safe operation.
- (d) Use a refuse packer unit within the maximum rated capacity of the equipment.
- (e) Report damage to or failure of a refuse packer unit.
- (f) Not eject or dump a loaded refuse packer unit until all employees are clear of the rear of the unit.
- (g) Not ride on the rear steps of a mobile packer unit when it is backing up.

History: 1979 AC.

R 408.11715 Operation of refuse packer units.

Rule 1715. (1) An employee shall not pass or work under any elevated equipment or part thereof, except when protected by a truck cab or when the elevated part is supported by a prop extending to the vehicle, which prop shall:

- (a) Be of such strength as to sustain the load.
- (b) Maintain support in case of movement of the vehicle or mechanical failure.
- (2) An operator shall not eject or dump a loaded unit until all employees are clear of the rear of the unit.
- (3) A lockout procedure for a refuse packer unit shall be established and followed whereby the power shall be shut off and the key removed before and during repairs to the packer or compaction mechanism, except during maintenance testing.
- (4) A power source of a stationary refuse packer unit to be repaired, serviced or set-up shall be locked out by each employee while doing such work. Any residual pressure shall be relieved before and during the work.

History: 1979 AC.

R 408.11716 Hoisting cables and chains.

Rule 1716. (1) A chain and its component parts, other than alloy steel chain having a minimum tensile strength of 125,000 pounds per square inch, shall have a designed safety factor of not less than 5. Alloy chain shall not be used in excess of the working load in straight tension for its size as prescribed in table 1.

(2) A hoist cable and its component parts for mobile refuse packer units shall have a designed safety factor of not less than 2 based on the applied pull.

(3) A hoist cable shall be inspected on installation and monthly thereafter.

(4) A hoist cable shall not be used if, in any length equal to 8 diameters of the cable, the total number of visible broken wires exceeds 10% of the total number of wires, or if the cable shows other signs of excessive wear, corrosion, kinks or bird caging.

(5) Where a "U" type cable clamp or clip is applied, it shall comply with table 2.

(6) The hydraulic relief valve in a cable operating system shall be set at the manufacturer's rating and sealed.

(7) A hoist cable bent to form an eye shall be equipped with a metal thimble.

Figure for 408.11716 (1 of 2)

TABLE 1 Working Load	
Nominal Size, Chain Bar, in.	Work Load, lb., min.
¼	3,250
⅜	6,600
½	11,250
⅝	16,500
¾	23,000
⅞	28,500
1	38,750
1¼	44,500
1½	57,500
1¾	67,000
1⅞	80,000
2	100,000

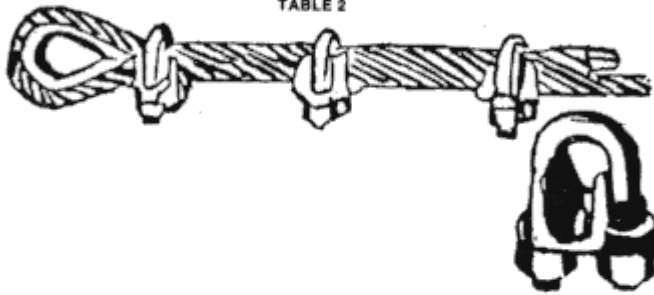
Note: There is only one correct method of installing wire rope clips. They should be attached to rope ends as shown in photograph above. The base of each clip should bear against the live, or long rope end, and the U-bolt should bear against the dead or short rope end.

Figure for 408.11716 (2 of 2)

TABLE 1  
Working Load

Nominal Size, Chain Bar, in.	Work Load, lb., min.
3/8	3,250
1/2	6,600
5/8	11,250
3/4	16,500
7/8	23,000
1	28,500
1 1/8	38,750
1 1/4	44,500
1 3/8	57,500
1 1/2	67,000
1 3/4	80,000
2	100,000

TABLE 2



Number and Spacing of Clips for Ropes of Various Sizes

Diameter of rope (in.)	Number of clips	Center-to-center space between clips (in.)	Length of rope turned back exclusive of eye (in.)
3/8	2	1 1/4	3
1/2	2	1 3/4	4
5/8	2	2 1/4	5
3/4	2	2 3/4	6
7/8	3	3	9
1	3	3 3/4	12
1 1/8	4	4 1/4	18
1 1/4	4	5 1/4	21
1 3/8	4	6	24
1 1/2	5	6 3/4	34
1 3/4	5	7 1/4	38
1 7/8	6	8 1/4	50
2	6	9	54
2 1/8	6	9 3/4	60
2 1/4	7	10 3/4	74
2 3/8	8	11 3/4	90
2 1/2	8	12	96
2 3/4	8	13	104
3	8	14	112

History: 1979 AC.

R 408.11717 Hydraulic piping.

Rule 1717. (1) Hydraulic piping shall have a designed safety factor of not less than 4.

(2) A refuse packer unit with a leaking hydraulic system, in excess of normal seepage, which constitutes a hazard to an employee or potential malfunction of equipment, shall not be used until it is repaired.

(3) An employee shall be protected from contact with hydraulic piping capable of causing a burn. The hydraulic piping shall be located or guarded to prevent damage from being struck or by striking other objects.

History: 1979 AC.

R 408.11718 Lights.

Rule 1718. A refuse packer unit used during hours of darkness shall have light of not less than 5 footcandles at the loading or hook-up point.

History: 1979 AC.

#### MOBILE UNITS

R 408.11721 Riding steps.

Rule 1721. (1) A riding step provided for an employee making collections on a mobile refuse packer unit shall:

(a) Have a slip resistant surface.

(b) Have a maximum height of 18 inches from the roadway with the mobile unit empty.

(2) A grab handle shall be provided for each employee using a riding step as specified in rule 237 of the occupational safety standards commission standard, Part 2. Floor and Wall Openings, Stairways and Skylights, being R 408.10237 of the Michigan Administrative Code.

History: 1979 AC.

R 408.11722 Warning devices.

Rule 1722. An audible or visual warning device shall be installed on a mobile packer unit to signal when the unit moves in reverse so as to warn an employee at the rear of the unit.

History: 1979 AC.

R 408.11723 Loading and unloading.

Rule 1723. (1) A mechanism such as, but not limited to, a hoisting motor or lifting arm, used for loading or lifting a container, shall be constructed and maintained to handle the designed rating of a mobile refuse packer unit.

(2) On a mobile unit, except a front loader, when loading mechanically, a locking device shall be provided to prevent dislodgement of a container during the dumping operation.

History: 1979 AC.

R 408.11724 Controls.

Rule 1724. (1) This rule takes effect 180 days after filing this 1974 amendment with the secretary of state.

(2) A side loading mobile refuse packer unit with a top loading hopper shall have a fixed barrier or a movable barrier interlocked with the power source if a pinch point is created by the compaction mechanism.

(3) A refuse packer unit with a side loading door shall have the door interlocked with the power source of the compaction mechanism when the bottom of the loading opening is less than 6 feet vertically from the loading surface.

(4) Loading compaction controls for a rear loading unit shall be located so that the operator using the compaction controls has a view of the loading sill.

(5) Operator controls for a mobile unit shall be designed or located so that unintentional activation will not occur.

(6) Except when guarded as required in R 408.11725(1), a mobile refuse packer unit shall be equipped with operator controls that require continuous pressure of both hands on the control devices until the packer blade has moved beyond the pinch point created where the blade or sweep panel and hopper come together, or shall provide for the blade or sweep panel to stop not less than 6 inches nor more than 16 inches from the pinch point and require reactivation to complete the cycle. When using the split cycle, a single control is sufficient.

(7) Each control device shall be labeled as to its function.

History: 1979 AC.

#### R 408.11725 Guards.

Rule 1725. (1) One hundred and eighty days after the filing of this 1974 amendment with the secretary of state, a rear loading mobile refuse packer unit shall be guarded to prevent employee access to the pinch point caused by the packing cycle by 1 of the following devices:

(a) A movable barrier designed to withstand repetitive use and remain in alignment and prevent the operator from reaching the pinch point created during the packing cycle. The barrier shall be provided with a cushion along its entire length where the barrier meets the sill to prevent chance of injury. The barrier shall be interlocked with the packing cycle so that it is in place before the packer mechanism closes to not less than 6 inches nor more than 14 inches of the pinch point.

(b) An elevating hopper which rises not less than 6 feet above the working surface before the packer blade closes to within 6 inches of the hopper sill.

(c) A fixed or movable barrier or other safety device which will prevent access to the pinch point by an employee.

(2) An operator of a mobile refuse packer may use the controls prescribed in R 408.11724(6) in lieu of fixed or movable barriers.

(3) An exposed pinch point created by mechanical controls or lifting arms on a mobile refuse packer unit shall be guarded.

History: 1979 AC.

### STATIONARY UNITS

#### R 408.11731 Controls.

Rule 1731. (1) Operator controls on a stationary refuse packer unit shall be designed and located to prevent accidental activation.

(2) The hopper or load opening on a manually controlled stationary refuse packer unit shall be visible to the operator from his control station.

(3) An emergency stop device distinguished by its size or color shall be provided at the control station to stop the ram of a stationary refuse packer unit.

(4) When a stationary refuse packer unit is equipped for direct manual loading and the operator is not protected from the pinch point, the control shall require continuous pressure and the compactor cycle shall stop when the control is released. Such a control shall be a minimum of 6 feet from the pinch point.

(5) Each control device shall be labeled as to its function.

History: 1979 AC.

#### R 408.11732 Guards.

Rule 1732. (1) A hopper opening on a stationary refuse packer unit shall be guarded with a standard barrier as prescribed in rule 231 of the occupational safety standards commission standard, Part 2. Floor and Wall Openings and Stairways, being R 408.10231 of the Michigan Administrative Code.

(2) A pinch point exposed to contact by an employee shall be enclosed or guarded.

(3) A lifting device used to empty a container at a stationary refuse packer unit shall have a locking device as prescribed in R 408.11723(2).

(4) Maintenance access openings shall be covered and secured on the compactor. The cover shall be removable by hand tools or interlocked to the power source.

(5) A locking device used to couple a receiving box and stationary compactor unit shall be capable of withstanding the rated pressure of the compactor.

(6) A receiving box loading device shall provide a positive locking action to prevent dislodgement during the loading of the box on a vehicle.

(7) A receiving box loaded on a vehicle for transport shall have a retaining device other than the loading device.

History: 1979 AC.