



## **D6220-20k Bid Specifications**

4/5/04

### **Functional Intent**

- 1) The Lifter shall lift plastic refuse containers and dump the contents of the containers into the rear hopper of a refuse collection vehicle, and then return the emptied container safely to the ground.
- 2) The Lifter will be compatible with all styles/brands of carts between 60 and 100 gallon in size, that have been designed to meet ANSI code for US semi-automated collection containers (2-bar style) with a bar-to-bar spacing between 14 <sup>3</sup>/<sub>4</sub>" to 15 <sup>1</sup>/<sub>4</sub>".
- 3) The design of the lifter will allow for the easy engagement/disengagement of the plastic carts.
- 4) The contact of the lifter with the plastic carts will be designed to eliminate or minimize scratching and wearing, in order to maximize cart life.
- 5) Weight Capacity of the lifter will meet or exceed ANSI's current standard container capacity limit of 350 lbs.
- 6) The pressure required to lift a 350lb load will be 1900 PSI. (300lb of refuse and approximately 50lb for the plastic cart) Maximum pressure available depends on model of the truck's pump, as well as the truck's main relief valve setting.
- 7) Complete cycle time to lift, dump, and return a cart will be within 6-8 seconds and will require an adjustment of 2.5 GPM of flow for each lifter.
- 8) The lifter will be rated for usage of 700 times a day.
- 9) The container will be dumped at an angle of 45 degrees above the horizon to ensure a complete dump of the refuse.
- 10) Operating temperatures will be between -30<sup>0</sup> F to +120<sup>0</sup> F.
- 11) Overall design shall provide for the maximum possible safety for the operator.

### **Performance**

- 1) The unit shall feature a "Tuck-Away" arc of motion that is suitable for grabbing the refuse container at a variety of heights, allowing for ease of cart engagement in a wide range of operating conditions including rough/uneven terrain, potholes, etc. This will further account for the truck's ever-changing height as the refuse-load varies from empty to full.

- 2) This “Tuck-Away” feature will further benefit the operator by tucking under the hopper of the truck when not in use, to make access to the hopper for hand loading, or commercial bin dumping easy and convenient.
- 3) The Lower Latch mechanism rotates during parts of the lifting motion, to help prevent cart wear and provide a secure grip.
- 4) The Lifter will dump as high and deep into the hopper as possible, to prevent spillage and to provide for even dispersal of waste into the hopper.
- 5) The Lifter will not be able to make contact with the packer blade when installed properly.
- 6) The design of the Lifter shall allow for a minimum of 22” of ground clearance at all times to help prevent bottom-out damage.
- 7) When properly installed with bumper sill extensions, the operator may safely dump a commercial container over the lifter without touching or damaging the lifter.
- 8) The lifter will function in combination with a tipper-bar unit.

### **Construction**

- 1) All structural components of the Lifter will be AISI A36 HRS.
- 2) All hardware, such as bolts, nuts, washers will be Grade 8.
- 3) The driver arms will be 3/8” thick HRS.
- 4) The idler arms will be 1/2” thick HRS.
- 5) The lower latch is spring mounted and all edges rounded smooth to prevent scratching the containers.
- 6) The upper hook is 8” wide, free from all rough/sharp edges, and PVC coated to prevent scratching the containers.
- 7) A set of plastic rollers supports the containers midsection to prevent scratching.
- 8) All nuts will be Nylock Locknuts for secure assembly.
- 9) The lifter assembly shall have a mounting plate that is 1/2” thick, and will attach via six (6) 1/2” bolts or studs to a secondary 1/2” thick rear plate that is permanently welded to the truck.

### **Rotary Actuator**

- 1) The Lifter will use a 20K Helical Rotary Actuator for its lifting motion. This Actuator will produce up to 20,000 in/lb of torque at 3,000 PSI, and has a total potential rotation of 220 degrees.
- 2) The design of the Actuator contains multiple internal seals to prevent both internal and external leakage. The Actuator is a closed hydraulic device, meaning that unlike a typical hydraulic cylinder, the Rotary Actuator is free from exposure to external debris.

- 3) The internal splined gearing mechanism of the actuator offers complete transmission of torque thru it's many teeth all at the same time, meaning the stress of the load, no matter the physical position, is constantly being held by the entire assembly of teeth, and not just a single gear tooth.
- 4) The Actuator features a thick main shaft that is at least 1 21/32" in diameter, and rotates upon 2 roller bearings (one at each end) for balanced and smooth motion.
- 5) The torque of the Actuator is transmitted to the driving arms by a 28-tooth involute splined hub that offers superior torque transmission.
- 6) The Rotary Actuator can be rebuilt and seal kit/spare parts are readily available. Rebuilt Actuators are also available thru the factory. Videos and instructions on rebuilding actuators are available per request.
- 7) The Actuator is commercially available and is suitable for use with standard hydraulic oil, ATF, or aviation grade hydraulic fluid.

### **Hydraulics (sold separately)**

- 1) The hydraulic system does not require any electrical wiring or solenoids.
- 2) Tap-In Kit shall include Diverter Valve (single or double depending on order), hand valve/s, and hoses and fittings required to make most installations. Some installations may require additional fittings not provided. Care should be taken to order the correct kit for your model truck at the time the order is placed.
- 3) The Diverter Valve is a priority flow control with an adjustable flow relief made from a single block of steel or aluminum. The valve can accept full system pressure/flow through it's body with minimum back pressure or heat. The valve will send the specified amount of flow to the hand valve and allow the rest of the flow to continue to the packer valve. Both the packer valve and the lifters can be used simultaneously without a pressure loss.
- 4) If there are two lifters being installed, the Diverter Valve will come with an attached 50/50 Splitter Valve, which will keep the flow to the two lifters equal.
- 5) The Hand Valve has a built in adjustable relief valve and a dead-man stop feature. Release the handle and all motion to the lifter stops. If there will be two lifters mounted per truck, they will each have their own Hand Valve that will allow the units to work independently of each other.
- 6) An Adjustable Flow Control Valve will come with each unit, mounted to the bottom of the Rotary Actuator, to cushion the flow/motion of the lifter in the downward motion.
- 7) All hoses, fittings and valves are rated for use in high-pressure, 3,000 PSI systems.
- 8) Provided in the Tap-In kit are hose clamps for managing the proper hose placement.

### **Maintenance**

- 1) The lifter utilizes standard grease zerks as a convenient way to lubricate the pivot points and sliding members. Greasing the lifter once a week is recommended.
- 2) Intervals for required adjustments to the Lifter shall not be less than 6 months.

- 3) Most parts are kept in stock and will ship the same, or the following day, depending on availability.
- 4) The faceplate assembly can be removed and replaced/repared without the need of removing the entire unit from the truck.
- 5) The Lifter will be installed on a rear mounting plate and will allow for fast lifter replacement.

## **Finishing**

- 1) All metal surfaces will be prepared and power washed prior to painting, to remove oils, rust, welding slag and grease.
- 2) Lifter will have an initial primer coating and one top-coat that will be "Safety Yellow" unless otherwise specified.
- 3) Completed unit will have all appropriate safety decals.
- 4) Lifter will come with an identification tag permanently affixed to the side member that has the serial number of the lifter necessary for warranty purposes.
- 5) All lifter shipments will be inside a durable cardboard box mounted atop a pallet, with plastic wrap/steel strapping to secure the lifter to the pallet and prevent exposure to the elements.
- 6) The lifter will come packaged with an instruction manual that contains detailed instructions on the proper mounting and care for the lifter, as well as a spare parts key and ordering information.

## **Warranty**

- 1) The Lifter shall be warranted against manufactures defects for a period of 2-years. Standard warranty does not cover labor. See Warranty Page for complete details.