

## Bid Specifications

### Model D6098b-27k Folding Auto-Arm Cart Lifter

Updated August 13, 2013

#### Functional Intent

- 1) The Lifter shall lift plastic refuse containers and dump the contents of the containers into the collection hopper of a refuse collection vehicle or carry can, and then return the emptied container safely to the ground.
- 2) The Lifter will be compatible with all styles/brands of carts between 30 and 96 gallon in size, that have been designed to meet ANSI Type G for automated style collection. *Note: Many carts that are Type B or Type C are also approved for Type G, but not all. Please check your carts manufacturer's specifications.*
- 3) The D6098b-27k may also be compatible with 55 gallon drums and some non-ANSI approved carts and/or barrels. Due to the wide variety of container possibilities they cannot all be listed here. *Note: Typical retail store-bought garbage cans may or may not be suitable for use with this lifter, as these types of garbage cans may not be designed to work on automated lifting equipment. Users lifting these types of garbage cans do so at their own risk.*
- 4) The design of the lifter will allow for the easy engagement/disengagement of the plastic carts. This lifter is equipped with rubber padded gripper arms for gripping the cart around it's sides.
- 5) The design of the lifter will not interfere with access to the hopper for the hand loading of bulk items or the removal of banded material. This lifter features folding gripper arms that can be moved with a hand control into a folded position, for easy access to the hopper.
- 6) The design of the lifter (with proper installation), will allow for the dumping of commercial containers over the lifter without damage to the lifter or container.
- 7) 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.
- 8) Weight capacity of the lifter will meet or exceed ANSI's current standard container capacity limit of 350 lbs. *Note: Capacity is limited by the adjustment of the relief valve.*
- 9) The pressure required to lift a 400lb load will be 1600 PSI. (350lb of refuse and approximately 50lb for the plastic cart) *Note: Maximum pressure available depends on model of the truck's pump, as well as the truck's main relief valve setting.*

- 10) Complete cycle time to lift, dump, and return a cart will be within 6-8 seconds. *Note: Cycle time is controlled by the flow rate delivered to the lifter. To achieve a cycle between 6-8 seconds, the flow should be adjusted to approximately 3.5 GPM per lifter.*
- 11) The cycle time to grip or release the cart is approximately 1 second. *Note: Cycle time of the grippers may be adjusted by adjusting the overall flow to the lifter, or as necessary, may be adjusted separately using a flow restrictor, if desired (not included).*
- 12) The lifter will be rated for usage of not less than 700 times a day.
- 13) The container will be dumped at an angle of 45 degrees above the horizon to ensure a complete dump of the refuse.
- 14) Operating temperatures will be between  $-30^{\circ}$  F to  $+120^{\circ}$  F.
- 15) Overall design shall provide for the maximum possible safety for the operator.
- 16) The D6098b-27k unit is specifically designed for rearloader applications, and may also be suitable for carry cans, or as a stationary dock dumper.

## Performance

- 1) 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.
- 2) The design of the Lifter shall allow for a minimum of 17 1/2" of ground clearance at all times to help prevent bottom-out damage, when mounted at 38 1/4" to the top of the mounting plate.
- 3) When properly installed by recessing into the rear sill and protected by bumper sill extensions, the operator may safely dump a commercial container over the lifter without touching or damaging the lifter on rearload applications. *Note: It is typical to have to relocate the container locks when performing an installation as described.*
- 4) The mounting height will be between 37 1/4"-39" from the top of the mounting plate to the ground. Such mounting height will position the top of the gripper arms no higher than 26-27" from the ground, which is ideal for engaging and lifting most carts.
- 5) The D6098b-27k's faceplate and arms allow clearance of an edge as high as 3" above the mounting plate top edge.

## Construction

- 1) The assembled lifter in the down position shall have a thickness of approximately 8 1/2" from the rear mounting plate to the front edges (with the gripper arms folded)
- 2) The rear mounting plate shall be 22 1/2" wide x 8" tall, 1/2" steel.
- 3) All structural components of the Lifter will be AISI A36 HRS or better.
- 4) All hardware, such as bolts, nuts, washers will be Grade 8 and zinc plated for corrosion resistance.
- 5) The faceplate will be heavy duty 1/4" wall steel tube weldment of solid workmanship.
- 6) The faceplate will be 21 3/4" wide for better cart support / stability.
- 7) The driver arms and idler arms will be 1/2" thick HRS.
- 8) The gripper arms shall be faced with rubber strips to prevent scratching the containers. The gripper arms are hydraulically driven by direct mechanical linkage for secure cart grasping action.
- 9) All nuts will be all-steel deformed thread locknuts for secure assembly.
- 10) The lifter assembly shall attach via five (5) 1/2" bolts or studs for quick installation / removal as needed.
- 11) The rear mounting plate that welds to the truck is included with the lifter.
- 12) All pivot pins, threaded rods and plunger components will be zinc plated .0005" + clear chromate & seal +5 for the best corrosion resistance.
- 13) The bearings on the driver and idler arms and other pivot points shall be self-lubricated steel composite bushings.

## Rotary Actuator

- 1) The lifter will use a helical 27K rotary actuator (no rack and pinion) for its lifting motion. This actuator will produce up to 27,000 in/lb of torque at 3,000 PSI, and has a total potential rotation of 220 degrees.
- 2) The rotary actuator will provide consistently even torque throughout the lift cycle, which will allow the cart to be lifted smoothly, extending the life of the cart.
- 3) The actuator is designed and built to stop internally, no external stop required.

- 4) The design of the actuator contains multiple internal seals to prevent both internal and external leakage.
- 5) The actuator is a closed hydraulic device, meaning that unlike a typical hydraulic cylinder, the rotary actuator is free from exposure to external debris on each cycle.
- 6) 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 or keyway such as on inferior designs.
- 7) The actuator features a hardened (annealed) main shaft that is at least 1 13/16" in diameter, and rotates upon 2 internal bearings constantly immersed in hydraulic oil for balanced and smooth motion and long life.
- 8) The shaft and casing are hardened (annealed) and both longer life & corrosion resistance.
- 9) The torque of the actuator is transmitted to the driving arms by a 28-tooth involute splined hub that offers superior torque transmission. The teeth of the hubs are also hardened (annealed) for long life & corrosion resistance.
- 10) The casing of the rotary actuator shall be a casted, two-piece design that is easier to open and service and offers fewer intrusion points for debris.
- 11) The rotary actuator can be rebuilt and seal kit/spare parts are readily available. Videos and instructions on rebuilding actuators are available per request.
- 12) The actuator is commercially available and is suitable for use with standard hydraulic oil, ATF, or aviation grade hydraulic fluid.
- 13) The internal teeth of the actuator are fully immersed in hydraulic oil at all times, preventing corrosion and extending tooth life.
- 14) There shall be seals located between the hubs and the actuator casing that will prevent corrosion and grime from inserting itself in between the shaft and hub, helping to extend the life of the shaft, and make disassembly for maintenance easier.

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

- 1) The hydraulic system does not require any electrical wiring or solenoids, although if the customer specifies electric push button controls, they are available, ask for details.

- 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. The valve can accept full system pressure/flow through its 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 and both lifters will be able to operate simultaneously and at full speed.
- 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 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) This unit takes advantage of self lubricated bearings and does not need periodic greasing.
- 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 and all major components can be removed and replaced/repaired without the need of removing the entire unit from the truck.
- 5) The lifter may be removed and or replaced easily by disengaging the lifter from the mounting plate.

## **Finishing**

- 1) All metal surfaces will be prepared and power washed prior to painting, to remove oils, rust, welding slag and grease.
- 2) All parts shall be de-burred and descaled for maximum handling safety and longest lasting finish.
- 3) Lifter will be powder-coated “Butter Cup Yellow” (#UFY503s7) unless otherwise specified. Custom colors are available on request.
- 4) Completed unit will have all appropriate safety decals, in both English and Spanish.
- 5) 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.
- 6) Each actuator is stamped with a serial number for proper identification
- 7) Each lifter is pre-greased at the factory and is packaged ready to run
- 8) Any significant amount of oil within the actuator is drained prior to packaging, for shipping safety.
- 9) 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.
- 10) 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 and other useful data.
- 11) The D6098b-27k unit weighs approximately 275 lbs. When considering shipping costs, please account for packaging, such as the double walled cardboard box that protects each lifter, pallet, wrap and strapping. Additional options, such as hydraulic kits will add to the shipping weight as well.

## **Warranty**

- 1) The Lifter shall be warranted against manufactures defects for a period of 2-years. The standard warranty does not cover labor costs associated with replacing a component, shipping charges, or downtime resulting from a damaged component. See Warranty Page included in the instruction manual or call (708) 482-9500 for complete details.
- 2) The actuator and all the major lifter components are MADE IN THE USA