SPECIFICATIONS:

REAR MOUNT MODEL RL-3 "LIGHTNING LOADER"

20 FOOT KNUCKLEBOOM LOADER

INTENT

It is the intent of these specifications to describe a hydraulically operated knuckleboom trash loader to be used in the collection of oversize trash items such as discarded appliances, furniture, brush, leaves, building materials, etc. In this configuration, the loader is intended to be mounted over the rear axle of a short wheel base cab chassis. This gives the customer the flexibility to either attach a trailer to the vehicle, or use the unit to load other vehicles.

VEHICLE

The recommended vehicle for this application has a Gross Vehicle Weight of 30,000 lbs. and a cab-to-axle dimension of 84 in. Must also have a minimum of 48 in. of frame behind the center of the rear axle. Frame rating to be a minimum of 900,000 RBM.

PEDESTAL ASSEMBLY

To be an open A-frame type to allow flexing under repeated load shocks. Total height not to exceed 7 ft. from mounting plate to top of pedestal/main boom connection point. Loader sub frame/counterweight to be a 2 ½ in. steel plate reducing stress on truck frame and providing additional safe lifting capacity over the side.

Swing post to be single piece high strength solid steel (ASTM 4140) turning in (ASTM-D4020-81) cast nylon bearings. Welded spindle/head assembly is to be stress relieved prior to installation.

Boom rotation to be accomplished by a direct drive 270 degree hydraulic rotary actuator, Model HA-36, with a maximum torque rating of 72,000 in. lbs. This rotary actuator eliminates the need for any type of gear reduction, thereby eliminating the metal-to-metal wear found in open, exposed pinion and bull gear design. To prevent spindle bending moments from being transmitted to rotary actuator, the actuator must be mounted by means of a torque arm assembly.

BOOM CONSTRUCTION

Main boom to be comprised of two ea., 4 in. x 8 in. x 3/8 in. thick high tensile steel tubes connected to each other only at their center line to allow a shock absorbing flexing action of the boom.

Tip boom to have an extendible/retractable telescopic section controllable from the operator's platform. Must have mechanical stops to prevent cylinder stress.
The inner and outer sleeves of the telescopic section must be separated by replaceable cast nylon wear blocks on all sides to prevent metal-to-metal wear. Hydraulic hoses for the telescopic section must be enclosed in steel box for protection. No exposed tip extension hoses shall be permitted.

BOOM RADIUS AND LIFT CAPACITY

Boom radius is measured from the center of rotation to the center of the bucket.
Capacities shown must not exceed 85% of vehicle tipping moment, with outriggers fully extended on firm, level ground. Weight of bucket and/or attachments to boom must be subtracted from lift capacities shown.
Use of trailer will increase capacities shown for lifts over the side.

Boom Radius	Lift Capacity Rear	Lift Capacity Side
10 ft.	7,100 lbs.	5500 lbs.
16 ft.	4,400 lbs.	3100 lbs.
20 ft.	3,200 lbs.	1800 lbs.

*Standard bucket weighs approximately 1000 lbs.

BOOM CONNECTION POINTS

Boom connection points must be equipped with replaceable cast nylon or bronze bushings and a 2 in. bolt with castellated nut to prevent spreading of the connection pivot point.

TRASH BUCKET

To be a special municipal trash bucket actuated by a single double-acting cylinder. The bucket shall be capable of continuous rotation with no need for physical stops. Bucket rotation to be accomplished by a continuous rotation bucket motor, Model RE, with 5,500 in. lbs. torque rating.

The bucket must incorporate:

- 3/16 in. plate, smooth steel clamshell scoop for leaves and sand
- a minimum of 5 ribs per side to handle branches, logs and appliances
- a trample ram in the center for compressing trash in body.
- Replaceable bolt-on bucket blades made of high impact tempered steel

The bucket must be 4 ft. long with an opened width of 5 ft. between pickup blades. Anti-scalping bucket sides are pivot mounted to provide a horizontal closing action rather than a vertical digging motion. Sides are mechanically linked to single hydraulic cylinder to ensure both sides close and open together. No hydraulic hoses below bucket rotator.

POWER SOURCE

To be a transmission mounted power take off coupled directly to the hydraulic pump (no drive shafts).

For vehicles with an automatic transmission, the power source shall be a "Hot Shift" PTO. "Hot Shift" automatically disengages the PTO when the truck is placed in gear, and reengages when the truck is placed back in neutral (ready for hydraulic operation). This eliminates the possibility of damage to the hydraulic components that could result if the operator drives the vehicle with the PTO in gear. Also provides for smooth engagement of PTO with no gnashing or grinding of gears.

For vehicles with a manual transmission and air brakes, the power source must be a “Air Shift” PTO.

For vehicles with a manual transmission and hydraulic brakes, the power source must be a “Cable Shift” PTO.

Must be equipped with overspeed protection (with the exception of a manual transmission). Over-speeding the pump causes the hydraulic fluid to overheat. Overspeed protection prevents damage to engine, hydraulic system, and major system components resulting from over-speeding the engine.

HYDRAULIC COMPONENTS

Reservoir:	40 gallon baffled tank with suction and return filters and cutoff valves for easy servicing. Includes a sight gauge with a thermometer and a vent filter.
Cylinders:	Double acting with chromed rods and aluminum pistons.
Main Boom:	5 in. x 32 in. with a 2 ½ in. shaft.
Tip Boom:	5 in. x 32 in. with a 2 ½ in. shaft.
Tip Extension:	2 in. x 48 in. with a 1 ¼ in. shaft.
Bucket:	4 in. x 12 in. with a 2 in. shaft.
Control Valves:	Gresen stack type with port reliefs
Safety Locking Valves:	Counter balance valves to be installed on main boom, tip boom, and tip extension cylinders and pilot operated check valves on outriggers to prevent a leakdown or collapse in case of a hydraulic hose rupture.
Pump:	Single Commercial Intertech P-20
Hydraulic Lines:	JIC mechanical tubing, 12,000 PSI working pressure. High tensile steel wire braided hoses, 4000 PSI working pressure.
Pressure:	Main relief set at 2,500 PSI maximum.

ENGINE CONTROL

Engine is to be programmed for the proper RPM level and activated by a marine type switch at the operator’s station.

OPERATOR CONTROLS

DUAL CONTROLS: Control platform to be located directly behind conventional cab at the same height as the top of the truck frame to allow operator access from the truck cab without ever having to touch the ground. A single bank of control valves to be mounted at the mid-point of loader, with control handles accessible from the operator platform on either side of truck. Control handle pattern must be the same on both sides of the truck for superior visibility. Control handles shall not require lubrication. A "Grip Strut" serrated steel walk platform is included.

OUTRIGGER STABILIZERS

Outriggers to be constructed with hydraulically powered telescoping rectangular tubing to prevent side loading and bending of cylinder shafts.

Outriggers to be equipped with large steel pads to minimize damage to street. Outriggers must telescope out and down to reach a horizontal distance of 11 ft. 8 in. between outer edges. Outward stabilizer movement of each stabilizer to be powered by a hydraulic cylinder with a bore of 2 in. and a stroke of 20 in.. The housing that accomplishes this outward movement must be separated by cast nylon bushings on all four sides to prevent metal-to-metal wear and to allow a greater area for grease.
Downward movement to be powered by two hydraulic cylinders with a bore of 3 in. and a stroke of 22 in. These cylinders must be fully enclosed for protection.

PAINT

Loader must receive 1 coat of high-grade primer and 2 coats of high-grade enamel (manufacturers standard colors). Bucket to be PI standard black.

MISCELLANEOUS

All steel bucket rack at rear of truck.

Includes boom up sensor with indicator light and audible alarm (light in cab with audible alarm warns the driver of excessive boom height)**,** tail pipe extended past operator platform and back-up alarm.

All steel fenders over rear wheels.

Anti-sail mud flaps behind rear wheels.

One operator/service/parts manual included.

One hour training videotape for operators/mechanics included.

Current model must have been in production at least fifteen years.

WARRANTY

Three year major structural and one year hydraulic. (**See Warranty Sheet)**Due to

Due to continuing product improvement, specifications are subject to change without notice or obligation.