

## SPECIFICATIONS FOR KNUCKLEBOOM TRASH LOADER AND DUMP BODY

**INTENT:**

It is the intent of these specifications to describe a hydraulically operated, telescoping 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 directly behind the cab of a long wheelbase cab chassis, along with a trash dump body. This arrangement provides a complete, one man operated, turn-key system.

**COMPLIANCE  
ANSWER  
YES NO**

**VEHICLE:**

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| 1.01 | The recommended vehicle for this application has a minimum Gross Vehicle Weight of 56,000 lbs., a cab-to-axle dimension of 192 in., a minimum of 1,500,000 RBM frame rating, a minimum frame thickness of 11/32" and 120 in. of after frame. |  |  |
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**PEDESTAL ASSEMBLY:**

**YES NO**

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| 2.01 | Must be an open A-frame type to <u>allow flexing under repeated load shocks</u> . Must include 'Extended Pedestal' option which makes the pedestal 12' taller than the standard pedestal.   |  |  |
| 2.02 | Swing post to be single piece high strength <u>solid steel</u> (ASTM 4140) turning in (ASTM-D4020-81) cast nylon bearings. Welded spindle/head assembly is to be stress relieved prior to installation.   |  |  |
| 2.03 | Boom rotation to be accomplished by a direct drive 270 degree planetary gearbox with geroller hydraulic motor. Model Dinamic Oil RE 1523 / 250, with a maximum torque rating of 251,064 in. lbs. This enclosed gearbox eliminates the metal-to-metal wear found in open, exposed pinion and bull gear design. To prevent spindle bending moments from being transmitted to enclosed gearbox, the gearbox must be mounted by means of a torque arm assembly. |  |  |

**BOOM CONSTRUCTION:**

**YES NO**

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| 3.01 | Main boom must 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 <u>allow a shock absorbing flexing action of the boom</u> . Main boom must have a minimum of 1200psi down pressure on the main boom for compacting loads.  |  |  |
| 3.02 | 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 <u>must</u> 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. <u>No exposed tip extension hoses shall be permitted.</u> |  |  |

**LIFTING CAPACITIES:****YES NO**

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| 4.01   | 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 machine level and outriggers fully extended. Weight of bucket and/or attachments to boom must be subtracted from lift capacities shown. (Bucket should weigh approximately 1,000 lbs.) |                      |  |  |
| 4.02   | <b>Boom Radius</b>   | <b>Lift Capacity</b> |  |  |
| 4.02-1 | 10 ft.   | 7,100 lbs.           |  |  |
| 4.02-2 | 16 ft.   | 4,400 lbs.           |  |  |
| 4.02-3 | 20 ft.   | 3,200 lbs.           |  |  |

**BOOM CONECTION POINTS:****YES NO**

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| 5.01 | 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. |  |  |
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**TRASH BUCKET:****YES NO**

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| 6.01 | To be a special municipal trash bucket actuated by a <u>single</u> 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. Bucket must have the capability to be rolled over on the load without damage to any components. This allows a maximum load and keeps boom height within acceptable limits. Bucket must also be have a minimum reach of 9 feet below grade to allow pick up of items over bridges and in ditches. |  |  |
| 6.02 | The bucket must incorporate: <ul style="list-style-type: none"> <li>• a 3/16 inch smooth steel clamshell scoop for leaves and sand</li> <li>• a minimum of 5 ribs per side to handle branches, logs and appliances</li> <li>• a trample ram in the center for compressing trash in body.</li> </ul>  |  |  |
| 6.03 | The bucket must be 4 ft. long with an opened width of 5 ft. between pickup blades. These blades must be high impact, tempered steel that form a reverse curve in the closed position to help prevent "scalping" and digging of grass lawns. No hydraulic hoses below bucket rotator will be allowed.   |  |  |

**POWER SOURCE:****YES NO**

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| 7.01 | To be a transmission mounted power take off coupled directly to the hydraulic pump (no drive shafts).   |  |  |
| 7.02 | 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. |  |  |

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| 7.03 | 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. <u>All electrical connections are to be chassis manufactures specifications.</u> |  |  |
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**HYDRAULIC COMPONENTS:**

**YES NO**

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| 8.01   | <b>Reservoir:</b> 40 gallon baffled tank with <u>suction</u> and <u>return</u> filters and cutoff valves for easy servicing. Includes a sight gauge with a thermometer and a vent filter.                           |  |  |
| 8.02   | <b>Cylinders:</b> Double acting with chromed rods and aluminum pistons.   |  |  |
| 8.02-1 | <b>Main Boom:</b> 5 in. x 32 in. with a 2 ½ in. shaft.  |  |  |
| 8.02-2 | <b>Tip Boom:</b> 5 in. x 32 in. with a 2 ½ in. shaft.   |  |  |
| 8.02-3 | <b>Tip Extension:</b> 2 in. x 48 in. with a 1 ¼ in. shaft.  |  |  |
| 8.02-4 | <b>Bucket:</b> 4 in. x 12 in. with a 2 in. shaft.   |  |  |
| 8.03   | <b>Control Valves:</b> Gresen stack type with port reliefs  |  |  |
| 8.04   | <b>Safety Locking Valves:</b> Counter balance valves to be installed on boom and outrigger cylinders and check valves on outrigger cylinders to prevent a leakdown or collapse in case of a hydraulic hose rupture. |  |  |
| 8.05   | <b>Pump:</b> Single Commercial Intertech P-20   |  |  |
| 8.06   | <b>Conductors:</b> Steel tubing and high tensile steel wire braided hoses, 4,000 PSI, 16,000 PSI minimum burst.   |  |  |
| 8.07   | <b>Pressure:</b> Main relief set at 2,400 PSI maximum.  |  |  |

**ENGINE CONTROL:**

**YES NO**

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| 9.01 | Engine is to be programmed for the proper RPM level and activated by a heavy duty switch at the operator's station. |  |  |
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**OPERATOR CONTROLS:**

**YES NO**

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| 10.01 | <b>DUAL CONTROLS:</b> Control platform to be located directly behind cab at the same height as the top of the truck frame to allow operator safe access from the truck cab without ever having to touch the ground. This provides the operator with superior visibility relative to the material being handled. 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. A "Grip Strut" serrated steel walk platform is included. |  |  |
| 10.02 | <b>JOYSTICK CONTROLS:</b> Joystick (dual walk-thru): Two pair mechanical joystick controls, one pair on each side of loader. Each joystick to have six functions to control loader operation. Outriggers are controlled by two separate joysticks at the center of the operator platform. When applicable, body dump is controlled by a single lever at the center of the operator platform.   |  |  |

**OUTRIGGER STABILIZERS:**

**YES NO**

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| 11.01 | Outriggers to be constructed with hydraulically powered telescoping rectangular tubing to prevent side loading and bending of cylinder shafts.   |  |  |
| 11.02 | 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. |  |  |

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| 11.03 | 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. |  |  |
| 11.04 | 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:** YES NO

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| 12.01 | Loader must receive 1 coat of high-grade primer and 2 coats of high-grade enamel (manufacturer's standard colors). |  |  |
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**MISCELLANEOUS:** YES NO

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| 13.01 | <u>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.</u> |  |  |
| 13.02 | One safety parts/service manual to be included.   |  |  |
| 13.03 | One hour training videotape for operators/mechanics must be included.   |  |  |

**22 FOOT, 40 CUBIC YARD TRASH DUMP BODY**

**BODY FLOOR:** YES NO

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| 14.01 | Body floor to be a single sheet of 1/4 in. smooth steel plate, 91 in. wide and 22 ft. long, continuously welded to the sides and headboard. |  |  |
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**HEADBOARD:** YES NO

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| 15.01 | Headboard to be 3/16 in. smooth steel plate, 56 in. high with see-thru headboard, continuously welded to the floor. Top rail to be a formed 3 in. x 5 in. 1/4 in. steel plate. |  |  |
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**SIDES:** YES NO

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| 16.01 | Sides to be of 3/16 in. smooth steel plate, front portion to be 56 in. high, angling to 84" in. for remainder of body and rear doors. Side construction must be smooth all the way to the bottom. (No 90 degree angles on the bottom of exterior body sides.) Top rail to be a formed 3 in. x 5 in. 1/4 in. steel plate. |  |  |
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**SIDE POST:** YES NO

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| 17.01 | Side post to be of 3 in. x 5 in. x 10 gauge formed channel. Total of 3 on the headboard and 8 on each side, with 64 in. x 12 in. x 4 in. x 3 in. x 1/4 in. formed plate corner post to prevent side flareout. |  |  |
| 17.02 | Side post to be continuously welded to body sides.  |  |  |

**CROSS MEMBERS:** YES NO

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| 18.01 | Cross members to be 4 in. structural channel on 12 in. centers. |  |  |
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**LONGITUDINAL BEAMS:** YES NO

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| 19.01 | Longitudinal beams to be 8 in. structural channel. |  |  |
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**BARN DOORS:** YES NO

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| 20.01 | Barn doors to be fitted on the rear of the body with a provision to swing each one completely around to the side and latch open for dumping. |  |  |
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| 20.02 | Each door must have 3 hinges, with each hinge consisting of 3 steel plates, 2 ea. 5/8 in. plate welded on body, 1 ea. 3/4 in. plate welded on door, all connected with a 3/4 in. steel pin. A positive lock shall be provided at the top and bottom for locking doors closed. |  |  |
| 20.03 | Doors to be fabricated from 10 gauge smooth steel sheet and must have an all around outside frame and 1 center upright brace.   |  |  |

**HYDRAULIC HOIST:**

**YES NO**

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| 21.01 | Hoist to be scissor type, dual cylinder with 23 ton capacity.   |  |  |
| 21.02 | Hoist must raise the body to a minimum 45 degree dump angle without the rest of the body touching ground. |  |  |

**LIGHTS, REFLECTORS, AND MUDDLAPS:**

**YES NO**

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| 22.01 | Lights, reflectors, and mudflaps must meet Federal standards. There is to be an additional set of brake, stop and turn lights mounted on the upper rear corner post. Clearance lights are to be flush, grommet mounted and shock resistant. |  |  |
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**PAINT:**

**YES NO**

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| 23.01 | Paint outside of body with 1 coat of high-grade primer and 2 coats of high-grade enamel. Inside of body must receive 1 coat of high-grade primer and 1 coat of high-grade enamel in <b>manufacturer's standard colors</b> . |  |  |
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**WARRANTY:**

**YES NO**

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| 24.01 | Three year major structural and one year hydraulic for loader and body. |  |  |
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**MISCELLANEOUS:**

**YES NO**

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| 25.01 | Safety bumper and body prop shall be provided. |  |  |
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**ADDITIONAL OPTIONS:**

**YES NO**

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| 26.01 | Complete unit to include steel ramps for loading a skid steer type vehicle in the rear of body. |  |  |
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