

**SPECIFICATIONS FOR ARTICULATED MID-MOUNT 22' PISTON PUMP BOOM  
MOWER MOUNTED ON TRACTOR**

**ACCEPTABLE TRACTOR BRANDS/MODELS: JOHN DEERE 6110M, NEW HOLLAND  
T6.145 W/ AUTO COMMAND TRANSMISSION OR EQUIVALENT**

**ACCEPTABLE MOWER BRAND/MODEL: ALAMO MACHETE OR EQUIVALENT**

**MOWER PORTION MUST BE BID AS A SEPARATE INSTALLED UNIT  
AND A COMPLETE UNIT WITH TRACTOR AS LISTED.**

**GENERAL**

It is the purpose of this specification to describe a 22' mid-mounted, hydraulically powered boom mower for cutting grass and brush on roadsides and other areas that are not accessible to conventional mowing equipment. The unit bid must be a current production model that has been in production on the open market for a minimum of one (1) year that meets or exceeds the following minimum specifications

**ALL SPECIFICATIONS ARE CONSIDERED MINIMUM UNLESS OTHERWISE NOTED.**

**BASIC FEATURES**

- 22' minimum horizontal reach.
- 22' 7" minimum vertical reach.
- 9' 1" below grade reach.
- Two section articulated boom.
- 60" rotary cutting head (specifications listed separately).

**BOOM FEATURES & MOUNTING**

- Main Boom: 6" x 6" x ¼" wall structural tubing conforming to ASTM A-500 Gr. B (58,000 psi min tensile).
- Outer Boom: 5" x 5" x ¼" wall structural tubing conforming to ASTM A-500 Gr. B (58,000 psi min tensile).
- The main boom pivot points shall be reinforced with ¾" ASTM A-572 Gr. 50 (65,000 psi min tensile).
- Main pivot pins shall be constructed of 2" ETD 150 alloy steel bar (150,000 psi min tensile/32 Rc min).

- Each pin shall be supported by a pair of 3" hardened steel, greaseable Connex® bushings.
- Standard boom functions shall include horizontal swing, vertical lift, dipper reach, and mower head tilt.
- Boom must swing hydraulically a minimum of 120° utilizing a king post style turning arm.
- The 2 ½" diameter king pin shall be constructed from AISI 1045 chrome steel.
- The king pin shall pivot about a pair of 2 ¾" diameter greaseable Connex® bushings.
- The weight of the boom and turning arm shall be supported by a 5" diameter UHMW polyethylene thrust washer.
- The tilt mechanism shall feature a four-bar linkage to allow for 215° mowing head rotation.
- The tractor mount kit shall feature a subframe spanning from the front bolster to the rear axle.
- Subframe shall consist of 4" x 4" x 5/16" wall tubing with a 6" x 4" x ½" vertical support.
- Torsional loading shall be minimized with a 4" x 2" x ¼" lateral cross-brace spanning the width of the tractor.
- All structural tubing used in the mount kit shall conform to ASTM A-500 Gr. B (58,000 psi min tensile).
- Framework fastened to the tractor bell housing area will not be accepted.
- The mainframe which supports the king post shall brace over the hood just above the operator's line of sight.
- The brace shall be a formed 4" x 4" x 5/16" wall tube conforming to ASTM A-500 Gr. B (58,000 psi min tensile).
- Only a one piece, formed structural brace shall be accepted.
- A minimum 1,600 lb counterweight shall be fastened to the frame opposite the boom.
- A self-adjusting axle stabilizer system shall provide counter-stability for the articulated boom.
- An additional 1,300 lb wheel weight shall be provided as standard equipment.
- A two-piece boom rest structure shall mount to the rear axle to support the weight of the boom in transport.

## **OPERATION AND POWER**

### **HYDRAULICS**

- Unit shall feature a self-contained hydraulic circuit for both mowing head and boom control.
- Mowing head circuit shall feature a closed-loop, hydrostatic, variable displacement, piston pump.
- The pump shall be rated at 28 gpm (40 hp) and 2,500 psi @ 2,200 rpm and feature a no flow neutral circuit.
- The hydrostatic pump shall also feature a charge pump rated at minimum of 8 gpm (1.4 hp) and 300 psi @ 2,200 rpm.
- The hydrostatic pump shall feature a charge pump to refresh and cool the cutter head circuit.
- The load sensing pump shall be rated at 19 gpm (33 hp) and 3,000 psi @ 2,200 rpm.
- Both piston pumps shall provide internal relief for component protection.
- Entire pump system shall be mounted to the front of the tractor and coupled to the engine crankshaft pulley.
- All high-pressure hydraulic hoses shall be of four-wire braid construction with a minimum SAE100R12 rating.

### **HYDRAULIC RESERVOIR**

- The hydraulic reservoir shall be front mounted for improved operator visibility, safety, and operator access.
- Reservoir shall feature a 100-mesh suction line filter and a 10-micron, 40 gpm return filter with restriction gauge.
- Reservoir shall feature visual indication of tank level and temperature to insure a 20-gallon working volume.
- The hydraulic oil must be of a superior grade with anti-wear additives conforming to ISO AW68 specifications.
- Convenient access points for draining and cleaning the reservoir shall be provided.
- A heavy-duty steel bumper shall provide frontal protection for the reservoir.

## **CYLINDER CONTROL VALVE**

- The cylinder control circuit shall feature a multi-section, electro-hydraulic, directional valve.
- The valve shall be open-center and provide section-specific pressure compensation.
- Valve shall allow a minimum of four functions to be operated simultaneously by joystick control.
- A manual override control system shall be available in lieu of the standard joystick.
- The swing, lift, and dipper sections must feature individual work port relief valves for breakaway protection.
- Valve shall feature a separate 20 micron, 35 gpm in-line pressure filter.
- The valve shall be mounted on the oil reservoir and protected by a hinged fiberglass cover.

## **MINIMUM TRACTOR REQUIREMENTS IF BOUGHT AS A COMPLETE UNIT**

- Tractor shall weigh a minimum of 11,376 lbs. lbs. and have a 94.5" minimum wheelbase.
- The engine shall produce a minimum of 84 PTO hp.

## **60" HEAVY-DUTY ROTARY HEAD**

### **CUTTER HEAD FEATURES & CAPABILITIES**

- The unit shall have a minimum cutting width of 58".
- The cutter head shall cut grass, weeds, and brush up to 5" in diameter.
- The cutting head top deck shall be constructed using a minimum of A606 alloy steel or equivalent.
- The side skirts shall be constructed using a minimum of 3/8" steel.
- Top of the deck shall be reinforced with a channel frame and a reinforced spindle mount plate.
- The cutting head shall feature full-length, replaceable skid-shoes.
- The cutter head shall have 80 degrees of rotation, to allow mower to be stowed behind the tractor during transport.

## **SPINDLE**

- The spindle shall be a minimum of 4 ½" x 9" heat-treated, high strength alloy steel.
- The spindle bearing shall be tapered roller bearings, 2 ½" ID top and 2-5/8" ID bottom, in a sealed housing.

### **BLADE CARRIER AND BLADES**

- The blade carrier shall be three-leaf, stacked blade-bar type with the bottom leaf being made out of high strength steel.
- The blades shall be 5/8" x 5" x 14-5/8", 360-degree full-swinging, double-edged, and constructed of tempered steel.

### **OPERATION & POWER**

#### **MOTOR**

- The motor shall be a cast-iron, piston-type, rated at 205 HP at 4,100 RPM and 6,000 PSI.
- The spindle speed shall be a minimum of 1,220 RPM and 4,916 in. lb. of torque.

#### **MOTOR DRIVE**

- The motor drive shall be direct drive, splined and totally enclosed. This specifically excludes a chain or dodge coupler.

#### **SAFETY**

- The front shield shall be hydraulically actuated, center feed, metal door operational from the joystick control.
- The rear shield shall be constructed of rubber material.

### **MISCELLANEOUS**

#### **WEIGHT**

- The cutter head shall have a shipping weight of approximately 1,000 lbs.

### **OPERATOR PROTECTION & SAFETY**

- The mower cutter head shall have a six-second emergency shutdown engaged by the operator inside the cab.
- The boom controls shall feature a master ON/OFF switch for complete power shutdown.

- An ignition lock-out safety switch shall prevent the tractor from being started with the cutter head valve engaged.
- Cab units shall include Shields® Premier 3/8" thick right-side replacement polycarbonate windows.
- The replacement windows shall feature Supercoat™ anti-abrasion coating with integrated UV protection.
- Open station tractors shall be supplied with a cage which shields the operator from flying debris.
- The right side of the cage shall feature a combination of opaque 3/8" Lexan® MR10 and 10 ga. ASTM A-36 steel.
- Overhead shielding shall consist of a FOPS rated canopy or a 1 ½" - #9 raised expanded metal cage extension.

### **PRODUCT LIABILITY INSURANCE**

- Suppliers shall include a copy of mowing equipment manufacturer's **Certificate of Insurance for Product Liability of at least \$25,000,000 for the products** subject to its bid.

### **PARTS AND SERVICE**

- Each bidder must be a manufacturer's franchised dealer that must have parts, sales & service, service trucks within 250 miles on the spreadsheet for regional address attachment

### **SAFETY AND TESTING**

- Due to the severe mowing conditions, safety tests are a requirement for the operator's safety and highway traffic safety. All equipment must meet or exceed the requirements on attachment D.

### **OPERATION AND MAINTENANCE:**

- Successful bidder shall be required to furnish a qualified individual(s) to provide operator preventative maintenance & safety orientation for approx. four (4) hours at each delivery location.

## **SPECIFICATIONS FOR TRACTOR, 84 PTO HP, 4WD**

**ACCEPTABLE BRANDS/MODELS: JOHN DEERE 6110M, NEW HOLLAND T6.145 W/  
AUTO COMMAND TRANSMISSION, OR EQUIVALENT**

**ALL SPECIFICATIONS ARE CONSIDERED MINIMUM UNLESS OTHERWISE NOTED.**

- Shipping Weight Unballasted (S.A.E.): Minimum of 11,376 lbs.
- Engine: Tier 4 B, air-to-air aftercooled/cold starting aid, turbocharged. Must be B-20 compatible while maintaining full warranty.
- Fuel Moisture Separator: Required
- Cylinders: 4
- Displacement: 4.5L; 274 cubic inches
- PTO Horsepower (S.A.E.): Minimum of 84 hp
- Rated Engine Power: Minimum of 110 hp
- Transmission: Minimum 24F/24R, w/left hand power reverser
- Clutch: Wet
- Main Tractor Hydraulic System: Direct Gear Driven
- Selective Control Valves: 2 mechanical
- Main Hydraulic Pump: Load sensing variable displacement pump.
- Hydraulic Pump Flow at a Single SCV: Minimum of 30 gpm
- Remote Hydraulic Valves: Three (3) sets of dual remotes required.
- Exhaust: Vertical
- Final Drive: Planetary
- Differential Lock: Required
- Brakes: Wet Disk
- PTO w/Guard & Wet Clutch: 540/1000, electric hydraulic engagement. Digital PTO indicator.
- Adjustable Telescopic Sway Bars: Right & left side of the draft lift arms, tube type with pins (**NOTE:** Adjustable chains are not acceptable) Dealer installed is acceptable.
- Hitch: Category 2, 3-point with telescopic link ends with top link
- Draft Sensing Method: Lower link
- Tires (Radial): Front – 340/85 R24; Rear – 460/85 R34
- Wheels: Eight position adjustable front & rear. Thread width to be delivered approximately 80" center to center.

- Factory Cab Required: Factory installed w/heater & air conditioner, & ROPS. Items advertised as standard to include tinted safety glass. OSHA & ANSI approved.
- Seat: Suspension, w/seat belt & arm rest
- Manufacturer Standard Gauges: **1)** Lighted Instrument Panel; **2)** Tachometer; **3)** Electric Hour Meter; **4)** Fuel gauge; **5)** Temperature gauge; **6)** Warning Lights for Oil Pressure & Alternator; **7)** PTO Warning Light or Buzzer.
- Digital Ground Speed Indicator, Dash Mounted: Required
- Steering: Power, w/tilt & telescopic column
- Throttle: Hand & foot
- Electrical System: 12-volt, key start, 120 AMP alternator, 1300 CCA battery
- Fuel Capacity: 46.2 gallons minimum
- Lighting Package: Two (2) headlights; two (2) taillights
- Warning Flashers: Required
- Rear Fenders: Required
- SMV (Slow Moving Vehicle) Emblem: Required
- Unit to Contain All Equipment Advertised as Standard by the Manufacturer.
- Anti-Freeze Solution: Protected to -34 degrees F.
- Manuals: One (1) operator & one (1) service manual-paper, CD or internet access. One (1) operator safety CD required for safe operation training.

## **MISCELLANEOUS**

### **Parts & Service Requirement:**

Each bidder must supply a manufacturer's franchised dealer list that must have parts, sales, & service, service trucks within 250 miles on the spreadsheet for regional address attachment.