

MAT-3 BIGLIFT BL110-I

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SPECIFICATIONS MAT-3 BIGLIFT MODEL BL110-I

1.0 SCOPE

- 1.1 This specification covers the procurement of the installation, testing and certification of an aerial device, flat bed and other equipment mounted on a truck cab and chassis.

2.0 GENERAL

- 2.1 Trucks completed to these specifications, unless specifically stated otherwise herein, shall conform to the Transportation Vehicle and Equipment Specifications.
- 2.2 The completed unit shall be certified by the manufacturer to meet all applicable State and Federal requirements.
- 2.3 The completed aerial tower shall be certified by the manufacturer to meet the ANSI A92.2-2001 standards for Vehicle-Mounted Elevating and Rotating Aerial Devices.

3.0 TOWER

- 3.1 **Description** - Unit shall be a non-overcenter, articulated aerial tower with **105** feet actual maximum height to the bottom of the platform. A working height of **75** feet at a working radius of **50** feet from the center line of rotation.
- 3.2 **Mounting Position** - The hydraulic articulated boom aerial device shall be mounted behind the rear truck axle with the booms positioned over the truck cab and the platform to the rear of the truck chassis.
- 3.3 **Subframe :**
 - 3.3.1 Shall be welded steel construction mounted to the top of the truck frame using high strength socket head capscrews.
 - 3.3.2 Subframe shall be **280** inches long and cover the complete length of the truck frame rails behind the cab.

3.4 Outriggers :

- 3.4.1 Shall be a dual set (four outriggers) of radial swing-down arm type outriggers.
- 3.4.2 Outrigger legs shall be attached to structural pod weldments integral with the subframe weldment and connected together by a cross-beam under the truck frame.
- 3.4.3 Outriggers shall be equipped with locks to inhibit settling of the outriggers.
- 3.4.4 Curbside and Streetside outriggers shall be controlled by separate control valves, and each outrigger circuit shall be capable of being shut off by an individual shut-off valve.
- 3.4.5 Each outrigger cylinder shall be equipped with holding valves on the base end and rod end of the cylinder.
- 3.4.6 Each outrigger leg shall be equipped with a mechanical detent device to keep the outrigger in the stowed position for travel.

3.5 Pedestal :

- 3.5.1 Shall be welded steel construction, mounted to the top of the subframe.
- 3.5.2 Shall have a top plate with a welded and machined turntable mounting ring to provide a smooth, level surface for attachment of the turntable slew bearing.

3.6 Rotation Bearing :

- 3.6.1 Shall provide **360** degrees of continuous rotation.
- 3.6.2 Shall be approximately **56** inches in diameter and have internal gear teeth.

3.7 Turntable :

- 3.7.1 Shall be a structural steel weldment with a machined base to provide a smooth, level surface for attachment of the turntable slew bearing.
- 3.7.2 Shall be provided with mounting for the lower control valve on the streetside of the turntable mounting ear and have a bolt-on control valve guard.
- 3.7.3 Shall be rotated by a hydraulic motor coupled to a **36 : 1** planetary gearbox, with a built in spring applied, hydraulically released parking brake, located on top of the turntable cap.
- 3.7.4 Shall have a hydraulic rotary swivel joint capable of transmitting six channels of hydraulic flow and four electrical commutator rings through **360** degrees of continuous rotation.

3.8 Lower Boom :

- 3.8.1 Shall consist of two piece, telescopic fabricated steel booms.
 - 3.8.1.1 The outer piece shall be a welded steel box section, 28" deep x 32" wide with 4"x 4"x 1/4" structural steel angles in all four corners.
 - 3.8.1.2 The inner piece shall be a welded steel lattice boom section, 25" deep x 30" wide with square structural steel tubing in the corners and round truss tubing.
- 3.8.2 Lower Boom length : **40' - 0" Retracted**
60' - 0" Fully Extended
- 3.8.3 The lower boom shall telescope 20 feet by means of a single double acting hydraulic cylinder.
 - 3.8.3.1 Extension cylinder : 4.25" diameter bore x 3.25" O.D. hollow tube rod.
 - 3.8.3.2 Dual counter-balance holding valves to hold the load in the event of a line failure.
- 3.8.4 Lower Boom articulation : 90 degrees
- 3.8.5 Turntable hinge point shall be furnished with greasable bronze bushings.
- 3.8.6 Boom inner and outer sections shall slide on nylatron slide pads.

3.9 Upper Boom :

- 3.9.1 Shall have a fabricated lattice steel boom stub weldment that is permanently bonded with epoxy cement and bolted with high strength socket head screws to the insulated fiberglass boom section.
- 3.9.2 Insulated fiberglass portion shall be constructed of a hand laid-up fiberglass tapered rectangular tube cross-section with bulkheads at both ends. Finish shall be a high gloss white polyurethane gel coat. Shall have a net insulation gap of 21 feet 0 inches.
- 3.9.3 Shall have a lattice steel boom tip that is permanently bonded with epoxy cement and bolted with high strength socket head screws to the insulated fiberglass boom section.
- 3.9.4 Upper boom length : 42' - 0"
- 3.9.5 Shall have an articulation between upper and lower booms of 135 degrees with a maximum upper boom angle of 70 degrees above horizontal.
- 3.9.6 Shall be a sealed fiberglass boom equipped with dehumidifier assemblies at each end.
- 3.9.7 Shall be equipped with a dielectric test band complying with ANSI A92.2-2001 specification and certified as Category B.

3.10 Leveling System :

- 3.10.1 Shall be a positive hydraulic leveling system consisting of two master rotary actuators at the boom pivot points and a matching slave actuator at the platform end of the upper boom.
- 3.10.2 Tip rotary actuator shall be protected by a holding valve to hold the Platform in position in the event of a hydraulic line failure.
- 3.10.3 Shall have a hydraulically operated platform tilt valve to adjust platform angle and to allow for basket debris clean-out or personnel rescue.

3.11 Lift System :

- 3.11.1 Upper boom lift shall be accomplished by a dual set of double-acting, **6-1/2"** diameter bore x **45-1/4"** stroke, hydraulic cylinders with holding valves on the blind end of the cylinder to hold the boom in position in the event of a hydraulic line failure.
- 3.11.2 Lower boom lift shall be accomplished by a dual set of double-acting, **7"** diameter bore x **45-1/4"** stroke, hydraulic cylinders with holding valves on each end of the cylinder to hold the boom in position in the event of hydraulic line failure.

3.12 Platform :

- 3.12.1 Totally enclosed, nominal **24** inches x **48** inches x **42** inches deep, fiberglass end mounted platform.
- 3.12.2 Shall have a rated capacity with liner removed of **800** lbs.
- 3.12.3 Shall be furnished with a polyethylene platform liner.
- 3.12.4 Shall be furnished with two fall-arrest lanyards and large size safety harness.

3.13 Hydraulic System :

- 3.13.1 The hydraulic pump shall be a pressure-compensated, variable displacement, axial piston pump.
- 3.13.2 Hydraulic reservoir shall have a capacity of **55** gallons and shall be equipped with a **100** mesh suction strainer, **10** micron breather vent, **200** mesh filler screen, bolt-on clean-out cover, and a visual fluid level sight gauge.
- 3.13.3 System operating pressure shall be **1750** psi.
- 3.13.4 Shall be furnished with a **6** micron replaceable cartridge type high pressure filter with pop-up visual dirt indicator.
- 3.13.5 Shall be furnished with a **10** micron spin-on canister type return line filter.
- 3.13.6 Hydraulic fluid shall be MIL-H-5606 type.
- 3.13.7 A power take-off (**PTO**) with in cab control and driveshaft pump mount configuration shall be installed to drive the hydraulic pump.

3.14 Controls :

3.14.1 Lower Controls :

3.14.1.1 Shall be located on the turntable cap, mounted on the streetside ear.

3.14.1.2 Controls are provided for the following :

Upper Boom Articulation

Lower Boom Articulation

Lower Boom Extension

Turntable Rotation

3.14.2 Upper Controls :

3.14.2.1 Shall be power-assisted with reduced hydraulic pressure delivered to the upper control.

3.14.2.2 Upper boom, lower boom and turntable rotation shall be the single handle, Hi-Ranger style **"3-D"** control head assembly.

3.14.2.3 Lower boom extension control shall be an auxiliary lever actuated control head assembly.

3.14.2.4 Removable fiberglass control guard shall be furnished.

3.14.2.5 Control line bundle shall be sealed through the insulated section of the upper boom with an injected silicone material.

3.14.3 Interlock System :

3.14.3.1 Shall inhibit accidental operation of controls by providing a trigger mechanism at the upper control station and a palm button at the lower control station, either of which must be held in before the controls will function.

3.14.3.2 Operational range interlock system shall stop the movement of the aerial device in the direction causing out of range operation. Movement in the opposite direction shall not be affected by the interlock system.

3.15 Safety Features :

3.15.1 Shall include a PTO Safety Interlock Switch and red PTO warning light to prevent operation of the tower unless the PTO is engaged.

3.15.2 Outriggers shall be equipped with interlock, outrigger down mercury switches.

3.15.3 Shall have a manual over-ride of the upper control system.

3.16 Boom Rest Assembly :

3.16.1 A cushioned lower boom rest assembly attached to the truck frame in front of the front bumper shall be provided.

3.16.2 An intermediate lower boom rest assembly attached to the front of the subframe behind the truck cab shall be provided.

3.16.3 A fabricated steel boom saddle with rubber pad mounted to the top of the lower boom shall be provided to support the upper boom in the stowed position.

- 3.16.4 A upper boom hold-down strap shall be provided to secure the upper boom during road travel.

4.0 FLAT BED BODY

4.1 Flat bed :

- 4.1.1 Flat bed shall be 22'-6" long x 8'-0" wide.
- 4.1.2. Cross sill beams shall be C4" x 6.25# structural steel channels.
- 4.1.3 Floor shall be constructed of 3/16" four-way safety tread plate
- 4.1.4 Walking surface shall be painted with "grip deck" anti-slip paint.

4.2 Rear Bumper - shall be furnished at rear of truck along with grab handles.

4.3 Mudflaps - one pair of swinging mudflaps shall be provided.

4.4 Storage Compartments - two 18" x 18" x 36" lockable underhung storage boxes shall be supplied.

- 4.4.1 Main Compartment Material - 14 Gauge Galvanneal.
- 4.4.2 Inner Door Panels - 18 Gauge Galvanneal.
- 4.4.3 Outer Door Panels - 18 Gauge Galvanneal.
- 4.4.4 Door Hinges - Stainless Steel Rod & Brass Socket.
- 4.4.5 Automotive rotary type door latches.

4.5 Outrigger Pad Storage Compartment - two outrigger pad storage racks, one on each side of the truck shall be provided, along with four outrigger pads.

4.6 Lighting and Reflector Package

- 4.6.1 Shall include reflectors, marker lights, and 3-lamp identification cluster.
- 4.6.2 Package to meet FMVSS #108.

5.0 PAINTING

- 5.1 All structural steel parts shall be sand blasted clean prior to prime painting.
- 5.2 All structural steel parts shall receive one coat of rust inhibitive primer.
- 5.3 Tower, flat bed, and storage compartments shall be finish painted with one coat of automotive enamel paint.

6.0 MANUALS

- 6.1 Furnish two sets of operation and service manuals.

7.0 TYPICAL CHASSIS SPECIFICATION

- 7.1 **Model :** 2004 International Model 4900 (6x4)
- 7.2 **Dimension :** Wheelbase : 224"
Cab-to-Axle : 156"
After Frame : 97"
- 7.3 **Engine :** International Model DT 466 HEUI-HT Electronic Diesel
50 State, 250 HP @ 2300/2400 RPM
800 lb-ft Torque @ 1400 RPM
2400 RPM Governed Speed
- 7.4 **Transmission :** Fuller RT-8908LL 10 Speed Manual Transmission
With Double-Lo and Air Shift
- 7.5 **Clutch :** Eaton Fuller Solo 1402
- 7.6 **Front Axle :** Meritor MFS-18-133A Wide Track, 16,000 lb Capacity
Tires : (2) 385/65R22.5 UNISTEEL G286 , load range L , 20 ply
Suspension : Multi-leaf springs with shock absorbers
- 7.7 **Rear Tandem Axle :** Dana SpicerDS405/RS405 Single Reduction
40,000 lb Capacity, Gear ratio : 6.50
Tires : (8) 11R22.5 UNISTEEL G177 , load range H, 16 ply
Suspension : Hendrickson RT-403 Walking Beam
- 7.7 **Brakes :** Air Dual Brake System with full vehicle wheel control
- 7.8 **Steering System :** Sheppard M-100/m-80 Power steering unit.
- 7.9 **Frame :** Full length "C" channel reinforcement, Frame Section Modulus - 23.19 in
- 7.10 **Cab :** Conventional, Steel
Glass : All Windows Tinted
Mirrors : TwoLang-Mekra Rectangular, West Coast Type
Gauge Package
Electric 2-Speed Windshield Wipers
Heater : International Blend-Air with Defroster
- 7.11 **Electrical System :** 12-Volt Standard Equipment
- 7.12 **Exhaust System :** Single Horizontal Muffler with Short Tail Pipe, frame mounted on right side.

DIMENSIONAL SPECIFICATION

GROUND TO BOTTOM OF PLATFORM :

MOUNTING POSITION	4' - 0"
MAXIMUM ELEVATION	105' - 0"
WORKING HEIGHT	110' - 0"
MAXIMUM HORIZONTAL REACH	50' - 0"

ROAD CLEARANCE :

FOLDED HEIGHT	13' - 2"
OVERALL LENGTH	45' - 8"
FOLDED WIDTH	8' - 0"

OUTRIGGER SPREAD	17' - 0"
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BOOM LENGTH BETWEEN PIVOTS :

LOWER BOOM (RETRACTED)	40' - 0"
LOWER BOOM (EXTENDED)	60' - 0"
UPPER BOOM	42' - 0"

BOOM TRAVEL :

LOWER BOOM	90 DEGREES
UPPER BOOM	135 DEGREES

TURNTABLE ROTATION	360 DEGREES CONTINUOUS
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PLATFORM CAPACITY	800 LBS
TOWER ASSEMBLY WEIGHT	27,000 LBS

OPERATING SPEEDS :

LOWER BOOM (FULL TRAVEL)	60 SEC. -to- 70 SEC.
LOWER BOOM EXTENSION	60 SEC. -to- 70 SEC.
UPPER BOOM (FULL TRAVEL)	60 SEC. -to- 70 SEC.
TURNTABLE ROTATION (360 DEG.)	70 SEC. -to- 90 SEC.
OUTRIGGERS (LOWER ALL FOUR)	30 SEC. -to- 40 SEC.

OPERATING PRESSURE	1750 PSI
HYDRAULIC PUMP OUTPUT	25 GPM
HYDRAULIC RESERVOIR CAPACITY	55 GAL