INSULATED TELESCOPING AERIAL DEVICE
SPECIFICATIONS
9 February 2011

It is the intent of the following specifications to set minimum requirements for an INSULATED 28 ft. 11 in. (8.82m) bottom of platform, 33 ft. 11 in. (10.34m) working height, telescoping aerial device with a one-man platform. These specifications must be considered minimum requirements. Any exceptions to these specifications must be so stated in your bid. All units must meet OSHA and ANSI/SIA A92.2-2009 standards, without exception.

GENERAL SPECIFICATIONS (CHOOSE ONE)

Side Mount Platform

Height to bottom of platform	28 ft. 11 in. (8.82m)
Working height	33 ft. 11 in. (10.34m)
Horizontal reach from center line	20 ft. 9 in. (6.32m)
Stowed travel height	10 ft. 1 in. (3.08m)
Standard platform capacity	300 lbs. (136kg)
Maximum platform capacity	400 lbs. (181kg)
Maximum aerial weight	1,514 lbs. (686.7kg)
Rotation shall be 540° non-continuous	

End Mount Platform

Height to bottom of platform	29 ft. (8.83m)
Working height	34 ft. (10.36m)
Horizontal reach from center line	22 ft. 9 in. (6.93m)
Stowed travel height	10 ft. 1 in. (3.08m)
Standard platform capacity	300 lbs. (136kg)
Maximum platform capacity	400 lbs. (181kg)
Maximum aerial weight	1,549 lbs. (702.6kg)
Rotation shall be 540° non-continuous	

Manually Rotated Platform

Height to bottom of platform	29 ft. (8.83m)
Working height	34 ft. (10.36m)
Horizontal reach from center line	23 ft. 4 in. (7.12m)
Stowed travel height	10 ft. 1 in. (3.08m)
Standard platform capacity	300 lbs. (136kg)
Maximum platform capacity	350 lbs. (159kg)
Maximum aerial weight	1,586 lbs (719.4kg)
Rotation shall be 540° non-continuous	

Hydraulically Rotated Platform

Height to bottom of platform	29 ft. (8.83m)
Working height	34 ft. (10.36m)
Horizontal reach from center line	23 ft. 6 in. (7.16m)
Stowed travel height	10 ft. 1 in. (3.08m)
Standard platform capacity	300 lbs. (136kg)
Maximum platform capacity	350 lbs. (159kg)
Maximum aerial weight	1,596 lbs. (723.9kg)
Rotation shall be 540° non-continuous	

The maximum working height is defined as 5 ft. (1.52m) above the maximum height to the bottom of the platform. Platform height, working height and stowed travel height are based on a chassis frame height of 36 in. (0.91m) with the pedestal mounted 5 in. (0.13m) above the chassis frame. Pedestal risers are available that increase the maximum height to the bottom of the platform up to 32 ft. (9.75m), the maximum working height up to 37 ft. (11.28m) and the maximum stowed travel height up to 13 ft. 1 in. (3.99m).

The major components of the aerial device shall be powdercoated white. Small parts shall be powdercoated or painted black. Components must be painted or powdercoated prior to assembly.

STABILITY (CHOOSE ONE)

Without Outriggers

The completed unit shall be capable of passing ANSI/SIA A92.2-2009 stability test when mounted on a chassis of a minimum 10,100 pounds (4,581kg) GVWR with 4,000 pounds (1,814kg) FAWR with a rear torsion bar. The use of outriggers is unacceptable.

With Outriggers

The completed unit shall be capable of passing ANSI/SIA A92.2-2009 stability test when mounted on a chassis of a minimum 10,100 pounds (4,581kg) GVWR with 4,000 pounds (1,841kg) FAWR with the use of outriggers. Outriggers shall require no more than 4.5 in. (114.3mm) of space between the body and the cab. A control valve shall be provided to select between aerial lift and outrigger operation. An outrigger/boom interlock system shall be provided to prevent aerial lift operation unless the outriggers have made contact with the ground. It also prevents outrigger operation if the aerial lift is in operation. A control valve shall be provided on each side of the rear of the body to provide visibility of each outrigger during operation.

HYDRAULIC SYSTEM

Operating pressure shall be a maximum of 2,200 PSI (155kg/cm^2). Operating oil volume shall be 3.0 to 3.5 GPM (11.4lpm to 13.2lpm) for lift operation. An open center type hydraulic system shall be provided. Unit shall be equipped with a 10 micron filter in the return line and a 100-mesh screen at the suction port of the 10 gallon (37.85l) oil reservoir.

Boom raise/lower and extension/retraction shall be done with double acting hydraulic cylinders with holding valves integral to the cylinder. Boom rotation is accomplished with a hydraulic motor that actuates the rotation drive. Any other manner of either boom elevation/lowering or extension/retraction is unacceptable. In addition, holding valves bolted to the cylinders are unacceptable.

A pressure relief valve is integral to the lower control valve shall protect the hydraulic system. The relief valve setting must be at 2200 PSI (155kg/cm^2). The pressure relief valve, the selector control, the boom controls and the hydraulic leveling control are provided in a one piece, monoblock valve body. The first spool of the control valve is a selector valve that directs hydraulic oil flow either to the upper controls or to the boom controls at the lower controls.

All hydraulic adapters must be machined from forgings. Brazed hydraulic adapters are not acceptable. Hydraulic hose to be non-conductive Parker 518C with permanent crimped on fittings. Reusable fittings must be available for field repair.

PEDESTAL

The pedestal shall be 0.25 in. (6.35mm) thick steel welded into a rectangular structure with an access door on one side. The top plate shall be 1.0 in. (25.4mm) thick to support the rotation bearing. The hydraulic reservoir will be a separate component mounted inside the pedestal for protection. The reservoir will include a sight glass visible through the pedestal side indicating oil level and temperature. The hydraulic reservoir is to be constructed of steel and powder coated for maximum cooling and protection from corrosion. Hydraulic reservoirs integral to the pedestal or mounted external of the pedestal are not acceptable. The 100 mesh suction strainer and 10 micron return filter are located inside the pedestal.

TURRET

The turret assembly shall be a welded assembly with 0.50 in. (12.7mm) thick sides and 0.75 in. (19.05mm) thick base plate. A formed flange on the turret wings and crossmembers provide rigidity. The turret and pedestal will be fastened to the rotation system with 0.63 in. (16mm) diameter grade 5 hex head capscrews tightened to a specified torque with a thread lock to prevent loosening.

ROTATION DRIVE

The rotation drive shall be a shear ball bearing with a worm driving directly on helical gear teeth machined on the outer race. The rotation bearing must be properly sized to allow the use of 0.63 inch (16mm) diameter grade 5 hex head capscrews for attachment to the pedestal and turret. The worm must be self locking and hourglass shaped to engage multiple teeth at all times. The rotation bearing, worm and housing must be factory adjusted and not require

field adjustment. Separate right angle gearboxes that require periodic adjustment are unacceptable. A removable cover must be provided over the rotation bearing to allow easy access for lubrication of the gear teeth. Rotation shall be limited to 540° non-continuous by means of a mechanical stop. Electric or hydraulic rotation stops are not acceptable. The worm shaft shall have an exposed hexagonal end for manual rotation.

BOOM ASSEMBLY

The telescopic boom shall articulate from 14° below horizontal to 78° above horizontal by means of a 3.5 in. (89mm) bore cylinder. The outer boom shall be a minimum of 6 in. by 10 in. (152mm x 254mm) steel tube. The telescoping inner boom shall be 5 in. x 7 in. (127mm x 1778mm) fiberglass reinforced plastic section that extends 108 in. (2743mm). A 30 in. (762mm) length of the fiberglass boom shall be non-tracking over any slide pads or rollers providing a minimum insulation gap of 30 in. (762mm)**.** Extended, the insulation gap shall be a minimum of 42 in. (1,067mm). The 0.38 in. (9.65mm) wall fiberglass boom must be filament wound using oven cured epoxy resin for consistent strength. Hand layed up booms or booms made with catalyst cured polyester resins are not acceptable. The fiberglass inner boom shall have a gelcoat finish with a painted topcoat to provide maximum water resistance. The inner boom to be dielectrically tested and rated per ANSI A92.2-2009 for Category C— 46kV and below, fully retracted.

Boom extension/retraction shall be accomplished with a hydraulic cylinder attached between the outer and inner boom. The stroke of the hydraulic cylinder will limit extension. Any other means of limiting extension is unacceptable. The use of hydraulic or electric motors, cables, chains or electrical limit systems for extension is not acceptable. Holding valves in the extension cylinder must hydraulically prevent boom creep in both directions. Mechanical boom latches or pilot operated hydraulic valves to prevent boom creep are not acceptable.

All pivot pins shall have a minimum tensile strength of 150,000 PSI (68,039kg/cm^2). Pins shall be zinc plated for corrosion resistance and have non-lube bearings at all points of movement.

Hoses and control circuits shall be housed inside a plastic hose carrier housed inside of the boom. The extension cylinder, hose carrier and inner boom slide pads must be accessible for service without removing the inner boom from the outer boom.

PLATFORM (CHOOSE ONE)

For Gravity Leveled Side Mounted Platform

The platform shall be mounted to the side of the boom and have a hydraulic dampener and infinitely adjustable positive friction brake. Locking pins are not acceptable for locking the platform in place. The platform shall be one-piece fiberglass, 24 in. x 24 in. x 42 in. (610mm x 610mm x 1,067mm) with a molded step to the front. A non-skid surface will be bonded into the step surface. Self adhesive non-skid strips are not acceptable. The maximum platform capacity is 400 lbs. (181kg). The horizontal side reach is 20 ft. 9 in. (6.33m).

For Hydraulically Leveled Side Mounted Platform

The platform shall be mounted to the side of the boom and be automatically leveled with a master/slave hydraulic leveling system. The slave cylinder shall include holding valves integral to the cylinder. Holding valves bolted to the cylinder are unacceptable. The hydraulic leveling system shall include a control valve to allow platform leveling adjustments from the upper and lower controls. An additional valve assembly shall provide dual pilot operated check valves and dual circuit relief valves to prevent leakage from the system and to protect the system from damage. The platform shall be one-piece fiberglass, 24 in. x 24 in. by 42 in. (610mm x 610mm x 1,067mm) with a molded step to the front. A non-skid surface will be bonded into the step surface. Self adhesive non-skid strips are not acceptable. The maximum platform capacity is 400 lbs. (181kg). The horizontal side reach is 20 ft. 9 in. (6.33m).

For End Mounted Platform

The platform shall be mounted to the end of the boom and be automatically leveled with a master/slave hydraulic leveling system. The slave cylinder shall include holding valves integral to the cylinder. Holding valves bolted to the cylinder are unacceptable. The hydraulic leveling system shall include a control valve to allow platform leveling adjustments from the upper and lower controls. An additional valve assembly shall provide a dual pilot operated check valve and dual circuit relief valves to prevent leakage from the system and to protect the system from damage. The platform shall be one-piece fiberglass, 24 in. x 24 in. x 42 in. (610mm x 610mm x 1,067mm) with a molded step to the front. A non-skid surface will be bonded into the step surface. Self adhesive non-skid strips are not acceptable. The maximum platform capacity is 400 pounds (181kg). The horizontal side reach is 22 ft. 9 in. (6.93m).

For Manually Rotated Platform

A manual platform rotator shall be provided to allow positioning of the platform at 0^{o} 45° or 90° to either side of the boom. This shall provide for positioning of the platform for optimal work access. The platform shall be automatically leveled with a master/slave hydraulic leveling system. The slave cylinder shall include holding valves integral to the cylinder. Holding valves bolted to the cylinder are unacceptable. The hydraulic leveling system shall include a control valve to allow platform leveling adjustments from the upper and lower controls. An additional valve assembly shall provide a dual pilot operated check valve and dual circuit relief valves to prevent leakage from the system and to protect the system from damage. The platform shall be one-piece fiberglass, 24 in. x 24 in. x 42 in. (610mm x 610mm x 1,067mm) with a molded step to the front. A non-skid surface will be bonded into the step surface. Self adhesive non-skid strips are not acceptable. (This option increases the maximum horizontal side reach to 23 ft. 4in. (7.11m) and reduces the maximum platform capacity to 350 pounds (159kg).)

For Hydraulically Rotated Platform

A hydraulic platform rotator shall be provided to allow infinite positioning of the platform up to 90° to either side of the boom. This shall provide for positioning of the platform for optimal work access. The platform shall be automatically leveled with a master/slave hydraulic leveling system. The slave cylinder shall include holding valves integral to the cylinder. Holding valves bolted to the cylinder are unacceptable. The hydraulic leveling system shall include a control valve to allow platform leveling adjustments from the upper and lower controls. An additional valve assembly shall provide a dual pilot operated check valve and dual circuit relief valves to prevent leakage from the system and to protect the system from damage. The platform shall be one-piece fiberglass, 24 in. x 24 in. x 42 in. (610mm x 610mm x 1,067mm) with a molded step to the front. A non-skid surface will be bonded into the step surface. Self adhesive non-skid strips are not acceptable. (This option increases the maximum horizontal side reach to 23 ft. 6in. (7.16m) and reduces the minimum platform capacity to 350 pounds (159kg).)

MOUNTING

The pedestal base shall be mounted directly to cross members below the body floor independent of the body. The cross members shall be secured to the chassis frame with four shear plates using two 0.63 in. (16mm) diameter grade 5 hex head cap screws in each shear plate. A boom rest with a rubber pad molded to a steel plate and ratchet tie down strap shall be provided to secure the upper boom for travel. Rubber pads not molded to a steel plate or plastic dipped boom rests are unacceptable.

CONTROLS

On side mounted platforms, the upper controls must be mounted on the platform support and remain level with the platform. On end mounted platforms, the upper controls must be mounted on the side of the platform. The upper controls must be an integrated radio transmitter providing total electrical isolation. To protect against inadvertent operation, a trigger in the handle must serve as an enable and speed control. The radio control allows for one handed proportional operation of upper boom raise/lower, extend/retract, boom rotation, lower boom raise/lower, engine start/stop, hydraulic leveling if provided, emergency lowering if provided, and throttle control if provided. The electric switches in the handle must be environmentally sealed for weather protection. An emergency stop control shall be provided that also functions as an engine stop control. Power for the transmitter shall be provided by four AA batteries. A low battery indicator shall be provided allowing for 8 hours of continual use. The radio receiver shall be installed at the pedestal and provides all electrical signals for aerial lift operation.

SAFETY FEATURES

Counterbalance Valves (Holding Valves) shall lock the elevation, extension and slave leveling cylinders in position in the event of hydraulic line or hose failure.

A 3-way valve shall divert hydraulic flow away from the control valve in the event of a valve malfunction.

Unit shall have a rotation system that prevents freewheeling in the event of hydraulic line or hose failure.

A 30 in. (762mm) fiberglass section must not track over slide pads or rollers for maximum dielectric protection for the operator.

A fall protection anchor must be attached to the inner boom. Anchors attached to the platform or platform support are not acceptable. A body harness and adjustable length shock-absorbing lanyard must be provided for fall protection.

Unit must meet OSHA and ANSI/SIA A92.2-2009 standards, without exception.

ADDITIONAL OPTIONAL EQUIPMENT

HYDRAULIC POWER SOURCE (CHOOSE ONE)

For Engine Driven Hydraulic Pump

Hydraulic power shall be provided by an engine accessory belt driven hydraulic pump or a PTO driven hydraulic pump of sufficient size to furnish 3.0 to 3.5 GPM (11.4lpm to 13.2lpm) at engine idle. Engine stop/start is provided at the upper controls.

For Electric Powered Hydraulic Pump

Hydraulic power shall be provided by a heavy duty 12 VDC motor mounted in the pedestal. The motor must be able to deliver 2.5 to 3.0 GPM (9.5lpm to 11.4lpm). Two group 8D auxiliary batteries shall be supplied mounted on the turret in protective containers. The batteries are to be charged from the chassis alternator when the engine is running.

For Dual Powered Hydraulic System

Hydraulic power shall be provided by either an engine driven hydraulic pump of sufficient size to furnish 3.0 to 3.5 GPM (11.4lpm to 13.2lpm) at engine idle or a heavy duty 12 VDC motor mounted in the pedestal. The motor must be able to deliver 2.5 to 3.0 GPM (9.5lpm to 11.4lpm). The system automatically shifts to electric operation when the chassis engine is not running. A control to actuate the 12 VDC motor is provided at the lower controls. Engine stop/start is provided from the upper controls. Two group 8D auxiliary batteries shall be supplied mounted on the turret in protective containers. The batteries are to be charged from the chassis alternator when the engine is running.

EMERGENCY LOWERING (CHOOSE ONE)

For Engine Driven Hydraulic Pump

A separate emergency lowering system shall be provided which includes a 12VDC motor located inside the pedestal. Controls to actuate the emergency lowering system shall be at the upper and lower controls.

For Electric Powered

In the event the unit batteries become fully discharged, a control must be provided at both the upper and lower controls to utilize the chassis battery for emergency lowering. The same 12 VDC motor is used for normal and emergency operation.

Gravity Descent

This system consist of an electrical solenoid valve attached to the boom cylinder. When actuated at the upper or lower controls, the valve opens and allows the boom to slowly bleed down under gravity.

HYDRAULIC TOOL CIRCUIT—REQUIRES TWO SPEED THROTTLE

An outlet for hydraulic tools shall be provided at the operator's platform. The circuit includes a selector valve and outlet ports for pressure and return. The system must be designed for 5 GPM (18.93lpm) flow. Quick disconnect fittings do not need to be included. A two speed engine throttle is required. At low idle, the pump shall provide 3.0 to 3.5 GPM (11.4lpm to 13.2lpm) flow for lift operation. At high idle, the pump shall provide 5 GPM (18.93lpm) flow for tool operation.

TWO SPEED THROTTLE

The two speed throttle system shall provide an electric signal for the chassis electronic engine control system. The signal shall be activated from the upper or lower controls and increase engine speed for hydraulic tool operation. The signal must be deactivated for road travel through the keyed aerial master switch. During operation from the upper controls, the signal must automatically be deactivated if a boom control is actuated.

PEDESTAL SPACERS

Pedestal spacers are available for increased cab clearance. These spacers will increase the unit working height as well as the stowed travel height.

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