3.2 UTLI41A AND UTLI46A GENERAL SPECIFICATIONS

The UTEM SkyTel UTLI41A or UTLI46A is an insulated telescoping aerial lift available with either a side mounted single man platform or an end mounted single man platform. The end mounted platforms may be fixed or equipped with a means to rotate the platform around the end of the boom. The SkyTel UTLI41A or UTLI46A is installed on a chassis cab with some form of body. The following is a brief description of the major components of the UTLI41A and UTLI46A aerial lift.

IIYDRAULIC SYSTEM - The open center hydraulic system operates at a flow rate of 2.5 to 3.0 GPM (9.5 to 11.4LPM) at a maximum pressure of 2200 PSI (155kg/cm sq.) for the UTLI41A and 2500 PSI (176kg/cm sq.) for the UTLI46A. The pump draws oil from a 15 gallon (56.8L) reservoir through a 100 mesh suction strainer that is equipped with a bypass valve. A 10 micron return filter with a bypass valve is also included. The hydraulic pump can be powered by the chassis engine accessory drive belt, a chassis transmission power take off or an auxiliary engine/generator package.

Lower boom raise/lower, upper boom raise/lower and extension/retraction are accomplished with double acting hydraulic cylinders with holding valves integral to the cylinders. Boom rotation is accomplished with a hydraulic motor that actuates the rotation drive.

The adjustable pressure relief valve is integral to the lower control valve. 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 are machined from forgings and hydraulic hoses are non-conductive Parker 518C with permanent crimped on fittings. Reusable fittings are available for field repairs.

PEDESTAL - The standard pedestal is fabricated with 0.25 in. (6.4mm) steel into a rectangular shape with an access door to the rear. The top plate is 1.0 in. (25.4mm) thick to support the rotation bearing. The hydraulic reservoir is a separate component housed inside the pedestal for protection. The 100 mesh suction strainer and 10 micron return filter are located inside the pedestal. A sight glass visible through the pedestal door indicates oil level and temperature. Pedestal spacers are available.

TURRET - The turret is fabricated with 0.63 in. (15.9mm) thick steel sides and a 1.00 in. (25.4mm) base plate. Welded cross members provide rigidity. A removable bearing cover is provided to prevent foreign material from interfering with the lift rotation and to provide access to lubricate the rotation bearing gear teeth.

ROTATION DRIVE - Rotation is 540 degrees non-continuous with a mechanical stop to prevent hose and wire damage. Rotation is accomplished by a hydraulically driven worm driving directly on helical gear teeth machined on the outer race of a shear-ball rotation bearing. The worm is self- locking and hourglass shaped to engage multiple teeth at all times. The rotation bearing, worm and housing are factory set and do not require field adjustment. The critical bolts holding the turret to the rotation bearing and to the pedestal are SAE grade 5 specifications. These critical bolts are installed with thread lock to resist loosening. The worm shaft has an exposed hexagonal end for manual actuation. Continuous rotation is available as an option.

LOWER BOOM ASSEMBLY - The major components of the lower boom assembly are a lower boom, a compensating link and a knuckle.

The UTLI41A lower boom assembly articulates from 6 degrees below horizontal to 90 degrees above horizontal. The UTLI46A lower boom assembly articulates from 4 degrees below horizontal to 90 degrees above horizontal. A double acting cylinder equipped with two holding valves provides lower boom elevation. The lower boom consists of a 5 in. X 7 in. (127mm X 178mm) rectangular steel section. The compensating link consists of a 3.25 in. (82.6mm) O.D. X 2.75 in. (69.9mm) I.D. steel section. The lower boom and compensating link are pinned to the turret and knuckle to form a parallelogram linkage. As the lower boom is raised, the knuckle remains at a constant angle relative to the turret. The knuckle consists of two plates pinned to the lower boom and compensating link and two plates supporting the upper boom. Two 5.00 in. (127mm) O.D. X 3.50 in. (88.9mm) I.D. steel tubes attached to the two plates pinned to the lower boom are also attached to the two plates supporting the upper boom.

An optional chassis insulation system or fiberglass lower boom insert is available providing a 12 in. (0.30m) insulation gap in all boom positions. With this option, the lower boom includes a 7.l3in. (181mm) X 9.13in. (232mm) rectangular fiberglass reinforced plastic section and the compensating link includes a 4.63 in. (117mm) O.D. fiberglass reinforced plastic section. Both fiberglass sections are filament wound using oven cured epoxy resin for consistent strength. A gelcoat finish with a painted topcoat provides for maximum water resistance. The chassis insulation system is tested and rated per ANSI A92.2-2001.

The hydraulic hoses and air lines to the knuckle are housed inside the lower boom.

UPPER BOOM ASSEMBLY - The major components of the upper boom assembly are an outer boom, a telescoping inner boom, an extension cylinder, a hose carrier system, and slide pads mounted on the inner and outer boom.

The upper boom assembly articulates from 14 degrees below horizontal to 77 degrees above horizontal. A double acting cylinder equipped with a holding valve provides boom elevation. The outer boom consists of an 6 in. X 10 in. (152mm X 254mm) rectangular steel section. The telescoping inner boom consists on a 5 in. X 7 in. (127 mm X 178 mm) rectangular fiberglass reinforced plastic section that extends 108 in.(2.74m). The 0.38 in. (9.5mm) wall fiberglass section is filament wound using oven cured epoxy resin for consistent strength. The fiberglass inner boom has a gelcoat finish with a painted topcoat for maximum water resistance. A 30 in. (0.76m) insulation gap is provided with the boom frilly retracted. This insulation gap is non-tracking over any slide pads or rollers. Extended, the insulation gap increases to a maximum of 42 in. (1.07m). The inner boom is dielectrically tested and rated per ANSI A92.2-2001 for Category C, 46kv and below, frilly retracted. The extension system consists of a hydraulic cylinder with wear rings on the piston and end gland and holding valves installed in the cylinder base. The hose carrier system is housed inside the boom assembly and consists of a multi-link assembly with adequate space to carry hoses and air lines to the upper control station. The inner boom does not have to be removed to service the extension cylinder, hose carrier or slide pads. The ultra high molecular weight polyethelene outer boom side and top slide pads are infinitely adjustable and the lower pad can be replaced without removing the inner boom.

HYDRAULIC LEVELING - Platform leveling is controlled automatically by a master and slave cylinder arrangement. The platform leveling system can be manually actuated from either the upper or lower controls to level the platform, to stow and unstow the platform, or to tilt the platform for clean out or rescue.

PLATFORM - The fiberglass basket is 24in. X 24in. X 42in. (.61 m X .61 m X 1.07 in) with a step for easy access. The standard platform capacity is 300 lbs. (136kg). The maximum platform capacity is 400 lbs. (181kg) with side or fixed end mounted platforms and 350 lbs. (159kg) with end mounted platforms with either the manual or hydraulic rotator. Increased curb weight may be required for stability with 350 lbs. (159kg) or 400 lbs. (181kg) capacity. Hydraulic leveling is provided as standard with both end mounted platforms and side mounted platforms. Walk-in or duck under baskets with a door and steel baskets are also available.

MOUNTING - The pedestal base is secured to the vehicle frame. The vehicle body is isolated from the mounting. A boom support and a ratchet-type booth tie down strap are included.

CYLINDERS - The extension cylinder has wear rings on the piston and end gland for extended seal life. Dual holding valves are mounted at the extension cylinder base to prevent boom creep during travel or uncontrolled movement in case of hydraulic hose failure. The extension cylinder can be removed without removing the inner boom. The boom elevation cylinder has a single holding valve.

BOOM AND CYLINDER PINS - Pins are high strength alloy steel and zinc plated for corrosion resistance.

LOWER CONTROL VALVE - The hydraulic system pressure relief valve, the selector control, the boom controls and the hydraulic leveling control are provided in a one-piece, monoblock valve body. The selector control directs hydraulic oil flow to either the upper controls or to lower boom controls to override the upper controls.

UPPER CONTROLS - On side mounted platforms, the controls are mounted on the platform support and remain level with the platform. On end mounted platforms, the controls are mounted on the side of the platform. Individual locking lever controls are provided as standard to protect against inadvertent operation. An emergency stop control, the boom controls and the hydraulic leveling control are provided in a one-piece, monoblock valve body.

A single handle joystick is available for one handed operation of upper boom raise and lower, upper boom extend and retract and boom rotation. A lever in the single stick control handle must be actuated before the boom controls are operable to protect against inadvertent operation. A separate locking lever control is provided with the single handle joystick to operate the lower boom raise and lower and leveling functions. A separate emergency stop control is also provided.

LUBRICATION - Non-lube bearings are used at all points of motion. The rotation bearing is the only component that requires periodic lubrication.

PAINTING - The complete unit is primed and painted prior to assembly. White hardened enamel paint is standard.

MANUALS - Two operator's manuals and two parts and service manuals are included with each UTEM aerial lift.

FALL PROTECTION SYSTEM - A body harness and adjustable length lanyard are provided. The anchor for the lanyard is attached to the inner boom.

3.3 UTLT41A AND UTLI46A OPTION SPECIFICATIONS

A brief description of some of the options available for the SkyTel UTLI4 1A and UTLI46A aerial device are given below.

HYDRAULIC POWER SOURCE - The HM hydraulic system accommodates an engine accessory belt driven hydraulic pump, a PTO driven hydraulic pump or an auxiliary engine driven hydraulic pump. The pump provides 2.5 to 3.0 GPM (9.5 to 1 l.4LPM) flow for the aerial lift. Engine start! stop at the upper controls is included with HM hydraulic systems and includes an air plunger actuated control to start and stop the engine.

BRIDGE MOUNT PEDESTALS - Optional Bridge mount pedestals allow the center of the load space to be unobstructed. The hydraulic oil reservoir is a separate assembly located wherever required.

EMERGENCY LOWERING - For units with HM hydraulics or an engine driven hydraulic pump, this system provides a 12VDC motor driven hydraulic pump connected in parallel with the engine driven hydraulic pump in the event the engine driven pump becomes inoperable. An air plunger actuated control is provided at the upper controls to actuate the emergency lowering motor. This control must be held actuated while operating the upper controls.

TORSION BAR - Stable Ride over frame and under frame torsion bars are available and add to the stability of the vehicle. All Stable Ride torsion bars include rubber bushings at all points of movement and do not require lubrication.

TWO SPEED MANUAL THROTTLE CONTROL - This control provides for efficient, economical operation at engine idle or a preset higher engine speed for the optional hydraulic tool circuit. The throttle control includes an air plunger actuated control at the upper controls.

HYDRAULIC TOOL CIRCUIT - A hydraulic pressure and return connection are provided at the upper controls for operation of hydraulic tools. The system is designed for up to 5 GPM (l9lpin). Quick disconnect fittings are not included. The two speed manual throttle control is required.

PLATFORM VARIATIONS - A 24 in. X 30 in. X 42 in. (0.61m X 0.76m X l.07m) fiberglass basket with steps are available. A 24 in. X 24 in. X 42 in. (0.6lm X 0.61m X l.07m) fiberglass walk-in or duck under basket is available with a door. An open 24 in. X 24 in. X 42 in. (0.61m X 0.61m X 1.07m) steel platform with a door is available as well.

CAPACITY VARIATIONS - The standard platform capacity is 300 lbs. (136kg). However a maximum platform capacity of 400 lbs. (181kg) can be provided with side mounted platforms or end mounted platforms without a platform rotator. With the end mounted platform with either the manual or hydraulic rotator, the maximum platform capacity is 350 lbs. (159kg). Increased curb weight may be required for stability with 350 lb. (159kg) or 400 lb. (181kg) capacity.

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.

REMOTE LOWER CONTROL – This option allows for remote operation of the lower controls for the aerial device. The remote lower controls override the upper controls and are house in either a permanently mounted weather resistant plastic enclosure or a hand-held enclosure on an umbilical cord for convenience. This option replaces the manual lower control valve with a solenoid operated lower control valve.