

UTEM

Utility Truck Equipment Mfg., L.L.C.

Operator's Manual

SkyTel

UTLI41A AND UTLI46A

Utility Truck Equipment MFG

821 Enterprise

P.O. Box 9

Hewitt, Texas 76643-9998

(254)857-8204

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701082
MAR10

WARRANTY

A completed warranty registration must be returned to Utility Truck Equipment Mfg., LLC (UTEM) within ten (10) days after delivery of a UTEM Aerial Lift (The Product). The warranty registration is a part of the “Warranty Registration/Pre-Delivery Inspection” form that is provided with the product manuals. UTEM is not obligated to warranty the unit unless this registration is on file.

UTEM warrants The Product sold to be free from defects in material and workmanship under normal use and service for one (1) year after date of delivery to the initial user, subject to the following provisions:

I. This warranty is limited to the repair or replacement of parts with appropriate labor as determined by UTEM upon inspection to have been defective in material or workmanship. There must be a warranty claim (supplied by UTEM) properly filled out and mailed to UTEM within thirty (30) days of the date of failure for approval and instructions regarding further disposition of parts. All parts have to be returned to the factory within thirty (30) days of the date of notification for UTEM inspection before credit can be given. Warranty parts shall be shipped to the factory prepaid motor freight or UPS.

II. Warranty with respect to batteries, generators, or optional equipment is subject to warranty offered by their respective manufacturer. Such warranties shall be handled direct through the respective manufacturer or their distributor.

UTEM Aerial Lifts are designed to be personnel carriers and have rated capacities for each unit. Exceeding the rated capacity or operating in a manner other than the intended use will void the warranty. These units are not designed to operate as cranes or pulling devices.

This warranty is in lieu of and excludes all other representations or warranties expressed or implied and does not apply where alterations or structural repair has been made to the “Product” without written authorization by UTEM. UTEM obligation under this warranty does not apply in case of any alterations, accidents, misuse, abuse, neglect or if maintained or operated in any manner other than recommended or approved in the UTEM Operator’s Manual.

THERE IS NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE NOR IS THERE ANY OTHER WARRANTY, EXPRESS OR IMPLIED, EXCEPT AS SPECIFICALLY STATED HEREIN. UTEM SHALL IN NO EVENT BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR CLAIMS OF ANY THIRD PARTY AGAINST CUSTOMER.

IMPROVEMENTS

UTEM reserves the right to make changes in design and improvements whenever it is believed the efficiency of the products will be improved, but without incurring any obligation to incorporate such improvements in any product which has been shipped or is in service.

016warranty statement

UTILITY TRUCK EQUIPMENT MANUFACTURING, LLC

Warranty Registration/Pre-Delivery Inspection

MODEL: _____ SERIAL NUMBER: _____

The purpose of this warranty registration/pre-delivery inspection is to insure that there is no in-transit damage and that the machine is in good working condition when delivered to the customer. Any unusual conditions should be noted. This form must be completed and returned within ten (10) days after delivery of the equipment to the customer to register this unit for warranty. Repairs that must be made as the result of failure to complete the pre-delivery inspection will not be covered under warranty.

INSTALLER'S NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PURCHASER'S NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

BEFORE DELIVERY, THE FOLLOWING WERE CHECKED AND CORRECTED AS NECESSARY:

- | | | |
|--|---|--|
| <input type="checkbox"/> Safety Covers | <input type="checkbox"/> Battery Cables | <input type="checkbox"/> Cylinder Holding Valves |
| <input type="checkbox"/> Unit Mounting Bolts | <input type="checkbox"/> Battery Charge and Water Level | <input type="checkbox"/> Paint Finish |
| <input type="checkbox"/> Basket Mounting Bolts | <input type="checkbox"/> Upper and Lower Controls | <input type="checkbox"/> Decals |
| <input type="checkbox"/> Basket for Damage | <input type="checkbox"/> Hydraulic Oil Level | <input type="checkbox"/> Air Pressure in Tires |
| <input type="checkbox"/> Basket Leveling System | <input type="checkbox"/> Hydraulic Oil Leaks | |
| <input type="checkbox"/> Stability Test Per
ANSI/SIAA92.2 | <input type="checkbox"/> Dielectric Test Per
ANSI/SIAA92.2 | |

REMARKS: _____

The above items have been inspected and the completed unit is in satisfactory working condition.

PRE-DELIVERY INSPECTION COMPLETED BY: _____ DATE: _____

On Behalf Of _____ (Purchaser), I am taking delivery of the aerial device identified above.

I have been presented with two (2) operator's manuals and two (2) parts and service manuals and I understand the importance of proper maintenance and safe operating practices of this unit.

Further, I understand the importance that anyone who is not familiar with safe and proper operation of this equipment as explained in the Operator's manual should not be allowed to operate unit.

Also, I have received and understand the UTEM limited warranty statement and have been advised that the warranty is not valid until this signed registration is received by UTEM. I understand that it is the responsibility of _____, the authorized UTEM dealer, to return this form to UTEM at the address indicated below within ten (10) days of the in-service date.

By: _____ By: _____
Dealer Representative Purchaser Representative

Title: _____ Title: _____

In-Service Date: _____

Return to: UTEM, P.O. Box 9, Hewitt, TX 76643 (254)857-8204 FAX (254)857-9253

033warranty registration/pre-delivery inspection

TABLE OF CONTENTS

INTRODUCTION	1.
SAFETY	2.
SPECIFICATIONS	3.
Identification of Major Components	3.1
UTLI41A and UTLI46A General Specifications	3.2
UTLI41A and UTLI46A Options Specifications	3.3
General UTLI41A Numerical Specifications with Side Mounted Basket	3.4
Typical UTLI41A Numerical Specifications with Side Mounted Basket	3.5
General UTLI46A Numerical Specifications with Side Mounted Basket	3.6
Typical UTLI46A Numerical Specifications with Side Mounted Basket	3.7
General UTLI41A Numerical Specifications with End Mounted Basket	3.8
Typical UTLI41A Numerical Specifications with End Mounted Basket	3.9
General UTLI46A Numerical Specifications with End Mounted Basket	3.10
Typical UTLI46A Numerical Specifications with End Mounted Basket	3.11
General UTLI41A Numerical Specifications with End Mounted Basket and Manual Rotator	3.12
Typical UTLI41A Numerical Specifications with End Mounted Basket and Manual Rotator	3.13

General UTLI46A Numerical Specifications with End Mounted Basket and Manual Rotator	3.14
Typical UTLI46A Numerical Specifications with End Mounted Basket and Manual Rotator	3.15
General UTLI41A Numerical Specifications with End Mounted Basket and Hydraulic Rotator	3.16
Typical UTLI41A Numerical Specifications with End Mounted Basket and Hydraulic Rotator	3.17
General UTLI46A Numerical Specifications with End Mounted Basket and Hydraulic Rotator	3.18
Typical UTLI46A Numerical Specifications with End Mounted Basket and Hydraulic Rotator	3.19
OPERATION	4.
Start-Up Procedures	4.1
Operating Where Electrical Hazards are Present	4.2
Lower Control Operation	4.3
Upper Control Operation	4.4
Storing the Aerial Lift	4.5
EMERGENCY OPERATION	5.
Emergency Controls and Features	5.1
Recommended Emergency Procedures	5.2
PREVENTIVE MAINTENANCE	6.
Daily Visual Inspection	6.1
Lubrication	6.2
Hydraulic System Maintenance	6.3
Routine Adjustments	6.4

1. INTRODUCTION

This **UTEM** aerial device has been designed and engineered to conveniently place personnel at work stations above the ground. Full controls at the platform and complete freedom of boom movements make this **UTEM** aerial device a truly functional work platform.

This manual is furnished to provide practical and essential information for safe and efficient operation of the **UTEM** aerial device. Proper operation of this aerial lift is the responsibility of the operator and requires a thorough understanding of its capabilities. Personnel responsible for the operation of the aerial lift must be familiar with and understand this manual.

Detailed information for the maintenance, inspection and service of the **UTEM** aerial device can be found in the accompanying Parts and Service Manual. Should further information be required, contact your local **UTEM** dealer or **Utility Truck Equipment Manufacturing**.

DANGER: THIS EQUIPMENT SHOULD BE OPERATED AND SERVICED ONLY BY COMPETENT PERSONNEL FAMILIAR WITH GOOD SAFETY PRACTICES. THESE INSTRUCTIONS ARE WRITTEN FOR SUCH PERSONNEL AND ARE NOT INTENDED AS A SUBSTITUTE FOR ADEQUATE TRAINING AND EXPERIENCE IN SAFE PROCEDURES FOR THIS TYPE OF EQUIPMENT.

DANGER: READ AND UNDERSTAND THIS MANUAL BEFORE ATTEMPTING TO OPERATE THIS AERIAL DEVICE.

The manual identifies all the controls and their locations and describes how the controls function. Routine preventive maintenance is very important in maintaining reliable aerial lift service. A preventive maintenance schedule is provided and must be understood and followed by all operators.

DANGER: THIS IS NOT MAINTENANCE-FREE EQUIPMENT.

NOTICE: THIS MANUAL MUST BE A PERMANENT PART OF THIS UTEM AERIAL DEVICE AND MUST REMAIN WITH THE UNIT ALWAYS.

MANUAL FEATURES

This manual is divided into six, numbered chapters. The first number in the page number at the bottom of each page identifies the chapter number.

Danger, caution, and warning notes are indented, bold faced, and separated from the regular text to emphasize their importance and the need for attention.

English units are followed by equivalent metric units in parenthesis.

Non-critical units of measure are usually rounded-off to the nearest whole unit.

Notes referring the reader to related information in the manual indicate the chapter or a section of a chapter, not to a single page. The reader may need to scan a few pages to find the needed information.

When interchangeable terms exist, the preferred current terminology is used. For example “platform” or “basket” are used instead of “bucket” and “turret” is used instead of “mast”. Users as well as service personnel must be familiar with this terminology.

A thorough effort has been made to produce a manual that is complete, accurate, and user friendly. However, if questions arise contact Utility Truck Equipment Manufacturing.

2. SAFETY

Only properly trained operators are qualified to operate this **UTEM** aerial lift. Operator training shall include complete instruction and understanding of the manufacturer's manuals, employer's work rules, and all related governmental regulations. Prior to operation from the platform, the machine must be operating properly, inspected, and maintained in accordance with the manufacturer's instructions. All safety signs, guards, and covers must be in proper condition.

DANGER: AN UNTRAINED OR CARELESS OPERATOR SUBJECTS HIM/HERSELF AND OTHERS TO DEATH OR SERIOUS INJURY.

Throughout this manual there are danger, warning, and caution notes to emphasize the possible hazards when operating this **UTEM** aerial lift. It is the responsibility of the operator to become familiar with the contents of this manual to avoid those hazards.

There are two main risks associated with operating an aerial lift:

- (1) Electrocution caused by contact with energized power lines.
- (2) Injuries caused by falling as a result of equipment failure or performing an unsafe or unstable maneuver.

No manual can address every conceivable operating hazard for the operator. Therefore, the prevention of accidents is greatly dependent on the good judgement and common sense of the operator.

It is the responsibility of the operator to operate this **UTEM** aerial device only if it has been maintained in accordance with the manufacturer's manuals. The preventive maintenance program outlined in this manual and the Parts and Service Manual must be followed.

It is extremely important for the operator to be thoroughly familiar with this **UTEM** aerial device. Study the information in this manual and the controls until both are completely mastered. Then practice operating the aerial lift in an unobstructed area.

Decals are installed at numerous locations on the aerial lift to warn all personnel of the potential hazards during the use and operation of the aerial lift. It is important that the operator, as well as any ground personnel, read and understand the information on the decals. If any decals are defaced, illegible or lost, they must be replaced. Refer to the "Decal Placement" illustration in Section 6.1, Daily Visual Inspection, for the locations of all the decals. For your convenience, many of these decals are pictured on the next few pages as a quick reference for reviewing safety concerns and for providing part numbers when ordering replacements.

An attitude of safety is very important to you, the operator. Practice anticipating accidents and operating hazards. Then determine a corrective course of action to respond to the situation. This habit will sharpen your safety awareness, quicken your reaction time, and prevent many accidents.

SAFETY DECALS

Warning and instruction decals on the **UTEM** aerial device are shown below and on the following pages with their respective part numbers. The decals are not shown at actual size.



DANGER

DEATH OR SERIOUS INJURY

- FOR STATIONARY OPERATION, TRUCK MUST BE SECURELY PARKED, DRIVELINE DISENGAGED, AND AERIAL DEVICE PROPERLY STABILIZED PRIOR TO OPERATION.
- TO AVOID TIP-OVER, OUTRIGGERS (WHEN SO EQUIPPED) MUST BE PROPERLY EXTENDED ON A SOLID LEVEL SURFACE.
- OPERATE ALL CONTROLS SLOWLY FOR A SMOOTH PLATFORM MOTION AND MAKE SURE CONTROLS ARE RETURNED TO NEUTRAL AFTER DESIRED OPERATION.
- CREW MUST USE PROPER PERSONAL AND OTHER PROTECTIVE EQUIPMENT.
- NEVER LOAD BEYOND RATED CAPACITY.
- NEVER OPERATE AERIAL DEVICE WITH PERSONNEL UNDER BOOM OR LOAD.
- NEVER MOVE THE TRUCK UNTIL THE BOOMS AND OUTRIGGERS ARE IN A PROPERLY STOWED POSITION AND SECURED.
- REFER TO THE OPERATORS MANUAL FOR COMPLETE INSTRUCTIONS. IF MANUAL IS MISSING, CONTACT UTILITY TRUCK EQUIPMENT MFG. P.O.BOX 9 HEWITT, TX 76643 (254) 857-8204 FOR REPLACEMENT.

601443

MODEL	_____	SERIAL NUMBER	_____	DATE OF MANUFACTURE	_____		
THE RATED PLATFORM CAPACITY IS	_____	LBS OR	_____	KG	NUMBER OF PLATFORMS	1	
THE MAXIMUM PLATFORM HEIGHT IS	_____	FT OR	_____	M			
THE ELECTRICAL SYSTEM VOLTAGE IS	_____	VDC	THE HYDRAULIC SYSTEM PRESSURE IS	_____	PSI OR	_____	KG/CM ²
THE MINIMUM AMBIENT OPERATING TEMPERATURE IS	_____	°F	OR	_____	°C		
THE BOOM IS	<input type="checkbox"/>	NON-INSULATED	<input type="checkbox"/>	INSULATED	THE DESIGN VOLTAGE IS	_____	
THE DIELECTRIC RATING IS CATEGORY	<input type="checkbox"/>	WITH A RATED LINE VOLTAGE OF	_____				
A CHASSIS INSULATION SYSTEM IS INSTALLED	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	DATE OF QUALIFICATION TEST	_____	
A MATERIAL HANDLING ATTACHMENT IS INSTALLED	<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	NO			
OUTRIGGERS ARE REQUIRED FOR STABILITY	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	DATE OF STABILITY TEST	_____	
MINIMUM VEHICLE WEIGHT FOR STABILITY	_____	LBS OR	_____	KG			
UNIT INSTALLED BY	_____						

OPERATING INSTRUCTIONS

BEFORE OPERATING THIS AERIAL DEVICE, READ AND UNDERSTAND ALL OPERATING AND SAFETY INFORMATION IN THE MANUAL AND ALL INFORMATION ON THIS PLACARD.

1. ALWAYS PARK VEHICLE AS NEARLY LEVEL AS POSSIBLE.
2. WHEN WORKING ON A SLOPE, DRIVE INTO OR BACK INTO POSITION.
3. DO NOT OPERATE THIS AERIAL DEVICE ON A SLOPE GREATER THAN 5'.
4. INSPECT THIS AERIAL DEVICE FOR VISIBLE DEFECTS OR LOOSE OBJECTS.
5. INSPECT INSULATED BOOM AND OTHER INSULATING MATERIAL FOR CLEANLINESS.
6. SET VEHICLE PARKING BRAKE AND CHOCK WHEELS.
7. ENGAGE HYDRAULIC POWER SOURCE.
8. EXTEND OUTRIGGERS, IF SO EQUIPPED, TO A SOLID FOOTING.
9. RAISE BOOMS SUFFICIENTLY TO CLEAR OBSTRUCTIONS ON TRUCK BEFORE ROTATING.
10. OPERATE ALL HYDRAULIC CONTROLS SLOWLY AND DELIBERATELY FOR SMOOTH PLATFORM MOTION.
11. WHEN CHANGING THE DIRECTION OF ROTATION, COME TO A FULL STOP, THEN REVERSE CONTROL.



UTILITY TRUCK EQUIPMENT MFG., L.L.C.
821 ENTERPRISE HEWITT, TX 76643 700000



DANGER

THE TOTAL LOAD IN THIS PLATFORM MUST NOT EXCEED 300 POUNDS (136kg) INCLUDING OPERATOR, TOOLS, LINER AND MATERIALS. EXCESS LOAD MAY CAUSE A FALL RESULTING IN DEATH OR SERIOUS INJURY.

700530



DANGER

CONDUCTIVE HOSES WILL CAUSE DEATH OR SERIOUS INJURY

- USE ONLY HOSE LABELED NON-CONDUCTIVE ON TOOLS, IN THE INSULATED SECTIONS AND IN THE PLATFORM AREA.

601435



DANGER

A MOVING OUTRIGGER WILL CAUSE SERIOUS CRUSHING INJURY

- DO NOT OPERATE ANY OUTRIGGER UNLESS YOU OR A SIGNAL PERSON CAN SEE THAT PERSONNEL AND OBSTRUCTIONS ARE CLEAR OF THE OUTRIGGER AND ITS CONTACT POINT.

601468



DANGER

ELECTROCUTION HAZARD
THIS PLATFORM IS NOT TESTED OR CERTIFIED AS INSULATING.
DEATH OR SERIOUS INJURY MAY OCCUR

- THIS FIBERGLASS PLATFORM DOES NOT PROVIDE ANY PROTECTION FROM PHASE-TO-PHASE OR PHASE-TO-GROUND CONTACT.
- OPEN HOLES OR PASSAGES IN FIBERGLASS PLATFORMS ON INSULATED AERIAL DEVICES MUST BE CLOSED DURING AERIAL LIFT OPERATION.

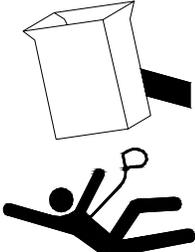
700262



DANGER

DEATH OR SERIOUS INJURY

- PLATFORM PERSONNEL MUST WEAR A BODY HARNESS WITH AN APPROPRIATE LANYARD ATTACHED TO ANCHOR PROVIDED.
- PLATFORM DOORS AND/OR CHAINS, IF PROVIDED, MUST BE SECURELY LATCHED.



617902



NOTICE

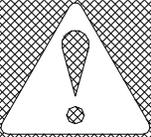
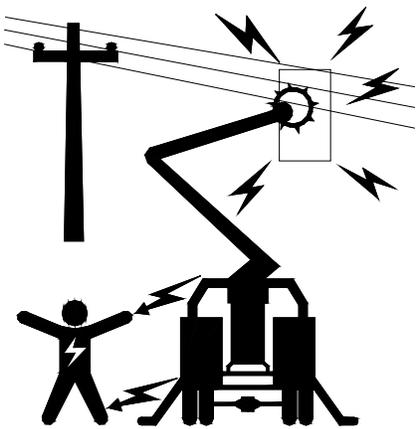
UPON TRANSFER OF OWNERSHIP

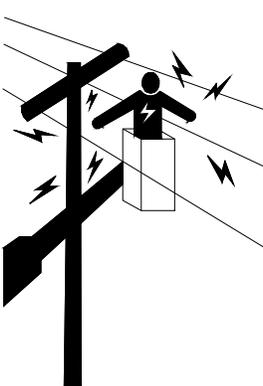
- IT SHALL BE THE RESPONSIBILITY OF THE SELLER TO PROVIDE THE MANUFACTURER'S MANUAL(S) FOR THAT AERIAL DEVICE TO THE PURCHASER.
- IT IS THE RESPONSIBILITY OF THE PURCHASER TO NOTIFY UTILITY TRUCK EQUIPMENT MANUFACTURING, HEWITT, TEXAS OF THE UNIT MODEL AND SERIAL NUMBER AND THE NAME AND ADDRESS OF THE NEW OWNER WITHIN 60 DAYS.

(REFERENCE ANSI A92.2)

700263

SAFETY DECALS

 <h1 style="margin: 0;">DANGER</h1>	
<p>ELECTROCUTION HAZARD DEATH OR SERIOUS INJURY WILL RESULT FROM CONTACT WITH THIS MACHINE, TRUCK OR TRUCK ATTACHMENTS IF THEY SHOULD BECOME ELECTRICALLY CHARGED KEEP CLEAR OF TRUCK AND LOAD</p>	
<p>617878</p>	

 <h1 style="margin: 0;">DANGER</h1>	
<p>ELECTROCUTION HAZARD DEATH OR SERIOUS INJURY WILL RESULT FROM CONTACT WITH OR INADEQUATE CLEARANCE TO ELECTRICAL POWER LINES AND APPARATUS</p> <ul style="list-style-type: none"> • MAINTAIN SAFE CLEARANCES FROM ELECTRICAL POWER LINES IN ACCORDANCE WITH APPLICABLE GOVERNMENT REGULATIONS. ALLOW FOR BOOM, PLATFORM, ELECTRICAL LINE AND LOAD LINE SWAY. • THIS MACHINE DOES NOT PROVIDE PROTECTION FROM CONTACT WITH OR PROXIMITY TO AN ELECTRICALLY CHARGED POWER LINE WHEN YOU ARE IN CONTACT WITH OR IN PROXIMITY TO ANOTHER POWER LINE. • ALL METAL COMPONENTS IN THE PLATFORM AREA SHALL BE CONSIDERED ELECTRICALLY CONNECTED. 	
<p>617886</p>	

 <h1 style="margin: 0;">DANGER</h1>
<p>AN UNTRAINED OPERATOR SUBJECTS HIM OR HERSELF AND OTHERS TO DEATH OR SERIOUS INJURY YOU MUST NOT OPERATE THIS MACHINE UNLESS</p> <ul style="list-style-type: none"> • YOU HAVE BEEN TRAINED IN THE SAFE OPERATION OF THIS MACHINE. • YOU HAVE READ, UNDERSTAND AND FOLLOW THE SAFETY AND OPERATING RECOMMENDATIONS CONTAINED IN THE MACHINE MANUFACTURER'S MANUALS, SAFETY SIGNS ATTACHED TO THE EQUIPMENT, YOUR EMPLOYERS WORK RULES AND APPLICABLE GOVERNMENT REGULATIONS. • YOU ARE SURE THE MACHINE IS OPERATING PROPERLY AND HAS BEEN INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S MANUALS. • YOU ARE SURE THAT ALL SAFETY SIGNS, GUARDS AND OTHER SAFETY FEATURES ARE IN PLACE AND IN PROPER CONDITION.
<p>601427</p>

 <h1 style="margin: 0;">DANGER</h1>

<p>OUTRIGGER CONTACT WILL CAUSE SERIOUS CRUSHING INJURY STAND CLEAR</p>
<p>601450</p>

ADDITIONAL SAFETY CONSIDERATIONS

1. Report any unusual occurrence during the operation of the aerial lift that may require repair or adjustment by service personnel.
2. Keep the work space and any storage areas clean and neat.
3. Avoid parking on soft surfaces. Soft surfaces may suddenly collapse, shift, or sink under the weight of the vehicle.
4. There is no insulating value in the fiberglass platform.
5. No attempt should be made to clean, lubricate or adjust a machine while the machine is in motion.
6. If the aerial lift has set idle for an extended period (i.e. overnight) or has been recently serviced, cycle the lift through its full range of motion several times. This procedure will force any air that may have become entrained in the hydraulic oil out of the hydraulic system. Do not operate the lift from the platform until this process is completed. Air trapped in the oil can cause lift movements to be erratic and unpredictable.
7. Do not operate any part of the aerial lift (platform, booms, outriggers, etc.) outside the designated work site. Set up adequate cones or barricades to mark the boundaries of the work site to alert motorists and pedestrians.
8. Only qualified mechanics are authorized to service this **UTEM** aerial device.
9. Avoid contacting a spray or mist produced by a high pressure hydraulic leak. This spray or mist can puncture the skin and be injected into the body or contaminate the eyes. These conditions require immediate medical attention.
10. Most hydraulic oil is flammable. Avoid any contact between hydraulic oil and sources of heat or open flames.
11. Bodily contact with hot hydraulic oil can cause serious burns which require immediate medical attention.
12. Always engage the outriggers, if provided, and maintain the correct tire pressure to provide adequate vehicle stability.
13. Always use a fall protection system attached to the anchor on the boom.
14. Do not operate the aerial lift with the vehicle parked on a slope unless absolutely necessary. If it is necessary to operate the aerial lift with the vehicle is parked on a slope, take the special precautions required in Section 4, Operation.

15. Always set the parking brake and chock the vehicle wheels before aerial lift operation.
16. Watch the booms during operation to make sure they clear the vehicle, body and any other obstructions.
17. Maintain safe clearances from powerlines and apparatus. This aerial lift does not provide protection from contact with, or if in proximity to, two or more electrical conductors of different Voltage or potential.
18. Never use this **UTEM** aerial lift as a crane.
19. Stow the booms securely before moving the vehicle.
20. When tools or equipment are carried in the platform with the operator the combined weight must not exceed the rated platform capacity.
21. Avoid dropping tools. Use a hand line to raise tools to the platform or lower tools from the platform.
22. Stand only on the platform floor.
23. Do not climb out of a raised platform onto poles, etc.

3. SPECIFICATIONS

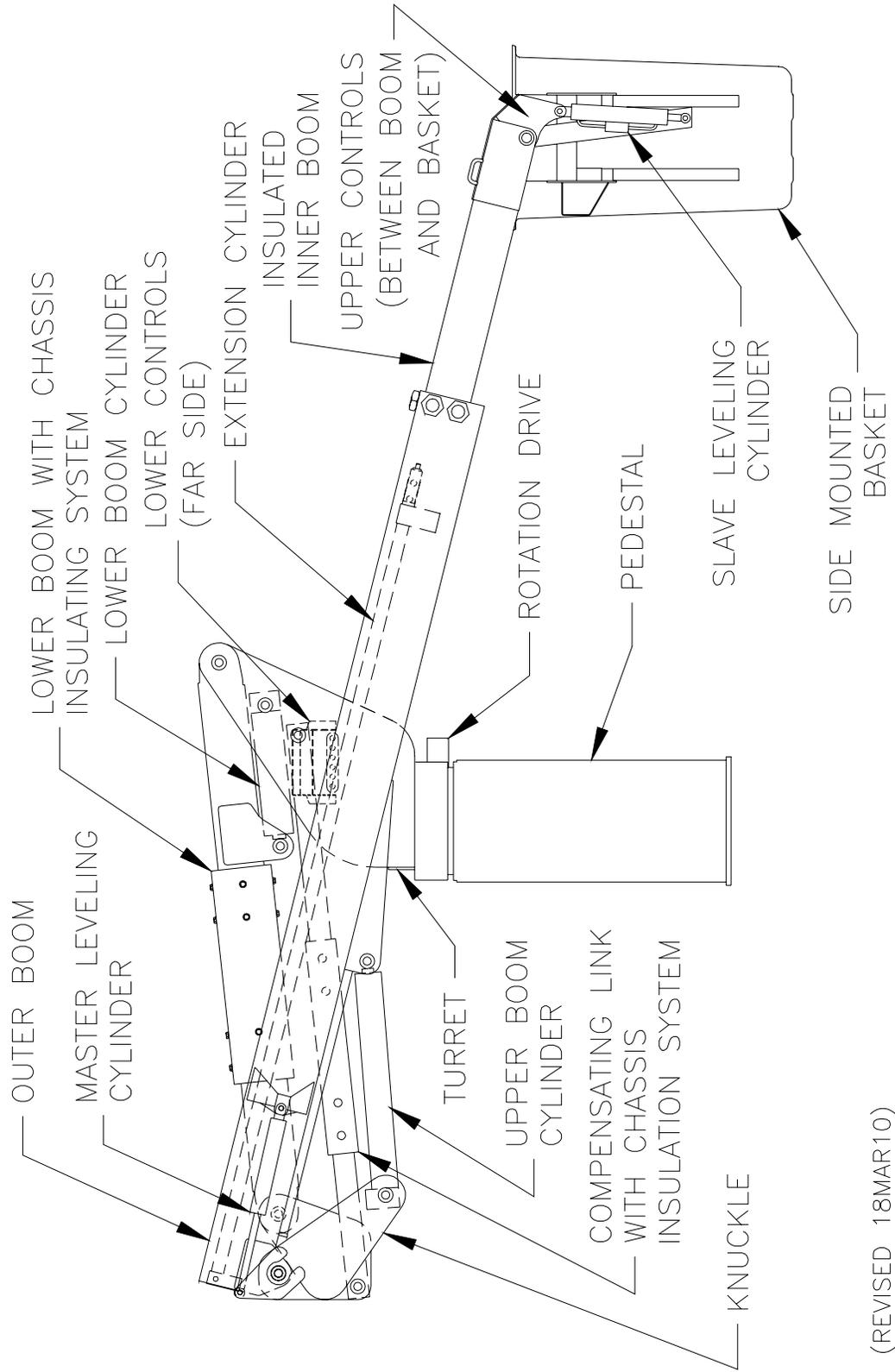
Safe use of an aerial lift requires that the operator be familiar with and understand the capabilities and intended purpose of the equipment. These specifications provide detailed explanations of the standard unit with all the variations available as well as the optional equipment that is available. It is also imperative that the operator be aware of the specific configuration of the unit he/she intends to operate.

TABLE OF CONTENTS

Identification of Major Components	3.1
UTLI41A and UTLI46A General Specifications	3.2
UTLI41A and UTLI46A Options Specifications	3.3
General UTLI41A Numerical Specifications with Side Mounted Basket	3.4
Typical UTLI41A Numerical Specifications with Side Mounted Basket	3.5
General UTLI46A Numerical Specifications with Side Mounted Basket	3.6
Typical UTLI46A Numerical Specifications with Side Mounted Basket	3.7
General UTLI41A Numerical Specifications with End Mounted Basket	3.8
Typical UTLI41A Numerical Specifications with End Mounted Basket	3.9
General UTLI46A Numerical Specifications with End Mounted Basket	3.10
Typical UTLI46A Numerical Specifications with End Mounted Basket	3.11
General UTLI41A Numerical Specifications with End Mounted Basket and Manual Rotator	3.12
Typical UTLI41A Numerical Specifications with End Mounted Basket and Manual Rotator	3.13

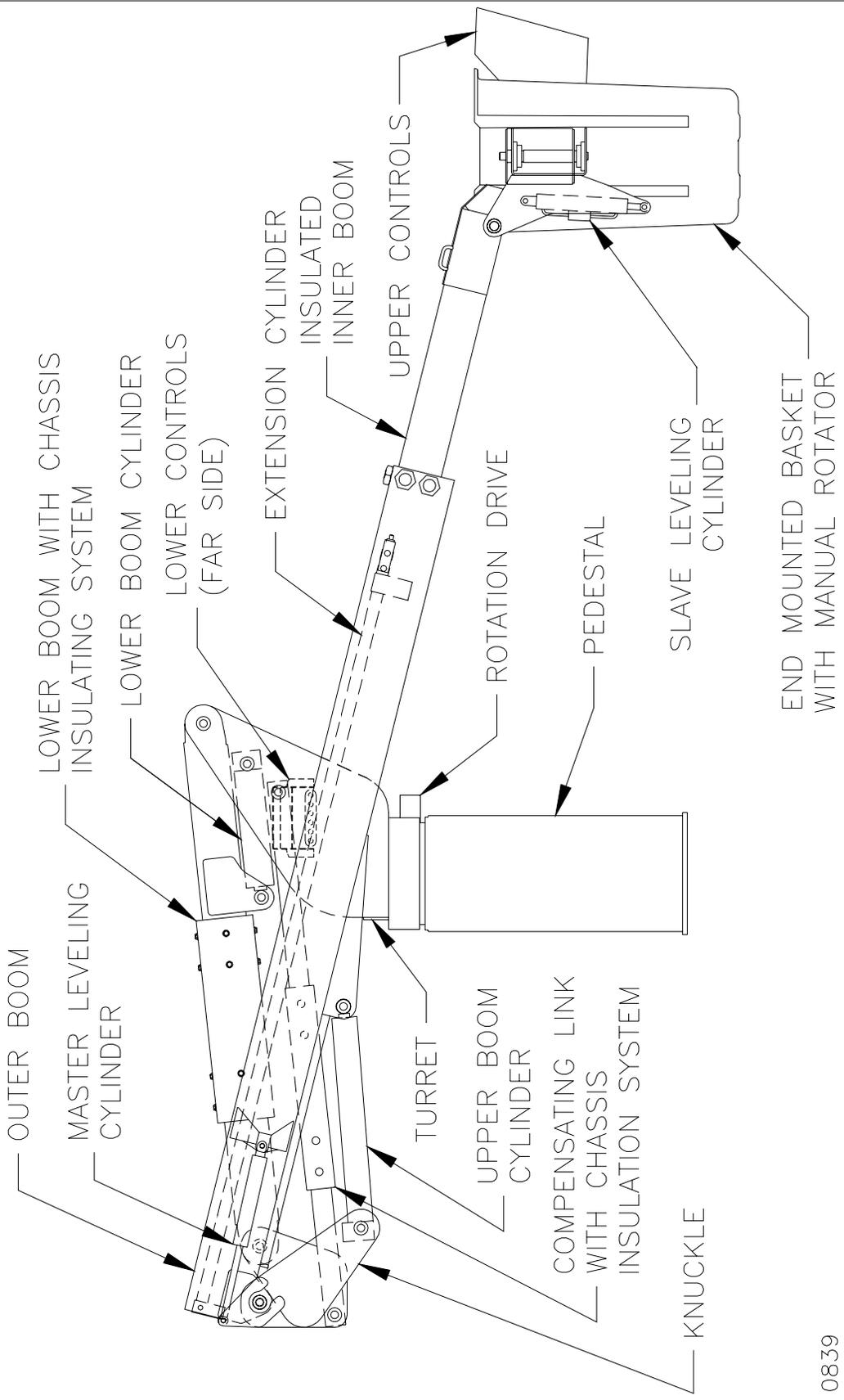
General UTLI46A Numerical Specifications with End Mounted Basket and Manual Rotator	3.14
Typical UTLI46A Numerical Specifications with End Mounted Basket and Manual Rotator	3.15
General UTLI41A Numerical Specifications with End Mounted Basket and Hydraulic Rotator	3.16
Typical UTLI41A Numerical Specifications with End Mounted Basket and Hydraulic Rotator	3.17
General UTLI46A Numerical Specifications with End Mounted Basket and Hydraulic Rotator	3.18
Typical UTLI46A Numerical Specifications with End Mounted Basket and Hydraulic Rotator	3.19

UTLI41A AND UTLI46A MAJOR COMPONENTS
 SHOWN WITH HYDRAULICALLY LEVELED
 SIDE MOUNTED BASKET



0840 (REVISED 18MAR10)

UTLI41A AND UTLI46A MAJOR COMPONENTS
 SHOWN WITH HYDRAULICALLY LEVELED
 END MOUNTED BASKET WITH MANUAL ROTATOR



0839

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.

HM HYDRAULIC SYSTEM - The open center hydraulic system operates at a flow rate of 2.5 to 3.0 GPM (9.5 to 11.4l) at a maximum pressure of 2500 PSI (176kg/cm²). 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. Engine start/stop is provided as standard and includes an air plunger actuated control at the upper controls and a toggle switch at the lower controls to start and stop the engine.

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 crossmembers 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 7.13in. (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.

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. (127mm X 178mm) 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 fully 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 for Category C, 46kV and below, fully 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 ultra high molecular weight polyethylene outer boom side and top slide pads are infinitely adjustable and like 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. (.61m X .61m X 1.07m) 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 boom 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 installed in the extension cylinder base to prevent boom creep during travel or uncontrolled movement in case of hydraulic hose failure. The lower boom elevation cylinder also has dual holding valves and the upper boom elevation cylinder has a single holding valve. The lower boom elevation cylinder also includes a relief valve to limit the force to lower the boom.

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 powdercoated prior to assembly. White powdercoating is standard for all major components and black powdercoating is standard for all smaller components. The hydraulic cylinders and rotation drive are painted black.

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 UTLI41A AND UTLI46A OPTION SPECIFICATIONS

A brief description of some of the options available for the SkyTel UTLI41A and UTLI46A aerial device are given below.

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 and a toggle switch is provided at the lower 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 and a toggle switch at the lower 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 (19lpm). 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 1.07m) fiberglass basket with step(s) is available. A 24 in. X 24 in. X 42 in. (0.61m X 0.61m X 1.07m) 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 lbs. (159kg) or 400 lbs. (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.

**3.4 GENERAL UTLI41A NUMERICAL
SPECIFICATIONS WITH SIDE MOUNTED BASKET**

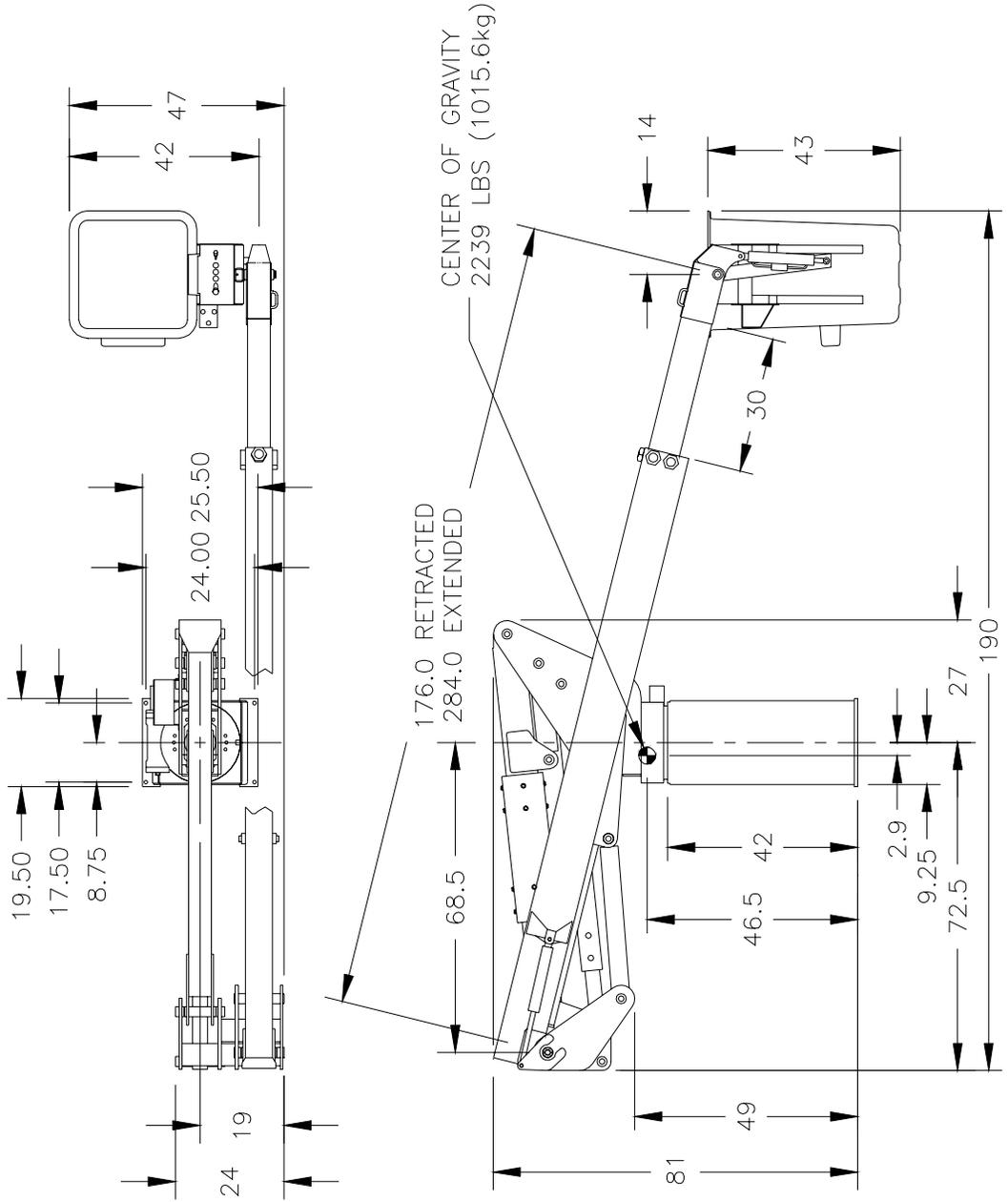
Basket Bottom Height ¹	36 ft.9 in.(11.19m)
Working Height ¹	41 ft.9 in.(12.72m)
Standard Basket Capacity	300 lbs.(136kg)
Maximum Basket Capacity	400 lbs.(181kg)
Maximum Horizontal Reach	25 ft.9 in.(7.86m)
Lower Boom Articulation	-6 ⁰ to 90 ⁰
Upper Boom Articulation	-14 ⁰ to 78 ⁰
Upper Boom Extension	108 in.(2.74m)
Insulation Gap Fully Retracted	30 in.(0.76m)
Insulation Gap Extended	42 in.(1.07m)
Stowed Travel Height ¹	10 ft.2 in.(3.10m)
Electrical System Voltage	12VDC
Rotation	540 ⁰ Non-Continuous
Hydraulic System Operating Pressure	2500 PSI(176kg/cm ²)
Unit Weight	2239 lbs.(1015.6kg)

OPERATING SPEEDS BASED ON 3.0GPM(11.4lpm)

Lower Boom Raise	16-18 Seconds
Lower Boom Lower	12-14 Seconds
Upper Boom Extend	17-19 Seconds
Upper Boom Retract	9-11 Seconds
Upper Boom Raise	24-27 Seconds
Upper Boom Lower	18-20 Seconds
Rotate 360 ⁰	65-80 Seconds

1. Based on 36 in (0.91m) chassis frame height.

UTL141A OVERALL DIMENSIONS
 SHOWN WITH HYDRAULIC LEVELED
 SIDE MOUNTED BASKET



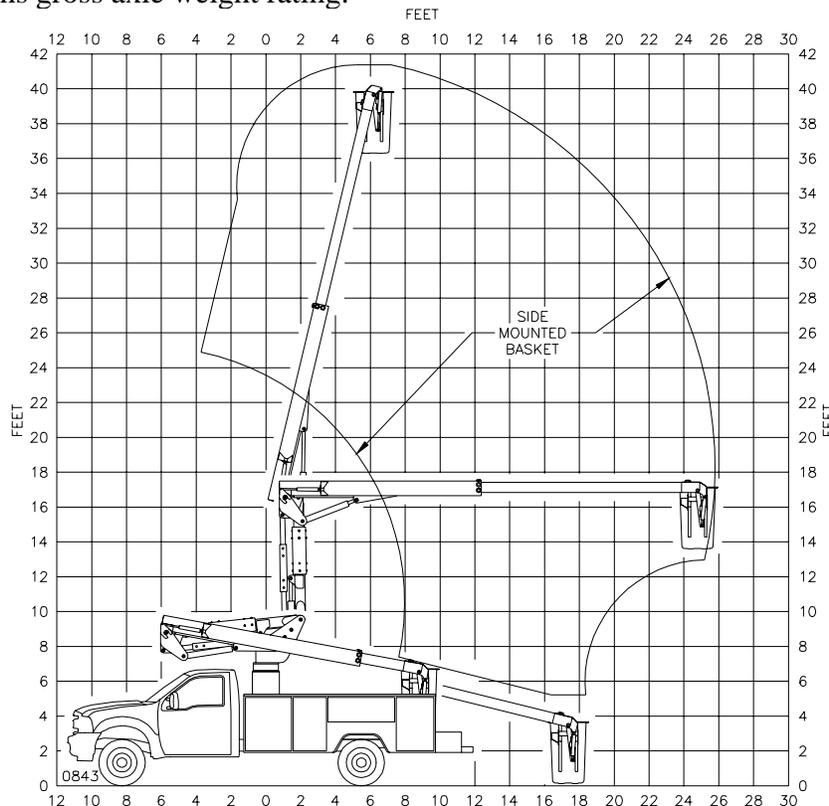
3.5 TYPICAL UTLI41A NUMERICAL SPECIFICATIONS WITH SIDE MOUNTED BASKET

Basket Bottom Height ¹	36 ft.5 in.(11.09m)
Working Height ¹	41 ft.5 in.(12.61m)
Maximum Horizontal Reach	25 ft.9 in.(7.86m)
Stowed Travel Height ¹	9 ft.10 in.(2.99m)
Approximate Curb Weight for Stability ²	11,750 lbs.(5330kg)

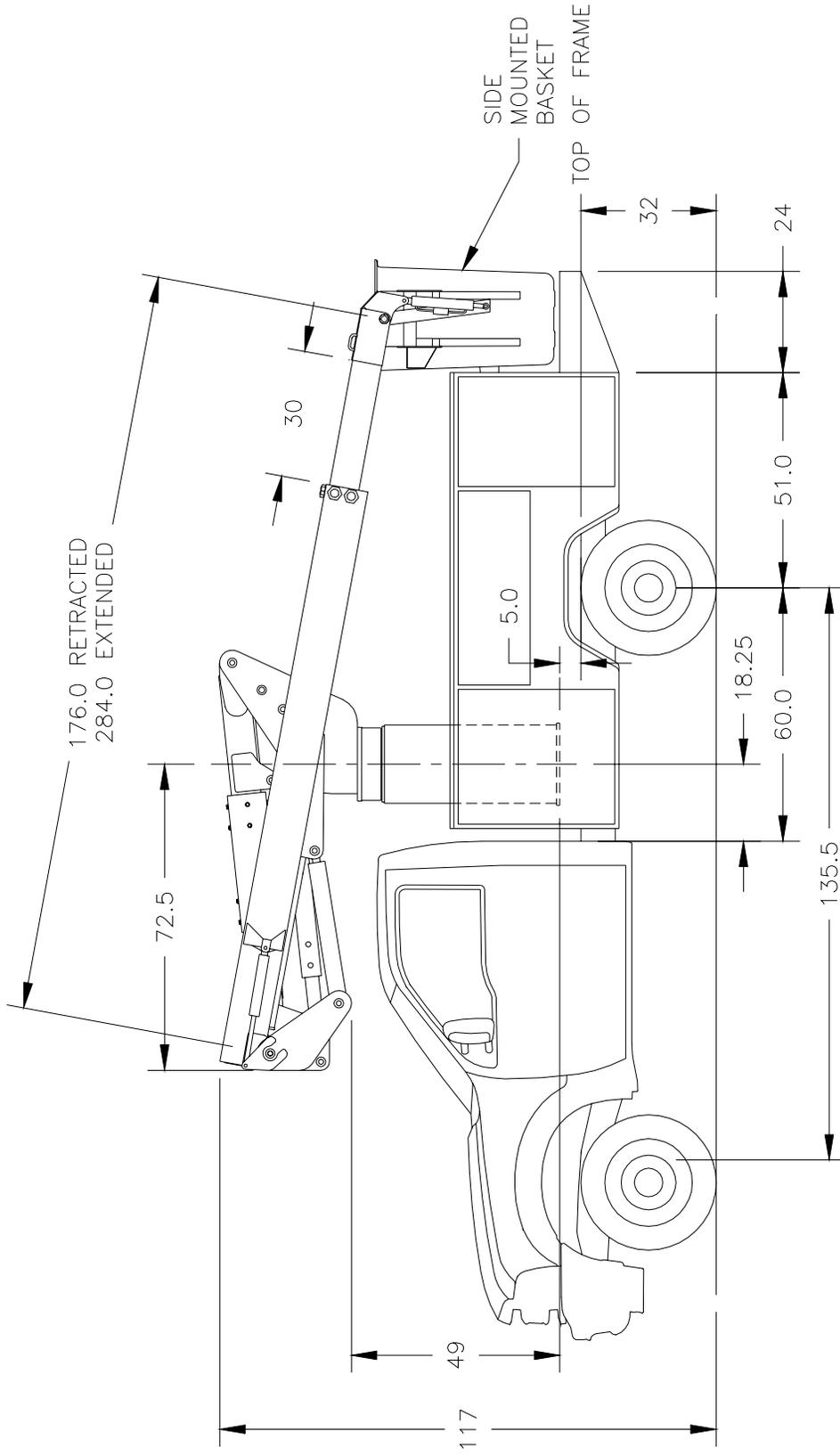
VEHICLE REQUIREMENTS

	<u>Minimum</u>	<u>Recommended</u>
GVWR ^{2,3}	15,000 lbs.(6804kg)	15,000 lbs.(6804kg)
Front GAWR ^{2,4}	5,000 lbs.(2268kg)	6,000 lbs.(2722kg)
Rear GAWR ^{2,4}	11,000 lbs.(4990kg)	11,000 lbs.(4990kg)
Cab to Rear Axle	60 in.(1.52m)	84 in.(2.13m)
Frame Section Modulus	8.0 in. ³ (131cm ³)	8.0 in. ³ (131cm ³)
RBM of Frame	280,000 in.-lbs.(31640N-m)	280,000 in.-lbs.(31640N-m)

1. Based on 32.0 in.(0.81m) chassis frame height.
2. Actual curb weight for stability and the required GVWR and GAWR can vary significantly with vehicle stiffness, suspension stiffness, vehicle wheelbase, aerial lift mounting location, body, accessories, ballast (if required), platform capacity and desired payload. Actual weight for stability must be determined by testing in accordance with the ANSI A92.2 standard.
3. GVWR means gross vehicle weight rating.
4. GAWR means gross axle weight rating.



UTL141A SHOWN ON FORD F550
WITH SIDE MOUNTED BASKET



**3.6 GENERAL UTLI46A NUMERICAL
SPECIFICATIONS WITH SIDE MOUNTED BASKET**

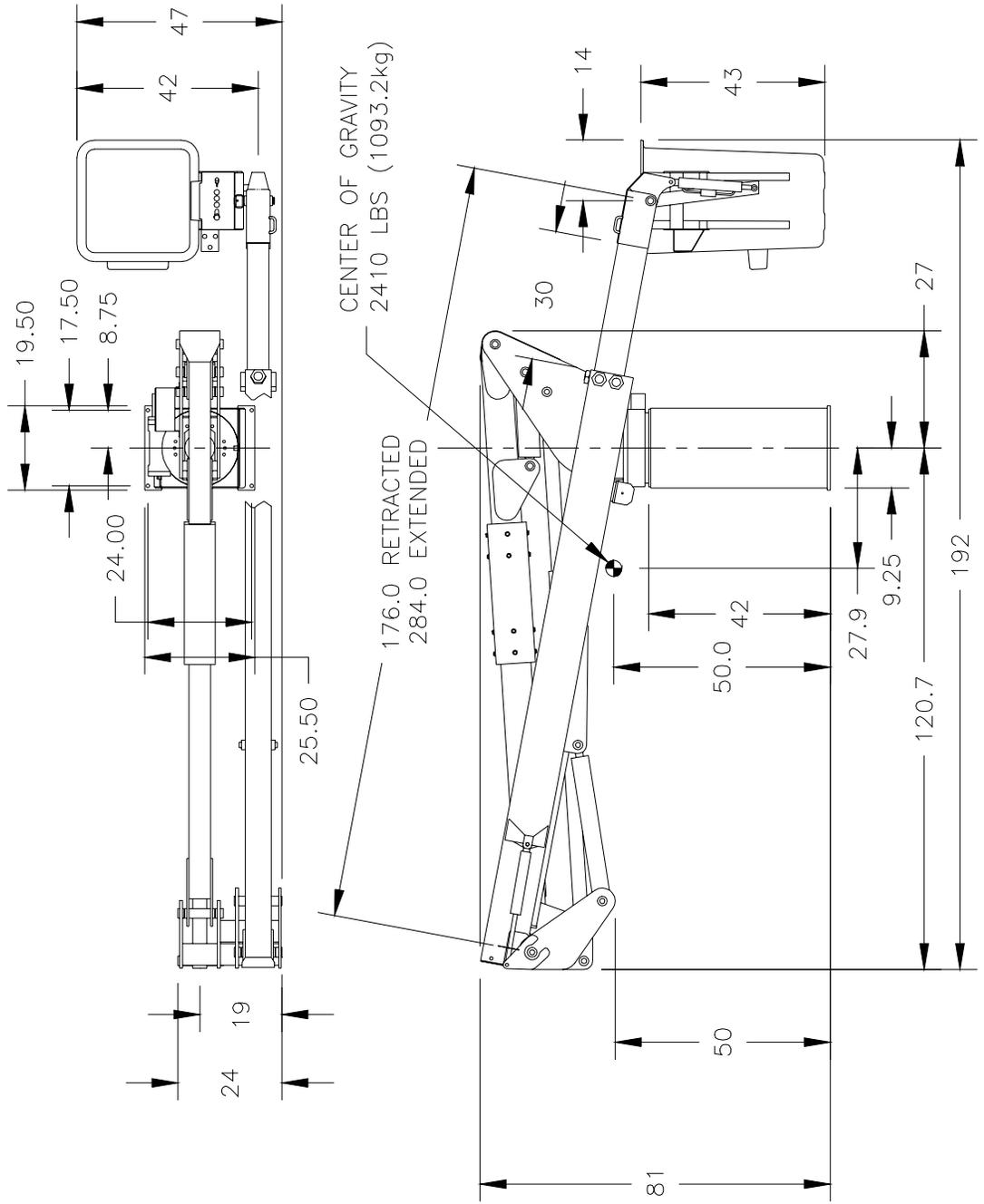
Basket Bottom Height ¹	40 ft.8 in.(12.40m)
Working Height ¹	45 ft.8 in.(13.92m)
Standard Basket Capacity	300 lbs.(136kg)
Maximum Basket Capacity	400 lbs.(181kg)
Maximum Horizontal Reach	25 ft.8 in.(7.84m)
Lower Boom Articulation	-4 ⁰ to 90 ⁰
Upper Boom Articulation	-14 ⁰ to 78 ⁰
Upper Boom Extension	108 in.(2.74m)
Insulation Gap Fully Retracted	30 in.(0.76m)
Insulation Gap Extended	42 in.(1.07m)
Stowed Travel Height ¹	10 ft.2 in.(3.10m)
Electrical System Voltage	12VDC
Rotation	540 ⁰ Non-Continuous
Hydraulic System Operating Pressure	2500 PSI(176kg/cm ²)
Unit Weight	2410 lbs.(1093.2kg)

OPERATING SPEEDS BASED ON 3.0GPM(11.4lpm)

Lower Boom Raise	19-21 Seconds
Lower Boom Lower	16-18 Seconds
Upper Boom Extend	17-19 Seconds
Upper Boom Retract	9-11 Seconds
Upper Boom Raise	24-27 Seconds
Upper Boom Lower	18-20 Seconds
Rotate 360 ⁰	65-80 Seconds

1. Based on 36 in (0.91m) chassis frame height.

UTLI46A OVERALL DIMENSIONS
 SHOWN WITH HYDRAULICALLY LEVELED
 SIDE MOUNTED BASKET



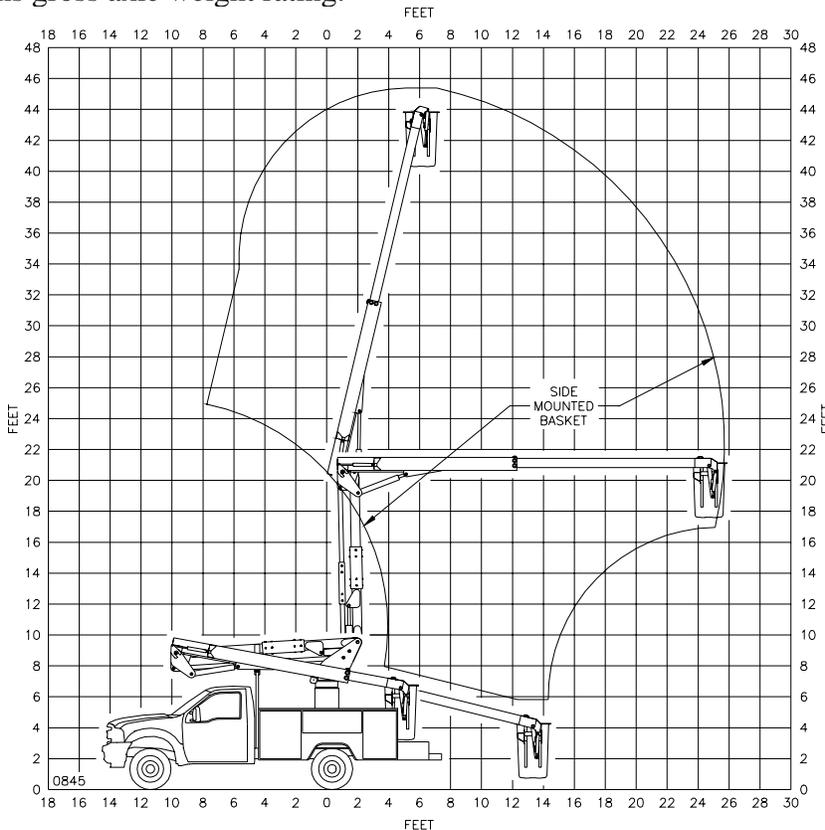
3.7 TYPICAL UTLI46A NUMERICAL SPECIFICATIONS WITH SIDE MOUNTED BASKET

Basket Bottom Height ¹	40 ft.4 in.(12.29m)
Working Height ¹	45 ft.4 in.(13.82m)
Maximum Horizontal Reach	25 ft.8 in.(7.84m)
Stowed Travel Height ¹	9 ft.6 in.(2.90m)
Approximate Curb Weight for Stability ²	12,250 lbs.(5557kg)

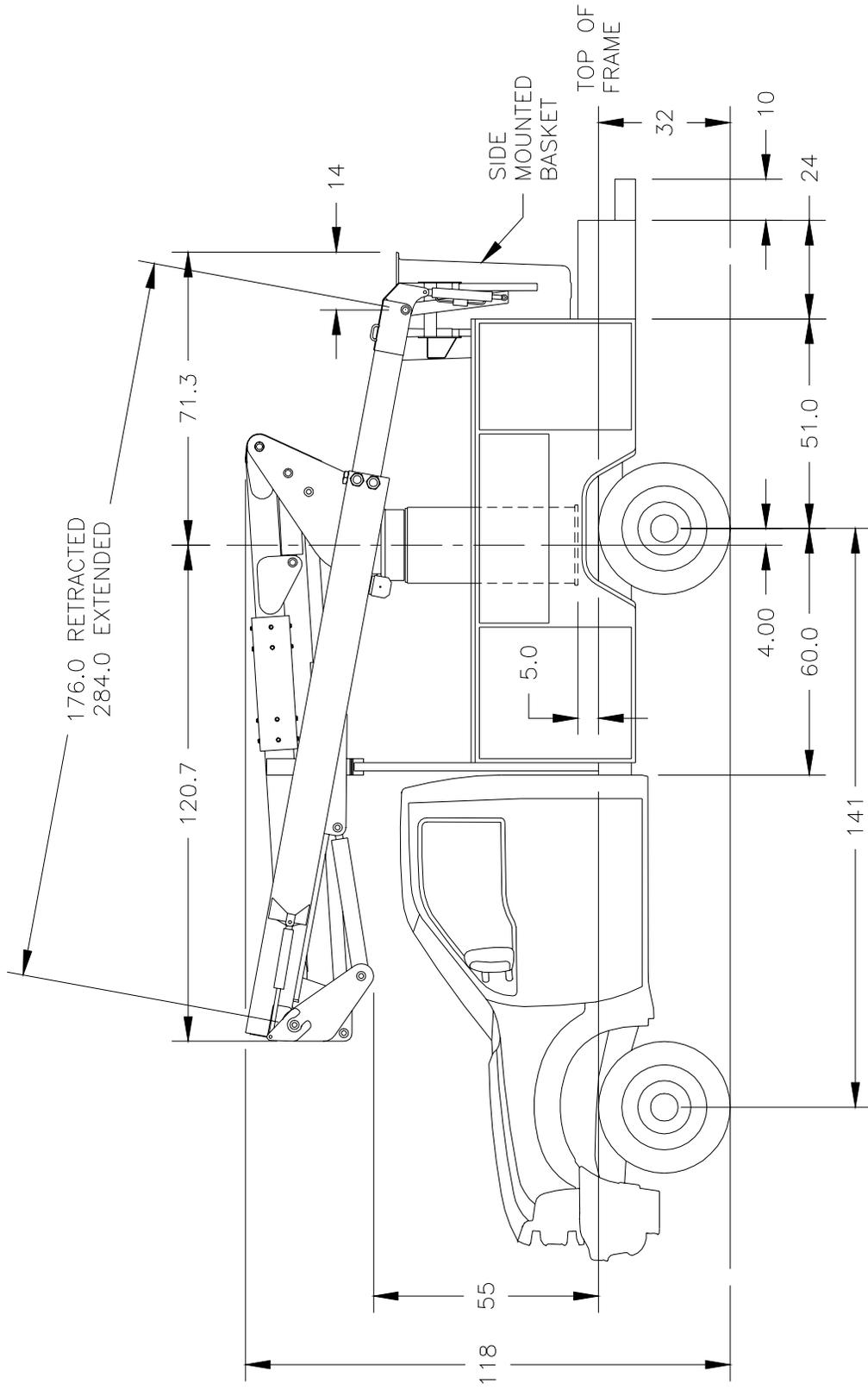
VEHICLE REQUIREMENTS

	<u>Minimum</u>	<u>Recommended</u>
GVWR ^{2,3}	15,000 lbs.(6804kg)	17,500 lbs.(7938kg)
Front GAWR ^{2,4}	5,000 lbs.(2268kg)	6,000 lbs.(2722kg)
Rear GAWR ^{2,4}	11,000 lbs.(4990kg)	13,500 lbs.(6123kg)
Cab to Rear Axle	60 in.(1.52m)	84 in.(2.13m)
Frame Section Modulus	8.0 in. ³ (131cm ³)	8.0 in. ³ (131cm ³)
RBM of Frame	280,000 in.-lbs.(31640N-m)	280,000 in.-lbs.(31640N-m)

1. Based on 32.0 in.(0.81m) chassis frame height.
2. Actual curb weight for stability and the required GVWR and GAWR can vary significantly with vehicle stiffness, suspension stiffness, vehicle wheelbase, aerial lift mounting location, body, accessories, ballast (if required), platform capacity and desired payload. Actual weight for stability must be determined by testing in accordance with the ANSI A92.2 standard.
3. GVWR means gross vehicle weight rating.
4. GAWR means gross axle weight rating.



UTL146A SHOWN ON FORD F550
WITH SIDE MOUNTED BASKET



**3.8 GENERAL UTLI41A NUMERICAL
SPECIFICATIONS WITH END MOUNTED BASKET**

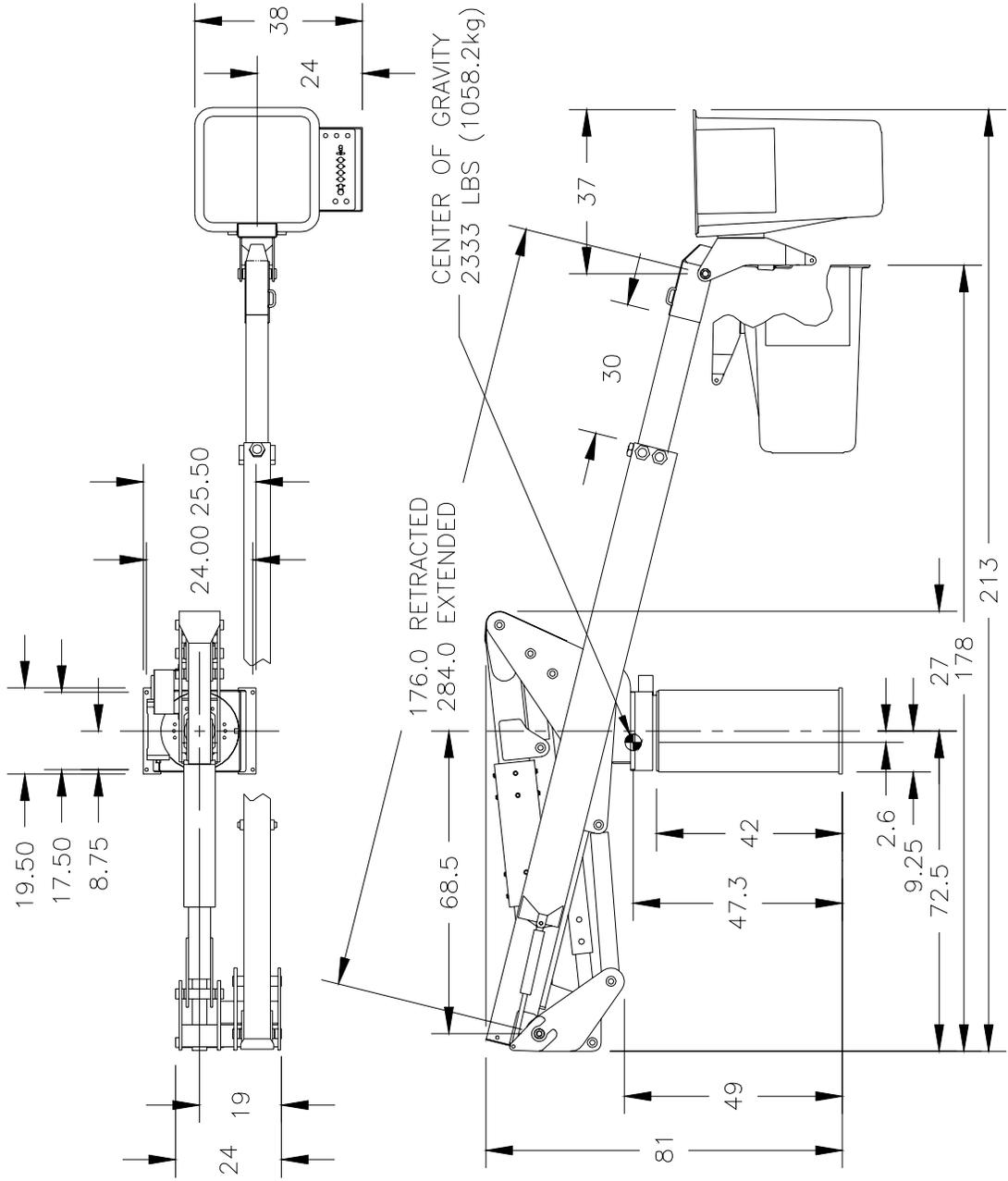
Basket Bottom Height ¹	36 ft.9 in.(11.19m)
Working Height ¹	41 ft.9 in.(12.72m)
Standard Basket Capacity	300 lbs.(136kg)
Maximum Basket Capacity	400 lbs.(181kg)
Maximum Horizontal Reach	27 ft.9 in.(8.46m)
Lower Boom Articulation	-6 ⁰ to 90 ⁰
Upper Boom Articulation	-14 ⁰ to 78 ⁰
Upper Boom Extension	108 in.(3.05m)
Insulation Gap Fully Retracted	30 in.(0.76m)
Insulation Gap Extended	42 in.(1.07m)
Stowed Travel Height ¹	10 ft.2 in.(3.10m)
Electrical System Voltage	12VDC
Rotation	540 ⁰ Non-Continuous
Hydraulic System Operating Pressure	2500 PSI(176kg/cm ²)
Unit Weight	2333 lbs.(1058.2kg)

OPERATING SPEEDS BASED ON 3.0GPM(11.4lpm)

Lower Boom Raise	16-18 Seconds
Lower Boom Lower	12-14 Seconds
Upper Boom Extend	17-19 Seconds
Upper Boom Retract	9-11 Seconds
Upper Boom Raise	24-27 Seconds
Upper Boom Lower	18-20 Seconds
Rotate 360 ⁰	65-80 Seconds

1. Based on 36 in.(0.91m) chassis frame height.

UTL141A OVERALL DIMENSIONS
 SHOWN WITH HYDRAULICALLY LEVELED
 END MOUNTED BASKET



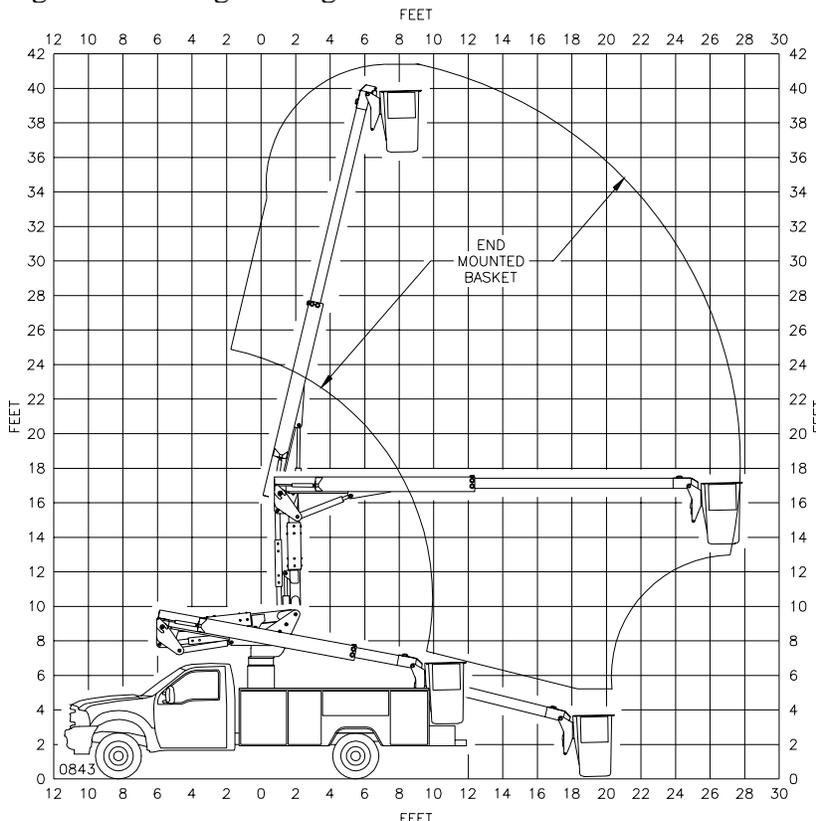
3.9 TYPICAL UTLI41A NUMERICAL SPECIFICATIONS **WITH END MOUNTED BASKET**

Basket Bottom Height ¹	36 ft.5 in.(11.10m)
Working Height ¹	41 ft.5 in.(12.62m)
Maximum Horizontal Reach	27 ft.9 in.(8.46m)
Stowed Travel Height ¹	9 ft.10 in.(3.00m)
Approximate Curb Weight for Stability ²	12,200 lbs.(5534kg)

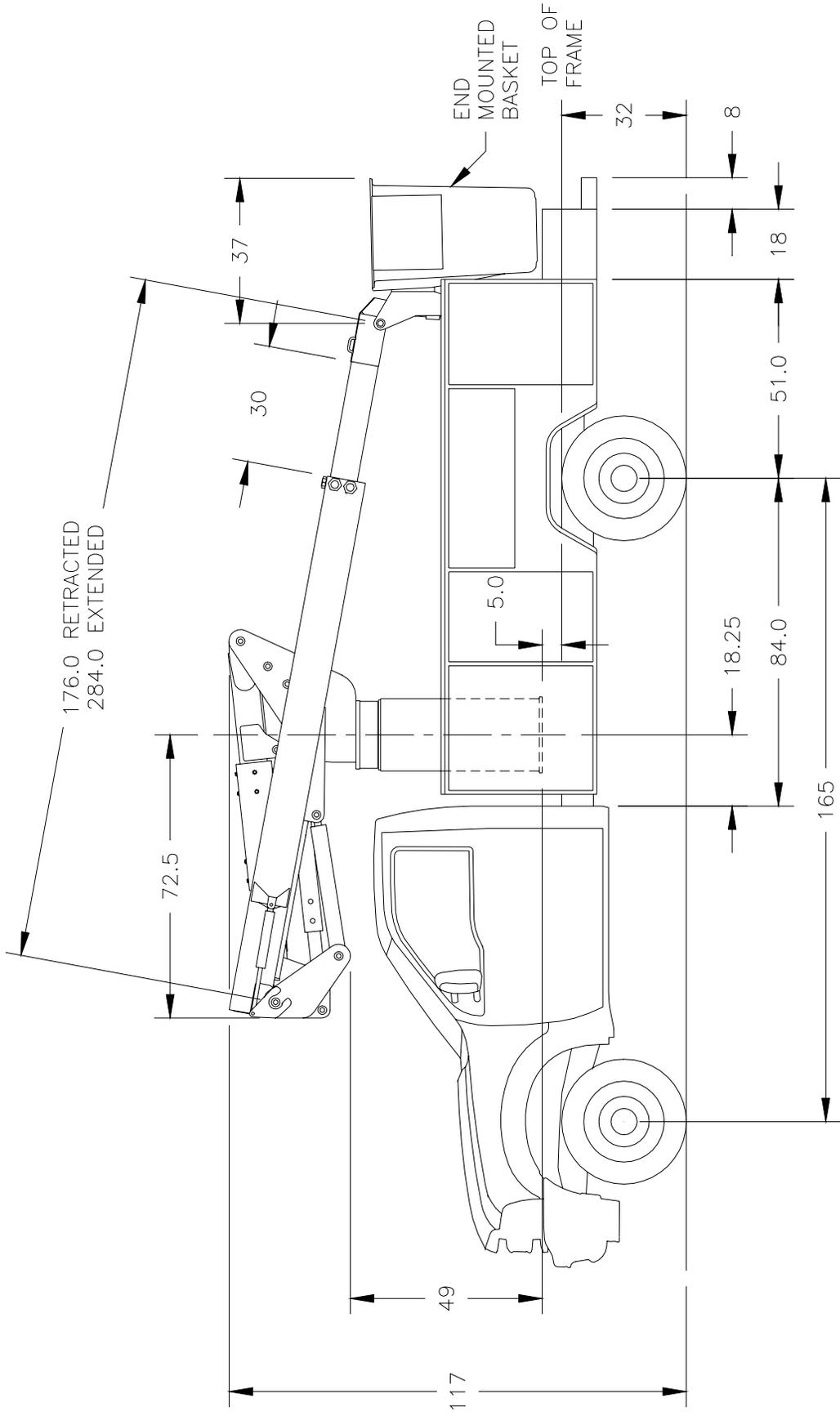
VEHICLE REQUIREMENTS

	<u>Minimum</u>	<u>Recommended</u>
GVWR ³	15,000 lbs.(6804kg)	15,000 lbs.(6804kg)
Front GAWR ⁴	5,000 lbs.(2268kg)	6,000 lbs.(2722kg)
Rear GAWR ⁴	11,000 lbs.(4990kg)	11,000 lbs.(4990kg)
Cab to Rear Axle	60 in.(1.52m)	84 in.(2.13m)
Frame Section Modulus	8.0 in. ² (131cm ²)	8.0 in. ² (131cm ²)
RBM of Frame	280,000 in.-lbs.(31640N-m)	280,000 in.-lbs.(31640N-m)

1. Based on 32.0 in.(0.81m) chassis frame height.
2. Actual curb weight for stability and the required GVWR and GAWR can vary significantly with vehicle stiffness, suspension stiffness, vehicle wheelbase, aerial lift mounting location, body, accessories, ballast (if required), platform capacity and desired payload. Actual weight for stability must be determined by testing in accordance with the ANSI A92.2 standard.
3. GVWR means gross vehicle weight rating.
4. GAWR means gross axle weight rating.



UTLI41A SHOWN ON FORD F550
WITH END MOUNTED BASKET



**3.10 GENERAL UTLI46A NUMERICAL
SPECIFICATIONS WITH END MOUNTED BASKET**

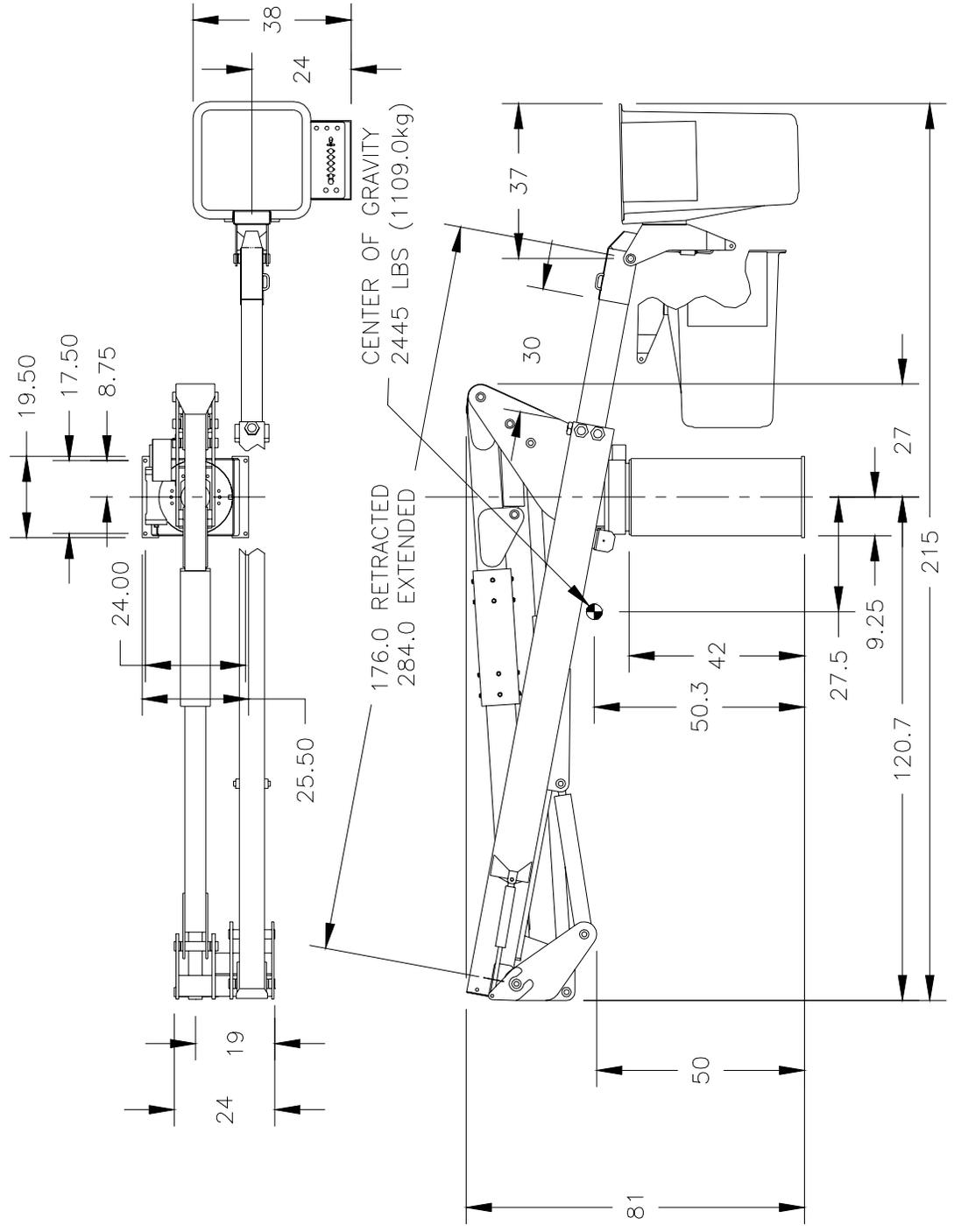
Basket Bottom Height ¹	40 ft.9 in.(12.41m)
Working Height ¹	45 ft.9 in.(13.94m)
Standard Basket Capacity	300 lbs.(136kg)
Maximum Basket Capacity	400 lbs.(181kg)
Maximum Horizontal Reach	27 ft.8 in.(8.43m)
Lower Boom Articulation	-4 ⁰ to 90 ⁰
Upper Boom Articulation	-14 ⁰ to 78 ⁰
Upper Boom Extension	108 in.(3.05m)
Insulation Gap Fully Retracted	30 in.(0.76m)
Insulation Gap Extended	42 in.(1.07m)
Stowed Travel Height ¹	10 ft.2 in.(3.10m)
Electrical System Voltage	12VDC
Rotation	540 ⁰ Non-Continuous
Hydraulic System Operating Pressure	2500 PSI(176kg/cm ²)
Unit Weight	2445 lbs.(1109.0kg)

OPERATING SPEEDS BASED ON 3.0GPM(11.4lpm)

Lower Boom Raise	19-21 Seconds
Lower Boom Lower	16-18 Seconds
Upper Boom Extend	17-19 Seconds
Upper Boom Retract	9-11 Seconds
Upper Boom Raise	24-27 Seconds
Upper Boom Lower	18-20 Seconds
Rotate 360 ⁰	65-80 Seconds

1. Based on 36 in.(0.91m) chassis frame height.

UTLI46A OVERALL DIMENSIONS
 SHOWN WITH HYDRAULICALLY LEVELED
 END MOUNTED BASKET



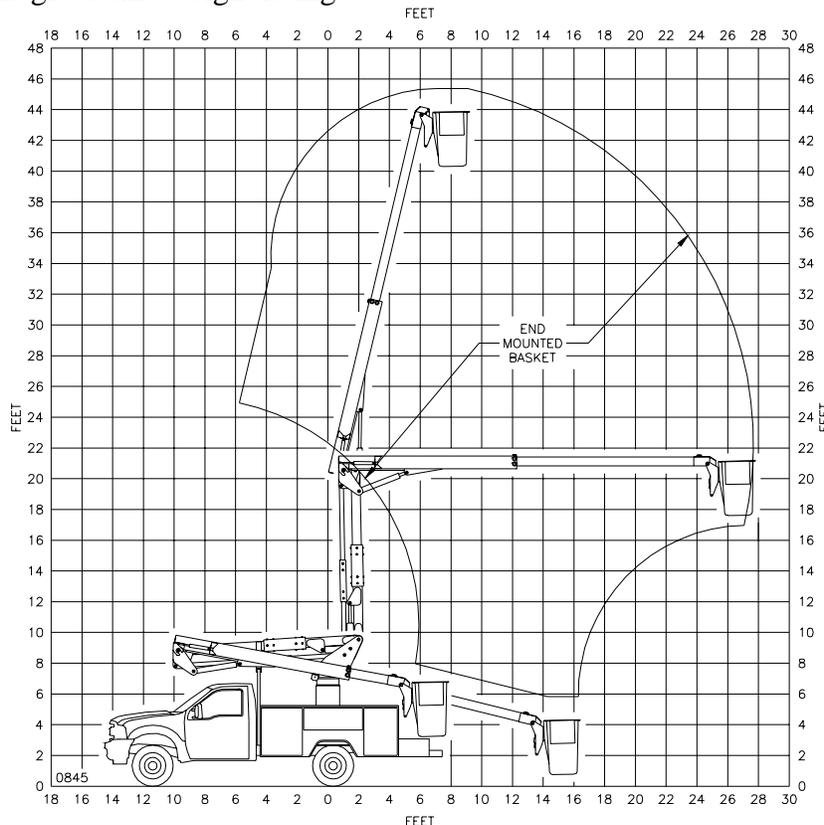
3.11 TYPICAL UTLI46A NUMERICAL SPECIFICATIONS WITH END MOUNTED BASKET

Basket Bottom Height ¹	40 ft.5 in.(12.32m)
Working Height ¹	45 ft.5 in.(13.84m)
Maximum Horizontal Reach	27 ft.9 in.(8.46m)
Stowed Travel Height ¹	9 ft.10 in.(3.00m)
Approximate Curb Weight for Stability ²	12,700 lbs.(5761kg)

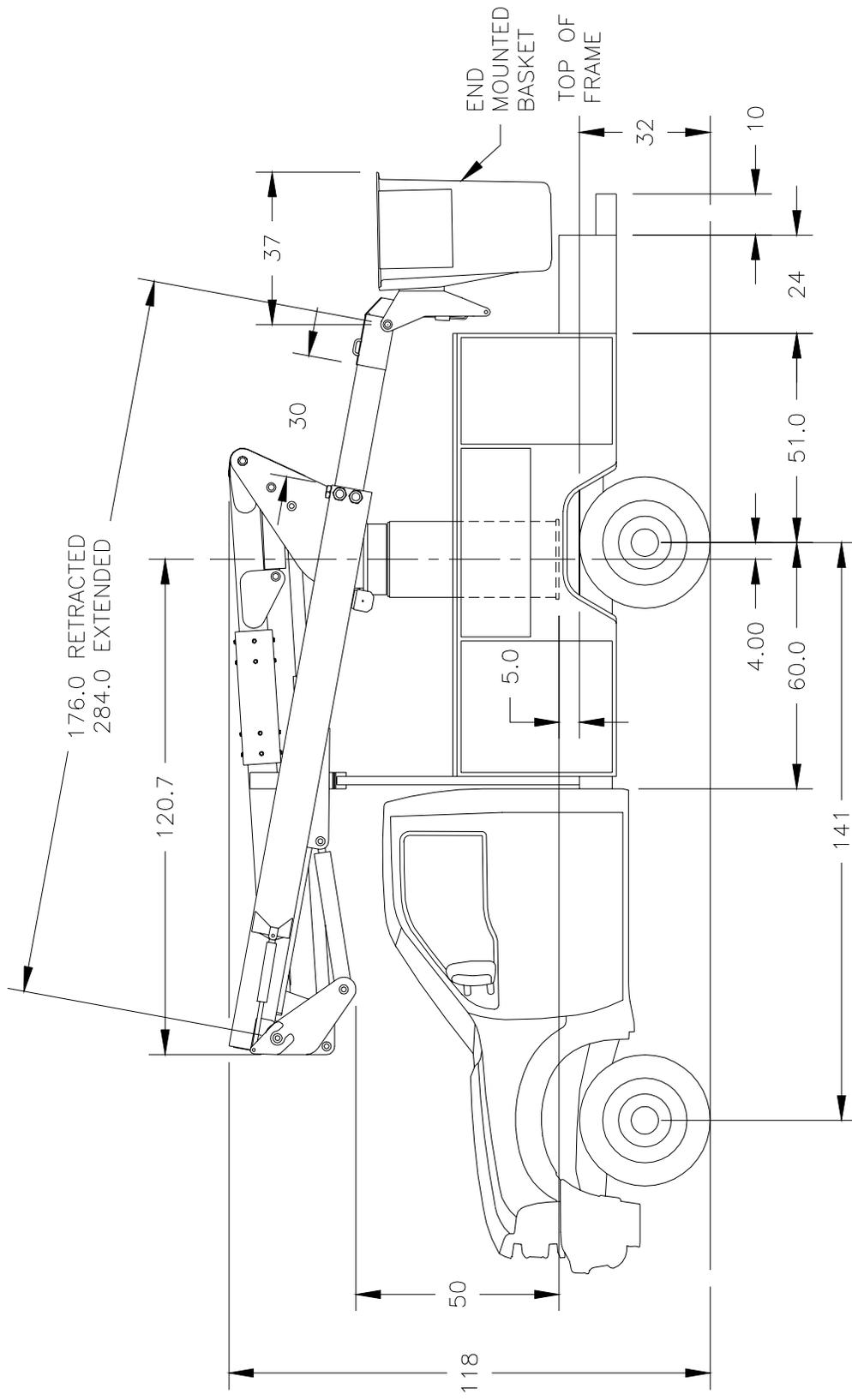
VEHICLE REQUIREMENTS

	<u>Minimum</u>	<u>Recommended</u>
GVWR ³	15,000 lbs.(6804kg)	17,500 lbs.(7938kg)
Front GAWR ⁴	5,000 lbs.(2268kg)	6,000 lbs.(2722kg)
Rear GAWR ⁴	11,000 lbs.(4990kg)	13,500 lbs.(6123kg)
Cab to Rear Axle	60 in.(1.52m)	84 in.(2.13m)
Frame Section Modulus	8.0 in. ² (131cm ²)	8.0 in. ² (131cm ²)
RBM of Frame	280,000 in.-lbs.(31640N-m)	280,000 in.-lbs.(31640N-m)

1. Based on 32.0 in.(0.81m) chassis frame height.
2. Actual curb weight for stability and the required GVWR and GAWR can vary significantly with vehicle stiffness, suspension stiffness, vehicle wheelbase, aerial lift mounting location, body, accessories, ballast (if required), platform capacity and desired payload. Actual weight for stability must be determined by testing in accordance with the ANSI A92.2 standard.
3. GVWR means gross vehicle weight rating.
4. GAWR means gross axle weight rating.



UTLI46A SHOWN ON FORD F550
WITH END MOUNTED BASKET



3.12 GENERAL UTLI41A NUMERICAL SPECIFICATIONS
WITH END MOUNTED BASKET AND MANUAL ROTATOR

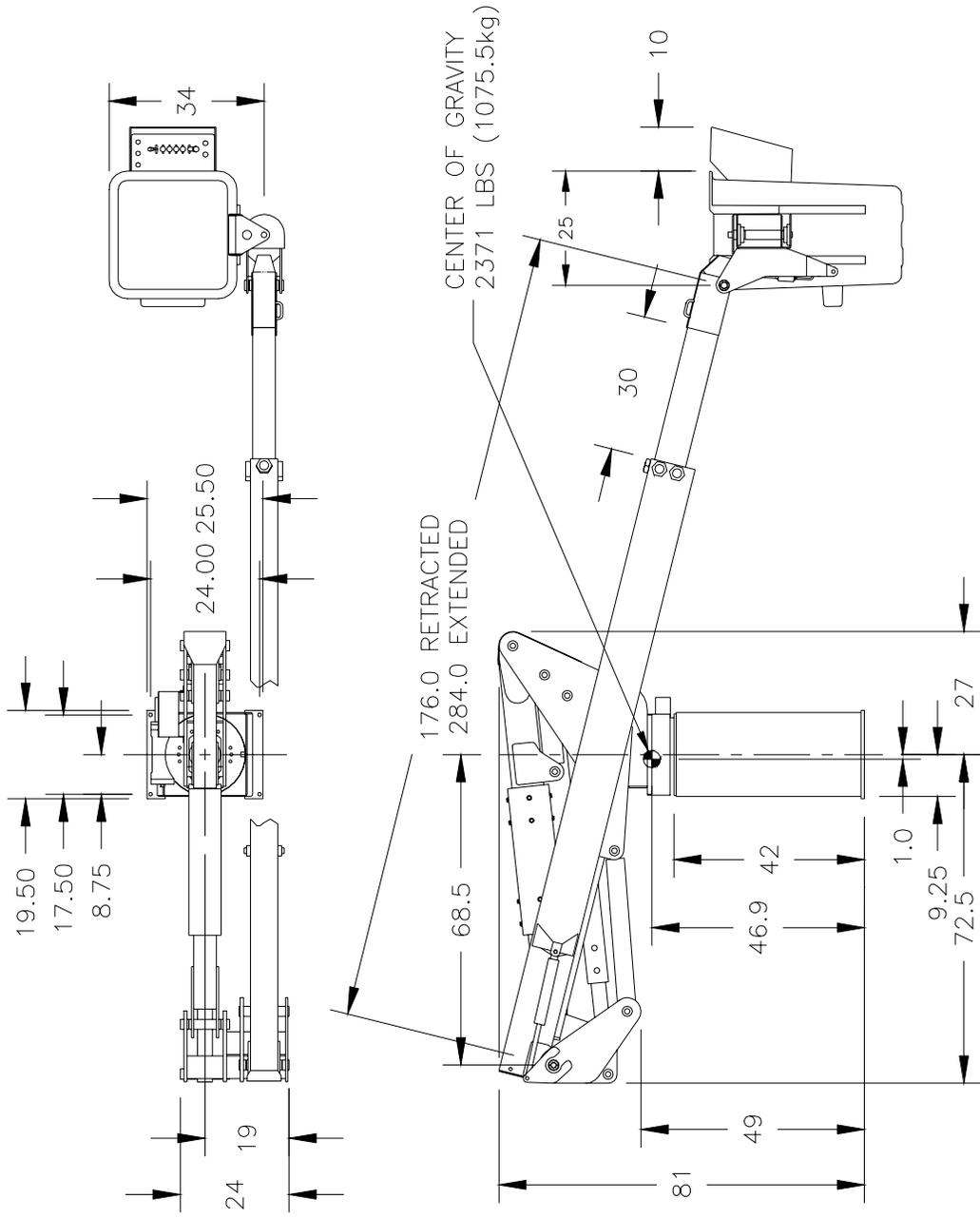
Basket Bottom Height ¹	36 ft.9 in.(11.21m)
Working Height ¹	41 ft.9in.(12.73m)
Standard Basket Capacity	300 lbs.(136kg)
Maximum Basket Capacity	350 lbs.(159kg)
Maximum Horizontal Reach	28 ft.5 in.(8.65m)
Lower Boom Articulation	-6 ⁰ to 90 ⁰
Upper Boom Articulation	-14 ⁰ to 78 ⁰
Upper Boom Extension	108 in.(2.74m)
Insulation Gap Fully Retracted	30in.(0.76m)
Insulation Gap Extended	42 in.(1.07m)
Stowed Travel Height ¹	10 ft.2 in.(3.10m)
Electrical System Voltage	12VDC
Rotation	540 ⁰ Non-Continuous
Hydraulic System Operating Pressure	2500 PSI(176kg/cm ²)
Unit Weight	2371 lbs.(1075.5kg)

OPERATING SPEEDS BASED ON 3.0GPM(11.4lpm)

Lower Boom Raise	16-18 Seconds
Lower Boom Lower	12-14 Seconds
Upper Boom Extend	17-19 Seconds
Upper Boom Retract	9-11 Seconds
Upper Boom Raise	24-27 Seconds
Upper Boom Lower	18-20 Seconds
Rotate 360 ⁰	65-80 Seconds

1. Based on 36 in (.91m) chassis frame height.

UTLI41A OVERALL DIMENSIONS
 SHOWN WITH HYDRAULICALLY LEVELED
 END MOUNTED BASKET AND MANUAL ROTATOR



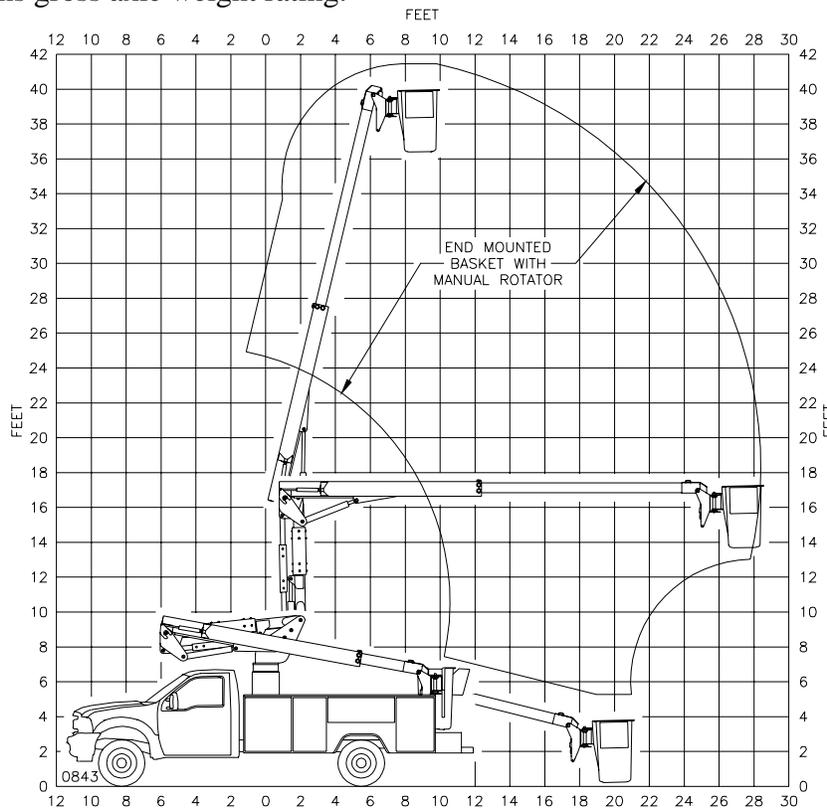
3.13 TYPICAL UTLI41A NUMERICAL SPECIFICATIONS WITH END MOUNTED BASKET AND MANUAL ROTATOR

Basket Bottom Height ¹	36 ft.5 in.(11.10m)
Working Height ¹	41 ft.5 in.(12.62m)
Maximum Horizontal Reach	28 ft.5 in.(8.65m)
Stowed Travel Height ¹	9 ft.10 in.(3.00m)
Approximate Curb Weight for Stability ²	12,750 lbs.(5783kg)

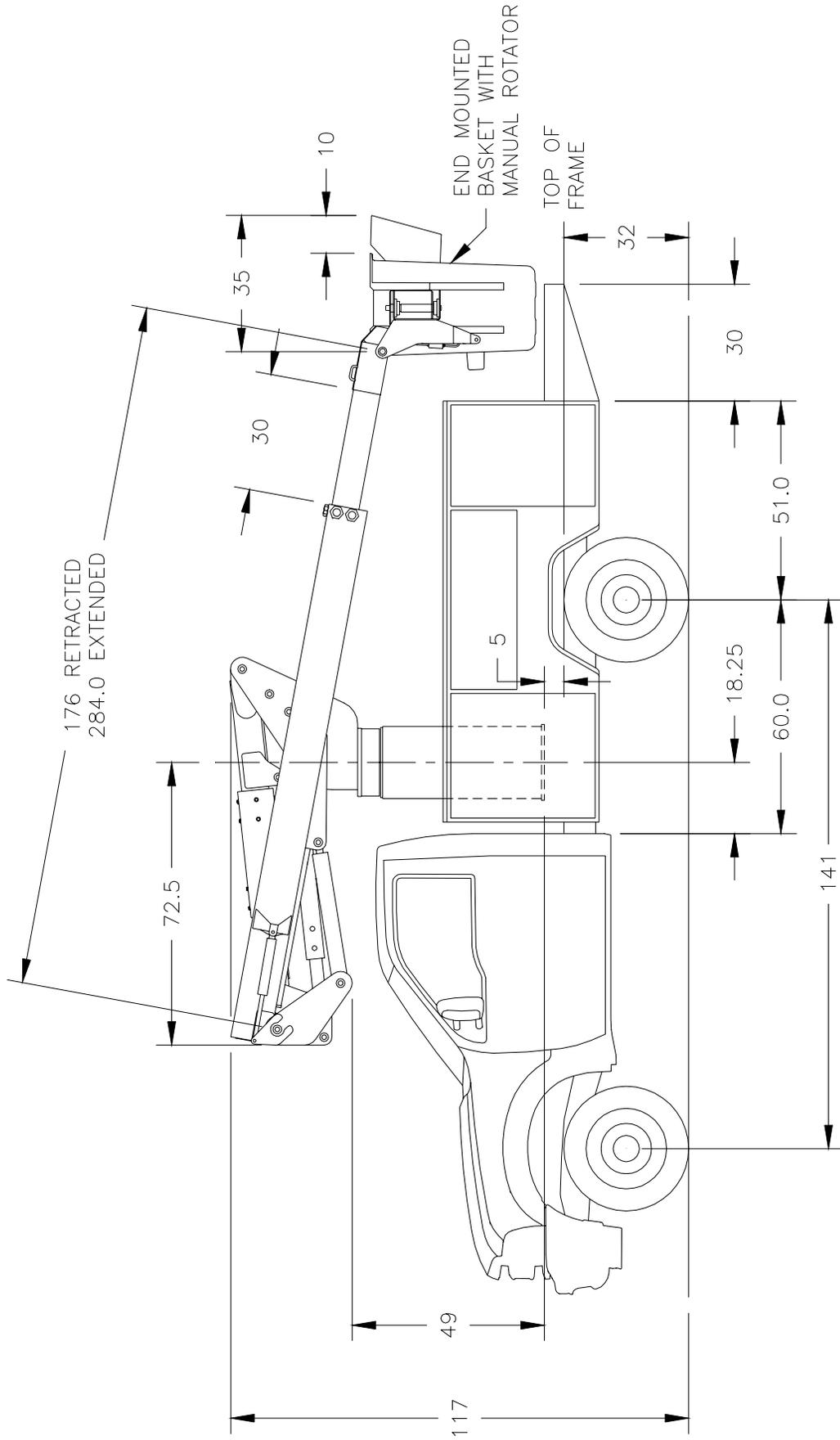
VEHICLE REQUIREMENTS

	<u>Minimum</u>	<u>Recommended</u>
GVWR ^{2,3}	15,000 lbs.(6804kg)	15,000 lbs.(6804kg)
Front GAWR ^{2,4}	5,000 lbs.(2268kg)	6,000 lbs.(2722kg)
Rear GAWR ^{2,4}	11,000 lbs.(4990kg)	11,000 lbs.(4990kg)
Cab to Rear Axle	60 in.(1.52m)	84 in.(2.13m)
Frame Section Modulus	8.0 in. ³ (131cm ³)	8.0 in. ³ (131cm ³)
RBM of Frame	280,000 in.-lbs.(31640N-m)	280,000 in.-lbs.(31640N-m)

1. Based on 32 in.(0.81m) chassis frame height.
2. Actual curb weight for stability and the required GVWR and GAWR can vary significantly with vehicle stiffness, suspension stiffness, vehicle wheelbase, aerial lift mounting location, body, accessories, ballast (if required), platform capacity and desired payload. Actual weight for stability must be determined by testing in accordance with the ANSI A92.2 standard.
3. GVWR means gross vehicle weight rating.
4. GAWR means gross axle weight rating.



UTLI41A SHOWN ON FORD F550
WITH END MOUNTED BASKET AND MANUAL ROTATOR



3.14 GENERAL UTLI46A NUMERICAL SPECIFICATIONS
WITH END MOUNTED BASKET AND MANUAL ROTATOR

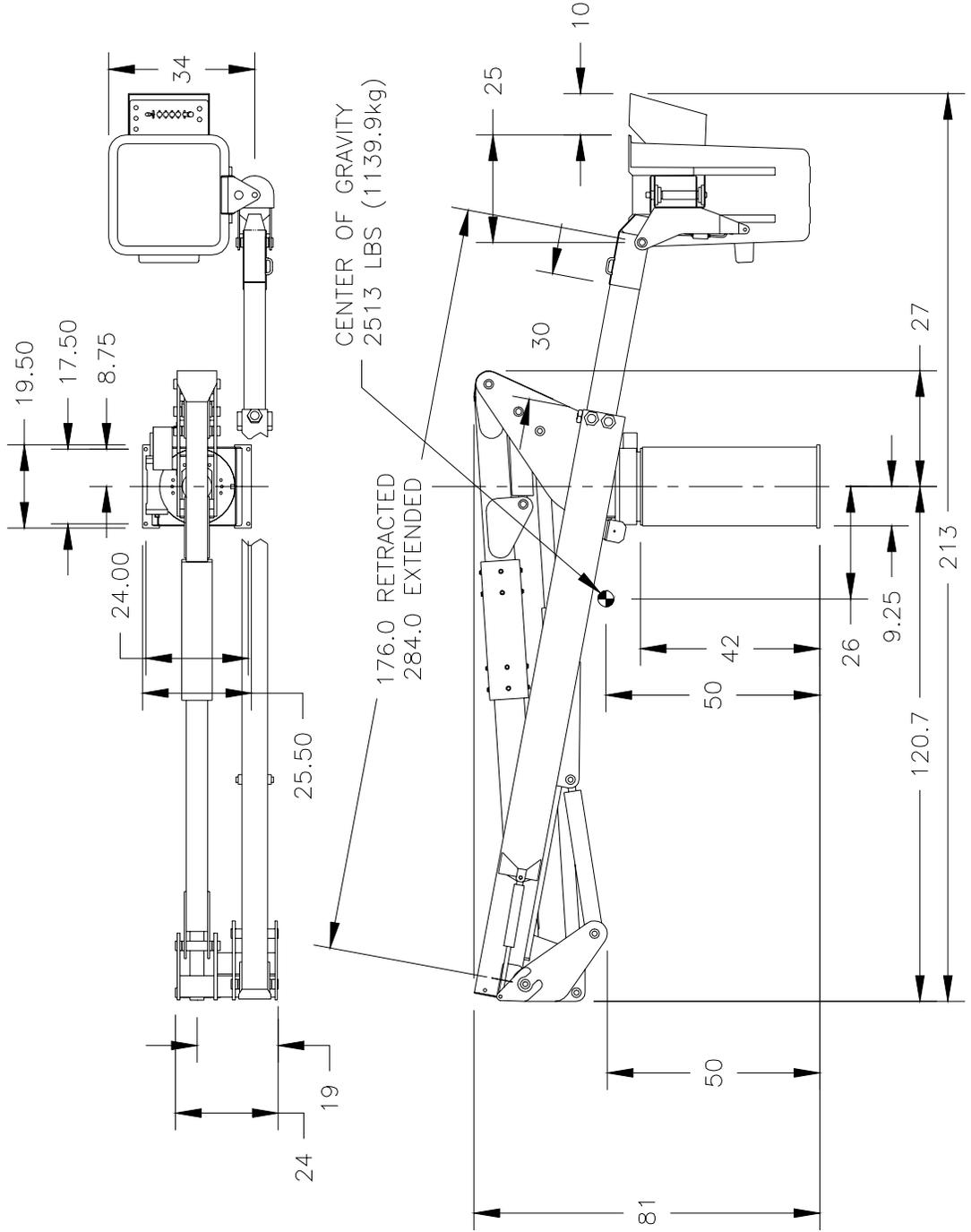
Basket Bottom Height ¹	40 ft.9 in.(12.43m)
Working Height ¹	45 ft.9in.(13.95m)
Standard Basket Capacity	300 lbs.(136kg)
Maximum Basket Capacity	350 lbs.(159kg)
Maximum Horizontal Reach	28 ft.4 in.(8.63m)
Lower Boom Articulation	-4 ⁰ to 90 ⁰
Upper Boom Articulation	-14 ⁰ to 78 ⁰
Upper Boom Extension	108 in.(2.74m)
Insulation Gap Fully Retracted	30in.(0.76m)
Insulation Gap Extended	42 in.(1.07m)
Stowed Travel Height ¹	10 ft.2 in.(3.10m)
Electrical System Voltage	12VDC
Rotation	540 ⁰ Non-Continuous
Hydraulic System Operating Pressure	2500 PSI(176kg/cm ²)
Unit Weight	2513 lbs.(1139.9kg)

OPERATING SPEEDS BASED ON 3.0GPM(11.4lpm)

Lower Boom Raise	19-21 Seconds
Lower Boom Lower	16-18 Seconds
Upper Boom Extend	17-19 Seconds
Upper Boom Retract	9-11 Seconds
Upper Boom Raise	24-27 Seconds
Upper Boom Lower	18-20 Seconds
Rotate 360 ⁰	65-80 Seconds

1. Based on 36 in (.91m) chassis frame height.

UTLI46A OVERALL DIMENSIONS
 SHOWN WITH HYDRAULICALLY LEVELED
 END MOUNTED BASKET AND MANUAL ROTATOR



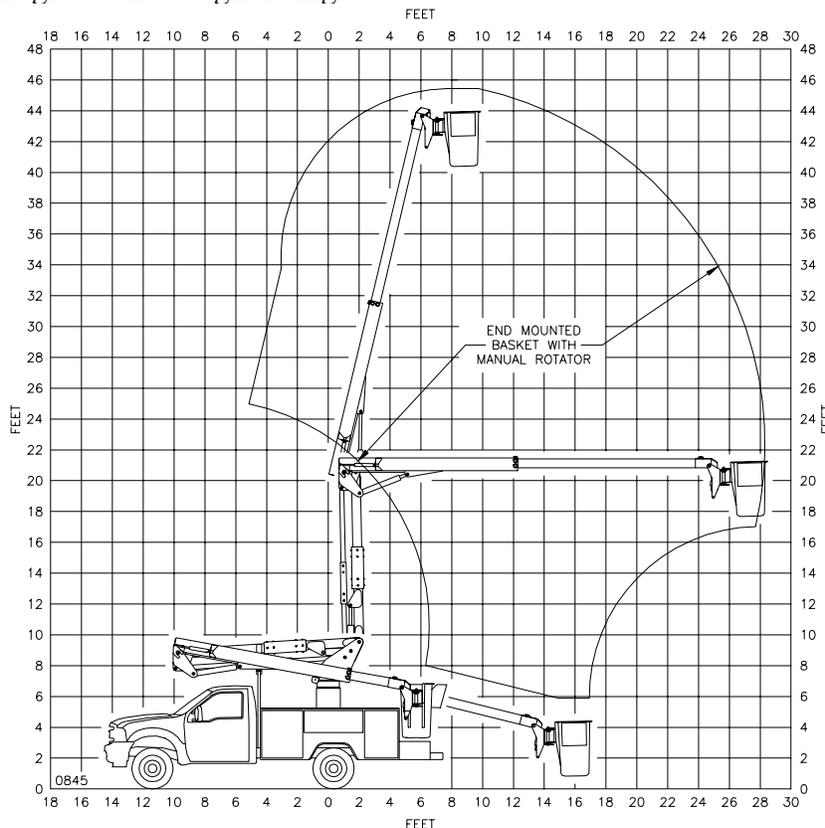
3.15 TYPICAL UTLI46A NUMERICAL SPECIFICATIONS WITH END MOUNTED BASKET AND MANUAL ROTATOR

Basket Bottom Height ¹	40 ft.5 in.(12.32m)
Working Height ¹	45 ft.5 in.(13.84m)
Maximum Horizontal Reach	28 ft.4 in.(8.63m)
Stowed Travel Height ¹	9 ft.10 in.(3.00m)
Approximate Curb Weight for Stability ²	13,250 lbs.(6010kg)

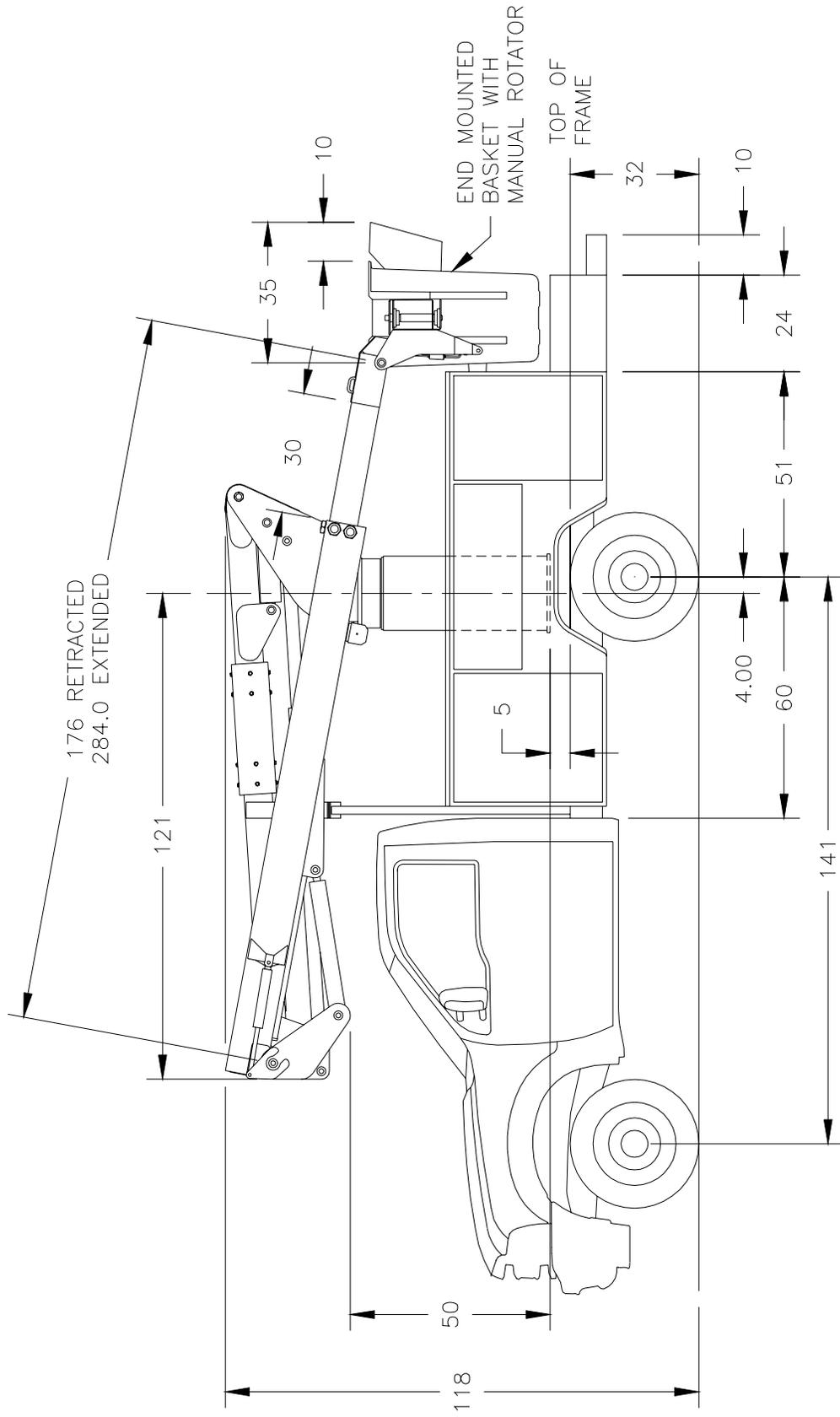
VEHICLE REQUIREMENTS

	<u>Minimum</u>	<u>Recommended</u>
GVWR ^{2,3}	15,000 lbs.(6804kg)	17,500 lbs.(7938kg)
Front GAWR ^{2,4}	5,000 lbs.(2268kg)	6,000 lbs.(2722kg)
Rear GAWR ^{2,4}	11,000 lbs.(4990kg)	13,500 lbs.(6123kg)
Cab to Rear Axle	60 in.(1.52m)	84 in.(2.13m)
Frame Section Modulus	8.0 in. ³ (131cm ³)	8.0 in. ³ (131cm ³)
RBM of Frame	280,000 in.-lbs.(31640N-m)	280,000 in.-lbs.(31640N-m)

1. Based on 32 in.(0.81m) chassis frame height.
2. Actual curb weight for stability and the required GVWR and GAWR can vary significantly with vehicle stiffness, suspension stiffness, vehicle wheelbase, aerial lift mounting location, body, accessories, ballast (if required), platform capacity and desired payload. Actual weight for stability must be determined by testing in accordance with the ANSI A92.2 standard.
3. GVWR means gross vehicle weight rating.
4. GAWR means gross axle weight rating.



UTL146A SHOWN ON FORD F550
WITH END MOUNTED BASKET AND MANUAL ROTATOR



3.16 GENERAL UTLI41A NUMERICAL SPECIFICATIONS
WITH END MOUNTED BASKET AND HYDRAULIC ROTATOR

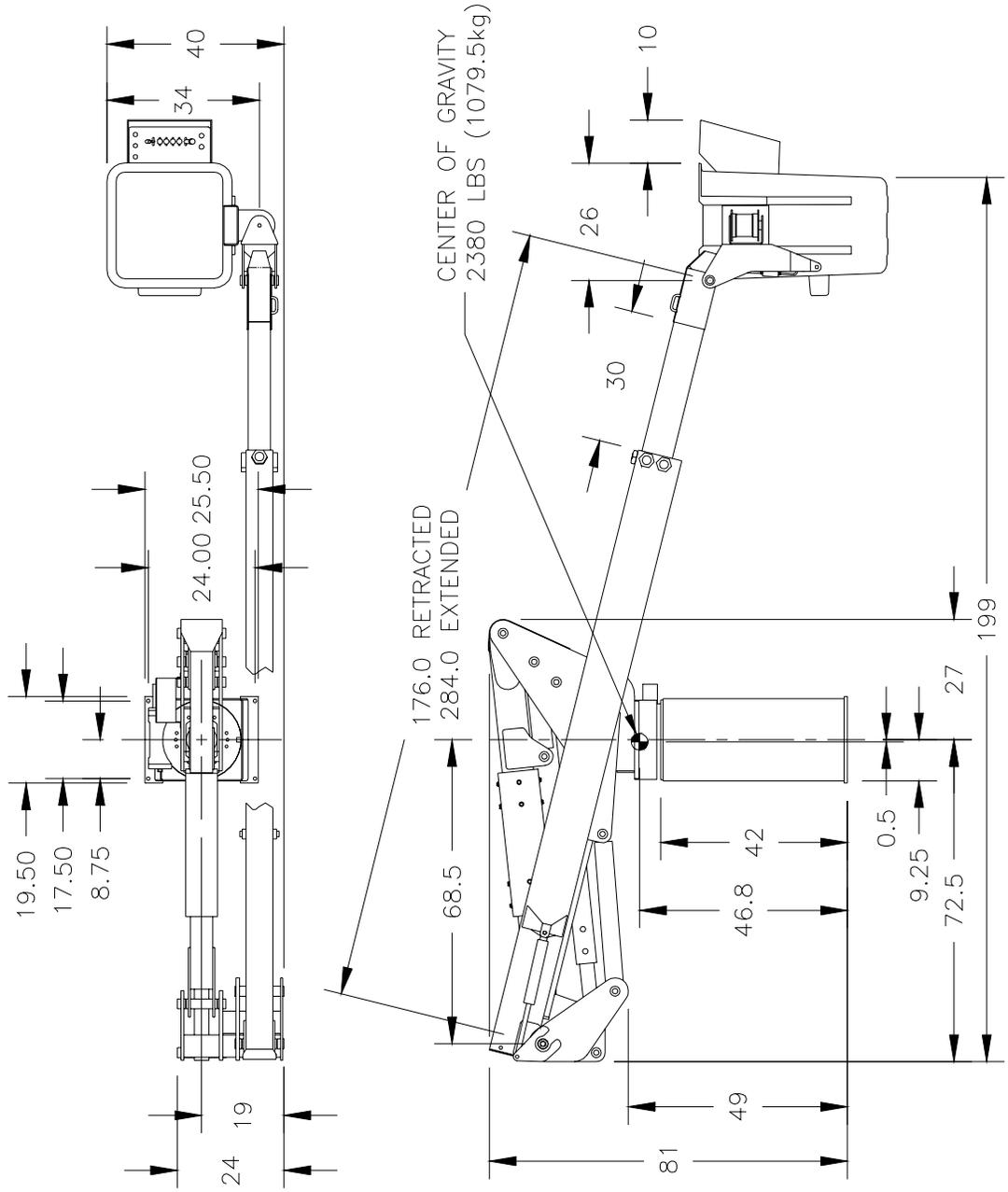
Basket Bottom Height ¹	36 ft.9 in.(11.19m)
Working Height ¹	41 ft.9 in.(12.72m)
Standard Basket Capacity	300 lbs.(136kg)
Maximum Basket Capacity	350 lbs.(159kg)
Maximum Horizontal Reach	28 ft.6 in.(8.69m)
Lower Boom Articulation	-6 ⁰ to 90 ⁰
Upper Boom Articulation	-14 ⁰ to 78 ⁰
Upper Boom Extension	108 in.(2.74m)
Insulation Gap Fully Retracted	30in.(0.76m)
Insulation Gap Extended	42 in.(1.07m)
Stowed Travel Height ¹	10 ft.2 in.(3.10m)
Electrical System Voltage	12VDC
Rotation	540 ⁰ Non-Continuous
Hydraulic System Operating Pressure	2500 PSI(176kg/cm ²)
Unit Weight	2380 lbs.(1079.5kg)

OPERATING SPEEDS BASED ON 3.0GPM(11.4lpm)

Lower Boom Raise	16-18 Seconds
Lower Boom Lower	12-14 Seconds
Upper Boom Extend	17-19 Seconds
Upper Boom Retract	9-11 Seconds
Upper Boom Raise	24-27 Seconds
Upper Boom Lower	18-20 Seconds
Rotate 360 ⁰	65-80 Seconds

1. Based on 36 in (.91m) chassis frame height.

UTL141A OVERALL DIMENSIONS
 SHOWN WITH HYDRAULICALLY LEVELED
 END MOUNTED BASKET AND HYDRAULIC ROTATOR



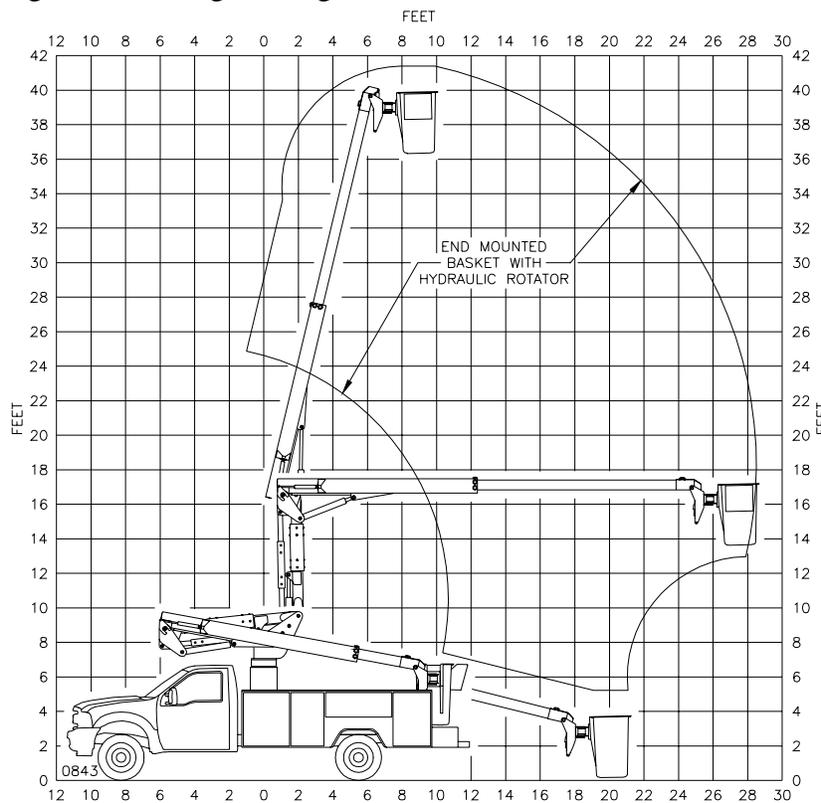
3.17 TYPICAL UTLI41A NUMERICAL SPECIFICATIONS
WITH END MOUNTED BASKET AND HYDRAULIC ROTATOR

Basket Bottom Height ¹	36 ft.5 in.(11.10m)
Working Height ¹	41 ft.5 in.(12.62m)
Maximum Horizontal Reach	28 ft.6 in.(8.69m)
Stowed Travel Height ¹	9 ft.10 in.(3.00m)
Approximate Curb Weight for Stability ²	12,850 lbs.(5829kg)

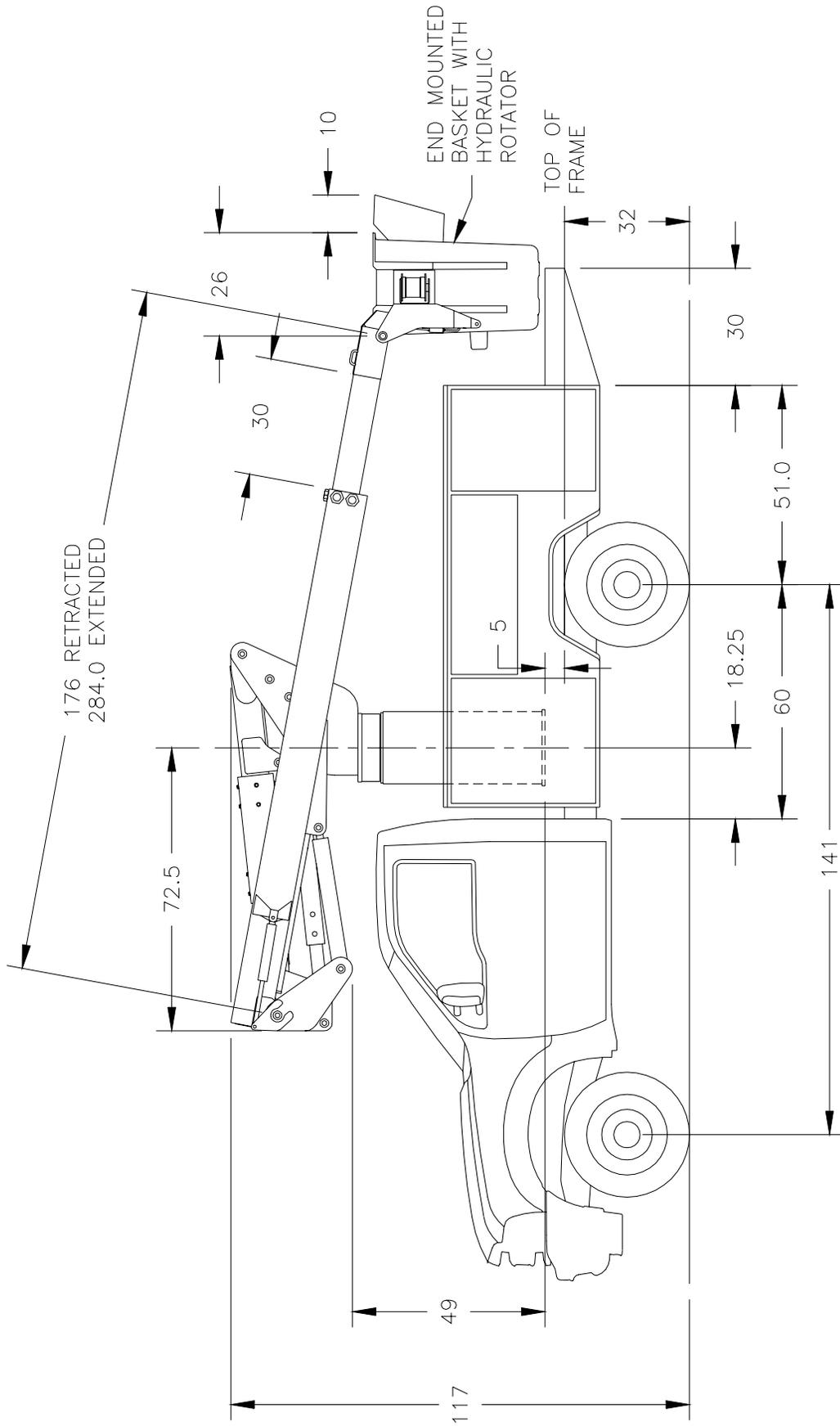
VEHICLE REQUIREMENTS

	<u>Minimum</u>	<u>Recommended</u>
GVWR ^{2,3}	15,000 lbs.(6804kg)	15,000 lbs.(6804kg)
Front GAWR ^{2,4}	5,000 lbs.(2268kg)	6,000 lbs.(2722kg)
Rear GAWR ^{2,4}	11,000 lbs.(4990kg)	11,000 lbs.(4990kg)
Cab to Rear Axle	60 in.(1.52m)	84 in.(2.13m)
Frame Section Modulus	8.0 in. ³ (131cm ³)	8.0 in. ³ (131cm ³)
RBM of Frame	280,000 in.-lbs.(31640N-m)	280,000 in.-lbs.(31640N-m)

1. Based on 32 in.(0.81m) chassis frame height.
2. Actual curb weight for stability and the required GVWR and GAWR can vary significantly with vehicle stiffness, suspension stiffness, vehicle wheelbase, aerial lift mounting location, body, accessories, ballast (if required), platform capacity and desired payload. Actual weight for stability must be determined by testing in accordance with the ANSI A92.2 standard.
3. GVWR means gross vehicle weight rating.
4. GAWR means gross axle weight rating.



UTL141A SHOWN ON FORD F550
WITH END MOUNTED BASKET AND HYDRAULIC ROTATOR



3.18 GENERAL UTLI46A NUMERICAL SPECIFICATIONS
WITH END MOUNTED BASKET AND HYDRAULIC ROTATOR

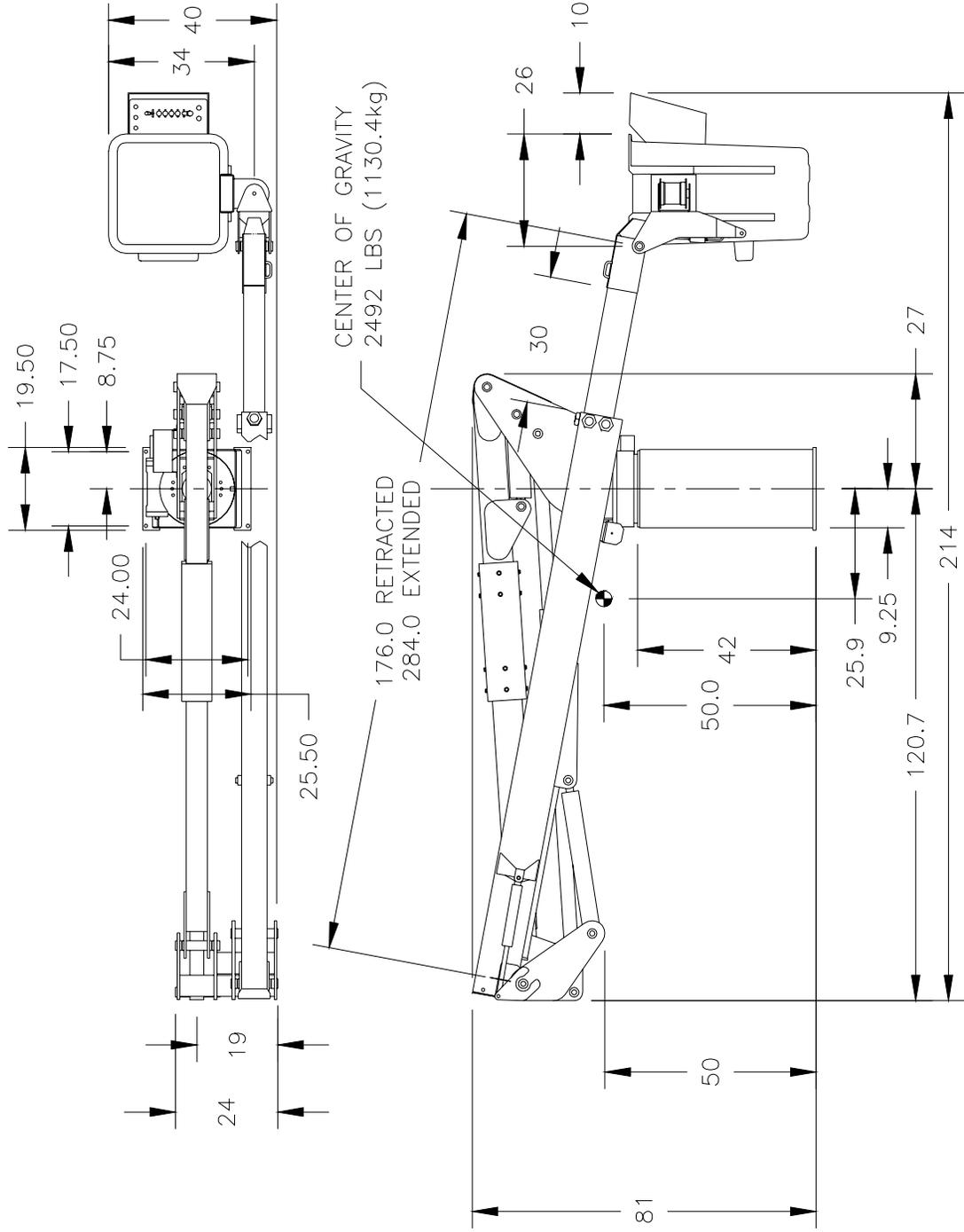
Basket Bottom Height ¹	40 ft.9 in.(12.41m)
Working Height ¹	45 ft.9 in.(13.94m)
Standard Basket Capacity	300 lbs.(136kg)
Maximum Basket Capacity	350 lbs.(159kg)
Maximum Horizontal Reach	28 ft.5 in.(8.66m)
Lower Boom Articulation	-4 ⁰ to 90 ⁰
Upper Boom Articulation	-14 ⁰ to 78 ⁰
Upper Boom Extension	108 in.(2.74m)
Insulation Gap Fully Retracted	30in.(0.76m)
Insulation Gap Extended	42 in.(1.07m)
Stowed Travel Height ¹	10 ft.2 in.(3.10m)
Electrical System Voltage	12VDC
Rotation	540 ⁰ Non-Continuous
Hydraulic System Operating Pressure	2500 PSI(176kg/cm ²)
Unit Weight	2492 lbs.(1130.4kg)

OPERATING SPEEDS BASED ON 3.0GPM(11.4lpm)

Lower Boom Raise	19-21 Seconds
Lower Boom Lower	16-18 Seconds
Upper Boom Extend	17-19 Seconds
Upper Boom Retract	9-11 Seconds
Upper Boom Raise	24-27 Seconds
Upper Boom Lower	18-20 Seconds
Rotate 360 ⁰	65-80 Seconds

1. Based on 36 in (.91m) chassis frame height.

UTL146A OVERALL DIMENSIONS
 SHOWN WITH HYDRAULICALLY LEVELED
 END MOUNTED BASKET AND HYDRAULIC ROTATOR



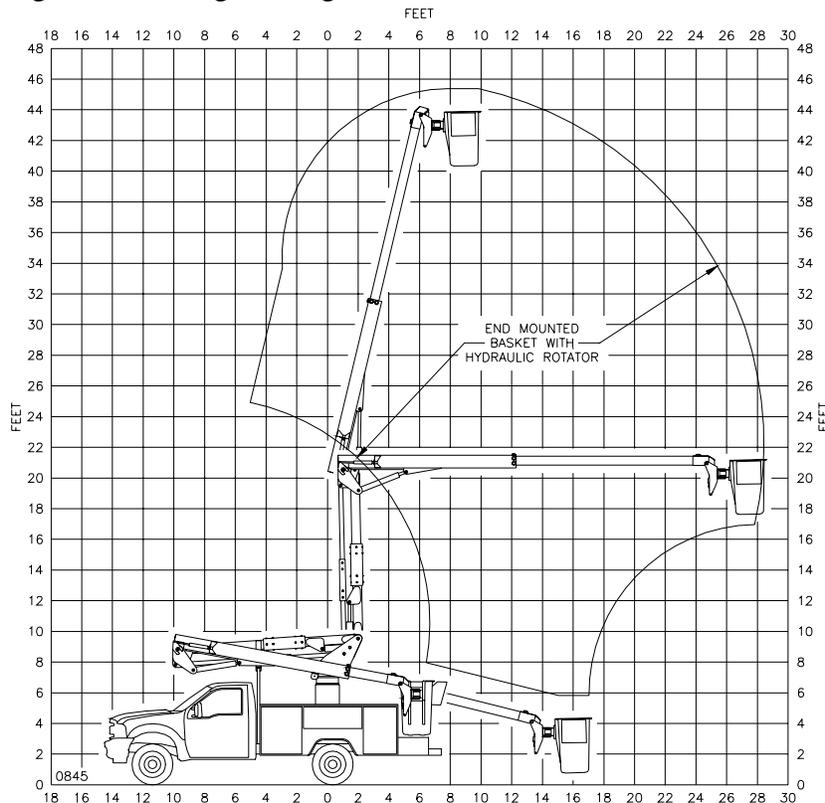
3.19 TYPICAL UTLI46A NUMERICAL SPECIFICATIONS WITH END MOUNTED BASKET AND HYDRAULIC ROTATOR

Basket Bottom Height ¹	40 ft.5 in.(12.32m)
Working Height ¹	41 ft.5 in.(13.84m)
Maximum Horizontal Reach	28 ft.5 in.(8.66m)
Stowed Travel Height ¹	9 ft.10 in.(3.00m)
Approximate Curb Weight for Stability ²	13350 lbs.(6055kg)

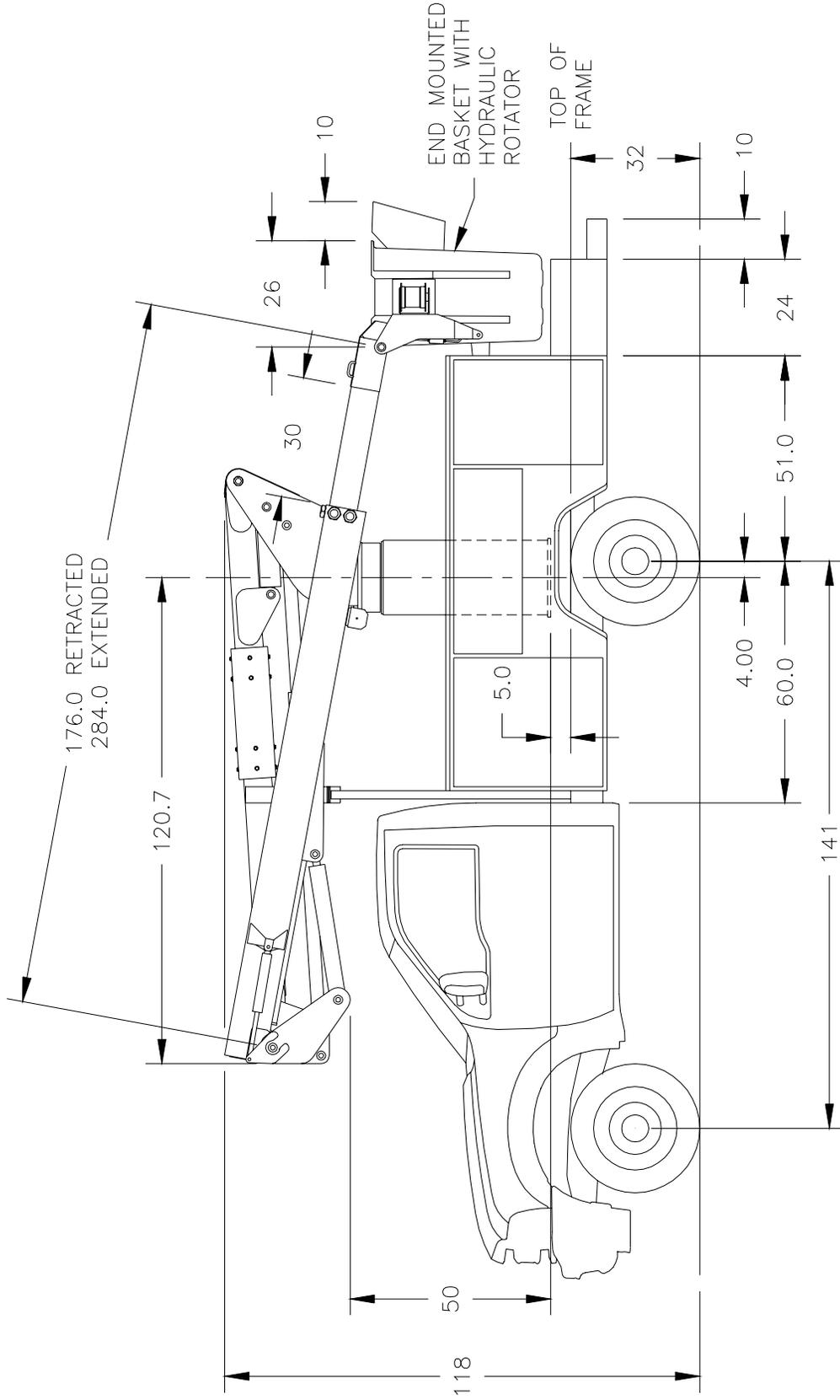
VEHICLE REQUIREMENTS

	<u>Minimum</u>	<u>Recommended</u>
GVWR ^{2,3}	15,000 lbs.(6804kg)	17,500 lbs.(7938kg)
Front GAWR ^{2,4}	5,000 lbs.(2268kg)	6,000 lbs.(2722kg)
Rear GAWR ^{2,4}	11,000 lbs.(4990kg)	13,500 lbs.(6123kg)
Cab to Rear Axle	60 in.(1.52m)	84 in.(2.13m)
Frame Section Modulus	8.0 in. ³ (131cm ³)	8.0 in. ³ (131cm ³)
RBM of Frame	280,000 in.-lbs.(31640N-m)	280,000 in.-lbs.(31640N-m)

1. Based on 32 in.(0.81m) chassis frame height.
2. Actual curb weight for stability and the required GVWR and GAWR can vary significantly with vehicle stiffness, suspension stiffness, vehicle wheelbase, aerial lift mounting location, body, accessories, ballast (if required), platform capacity and desired payload. Actual weight for stability must be determined by testing in accordance with the ANSI A92.2 standard.
3. GVWR means gross vehicle weight rating.
4. GAWR means gross axle weight rating.



UTLI46A SHOWN ON FORD F550
WITH END MOUNTED BASKET AND HYDRAULIC ROTATOR



4. OPERATION

This chapter provides the operator and ground personnel with a description of the controls and detailed operating information for this **UTEM** aerial lift. The operator and the ground crew are responsible for knowing and applying this information to situations that arise on the job.

Only properly trained operators are qualified to operate this aerial lift. Operator training shall include complete instruction in and understanding of the manufacturer's manuals, employer work rules, and all related governmental regulations. Prior to operation from the platform the machine must be operating properly, inspected, and maintained in accordance with the manufacturer's manuals.

DANGER: AN UNTRAINED OR CARELESS OPERATOR SUBJECTS HIM/HERSELF AND OTHERS TO DEATH OR SERIOUS INJURY.

It is the responsibility of the operator and the ground crew to make certain that the identification, operation, and instructional decals are not lost, damaged, or illegible. If these conditions exist the decals must be replaced before lift operation. Refer to the decal placement illustration in the Parts and Service Manual for decal location and identification.

This section emphasizes some general operating practices and concerns during aerial lift use. This information appears in the order of probable use.

For operation in extremely cold weather refer to Section 6.3, Hydraulic System Maintenance.

TABLE OF CONTENTS

Start-Up Procedures	4.1
Operating Where Electrical Hazards are Present	4.2
Lower Control Operation	4.3
Upper Control Operation	4.4
Storing The Aerial Lift	4.5

4.1 START-UP PROCEDURES

This section contains information that will help the operator and ground crew use the **UTEM** aerial lift in a safe, stable and efficient manner. The information in this section addresses the proper orientation of the vehicle at the work site and the necessary steps prior to operation of the aerial lift.

ORIENTING THE VEHICLE AT THE WORK SITE

Be sure to park the truck on firm level ground whenever possible. Do not operate the **UTEM** aerial lift on a slope greater than 5° (approximately 1 foot rise in 12 feet). Slope reduces the stability of the vehicle and places additional stress on the aerial lift rotation system. If it is necessary to work on an incline, extra precautions are required. For increased stability, position the vehicle near the work site with the vehicle facing up or down the slope. Maintaining the correct tire pressure also contributes to vehicle stability. If there is any doubt about the stability of the vehicle under any condition, do not operate the lift.

DANGER: NEVER OPERATE THE LIFT ON A SLOPE GREATER THAN 5° . WITHOUT PROPER STABILITY, THE UNIT MAY TIP RESULTING IN DEATH OR SERIOUS INJURY.

REQUIREMENTS PRIOR TO AERIAL LIFT OPERATION

Execute the following steps prior to operation of the aerial lift. Some vehicles may have additional equipment installed requiring deviations to these procedures or additional steps. Always refer to the specific manufacturer's manuals for other operating instructions. Employer work rules and governmental regulations may also require additional steps.

1. Set the parking brake and the brake lock (if so equipped).
2. Turn on warning lights/flashers to alert pedestrians and motorists.
3. For aerial lifts with HM hydraulics and a vehicle engine driven hydraulic pump, the vehicle engine should be left running and a manual transmission must be in neutral or an automatic transmission must be in "park". Some exceptions to these requirements may exist for some PTO driven hydraulic pumps as discussed below. The ignition switch must be left in the "run" position. The engine can then be stopped or started as desired, using the engine start/stop control at the upper or lower controls.
4. The PTO for some transmissions, including some automatic transmissions, have specific requirements to engage them. Always refer to the PTO operator's manual for instructions to engage the PTO. If the hydraulic pump is driven by the vehicle engine accessory drive belt, the pump is usually engaged by an electric clutch. This clutch may be energized by the unit master switch or a separate switch in the vehicle cab. If a separate switch is provided, this switch must be actuated before exiting the vehicle cab.
5. For aerial lifts with HM hydraulics, an auxiliary engine may be provided to drive the hydraulic pump. In this case, the vehicle engine must be turned off and a manual transmission in gear or an automatic transmission in "park".

6. Set up adequate cones or barricades to mark the boundaries of the work site and alert pedestrians and motorists. Never work outside the boundaries.

7. Always chock the wheels of the truck. This is extremely important because the parking brake system on some vehicles may engage by locking the drive shaft behind the transmission. If the load is reduced on one of the drive wheels during aerial lift operation, the vehicle differential can allow the truck to roll.

DANGER: NEVER OPERATE THE LIFT WITHOUT SETTING THE PARKING BRAKE AND CHOCKING THE WHEELS. A ROLLING TRUCK MAY CAUSE AN ACCIDENT RESULTING IN DEATH OR SERIOUS INJURY.

4.2 OPERATING WHERE ELECTRICAL HAZARDS ARE PRESENT

It is imperative that the operator of this aerial device understand the dangers associated with operating near electrical hazards. Due to the work involved, the ordinary uses of aerial lifts often place the operator and ground crew in the vicinity of electrical lines and equipment where the danger of electrocution exists. This danger can only be avoided by the constant care of an operator who is qualified to operate the aerial lift where electrical hazards exist. The operator must be aware of the dangers, know the limitations of the aerial lift, and know how to protect himself and other personnel from this danger.

The insulation rating of this aerial lift is defined by ANSI A92.2 and specified on the data plate installed on the unit. The data plate is shown on page 2.2 of this manual. Although this aerial lift provides an insulated boom, no aerial lift can provide protection from contact with or inadequate clearance to an electrically charged power line when you are in contact with or in proximity to another power line or overhead neutral or ground. Maintain safe clearances from electrical power lines in accordance with applicable government regulations or work rules. Allow clearance for boom, platform and electrical line sway and deflection.

DANGER: CONTACT WITH OR INADEQUATE CLEARANCE TO ELECTRICAL POWER LINES AND APPARATUS WILL CAUSE DEATH OR SERIOUS INJURY.

Contamination such as dirt, creosote, road spray and moisture on the inner and outer surfaces of the insulated boom degrades its insulating properties. The insulating boom must be clean and dry prior to use. Remember that the inner surface may be damp even if the outer surface is dry. In addition, any equipment that bridges the insulation or between the platform and the ground renders the insulation ineffective and must not be used when working in areas of electrical hazards.

DANGER: EQUIPMENT THAT BRIDGES THE INSULATION OR BETWEEN THE PLATFORM AND THE GROUND RENDERS THE INSULATION INEFFECTIVE AND WILL RESULT IN DEATH OR SERIOUS INJURY IN THE EVENT OF CONTACT WITH AN ENERGIZED POWER LINE.

DANGER: IF THE VEHICLE BECOMES ENERGIZED, DEATH OR SERIOUS INJURY WILL RESULT FROM CONTACT WITH THE UNIT BY ANYONE ON THE GROUND.

As previously stated, it is the responsibility of the operator and the ground crew to know and understand the capabilities of the aerial lift and the hazards associated with operation near energized power lines or components. In addition they must apply this knowledge to situations that arise on the job for safe and efficient operation.

4.3 LOWER CONTROL OPERATION

The steps provided in Section 4.1, Start-Up Procedures, must be performed prior to operating the aerial lift using the lower controls. If an aerial device has not been used for an extended length of time such as overnight, the aerial lift must be operated from the lower controls through its full range of motion at least once before an operator enters the platform. This procedure allows the operator to confirm the lift is operating properly and to purge any air that may have become entrapped in the hydraulic system. If any malfunction or problem is detected during this process do not operate the aerial lift until the problem has been corrected.

LOWER CONTROL SELECTOR

The lower controls include a lever actuated two position selector valve. If the lower controls are selected, the lower controls are operable and override the upper controls. In this position, hydraulic oil flow is only provided to the lower boom controls.

Prior to operating the aerial lift, always disengage the boom tie down strap. To operate the aerial lift from the lower controls, position the control selector to lower control operation.

BOOM CONTROLS

The four additional levers adjacent to the control selector at the lower controls operate lower boom raise and lower, boom rotation, upper boom raise and lower and upper boom extend and retract. Slowly move the lever in the direction indicated on the decal to produce the desired motion. Movement will begin slowly and increase in speed as the lever is actuated further. When released, the controls must always return to their “off” position and any movement will stop. Lower boom raise and lower, boom rotation, upper boom raise and lower and upper boom extend and retract are mechanically limited and an operator should become familiar with those limits to know when to expect movement to stop. If continuous rotation is provided, rotation is not mechanically limited.

CAUTION: NEVER REVERSE LIFT MOTIONS WITH A SUDDEN REVERSAL OF THE CONTROL SWITCH. ALLOW THE BOOM TO STOP AND THEN MOVE THE BOOM IN THE OPPOSITE DIRECTION.

DANGER: ALWAYS WATCH FOR PERSONNEL AND OBSTRUCTIONS WHEN OPERATING THE BOOM CONTROLS. A CRUSHING INJURY TO PERSONNEL OR DAMAGE TO THE AERIAL LIFT OR VEHICLE CAN OCCUR.

PLATFORM TRIM CONTROL

The platform trim control is an additional lever at the lower controls. Operate the basket trim control as indicated on the decal to produce the desired motion. When released, it must always return to the “off” position and movement of the basket will stop. Platform leveling is automatic due to the master/slave hydraulic cylinders used in the system. Use the platform trim control to adjust the platform leveling or to stow and unstow the platform, if required. Verify that the platform remains level throughout the boom travel. Some deviation from level is normal but should not exceed 5 degrees.

ENGINE START/STOP CONTROL (IF PROVIDED)

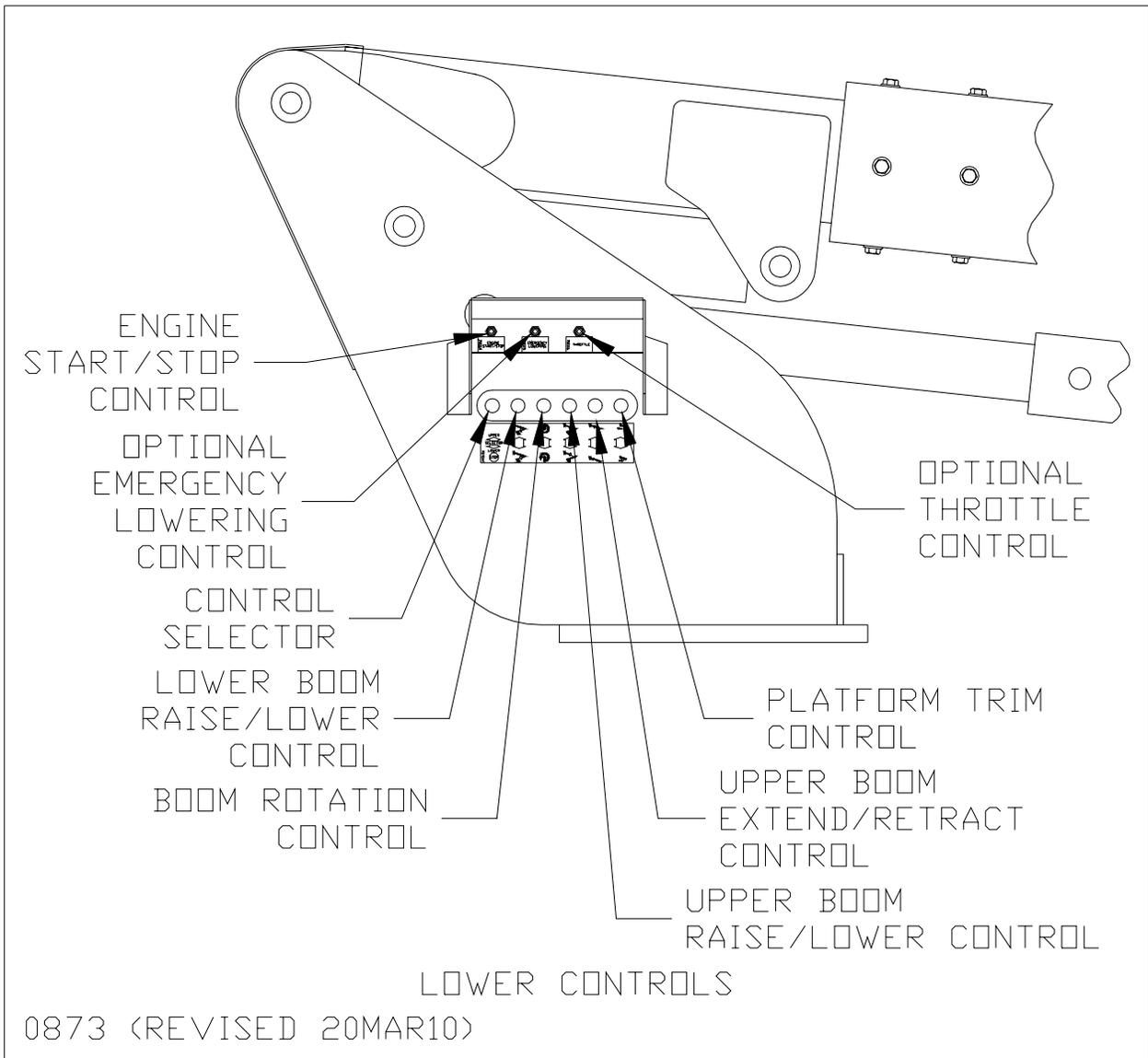
The engine start/stop control at the lower controls is a two position, momentary switch. To stop the vehicle engine, the engine start/stop control must be actuated and released. To start the vehicle engine, actuate and hold the engine start/stop control until the engine starts and then release it.

THROTTLE CONTROL (IF PROVIDED)

The throttle control, if provided, is a two position, momentary switch. Actuate this control once to speed up the vehicle engine. Actuate the control again to allow the vehicle engine to return to idle. This control is only required to provide adequate flow for the hydraulic tool circuit. Lift operation must normally be done with the engine at idle. Operating the aerial lift at excessive speed overstresses the structural components and limits the ability of the operator to control aerial lift movement.

EMERGENCY LOWERING CONTROL (IF PROVIDED)

The emergency lowering control, if provided, is a two position, momentary switch. With HM hydraulics, actuating the emergency lowering control, if provided, will energize the 12VDC motor driven hydraulic pump. This system is designed for use in the event the engine driven hydraulic pump becomes inoperable. This emergency lowering system should not be operated continuously or longer than 30 seconds. Extended use will deplete the vehicle battery and possibly damage the motor and other components. Using this emergency lowering control, lower boom raise and lower, upper boom raise and lower, boom rotation, upper boom extend and retract and basket trim controls will be operable. To use this control, it is necessary to actuate the emergency lowering control and then the appropriate boom control simultaneously. When the control is released, the 12VDC motor will shut down.



4.4 UPPER CONTROL OPERATION

The steps provided in Section 4.1, Start-Up Procedures, must be performed prior to operating the aerial lift using the upper controls. If an aerial device has not been used for an extended length of time such as overnight, the aerial lift must be operated from the lower controls through its full range of motion at least once before an operator enters the platform. This procedure allows the operator to confirm the lift is operating properly and to purge any air that may have become entrapped in the hydraulic system. If any malfunction or problem is detected during this process do not operate the aerial lift until the problem has been corrected. Refer to Section 4.3, Lower Control Operation, for detailed instructions.

After verifying the aerial lift is operating properly, select upper control operation at the lower controls. Always disengage the boom tie down strap prior to operating the aerial lift. Safety regulations require the operator to use appropriate fall protection while operating an aerial lift. With duck under baskets, UTEM provides a door. The door must be closed and securely latched prior to operating the aerial lift from the upper controls. With walk-in baskets, UTEM provides a door and chain at the top of the walk-in opening. The door must be closed and securely latched and the chain engaged prior to operating the aerial lift from the upper controls. In addition, UTEM provides a body harness with a shock-absorbing lanyard that must be secured to the anchor provided on the boom. Refer to applicable employer work rules and governmental regulations for specific requirements.

DANGER: NEVER OPERATE ANY AERIAL LIFT WITHOUT USING APPROPRIATE FALL PROTECTION. FAILURE TO CLOSE OR ENGAGE THE DOOR AND/OR CHAIN ACROSS A BASKET OPENING OR FAILURE TO USE AND PROPERLY SECURE A BODY HARNESS AND SHOCK-ABSORBING LANYARD MAY RESULT IN DEATH OR SERIOUS INJURY IN THE EVENT OF A FALL FROM THE PLATFORM.

The upper controls have been designed to provide convenient and comfortable access for the operator. These controls are also carefully protected from damage. Refer to the illustrations that follow of the variations in upper controls that are provided.

EMERGENCY STOP CONTROL

With individual lever upper controls, a lever actuated, selector valve is provided as an emergency stop. On units equipped with the single stick upper control, a manually actuated dump valve is provided as an emergency stop. These controls direct hydraulic oil flow to either the boom controls or back to the hydraulic oil reservoir. If the emergency stop control is actuated as indicated by the decal, the upper boom controls will be inoperable.

BOOM CONTROLS

With individual upper controls, four additional lever actuated control valves are provided to operate lower boom raise and lower, boom rotation, upper boom raise and lower and upper boom extend and retract. These levers are equipped with a locking device to prevent inadvertent actuation of the controls. To operate the boom controls, the knob on the lever must be pulled up disengaging the

lock allowing actuation of the control. Slowly move the lever in the direction indicated on the decal to produce the desired motion. Movement will begin slowly and increase in speed as the lever is actuated further. When released, each lever must return to its centered position, lock and all movement will stop.

On units equipped with the pistolgrip upper control, a single control handle is provided to operate upper boom raise and lower, boom rotation and upper boom extend and retract. An additional lever in the control handle must be actuated before the boom controls are operable. This lever is intended to prevent inadvertent actuation of the controls. To operate the upper boom controls, fully actuate the lever in the control handle and then slowly move the control handle as indicated on the decal to produce the desired boom movement. Movement will begin slowly and increase in speed as the handle is actuated further. When either the handle is released or the lever in the control handle is released, they must return to their centered or “off” position and any movement will stop. Using these controls easily becomes intuitive because the direction the handle is actuated agrees closely with the direction the platform will move. The lower boom raise and lower control is an additional lever actuated control valve. This lever is equipped with a locking device to prevent inadvertent actuation of this control. To operate the lower boom control, the knob on the lever must be pulled up disengaging the lock allowing actuation of the control. Slowly move the lever in the direction indicated on the decal to produce the desired motion. Movement will begin slowly and increase in speed as the lever is actuated further. When released, this lever must return to its centered position, lock and all movement will stop.

All boom movements are mechanically limited and an operator should become familiar with those limits to know when to expect movement to stop.

CAUTION: NEVER REVERSE LIFT MOTIONS WITH A SUDDEN REVERSAL OF THE BOOM CONTROL SWITCH. ALLOW THE BOOM TO STOP AND THEN MOVE THE BOOM IN THE OPPOSITE DIRECTION.

DANGER: ALWAYS WATCH FOR PERSONNEL AND OBSTRUCTIONS WHEN OPERATING THE BOOM CONTROLS. A CRUSHING INJURY TO PERSONNEL OR DAMAGE TO THE AERIAL LIFT OR VEHICLE CAN OCCUR.

PLATFORM TRIM CONTROL

The platform trim control is an additional lever actuated control valve. This lever is equipped with a locking device to prevent inadvertent actuation of this control. To operate the platform trim control, the knob on the lever must be pulled up, disengaging the lock, allowing actuation of the control. Slowly move the lever in the direction indicated on the decal to produce the desired motion. Movement will begin slowly and increase in speed as the lever is actuated further. When released, this lever must return to its centered position, lock and all movement will stop. With hydraulic leveling, platform leveling is automatic due to the master and slave hydraulic cylinders used in the system. Use the platform trim control to adjust the platform leveling or to stow and unstow the platform as the decal indicates, if required. Verify that the platform remains level throughout the boom travel prior to operating the aerial lift from the upper controls. Some deviation from level is normal but it should not exceed 5 degrees.

ENGINE START/STOP CONTROL

Provided with HM hydraulics, the engine start/stop control is an air plunger actuated control. To stop the vehicle engine, the engine start/ stop control must be actuated and released. To start the vehicle engine, actuate and hold the engine start/stop control until the engine starts and then release it.

DANGER: THE VEHICLE TRANSMISSION MUST BE IN NEUTRAL OR PARK BEFORE USING THE ENGINE START CONTROL. STARTING THE VEHICLE WHILE IN GEAR WILL RESULT IN MOVEMENT WHICH MAY CAUSE DEATH OR SERIOUS INJURY TO THE OPERATOR OR ANYONE IN THE PATH OF THE TRUCK.

HYDRAULIC TOOL CIRCUIT CONTROL (IF PROVIDED)

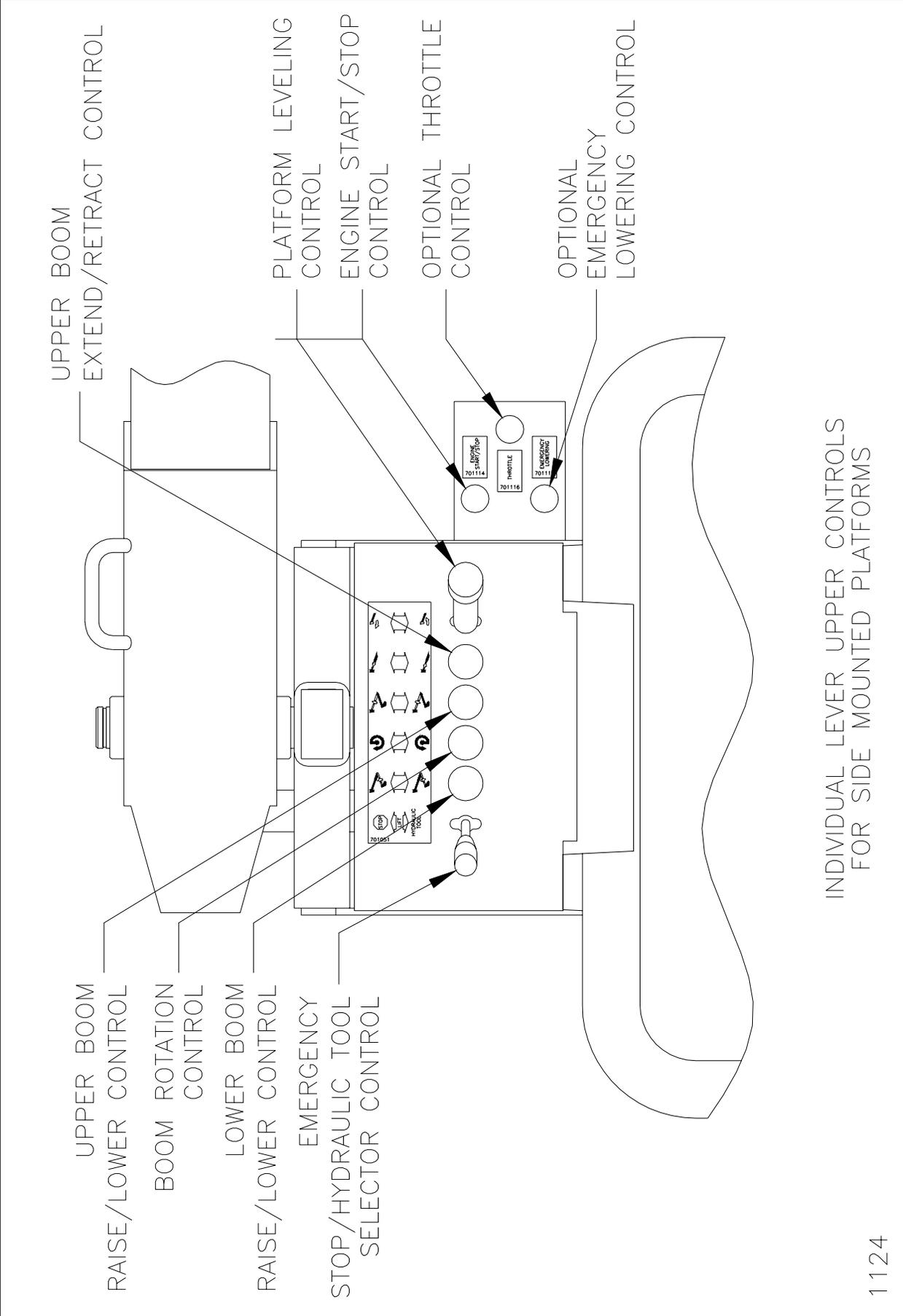
With individual lever upper controls, the hydraulic tool circuit control, if provided, is the same lever actuated control valve used for emergency stop. As indicated on the decal, one position is for emergency stop, one is for upper boom control operation and the third position is for hydraulic tool operation. On units equipped with the single stick upper control, a manually actuated selector valve is provided as the hydraulic tool circuit control. Actuate this control to direct hydraulic oil to the tool circuit at the platform. Do not actuate this control unless a hydraulic tool is connected. In addition, the hydraulic tools must be an open center type. If a tool is not connected or if a closed center tool is used, the hydraulic system will overheat resulting in possible damage to the hydraulic system. Disengage the hydraulic tool circuit when the tool circuit is no longer needed or to operate the boom controls or the platform trim control.

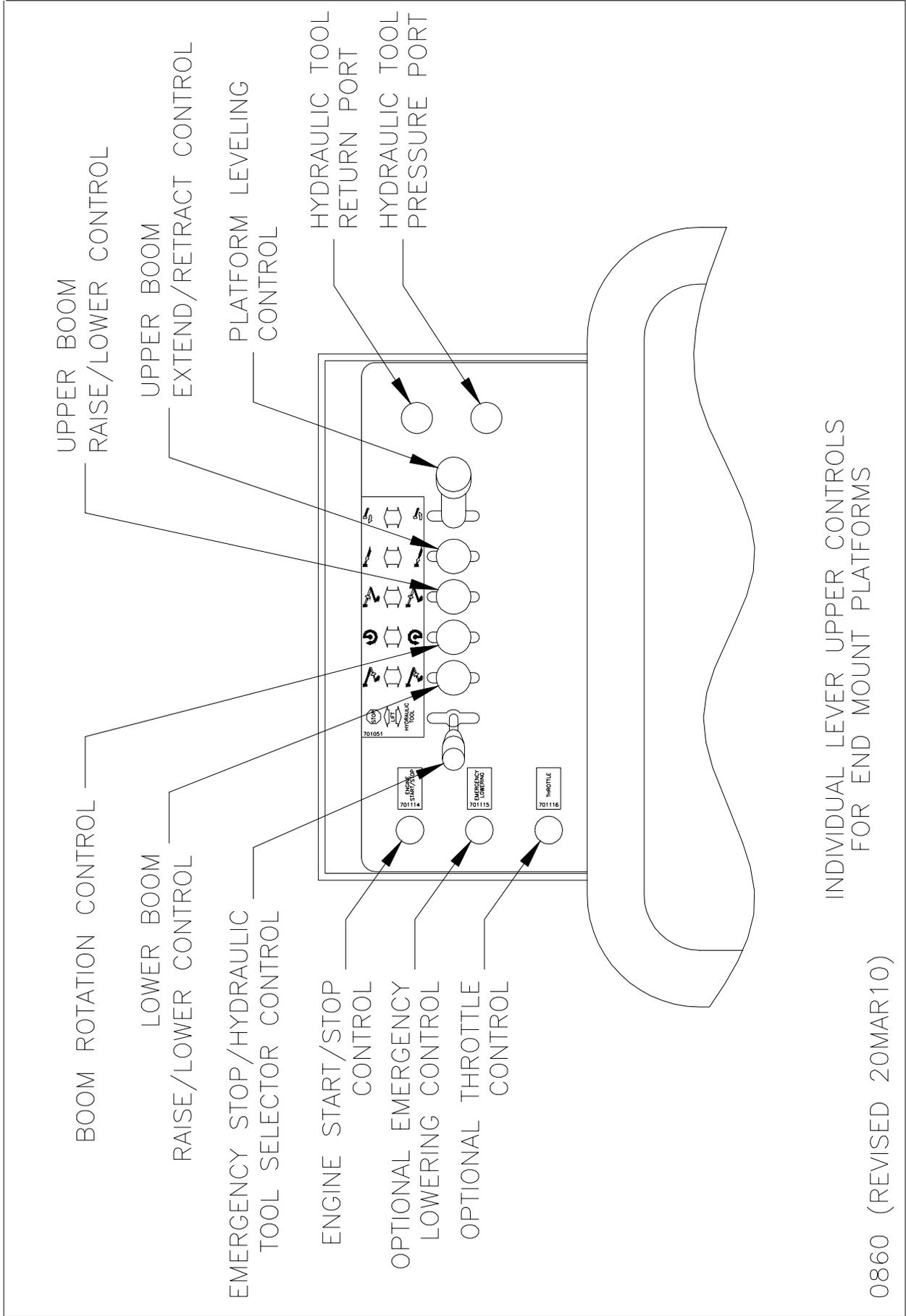
THROTTLE CONTROL (IF PROVIDED)

The throttle control, if provided, is an air plunger actuated control that operates a latching relay. Actuate this control once to speed up the engine. This control is normally only required to provide adequate flow for the hydraulic tool circuit. Actuate the control again to return the engine to idle speed. Lift operation must normally be done with the engine at idle. Operating the aerial lift at excessive speed overstresses the structural components and limits the ability of the operator to control aerial lift movements.

EMERGENCY LOWERING CONTROL (IF PROVIDED)

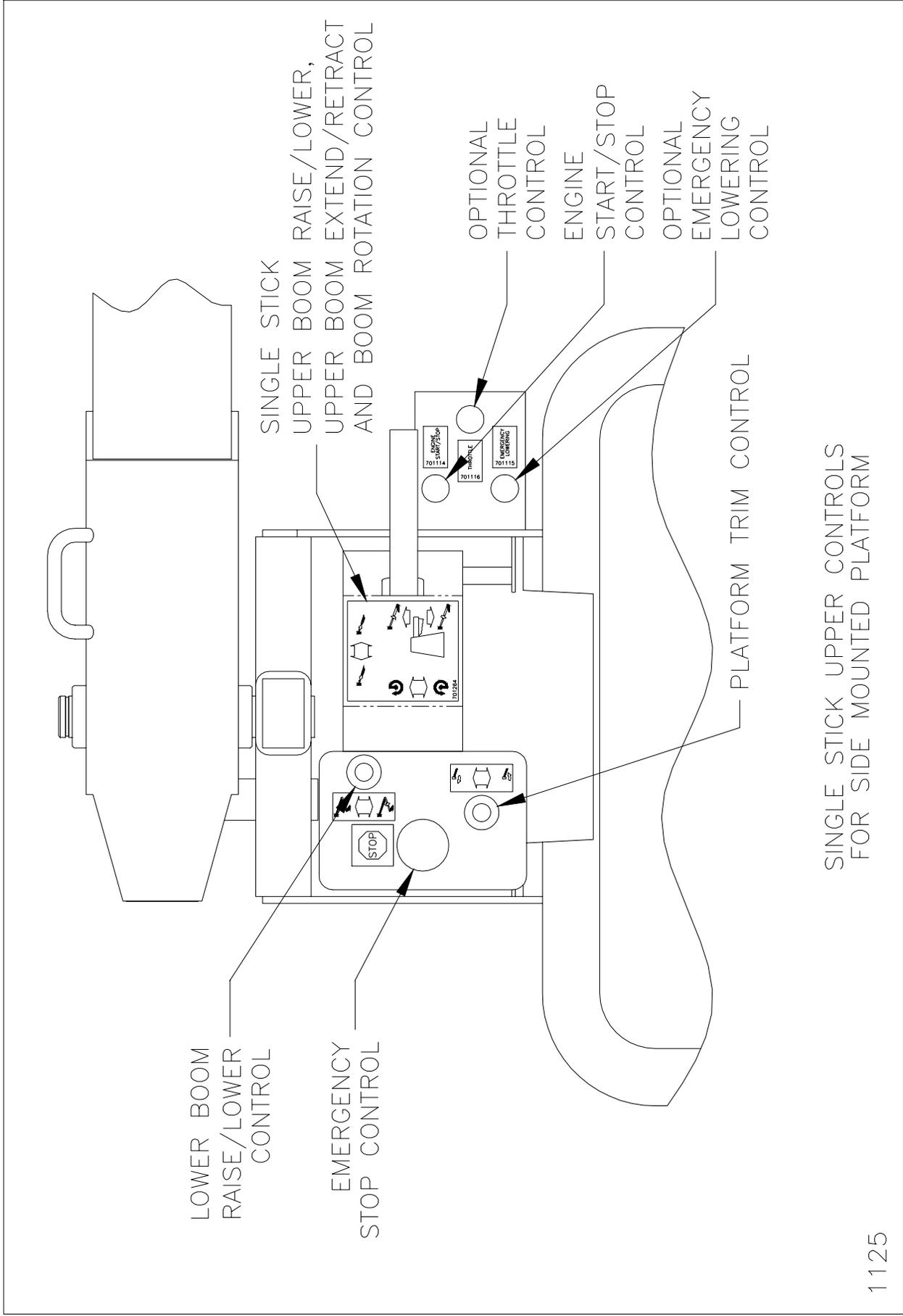
With HM hydraulics, the emergency lowering control is an air plunger actuated control that energizes a 12VDC motor driven hydraulic pump. This system is designed for use in the event the engine driven hydraulic pump becomes inoperable. This emergency lowering system should not be operated continuously or longer than 30 seconds. Extended use will deplete the vehicle battery and possibly damage the motor and other components. With the emergency lowering control, all boom controls and the platform trim control will be operable. To use this control, it must be actuated and held actuated while the boom controls or platform trim control are operated.

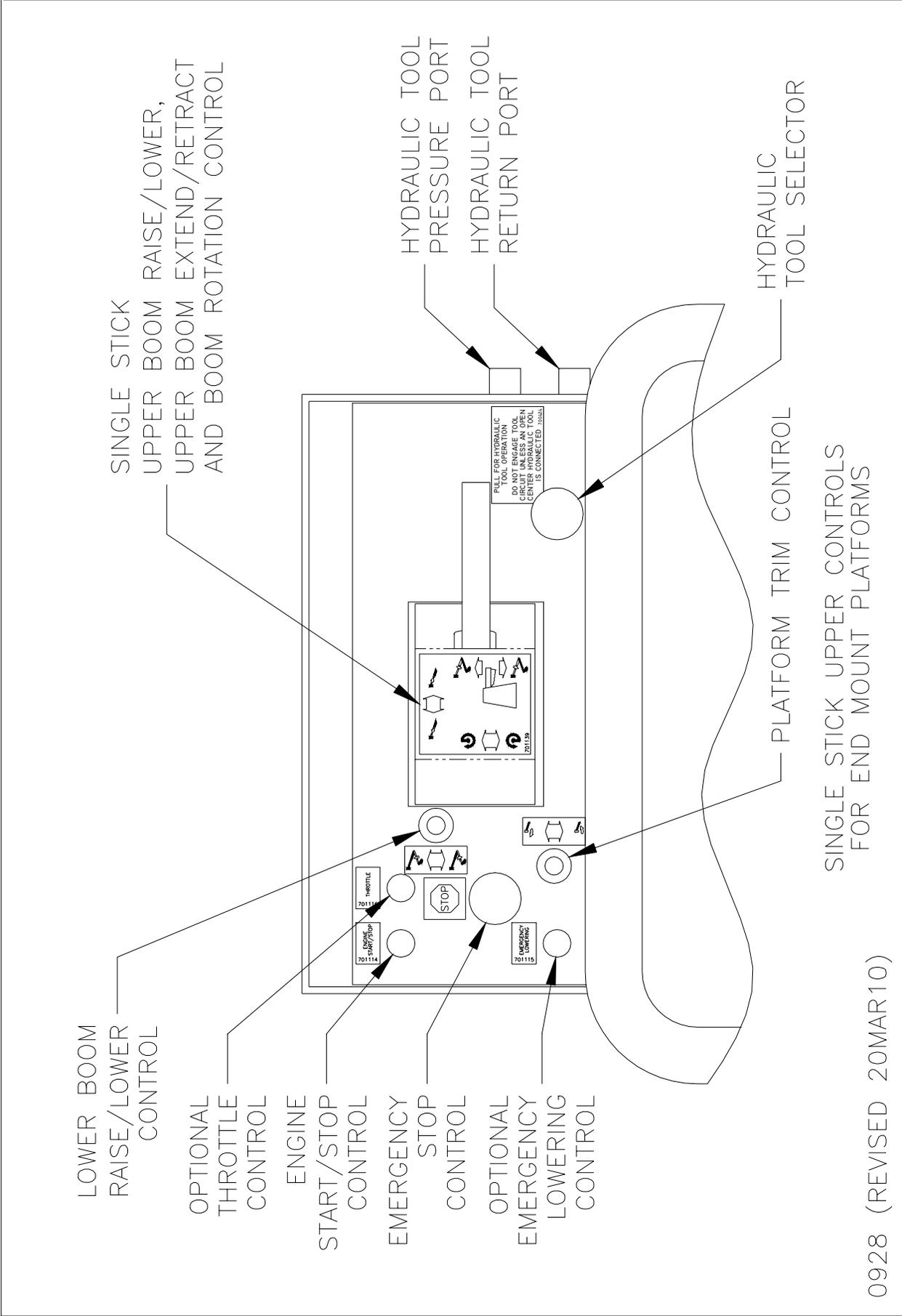




INDIVIDUAL LEVER UPPER CONTROLS
FOR END MOUNT PLATFORMS

0860 (REVISED 20MAR10)





LOWER BOOM
RAISE/LOWER
CONTROL

OPTIONAL
THROTTLE
CONTROL

ENGINE
START/STOP
CONTROL

EMERGENCY
STOP
CONTROL

OPTIONAL
EMERGENCY
LOWERING
CONTROL

SINGLE STICK
UPPER BOOM RAISE/LOWER,
UPPER BOOM EXTEND/RETRACT
AND BOOM ROTATION CONTROL

HYDRAULIC TOOL
PRESSURE PORT
HYDRAULIC TOOL
RETURN PORT

HYDRAULIC
TOOL SELECTOR

PLATFORM TRIM CONTROL

SINGLE STICK UPPER CONTROLS
FOR END MOUNT PLATFORMS

0928 (REVISED 20MAR10)

4.5 STORING THE AERIAL LIFT

When storing the aerial lift for road travel, retract the inner boom completely. With the UTLI46A, rotate the lower boom until it is centered over the lower boom rest. Fully lower the lower boom and then lower the upper boom firmly onto the boom rest. The upper boom lower control should be released as soon as there is firm contact with the boom rest pad. With the UTLI41A, rotate the unit until the upper boom is centered over the boom rest. Fully lower the lower boom and then lower the upper boom firmly onto the boom rest. The upper boom lower control should be released as soon as there is firm contact with the boom rest pad.

DANGER: ALWAYS WATCH FOR PERSONNEL AND OBSTRUCTIONS WHEN STORING THE AERIAL LIFT. A CRUSHING INJURY TO PERSONNEL OR DAMAGE TO THE AERIAL LIFT OR VEHICLE CAN OCCUR.

CAUTION: TO PREVENT DAMAGE TO THE UNIT OR TO OVERHEAD STRUCTURES ON ROADWAYS, ALWAYS FULLY LOWER THE LOWER BOOM BEFORE STORING THE UPPER BOOM. FAILURE TO DO SO WILL RESULT IN EXCESSIVE OVERALL TRAVEL HEIGHT.

To complete the storing procedure secure the upper boom with the tie-down strap and remove the wheel chocks. Turn off the master switch and disengage the hydraulic pump drive (when applicable). Driving with a vehicle engine driven hydraulic pump engaged may damage the transmission, PTO, pump or other components.

CAUTION: TO PREVENT DAMAGE TO THE UNIT DO NOT MOVE THE VEHICLE UNTIL THE AERIAL LIFT IS STORED AND THE UPPER BOOM IS SECURED WITH THE BOOM TIE-DOWN STRAP.

CAUTION: DRIVING WITH A VEHICLE ENGINE DRIVEN HYDRAULIC PUMP ENGAGED MAY CAUSE DAMAGE TO THE TRANSMISSION, PTO, PUMP, OR OTHER COMPONENTS.

5. EMERGENCY OPERATION

Emergency operation may be required if an operator is injured or the hydraulic or electrical system malfunctions. The purpose of this chapter is to help personnel become proficient with the controls and features provided for emergency operation and to describe some procedures for responding to emergency situations. Identifying the problem and initiating emergency procedures promptly will help to minimize or possibly prevent injuries. Even during emergency operation, it is important to follow standard work practices and safety regulations.

TABLE OF CONTENTS

Emergency Controls and Features	5.1
Recommended Emergency Procedures	5.2

5.1 EMERGENCY CONTROLS AND FEATURES

CONTROL SELECTOR - If a situation requires operation from the lower controls, position the control selector for lower control operation. Operate the aerial lift using the lower controls as explained in Section 4.3, Lower Control Operation. In this mode of operation the upper controls are inoperable.

HOLDING VALVES - If all hydraulic power sources become inoperable the boom can be retracted using the adjustment screw on the holding valve located on the extension cylinder. This is only possible if the boom assembly is raised sufficiently to allow gravity to retract the inner boom. The knuckle cover must be raised to access the holding valve. First loosen the jamnut identified on the illustration below with a 9/16 in. wrench and slowly turn the adjustment screw clockwise with a 5/32 in. allen wrench. The boom retract control will also need to be actuated when using this procedure. The inner boom will begin to retract and the speed will increase as the adjustment screw is turned further in a clockwise direction.

The upper boom or lower boom may also be lowered by using the adjustment screw on the holding valve on the upper boom or lower boom cylinders. First loosen the jamnut identified on the illustrations below with a 9/16 in. wrench and slowly turn the adjustment screw clockwise with a 5/32 in. allen wrench. The upper boom lower or lower boom lower control will also need to be actuated when using this procedure. The boom assembly will begin to lower and the speed will increase as the adjustment screw is turned further in a clockwise direction

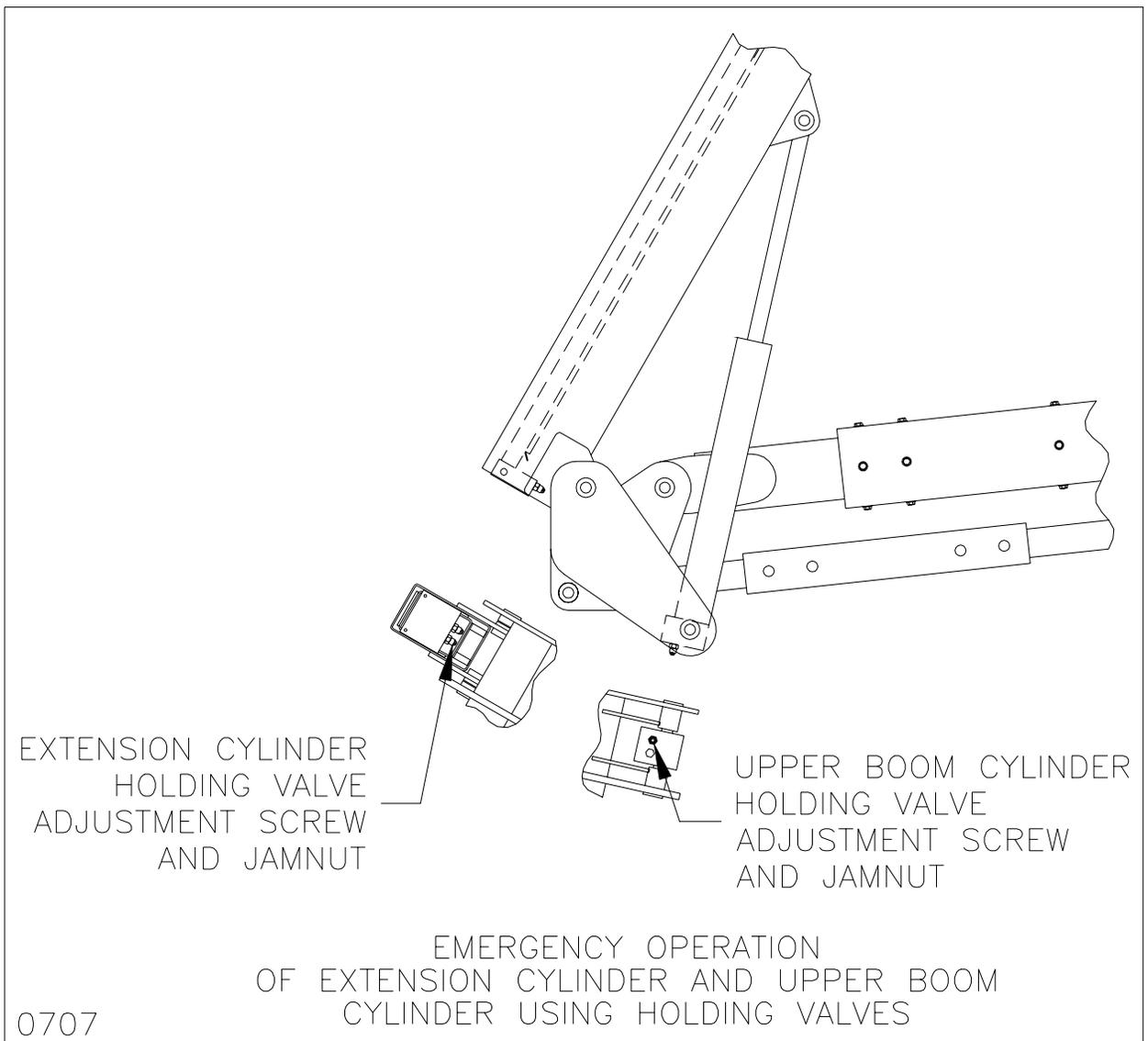
Whenever this procedure is used, the function of the holding valves is defeated and they must be readjusted prior to using the aerial lift. With the inner boom fully retracted and the upper boom or lower boom assembly fully lowered or supported, turn the adjustment screw clockwise until it stops. Then turn the adjustment screw 2-1/2 turns counter-clockwise and tighten the jamnut.

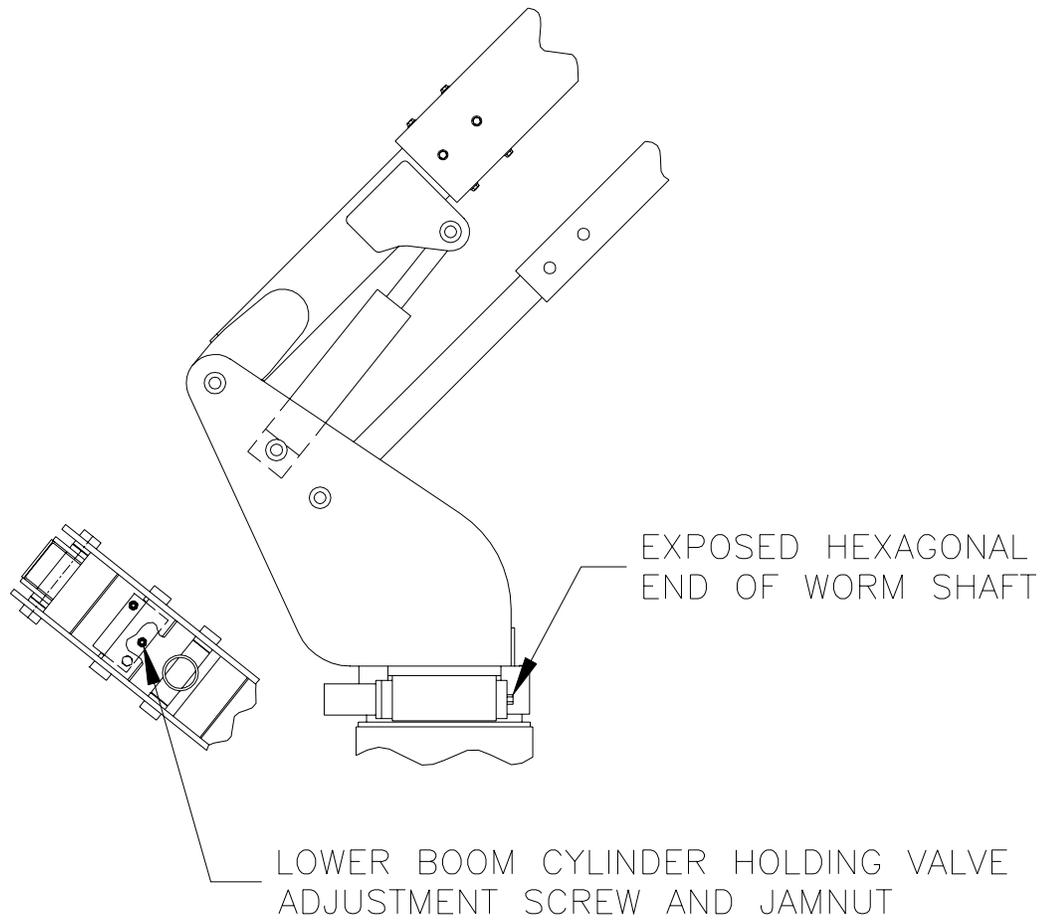
DANGER: MAKE CERTAIN ALL BODY PARTS ARE CLEAR OF THE PATH OF BOOM TRAVEL BEFORE ATTEMPTING TO LOWER THE BOOM USING THE ADJUSTMENT SCREWS ON THE HOLDING VALVE. FAILURE TO DO SO MAY CAUSE SERIOUS INJURY.

DANGER: HOLDING VALVES MUST BE PROPERLY ADJUSTED PRIOR TO AERIAL LIFT OPERATION. FAILURE TO DO SO MAY RESULT IN THE BOOM DROPPING CAUSING DEATH OR SERIOUS INJURY.

MANUAL ROTATION - If all hydraulic power sources become inoperable, the lift rotation system can be actuated manually. Using a ratchet and 1.00 in. socket, rotate the exposed hexagonal end of the worm shaft, as illustrated below, in the direction required to manually rotate the aerial lift. Actuating the boom rotation control will reduce the effort required to rotate the aerial lift.

EMERGENCY LOWERING (IF PROVIDED) - In the event the aerial lift hydraulic power source becomes inoperable, the emergency lowering control at either the upper or lower controls, if provided, will allow the aerial lift to be stowed. Section 4.3, Lower Control Operation, and Section 4.4, Upper Control Operation, fully explain the operation of the emergency lowering system.





EMERGENCY OPERATION OF LOWER
BOOM CYLINDER USING THE HOLDING VALVE
AND BOOM ROTATION USING MANUAL ROTATION

0708 (REVISED 23MAR10)

5.2 RECOMMENDED EMERGENCY PROCEDURES

In an emergency, the first priority is always the safety of all personnel involved. Before attempts are made to rescue personnel, make sure the unit has not become energized.

DANGER: BEFORE ATTEMPTING TO RESCUE PERSONNEL ON THE AERIAL LIFT, ALWAYS MAKE SURE THAT THE VEHICLE OR THE AERIAL LIFT HAVE NOT BECOME ENERGIZED. CONTACT MADE WITH AN ENERGIZED UNIT WHILE ON THE GROUND WILL CAUSE DEATH OR SERIOUS INJURY.

INJURED OR INCAPACITATED OPERATOR - If the operator is unable to operate the aerial lift, determine if any damage has occurred to make the lift inoperable. If the aerial lift is operable and the situation allows safe operation from the lower controls, move the platform away from any danger and into the shortest clear path of descent to get the operator on the ground. Refer to Section 4.3, Lower Control Operation, for instructions to override the upper controls and operate the aerial lift with the lower controls. If the aerial lift is not operable, use another aerial lift to rescue the operator from the platform or consider one of the other emergency procedures in this chapter.

HYDRAULIC LINE FAILURE - Hydraulic line failure during aerial lift operation presents numerous hazards. If working near energized conductors, be aware that hydraulic oil mist caused by a leak or hydraulic line failure is conductive even though a non-conductive oil is used. In addition, never place your body in the path of a high pressure oil stream.

DANGER: AVOID HIGH PRESSURE HYDRAULIC OIL SPRAY. THIS SPRAY OR MIST CAN PUNCTURE OR BECOME EMBEDDED BENEATH THE SKIN OR CONTAMINATE THE EYES. THESE CONDITIONS REQUIRE IMMEDIATE MEDICAL ATTENTION.

A hydraulic oil leak will create a slippery surface which is potentially hazardous. When a hydraulic leak is encountered, it must be repaired by qualified service personnel and the unit should be cleaned of excess hydraulic oil. If a hydraulic leak is not repaired the oil in the reservoir will be depleted and pump damage may occur. Most hydraulic oils are flammable and bodily contact with hot oil is dangerous. The operator and the ground crew must be alert for these hazards to avoid injury.

DANGER: AVOID ANY CONTACT BETWEEN HYDRAULIC OIL AND SOURCES OF HIGH HEAT OR OPEN FLAMES. DEATH OR SERIOUS INJURY MAY RESULT FROM A FIRE.

WARNING: CONTACT WITH HOT HYDRAULIC OIL MAY CAUSE SERIOUS BURNS WHICH REQUIRE IMMEDIATE MEDICAL ATTENTION.

A quick response to hydraulic line failure is important if the operator is to be safely removed from the platform. The examples below describe some emergency operating procedures to follow for some specific types of hydraulic line failures.

1. The UTLI41A and UTLI46A aerial lift design includes holding valves to lock the position of the cylinders in the event of a complete hydraulic line failure. This safety feature prevents the booms from dropping in the event of a hydraulic hose failure. Use the holding valve adjustment screw and the manual rotation features described in Section 5.1, Emergency Controls and Features, to lower the platform.

2. If there is a continuous loss of hydraulic oil from the aerial lift, operate the hydraulic power source only while actuating the controls to lower or stow the aerial lift to conserve the hydraulic oil. If operation of the aerial lift is not possible, then use the holding valve adjustment screw and the manual rotation features described in Section 5.1, Emergency Controls and Features, to lower the platform.

ENGINE FAILURE - In the event the engine driving the hydraulic pump stalls or will not start, use the emergency lowering control, if provided, to lower the platform as explained in Section 5.1, Emergency Controls and Features. If none of these features are provided, use the holding valve adjustment screw and the manual rotation features described in Section 5.1 as well.

HYDRAULIC PUMP FAILURE - If the primary hydraulic pump fails use the emergency lowering system, if provided. If this feature is not installed, the holding valve setscrews and manual rotation must be used.

After any emergency procedure, any equipment defects must be corrected by qualified service personnel prior to further operation. The aerial lift must also be operated, from the lower controls, through its full range of motion several times to verify proper operation. Check the hydraulic oil level and refill if necessary.

6. PREVENTIVE MAINTENANCE

This **UTEM** aerial lift is designed to provide years of reliable service with minimum maintenance. A routine preventive maintenance program will assure extended service. The recommended maintenance program presented in this chapter is divided into four sections to provide the operator the necessary information for proper maintenance. The operator is responsible for detecting maintenance problems during the daily visual inspection, verifying that maintenance is performed at the suggested intervals, reporting the need for adjustments or repairs, verifying that adjustments or repairs are performed and determining if the aerial lift is in a good, safe operating condition. The importance of accurate maintenance records cannot be emphasized enough. In order to judge the condition of the aerial lift, the operator needs to be familiar with the maintenance records of the aerial lift. Refer to the “Maintenance Checklist” in the Service Manual for three and six month maintenance requirements. All aerial lift repairs or adjustments must be done by qualified service personnel.

TABLE OF CONTENTS

Daily Visual Inspection	6.1
Lubrication	6.2
Hydraulic System Maintenance	6.3
Routine Adjustments	6.4

6.1 DAILY VISUAL INSPECTION

Every day the aerial lift must be given a thorough visual inspection to detect problems before they become serious. During this inspection the operator shall look for anything out of the ordinary that might indicate a problem. Particular attention must be paid to the items listed below.

CRITICAL FASTENERS - The critical fasteners are identified on the critical fastener drawings in this section. Bolts that are critical fasteners must remain tight. Inspect all the bolts identified as critical fasteners for signs of loosening. These include pedestal mounting bolts, basket mounting bolts and the rotation bearing bolts. Refer to the Parts and Service Manual for recommended torque procedures and torque specifications. Check that the retaining rings or roll pins are in place on all pins.

CRITICAL WELDS - The critical welds are identified on the critical weld drawings in this section. Inspect all critical welds for cracks.

HYDRAULIC LINES - Hydraulic lines should be inspected for loose connections and damaged covers. Carefully examine the hoses where they are subject to flexing, particularly any hoses at the platform.

FIBERGLASS BOOM - Inspect the inner and outer surfaces of the insulated inner boom for any contamination such as dirt, creosote, road spray or moisture. If contamination exists, clean the fiberglass boom with a mild detergent and water, both inside and out as required. When the fiberglass boom is dry, apply a hotstick wax to the outer surface to enhance the water shedding ability. The insulating boom must be clean and dry prior to use. Remember that the inner surface may be damp even if the outer surface is dry. Also verify that nothing conductive has been installed on the aerial lift that bridges the insulated boom. Inspect the insulated inner boom for cracks or mechanical damage. Any damage must be inspected by qualified service personnel and repaired if required. Safety regulations require that the insulated boom be dielectrically tested and certified periodically.

OIL LEAKS - Oil leaking onto the floor of the truck or on the ground is an obvious sign of an impending problem. A hydraulic leak will create a slippery surface which is potentially hazardous. When a hydraulic leak is found it must be repaired by qualified service personnel and spilled hydraulic oil must be removed. If a hydraulic leak is not repaired the oil in the reservoir will be depleted and hydraulic pump damage may occur.

VEHICLE TIRES - Check the vehicle tires for the correct inflation and for damage. Low pressure or damaged tires are unsafe while driving the vehicle or operating the aerial lift.

LOOSE OBJECTS - Inspect the booms for loose objects (tools, spare parts, etc.) that might fall when the booms are elevated.

HYDRAULIC OIL LEVEL - Check the hydraulic reservoir oil level in the sight gauge. Add the appropriate oil if necessary. Refer to Section 6.3, Hydraulic System Maintenance, for oil recommendations. Maintain the proper hydraulic oil level and do not overfill the oil reservoir.

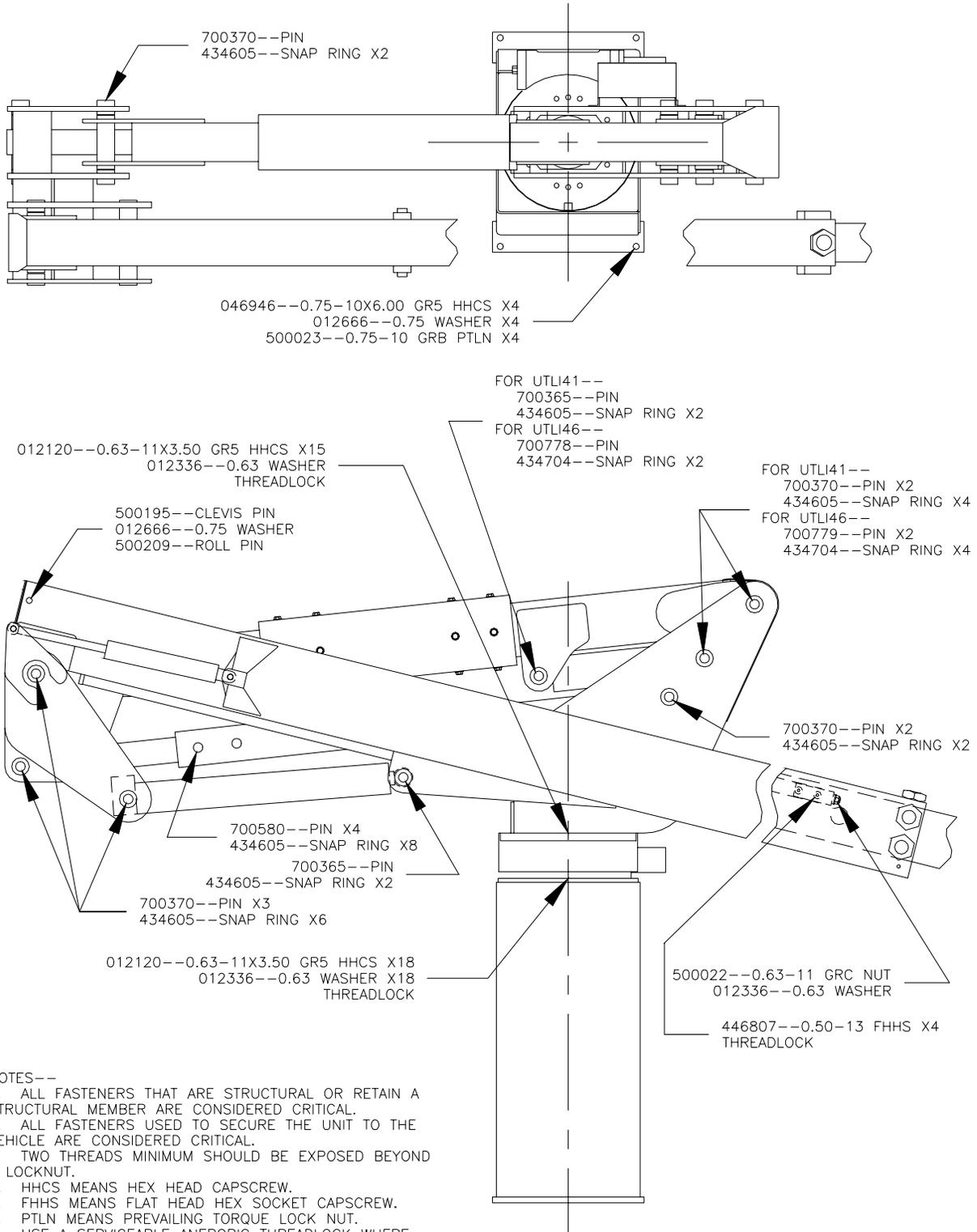
CONTROLS - Verify that the controls are not damaged and are operational. Any damaged or missing components must be replaced or repaired prior to aerial lift operation.

LEVELING SYSTEM - Inspect the master leveling cylinder, slave leveling cylinder, hoses, and fittings for damage, wear, or foreign objects which may prevent proper operation.

DECALS - Identification, operational, and instructional decals are installed at numerous locations on the aerial lift. These decals must be replaced if they become lost, damaged, or illegible. Refer to the Decal Placement drawing in this section for decal identification and location.

PLATFORM - Inspect a fiberglass basket for cracks in the mounting ribs, floor, and top flange. Inspect other structural components for cracks or damage as well. If any cracks are found, they must be evaluated and repaired, if required, by qualified service personnel prior to aerial lift operation.

BASKET LINER - If a basket liner is provided, inspect it for cracks or damage. If any defects are found, the liner will not provide adequate electrocution protection. If a liner is used, safety regulations require that it be tested and certified periodically.

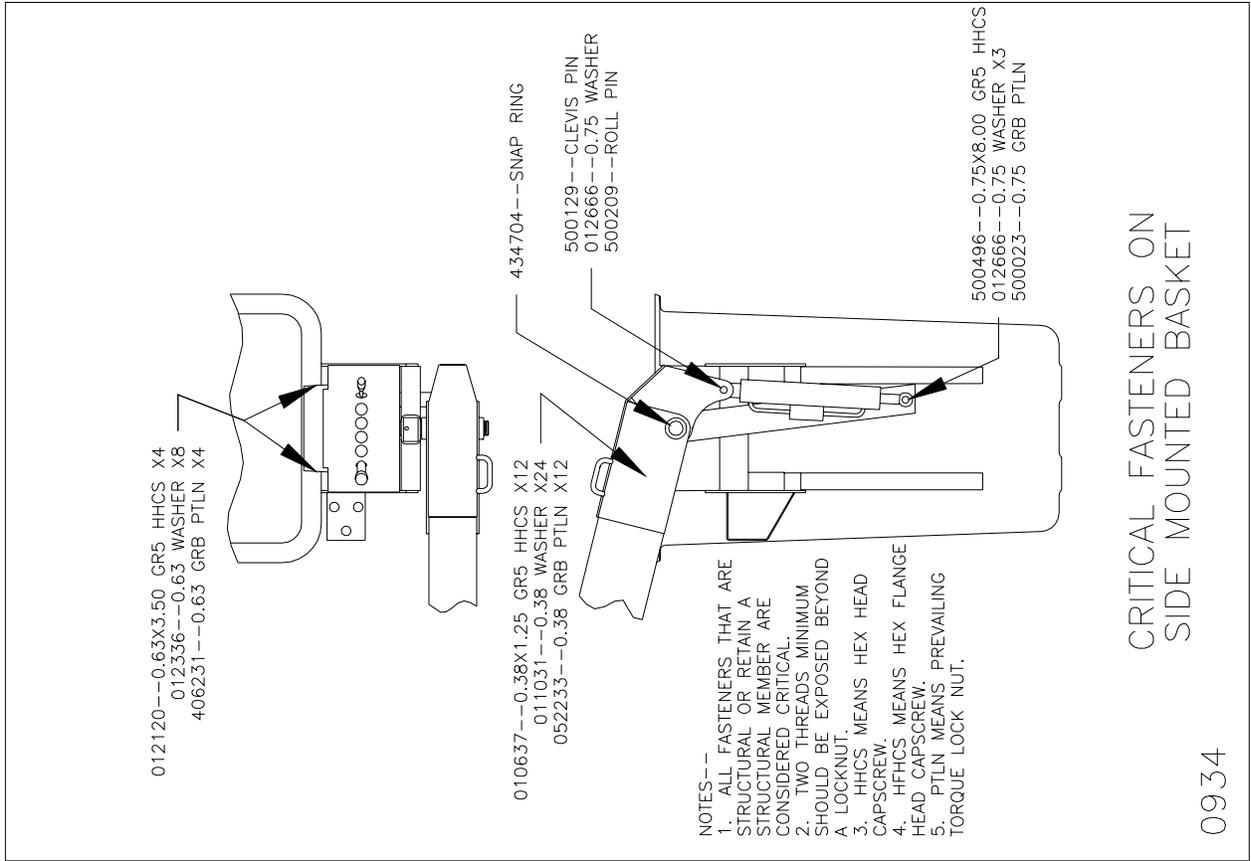


NOTES--

1. ALL FASTENERS THAT ARE STRUCTURAL OR RETAIN A STRUCTURAL MEMBER ARE CONSIDERED CRITICAL.
2. ALL FASTENERS USED TO SECURE THE UNIT TO THE VEHICLE ARE CONSIDERED CRITICAL.
3. TWO THREADS MINIMUM SHOULD BE EXPOSED BEYOND A LOCKNUT.
4. HHCS MEANS HEX HEAD CAPSCREW.
5. FHHS MEANS FLAT HEAD HEX SOCKET CAPSCREW.
6. PTLN MEANS PREVAILING TORQUE LOCK NUT.
7. USE A SERVICEABLE ANEROBIC THREADLOCK WHERE INDICATED.

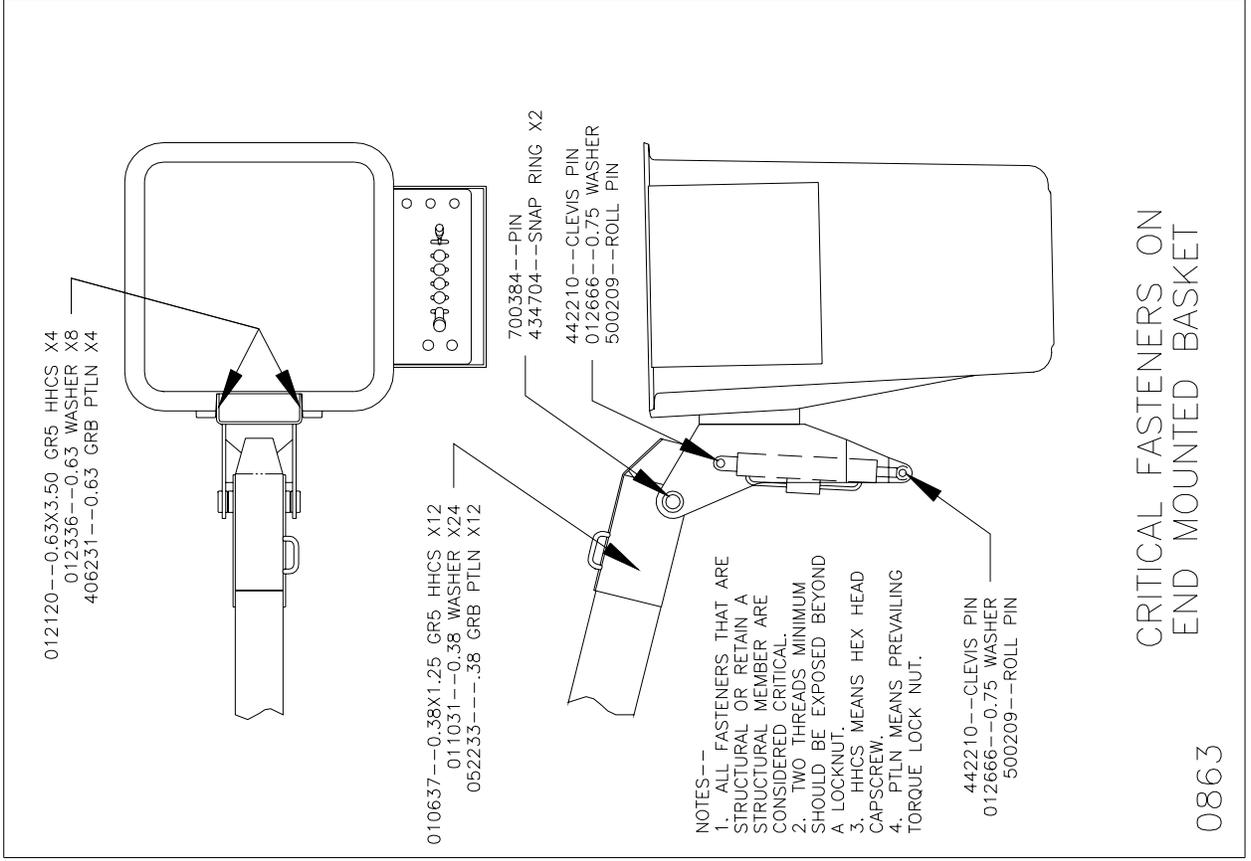
CRITICAL FASTENERS

0870



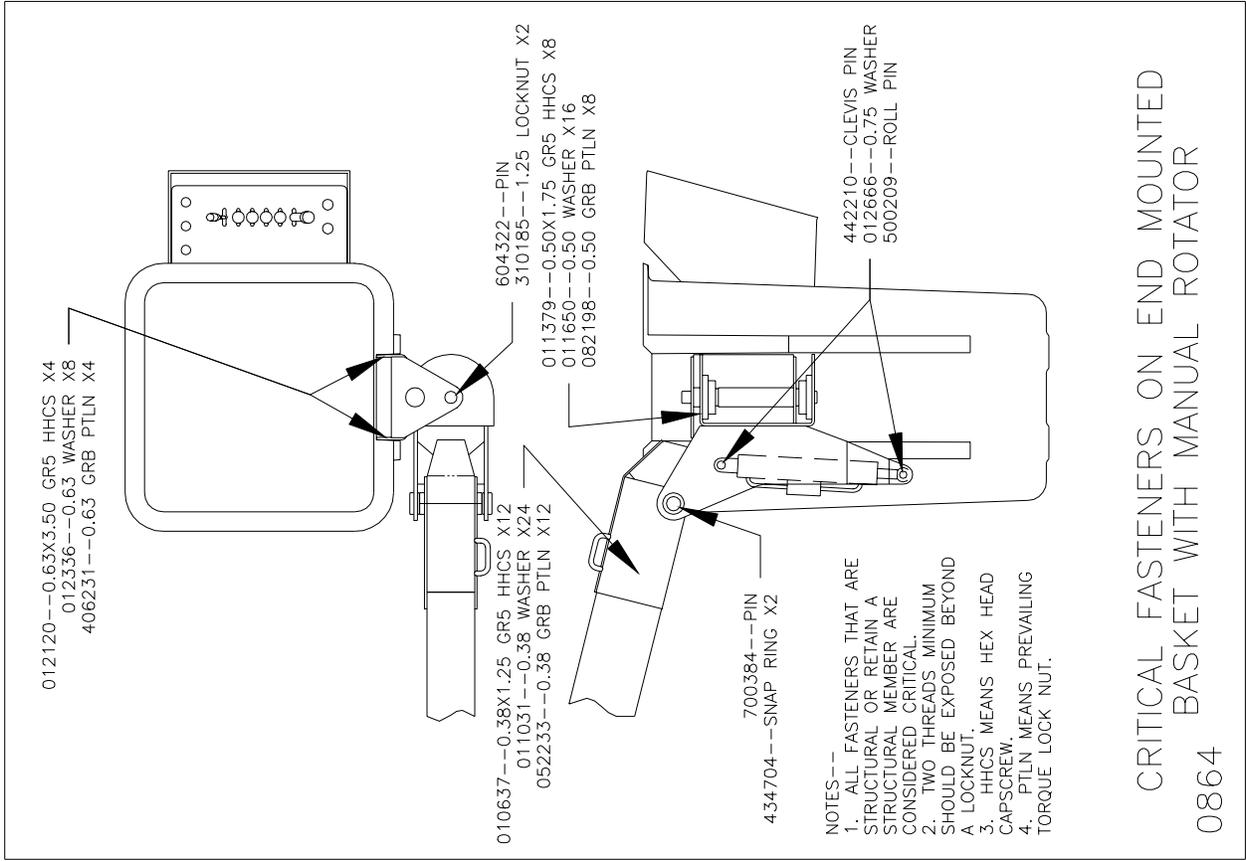
CRITICAL FASTENERS ON
SIDE MOUNTED BASKET

0934



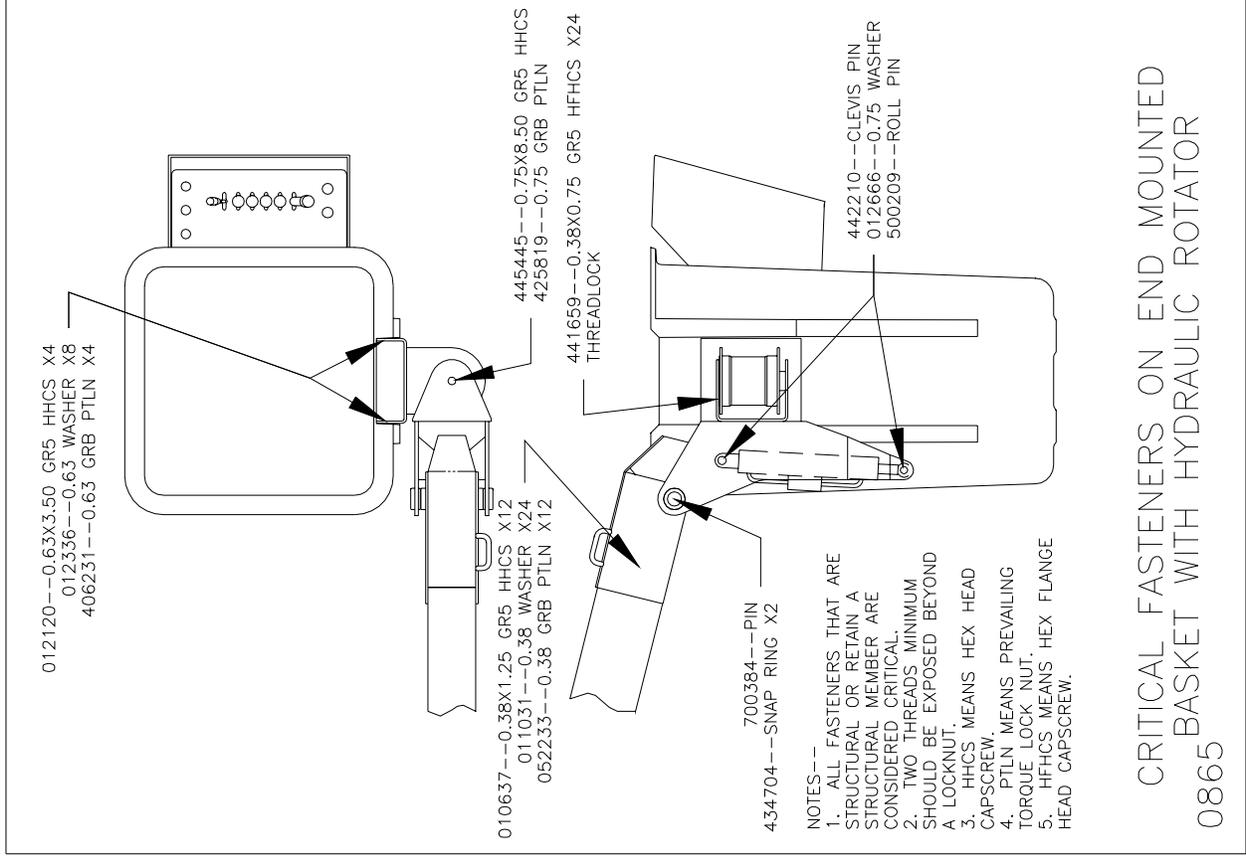
CRITICAL FASTENERS ON
END MOUNTED BASKET

0863



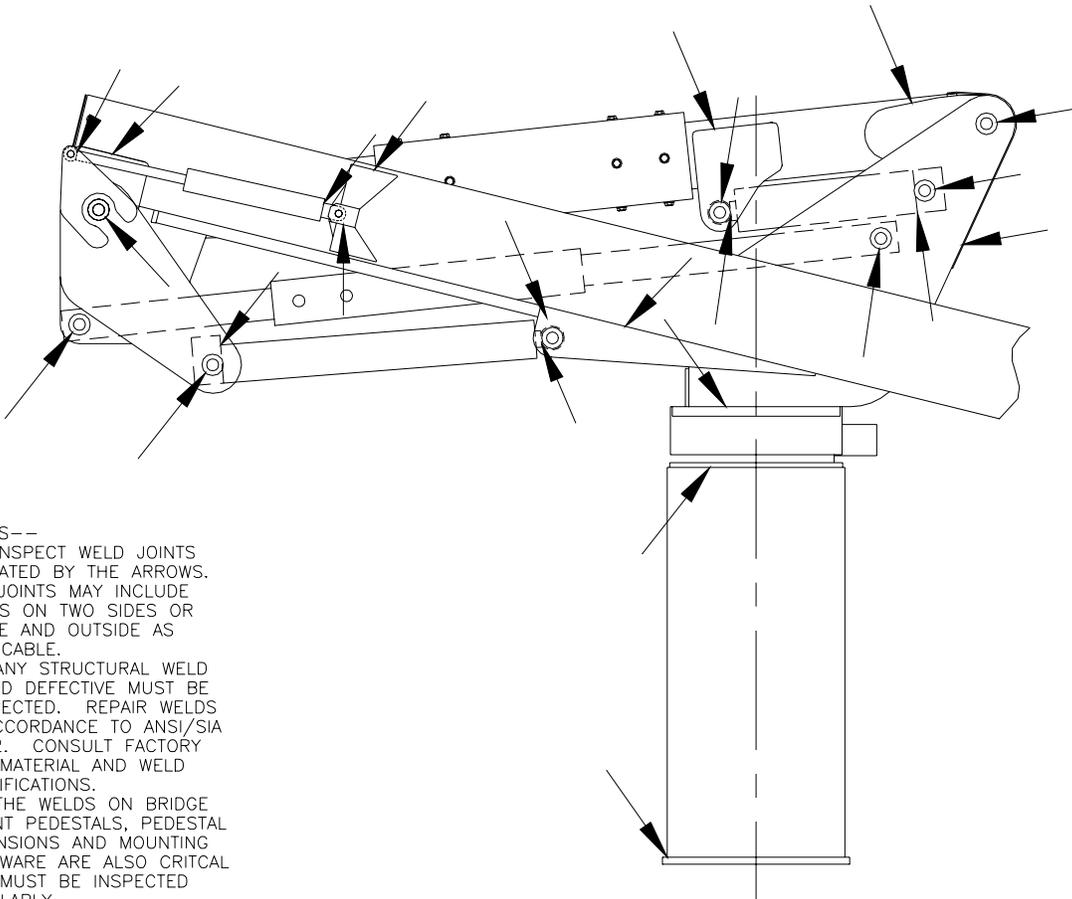
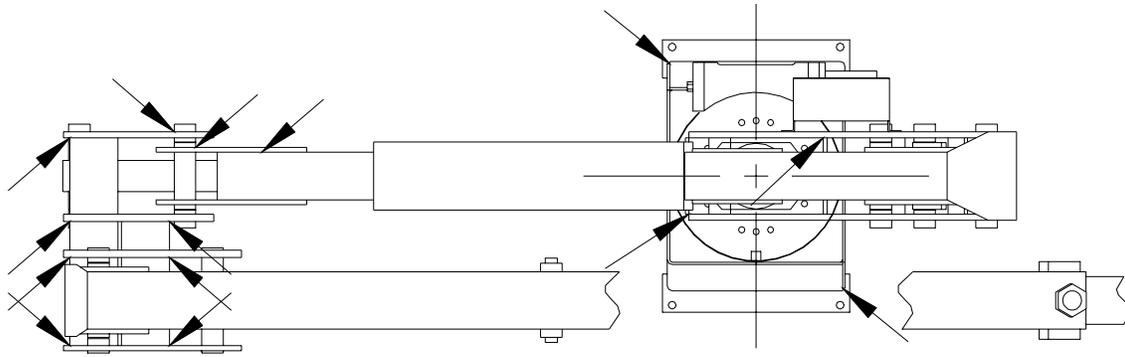
CRITICAL FASTENERS ON END MOUNTED
BASKET WITH MANUAL ROTATOR

0864



CRITICAL FASTENERS ON END MOUNTED
BASKET WITH HYDRAULIC ROTATOR

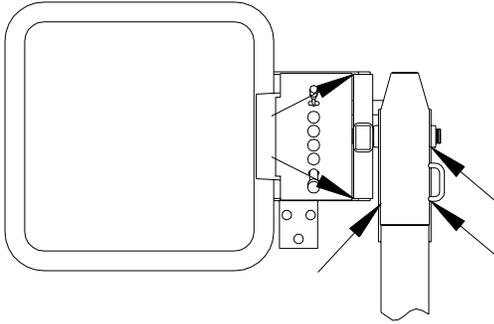
0865



- NOTES--
1. INSPECT WELD JOINTS INDICATED BY THE ARROWS. THE JOINTS MAY INCLUDE WELDS ON TWO SIDES OR INSIDE AND OUTSIDE AS APPLICABLE.
 2. ANY STRUCTURAL WELD FOUND DEFECTIVE MUST BE CORRECTED. REPAIR WELDS IN ACCORDANCE TO ANSI/SIA A92.2. CONSULT FACTORY FOR MATERIAL AND WELD SPECIFICATIONS.
 3. THE WELDS ON BRIDGE MOUNT PEDESTALS, PEDESTAL EXTENSIONS AND MOUNTING HARDWARE ARE ALSO CRITICAL AND MUST BE INSPECTED REGULARLY.

CRITICAL WELDS

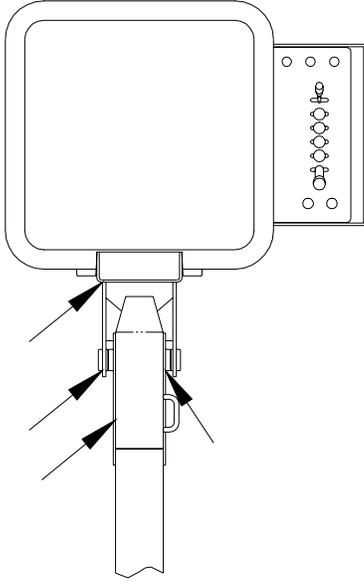
0871 (REVISED 27MAR10)



NOTES--
 1. INSPECT WELD JOINTS INDICATED BY THE ARROWS. THE JOINTS MAY INCLUDE WELDS ON TWO SIDES OR INSIDE AND OUTSIDE AS APPLICABLE.
 2. ANY STRUCTURAL WELD FOUND DEFECTIVE MUST BE CORRECTED. REPAIR WELDS IN ACCORDANCE TO ANSI/SIA A92.2. CONSULT FACTORY FOR MATERIAL AND WELDING SPECIFICATIONS.

CRITICAL WELDS ON
 SIDE MOUNTED BASKET

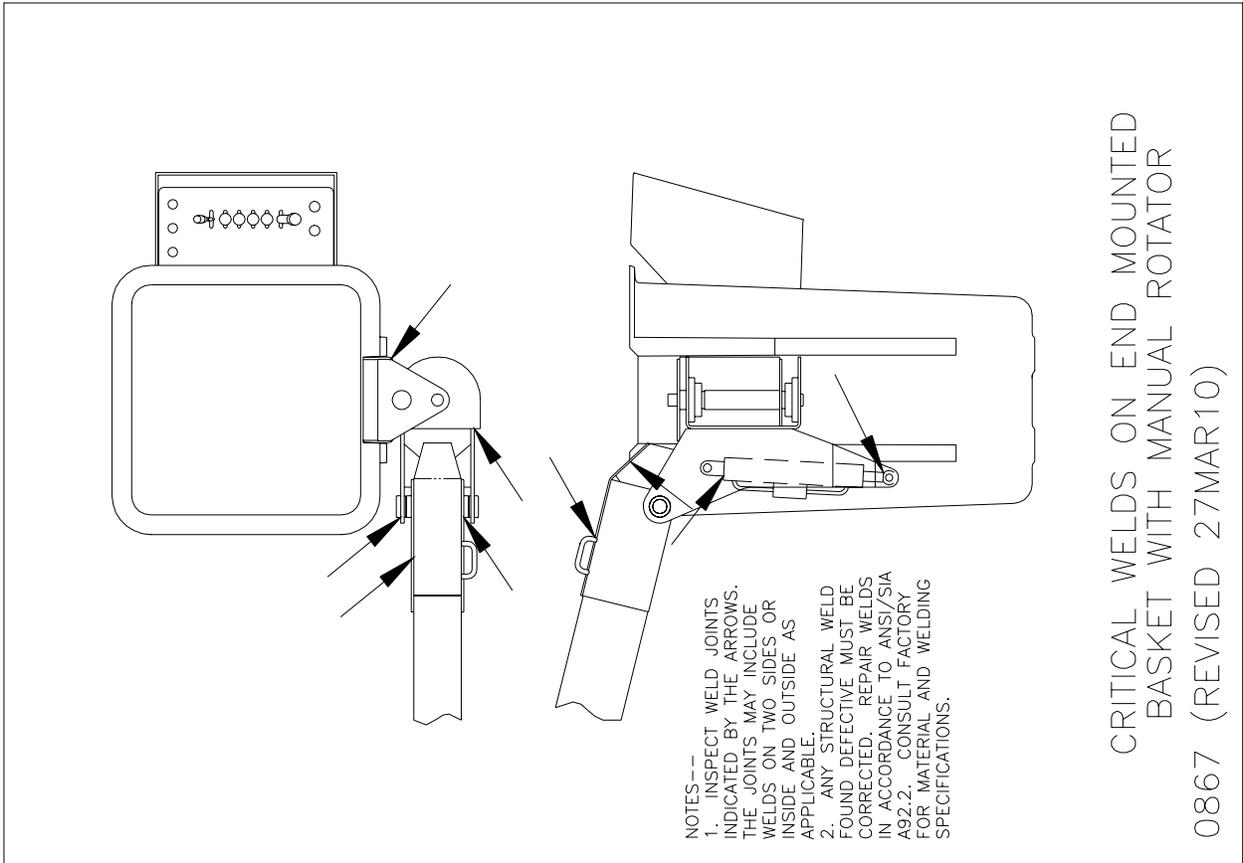
0935 (REVISED 27MAR10)



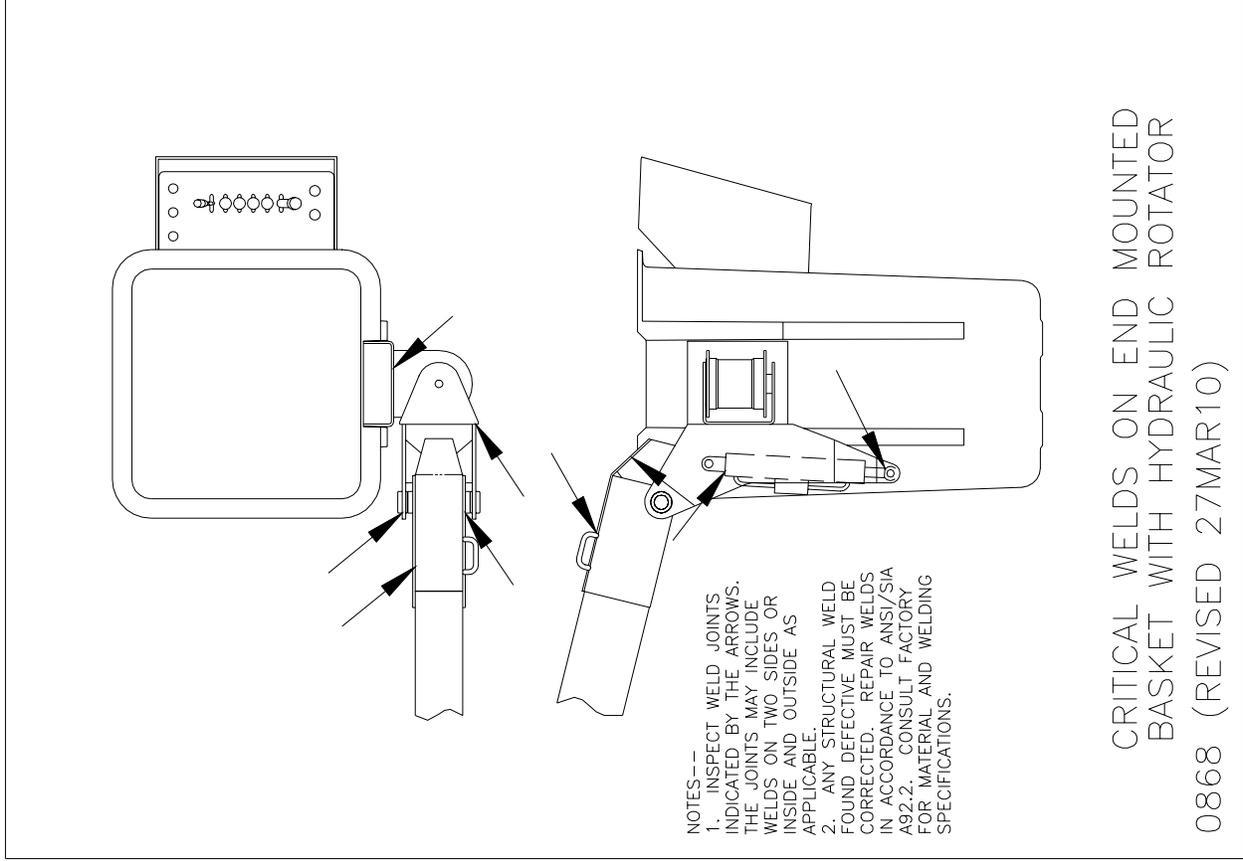
NOTES--
 1. INSPECT WELD JOINTS INDICATED BY THE ARROWS. THE JOINTS MAY INCLUDE WELDS ON TWO SIDES OR INSIDE AND OUTSIDE AS APPLICABLE.
 2. ANY STRUCTURAL WELD FOUND DEFECTIVE MUST BE CORRECTED. REPAIR WELDS IN ACCORDANCE TO ANSI/SIA A92.2. CONSULT FACTORY FOR MATERIAL AND WELDING SPECIFICATIONS.

CRITICAL WELDS ON
 END MOUNTED BASKET

0866 (REVISED 27MAR10)



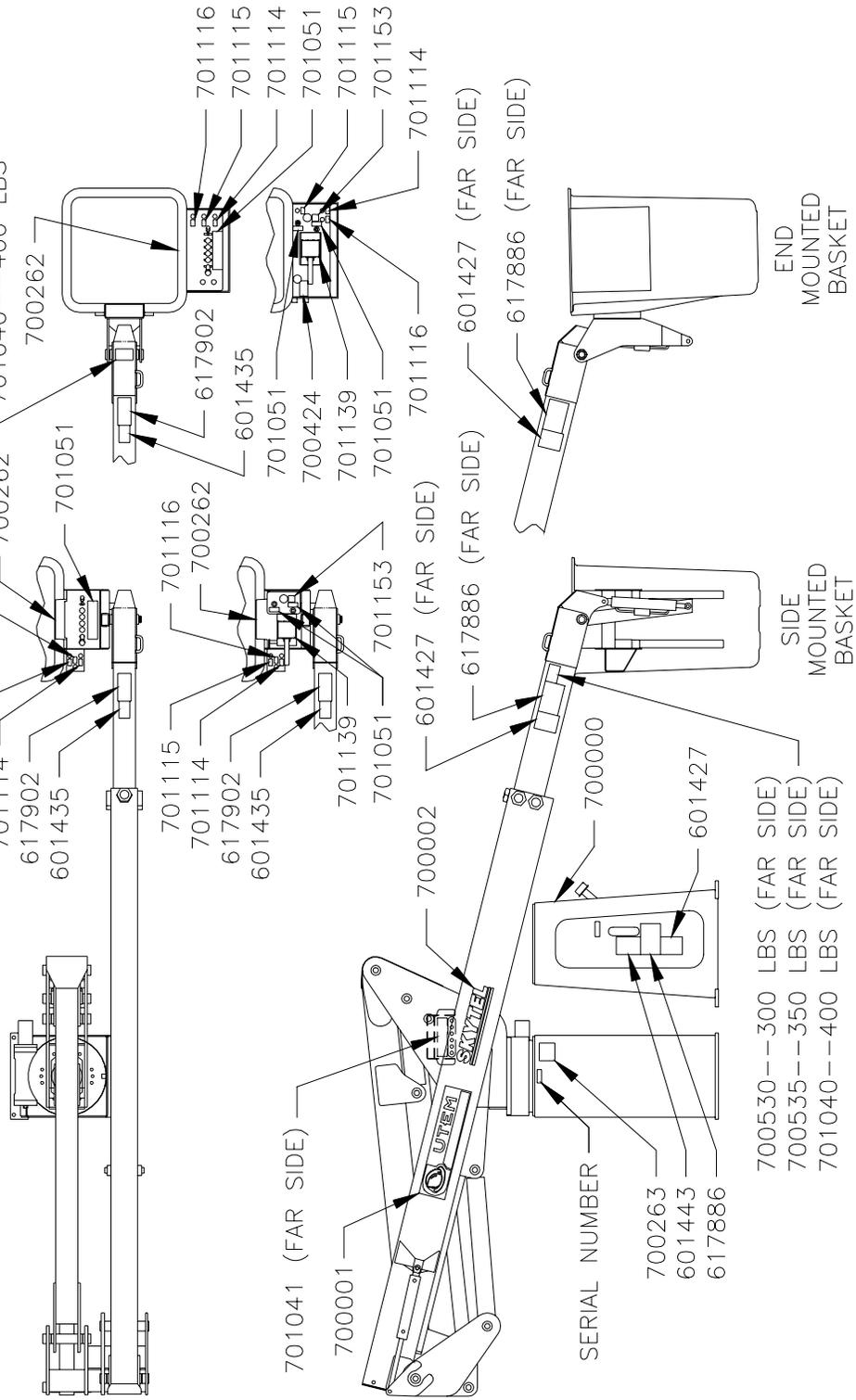
CRITICAL WELDS ON END MOUNTED
BASKET WITH MANUAL ROTATOR
0867 (REVISED 27MAR10)



CRITICAL WELDS ON END MOUNTED
BASKET WITH HYDRAULIC ROTATOR
0868 (REVISED 27MAR10)

DECAL PLACEMENT

ADDITIONAL DECALS NOT SHOWN --
 617894 -- INSTALLED ON EACH SIDE
 OF VEHICLE.
 601450 AND 601468 -- INSTALLED NEAR
 OUTRIGGERS AND OUTRIGGER CONTROLS
 IF PROVIDED.

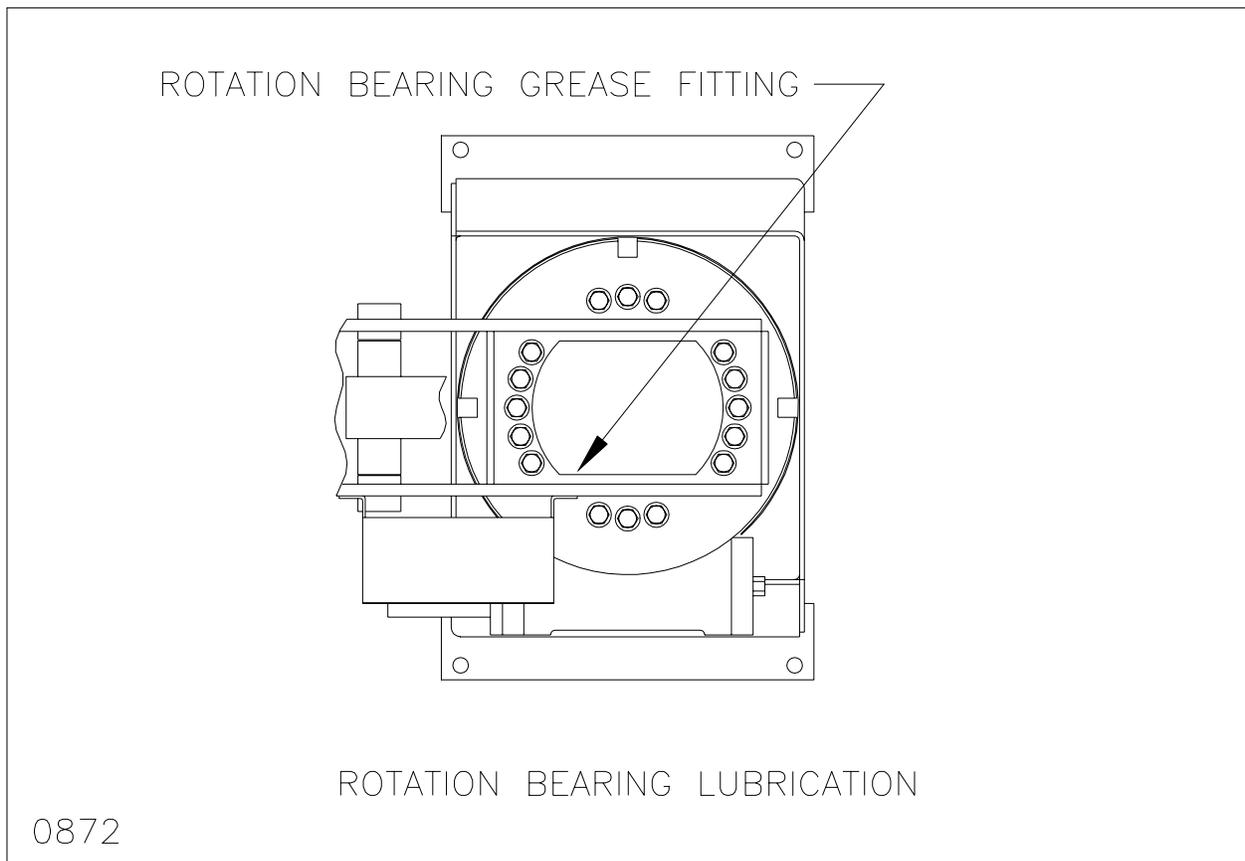


0869 (REVISED 22MAR10)

6.2 LUBRICATION

This **UTEM** aerial lift utilizes non-lube bearings at most points of motion. Only the rotation drive requires periodic lubrication. Every three months or 250 hours of aerial lift operation, the rotation drive must be lubricated. Apply an extreme pressure lithium based grease through the grease fitting identified in the illustration below. Rotate the aerial lift in 90° intervals while applying grease to assure lubrication of the entire bearing. In addition, the gear teeth on the outer race of the rotation bearing must be lubricated. Remove the cover over the rotation drive to expose the rotation bearing. Apply an open gear lubricant such as Lubriplate “Gear Shield Heavy” to the teeth on the rotation bearing. Be sure grease is applied to the entire profile of the gear teeth. Rotate the aerial lift approximately 90° to allow lubrication of the entire rotation bearing.

WARNING: KEEP CLEAR OF THE GEARS WHILE ROTATING THE AERIAL LIFT AND ALWAYS REINSTALL THE COVER AFTER LUBRICATION. ANYTHING CAUGHT BETWEEN THE GEARS WILL BE CRUSHED.



6.3 HYDRAULIC SYSTEM MAINTENANCE

All hydraulic systems require maintenance at regular intervals to insure safe, efficient performance and long life. Preventive maintenance and the recommended intervals are provided below.

OIL FILL/BREATHING CAP - The oil fill cap that is provided allows air to enter and exit the reservoir as the oil level fluctuates. A filter is provided to prevent contaminants from entering the reservoir. It is recommended to wash the filter in a solvent whenever the hydraulic oil is changed. Always keep the oil fill/breathing cap in place to avoid contamination of the hydraulic oil.

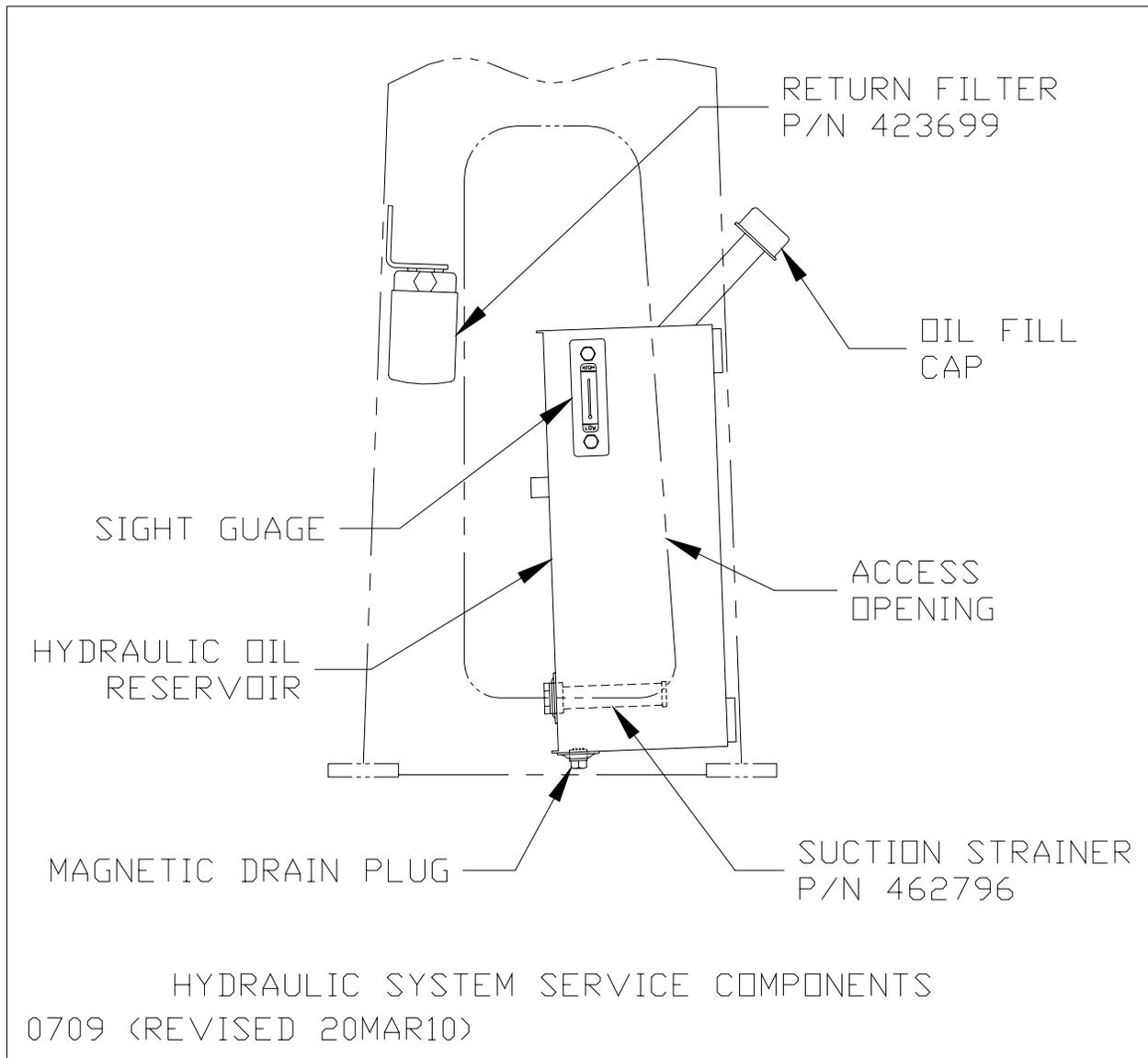
RETURN LINE FILTER - The 10 micron return line filter should be replaced after the first 30 days of operation and every 6 months thereafter. The return line filter is mounted inside the standard pedestal adjacent to the hydraulic oil reservoir. The return line filter can be conveniently changed with minimal loss of hydraulic oil. Whenever the return line filter is changed the oil should be examined for foreign particles and water. If contamination is found, the oil should be changed or reclaimed by adequate filtering.

SUCTION STRAINER - The 100 mesh (149 micron) rated suction strainer must be removed and cleaned if the hydraulic system is contaminated. Noisy operation of the hydraulic pump is indicative of pump cavitation which is often caused by a dirty or clogged suction strainer. Operating in conditions too cold for the type of oil used is another common cause for pump cavitation. Pump cavitation will result in damage to the hydraulic pump. To remove the suction strainer the reservoir must be drained. This is accomplished by removing the magnetic drain plug. Remove the suction hose and suction fittings and remove the suction strainer. Remove, clean, and reinstall the suction strainer. When reconnecting the suction fittings and suction line make certain all connections are sufficiently tight to prevent leakage. Loose hydraulic connection may allow air to enter the hydraulic oil.

MAGNETIC DRAIN PLUG - A magnetic drain plug is provided to attract and remove metallic particles from the oil. These can be very damaging to the precision hydraulic components throughout the hydraulic system. The magnetic drain plug should be cleaned whenever the reservoir is drained.

SIGHT GAUGE - The hydraulic fluid level can be conveniently checked by monitoring the oil level through the hydraulic oil reservoir sight gauge. With the aerial lift stowed, the hydraulic oil level should always be between the "low" and "high" markings on the sight gauge. Maintaining the oil level will minimize the operating temperature of the hydraulic oil maintaining its lubricity. In addition, minimizing the temperature variation of the hydraulic oil will also minimize the condensation of moisture inside the reservoir.

HYDRAULIC OIL SELECTION - The selection of a suitable hydraulic oil is very important for proper performance of the hydraulic system. UTEM uses a hydraulic oil that provides good service in temperatures over 15⁰F (9⁰C). Any hydraulic oil used should be clean and free of water. For extremely cold weather, hydraulic oils meeting or approaching military specification MIL-H-5606 can be used. However, if such a cold weather oil is used at higher temperatures, the result may be a reduction in pump efficiency and the operating life of the pump may be significantly reduced. Furthermore, these cold weather hydraulic oils typically have low flash points and must be used with caution.



A suitable hydraulic oil for a **UTEM** aerial lift must meet the requirements listed below.

1. A petroleum based oil.
2. A maximum viscosity of 4000 SUS (1000cst) at the minimum start-up temperature.
3. A viscosity range of 80 SUS to 180 SUS (16 to 38cst) at the anticipated operating temperatures.
4. Anti-wear additives to ensure the long life of the hydraulic components.
5. Anti-foam additives to minimize air entrapment.
6. Good chemical stability at anticipated operating temperatures.
7. A flash point above anticipated operating temperatures.
8. Good demulsibility or water separation characteristics.
9. Dielectric requirements meeting ANSI A92.2-2001.

Based on the requirements for a particular aerial lift application, one hydraulic oil can generally provide year round service. If a wide variation in start-up temperatures is expected, a hydraulic oil with a high viscosity index is suggested. Start-up at extremely cold temperatures will require a hydraulic oil with a low pour point. Therefore, make certain the viscosity requirements are met in addition to the pour point needed.

The hydraulic oil in an insulated aerial lift must be non-conductive. Experience has proven that most mineral based hydraulic oils will provide adequate dielectric characteristics. The introduction of water to the hydraulic oil, generally due to condensation in the reservoir, will degrade the dielectric characteristics over time. Periodic dielectric tests of the insulated boom will indicate if such degradation has occurred. Most hydraulic oil specifications will include a dielectric rating based on a recognized test procedure for transformer applications. This test procedure is much more demanding than that required for an aerial lift. However, such a rating indicates that a hydraulic oil is certainly adequate for an insulated aerial lift application. Once in service, the periodic dielectric tests prescribed by ANSI A92.2 and in the Parts and Service Manual for the insulated boom are adequate assurance of the dielectric integrity of the hydraulic oil.

UTEM does not endorse or guarantee any particular hydraulic oil. A reputable distributor or supplier should be consulted in any hydraulic oil application. Mixing different oils or additives must be done only by the supplier. Serious damage to a hydraulic system can result from mixing incompatible hydraulic oils or additives.

A table of some suitable hydraulic oils with their respective properties is provided. This information will be helpful in selecting a hydraulic oil or an equivalent oil for a particular application.

HYDRAULIC OIL SPECIFICATIONS													
BRAND NAME	ISO GRADE	SUS				VISCOSITY		CST @100°C	VISCOSITY INDEX	POUR POINT		FLASH POINT	
		@100°F	@210°F	@40°C	@100°C	°F	°C			°F	°C		
Exxon Nuto H32	32	155	44	30	5	100	-22	-30	410	210			
Exxon Univis J-13 ¹	-	75	44	14	5	374	-75	-59	200	93			
Union Unocal UNAXAW	32	157	44	30	5	110	-27	-33	414	212			
Texaco Rando HD32	32	155	44	30	5	106	-25	-31	385	196			
Texaco Rando HDZ32	32	161	42	31	6	144	-40	-40	385	160			
Shell Tellus T-22	23	107	42	24	5	147	-50	-46	305	152			
Shell Tellus T-32	32	155	47	32	6	153	-45	-42	345	198			
Sun 2105	-	206	52	40	8	167	-45	-46	390	182			
Dextron III	-	190	51	38	8	172	-54	-48	396	202			
Pennzoil Pennzbell AW32	32	165	44	32	5	95	-22	-30	405	208			
Pennzoil Pennzbell AWX MULTI-VIS	32	165	48	33	6	144	-40	-40	410	210			
Pennzoil Pennzbell AWX ARTIC	15	86	39	16	4	145	-76	-60	290	146			
Mobil DTE 11M	15	82	39	15	4	140	-40	-40	300	149			
Mobil DTE 13M	32	169	48	33	7	140	-40	-40	330	165			
Mobil DTE 24	32	165	44	32	5	95	-10	-23	395	202			
Mobil EAL SYNDRAULIC 46 ²	46	210	52	45	8	153	-27	-33	500	260			

¹Meets MIL-H-5606 Specifications

²Non Toxic Readily Biodegradable

035-Hydraulic Oil Table

6.4 ROUTINE ADJUSTMENTS

Field adjustment of the **UTEM** UTLI41A or UTLI46A aerial lift can be performed but may require some tools or equipment not readily available. These adjustment items are listed below. Refer to the Service Procedures section in the Parts and Service Manual for the correct procedures.

1. System Relief Pressure
2. Outer Boom Slide Pads
3. Hydraulic Leveling Circuit Relief Pressure

