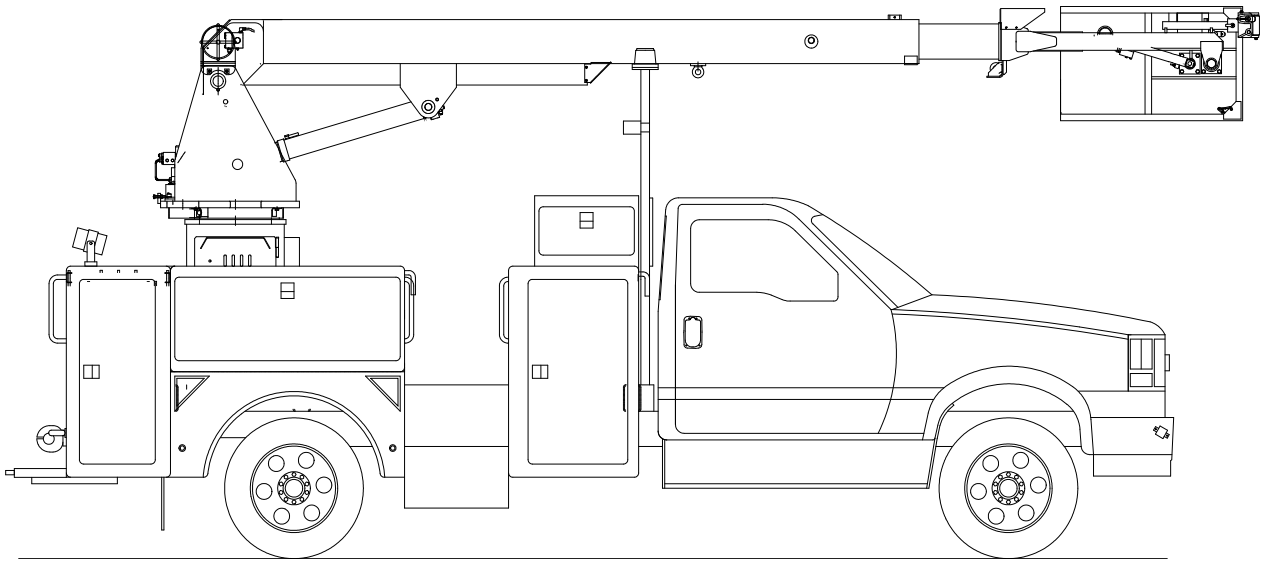
OPERATOR'S MANUAL

TELESCOPIC AERIAL DEVICE

Line Runner 700-40



700-OPEA-004

TABLE OF CONTENTS

Preface

The Posi-Plus Line Runner 700 aerial device is the result of Posi-Plus advanced technology and quality awareness in design, engineering and manufacturing. At the time of delivery from the factory, this unit met or exceeded all applicable standards published by both the Canadian Standards Association CSA-C225 and the American National Standards Institute ANSI A92.2. All information, illustrations and specifications contained within this manual are based on the latest product information available at the time of publication.

It is mandatory that all operators read and understand this manual to operate the machine in a safe and efficient manner.

This unit should never be altered or modified in any way that might affect the structural integrity or operational characteristics without the specific written approval of Posi-Plus. Any unauthorized alterations or modifications will void the warranty. Of greater concern, is the possibility that unauthorized modification could adversely affect the safe operation of this unit, resulting in property damage and/or personal injury.

Danger

Electrocution Hazard

This unit is a non-insulating aerial device.

Maintain safe clearances from electrical power lines and apparatus. You must allow for platform sway, rock or sag.

This aerial device does not provide protection from contact with or proximity to an electrically charged conductor.

Death or serious injury will result from such contact or inadequate clearance. The operator of this machine must be familiar with and understand the safety information in the manual and on the placards before operating the unit.

Set-up requirements, work procedures, and safety precautions for each particular situation are the responsibility of the personnel involved in the use and/or care of this unit.

Dealers, installers, owners, users, operators, rentors, lessors, lessees and brokers must comply with the appropriate sections of the applicable CSA C225 or ANSI A92.2 standards, OSHA, local and company regulations.

In this manual, there is the applicable reach diagram for this aerial device. This diagram will help you choose the proper vehicle's position for the optimum operation of the aerial device.

Section 1 - Unit specifications

About this manual

This manual provides instruction for the operation of the unit. The operator must be familiar with the unit and its capabilities before using the unit on the job. This manual is written to provide an understanding of the unit, safety, proper set-up, and operation.

General specifications

The Posi-Plus model 700 uses a telescopic boom design that is capable of movement through 100°, from -20° below horizontal to 80° above horizontal. The turntable has a 370° non-continuous rotation. The standard unit is manufactured with "ON/OFF" controls using a 3-axis joystick at the platform that operates the three (3) boom functions.

If requested, an optional 3-axis proportional joystick and valve assembly is available for this model. In this case, the proportionality obtained during simultaneous operation of the boom functions via the platform joystick will be dependent on the maximum flow available. The standard flow available for this model is approximately 8 GPM at 1000 engine RPM.

This unit has been designed to be operated as a mobile aerial device. The driver must never exceed 3 km/h (2 mph) when the operator is inside the platform. It should only be operated on firm surfaces up to 5 degrees of inclination. For a maximum stability, the truck chassis must be on a level and firm surface only.

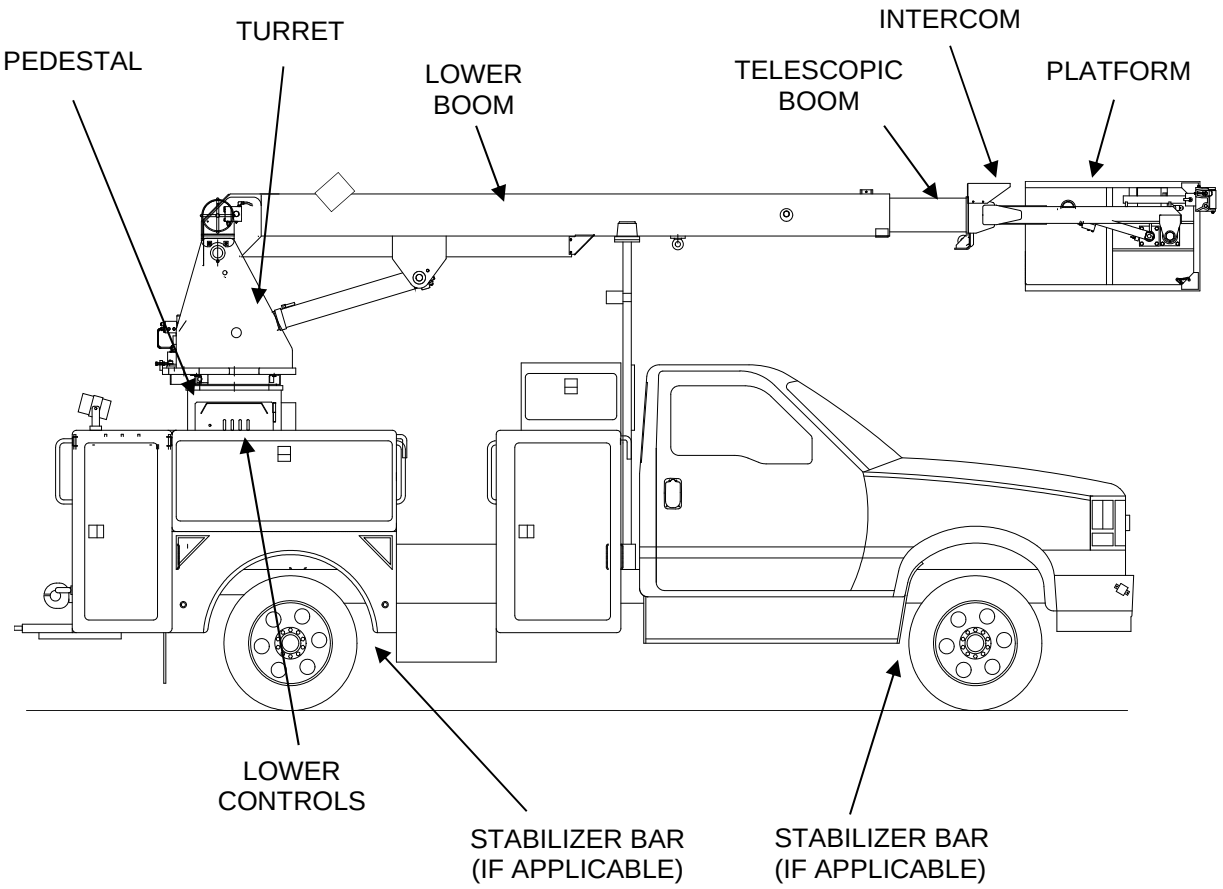
Height (ground to bottom of platform)	34’-1”	10,4 m
Working Height	39’-1”	11,9 m
Reach from Centerline of Rotation	29'0"	8,9 m
Stowed Travel Height	10' 5"	3,2 m
Side pull Capacity*	300 lb	136 kg
Platform Capacity*	300 lb	136 kg
Cable Down Load*	100 lb	45 kg
Lower Boom Articulation	-20° to 80°	
Rotation	370° non-continuous	

The capacities applicable to this unit could be different and are engraved on the aerial device identification placard on the turret (100-229-XXX).

Standard optional features

- Lower remote controls
- Emergency operating system (12 V dc)
- Fairlead ass' y at the platform
- Standardized cab control panel
- Optional proportional controls are available

Components identification



POSI-PLUS TECHNOLOGIES INC.

AERIAL DEVICE REACH DIAGRAM MODEL 700-39
(UNITS = FEET)

PLATFORM HEIGHT	34' -1"	SIDE REACH	29' - 0"	STOWED TRAVEL HEIGHT	10' - 5"

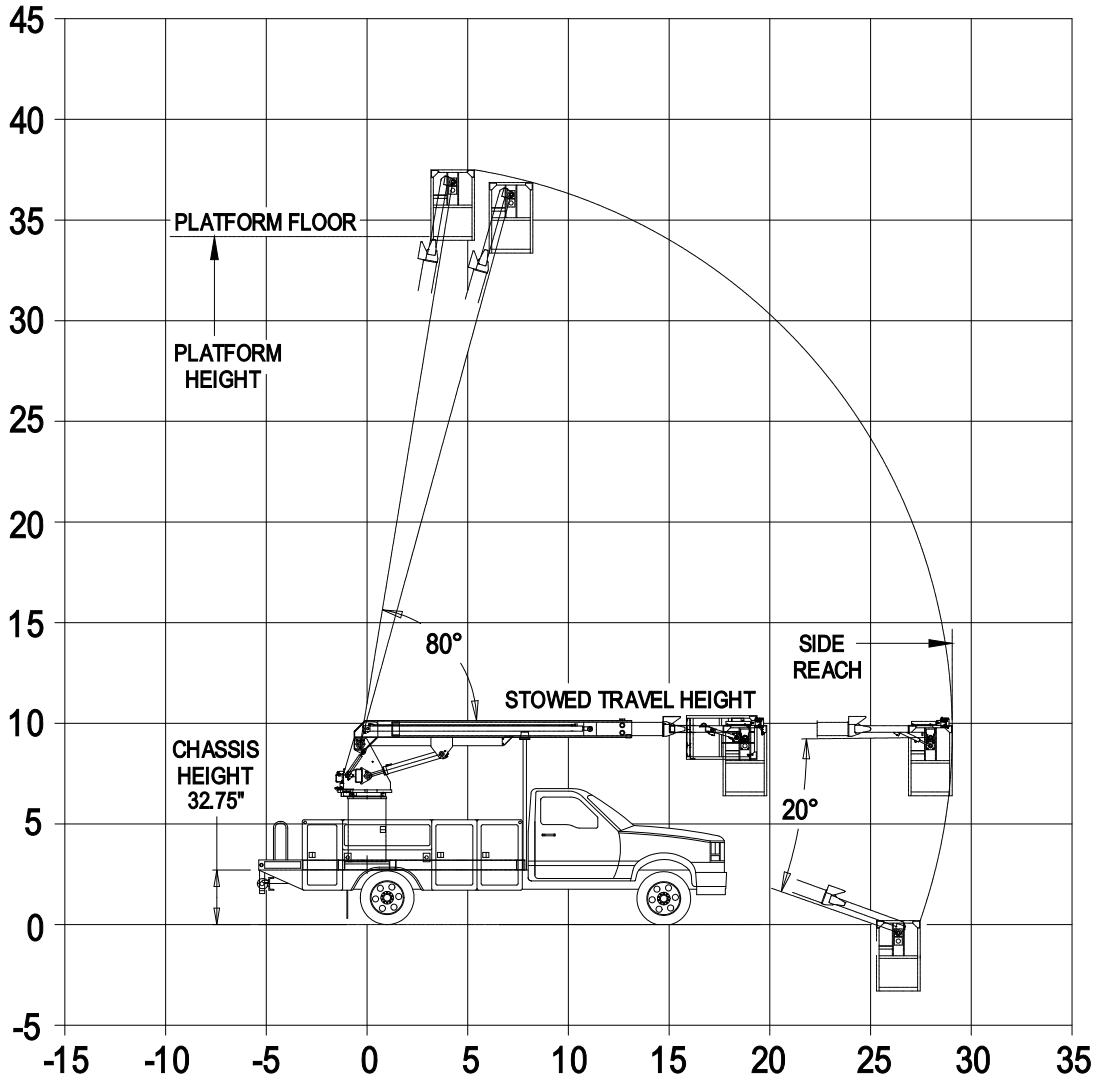


FIGURE 1.2.1 - REACH DIAGRAM IN FEET

Section 2 - Safety

Accident prevention signs

Your aerial device was complete with accident prevention signs when it was delivered. These accident prevention signs are prepared by an industry council. If for any reason any of the accident prevention signs are lost or become illegible, replacements may be obtained from Posi-Plus.

Safety instructions

This "safety alert symbol" is used throughout this manual to indicate danger, warning, caution, and attention instructions. These instructions must be followed to prevent the possibility of personal injury and/or property damage.

The terms "danger, warning, and caution" represent varying degrees of personal injury and/or property damage that could possibly result if the preventive instructions are not followed. The following paragraphs from ANSI Z535.4 explain each term.

Danger

Indicates an imminently hazardous situation which, if not voided, will result in death or serious injury. This signal word is to be used in the most extreme situations.

Warning

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

The terms "attention" is used to alert personnel of instructions that must be followed to prevent the possibility of property damage. Property damage could include structural damage to the unit, component failure, or damage to nearby property. Read and follow all danger, warning, caution and attention instructions.

Read and follow all danger, warning, caution and attention instructions.

Safety information 

Study all safety messages and apply them on the job.

General safety information

- Dealers, installers, owners, users, operators, rentors, lessors, lessees, and brokers must comply with the appropriate sections of the applicable CSA or ANSI standards, OSHA, local and company regulations.
- Knowledge of the information in this manual and proper training provide a basis for safely operating the unit. Follow your employer's safe work practices and the procedures in this manual when operating the unit.
- This unit is designed and manufactured with many features intended to reduce the likelihood of an accident. Safety alerts throughout this manual highlights situations in which accidents can occur. Pay special attention to all safety alerts.
- This aerial device should never be altered or modified in any way which might affect the structural integrity or operational characteristics without the specific written approval of Posi-Plus Technologies Inc. Unauthorized alterations or modifications will void the warranty. Of greater concern is the possibility that unauthorized modification could adversely affect the safe operation of the unit, resulting in personal injury and/or property damage.
- The operator bears ultimate responsibility for following all regulations and safety rules of their employer and/or any state or federal law.
- Never operate the aerial device with the vehicle out of level by more than 5° on all sides (i.e. front, rear, curbside and roadside).

Before operation

- Do not operate the unit without proper training.
- Keep any tools or equipment needed to perform manual emergency operation in a well-marked, designated area.
- A pre-operational inspection should be performed daily, as described in the daily pre-operational checks Section.
- Do not use hands or other body parts to check hydraulic lines and fittings for leaks. Death or serious injury can result from hydraulic oil being injected into the flesh.
- Make sure that the unit is operating properly, and has been inspected, maintained and tested in accordance with the manufacturer's and government's requirements.
- The unit may be stabilized by stabilizer bars and/or outriggers. Set the unit on level and firm ground before moving the booms from the rest.
- Make sure that the fall protection equipment for each operator is in good condition (i.e. no damage, no cuts, carabiner with safety latch working properly).
- Make sure the platform floor is clear of debris, tools and other equipment that could make the operator unstable and prevent from having both feet on the floor during the operation.

- All platform occupant(s) must always wear a certified CSA or OSHA approved full body harness attached and secured to the anchor provided at the upper controls' station before entering the platform.
- All platform occupants must always wear appropriate personal protective devices at all times (i.e. hard hats, safety shoes or boots; safety glasses, work gloves).
- Never try to climb in or enter the platform, if the platform is not down to the ground.
- Never place any item in the platform for the purpose of increasing work height (i.e. planks, ladders, step stools).
- Never wear climbers inside the platform.
- Before entering the platform, visually inspect the unit and test operate it at the beginning of each day by using the lower controls.

During operation

- Always maintain safe clearance from obstacles, electrical power lines and apparatus. The operator must allow for platform sway, rock or sag.
- Always maintain a safe distance from overhead obstacles (including overhead electrical power lines).
- Always maintain a clear view of the path of travel when operating from the platform.
- Do not exceed the platform capacity that is stated on the serial number placard.
- Understand the stability characteristics of this unit before using it.
- All platform occupant(s) of this aerial device must always wear a certified CSA or OSHA approved full body harness attached to a lanyard while operating the unit from the platform. The lanyard must be secured to the lanyard anchor (D-ring) at the boom tip.
- All platform occupants must always wear appropriate personal protective devices at all times (i.e. hard hats, safety shoes or boots; safety glasses, work gloves).
- Always stand firmly and keep both feet on the floor of the platform.
- Never sit, stand, or climb on the edge of the platform.
- Never place any item or equipment in the platform for the purpose of increasing work height (planks, ladders, step stools).
- Never try to climb down from the platform, if the platform is not in the stowed position or down to the ground.
- Make sure the platform floor is clear of debris, tools and other equipment that could make the operator unstable and prevent from having both feet on the floor during the operation.
- Never belt off or tie off to an adjacent pole, structure or other equipment.
- Operate the controls smoothly, avoiding rapid reversals.
- Use care when getting on and off the unit and/or when entering and exiting the platform to avoid slipping or falling. Always maintain three points contact.

Danger

This aerial device is not insulating and carries no dielectric rating. Death or serious injury can result from the use of such equipment in contact with or with inadequate clearance from an energized conductor.

Maintain safe clearance from electrical power lines and apparatus. The operator must allow for platform sway, rock or sag.

- Never allow ground personnel to come in contact with the aerial device, vehicle or vehicle attachments while in operation near energized power lines.
- Pinch points exist on an aerial device between the lower boom and the turntable. Stand clear while raising and lowering the lower boom.
- This unit has been designed to be operated as a mobile aerial device. The driver must never exceed 3 km/h (2 mph) when the operator is inside the platform. It should only be operated on firm surfaces up to 5 degrees of inclination. For a maximum stability, the truck chassis must be on a level and firm surface only.

Danger

Do not attempt to operate the aerial device if the communication system is malfunctioning. Death or serious injury may result if the operator in the platform is unable to communicate with the driver of the truck.

Danger

The operator must make sure that the door is closed, the latch of the platform is engaged properly on the platform door retainer, and the safety chain routed through the platform door. The door must be secured at all times.

- Avoid contact of the booms or platform with fixed objects such as tree limbs, poles, buildings, etc.
- Do not sit or stand on the lip edge of the platform.
- All operators must operate the aerial device only when their view is unobstructed or a second person who has an unobstructed view instructs the operator of the position of the booms at all times.

Section 3 – Safety decals

This section contains the decals listing and a drawing showing their location for this particular unit. A copy of each decal follows the listing.

If for any reason any of the accident prevention signs are lost or become illegible, replacements can be obtained from your Posi-Plus dealer. This section will help you to find the decal to be replaced.

Capacity and stability

The maximum platform capacity for this aerial device is stated on the aerial device identification placard mounted on the side of the pedestal. A sample of the aerial device identification placard may be found at Section 3 of this Operator's Manual.

The Posi+ Line Runner 700 aerial device has been designed to be operated as a mobile aerial device. **The driver must never exceed 3 km/h (2 mph)** when the operator is inside the platform. It should only be operated on firm surfaces up to 5 degrees of inclination. For a maximum stability, the truck chassis must be on a level and firm surface only.

This aerial device has been tested per the stability requirements of both CAN/CSA-C225 and ANSI A92.2 standards as of the date of manufacture. If there were some specifics requirements for the stability tests, the applicable report will show the compliance with these requirements.

This unit can be equipped with stabilizer bars on both, the front and rear axles to maintain stability during operation. Consult the Stability Test report and the Parts Manuals for the applicable stabilizer options on this unit.

Stability, or resistance to tipping, is determined by the size and weight of the chassis and the location of the aerial device mounting on the chassis. If the unit has stabilizer bars installed, they are part of your daily preoperational checks.

The aerial device capacity can be found on the serial number placard that is located on the turntable. The capacity is listed both for the platform and for the entire unit.

Total unit capacity is the total weight of the operator and material in the platform, and the cable down load that may be lifted by the aerial device without overloading the unit.

Platform capacity is the total weight to be lifted in the platform, including the operator, tools and material in the platform.

Cable down load capacity is the total load induced by a cable that can be lifted at the platform while installing a cable.

Compare the total unit load to the capacity listed on the serial number placard.

Caution

Never lift an unknown load. Determine the weight of the material before moving it. Use the placards provided on the unit and in this manual to determine the available rated lifting capacities. Do not exceed rated lifting capacities.

Caution

Operators are instructed to operate the aerial device controls smoothly, avoiding sudden reversals in direction or abrupt stops. This aerial device will meet or exceed the extreme requirements for stability as set forth in the CAN/CSA-C225 and ANSI A92.2 Standards, as delivered. Even so, in extreme conditions of rough control, dynamic or shock loading may have a detrimental effect on stability.

Complete dated and signed records of satisfactory testing and inspection should be maintained in permanent files.

Warning

Aerial devices are designed to operate on slopes up to five (5) degrees. For maximum stability the truck chassis must be on a level and firm surface.

It is impossible to foresee all possible situations and combinations for set up of the unit. The operator bears ultimate responsibility for insuring that the unit is properly set up for the particular conditions encountered.

Operation near energized conductors

Danger

This aerial device is not insulating and carries no dielectric rating. Death or serious injury can result from the use of such equipment in contact with or with inadequate clearance from an energized conductor.

Maintain safe clearance from electrical power lines and apparatus. The operator must allow for platform sway, rock or sag.

Operators must comply with the appropriate sections of the applicable CSA or ANSI standards, OSHA, local and company regulations.

Daily preoperational checks

The aerial device should be inspected at the beginning of each work day, before going out on the job. By spending a few moments every day inspecting the unit, potential service and safety problems may be detected. **The following inspections and tests shall be performed by the operator immediately prior to first use at the beginning of each shift**.

The following items should be checked during the daily pre-operation inspection.

1. Check the oil level of the hydraulic reservoir. The oil level must be between the Add and Full marks on the sight gauge with the truck on level ground, booms in the rest position. If necessary, add oil of the proper type as described in the Maintenance Manual. The need to add oil on a regular basis indicates a leak in the hydraulic system which should be corrected.
2. Conduct a visual inspection of the unit. Inspect pins, fasteners, structures and welds for looseness, cracks, wear or damage. Special attention should be given to check fasteners of the following components:
    - Lower boom pivot pin.
    - Lower boom cylinder mounting pins.
    - Upper boom cylinder mounting pins.
    - Leveling cylinders mounting pins.
    - Platform mounting shafts.
    - Platform mounting fasteners.

.

3. Check the electrical and hydraulic system, wire routing, hydraulic cylinders, hoses and tubes for leakage or damage. Any loose or damaged component, fasteners, hose, tube, pin or weld must be repaired or replaced before operating the unit.

> ***Warning***
>
> Do not use hands or other body parts to check hydraulic lines and fittings for leaks. Death or serious injury can result from hydraulic oil being injected into the flesh.

4. Visual and audible safety devices should be checked for proper operation. Any malfunction, missing or illegible markings or placards should be corrected before operating the unit.
5. Check the tires for proper inflation, no damages.
6. Check the stabilizer bar(s), look for deformation or damage, visible defects, rubbers condition.
7. Apply the parking brake, start the engine and engage the PTO.
8. Check the voice communication system, upper speaker and in cab intercom.

9. Test the override systems of this unit. The lower controls must override the upper controls. If the overrides (station selector) are not operating correctly, the machine should not be used until the problem is corrected.

10. With no one in the platform**, cycle the aerial device functions through the complete range of motion from the lower control station**. If all functions operate properly from the lower control station, then test the operation of each function from the upper controls. While the unit is operating, look for oil leakage from the hydraulic lines and components. If any function does not operate properly, or an oil leak is found, the problem must be corrected before further operation of the aerial device.

11. There is an electrical interlock system on the upper controls. When the trigger on the single handle upper controller is activated, the boom can be moved. When this trigger is released, it should not be possible to move the boom and it should not be possible to rotate the unit. The machine must not be operated unless the trigger is working correctly.

Warning

Platform occupant(s) must always wear a certified CSA or OSHA approved personal fall protection system attached and secured to the anchor provided.

12. This unit is equipped with an emergency lowering DC pump, start the DC pump from the portable control to check the pump for proper operation. Then start the DC pump at the upper control station and check the pump for proper operation (if applicable).

Caution

The DC pump is intended for emergency lowering use only. Do not run for over three (3) minutes continuously. Damage to the pump or motor can result.

13. The upper controls' enclosure is a very important part of this unit. It must be kept dry at all times. If for any reason, a component has to be changed in and/or on the upper controls' enclosure, then the seals or gaskets have to be replaced, if they are damaged. If you suspect that a water seal is damaged, then it must be replaced immediately.

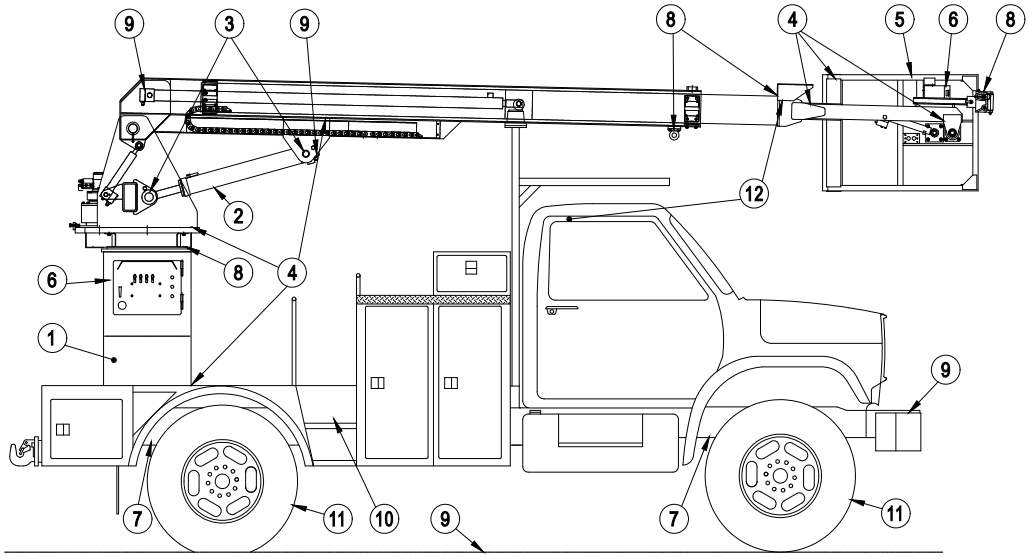
Warning

Erratic movements of the aerial device can happen if upper controls enclosure is not kept watertight check all seal and rubbers before to operate.

Figure 4.1

POSI+

DAILY PRE-OPERATION INSPECTION



1. HYDRAULIC OIL IN RESERVOIR - CHECK:
   - "BLACK LINE" LEVEL = FULL
   - "RED LINE" LEVEL = ADD
   - OIL CLEANLINESS ON GAUGE

2. BOOM CYLINDERS (2 PLACES) - LOOK FOR:
   - ROD OR CYLINDER DAMAGE
   - BEARING SECURE IN ROD END
   - NO LEAKS ON HOLDING VALVES

3. BOOM + PLATFORM PINS (11 PLACES) - LOOK FOR:
   - DAMAGE OR DEFORMATION
   - RETAINERS IN PLACE
   - PINS SECURED

4. STRUCTURAL WELDS - LOOK FOR:
   - CRACKS & DAMAGE ON BOOMS, PEDESTAL, PLATFORM + TURRET

5. PLATFORM - LOOK FOR:
   - DAMAGE & CRACKS
   - MOUNTING STRUCTURE DEFORMATION/CRACKS
   - MOUNTING BOLTS SECURED

6. CONTROLS - CHECK FOR:
   - PROPER & SMOOTH OPERATION OF EVERY FUNCTIONS
   - EMERGENCY STOP
   - INTERLOCK ON JOYSTICK
   - LOWER CONTROLS OVERRIDE SWITCH

7. STABILIZER BARS - CHECK FOR:
   - DAMAGE OR DEFORMATION
   - VISIBLE DEFECTS

8. FASTENERS - LOOK FOR:
   - FASTENERS AND MOUNTING BOLTS IN PLACE
   - PRESENCE OF RUST

9. HYDRAULIC LEAKS - LOOK FOR:
   - OIL ON THE GROUND & ON THE BODY DECK
   - CYLINDERS' HOLDING VALVES LEAKS
   - LOOSE FITTINGS & HOSES DAMAGE
   - PUMP, MOTOR & VALVES LEAKS

10. ANTI-SKID SURFACES - LOOK FOR:
    - CLEANLINESS & DAMAGE
    - REPAIR & CLEANING MUST BE DONE TO PREVENT ACCIDENTS

11. TIRES - CHECK FOR:
    - PROPER INFLATION & DAMAGE

12. VOICE COMMUNICATION SYSTEM - CHECK FOR:
    - UPPER SPEAKER OPERATION
    - INTERPHONE OPERATION

13. OTHER COMPONENTS - LOOK FOR:
    - LOOSE COMPONENTS
    - NOISY OPERATION

IMPORTANT: REFER TO THE OPERATOR'S MANUAL FOR MORE INSPECTION INFORMATION

100-229-060

Preparing for operation

1. Positioning of the vehicle will be governed by the reach of the booms and the work to be done.
2. The driver and the operator are both responsible for placing the vehicle in the proper position for safe operation of the lift at all times and in every condition. The operator must make sure that any signals that might be used are understood by all personnel concerned, including bystanders. When operating on crowned or inclined roads, where the slope may exceed five degrees, or when on soft ground, extra caution must be taken to maintain the vehicle. The driver must check the surface conditions before moving the vehicle when operating on the shoulder or off the road. Proper tire pressure must be maintained to ensure vehicle stability.
3. If there is any doubt as to vehicle stability under any conditions, do not operate the lift. Working areas must be identified with approved cautionary signs and/or other approved safety devices. Before operating the lift, make sure that any rotating, elevating, or other operations will not interfere with traffic, nearby objects or energized conductors. Keep bystanders away from the lift and clear of working areas.
4. Start the engine and turn "ON" the PTO/PUMP switch of the cab control panel. This switch starts the PTO/PUMP hour counter and allows the hydraulic operation of the aerial lift.
5. Before moving the boom, ensure that the vehicle is on a firm surface.
6. The controls at the platform allow aerial device rotation in both directions, booms raise and lower, and boom extends and retracts. The controls will not operate until the trigger on the side of the control handle has been depressed.

Operating instructions

1. Do not exceed platform capacity.
2. Inspect unit for loose objects, hydraulic leaks or physical damage.
3. Turn "ON" the PTO/PUMP switch of the cab control panel. This switch starts the PTO/PUMP hour counter and allows the hydraulic operation of the aerial lift.
4. Wear your safety belt and lanyard.
5. Raise booms sufficiently to clear all obstructions before rotating booms.
6. Operate controls slowly for smooth movements.
7. Make sure that the voice communication system is turned "ON" and working properly before any travel.
8. The driver **must never exceed 3 km/h (2 mph)** when the operator is inside the platform.
9. Inspect and service unit per the instructions given in the manual.
10. Tires and suspension are the stability, inspect all of them meticulously.

In cab controls

The in cab controls are:

- Switches controlling the PTO and the strobe lights
- Intercom.

Intercom system

The intercom system consists of a master unit mounted in the cab and a slave unit mounted at the platform.

The master unit is wired into the cab control station and supplies DC power to the slave unit. It has a push-to-talk switch that allows the driver to talk to the operator.

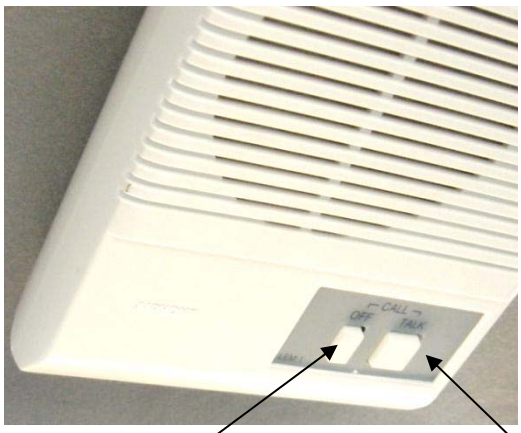
It is normally in the listen mode, unless the switch is activated.

Volume of both speakers is controlled from the master unit in the cab.

The slave unit is a "hands-free" unit, so it is in talk mode at all times unless the push-to - talk switch at the master unit is activated. This way, the operator can talk to the driver without having to manually operate the intercom.

Warning

Do not attempt to operate the aerial device if the communications system is malfunctioning. Death or serious injury may result if the operator in the platform is unable to communicate with the driver of the truck.



Voice system power
Speakers' volume is on right side

Free hand platform speaker

-Hold down to talk to the platform.
-Listening mode when in normal position.

Upgraded intercom system (optional)

The upgraded intercom system consists of a master unit mounted in the cab and a slave unit mounted at the platform.

The master unit is wired into the cab control station and supplies DC power to the slave unit. It has a push-to-talk switch that allows the driver to talk to the operator.

It is normally in the listen mode, unless the switch is activated.

Volume of both speakers is controlled from the master unit in the cab.

The slave unit is a "hands-free" unit, so it is in talk mode at all times unless the push-to -talk switch at the master unit is activated. This way, the operator can talk to the driver without having to manually operate the intercom.

> ***Warning***
>
> Do not attempt to operate the aerial device or reel lifter if the communications system is malfunctioning. Death or serious injury may result if the operator in the platform is unable to communicate with the driver of the truck.

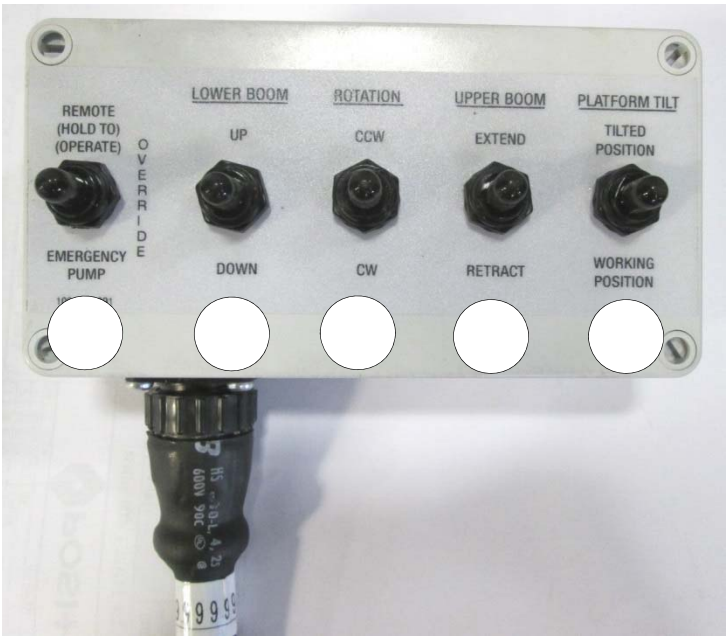
Platform speaker volume

Free hand platform speaker

Voice system power &
In-cab speaker volume

-Hold down to talk to the platform.
-Listening mode when in normal position.

Lower controls



1. A red master switch push/pull button at the electrical junction box that will either turn "ON" the electricity to both, the lower controls and to the upper controls and it will act as an emergency stop at the lower controls. So, if this switch is in the "OFF" position, both the lower and upper controls become inactive.

The lower portable controls are located on curbside. The station consists of five (5) toggle switches that operate the following functions:

2. Lower boom up/down
3. Rotation CCW/CW
4. Upper boom extend/retract
5. Platform tilt
6. A three positions toggle switch “Emergency pump / Override switch”. The “Override” position allows bypassing the upper controls to operate from the lower controls and the “Emergency pump” position allows operation from the lower controls with the Emergency pump.

Warning

The ‘’Override” position allows operation from the control toggle switches and overrides the upper controls.

The “Emergency pump” switch is activated to run the pump while operating from toggle switches on the portable control.

Upper controls

The one-hand joystick control mounted on the side of the platform operates the aerial device movement.

The functions operated are:

- Upper boom “EXTEND/RETRACT”
- Rotation “CLOCKWISE/COUNTERCLOCKWISE”
- Lower boom “UP/DOWN”

In addition to providing for directional control of the aerial device, the single handle controller has an interlock button (trigger) fitted into the handle. The joystick trigger must be depressed before any movement of the joystick handle.

The main control valve at the pedestal on the standard unit is adjusted to provide optimal operation of the three (3) boom functions. Since, the standard "ON/OFF" joystick provides "ON/OFF" displacement of the boom functions, then if the pump flow available is lower than the demand, the boom speeds will be reduced according to the number of functions activated simultaneously. Moreover, the flow will divert to the maximum flow of the less demanding (easiest to operate) function first. If there is still some flow available, then the next less demanding function will use the remaining flow.

Caution

The interlock button must be fully depressed before the controller handle is moved in any direction. Releasing the interlock button before centering the control handle may produce sudden and abrupt stopping of movement.

Testing the Interlock System

It is recommended that the interlock system be tested daily to assure that it is operating properly. Testing can be easily accomplished by simply moving the single handle controller without depressing the interlock button (trigger). If movement of the booms or rotation occurs, the cause should be determined and the unit not operated until the problem is corrected.

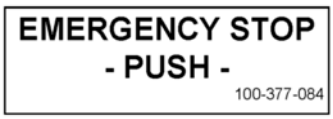
Caution

When testing the operation of the interlock system, the platform and booms should be in such a position that no damage can result from unexpected unit movement.

Boom upper controls

The one-hand joystick control mounted on the side of the platform operates the aerial device movement.

Emergency stop



Whenever required the emergency stop can be used to stop all boom functions. To activate, push down the red push button that is installed on top of the upper controls' enclosure. Even if the single handle controller is activated in any position, the emergency stop can always be applied.

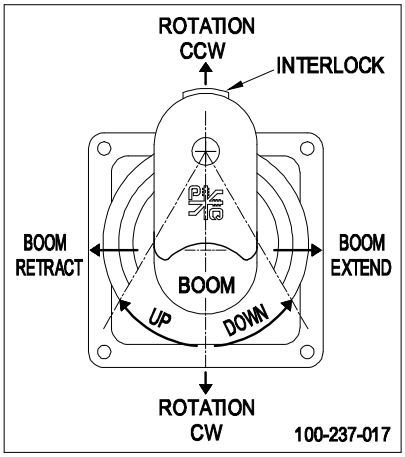
The emergency stop deactivates the electronic controls. Operation can still be done from the pedestal control if "Lower controls'' is selected at lower portable control.

Joystick

When a function is operated, the function's speed is proportional to the distance the single handle upper control is shifted.

A decal indicates the functions operated from the joystick. The trigger must be depressed before to operate the boom functions.

The functions position of the unit may be different from the decal shown here, check the part manual for the specific decal.

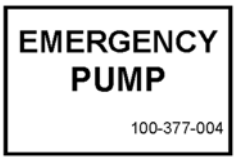


Caution

The interlock button should be fully depressed before the controller handle is moved in any direction. Moving the handle first, before depressing the button, may produce sudden and rough movement of the platform. Releasing the interlock button before centering the control handle may produce sudden and abrupt stopping of movement.

Emergency pump

A spring return toggle switch or a push button allows operating the boom functions with the emergency pump. Hold the control while operating with the joystick.



Platform tilt

A spring return toggle switch allows tilting the platform to the "Tilt" position or to the "Working" position. This function allows also setting the platform level for a comfortable working position.

Booms

This unit is a non-overcenter type design that uses a hydraulic cylinder to raise and lower the boom. The boom may be actuated from the upper controls' joystick.

The lower hydraulic controls may also be used to operate the boom when the toggle switch at pedestal is maintained in the "Override" position.

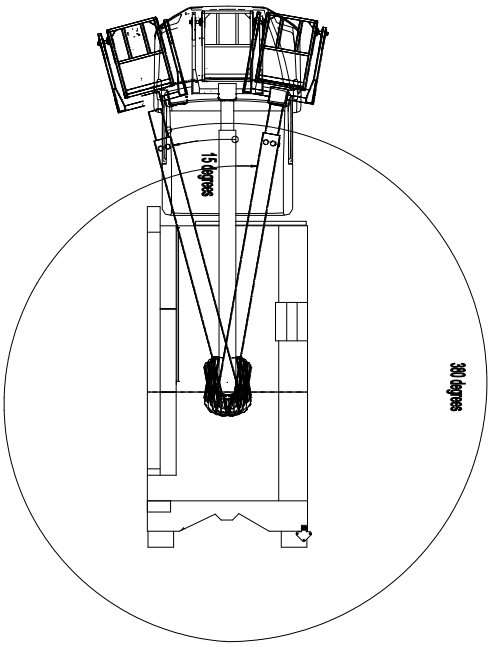
Lower Boom

The lower boom can be articulated from 20 degrees below the horizontal (-20°) to 80 degrees above the horizontal (+80°).

Boom extension and retraction

The upper boom is hydraulically extended or retracted by the use of a hydraulic cylinder controlled from either the upper or lower control stations.

Boom rotation



The standard 700-40 aerial device can be rotated through 370 degrees after the boom has been elevated to clear any obstacles. The standard boom rotation movement stops approximately at 11 o'clock (on the roadside).

A planetary gearbox is used to drive the outer race of the rotation bearing. The gearbox pinion meshes with the rotation bearing gear teeth to rotate the unit. A hydraulic motor drives the planetary in the gearbox.

The rotation motor is equipped with a spring applied, hydraulically released brake. This means the brake is engaged until it is released by hydraulic pressure.

When the rotation control handle is shifted, pressure begins to build up in the rotation motor. This pressure releases the brake and allows the motor to rotate the aerial device. When the control handle is returned to neutral, the rotation motor stops and the pressure in the brake decreases. As the pressure in the motor decreases, the brake is applied and the rotation motion is stopped.

Personnel Platform

This aerial device is equipped with an aluminum platform.

Danger

The aluminum platform at the boom tip area does not provide any protection against electrical continuity. It cannot protect against any contact with energized lines

Caution

Use care when getting on and off the unit and/or when entering and exiting the platform to avoid slipping or falling. Maintain three points contact when getting on and off.

The personnel platform capacity is found on the serial number placard.

The "Platform Capacity" indicated on the placard installed at the upper controls station is the total weight allowed as platform contents: Operator(s), liner(s), tools and equipment.

All platform occupant(s) of this aerial device must always wear a certified CSA or OSHA approved full body harness attached to a lanyard while operating the unit from the platform. The lanyard must be secured to the lanyard anchor (D-ring) near or on the platform.

All platform occupants must always wear appropriate personal protective devices at all times (i.e. hard hats, safety shoes or boots; safety glasses, work gloves).

Always stand firmly and keep both feet on the floor of the platform. Never sit, stand, or climb on the edge of the platform. Never place any item or equipment in the platform for the purpose of increasing work height (planks, ladders, step stools). Never try to climb down from the platform, if the platform is not down to the ground. Make sure the platform floor is clear of debris, tools and other equipment that could make the operator unstable and prevent from having both feet on the floor during the operation.

Attachment for fall protection

Depending on the model and options installed on the unit, the attachment for fall protection (D-ring attachment) can be installed in different locations, but it is always located near the platform mounting bracket. The D-ring is rated for one person only.

Danger

During operation of this aerial device, all platform occupant(s) of this aerial device must always wear a certified CSA or OSHA approved full body harness attached to a lanyard while operating the unit from the platform. The lanyard must be secured to the lanyard anchor (D-ring) at the boom tip.

Platform leveling system

The platform leveling system is a master/slave arrangement between two small hydraulic cylinders of equal diameter and stroke. The master driving cylinder is connected between the turntable and the lower boom, so that any movement of the lower boom causes a proportionate movement in the cylinder. With movement, the cylinder piston becomes, in effect, a pump forcing oil into the slave cylinder which is attached between the upper boom and platform shaft. The two cylinders are hydraulically connected, rod side to rod side. Therefore, both cylinders will travel exactly the same distance. This action keeps the platform standing surface parallel with the turntable at all times.

In addition to keeping the platform level, the system is capable of stowing the platform horizontal for road travel. When the platform is unstowed and moved to the work position, it can be levelled from the upper or lower controls to suit the operator. In the event that the platform position needs to be changed slightly, the operator can do this from either control position.

Danger

Never operate the platform tilt from the lower controls when the platform is occupied.

The platform leveling at the upper controls can only be accomplished by activating the platform leveling toggle switch at the same time as the joystick trigger (dead man) button.

It is recommended that the platform leveling not be adjusted by the operator while the booms are in motion in any direction.

During the operation of this aerial device, if the platform tilt cylinder becomes fully extended, then the leveling of the platform may lag with respect to the booms displacement. If this condition happens, then lift the booms by a few degrees and readjust the platform level by using the platform "TILTED/WORKING" position control. Operate the platform tilt control in the "TILTED POSITION" very slowly until the platform is leveled again.

Lower boom lifting eye

This attachment adapts the lower boom for light-duty material handling. The lifting eye provides a secure mounting for a shackle at the end of the lower boom. The lifting eye is rated for 1000 pounds at any boom angle.

Warning

The lower boom lifting eye should only be used when the platform is not occupied. Always keep the upper boom as near to the stowed position as possible. Be careful of striking the vehicle or other obstacles with the platform.

Caution

Never lift an unknown load. Determine the weight of the material before moving it. Use the placards provided on the machine and in the Operator's Manual to determine the available rated lifting capacities of the lower boom lifting eye. Do not exceed the rated lifting capacities of the lower boom lifting eye.

120 Volts AC power source (option)

Electric power is provided at the platform through an electric cable which is carried in the chain link hose tracking system.

At the platform electrical outlet, a ground fault circuit-interrupter is provided protecting personnel when a fault current to ground exceeds the predetermined setting.

The ground fault circuit-interrupter should be tested frequently. Push the “Test” red button, the circuit must become unloaded. Push the “Reset” button to reactivate the outlet.

Section 7 - Protection systems

Limitations of protection systems

The Line Runner 700 aerial device is equipped with protection systems that are intended to protect the machine from being overloaded due to operator errors. However, even with these protection systems, the unit can be damaged if the operator disregards the recommended methods and procedures described in this manual.

Boom stow protection

The boom stow protection system prevents damage to the chassis when the boom is lowered on the boom rest. An adjustable limiting valve is provided in the electro-hydraulic section valve that controls the lower boom cylinder. So when the boom is positioned on the boom rest, it is not possible to reach the maximum operating pressure of the unit. **ATTENTION:** this system doesn't protect against boom speed, operate slowly when stowing the boom on its rest.

Side load protection

The side load protection system helps prevent damage to the aerial device structures when a side load is developed on the booms. Side load may be caused for example when using the pulling eye without having the booms directly over the load.

If an excessive side load is developed on the booms, the gearbox and rotation motor will back drive and the rotation brake will slip. This allows the booms to side slip, or rotate toward the load.

Operate the unit in a manner that avoids developing a side load on the booms. Do not rely on the side load protection system to prevent side loads from developing on the booms. The system is intended to protect the aerial device from excessive side loading due to operator error. Each time the side load protection system operates, the aerial device is subjected to an overload. Repeated overloads could cause fatigue failure of the machine components.

Caution

Excessive side loading of the booms during aerial device operation should be avoided. The booms should be rotated toward the load rather than depending upon side load protection. Side loading can result in damage to the structures or the rotation system and may adversely affect vehicle stability.

Attention

Never attempt to counteract the side load protection system by shifting the rotation function of the single handle upper control in the opposite direction of the side slip. Attempting to override the side load protection system will cause increased side loading of the booms.

Section 8 - Emergency operation

Operating safely

Should the occupant of the platform suffer injury while aloft, disabling that person from operating the platform controls, the platform may be lowered by means of the overriding lower controls.

Danger

Before attempting to lower the platform with the lower control, for the protection of the ground personnel, it must first be determined that the vehicle is not energized. Death or serious injury can result from contact with equipment that has become electrically energized.

Upon determining that it is safe to touch the vehicle, the lower controls may be used for booms' movement.

- From the pedestal controls, selecting and holding the "Override" position with the toggle switch at the pedestal door, permits operation of the aerial device from the lower hydraulic controls.

Emergency lowering DC pump

If a situation arises that the machine cannot be operated due to a **loss of hydraulic power,** such as engine or pump failure, the emergency lowering DC pump can be used to lower the main boom.

The 12-volt DC battery operated pump is designed for use in case the vehicle engine or power system fails. The emergency lowering DC pump may be operated from the platform or the pedestal controls. The pump is located near the reservoir and power is supplied to the pump from the vehicle battery. The capacity of this pump is dependent on the capacity of the battery.

The emergency lowering DC pump system has been designed to allow for lowering the booms to the ground for operator rescue, but may not allow for complete storage of the booms.

Attention

The DC pump is intended for emergency lowering use only. Do not run for over three (3) minutes continuously. Damage to the pump or motor can result.

From the upper controls, to start the emergency DC pump, press and hold the "Emergency pump" switch while operating with the control joystick.

From the lower controls, to start the emergency DC pump, hold the switch in the "emergency pump" position while operating the toggle switches. The pump will continue to operate as long as the switch is held in this position. When the switch is not held in this position, it automatically comes back to the neutral position to stop the DC pump.

The DC pump can be heard while it is operating. Since the emergency lowering pump has a smaller capacity than the main pump, the functions speeds will be reduced when using the emergency pump.

Rotate or lower the unit enough to position the platform clear of the work area. Then lower the unit to the ground, or to a position where the operator(s) may get out of the platform. The unit may then be stowed using the lower controls.

Section 9 - Troubleshooting

Normal operation of the aerial device may be interrupted by a failure or malfunction in the engine or hydraulic system. The chart below summarizes trouble situations, with typical symptoms and troubleshooting procedures.

Troubleshooting chart

Symptom	Possible Cause	Corrective Action
All functions stop working.	Pump, PTO or clutch failure.	Repair or replace PTO, clutch or pump. Stow the booms using the Emergency lowering DC pump system.
	Low fluid level in reservoir.	Check fluid level. Add fluid to the Full mark. Use correct type of fluid.
	Oil reservoir gate valves closed.	Check gate valves and open if they were closed.
	Emergency stop has been applied at a control station	Put the Emergency stop button to working position.
Severe hydraulic leak.	Failure of hose, tube, fitting, seal, etc.	Replace defective component.
Upper controls stop working	Emergency stop switch in the "stop" position.	Move the emergency stop switch to the working position.
	One-hand control (upper controls' joystick) damaged.	Replace the joystick. Stow the booms using the lower controls.

Section 10 - Care of the unit

Although the maintenance responsibilities for equipment will vary depending upon company policies, an alert operator can contribute greatly to the proper care of the aerial device. The guidelines given in this section are for the hydraulic system, upkeep.

The observation and correction of minor maintenance problems, as they occur, may help prevent costly repairs and reduce downtime. For a complete description of any maintenance procedure, refer to the Maintenance Manual.

At no time should an aerial device be altered or modified without the specific written approval from Posi-Plus Technologies Inc.

Hydraulic system

The condition of the hydraulic oil is the major factor in obtaining long life and trouble free service from the pump, motor, valves, cylinders, seals, etc. in the hydraulic system.

Warning

Any oil added to the reservoir must be pre-filtered to ISO 14/12. To obtain this filtration rating, use a filter with a β_3=200 rating.

The proper oil type, oil temperature, oil level, and oil cleanliness should be maintained by following the guidelines recommended in the Maintenance Manual for top performance from the hydraulic system. When cleaning the unit, care should be taken not to spray water under pressure directly on or around the fill cap of the reservoir. This could spray water inside the oil cap.

The minimum temperature at which oil will flow to the pump varies with the type of oil used. The Maintenance Manual recommends hydraulic oil for various temperature conditions. Regardless of the oil being used, cold weather start-up can damage the pump quickly if the operator does not allow the oil to warm up before operating the unit.

Attention

Do not put the unit in service and run the pump at normal operating speeds until the hydraulic reservoir feels warm to the touch.

The maximum temperature at which a hydraulic system can operate also depends to some extent upon the hydraulic oil being used. Winter weight oil should not be allowed to exceed 160°F (70°C) and summer weight oil should not be run over 180°F (100°C). If an operator cannot hold his hand on the side of the reservoir momentarily before removing it, the oil is reaching a temperature in excess of 150°F (66°C). If overheating occurs during normal use, it could be an indication of a worn pump or other components, low oil level,

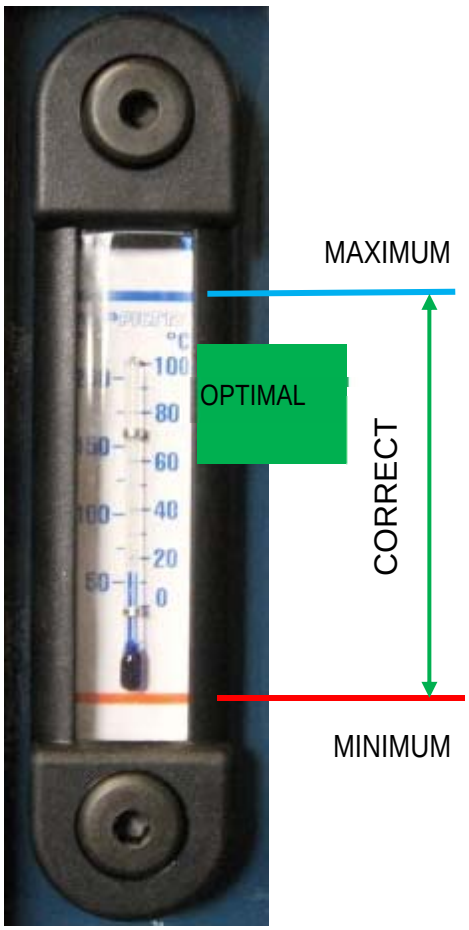
improper oil, or excessive engine/pump speed. In any case, the cause of the overheating should be identified and corrected immediately.

The oil level in the hydraulic reservoir should be checked daily as described in the daily preoperational checks section. With the unit on level ground, booms in the boom rest, the oil level should be between the Add and the Full marks on the filler cap dipstick or applicable sight gauge. If oil must be added, oil of the proper type, as described in the Maintenance Manual, should be used.

Warning

Only use pre-filtered hydraulic oils to ISO 14/12 as recommended. Other fluids added to the hydraulic system may increase component wear, affect the lubricating characteristics of the oil, or may induce the valves to malfunction.

OIL LEVEL



Structures and mechanical systems

The observation and correction of minor maintenance problems, as they arise, may prevent the need for major repairs, decrease downtime and improve safety. Loose fasteners should be corrected, as they occur, before serious problems develop.

Any unusual noises observed during operation should be reported so that the cause can be determined and corrective action taken.

A noisy pump should not be run until the problem is corrected. Excessive pump noise can be an indication of a variety of problems such as: loose or leaking suction lines, a partially closed suction valve, and worn seals in the pump, low oil level, or cold hydraulic oil. If a pump with an existing problem is left running, serious pump damage could result.

Proper lubrication on a regular basis, as indicated in the Maintenance Manual, will increase the life of the machine and help to avoid future maintenance problems. Any squeaky or jerky action of the moving parts on the aerial device is an indication that lubrication is needed immediately. Any sign of lubricant leaking from the gearbox should be reported and corrected as soon as possible.

Shock loads and overloading should be avoided as these conditions can present hazards to the machine and personnel in the working area. Start and stop all operations as smoothly as possible. Care should be taken to make sure the debris or tools are not allowed into the retraction area of the aerial device.

Caution

Keep the unit and work areas clean. Spilled hydraulic oil creates slick surfaces and may cause personnel to slip and/or fall.

When cleaning with high pressure washers or steam cleaning, care should be taken not to apply pressure directly to electrical connections, control panels or electrical components.

At no time should this Posi-Plus aerial device the altered or modified without the specific written approval from Posi-Plus Technologies Inc.