Operation and Safety Manual

Keep this manual with the machine at all times.

Model(s)
DVL &
DVSP
Series

P/N - 3121135

September 27, 2005

ANSI

FOREWORD

This manual is a very important tool! Keep it with the machine at all times.

The purpose of this manual is to provide owners, users, operators, lessors, and lessees with the precautions and operating procedures essential for the safe and proper machine operation for its intended purpose.

Due to continuous product improvements, JLG Industries, Inc. reserves the right to make specification changes without prior notification. Contact JLG Industries, Inc. for updated information.

Other Publications Available:

Service and Maintenance Manual	3121136
Illustrated Parts Manual (ANSI/CSA)	3121137
Illustrated Parts Manual (CE)	3121839

SAFETY ALERT SYMBOLS AND SAFETY SIGNAL WORDS

This is the Safety Alert Symbol. It is used to alert you to the potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death

⚠ DANGER

INDICATES AN IMMINENTLY HAZARDOUS SITUATION. IF NOT AVOIDED, WILL RESULT IN SERIOUS INJURY OR DEATH. THIS DECAL WILL HAVE A RED BACKGROUND.

⚠ WARNING

INDICATES A POTENTIALITY HAZARDOUS SITUATION. IF NOT AVOIDED, COULD RESULT IN SERIOUS INJURY OR DEATH. THIS DECAL WILL HAVE AN ORANGE BACKGROUND.

⚠ CAUTION

INDICATES A POTENTIALITY HAZARDOUS SITUATION. IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY. IT MAY ALSO ALERT AGAINST UNSAFE PRACTICES. THIS DECAL WILL HAVE A YELLOW BACKGROUND.

IMPORTANT

INDICATES PROCEDURES ESSENTIAL FOR SAFE OPERATION. THIS DECAL WILL HAVE A GREEN BACKGROUND.

⚠ WARNING

THIS PRODUCT MUST COMPLY WITH ALL SAFETY RELATED BULLETINS. CONTACT JLG INDUSTRIES, INC. OR THE LOCAL AUTHORIZED JLG REPRESENTATIVE FOR INFORMATION REGARDING SAFETY-RELATED BULLETINS WHICH MAY HAVE BEEN ISSUED FOR THIS PRODUCT.

IMPORTANT

JLG INDUSTRIES, INC. SENDS SAFETY RELATED BULLETINS TO THE OWNER OF RECORD OF THIS MACHINE. CONTACT JLG INDUSTRIES, INC. TO ENSURE THAT THE CURRENT OWNER RECORDS ARE UPDATED AND ACCURATE.

IMPORTANT

JLG INDUSTRIES, INC. MUST BE NOTIFIED IMMEDIATELY IN ALL INSTANCES WHERE JLG PRODUCTS HAVE BEEN INVOLVED IN AN ACCIDENT INVOLVING BODILY INJURY OR DEATH OF PERSONNEL OR WHEN SUBSTANTIAL DAMAGE HAS OCCURRED TO PERSONAL PROPERTY OR THE JLG PRODUCT.

FOR :

- Accident Reporting
- Product Safety Publications
- Current Owner Updates
- Questions Regarding Product Safety
- Standards and Regulations Compliance Information
- Questions Regarding Special Product Applications
- Questions Regarding Product Modifications

CONTACT :

Product Safety and Reliability Department
JLG Industries, Inc.
1 JLG Drive
McConnellsburg, PA 17233

or Your Local JLG Office
(See addresses on back cover of manual)

In USA:

Toll Free: 877-JLG-SAFE
877-554-7233

Outside USA:

717-485-5161

E-mail: ProductSafety@JLG.com

REVISION LOG

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November 19, 2001 – Manual Revised

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TABLE OF CONTENTS

SUBJECT - SECTION, PARAGRAPH **PAGE NO.**

LIST OF FIGURES

LIST OF TABLES

SECTION 1. SAFETY PRECAUTIONS

1.1 GENERAL

This section outlines the necessary precautions for proper and safe machine usage and maintenance. For proper machine use, it is mandatory that a daily routine is established based on the content of this manual. A maintenance program, using the information provided in this manual and the Service and Maintenance Manual, must also be established by a qualified person and must be followed to ensure that the machine is safe to operate.

The owner/user/operator/lessor/lessee of the machine should not accept operating responsibility until this manual has been read, training is accomplished, and operation of the machine has been completed under the supervision of an experienced and qualified operator.

If there are any questions with regard to safety, training, inspection, maintenance, application, and operation, please contact JLG Industries, Inc. *("JLG")*.

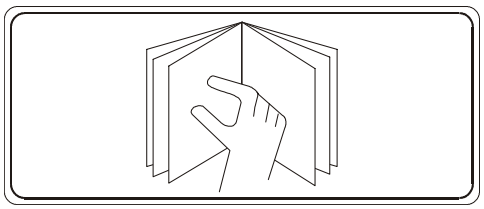
⚠ WARNING

FAILURE TO COMPLY WITH THE SAFETY PRECAUTIONS LISTED IN THIS MANUAL COULD RESULT IN MACHINE DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

1.2 PRE-OPERATION

Operator Training And Knowledge

- Read and understand this manual before operating the machine.



- Do not operate this machine until complete training is performed by authorized persons.
- Only authorized and qualified personnel can operate the machine.
- Read, understand, and obey all DANGERS, WARNINGS, CAUTIONS, and operating instructions on the machine and in this manual.
- Use the machine in a manner which is within the scope of its intended application set by JLG.
- All operating personnel must be familiar with the emergency controls and emergency operation of the machine as specified in this manual.
- Read, understand, and obey all applicable employer, local, and governmental regulations as they pertain to operation of the machine.

Workplace Inspection

- The operator is to take safety measures to avoid all hazards in the work area prior to machine operation.
- Do not operate or raise the platform while on trucks, trailers, railway cars, floating vessels, scaffolds or other equipment unless approved in writing by JLG.
- This machine can be operated in temperatures of 0° F to 104° F *(-20° C to 40° C)*. Consult JLG for operation outside this range.

Machine Inspection

- Before machine operation, perform inspections and functional checks. Refer to Section 2 of this manual for detailed instructions.
- Do not operate this machine until it has been serviced and maintained according to requirements specified in the Service and Maintenance Manual.

- Ensure all safety devices are operating properly. Modification of these devices is a safety violation.

⚠ WARNING

MODIFICATION OR ALTERATION OF AN AERIAL WORK PLATFORM SHALL BE MADE ONLY WITH PRIOR WRITTEN PERMISSION FROM THE MANUFACTURER

- Do not operate any machine on which the safety or instruction placards or decals are missing or illegible.
- Avoid any build up of debris on platform floor. Keep mud, oil, grease, and other slippery substances from footwear and platform floor.

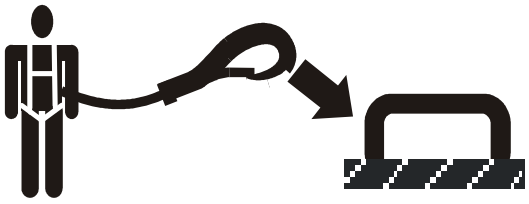
1.3 OPERATION

General

- Do not use the machine for any purpose other than positioning personnel, their tools and equipment, or for hand stock picking.
- Never operate a machine that is not working properly. If a malfunction occurs, shut down the machine.
- Never slam a control switch or lever through neutral to an opposite direction. Always return switch to neutral and stop before moving the switch to the next function. Operate controls with slow and even pressure.
- Do not allow personnel to tamper with or operate the machine from the ground with personnel in the platform, except in an emergency.
- Do not carry materials directly on platform railing unless approved by JLG.
- Always ensure that power tools are properly stowed and never left hanging by their cord from the platform work area.
- Fully lower mast assembly and shut off all power before leaving machine.
- When performing welding operations at elevation, precautions must be taken to protect all machine components from contact with weld splatter or molten metal.
- Battery fluid is highly corrosive. Avoid contact with skin and clothing at all times.
- Charge batteries on in a well ventilated area.

Trip and Fall Hazard

- JLG Industries, Inc. recommends that the operator in the platform wear a full body harness with a lanyard attached to an authorized lanyard anchorage point. For further information regarding fall protection requirements on JLG products, contact JLG Industries, Inc.



- Before operating the machine, make sure all railing and gates are fastened in their proper position.

- Keep both feet firmly positioned on the platform floor at all times. Never use ladders, boxes, steps, planks, or similar items on platform to provide additional reach.
- Never use the mast assembly to enter or leave the platform.
- Use extreme caution when entering or leaving platform. Ensure that the mast assembly is fully lowered. Face the machine when entering or leaving the platform. Always maintain “three point contact” with the machine, using two hands and one foot or two feet and one hand at all times during entry and exit.
- Platform-to-structure transfers at elevated positions are discouraged. Where transfer is necessary, enter/exit through the gate only with the platform within 1 foot *(0.3m)* of a safe and secure structure. 100% tie-off is also required in this situation utilizing two lanyards. One lanyard must be attached to the platform with the second lanyard attached to the structure. The lanyard connected to the platform must not be disconnected until such time the transfer to the structure is safe and complete.

Electrocution Hazard

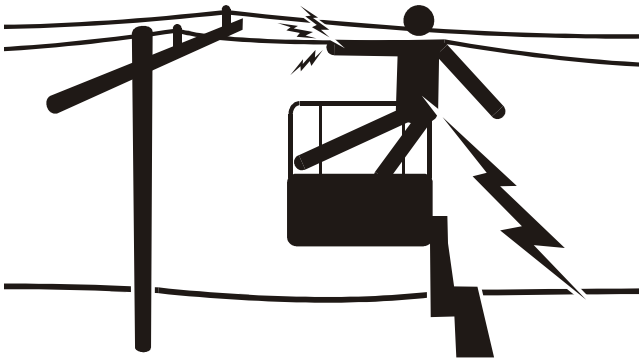


Table 1-1. Minimum Safe Approach Distance (M.S.A.D.)

VOLTAGE RANGE (PHASE TO PHASE)	MINIMUM SAFE APPROACH DISTANCE - Feet (m)
0-50KV	10 (3)
Over 50KV to 200KV	15 (5)
Over 200KV to 350KV	20 (6)
Over 350KV to 500KV	25 (8)
Over 500KV to 750KV	35 (11)
Over 750KV to 1000KV	45 (14)

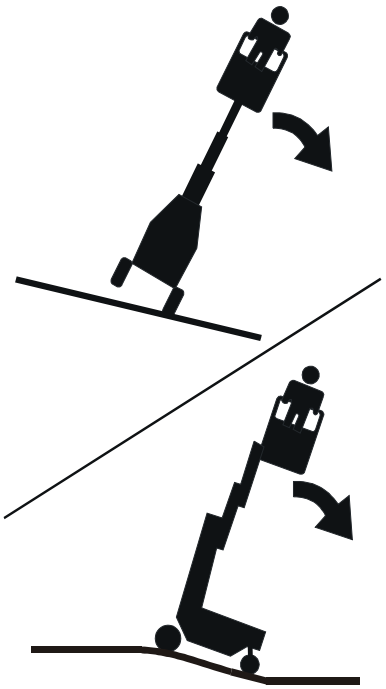
NOTE: *This Minimum Safe Approach Distance shall apply except where employer, local, or governmental regulations are more stringent.*

Maintain a clearance of at least 10 ft (3m) between any part of the machine and its occupants, their tools, and their equipment from any electrical line or apparatus carrying up to 50,000 volts. One foot (0.3m) additional clearance is required for every additional 30,000 volts or less.

The minimum safe approach distance may be reduced if insulating barriers are installed to prevent contact, and if the barriers are rated for the voltage of the line being guarded. These barriers shall not be part of *(or attached to)* the machine. The minimum safe approach distance shall be reduced to a distance within the designed working dimensions of the insulating barrier. This determination shall be made by a qualified person in accordance with employer, local, or governmental requirements for work practices near energized equipment.

Tipping Hazard

- The user should be familiar with the surface before driving. Do not exceed the allowable sideslope and grade while driving.



- Do not elevate platform or drive with platform elevated while on a slope, or on an uneven or soft surface.
- Before driving on floors, bridges, trucks, and other surfaces, check allowable capacity of the surfaces.
- Never exceed the maximum platform capacity. Distribute loads evenly on platform floor.
- Keep the chassis of the machine a minimum of 2 ft. (0.6m) from holes, bumps, drop-offs, obstructions, debris, concealed holes, and other potential hazards at the ground level.
- Never attempt to use the machine as a crane. Do not tie-off machine to any adjacent structure.
- Do not increase the platform size with unauthorized deck extensions or attachments, increasing the area exposed to wind will decrease stability.
- If mast assembly or platform is caught so that one or more wheels are off the ground, the operator must be removed before attempting to free the machine. Use cranes, forklift trucks, or other appropriate equipment to stabilize machine and remove personnel.

Crushing And Collision Hazard

- Personal protection equipment must be worn by all operating and ground personnel.
- Check work area clearances above, on sides, and bottom of platform while driving and lifting or lowering platform.

- During operation, keep all body parts inside platform railing.
- Always post a lookout when driving in areas where vision is obstructed.
- Keep non-operating personnel at least 6 ft. *(1.8m)* away from machine during all driving operations.
- Limit travel speed according to conditions of ground surface, congestion, visibility, slope, location of personnel, and other factors causing hazards of collision or injury to personnel.
- Be aware of stopping distances in all drive speeds.
- Do not drive at high speeds in restricted or close quarters or when driving in reverse.
- Exercise extreme caution at all times to prevent obstacles from striking or interfering with operating controls and persons in the platform.
- Ensure that operators of other overhead and floor level machines are aware of the aerial work platform's presence. Disconnect power to overhead cranes.
- Warn personnel not to work, stand, or walk under a raised platform. Position barricades on floor as necessary.

1.4 TOWING, LIFTING, AND HAULING

- Never allow personnel in platform while towing, lifting, or hauling.
- This machine should not be towed, except in the event of emergency, malfunction, power failure, or loading/unloading. Refer to the Emergency Procedures Section of this manual for emergency towing procedures.
- Ensure platform is fully retracted and completely empty of tools prior to towing, lifting or hauling.
- Do not assist a stuck or disabled machine by pushing or pulling except by pulling at the chassis tie-down bars.
- When lifting machine with a forklift, position forks only at designated areas of the machine. Lift with a forklift of adequate capacity.
- Refer to the Machine Operation section of this manual for lifting information.

SECTION 2. PREPARATION AND INSPECTION

2.1 PERSONNEL TRAINING

The aerial platform is a personnel handling device; so it is necessary that it be operated and maintained only by trained personnel.

Persons under the influence of drugs or alcohol or who are subject to seizures, dizziness or loss of physical control must not operate this machine.

Operator Training

Operator training must cover:

1. Use and limitations of the controls in the platform and at the ground, emergency controls and safety systems.
2. Control labels, instructions, and warnings on the machine.
3. Rules of the employer and government regulations.
4. Use of approved fall protection device.
5. Enough knowledge of the mechanical operation of the machine to recognize a malfunction.
6. The safest means to operate the machine where overhead obstructions, other moving equipment, and obstacles, depressions, holes, drop-offs are present.
7. Means to avoid the hazards of unprotected electrical conductors.
8. Specific job requirements or machine application.

Training Supervision

Training must be done under the supervision of a qualified person in an open area free of obstructions until the trainee has developed the ability to safely control and operate the machine.

Operator Responsibility

The operator must be instructed that he/she has the responsibility and authority to shut down the machine in case of a malfunction or other unsafe condition of either the machine or the job site.

NOTE: *The Manufacturer or Distributor will provide qualified people for training assistance with the first unit(s) delivered and from that time forward as requested by the user or his/her personnel.*

2.2 PREPARATION, INSPECTION, AND MAINTENANCE

The following table covers the periodic machine inspections and maintenance recommended by JLG Industries, Inc. Consult local regulations for further requirements for aerial work platforms. The frequency of inspections and maintenance must be increased as necessary when the machine is used in a harsh or hostile environment, if the machine is used with increased frequency, or if the machine is used in a severe manner.

IMPORTANT

JLG INDUSTRIES, INC. RECOGNIZES A QUALIFIED JLG MECHANIC AS A PERSON WHO HAS SUCCESSFULLY COMPLETED THE JLG SERVICE TRAINING SCHOOL FOR THE SPECIFIC JLG PRODUCT MODEL.

Table 2-1. Inspection and Maintenance Table

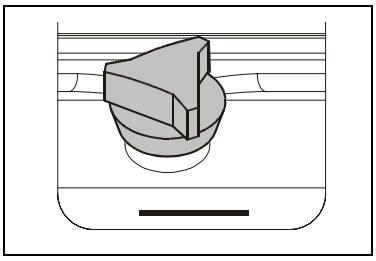
TYPE	FREQUENCY	PRIMARY RESPONSIBILITY	SERVICE QUALIFICATION	REFERENCE
Pre-Start Inspection	Before using each day; or whenever there's an Operator change.	User or Operator	User or Operator	Operator and Safety Manual
Pre-Delivery Inspection *(See Note)*	Before each sale, lease, or rental delivery.	Owner, Dealer, or User	Qualified JLG Mechanic	Service and Maintenance Manual and applicable JLG inspection form
Frequent Inspection	In service for 3 months or 150 hours, whichever comes first; or; Out of service for a period of more than 3 months; or Purchased used.	Owner, Dealer, or User	Qualified JLG Mechanic	Service and Maintenance Manual and applicable JLG inspection form
Annual Machine Inspection	Annually, no later than 13 months from the date of prior inspection.	Owner, Dealer, or User	Qualified JLG Mechanic	Service and Maintenance Manual and applicable JLG inspection form
Preventative Maintenance	At intervals as specified in the Service and Maintenance Manual.	Owner, Dealer, or User	Qualified JLG Mechanic	Service and Maintenance Manual
NOTE: *Inspection forms are available from JLG. Use the Service and Maintenance Manual to perform inspections.*				

2.3 PRE-START INSPECTION

The Pre-Start Inspection should include each of the following:

1. **Cleanliness –** Check all surfaces for leakage (oil, fuel, or battery fluid) or foreign objects. Report any leakage to the proper maintenance personnel.
2. **Decals and Placards** – Check all for cleanliness and legibility. Make sure no decals or placards are missing. Make sure all illegible decals and placards are cleaned or replaced. *(Reference "Decal Installations" in Section 3)*.
3. **Operators and Safety Manuals** – Make sure a copy of the Operator and Safety Manual, EMI Safety Manual (Domestic only), and ANSI Manual of Responsibilities (Domestic only) is enclosed in the weather resistant storage container.
4. **Daily Walk-Around Inspection** – *(See Section 2.4)*
5. **Battery –** Charge as required.
6. **Hydraulic Oil** – Check the hydraulic oil level.

NOTE: *Check Service Manual for instructions and hydraulic oil specification before adding. DO NOT OVERFILL.*



FILL TO LINE on Hydraulic Reservoir indicates the proper level for hydraulic oil.

7. **Function Check** – Check all machine controls for operation. *(See Section 2.5)*

If optional equipment is installed on this machine refer to Section 3 for specific Pre-Start Inspection and Operation instructions.

2.4 DAILY WALK-AROUND INSPECTION

Begin the “Walk-Around Inspection” at item one (1) as noted on the diagram. Continue around machine check each item in sequence for the conditions listed in the following check list.

⚠ WARNING

TO AVOID POSSIBLE INJURY, BE SURE MACHINE POWER IS “OFF” DURING “WALK-AROUND INSPECTION”.

DO NOT OPERATE MACHINE UNTIL ALL MALFUNCTIONS HAVE BEEN CORRECTED.

IMPORTANT

DO NOT OVERLOOK VISUAL INSPECTION OF THE BASE FRAME UNDERSIDE. CHECK THIS AREA FOR OBJECTS OR DEBRIS WHICH COULD CAUSE EXTENSIVE MACHINE DAMAGE.

NOTE: *On all components, make sure there are no loose or missing parts, that they are securely fastened, and that no visible damage, leaks or excessive wear exists in addition to any other criteria mentioned.*

1. **Drive and Caster Wheels** - Check for any debris stuck to or around wheels.
2. **Base Frame** - Check pot-hole-protection system components; check for loose wires or cables dangling below the base.
3. **Manual Descent Control Valve** - See note above.
4. **Motor/Pump/Reservoir Unit** - No evidence of hydraulic leaks. Hydraulic oil level should be filled level with the full line.
5. **Batteries** - Battery cables; no corrosion.
6. **Platform Assembly and Gate** - Quick-Change platform mounting and mounting pins; DVSP - platform fasteners; platform railings; entry bar or gate in proper working order.
7. **Platform Control Console** - Platform control; placards secure and legible; emergency stop switch reset for operation; Control markings legible.
8. **Ground Control Station** - Main Power Selector Switch operable; placards secure and legible; emergency stop switch operates properly.
9. **Mast Assembly** - Mast sections; slide pads; mast chains; sequencing cables; platform control and power cables *(on side of mast);* power cables properly tensioned and seated in sheaves; cable sheaves rotating freely.

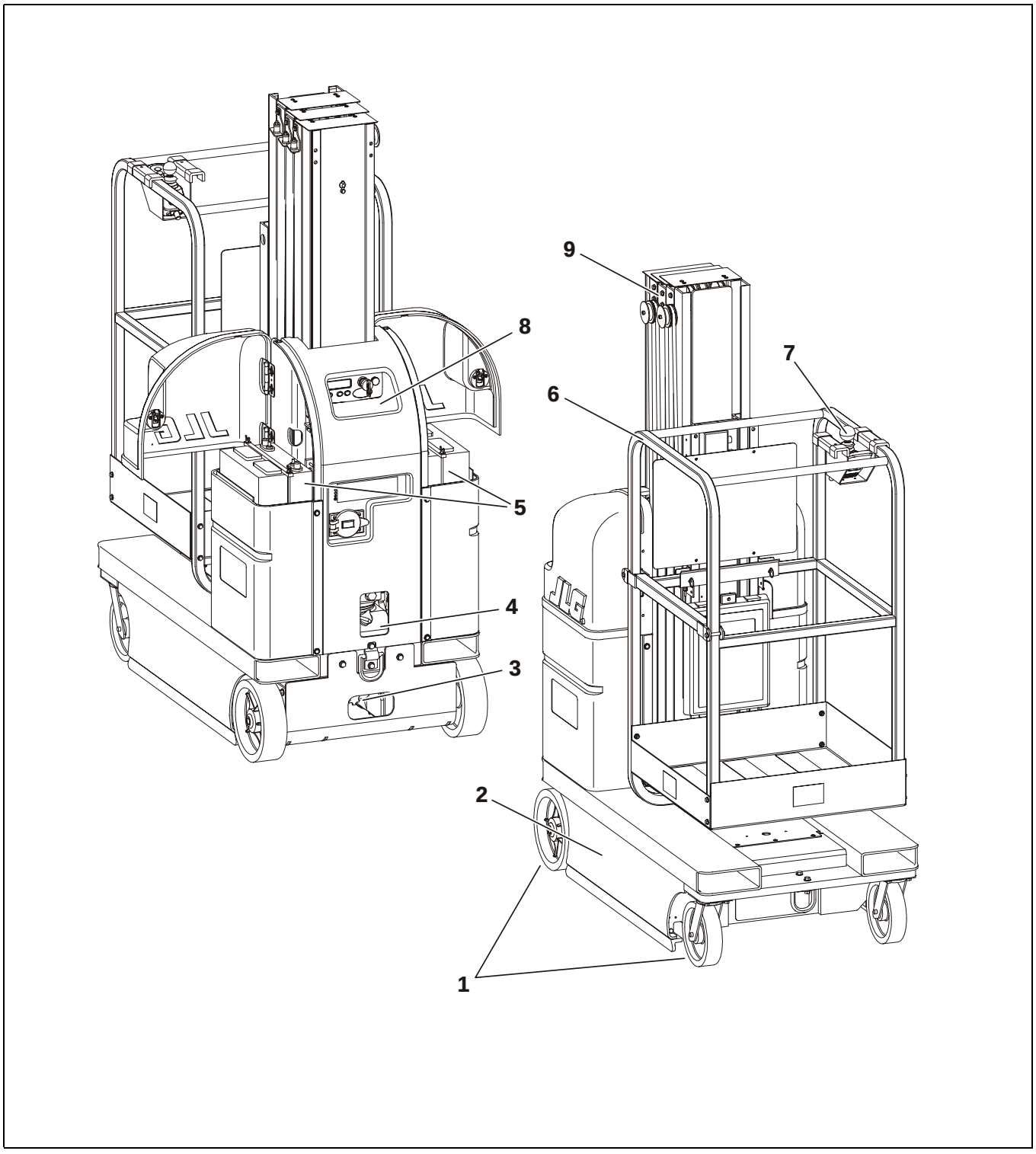


Figure 2-1. Daily Walk-Around Inspection for DVL/DVSP Machines.

1. Drive and Caster Wheels
2. Base Frame
3. Manual Descent Control Valve
4. Motor/Pump/Reservoir Unit
5. Batteries *(Open Cover Doors)*
6. Platform Assembly
7. Platform Control Console
8. Ground Control Station
9. Mast Assembly

2.5 FUNCTION CHECK

Once the “Walk-Around” Inspection is complete, perform a function check of all systems in an area free of overhead and ground level obstructions. Refer to Section 3 for more specific operating instructions.

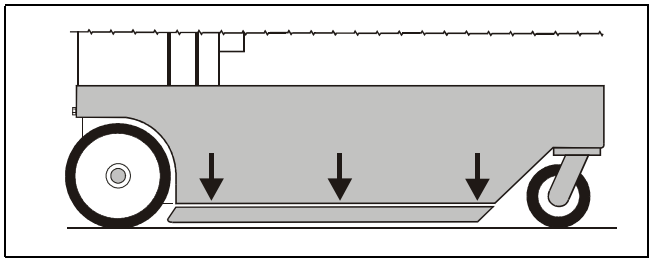
⚠ WARNING

IF THE MACHINE DOES NOT OPERATE PROPERLY, TURN OFF THE MACHINE IMMEDIATELY! REPORT THE PROBLEM TO THE PROPER MAINTENANCE PERSONNEL. DO NOT OPERATE THE MACHINE UNTIL IT IS DECLARED SAFE FOR OPERATION.

Perform a Function Check as follows:

1. **From the ground controls with no load in the platform:**
   a. Operate ground control functions, platform lift up and lift down.

NOTE: *Ensure Pot-Hole-Protection device is fully engaged (both bars down) when the platform is elevated.*



   b. Ensure that all machine functions are disabled when the Emergency Stop Button is activated.
   c. Check Manual Descent Control valve is operating properly.
2. **From the platform control console:**
   a. Ensure that the control console is properly mounted and secure.
   b. Raise and lower platform 2 ft. to 3 ft. *(.61m to .92 m)* several times. Check for smooth elevation and lowering of platform.
   c. Operate all functions and check all limit and cut-out switches.
   d. Ensure that all machine functions are disabled when the Emergency Stop Button is activated.
3. **With platform in the transport (stowed) position:**
   a. Drive the machine on a grade, not to exceed the rated grade ability, and stop to ensure the brakes hold.
   b. Check the 1.5 degree tilt sensor alarm to ensure proper operation.

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SECTION 3. MACHINE CONTROLS, INDICATORS AND OPERATION

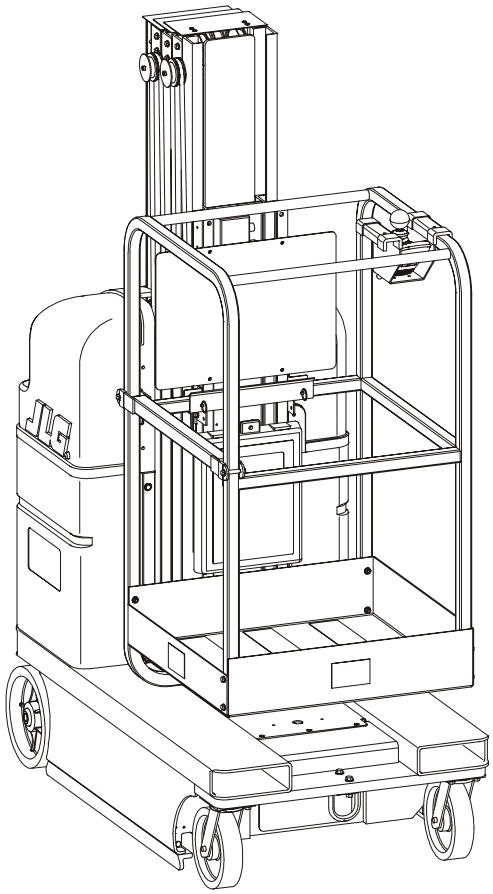


Table 3-1. DVL And DVSP - Machine Operating Specifications

	15DVL	20DVL	15DVSP	20DVSP
Maximum Occupants:	1			
Maximum Work Load (Capacity): (DVL-Std. Platform / DVSP - Stockpicker Platform)	500 lb. (230 kg)	350 lb. (160 kg)	500 lb. (230 kg)	400 lb. (180 kg)
Maximum Travel Grade (Gradeability): (Platform STOWED ONLY)	20%			
Maximum Travel Grade (Side Slope): (Platform STOWED ONLY)	5°			
Machine Height (Platform Stowed)	78 in. (198cm)			
Maximum Vertical Platform Height:	15 ft. (4.57 m)	19.5 ft. (5.94 m)	15 ft. (4.57 m)	19.5 ft. (5.94 m)
Maximum Wheel Load (Per Wheel):	800 lb. (360 kg)			
Maximum Drive Speeds (Operator Variable):	0.5 - 2 mph (0.8 - 3.2 kph)			
Max. Platform Speeds (w/Max. Load): Platform Up:	20 sec.	22.5 sec.	20 sec.	22.5 sec.
Platform Down:	15 - 21 sec.	21 - 26 sec.	15 - 21 sec.	21 - 26 sec.
Gross Machine Weight (Standard Equipment/Platform Empty):	2,105 lb. (955 kg)	2,105 lb. (955 kg)	2,150 lb. (975 kg)	2,150 lb. (975kg)

3.1 GENERAL

IMPORTANT

THE MANUFACTURER HAS NO DIRECT CONTROL OVER MACHINE APPLICATION AND OPERATION. THE USER AND OPERATOR ARE RESPONSIBLE FOR CONFORMING WITH GOOD SAFETY PRACTICES.

This section provides the necessary information needed to understand control function and operation.

3.2 MACHINE DESCRIPTION

The JLG DVL and DVSP Model Lifts are electric self-propelled machines with an aerial work platform mounted to an elevating aluminum mast mechanism. The personnel lift's intended purpose is to provide personnel access to areas above ground level. The DVSP model lift is intended for stock picking purposes in retail stores or warehouses.

The primary control station is located in the platform. From the Platform Control Console the operator can drive the machine and raise or lower the platform.

The controls of the programmable Ground Control Station are to be used during machine power-up, machine maintenance or in case of emergency should the operator in the platform be unable to lower the platform.

Vibrations emitted by these machines are not hazardous to an operator working in the platform.

The continuous A-Weighted sound pressure level at the work platform is less than 70db (A).

NOTE: *Machines built to the UL-EE electrical specification (option) include additional controls and design features. These controls are labeled as (EE Only).*

3.3 MACHINE OPERATION

Getting Started

The following control conditions must be met before the machine can be operated from either the Ground or Platform Controls.

- The batteries contain enough voltage to operate the machine.
- The Main Power Selector Switch on the Gound Control Station must be set for either Ground Control Mode or Platform Control Mode.
- Both Emergency Stop Switches, one on the Ground Control Station the other on the Platform Control Console must be in the RESET position.
- If equipped, the On/Off Key Switch on the Platform Console must be set to the ON position.

3.4 BATTERY CHARGING

DVL and DVSP machines are equipped with an AC voltage input/DC voltage output battery charger. The charger automatically terminates charging when the batteries reach full capacity.

NOTE: *The machine's platform drive function is disabled when the battery charger is plugged into an AC receptacle.*

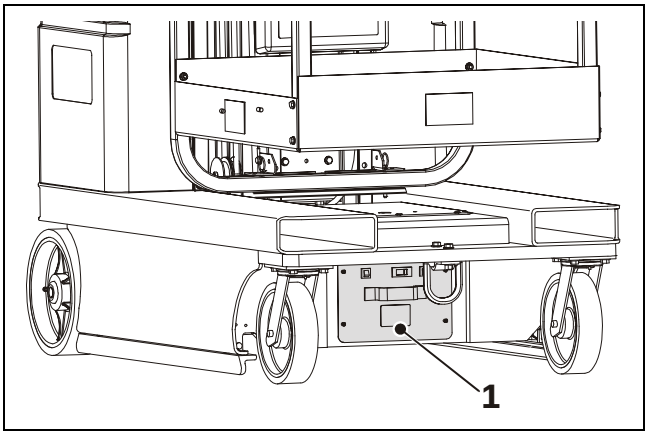
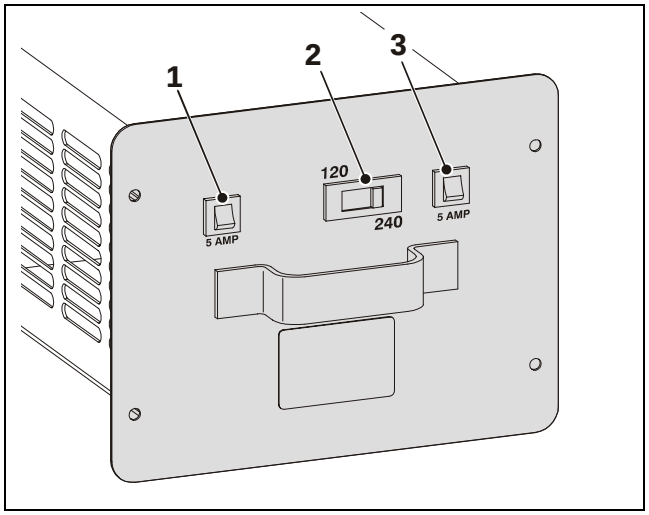


Figure 3-1. Battery Charger Location.

1. Battery Charger



Battery Charger Front Panel

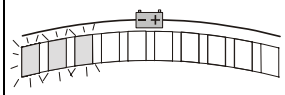
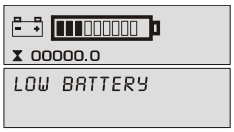
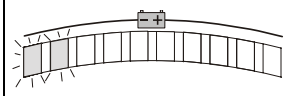
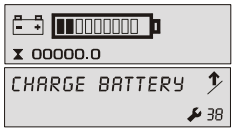
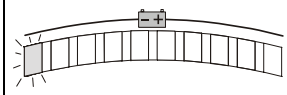
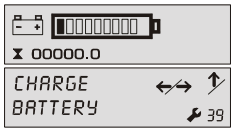
1. 120V/5 Amp Breaker
2. AC Input Voltage Selector
3. 240V/5 Amp Breaker

Battery Low Voltage Warning Indicators

The Platform Control Console and Ground Control Station indicate battery low voltage at three (3) Warning Levels.

Table 3-2. Battery Low Voltage Warning Indicators.

IMPORTANT: *The 3 Levels of Battery Low Voltage Warning indication will only activate on Ground Control Modules with version 29 or later Ground Control Module software (implemented 8/2004). However, machines with earlier versions of software must follow the same LED/BAR indicator guidelines and battery charging cycles to maximize battery life.*

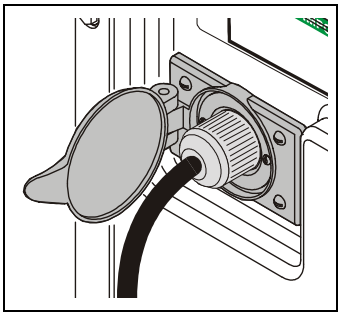
WARNING LEVEL	INDICATOR LOCATION		RESULT	ACTION REQUIRED TO CLEAR FAULT
	PLATFORM CONTROL LED	GROUND CONTROL LCD		
LEVEL-1			• 3 LEDs/BARS Flashing with an audible beep. • Machine will Operate - No Control Functions Locked Out.	Charge batteries to a level of four (4) LEDs/BARS or more before operating.
LEVEL-2			• 2 LEDs/BARS Flashing with an audible beep. • Platform Lift-UP Function is Locked Out.	Charge batteries for a minimum of four (4) continuous hours or eight (8) LEDs/BARS lit before operating. (a)
LEVEL-3			• 1 LED/BAR Flashing with an audible beep. • Drive and Platform Lift-UP Functions Locked Out.	Charge batteries for a minimum of four (4) continuous hours or eight (8) LEDs/BARS lit before operating. (a)

NOTE: *(a) To maximize battery life, it is recommended that the factory supplied batteries be charged continuously for a minimum of 4 hours or until 8 bars are lit on the ground station LCD Display before operating the machine. When drained to Warning Level 2 or 3, batteries must be charged until 8 bars are lit on the ground station LCD display to clear the fault code.*

To Charge Batteries

1. Park machine in a well ventilated area near an AC voltage electrical outlet.
2. Check the AC voltage selector switch on front of the battery charger is set to correct local AC voltage.

NOTE: *The batteries on DVL/DVSP machines require approximately five (5) hours to fully charge when drained to LOW BATTERY VOLTAGE warning on the Ground Control Module LCD display.*

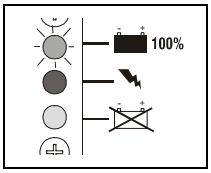


3. Plug a heavy duty AC extension cord into the Charger AC Input Receptacle on the center rear cover of the machine.

Battery Charging Status Indicators

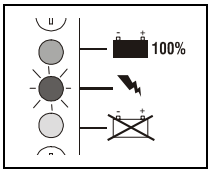
The battery charging status indicators are located just above the Charger AC input receptacle on the center cover section at the rear of the machine. *(See Figure 3-2.)*

When first plugged in, the charger runs through a self-diagnostic test, lighting the LEDs in sequence, then charging will begin.



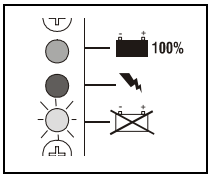
CHARGE COMPLETE

GREEN (TOP) LED ON
100% Complete



CHARGING

AMBER (MIDDLE) LED ON
Charge Incomplete



CHARGING PROBLEM

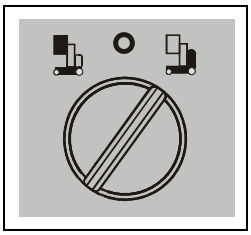
RED (BOTTOM) LED ON
Consult Troubleshooting Section of the Service Manual.

3.5 GROUND CONTROL STATION - OPERATION

(See Figure 3-2.)

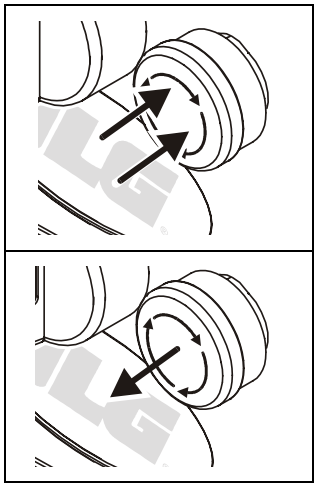
NOTE: *If equipped with optional Programmable Security Lock (PSL) see Section 3.10 for additional instructions.*

Main Power Selector Switch



Set the Main Power Selector Switch to Ground Control Mode at the Ground Control Station

Emergency Stop/Shut Down Button



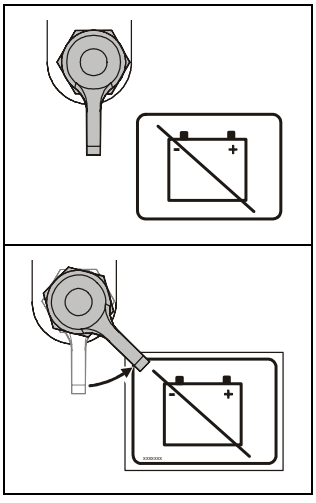
POWER OFF

PUSH IN -
To Engage
Emergency Stop

POWER ON

TURN CLOCKWISE and RELEASE -
To Reset
Emergency Stop

Master Disconnect Switch - (EE Option Only)



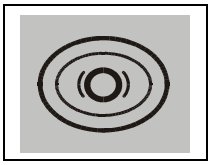
POWER ON

Lever is pointing straight out towards left side of machine.

POWER OFF

Lever is TURNED COUNTERCLOCK-WISE towards decal.

Brake Release Button



PUSH and RELEASE -
TO DISENGAGE Brakes

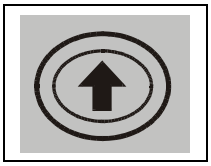
PUSH and RELEASE AGAIN -
TO ENGAGE Brakes

NOTE: *The brakes only DISENGAGE (electrically) when the joystick control is moved off center during driving or are manually DISENGAGED (electrically) using the the Brake Release Button.*
If the machine's batteries are completely depleted of electrical charge the brakes cannot be released manually.

⚠ CAUTION

DO NOT MANUALLY DISENGAGE THE BRAKES UNLESS MACHINE IS SETTING ON A LEVEL SURFACE OR MACHINE IS FULLY RESTRAINED.

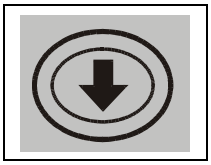
Platform Up



PUSH IN -
TO ELEVATE Platform

RELEASE -
TO STOP ELEVATING

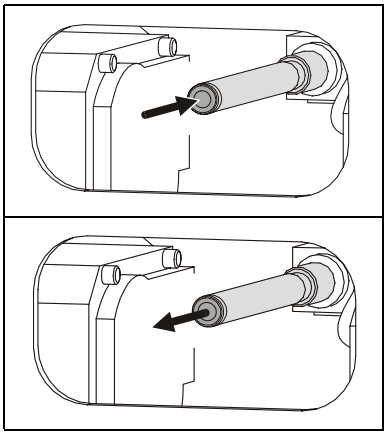
Platform Down



PUSH IN -
TO LOWER Platform

RELEASE -
TO STOP LOWERING

Manual Descent Control Valve



PUSH-IN TO LOWER Platform

RELEASE TO - STOP Platform Descent

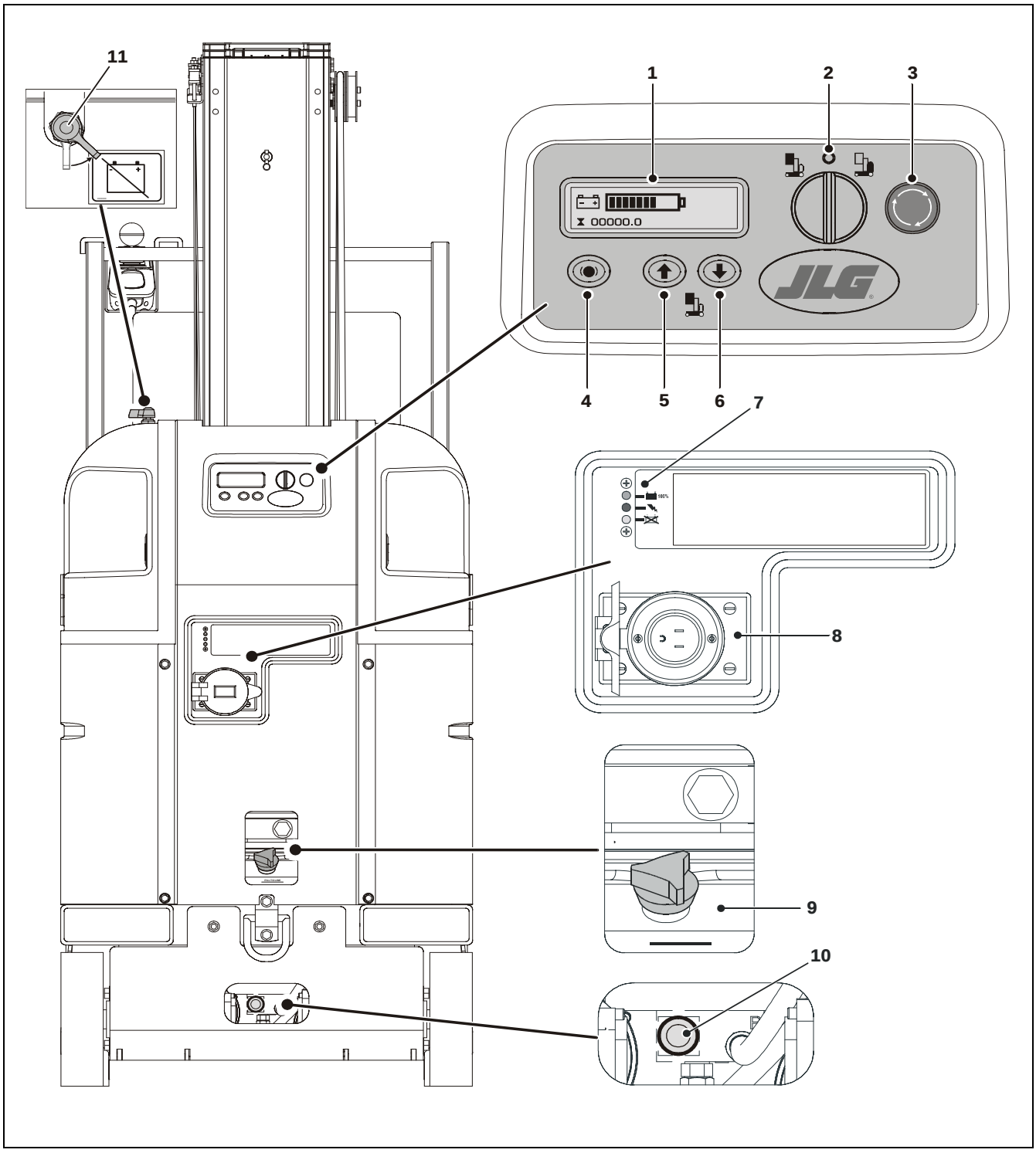
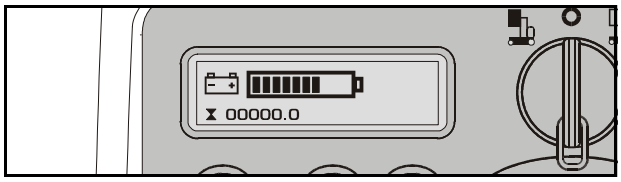


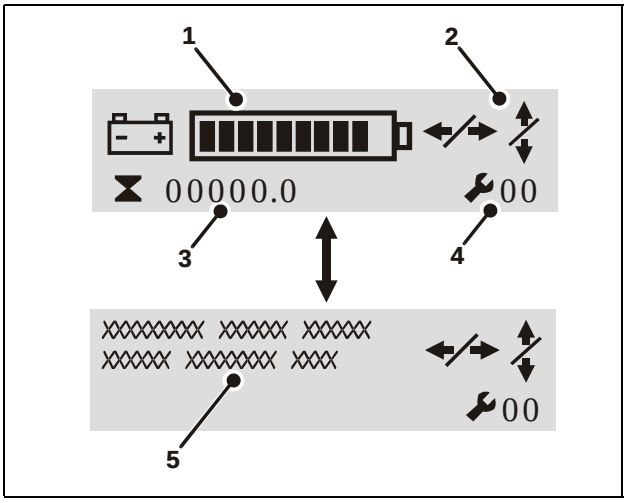
Figure 3-2. Ground Control Station. (Machine Rear View)

1. Machine Status LCD Display
2. Main Power Selector Switch
3. Emergency Stop
4. Brake Release
5. Platform Up
6. Platform Down
7. Battery Charging Status Indicators
8. Charger A/C Input Receptacle
9. Hydraulic Oil Reservoir
10. Manual Descent Control Valve
11. Master Power Disconnect Switch (UL-EE Only)

Machine Status LCD Display



At power-up and during operation the LCD display on the Ground Control Module displays the current machine operating status. The following illustration explains the symbol indications.

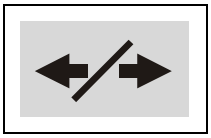


LCD Display Symbols

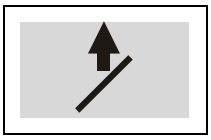
1. Battery Charge Indicator (BCI)
2. Function Display or Function Disabled Indicators
3. Hour Meter Display
4. Fault Code Indicator
5. Fault Text Message Display (a)

Note: (a) When an Fault Code is indicated the LCD screen will alternate between the text and symbol display modes.

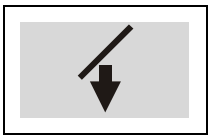
In the LCD Display Symbols illustration item (2), the Function Display or Function Disabled Indicators will vary as shown following:



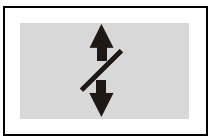
DRIVE Disabled



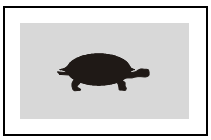
LIFT UP Disabled



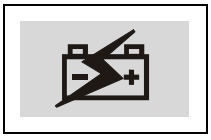
LIFT DOWN Disabled



Both LIFT UP and LIFT DOWN Disabled



Drive Speed Cut-Back (Turtle) Mode Engaged (When Platform is Elevated)



Battery Charger (AC) Plugged In

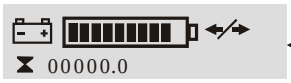
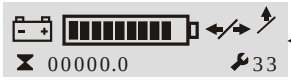
LCD Display Fault Conditions

Table 3-3, LCD Display - Operating Fault Conditions show common LCD display Fault indications which may occur during operation and are usually caused by either an error in machine operation or a work area condition. These fault conditions can usually be corrected by the operator and do not require a qualified mechanic to repair.

IMPORTANT

AFTER A FAULT CONDITION IS CORRECTED THE MACHINE POWER MAY NEED TO BE RECYCLED TO RESET THE GROUND CONTROL STATION.

Table 3-3. LCD Display - Operating Fault Conditions

FAULT CODE	PLATFORM CONSOLE LED FAULT CODE	LCD SYMBOL SCREEN	LCD TEXT SCREEN	FAULT DESCRIPTION/ MACHINE CONDITION	LOOK FOR THIS
—	—		BRAKES RELEASED	Brakes Released (DRIVE Disabled)	To Engage Brakes - Press Brake Release Button on Ground Control Station
—	—		NONE	Charger AC Plugged In DRIVE Disabled	Unplug Charger AC Power Cord
—	—		OBSTRUCTION BELOW PLATFORM	Obstruction Sensor System (Platform Elevated) LIFT DOWN Disabled	Obstruction Under Platform or Sensor Defective
—	—		ENTER SECURITY CODE	Programmable Security Lock Password	Enter Code on PSL Keypad to Power-Up Machine
02	2		LEFT PHP BAR UP	Left PHP Bar UP (Platform Elevated) DRIVE and Lift UP Disabled	Lower Platform and Check the Left Pot Hole Protection Bar
03	2		RIGHT PHP BAR UP	Right PHP Bar UP (Platform Elevated) DRIVE and Lift UP Disabled	Lower the Platform and Check the Right Pot Hole Protection Bar
04	3		TILTED	Tilt Condition (Platform Elevated) DRIVE and Lift UP Disabled	Lower the Platform and Drive off the Tilt Condition
13	6		TRACTION MOD IN FOLD BACK	Traction Module Over Temperature (DRIVE Disabled)	Allow Drive System Traction Module to Cool Before Operating
17	7		GROUND MODULE IN FOLD BACK	Ground Control Module Over Temperature (Machine Stopped)	Allow Ground Control Module to Cool Before Operating
32	7		PUMP MOTOR OVER CURRENT	Pump Motor Over Current (LIFT UP Disabled)	Platform Load Over Capacity
33	2		BOTH PHP BARS UP	Both PHP Bars UP DRIVE and Lift UP Disabled	Check for Object Blocking Both the Left and Right PHP Bars
34	—		AUX 1 INHIBIT	Aux. #1 - Platform Gate Open or No Pressure on the Platform Enable switch.	Close Platform Gate or Depress Platform Enable switch during machine operation.
35	—		AUX 1 TIE DOWN	Aux. #1 - Platform Enable switch depressed during Machine Power-up.	Do Not Press on Platform Enable switch during Machine Power-Up.

NOTE: *The fault conditions shown above are fault conditions which the Operator may be able to resolve. Should a fault occur and be displayed on the LCD screen which cannot be corrected at the Operator's level, the problem must be referred to a qualified mechanic. A complete table of Fault Codes is listed in the TroubleShooting Section of the Service and Maintenance Manual.*

3.6 GROUND CONTROL STATION - PROGRAMMING

General

The DVL/DVSP machine Ground Control Station allows on-board programming of various component and control function personality settings.

Programming may be required under circumstances such as:

- Optional equipment has been added to the machine in the field and a function must be enabled before operation.
- Customizing the machine to fit a specific application, such as changing the LCD display language.

Programming Levels

There is one (1) **password protected** programming level available to the Operator:

- **Level-3:** Operator's Settings -
  Level-3 Password: 33271

Operator Programming Mode

In the Operator Level Programming Mode the following items are shown on the main menu *(See Table 3-4 for Setting Range and Default Factory Setting)*:

- Tilt Sensor
- Program

- **Tilt Sensor**

  Allows viewing current tilt sensor individual X and Y direction degree reading.

- **Program**

  Allows programming of the items shown in Table 3-4, the following is a brief explanation of each programming item.

NOTE: *There are two production modules available at this time, one for North/South American and European languages, and one for Asian languages. All programmable items between these modules are identical with the exception of language selection.*

- **Back To Main** - When selected, will return to main level menu.
- **Set Language** - Selects the language that text on the LCD screen will be displayed.
- **Set Sleep Time** - Allows setting the length of time the machine will remain powered up without control input before powering itself down.
- **Set Polarity of Keypad Code** - Turns on or off the Programmable Security Lock switch circuit, if equipped.
- **Enable Detection of Horn Open Circuit** - Enables horn electrical circuit to be turned on (YES) or off (NO) if machine is equipped with a horn.

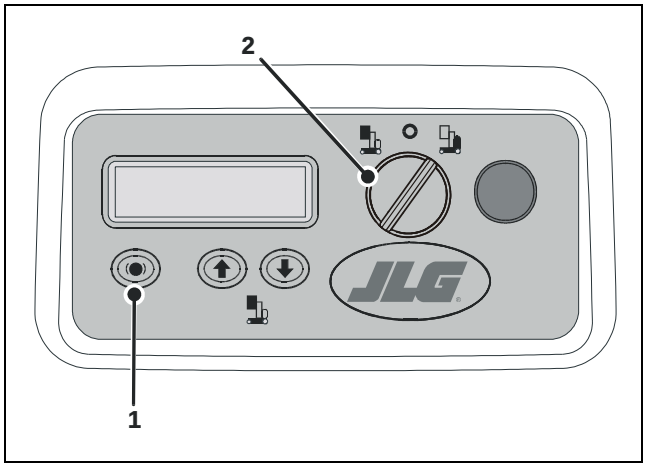
Table 3-4. DVL/DVSP Ground Control Station - Level 3 - Programmable Settings and Factory Presets.

Level-3: Operator Programmable Settings		On LCD Display:	YES = ✓ NO = ✗ HIGH = ↑ LOW = ↓
LEVEL	PROGRAMMABLE ITEM	FACTORY PRESET	SETTING RANGE
3	Back to Main	—	Return to Main Menu
3	Set Language ***NOTE:*** *There are two production modules available at this time, one for North/South American and European Languages, and one for Asian Languages.*	1	**1** - English **6** - Italian **2** - German **7** - Swedish **3** - Dutch **8** - Brazilian Portuguese **4** - French **9** - Finnish **5** - Spanish
		2	**1** - English **3** - Japanese **2** - Chinese
3	Set Sleep Time	5 MINS	0 - 60 MINS
3	Set Polarity of the Keypad Code	LOW	HIGH/LOW
3	Enable Detection of Horn Open Circuit	NO (a)	YES/NO
3	Enable Detection of Beacon Open Circuit	NO (a)	YES/NO
3	Forward Alarm Disable	NO	YES/NO
3	OSS Diagnostics	NO	YES/NO
Notes: (a) DVSP Models this feature is standard equipment and preset to YES at factory.			

- **Enable Detection of Beacon Open Circuit** - Enables mast/base beacon strobe electrical circuits to be turned on (YES) or off (NO) if machine is equipped with either or both beacon strobes.
- **Forward Alarm Disable** - When turned on (YES) will disable the alarm when driving forward.
- **OSS Diagnostics** - When turned on (YES) will cause the controller LCD to continuously display the Obstruction Sensing System (OSS) Diagnostics until turned back off (NO).....the machine will function normally, but only the OSS Diagnostics screen will display until this setting is re-set to the off (NO) position.

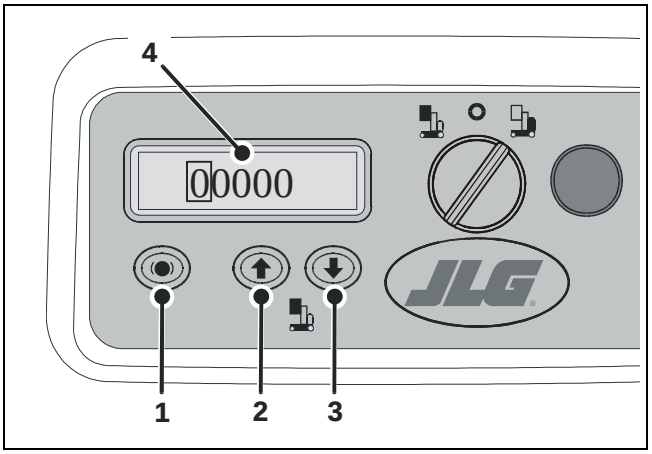
Activating Programming Mode

NOTE: *If machine does not power up, check that both the Ground Control Station - Emergency Stop Button, and the Platform Control Console - Emergency Stop Button, are in the RESET position.*
Also if machine is equipped with the (PSL) Programmable Security Lock option, see Section 3.5 of this Operators Manual for additional machine power-up steps.



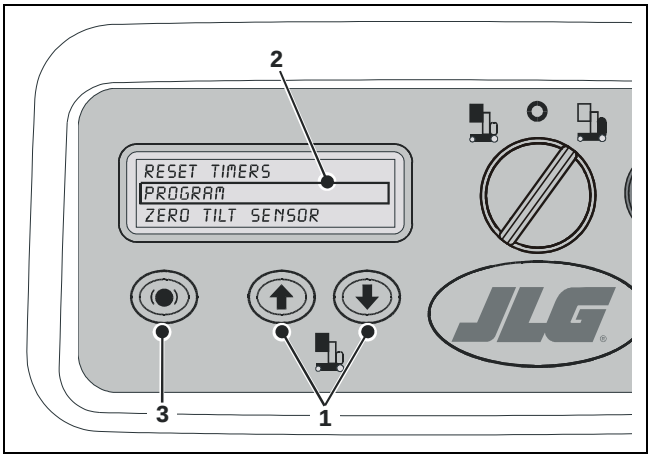
1. With machine power OFF, press and hold the Brake Release Button (1) on the Ground Control Station.
2. While holding the Brake Release Button in, power machine up by turning the Main Power Selector Switch (2), to either the Ground Control or Platform Control Mode.
3. Release the Brake Release Button (1) after machine is powered up. The LCD display should now display five zeros, one with a box around. Continue to next step Entering Password.

Entering Password



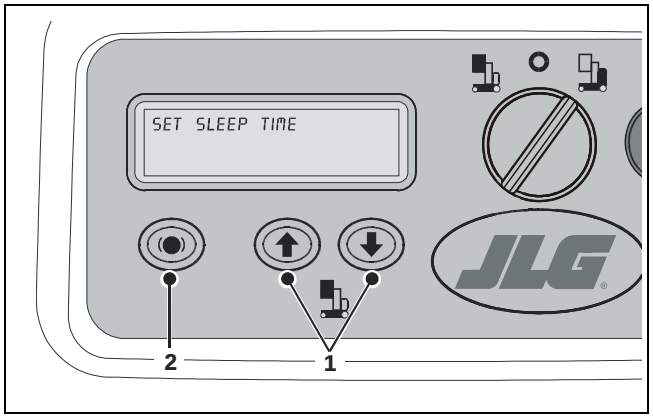
1. The Brake Release button (1) moves the box from left to right to select which digit to change.
2. Platform UP button (2) increases the numerical digit.
3. Platform DOWN button (3) decreases the numerical digit.
4. Change all five digits (4) to match password level, then press the Brake Release button (1) again.

Programming Mode Selection



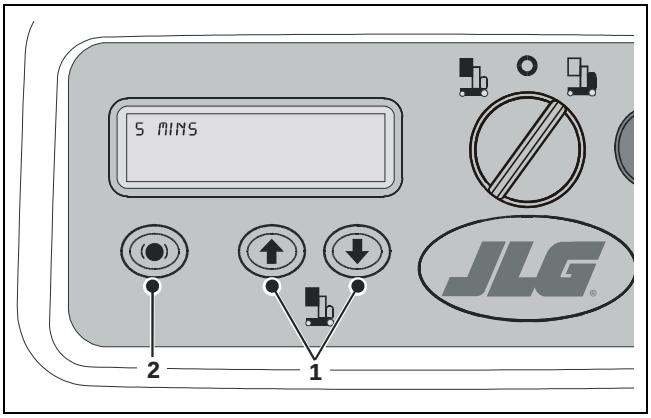
1. Use Platform UP/DOWN buttons (1) to move the selection box (2) up or down to select item to program.
2. Press the Brake Release button (3) to enter selected mode then move on to Selecting Programmable Item to Adjust.

Selecting Programmable Item to Adjust



1. Use the Platform UP/DOWN buttons (1) to scroll through the list of programmable items available to your programming level.
2. Once a programmable item to be adjusted is selected, press the Brake Release button (2) to enter that settings' adjustment mode.

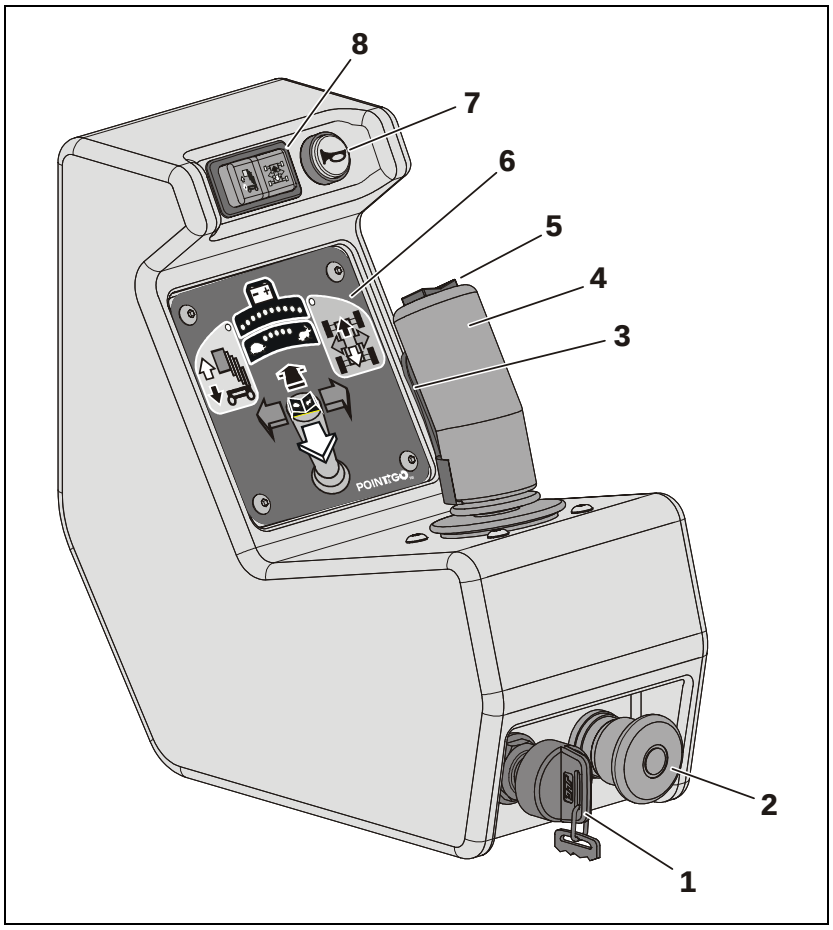
Adjusting Programmable Setting



1. Adjust the programmable setting using the Platform UP/DOWN buttons (1), see Table 3-4 for range of settings for that item.
2. Once parameter is set for the programmable item, press the Brake Release button (2), this will enter the parameter and return you to the Programmable Settings Menu.

TO EXIT Programming Mode after adjusting programmable settings, power machine down with either the Main Power Selector Switch or Emergency Stop Button.

3.7 PLATFORM CONTROL CONSOLE OPERATION - (MACHINES SERIAL NUMBER - 0130007616 TO PRESENT)



1. On/Off Key Switch - (See page 3-12)
2. Emergency Stop/Shut Down Button - (See page 3-12)
3. Function Enable Lever - *(on front of joystick) (See page 3-13)*
4. Multifunction Joystick Control - (See page 3-13)
5. Drive Speed Setting Selector Switch - (See page 3-14)
6. Platform Control Display Panel - (See page 3-12)
7. Horn Button - (See page 3-13)
8. Drive/Lift Mode Selector Switch - (See page 3-13)

Figure 3-3. Platform Control Console - (Machines Serial Number - 0130007616 to Present)

General

The following conditions must be met before the machine can be operated from the platform control console:

- Ground Control Station - Main Power Selector Switch must be set to PLATFORM CONTROL MODE.
- Ground Control Station - Emergency Stop/Shut Down Button must be in the RESET position (POWER ON).

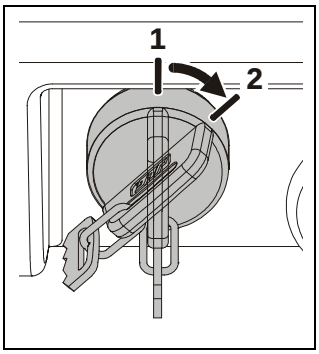
NOTE: *See Section 3.5 on page 3-4, for Ground Control Station operation.*

- Platform Console - On/Off Key Switch must be set to the ON position.
- Platform Console - Emergency Stop/Shut Down Button must be in the RESET position (POWER ON).
- If equipped with the OPTIONAL - PSL (Programmable Security Lock) it must be set to the ON position.

NOTE: *See Section 3.10 on page 3-18, for location and PSL instructions.*

NOTE: ***SLEEP MODE*** *- During operation if no control functions have been activated for 10 minutes (default programmable setting), the ground control module will power the machine down to conserve battery power. Cycle power back on using either the main power selector switch (key) or the emergency stop/ power down button either on the platform controller or on the ground control station.*

Platform On/Off Key Switch



At the Platform Control Console - Set the On/Off Key Switch to the ON position (2) to operate machine.

1. OFF Position
2. ON Position

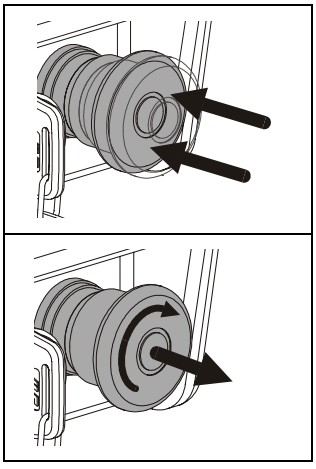
Set the ON/OFF Key Switch to the OFF position to power machine down.

NOTE: *If necessary, when machine is not in use, remove key from platform key switch to disable machine from unauthorized use.*

NOTE: *During operation the operator in the platform can prevent unauthorized control of the machine (from the Ground Control Station) by either switching the On/Off Key to the OFF position, or activating the Emergency Stop Button on the platform control console.*

Platform Emergency Stop/Shut Down Button

NOTE: *The Platform and Ground Control Station Emergency Stop/Shut Down Buttons must both be in the RESET position to operate machine.*



POWER OFF

PUSH IN -
TO ENGAGE
Emergency Stop

POWER ON

TURN CLOCKWISE
and RELEASE to
RESET Emergency Stop

Platform Control Display Panel

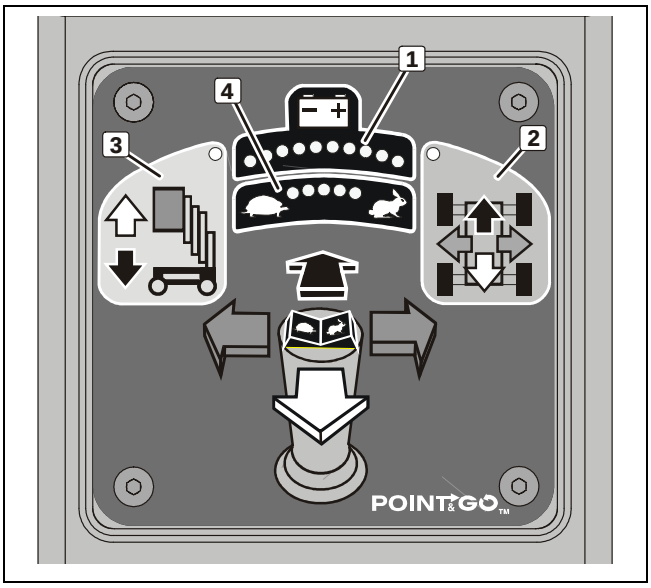


Figure 3-4. Platform Control Display Panel.

1. Battery Charge/Flash Code LEDS
2. Drive Mode Indicator
3. Lift Mode Indicator
4. Drive Speed Setting Indicator

1. Battery Charge/Flash Code Indicator LEDS

On normal power-up and operation this series of ten (10) LEDs visually indicates the amount of charge remaining in the batteries.

The number of LEDs lit will change depending on the level of charge in the batteries.

- (+) All Three (3) GREEN LEDs lit up indicate maximum battery charge.
- Four (4) YELLOW LEDs indicate a two thirds to one third battery charge remaining.
- (–) Three (3) RED LED's lit indicate minimum battery charge remaining. The machine will continue to operate at this charge level but will begin to indicate low battery voltage warning indicators.

NOTE: *For more information on Battery Warning Level Indicators See "Battery Low Voltage Warning Indicators" on page 3-3.*

This set of ten (10) LEDs will also indicate a flash (fault) code if operating problems are detected by the Ground Control Station.

NOTE: *LED Flash (Fault) Code indications that can be corrected by the operator are shown on Table 3-3 on page 3-7, this section of the manual.*

2. Drive Mode Indicator

When the Drive/Lift Mode Selector Switch is set to DRIVE MODE the round LED indicator on that portion of the display panel will light up indicating the DRIVE Mode active.

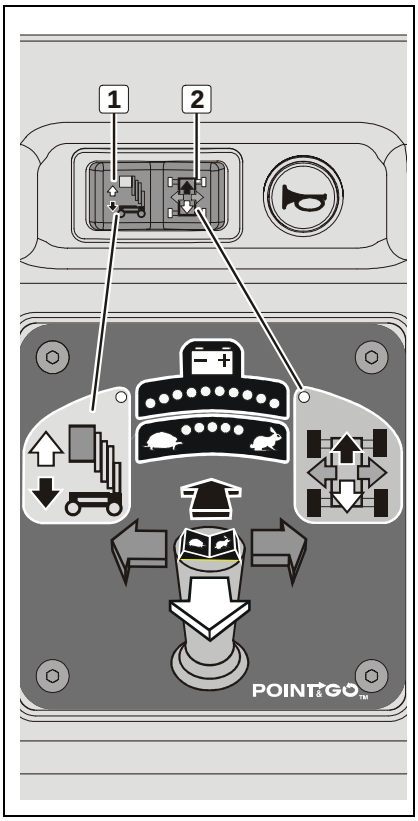
3. Lift Mode Indicator

When the Drive/Lift Mode Selector Switch is set to LIFT MODE the round LED indicator on that portion of the display panel will light up indicating the LIFT Mode active.

4. Drive Speed Setting Indicator

The five (5) GREEN LEDs on the top of this indicator display the drive speed setting with the TURTLE *(on the left*) representing the MINIMUM speed setting and the RABBIT (*on the right)* representing the MAXIMUM speed setting.

Drive/Lift Mode Selector Switch



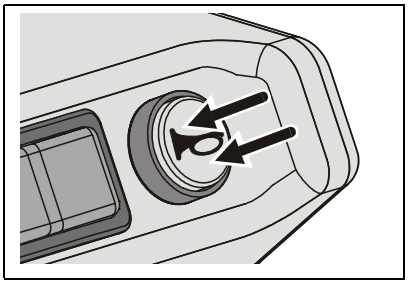
Drive/Lift Mode Selector Switch

1. LIFT Mode
2. DRIVE Mode

PUSH the rocker switch to select mode of operation. Whichever mode is selected the appropriate LED indicator on the display panel below will light up showing which mode has been activated for joystick operation.

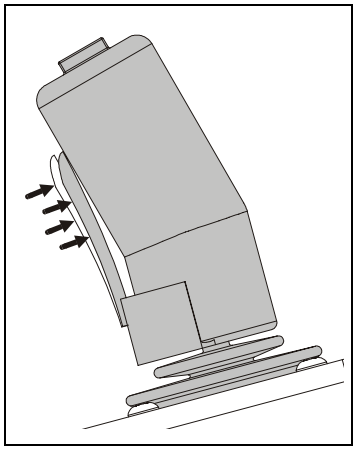
IMPORTANT: *The selected mode will only remain active for 5 seconds if the function is not operated.*

Horn Button



When the machine is powered on, pressing this button will sound the Horn.

Joystick Function Enable Lever



Joystick Function Enable Lever

The Function Enable lever on the front of the joystick control, must be engaged and held in during any joystick operation.

Multifunction Joystick Control

The joystick will operate the following machine functions:

- Drive
- Platform Lift Up and Down

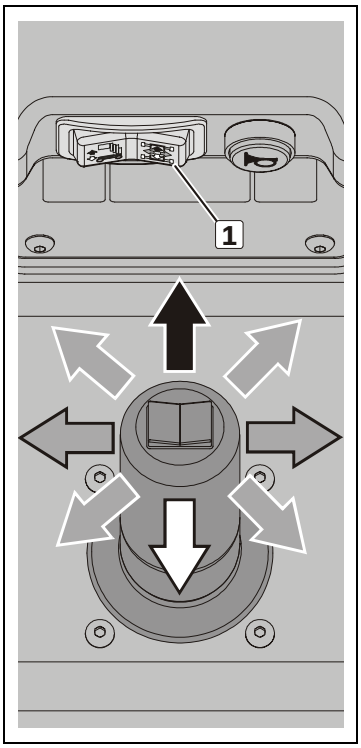
NOTE: *Use the Drive/Lift Mode Selector Switch to select which function the joystick will operate.*
The selected operating mode will only remain active for 5 seconds if the function is not operated.
Remember to press and hold the joystick function enable lever to operate any joystick functions.

⚠ WARNING

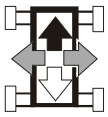
WHEN DRIVING WITH PLATFORM LOWERED, DO NOT ATTEMPT TO DRIVE MACHINE UP A RAMP (GRADE) OF GREATER THAN FIFTEEN PER CENT (15%).

DRIVING WITH PLATFORM ELEVATED IS RESTRICTED TO A SMOOTH, FIRM AND LEVEL SURFACE WITHIN 1.5 DEGREES OF LEVEL IN ANY DIRECTION.

Drive Mode

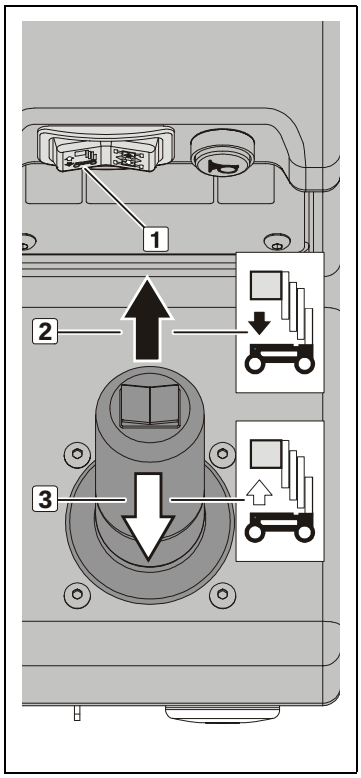


1. Activate the Drive Mode using the Drive/ Lift Mode Selector switch.



Within 5 seconds of activation - ENGAGE and HOLD the JOYSTICK ENABLE LEVER then move the joystick in the desired direction of travel. Drive power is applied proportionally the further the joystick is moved off center.

Lift Mode



1. Activate the Lift Mode using the Drive/Lift Mode Selector switch.

2. Platform LIFT DOWN Direction
3. Platform LIFT UP Direction

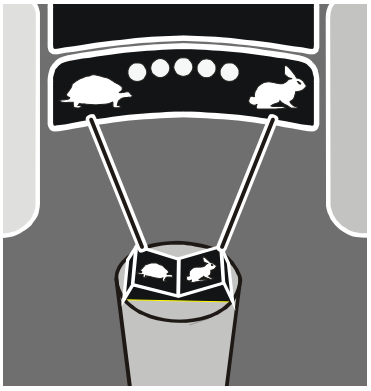
Within 5 seconds of activation - ENGAGE and HOLD the JOYSTICK ENABLE LEVER then move the joystick in the direction of LIFT (3) OR LOWER (2).

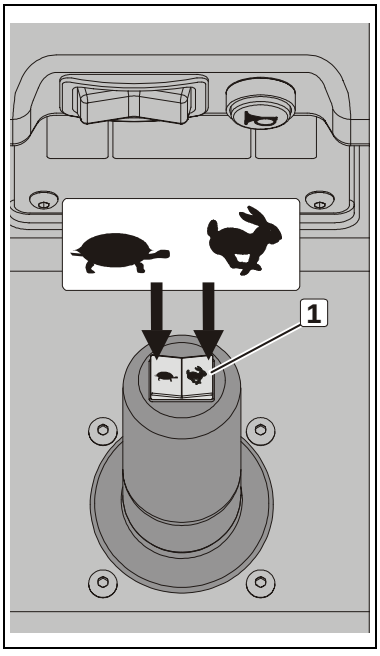
⚠ WARNING

THE GROUND CONTROL STATION CONTAINS A 1.5 DEGREE TILT ALARM, IF THE TILT ALARM HAS BEEN ACTIVATED, THE PLATFORM WILL NOT ELEVATE. ALSO IF THE TILT ALARM HAS BEEN ACTIVATED WHEN THE PLATFORM IS ELEVATED, THE DRIVE AND LIFT UP FUNCTIONS WILL BE DISABLED UNTIL THE PLATFORM IS COMPLETELY LOWERED, THEN DRIVEN OFF THE TILT CONDITION.

Drive Speed Setting Controls

NOTE: *When the platform is elevated the maximum drive speed is automatically cut-back to 1/4th the speed when the platform is fully lowered. The Ground Control Module-LCD screen will display a turtle when in this mode, See page 3-6 - Ground Control - LCD Status Display in this section of the manual.*





Drive Speed Setting Selector Switch

1. Selector Switch (on top of joystick)

Each PRESS on this side of the switch will DECREASE maximum drive speed. (FEWER LEDs Lit up on the Drive Speed Indicator.)

Each PRESS on this side of the switch will INCREASE maximum drive speed. (MORE LEDs Lit up on the Drive Speed Indicator.)

3.8 PLATFORM CONTROL CONSOLE OPERATION - (MACHINES BEFORE SERIAL NUMBER - 0130007616)

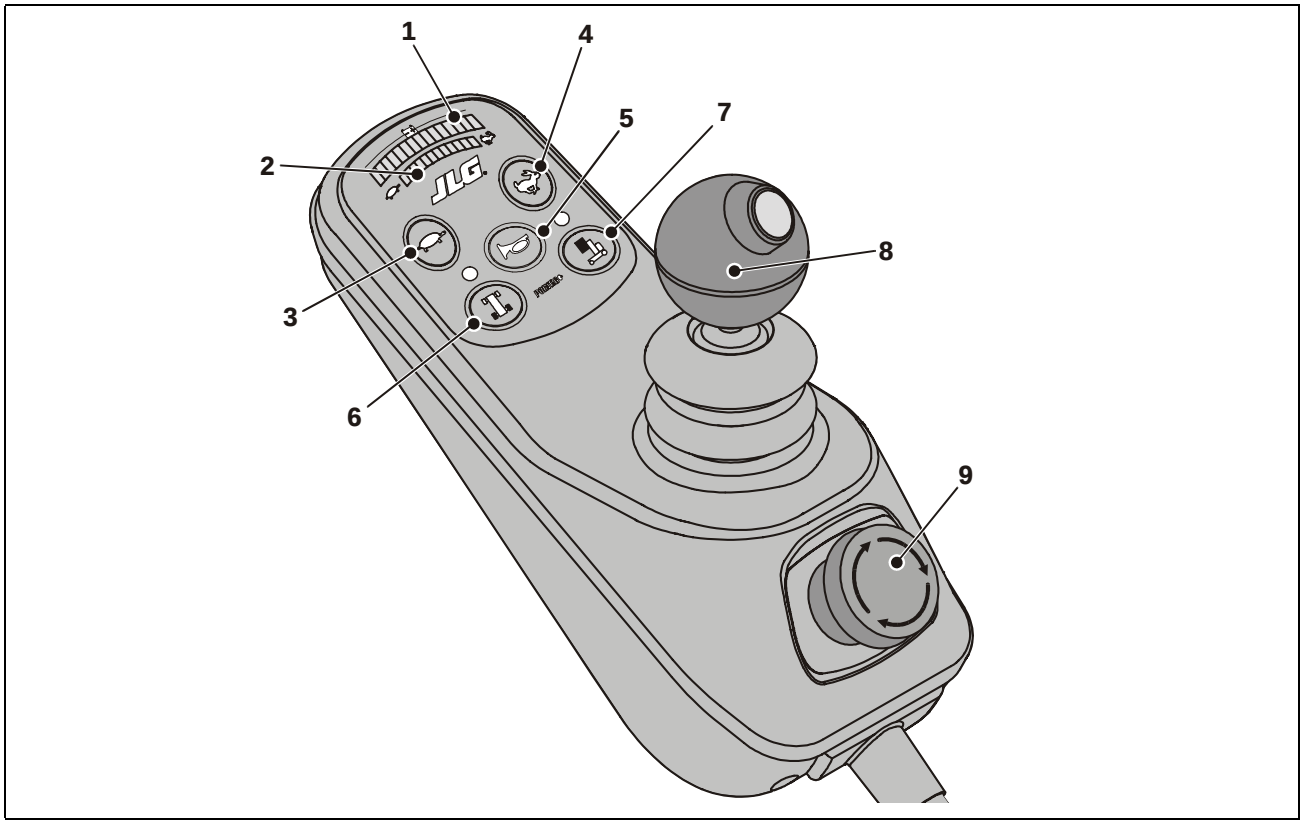
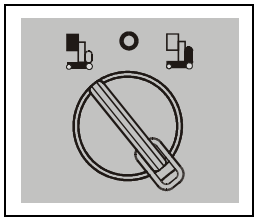


Figure 3-5. Platform Control Console - (Machines Before Serial Number - 0130007616

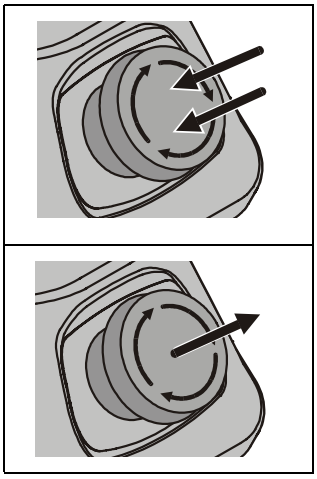
1. Battery Charge/Fault Code (LEDs)
2. Max. Drive Speed Setting (LEDs)
3. Decrease Max. Drive Speed
4. Increase Max. Drive Speed
5. Horn
6. Drive Function (Enable)
7. Platform Function (Enable)
8. Joystick with Enable Button
9. Emergency Stop

At Ground Control Station



Set the Main Power Selector Switch to Platform Control Mode at the Ground Control Station. (See Figure 3-2.)

Emergency Stop/Shut-Down Button



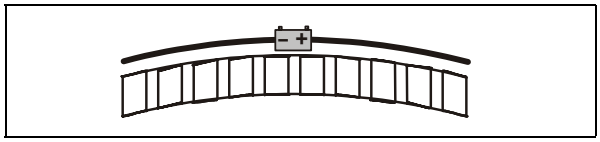
POWER OFF

PUSH IN -
TO ENGAGE
Emergency Stop

POWER ON

TURN CLOCKWISE
and RELEASE -
TO RESET
Emergency Stop

Battery Charge/Fault Code LED Indicator



On normal power-up and operation this series of LEDs visually indicates the amount of charge left in the batteries.

- (+) GREEN LEDs lit indicate maximum charge.
- (–) RED LED's lit indicate minimum charge remaining.
- The number of LEDs lit will change depending on the level of charge in the batteries.

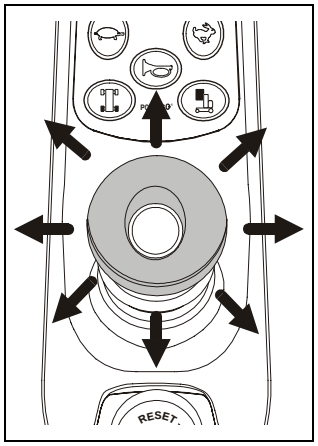
If battery voltage falls below 16.8 volts a fault condition will occur and the machine will stop operating. The batteries will need recharged.

NOTE: *LED Fault Code indications are in Table 3-3, LCD Display - Operating Fault Conditions, this section of the manual.*

Driving Machine

⚠ WARNING

WHEN DRIVING WITH PLATFORM LOWERED, DO NOT ATTEMPT TO DRIVE MACHINE UP A RAMP (GRADE) OF GREATER THAN TWENTY PER CENT(20%), AS TIPPING COULD OCCUR.

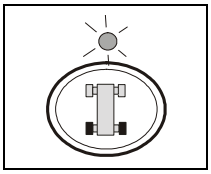


POINT & GO®

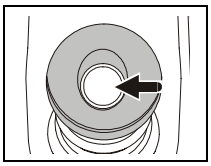
The Joystick can be moved in any direction off center.

Drive Power is applied proportionally the further the Joystick is moved off center.

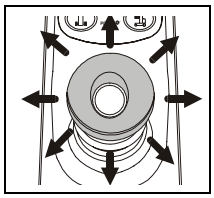
1. Enter the platform.



2. PRESS and RELEASE the Drive Function Button. The flashing LED indicates the function is active. The function remains active 3 to 4 seconds.



3. While the Drive Function is active. PRESS and HOLD the enable button on top the joystick

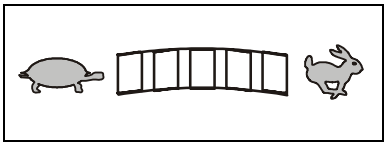


4. Move the joystick in the desired direction of travel. TO STOP the machine return the joystick back to center.

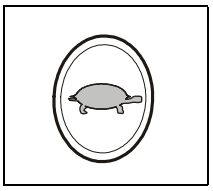
Adjusting Maximum Drive Speed Control

NOTE: *When the platform is elevated the maximum drive speed is cut-back to 1/4th the speed when the platform is fully lowered. The Ground Control Module-LCD screen will display a turtle when in this mode, see Machine LCD Status Display in this section of the manual.*

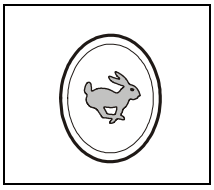
Maximum Drive Speed Indicator



Indicates current Maximum Drive Speed Setting. Slow to Fast.



1. Each Press of this button will reduce the Maximum Drive Speed allowed.
(LESS LEDs Lit.)



2. Each Press of this button will increase the Maximum Drive Speed allowed.
(MORE LEDs Lit.)

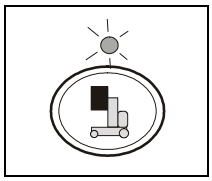
Elevating/Lowering the Platform

⚠ WARNING

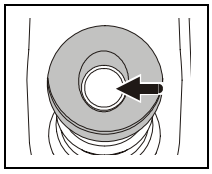
IF THE TILT ALARM HAS BEEN ACTIVATED, THE PLATFORM WILL NOT ELEVATE. ALSO IF THE TILT ALARM HAS BEEN ACTIVATED WHEN THE PLATFORM IS ELEVATED, THE DRIVE FUNCTION WILL BE DISABLED UNTIL THE PLATFORM IS COMPLETELY LOWERED.

NOTE: *For DVSP Models equipped with the optional Obstruction Sensing System, see Section 3.14 for additional platform operation instructions.*

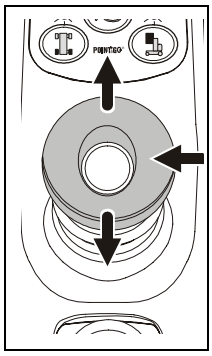
1. Drive the machine to the area where overhead work is to be performed and position the machine into it's approximate work position.



2. PRESS and RELEASE the Platform Function Button. The flashing LED indicates the function is active and will remain active 3 to 4 seconds.



3. While the Platform Function is active. PRESS and HOLD the Enable Button on top the Joystick



4. Push the Joystick FORWARD from center TO ELEVATE the Platform.

TO STOP platform movement return the joystick back to center.

Pull the Joystick BACK from center TO LOWER the Platform.

5. If necessary, reposition *(drive)* lift using platform controller joystick to bring work object within reach.

3.9 PARKING MACHINE

1. Drive machine to a well-protected and well-ventilated area.

2. Ensure the platform is fully lowered, turn the main power selector switch to the OFF position *(centered)*.

NOTE: *If required, charge batteries in preparation for next work day.*

3.10 PROGAMMABLE SECURITY LOCK (PSL™) (DVL/DVSP - OPTION)

The optional Programmable Security Lock switch can be programmed with a four (4) digit operators code to allow only those persons with the code to power-up and operate the machine.

PSL™ Box and Ground Control Locations

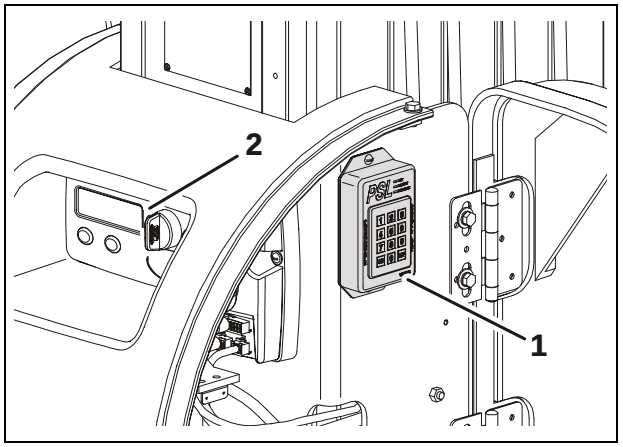


Figure 3-6. PSL™ Switch & Ground Control Station Locations - At Rear of Machine.

1. PSL Switch *(Inside Right Cover) (a)*
2. Ground Control Station

Note: (a) Machines with bolt on (fixed) covers, the PSL Switch is mounted on outside of right cover.

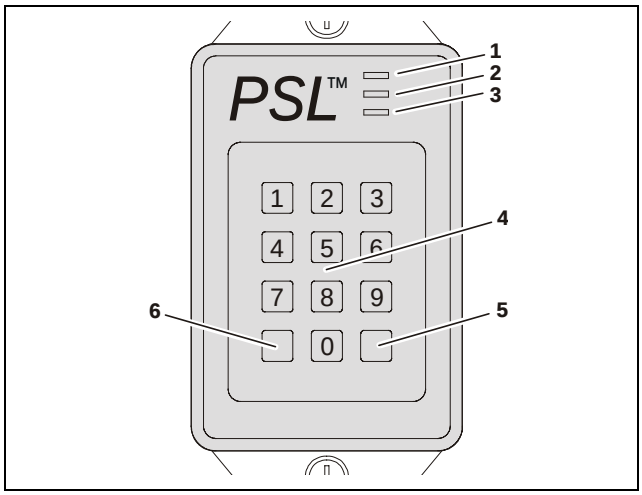


Figure 3-7. PSL™ Switch Controls & Indicators.

1. ON (Green LED)
2. ACCEPT (Amber LED)
3. PROGRAM (Red LED)
4. Key Pad
5. OFF Switch
6. ON Switch

Machine Power Up using the PSL™

NOTE: *When entering code on the key pad, a short beep indicates a properly depressed key, a long beep indicates an error in depressing key. If an error occurs, you must restart the code entry process again.*

1. Enter the four digit code on the PSL key pad. The ACCEPT - AMBER LED indicator will be lit if the code is correct.
2. Press the keypad ON button. The ON - GREEN LED indicator will light and power will be supplied to the Ground Control Station.
3. At the ground control station, turn the main power selector switch from OFF to either Platform Control Mode or Ground Control Mode.
4. The machine will now operate normally.

Machine Power Down

1. At the Ground Control Station set the main power selector switch to the OFF position.
2. Press the OFF button on the PSL keypad. No LEDs on the PSL box will be lit.

Changing the Operator's Code

The PSL Operators Code can be changed by a supervisor should the need occur. A separate permanent Supervisor's Code matched to the serial number of the PSL box is included on a sheet in the PSL user manual supplied with the machine.

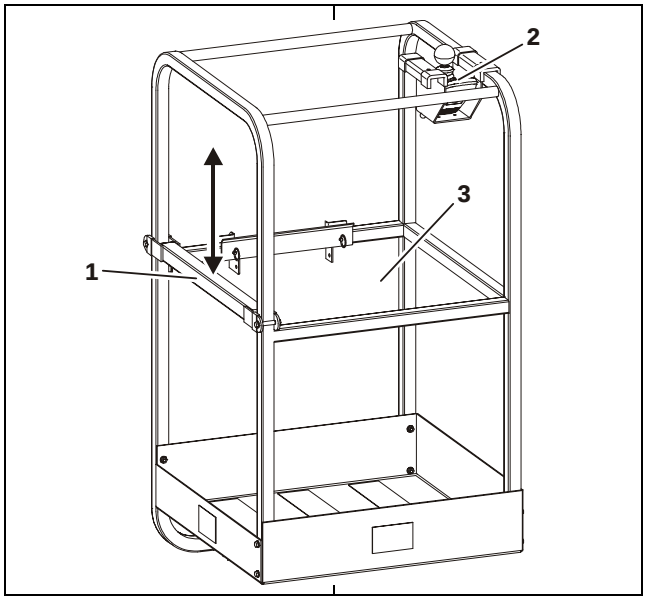
1. Enter the Supervisor's code on the key pad. The PROGRAM - RED LED will be lit if correct code is entered.

NOTE: *ON or OFF cannot be one of the four digits of the new Operator's code.*

2. Enter a new four (4) digit Operator's code on the keypad. The ACCEPT - AMBER LED will light up if the new Operator's code is accepted.
3. Press the OFF button on the keypad to activate the new Operator's code.

NOTE: *The new Operator's code will remain in the PSL even when power is removed from the equipment, or until the Supervisor changes the Operator's code.*

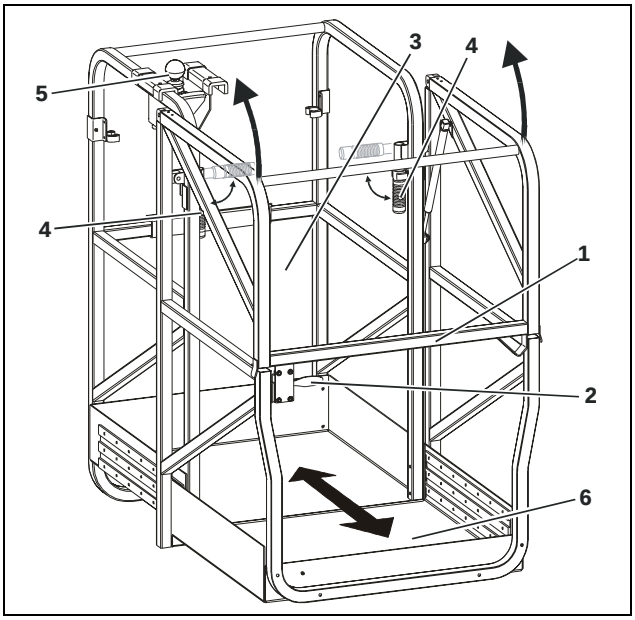
3.11 PLATFORM CONFIGURATIONS



STANDARD PLATFORM (DVL)

Model	Max. Capacity
20DVL	350 lb. (160kg)
15DVL	500 lb. (230kg)

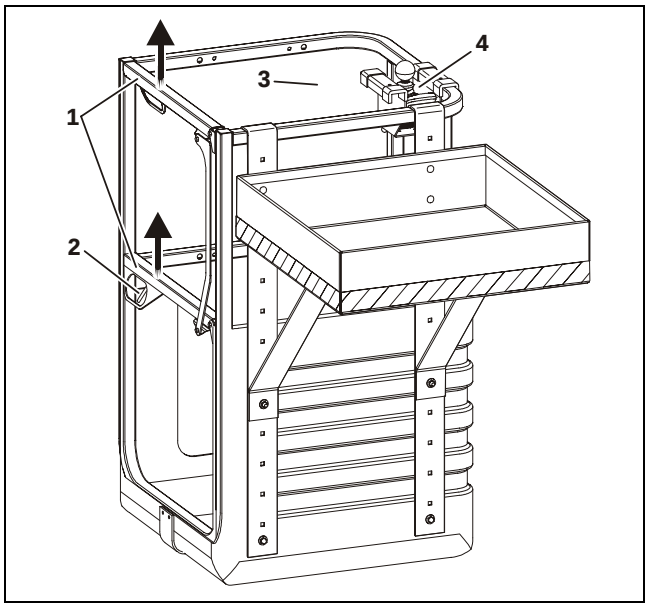
1. Sliding Side Entry Gate
2. Platform Control Console
3. Lanyard Attach Point - *(Left side of mast)*



EXTENDIBLE PLATFORM (GULL-WING ENTRY - NON CE)

Model	Max. Capacity
20DVL	350 lb. (160kg)
15DVL/15DVSP	500 lb. (230 kg)

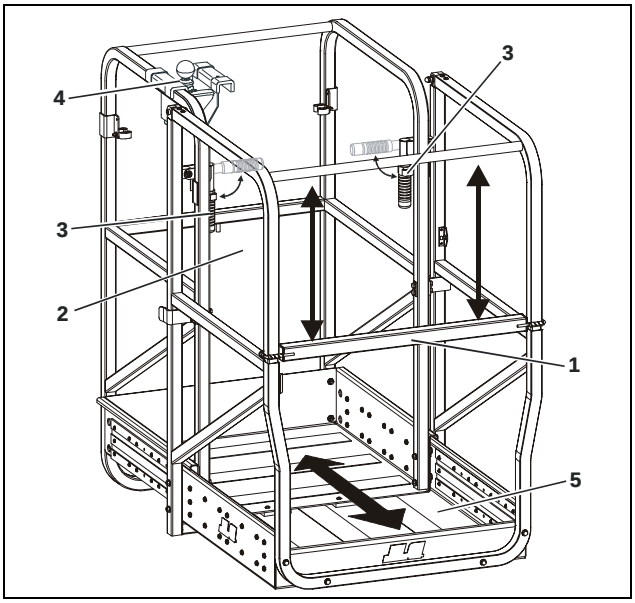
1. Gullwing Entry Gate
2. Entry Gate Latch
3. Lanyard Attach Point *(on mast)*
4. Extension Slide/Lock Handle
5. Platform Control Console
6. Sliding Extendible Section



MOLDED PLATFORM (OPTION) - SHOWN w/MATERIAL TRAY

Model	Platform & Tray Combined Max. Capacity	Material Tray Max. Capacity
20DVL	350 lb. (160kg)	100 lb. (45kg)
15DVL/15DVSP	500 lb. (230kg)	150 lb. (70kg)

1. Swing Up Side Entry Gate
2. Entry Gate Latch
3. Lanyard Attach Point - *(on mast)*
4. Platform Control Console



EXTENDIBLE PLATFORM (SLIDING BAR ENTRY - CE ONLY)

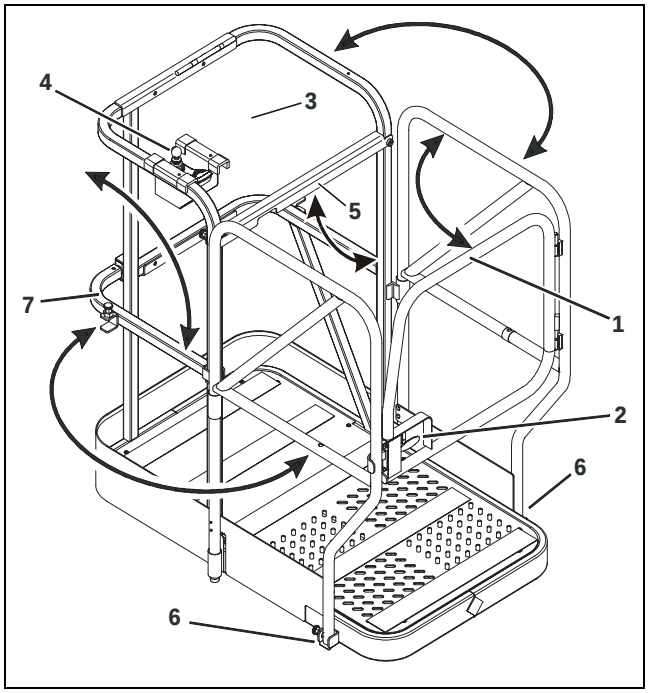
Model	Max. Capacity
20DVL	350 lb. (160kg)
15DVL/15DVSP	500 lb. (230 kg)

1. Sliding Bar Entry Gate
2. Lanyard Attach Point *(on mast)*
3. Extension Slide/Lock Handle
4. Platform Control Console
5. Sliding Extendible Section

StockPicking Platform Operation

The stockpicking platform is available in two (2) versions.

- Fixed side-rail version
- Folding side-rail version



STOCKPICKER PLATFORM (WITH FOLDING SIDE-RAILS) (DVSP)

Model	Max. Capacity
15DVSP	500 lb. (230 kg)
20DVSP	400 lb. (180 kg)

1. Primary Entrance/Exit Gate	**4.** Platform Control Console
2. Primary Entrance Latch	**5**. Mid-Gate
3. Lanyard Attach Point - *(on side of mast)*	**6**. Gate Release/Lock Pins
	7. Secondary Exit Gate

⚠ CAUTION

THE STOCKPICKER PLATFORM ALLOWS THE MACHINE TO BE OPERATED IN AN OPEN RAIL CONFIGURATION (SEE ILLUSTRATION).

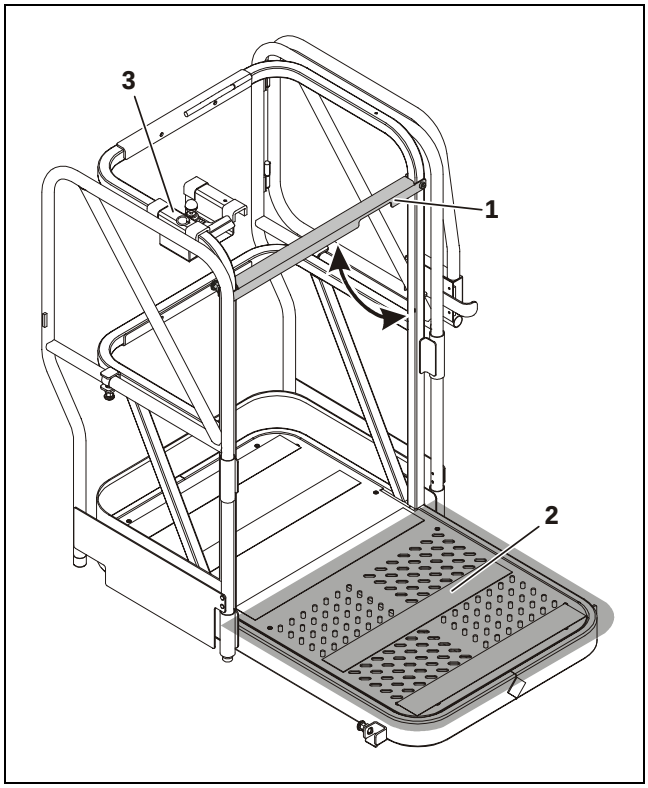
CE SPECIFICATION MACHINES:

THE OPERATOR MUST WEAR A FULL BODY HARNESS EQUIPPED WITH A LANYARD SHORT ENOUGH TO PREVENT A FALL FROM THE PLATFORM. THE LANYARD MUST BE ATTACHED TO THE AUTHROIZED LANYARD POINT. ALSO, JLG RECOMMENDS THAT CE SPECIFICATION MACHINES EQUIPPED WITH THE STOCKPICKER PLATFORM ARE ONLY TO BE USED FOR STOCKPICKING APPLICATIONS.

NON-CE UNITS:

THE OPERATOR MUST WEAR A FULL BODY HARNESS WITH A LANYARD (MAX. 6 FT. (1M) ATTACHED TO THE AUTHORIZED LANYARD POINT OR A BODY BELT EQUIPPED WITH A LANYARD SHORT ENOUGH TO PREVENT A FALL FROM THE PLATFORM.

WHILE OPERATING THE MACHINE IN THE OPEN RAIL CONFIGURATION, ALWAYS OPERATE THE MACHINE FROM THE REAR OF THE PLATFORM WITH THE MID-GATE CLOSED AND THE PLATFORM CONTROL CONSOLE ATTACHED TO THE FIXED PORTION OF THE GUARDRAIL.



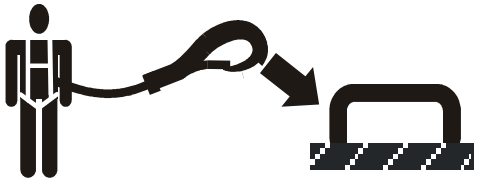
STOCKPICKER PLATFORM (OPEN RAIL CONFIGURATION) (DVSP)

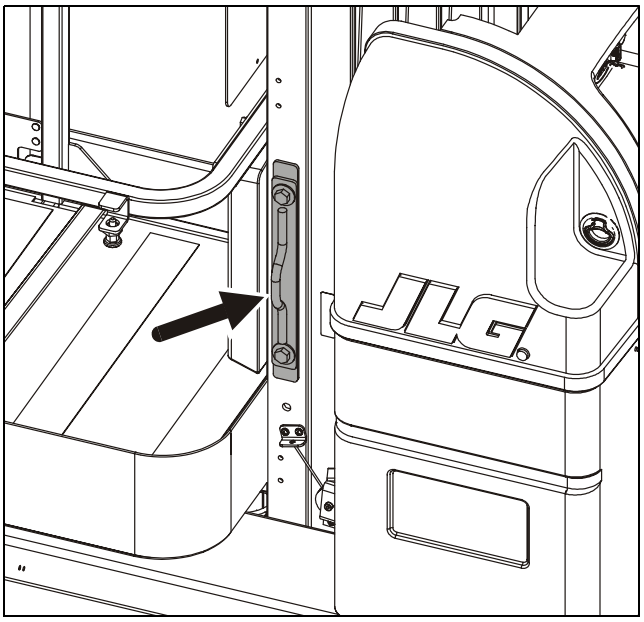
1. Platform Mid-Gate *(enter rear of platform and close mid-gate when driving with front rails open)*.
2. Open Rail Configuration work area. *(See previous Caution about fall protection requirements)*.
3. Platform Control Console attached to fixed side-rail in the rear of the platform.

3.12 FALL PROTECTION - LANYARD ATTACHMENT

⚠ CAUTION

JLG INDUSTRIES, INC. RECOMMENDS THE OPERATOR IN THE PLATFORM WEAR A FULL BODY HARNESS WITH A LANYARD ATTACHED TO AN AUTHORIZED LANYARD ANCHORAGE POINT.





The main lanyard attach point for all DVL/DVSP machines is located on the lower left side of the mast platform header, just behind the operators platform.

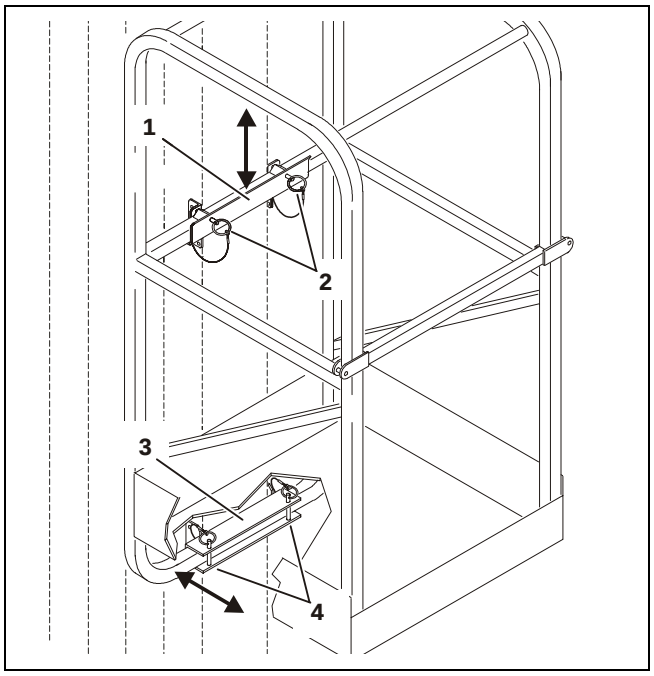
⚠ CAUTION

AFTER ENTERING THE PLATFORM, BEFORE BEGINNING OPERATION ALWAYS CLOSE THE PLATFORM ENTRY GATE(S).

3.13 QUICK-CHANGE PLATFORM MOUNTING

DVL Model Lifts are equipped with quick-change platform mounts which allow quick removal and installation of currently available quick-change platforms.

NOTE: *DVSP Models require the installation of the Quick-Change mount kit to use Quick-Change Platforms.*



1. Upper Platform Mount
2. Upper Mount Attach Pins
3. Lower Platform Mount
4. Lower Mount Pins

Platform Removal

1. Remove the platform control console from the platform and lay aside.
2. Remove both upper and lower mount attach pins securing the platform support rails to the mast mounting channels.
3. Swing and lift the platform out of the mounts and lay aside.

Platform Installation

1. Set platform in upper and lower mounts.
2. Install attach pins in upper and lower mounts.
3. Attach platform control console to platform rail.

⚠ WARNING

ENSURE ALL PINS AND FASTENERS ARE INSTALLED AND SECURE PRIOR TO OPERATION.

3.14 OBSTRUCTION SENSING SYSTEM (DVSP - OPTION)

System Description

The Obstruction Sensing System (OSS) is designed to detect the presence of obstructions within a predetermined detection zone beneath the platform, when lowering the platform from an elevated position.

NOTE: *The OSS only operates normally when the Ground Control Module - Power Selector Switch is set to PLATFORM CONTROL MODE.*
When the Power Selector Switch is set to GROUND CONTROL MODE the OSS will detect an obstruction but will not stop platform downward movement or sound the horn. However, the OSS Control Module LED will flash if a sensor detects the presence of an object.

Operation

NOTE: *See Figure 3-9. for the location of the OSS Electronic module.*

When the machine is powered on a RED LED located on the OSS electronics module will illuminate. During platform lowering, if no obstructions have entered the detection zone beneath the platform, the platform will lower normally.

If an obstruction is detected within the detection zone beneath the platform, the platform will;

- Stop Lowering
- The RED LED on the electronics module will flash
- The horn will sound three short blasts

If an obstruction is detected, have the obstruction cleared by someone on the ground or carefully drive the lift until clear of the obstruction. Reset the OSS by pressing the horn button on the platform control once and continue machine operation. Should the OSS falsely detect an obstruction, the system can be overridden by pressing and holding the horn button while operating the platform lowering controls.

⚠ WARNING

ALWAYS CHECK THE AREA UNDER THE PLATFORM IS CLEAR OF OBSTRUCTIONS BEFORE LOWERING THE PLATFORM.

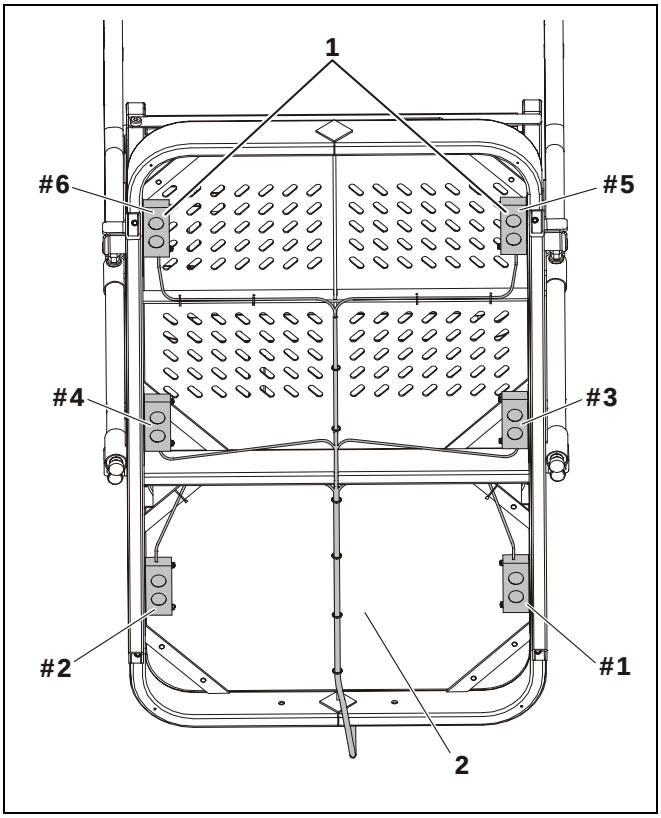


Figure 3-8. OSS Transducer Sensor Array Location.

1. Transducer Arrays #1 through #6
2. Underside of DVSP Platform

OSS Pre-Start Inspection

(See Figure 3-9.)

From ground controls, raise platform approximately 5'-6'. The RED LED on the electronic module will be illuminated when power is applied. If an obstruction, such as a pad of paper is placed under any of the transducer sensor arrays, the RED LED will flash and remain flashing while the obstruction is present and stop flashing 3 seconds after the obstruction is removed. Check the operation of each transducer sensor array by placing an object individually under each sensor array *(within approximately 6"-12")* and checking if the RED LED starts to "flash", and stops flashing 3 seconds after the obstruction is removed. Also, inspect the transducer arrays and electronic module for physical damage, loose wires, loose mounting hardware, etc.

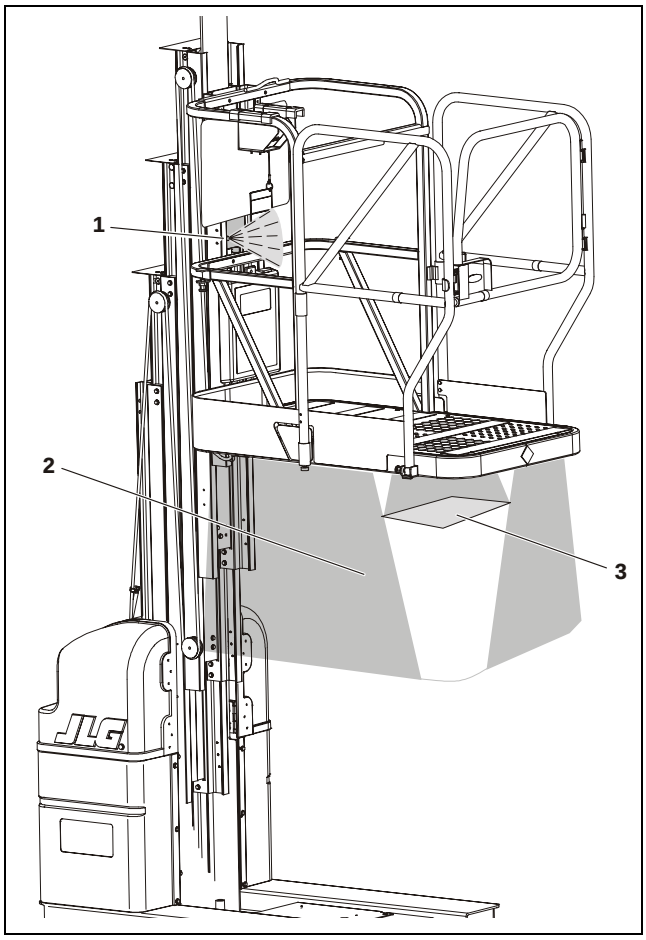


Figure 3-9. OSS - Pre-Start Inspection of Operation.

1. Electronic Module LED Indicator (a)
2. Detection Zone
3. Place a pad of paper or similar size object, 6 to 12 in. (15 to 30cm) individually beneath each transducer to check detection.

Notes: (a) The LED Indicator will flash when an object is detected at each sensor. Remove object and allow the LED to stop flashing before testing next sensor.

3.15 TRANSPORTING, LIFTING AND TIE DOWN PROCEDURES

General

All DVL Series and DVSP Model Personnel Lifts may be transported to a work site using the following methods:

- Driving the machine around on its base wheels if travel surface area permits.
- Loaded, IN AN UPRIGHT POSITION ONLY onto a heavy-duty vehicle with the payload capacity capable of supporting the full weight of the machine *(Check machine gross weights in the Operating Spec Chart at the beginning of this Section)*.
- Moved with a fork-lift truck using the fork-lift pockets in the base frame.

Truck Transport

⚠ CAUTION

DO NOT TRANSPORT THE MACHINE IN A HORIZONTAL POSITION DUE TO LEAKAGE OF BATTERY ACID FROM THE BATTERIES OR HYDRAULIC FLUID FROM THE HYDRAULIC RESERVOIR.

The machine may be winched onto a tilted roll-back truck bed *(see important note following)* which has been rolled back to ground level. Disengage the brakes and always winch *(pull)* from the mast *(rear)* end of the machine, using the rear tie-down loop attached to the base frame.

IMPORTANT

DO NOT ATTEMPT TO DRIVE MACHINE ONTO, OFF OF, OR PUSH MACHINE ONTO A TILTED ROLL-BACK TRUCK BED.
THE DVL AND DVSP MACHINES POWER MODULE COULD SUSTAIN SERIOUS DAMAGE WHEN THE UNIT IS PUSHED, OR TOWED AT SPEEDS GREATER THAN 2 MPH.

WHEN TOWING OR WINCHING, THE MACHINE'S BRAKES MUST BE DISENGAGED.

RE-ENGAGE THE BRAKES ONCE MACHINE IS IN PLACE WITH TRUCK BED LEVEL AND READY FOR TIE DOWN.

TIE DOWN LOOPS ARE PROVIDED ON BOTH ENDS OF THE BASE FRAME TO SECURE MACHINE TO BED OF TRANSPORT VEHICLE.

Machine Tie-Down

With machine in position to be tied down and brakes engaged, use the following guidelines for restraining the machine during transport.

IMPORTANT

USE OF EXCESSIVE FORCE WHEN SECURING MACHINE (DRIVE WHEEL LOAD), CAN CAUSE DAMAGE TO THE MACHINES DRIVE WHEEL COMPONENTS.

1. Secure machine with an adequate chain attached through the tie down loops located at the front and rear of machine. *(See Figure 3-11.)*
2. The chain should be securely tightened with a force of approximately 100 lb. applied two feet from the pivot handle.

Crane Hook Accessory (DVL Option)

NOTE: *Lifting devise must be capable of handling the gross weight of the machine, see the Operating Specifications table at the beginning of this Section.*

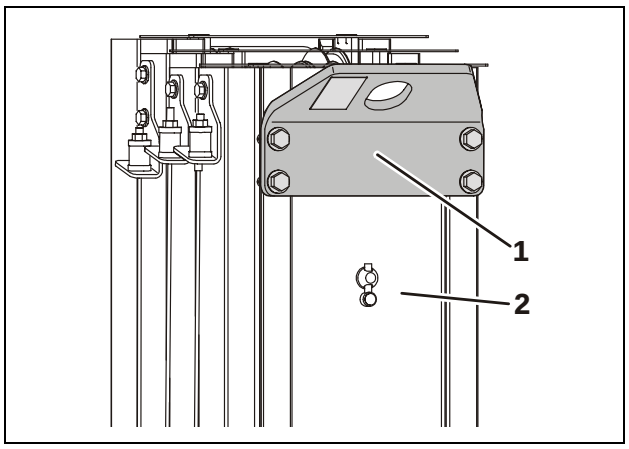


Figure 3-10. Crane Hook Accessory

1. Crane Hook Attachment **2.** Back of Mast

Fork-Lift Truck Transport

All DVL and DVSP Model Lifts are equipped with wide fork-lift pockets running through the base frame. *(See Figure 3-11.)* This allows the machine to be either transported around a work area or lifted onto a higher level using a standard fork-lift truck.

NOTE: *Fork-lift trucks must be capable of handling the gross weight of the machine, see the Operating Specifications table at the beginning of this Section.*

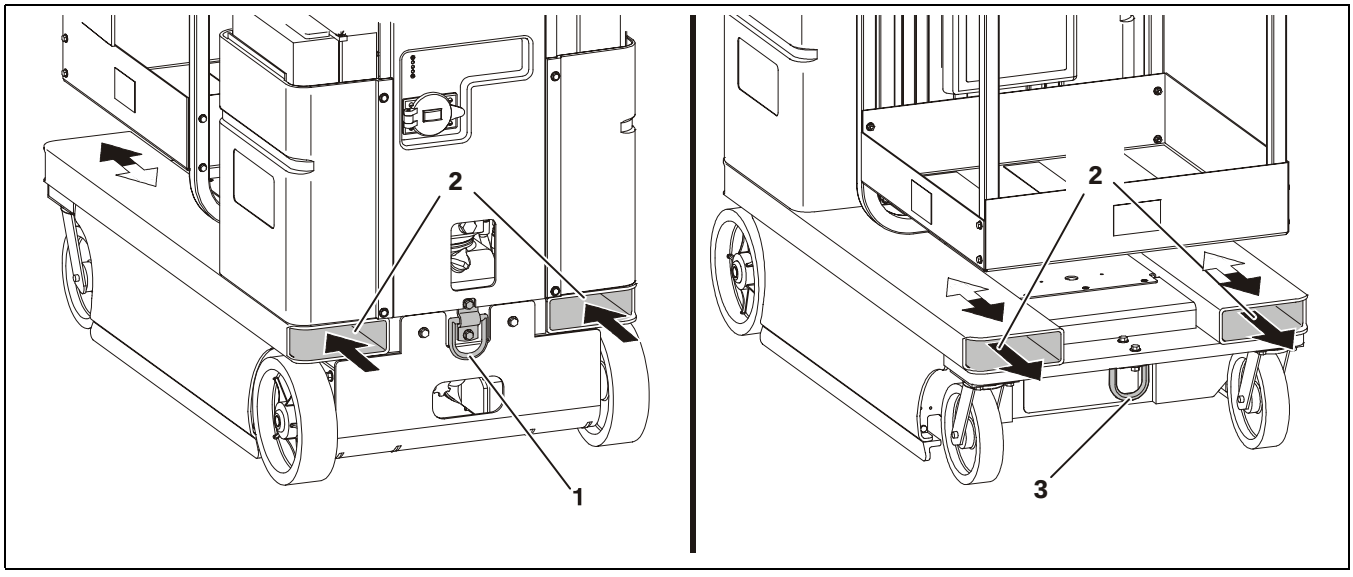


Figure 3-11. Forklift Truck Lifting Pockets and Machine Tie Down Bar Locations.

1. Rear Tie-Down Loop **2.** Fork Lift Pockets **3.** Front Tie-Down Loop

3.16 RUG CARRIER ACCESSORY (DVSP - OPTION)

NOTE: *The Rug Carrier accessory is available only on the JLG DVSP model and is not authorized for use with any other JLG lift. The Rug Carrier Accessory is intended for use in hanging and removal of rugs in hanging display racks only. Use for any other purpose is not authorized by JLG.*

General

The Rug Carrier Accessory consists of two pivoting arms mounted to the DVSP platform left side rails. The pivoting arms are locked in the plane of the platform side rail when not in use *(the stowed position)*. The arms are locked into position at approximately 90 degrees to the left side platform side rails when in use *(the carry position)*. The pivoting arms' position can be changed by lifting each arm to release the lock, rotating the arm, and lowering each arm back into a locked position.

Pre-Start Inspection

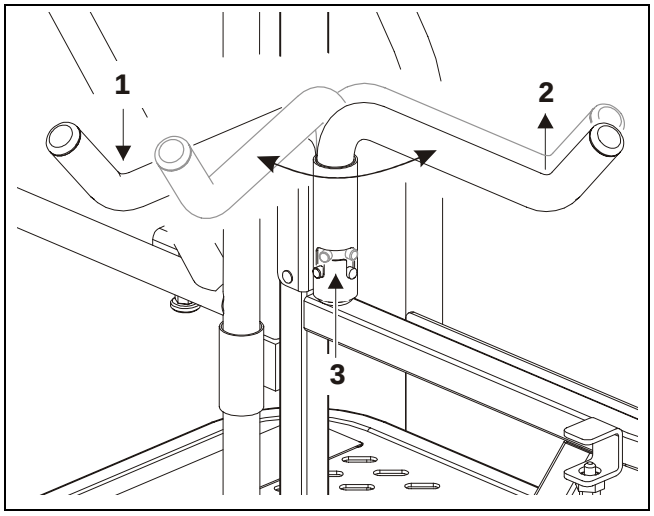
Prior to use of the Rug Carrier accessory, check the following;

- Carrier arm mounting is secure to the platform railing, no missing or damaged fasteners.
- The arm lock pins are in place and working properly.

Hanging a Rug using the Rug Carrier Accessory Arms

The following is a description for use of the Rug Carrier accessory in hanging rugs on horizontal pivoting arm display racks.

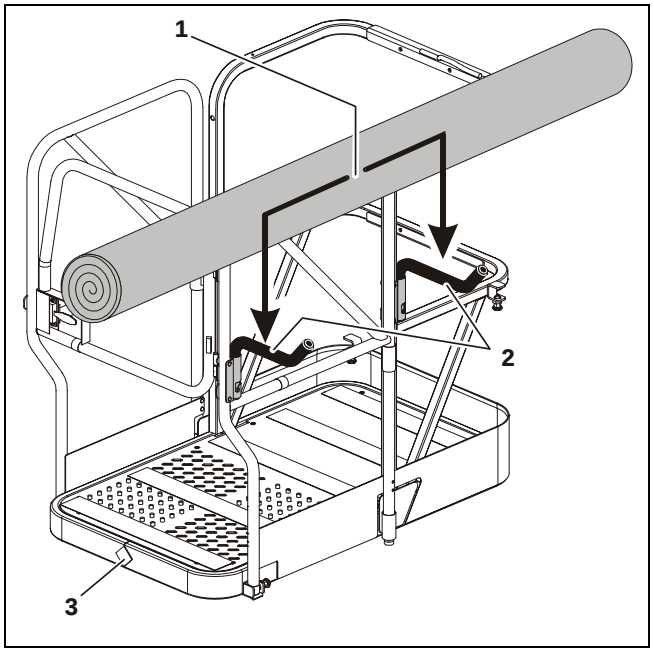
1. Select the intended location in the display for mounting the rug. Open the display rack to provide adequate space for the DVSP lift and rug.
2. With the Rug Carrier Accessory arms stowed, drive the DVSP into position prior to loading the rug.
3. Swing and lock Rug Carrier Accessory arms into the carry position.
4. Load the rolled rug with the finished side facing the platform. As required, use an assistant to load the rug onto the Rug Carrier Accessory arms.
5. Make sure that the rug is centered over its length on the Rug Carrier Accessory.
6. Elevate the platform to the required height for mounting the rug onto the display arm.
7. Properly attach the rug to the display arm. Never climb onto the platform rails for any reason.



Positioning Rug Carrier Arms

1. Carry Position
2. Stowed Position
3. Lift Arm Up, Swing and Lock into Position

8. After adequately attaching the rug to the display arm, lower the platform, stow the Rug Carrier Accessory arms.
9. As required reposition and elevate the DVSP to completely attach the rug.



Positioning Carpet Roll On Rug Carrier

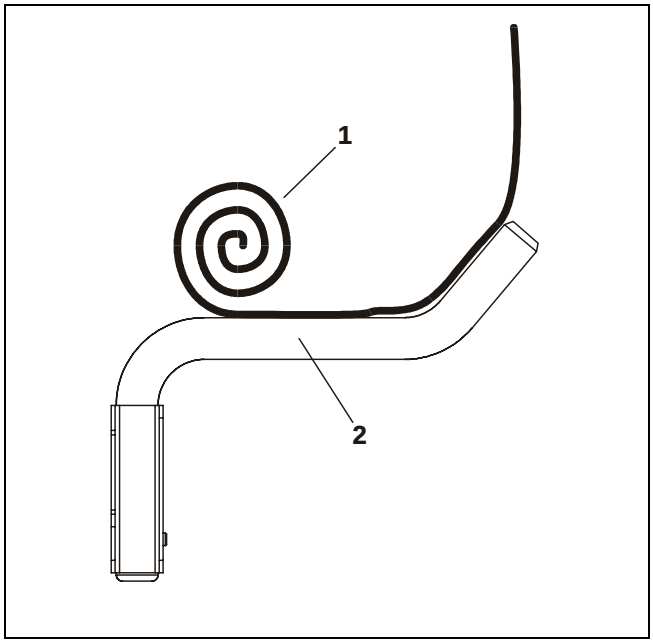
1. Center Carpet on Arms
2. Rest on Arms Here (a)
3. Platform Front

Note: (a) Maximum Capacity of Arms - 150 lb. (68kg)

Removing a Rug using Rug Carrier Accessory Arms

This section describes the use of the Rug Carrier accessory in removing a rug from a horizontal pivoting arm display rack.

1. Select the intended location in the display for removal of the rug. Open the display rack to provide adequate space for the DVSP lift and rug.
2. With the Rug Carrier Accessory arms stowed, drive the DVSP into position prior to loading the rug.
3. Swing and lock the Rug Carrier Accessory arms into the carry position.
4. Elevate the platform a few feet. Start to roll the rug onto the Rug Carrier Accessory arms.



Removing Rug From Display Arm.

1. Roll Rug onto Rug Carrier while Elevating Platform
2. Rug Carrier in Carry Position

5. Be certain the rug is centered over its length on the Rug Carrier Accessory.
6. While elevating to the required height for removing the rug from the display arm, continue to roll the rug until it is completely rolled up on the carrier arms.
7. Properly remove the rug from the display arm. Never climb onto the platform rails for any reason.
8. After adequately removing the rug from the display arm, lower the platform.
9. Remove the rug from the Rug Carrier Accessory. If required, use an assistant to unload the rug from the Rug Carrier Accessory Arms.
10. Replace the Rug Hanger Accessory arms to the stowed position for normal operation.

⚠ CAUTION

THE RUG CARRIER ACCESSORY ARMS MUST BE LOCKED IN THE STOWED POSITION WHEN NOT IN USE.

EXTREME CAUTION MUST BE EXERCISED AT ALL TIMES WHILE THE RUG CARRIER ACCESSORY IS IN USE (DRIVING, RAISING AND LOWERING) TO PREVENT OBSTACLES AND PERSONNEL FROM STRIKING THE LOAD.

WHEN DRIVING WITH A RUG WITHIN THE RUG CARRIER ACCESSORY, THE RUG MUST BE PROPERLY SECURED TO PREVENT INADVERTENT MOTION OR MOVEMENT OF THE RUG AND MUST NOT EXCEED THE RATED CAPACITY OF THE RUG CARRIER ACCESSORY.

NEVER OVERLOAD THE RUG CARRIER ACCESSORY. MAXIMUM CAPACITY OF THE RUG CARRIER ACCESSORY IS 150 LBS.

THE COMBINED WEIGHT OF PERSONNEL, MATERIALS, EQUIPMENT PLUS ANY LOAD ON THE RUG CARRIER ACCESSORY MUST NOT EXCEED THE MAXIMUM CAPACITY OF THE PLATFORM.

NEVER USE A RUG CARRIER ACCESSORY THAT HAS DAMAGE OR LOOSE MOUNTINGS. IMMEDIATELY REPORT ANY DAMAGE TO APPROPRIATE PERSONNEL. DISCONTINUE USE OF THE RUG CARRIER ACCESSORY UNTIL ALL DISCREPANCIES HAVE BEEN CORRECTED.

3.17 STOCK-PICKER HANGER ACCESSORY

NOTE: *The stock-picker hanger accessory is available only on the JLG DVSP model and is not authorized for use with any other JLG lift. This hanger accessory is intended for use in placing or retrieving stock items such as bicycles, ladders, etc., on racks or shelves above ground level. Use for any other purpose is not authorized by JLG.*

The hanger accessory is a pivoting arm mounted to the DVSP platform rail. The hanger accessory can be mounted to either side of the platform individually, or two can be mounted, one on each side of the platform. Each individual hanger has a maximum load capacity of 100 lb. (45kg).

The hanger arm can be pivoted out of the way parallel with the platform side rails when not in use, *(the stowed position)*. The hanger arm is pinned into position at 90 degrees to the platform side rails when in use, *(the carry position)*.

Pre-Start Inspection

Prior to use of the hanger accessory, check the following;

- Hanger arm mounting is secure to the platform railing, no missing or damaged fasteners.
- The hanger arm lock pin is in place and secure.

⚠ CAUTION

THE COMBINED WEIGHT OF PERSONNEL, MATERIALS, EQUIPMENT PLUS ANY LOAD ON THE HANGER ARM ACCESSORY MUST NOT EXCEED THE MAXIMUM LOAD CAPACITY OF THE PLATFORM.

Loading and Transporting an Item using the Hanger Accessory

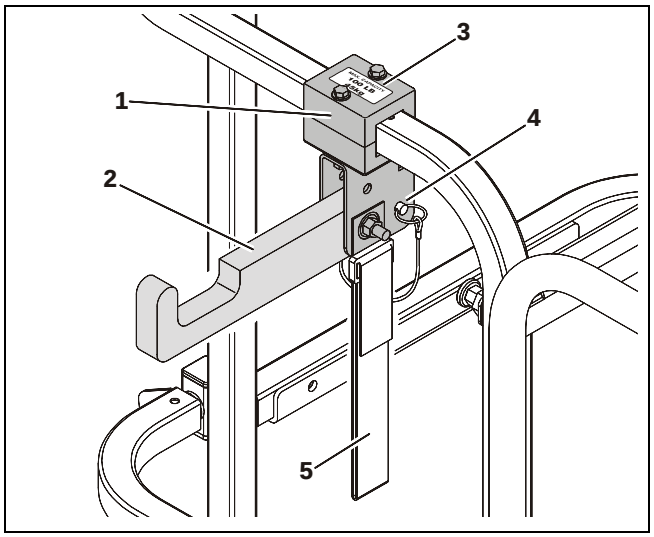
Use the following steps as a guide when loading and transporting an object with the hanger accessory arm.

1. Keep the hanger arm in the stowed position when not in use.
2. When ready to use, pull the lock pin from the stowed position hole and swing the hanger arm into the carry position. Place pin in the carry position hole locking the hanger arm in place.
3. Load the object onto the hanger arm and use the hanger arm strap to secure the object during transport.

IMPORTANT

DVSP MACHINE'S EQUIPPED WITH THE OBSTRUCTION SENSING SYSTEM (OSS) OPTION – OBJECTS PLACED ON THE HANGER ACCESSORY AND EXTENDING BELOW THE BASE OF THE PLATFORM MAY CAUSE AN OSS DETECTION - SOUNDING THE HORN AND PREVENTING THE PLATFORM FROM LOWERING. IF NECESSARY, REPOSITION THE OBJECT OUT OF THE OSS DETECTION ZONE.

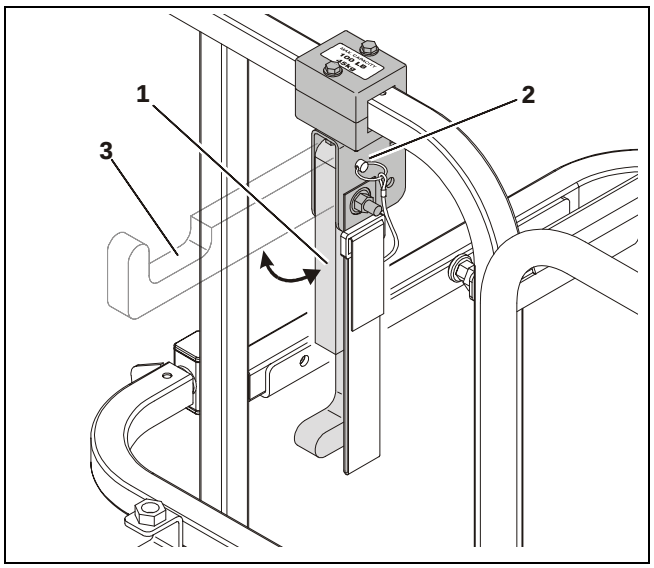
4. Be aware of clearance above, below, and around the object when driving and lifting or lowering the platform.



Stock Picker Hanger - Carry Position

1. Mounting Bracket
2. Hanger Arm (Carry Position)
3. Capacity Decal (a)
4. Lock Pin (Carry Position)
5. Hanger Arm Strap

Notes: (a) Maximum load capacity of hanger is 100 lb. (45kg).



Stock Picker Hanger - Stowed Position

1. Hanger Arm (Stowed Position)
2. Lock Pin (Stowed Position)
3. Hanger Arm (Carry Position)

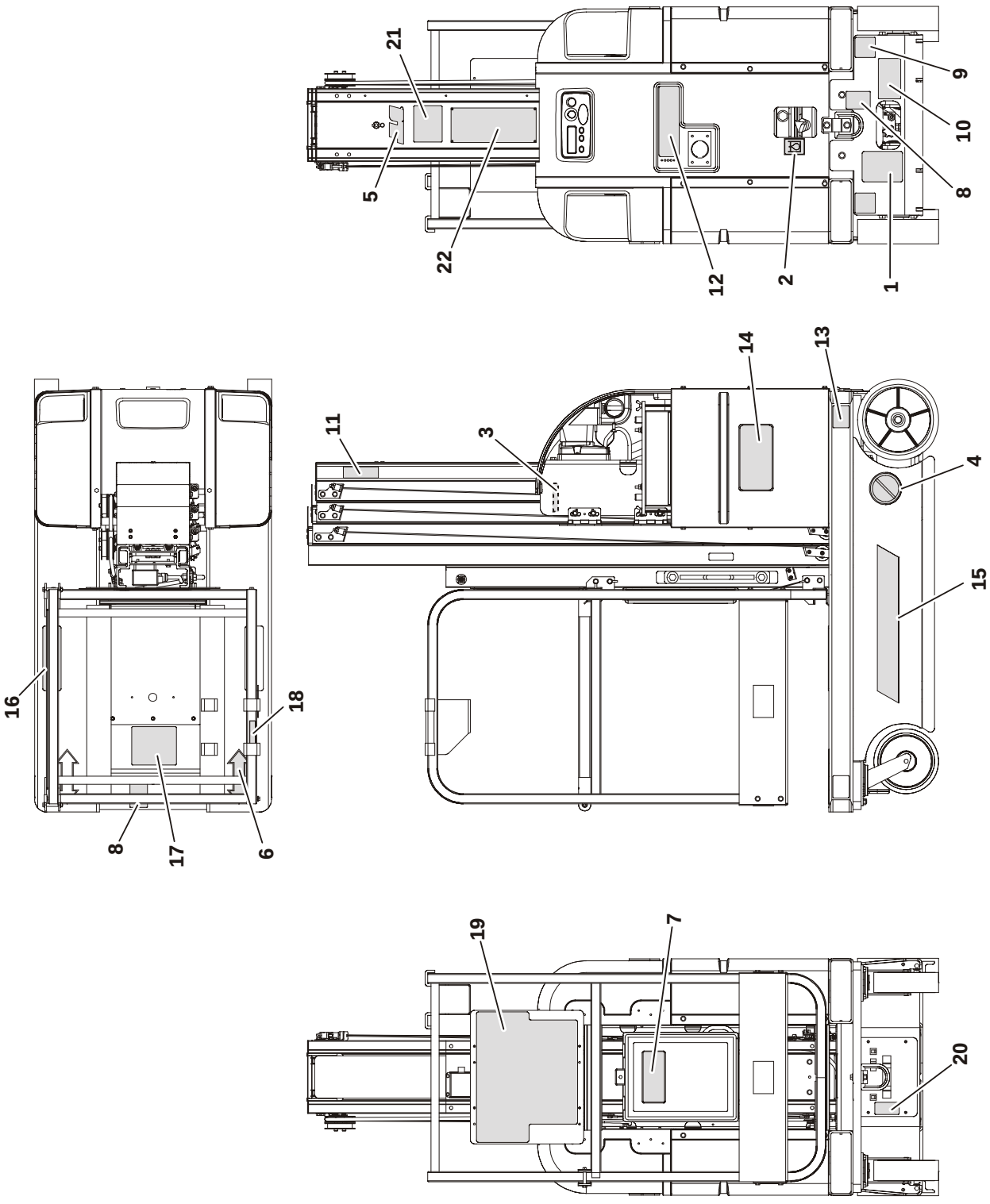


Figure 3-12. DVL Series Decal Installation Chart - (See Table 3-5 for Specification)

Table 3-5. DVL Series - Decal Installation Chart (See Figure 3-12.)

	ANSI	ANSI (LAT)	ANSI (BRZ)	ANSI (JPN)	ANSI (CHI)	CSA (FRE)	CE (ENG/ (AUS)	CE (GER)	CE (FRE)	CE (SPA)	CE (ITA)	CE (DUT)	CE (SWE)
1	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584
2	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504
3	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631
4	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072
5	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681
6	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687
7	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788
8	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814
9	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817
10	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016
11	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017	**15DVL -** 1705191 **20DVL -** 1705017
12	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048
13	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059
14	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060
15	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064
16	1703786	1704032	1704024	1705099	1704081	1704039	1705099	1705099	1705099	1705099	1705099	1705099	1705099
17	1702153	—	—	—	—	—	—	—	—	—	—	—	—
18	1703684	1703685	1703686	1703723	1703751	1703719	1703684	1703718	1703719	1703685	1703721	1703722	1705100
19	1705046	1705104	1705105	1705118	1705106	1705107	1705049	1705113	1705114	1705112	1705115	1705116	1705117
20	1703785	1704031	1704023	1704089	1704079	1704797	1703785	1704071	1704042	1704031	1704063	1704055	1705102
21	1703779	—	—	—	—	—	—	—	—	—	—	—	—
22	3252797	1702797	1702797	1702798	1702797	1702797	3252798	3252798	3252798	3252798	3252798	3252798	3252798

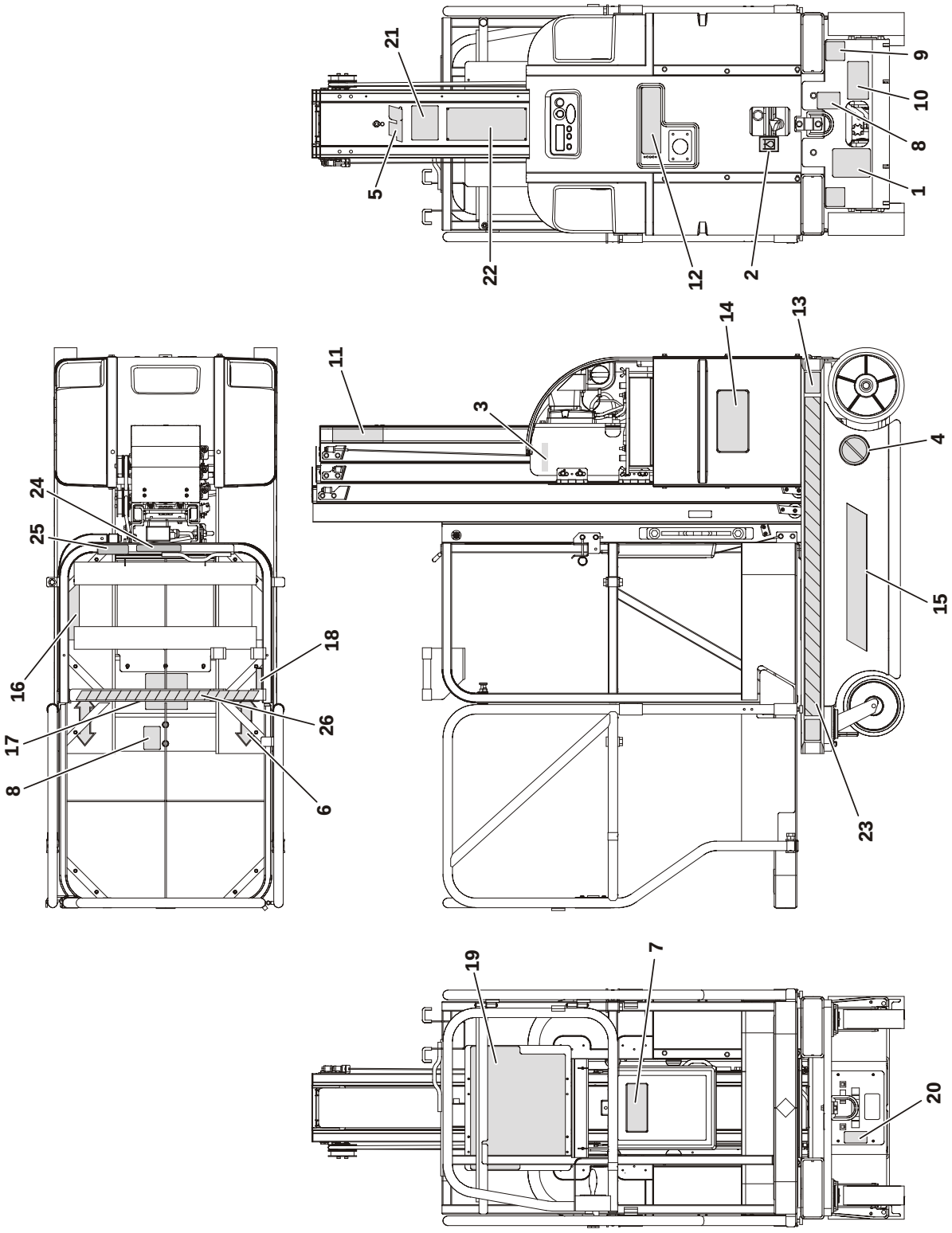


Figure 3-13. DVSP Decal Installation Chart - (See Table 3-6. for Specification)

Table 3-6. DVSP Decal Installation Chart (See Figure 3-13.)

	ANSI	ANSI (LAT)	ANSI (BRZ)	ANSI (JPN)	ANSI (CHI)	CSA (FRE)	CE (ENG/ (AUS)	CE (GER)	CE (FRE)	CE (SPA)	CE (ITA)	CE (DUT)	CE (SWE)	CE (FIN)
1	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584
2	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504	1701504
3	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631
4	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072	1703072
5	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681	1703681
6	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687	1703687
7	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788	1703788
8	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814	1703814
9	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817	1703817
10	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016	1705016
11	**15DVSP -** 1705018 **20DVSP -** 1705703	**15DVSP -** 1705018 **20DVSP -** 1705703	**15DVSP -** 1705018 **20DVSP -** 1705703	**15DVSP -** 1705018 **20DVSP -** 1705703	**15DVSP -** 1705018 **20DVSP -** 170570	**15DVSP -** 1705018 **20DVSP -** 170570	**15DVSP -** 1705018 **20DVSP -** 170570	**15DVSP -** 1705018 **20DVSP -** 170570	**15DVSP -** 1705018 **20DVSP -** 170570	**15DVSP -** 1705018 **20DVSP -** 170570	**15DVSP -** 1705018 **20DVSP -** 170570	**15DVSP -** 1705018 **20DVSP -** 170570	**15DVSP -** 1705018 **20DVSP -** 170570	**15DVSP -** 1705018 **20DVSP -** 170570
12	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048	1705048
13	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059	1705059
14	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060	1705060
15	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064	1705064
16	1703786	1704032	1704024	1705099	1704081	1704039	1705099	1705099	1705099	1705099	1705099	1705099	1705099	1705099
17	1702153	—	—	—	—	—	—	—	—	—	—	—	—	—
18	1703684	1703685	1703686	1703723	1703751	1703719	1703684	1703718	1703719	1703685	1703721	1703722	1705101	1705100
19	**15DVSP -** 1705047 **20DVSP -** 1705702	**15DVSP -** 1705108	**15DVSP -** 1705109	**15DVSP -** 1705127	**15DVSP -** 1705110	**15DVSP -** 1705111	**15DVSP -** 1705050	**15DVSP -** 1705121	**15DVSP -** 1705122	**15DVSP -** 1705120	**15DVSP -** 1705123	**15DVSP -** 1705124	**15DVSP -** 1705126	**15DVSP -** 1705125
20	1703785	1704031	1704023	1704089	1704079	1704797	1703785	1704071	1704042	1704031	1704063	1704055	1705103	1705102
21	1703779	—	—	—	—	—	—	—	—	—	—	—	—	—
22	3252797	1702797	1702797	1702797	1702797	1702797	3252798	3252798	3252798	3252798	3252798	3252798	3252798	3252798
23	4420051	4420051	4420051	4420051	4420051	4420051	4420051	4420051	4420051	4420051	4420051	4420051	4420051	4420051
24	—	—	—	1705140	—	1704804	1704981	1705134	1705135	1705133	1705136	1705137	1705139	1705138
25	1704366	1705141	1705142	1704777	1704910	1704804	1704980	1705146	1705147	1705494	1705148	1705149	1705151	1705150
26	1704469	1705153	1705154	1705164	1705155	1705156	1704469	1705158	1705159	1705157	1705160	1705161	1705163	1705162

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SECTION 4. EMERGENCY PROCEDURES

4.1 GENERAL INFORMATION

This section explains the steps to be taken in case of an emergency situation during operation.

4.2 EMERGENCY OPERATION

Operator Unable to Control Machine

IF THE PLATFORM OPERATOR IS PINNED, TRAPPED OR UNABLE TO OPERATE OR CONTROL THE MACHINE:

1. Other personnel should operate the machine from ground controls only as required.
2. Only qualified personnel in the platform may use the platform controls. DO NOT CONTINUE OPERATION IF CONTROLS DO NOT FUNCTION PROPERLY.
3. Cranes, forklift trucks or other equipment can be used to remove the platform occupant and stabilize motion of the machine.

Platform Caught Overhead

If the platform becomes jammed or snagged in overhead structures or equipment, rescue the platform occupant prior to freeing the machine.

4.3 INCIDENT NOTIFICATION

JLG Industries, Inc. must be notified immediately of any incident involving a JLG product. Even if no injury or property damage is evident, the factory should be contacted by telephone and provided with all necessary details.

JLG Phone:

U.S.A.: 877-JLG-SAFE (554-7233)
(8am till 4:45pm EST)

EURO: (44) 1 698 811005

AUSTRALIA: (61) 2 65 811111

E-mail: productsafety@jlg.com

Failure to notify the manufacturer of an incident involving a JLG Industries product within 48 hours of such an occurrence may void any warranty consideration on that particular machine.

IMPORTANT

FOLLOWING ANY ACCIDENT, THOROUGHLY INSPECT THE MACHINE AND TEST ALL FUNCTIONS FIRST FROM THE GROUND CONTROL STATION, THEN FROM THE PLATFORM CONTROL CONSOLE. DO NOT LIFT ABOVE 10 FT. (3 M) UNTIL YOU ARE SURE THAT ALL DAMAGE HAS BEEN REPAIRED, IF REQUIRED, AND THAT ALL CONTROLS ARE OPERATING CORRECTLY.

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SECTION 5. GENERAL SPECIFICATIONS AND OPERATOR MAINTENANCE

5.1 INTRODUCTION

This section of the manual provides additional necessary information to the operator for proper operation and maintenance of this machine.

The maintenance portion of this section is intended as information to assist the machine operator to perform daily maintenance tasks only, and does not replace the more thorough Preventive Maintenance and Inspection Schedule included in the Service and Maintenance Manual.

Other Publications Available Specific to this Machine:

Service and Maintenance Manual
GLOBAL 3121136
Illustrated Parts Manual
ANSI 3121137
CE 3121839

5.2 GENERAL SPECIFICATIONS

Machine Specifications

SPECIFICATION	15DVL	20DVL	15DVSP	20DVSP
Gross Machine Weight (*Platform Empty)*:	2,105 lb. (955 kg)	2,105 lb. (955 kg)	2,150 lb. (975 kg)	2,150 lb. (975kg)
Machine Height *(Platform Stowed):*	78 in. (198cm)			
Maximum Ground Bearing Pressure: *(per wheel)*	800 lb. (360 kg)			
Maximum Operating Incline:	1.5°			
Maximum Travel Grade (Gradeability): (Platform STOWED ONLY)	20%			
Maximum Travel Grade (Side Slope): (Platform STOWED ONLY)	5°			
Maximum Drive Speeds *(Operator Variable)*:	0.5 - 2 mph (0.8 - 3.2 kph)			
Machine Base - Overall : *(Width x Length)*	29.25 in.- W x 52 in.- L (74cm) x (132cm)			
Maximum Wind Speed:	0 mph (0kph) - Machine rated for indoor use only			
Maximum Horizontal Manual Side Force: *(Platform fully extended with Maximum load)*	45 Pound Force (200 Newtons)			
Maximum Hydraulic System Pressure: *(Recommended initial setting)*	2600 PSI (180 Bars)	1800 PSI (124 Bars)	2600PSI (180 Bars)	2800 PSI (193 Bars)
Hydraulic System Capacity:	5 qts. U.S. (4.7 L)			
Hydraulic Reservoir Capacity:	1 Gallon (3.78 L)			

Electrical Specifications

SPECIFICATION		15DVL	20DVL	15DVSP	20DVSP
System Voltage:		24 Volts DC			
Battery Specifications:	**Battery Type:**	AGM (VRLA) (Sealed)			
	Voltage:	12 Volts DC			
	Amp Hour (AH) Rating:	100 Amp Hr. @ 20 Hr.			
Battery Charger *(DC Models)*	**Input:**	120/240 Volts AC - 50/60 Hz - Voltage Selectable			
	Output:	24 volt, 20 Amp Output - with 2 Amp Finish			

Platform Data

SPECIFICATION		15DVL	20DVL	15DVSP	20DVSP
Occupants: *(Persons allowed in Platform)*		1			
Maximum Work Load (Capacity):	**Standard:**	500 lb. (230 kg)	350 lb. (160 kg)	—	—
	Stockpicker:	—	—	500 lb. (230 kg)	400 lb. (180 kg)
	Extendible:	500 lb. (230 kg)	350 lb. (160 kg)	500 lb. (230 kg)	350 lb. (160 kg)
	Molded:	500 lb. (230 kg)	350 lb. (160 kg)	500 lb. (230 kg)	350 lb. (160 kg)
Platform Height - Mast Fully Extended - *(Ground to Platform Floor)*:		15 ft. (4.57 m)	19.5 ft. (5.94 m)	15 ft. (4.57 m)	19.5 ft. (5.94 m)
Platform Cycle Performance:	**Lift Up:**	20 sec.	22.5 sec.	20 sec.	22.5 sec.
(in seconds) (w/max. rated load)	**Lift Down:**	15 - 21 sec.	21 - 26 sec.	15 - 21 sec.	21 - 26 sec.

Machine Component Weights

SPECIFICATION		15DVL	20DVL	15DVSP	20DVSP
Platform Weight :	**Standard Platform:**	55 lb. (25 kg)			
(Quick-Change Platforms)	**Molded Platform:**	70 lb. (32 kg)			
Battery: *(per battery)*		65.7 lb. (29.8 Kg)			

Serial Number Locations

For machine identification, a serial number plate is affixed to the machine. The plate is located on the back of the mast, just above the mast support bracket.

5.3 OPERATOR MAINTENANCE

Lubrication

Hydraulic Oil (HO)

HYDRAULIC SYSTEM OPERATING TEMPERATURE RANGE	SAE VISCOSITYGRADE
+0° F to +180° F (-18° C to -83° C)	10W
+0° F to +210° F (-18° C to +99° C)	10W-20, 10W-30
+50° F to +210° F (+10° C to +99° C)	20W-20

Hydraulic oils must have anti-wear qualities at least to API Service Classification GL-3, and sufficient chemical stability for mobile hydraulic system service. JLG Industries, recommends Mobilfluid 424 hydraulic oil, which has an SAE viscosity of 10W-30 and a viscosity index of 152.

For cold weather applications, i.e. when temperatures remain consistently below +20°F (–7°C) JLG recommends using Mobil DTE 13 hydraulic oil.

Aside from JLG recommendations, it is not advisable to mix oils of different brands or types, as they may not contain the same required additives or be of comparable viscosities. If use of hydraulic oil other than Mobilfluid 424 is desired, contact JLG Industries for proper recommendations.

Table 5-1. - Lubrication Specifications

KEY	SPECIFICATIONS
MPG -	Multipurpose Grease having a minimum dripping point of 350° F. Excellent water resistance and adhesive qualities, and being of extreme pressure type. (Timken OK 40 pounds minimum.)
EPGL -	Extreme Pressure Gear Lube (oil) meeting API service classification GL-5 or MIL-Spec MIL-L-2105.
HO -	Hydraulic Oil. ISO-Vg grade 32, 46.
CL -	Chain Lube. Use a good quality chain lubricant

NOTE: *Refer to Lubrication Chart, Table 5-2 for specific lubrication locations on machine.*

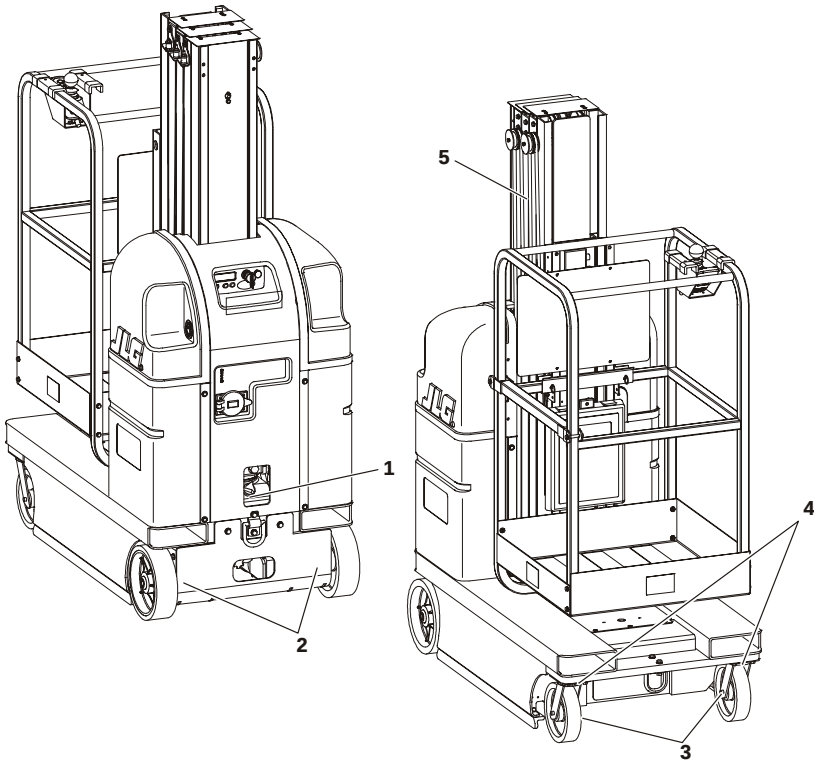

Table 5-2.Lubrication Intervals for Various Components

ITEM	COMPONENT	NO/TYPE (a) LUBE POINTS	LUBE/METHOD	INTERVAL (b)				COMMENTS
				3 MONTHS	6 MONTHS	1 YEAR	2 YEARS	
1	Hydraulic Oil	Fill To Line on Reservoir 5 Qt. Reservoir	HO - Check Hyd. Oil Level HO - Change Hyd. Oil				✔	Check fluid level every day. (c) Change hydraulic oil every 2 years.
2	Drive Wheel Gear Box	2 - Gear Boxes	Gear Oil					Change only when serviced requires 6 oz. (175 cc's) to fill.
3	Caster Axles	2 - Grease Fittings	MPG - Pressure Gun	✔				
4	Swivel Raceways	2 - Front Casters	MPG - Pressure Gun	✔				
5	Mast Chains	2 - Per Mast Section	CL - Brush or Spray		✔			Inspect, lubricate if dry or rusting.

Key to Lubricants: **MPG** - Multipurpose Grease
HO - Hydraulic Oil - ISO-Vg grade 32, 46.
GEAR OIL - Good Quality Worm Gear Oil - SAE 90 - AGMA#5 - EP Compounded
CL - Chain Lube. Use a good quality chain lubricant

Notes:
(a) *Be certain to lubricate like items on each side of the machine.*
(b) *Recommended lubricating intervals are based on normal use. If machine is subjected to severe operating conditions, such as a high number of cycles, location, corrosive/dirty environment, etc., user must adjust lubricating requirements accordingly.*
(c) *Prior to checking hydraulic oil level, operate machine through one complete cycle of lift function (full up and down). Failure to do so will result in incorrect oil level reading on the hydraulic reservoir.*

SECTION 6. INSPECTION AND REPAIR LOG

Machine Serial Number: _____

Table 6-1. Inspection and Repair Log

Date	Comments

Table 6-1. Inspection and Repair Log

Date	Comments

CALIFORNIAN PROPOSITION 65

BATTERY WARNING

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.

Batteries also contain other harmful chemicals known to the State of California.

WASH HANDS AFTER HANDLING!

Corporate Office
JLG Industries, Inc.
1 JLG Drive
McConnellsburg PA. 17233-9533
USA
Phone: (717) 485-5161
Fax: (717) 485-6417

JLG Worldwide Locations

JLG Industries (Australia)
P.O. Box 5119
11 Bolwarra Road
Port Macquarie
N.S.W. 2444
Australia
Phone: (61) 2 65 811111
Fax: (61) 2 65 810122

JLG Industries (UK)
Unit 12, Southside
Bredbury Park Industrial Estate
Bredbury
Stockport
SK6 2sP
England
Phone: (44) 870 200 7700
Fax: (44) 870 200 7711

JLG Deutschland GmbH
Max Planck Strasse 21
D-27721 Ritterhude/lhlpohl
Bei Bremen
Germany
Phone: (49) 421 693 500
Fax: (49) 421 693 5035

JLG Industries (Italia)
Via Po. 22
20010 Pregnana Milanese - MI
Italy
Phone: (39) 02 9359 5210
Fax: (39) 02 9359 5845

JLG Latino Americana Ltda.
Rua Eng. Carlos Stevenson,
80-Suite 71
13092-310 Campinas-SP
Brazil
Phone: (55) 19 3295 0407
Fax: (55) 19 3295 1025

JLG Europe B.V.
Jupiterstraat 234
2132 HJ Foofddorp
The Netherlands
Phone: (31) 23 565 5665
Fax: (31) 23 557 2493

JLG Industries (Norge AS)
Sofeimyrveien 12
N-1412 Sofienyr
Norway
Phone: (47) 6682 2000
Fax: (47) 6682 2001

JLG Polska
Ul. Krolewska
00-060 Warsawa
Poland
Phone: (48) 91 4320 245
Fax: (48) 91 4358 200

JLG Industries (Europe)
Kilmartin Place,
Tannochside Park
Uddingston G71 5PH
Scotland
Phone: (44) 1 698 811005
Fax: (44) 1 698 811055

JLG Industries (Pty) Ltd.
Unit 1, 24 Industrial Complex
Herman Street
Meadowdale
Germiston
South Africa
Phone: (27) 11 453 1334
Fax: (27) 11 453 1342

Plataformas Elevadoras
JLG Iberica, S.L.
Trapadella, 2
P.I. Castellbisbal Sur
08755Castellbisbal
Spain
Phone: (34) 93 77 24700
Fax: (34) 93 77 11762

JLG Industries (Sweden)
Enkopingsvagen 150
Box 704
SE - 175 27 Jarfalla
Sweden
Phone: (46) 8 506 59500
Fax: (46) 8 506 59534