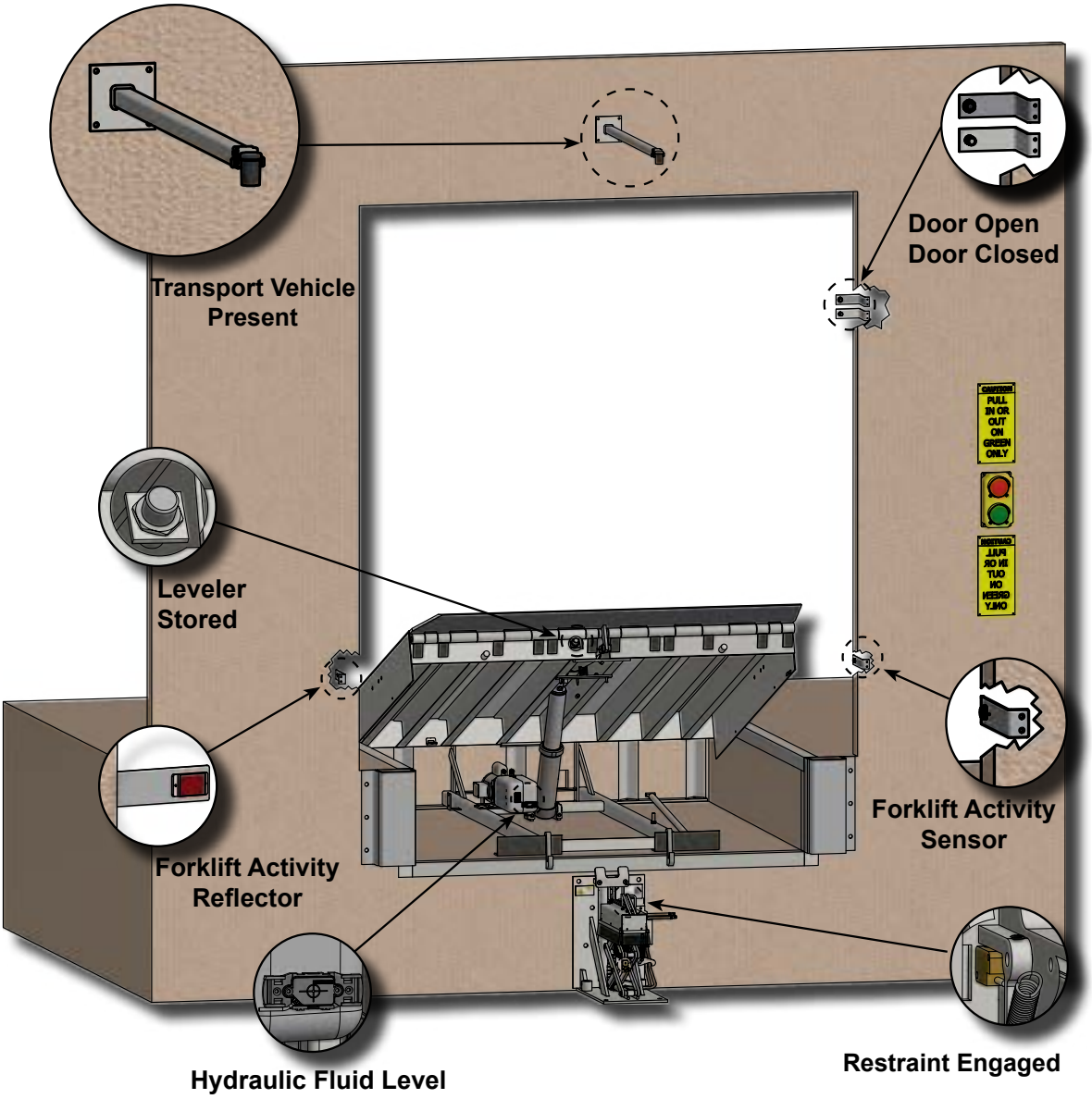
POWERAMP
MCGUIRE
DLM
SYSTEMS
Loading Dock Equipment

iDock Optional Hardware

Owner's/User's Manual



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Manual No. 4111-0092
Aug. 2021

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Recognize Precautionary Information

Safety-Alert Symbol

The Safety-Alert Symbol is a graphic representation intended to convey a safety message without the use of words. When you see this symbol, be alert to the possibility of death or serious injury. Follow the instructions in the safety message panel.

DANGER

The use of the word DANGER signifies the presence of an extreme hazard or unsafe practice which will most likely result in death or severe injury.

WARNING

The use of the word WARNING signifies the presence of a serious hazard or unsafe practice which could result in death or serious injury.

CAUTION

The use of the word CAUTION signifies possible hazard or unsafe practice which could result in minor or moderate injury.

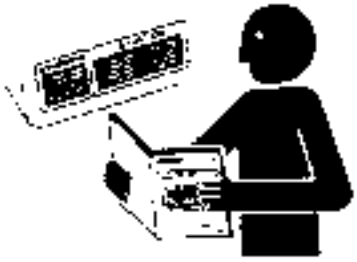
NOTICE

The use of the word NOTICE indicates information considered important, but not hazard-related, to prevent machine or property damage.

SAFETY INSTRUCTIONS

Indicates a type of safety sign, or separate panel on a safety sign, where safety-related instructions or procedures are described.

General Operational Precautions



Read and understand the Owner's/ User's Manual and become thoroughly familiar with the equipment and its controls before operating the equipment.

Never operate dock equipment while a safety device or guard is removed or disconnected.

Never remove DANGER, WARNING, or CAUTION signs, Placards or Decals on the equipment unless replacing them.

WARNING: This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

PRECAUTIONS

Operational Precautions

Learn the safe way to operate this equipment. Read and understand the manufacturer's instructions. If you have any questions, ask your supervisor.

DANGER

Stay clear of dock leveling device when transport vehicle is entering or leaving area.

Do not move or use the dock leveling device if anyone is under or in front of it.

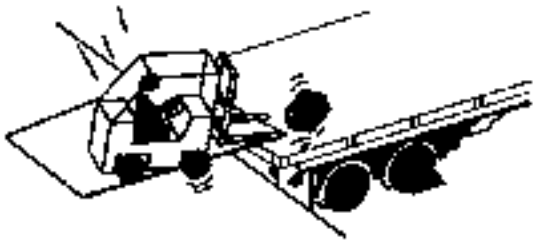
Keep hands and feet clear of pinch points. Avoid putting any part of your body near moving parts.

WARNING

Chock/restrain all transport vehicles. Never remove the wheel chocks or release the restraining device until loading or unloading is finished, and transport driver has been given permission to drive away.

Do not use a broken or damaged dock leveling device or restraining device. Make sure proper service and maintenance procedures have been performed before using.

Make sure lip overlaps onto transport vehicle bed at least 4 in. (102 mm).



Keep a safe distance from both side edges.

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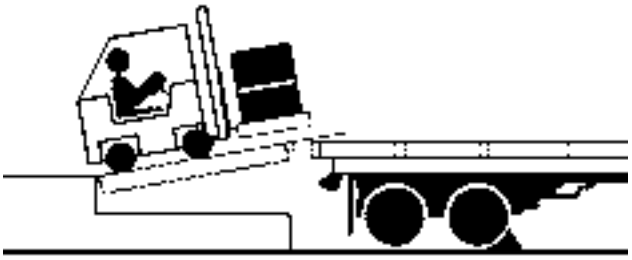
Operational Precautions

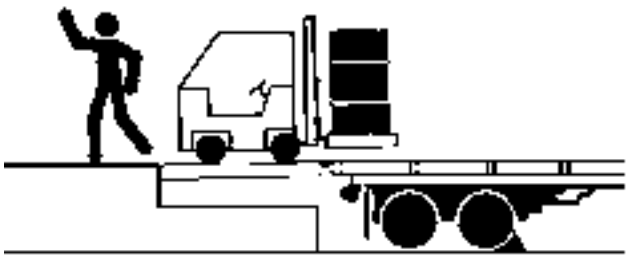
⚠WARNING



Do not use dock leveling device if transport vehicle is too high or too low.

Do not overload the dock leveling device.

Do not operate any equipment while under the influence of alcohol or drugs.



Do not leave equipment or material unattended on dock leveling device.

OWNER'S/USER'S RESPONSIBILITIES

1) The manufacturer shall provide to the initial purchaser and make the following information readily available to the owners, users and their agents, all necessary information regarding Safety Information, Operation, Installation and Safety Precautions, Recommended Initial and Periodic Inspections Procedures, Planned Maintenance Schedule, Product Specifications, Troubleshooting Guide, Parts Break Down, Warranty Information, and Manufacturers Contact Information, as well as tables to identify the grade(slope) for all variations of length or configuration of the dock leveling device and information identifying the maximum uncontrolled drop encountered when sudden removal of support while in the working range of the equipment.

2) When selecting loading dock safety equipment, it is important to consider not only present requirements but also future plans and any possible adverse conditions, environmental factors or usage. The owners/ users shall provide application information to the manufacturer to receive recommendations on appropriate equipment specifications and capacity.

3) The owner/ user must see all nameplates, placards, decals, instructions and posted warnings are in place and legible and shall not be obscured from the view of the operator or maintenance personnel for whom such warnings are intended for. Contact manufacturer for any replacements.

4) Dock leveling devices may become hazardous if the manufacturer's instructions regarding modifications or adjustments are not followed. Modifications or alterations of dock leveling devices shall only be made with prior written approval from the original manufacturer. These changes shall be in conformance with all applicable provisions of the MH30.1 standard and shall also satisfy all safety recommendations of the original equipment manufacturer of the particular application.

5) Modifications or alterations of restraining devices shall be made only with prior written approval from the original manufacturer. These changes shall be in conformance with all applicable provisions of the MH30.3 standard and shall also satisfy all safety recommendations of the original equipment manufacturer of the particular application.

6) The owner/ user should recognize the inherent dangers of the interface between the loading dock and the transport vehicle. The owner/ user should, therefore, train and instruct all operators in the safe operation and use of the loading dock equipment in accordance with manufacturer's recommendations and industry standards. Effective operator training should also focus on the owner's/ user's company policies, operating conditions and the manufacturer's specific instructions provided with the dock leveling device. Maintaining, updating and retraining all operators on safe working habits and operation of the equipment, regardless of previous experience, should be done on a regular basis and should include an understanding and familiarity with all functions of the equipment. Owners/ users shall actively maintain, update and retrain all operators on safe working habits and operations of the equipment.

7) An operator training program should consist of, but not necessarily be limited to, the following:

   a) Select the operator carefully. Consider the physical qualifications, job attitude and aptitude.

   b) Assure that the operator reads and fully understands the complete manufacturer's owners/ users manual.

   c) Emphasize the impact of proper operation upon the operator, other personnel, material being handled, and equipment. Cite all rules and why they are formulated.

   d) Describe the basic fundamentals of the dock leveling device and components design as related to safety, e.g., mechanical limitation, stability, functionality, etc.

   e) Introduce the equipment. Show the control locations and demonstrate its functions. Explain how they work when used properly and maintained as well as problems when they are used improperly.

   f) Assure that the operator understands the capacity rating, nameplate data, placards and all precautionary information appearing on the dock leveling device.

   g) Supervise operator practice of equipment.

   h) Develop and administer written and practical performance tests. Evaluate progress during and at completion of the course.

   i) Administer periodic refresher courses. These may be condensed versions of the primary course and include on-the-job operator evaluation.

8) Loading dock safety equipment should never be used outside of its vertical working range, or outside the manufacturer's rated capacity. It shall also be compatible with the loading equipment and other conditions related to dock activity. Please consult the manufacturer if you have any questions as to the use, vertical working range or capacity of the equipment. Only properly trained and authorized personnel should operate the equipment.

9) It is recommended that the transport vehicle is positioned as close as practical to the dock leveling device and in contact with both bumpers. When an industrial vehicle is driven on or off a transport vehicle during loading and unloading operations, the transport vehicle parking brakes shall be applied and wheel chocks or a restraining device that provides equal or better protection of wheel chocks shall be engaged. Also, whenever possible, air-ride suspension systems should have the air exhausted prior to performing said loading and unloading operations.

10) When goods are transferred between the loading dock and a trailer resting on its support legs/ landing gear instead of a tractor fifth wheel or converter dolly, it is recommended that an adequate stabilizing device or devices shall be utilized at the front of the trailer.

11) In order to be entitled to the benefits of the standard product warranty, the dock safety equipment must have been properly installed, maintained and operated in accordance with all manufacturer's recommendations and/or specified design parameters and not otherwise have been subject to abuse, misuse, misapplication, acts of nature, overloading, unauthorized repair or modification, application in a corrosive environment or lack of maintenance. Periodic lubrication, adjustment and inspection in accordance with all manufacturers' recommendations are the sole responsibility of the owner/ user.

12) Manufacturer's recommended maintenance and inspection of all dock leveling and vehicle restraining devices shall be performed in conformance with the following practices: A planned maintenance schedule program must be followed, only trained and authorized personnel shall be permitted to maintain, repair, adjust and inspect dock leveling devices, and only the use of original equipment manufacturer parts, manuals, maintenance instructions, labels, decals and placards or their equivalent. Written documentation of maintenance, replacement parts or damage should be kept. In the event of damage, notification to the manufacturer is required.

13) Loading dock devices that are structurally damaged or have experienced a sudden loss of support while under load, such as might occur when a transport vehicle is pulled out from under the dock leveling device, shall be removed from service, inspected by a manufacturer's authorized representative, and repaired or replaced as needed or recommended by the manufacturer before being placed back in service.

14) Restraining devices that are structurally damaged shall be removed from service, inspected by a manufacturer's authorized representative, and repaired or replaced as needed or recommended by the manufacturer before being placed back in service.

INTRODUCTION

General Information

This manual provides current information on the iDock Control System's optional sensors. Due to ongoing product improvement, some parts may have changed, along with operation and troubleshooting methods. This manual describes these changes where applicable.

The iDock Control System is a technologically advanced push-button controller and light communication system used with Systems, LLC loading dock equipment.

iDock Control Systems feature a modular design. A 3-in-1 inside light assembly shows the state of the system and whether it is safe to enter the transport vehicle. A LCD display shows status of controls and explains fault conditions. Metal dome buttons provide positive control feedback.

Each iDock Control System has been factory tested to ensure satisfactory operation.

To illustrate which connections are to be made in the field at installation, electrical drawings are included with each order or by contacting Systems, LLC Technical Services.

iDock Control Systems are available in the following models:

iDock
- Dock Alert/Light Communication System
- Pit or HED Leveler
- Pit Leveler w/Lip Out
- Vertical Leveler
- Vehicle Restraint
- Pit or HED Leveler w/Vehicle Restraint
- Pit Leveler w/Lip Out & Vehicle Restraint
- Vertical Leveler w/Vehicle Restraint

Optional Equipment
- CentraPower® (Poweramp® only)
- Overhead Door Controls
- Emergency Stop
- Dock Light
- Edge Lights
- Fluid Level Sensor
- Fork Lift Truck Counter
- Outside Vehicle Presence
- Guide Lights
- Door Fault/Maintenance Notification

Call Systems, LLC to discuss available options to meet your specific needs.

Technical Service at 800-643-5424 or techservices@loadingdocksystems.com

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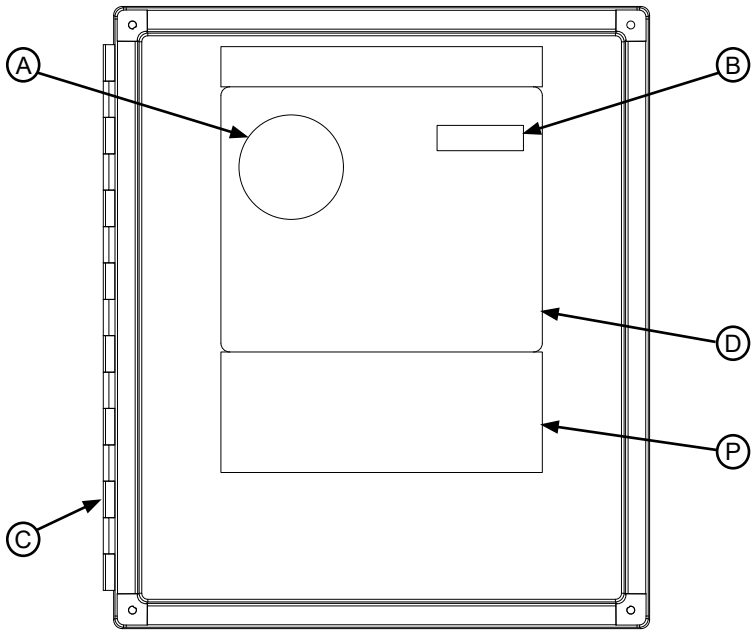
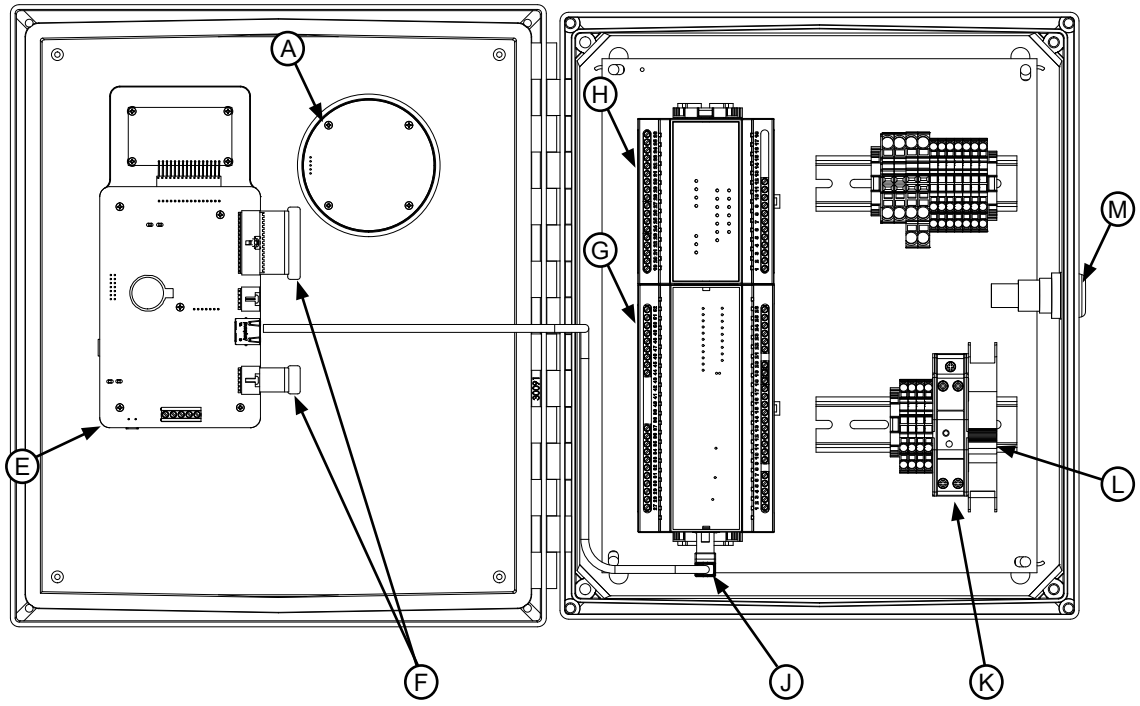
Component Identification (iDock Controller)





A — Multi-Colored LED Light
B — Message Display
C — Enclosure*
D — Primary Membrane*
E — Main Board Assembly
F — Ribbon Cables
G — Terminal Board*
H — Expansion Board*
J — RJ45 Cable
K — Power Supply*
L — Circuit Breaker
M — Alarm (Optional)
O — Terminal Blocks
P — Secondary Membrane

**Appearance may vary depending on options.*

INTRODUCTION

Definitions (iDock Controller)

Throughout this manual, many different button inputs and system functions of the iDock Control System are referenced. This section defines these inputs/functions:

- **(A) DOCK ALERT STATUS BUTTON** - To change the status of the Dock Alert light communication system.
- **(B) ENGAGE BUTTON** - To activate vehicle restraint to capture transport vehicle RIG.
- **(C) RELEASE BUTTON** - To disengage vehicle restraint from transport vehicle RIG.
- **(D) RAISE BUTTON** - To activate dock leveler from a lowered or stored position.
- **(E) LOWER BUTTON** - To activate dock leveler from a raised position.
  (VS and VSH models only)
- **(F) LIP BUTTON** - To control the lip position.
  (VS and VSH models only)
- **(G) LIP OUT BUTTON** - To control the lip position.
- **(H) MENU BUTTON** - To access the iDock Control menus.
  - Press to activate menu screen.
  - Press to exit to previous screen.
- **(J) ENTER BUTTON** - To select highlighted feature or digit on the Message Display (**M**).
  - To save any setting changes.
- **(K) SCROLL UP/DOWN BUTTONS** - To change the message on display.
  - To change highlighted digit value.
  - To change the selected sub-menu.
- **(L) LEVELER STORED LIGHT** - The light that informs the user that the dock leveler is stored.
  (VS and VSH models only)
- **(M) MESSAGE DISPLAY** - During equipment operation, will show messages to assist the operator.
  - When menu is active, will show various settings, equipment info, and maintenance features.

- **Main Menu** - The menu that is accessed by pressing the MENU button (**H**). See iDock manual for more information.

- **User Code** - Used to secure access to BYPASS mode. No code is default from factory. Owner/ User is responsible to define 3-digit code if required; this code can be added or changed at any time. See iDock manual for more information.

- **Maintenance Code** - Used to secure access to the MAINTENANCE menu. No code is default from factory. Owner/User is responsible to define 8-digit code if required; this code can be added or changed at any time. See iDock manual for more information.

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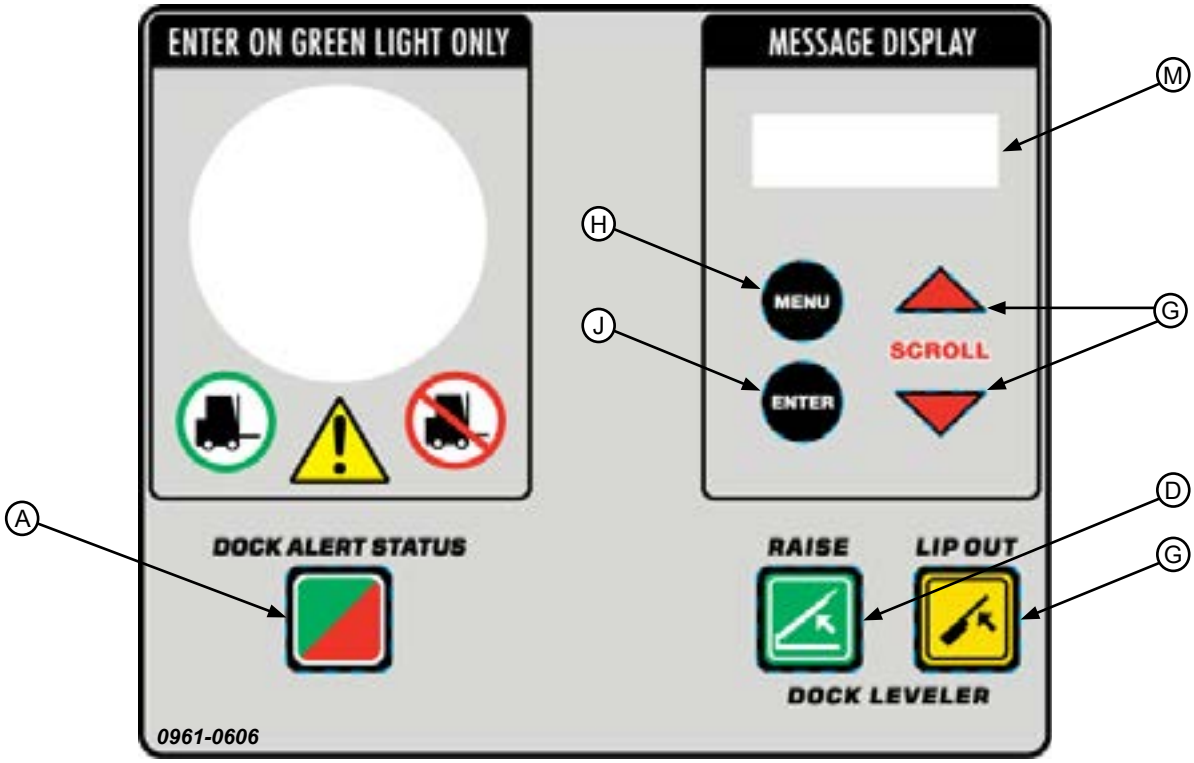
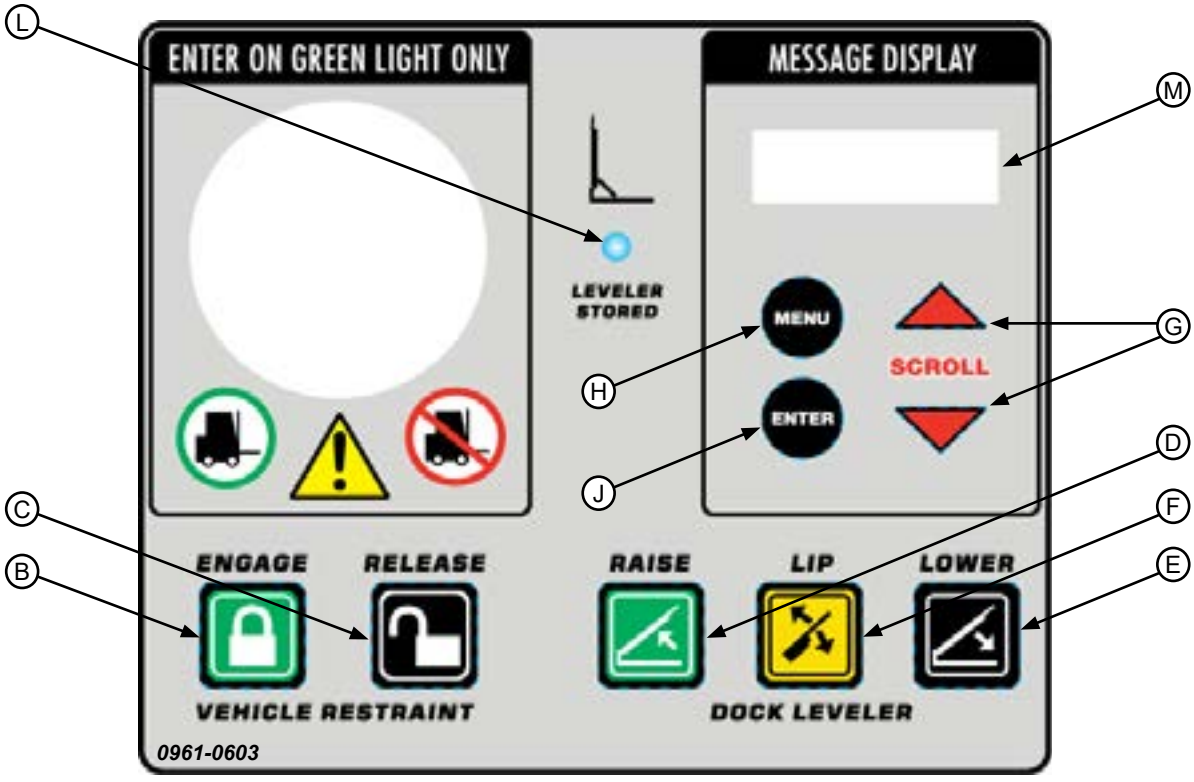
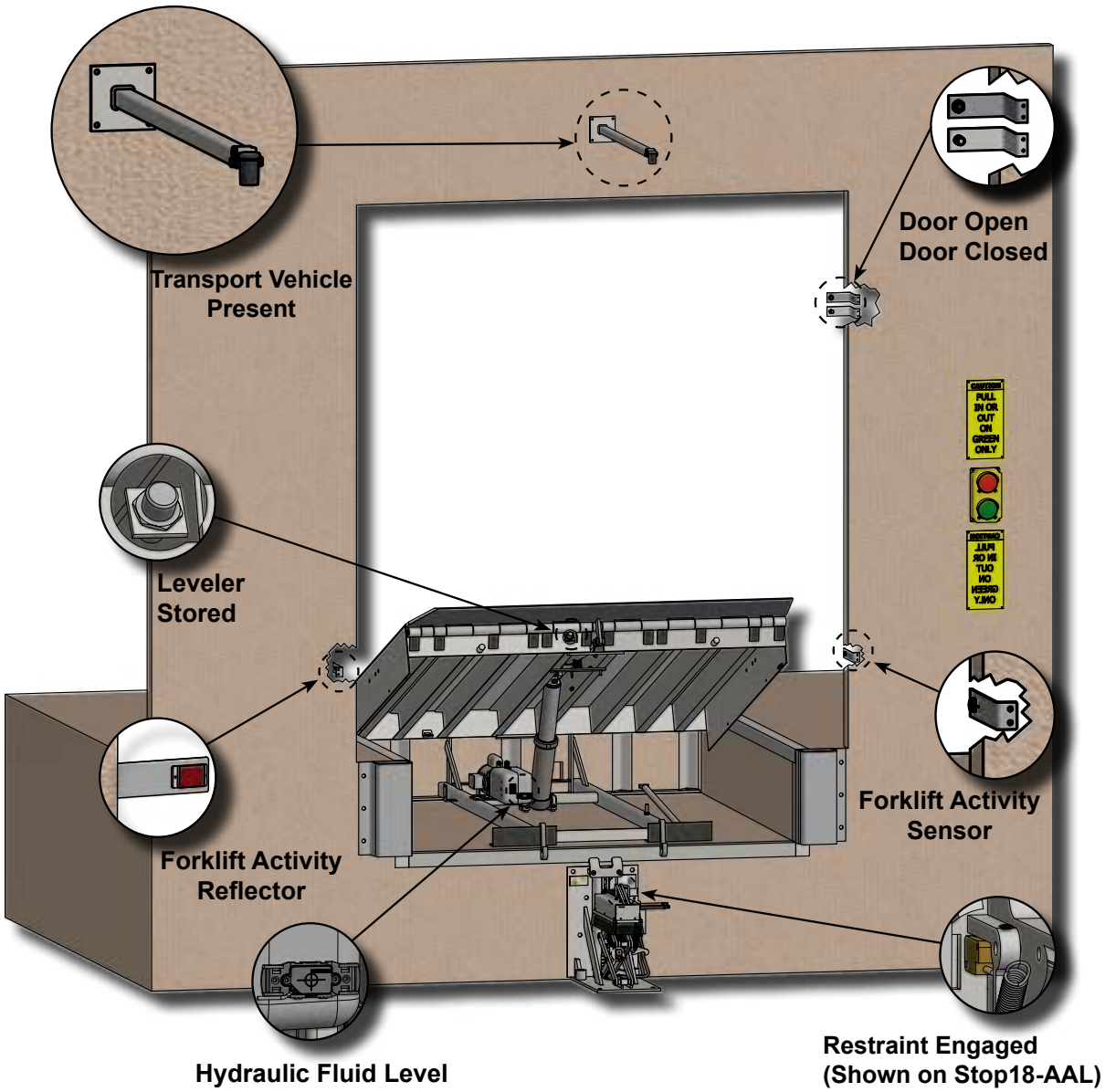


Dock Alert w/Pit Leveler and Lip Out



Vertical Leveler w/Vehicle Restraint

Component Identification (Optional Sensors)



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Definitions (Continued)

Transport Vehicle Present (7155-0007)

- The Transport Vehicle Present sensor mounts on the building exterior, above a loading dock. The sensor mounts to a long bracket, designed to span most awnings, shelters and dock seals, for unobstructed transport vehicle detection.
- When a vehicle is detected, a signal is sent to the iDock and a message appears on its display.
- **Note:** iDock firmware version 1.6.0 or later, has the option of an increased communication light flash rate, when a vehicle is detected.

Leveler Stored Sensor Retrofit (7155-0009)

- The Leveler Stored sensor is optional on most levelers. This feature is commonly used for safety interlocks between equipment, to establish a safe sequence of operation. However, it can also report data to the iDock controller.
- This sensor is available as a factory option or it can be installed using a retrofit kit.
- The leveler status is communicated on the iDock message display. The operator is instructed based on the position of the leveler and other applicable equipment.

Forklift Activity Sensor (7155-0008)

- The Forklift Activity sensor mounts near the door track on either side of the door. The bracket mounted near the iDock houses the sensor and the side opposite mounts the reflector.
- This sensor kit reports activity to the iDock controller and records the number of forklift cycles to the transport vehicle.

Hydraulic Fluid Level Sensor (7155-0001, 0002)

- The Hydraulic Fluid Level sensor monitors the hydraulic fluid in a reservoir. Kits are available for plastic (7155-0001) and metal (7155-0002) reservoirs.
- When the fluid level is low, the sensor sends a signal to the iDock, where a message appears on the message display.

Restraint Engaged Sensor

- The Restraint Engaged sensor is a standard feature on automatic restraints and is optional on most manual units.
- The sensors used to verify the engaged position will vary between restraint models. See the owners manual for your restraint to determine the sensor type.
- When a restraint is successfully engaged, a signal is sent to the iDock. The message display will indicate the restraint status and will instruct the operator based on the position of other applicable equipment.

Note: Reference restraint owners manual for sensor and related parts.

Door Open/ Closed Sensors (7155-0010, 0011)

- These sensors monitor the position of the overhead door to prevent equipment damage via interlocking circuits.
- The Door Open sensor verifies the door is open prior to operating a dock leveler. This sensor can also provide valuable analytics to the iDock controller.
- The Door Closed sensor is typically used for interlocking purposes. It can also provide valuable analytics to the iDock controller.
- Both sensors attach to brackets that are mounted near the top of the door.
- The Door Open sensor (7155-0010) uses a photoelectric sensor and requires a reflection off of the door.
- The Door Closed sensor (7155-0011) uses a retro-reflective sensor, which receives a signal from a special reflective strip mounted on the door.

INSTALLATION

Installation Precautions

⚠DANGER

Make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes, before installing or servicing the equipment.

⚠DANGER

It is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

⚠WARNING

Read and understand the Owner's/ User's manual of the equipment present, before installing, operating, or servicing the equipment.

⚠WARNING

Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before installation is complete.

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

⚠CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and final connections to the pit junction box — must be performed by a certified electrician and conform to all local and applicable national codes.

⚠CAUTION

Overhead door operators capable of remote operation can bypass iDock controller door interlock(s) when operated remotely! Always utilize the dry contact interlock terminals in the controller to provide the requisite signal and prevent remote door operation until the equipment is not in use.

NOTICE

DO NOT connect any dock equipment electrical wiring or ground connections until all welding has been completed.

Failure to follow these instructions may damage the motor, hydraulics, wiring, and/or control panel.

NOTICE

Where indicated, all components must be connected to a SAFETY EARTH GROUND that conforms to the 1999 National Electrical Code Section 250-50 section (a) or section (c) for a grounding electrode system.

NOTICE

Note: When installing electrical controls in a temperature-controlled environment, the installer must determine an appropriate means to isolate/prevent thermal and vapor transfer through electrical conduit where conduit routing crosses temperature zones. Systems, LLC is not responsible for any damage due to moisture collecting inside the control panel caused by improper isolation/prevention of thermal and vapor transfer through the conduit. Refer to Tech Service Bulletin 19-053 for more information.

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General Installation Guidelines

1. Barricade work area at ground level and dock level and follow Lock Out/Tag Out procedures during service.*

2. Install sensors at specified location(s). Avoid mounting sensor eyes in direct sunlight for proper performance; some installations may require additional shielding (provided by others).

   - Kits may require the installer to drill and mount sensors with hardware. Hardware is not included, due to a variety of installation applications.

   - Forklift Sensor Kits can be mounted directly to pre-drilled holes in the Track Guards LS units. Refer to Track Guard LS Owner's/User's Manual for instructions.

3. Connect sensor wires to designated terminals in iDock control box. Refer to the controller specific wiring diagram listed in iDock controller.

4. Restore power to equipment and verify operation of sensors:

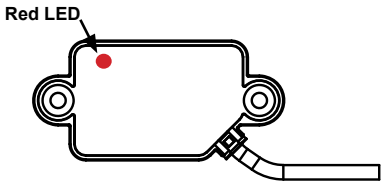
   - Kit 7155-0001 will illuminate a red LED when it detects hydraulic fluid.

   - Kit 7155-0002 will illuminate a blue LED when it detects hydraulic fluid.

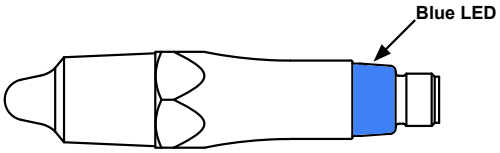
   - Kit 7155-0007 sensor will illuminate a dim red LED when powered and increase brightness when an object is detected.

   - Kits 7155-0008 through 7155-0011 will illuminate a green light when powered and an amber light when the sensor is receiving a signal. If amber light is flashing, adjust sensor as needed until light is steady on.

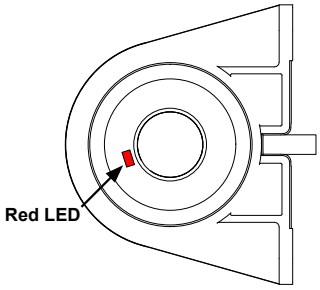
5. **If the sensors are installed as a retrofit and not with the original loading dock equipment installation, make sure the iDock System Configuration and Firmware have been updated to allow system compatibility.**



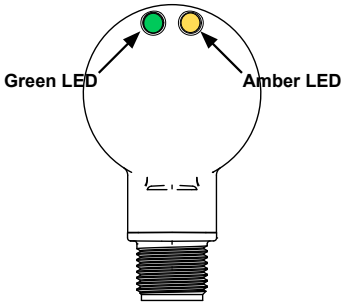
7155-0001 sensor



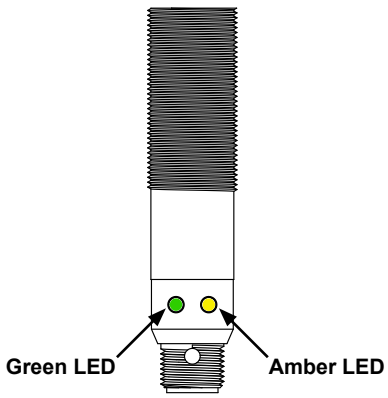
7155-0002 sensor



7155-0007 sensor



7155-0008 and 7155-0011 sensors

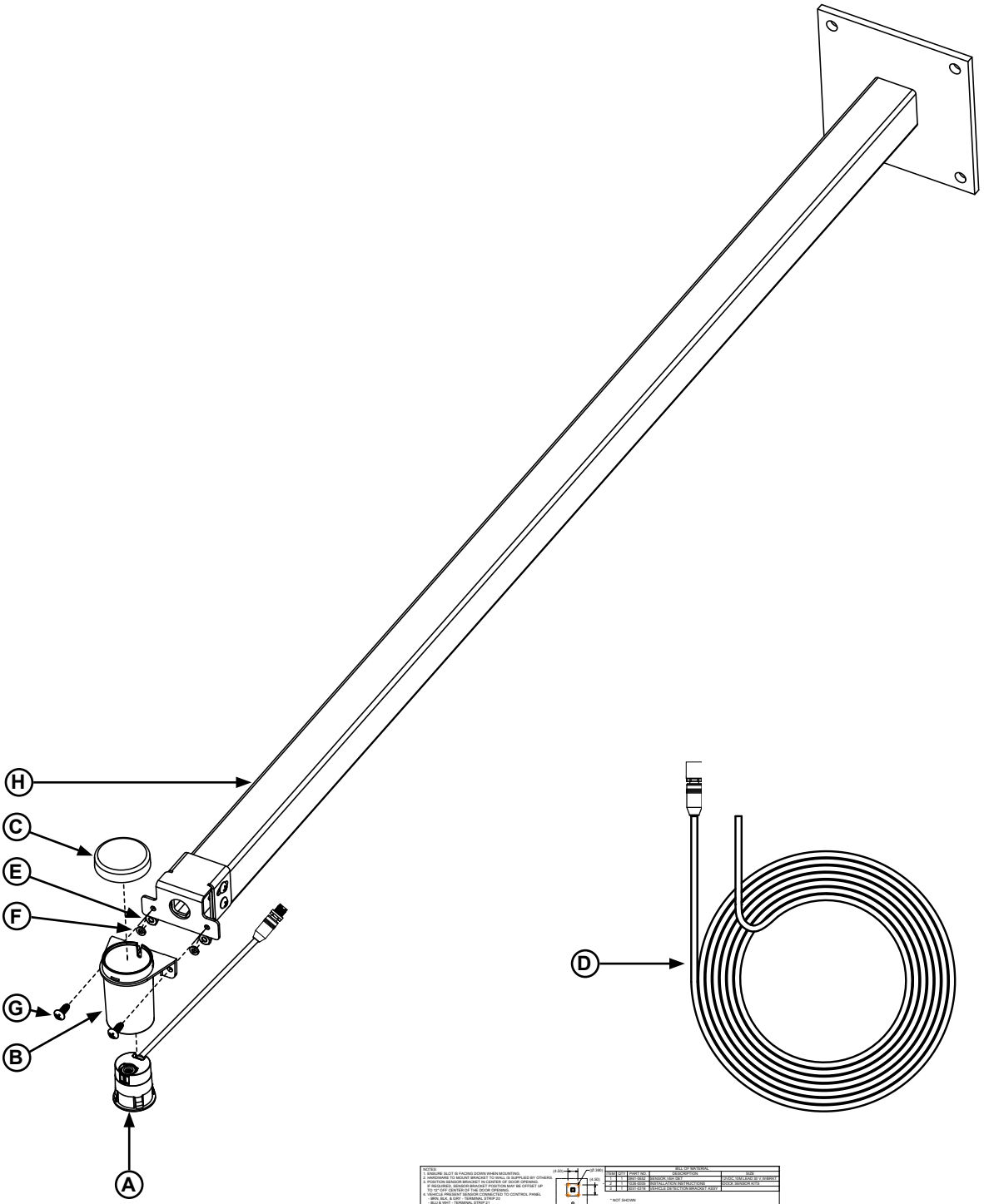


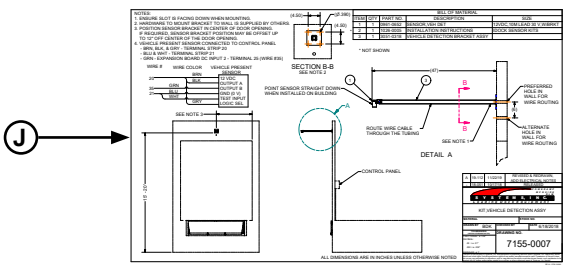
7155-0009 and 7155-0010 sensors

** Refer to OSHA regulations 1910.146. Confined Space and 1910.147. Lockout/Tagout*

Installation - Vehicle Present Sensor

7155-0007 — Kit Contents





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Vehicle Present Sensor Kit			
Item	**Quantity**	**Part Number**	**Description**
	1	**7155-0007**	**Kit,Vehicle,Detection Assy**
	1	0961-0652	Sensor,Veh Det,12VDC,10M Lead 30V,W/Brkt (**Includes A-G***)
A	1	*	Sensor
B	1	*	Sensor Housing
C	1	*	Sensor Housing Cap
D	1	*	Cable, 6-Conductor, 10M (32.8ft), Female M12 X Flying Leads
E	2	*	Nut, #8-32.
F	2	*	Washer, Lock, #8-32
G	2	*	Screw, #8-32 x 1/2" .
H	1	3051-0318	Vehicle Detection Bracket Assy
J	1	1026-0005	Installation Instructions

Installation - Vehicle Present Sensor

Vehicle Present Sensor Installation

The Transport Vehicle Present sensor mounts on the building exterior, above a loading dock. The sensor mounts to a long bracket, designed to span most awnings, shelters and dock seals, for unobstructed transport vehicle detection.

Review the installation instructions included with this kit to determine an appropriate mounting location for the mounting bracket.

NOTICE

Ensure the chosen bracket location will not interfere with an awning/ shelter, or other building materials. Many facilities are built using precast walls, which contain embed plates. Select a location free of obstructions for anchors and field wiring.

NOTICE

Hardware for mounting the sensor bracket is not included in this kit. Chose appropriate hardware based on the construction material of the building wall.

Install Mounting Bracket

1. Locate the center line (**A**) above the door opening. The mounting bracket (**B**) can be mounted up to 12” off center to avoid obstructions. See **Figure 1.**

2. Mark a location for the mounting bracket based on the centerline, that is 15-20’ above the approach. Ensure the area can be drilled for mounting hardware and for the sensor cable. Inspect the inside and outside of the wall, to determine an appropriate path for the cable to reach the iDock (**C**). (Using a wall scanner to avoid re-bar or embed plates is recommended.)

3. With the slot (**E**) facing down, position the mounting base against the building wall in the location chosen in steps 1-2. Ensure it is plumb and level. Then mark the holes for the mounting hardware (**G**) and the sensor cable (**H**). See **Figure 2.**

   Note: If necessary, an alternate hole (**J**) for the cable may be used. The hole may be 6” below and in-line with the mounting bracket. **Figure 2.**

4. With the holes marked, drill the hole for the sensor cable first (**H or J**). The bit must be at least 3/8” in diameter and an adequate length to pass through the wall. Choose an appropriate bit for the building wall material.

Note: Position overhead door in the closed position to avoid damage.

5. Assemble the sensor and housing. Insert the sensor into its housing. See **page 14.**

6. Adjust the white sensitivity dial on the sensor to halfway (pointing away from building.) See **Figure 3**.

7. Then pull the long sensor cable through the mounting bracket (**B**), through slot (**E**), and attach the cable to the sensor connector.

8. Attach the sensor housing to the bracket, using the included hardware:
   - Make sure the sensor cable rests in the slot in the housing and is not pinched when attached. See **Figure 3**.
   - Feed cable slack into hole in bracket.
   - Ensure the sensor is pointing down toward the slot in the mounting bracket. Install the housing cap when finished.

9. Choose <u>one</u> of the upper anchor holes that was marked in step 3. Drill the hole for the anchor using the correct bit according to the hardware chosen for this application.

   Note: 5/16 x 2” sleeve anchors are recommended for masonry applications.

10. Secure the sensor bracket to the first hole using the mounting hardware. Ensure the bracket is level and plumb, then tighten the fastener.

11. With the bracket located using the first anchor and with the bracket plumb and level, drill a hole for one of the lower anchors. Then insert the second anchor.

12. Continue to drill the remaining holes and install remaining mounting hardware.

13. Leave extra cable length inside the mounting bracket to allow access to the sensor connector for future service. Cable tie a loop as shown in **Figure 4**.

14. Feed the long cable through the sensor hole (**H** or **J.**)

Instructions continued on page 18.

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Vehicle Present Sensor Installation

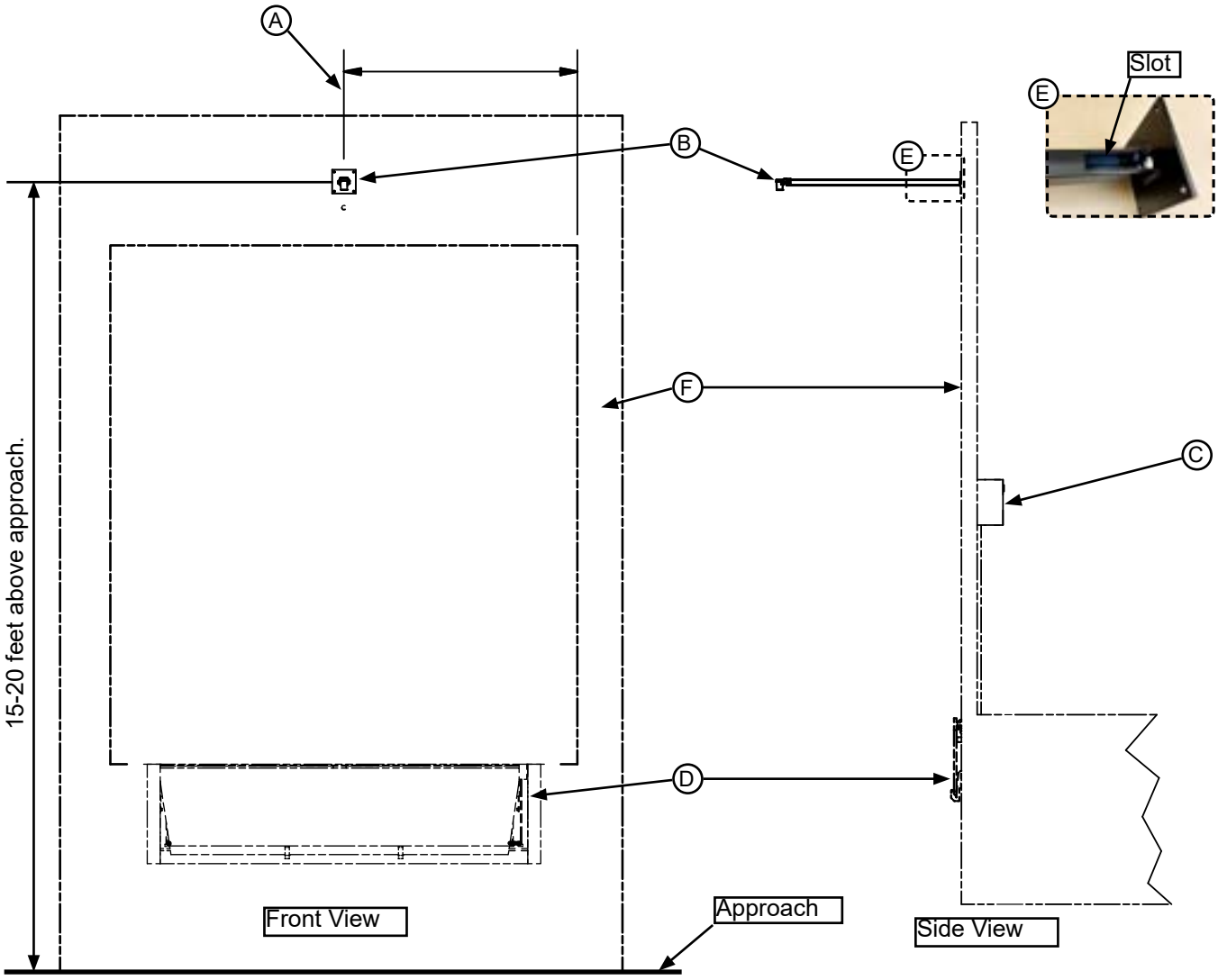


Figure 1

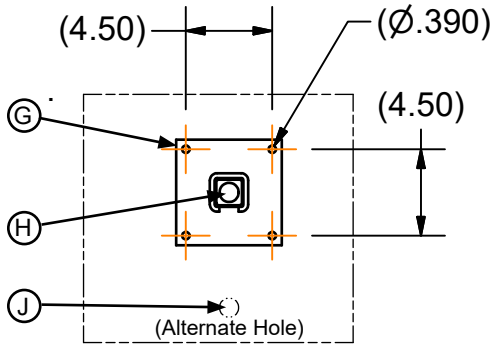


Figure 2

Figure 3

Figure 4

A— Centerline
B— Mounting Bracket
C— iDock Contoller
D— Dock Leveler
E— Mounting Base Slot
F— Building Wall
G—Mounting Hardware Holes (4)
H—Sensor Cable Hole
J—Alternate Cable Hole

Installation - Vehicle Present Sensor

Vehicle Present Sensor Installation (Continued)

Electrical Connections

DANGER

Make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and final connections to the pit junction box — must be performed by a certified electrician and conform to all local and applicable national codes.

NOTICE

When installing electrical controls in a temperature-controlled environment, the installer must determine an appropriate means to isolate/prevent thermal and vapor transfer through electrical conduit where conduit routing crosses temperature zones. Systems, LLC is not responsible for any damage due to moisture collecting inside the control panel caused by improper isolation/prevention of thermal and vapor transfer through the conduit. Refer to Tech Service Bulletin 19-053 for more information.

1. After the sensor and bracket have been mounted on the building exterior, complete the installation inside the building.

2. Following all local and applicable national codes, and site specific requirements to adequately secure the sensor cable and terminate it in the iDock.

   Note: Seal the hole between the outside mounting bracket and the inside wall. A junction box is recommended to conceal the hole where the cable enters the interior wall. See **Figure 5**.

   Note: If door sensors are, or will be installed, the sensor cable can share the same conduit to the iDock.

3. The connections to the iDock are as follows:

- Brown, Black and Gray connect to terminal block 20.
- Blue and White connect to terminal block 21.
- Green connects to the expansion board, terminal 25.

(Reference **Figure 6**.)

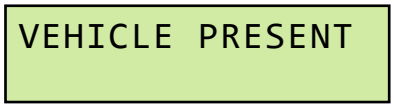
Testing Operation

1. If the sensor was installed as a retrofit, and not with the original loading dock equipment installation, make sure the iDock System Configuration and Firmware have been updated.

2. After the wiring connections have been made, safely energize the equipment and test the sensor operation.

   - With the power on and no target detected, the Red LED should be dimly lit. See **Figure 7**.
   - When the sensor detects an object, the Red LED will become more bright. See **Figure 8**. Use this LED to confirm sensor operation
   - Monitoring the expansion board DC input #2 will also confirm the sensor's operation. Input #2 should turn off when a target is not present and illuminate when a target is detected. See **Figure 9**.

3. After the sensor has detected a target, there is a 15 second delay before the iDock will acknowledge a transport vehicle is present. This delay is to avoid sensor oscillation due to foot traffic or other objects passing under the sensor. After 15 seconds, verify the display shows the following:



(Alternating Messages)

4. If the sensor is mounted near an awning, shelter or dock seal, ensure sensor is not detecting this obstruction. If so, the sensor can be rotated away from the obstruction using the slots in the sensor mount. See Figure 5.

   Note: As an option, the communication light on the iDock can double-flash when a vehicle is present.

5. There is also a 15 second delay before the iDock will turn off the vehicle present notification, when a transport vehicle departs. Verify that the vehicle present notification disappears.

6. If the equipment is operating correctly, based on steps 1-4 above, the installation is complete. If you need assistance with the installation, contact Systems Technical Services.

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Vehicle Present Sensor Installation (Continued)

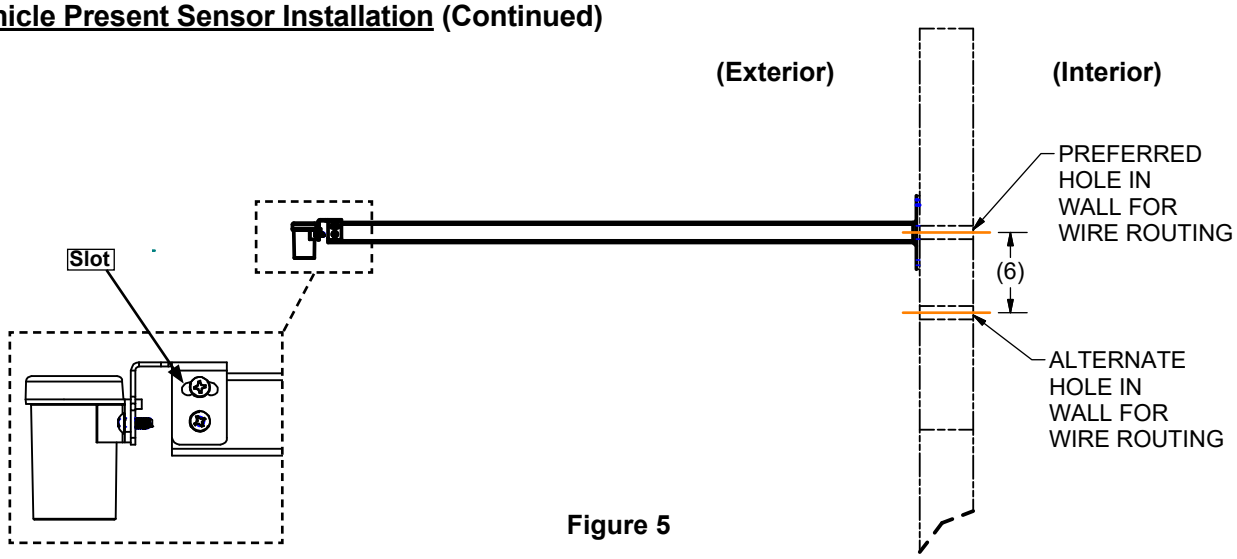


Figure 5

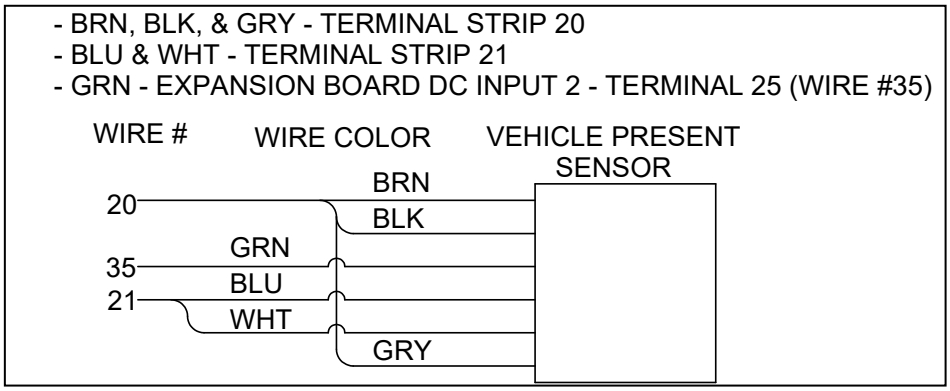
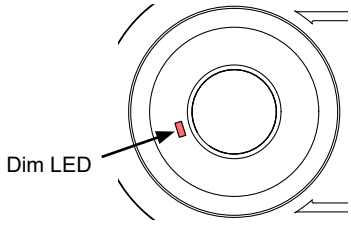
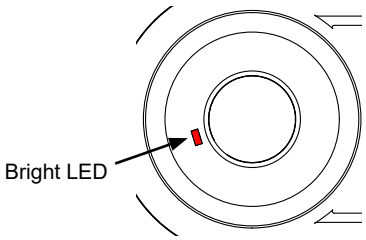


Figure 6



(Target Not Detected)

Figure 7



(Target Detected)

Figure 8

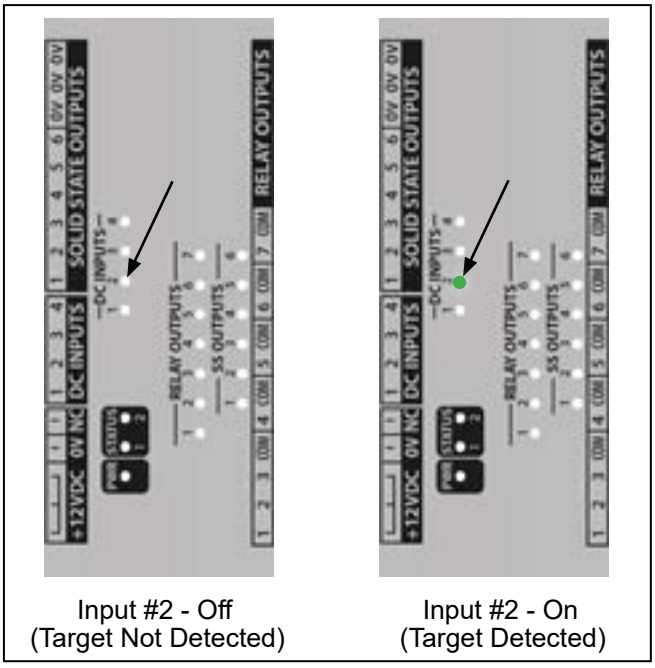
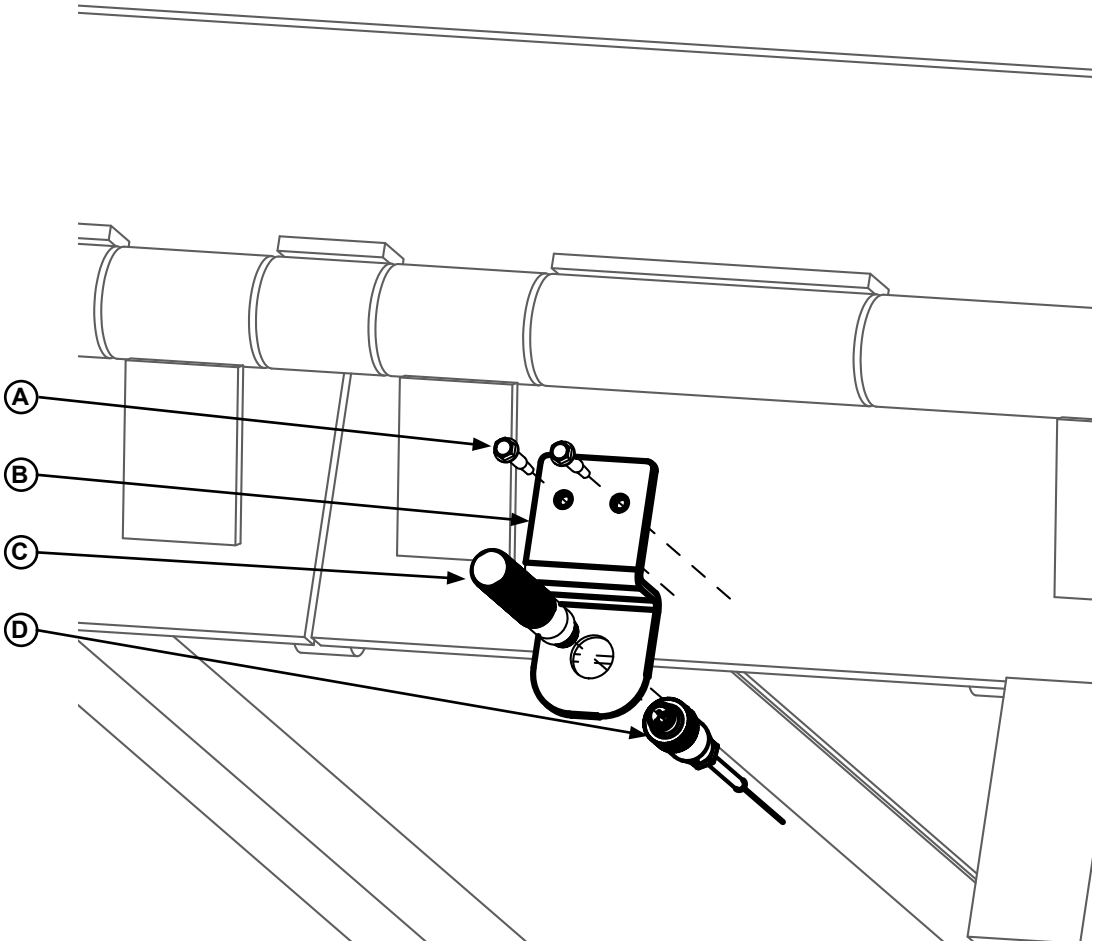
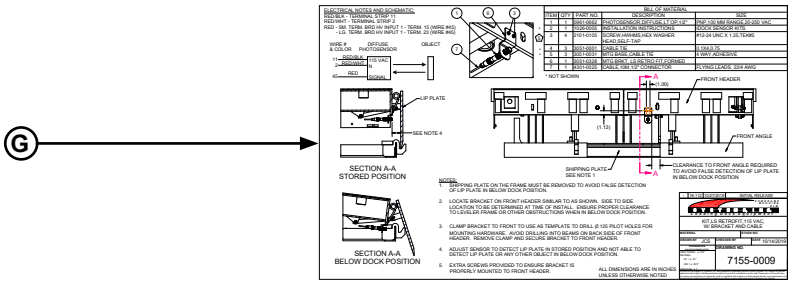


Figure 9

Installation - L.S. Sensor

7155-0009 — Kit Contents





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Leveler Stored Sensor Kit			
Item	**Quantity**	**Part Number**	**Description**
	1	**7155-0009**	**Kit, LS Retrofit 115VAC, W Bracket and Cable**
A	4	2101-0105	Screw, HWHMS, Hex Washer #12-24 UNC X 1.25, Tek#5 Head, Self-Tap
B	1	3051-0328	Mounting Bracket
C	1	0961-0662	Photosensor
D	1	4301-0025	Cable,10m
E	3	3051-0001	Cable Tie 0.1X4,0.75 (Not Shown)
F	3	3051-0031	Mounting Base, Cable Tie 4 Way,Adhesive (Not Shown)
G	1	1026-0005	Installation Instructions iDock Sensor Kits

Installation - Leveler Stored Sensor

Leveler Stored Sensor Installation

The Leveler Stored (L.S.) sensor is optional on most levelers. This feature is commonly used to interlock equipment and establish a safe sequence of operation. It can also report data to the iDock controller.

This sensor is available as a factory option or it can be installed using a retrofit kit. The instructions below will cover the retrofit kit installation.

⚠DANGER

Make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

⚠DANGER

Unless the dock leveler is equipped with a tethered remote, two people are required to engage the maintenance prop: one person to operate the unit, the other person to engage the maintenance prop.

In addition, it is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

⚠WARNING

Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before installation is complete.

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

⚠CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and final connections to the pit junction box — must be performed by a certified electrician and conform to all local and applicable national codes.

Dock Leveler Precautions

When working with electrical or electronic controls, make sure that the power source has been tagged (**A**) and locked out (**B**) according to OSHA regulations* and approved local electrical codes (see **Figure 10**).

Whenever maintenance is to be performed under the dock leveler platform, support the platform with maintenance prop (**C**). Position the maintenance prop behind front header plate (**D**) while staying clear of the lip plate. The lip plate can fold down after the platform has rested on the maintenance prop. Lock the maintenance prop in the service (upright) position using an OSHA approved lockout device* (**B**) and tag out device* (**A**). See **Figures 11** and **12.**

Only the person servicing the equipment should have the capability to remove the lockout devices. The tag out devices* must inform that repairs are in process and clearly state who is responsible for the lockout condition.

L.S. Sensor Retrofit Installation

1. Verify that the shipping plate (**E**) has been removed from the leveler frame. See **Figure 13**. If the plate remains installed, remove it by cutting the plate on both sides. Two angles should remain at the front of the frame (**F**).

2. Select a suitable location on the platform header (**D**) for the mounting bracket (**G**). Its location should provide a route to the pit junction box for electrical connections and it should not interfere with platform components, the frame, or the pit floor.

Note: The bracket should clear the steel frame angles to avoid false detection of the lip plate, when the platform is in the below dock position (**H**).

3. Clamp the bracket to the header (**D**) at the chosen mounting location. Bracket holes should be 1-1/8” from the bottom of the header (**J**). Make sure the holes will not interfere with structural members.

4. Using the bracket as a template, drill two 1/8” pilot holes. Distance between pilot hole centers is one inch (**K**).

5. Secure bracket to header using the included self-tapping screws.

Instructions continued on page 24.

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Leveler Stored Sensor Installation

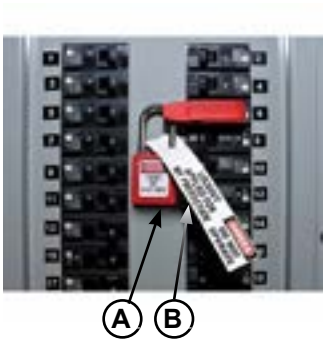


Figure 10

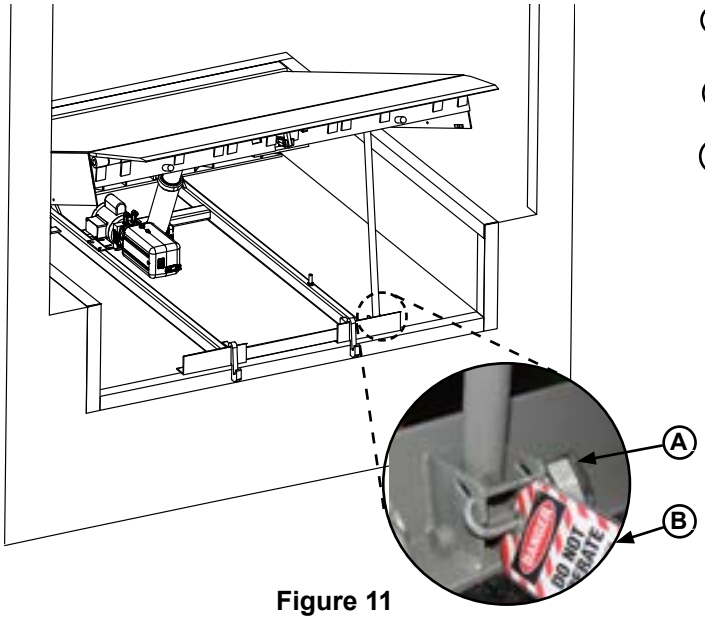


Figure 11

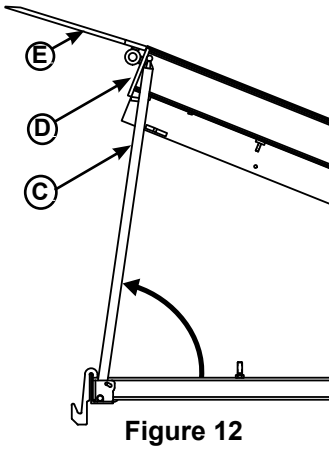


Figure 12

A — Lock Out Device
B — Tag Out
C — Maintenance Prop
D — Header plate
E — Lip plate

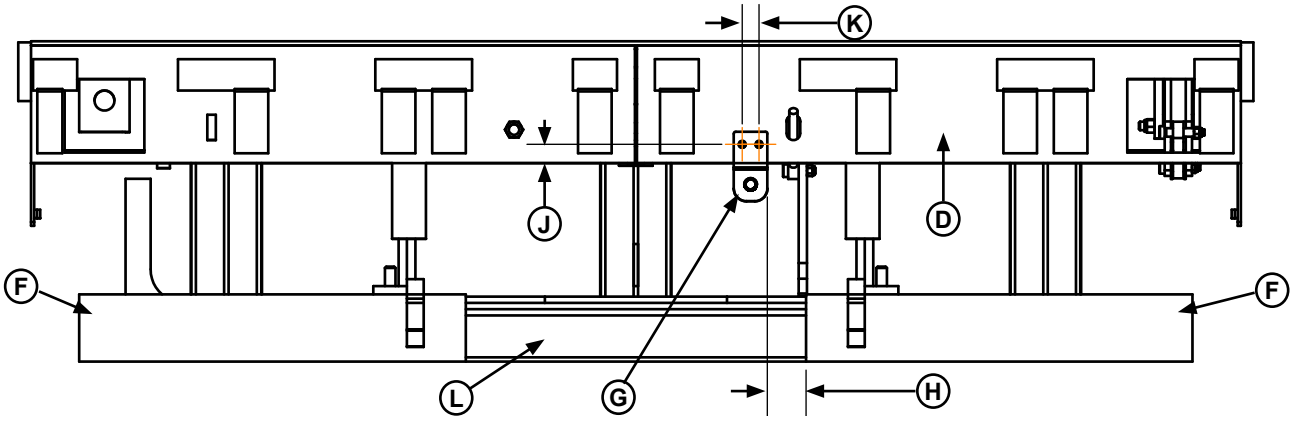


Figure 13

A— Tag Out Device
B— Lock Out Device
C— Maintenance Prop
D— Header
E—Lip Plate
F—Front Angles
G—Mounting Bracket
H—Steel Angle Clearance
J—Bracket Hole Distance
K— Bracket Hole Spacing
L— Shipping Plate

Installation - Leveler Stored Sensor

Leveler Stored Sensor Installation (Continued)

Electrical Connections

1. Install the photosensor (**A**) into the mounting bracket (**B**) using the plastic sensor nuts. Make sure that the sensor will not interfere with the lip plate (**C**) or frame (**D**), or the sensor could be damaged.
2. Connect the cable (**E**) to the sensor. See **Figure 14**.
3. Verify the cable's path to the junction box (**F**) at the rear of the pit. See **Figure 15**. Evenly distribute the included cable tie mounting bases on the platform beam (**G**) next to the cable's path.

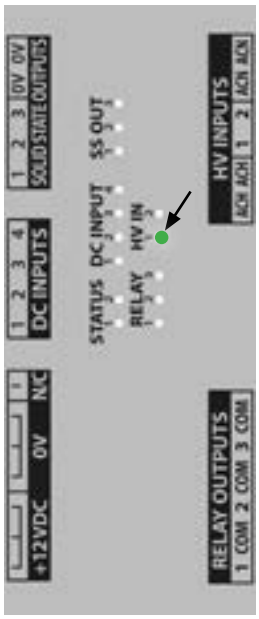
Note: Clean the beam before attaching mounting bases to ensure proper adhesion.

4. Secure the cable to the mounting bases using the included cable ties.
5. Connect the cable to the iDock controller using the connections referenced in **Figure 16**.
   - Red/ Black wire: connect to terminal block 11.
   - Red/ White wire: connect to terminal block 2.
   - Red wire: connect to H.V. Input 1 on the terminal board. Terminal number varies based on board size:
     - Small terminal board: Terminal #15
     - Large terminal board: Terminal #23
     - Green/ Yellow wire: not connected.

Testing Operation

1. If the sensor was installed as a retrofit, and not with the original loading dock equipment installation, make sure the iDock System Configuration and Firmware have been updated.
2. After the wiring connections have been made, safely energize the equipment and position the leveler on its maintenance prop.
3. With the power on and the lip folded, the green and amber LED's should be illuminated. This indicates that the sensor is powered on and is seeing it's target. See **Figure 17.**
4. When the lip is not completely folded**,** only the green LED is illuminated. This indicates the sensor is powered on, but is not sensing a target. See **Figure 17**.
5. Monitoring the terminal board in the iDock controller, can also indicate if the sensor is working correctly. HV Input #1 should illuminate when the sensor is seeing the lip plate.

Small Terminal Board



Large Terminal Board

6. If necessary, adjust the sensor position in the bracket by loosening the plastic sensor nuts to reposition the sensor. Adjust the sensor until it only reads the lip plate while the lip is folded fully, and in the lip keepers. See **Figure 14**.
7. Verify that the message display shows the message below:

(*Alternating Messages)*

8. If the equipment is operating correctly, based on steps 1-4 above, the installation is complete. If you need assistance with the installation, contact Systems Technical Services.

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Leveler Stored Sensor Installation (Continued)

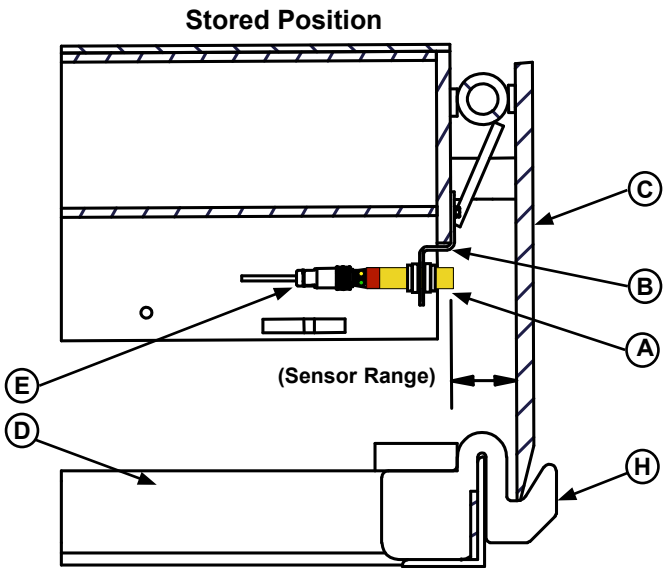


Figure 14

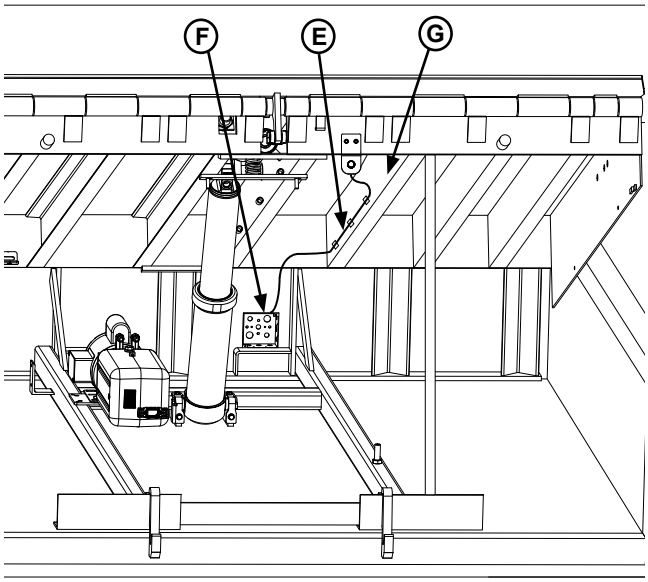


Figure 15

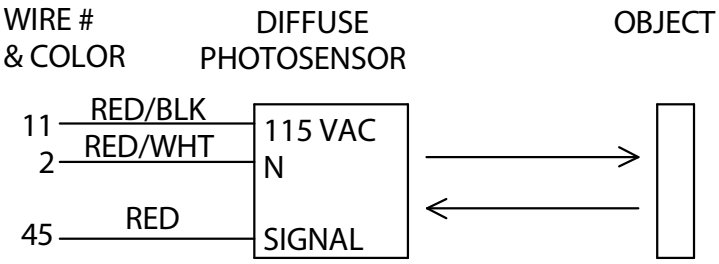
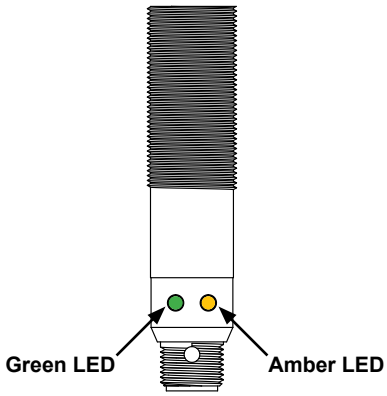


Figure 16



Green - Powered on

Amber - Sensing target

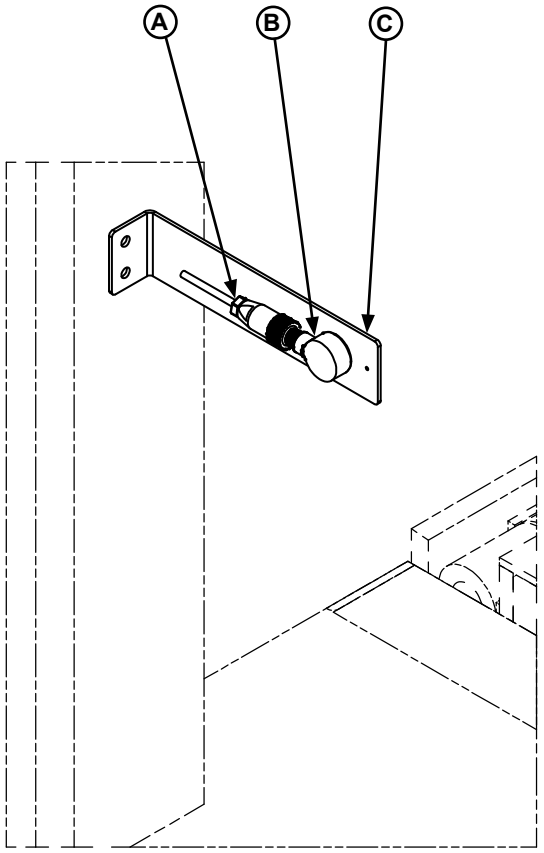
Flashing Amber - Partial Signal

Figure 17

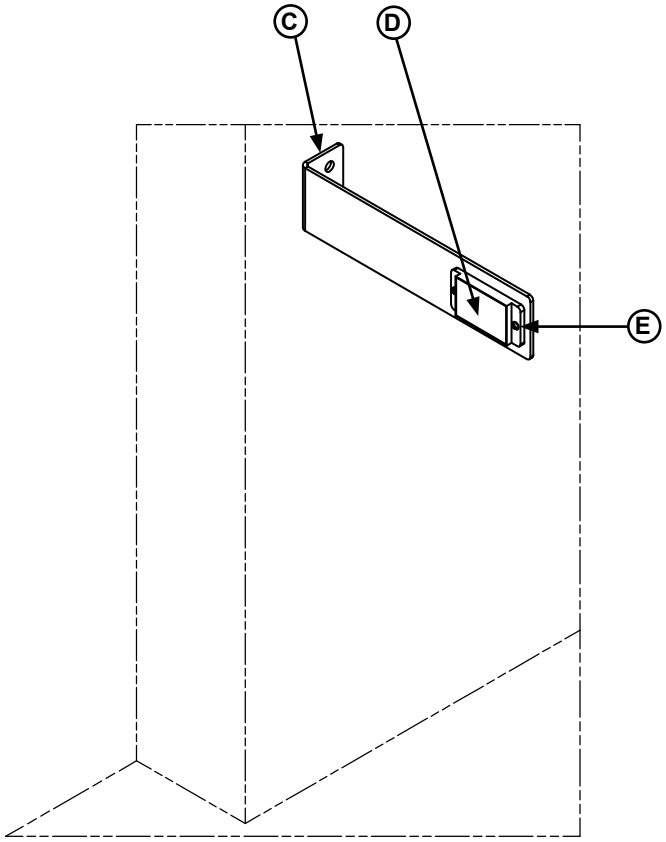
A— Photosensor
B — Mounting Bracket
C — Lip Plate
D— Frame
E— Cable
F—Pit J-Box
G—Beam
H—Lip Keeper

Installation - Forklift Activity Sensor

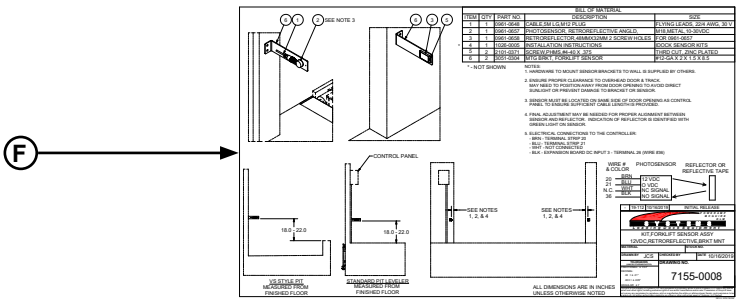
7155-0008 — Kit Contents



Controller Side of Door Opening



Opposite Side of Door Opening



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Forklift Activity Sensor Kit			
Item	**Quantity**	**Part Number**	**Description**
	1	**7155-0008**	**Kit, Forklift Sensor Assy, 12VDC, Retroreflective Bracket Mount**
A	1	2101-0105	Cable, 5M Lg, M12 Plug
B	1	3051-0328	Photosensor, Retroreflective Angled, M18,Metal,10-30VDC
C	2*	0961-0662	Mtg Bracket, Forklift Sensor #12-GA X 2 X 1.5 X 8.5
D	1	0961-0658	Retroreflector, 48MMX32MM 2 Screw Holes For 0961-0657
E	2	3051-0001	Screw, PHMS, #4-40 X .375 Thread Cut
F	1	3051-0031	Installation Instructions iDock Sensor Kits

If kit is installed using Track Guards, brackets are not used. (See page 31 for example)

Installation - Forklift Activity Sensor

Foklift Activity Sensor Installation

The forklift activity sensor uses a retro-reflective sensor for easy installation. The sensor mounts to a bracket or Track Guard below the iDock controller. A reflector mounts on the opposite side of the door opening.

This sensor allows the iDock to count the number of forklift cycles and log the time frame of the activity. This allows a user to monitor the timing and efficiency of their operations.

⚠DANGER

Make sure that the power source has been locked out and tagged out according to OSHA regulations and approved local electrical codes.

⚠WARNING

Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before installation is complete.

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

⚠CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and optional sensors — must be performed by a certified electrician and conform to all local and applicable national codes.

NOTICE

Ensure the chosen bracket location will not interfere with the door track or other building materials. Many facilities are built using precast walls, which contain embed plates. Select a location free of obstructions for hardware.

NOTICE

Hardware for mounting the sensor bracket is not included in this kit. Chose appropriate hardware based on the construction material of the building wall.

F.A.S. Installation - *Via Wall Brackets*

Note: See page 30 if sensors are installed using Track Guards.

1. The sensor can be installed using the included mounting brackets (**A**), or with optional Track Guards. See **page 30** for Track Guard installation.
2. Review the included installation instructions. Choose a mounting location for the brackets (**A**) that will not interfere with the door track and provides an obstructed path between the sensor (**B**) and its reflector (**C**).See **Figures 18 and 19**.

   Note: DO NOT mount the sensor bracket to the door track. Door tracks can move as the door changes position. This can negatively affect sensor alignment.

   - Bracket position should avoid direct sunlight in applications where enclosed type vehicles are *not* the primary transport vehicle.
   - Bracket position should avoid potential damage caused by material handling equipment. The brackets can be mounted away from the door opening to avoid damage.
   - Bottom edge of bracket should be 18-22 inches off the dock floor. See **Figure 19**.

3. When the correct location is chosen, use the bracket as a template to mark the holes for the mounting hardware. Ensure the bracket is plumb and square with the building wall. Final adjustments may be required for sensor alignment.

   Note: Mounting hardware is not included and will vary based on wall construction and material.

4. Mount the bracket using the chosen hardware. Verify that the bracket remains plumb and level.
5. Repeat steps 2-4 to mount the reflector bracket on the opposite side of the door opening.
6. Install the reflector on the mounting bracket using the included self-drilling screws.
7. Then install the sensor on the bracket beneath the iDock controller (**D**). Position the sensor so that its connector is parallel with the bracket and pointing toward the wall. See **Figure 18**.
8. Final alignment can be verified when power is applied to the sensor. Electrical connections are continued on **page 32**.

Instructions continued on page 32.

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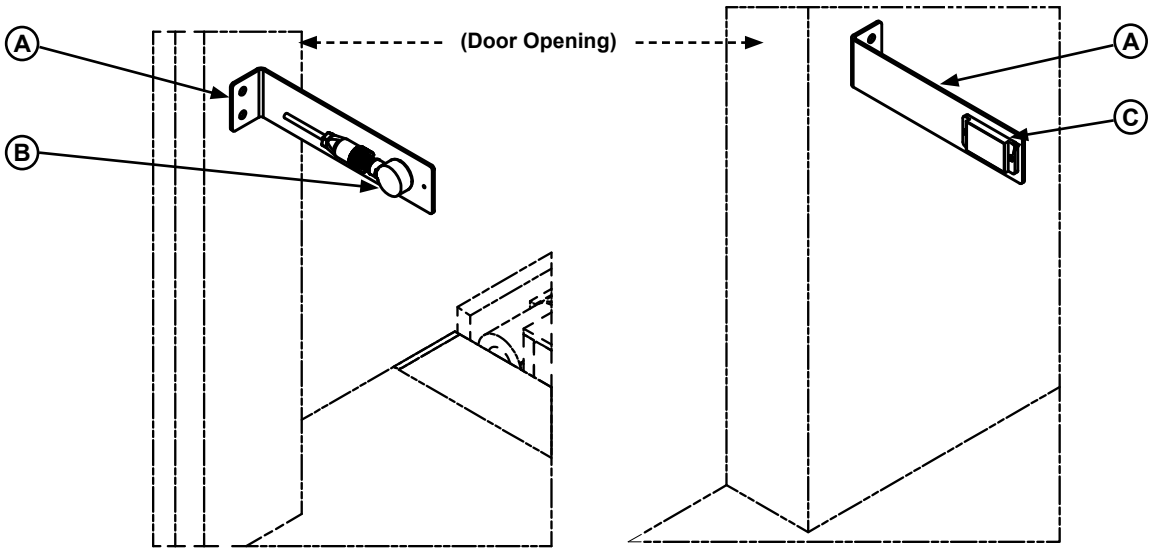


Figure 18

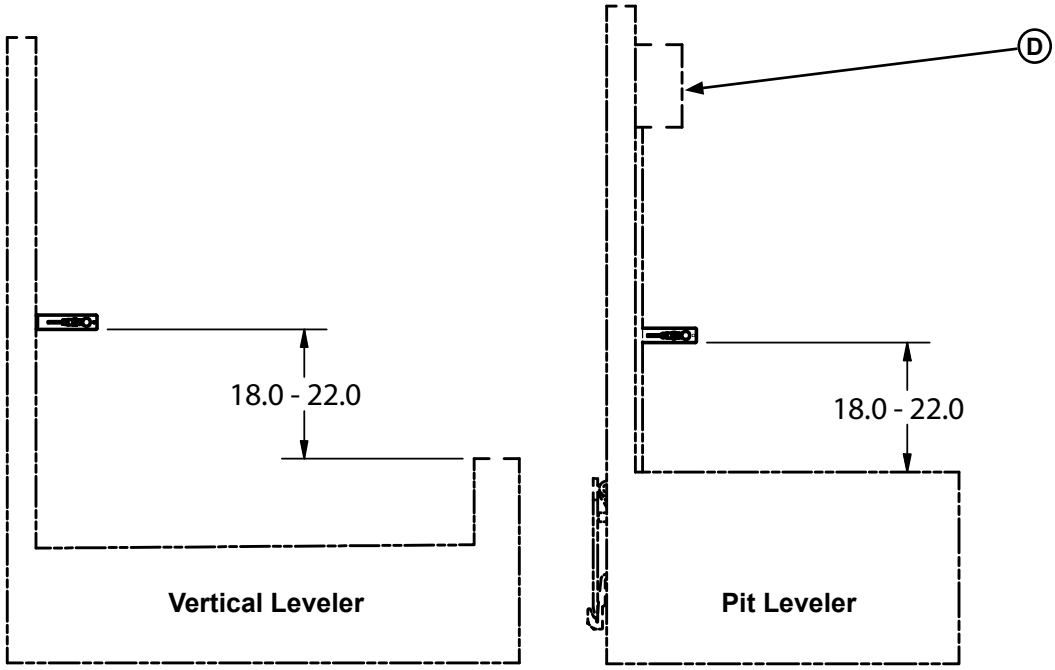


Figure 19

A — Mounting Bracket
B — Retro-reflective Sensor
C — Reflector
D — iDock Controller

Installation - Forklift Activity Sensor

F.A.S. Installation - *Via Track Guards*

Track Guards (**A**) are steel formed-angles that mount to the floor and wall, protecting the door track. They are available in 24” 36” or 48” heights depending on operating environment requirements. See **Figure 20**.

The Track Guards are also available as a standard unit or with pre-drilled mounting holes. The holes allow mounting and protection of optional iDock sensors and LiftMaster® entrapment protection devices.

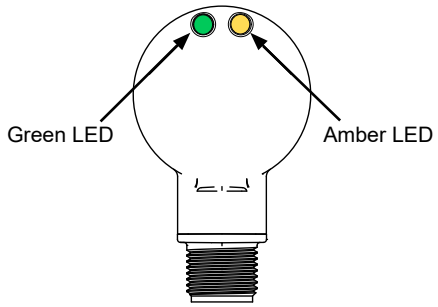
Note: If the Track Guards are installed at the time of the sensor installation, please **reference the Track Guard owner’s/ user's manual for installation instructions.** To install the sensors on existing Track Guards, see section below.

Sensor Installation - Existing Track Guards

If Track Guards are present, determine the model: Standard (no holes) or LS (pre-drilled).

Standard Model - Mounting Sensor/ Reflector

1. If the Track Guards are standard (no holes), determine a suitable mounting location for the sensor and reflector.
   - Choose a location that is 18”-22” above the dock floor, that provides an unobstructed path between the sensor and reflector. Similar to **Figure 20.** The sensor must mount on the controller side of the door.
2. The sensor (**B**) requires a 3/4” hole for mounting. Mark a location for the mounting hole on the Track Guard, beneath the iDock. Be sure to allow enough clearance from the inside corner to allow the mounting hardware to fit. See **Figure 21** for example. Make sure the sensor is not obstructed by the door track.
3. Drill the hole for the sensor and debur the edges using a file or similar.
4. Insert the sensor and install it’s hardware. Make sure the sensor connector is either facing down or toward the wall. This will help to protect the cable. See **Figure 20**.
5. Before installing the reflector (**C**), connect the sensor to the iDock using the cable. Connect the M12 connector to the sensor.
6. Then, secure the cable from the sensor to the iDock, following all applicable local codes and site specific requirements.
7. Connect the cable to the iDock. The electrical connections are as follows:
   - Brown wire: connect to terminal block 20
   - Blue wire: connect to terminal block 21
   - White wire: Not Connected.
   - Black wire: connect to expansion board, terminal 36.
8. After the connections have been made, safely energize the equipment.
9. Verify that the green LED on the sensor is illuminated, indicating the sensor is on.
10. Using tape or a temporary mounting method, mock up the reflector across from the sensor. Find a location that allows the amber LED to remain steady on. See image below:



11. When the reflector location is chosen, mark the location for its mounting holes.
12. The reflector requires two, 3/32” holes for the self-drilling mounting screws.
13. Drill the holes and secure the reflector using the self-drilling screws. See **Figure 22**.
14. Testing instructions are continued on **page 32**.

LS Model - Mounting Sensor/ Reflector

1. Insert the sensor and install it’s hardware on the track guard beneath the iDock. Make sure the sensor connector is either facing down or toward the wall. This will help to protect the cable. See **Figure 20**.
2. Install the reflector on the track guard across from the sensor using the two pre-drilled holes and self-drilling screws. See **Figure 22**.
3. Attach the cable to the sensor using the M12 female connector. Electrical connections are continued on **page 32**.

Instructions continued on page 32.

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Controller Side

Opposite Side

Figure 20

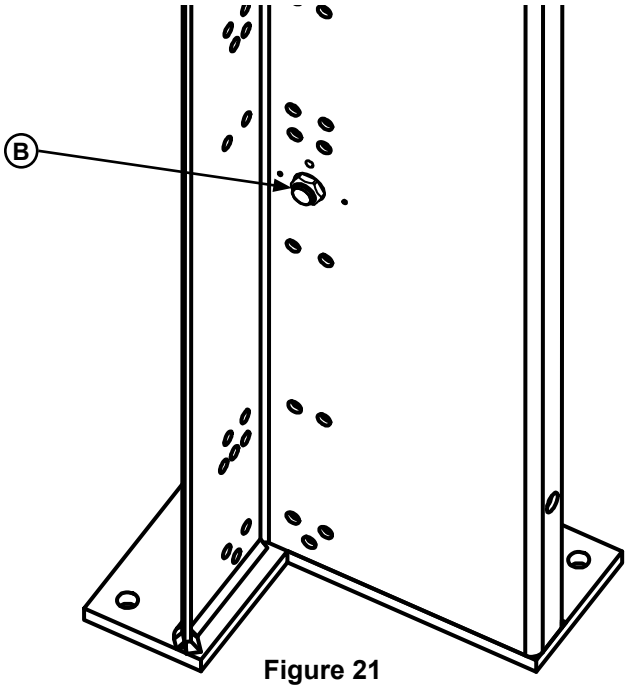


Figure 21

Controller Side

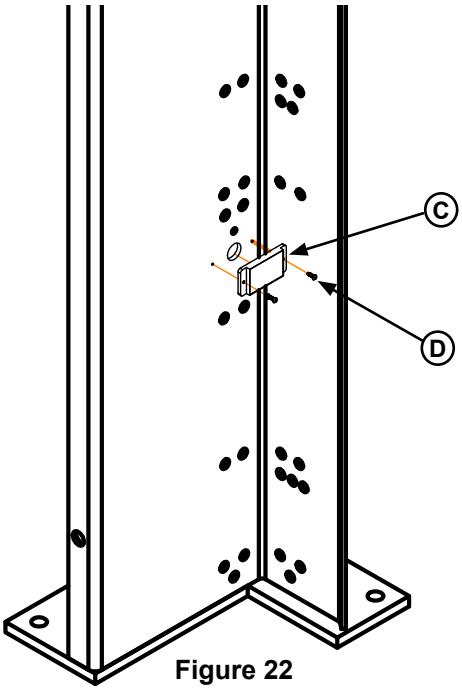


Figure 22

Opposite Side

A— Track Guard

B — Retro-reflective Sensor

C — Reflector

D— Self-drilling Screw

Installation - Forklift Activity Sensor

F.A.S. Installation - Via Track Guards (Continued)

DANGER

Make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and optional sensors — must be performed by a certified electrician and conform to all local and applicable national codes.

Electrical Connections

1. Secure the cable between the sensor and the iDock following all applicable local codes and site specific requirements.
2. Connect the cable to the iDock controller. Reference the included installation instructions for a wiring diagram, or see **Figure 23**. The connections to the iDock are as follows:
   - Brown wire: connect to terminal block 20
   - Blue wire: connect terminal block 21
   - White wire: Not Connected.
   - Black wire: connect to expansion board, terminal #26.

Testing Operation

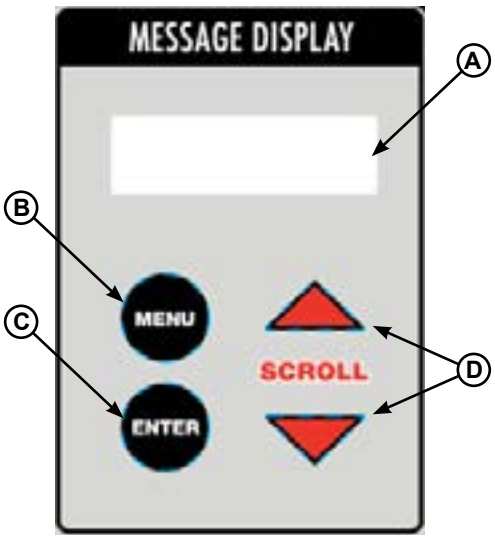
1. If the sensor was installed as a retrofit, and not with the original loading dock equipment installation, make sure the iDock System Configuration and Firmware have been updated.
2. After the electrical connections have been made, safely energize the iDock Controller.
   - With the power on and no forklift or other object in front of the reflector, both LED's should remain illuminated until an object breaks the beam.

   Note: The amber LED should not be blinking. If the amber light is blinking, there may be an alignment issue or partial obstruction. Check for an obstruction and verify alignment.
   - With the power on and an object in front of the reflector, only the green (power) LED should be illuminated.

Testing Operation (Continued)

- Monitoring the expansion board in the iDock controller, can also indicate if the sensor is working correctly. DC Input #3 should illuminate when there is no object in front of the reflector and turn off when an object is blocking the reflector. See **Figure 24**.

3. Verify that the iDock controller is counting the number of forklift cycles using the iDock menu. Press menu to enter the main menu.



System Control Buttons/Displays

A - Message Display
B - MENU button
C - ENTER button
D - SCROLL UP/DOWN buttons

- Use the down arrow to scroll to counters and press enter.
- Use the down arrow to find the screen below:

```
FORK LIFT
16
```

- The count should be a number above zero and continue to rise as the sensor is flagged.

4. Flagging the sensor will update the count. The beam must be broken for 1 sec or more to register.
5. If the equipment is operating correctly, based on steps 1-4 above, the installation is complete. If you need assistance with the installation, contact Systems Technical Services.

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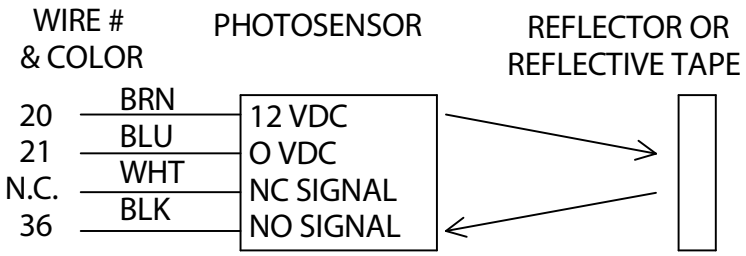
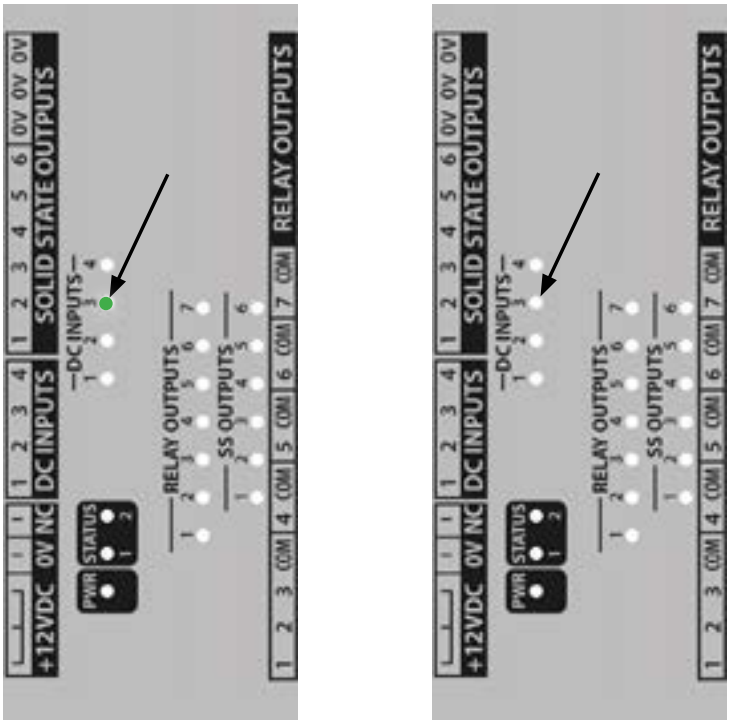


Figure 23

(Expansion Board) **(Expansion Board)**



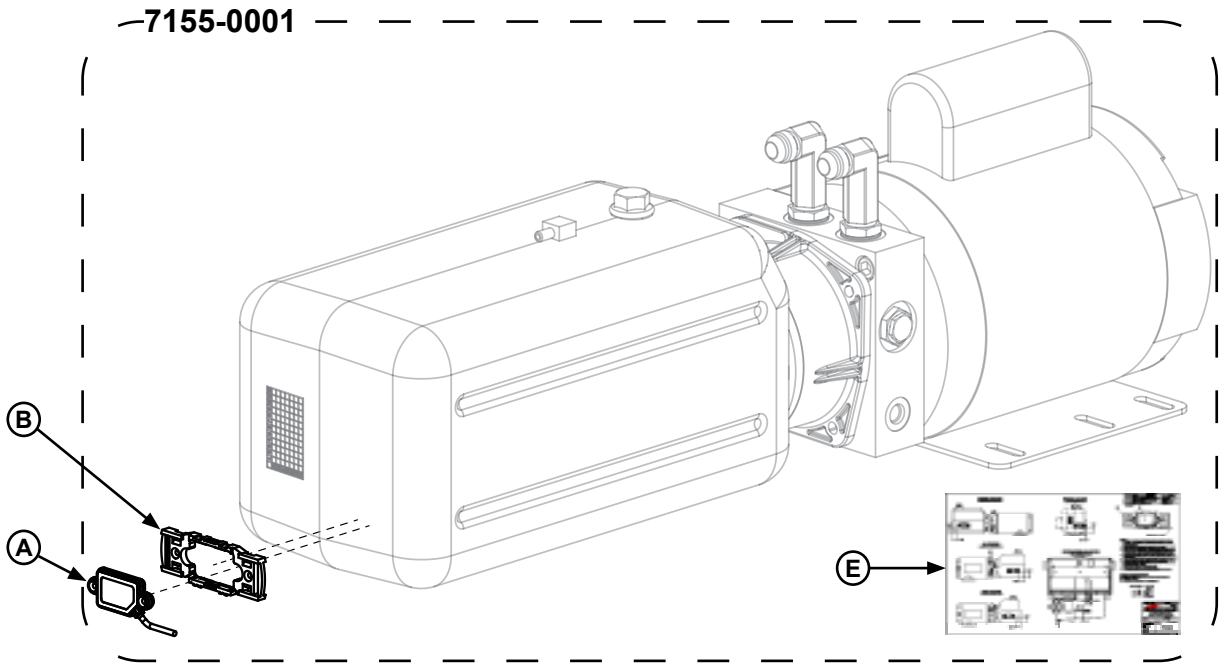
Input #3 - On
(No Object

Input #3 - Off
(Object Detected)

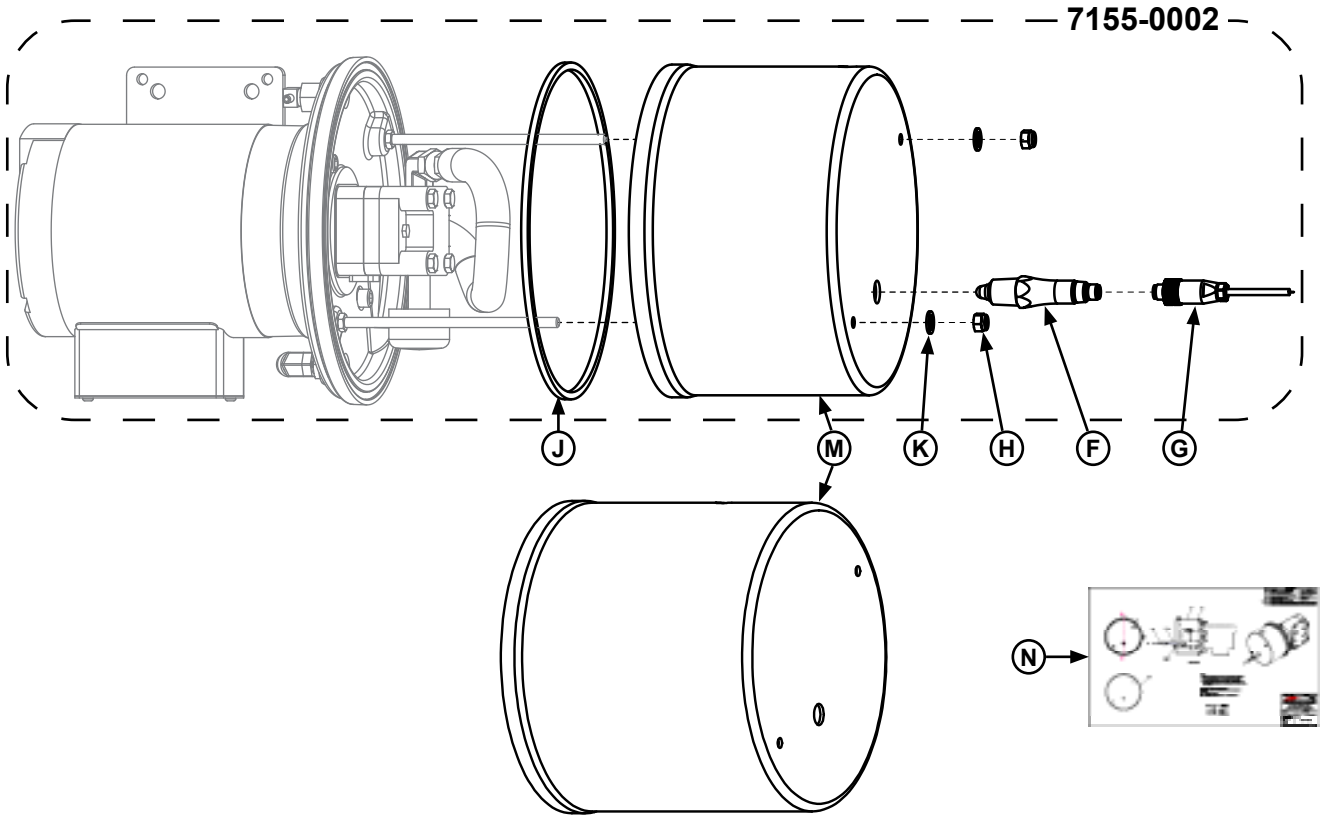
Figure 24

Installation - Fluid Level Sensor

7155-0001 and 7155-0002 — Kit Contents



Note: 7155-0001 shown on VH PPAC Assembly. Mounting location varies based on model. (See page 37)



**Reservoir size is based on leveler model. Please provide leveler serial number before ordering.*

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7155-0001 - Forklift Activity Sensor Kit			
Item	**Quantity**	**Part Number**	**Description**
	1	**7155-0001**	**Kit, Fluid Sensor Assy, 12VDC, Plastic Reservoir**
A	1	0961-0641	Sensor, Fluid, Plastic Tank 12VDC, Non-Intrusive
B	1	0961-0647	Bracket, Sensor, Plastic Tank For 0961-0641
C	2	3051-0001	Cable Tie 0.1x4,0.75 (Not Shown)
D	2	3051-0031	Mtg Base, Cable Tie 4 Way, Adhesive (Not Shown)
E	1	1026-0005	Installation Instructions iDock Sensor Kits

7155-0002 - Forklift Activity Sensor Kit			
Item	**Quantity**	**Part Number**	**Description**
	1	**7155-0002**	**Kit, Fluid Sensor Assy, 12VDC, Cookpot Reservoir**
F	1	0961-0642	Sensor,Fluid,Cookpot 12VDC, Intrusive, 1/2 Npt
G	1	0961-0648	Cable,5m Lg,M12 Plug, Flying Leads, 22/4 AWG, 30V
H	2	2101-0039	Nylon Lock Nut 5/16-18 UNC
J	1	9301-0027	O-Ring 10 DIA X 0.21
K	2	9301-0029	Seal,Thread,7500 0.3125
M	1	9302-0002*	Reservoir,Cookpot,Sensor Hole 8.5qt X 10.0 Dia X 6.5 Deep
		9302-0003*	Reservoir,Cookpot,Sensor Hole 12qt X 10.0 Dia X 9.0 Deep
N	1	1026-0005	Installation Instructions iDock Sensor Kits

Reservoir size is based on leveler model. Please provide leveler serial number before ordering.

Installation - Fluid Level Sensor

Fluid Level Sensor Installation

Fluid level sensors allow remote monitoring of hydraulic fluid in powerpack reservoirs. Two kits are available to accommodate the various powerpacks that Systems, LLC offers.

Each kit includes a fluid level sensor designed to easily mount to a given reservoir. The 7155-0001 kit is designed for plastic reservoirs. 7155-0002 is designed for the aluminum (cookpot) reservoirs.

⚠DANGER

Make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

⚠DANGER

Unless the dock leveler is equipped with a tethered remote, two people are required to engage the maintenance prop: one person to operate the unit, the other person to engage the maintenance prop.

In addition, it is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

⚠CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and optional sensors — must be performed by a certified electrician and conform to all local and applicable national codes.

7155-0001 - Installation Instructions

1. Determine the model of leveler requiring the sensor installation. Then, reference **Figure 27** and **Figure 28** to verify the correct mounting location for the bracket (**A**) and sensor (**B**).
2. Properly clean the plastic surface before adhering the mounting bracket (**A**) to the reservoir.
3. Make sure mounting bracket is oriented correctly to allow sufficient cable length to reach a local junction box.
   - For frame mounted reservoirs, the junction box is to be located in the dock leveler pit. Junction box is supplied by others unless using a factory installed junction box on the platform.
   - For EH, DH, H, HP, OR LH models: the sensor and bracket may be placed on either side of the reservoir, using the dimensions shown on page 29, **Figure 28**.
   - For CentraPower reservoirs, route the sensor wire (**C**) to the iDock control box located near the pump station.
4. Sensor (**B**) must be oriented with the cross hairs facing toward the reservoir and with the red LED facing away from the reservoir. See **Figure 25**.

Figure 25

Electrical Connections

1. Secure the sensor cable (**C**) from the reservoir to the junction box using cable ties (not included).
2. Field wiring from the junction box to the control box requires 3 conductors at 18 gauge minimum (supplied by installer).
3. Connect the 3 conductors to the sensor cable in the pit junction box. Reference diagram below for connections and field wiring numbers. See **Figure 26.**

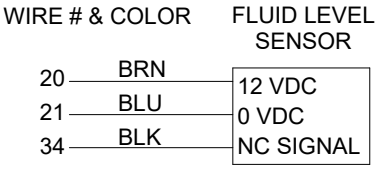

Figure 26

4. Connections to the iDock are as follows:
   - Wire #20 connects to terminal block #20.
   - Wire #21 connects to terminal block #21.
   - Wire #34 is the signal wire from the sensor. This connects to the iDock expansion board at terminal #24. This is DC Input 1.

Instructions continued on page 40

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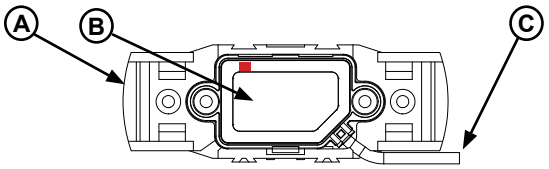
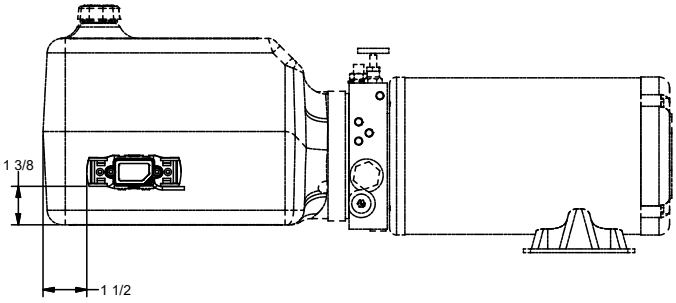


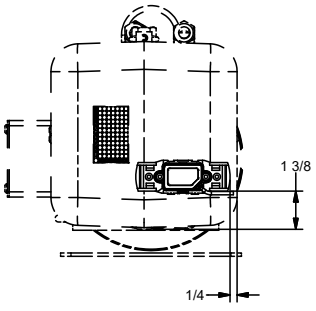
A—Mounting Bracket **B— Sensor** **C—Sensor Cable (6' long)**

Figure 27

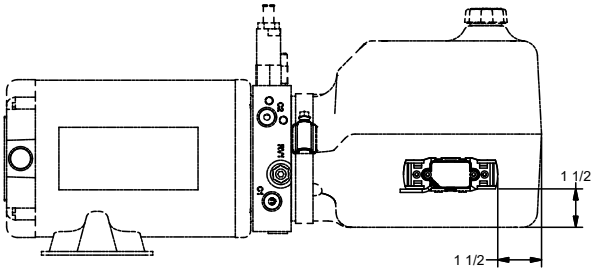
EH3/ DH3 Location



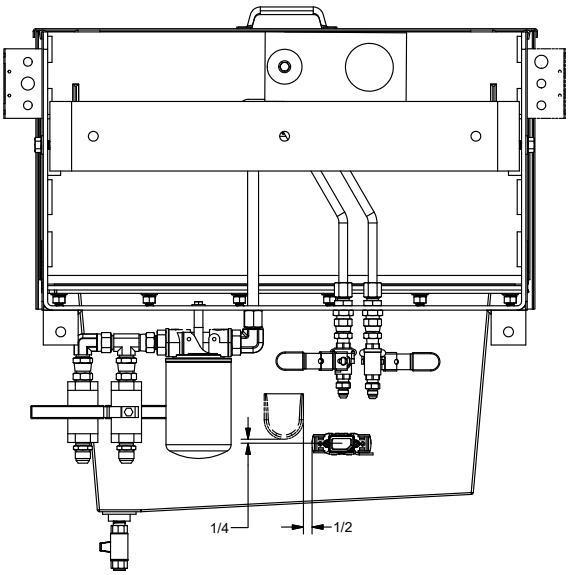
PR3/VH3 Location



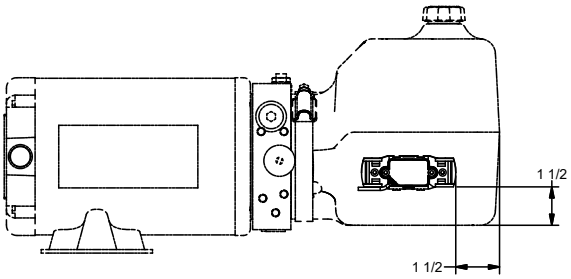
LH Location



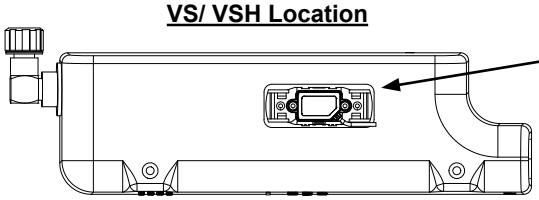
CentraPower-18 Location



H/HP Location



VS/ VSH Location



Sensor is placed in a molded recess on the reservoir.

(All dimensions in inches unless otherwise specified)

Figure 28

Installation - Fluid Level Sensor

Fluid Level Sensor Installation (Continued)

7155-0002 Installation Instructions

- Factory installed 7155-0002 kits will only require field wiring to the pit junction box and iDock controller. See Electrical Connections section.
- For aftermarket installations, see installation steps below:

1. The 7155-0002 requires a factory drilled and tapped reservoir to mount the sensor. An aftermarket installation will require reservoir replacement.
2. Raise the dock leveler and engage the maintenance prop. Then Lock Out Tag Out the maintenance prop and local disconnect or circuit breaker.

⚠ DANGER

Make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

⚠ DANGER

Unless the dock leveler is equipped with a tethered remote, two people are required to engage the maintenance prop: one person to operate the unit, the other person to engage the maintenance prop.

In addition, it is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

3. With the leveler safely supported and the equipment locked out, proceed to swap out the reservoir using the following steps.
4. Drain hydraulic fluid from the powerpack (**A**). See **Figure 29**.
   - With a pan (or similar) to catch hydraulic oil positioned under the return fitting (**B**), remove the hose connected to the return fitting.
   - Allow fluid to drain into catch pan from fitting and hose.
5. When fluid is drained, remove reservoir (**E**) by removing lock nuts (**C**) and thread seals (**D**).
   - Verify that the old reservoir O-ring (**F**) is removed with the reservoir. See **Figure 30.** A new O-ring and thread seals are included with the 7155-0002 kit.
6. Install the 7155-0002 kit using the steps below:
   - Apply thread seal tape to threads on sensor (**J**).
   - Insert sensor (**J**) into tapped hole in new reservoir. **Do not over-tighten sensor.** Tighten until snug.
7. Place new O-ring (**F**) into depression on drive plate (**G**). See **Figure 30**.
8. With the new o-ring and sensor in place, mount the reservoir (**E**) on the drive plate (**G**). Align the mounting holes on the reservoir with the tie rods (**H**).

Note: Make sure the breather hole is facing up and the sensor is near the bottom. See **Figure 31**.

9. With the tie rods (**H**) exposed through the reservoir, position the thread seals (**D**) on the tie rods.
10. Verify the reservoir (**E**) is evenly seated on the o-ring (**F**). Then install the lock nuts (**C**) on the tie rods. Tighten the lock nuts to 35-40 in/ lbs. **Do not over-tighten.**
11. Add **1 gallon** of hydraulic fluid to the reservoir and verify that there are no leaks. With residual fluid in the hydraulic system, 1 gallon will allow the unit to raise off the maintenance prop and lower to the stored position. Install Breather Cap (**M**).

Note: Do not raise the leveler at this time. Continue with electrical connections before running the dock leveler.

Electrical Connections

1. Attach cable (**K**) to sensor (**J**). See **Figure 31.**
2. The 5M cable (**K**) should be long enough to reach the iDock controller in most applications. Pull the cable through the existing pit junction box/ conduit to the iDock controller.
3. The connections to the iDock are as follows:
   - Brown wire connects to terminal block #20.
   - Blue wire connects to terminal block #21.
   - White wire connects to PLC expansion board, terminal #24. This is DC Input #1.
4. Reference **Figure 32** for connection diagram.

Instructions continued on page 40 - Testing Operation

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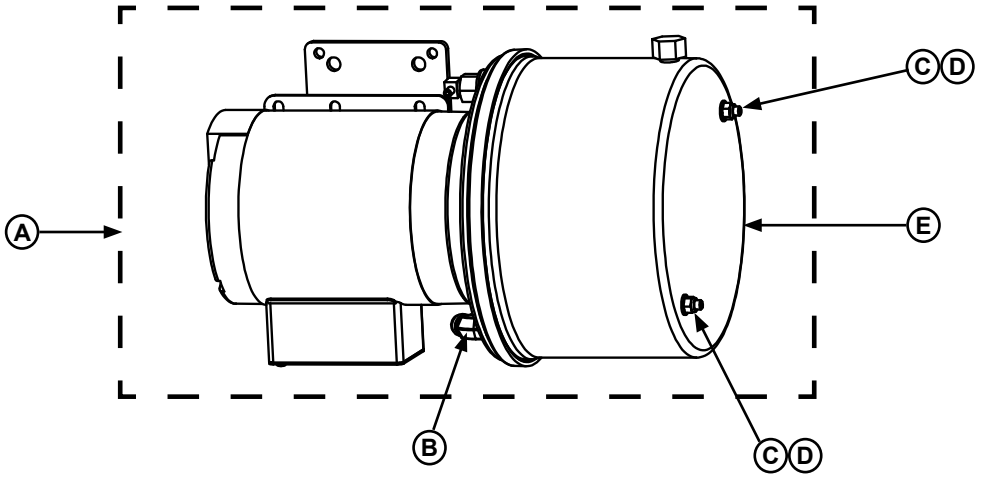


Figure 29

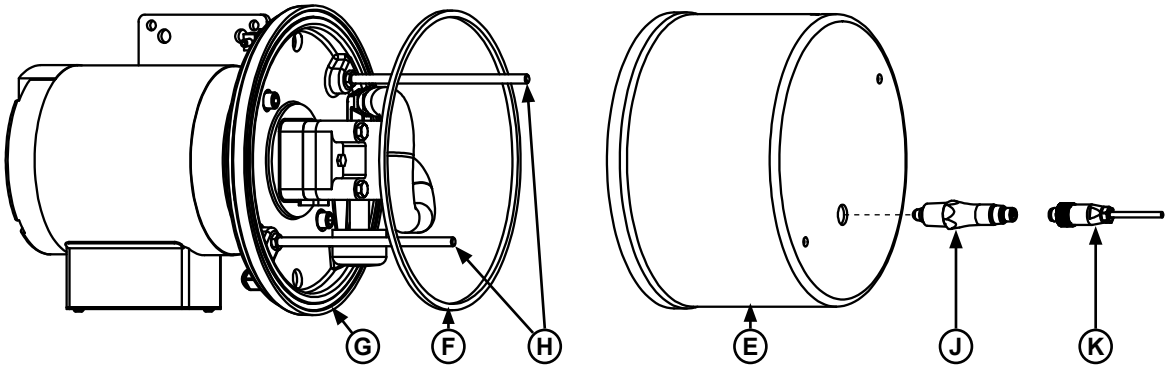


Figure 30

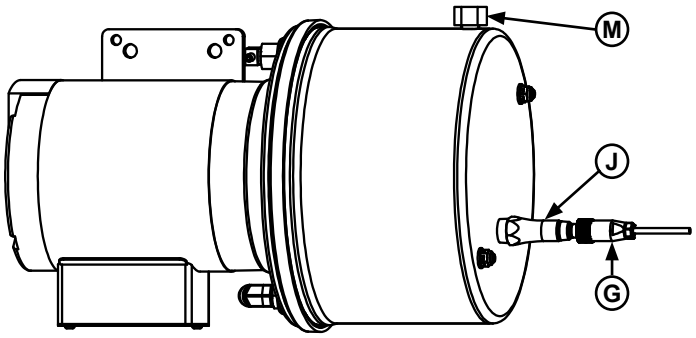


Figure 31

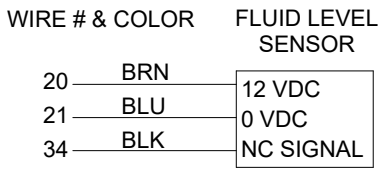
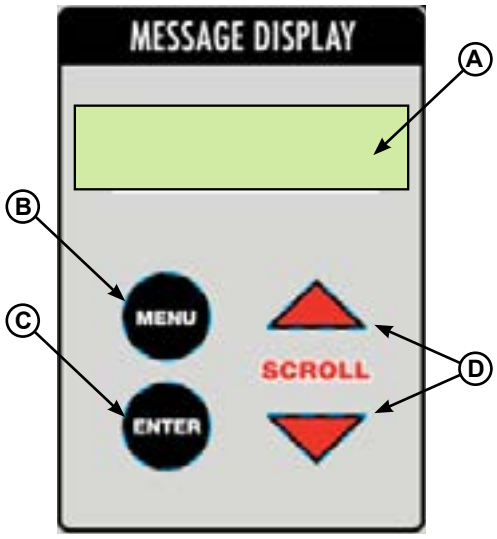


Figure 32

A—Powerpack Assembly	**C—Lock Nut**	**E—Reservoir**	**G—Drive Plate**	**J—Sensor**	**M—Breather Cap**
B— Return Fitting	**D—Thread Seal**	**F—O-Ring**	**H—Tie Rod**	**K—Sensor Cable**	

Installation - Fluid Level Sensor

Fluid Level Sensor Installation (Continued)



System Control Buttons/Displays

A - Message Display
B - MENU button
C - ENTER button
D - SCROLL UP/DOWN buttons

7155-0001 or 7155-0002 — Testing Operation

1. (**7155-0001 only**) Verify the fluid level in the reservoir using the steps below:
   - Reference the equipment owner's/ user's manual for fluid inspection instructions.
   - After the fluid level is correct, remove the lock out tag outs and energize the equipment.
   - Continue to **Step 3.**
2. (**7155-0002 only**) Verify the fluid level in the reservoir using the steps below:
   - After the sensor has been installed and the electrical connections have been made, remove the lock out tag outs and energize the equipment
   - Position the dock leveler in the below dock/ end loading position. See **Figure 33**.
   - Remove the access cover (**C**) from the top of the leveler platform (**D**). This will provide access to the reservoir fill port.
   - Remove breather cap from top of reservoir and inspect the fluid level.
   - The fluid level should be approximately 2 in. (51mm) from the top of the reservoir with the platform in the below dock position. Add fluid if necessary.
   - Re-install breather plug and access cover and return the leveler to the stored position.
   - Continue to **Step 3**.
3. Test the function of the Fluid Level Sensor by following the steps below:
   - If the sensor was installed as a retrofit, and not with the original loading dock equipment installation, make sure the iDock System Configuration and Firmware have been updated.
   - With the correct fluid level in the reservoir, the sensor LED should be Illuminated. DC Input #1 should be illuminated on the expansion board. See **Figure 34**.
   - If the fluid level is low, DC Input #1 should *not* be illuminated. See **Figure 34**. The message display (**A**) will show:

31 LOW LEVELER HYD FLUID LEVEL
PRESS ENTER TO ACKNOWLEDGE

(***Alternating Messages)***

   - If the fluid level is correct, verify the electrical connections and that the sensor is mounted correctly, according to the kit instructions.
   - After DC Input #1 is illuminated, the Enter Button (**C**) must be pressed before the communication light and display will reset. Press Enter and verify that Fault code 31 does not appear on the message display .
4. If the equipment is operating correctly, based on steps 1-3 above, then the installation is complete. If you require further assistance with the installation, contact Systems Technical Services.

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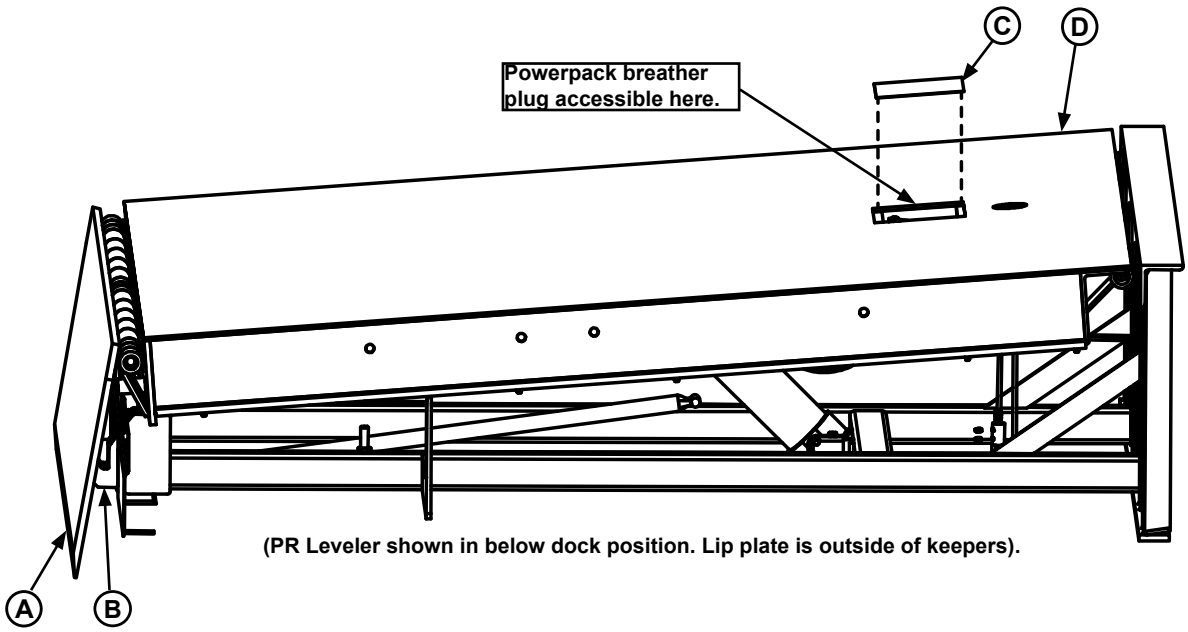
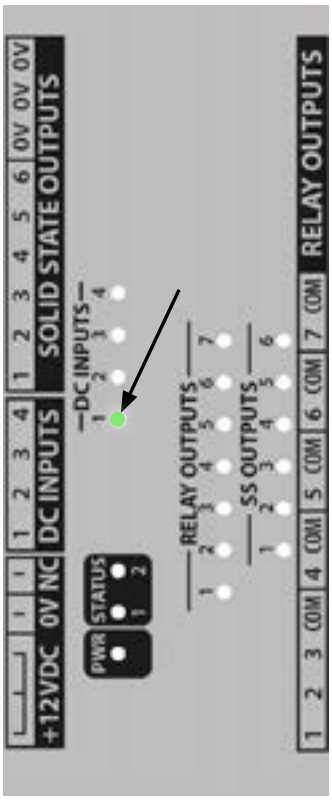


(PR Leveler shown in below dock position. Lip plate is outside of keepers).

A—Lip Plate B—Lip Keepers C—Access Cover D—Platform

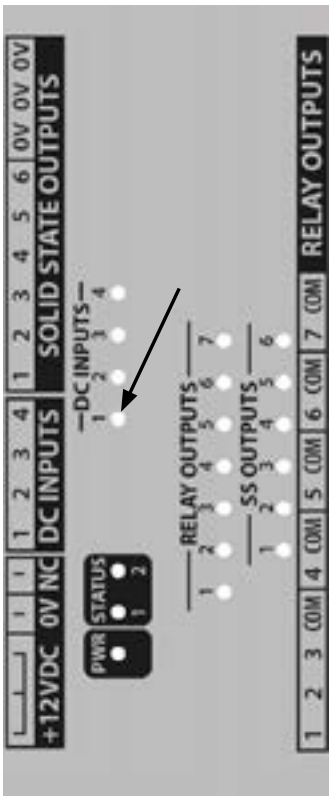
Figure 33

(Expansion Board)



Input #1 - On
(Fluid Detected)

(Expansion Board)

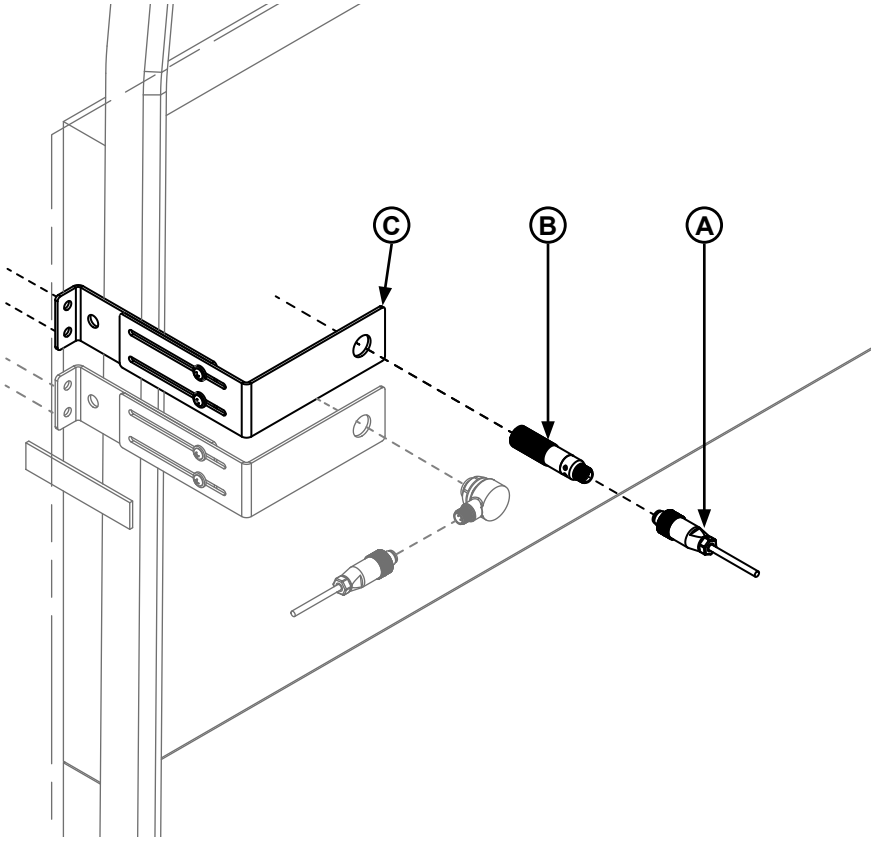


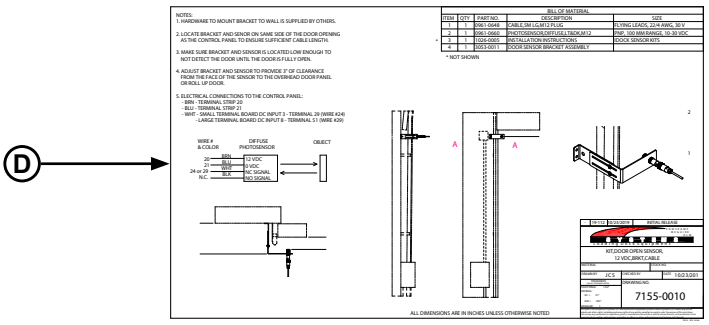
Input #1 - Off
(Fluid Not Detected)

Figure 34

Installation - Door Open Sensor

7155-0010 — Kit Contents





7155-0010 - Door Open Sensor Kit			
Item	**Quantity**	**Part Number**	**Description**
	1	**7155-0010**	**Kit, Door Open Sensor, 12VDC, Brkt, Cable**
A	1	0961-0648	Cable, 5M Lg, M12 Plug Flying Leads
B	1	0961-0660	Photosensor
C	2	3053-0011	Door Sensor Bracket Assembly
E	1	1026-0005	Installation Instructions iDock Sensor Kits

Installation - Door Open Sensor

DANGER

Make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

DANGER

Unless the dock leveler is equipped with a tethered remote, two people are required to engage the maintenance prop: one person to operate the unit, the other person to engage the maintenance prop.

In addition, it is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and optional sensors — must be performed by a certified electrician and conform to all local and applicable national codes.

7155-0010 - Door Open Sensor Installation

Door position sensors are used to signal the position of the door to the iDock controller. This information can be used for interlocking and sequence of operation, and also to provide analytics for myQ Dock management subscribers.

The door open sensor mounts near the top of the door to confirm the door is in the open position. Each kit includes the sensor, cable and adjustable mounting bracket.

Note: Mounting hardware is supplied by others.

7155-0010 Installation Instructions

1. Determine a suitable mounting location for the door open sensor and bracket (**D**), according to **Figure 35**.
2. Locate the bracket and door sensor (**D**) on the same side of the door opening as the iDock controller (**C**), to ensure sufficient cable length to reach iDock.
3. Hardware to mount the sensor bracket to the wall is supplied by others.

Note: Do not mount sensor to door track (**B**). The door track can change position as the door operates. This can affect sensor accuracy.

4. Position the bracket so that it is plumb and level. Ensure that the bracket will clear the door track and also position the sensor below the bottom of the door (**A**) when it is fully open only. See **Figure 36**.
5. Mount the door open sensor (**J**) into the bracket (**H**), using the included plastic nuts. See **Figure 37**.
6. Adjust the bracket and sensor to provide 3” of clearance from the face of the sensor to the overhead door panel or roll up door.

Electrical Connections

1. Attach cable (**M**) to the sensor (**J**).
2. Secure the sensor cable following all applicable local and national codes. See suggested J-Box placement (**E**) near the sensor(s). Reference **Figure 35**.

Note: If also installing a door closed sensor and or vehicle present sensor, use conduit with a sufficient I.D. to secure the additional sensor cables.

3. Terminate the cable in the iDock controller (**C**) with the following connections:
   - Brown wire connects to terminal block #20
   - Blue wire connects to terminal block #21
   - White wire:
     - Small terminal board - Terminal #29
     - Large terminal board - Terminal #51.
   - Black wire - not connected.

Note: Removal of factory installed yellow jumper wire in the iDock, may be required to install signal wire from door open sensor.

4. Continue to Testing Operation instructions on **page 46**.

Instructions continued on page 46.

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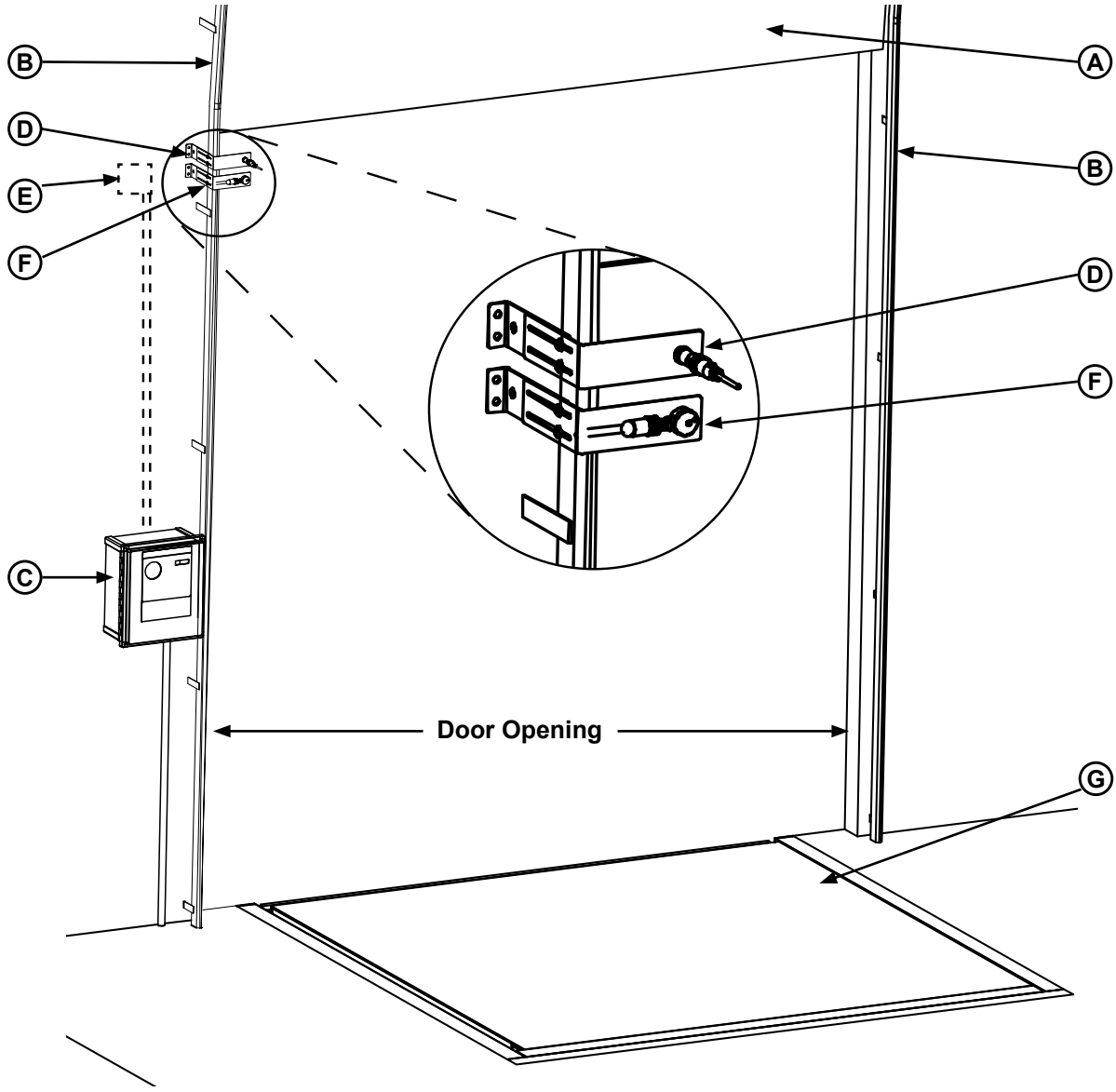


Figure 35

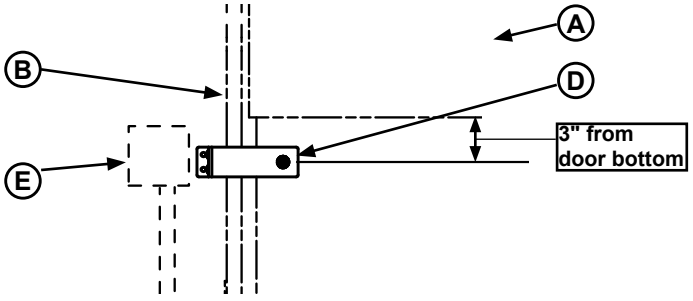


Figure 36

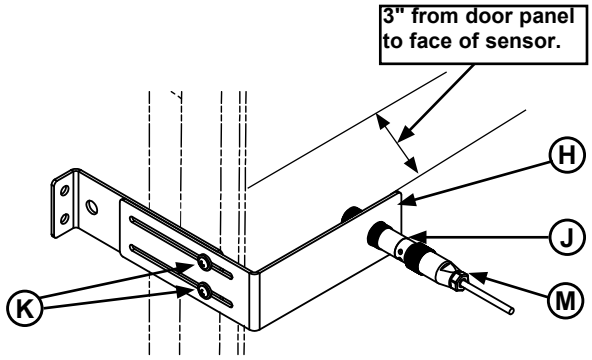


Figure 37

A—Overhead Door (Open)

B— Door Track

C—iDock Controller

D—Door Open Sensor Kit (7155-0010)

E—Suggested J-Box Location

F—Door Closed Sensor Kit (7155-0011)

G—Dock Leveler

H—Bracket

J—Sensor

K—Adjusting Hardware

M—Sensor Cable

Installation - Door Open Sensor

Door Open Sensor Installation (Continued)

7155-0010 - Testing Operation

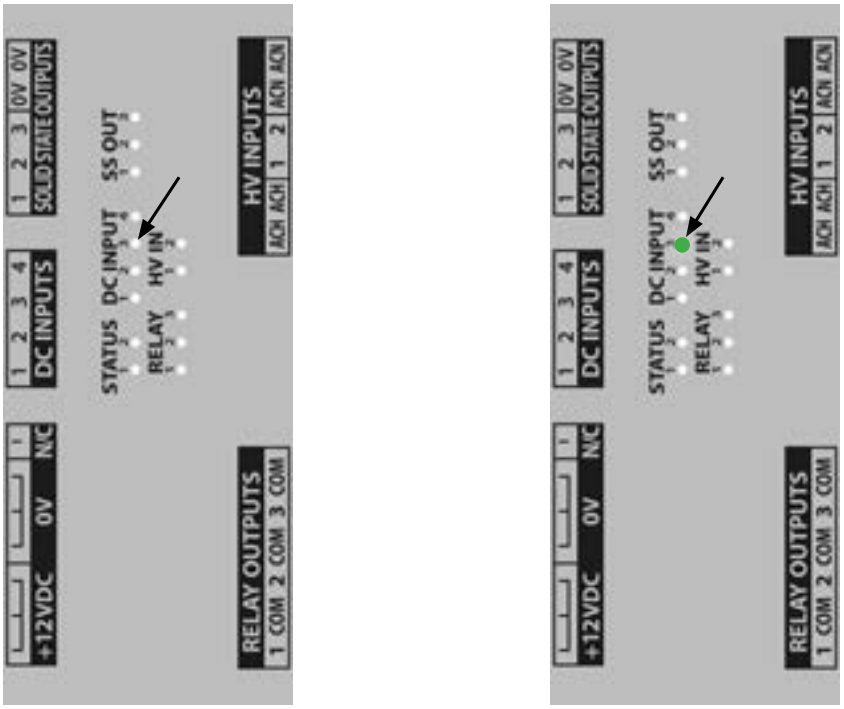
1. After the sensor has been mounted and the electrical connections have been made, remove the lock out tag outs and safely energize the equipment.

2. With the door in the *Closed* position, the terminal board in the iDock controller should display the following:
   - Small Terminal Board: DC Input #3 OFF (Figure 38)
   - Large Terminal Board: DC Input #8 OFF (Figure 39)

3. With the door in the *Open* position, the terminal board in the iDock controller should display the following:
   - Small Terminal Board: DC Input #3 ON (Figure 38)
   - Large Terminal Board: DC Input #8 ON (Figure 39)

4. If the equipment is operating correctly, based on steps 1-3 above, then the installation is complete. If you require further assistance with the installation, contact Systems Technical Services.

Small Terminal Board - Door Open Sensor Operation

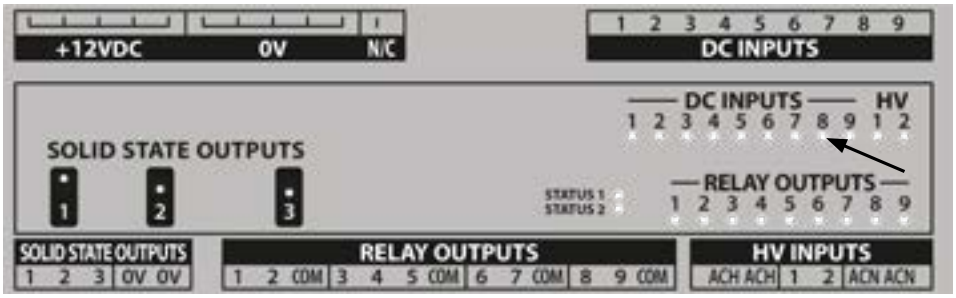


Door Closed - Input 3 OFF

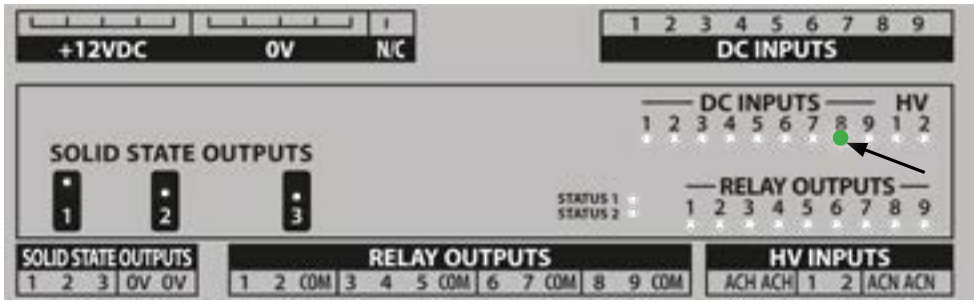
Door Open - Input 3 ON

Figure 38

Large Terminal Board - Door Open Sensor Operation



Door Closed - Input 8 OFF

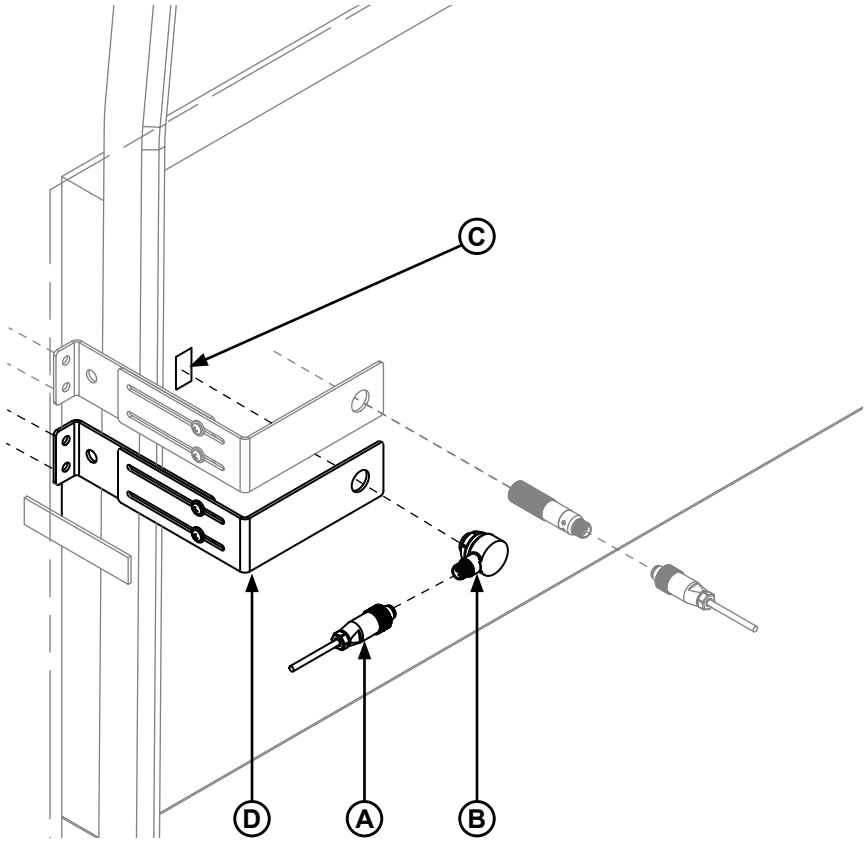


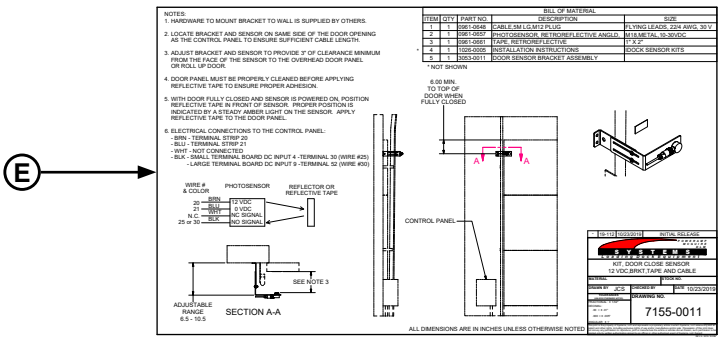
Door Open - Input 8 ON

Figure 39

Installation - Door Closed Sensor

7155-0011 — Kit Contents





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7155-0011 - Door Closed Sensor Kit			
Item	**Quantity**	**Part Number**	**Description**
	1	**7155-0011**	**Kit, Door Close Sensor, 12VDC, Brkt, Tape and Cable**
A	1	0961-0648	Cable, 5M Long
B	1	0961-0657	Photosensor
C	1	0961-0661	Tape, Retroreflective 2” X 2”
D	2	3053-0011	Door Sensor Bracket Assembly
E	1	1026-0005	Installation Instructions iDock Sensor Kits

Installation - Door Closed Sensor

DANGER

Make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

DANGER

Unless the dock leveler is equipped with a tethered remote, two people are required to engage the maintenance prop: one person to operate the unit, the other person to engage the maintenance prop.

In addition, it is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and optional sensors — must be performed by a certified electrician and conform to all local and applicable national codes.

7155-0011 - Door Closed Sensor Installation

The door closed sensor mounts out of harms way, near the top of the door opening. It is typically mounted beneath the door open sensor (if installed.) This retro-reflective sensor uses a target mounted on the door to confirm that the door is fully closed.

Note: Mounting hardware is supplied by others.

7155-0011 Installation Instructions

1. Determine a suitable mounting location for sensor and bracket (**F**), according to **Figure 40**.
2. Locate the bracket and door sensor on the same side of the door opening as the control box, to ensure sufficient cable length to reach the control box.
3. Hardware to mount the bracket to the wall is supplied by others.
4. Position the bracket so that it is plumb and level and approximately 1” below the door open sensor (if installed.) See **Figure 40**.
   - Ensure the bracket does not interfere with the door track.
   - Make sure there is a flat mounting surface for the reflective tape (**N**), on the door (**A**) in front of the sensor. See **Figure 41**.
5. With the bracket (**H**) mounted, insert the sensor (**J**) into the bracket with included hardware, as shown in **Figure 42.**
6. Mount the included reflective tape (**N**) on the door in front of the door closed sensor.

Note: For accuracy, install the tape after the electrical connections. Then use the sensor's LED's to verify the correct location for the reflective tape. See Step 3 on page 52.

Electrical Connections

1. Attach cable (**M**) to the sensor (**J**).
2. Secure the sensor cable following all applicable local and national codes. See suggested J-Box placement (**E**) near the sensor(s). Reference **Figure 38**.

Note: If also installing a door open sensor and or vehicle present sensor, use conduit with a sufficient I.D. to secure the additional sensor cables.

3. Terminate the cable in the iDock controller (**C**) with the following connections:
   - Brown wire - terminal block #20
   - Blue wire - terminal block #21
   - White wire - not connected.
   - Black wire:
     - Small terminal board - terminal #30
     - Large terminal board - terminal #52

Note: Removal of factory installed yellow jumper wire in the iDock, may be required to install signal wire from door closed sensor.

4. Continue to Testing Operation instructions on **page 52**.

Instructions continued on page 52.

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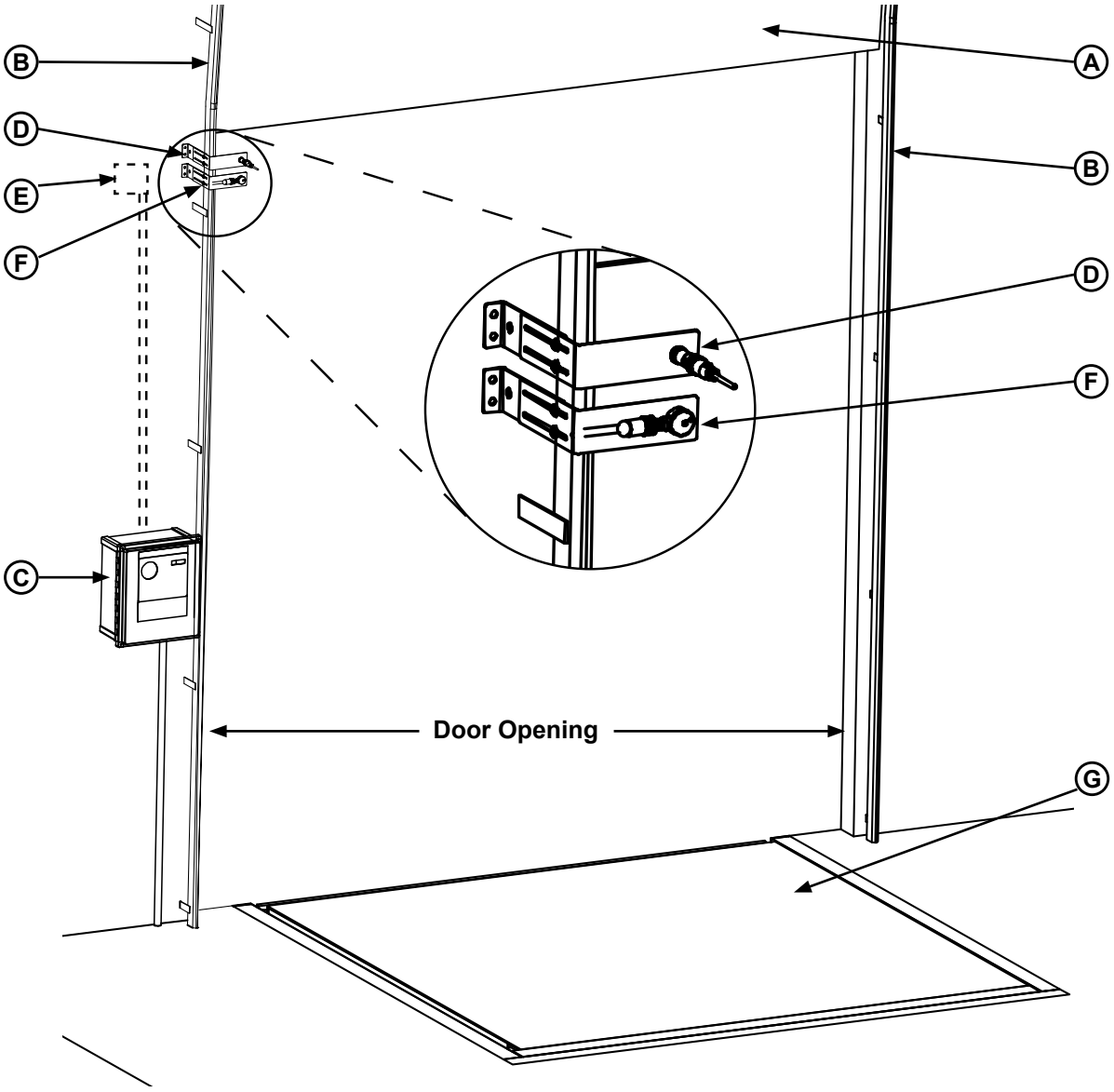


Figure 40

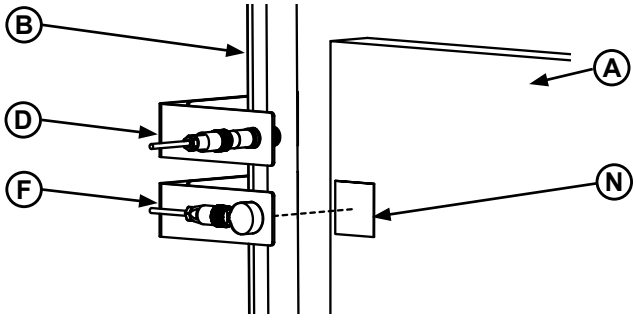


Figure 41

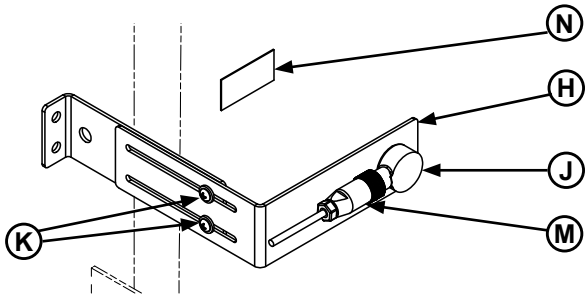


Figure 42

A—Overhead Door (Open)	D—Door Open Sensor Kit (7155-0010)	G—Dock Leveler	K—Adjusting Hardware
B— Door Track	E—Suggested J-Box Location	H—Bracket	M—Sensor Cable
C—iDock Controller	F—Door Closed Sensor Kit (7155-0011)	J—Sensor	N—Reflective Tape

Installation - Door Closed Sensor

Door Closed Sensor Installation (Continued)

7155-0011 - Testing Operation

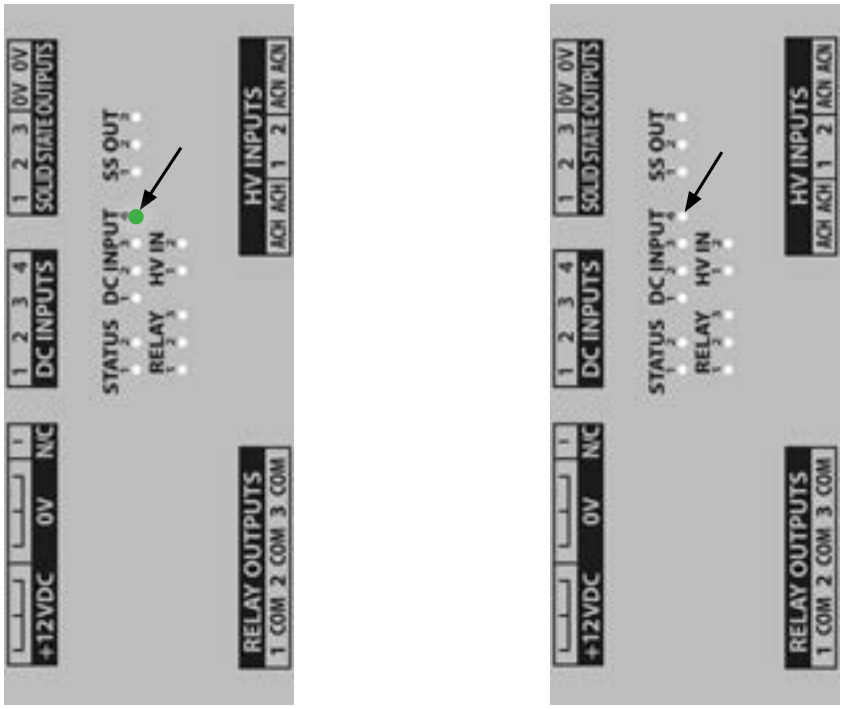
1. After the sensor has been mounted and the electrical connections have been made, remove the lock out tag outs and safely energize the equipment.

2. With the door in the *Open* position, the terminal board in the iDock controller should display the following:
   - Small Terminal Board: DC Input #4 OFF (Figure 43)
   - Large Terminal Board: DC Input #9 OFF (Figure 44)

3. With the door in the *Closed* position, mount the reflective tape in front of sensor (if not already positioned). The terminal board in the iDock controller should display the following:
   - Small Terminal Board: DC Input #4 ON (Figure 43)
   - Large Terminal Board: DC Input #9 ON (Figure 44)

4. If the equipment is operating correctly, based on steps 1-3 above, then the installation is complete. If you require further assistance with the installation, contact Systems Technical Services.

Small Terminal Board - Door Closed Sensor Operation

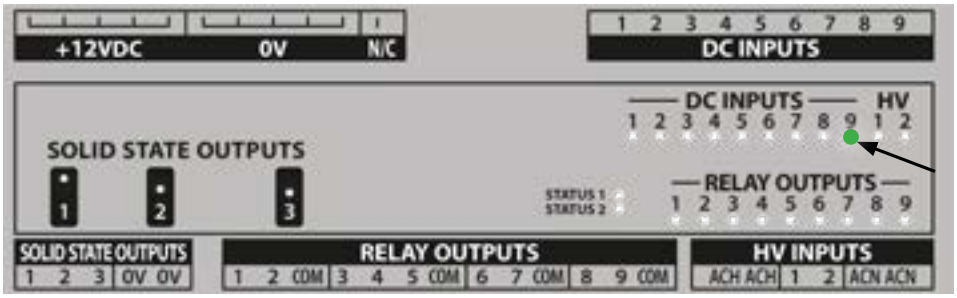


Door Closed - Input 4 ON

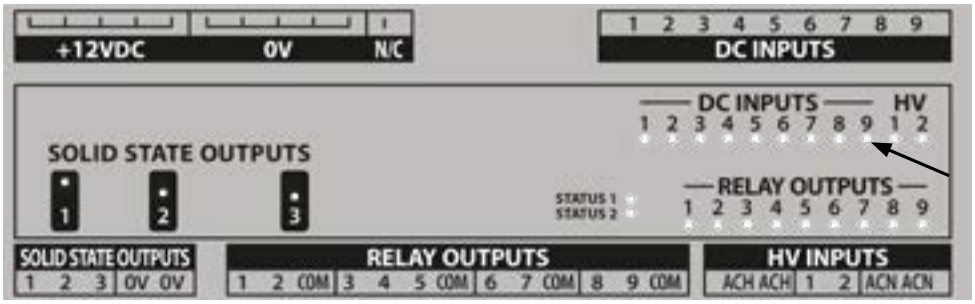
Door Open - Input 4 OFF

Figure 43

Large Terminal Board - Door Closed Sensor Operation



Door Closed - Input 9 ON



Door Open - Input 9 OFF

Figure 44

TROUBLESHOOTING

Vehicle Present Sensor

Problem	Cause	Troubleshooting
SENSOR WILL NOT POWER ON.	Incorrect or damaged field wiring and or damaged sensor.	Verify field wiring using factory diagrams. Check field wiring for damage. Check field wiring for loose/ poor connections. Check sensor unit for damage.
PLC INPUT IS ALWAYS ON.	Improper field wiring, adjustment or obstruction.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Verify clearance from awning/ shelter. Reduce signal strength using white dial on sensor.
PLC INPUT WILL NOT TURN ON WHEN VEHICLE PRESENT.	Improper field wiring, adjustment or obstruction.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Verify clearance from awning/ shelter. Increase signal strength using white dial on sensor.

Leveler Stored Sensor

Problem	Cause	Troubleshooting
SENSOR WILL NOT POWER ON.	Incorrect or damaged field wiring and or damaged sensor.	Verify field wiring using factory diagrams. Check field wiring for damage. Check field wiring for loose/ poor connections. Check sensor unit for damage.
PLC INPUT IS ALWAYS ON.	Improper field wiring, adjustment or obstruction.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Check proximity between lip plate and sensor.
PLC INPUT WILL NOT TURN ON.	Improper field wiring, adjustment or obstruction.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Check proximity between lip plate and sensor.
PLC INPUT IS ON WHEN LEVELER IS BELOW DOCK	Improper adjustment or obstruction	Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Check proximity between lip plate and sensor. Check for debris in leveler pit. Remove

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Forklift Activity Sensor

Problem	Cause	Troubleshooting
SENSOR WILL NOT POWER ON.	Incorrect or damaged field wiring and or damaged sensor.	Verify field wiring using factory diagrams. Check field wiring for damage. Check field wiring for loose/ poor connections. Check sensor unit for damage.
PLC INPUT IS ALWAYS ON.	Improper field wiring, adjustment or obstruction.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Verify alignment with reflector.
PLC INPUT WILL NOT TURN ON.	Improper field wiring, adjustment or obstruction.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Verify alignment with reflector.

Fluid Level Sensor

Problem	Cause	Troubleshooting
SENSOR WILL NOT POWER ON.	Incorrect or damaged field wiring and or damaged sensor.	Verify field wiring using factory diagrams. Check field wiring for damage. Check field wiring for loose/ poor connections. Check sensor unit for damage.
PLC INPUT IS ALWAYS ON.	Improper field wiring, fluid level or sensor placement.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Verify mounting location.
PLC INPUT WILL NOT TURN ON.	Improper field wiring, fluid level or sensor placement.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Verify mounting location.

TROUBLESHOOTING

Door Open Sensor

Problem	Cause	Troubleshooting
SENSOR WILL NOT POWER ON.	Incorrect or damaged field wiring and or damaged sensor.	Verify field wiring using factory diagrams. Check field wiring for damage. Check field wiring for loose/ poor connections. Check sensor unit for damage.
PLC INPUT IS ALWAYS ON.	Improper field wiring, adjustment or obstruction.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Verify proximity to door. Verify sensor not detecting building.
PLC INPUT WILL NOT TURN ON.	Improper field wiring, adjustment or obstruction.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Verify proximity to door.

Door Closed Sensor

Problem	Cause	Troubleshooting
SENSOR WILL NOT POWER ON.	Incorrect or damaged field wiring and or damaged sensor.	Verify field wiring using factory diagrams. Check field wiring for damage. Check field wiring for loose/ poor connections. Check sensor unit for damage.
PLC INPUT IS ALWAYS ON.	Improper field wiring, adjustment or obstruction.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Verify proximity to reflective tape. Verify reflective tape location.
PLC INPUT WILL NOT TURN ON.	Improper field wiring, adjustment or obstruction.	Verify field wiring using factory diagrams. Check sensor lens for cleanliness or obstructions. Check sensor unit for damage. Verify proximity to reflective tape. Verify reflective tape location.

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MISCELLANEOUS

myQ® Dock Management

Monitor and improve your loading dock efficiency online with myQ® Dock Management. Once your dock equipment from brands of Systems is installed with iDock Controls and paired with an iDock Gateway, simply create an online facility account at myQ.com and review the analytics of your loading dock activity.

Current Dock Activity

- Real-Time Status
- Image attached – real time widgets
- From your dashboard with myQ®, quickly review the real-time status of all your loading docks, which docks are available, if any docks are near or past required load time, and what current loading activity has occurred.

Dock Activity Over Time

- Activity Over Time
- Image attached – widgets-dock management
- Analyze your dock activity during a selected period of time and compare it to a previous period. This allows you to monitor changes in loading efficiency, compare each dock performance, analyze how your docks are utilized, and evaluate any detention fees.

Notifications

With myQ® Dock Management, you can receive email and/or text message alerts of loading dock events, such as trucks approaching load time limits, inefficient loading activity, restraints in bypass, doors left open, after hours activity, and more.

Improve Efficiency | **Simplify Maintenance** | **Prioritize Safety** | **Tighten Security**

Want to see myQ® Dock Management in action?

We are here to assist you Monday through Friday from 8am-4:30pm CST.
Call us at 262-255-1510 or toll free at 1-800-643-5424. E-mail us at Sales@LoadingDockSystems.com.

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LiftMaster® MAS Integration Retrofit Kit

For iDock Controls not originally ordered with the LiftMaster® MAS Logic 5.0 Integration option, the components can be purchased as a kit and field installed. **The Logic 5.0 Interface Kit, part number 7147-0001, includes everything required to retrofit LiftMaster® MAS Logic 5.0 Integration on iDock Controls.**

Note: The iDock system must be running firmware version 1.4.9 or later to use Logic 5.0 integration. Units with firmware version 1.4.8 or earlier will additionally require an update via SD card to install the latest firmware. The current firmware version can be verified in the Diagnostics sub-menu (Main Menu ► Settings ► Program Access ► Diagnostics ► Controller Info).

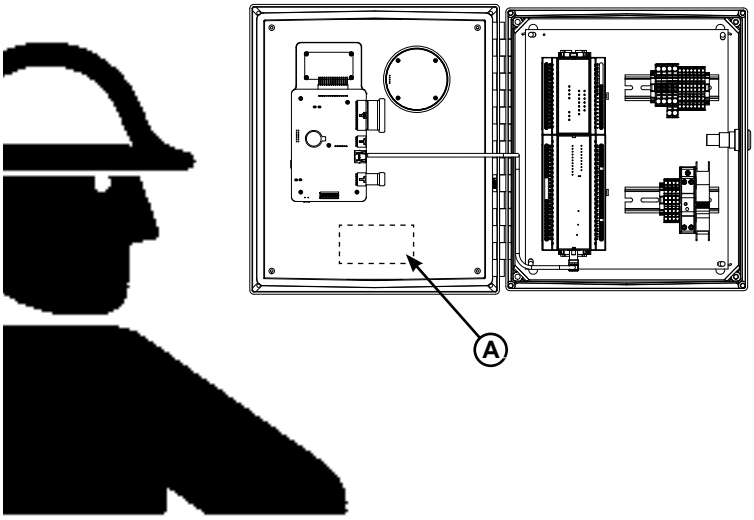
Systems, LLC is not responsible for any time lost if the firmware is not checked and/or a required update SD card is not utilized before attempting to install the Logic 5.0 Interface Retrofit.

Interested in the LiftMaster® MAS Integration Retrofit Kit?

We are here to assist you Monday through Friday from 8am-4:30pm CST.
Call us at 262-255-1510 or toll free at 1-800-643-5424. E-mail us at Sales@LoadingDockSystems.com.

MISCELLANEOUS

Customer Information



NOTE: Refer to figures for orientation of control box and example of decal.

*The CONTROL BOX model/serial number decal is located on the inside of the enclosure door (**A**).*

When you receive your new equipment, write down the model and serial number in the form provided. This will help ensure safe keeping of the numbers in the event the model/serial number decal (**A, B**) becomes lost or damaged.

Also, write down Systems, LLC's job number, the company that installed the dock leveler, and the original owner's name. This will all help to identify the specific dock leveler if more information is required.

When ordering, use part numbers and description to help identify the item ordered. Do not use "item" numbers. These are only for locating the position of the parts. Always give dock leveler MODEL NUMBER and/or SERIAL NUMBER.

For service, call or contact:

Systems, LLC
P.O. Box 309
Germantown, WI 53022

Phone: (800) 643-5424
Fax: (262) 255-5917

www.loadingdocksystems.com

iDock Control System Information

Model _____

Serial No. _____

Systems, LLC, Job No. _____

Dock Leveler Information

Model _____

Serial No. _____

Systems, LLC, Job No. _____

Vehicle Restraint Information

Model _____

Serial No. _____

Systems, LLC, Job No. _____

Original Owner Information

Name _____

Address _____

_____

Installer Information

Name _____

Address _____

_____

Date of Installation _____

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STANDARD PRODUCT WARRANTY

SYSTEMS, LLC warrants that its products will be free from defects in design, materials and workmanship for a period of one (1) year from the date of shipment. All claims for breach of this warranty must be made within 30 days after the defect is or can with reasonable care, be detected. In no event shall any claim be made more than 30 days after this warranty has expired. In order to be entitled to the benefits of this warranty, the product must have been properly installed, maintained and operated in accordance with all manufacturer's recommendations and/or specified design parameters and not otherwise have been subject to abuse, misuse, misapplication, acts of nature, overloading, unauthorized repair or modification, application in a corrosive environment or lack of maintenance. Periodic adjustment and inspection in accordance with all manufacturers' recommendations are the sole responsibility of the Owner/User.

In the event of a defect, as determined by SYSTEMS LLC, covered by this warranty, SYSTEMS LLC shall remedy such defect by repairing or replacing any defective equipment or parts, bearing the cost for the parts, labor and transportation. This shall be exclusive remedy for all claims whether based on contract, negligence or strict liability.

WARRANTY LIMITATIONS

THE ABOVE WARRANTIES ARE IN LIEU OF ANY OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SYSTEMS LLC AND ITS SUBSIDIARIES SHALL NOT IN ANY EVENT BE LIABLE TO ANYONE, INCLUDING THIRD PARTIES, FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND INCLUDING BUT NOT LIMITED TO, BREACH OF WARRANTY, LOSS OF USE, LOSS OF PROFIT, INTERRUPTION OF BUSINESS OR LOSS OF GOODWILL.