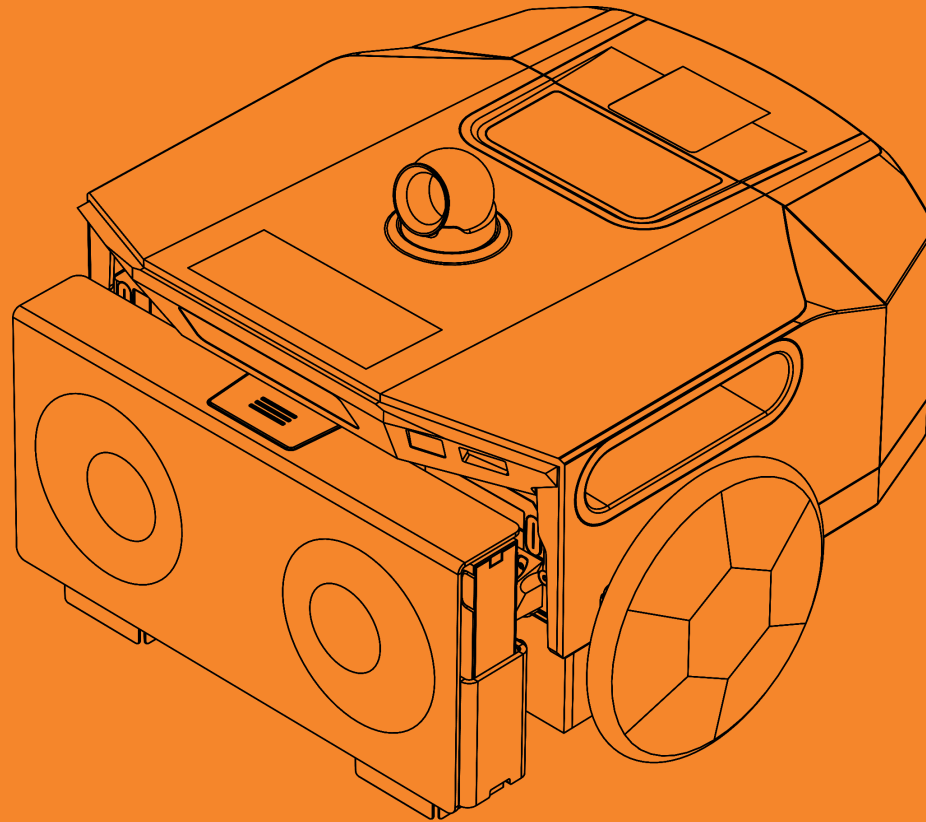


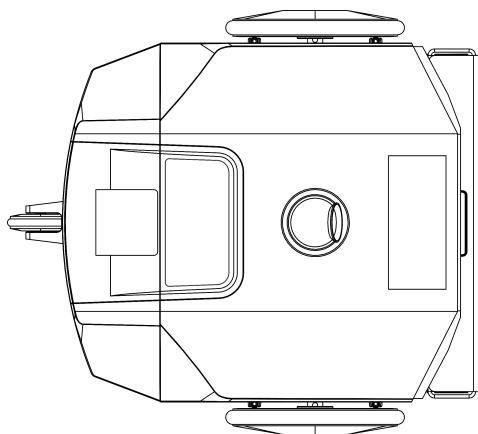
DUSTY
ROBOTICS



FieldPrinter 2

User Guide

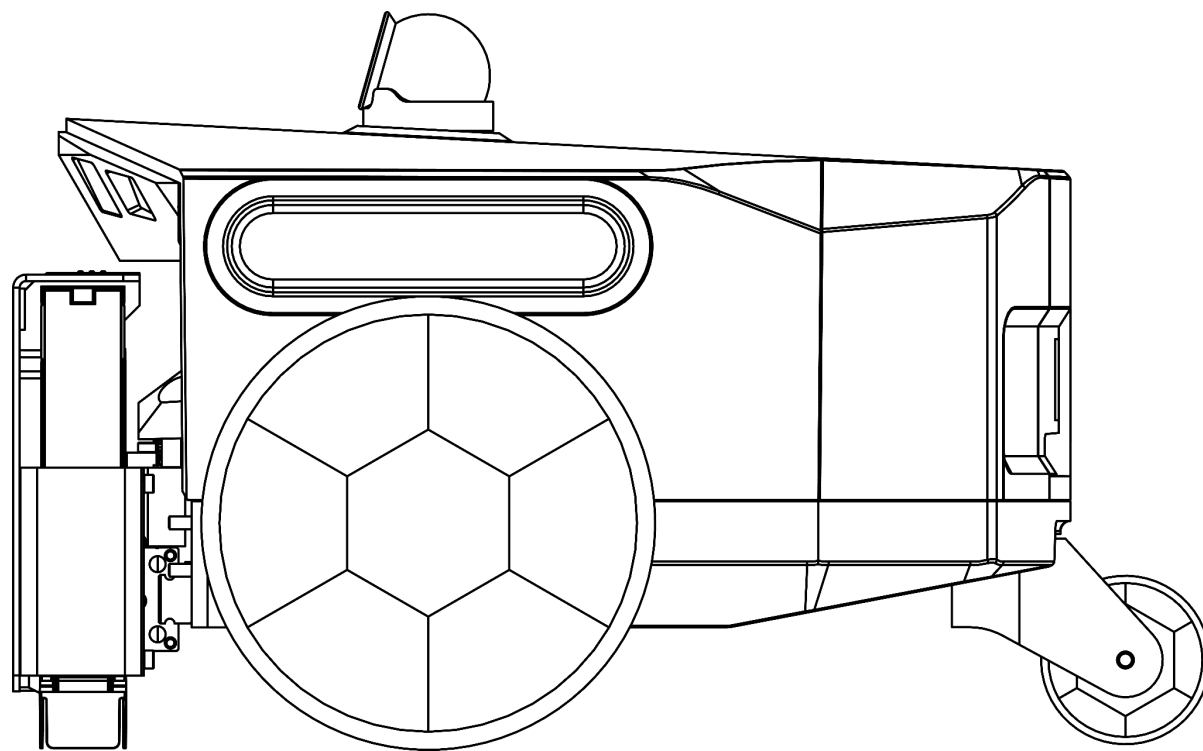
CONTENTS



Escanear para español



INTRODUCTION	5
System Contents	6
Components	11
SAFETY	15
SETUP	17
Laser Tracker Setup	17
FieldPrinter Setup	32
Battery Installation	33
Stationing	36
TAKEDOWN	41
OPERATION	42
SERVICE	43
TROUBLESHOOTING	47
SUPPORT	49



Dusty Robotics Background and History

Dusty Robotics accelerates the digital transformation of the construction industry by developing robot-powered tools for the modern construction workforce. Our FieldPrinter-automated layout robot bridges the gap between design and reality, bringing fully-detailed digital building models out to the field for error-free construction.

Today, Dusty FieldPrinters are working on construction sites throughout North America. We work closely with our clients to ensure that our products exceed customer expectations from design to delivery of the final product.

Robot Applications

The Dusty FieldPrinter system can print full-size floor plans on the deck for builders. Construction crews build directly off those plans reducing the possibility of manual error. Robotic layout takes significantly less time with higher accuracy compared to traditional layout. Digital reports are automatically created, detailing exactly what was laid out, ensuring smoother closeout and handoff. The FieldPrinter is also capable of laying out multiple trades at once. This ensures that all crews are working off of the same information and clashes are resolved earlier in the schedule.

The Dusty FieldPrinter system is an advanced robotic platform that uses cutting-edge technology to autonomously navigate the job site. Using precise control systems, it prints lines with 1/16" accuracy. Path planning and obstacle avoidance systems allow it to print the maximal layout near obstructions while optimizing print speed.

FieldPrinter Case

ITEM	QUANTITY
Dusty FieldPrinter	1
Blue Ring Reflector	2
Unboxing Card	1
iPad Controller	3
FieldPrinter Joystick	1
Robot Batteries - Milwaukee	2
Robot Battery Charger - Milwaukee	1
Printer Ink	10
USB-C Charger & Cable	1
Control Point Targets	3
Verification Reflector	2
Roll of Tape	1
Windguards with Mount (2 equipped, 2 in case)	4
Ink Nozzle Cleaning Wipes	15
AA Joystick Batteries (Pair)	1

ACCESSORIES KIT

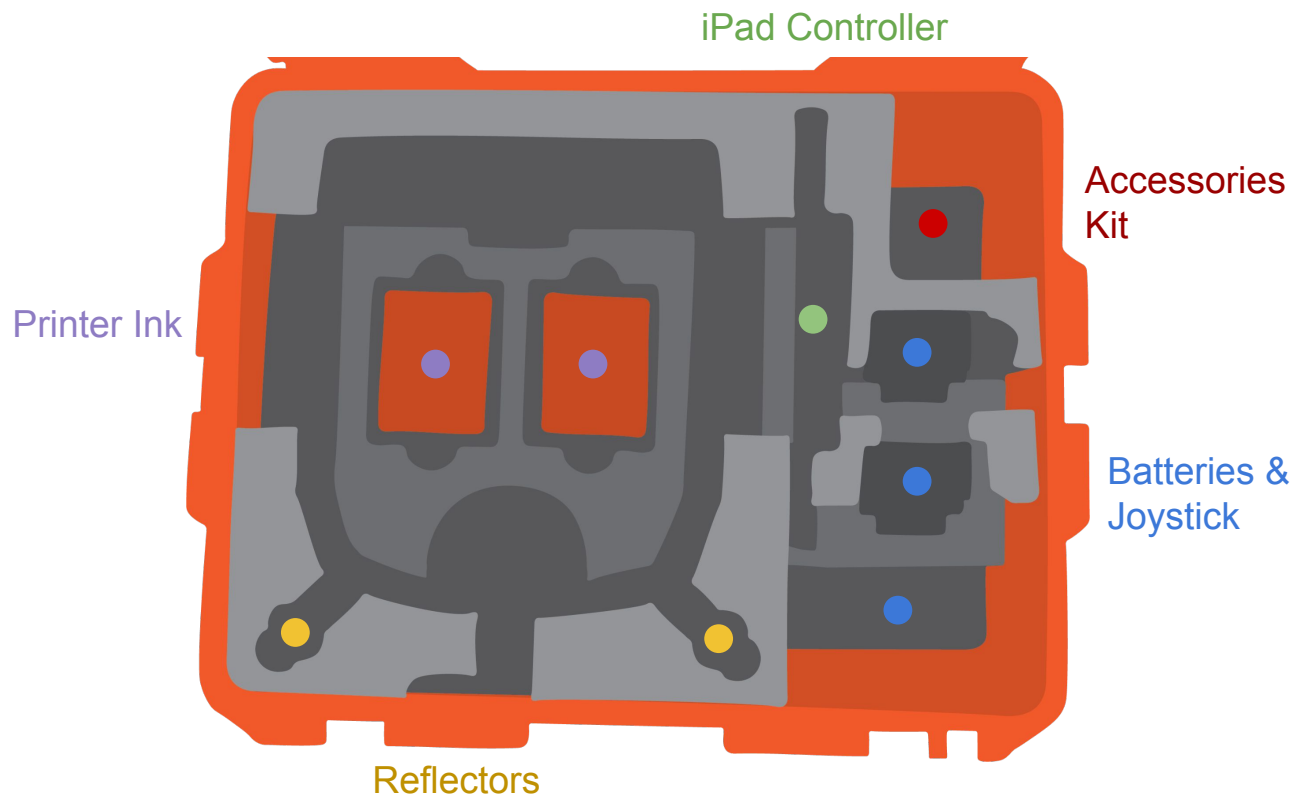
* Match the text color of each item to the colored circles on the next page to identify the location of the items within the case.



FieldPrinter Case



Refer to the last page for more information on how to locate the specific items in this case.



Laser Tracker Case

ITEM	QUANTITY
Leica Absolute AT930 (Laser Tracker)	1
Laser Tracker Controller	1
GPS Tracker	1
Spanner Wrench	1
Laser Tracker to Controller Cable	1
USB Type A to Type B Cable (1 spare)	2
Ethernet Cable (1 spare)	2
AC Outlet Cable for the Power Supply (PSU)	1
Radio	1
Portable Power Station Charging Cable	1
Power Supply Unit (PSU)	1
Portable Power Station (Ecoflow) - <i>Separate</i>	1

* Match the text color of each item to the colored circles on the next page to identify the location of the items within the case.



Laser Tracker Case



Tripod Bag

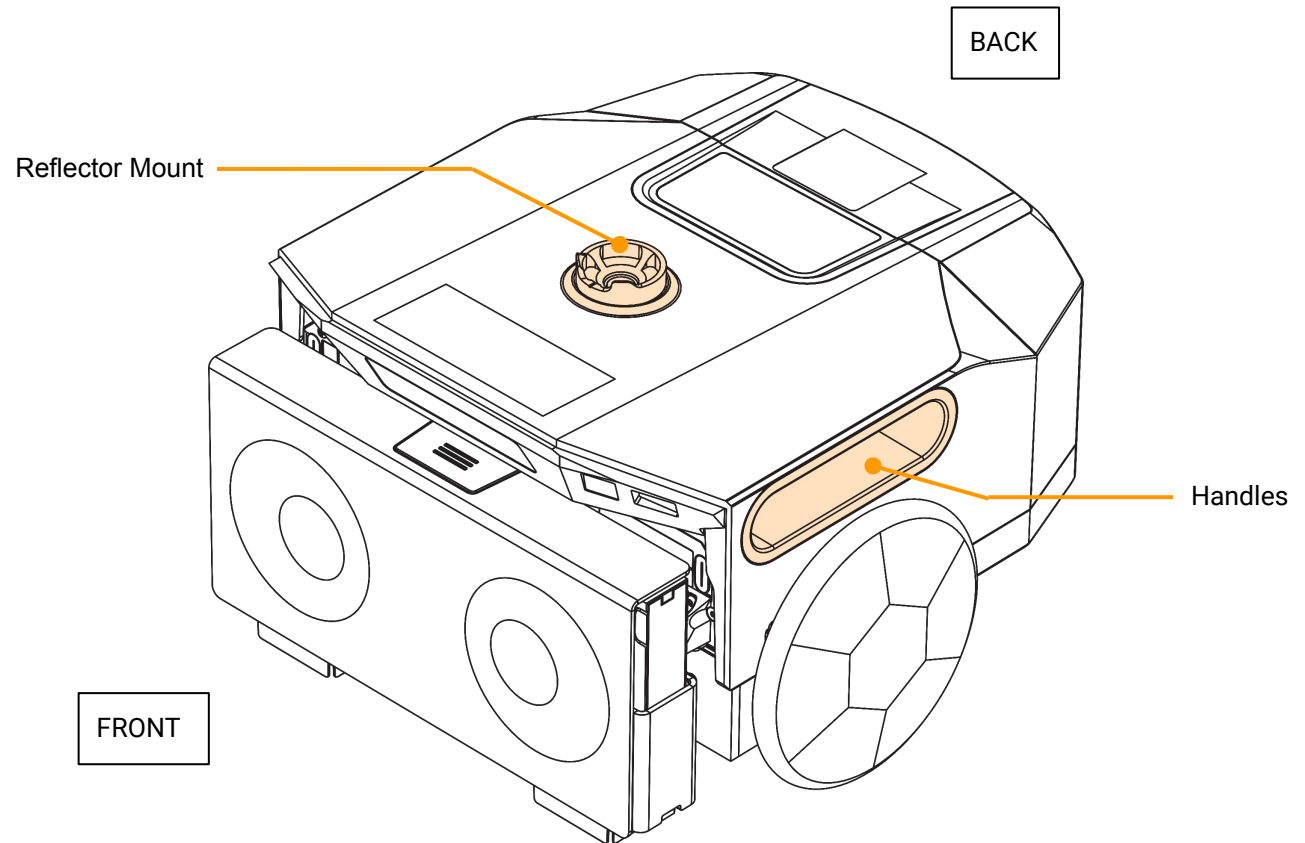
ITEM	QUANTITY
Tripod with Unified Mount	1
Tripod Stabilizer Base	1
Power Hub Adapter with USB Port	1
Extension Cord	1
Temp Power Box Adapter 20A→15A (Pig Tail)	1



INTRODUCTION

COMPONENTS

FRONT-THREE-QUARTER VIEW

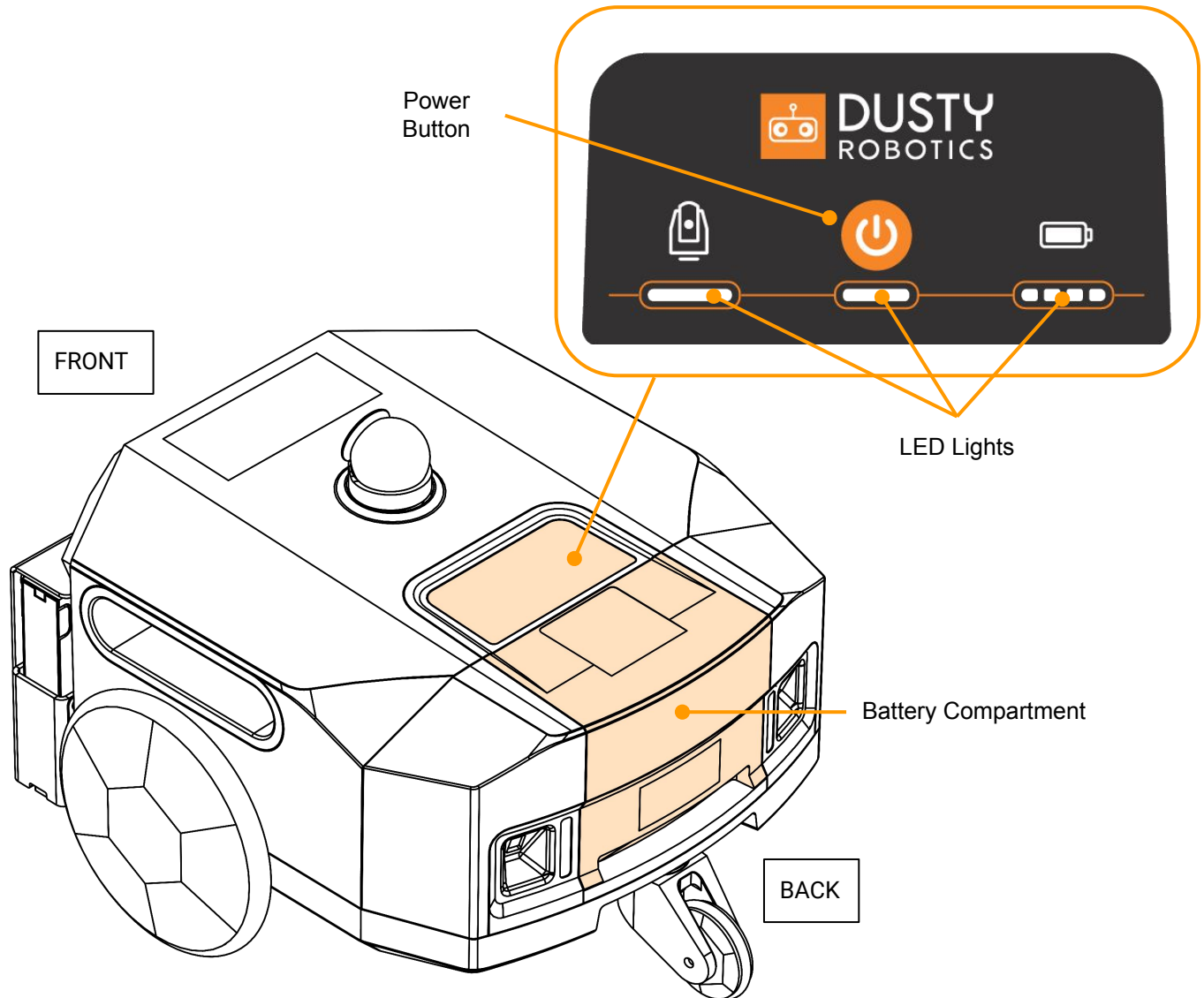


INTRODUCTION

COMPONENTS

BACK-THREE-QUARTER VIEW

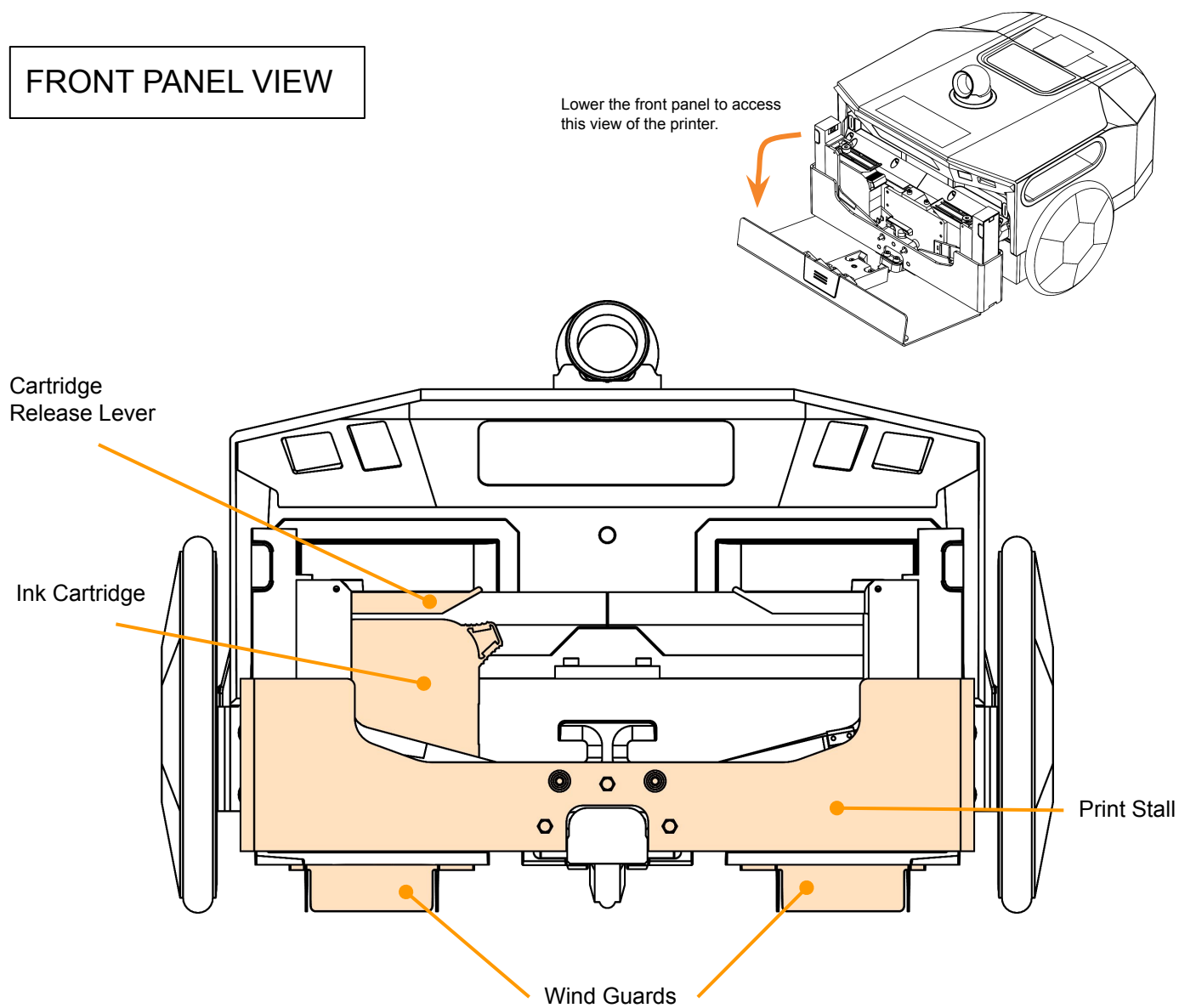
PANEL VIEW



INTRODUCTION

COMPONENTS

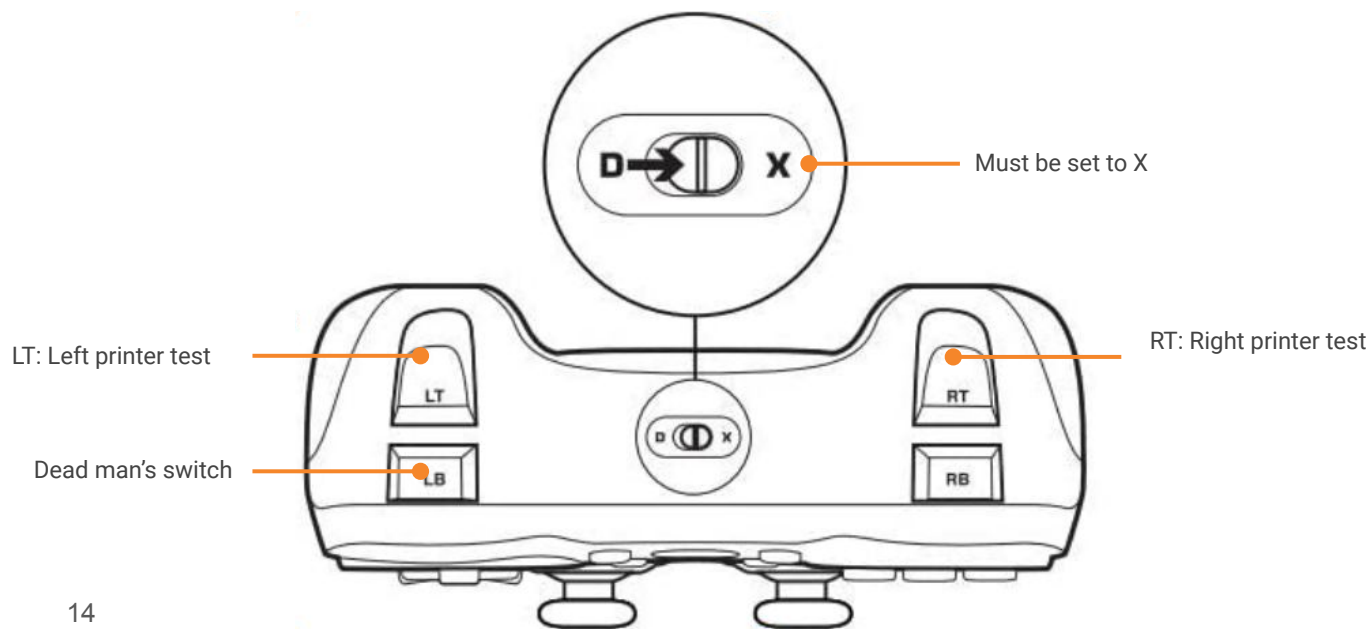
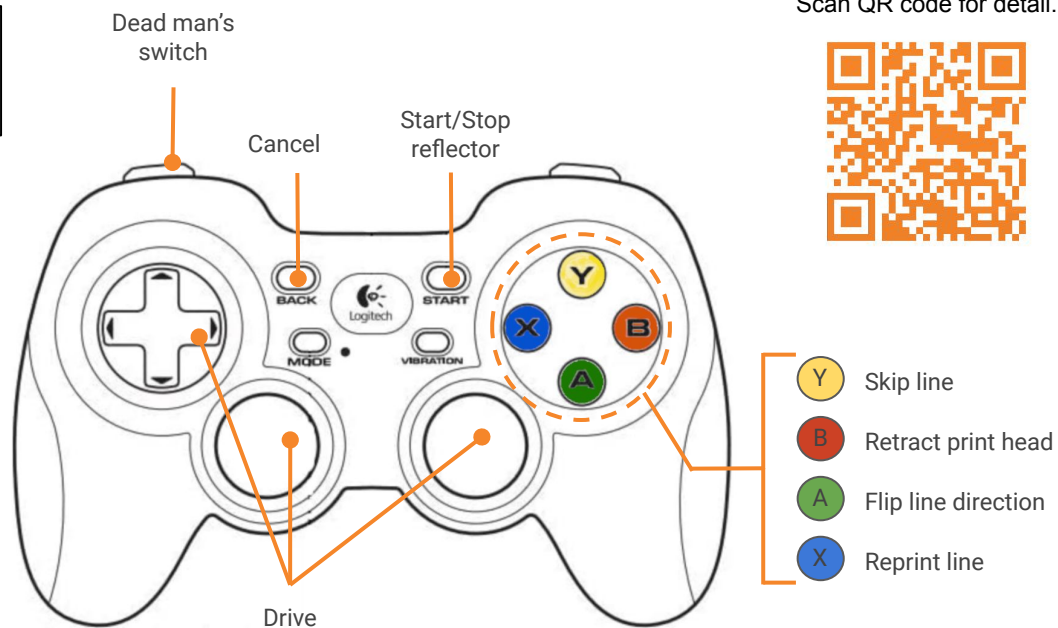
FRONT PANEL VIEW



INTRODUCTION

COMPONENTS

JOYSTICK BUTTONS



SAFETY GUIDELINES



When operating the FieldPrinter it is important to keep an eye on the robot at all times.

Stairs or Inclines	The FieldPrinter is not suitable for operation on stairs or inclines of over 5 degrees.
Slab Edges	Protect any open edges with a barrier at least 2" in height to ensure safe FieldPrinter operation.
Rain or Puddles	The FieldPrinter system cannot operate near puddles or in rain.
Ensure correct handling of parts	Be careful when handling any of the system components.
Shipping	FieldPrinter batteries (Milwaukee) must be in a carry-on bag or shipped with strict requirements. Ecoflow can only be shipped ground. Consult your shipping provider or airline for requirements.

SAFETY GUIDELINES



Ensure that these standard safety guidelines are met when operating the FieldPrinter to prevent a potential fall from slab edge or opening.

Applicable Construction Safety Standard Review

Federal OSHA

1917.112 - Guarding of edges.

1917.112(d)

Toeboards. Toeboards shall be provided when employees below could be exposed to falling objects such as tools. Toeboards shall be at least 3½ inches (8.9 cm) in height from top edge to floor level, and be capable of withstanding a force of 50 pounds (222 N) applied in any direction. Drainage clearance under toeboards is permitted.

CAL OSHA

1621. Railings and Toeboards.

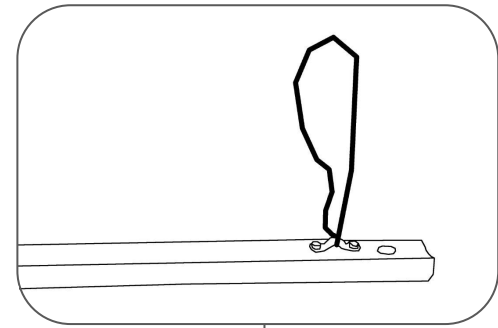
(b) **A standard toeboard shall be 4 inches (nominal) minimum in vertical height from its top edge to the level of the floor, platform, runway, or ramp.** It shall be securely fastened in place and have not more than 1/4-inch clearance above floor level. It may be made of any substantial material, either solid, or with openings not over one inch in greatest dimension. **Toeboards shall be provided on all open sides and ends of railed scaffolds at locations where persons are required to work or pass under the scaffold and at all interior floor, roof, and shaft openings.**

SETUP

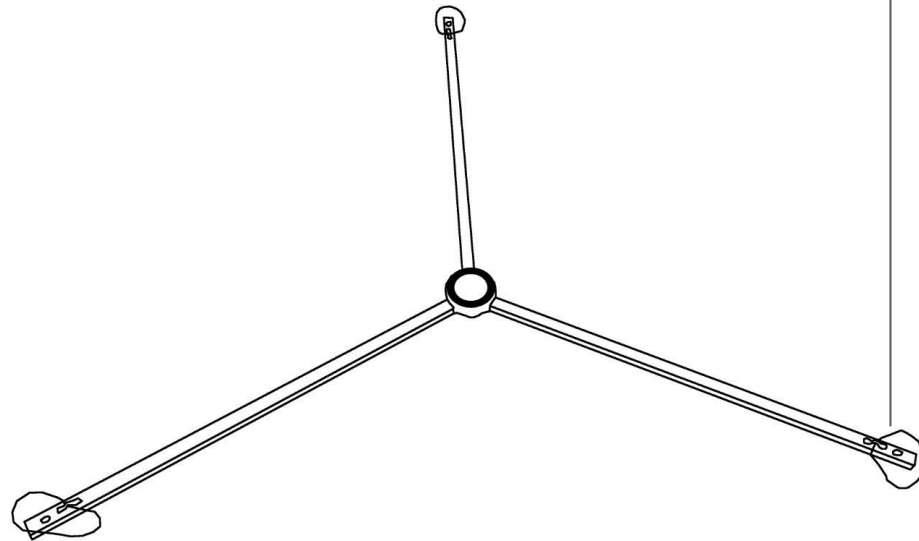
LASER TRACKER SETUP

PLACE THE STABILIZER ON THE GROUND

Before setting up the tripod, ensure the tripod stabilizer is positioned completely flat on the ground.

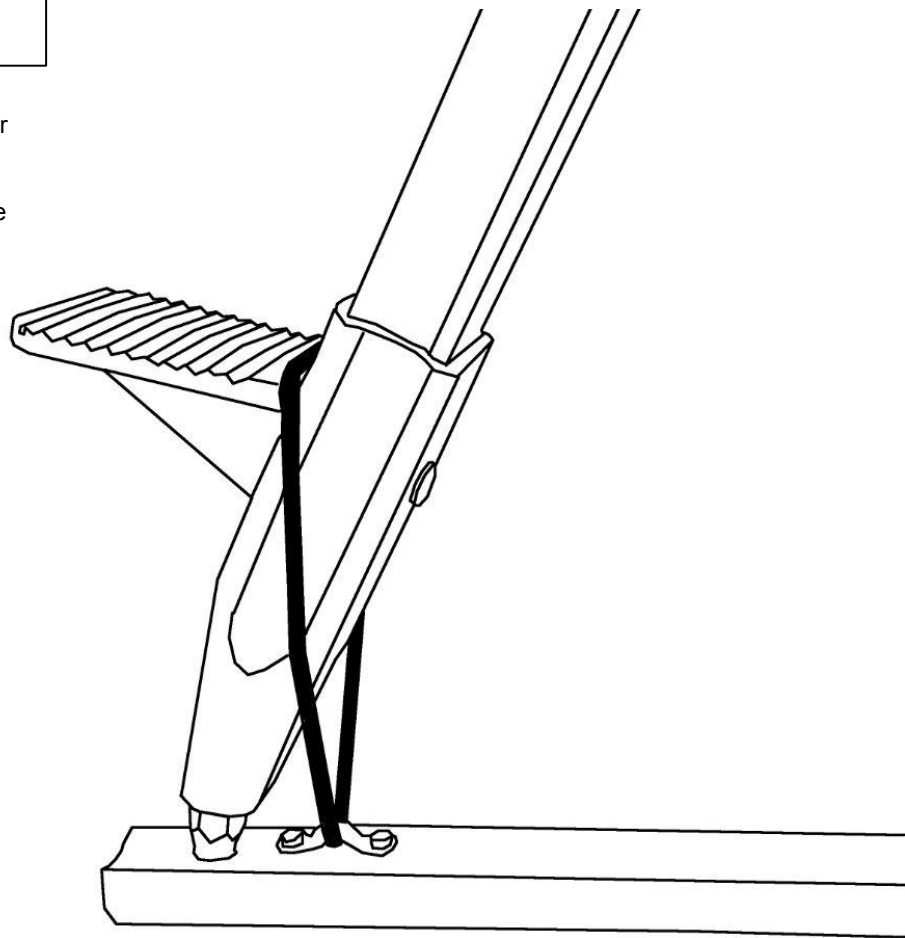


Ensure the rubber retention bands are facing up.



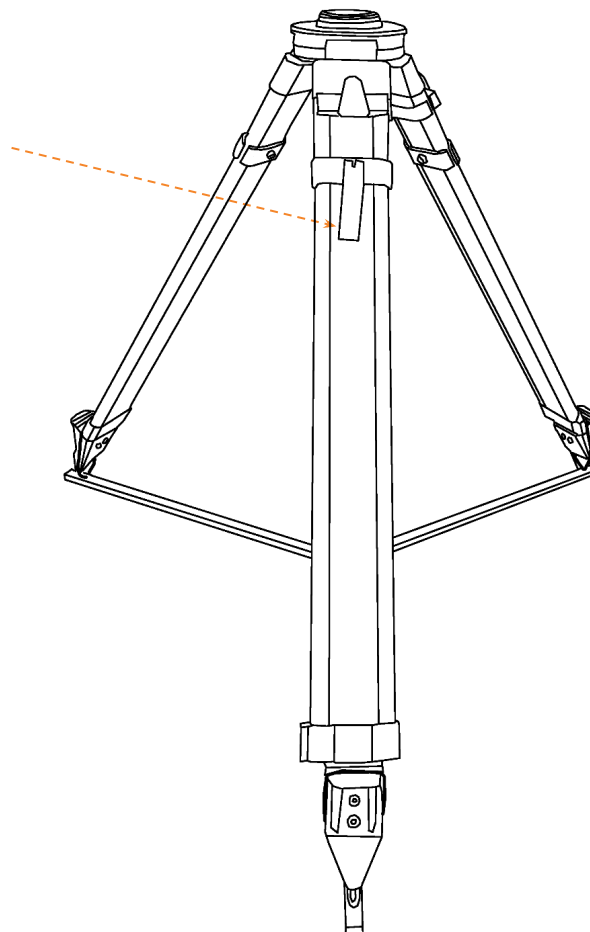
PLACE THE TRIPOD ON THE STABILIZER

After setting the stabilizer on the ground, open and place each of the tripod legs onto the holes of the stabilizer and wrap the rubber retention bands onto the tripod legs.



RAISE THE TRIPOD LEGS

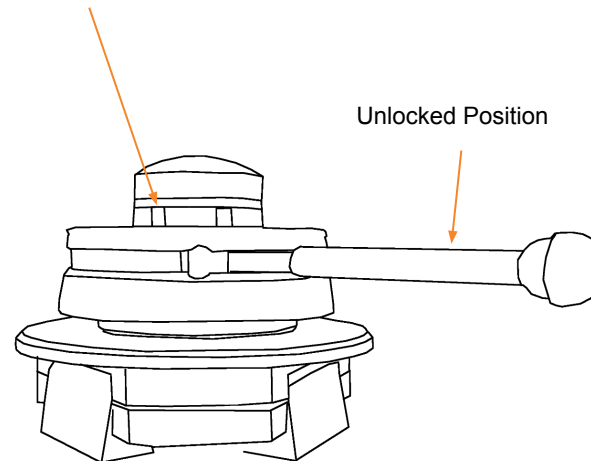
Pull the latch on each leg to raise the height of the tripod to about 8 to 12 inches. **This is necessary to ensure that the components fit correctly on the tripod.** At this step, the tripod only needs to be approximately leveled.



ENSURE THE ADAPTER IS IN THE UNLOCK POSITION

The adapter handle needs to be in the rightmost position. If not already in that position, pull the handle neck outward and push right.

When unlocked, the ball bearings in the adapter are movable.

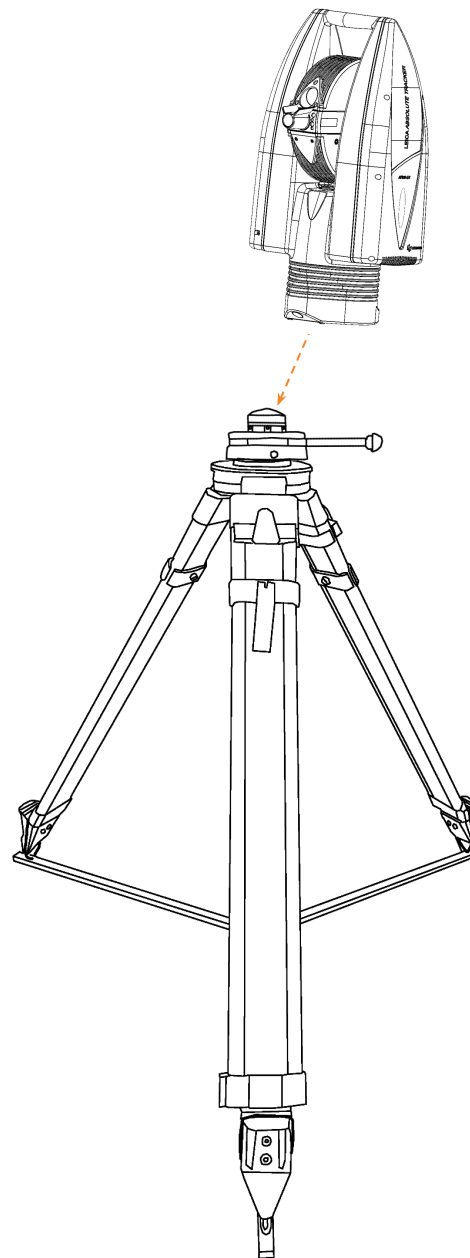


SETUP

LASER TRACKER SETUP

PLACE THE LASER TRACKER ON THE ADAPTER

After securing the laser tracker head adapter onto the tripod, the next step is to ensure the correct placement of the laser tracker head.



The laser tracker is heavy! Use two hands when handling it.

SETUP

LASER TRACKER SETUP

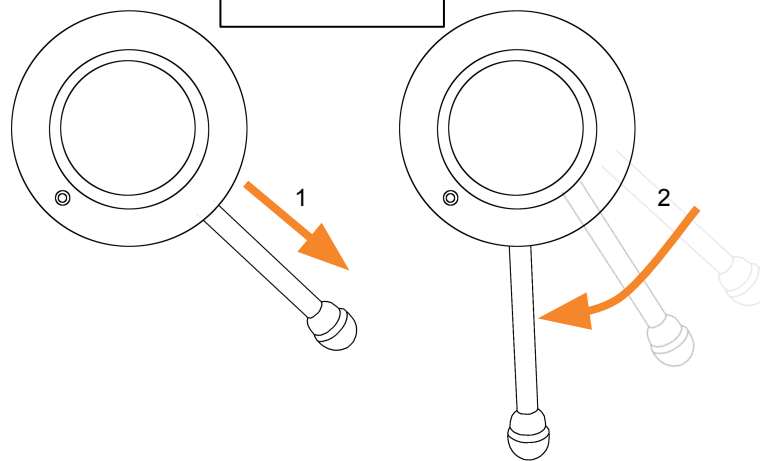
LOCK THE ADAPTER TO SECURE THE LASER TRACKER

Pull the handle outward and push the adapter handle to the left to lock the head unit in place. **Hold the handle at the top of the head with one hand during tightening to eliminate wobble.**

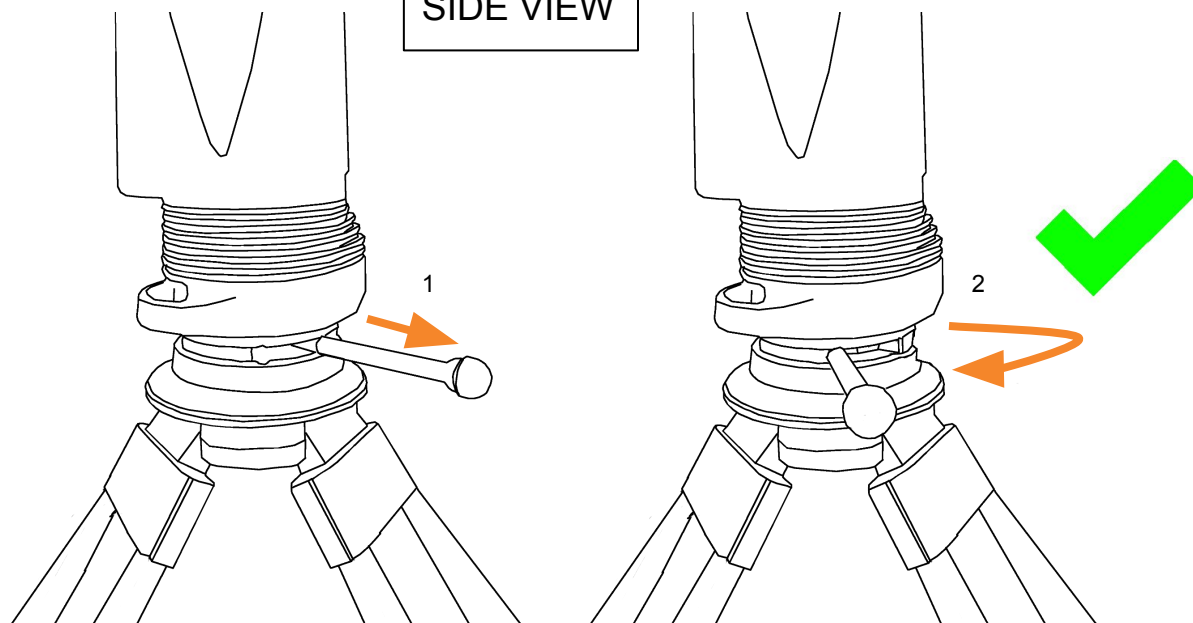


Failure to lock the adapter may result in equipment damage or poor print quality.

TOP VIEW



SIDE VIEW

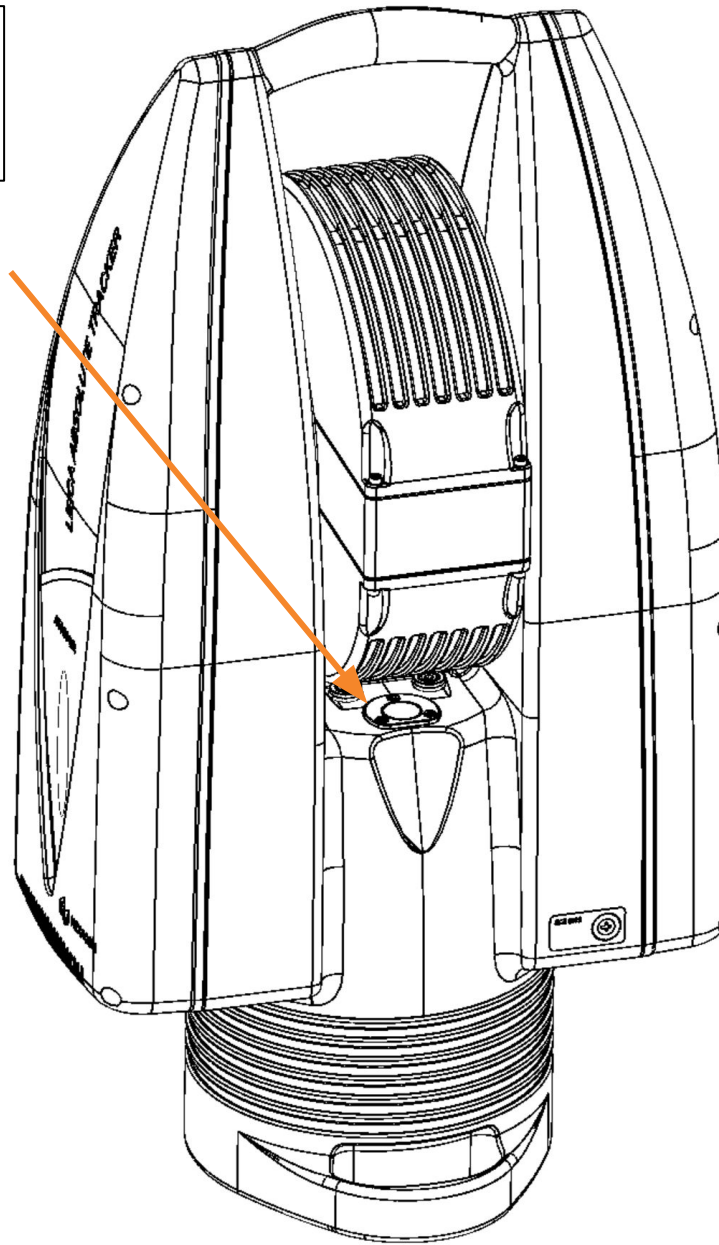


SETUP

LASER TRACKER SETUP

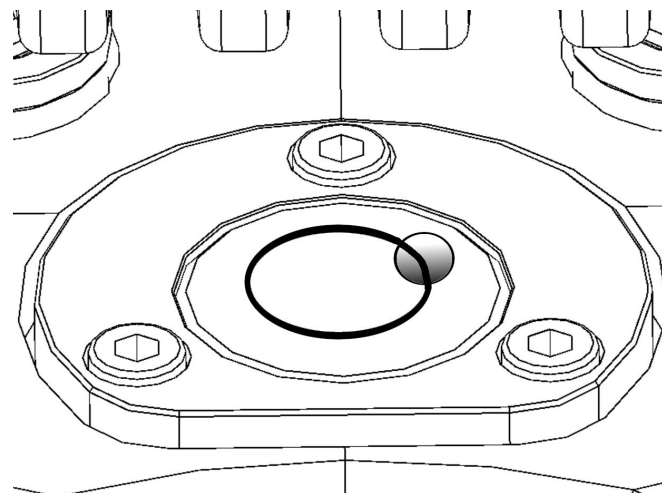
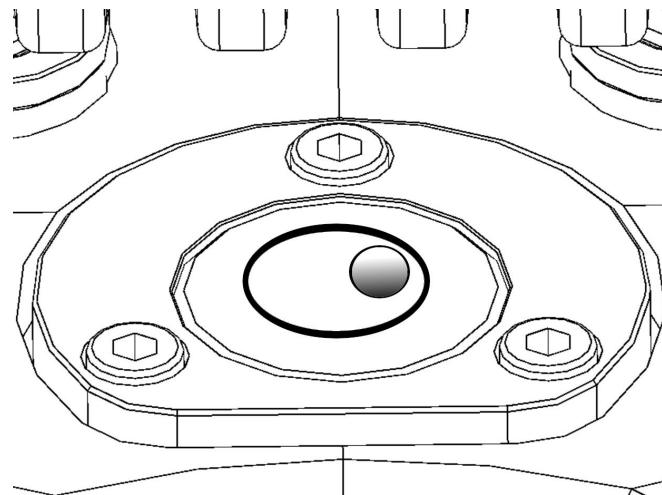
LEVEL THE LASER TRACKER

Locate the leveling bubble
on the back of the head
indicated here.



LEVEL THE LASER TRACKER

Ensure that the leveling bubble is contained within the circle. The bubble does not need to be perfectly centered, but the bubble must be completely inside of the circle to function properly.

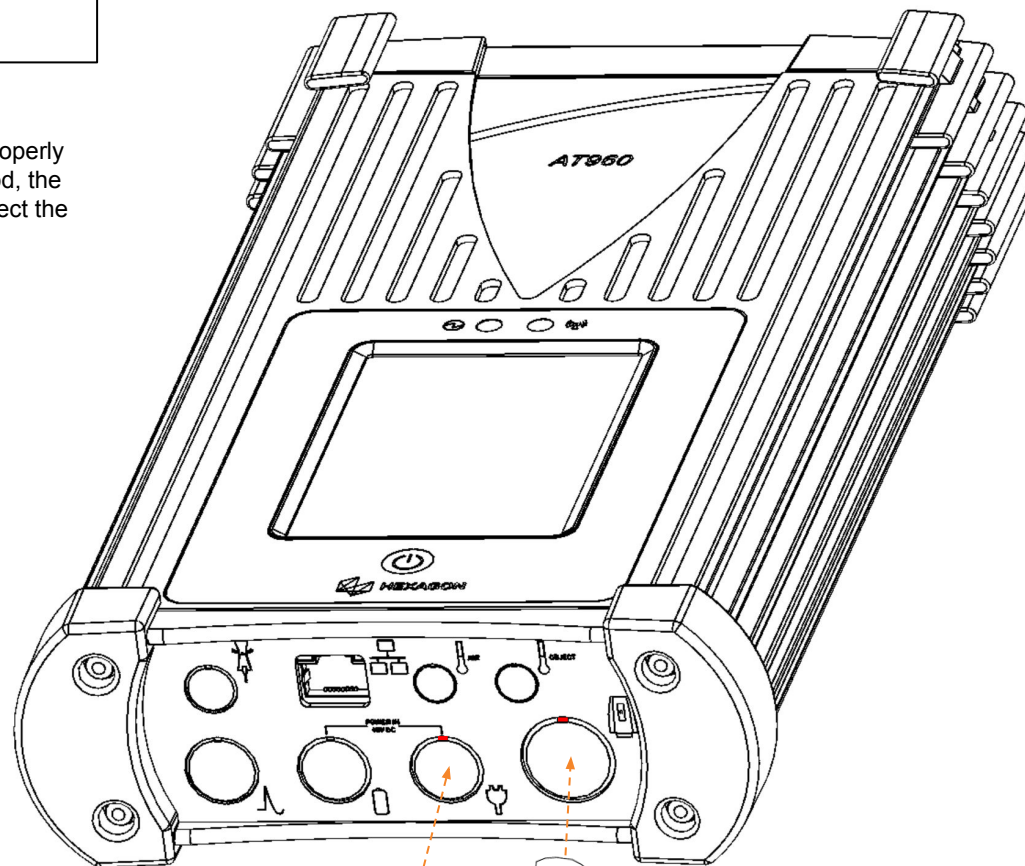


Tip:

To make the leveling process easier, try to position the bubble in-line with individual tripod legs and then go to that leg and adjust until the bubble is centered.

CONNECT THE WIRES

Once the head is properly set up onto the tripod, the next step is to connect the wires.



This cable connects to the power supply unit.

To ensure correct alignment, the red dot must be facing upwards and align with red dots on the laser tracker controller.

This cable connects to the Leica laser tracker head (see next page).

SETUP

LASER TRACKER SETUP

CONNECT THE WIRES

Connect the laser tracker to the controller.

