MERLIN INDUSTRIES, INC.

Merlin Drone Magix

Drone Photo Measuring Guide for New and Replacement Safety Covers

1 **Review Supplies Checklist & Drone Specifications**
Page 2

2 **Choose the Ideal Pool Types & Preparing Your Jobsite**
Page 4

3 **Follow Our "Measuring Made Easy" Steps**
Page 8

4 **Take the Perfect Drone Photo**
Page 10

5 **Submit Your Work**
Page 13

orders@merlinindustries.com

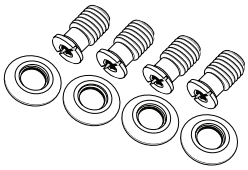
Supplies Checklist

Select Your Drone Magix Kit

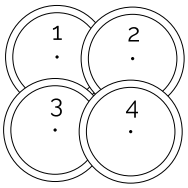
A



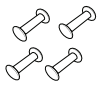
Drone with 4K or Better Camera



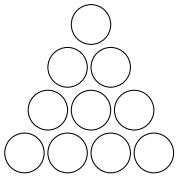
4 Brass Anchor Insert screws & 4 Brass Flanges



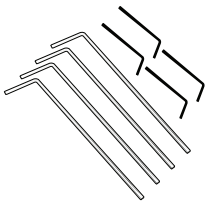
4 Measurement Discs



4 Aluminum Rivets

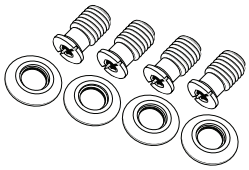


50-60 Small Discs

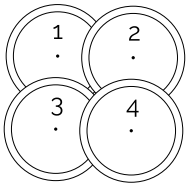


4 Large Allen Wrenches & 4 Small Black Allen Wrenches

B



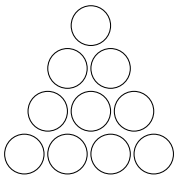
4 Brass Anchor Insert screws & 4 Brass Flanges



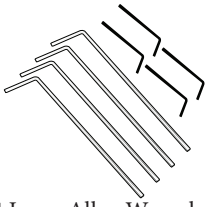
4 Measurement Discs



4 Aluminum Rivets



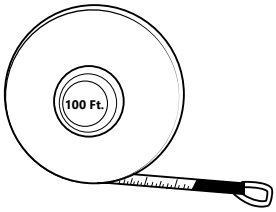
50-60 Small Discs



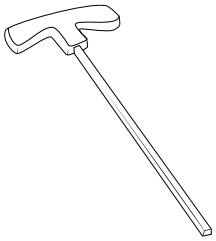
4 Large Allen Wrenches & 4 Small Black Allen Wrenches

You must provide your own Drone if selecting Kit B.

Required Supplies Not Provided in Kit



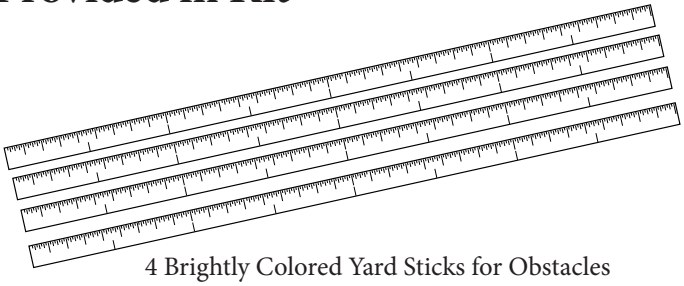
100' Fiberglass Measuring Tape



Hex Tool for Anchor Inserts



Laptop or Mobile Device to download photos from drone



4 Brightly Colored Yard Sticks for Obstacles (Needed to locate hidden obstructions)

Drone Specifications

If you are purchasing Kit B and therefore utilizing your own drone, please note that Drone Magix requires your drone/camera combo to be equivalent to or better than the Mini-3 by DJI.

Your drone should have the following specifications:

- A resolution of 48MP or higher, with a capability to capture in 4K or better quality
- Ability to change camera settings (assists with managing sunlight variation)
- Gimbal with 90 degree setting/toggle (for vertical picture taking)
- Hovering capability
- Ability to download photos to your mobile device

To view the specifications for the DJI Mini-3, follow this link: https://www.dji.com/mini-3/specs

Drone Operations & Regulations

If you are not a qualified and trained drone operator, do not attempt to fly a drone.

It is the drone operator's responsibility to understand Federal and Local regulations pertaining to commercial drone use certifications.

It is the drone operator's responsibility to review Federal and Local regulations pertaining to overall drone use in the area and all safety guidelines.

Rules & Regulations pertaining to drone use within the United States can be found on the Federal Aviation Administration (FAA) website: www.faa.gov/uas/getting_started

Review the fundamentals of safe drone flight practices by visiting Fly Robotics at: https://www.fly-robotics.com/public-safety-2

Pre-Flight Checklist:

- ✓ Ensure drone and controller are fully charged.
- ✓ Remove lens cover from drone. Power on drone and controller.
- ✓ Ensure drone camera is set to Auto mode and **JPEG photo capture.**
- ✓ Set drone camera setting for a 4 to 3 aspect ratio.
- ✓ Ensure the weather is safe for flight and that the flight area is outside of controlled airspace.
- ✓ Confirm the operator is qualified and licensed, if necessary.
- ✓ Confirm operator has understood this procedure and what photos are required.
- ✓ Check flight area for flight hazards such as branches, fences, power lines, etc.
- ✓ Review flight regulation and permission compliance.
- ✓ Review your drone's safety guidelines.

Ideal Pool Types

It is important to note that Merlin Drone Magix is not suitable for ALL pool types. For the best possible results, we encourage you to use this method only on the ideal pool types listed below.

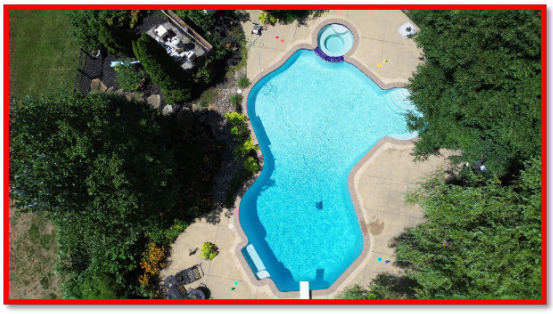
Ideal Pool Types:

- *Single plane deck*
- *Freeforms, rectangles*
- *Covered pools (remakes)*
- *Anchor matching*
- *New pools without anchors*
- *Basic raised spas*



Not Ideal:

- *Pool perimeter not fully visible*
- *Multiple riser raised spa*
- *Grotto/caves*
- *Vanishing edge*





Prepare Your Jobsite

Preparing your job site accurately will ensure that your photos allow Merlin Industries to provide an informed quote and cover design. **Drone Magix can be used on pools with the safety cover in place. Be sure that the cover is free of heavy debris or water. The cover needs to be taut as possible.** You will be assembling and positioning 4 numbered discs to create a large rectangle that will encompass a majority of or all of the pool.

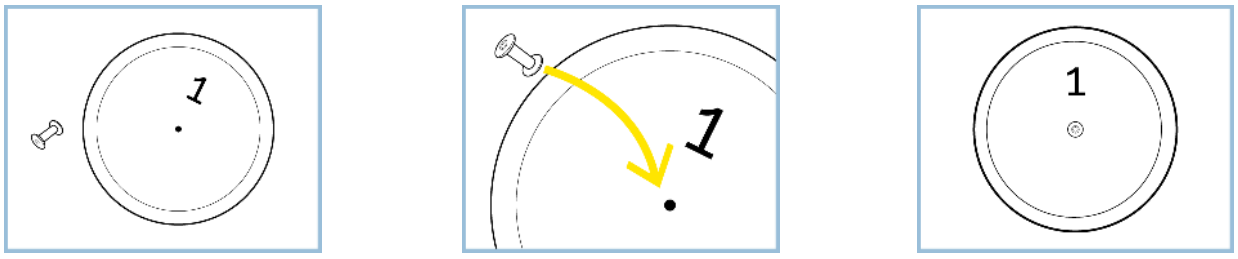
First, unpack your Drone Magix Measuring Kit to ensure you have all the components.

Note: There are two ways to prepare to measure a pool. Determine if you are working with a pool ***without*** existing anchors or ***with*** existing anchors. *Review the section that applies to your specific pool.*

Prepare Your Jobsite

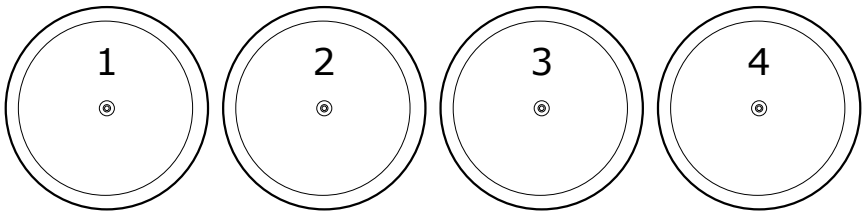
1.) Preparing the Jobsite for a Pool WITHOUT Existing Anchors

For this method, two people are needed. You will assemble the 4 discs with the aluminum rivets provided in your kit. Simply push the rivets through the center hole of each large disc. *See image below.*



1. Identify the best placement for the four discs around the pool perimeter. Make sure measurements with a tape measure can be taken between all four discs.

2. Place the four measuring discs with the rivet centers around the pool perimeter to form a rectangle as shown on page 8.

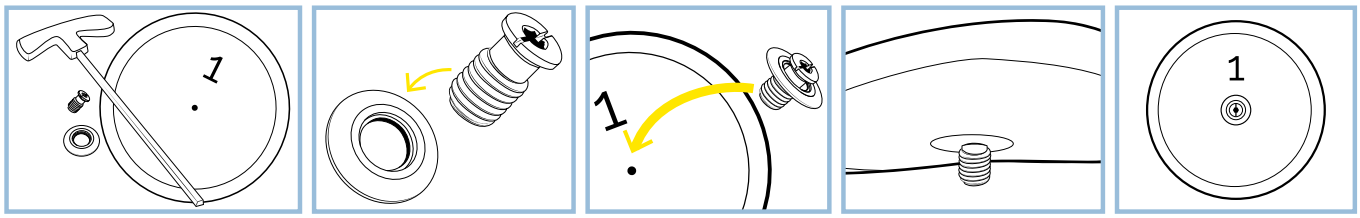


3. When you begin to measure, one person will stand at the first disc holding one end of the measuring tape while the other stands at the next disc with the other end of the measuring tape. Hold the tape in the center of each disc and follow the steps on Page 9.

Prepare Your Jobsite

2.) Preparing the Jobsite for a Pool WITH Existing Anchors

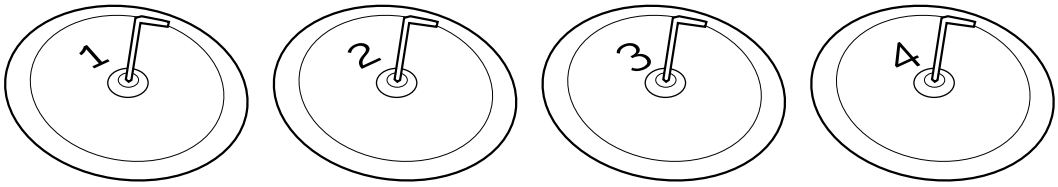
Assemble the four discs with the four brass anchor insert screws and the four anchor flanges as shown below. Then follow the steps below. Note: There is no need to remove the anchor inserts if the small Allen wrenches fit the existing inserts.



1. Identify four existing anchors on the pool deck that will create the desired rectangle. (see page 8 for examples)

2. Using the Hex Anchor Insert Tool, remove the existing brass anchor insert screws from those four anchors.

3. Push the brass inserts into the center hole of each of the four discs as shown in the illustrations above. Then, insert the four allen wrenches as shown below:



4. Place the small 2” discs on top of the existing anchors, especially if the safety cover’s anchors are not clearly visible. Use the small discs for any tarnished anchors or anchors located in the lawn or flower beds.

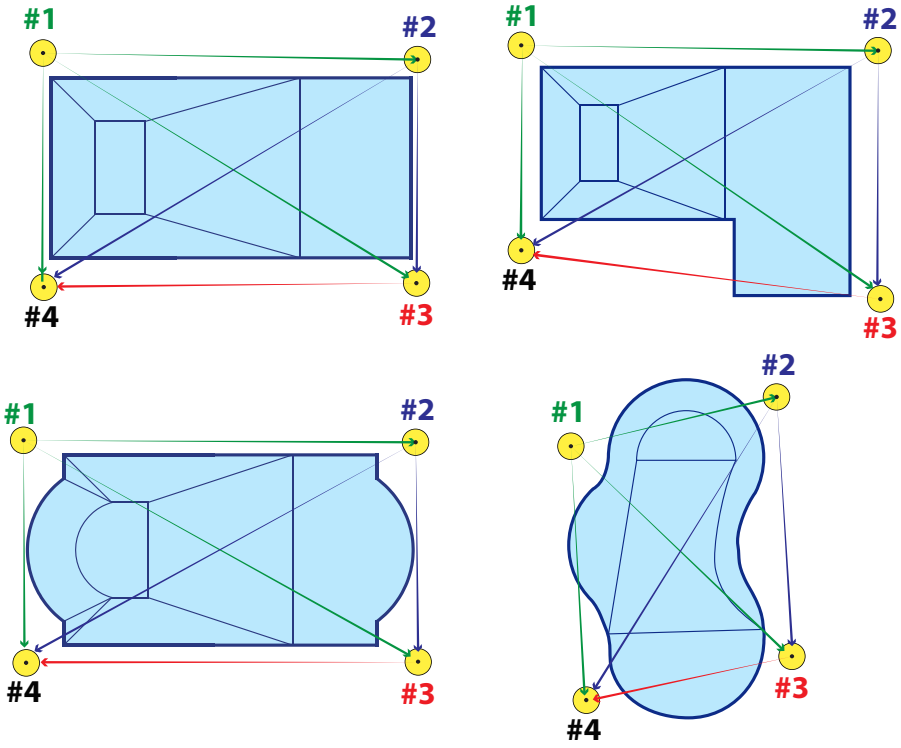
Measuring Made Easy

For Pools WITH and WITHOUT existing anchors

1. **Discs MUST be placed in a clockwise orientation.** Start with Disc #1 placed at the top left of the pool.

2. Repeat the same process for Discs #2, #3 and #4 moving clockwise around the pool to complete the rectangle.

Examples:



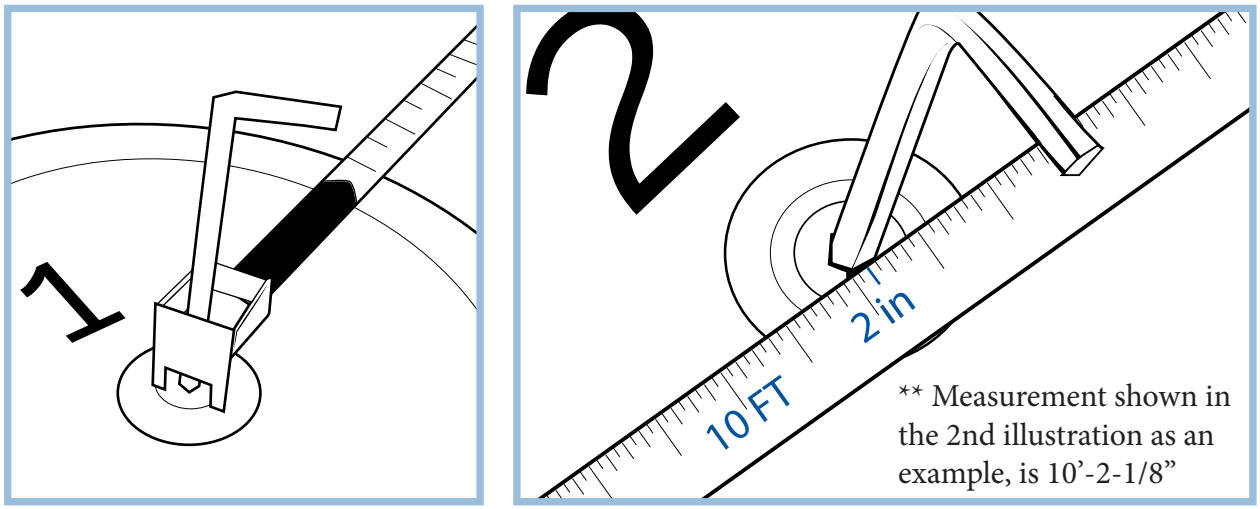
3. Place the small 2” discs on top of existing anchors, especially if the safety covers anchors are not clearly visible.

   Use the small discs for any tarnished anchors or anchors located in the lawn or flower beds.

Measuring Made Easy

4

Record measurements to the nearest 1/4" and make sure you measure to the center of the measurement disc. Take and record the six cross dimension measurements in the Drone Magix Measurement form or the Mobile Magix tool.



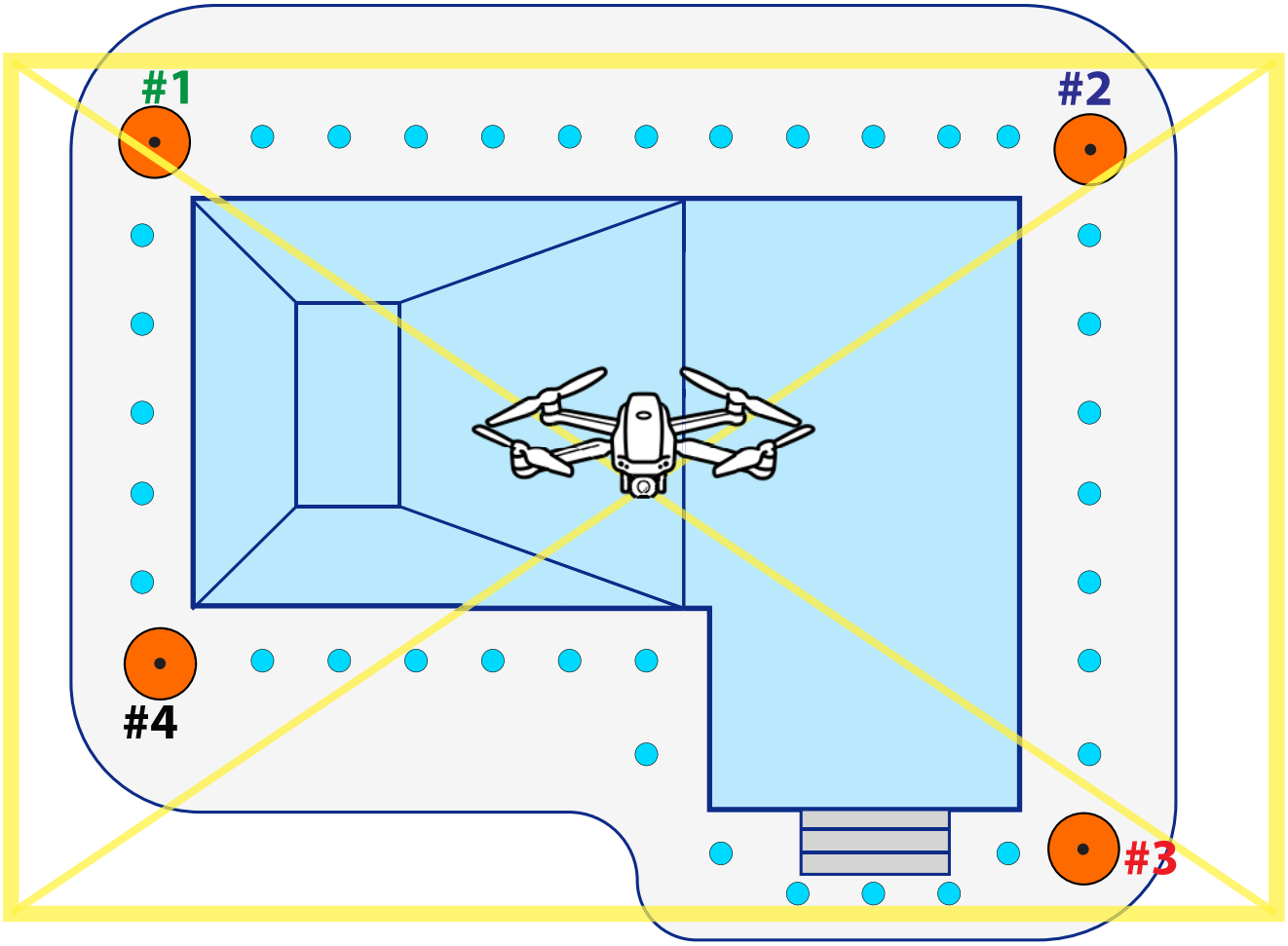
REQUIREMENTS TO NOTE FOR PLACING DISCS

- The discs can be placed with the existing cover in place or with the existing cover completely removed.
- There must be a clear line of sight to measure between each of the numbered discs.
- The discs must be placed on the deck surface and must be at the same height to each other.
- **IMPORTANT:** discs MUST be placed in a clockwise orientation, otherwise there is risk for the cover being manufactured incorrectly.

Taking the Perfect Drone Photo

The ideal drone position is to stay as close as possible to the **center of the pool** while maintaining the required Field of View (the yellow box below). Keep the **drone altitude at the minimum height** so that the camera's field of view captures all measurement discs, anchors and most of the pool desk. *Review the tips on the next page for working with altitude & center obstructions.*

Desired Field of View



Taking the Perfect Drone Photo

The drone flight and pictures are the most critical part of the Drone Magix process. You will want to ensure you have the right settings for your drone and camera. Depending on the size of the pool, you will only need as little as one or two drone pictures.

Pro Tips to Review

CHECK YOUR ALTITUDE

If your altitude is too high, the photo processing can be difficult or even impossible. If you are too low, you run the risk of eliminating needed features of the pool and deck. Your altitude should be just high enough to capture all required objects in the field of view such as the pool, anchors, and measuring discs.

WATCH FOR OBSTRUCTIONS

Obstructions such as tree branches will prevent the drone from being as close to the center of the pool as possible and will prohibit you from getting the needed field of view. If you encounter these types of obstructions, move the drone off-center.

GIMBAL ADJUSTMENT

If the desired altitude cannot be achieved and moving the drone off-center does not clear your field of view from obstructions, you can adjust the gimbal. **The angle of the gimbal must be noted and added to the measurement sheet.** Optimal gimbal setting is 90 degrees.

SUPPLEMENTARY PHOTOS

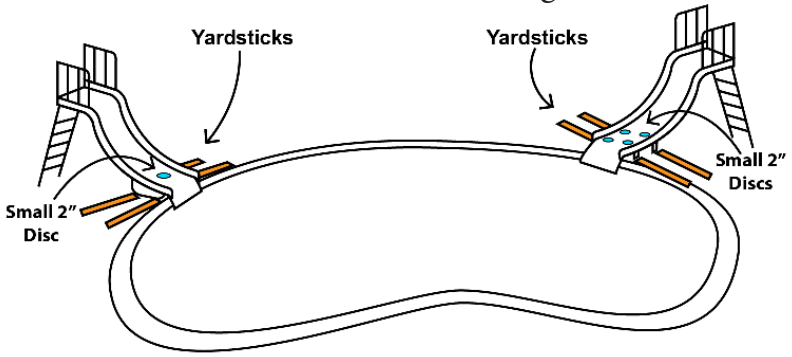
Take additional photos with a cell phone of any fixed objects that may interfere with the safety cover. **Include these photos in your order submission.**

Taking the Perfect Drone Photo

1. Set the camera to AUTO mode (not manual) and ensure picture format is set to JPEG mode. Make certain that the drone camera is set to 48 MPs.
2. Establish your correct field of view while considering altitude and obstruction tips from the previous page.
3. Set gimbal face down at 90 degrees after reaching desired altitude. Avoid facing the drone into direct sunlight.
4. Take the required photos and download the drone photos to your laptop or mobile device.

HOW TO HANDLE HIDDEN OBSTACLES

- Some features or obstacles on the pool deck such as a slide obscuring its support legs or blocks, may be hidden from the view of the drone when the drone photo is taken.
- The appropriate way to handle the obstacle is to place one end of the yardsticks (safety brightly-colored if possible) against four sides of the hidden feature so that most of the yardsticks will be visible in the drone photo. Place a small disc on the estimated center of the foot of the slide or diving board.
- The visible section of the yardsticks will be used to help determine the location and dimension of the hidden feature or obstacle.
- When a hidden obstruction such as a rail or slide foot is part of a pool feature, note the diameter or size of the obstruction in the notes section of the measurement form.



Submitting Your Work

Email Submission

Complete the enclosed Drone Magix Measurement Sheet by hand.

Take a photo of the measurement sheet or scan it into your computer.

Download the photo(s) from the drone in either a **JPEG format.**

Start an email and attach a photo of the measurement sheet along with all photos taken during flight and send email with attachments to orders@merlinindustries.com

Once your submission has been received, Merlin Industries will provide you with a timely quote for a cover based on your specifications.

Ready to purchase? Send us an email at **orders@merlinindustries.com** when you are ready to covert your quote to an order.

Submitting Your Work

Magix Submission

To accommodate those who are proficient with moblie Magix, a workaround has been created. Follow the instructions below for Mobile Magix.

Log in to Mobile Magix with your Dealer ID and Password.

Name the job and receive a job number.

Measure the distance between Disc 1 and Disc 2 and enter it in the "Distance between your 'A' point and 'B' point" field.

Make sure the selected Entry Mode is "AB". *See figure 1.*

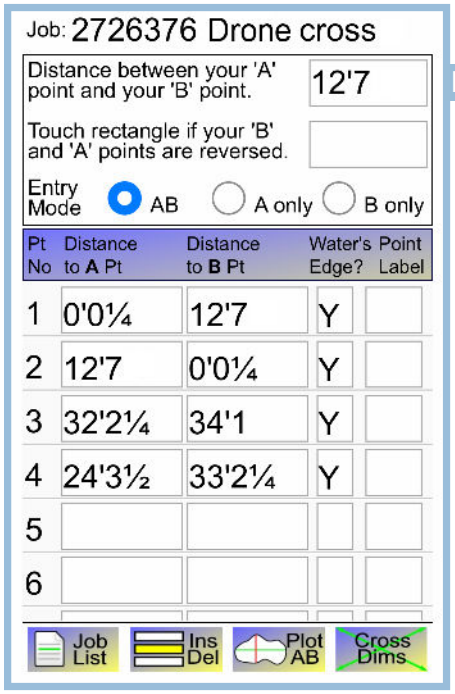


Fig. 1

Measure and enter the distances as follows:

A1 will be 0' 0 ¼"

B1 is the distance between Disc 1 and Disc 2

A2 is the distance between Disc 1 and Disc 2

B2 will be 0' 0 ¼"

A3 is the distance between Disc 1 and Disc 3

B3 is the distance between Disc 2 and Disc 3

A4 is the distance between Disc 1 and Disc 4

B4 is the distance between Disc 2 and Disc 4

Tap "Cross Dims" on the bottom of the screen.

Submitting Your Work

Magix Submission

Fill in all the Measured Cross Dimensions from disc to disc, there should be six total measurements, *as in Figure 2.*

Tap "Plot AB" to check the dimensions as a drawing, *as seen in Figure 3.*

The difference between Measured Dimensions and Actual Dimensions for the cross dimensions between Disc 3 and 4 should be less than 2 inches, *as highlighted in Figure 2.*

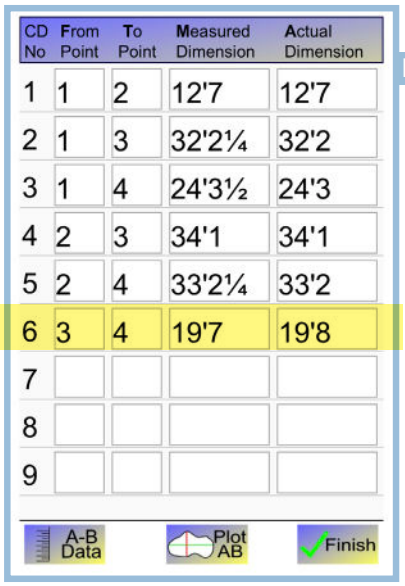


Fig. 2

Tap "Finish", then "Save Data" on the next screen. *See Figure 4.*

Tap "Send Mail" in the Get a Quote area.

Attach all photos taken during flight to the email on your screen.

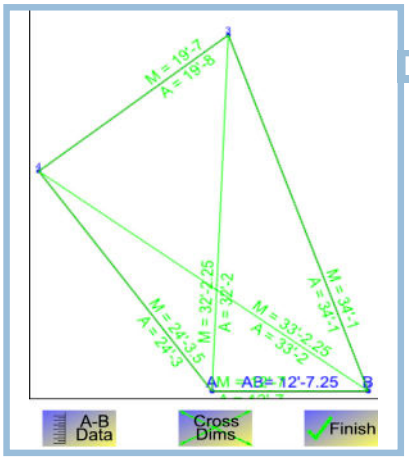


Fig. 3

Once your submission has been received, Merlin Industries will provide you with a timely quote for a cover based on your specifications.

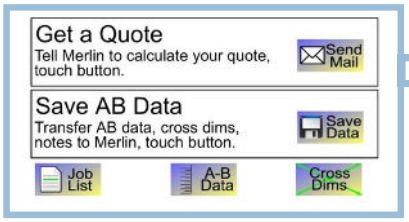


Fig. 4

Ready to purchase? Send us an email at **orders@merlinindustries.com** when you are ready to convert your quote to an order.

Merlin Drone Magix Measurement Form

Take a photo of this completed form and along with your drone pictures in **JPEG format only**, email it to orders@merlinindustries.com

Job Name:	Homeowner Address:

Date: _____ PO#(if an order): _____

Process as: ☐ Order ☐ Quote

Dealer Information		
Dealer Name:		
City:	ST:	Zip:
Contact Name:		
Phone:		

Distributor Information		
Distributor Name:		
City:	ST:	Zip:

Shipping Instructions:

☐ Ship to Dealer ☐ Ship to Distributor ☐ Pick up at Merlin

Drop Ship Name:		
Drop Ship Address:		
City:	ST:	Zip:
Phone Number:		

Cross Dimensions

Discs **MUST** be placed in a clockwise orientation around the pool perimeter. Use the center of the disc as the start and end points for cross-dimensional measurements.

Step #1 - Disc #1 Starting Point	Distance	Re-check
Disc #1 to Disc #2		
Disc #1 to Disc #3		
Disc #1 to Disc #4		
Step #2 - Disc #2 Starting Point	**Distance**	**Re-check**
Disc #2 to Disc #3		
Disc #2 to Disc #4		
Step #3 - Disc #3 Starting Point	**Distance**	**Re-check**
Disc #3 to Disc #4		

Raised Spa or Obstacle Height:_____ft. _____in.

Spacing

☐ 3x3 ☐ 5x5

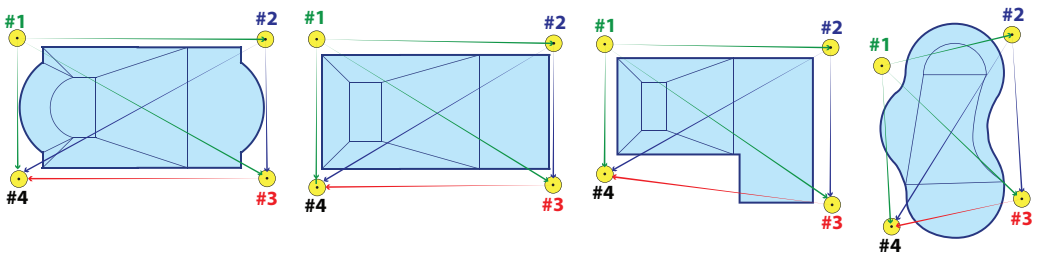
Overlap

☐ 12" ☐ 18" ☐ Other_____

Treatment and Hardware

☐ Cable ☐ Up & Over

☐ Tubes ☐ Entire Pool ☐ Or Qty_____



Drone Pictures Must Be in JPEG Format Only.

Material Type

☐ Dura-Mesh II

☐ Patented SmartMesh™

☐ Solid XLS
☐ with pump* ☐ with drain panel
(additional charges apply)

☐ Pool Guard

☐ Classic Mesh Green Economy Cover

Material Color

☐ Black* ☐ Green ☐ Blue

☐ Tan ☐ Gray

**Black color only available for Dura-Mesh II and SmartMesh.*

Kaleidoscapes! Material

☐ Indicate color(s)Below(Check Brochure)

_____ _____ _____

Please choose Pump* or Drain Panel for Kaleidoscapes! Below:

☐ Pump* ☐ Drain Panel

*Additional Charges For Pump Apply.

☐ Pool Guard Kaleidoscapes!

Color _____

☐ Send Pool Guard Without Pump**

**Pool Guard covers must have pump Installed in order to meet ASTM Safety Standards.