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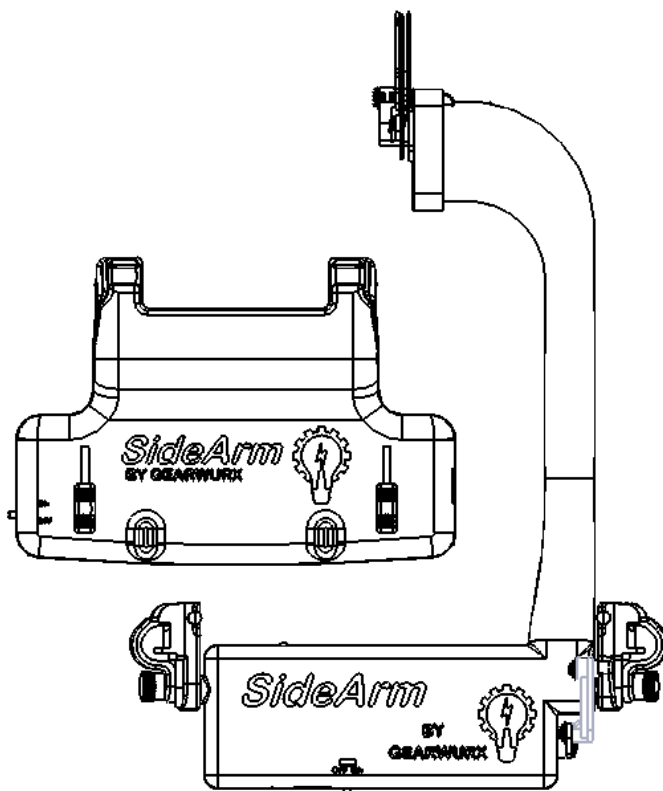| Page: 1	*SideArm* User Manual	Document Number: **i07178**
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Figure 1

1. PRODUCT DESCRIPTION

The *SideArm* is a clip-on robotic arm that fits DJI Phantom 3 drones (See Par. 16). It is a self-contained system consisting of a *SideArm Controller* unit and a *SideArm* robotic arm. Each has an internal rechargeable battery. The *SideArm* is a two degree of freedom robotic arm that allows the gripper Talon to be deployed beneath the drone to allow pick-up and drop-off of parcels.

2. APPLICATIONS

The *SideArm* is designed to be compatible with the following drones:
- DJI Phantom 3 Standard (See *SideArm Controller* compatibility notes below)
- DJI Phantom 3 Advanced
- DJI Phantom 3 4k
- DJI Phantom 3 Professional Drones

The *SideArm Controller* is designed to be compatible with the following drones using DJI model GL300C controllers:
- DJI Phantom 3 Advanced
- DJI Phantom 3 4k
- DJI Phantom 3 Professional Drones

The DJI Phantom 3 Standard uses a different controller and though the ***SideArm Controller*** will function with the Phantom 3 Standard Controller it will not snap onto the back as it does on the GL300C.

Reference par.16 below.

3. COMMON USE CASES

- Parcel delivery
- Delivery of items into hazardous areas
- Item retrieval
- Drone and robotics research
- Hobby

4. FEATURES

- Up to 500 gram (1.1 lb) lift capacity
- Carbon fiber Talon assembly
- Carbon fiber reinforced arm
- Fully proportional controls
- ***SideArm*** module weighs just 135 grams (4.8 oz)
- ***SideArm*** dimensions: 246mm x 138mm x 43mm (9.7 in x 6.6 in x 1.7 in)
- ***SideArm Controller*** module weighs 111 grams (3.9 oz)
- ***SideArm Controller*** dimensions: 140mm x 94mm x 30mm (5.5 in x 3.7 in x 1.2 in)

5. APPLICABILITY

This document applies to the following part numbers:

Part Number	Description
i06517	SideArm Expert Kit
i06900	SideArm Basic Kit

6. PACKAGING DETAILS

6.1 *SIDEARM* EXPERT KIT (I06517)

The following items are included in the package:
- 1x i06525 ***SideArm***
- 1x i06560 ***SideArm Controller***
- 2x i06775 Charger
- 1x i06505 Drone Perch
- 1x i07146 Sling
- 1x i07179 Transport Basket Assembly

6.2 *SIDEARM* BASIC KIT (I06900)

The following items are included in the package:
- 1x i06525 **SideArm**
- 1x i06560 **SideArm Controller**
- 1x i06775 Charger

7. PERFORMANCE

7.1 ARM TRAVEL

The total travel of the **SideArm** is 80 degrees from stowed position to fully deployed. The proportional control allows it to be stopped in any position. For optimal drone and **SideArm** stability, it should be fully deployed when carrying loads.

7.2 TALON TRAVEL

Each part of the Talon of the **SideArm** moves approximately 90 degrees. The slider controller allows the Talon to be stopped in any position. The Talon is protected against over-loading and will release loads that are too heavy for it to handle.

8. SET-UP AND USE

The following details how to install, power up, and use your **SideArm, SideArm Controller** and Accessories.

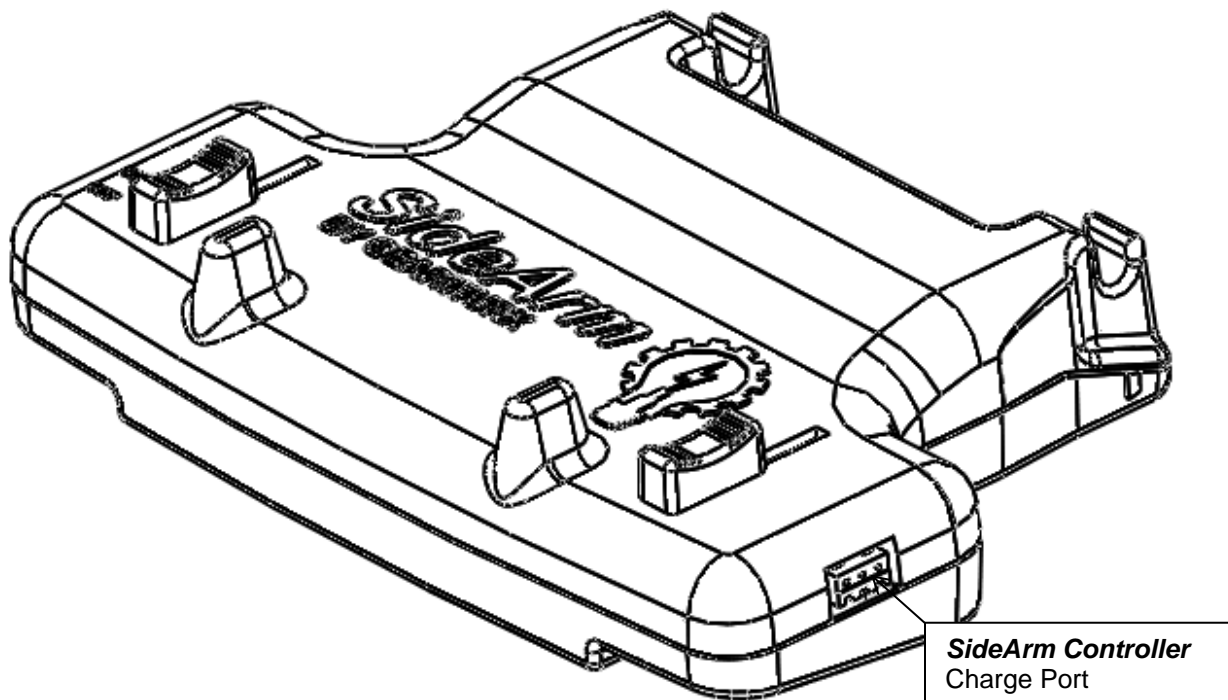### 8.1 CHARGE THE BATTERIES

Before using the **SideArm**, it is important to fully change the batteries in the **SideArm Controller** and in the **SideArm** with the included charger. The charge indicator LED on the charger will illuminate red when charging is started. The LED will gradually change from red to orange and finally to green when each battery is fully charged. The charger connector is keyed and can only be
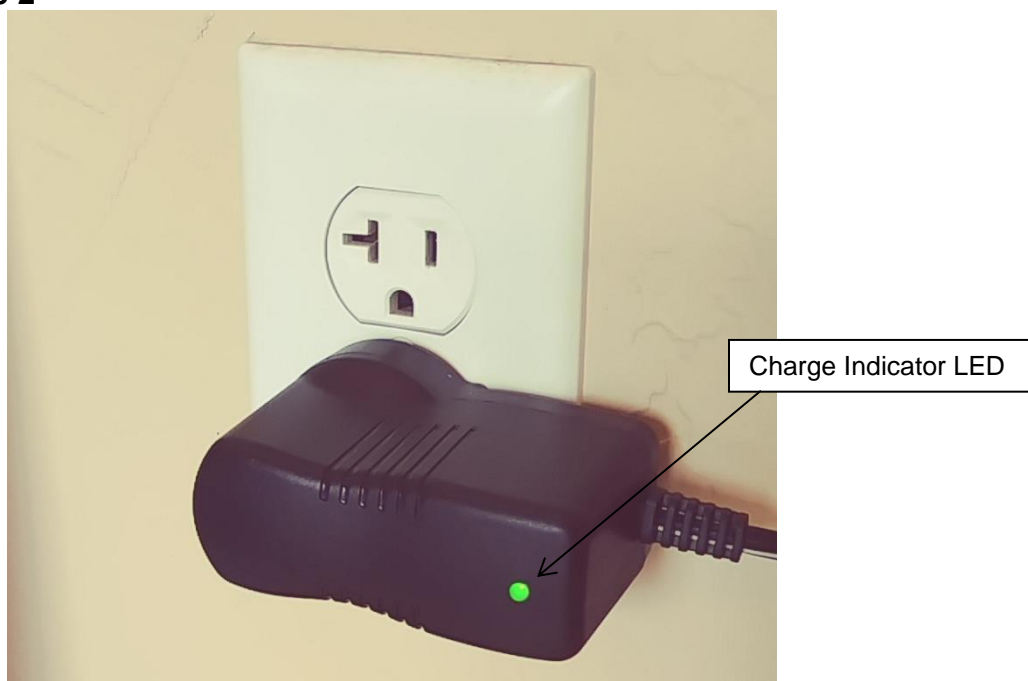
inserted in one orientation.

SideArm Controller
Charge Port

Figure 2

Charge Indicator LED

Figure 3

SideArm Charge Port
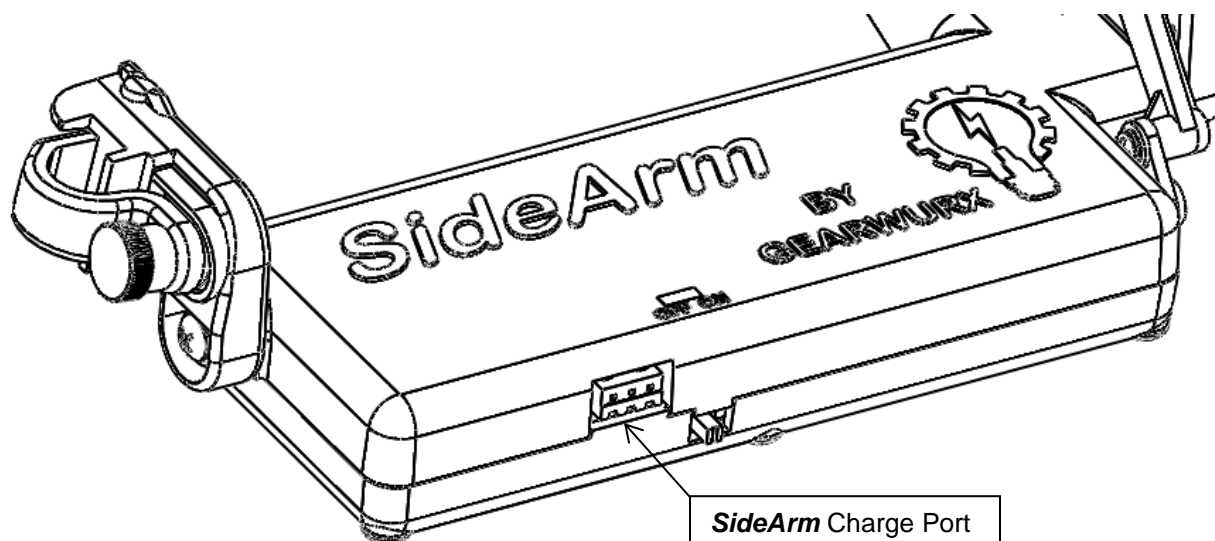
Figure 4

8.2 INSTALLING THE *SIDEARM* ONTO THE DRONE

The *SideArm* clamps to the two rear legs of the drone landing gear. It rests on the top of protrusions in the landing gear as shown in Figure 5. The clamp is snapped around the landing gear and the thumb screw is aligned and threaded in. See Figure 6. Repeat for other side.
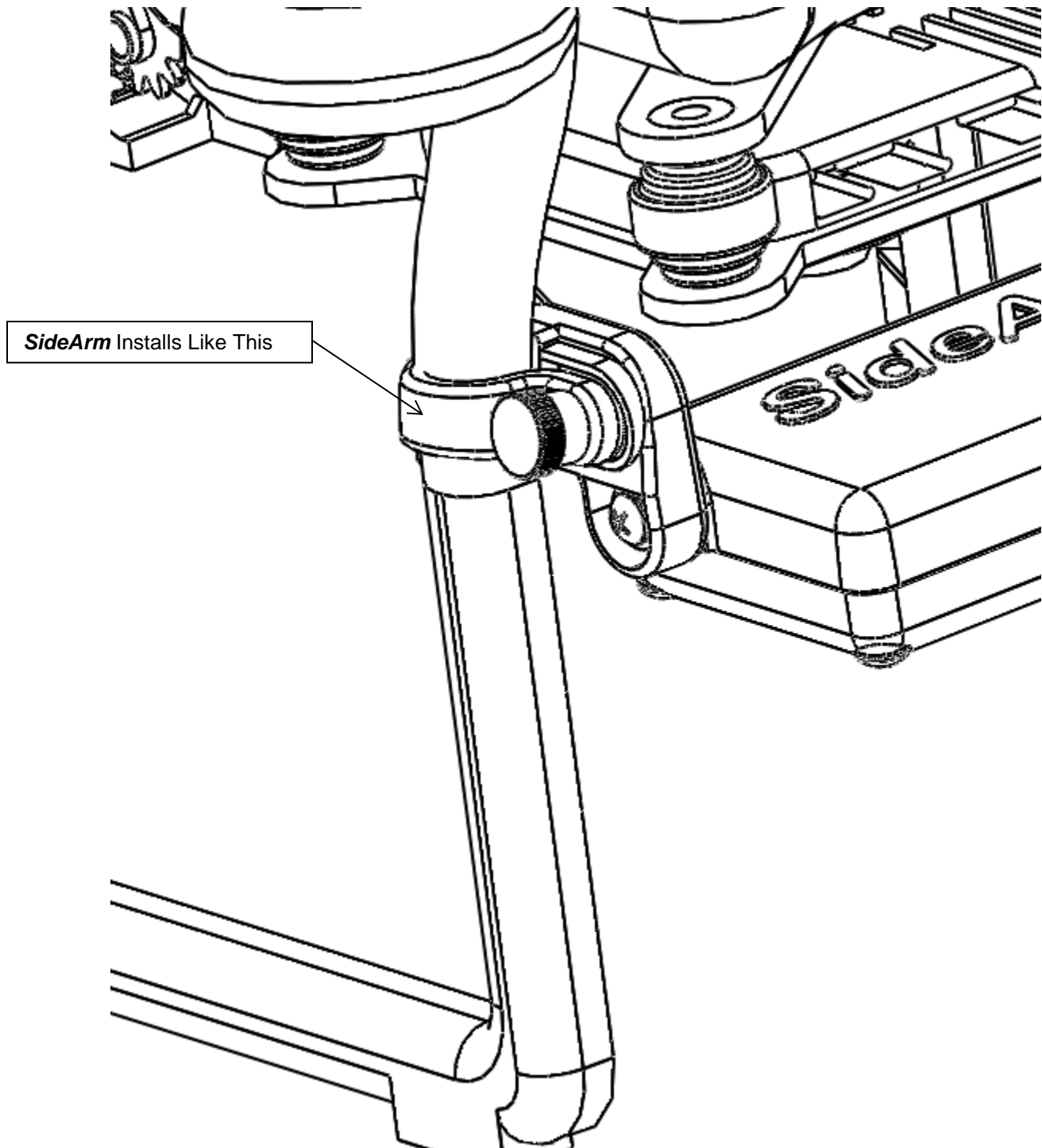
SideArm Installs Here

Figure 5

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SideArm Installs Like This

Figure 6

8.3   INSTALLING *SIDEARM CONTROLLER* ONTO DRONE CONTROLLER

Hinge the **SideArm Controller** under the rear metal handle of the drone controller. Swing the **SideArm Controller** down against the drone controller until it snaps into place. If fit is loose, install adhesive backed Velcro disks onto drone controller to captivate **SideArm Controller**.
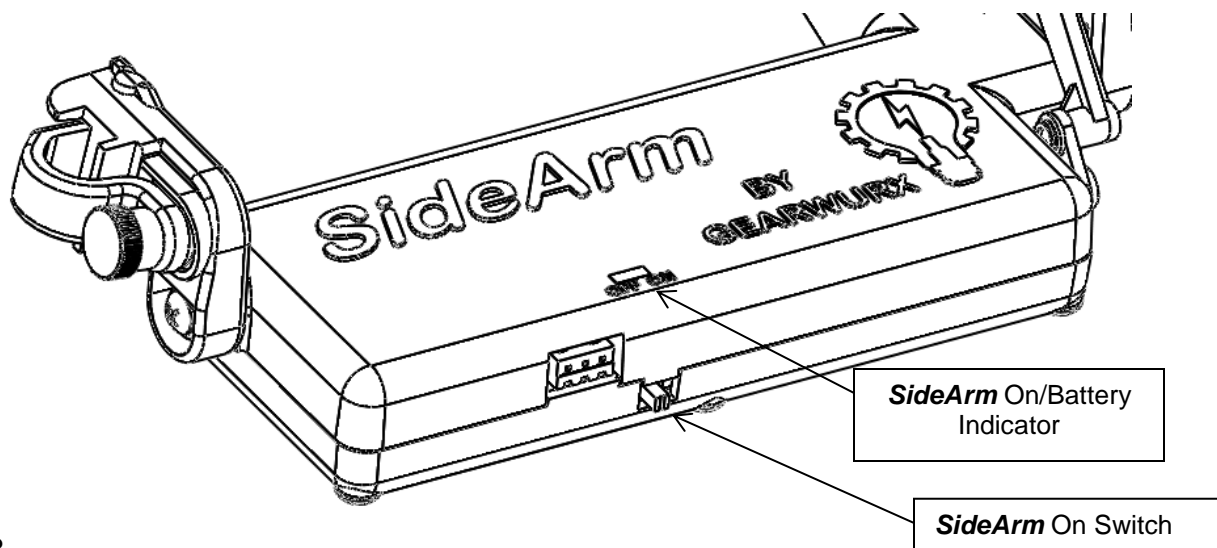

Figure 7

8.4   POWER ON

The **SideArm** and the **SideArm Controller** each have a separate slide switch for power on/off. See Figure 8 and Figure 9. When either unit it powered up, the power / battery indicator will illuminate. If it is red or toggles between red and green, charge before flight. Flying with inadequate charge can result in the **SideArm** being stuck in the deployed down position and can make landing difficult or impossible. Switch the power switch of **SideArm Controller** and **SideArm** into the "Off" position when not in use.

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SideArm On/Battery Indicator

SideArm On Switch

Figure 8

SideArm Slider

Talon Slider

SideArm Controller On/Battery Indicator

*SideArm Controller* On Switch
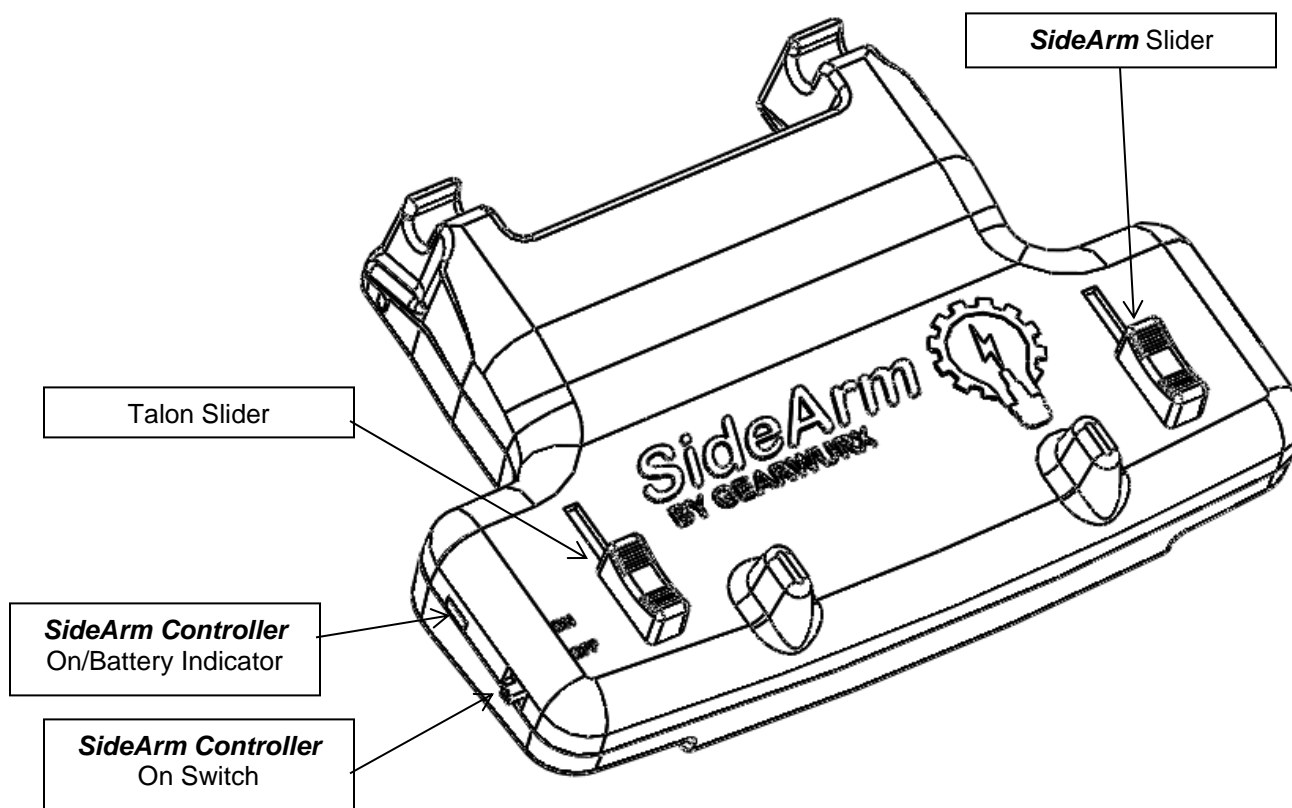
Figure 9

8.5   SLIDER CONTROLS

When the *SideArm Controller* is attached to the back of a drone controller, the power "On" switch of the *SideArm Controller* is positioned near the right side of the drone controller as viewed from the front. The slider nearest the power switch controls the Talon as shown in Figure 9. Sliding this control down closes the Talon. Sliding it up opens the Talon. The slider on the left (as viewed from the drone controller) deploys the *SideArm.* Sliding it downward moves the *SideArm* down into the deployed position. Sliding it up moves the *SideArm* upward into the stowed position. The *SideArm* must be in the stowed position for landing. . **Warning:** Attempting to land without having the *SideArm* in the stowed position will cause the drone to crash and will likely cause damage to the drone, nearby people and property.

8.6   ACCESSORY ITEMS

The following items are accessory items to extend and simplify the use of the *SideArm*. The use of each is depicted below:

8.6.1   Drone Perch

The Drone Perch allows the drone to be perched high enough that the *SideArm* can be fully extended below the drone before flight. This allows the Talon to grip a payload before starting the drone. Once the payload is securely gripped in the Talon, the drone can be started and can take off from the Drone Perch. The Drone Perch is assembled by sliding the four legs into the four square holes on the base (Figure 10). The legs should be inserted completely through both the upper and lower sheets of plastic on the base and should feel secure and not wobbly. **Warning:** The Drone Perch is only intended to be used for take-off. It is not intended to be used for landing. Attempting to land on the Drone Perch will likely damage the drone. Be sure that home settings (if your drone is so equipped) do not cause your drone to return to the Drone Perch.
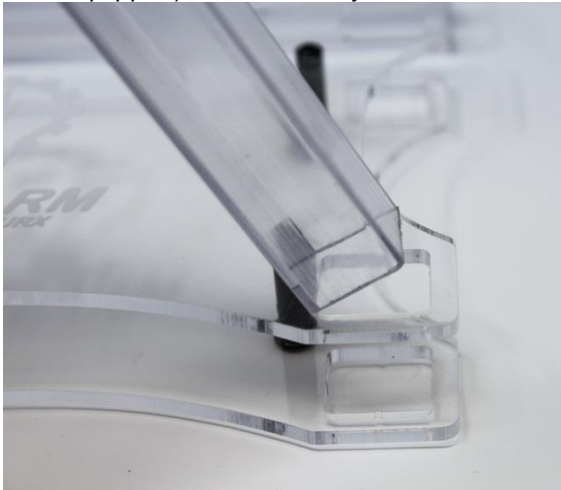
Figure 10

Figure 11

Figure 12

8.6.2 Sling

The sling is a useful way to carry small loose items and allows dropping them while in flight. Use of the Sling requires the Launch Pad. After the drone is placed on the Drone Perch and with the drone turned off, the *SideArm* is fully extended and the Talon is opened. The Velcro strip is then threaded through two of the eyelets on the sling (Figure 13) and secured around the wrist of the *SideArm* (Figure 14). The payload is then placed into the sling and the remaining two eyelets are threaded on to the lower claws of the Talon (Figure 15). The Talon is then closed using the slider. You are ready for take-off (Figure 16). While in flight over a safe area, the Talon is opened and the payload released. The Sling remains captive with the *SideArm* for the next delivery. **Warning:** The sling can release due to overloading or air turbulence. Do not fly over people or property that could be injured or damaged with an inadvertent payload release.

Figure 13

Figure 14

Figure 15

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Figure 16

8.6.3   Transport Basket

The Transport Basket allows deliveries and pick-ups of small parcels. It is not compatible with and should not be used with the Drone Perch. Pick-up requires calm weather and considerable skill. The Transport Basket Cradle is assembled and placed on a dry, level surface. The Transport Basket is placed into it and the Velcro strap on the handles is used to tie the handles together in the upright position (Figure 17). With the drone in flight and the *SideArm* installed, the *SideArm* is extended all the way down. The drone is then positioned to face the Transport Basket. The drone elevation is adjusted until the Talon is at the same elevation as the Transport Basket handle. The drone is then flown forward bringing the Transport Basket handle into the Talon. The operator then closes the Talon and flies the drone upward with the Transport Basket (Figure 18). To release the basket, the drone is flown vertically down to the ground until the Transport Basket touches the ground. The Talon is then opened fully releasing the basket. The drone then flies vertically up and away without the Transport Basket. **Warning:** The Transport Basket is not intended to be dropped. Dropping may damage the basket or property or injure people. Never fly over anything or anyone that may be damaged or injured by an inadvertent release of the payload.

Figure 17

Figure 18

9. DRAWING

Figure 19
SideArm
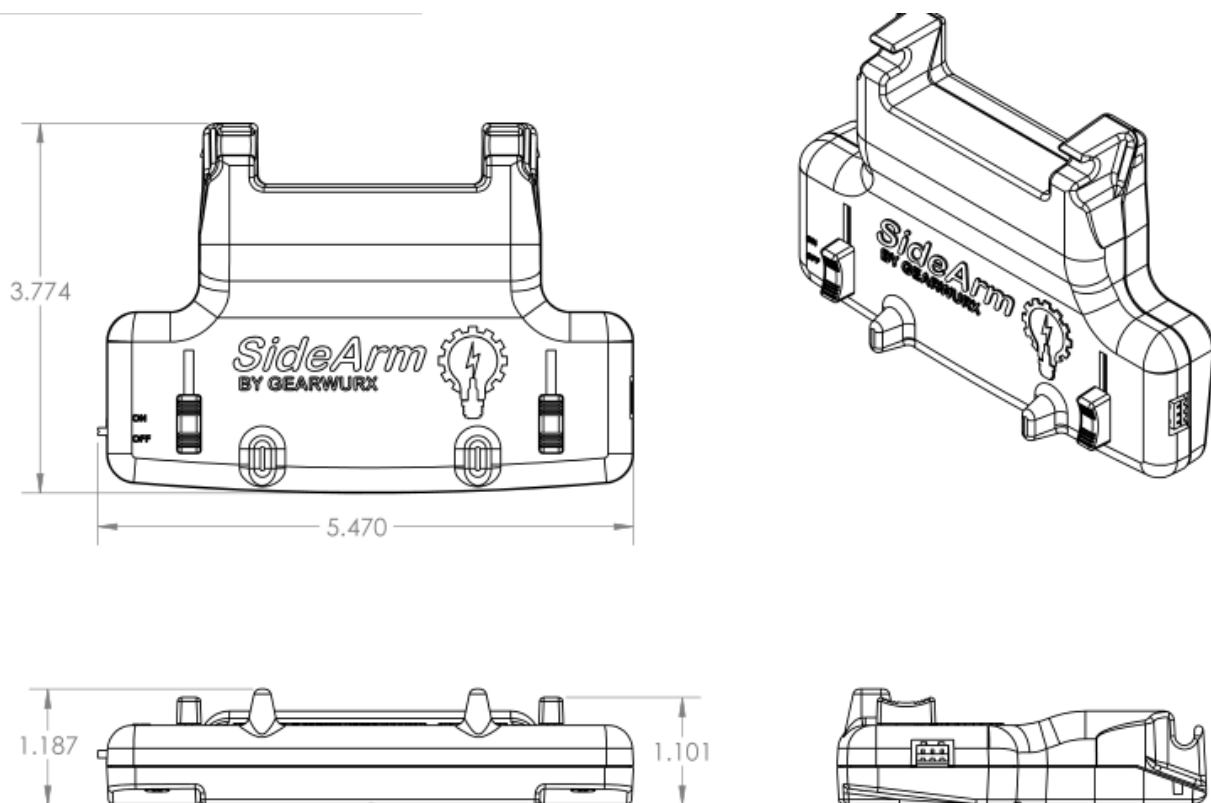
Figure 20
SideArm Controller

10. RELATED PRODUCTS

The following products are related to or accessories for this product.

Part Number	Description
i06517	*SideArm Extreme*
i06900	*SideArm Basic Kit*
i06525	*SideArm*
i06560	*SideArm Controller*
i06775	*Charger*
i06505	*Drone Perch Assembly*
i07179	*Transport Baket Assembly*
i07146	Sling Assembly

11. NO AFFILIATION TO DJI OR PHANTOM DRONES

The *SideArm* and its associated *SideArm Controller* are products of Invenscience LC, DBA GearWurx. Invenscience LC, DBA GearWurx is not affiliated with DJI or Phantom in any way.

12. TERMS OF USE

The Terms of Use document warns of risks and hazards associated with the use of the *SideArm* product. It can be found at
https://gearwurx.com/product/sidearm/
Scroll down the page until the "Terms of Use PDF" icon is visible. Click it to download or view the Terms of Use. Opening the *SideArm* package constitutes consent to abide by the Terms of Use.

13. CHANGE LOG

Revision	Date	Description of Changes
01	180418	Document Initial Release