Operators Manual
360° Blade Access Platform

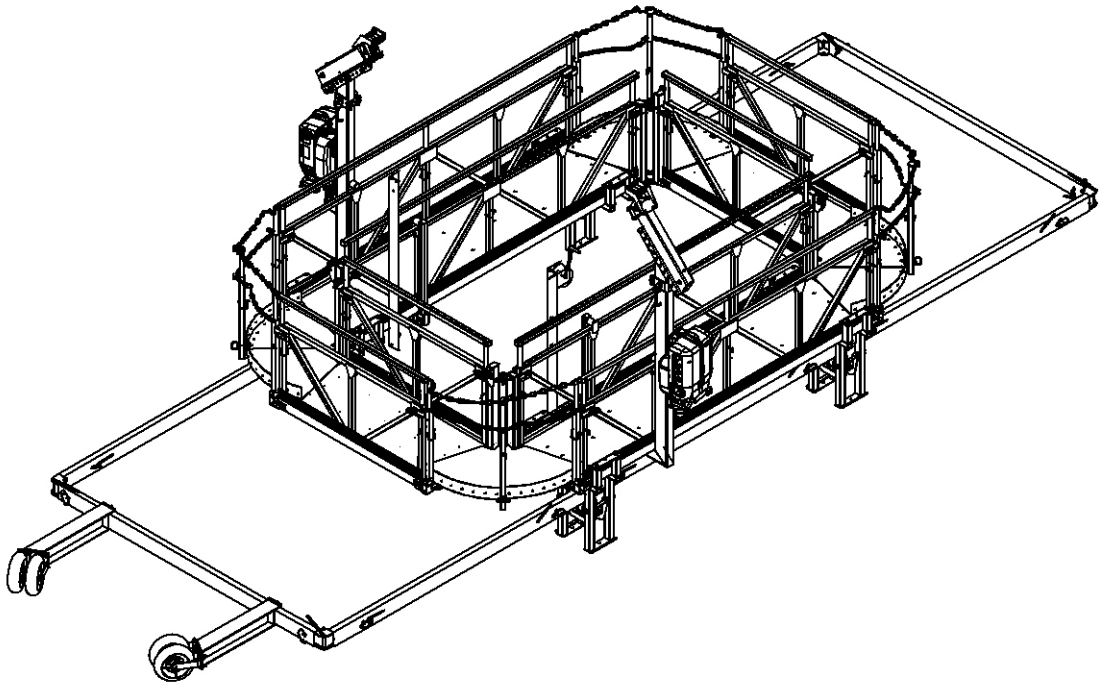

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Table of Contents

1. System Overview and Bill of Materials (BOM)

Component	Description	Quantity Per
706800-1	BAP 360 STABILIZATION KIT	1
709619-1	SUBFRAME KIT; STD BAP	1
709479-1	CASTER ASSY;DUAL;BAP 360	2
709626-1	TUBE ASSY;STD SPAN;SUB FRAME	6*
706644-1	JOINER WELDMENT;SUBFRAME	4*
706531-1	TUBE;CROSS;SUBFRAME;BAP 360	2
706802-1	CORNER ASSY;SUBFRAME	4
706108-1	SUBFRAME MOUNT ASS;BAP 360	4
706803-2	WINCH ASSY; BAP 360	1
706804-2	ANCHOR ASSY;WINCH;BAP 360	1
4969	MOD PLAT ASSY;10FT WOOD DECK	2
4968	MOD PLAT ASSY;5FT WOOD DECK	2
008812-1	CORNER ADAPTER;MODULAR PLTFRM	4
008810-2	WALKTHOUGH STIRRUP ASSY	2
709740-1	SINGLE LINE KIT;BAP	1
709477-1	UPPER BRACKET KIT;SINGLE LINE	2
701186-1	SUPPORT;BOT;SINGLE-LINE	2
9016 or 9036	HOIST;SC1500;+SR	2
705575-1	INLET ROLLER ASSY;WALKTHRU	2
705465-1	ANCHOR ASSY;SAFETYLINE;5FT BAP	2

* Different stabilization frame components can be supplied when blade size requires a different platform configuration. Contact Spider for more information.

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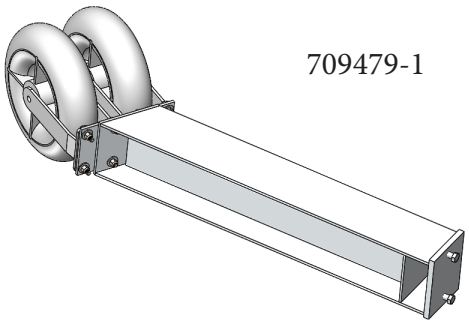

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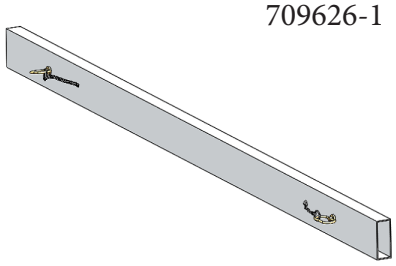

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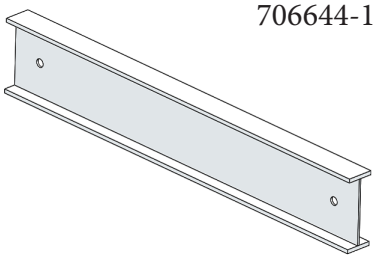

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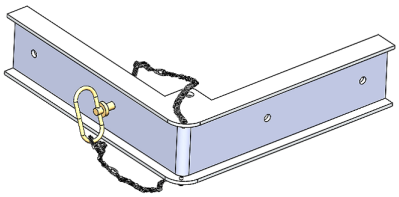

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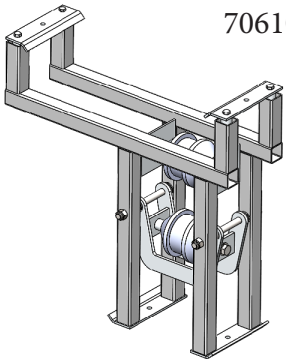

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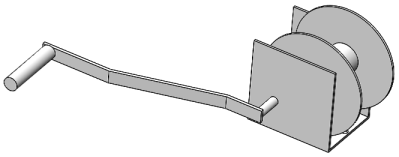

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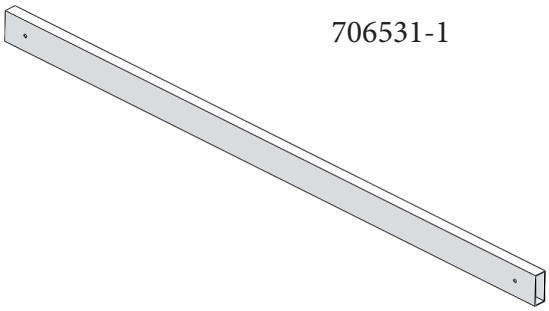

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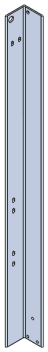

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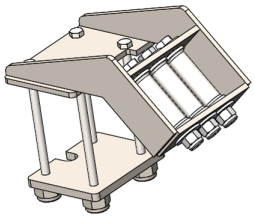

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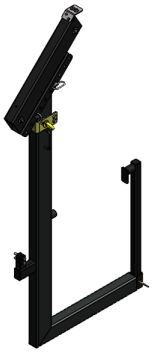

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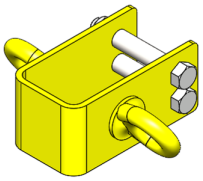

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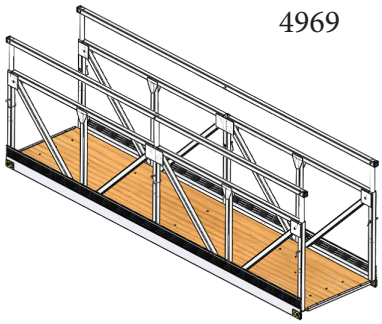

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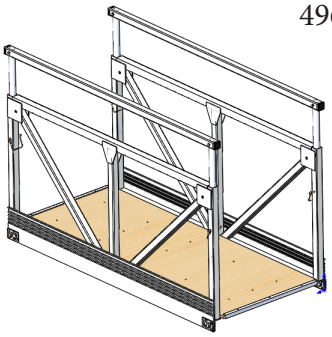

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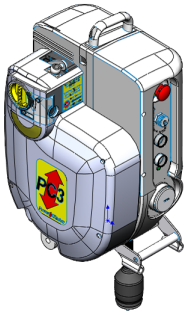

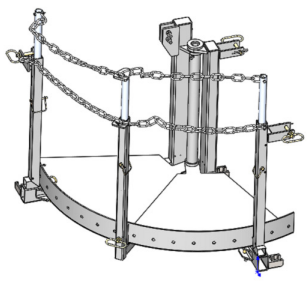

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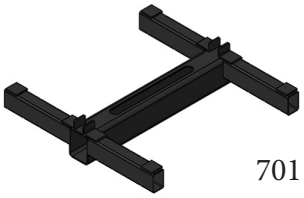

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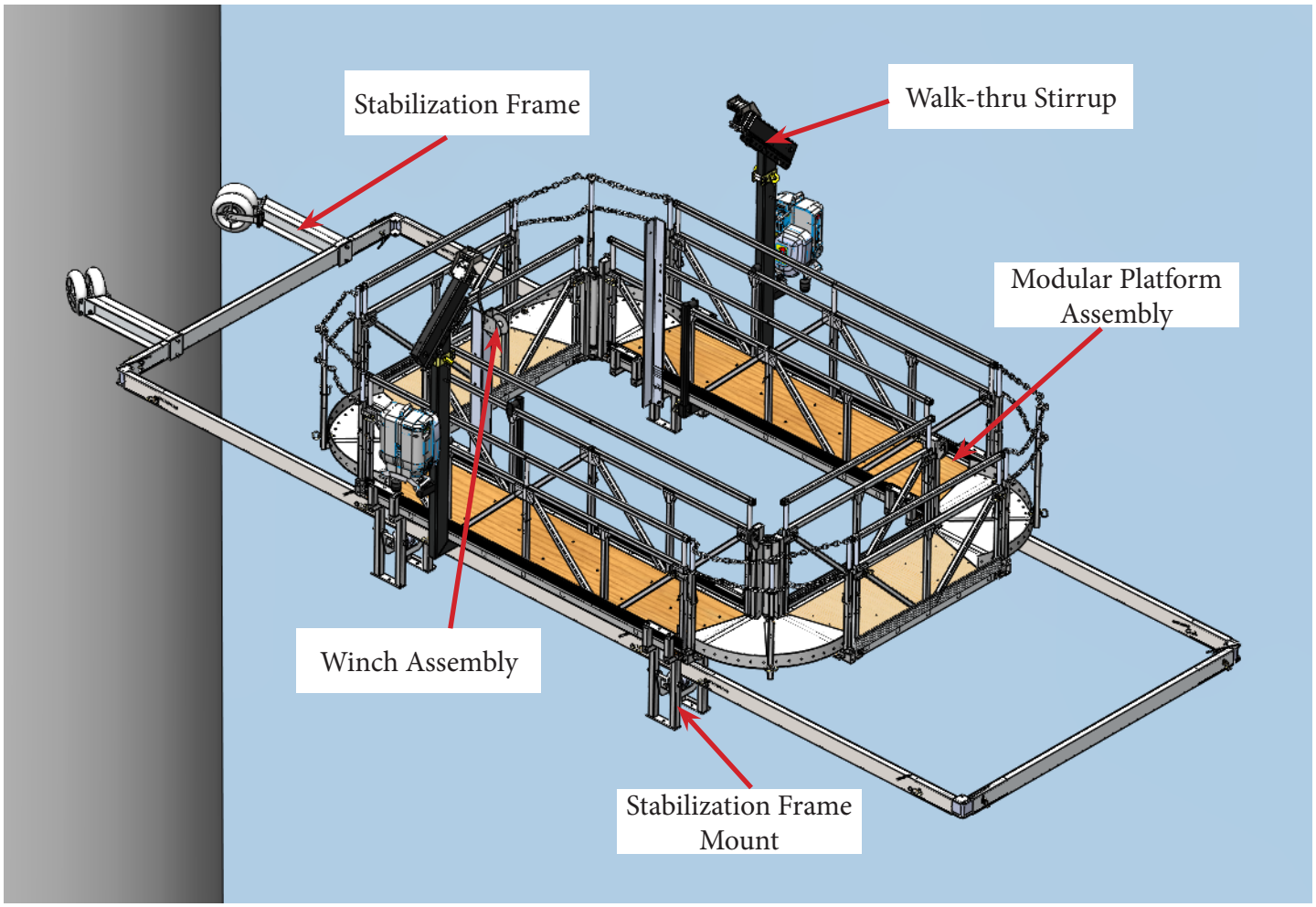
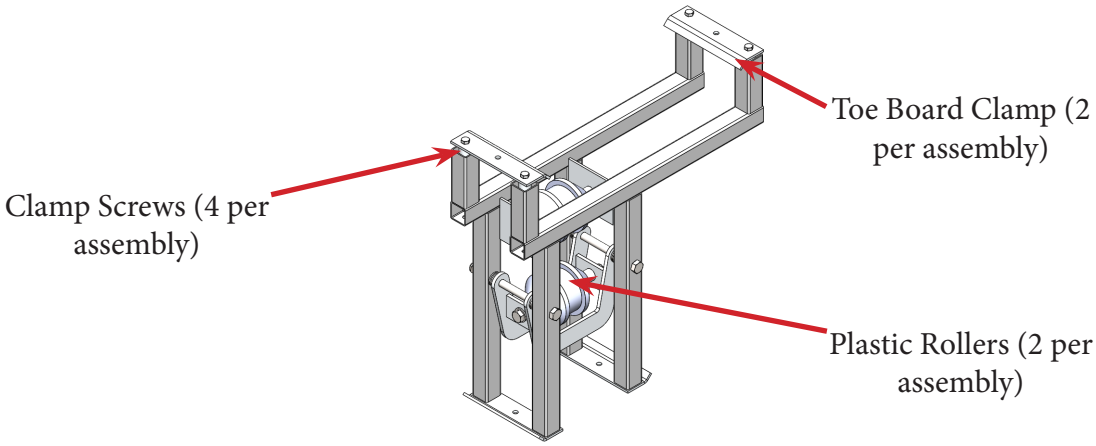
2. Product Description





2.1 Capacity

The 360° BAP is approved for a maximum rated capacity of 720 lbs (326 kg). (Rated capacity may vary for platforms in Canada)

Number of people: 2
Lifting speed: 35 ft/min (10.6 m/min).
Maximum wind speed: 11.2m/s (25 mph)

Self Weight	2280 lb (1034 kg)
Rated Capacity	720 lb (326 kg)
Max Distance from Tower to Blade Tip	29.2 ft (8.9 m)
Min Distance from Tower to Blade Trailing Edge	33 in (840 mm)
Overall Internal Platform Dimensions [L x W]	129.9 in x 65.4 in (3299 mm x 1661 mm)
Total Height in (mm)	115 in (2921 mm)

NOTE: Different lengths, widths, and extension limits are available depending on blade size, maximum distance to tower, and nature of the blade work being performed. Contact Spider for details 1-877-374-3370.

2.2 Function

The platform is designed to inspect and perform any necessary repairs to the blades and tower. The platform is for use in daylight, under the temperature range of 5° to 120° F (-15°C to 48°C) and shall not be used in case of inclement weather. Refer to Spider Operator's Manual for more information.

2.3 Scope of Application

The platform shall only be used for lifting people for blade/tower inspection and repair by trained personnel. Refer to OSHA Part II, Subpart D 1910.28 Safety requirements for scaffolding and Spider Operator's Manual for Codes of Safe Practices for suspended powered scaffolds.

2.4 Platform Limitations

- Access range of blade depends on blade and turbine type.
- Platform is not counterweighted, stability control is managed by technician positioning for counterbalancing.
- Expect platform angles of up to 25 degrees at times.
- Wire rope angle exiting from Stirrup head not to exceed 25 degrees from vertical

NOTE: Wire rope angles greater than 25 degrees must be approved by Spider.

NOTE: When exceeding Max cord height on the blade, Short Caster Arm Assembly (Ref P/N 710504-1) must be used, quantity 2.

2.5 Construction

The platform is built with Spider Modular platforms and stirrups. Two SC1500 hoists are used to travel vertically, both of which are equipped with secondary wire ropes. Attached to the bottom of the rectangular platform is an aluminum stabilization frame. The stabilization frame is actuated with a manual winch to push the platform away from the tower to access the blade. Pneumatic casters are used to engage the tower and roll along with the platform during ascent and descent.

2.6 Manufacturer

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To ensure proper and safe setup and operation, the following components are required in addition to the platform.

- 1 each Power supply cable with yoke. See Hoist Operator's Manual for detailed power requirements
- 4 each Ø8.4 mm or 5/16" wire ropes, 350 ft in length.
- 2 each 50 lbs (22 kg) counterweight, incl. wire grip. (Ref. P/N SA-10843)
- 4 each shackles, 3.25 T with screw nut and cotter pin. (Ref P/N 557026)
- 2 each pendant controls (for remote hoist operations) (Ref. P/N 701602-1)

The following is provided by others:

- 1 each fall arrest system per person
- All PPE as required by the operator's employer.
- All necessary rigging devices (slings, shackles, hardware, etc.) Rigging methods include multiple equipment solutions. Spider provides these in consultation with the user.
- Generator or site provided power. Refer to the Hoist Operator's Manual for power requirements.

In addition, the following may be used during transportation:

- 1 each trailer with rappelling winch.
- 2 each straps with tensioners.

3. Generator Size Recommendations & Operations Overview

Spider recommends the following generators for use with its SC1000 and SC1500 electric traction hoists running on 110 VAC and 208 VAC single phase 60 Hz, and 208 VAC 3 phase 60 Hz.

Hoist Model	Part Number	Hoist Capacity (lbs.)	Voltage AC	Amperage	Phase	Min. KW per Hoist
SC1500	9015, 9016	1500	208	9.9	1	6
SC1500	9035, 9036	1500	208	6.9	3	6

* When using 3 hoists or more on a platform, consult Spider Product Support at +1 877-374-3370 for proper Gen set ratings.

These suggested gen-set ratings are minimum requirements based on intermittent platform movement (less than 10 minutes of continuous upward travel) and standard ambient conditions.
Using a larger capacity generator is always acceptable, and is advised if any of the following are present:

- Ambient temperature over 100° F
- Relative humidity over 50%
- Site elevation above than 5000 feet
- Cord length over 250 feet, where transformer is not used.
- Running the hoists continuously for more than ten minutes

IMPORTANT: Verify the voltage operating range of the hoist before plugging it into the generator. Too much voltage will damage a hoist, causing work delays and expensive repairs – just as too little voltage. Consult the Hoist Operator's Manual before you start. Use a Buck / Boost transformer to adjust output voltage of the generator to meet the hoist specified voltage. Verify that the transformer is wired for the desired buck or boost function.

Key Term	**What you need to know**
Portable Engine Generator Set	An engine driven generator or 'gen-set'. Engine converts fuel into mechanical power, generator converts mechanical power into electrical power
Fuel	Either diesel oil, gasoline, natural gas or propane vapor
Governor	Adjusts the engine throttle position to maintain engine speed and output frequency as loads change.
Voltage Regulator	Controls the output voltage as the load changes. Usually not adjustable on portable units.
Frequency (Hz)	The number of times per second the AC voltage and current go from maximum to minimum and back to maximum. Directly controlled by the engine speed Determines the speed of an AC motor driven by the gen-set

Ambient Conditions	The air temperature, humidity and elevation above sea level used to rate gen-sets
Generator Ratings	The amount of power a gen-set can produce over a length of time without damage Intermittent rating: The highest output available for a short period of time Standby rating: For use when utilities go out, running no more than 60 hours a year continuous rating: Power level produced continuously, must be a steady load Prime rating: For use when gen-set is primary source of power, running 24 hours a day under varying loads. **Increased air temperature, humidity and elevation reduce the engine power output, and the generator output power ratings**
Inverters	An electronic device that converts DC electrical power into AC electrical power. Inverter generators use a DC generator connected to an inverter creating AC power Typically quieter, weigh less, use less fuel Limited power output and easily damaged by sudden load surges
3 phase power	Electrical power provided by the grid in 3 phases, or separate lines. Used for equipment with high start up loads
Single Phase Power Startup/ Run Factor	Used for most tools and devices. One of the three circuits coming from the grid. Power required when an electrical motor is started with a load already applied to it (such as a hoist supporting a platform). Power required for a scaffold hoist motor can be 3 times the run power
Power Cord	Connects the gen-set and motor, includes plug (male) and socket (female) connector at ends. Orientation of connector pins and sockets (x to x, y to y etc) on each wire must be correct or the voltage and/or phase will be incorrect

Always follow Operators Manual instructions, daily operations tests, and troubleshooting steps.
Contact Spider at +1-877-774-3370 for more assistance.

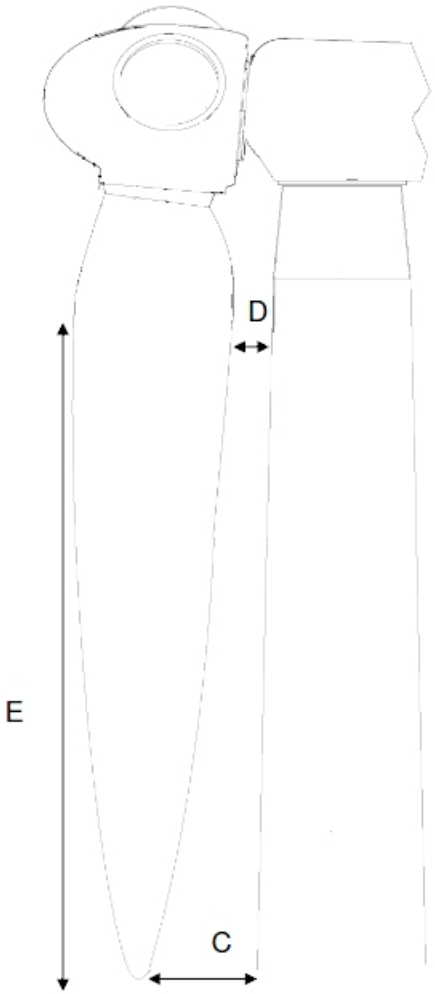
4. Assembly Instructions

4.1 Transportation

It is highly recommended that operators use a suitable flatbed vehicle or trailer to move the 360° BAP from tower to tower within a wind farm. The ability to transport the fully assembled platform from one tower to the next will minimize setup time and maximize productivity.

4.2 Platform Sizing

The 360° BAP is a modular design that is configurable to many different types of blades and towers. Spider can help to optimize the platform size for maximum productivity. In order to size the 360° BAP appropriately, the following information is required.



5 Must Have Measurements for Configuring 360 BAP

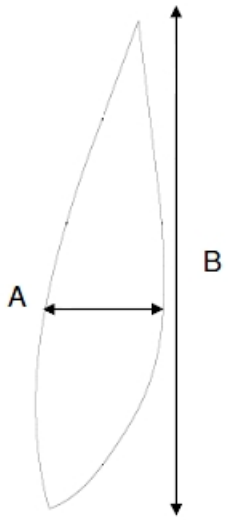
A: Blade width at its widest point = _____

B: Blade length from leading to trailing edge = _____

C: Distance of blade tip from tower at tip elevation = _____

D: Distance of blade to tower at its closes point to tower = _____ at an elevation of _____ ft (M).

E: Work to be performed on the blade is from _____ to _____of blade. Blade dimensions at this elevation are: _____.



Tower Manufacturer: _____
Model: _____ KW _____ MW_____
Site Name: _____
Work to be performed: _____
Bedframe exposed: ____yes _____no
Total Tower Height:_____
Requested load capacity: _____
PFAS: Dogline? ___yes _____no
Independent Lifeline? ___yes _____no
Site Contact: _____
_____
Site Owner: _____
Spider's Customer & Contact info:_____
_____
Other: _____

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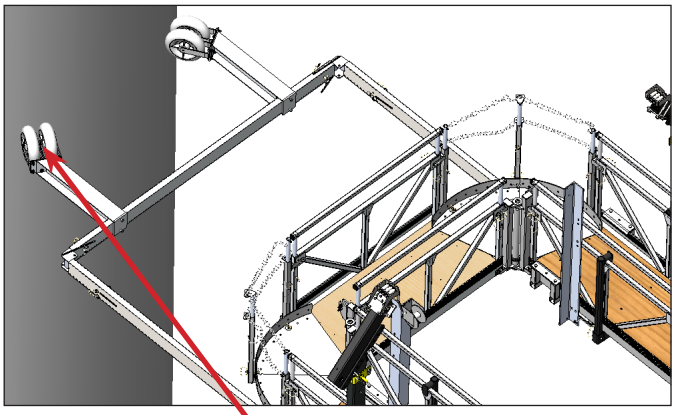
4.3 On-site Preparation

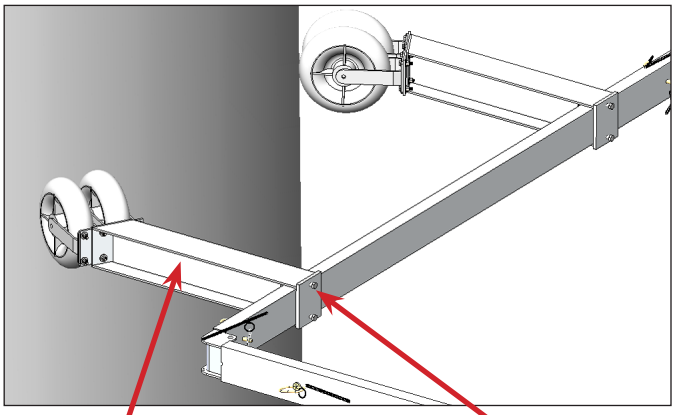
1. Refer to the Spider Operator's Manual for details on assembly of the Spider Modular platform components.
2. Refer to the 360° BAP Field Installation Instructions for details on assembly of the Stabilization Frame components.
3. Refer to the Hoist Operator's Manual for detailed instructions related to the hoist setup and operation.
4. Ensure that the 4 wire ropes (2 primary and 2 secondary) are rigged by a competent person to suitable anchorages. All wire ropes must use independent rigging devices (slings, shackles, etc.) that are attached to suitable structures. Use of the same structure for multiple suspension ropes is acceptable if the structure is suitably robust.

4.4 Set up

1. Position the assemble platform underneath the suspension points.
2. Insert the primary suspension rope and the secondary suspension rope into the stirrup. Ensure that the ropes are not twisted relative to each other prior to threading the stirrup and hoist.
3. With power supplied to the hoist, insert the primary suspension rope through the inlet eye. Push the "UP" button to feed the rope through the hoist until the rope is taut (to actuate the slack rope lever). Once the lever is actuated, the secondary suspension rope can be threaded through the hoist.
4. Attach 50 lbs. weights to the secondary suspension ropes to maintain tension on the system. At higher wind speeds, it may be necessary to use more than one weight per rope to maintain tension on the rope.
5. Repeat process for second hoist.
6. Raise the platform off the ground slightly to position the casters on the tower. Ensure that the caster arms are spaced such that the casters are perpendicular to the tower. The caster attachment arm can be moved horizontally along the end tube and tightened with the two screws.
7. Verify that the extension cable is tight and applying some pressure to the tower from the sub frame.
8. The platform is now assembled and ready for all pre-operational checks.



Casters perpendicular to tower



Attachment arm

Adjustment screws

4.5 Pre-operational Check

1. Verify that all hitch pins are fully inserted into the stabilization frame, and all retaining pins are fully inserted in the hitch pins.
2. Verify tire pressure in the casters is 45-50 psi using a standard tire pressure gage.
3. Check to see that the caster adjustment screws are tightened to 15 ft-lbs.
4. Check to see that the stabilization frame is rolling smoothly through the rollers on the stabilization frame mounts.
5. Verify the extension cable is routed properly and is rolling smoothly through the pulleys attached to the winch assembly and the stabilization frame.
6. Verify that the toe board clamps are fully engaged on the toe board and that all fasteners are tightened to 12 ft-lbs. (p/n 706108-1).
7. Verify that the Modular Platforms have been assembled per the Spider Operator's Manual (p/n 400540).
8. Perform all pre-operational tests of both hoists per the Hoist Operator's Manual (p/n 9961).
9. Verify that the primary and secondary wire ropes for both hoists are plumb and have not become twisted. Ensure that the ropes are free to rotate below the hoists to avoid entanglement.

4.6 Fall Arrest Planning

All workers on platform must use a Fall Arrest system. Note that it is acceptable to attach lanyards to an engineered horizontal lifeline system on the platform when both a primary and secondary suspend wire rope is used. Workers must use "Y" or 2-legged lanyards in this case to ensure 100% tie-off to the platform. Contact Spider for details on this option. Note: Although it is acceptable to use vertically hung independent lifelines, the 360-degree movement of workers around the platform makes lifeline management more complex and requires more operator attention. Ensure operators have appropriate training for lifeline management if vertically hung independent lifelines are used.

5. Operation Instructions

NOTE! Do not exceed the weight limit and follow the instructions in the warning decals.
NOTE! No persons are allowed under the platform during operation. Mark the work zone with construction tape or something similar.

The hoists are operated from the work platform. Use of a remote pendant is recommended to allow adjustment of the platform at multiple locations.

NOTE! Pay attention to the suspension ropes and spacing between blades and platform when working near the nacelle in order to avoid damage to the blade. In addition, make sure that the suspension wire ropes do not get tangled.

NOTE! Always perform pre-operational inspection. Perform functional test near the ground before every use.

1. Press "UP" on both hoists until you reach the desired height.
2. To extend the platform away from the tower, rotate the manual winch clockwise (you will hear a "clicking" sound when the cable is collecting on the winch). To retract towards the tower, rotate the winch handle counter-clockwise (the winch will not make noise while the extension cable is let out of the winch). Use a combination of horizontal movement with the winch and vertical travel with the hoist to access the pertinent area of the blade.

NOTE! Because the stirrups are located towards the inside (tower side) of the platform, the blade access platform will tend to tilt away from the tower on initial lift off. This is normal and to be expected. As the platform is pushed from the tower, the platform will tend to level out. It is recommended to raise the platform off the ground and immediately position the stabilization frame to the approximate position where the platform will engage the tip of the blade. This will help to level the platform.

NOTE! In the event of a power loss, the platform can be lowered using no power emergency descent function on the hoists (refer to Hoist Operator's Manual). However, both hoists must be activated at the same time in order to maintain platform level. Careful coordination between operators is required to lower the platform in a controlled manner.

6. Maintenance/Service Instructions

6.1 General Maintenance

Clean the Stabilization Frame after each use, especially the mounts to prevent falling debris.

Lubricate the plastic rollers with graphite lubricant as needed (about every 6 months).
Caution - do not use petroleum based oils as a lubricant.

Verify that all attachment hardware is properly tightened prior to use.

Inspect the rollers for excessive wear or damage prior to use.

Refer to Spider Operator's Manual for specific maintenance requirements for the platforms.

Refer to Hoist Operator's Manual for specific maintenance requirements for the hoists.

7. Troubleshooting

7.1 Hoist/Generator

Low Engine Speed/Output Frequency	Output frequency measured with a multi-meter at the power outlet or end of the power cord must measure between 58 and 62 Hz. If you get a different reading, consult the Operators Manual or contact the gen-set's authorized service provider. Check to see if the gen-set is set in "energy saver" mode. This mode idles the engine until a load is applied to it. The high start up loads of a hoist motor can damage the gen-set when in this mode, and also the hoist motor. Keep the gen-set in full run mode
Incorrect Voltage	If output voltage at the gen-set gauge panel or measured with a multi-meter at the gen-set outlet is less than the rated hoist voltage with no load, do not use the gen-set to power the hoist. Check the gen-set Operator's Manual for how to adjust the output voltage or contact the gen-set's authorized service provider. If the voltage at the opposite end of the cord is less than the rated hoist voltage or no voltage is measured, check for incorrect socket/plug alignment in the cord, plug and socket. Orientation of connector pins and sockets (x to x, y to y etc) on each wire must be correct or the voltage and/or phase will be incorrect
Low Fuel Level	Low fuel supply affects the gen-set speed, causing voltage and power surges that can damage the hoist. Consult the gen-set Operator's Manuals for fuel consumption rates and make sure enough fuel is available for the operating shift. Consult the gen-set Operator's Manual safety considerations during refueling and on re-starting after refueling
Intake, Exhaust and Cooling System Blockage	Restricting the gen-set air intake, exhaust or cooling systems will result in low power output, overheating and damage. The gen-set must be in an open space with plenty of room around it to draw in air and let exhaust gases leave the area.

7.2 Stabilization Frame

Winch operation is difficult	Inspect the routing of the extension cable to make sure it is properly seated in the sheaves. Make sure the cable is straight the not wrapped around roller stanchions or the platforms.
No platform movement when winch is rotated	Make sure there is no slack in the rope. Make sure the tires have engaged the tower. Make sure that the cable is properly wrapped on the winch (cable is collected on the winch when "clicking" sound is heard)

8. Winch Wire Rope Assembly

Item	Part Number	Description	Qty.
1	706118-1	Pulley Block	3
2	A-00664-3	Shackle	1
3	706119-1	1/4" Dia. Cable Assembly	50 ft