

# BENNU INNOVATION

A.P.U. / M.P.U. / H.S.P.U.  
OPERATOR'S MANUAL



This manual contains information on the installation, operation and maintenance of BENNU's A.P.U. / M.P.U. / H.S.P.U. units as well as safety warnings and recommendations. Should you need more help, please feel free to contact BENNU's technical support.



**Bennu Innovation, Inc.**  
3140 Boul. des Entreprises  
Terrebonne (Qc)  
Canada, J6X 4J8

Toll Free number:  
1 (877) 55 BENNU (552-3668)  
techsupport@bennu.org

To make the information easy to understand, we have used the following legend:

<b>GENERAL</b>	Is used to present general information.
<b>NOMENCLATURE</b>	Is used to present a component nomenclature.
 <b>CAUTION</b>	Important information.
 <b>WARNING</b>	Be careful, can be dangerous.
 <b>DANGER</b>	Could cause serious injuries, even death.



# TABLE OF CONTENTS

CHAPTER		PAGE
1	<b>INTRODUCTION</b>	<b>3</b>
2	<b>TRANSPORTATION</b>	<b>15</b>
3	<b>POSITIONNING &amp; LEVELLING</b>	<b>23</b>
4	<b>SETTING UP THE PLATFORM</b>	<b>31</b>
5	<b>RAISING &amp; LOWERING</b>	<b>37</b>
6	<b>MASTS</b>	<b>41</b>
7	<b>TYING THE PLATFORM</b>	<b>45</b>
8	<b>ACCESS</b>	<b>51</b>
9	<b>WINGS</b>	<b>55</b>
10	<b>GUARD RAILS</b>	<b>69</b>
11	<b>WORKING ON THE PLATFORM</b>	<b>75</b>
12	<b>MULTI-FUNCTIONS SYSTEM</b>	<b>83</b>



# CHAPTER 1

## INTRODUCTION



### Dear Owner

You have chosen the Bennu Innovation mast climbing work platform. It is of innovative design and a fully automated system.

In our key design criteria, we have given the outmost importance to safety, reliability as well as simplicity of assembly. When properly operated and maintained, your Bennu platforms will give you years of dependable service.

Vitaly concerned about your safety, Bennu uses top of the line raw materials and assembles quality products, ultimately providing the safest work environment under normal conditions.

To reach our goal of a safe work environment, you must read and understand this manual. As well, you must be familiar and abide by ANSI/SIA A92.9-1993 Standards for mast climbing.

We encourage you to share this information with all the personnel involved with the operation and safety of your platforms. Failure to do so could result in serious injury or damage.

All Federal, State and Provincial Safety and Health Standards must be followed, including OSHA 29 CFR 1926 subpart L (1926.450 to 1926.454) for scaffolds.

Bennu Innovation inc. cannot be held responsible for users failing to comply with any and all Federal, State, and Local Regulations. Further questions may be directed to your Bennu distributor or to Bennu Innovation inc., where they will be given immediate attention.

Thank you for purchasing, renting or using BENNU's products.

**Jean G. Robillard, Eng.**  
*President*



Bennu Innovation inc., hereinafter referred to as Bennu, warrants new products to be free from defects in material and workmanship for a period of one year, following date of delivery to the first user, or a maximum of eighteen months following date of delivery to the authorized distributor, whichever occurs first.

Bennu's obligation and liability under this warranty is expressly limited to repairing or replacing with re-manufactured or new, at Bennu's option, any parts which appear to Bennu, upon inspection, to have been defective in material or workmanship. Such parts shall be provided at no cost to the user, F.O.B. Bennu's facilities, or other source at Bennu's option.

Bennu shall assume the cost to install any repaired or replacement part provided under this warranty, to the extent established by it in its applicable service policy in effect at the time of delivery. The cost of any such work will only be paid by Bennu if a written authorization has been granted prior to its beginning.

This warranty does not apply to component parts or accessories of the products not manufactured by Bennu and which carry the warranty of the manufacturer thereof, or to normal maintenance (such as engine tune-up) or to normal maintenance parts. Bennu makes no other warranty, express or implied, and makes no warranty of merchantability or fitness for any particular purpose.

Bennu's obligation under this warranty shall not include duty, taxes or any other charge whatsoever or any liability for direct, indirect, incidental or consequential damage or delay. Products or parts for which a warranty claim is made must be returned prepaid by sender to the designated location. Any improper use, including operation after discovery of defective or worn parts, shall void this warranty. Improper use also includes operation beyond rated capacity, substitution of parts not approved by Bennu, including anchors, or any alteration, modification or repair by others, and shall automatically void this warranty.

The above warranty may not be altered without the written authorization of Bennu Innovation Inc.

 **CAUTION**
 **WARNING**
 **DANGER**

Plank overlap is subject to rules and regulations which must be closely followed.

Planks should exceed last outrigger (Bennu recommends 12" overlap).

Make sure to block off open ends.

Never stand on any unsupported end portion of a plank.

 **GENERAL**


Climbing on high strength steel, laser cut structural tubing masts, vertically bolted to ensure **zero lean**.

**Masts** available in **5'** and **25'** climbable sections.

Using two pumps and variable flow valves to ensure **smooth and even climbing** (A.P.U. and M.P.U. only) H.S.P.U. has only one cylinder uses only one pump.

Secured in place with massive safety dogs, located half travel apart to **minimize drop in case of an emergency**.

Pushing the unit up on the piston side of the hydraulic ram **for power**, and retracting on the rod side **for speed**.

Completely automated hydraulic system allows **single operator** to ascend and descend.

Braceless system.

Open platform geometry allows **bypass of wall ties**.

Free standing up to 35'.

**Independant bases** allow for installation on uneven ground.

Foldable ladder and access cage (no need to remove and store).

Finished with "Sun Gold" baked on powder coat and hot dip galvanized for **added durability**.

All units available with street legal towing packages.

All units are BENNUWARE compatible.

**600'** maximum reach (over 600' call Bennu technical service).

**AUTOMATED POWER UNIT (A.P.U.)****GENERAL**

<b>Platform dimensions:</b>	24' X 7'
<b>Setup length (1 unit only):</b>	24' to 64'
<b>Collapsed height:</b>	55"
<b>Shipping weight:</b>	8,200 lbs with standard accessories
<b>Load capacity:</b>	20,000 lbs
<b>Elevation speed:</b>	up to 8' per minute
<b>Engine:</b>	13HP GX 390K1 Honda engine, electric start, oil alert

**NOMENCLATURE****Guard rails:**

- (1) (2) 48" adj. guard rails
- (2) (2) door guard rails
- (3) (2) sliding doors
- (4) (2) mast toe guards

**Access:**

- (5) (1) foldable access ladder with built-in rest-platform and guard rails
- (6) (1) ladder access door
- (7) (1) powerpack access door

**Outriggers:**

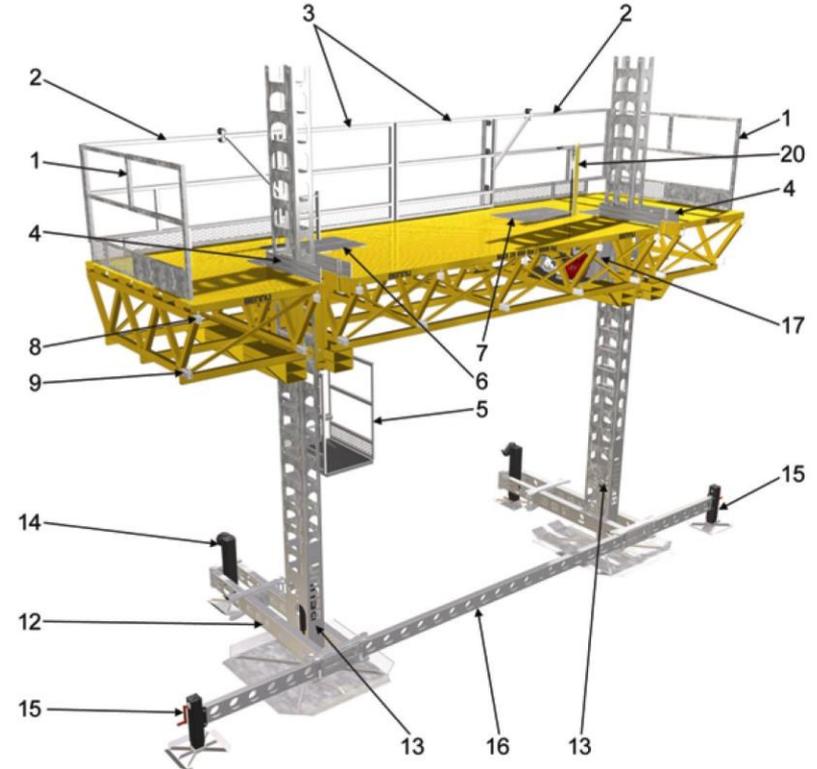
- (8) (9) 6' top.
- (9) (9) 8' bottom.
- (10) (2) portable outriggers
- (11) (2) locking bars (6')

**Base:**

- (12) (2) independent bases with starter 49" mast sections
- (13) (2) high capacity (200,000 lbs) front jacks and main pads
- (14) (2) high capacity (200,000 lbs) retractable rear jacks and standard pads
- (15) (2) stabilizer arms with jacks & standard pads
- (16) (2) traverse bar

**Lifting system:**

- (17) (1) powerpack
- (18) (2) cylinder hydraulic ram power drives
- (19) (2) tower cages
- (20) (1) control post



**MODULAR POWER UNIT (M.P.U.)****GENERAL**

<b>Platform dimensions:</b>	(2) lifting modules (32") (1) power module (30" or 48") (1) access module (30" or 48")
<b>Setup length (1 unit only):</b>	32" up to 114'
<b>Collapsed height:</b>	55"
<b>Shipping weight:</b>	7,900 lbs with standard accessories
<b>Load capacity:</b>	20,000 lbs
<b>Elevation speed:</b>	up to 8' per minute
<b>Engine:</b>	13HP GX 390K1 Honda engine, electric start, oil alert

**NOMENCLATURE****Guard rails:**

- (1) (4) 48" adj. guard rails
- (2) (2) 30" adj. guard rails
- (3) (2) mast toe guards

**Access:**

- (4) (1) access module:
- (5) (1) foldable access ladder with built-in rest-platform and guard rail)
- (6) (1) ladder access door

**Outriggers:**

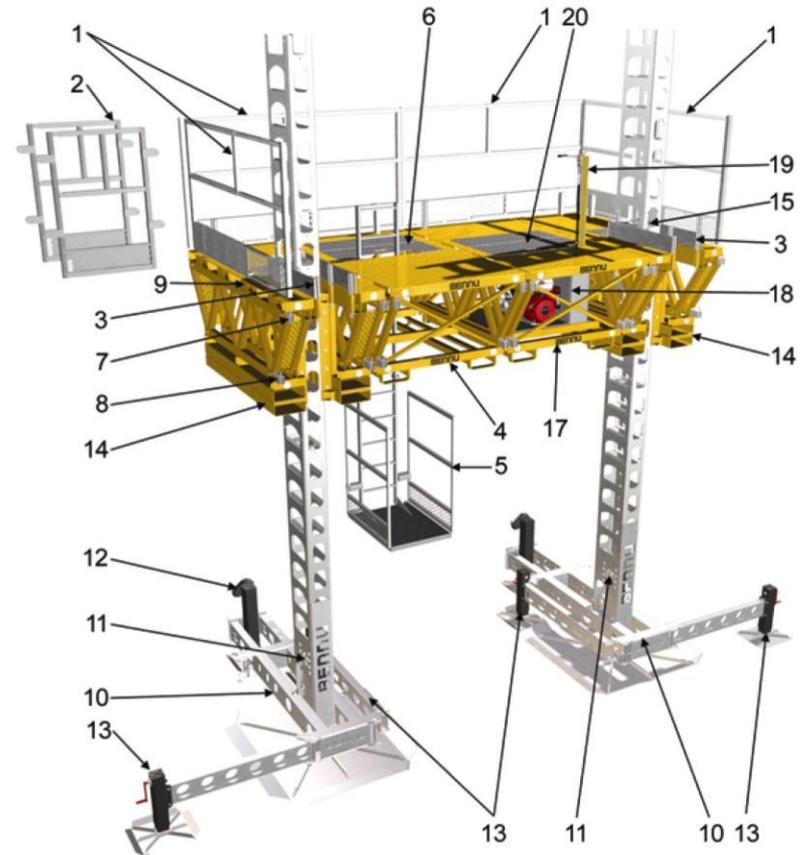
- (7) (6) 6' top
- (8) (6) 8' bottom
- (9) (2) locking bars (smart bar)

**Base:**

- (10) (2) independent bases with starter 49" mast sections
- (11) (2) high capacity (200,000 lbs) front jacks and main pads
- (12) (2) high capacity (200,000 lbs) retractable rear jacks and standard pads
- (13) (4) stabilizer arms with jacks & standard pads

**Lifting system:**

- (14) (2) lifting modules:
- (15) (1) cylinder hydraulic packs (2 per unit)
- (16) (1) tower carriage (2 per unit)
- (17) (1) power module:
- (18) (1) powerpack
- (19) (1) control post
- (20) (1) control post and powerpack access door



## HIGH SPEED POWER UNIT (H.S.P.U.)

### GENERAL

<b>Platform dimensions:</b>	7' X 7'
<b>Setup length (1 unit only):</b>	7' to 32'
<b>Collapsed height:</b>	79"
<b>Shipping weight:</b>	4,300 lbs with standard accessories
<b>Load capacity:</b>	12,000 lbs
<b>Elevation speed:</b>	up to 15' per minute
<b>Engine:</b>	20HP v-twin GX 620K1 Honda engine, electric start, oil alert

### NOMENCLATURE

#### Guard rails:

- (1) (3) 48" adj. guard rails
- (2) built in mast toe guard

#### Access:

- (3) (1) foldable access ladder with built-in rest-platform and guard rail
- (4) (1) ladder & hydraulic access door
- (5) (1) engine and control post access door

#### Outriggers:

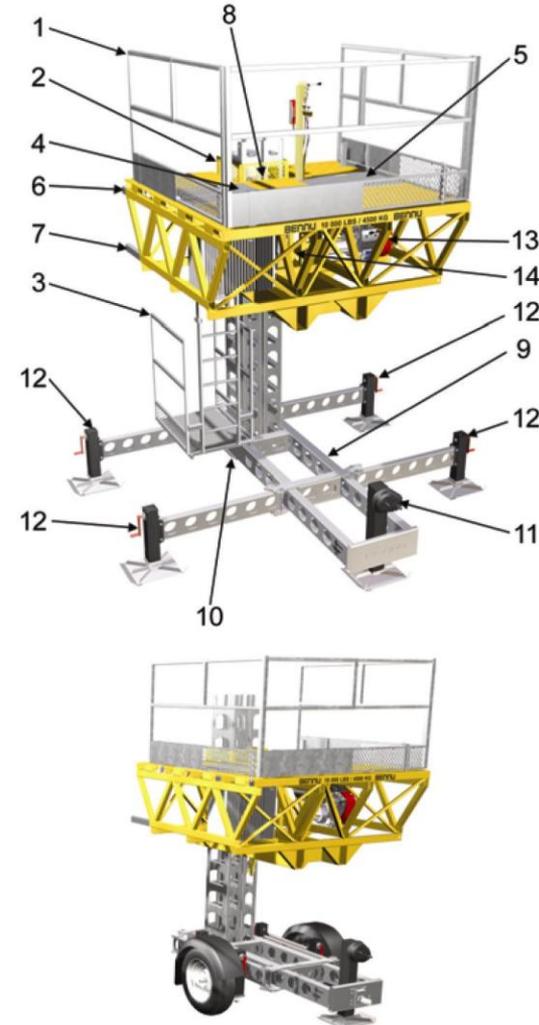
- (6) (4) 6' top
- (7) (4) 8' bottom
- (8) (1) locking bars (6' out.)

#### Base:

- (9) (1) base with 2 starter 60" mast sections
- (10) (1) main pad
- (11) (1) high capacity (200,000 lbs) retractable rear jack and standard pad
- (12) (4) stabilizer arms with jack & standard pads

#### Lifting system:

- (13) (1) powerpack
- (14) (1) hydraulic ram power drive





# CHAPTER 2

## TRANSPORTATION



**WARNING**

Make sure lockbar is in place before attempting to move P.U.

Make sure smart bars are securely locked in place by smart pins.

Make sure outriggers are closed and securely locked in place by their bolts.

Make sure to turn off the gasoline valve of A.P.U. or M.P.U. (during transportation or when it is not used on a daily basis.)

Make sure to close the fuel tank vent of H.S.P.U. (or when it is not used on a daily basis).

Remove guard rails, mast toe guard and any loose moving parts from the unit prior to transporting unit.

**GENERAL**

There are several ways to transport your Bennu equipment:

Semi, with flatbed trailer

Semi, with drop deck trailer

Straightbody

Pick-up truck with standard trailer or fifth wheel trailer

Bennu trailer package

**Pick points for safe and easy handling of P.U.:**

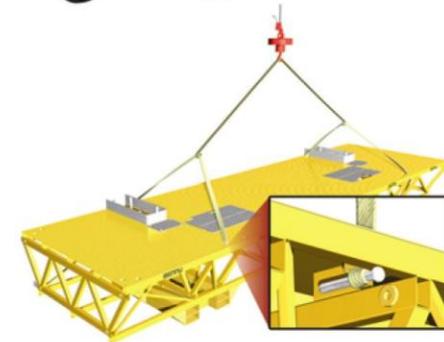
For chains



For lift truck



For sling

**WARNING**

Don't try to pick more than one unit at a time or more than two high.

Unload and place the equipment in a way to make it easy to pick it up later, for installation. Example: place what you will use last far from you, and what you will use first nearest you.

**WARNING**

To use the trailer package, the towing vehicle must be equipped with an electric brake controller and an anti-sway system.

**Automated Power Unit:**

Procedures available soon

**Modular Power Unit:**

Procedures available soon

**High Speed Power Unit****GENERAL**

The H.S.P.U. trailer package is composed of 4 easy to install components, and can be mounted underneath the standard H.S.P.U.

**Towing procedures:**

- (1) Remove stabiliser pads (store in carrying basket)
- (2) Remove 2 front stabiliser arms (store in carrying basket)
- (3) Fold the other 2 stabiliser arms behind fenders and secure in place
- (4) Lower retractable back jack
- (5) Remove main pad (store in carrying basket)
- (6) Raise retractable back jack
- (7) Lower trailer pole onto truck hitch, clamp lock, and secure with safety pin. Fully retract all jacks
- (8) Remove back jack pad (store in carrying basket)
- (9) Connect wiring cord
- (10) Fasten content of carrying basket with supplied tie down straps
- (11) Perform visual light inspection and brake test

**NOMENCLATURE****Axle:**

- (1) (1) Bolt-on torqueflex 5,550 lbs axle
- (2) (2) Fenders with mud guards (installed over axle)
- (3) (2) 225 / 75 R15 8 P.R. tires (installed on axle)
- (4) (2) Electric brakes (installed on axle)
- (5) (2) Brakes lights & flashers (installed on fenders)
- (6) (1) License plate holder (installed on fenders)

**Tongue:**

- (7) (1) Bolt-on tongue for 2 5/16" ball
- (8) H.S.P.U. retractable rear jack is used as tongue jack

**Electric wiring:**

- (9) (1) Trailer cable
- (10) (1) Trailer 7 pin plug

**Carrying basket:**

- (11) Assembly made with smart bars and smart pins  
Use to store H.S.P.U. main pad, retractable jack pads and stabilizer arms

## GENERAL

The wheel kit provides a fast and easy way to move equipment around the job site. It allows moving of heavy P.U. or wing assemblies without having to disassemble the setup.

2 types of wheel kits are available. One has a steerable axle while the other has a fixed axle.



There are 2 ways to work with wheel kits:

With a fixed axle wheel kit at one end and a fork lift at the other end.

With a fixed axle wheel kit at one end and a steerable wheel kit at the other end, using fork lift to push or pull the set-up.

## Installation procedures:

- (1) Insert lock bars on P.U.
- (2) Raise one end of the setup to move with forklift using chains or slings.
- (3) Place wheel kit under that end of the setup.
- (4) Lower setup on wheel kit, making sure that tabs on wheel kit are on each side of their longitudinal structural tubes.
- (5) Secure in place with all four clevis pins and hitch pins.



## GENERAL

If setup weight is too great, or if ground bearing capacity is low, install two wheel kits back to back, thus forming a tandem axle system.



# **CHAPTER 3**

## **POSITIONING and LEVELLING**



**WARNING**

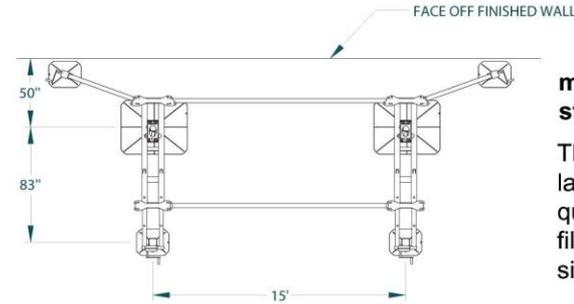
Make sure that ground is fairly level and clear of debris.

Make sure that ground has an acceptable level of compaction, if not multiple layers of planking (cribbing ) must be used.

Installation should always be performed by a competent person.

Always have a planned layout prior to installation (an engineer’s approval maybe needed in certain cases).

**Automated Power Unit**



**main pad:** 12.75 sq ft.  
**standard pad:** 3 sq ft.

The main pad surface is large to offset the frequent inadequate back filled conditions alongside of the foundation.

**Maximum load per square foot of A.P.U. at full capacity (20,000 lbs):**

	(main jack)	(retractable jack)
Maximum load balanced	<b>890</b>	<b>945</b>
Max load unbalanced	<b>1,515</b>	<b>1,610</b>
	lbs / sq. ft	

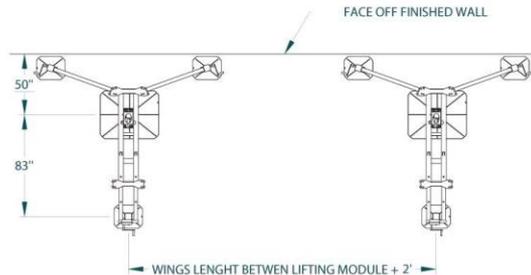
Max load does not include the weight of the mast.  
Add 25 lbs per sq ft to front load for each 10 ft mast.  
Back loads are not affected by weight of masts.

**Example**

For 60' of masts above starter mast, add:  
**6 X 25 = 150 lbs / sq. ft**  
Add that pressure to the front pad only

	(main jack)	(retractable jack)
Maximum load balanced	<b>1,040</b>	<b>945</b>
Max load unbalanced	<b>1,665</b>	<b>1,610</b>
	lbs / sq. ft	

## Modular Power Unit



**main pad:** 12.75 sq ft.  
**standard pad:** 3 sq ft.

The main pad surface is large to offset the frequent inadequate back filled conditions along-side of the foundation.

**Maximum load per square foot of M.P.U. at full capacity (20,000 lbs):**

	(main jack)	(retractable jack)
Maximum load balanced	890	945
Max load unbalanced	1,665	1,610
	lbs / sq. ft	

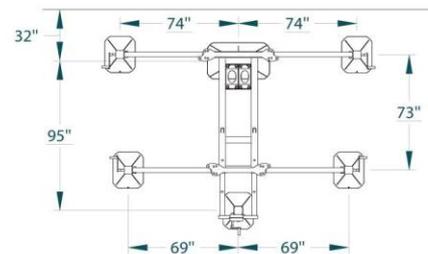
Max load does not include the weight of the mast.  
Add 25 lbs per sq ft to front load for each 10 ft mast.  
Back loads are not affected by weight of masts.

### Example

For 60' of masts above starter mast, add:  
**6 X 25 = 150 lbs / sq. ft**  
Add that pressure to the front pad only

	(main jack)	(retractable jack)
Maximum load balanced	1,040	945
Max load unbalanced	1,665	1,610
	lbs / sq. ft	

## High Speed Power Unit



**main pad:** 6.67 sq ft.  
**standard pad:** 3 sq ft.

The main pad surface is large to offset the frequent inadequate back filled conditions along-side of the foundation.

**Maximum load per square foot of H.S.P.U. at full capacity (12,000 lbs):**

	(main jack)	(retractable jack)
Maximum load balanced	1,800	1,000
	lbs / sq. ft	

Max load does not include the weight of the mast.  
Add 50 lbs per sq ft to front load for each 10 ft mast.  
Back loads are not affected by weight of mast.

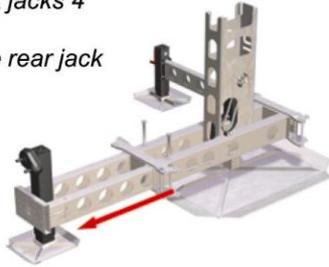
### Example

For 60' of masts above starter mast, add:  
**6 X 50 = 300 lbs / sq. ft**  
Add that pressure to the front pad only

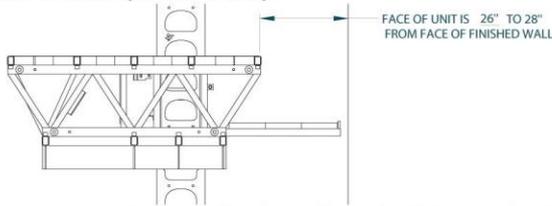
	(main jack)	(retractable jack)
Maximum load balanced	2,100	1,000
	lbs / sq. ft	

### A.P.U. / M.P.U. / H.S.P.U.

- (1) Determine where P.U pads will set
- (2) Mark center point of pad on the ground (spray paint may be used)
- (3) Level and clean area covered by the pads (gravel, cribbing, planking may be used to even surface)
- (4) Check ground capacity  
(if ground capacity is not sufficient use cribbing)
- (5) Lower front & back jacks 4"
- (6) Pull out retractable rear jack



- (7) Set unit in place along wall and set back 26" to 28" from finished wall. This will allow a 3 planks set-up



- (8) Open stabiliser arm and secure in place (2 on A.P.U., 4 on M.P.U. & H.S.P.U.)



**Additional stabilizer arms and jacks are available.**

### **WARNING**

The stabilizer arms have not been designed to be loaded with excessive weight but only to stabilize bases.

#### Tips:

Raise stabilizer jack to push tower forward  
Lower stabilizer jack to pull tower back

### A.P.U. / M.P.U. / H.S.P.U.

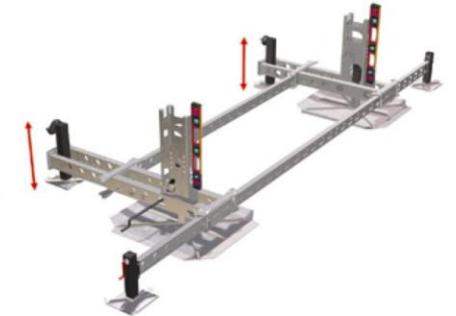
- (1) Level platform from end to end using main jacks.

Place level on platform for reference (or junction bar if present).



- (2) Adjust front/back level using back jacks.

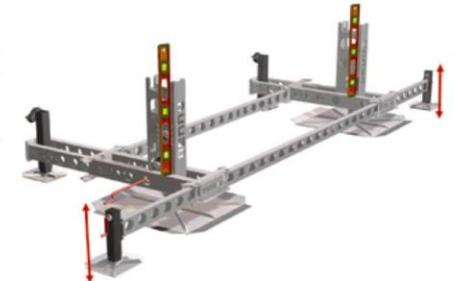
Place the level on the front of the starter mast section for reference.



- (3) Use front stabilizer arms to make sure the masts are vertical from side to side.

Place level on side of mast for reference.

(Make sure all stabilizer pads are tight and touching the ground)





# **CHAPTER 4**

## **SETTING UP THE PLATFORM**



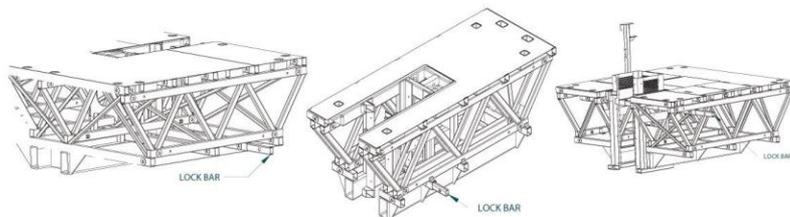
**A.P.U. / M.P.U. / H.S.P.U.**

Remove lock bar from each mast

(2) on A.P.U.

(2) on M.P.U.

(1) on H.S.P.U.



**Install first mast section**

A.P.U. & M.P.U.



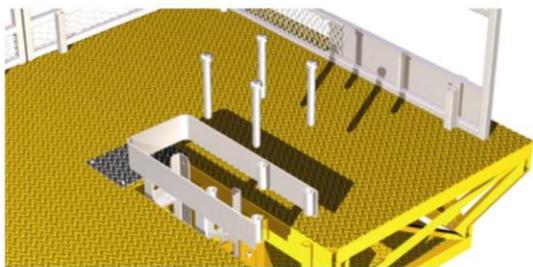
H.S.P.U.

Bolt masts together before assembling to unit.



**Install mast toe guard**

A.P.U. & M.P.U.



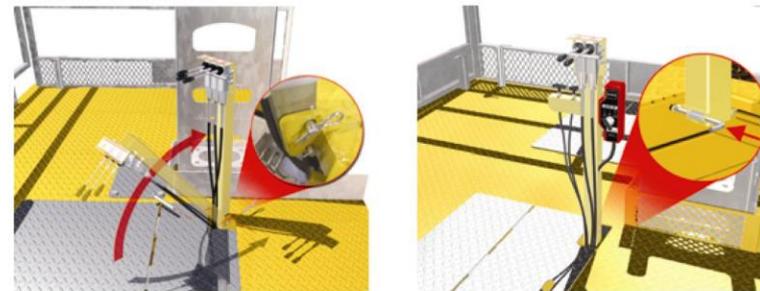
H.S.P.U.

toe guard is built-on the unit

**Lift control post and secure in place**

A.P.U. & M.P.U.

H.S.P.U.



**Check hydraulic oil level**

A.P.U. / M.P.U. / H.S.P.U.

Hydraulic gauge is located on hydraulic tank.

Make sure gauge is at 3/4 full.



**Fill Honda engine with gasoline**

A.P.U. & M.P.U.

H.S.P.U.

Tank located next to unit.



### Check Honda engine oil level

Engine is equipped with oil alert which will prevent starting in low oil level conditions.

A.P.U. & M.P.U.

H.S.P.U.  
Tank located next to unit.

---

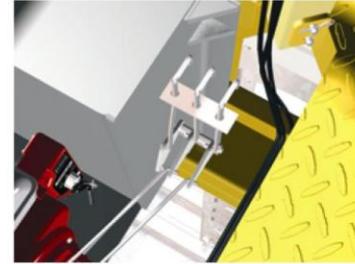
**Make sure to turn on gasoline shut valve on A.P.U. & M.P.U.**

---

**Open fuel tank vent on H.S.P.U. (prior to starting)**

### Starting engine

A.P.U. & M.P.U.  
Rod control located on side of door.



H.S.P.U.  
Cable controls  
Remote starter on control post.



- Pull choke
- Pull throttle to 1/4
- Start engine
- Allow engine to warm up, release choke
- Bring engine to operating speed

### Stopping engine

Reduce engine speed to idle (let it idle for 30 sec.).

Push on throttle lever or rod.

Stop engine by pushing the starter rod (A.P.U. & M.P.U.) or turning the ignition key to "off" position (H.S.P.U.)

### Tips

For the first time use of the unit, let the engine run for 15 minutes to allow the battery to charge & the oil to reach all parts of engine.

In winter conditions (below 34 degree F°), you may have to leave the choke a little longer, but you absolutely have to leave the engine running for at least 10 minutes to allow the hydraulic oil to warm up.



# CHAPTER 5

## RAISING and LOWERING



### GENERAL

#### Double bump:

At the end of both cylinders stroke, the engine starts making a laboring noise; the action of pushing or pulling again for approx. 1 second on both long control levers, ensures the main cylinders are synchronized.

Full extension or retraction of both cylinders at the end of each cycle plus doing the double bump will ensure perfect synchronization of the main cylinders.

### WARNING

Short lever is not involved at all during the raising process.

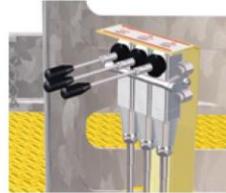
Always leave the main hook engaged in mast rung when P.U. is stopped.

Always complete the lifting process after releasing both long control levers.

Make sure there is no interference between platform, accessories, the building and wall ties before attempting to raise or lower the P.U.

#### Control console

A.P.U. & M.P.U.



H.S.P.U.



#### Cylinder packs

A.P.U. / M.P.U. / H.S.P.U.



### Raising procedures

- (1) Pull long levers upward ( 2 on A.P.U. and M.P.U., 1 on H.S.P.U.), until cylinders extend down completely, noticeable by a laboring noise from the engine. Only allow that laboring noise for a second. "Double bump" to make sure cylinders are fully extended. During this operation the platform will raise.
- (2) Push down long levers ( 2 on A.P.U. and M.P.U., 1 on H.S.P.U.), until cylinders are fully retracted, noticeable by a laboring noise from the engine. "Double bump" to make sure cylinders are fully retracted. During this operation, the platform is not moving.
- (3) Repeat step 1 and 2 until desired height is reach.

### Lowering procedures

- (1) Pull up long levers ( 2 on A.P.U. and M.P.U., 1 on H.S.P.U.), to slightly raise platform, this will allow safety dogs to disengage.
- (2) Push down on short lever. **The short lever must be held in down position at all time during the lowering procedure.**
- (3) Push down long levers ( 2 on A.P.U. and M.P.U., 1 on H.S.P.U.), until cylinders are fully retracted noticeable by a laboring noise from the engine. "Double bump" to make sure cylinders are fully retracted. During this operation, the platform is lowering
- (4) Pull long levers upward ( 2 on A.P.U. and M.P.U., 1 on H.S.P.U.), until cylinders extend down completely, noticeable by a laboring noise from the engine. "Double bump" to make sure cylinders are fully extended. This will allow the main hook to lock in position 20" lower. During this operation, the platform is not moving.
- (5) Repeat steps 2 & 3 until desired height is reached.
- (6) Release short lever
- (7) Pull up long levers ( 2 on A.P.U. and M.P.U., 1 on H.S.P.U.) to lift the platform slightly and make sure the main hooks are engaged.



# CHAPTER 6

## MASTS



## GENERAL

Mast sections are cut out of high tensile strength steel.

Standard sections are 60" or 25' high and are provided with heavy vertical bushings at connection points.

Lateral anti-slip steps are built into the mast for legal climbing.

When used with H.S.P.U., masts sections are doubled up simply by bolting standard sections side by side together using 5/8" bolts and nylock nuts, available separately.

Connection between mast sections are assured by 3/4" X 10" grade 8 bolts.

These connections are extremely positive and allow no lean.

Sockets are machined in the lower part of the top bushings to insert bolt head so that only one box wrench is required. Size is 1 1/8".



### Mast installation procedures:



- (1) Lower mast section over previously installed section using bushings as positioning guides
- (2) Insert bolt (3/4" X 10") in vertical bushing from the bottom
- (3) Slide on flat washer (3/4")
- (4) Slide on lock washer (3/4")
- (5) Screw nut (3/4")
- (6) Repeat step 1 to 4 for the 3 other bolts
- (7) Tighten bolts alternatively from corner to corner until all bolts are fully tighten using a 1 1/8" wrench

Visually inspect that all bushings are mating.

On H.S.P.U. 8 bolts are required since the mast number is doubled.

## GENERAL

The mast handler is designed to make mast installation quick, easy and effortless on free standing or low rise job.

It allows the installation of up to 50' of mast in two steps (when using 25' masts sections, or preassembled 5' sections).

The mast handler is easily installed on the forks of a lift truck.



## WARNING

Handler must be inserted at least 4' from bottom of tower.

### Mast handler installation procedures:

- (1) Mount adaptor on forks
- (2) Secure in place with chains
- (3) Tilt forks down to vertical\*
- (4) Insert pick up tab in mast rung
- (5) Push forward (up the mast)
- (6) Make sure safety latch is engaged
- (7) Raise boom up to clear ground and tilt forks back until mast is vertical (1)
- (8) Line up mast with mast installed on P.U.
- (9) Secure mast in place with mounting bolts (see mast installation procedures)
- (10) Release safety latch and lower handler
- (11) Back down to release pick up tabs.

\* a 20 degree forwards angle adaptor is available for lift trucks and forks that do not fully down tilt. (2)

(5)

(4)

(3)



# CHAPTER 7

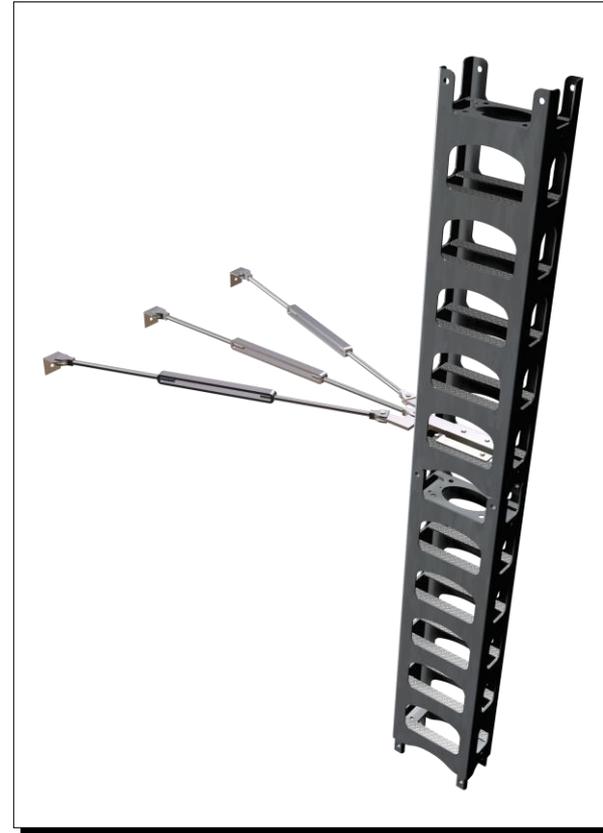
## TYING THE PLATFORM



# TYING THE PLATFORM

- The BENNU is a ***brace less system*** which means lateral stability is obtained solely from the wall tie system, in configuration over 30 feet high.
- The demand on such a system is significant but offers the benefit of traveling up and down without having to remove anything.
- It eliminates as well the need to have an operator's platform underneath the main platform.
- BENNU has designed a 3 point system to ensure such stability.

**A minimum angle of 27° is required between each arm but 30° is recommended.**

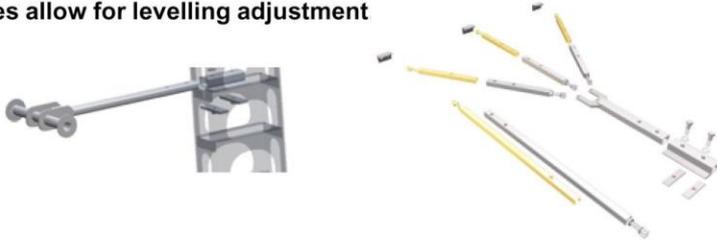


**GENERAL**

Bennu's platforms are braceless, meaning that lateral stability is obtained mostly from the wall tie system in configurations exceeding 30'.

The demand on such a system is significant, however it offers the benefit of travelling up or down the mast without having to remove the braces.

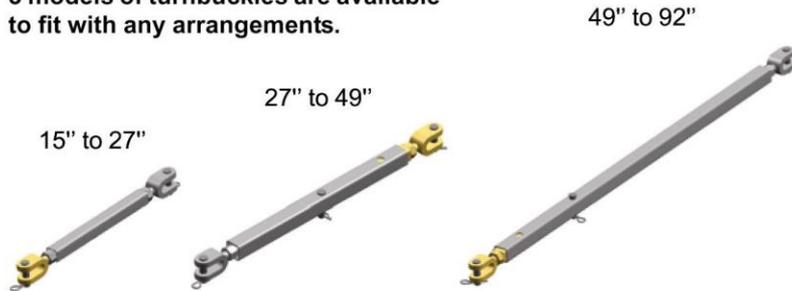
Bennu has designed a 3 point tying system to ensure such stability. This system is anchored or clamped to the building structure. Turnbuckles allow for levelling adjustment



A tube and clamp fastening system is also available.

Any combination of these 3 systems is possible.

3 models of turnbuckles are available to fit with any arrangements.



Special sizes are available upon request.

**WARNING**

**WALL TIE SCHEDULE  
(Minimum required)**

HEIGHT	TYING WITHOUT HOIST OR M.F.S.	TYING WITH HOIST OR M.F.S.
0 - 35'	FREE STANDING (no tie required)	15' & 30'
35' - 100'	20' - 40' - 60' 80' - 100'	15' - 30' - 45' 60' - 75' - 90'
OVER 100'	EVERY 20'	EVERY 15'

M.F.S.: Multi-function system

Remember you can never install too many ties.

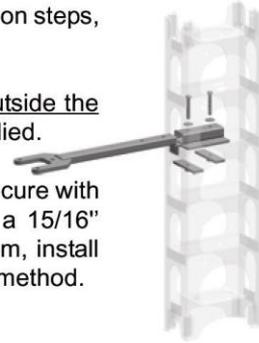
Always adjust front and back level with center tie point before installing or anchoring the 2 other points.

### Installation of wall tie mast support plates and forks

Place wall tie mast support plate in the mast, flat on steps, at the desired height.

The tab on the support plate must be placed outside the mast in order to retain the P.U. when load is applied.

Slide the wall tie fork in the plate's pocket and secure with provided fastener plates and 5/8" bolts, using a 15/16" wrench. When using the tube and clamp system, install adaptor in place of wall tie fork, using the same method.



### Anchoring to building structure

#### Anchor bracket



A minimum angle of 30° and a maximum of 45° between each brace is required. It represents on a 3 working plank setup, or with P.U. placed at 28" from finished wall, an approximate distance of 17" between each wall tie.



Attach anchor bracket to building using minimum 1/2" X 4" concrete anchors leaving the side with 3 holes available to attach braces. 2 anchors are necessary for each anchor bracket, providing at least the minimal capacity of 1,500 lbs/anchor.

#### Beam clamp

A minimum angle of 30° between each brace is required.

Attach beam clamp to building by sliding the slot over either flange of the beam and secure with provided 5/8" bolts using a 15/16" wrench.

### Tube and clamp



The tube and clamp assembly is designed to tie the P.U. from the mast to the building wall, floor or ceiling, allowing passage through openings such as windows, doors etc... The tube clamps and tubes are not provided by Bennu. We recommend the use of tubes of 2" diameter and standard 2" tube clamps.

A minimum angle of 30° between each tube is still required.

Secure one end of the tube to the floor or ceiling using anchor bracket or any other equivalent mean. These anchors points must be able to withstand forces of 1,500 lbs / anchor.

**If only two tubes are used, they must be cross tied using a short tube.**

### Installation of turnbuckles and tubes

#### Shelf angles and beam clamp

Before installing turnbuckles, adjust length by sliding tubes into each other and leaving thread adjustment in and out at each end.

Install all 3 turnbuckles with provided pins and hitch pins.

Adjust each turnbuckle length so that mast is perfectly vertical in both axis (center first, then sideways).

#### Tube and clamp

Set the free end of the tube to the tube and clamp adaptor using standard beam clamp.

Level the mast in both axis and tighten beam clamps.



# CHAPTER 8

## ACCESS



**Access ladder**

**GENERAL**

An access ladder is provided on all P.U.

A.P.U. and M.P.U. systems are the same (on M.P.U., the access module must be installed next to a lifting module), the H.S.P.U. is provided with a parent system.

All provide easy and safe access to the power unit, from the climbable mast.



**To install access ladder:**

- (1) To unfold ladder remove chain linking it to the P.U. structure
- (2) Unfold ladder platform
- (3) Unfold and secure ladder platform guardrail to ladder platform

**To use access ladder:**

- (1) Open access door
- (2) Depress upper section lock, pull up Handle Bar & latch, making sure lock is engaged.
- (3) Climb up or down the ladder
- (4) Close upper section of ladder, make sure that lock is engaged
- (5) Close the access door

**WARNING**

Make sure unit is at least 10' high and do not go below that level when using the access ladder. Failure to do so could result in serious injuries, damages to the ladder or the P.U. structure.

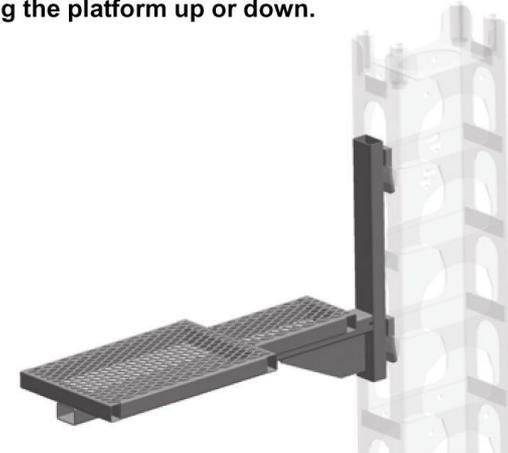
Bennu recommends the use of life lines and fall protection devices when using the access system.

**Rest platform**

**GENERAL**

For jobs over 35', it is required to use a rest platform every 35'.

Bennu has designed a rest platform system that can be by-passed just like the wall tie system, and that does not need to be removed while moving the platform up or down.



To install the rest platform, simply slide it in the mast rung, on the wall side of mast, as shown on the illustration.

**WALL SIDE**





# CHAPTER 9

## WINGS



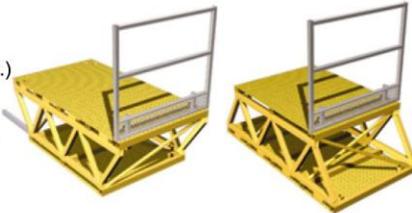
**30 inches wings**

- Dimensions:** 7' X 30"
- Weight:** 650 lbs (with standard acc.)
- Guard rails:** (1) 30" adjustable guard rail
- Outriggers:** (1) 6' adjustable outrigger  
(1) 8' adjustable outrigger



**4 foot wings**

- Dimensions:** 7' X 4'
- Weight:** 850 lbs (with standard acc.)
- Guard rails:** (1) 4' standard guard rail
- Outriggers:** (1) 6' adjustable outrigger  
(1) 8' adjustable outrigger



**8 foot wings**

- Dimensions:** 7' X 8'
- Weight:** 1,250 lbs (with standard acc.)
- Guard rails:** (2) 4' standard guard rails
- Outriggers:** (2) 6' adjustable outriggers  
(2) 8' adjustable outriggers



**6 foot wings**

- Dimensions:** 7' X 6'
- Weight:** 1,000 lbs (with standard acc.)
- Guard rails:** (1) 30" adjustable guard rail
- Outriggers:** (1) 6' adjustable outrigger  
(1) 8' adjustable outrigger  
(1) portable outrigger support



**45 degrees wings**

- Dimensions:** 7' X 78" / 14"
- Weight:** 950 lbs (with standard acc.)
- Guard rails:** (1) 4' to 7' adjustable guard rail
- Outriggers:** (2) 6' adjustable outriggers  
(2) 8' adjustable outriggers



Functions: these angular wings are normally used to create inwards or outwards angles at the end of a P.U.

Two reversed wings can be used to create an offset of 3'.

Two consecutive 45° wings on either side create an outside corner or an inside corner.



### Cantilever Mode

Cantilever wings are directly connected to a P.U. using smart bars.

Use a combination of any 30", 4', 8' wings or 6' starter wings.



### Bearing Mode

Bearing wings are preassembled and laid out between the ends or along two P.U., either in a straight line or forming an angle with P.U.

Use a combination of any 30", 4', 8' ending with a 6' starter at each extremity.



### Extension Mode

Wings are alternatively reversed and kept upright then, directly connected to the front or back of a P.U. or another wing.

Use a combination of normal/inverted 30" or 4' wings.



### Cross Wing Mode

Wings are assembled in their cross direction.

Use a combination of normal/inverted 30" or 4' wings.

### GENERAL

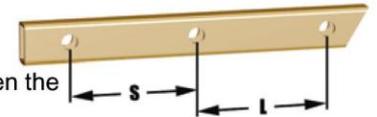
Smart bars are used to connect and adapt most of Bennu components and accessories.

The smart bar is a plated rectangular tube with three holes and one angular cut. This innovative connecting system allows components to be connected without sagging.

Since only two holes of the smart bars are used at any time, it is very important to understand which holes are used in which configuration.

The center hole is always used.

There is a difference of 3/8" between the long and the short distance.



To use the short distance of the smart bar:  
Use the center hole & the hole towards the Square end

To use the long distance of the smart bar:  
Use the center hole & the hole towards the anguLar end



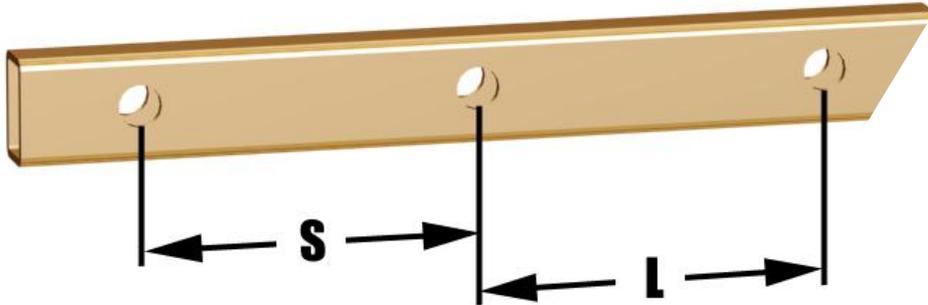
### WARNING

Always install smart bars on the wing or P.U. that you are not handling, i.e. on the section already installed.

Make sure you have secured both sides of wings at the top before moving under wings and extensions.

Never place hand or arm between wings when making the connections.

# CONNECTING WINGS



Distance "S" is referred to as the **Short distance** and corresponds to the **square end** of the bar.

Distance "L" is referred to as the **Long distance** and corresponds to the **angular end** of the bar.

**MAKE SURE PLATFORM IS LIFTED OFF THE GROUND TO ALLOW FOR INSTALLATION OF WINGS IN CANTILEVER OR BEARING MODE OR FRONT/REAR EXTENSION MODE**

- **SMART BARS** are used to connect, adapt all BENNU:
  - Wings.
    - Cantilever mode.
    - Bearing mode.
    - Front extension mode.
    - Rear extension mode.
    - Hoist
- **SMART BARS** are cold cadmium plated tubes with three holes and one angular cut.
- The innovative tie system allows accessories to be connected without sagging and bolts.

## Cantilever wings

On a cantilever set-up, the objective is to create an end lift on the wing.

### Maximum length:

20' maximum on each side of A.P.U. and M.P.U.

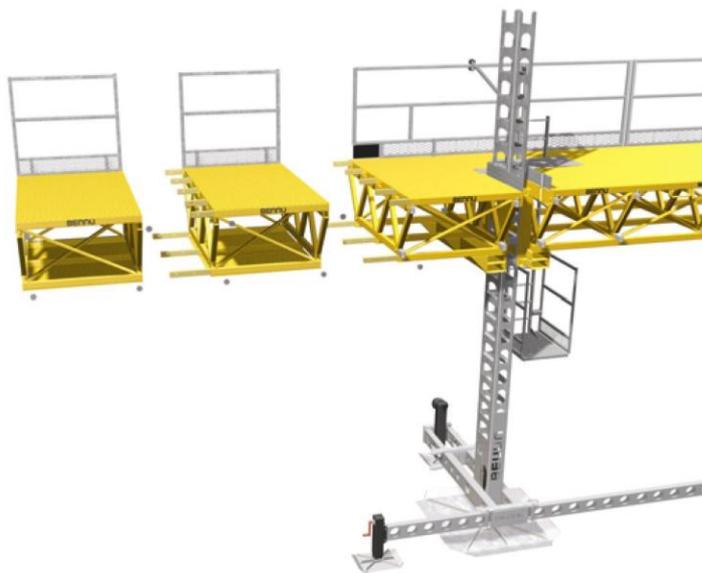
12' 6" maximum on each side of H.S.P.U.



### Smart Bar:

**Short** distance on the **top** smart bars.

**Long** distance on the **bottom** smart bars.



## Procedures (A.P.U. / M.P.U. / H.S.P.U.):

### Top

Install top smart bars (5) using the short distance of the smart bar, secure on the first wing using smart pin and lynch pin.

Square end first, angle end out, leaving 2 holes visible

### Bottom

Install bottom smart bars (3) using the long distance and secure with smart pins and lynch pins.

Square end first, angle end out, leaving 1 hole visible

### Assembly

Slide second wing over smart bars until holes at the top line up with smart bar holes.

Connect all top smart bars with smart pins and secure with lynch pins

Adjust height of wing end with lift truck or crane to ensure bottom holes line up. Secure with smart pins and lynch pins.



Do not stand under wings until at least two outside top pins have been installed.



It is possible to attach a total of 20' of wings on one side of P.U. before attaching the other side to P.U., as long as no load is placed on any wing.



**Bearing wings**

On a bearing wing set-up, the objective is to create an arch in the wing assembly.

**Maximum length:**

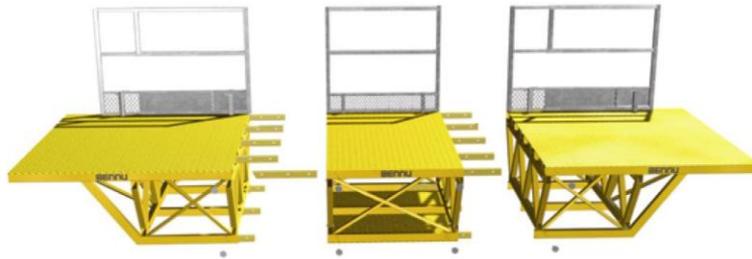
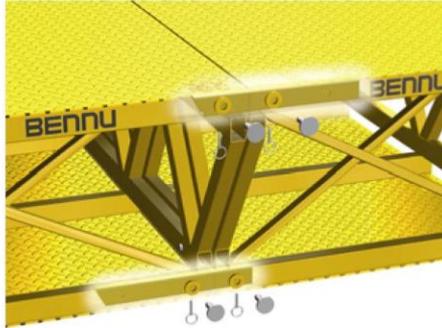
72' maximum length with A.P.U. and M.P.U.

44' maximum length with H.S.P.U.

**Smart bar:**

Long distance on **top** smart bars.

Short distance on **bottom** smart bars.



**Procedures (A.P.U. / M.P.U. / H.S.P.U.):**

**Top:**

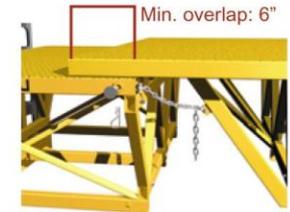
Install top smart bars (5) using the long distance of the smart bar secure on the first wing using smart pins and lynch pins.

Angle end first, square end out, leaving 2 holes visible

**Bottom:**

Install bottom smart bar (3) using the short distance

Angle end first, square end out, leaving 1 hole visible



**Assembly**

Slide second wing over smart bars until top holes line up. Secure using smart pins and lynch pins.

Adjust height of wing end with lift truck to ensure bottom holes line up, secure with smart pins and lynch pins.

Position two P.U. so that a minimum of 6" and a maximum of 14" of the bearing wing overlaps P.U. at each end. (Bennu recommends to use 12" overlap for simplicity.)

Secure both 6' wing to top of P.U. using the chains provided

Insert swivel shackle in longitudinal tube of P.U.  
Secure using smart pins and lynch pins  
Adjust chain's length using shackle, leaving approximately 1 link of slack.

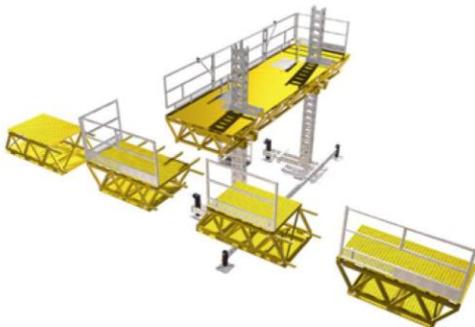


**Extension mode**

Do not use extensions on bearing wings.

4' extension can be connected to a 4' and 8' cantilever wing or directly to A.P.U.

30" extension can only be connected to a 30" cantilever wing or directly to H.S.P.U.



On M.P.U. 48" and 30" extension can also be used on wings between mast.

Make sure set-up is balanced when using extensions (counterweight may be needed).

**Maximum extension set-up length:**

24' maximum with proper counterweight on A.P.U. and M.P.U.  
12' maximum with proper counterweight on H.S.P.U.

**Procedures for first extension module (A.P.U. / M.P.U. / H.S.P.U.):**

Install smart bars (4) into top and bottom outrigger pocket of main stream unit using the long distance.

Flip wing upside down to use as first extension.

Slide reversed wing on smart bars until holes line up and secure with smart pins and lynch pins.

**Procedures for second and subsequent extension wings (A.P.U. / M.P.U. / H.S.P.U.):**

Install smart bars (4) into top and bottom outrigger pocket of main stream unit using the same configuration as cantilever wing mode.

Short distance on top and long distance on bottom.

Wing is used on its normal side for extension #2 and #4 and reversed for #1 and #3.

Slide wings on smart bars until holes line-up and secure with smart pins and lynch pins.

Counterweight wings should line-up with the extension on the opposite side of P.U. or cantilever wing.



**If an offset is required, consult your official distributor or BENNU technical support.**

**General counterweight formula:**

For every **X** wing installed as forward extension, install **X-1** wing as counterweight in the opposite direction.

**Work load** on extensions should not exceed **2,000 lbs** without the use of a counterweight on A.P.U. and M.P.U. and **1,000 lbs** on H.S.P.U..

**Alternative:**

For every **X** wing installed as forward extension install **X-2** wing as counterweight and use a 2,000 lbs / wing counterweight

## Cross wings

There are circumstances where a normal wing is too wide. Rather than supply several wings width, Bennu allows its 30" and 4' wide wings to be connected in their cross direction as with forward/backward extensions.

Do not use outriggers to support cross wings.

Cross wing assembly are supported by a P.U. or another wing of sufficient bearing capacity.

**Maximum cross wings length is:**  
55' when using 30" wings (7 sections)  
43' when using 4' wings (5 sections)



## Procedures (A.P.U. / M.P.U. / H.S.P.U.):

Install smart bars (4) on top and bottom outrigger pockets, using the same configuration as for bearing wings. Long on top, short at the bottom secure with smart pins and lynch pins.

Slide second wing over smart bars until holes line-up and secure with smart pins and lynch pins.

Repeat steps 1 and 2 until desired length is obtained

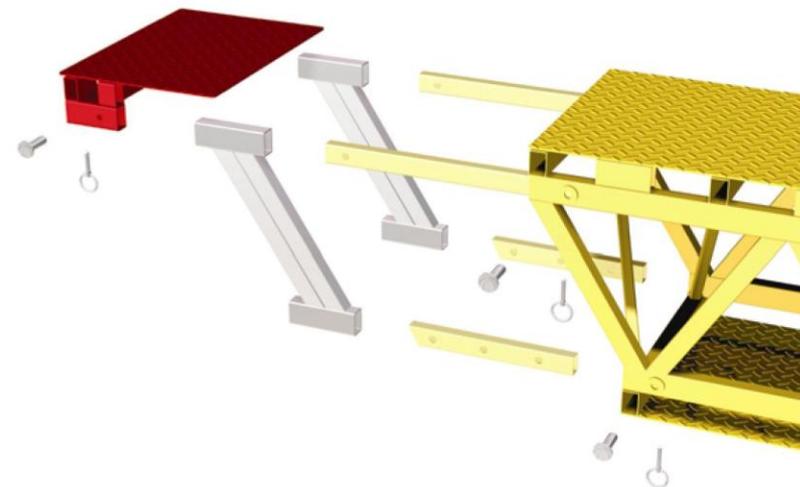
Insert 4' Heavy Duty long bearing members at both end of cross wings in the top outrigger pockets and secure with smart pins and lynch pins.

Lay wings over bearing structure, cantilever wings or P.U.

(The gap between the end of the cross wings and bearing structure must not exceed 4'. Should a larger gap be required, stiffeners are available. Contact Bennu or your authorised distributor for applicational limits).

Secure cross wing in place using chain as for a bearing bridge.

Slide cross wings stabilizer plate cover bearing members and secure in place using 5/8" bolts.





# CHAPTER 10

## GUARD RAILS



## SECTION A: General information

Bennu offers 6 types of guardrails to provide a safe and legal work area on the platform.

Standard 4' guard rail

Adjustable 4' to 7' guard rail

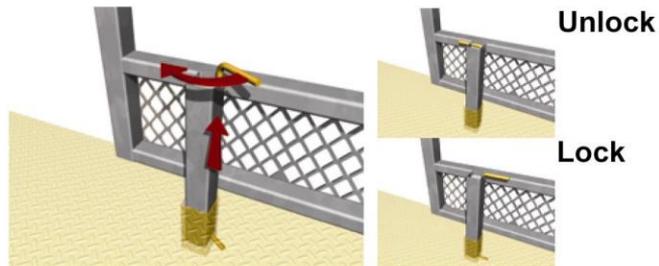
Adjustable 30" guard rail

Door guard rail and sliding door

Mason slip on guard rail

Guard rail outrigger adaptor  
(used to install guardrails on outriggers)

**All Bennu's guard rails are safely lockable from the deck**



## SECTION B: General information



The standard 4' guard rail is the most commonly used. It fits most positions on P.U., wings and extensions.

*Set a standard 4, guard rail wherever applicable, by inserting mounts in pockets on floor.*

*For installation, lock rods must be pointing outwards (unlocked position).*

*Raise and pivot lock rods inward (locked position)*



The adjustable 4' to 7, guard rail fits at the ends of P.U. and wings or on 6' wings.

*Place an adjustable 4' to 7' guard rail wherever applicable by stretching it to desired width (7') and inserting mounts in pockets on floor.*

*For installation, lock rods must be pointing outwards.*

*Raise and pivot lock rods inward (locked position).*

Tabs are provided for added flexibility and strength.



The adjustable 30" guard rail is used to fill the gap between a bearing wing and the platform. It is also used to fill narrow apertures created when using special configurations or 30" wings.

*Place an adjustable 30" guard rail wherever applicable by stretching it to desired width.*

*Slide tabs on each side of the posts of installed guard rails and secure with pins and hitch pins clip.*



Mason slip on guard rail are used on working planks to block ends of setup.

*Slip mason slip on guard rail over all working planks at each end of the setup, making sure that planks exceed colar.*

*Secure in place with two nails.*

The **sliding door and door guard rail** are generally placed on the unit itself in order to ease loading.

Instead of removing a section of guard rail to place material loads, workers can benefit from an easy to use 5' temporary opening.

During the loading operation, workers are no longer exposed to this opening, since the door is operated from the side.

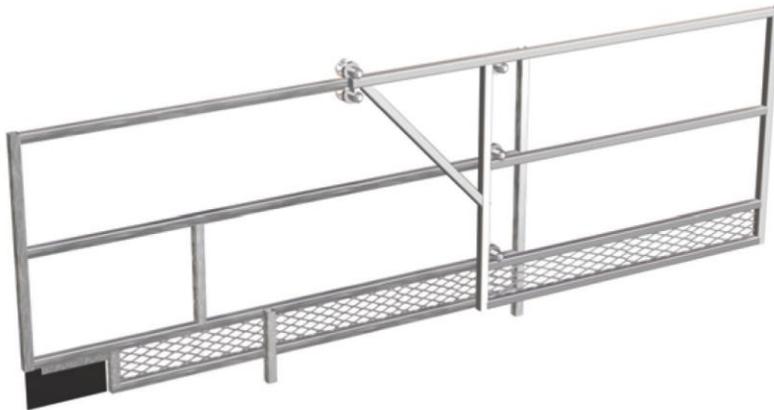
The sliding door and door guard rail assembly can be installed to open either from the right or left hand.

Five plastic rollers ensure smooth operation and only one needs to be removed for installation.

Sliding door can be placed anywhere 3 consecutive standard 4' guard rail are present, either on a P.U. or wings.

Sliding door and door guard rail **MUST** be used together at all times.

The rubber flap in the corner of the door guard rail is to ease installation of a bearing starter wing.



*Install door guard rails as you install a standard guard rail.*

*Remove roller (e) and its axle from sliding door. Make sure all washers are positioned on each side of all rollers, except roller (a).*

*Tilt door as shown and install on door guard rail, outward from the P.U.*

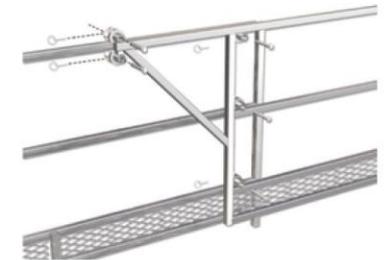
*Rollers (a) and (b) go over bars (A) and (B)  
Rollers (c) and (d) go under bars (C) and (D)*

*Let door rest on its tracks, making sure washers are on either side of the bars.*

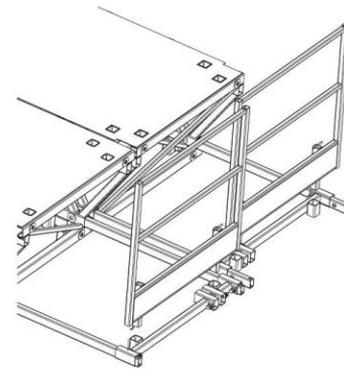
*Install roller (e) over bar (D) to secure door in place.*

*Push the lock outward to unlock and open door.*

*When closing, the door locks itself automatically.*



**Benu offers a guard rail outrigger adaptor to add safety on the front of the working area. In special applications where the platform exceeds the end of the wall, or when front openings are present, fall protection must be provided at the plank area.**



*Install every bottom outrigger and secure in place with provided 5/8" bolts.*

*Slide guard rail outrigger adaptor over 2 outriggers. Outrigger pockets are placed in a way that they can accommodate any kind of platform configurations.*

*Install plank stop pin on outrigger and secure with provided hitch pin clip.*

*Secure guard rail adaptor in place with provided 5/8" bolts.*

*Install standard 4' guard rail in pockets and lock properly.*

When 2 or more consecutive guard rail adaptor are needed, install as shown.



# **CHAPTER 11**

## **WORKING ON THE PLATFORM**



### GENERAL

To benefit from the P.U.'s maximum capacity, make sure load is distributed evenly over the platform.

To leave a free passage along the back of the platform, keep material load towards the front of P.U. and wings. This will minimize torque on masts sections and provide a safe passage for workers and brick carts all along the platform.



Refer to wings section for wings & extensions load capacity.

#### A.P.U. / M.P.U.

The first material load should be placed near the center of the P.U., between the masts.

The next loads should be placed alternatively and evenly left and right. Keeps loads balanced from side to side.

#### H.S.P.U.

Place first load behind the tower, subsequent loads must be placed each side of the tower, as close as possible to the tower. Make sure not to obstruct access door openings.

### GENERAL

Bennu's work-platform provides workers with a safe and ergonomic working environment.



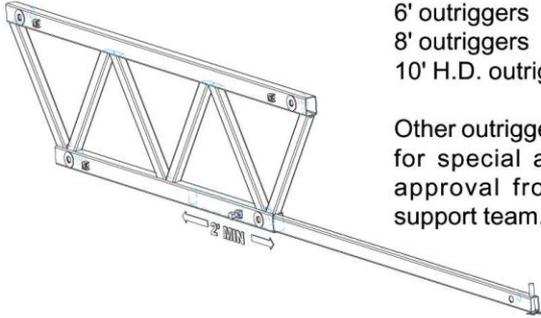
In typical installations, it allows workers to stand on the lower outrigger planks and to have material handy, on either the top outrigger planks or the platform deck. This concept will minimize risk of back injuries while providing a productive work area.

**GENERAL**

To suit every purpose, Bennu offers 3 lengths of standard outriggers.

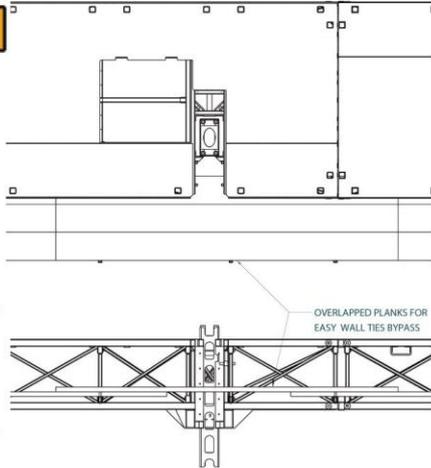
- 6' outriggers
- 8' outriggers
- 10' H.D. outriggers

Other outriggers lengths are available for special applications with prior approval from Bennu's technical support team.



**WARNING**

When sliding an outrigger out, make sure to leave at least 2' in its pocket to provide enough stability and support.



**Installation procedures (A.P.U. / M.P.U. / H.S.P.U.):**

Slide outrigger in its pocket or support tube.

Adjust to desired length.

The working planks should cover most of the whole length of the outriggers, from the structure to the plank stop pins.

Tighten the 5/8" bolts located on the side of the support tubes using a 15/16" wrench.

Make sure there is a plank stop pin on the end of each outrigger and secure with hitch pin.

The outrigger positioning offers a working plank layout that does not interfere with the wall tie system.

It might be wise to overlap planks on areas in front of masts, It makes it easier to slide planks aside while raising and lowering the P.U.

**Outriggers stiffening bracket**

An outrigger stiffening bracket is available for special applications requiring more reach with longer outriggers, or to be used with cross wings supports.



**Installation procedures (A.P.U. / M.P.U. / H.S.P.U.):**

Remove plank stop pins on both top and bottom outriggers.

Slide stiffening bracket over outriggers as shown on the picture and secure with 5/8" bolts using 15/16" wrench.



### Portable outrigger

Bennu offers a portable outrigger adaptor for applications requiring more outrigger supports.

#### Installation procedures (A.P.U. / M.P.U. / H.S.P.U.):

*Place a portable outrigger adaptor underneath the P.U. or wing, between 2 longitudinal structural tubes*

*Slide an 8' outrigger in the adaptor's pocket, passing outrigger over both structural tubes as shown.*

*Secure outrigger in place with 5/8" bolt using a 15/16" wrench.*

*The portable outrigger can also be used at an angle to reach corners with outriggers.*

### GENERAL

A truss similar to the ones used on units and wing structures is available to extend reach.

#### Installation procedures (A.P.U. / M.P.U. / H.S.P.U.):

*Using two smart bars and four pins, attach truss to front or back of P.U. or wing as shown.*

*Insert outriggers to desired length and lock using 5/8" bolts.*

*Plank outriggers as required.*

### WARNING

If extension truss is not planked, guard rails should be installed to prevent access to open areas.



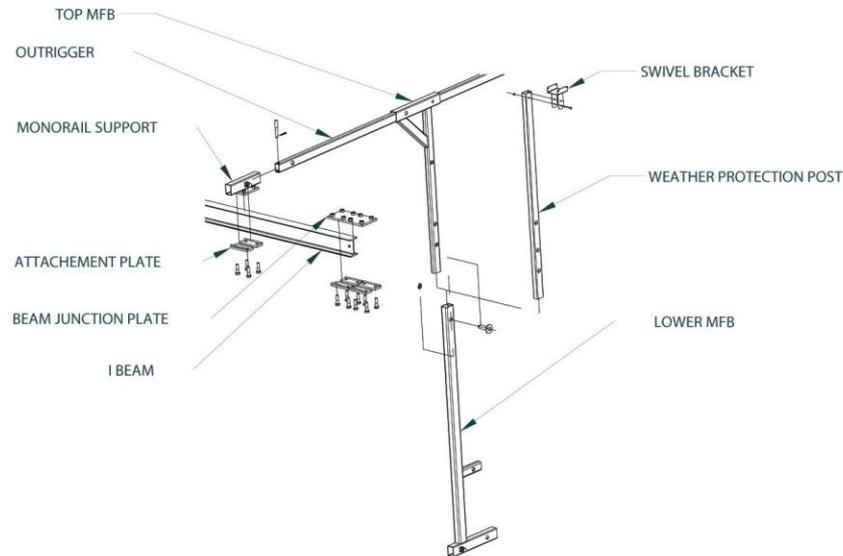
# CHAPTER 12

## MULTI-FUNCTION SYSTEM



## GENERAL

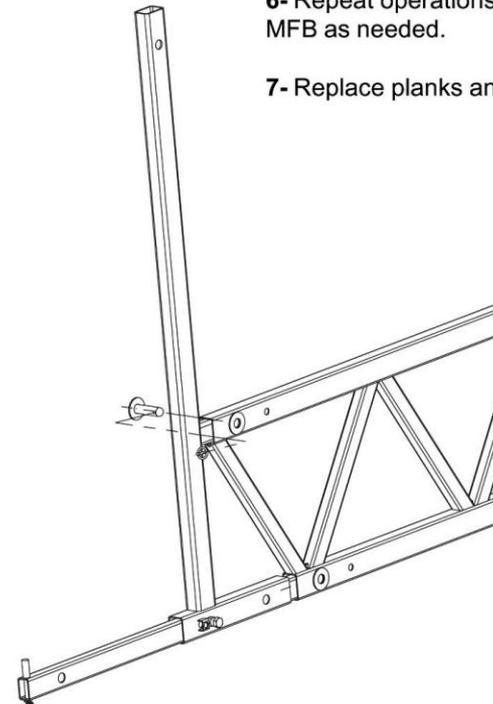
The MFB serves multiple purposes such as weather protection, centered monorail, forward monorail, "end hoist" structure, and second work level, above & below the main platform level.



### MFB installation procedures (A.P.U. / M.P.U. / H.S.P.U.):

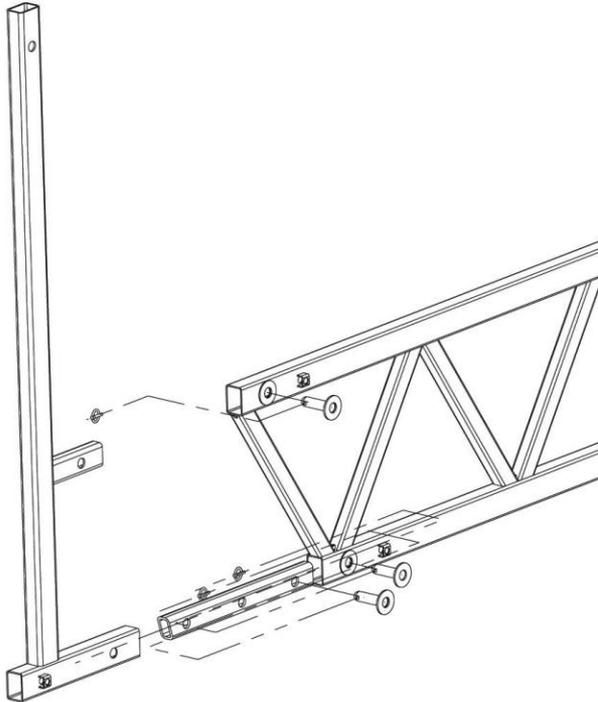
A- Lower MFB on front of P.U.

- 1- Remove planks and plank stop pins from bottom outrigger.
- 2- Remove top outriggers
- 3- Slide lower MFB over bottom outrigger, 8' or other.
- 4- Insert top tube of MFB into top outrigger pocket.
- 5- Secure tube with smart pin and lynch pin and secure lower part with 5/8" bolt using 15/16" wrench.
- 6- Repeat operations 1 to 4 for as many lower MFB as needed.
- 7- Replace planks and install plank stop pins.



### B- Lower MFB on back of P.U.

- 1- Insert smart bar in bottom outrigger pocket. Secure with smart pin and lynch pin.
- 2- Slide lower MFB over smart bar.
- 3- Insert top tube of MFB in top outrigger pocket.
- 4- Secure both top and bottom with smart pins and lynch pins.
- 5- Repeat operation 1 to 4 for as many back lower bracket as needed



### C- Top MFB ( for front monorail, centered monorail, end hoist and second work level)

- 1- Slide top MFB into lower MFB.  
Long part facing the wall for front monorail and second work level.  
Long part facing P.U. for centered monorail and end hoist.
- 2- Secure with smart pin and lynch pin.
- 3- Spacing between MFB must not exceed 48" to allow full capacity.

## SECTION B: Forward monorail

The forward monorail offers a capacity of 750 lbs at a distance of 36" from the center of the beam to the center of multi-function bracket.

At least 3 consecutive multi-function brackets must be installed to allow use of forward monorail at rated capacity.

### Installation procedures (A.P.U. / M.P.U. / H.S.P.U.):



*Install 6' outriggers in top multi-function bracket pockets and secure with 5/8" bolts, using 15/16" wrench.*

*Slide monorail support over outrigger and secure with 5/8" bolts using a 15/16" wrench.*

*Repeat steps 1 and 2 for as much multi-function bracket as needed.*

*Position I-Beam using forklift or crane.*

*Secure I-Beam onto monorail supports using one attachment plate on each side, secure with 5/8" bolts, using 15/16" wrench.*

## SECTION C: Centered monorail End hoist structure

The center monorail offers a capacity of 2,000 lbs when using 8' outriggers and 4,000 lbs with 10' heavy duty outriggers.

At least 3 consecutive multi-function brackets must be installed to allow use of center monorail at rated capacity.

The end hoist offers a capacity of 2,000 lbs at 36" out, using 10' heavy duty outriggers and 3 consecutive multi-function brackets.

### Centered monorail installation procedures (A.P.U. / M.P.U. / H.S.P.U.):

*Install 8' or 10' heavy duty outriggers in top multi-function bracket pockets and secure with 5/8" bolts using 15/16" wrench.*

*Slide monorail support on outrigger.*

*Slide outrigger in second top multi-function bracket.*

*Secure outrigger and monorail support with 5/8" in bolts using a 15/16" wrench.*

*Repeat steps 1 to 4 for as many multi-function brackets as needed.*

*Install beam in the same way as for the forward monorail.*



### End hoist structure installation procedures (A.P.U. / M.P.U. / H.S.P.U.):

*Install monorail support in the same way as for the center monorail.*

*Install beam, making sure beam is sticking out 36" beyond the end of P.U.*



## SECTION D: Weather protection

Bennu's weather protection system provides a fast and easy way to protect workers against the harsh weather conditions.

The system consists of a steel structure on which user can safely install a plastic cover (polyethylene or fabric).

A key component of the system is the swivel bracket. The bracket is designed to allow easy attachment of a wooden frame onto the steel structure.

Weather protection structures can also be used as an overhead protection.

### Weather protection installation procedures (A.P.U. / M.P.U. / H.S.P.U.):



*Install swivel bracket on top of weather protection post.*

*Install weather protection post into lower multi-function bracket and secure with smart pins and lynch pin.*

*To create a slope, use the top hole in the front weather protection post and the bottom hole in the back.*

*Repeat step 1 and 2 for as many posts as needed. Bennu recommends a maximum spacing of 8' between posts.*

*Install lumber (2" X 4" or 4" X 4") across swivel brackets and secure with nails or screws.*

*Lay some more lumber across to lend more support for the plastic cover.*

*Install swivel brackets on the back side of the weather protection post.*

*Install lumber and secure with nails or screws.*

*Install and fasten plastic cover over wooden frame.*

## SECTION E: Second work level

The same multi-function bracket allows the installation of a second work level.

This addition can suite many purposes, for example, installing insulation and doing masonry work simultaneously.

The installation of a second work level below the platform is also possible with the multi-function bracket. This is mostly useful for heaters during winter months or also for workers to perform duties below the main work level.

### Second work level installation procedures (A.P.U. / M.P.U. / H.S.P.U.):



*Install 6' outriggers in top multi-function bracket pockets, making sure not to extend more than 48" from the center of the multi-function bracket to the end of outrigger and secure with 5/8" bolts, using a 15/16" wrench.*

*Install planks and plank stop pins.*

*Install guard rail outrigger adaptor on either side of the multi-function bracket to provide fall protection.*



As for other working levels, make sure planks properly overlap.

Do not stand on planks beyond their supports.

Use plank end guard rails on open ends.



**September 24th, 2002**  
**Printed in Canada,**

**Text & Data compiling by:**  
Jean Robillard,  
3VImaging &  
Bennu Innovation Technical Support Team

**3D drawings by:**  
3VImaging & Bennu Innovation  
Using 3D Studio Max 4.0 & Solid Edge 11

**Edited by 3VImaging**  
Using Adobe Photoshop 6.0,  
Adobe Illustrator 10 &  
Adobe Pagemaker 7.0

This manual may not, in whole or in part, be copied or photocopied, manually or electronically, without prior authorization of Bennu Innovation, inc.

All Bennu products are worldwide patent protected.

**3140 Boulevard des Entreprises,  
Terrebonne (Québec)  
Canada, J6X 4J8**

**Toll free: 1 855 55-BENNU (552 -3668)**  
**[www.bennu.org](http://www.bennu.org)**