

# Patria

Vammas  
Snow Removal

# Snow How



# PSB 4500

# PSB 5500



## VAMMAS PSB 4500 and PSB 5500

– Presenting a new level in snow removal efficiency

The VAMMAS 3-in-1 PSB-high speed concept has been proven for years in both Europe and North America. All PSB units are manufactured to the highest standards of quality and reliability by Patria Vammas. The PSB concept is for airports where speed and efficiency snow removal are most important – both for the airports and for their customers.

The superbly engineered VAMMAS PSB takes multi-tasking to a new level, combining the efficiency of a snow plow, sweeper and air-jet blower all in one unit. The PSB unit is designed to give the operator maximum visibility with the unique VAMMAS cab. The machine is short, but still long enough to have the broom parallel to the frame in transport position making it easy to drive to the garage or service area.

VAMMAS PSB units have both wheel and articulated steering, so it can turn around easily on taxiways and runways. The articulated frame steering also maintains optimally the same path for the plow, sweeper and air blower.

Faster clearing, less runway downtime. A better bottom line.

The wide PSB units offer substantial savings in capital and labor resources for airport operators by dramatically reducing the need for large fleets of narrow or single function vehicles. Several airports using VAMMAS PSB units have 3 000 m (10.000 ft) runways that are cleaned to bare pavement in less than 10 minutes.

**The latest technology for maximum performance in all conditions. The Advanced technology incorporated in to all PSB units includes:**

- plows with independent spring-loaded cutting edge segments to maintain maximum contact area even on uneven surfaces
- dense cassette broom system for easy maintenance and option to use steel or polypropylene brooms or a mix broom
- powerful air-jet blower to remove remnants as well as snow from edge lights
- ergonomically designed ‘control tower’ cab, with operator in the center to have excellent, all-around visibility
- both engines and frame steering softwares are integrated into VAMMAS CAN-system for monitoring and diagnostics

For more info, please ask for the complete specifications.

Technical specifications	PSB 4500		PSB 5500	
Total length in working position	18.3 m	60 ft	20.9 m	68 ft 7 in
Total width in working position	6.4 m	21 ft	7.5 m	24 ft 7 in
Total width in transport position, without plow	3.0 m	9 ft 9 in	2.5 m	8 ft 2 in
Wheel base	10.9 m	35 ft 8 in	10.5 m + 1.4 m	34 ft 4 in + 4 ft 6 in
Height	3.6 m	11 ft 10 in	3.7 m	12 ft 2 in
Weight, without plow	23 t	51 000 lbs	30 t	66 000 lbs
Turning radius:				
- from outer plow end	13.6 m	44 ft 7 in	16.3 m	53 ft 6 in
- from outer front wheel	11.1 m	36 ft 5 in	10.9 m	35 ft 9 in
- from inner plow end	6.4 m	21 ft	7.5 m	24 ft 7 in
- from inner front wheel	8.6 m	28 ft 3 in	9.0 m	29 ft 6 in
Plow total width	6.75 m	22 ft 2 in	7.5 m	24 ft 7 in
Plow working width (37°)	5.6 m	18 ft 5 in	6.7 m	22 ft
Plow angle left and right	37	37	37	37
Broom width	5.7 m	18 ft 8 in	6.8 m	22 ft 4 in
Broom working width	4.6 m	15 ft 2 in	5.5 m	18 ft
Broom maximum diameter	940 mm	37 in	940 mm	37 in
Swing angle left and right (35°)	30°- 40°	30°- 40°	30°, 35° or 40°	30°, 35° or 40°
Caster wheels, automatic adjustment optional	2 pairs adjustable	2 pairs adjustable	4 pairs adjustable	4 pairs adjustable
Air flow	11 cu m/s	23 500 cfm	11 cu m/s	23 400 cfm
Air speed at nozzle	400 km /h	250 mph	400 km/h	250 mph
Recommended max. working speed	40 - 60 km/h	25 - 40 mph	40 - 60 km/h	25 - 40 mph
Drive engine – US Tier 3 / EU Stage IIIa	Caterpillar C11		Caterpillar C15	
	287 kW	385 hp	354 kW	475 hp
Aggregate engine – US Tier 3 / EU Stage IIIa	Caterpillar C11		Caterpillar C15	
	313 kW	420 hp	354 kW	475 hp
Voltage	24 V	24 V	24 V	24 V
Transmission, Allison 4000 RDS automatic	6 forward + 1reverse		6 forward + 1reverse	

# SB 3600

# SB 4500



## VAMMAS SB 3600 and SB 4500

– Reliable tow-behind units with latest technology

VAMMAS SB series tow-behind sweepers have been used in high speed snow removal in all sizes of commercial and military airports. The units are manufactured to the highest standards of quality, speed, reliability and simplicity

VAMMAS SB series units share the same design principles and standard components as other VAMMAS units. The units are fast to couple to the draw table or towing hook of the towing truck. In transport position the broom turns parallel to the frame allow to access even through narrow gates or door openings.

### Low capital investment with high operating speed.

VAMMAS tow-behind sweepers are build to operate at speeds up to 60 km/h (40 mph) thanks to the use of on-highway truck components and unique design of the broom assembly. Operators only require short training since they are already familiar with driving a standard truck. Trucks can be used for other tasks in and out of season.

### New technology available for every VAMMAS SB unit

for safety and performance.

The Vammas SB-sweeper has several standard and optional features to ensure a high performance:

- remote control unit with graphical display and single control joy stick
- rear wheel steering available for better guidance of the plow, boom and air-blower
- ABS brakes available for increased safety
- Broom automatically rises when unit is reversed
- Self diagnostics
- Automatic or manual broom pattern control
- Latest engine technology improving emissions, power and fuel consumption
- All hydraulic and electric components located in sealed stainless steel boxes.

### Tow truck specifications

Any make of truck can be used or Patria can supply the truck including the plow hydraulics and additional features required. Vammas SB- units can be towed by a 2 axle truck, or a rear tandem or 4 x 4 truck. The recommended minimum truck weights are 10 to 14 tons.

For more info, please ask for the complete specifications.

Technical specifications	SB 3600		SB 4500	
Total length in working position	10.9 m	35 ft 8 in	12.3 m	39 ft 4 in
Total width in working position with plow	4.46 m	14 ft 8 in	6.4 m	21 ft
Total width in transport position	2.45 m	8 ft 0 in	3.0 m	9 ft 9 in
Wheel base (nose wheel version)	7.3 m	24 ft 0 in	N/A	N/A
Height	2.62 m	8 ft 6 in	3.27 m	10 ft 8 in
Weight	10 t	22 000 lbs	14 t	31 000 lbs
Turning radius:	depends on the truck		depends on the truck	
Broom width	4.2 m	13 ft 9 in	5.6 m	18 ft 5 in
Broom working width	3.6 m	12 ft 0 in	4.6 m	15 ft 2 in
Broom maximum diameter	940 mm	37 in	940 mm	37 in
Swing angle left and right ( std 35°)	30°- 40°	30°- 40°	30°- 40°	30°- 40°
Caster wheels, automatic adjustment optional	2 pairs adjustable	2 pairs adjustable	2 pairs adjustable	2 pairs adjustable
Air flow	11 cu m/s	23 500 cfm	11 cu m/s	23 500 cfm
Air speed at nozzle	400 km /h	250 mph	400 km /h	250 mph
Recommended max. working speed	40 - 60 km/h	25 - 40 mph	40 - 60 km/h	25 - 40 mph
Aggregate engine – US Tier 3 / EU Stage IIIa	Mercedes Benz 501 LA		Caterpillar C11	
	260 kW	349 hp	313 kW	420 hp
Voltage	24 V	24 V	24 V	24 V

# RSB 3600



**NEW – VAMMAS RSB 3600 compact sweeper for all-around snow removal**

Continuing the innovation Patria introduces the RSB 3600 compact sweeper, designed to maximize the utilization of capital investment. This unit is designed for usage on aprons, taxiways and runways.

The VAMMAS RSB 3600 is mounted on top of the truck chassis and only the sweeper and air-blower follow immediately behind the truck. The unit is easy to service from the service platforms on both sides.

## Economy, versatility, speed

Vammas RSB units can utilize any quick-change systems (hook or cable) and thus the compact sweeper carrier truck is ready for use for other purposes in minutes – 12 months a year.

The control box and operating functions are the same as in other VAMMAS tow-behind unit to give identical operator controls and maintenance for the whole fleet. Due to the short length this unit is also ideal for apron work. As in all VAMMAS units, single joystick control with possibility to isolate single functions on or off.

For more info, please ask for the complete specifications.

Technical specifications	RSB 3600	
Total length in working position	7 m	35 ft 8 in
Total width in working position	4.61 m	15 ft 1 in
Total width in transport position	4.61 m	15 ft 1 in
Weight	6.7 t	15 000 lbs
Turning radius:	depends on the truck	
Broom width	4.2 m	13 ft 9 in
Broom working width	3.6 m	12 ft 0 in
Broom maximum diameter	940 mm	37 in
Swing angle left and right	30°	30°
Caster wheels, automatic adjustment optional	2 pairs	2 pairs
Air flow	8.5 cu m/s	18 000 cfm
Air speed at nozzle	400 km /h	250 mph
Recommended max. working speed	40 - 60 km/h	25 - 40 mph
Aggregate engine – US Tier 3 / EU Stage IIIa	Mercedes Benz 501 LA	
	260 kW	349 hp
Voltage	24 V	24 V



# B 400



## Small giant – VAMMAS B 400 snow blower

Patria is the leading manufacturer of airport snow blowers in Northern Europe. The latest VAMMAS B 400 snowblower is designed to do all the snow jobs at an airport.

VAMMAS B 400 snow blower with two horizontal helical ribbon augers to force the snow to the fan. The unit is designed for both dry and wet snow.

Performance – performance – performance

### Performance is engineered into the unit itself through:

- tapered design at front and sides for improved visibility
- fan wheel with special nose cone to avoid pushing the snow
- hydraulic driven side augers
- optional chute for loading the trucks
- separate operator friendly control box
- fast to mount and dismount to allow other usage of the carrier

Technical specifications	B 400	
Total length in working position	3.46 m	11 ft 4 in
Total width in working position	3.64 m	11 ft 11 in
Total width in transport position	3.64 m	11 ft 11 in
Height	3.2 m	10 ft 6 in
Weight	7.6 t	16 700 lbs
Turning radius:	depends on the front end loader	
Maximum capacity	3 300 t/h	3 300 t/h
Casting distance	15 - 45 m	50 ft -150 ft
Max height of snow bank	1.2 - 1.7 m	4 ft - 5 ft 8 in
Impeller diameter	1.5 m	4 ft 11 in
Helical ribbon augers	2 pcs, horizontal, hydraulic driven	
Casting angle	160° (lh 30°, rh -10° )	
Engine – US Tier 3 / EU Stage IIIa	Mercedes Benz 502 LA	
	420 kW	563 hp
Voltage	24 V	24 V
Carrier recommendation:	20 t weight class	

For more info, please ask for the complete specifications.



# PS 3500 / PS 4200



VAMMAS PS-plow - unique mechanized method for cleaning airport edge lights

The VAMMAS PS edge light plow with sweepers is designed to be an efficient heavy duty V-plow, but it also has a unique concept to clean the edge lights from the vehicle cab. Vammas PS 4200 plow has second set of vertical brushes for airport sign cleaning, the vertical brushes can be moved in or out hydraulically.

The plow can be mounted to a front-end loader, a tractor or a tractor or a high clearance farming tractor with quick attachment. The only connections needed are one set of hydraulic ports and electric voltage from the base vehicle. During the cleaning, the operator opens the front cone of the plow in front of the edge light, and the sweeping brushes start to rotate. Simple.

**Low investment for efficient, fast cleaning and satisfied personnel**

Edge lights can be cleaned immediately after the snow event with minimal labor force, since a manual cleaning is history. The plow can be fitted with various types of cutting edges; plastic, steel net or solid steel. The small snow-bank is normally cast away by a snowblower – which can use the same carrier.

For more info, please ask for the complete specifications.

Technical specifications	PS 3500		PS 4200	
Working width	3 500 mm	11 ft 6 in	4 250 mm	13 ft 10 in
Transportation width (from front to rear)	2 950 mm	9 ft 8 in	2 920 mm	9 ft 7 in
Transportation width without nose wedge (from front to rear)	2 100 mm	6 ft 11 in	2 070 mm	6 ft 9 in
Maximum height of light device	520 mm	1 ft 8 in	1 120 mm	3 ft 8 in
Maximum opening of the nose wedge	800 mm	2 ft 7 in	1000 mm	3 ft 3 in
Cutting edge angle	40°	40°	60°	60°
Blade height (front/rear)	550 mm / 1100 mm	1 ft 10 in / 3 ft 7 in	750 mm / 1 280 mm	2 ft 6 in / 4 ft 2 in
Blade thickness	3 mm	1/8 in	3 mm	1/8 in
Weight	1 350 kg	3 000 lbs	2 150 kg	4 750 lbs
Skids	2 pcs	2 pcs	4 pcs	4 pcs



# P 5600 | P 7000 | P 8400



**NEW & UNIQUE VAMMAS airport plow series with self adjusting moldboard curvature**

**Efficiency and simplicity**

**Patria has now full line of airport plows to match Vammass sweeper widths. The plows have low friction polyethylene plastic blade with adjustable curvature for more controlled windrow.**

The VAMMAS plow blades are made of plastic with extreme strength and low friction. The lightweight construction with heavy bottom frame construction optimizes the power requirements of the plow truck. The plow has 2 caster wheels for high-speed stability.

VAMMAS P-series plows have segmented cutting edge elements to maintain the maximum contact on the surface even if one segment hits an obstruction. The moldboard radius and height is self adjusting in minutes to better match the snow conditions, operating speed and to control the shape of windrow.

P-series plow can be fitted to any front attachment system.

Technical specifications	P 5600		P 7000		P8400	
<b>Dimensions</b>						
Length of mouldboard	6 200 mm	20 ft 8 in	7 600 mm	25 ft 3 in	9 000 mm	30 ft 0 in
Working width 37°	4 472 mm	14 ft 11 in	5 590 mm	18 ft 8 in	6 709 mm	22 ft 4 in
Share cutting length	1 400 mm	4 ft 8 in	1 400 mm	4 ft 8 in	1 400 mm	4 ft 8 in
Share unit pcs	4		5		6	
Self Adjusting Mouldboard profile	std		std		std	
Mouldboard height	1.2 m ± 0.3 m	3 ft 10 in ± 1 ft	1.2 m ± 0.3 m	3 ft 10 in ± 1 ft	1.2 m ± 0.3 m	3 ft 10 in ± 1 ft
Quick coupling Volvo BM	std		std		std	
Caster wheels	2		2		2	
Caster wheel tires	180x80 R8		180x80 R8		180x80 R8	
Weight	1150 kg	2600 lbs	1350 kg	3000 lbs	1550 kg	3400 lbs

**Options**

- Steel cutting edges
- Edge marker lights
- Storage supports



# SKIDDOMETER BV 11



Complete friction and runway condition measurement system for civil and military airports.

The Patria Vammass Skiddometer BV11 is the most used continuous friction measurement system around the World. It is special designed for its purpose on large and small airports both in winter and in summer. The system is fully approved by ICAO and FAA.

For measurement a wet runway (runway calibration) with 1 mm water film as per ICAO and FAA recommendations, the unit is supplied with water tank or water trailer.

As a special feature, the unit does not require regular calibration. Calibration is automatically checked by the Skiddometer Computer always when it is turned on.

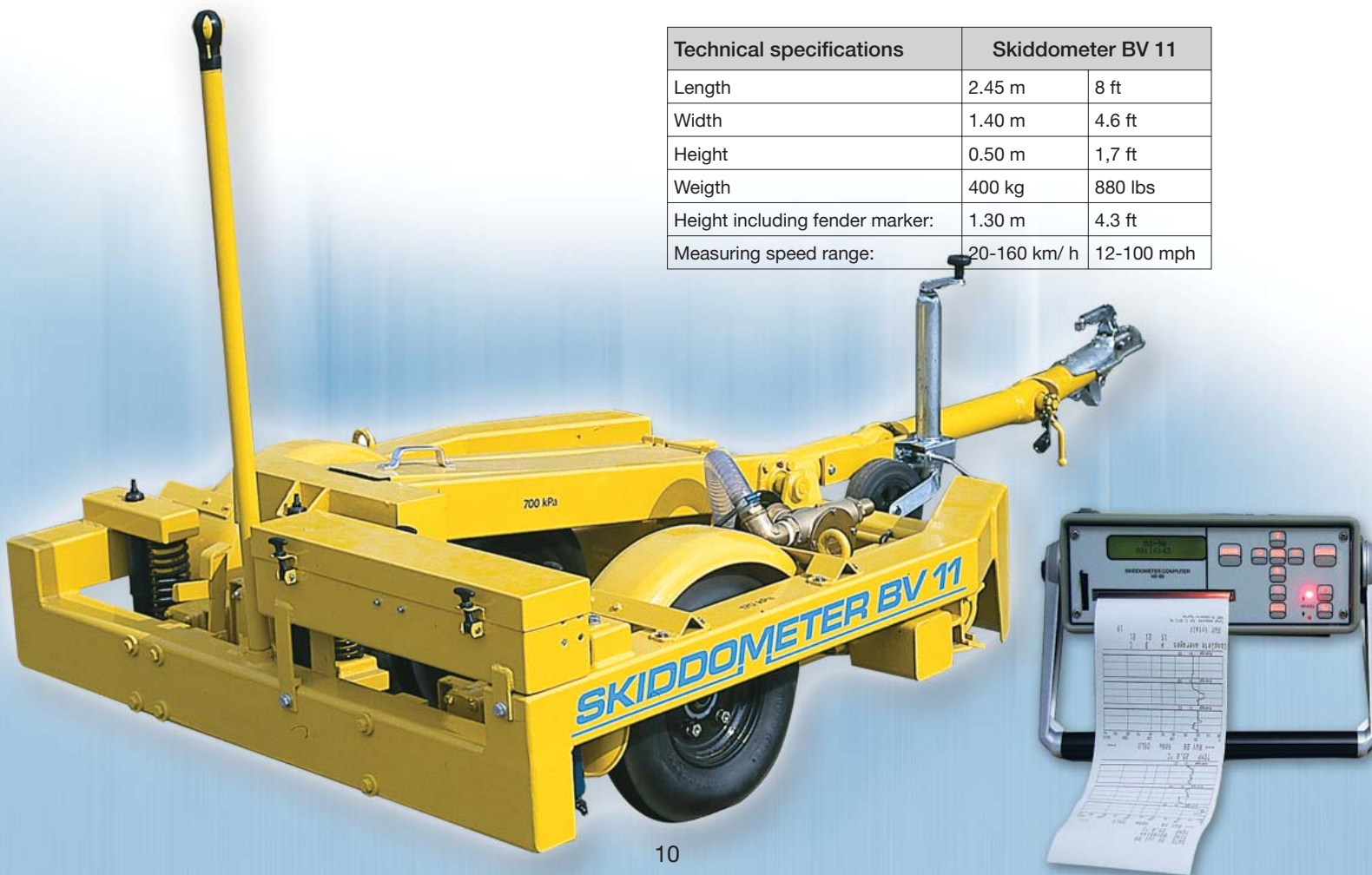
Simplicity, reliability and accuracy

The list of main features for the Skiddometer BV11 is long and impressive.

- Reliable and safe operation in all conditions due to practical and robust design with a fully enclosed electrical and mechanical system.
- Low profile chassis, fully suspended for high-speed operation. Quick turns no problem (no tailswing).
- Easy to operate and service, most of parts locally available around the World.
- Real time print-outs.
- Offers maximum flexibility, any automobile with towing hook is adequate for towing. Fast hook-up time.
- Maximum stability at high speed due to its low gravity and fully suspended chassis.
- Low operational cost with extremely long life cycle.

For more info, please ask for the complete specifications.

Technical specifications	Skiddometer BV 11	
Length	2.45 m	8 ft
Width	1.40 m	4.6 ft
Height	0.50 m	1,7 ft
Weight	400 kg	880 lbs
Height including fender marker:	1.30 m	4.3 ft
Measuring speed range:	20-160 km/ h	12-100 mph



# Customer Service

Total pre- and aftermarket support from a world leader in snow removal equipment and GSE.

Patria Vammas provides comprehensive study services of the economics of fast snow removal operations for airlines and airports. For aftermarket support Patria has a global distributor network to provide local operator and maintenance training and technical and service part support – all in the local language.

Patria has made with an independent aviation consulting company a thorough study program to establish the costs of delays to airlines due to reduced traffic at any given airport based on actual scheduled flight traffic and plane types.

For airports the study optimizes the fleet size and fleet type by minimizing capital and operating costs.

Patria Vammas Customer Service supports all VAMMAS units during their long life cycle, including normal maintenance parts all the way to complete modernization rebuilds.

Technical documentation is available in books and in electric format with advanced interactive features.

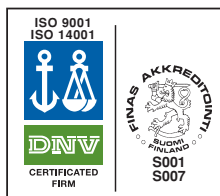
Patria Vammas provides complete life time service support including future updates and rebuilds.





## Patria Vammas Oy

P.O. Box 98  
FI-38201 Vammala  
Tel. +358 20 4691  
Fax +358 20 469 4252  
email: [vammas@patricia.fi](mailto:vammas@patricia.fi)  
[www.patria.fi](http://www.patria.fi)



50 Fairchild Court  
Plainview, NY 11803  
Tel. +1-516-576-3200  
Fax +1-516-576-3221  
email: [info@fortbrand.com](mailto:info@fortbrand.com)  
[www.fortbrand.com](http://www.fortbrand.com)