

# ODYSSEY

THE EXTREME BATTERY



USER'S GUIDE

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## **INTRODUCTION**

The ODYSSEY battery combines in one box the characteristics of two separate batteries. It can deep cycle as well as provide enormous cranking power - it is almost as if a champion long distance runner and a world class sprinter are one and the same person.

These batteries are capable of providing engine cranking pulses in excess of 2250A for 5 seconds as well as 400 charge/discharge cycles to 80% depth of discharge (DOD). A typical starting, lighting and ignition (SLI) battery can do one or the other, but not both. It is either a sprinter or a long distance runner; ODYSSEY batteries will do both - provide short duration high amperage pulse or low rate long duration drains.

## **WHY USE ODYSSEY BATTERIES?**

### **GUARANTEED LONGER SERVICE LIFE**

With an eight to twelve year design life (float) and a three to ten year service life, ODYSSEY saves you time and money because you do not have to replace the battery as often. ODYSSEY is warranted against factory defects for two full years in Powersports or three full years in automotive, commercial and heavy-duty marine applications.

### **SUPERIOR CRANKING AND FAST CHARGE CAPABILITY**

The 5 second cranking power of ODYSSEY batteries is double to triple that of equally sized conventional batteries, even when the temperature is as low as - 40°C (-40°F). Also, with simple constant voltage charging (alternator or independent charger), there is no limitation on the inrush current, so the user is assured of fast charge recovery.

### **MOUNTING FLEXIBILITY**

The ODYSSEY battery may be installed on its sides at any angle without sacrificing any performance attributes. There is no fear of any acid spillage as ODYSSEY recycles the internal gas during operation or charging. The sealed design of the ODYSSEY battery eliminates the need for an acid vent tube; eliminating the fear of acid burns or damage to expensive chrome or paint.

## SUPERIOR VIBRATION RESISTANCE

ODYSSEY batteries are of military grade and have endured rigorous tests that demonstrate their overall ruggedness and exceptional tolerance of mechanical abuse.

## READY OUT OF THE BOX

ODYSSEY batteries are shipped fully charged. If ODYSSEY'S voltage is 12.65V or greater simply install the battery in your vehicle and you are ready to go! If below 12.65V, boost charge following the instructions in the ODYSSEY Owner's Manual and/or Technical Manual.

## WORRY-FREE SHIPPING

Owing to the drycell design, the US Department of Transportation (USDOT) has classified the ODYSSEY battery as a nonspillable, so it may be shipped worry-free by UPS/Federal Express or by air.

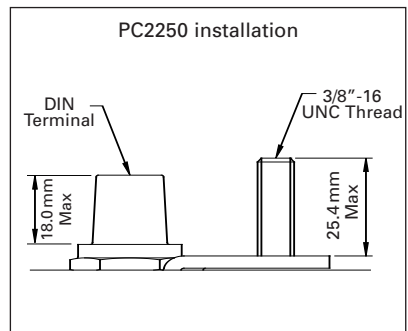
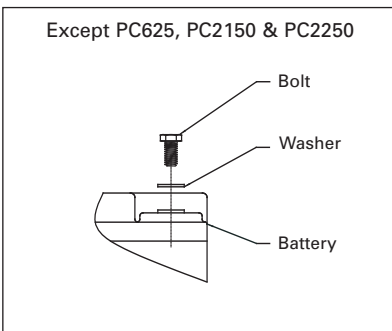
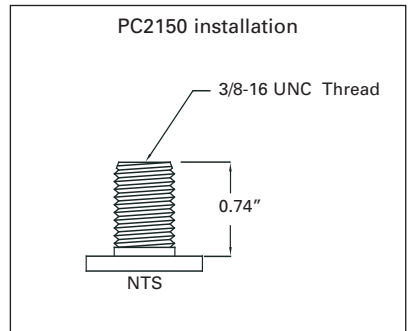
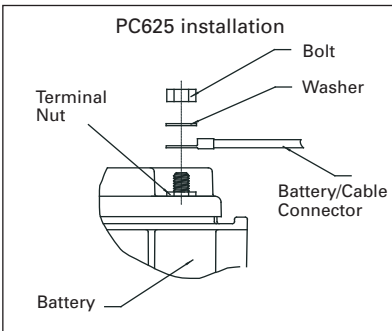
## LONGER STORAGE LIFE

Unlike conventional batteries that need to be recharged every six to twelve weeks the ODYSSEY battery, when fully charged, can be stored for up to 2 years at 25°C (77°F). Simply recharge and ODYSSEY is returned to full power. At lower temperatures, storage times will be even longer.

## DEEP DISCHARGE RECOVERY

Should ODYSSEY become deeply discharged, simply recharge following instructions in the ODYSSEY Owners Manual.

## INSTALLATION



### **PC625 installation**

1. Using procedures recommended by the manufacturer, carefully disconnect the cables from your old battery and remove it from the vehicle. Return the spent battery to the dealer for recycling.
2. Inspect existing battery cables for corrosion, acid damage or insulation deterioration. Replace if any deterioration is present.
3. Position the PC625 in the battery holder and fasten firmly to the vehicle.
4. Connect the positive (+) cable from your ignition to the positive (+) battery terminal between the two nuts, with the washer on top.  
DO NOT TRY TO LOOSEN THE LOWER NUT.
5. Connect the negative (-) cable from your engine or chassis to the negative (-) battery terminal between the two nuts, with the washer on top.  
DO NOT TRY TO LOOSEN THE LOWER NUT.
6. Torque the top nuts to a maximum per specifications noted in table.

### **All ODYSSEY installation (except PC625, PC2150 & PC2250)**

1. Using procedures recommended by the manufacturer, carefully disconnect the cables from your old battery and remove it from the vehicle. Return the spent battery to the dealer for recycling.
2. Inspect existing battery cables for corrosion, acid damage or insulation deterioration. Replace if any deterioration is present.
3. Position the ODYSSEY in the battery holder and fasten firmly to the vehicle.
4. Connect the positive (+) cable from your ignition to the positive (+) battery terminal.
5. Connect the negative (-) cable from your engine or chassis to the negative (-) battery terminal.
6. Torque the bolt/screw to a maximum per specifications noted in the table. If you are using the accessory bolt ©, hold the brass post (A) with a vise grip and counter torque. Do the same with the GM cable installation.

### **PC2150 & PC2250 installation**

1. Using proper procedures as recommended by the vehicle manufacturer, carefully disconnect the cables from your old battery and remove it from the vehicle.  
Return the spent battery to the dealer for proper recycling.
2. Inspect existing battery cables for corrosion, acid damage or insulation deterioration. Replace if any deterioration is present.
3. Position your ODYSSEY in the battery holder and fasten firmly to the vehicle.
4. Connect the positive (+) cable to the positive (+) battery terminal.
5. Connect the negative (-) cable to the negative (-) battery terminal.
6. Torque the top bolt/screw or nuts per specifications noted in table.

*NOTE: All ODYSSEY batteries are valve regulated sealed batteries and never need to have water or electrolyte (acid) added. WARRANTY WILL BE VOID IF THE BATTERY IS OPENED.*

## ODYSSEY SLI BATTERY SPECIFICATIONS

MODEL	Voltage	PHCA** (5 Sec)	CCA*	HCA	MCA	Nominal Capacity (20 Hr Rate - Ah)	Capacity (10 Hr Rate - Ah)	Reserve Capacity Minutes	Length inches (mm)	Width inches (mm)	Height inches (mm)	Weight lbs (kg)	Terminal	Torque Specs in-lbs (Nm max)	Internal Resistance (mΩ)	Short Circuit Current
PC310	12	310	100	200	155	8.5	7.8	9	5.43 (138.0)	3.39 (86.0)	3.98 (101.0)	10 (2.7)	M4 Bolt	8.9 (1.0)	27.1	455A
PC535	12	535	200	300	265	14.8	13	21	6.70 (170.2)	3.90 (99.1)	6.125 (155.6)	12.0 (5.4)	M6 Bolt	40 (4.5)	8	1000A
PC545	12	545	185	300	240	14	12	18	7.00 (177.8)	3.37 (85.6)	5.17 (131.3)	12.6 (5.7)	M6 Bolt†	50 (5.6)	10	1200A
PC625	12	625	265	440	350	18	17	27	6.70 (170.2)	3.90 (99.1)	6.89 (175.0)	13.2 (6.0)	M6 Stud	40 (4.5)	7	1800A
PC680	12	680	220	370	300	17	16	24	7.27 (184.7)	3.11 (79.0)	6.67 (169.4)	15.4 (7.0)	M6 Bolt† or SAE 3/8" Receptacle	50 (5.6)	7	1800A
PC925	12	925	380	625	500	28	27	52	6.64 (168.6)	7.05 (179.0)	5.04 (128.0)	26.0 (11.8)	M6 Bolt† or SAE 3/8" Receptacle	60 (6.8)	5	2400A
PC1200	12	1200	550	860	725	44	40	78	7.87 (199.9)	6.66 (169.1)	6.80 (172.7)	38.2 (17.4)	M6 Bolt† or SAE 3/8" Receptacle	60 (6.8)	4.5	2600A
PC1700	12	1700	875	1325	1175	68	65	142	13.02 (330.7)	6.62 (168.2)	6.93 (176.0)	60.9 (27.6)	M6 Bolt† or SAE 3/8" Receptacle	60 (6.8)	3.5	3500A
PC2150	12	2150	1090	1545	1370	100	95	200	13.00 (330.2)	6.80 (172.7)	9.40 (238.8)	75.0 (34.1)	3/8" Stud/ SAE Dual SAE	150-200 (16.9-22.6)	2.2	5000A
PC2250	12	2250	1225	1730	1550	126	114	240	11.26 (286.0)	10.59 (269.0)	8.19 (208.0)	86.0 (39.0)	Dual DIN Terminal	100 (11.0) For 3/8 Stud only	2.1	5000A

\* Cold Start Performance S.A.E. J537 JUNE 82    \*\* Pulse Current    † Can be fitted with brass automotive terminal

All batteries available with metal jackets, except PC310, PC535, PC625 and PC2250

Operating temperature range: -40°C (-40°F) to 45°C (113°F) • -30°C (-22°F) to 40°C (104°F) for PC2250 • -40°C (-40°F) to 80°C (176°F) with metal jackets on all other sizes

## Pulse discharge capabilities

Table 1 shows the 5, 10, 20 and 30-second pulse discharge numbers for these batteries to 7.2V at 25°C (77°F). Sufficient time must be given between successive discharges to allow the terminals to cool down. Also, fully charged batteries will meet these.

Battery	Pulse discharge in amps to 7.2V			
	5 sec.	10 sec.	20 sec.	30 sec.
PC310	TBA	TBA	TBA	TBA
PC535	535	465	410	380
PC545	545	495	420	380
PC680	680	595	525	400
PC625	625	545	480	450
PC925	925	870	765	675
PC1200	1,200	1,090	900	825
PC1700	1,700	1,540	1,355	1,195
PC2150	2,150	1,985	1,750	1,600
PC2250	2,250	2,075	1,775	1,675

Table 1: Pulse discharge of ODYSSEY batteries

## ODYSSEY STORAGE AND DEEP DISCHARGE RECOVERY

Figure 2 shows the relationship between open circuit voltage (OCV) and state of charge (SOC) for the ODYSSEY battery.

### (A) How do I know the state of charge (SOC) of the battery?

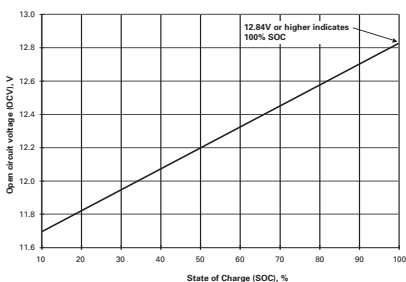


Figure 2: ODYSSEY OCV vs. state of charge

As long as the battery has not been charged or discharged for 6 or more hours, Figure 2 can be used to determine the SOC of the ODYSSEY battery. Use a high quality digital voltmeter to measure its open circuit voltage (OCV). The graph shows that a healthy, fully charged ODYSSEY battery will have an OCV of 12.84V or higher at 25°C.

### (B) How long can the battery be stored?

Refer to Figure 3 below. At 25°C (77°F), these batteries can be stored for up to 2 years. The lower the temperature, the longer the storage time. The battery must be charged before storage.

Roughly every 10°C (18°F) increase in temperature cuts storage time in half. If the temperature rises to 35°C (95°F) the battery may be stored for only 1 year before a recharge becomes necessary. Figure 3 will apply only if the battery is charged before storage.

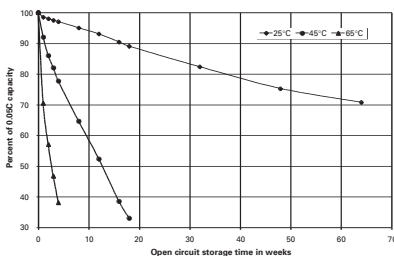


Figure 3: ODYSSEY storage time at temperatures

## CHARGING ODYSSEY BATTERIES

Charging is key to the proper use of a rechargeable battery. Inadequate or improper charging is a common cause of premature failure of rechargeable lead acid batteries.

### (A) Selecting the right charger for your battery

Qualifying chargers for your ODYSSEY battery is a simple two-step process.

#### Step 1 Charger output voltage

Determining the charger output voltage is the most important step in the charger qualification process. If the voltage output from the charger is less than 14.2V or more than 15V for a 12V battery do not use the charger. For 24V battery systems the charger output voltage should be between 28.4V and 30V. If the charger output voltage falls within these voltage limits when the charge current starts dropping, proceed to Step 2; otherwise pick another charger.

#### Step 2 Charger type - automatic or manual

The two broad types of small, portable chargers available today are classified as either automatic or manual. Automatic chargers can be further classified as those that charge the battery up to a certain voltage and then shut off and those that charge the battery up to a certain voltage and then switch to a lower float (trickle) voltage.

An example of the first type of automatic charger is one that charges a battery up to 14.7V, then immediately shuts off. An example of the second type of automatic charger would bring the battery up to 14.7V then switch to a float (trickle) voltage of 13.6V; it will stay at that level indefinitely. The second type of automatic charger is preferred as the first type of charger is likely to undercharge the battery.

**WARNING: If using a wheeled service garage charger, DO NOT use any setting above 20A as they typically have voltages in excess of 15V at current settings above 20A**

A manual charger typically puts out a single voltage or current level continuously and has to be manually switched off to prevent battery overcharge. Should you choose to use a manual charger with your ODYSSEY battery, do not exceed charge times suggested in Table 3 below.

Charger amps	Battery model	Time to full charge
6 - 10	PC310	
	PC535	8 – 10 hrs.
	PC545	8 – 10 hrs.
	PC625	12 – 14 hrs.
15 –20	PC680	14 – 16 hrs.
	PC925	8 – 10 hrs.
	PC1200	12 – 14 hrs.
	PC1700	14 – 16 hrs.
	PC2150	14 – 16 hrs.
	PC2250	

Table 3: Suggested charge times for ODYSSEY batteries

#### Concluding remarks

We believe there is no other sealed-lead battery currently available commercially that can match ODYSSEY battery for sheer performance and reliability. We hope that the preceding material will help the reader arrive at the same conclusion.

**WARRANTY: FULL 2-YEAR AND 3-YEAR REPLACEMENT**

ODYSSEY Batteries of EnerSys Energy Products Inc. (seller), warrants its batteries to be free of defects in material and workmanship. This warranty is effective for 2 years in powersports applications and 3 years in automotive/commercial/industrial applications from the date of purchase with original receipt; 2 and 3 years respectively from manufacturer's shipping date if no original receipt is available; or within 400 cycles to 80% depth of discharge, whichever occurs first. Within the warranty period, the battery will be replaced free of charge if adjustment is necessary due to defect in material or workmanship (not merely discharged). Simply return the battery to any authorised ODYSSEY dealer with the original receipt for a replacement. This warranty may vary from country to country; contact your appropriate sales region for confirmation.

**GENERAL PROVISIONS**

- A. Seller has no obligation under the limited warranty set forth above in the event the battery is damaged or destroyed as a result of:
  - Willful abuse or neglect or if the top decorative cover has been removed.
  - Natural forces such as wind, lightning, hail; damage due to fire, collision, explosion, vandalism, theft, penetration, or opening of the battery case in any manner.
  - Overcharging, undercharging, charging or installing in reverse polarity, improper maintenance, allowing the battery to be deeply discharged via a parasitic load or mishandling of the battery such as but not limited to using the terminals for lifting or carrying the battery.
  - Failure to properly install the battery or lack of metal jacket for high temperature or vibration applications.
  - Normal deterioration in the electrical qualities or the acceleration of such deterioration due to conditions that accelerate such deterioration.
  - If the battery is used for any application that requires higher cranking power or a greater reserve rating than the battery is designed to deliver or the battery capacity is less than the battery capacity specified by the vehicle manufacturer or the battery is otherwise used in applications for which it was not designed.
- B. To obtain warranty service:
  1. Return battery to any authorised ODYSSEY wholesaler or dealer.
  2. If the battery is determined to be defective for material or workmanship under terms of the warranty, it will be replaced.

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