

CHARGING BASICS

Correct charging is very important and will affect the overall life of the battery. The charging process is not 100% efficient and will typically require 10% to 20% more recharge than the amount of capacity removed during discharge. Review charging instruction provided with the battery.

Undercharging of a battery occurs when the required 110% to 120% of the removed capacity is not returned during recharge. If this were to occur repeatedly, residual uncharged lead sulfate will eventually increase in the plates, making it very difficult to recover. In this case the battery will suffer a permanent loss of capacity.

Overcharging a battery repeatedly will corrode the grids in the positive plates and break down the water in the electrolyte to hydrogen and oxygen (electrolysis). This is quite detrimental to the life of valve-regulated ("sealed") lead acid batteries.

Charging efficiency is affected by temperature. Lower temperatures will require higher charging voltages and vice versa for higher temperatures. Please review such conditions with GILL Technical Support.

Constant Current (CC)

Useful in recovering deeply discharged batteries, if performed per GILL instructions.

This method uses a constant current throughout the charging period. Voltage could be as high as 2.67 volts per cell.

MUST have a functional timer to end charging.

Since the charge rate is constant, prolonged charging using this technique will result in excessive water loss and accelerate battery failure.

Constant Voltage (CV)

Charger output voltage is constant - typically around 2.36 volts per cell.

Initial charge rate is dependent on the charger - could be as high as 10A. The rate will continue to drop as the battery voltage approaches the charger output voltage (battery internal resistance changes).

End of charge is typically determined by the drop in charging rate to less than 0.5 amps.

Trickle Chargers are also CV chargers.

CONTINUED AIRWORTHINESS TESTING

If the user cannot discharge a battery at the recommended discharge rate, call Teledyne Tech Support for the performance curve for that battery. This curve can be used to determine the discharge time for a known discharge rate to a specified end voltage (1.67 volts per cell).

MANAGING PERIODS OF NON-USE/LIMITED USE

To maximize the life of your GILL battery, Teledyne recommends that the battery be removed from the aircraft during extended periods (more than 30 days) of non-use or repeated short duration - reduced number of flights (typically less than one hour, once or twice a month) and kept on trickle charge or fully recharged prior to the next flight.

All charging should be in accordance with Teledyne Service Instructions.

BATTERY SAFETY

ALWAYS WEAR ACID RESISTANT GLOVES AND SAFETY GOGGLES WHEN WORKING WITH BATTERIES

Batteries generate explosive gases when charging; do not create any sparks, flames, smoke cigarettes or introduce any ignition sources around the battery.

MAKE SURE THERE IS ADEQUATE VENTILATION WHEREVER A BATTERY IS USED.

FOLLOW BATTERY MANUFACTURER'S INSTRUCTIONS AT ALL TIMES.

RECYCLE SPENT BATTERIES RESPONSIBLY. CHECK OUR WEB-SITE FOR WORLD-WIDE RECYCLING RESOURCES.

Please keep the GILL Battery Log with aircraft/bother logbooks at all times.

User must obtain GILL Warranty Authorization Number from manufacturer. Please have information on the following page completed prior to contacting GILL Tech Support. Do not dispose of battery until Tech Support evaluation is completed.

Once warranty is authorized, submit the GILL Battery Log to any authorized Dealer or Distributor within 30 days of GILL authorization. Incomplete forms will be rejected. Note website for authorized Dealer listings.

GILL Tech Support can be contacted at (800) 456-0070, ext 7 or 8, between 7 a.m. to 4 p.m. PST, Monday through Friday.

Our website address is:

www.gillbatteries.com

CALIFORNIA PROPOSITION 65 WARNING

WARNING: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

EXHIBIT A

Battery Type	Warranty Period	Full Coverage Period	Pro-rata Coverage Period
12 Volt Series	24 Months or 1,200 Hours	First 12 Months or 300 Hours, whichever occurs first	Remainder of 24 Months or 1,200 Hours, whichever occurs first*
G-200 Series	12 Months or 1,200 Hours	First 6 Months or 300 Hours, whichever occurs first	Remainder of 12 Months or 1,200 Hours, whichever occurs first*
G-639 Series G-649 Series	12 Months or 1,200 Hours	First 6 Months or 300 Hours, whichever occurs first	Remainder of 12 Months or 1,200 Hours, whichever occurs first*
G-88, GE-50 Series	12 Months or 600 Hours	First 6 Months or 300 Hours, whichever occurs first	Remainder of 12 Months or 600 Hours, whichever occurs first*

* PRO-RATA CALCULATION IS BASED ON ACTUAL MONTHS OR ACTUAL HOURS, WHICHEVER IS GREATER

Date: _____

Owner: _____

Phone Number: _____

E-mail: _____

Distributor: _____

Dealer/Installer: _____

Aircraft Make/Model: _____

Description of defect: (please check one)

Won't take/hold a charge Dead Cell Other (describe)

Gill contact: _____

Warranty Authorization #: _____

PLEASE COMPLETE REVERSE SIDE

Battery Part #	Serial #	Date Installed	Tachometer Time In
		Removed	Out

Service Hours	Period Mths	Date	Maintenance Log												Battery Voltage			
			Cell Specific Gravity												Before	After		
50	3		1	2	3	4	5	6	7	8	9	10	11	12				
100																		
150	6																	
200																		
250	9																	
300																		
350	12																	
400																		

Battery Capacity Check

First _____ Second _____ Battery Voltage _____

**TELEDYNE CONTINENTAL BATTERY PRODUCTS
GILL BATTERY WARRANTY**

- Each GILL battery manufactured by Teledyne Battery Products (TBP) installed after September 15, 2002 is warranted as follows:
- 1) For a period of six or twelve months (as applicable) or 300 hours of operation, whichever occurs first after the date of installation, TBP will replace at no charge any battery manufactured or supplied by it which within the applicable six or twelve months or 300-hour period is found to the satisfaction of TBP to be defective in material or workmanship.
 - 2) After the expiration of the applicable six or twelve months or 300-hour period described above and before the expiration of the total number of months or number of hours of warranty period applicable to the battery type in question as shown on the chart (see Exhibit A), TBP will replace any battery manufactured or supplied by it which is found to be defective in material or workmanship. When replacement is made under this paragraph, the owner will pay a net price for a new replacement battery divided by the total number of months included in the warranty period and then multiplied by the number of months the battery has been in service or (i) the purchase price of the replacement battery divided by the total number of hours included in the warranty period then multiplied by the number of hours the battery has been in service. In applying the above formula, the number of hours on the replaced battery will be actual logbook hours or recorded tachometer hours from the date of commencement of the warranty period as specified above. See Exhibit A.
 - 3) TBP will not assume any responsibility for labor or transportation costs in connection with the replacement of any battery under this warranty.
 - 4) This warranty applies only to batteries on which the applicable manufacturer's inspection, maintenance and operating instructions and recommended inspections and maintenance must be documented by appropriate logbook entries.
 - 5) This warranty does not apply to any battery manufactured or supplied by TBP which has been subject to misuse, neglect or accident or that in the judgement of TBP has adversely affected the condition of the battery or which has been operated beyond factory recommendations.
 - 6) This warranty does not apply if electrolyte other than that recommended by TBP has been used; if the manufacturer's code markings have been destroyed; or if the battery is of a smaller size than that specified by the aircraft manufacturer.
 - 7) The provisions of this warranty do not apply to routine maintenance service.
 - 8) TBP reserves the right to change any battery specifications or prices without incurring any responsibility with regard to batteries previously sold.
 - 9) THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY IS LIMITED TO REPLACEMENT AS SPECIFIED ABOVE. THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED. IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IN NO EVENT WILL TBP BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY DEFECT IN ANY BATTERY, ARISING OUT OF THE FAILURE OF ANY BATTERY TO OPERATE PROPERLY, OR ARISING OUT OF ANY BREACH OF THE WARRANTY MADE HEREIN. No person is authorized to give any other warranty or to assume any additional obligation or liability on behalf of TBP.

Battery Serial Number

The GILL Battery Log
RECOMMENDED PRACTICES FOR
TAKING THE BEST POSSIBLE CARE
OF YOUR AIRCRAFT BATTERIES



TELEDYNE BATTERY PRODUCTS
 840 W. BROCKTON AVENUE
 REDLANDS, CA 92375
 www.gillbatteries.com

"GILL" AIRCRAFT BATTERY LIMITED WARRANTY

The "Gill" Battery described on this Limited Warranty form is warranted from the date of installation for the applicable warranty period against defects in workmanship and material and against failure, except where such failure is due to shipping damage, fire, crash, freezing, abuse, i.e. failure to regularly perform maintenance service or a faulty electrical system. This warranty does not cover any consequential damage or injury, batteries that need recharging only, rental service costs, loss of time or use of the aircraft.

Should this battery fail to hold a charge within *6 months, or 300 flight hours (whichever occurs first), it at the Seller's option, will be repaired or replaced free of charge. Should this battery fail to hold a charge after *6 months or 300 flight hours (whichever occurs first) but within the warranty period, it, at the Seller's option, will be repaired or replaced for a pro rata charge based upon the useful service life of the battery, computed as follows:

The purchase price of the battery divided by the total months of warranty determines the monthly service charge. The number of months of useful service, multiplied by the monthly service charge, determines the total pro rata charge.

Freight and installation may be an extra charge and is not included in this warranty. This warranty and pro rata service adjustment agreement does not apply if: electrolyte other than as recommended by the factory has been used; if the manufacturer's code markings have been destroyed; if a battery is used of an electrical size smaller than that specified by the aircraft manufacturer.

This warranty and adjustment agreement constitutes the entire agreement between Teledyne Battery Products and the Purchaser, and there are no other agreements or understandings regarding the subject matter hereof. Alterations or erasures in this agreement will render same void and of no effect.

"GILL" Battery Type	(Flooded Battery)	Warranty Period	"GILL" Battery Type	(Flooded Battery)	Warranty Period
G-25	"	24 months	G-240, 241, 242, 243	"	12 months
G-25M	"	24 months	G-244, 245, 246, 247	"	12 months
G-35	"	24 months	G-638, 639, 640, 641	"	12 months
G-35M	"	24 months	G-6381	"	12 months
G-88	"	12 months	M83769/1-1, 2-1, 3-1	"	12 months
GE-50, 51, 54	"	12 months	M83769/4-1, 5-1, 6-1	"	12 months

*Gell Cell & Recombinant/Sealed Valve Regulated Battery Products are Warranted for the First 90 Days for Repair or Replacement Free of Charge and Pro Rated after the 90 Day Period to 12 Months. Refer to Limited Warranty Terms & Conditions above for other pertinent information.

NOTE: PLEASE SUBMIT YOUR "GILL" AIRCRAFT BATTERY WARRANTY ADJUSTMENT CERTIFICATE CLAIM THROUGH YOUR NEAREST "GILL" AUTHORIZED DEALER/DISTRIBUTOR

 **TELEDYNE BATTERY PRODUCTS**