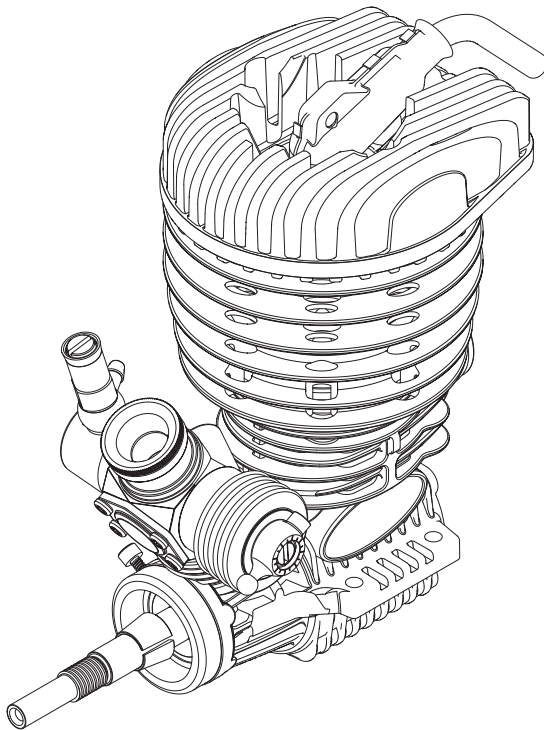




.31 (5.1cc) Gas Engine



Instruction Manual | Bedienungsanleitung | Manuel d'utilisation | Manuale di Istruzioni

(DYNE0500/DYNE0505)

NOTICE

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, LLC. For up-to-date product literature, visit horizonhobby.com and click on the support tab for this product.

MEANING OF SPECIAL LANGUAGE

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

NOTICE: Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.

CAUTION: Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

WARNING: Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.



WARNING: Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision. Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of Horizon Hobby, LLC. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

Age Recommendation: Not for children under 14 years. This is not a toy.

FUEL SAFETY AND USE INSTRUCTIONS

- Always observe all warnings, precautionary statements and instructions supplied by the fuel manufacturer/provider.
- Fuel is a fire accelerant. Never operate your vehicle near open flames. Never smoke while operating your vehicle or while handling fuel.
- Always only use a mixture of gasoline and two-cycle oil for fuel. Do not use glow (nitro) fuel.
- Always use caution when handling gasoline.
- Always run your model engine in a well-ventilated area. Model engines produce harmful carbon monoxide fumes.
- Always drain your engine after you have finished running your vehicle. Do not store the vehicle with fuel in the gas tank.
- Never handle model engines and mufflers until they have had time to cool. They become extremely hot when in use.
- Always store your fuel in a safe place well away from sparks, heat or anything that can ignite.

- Always ensure that gasoline and fuel are stored in a clearly marked container well away from the reach of children.
- Always mix and store your fuel safely in a sealed, water-resistant container specifically made for gasoline.
- Always store fuel in a cool, dry location. Do not allow fuel containers to come in direct contact with concrete, as the fuel may absorb moisture.
- Always responsibly discard fuel if there is condensation and/or water inside the fuel container.
- Never allow fuel to come into contact with eyes or mouth. Gasoline and other fuels used in model engines are poisonous.
- Never return unused fuel from the fuel tank back into the fuel container.
- Contact your local waste disposal authorities for more information about discarding fuel waste responsibly.

✓ Included Items

CDI Unit (DYNE0505 only)
Flywheel

Required Items

Fuel
7.4V Li-Po Battery
Roto Start (DYN5645)
Tuned Pipe and Header Set (DYNE0551)
DYNE0500: Ignition Unit (DYNE0548)

SPECIFICATIONS

Displacement	5.1cc (.31)
Bore	19.2mm (0.75 in)
Stroke	17.6mm (0.69 in)
Cylinder	Single
Weight	520 g (18.34 oz) with flywheel

INSTALLATION

1. Install the engine in the vehicle according to the vehicle's instructions. Ensure the engine has plenty of airflow.
2. Connect the fuel feed line to the fuel nipple on the carburetor. The fuel feed line should have a filter connected to it in the fuel tank.
3. Install the tuned pipe.
4. Connect the pressure line to the tuned pipe nipple.
5. Install the spark plug.
6. Install the included flywheel. If a different flywheel is used, the CDI will not function properly.
7. Install the CDI onto the vehicle and connect it to the auxiliary port on the receiver with the included wire harness connector.
8. Connect the ignition sensor to the CDI.

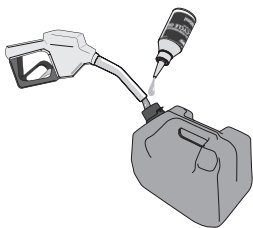
FUEL MIXING PRECAUTIONS AND GUIDELINES

- Only use gasoline mixed with two-cycle engine oil.
- Only use Dynamite® Pre-Mix Two-Cycle Engine Oil (DYNE4105). **Do not use any other kind of oil.**
- Always use 92–98 Octane RON (Europe) and 91–93 Octane AKI (US) gasoline.
- Always blend gasoline with two-cycle engine oil at a 14:1 ratio.
- Never use a 40:1, 32:1 or 25:1 gas-oil ratio.
- Never use glow (nitro) fuel.

Gasoline

2-Cycle Engine Oil

14:1



Gasoline

:

2-Cycle Engine Oil

1 gallon

:

9.5 fl oz

½ gallon

:

4.7 fl oz

¼ gallon

:

2.4 fl oz

4 liters

:

282 ml

2 liters

:

141 ml

1 liter

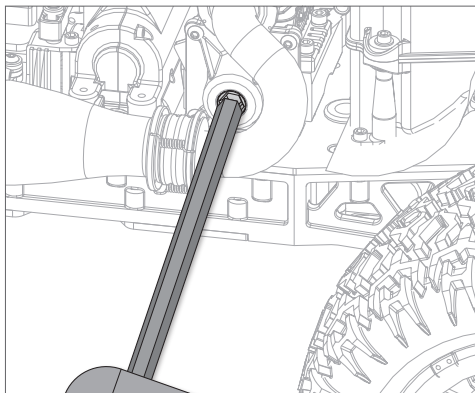
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71 ml

STARTING THE ENGINE

1. Put the standard hex of the starter shaft into the Spin-Start.
2. Slide your hand under the strap of the starter so that your index finger is on the switch at the bottom.
3. Place the machined end of the starter shaft into the matching hex socket in the back plate of the engine.
4. Holding the starter securely, press the switch and the engine should turn over and start up. If the engine does not turn over, it is probably flooded or the battery in the starter needs to be recharged.

Follow the engine break-in procedure before attempting any racing or high-performance operation. Use caution when adding fuel while the engine is running. Do not over fill or spill fuel outside the tank.



ENGINE BREAK-IN

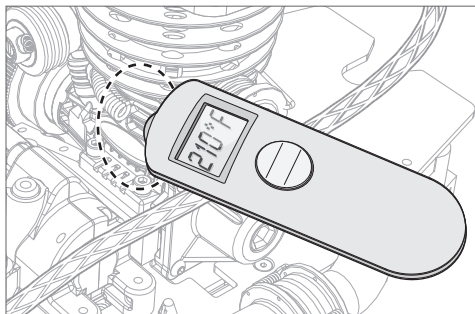
Breaking in your new engine is critical for proper performance. Failure to follow the break-in procedures can cause engine damage and shortened engine life. Always use a 14:1 gasoline:oil mixture during the break-in process and when running the engine.

If you change fuel or run in dramatically different environments (hot/cold, high/low elevation, etc.) you will need to adjust the carburetor needles to prevent overheating and maintain proper performance. Never allow the engine to rev freely with the wheels off the ground.

Use the optional Dynamite Pro Temp Gun with Laser Sight (DYNP2000) to check engine temperatures.

ENGINE TEMPERATURE LOCATION

Engine temperatures are measured on the side of the engine block and not at the top of the head like a traditional nitro engine.



BREAK-IN PROCEDURE

CAUTION: You must complete the break-in process on a smooth surface, such as pavement or concrete. Do not drive the vehicle on dirt or grass during the break-in process; doing so will damage the engine.

Priming the Carburetor

Before turning on the vehicle, install the spin-start on the engine. Hold your finger over exhaust tip and press the spin-start button for one second to prime the carburetor. Stop the spin-start. With the spin-start still installed, remove your finger from the exhaust tip and press the spin-start button for two seconds.

Unlike nitro engines, do not allow the gasoline engine to idle for several tanks. Allowing the engine to idle prevents the engine from reaching operating temperature.

BREAK-IN PROCEDURE (CONTINUED)**Fuel Tank #1:**

1. Drive the vehicle in a figure 8 for the first half tank of fuel. Keep the throttle position between $\frac{1}{4}$ – $\frac{3}{4}$ throttle. Do not exceed $\frac{3}{4}$ throttle.
2. During the second half of the tank, move the throttle position between $\frac{1}{4}$ and full throttle. Do not hold full throttle for more than one second.

NOTICE: Engine temperature should not exceed 195°F (90°C) or damage to the engine could result.

Fuel Tank #2:

Move the throttle position between $\frac{1}{4}$ and full throttle. Do not hold full throttle for more than one second.

NOTICE: Engine temperature should not exceed 210°F (99°C) or damage to the engine could result.

Fuel Tank #3:

1. For the first half tank of fuel, move the throttle position between $\frac{1}{4}$ and full throttle. Do not hold full throttle for more than one second.
2. Lean the high speed needle 2–3 hours when the fuel level reaches $\frac{1}{2}$ tank.
3. For the second half of the tank, move the throttle position between $\frac{1}{4}$ and full throttle. Do not hold full throttle for more than two seconds.

NOTICE: Engine temperature should not exceed 225°F (107°C) or damage to the engine could result.

Fuel Tank #4:

1. For the first half tank of fuel, move the throttle position between $\frac{1}{4}$ and full throttle. Do not hold full throttle for more than two seconds.
2. Lean the high speed needle 1–2 hours when the fuel level reaches $\frac{1}{2}$ tank.
3. For the second half of the tank, move the throttle position between $\frac{1}{4}$ and full throttle. Do not hold full throttle for more than three seconds.

NOTICE: Engine temperature should not exceed 230°F (110°C) or damage to the engine could result.

Fuel Tanks #5-8:

At the end of Tank #4, the vehicle is ready to run on dirt surfaces. Maintain the same carburetor settings that were used during Tank #4 through Tank #8. After 8 tanks of fuel, you can tune the engine for peak performance.

NOTICE: Engine temperature should not exceed 250°F (121°C) or damage to the engine could result.

ENGINE TUNING

After the engine is broken in, you can tune it for optimum performance. When tuning, it is critical that you be cautious of overheating as severe damage and pre-mature wear can occur.

Before Making Adjustments

- Ensure there are no leaks or obstructions in the fuel tank, fuel tubing or the carburetor. Any faults can affect engine operation and tuning.
- The carburetor needle is very sensitive. Adjusting the needle even 1/12 of a turn is a significant change. Be careful when making adjustments.

Factory Needle Settings

- Low-Speed Needle: 20 hours from the bottom
- High-Speed Needle: 17 hours from the bottom

High-Speed Needle (top, left side). Close the high-speed needle by turning it clockwise until it stops, then turn it counterclockwise 17 hours out (open).

Idle Needle (left, rear of carburetor). The engine includes an idle needle for carburetor function, however it is not used for engine tuning. **DO NOT ADJUST THE IDLE NEEDLE.**

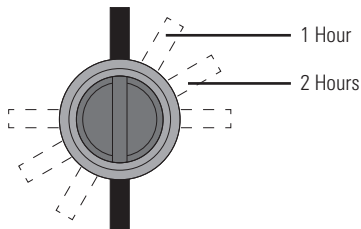
Low-Speed Needle (on the right side). Close the low-speed needle by turning it clockwise until it stops, then turn it counterclockwise 20 hours out (open).

Carb Adjustments

Make all carburetor adjustments in one-hour increments.

Imagine the slot in the needle is the hour hand on a clock. Adjust it as though you were moving the hour hand from one hour to the next or previous one.

NOTICE: When making adjustments, only turn the needle 1/12 turn at a time. Never exceed 1/4 turn in (1 turn out from closed) or the engine will be damaged.

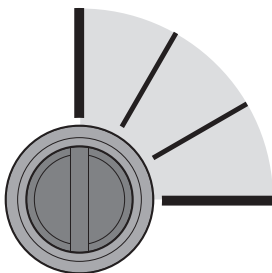


ADJUSTING THE HIGH-SPEED NEEDLE

Turn the high-speed needle until you achieve the ideal engine temperature and amount of exhaust smoke. The engine should have a noticeable smoke trail during initial acceleration and fade to a minor smoke trail when the engine reaches full throttle.

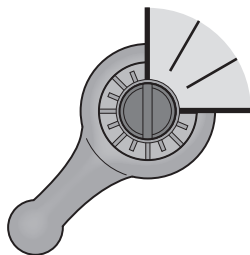
If the engine exceeds proper running temperature, 250° F (121° C), richen the high-speed needle immediately. If the engine temperature is very low considering normal running temperature, then lean the high-speed needle.

If the high-speed needle is too lean, it will cause a high idle speed.



ADJUSTING THE LOW-SPEED NEEDLE

Turn the low-speed needle to adjust the engine idle speed. Once you have achieved a proper idle speed, you can turn the low-speed needle by one hour in either direction to reach the optimal engine performance.



MAINTENANCE AND TROUBLE SHOOTING

Spark Plug Test

The spark plug used with your engine (DYNE0550) is designed specifically for the engine and is only available from Dynamite. Only use the spark plug with the designed cylinder head button (DYNE0513), as the head button creates the spark and controls the spark plug gap.



CAUTION: Before testing the spark plug, clean up spilled fuel and close fuel containers. Failure to do so can result in injury, fire or damage.

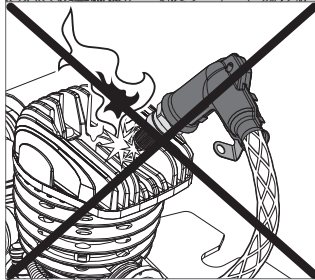
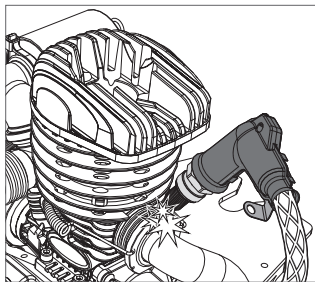
Remove the spark plug from the engine and attach the plug wire and boot to the spark plug. Place the threaded end of the spark plug against the muffler. Use the spin-start to turn over the engine and ensure there is a spark.

If there is no spark:

- Install a new spark plug (DYNE0550)



CAUTION: Do not test the spark plug near the spark plug hole or residual fuel may ignite.

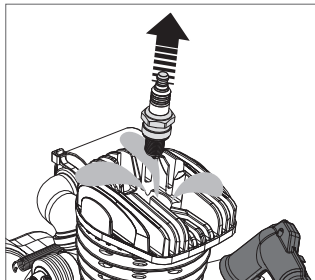


FLOODED ENGINE

The engine will not start if too much fuel is in the cylinder. Excess fuel can be expelled by following the steps below.

1. Disconnect and remove the spark plug.
2. Install spin-start and rotate engine over for two seconds.
3. Replace the spark plug and make sure the boot is tightly secured.

NOTICE: Always clean up spilled fuel. Failure to do so may result in injury or damage.



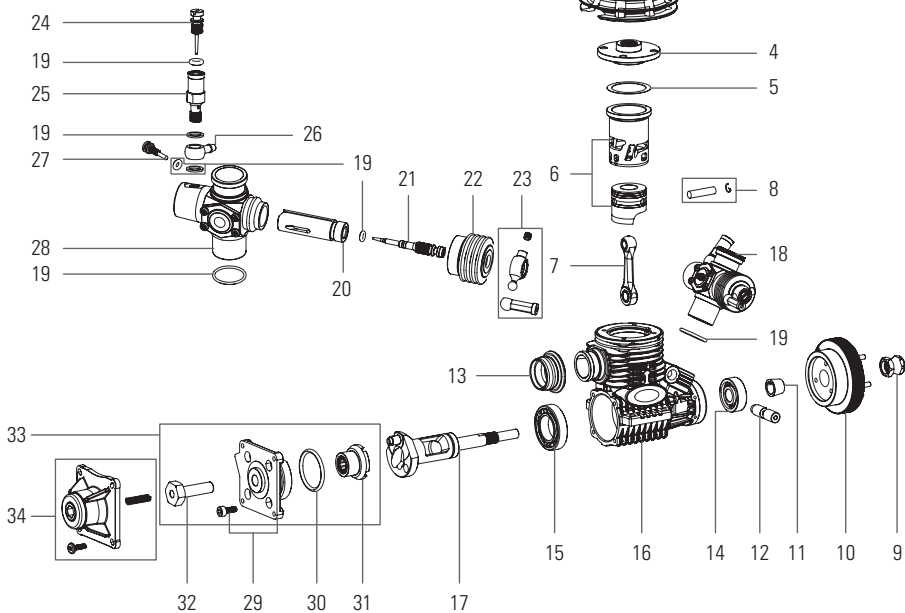
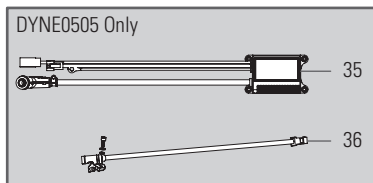
TROUBLESHOOTING GUIDE

Possible Cause	Soultion
Engine does not start	
Out of fuel.	Refill the tank and follow starting instructions.
Engine flooded.	Remove the spark plug. Install the spin-start and turn the engine over for 2 seconds. Replace and test.
Air filter is clogged.	Check and replace if necessary.
Fuel mixture is old or bad.	Mix fresh fuel per instructions.
Spark plug is not working.	Check the spark plug and CDI and replace if necessary.
Throttle servo failed/Setup is wrong.	Check servo operation. Set it to neutral and reset the linkage according to your radio and model manufacturer's specifications.
Carburetor is incorrectly adjusted.	Return the carburetor to the factory settings and retune if necessary.
Piston and cylinder is worn.	Check the piston and cylinder for wear or damage and replace if necessary.
Vehicle or CDI not powered ON.	Power on the vehicle or CDI.
Engine starts then stalls	
Out of fuel.	Refill the tank and follow starting instructions.
Air filter is clogged.	Check and replace if necessary.
Engine may be overheated.	Let the engine cool. Reset the carburetor to factory settings and restart.
Engine idle is too low.	Follow the instructions to increase idle speed.
Carburetor is incorrectly adjusted.	Return the carburetor to the factory settings and retune if necessary.
Clutch is slipping or locked-up.	Check the clutch for worn/broken clutch shoe or spring. Also check clutch bearings and ensure free rotation.
Fuel mixture is old or bad.	Mix fresh fuel per instructions.
Throttle servo is improperly set up.	Set the servo to neutral and reset the linkage according to radio and model manufacturer's specifications.

PARTS LIST

#	Description	Part	#	Description	Part
1	Cylinder Head Screws (16)	DYNE0510	20	Throttle Barrel	DYNE0530
2	Cylinder Head Upper	DYNE0511	21	Low-Speed Needle	DYNE0531
3	Cylinder Head Lower	DYNE0512	22	Throttle Barrel Boot	DYNE0532
4	Head Button	DYNE0513	23	Carburetor Ball Link/Ball End	DYNE0533
5	Head Shims (0,1mm (2), 0,2mm (2))	DYNE0514	24	High-Speed Needle Valve	DYNE0536
6	Piston/Sleeve/Connecting Rod	DYNE0516	25	High-Speed Needle Holder	DYNE0537
7	Connecting Rod	DYNE0517	26	Fuel Inlet Nipple	DYNE0538
8	Wrist Pin with Clips	DYNE0518	27	Idle Speed Screw	DYNE0539
9	Clutch Nut	DYNE0519	28	Carburetor Body	DYNE0541
10	Flywheel (42mm)	DYNE0520	29	Backplate with O-Ring, Screws	DYNE0542
11	Collet	DYNE0521	30	Backplate O-ring (2)	DYNE0543
12	Carburetor Retain Post Set	DYNE0522	31	One Way Bearing	DYNE0544
13	Exhaust Manifold Gasket	DYNE0523	32	Spin Start Shaft	DYNE0545
14	Front Bearing (7 x 19 x 6mm)	DYNE0524	33	Backplate/Shaft/One-Way	DYNE0546
15	Rear Bearing (14 x 25.5 x 6mm)	DYNE0525	34	Spin Start Assembly	DYNE0547
16	Crankcase	DYNE0526	35	Ignition Unit (DYNE0505 Only)	DYNE0548
17	Crankshaft	DYNE0527	36	Ignition Sensor Set (DYNE0505 Only)	DYNE0549
18	Carburetor (2 Needle)	DYNE0528	37	Spark Plug	DYNE0550
19	Carburetor O-Ring/Seal Set	DYNE0529	38	Tuned Pipe Set	DYNE0551

EXPLODED VIEW



LIMITED WARRANTY

What this Warranty Covers - Horizon Hobby, LLC (Horizon) warrants to the original purchaser that the product purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase.

What is Not Covered - This warranty is not transferable and does not cover (i) cosmetic damage, (ii) damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance, (iii) modification of or to any part of the Product, (iv) attempted service by anyone other than a Horizon Hobby authorized service center, (v) Product not purchased from an authorized Horizon dealer, or (vi) Product not compliant with applicable technical regulations.

OTHER THAN THE EXPRESS WARRANTY ABOVE, HORIZON MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

Purchaser's Remedy - Horizon's sole obligation and purchaser's sole and exclusive remedy shall be that Horizon will, at its option, either (i) service, or (ii) replace, any Product determined by Horizon to be defective. Horizon reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Horizon. Proof of purchase is required for all warranty claims. SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY.

Limitation of Liability - HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY

OTHER THEORY OF LIABILITY, EVEN IF HORIZON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. If you as the purchaser or user are not prepared to accept the liability associated with the use of the Product, purchaser is advised to return the Product immediately in new and unused condition to the place of purchase.

Law - These terms are governed by Illinois law (without regard to conflict of law principals). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Horizon reserves the right to change or modify this warranty at any time without notice.

WARRANTY SERVICES

Questions, Assistance, and Services - Your local hobby store and/or place of purchase cannot provide warranty support or service. Once assembly, setup or use of the Product has been started, you must contact your local distributor or Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please visit our website at www.horizonhobby.com, submit a Product Support Inquiry at <https://horizonhobby.quickbase.com/db/bghj7ey8c?a=GenNewRecord>, or call the toll free telephone number referenced in the Warranty and Service Contact Information section to speak with a Product Support representative.

Inspection or Services - If this Product needs to be inspected or serviced and is compliant in the country you live and use the Product in, please use the Horizon Online Service Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without

additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. An Online Service Request is available at http://www.horizonhobby.com/content/_service-center_render-service-center. If you do not have internet access, please contact Horizon Product Support to obtain a RMA number along with instructions for submitting your product for service. When calling Horizon, you will be asked to provide your complete name, street address, email address and phone number where you can be reached during business hours. When sending product into Horizon, please include your RMA number, a list of the included items, and a brief summary of the problem. A copy of your original sales receipt must be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

NOTICE: Do not ship Li-Po batteries to Horizon. If you have any issue with a Li-Po battery, please contact the appropriate Horizon Product Support office.

Warranty Requirements - For Warranty consideration, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be serviced or replaced free of charge. Service or replacement decisions are at the sole discretion of Horizon.

Non-Warranty Service - Should your service not be covered by warranty, service will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for service you are agreeing to payment of the service without notification. Service estimates are available upon request. You must include this request with your item submitted for service. Non-warranty service estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashier's checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for service, you are agreeing to Horizon's Terms and Conditions found on our website http://www.horizonhobby.com/content/_service-center_render-service-center.

ATTENTION: Horizon service is limited to Product compliant in the country of use and ownership. If received, a non-compliant Product will not be serviced. Further, the sender will be responsible for arranging return shipment of the un-serviced Product, through a carrier of the sender's choice and at the sender's expense. Horizon will hold non-compliant Product for a period of 60 days from notification, after which it will be discarded.

WARRANTY AND SERVICE CONTACT INFORMATION

Country of Purchase	Horizon Hobby	Contact Information	Address
United States of America	Horizon Service Center (Repairs and Repair Requests)	servicecenter.horizonhobby.com/RequestForm/	4105 Fieldstone Rd Champaign, Illinois, 61822 USA
	Horizon Product Support (Product Technical Assistance)	www.quickbase.com/db/bghj7ey8c?a=GenNewRecord	
		888-959-2306	
	Sales	sales@horizonhobby.com	
		888-959-2306	
United Kingdom	Service/Parts/Sales: Horizon Hobby Limited	sales@horizonhobby.co.uk	Units 1–4, Ployters Rd, Staple Tye Harlow, Essex, CM18 7NS, United Kingdom
		+44 (0) 1279 641 097	
Germany	Horizon Technischer Service	service@horizonhobby.de	Christian-Junge-Straße 1 25337 Elmshorn, Germany
	Sales: Horizon Hobby GmbH	+49 (0) 4121 2655 100	
France	Service/Parts/Sales: Horizon Hobby SAS	infofrance@horizonhobby.com	11 Rue Georges Charpak 77127 Lieusaint, France
		+33 (0) 1 60 18 34 90	
China	Service/Parts/Sales: Horizon Hobby – China	info@horizonhobby.com.cn	Room 506, No. 97 Changshou Rd. Shanghai, China 200060
		+86 (021) 5180 9868	

COMPLIANCE INFORMATION FOR THE EUROPEAN UNION

CE Declaration of Conformity (in accordance with ISO/IEC 17050-1)

No. HH2014053005

Product(s): .31 Gas Engine (5.1cc) w/CDI

Item Number(s): DYNE0505

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the EMC Directive 2004/108/EC:

EN55022:2010 + AC:2011**EN55024:2010**

Signed for and on behalf of:

Horizon Hobby, LLC
Champaign, IL USARobert Peak
Chief Financial Officer, Horizon Hobby, LLC

May 30, 2014

**Instructions for disposal of WEEE by users in the European Union**

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collections point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.



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