

## The MCRCF Flight Training Program

The objectives of the MCRCF Flight Training Program are as follows:

- Promote the sport of radio controlled model aviation
- Introduce newcomers to the club
- Provide a safe and friendly environment where novice pilots can learn
- Teach basic flight skills by following a standardized instruction program
- Help improve the club's overall safety record

The goal of the instruction program is to get each student to the point where they can fly safely by themselves. The program consists of **four steps** (or progression levels) a student must achieve to get to the point where they can begin flying on their own.

When it comes to actually teaching, we break teaching R/C flying into four basic steps. In any form of teaching it is good to limit the number of things a student must learn at one time – and teaching R/C flying is no exception.

- Step 1. Learning how to master turns and level flight**
- Step 2. Learning how to set and hold course headings**
- Step 3. Learning how to take off**
- Step 4. Learning how to land**

While this may sound overly simplistic, but each step builds on skills learned in the previous steps. To get to the point where you can safely fly by yourself, you must master a whole group of skills that fit into these four steps!

**Trainer radio system** – Most flight training is done with radio systems that support what is commonly referred to as a “buddy box”. This feature allows the safest manner of flight instruction. Novice fliers should not buy a radio system until they have spoken to an instructor and confirmed that the proposed radio will function with a buddy box. The following quote offers some insight into the perils of not using a flight-training program to help novice fliers earn their wings.

### QUOTE FROM THE INTERNET

How do I take off???

With the first plane I gave it about half throttle (just fast enough to ease it into the air) and it got about 10 feet off the ground and then rolled over upside down and plowed into the Earth.

The second time, I tried giving 2/3 throttle (as fast as I could bear to drive that thing on the ground) and then eased up the elevator. It got about 15 feet up (an altitude improvement of 5 feet) and then rolled over upside down and plowed into the Earth.

Before I total a third airplane, does anyone know of any books out there that can help a person (like myself) who doesn't have the luxury of an instructor?

## Middlesex County R-C Fliers, Inc.

**Purpose** – The Middlesex County R-C Fliers, Inc. (MCRCF) is a non-profit organization chartered in the state of Massachusetts. The club is dedicated to the promotion of building and flying radio controlled model aircraft (both airplanes and helicopters). Since 1988, the club has operated from a flying field located in the Vietnam Veterans Memorial Park on Treble Cove Road, in Billerica, Massachusetts.

**Meetings** – Regular club meetings are held at 7:30 PM on the second Wednesday of every month between September and June at the Billerica Recreation Department (Lewis Building) across from the former Iverson Ford, 248 Boston Rd. Billerica, MA. The July and August meetings are usually held at the field, weather permitting.

**All written correspondence should be sent to our mailing address:**

Middlesex County R/C Fliers, Inc.  
c/o Ray Capobianco  
28 Griffen Drive  
Wakefield, MA 01863

**Our e-mail address:**

[info@mcrcf.org](mailto:info@mcrcf.org)

**Our Website Address:**

<http://www.mcrcf.org>

**Flight Privileges** – Use of the flying field is in accordance with an agreement with the Billerica Recreation Department and requires club membership. The club's By-laws specify that, for insurance coverage, members must maintain a current membership in the Academy of Model Aeronautics. AMA membership applications are available at most hobby stores or on the web at [www.modelaircraft.org](http://www.modelaircraft.org).

**Experienced Fliers** must pass a minimum proficiency test before they are allowed to operate from the field. The test must be witnessed by two members of the MCRCF Flight Operations Committee and covers both ground and flight operations. Proper usage of the frequency pole as well as club operating and safety rules will be discussed first. The in-flight proficiency portion includes safe takeoffs and landings on the runway (with at least one takeoff and landing in each direction). The pilot must also trim the plane for level flight, circle the field in both directions and observe flight boundary and traffic pattern guidelines. After passing the proficiency exam, a red stamp will be added to the pilot's frequency pin indicating that he/she is free to operate as a Solo Pilot at our field.

**Novice Fliers** should request flight training assistance from a club approved, instructor who will introduce them to the MCRCF Flight Training Program. Novice Fliers are NOT permitted to learn on their own or receive instruction from someone else. All MCRCF instructors are volunteers who provide flight training as a free service to anyone needing assistance. The MCRCF Flight Training Program provides a safe environment with individualized instruction designed to help the student develop the skills needed to solo and then pass the flight proficiency test.

## Common questions

Most beginners to the hobby tend to have the same set of questions as they enter into the R/C airplane hobby. So we'll begin by giving a summary of these questions and supply brief answers.

**How does the radio control system work?** – As with any kind of radio, a transmitter (held by the flyer) is used to send signals to the receiver (in the airplane). Rechargeable batteries are usually used to power both units. The radio system can have several control “channels.” Each channel is used to control a different airplane function. Servos (one for each channel) are used to move control surfaces on the airplane.

A good beginner's radio configuration has four channels. (**NOTE:** Less expensive three channel systems and any radio that does not have a Buddy Box interface are not recommended.) The four channels typically control the airplane's aileron, elevator, rudder, and throttle functions. Two control sticks (like computer game joysticks) on the transmitter give the pilot command of these four controls. With the most common radio setup mode, the right stick is used to control aileron (left/right) and elevator (up/down). The left stick is used to control rudder (left/right) and throttle (idle through full throttle). The aileron, elevator, and rudder sticks are spring loaded. When you let go of these sticks, they spring back to the center (neutral) control position. The throttle stick stays where you place it, from idle to full throttle. All four channels are proportional and allow precise control of each function.

**Is it hard to learn to fly?** – This is a tough question to answer. Everyone has a different aptitude for learning R/C. This much is certain. R/C flying is hard enough to learn that you will not want to try to learn by yourself. You are not likely to meet anyone who learned by himself that did not go through several airplanes (or at least several crashes) in the process! Fixing airplanes is not nearly as much fun as flying. If you want to learn to fly with the least amount of problems and expense, join the club and work with one of our instructors. He'll flight test and trim your plane, take off and land for you, give you pointers, and stand close by, ready to take control if you get into trouble in the air. While we can't promise that your plane will never crash, you will have a much better chance of keeping your plane in one piece with an instructor than without one.

**How long does it take to learn to fly?** – Like the previous question, this is tough to answer. It depends upon the student's aptitude. It also depends on how often you and your instructor can schedule training sessions. The more often you practice, the shorter the time it will take to master the required skills. You know the saying, “If you don't use it, you lose it!” If you only fly once a month, it may take quite a long time. You'll be struggling to remember what was learned in the last session.

Most novice fliers can solo (fly by themselves for an entire flight) after 20 to 30 training flights. Each training flight is only 10 to 15 minutes long, but most students will tire after 4 or 5 flights in one day. With a good instructor, even the learning stage is fun and rewarding, so this period should seem to go quite quickly, regardless of how long it takes.

## What makes a good trainer plane?

Here are some qualities that contribute to making a good trainer plane:

**High wing design** – You'll notice that all trainer recommendations we give are high wing airplanes. This is the most stable design. Since the body of the fuselage is below the wing, the plane will have a natural tendency to right itself after a turn.

**Flat bottom wing** – The best choice for your first airplane is one with a flat bottom wing. Once you learn to fly, you will eventually want to learn how to do some aerobatics. Your second airplane may have a semi-symmetrical wing design. Semi-symmetrical wings have a slight curvature to the bottom (similar to the top) of the wing.

**Tricycle Landing Gear** – The best trainers have a steerable nose wheel design. Planes with a conventional (tail dragger) landing gear should be avoided.

**Rugged design** – It's almost a guarantee that your first plane will get knocked around quite a bit. You'll want to be sure that it can take some minor bumps and bruises and keep flying. There are a number of planes on the market that claim to be good trainers. Here is a short list of planes that we have successfully taught people to fly with:

- SIG Kadet LT 40 (ARF and Kit) – Limited availability, out of production
- Hobbico Superstar 40 (ARF) and/or Avistar 40 (ARF)
- Hangar 9 Alpha .40 (VRTF)

All these planes are very stable, don't tip stall, can fly slowly, respond uniformly to controls, and have a fairly light wing loading.

## How much do they cost?

This is also a tough question to answer and is based on the size of the airplane and how many extras you want to buy. Here are some basic guidelines for the initial cost of a .40-sized trainer airplane. Note that this configuration assumes that you wish to keep the cost down

ARF (almost ready to fly) plane:	\$110.00	to	\$250.00
.40 sized engine (medium class):	\$80.00	to	\$150.00
4 Channel FM radio (with cord):	\$150.00	to	\$300.00
Flight box accessories (fuel, etc.):	\$60.00	to	\$130.00

Approximate startup cost:	----- \$400.00	----- \$830.00
---------------------------	-------------------	-------------------

**Suggestion:** Novice Fliers should visit a local hobby store (Hobby Fever in Billerica or RC Buyers in Nashua) for information on a trainer combo package that includes the plane, engine, radio and accessories. Be aware that combo packages advertised on the Internet often include products that are not a good investment. An MCRCF instructor can provide more information on our experience with these products.

# Field Operating Rules

Approved: April 2009

1. Flight operations at this site are restricted to current MCRCF members and their guests. All pilots must have a current AMA membership.
2. Flight operations are not permitted before 8:00 AM on weekdays or before 9:00 AM on weekends. The field closes at dusk and no one is permitted on the field after dark. All flight operations should be suspended during electrical storms.
3. Consumption of alcoholic beverages is not permitted in the park at any time.
4. All pilots must have a **current** MCRCF issued Frequency Pin that identifies the Tx channel being used. Pins also designate what type of aircraft the pilot is approved to operate. Pilots must have their pin stamped before they are cleared to operate either an airplane or a helicopter on the runway without a flight instructor being present.
5. Flight privilege shall not exceed 15 minutes per flight. Flight operations on the runway and within the first 200 feet directly above the runway shall be announced to other pilots. As a courtesy, pilots should always talk directly with an instructor who is teaching a student and then insure that they do not interfere with the instruction program. On designated flight training nights, members should yield flight time to students and instructors when present.
6. All model aircraft (planes and helis) will fly only in the designated areas. Airborne operations are permitted only on the runway side of the safety barrier. Pilots should avoid flying overhead or behind another pilot. Models will yield right-of-way to full-size aircraft (see site map).
7. **No flying over equestrian events, the town soccer field or the soccer parking lot during events.** Both take-offs and landing must be from the end of the field opposite the event. Flying is limited to electric powered, Park Fliers and helicopters (operating below the tree tops) if both groups are active.
8. No more than three models may be concurrently in flight off the main runway. Only one helicopter at a time may use the designated helicopter practice area.
9. Mufflers shall be attached to all engines that were designed to operate with a muffler. It is recommended that engine noise should not exceed 98 dB at 9 feet.
10. Flying turbine-powered aircraft is not permitted at this field.

Emergency Numbers: **Police: 978 671-0900** **Fire: 978 671-0940**

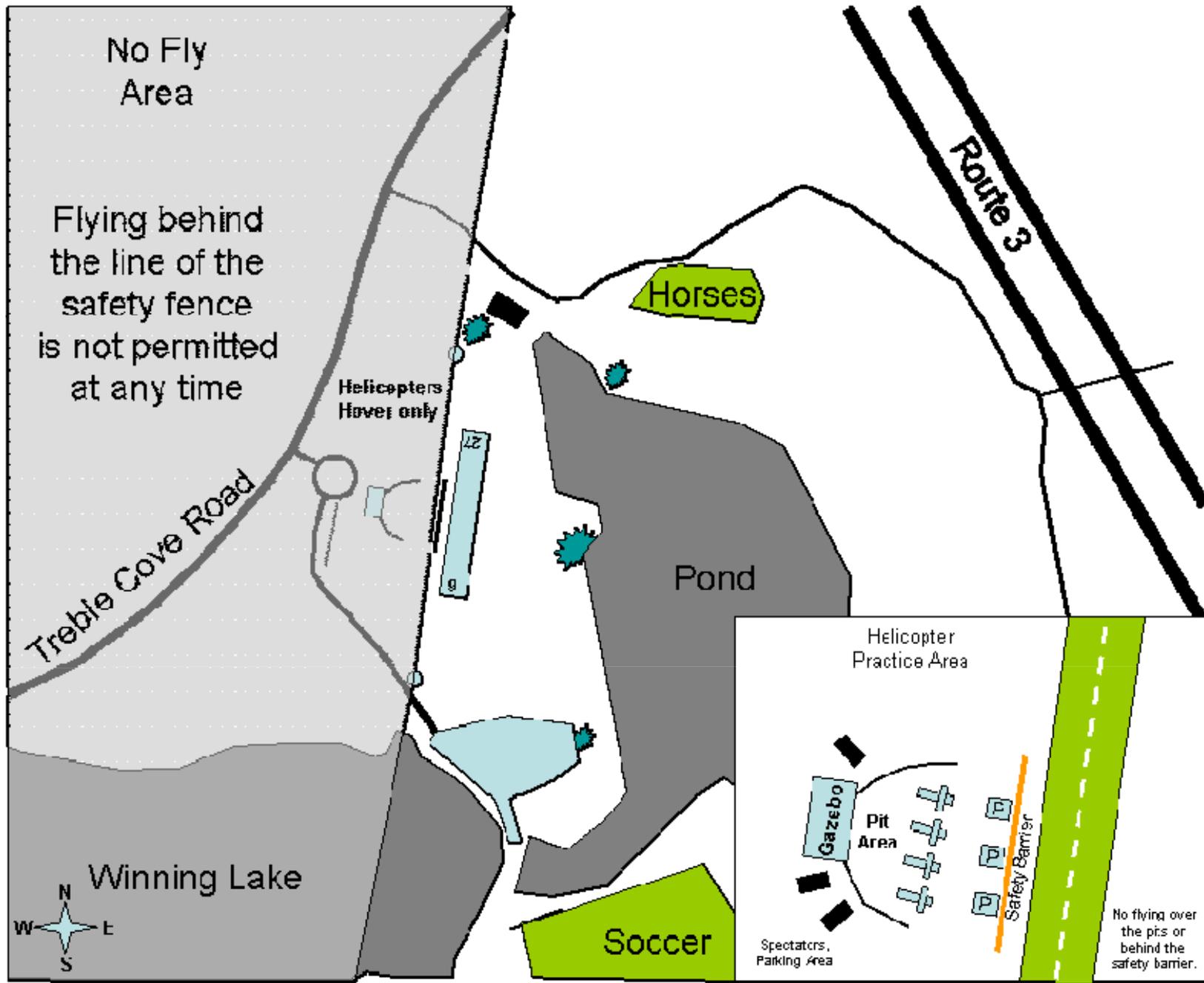
# Flight Safety Rules

Approved: April 2009

## **ALL MEMBERS SHOULD CONSIDER THEMSELVES AS A DESIGNATED SAFETY OFFICER**

1. All pilots and pilots-in-training shall take both personal safety and the safety of others as a serious matter at all times. The MCRCF recommends that individuals **SHOULD NOT FLY ALONE**. Pilots are required to be familiar with and abide by all MCRCF Flight Safety Rules, Field Operating Rules, and the AMA Safety Code.
2. Pilots should always perform a safety inspection of their model prior to flight. All aircraft must be properly restrained while starting the engine. Bungee cord style restraints are **NOT** permitted.
3. High-speed engine run-ups shall occur in the lower half of the pit area. **WATCH YOUR PROP'S ARC!** Pilots should insure that helpers, spectators and guests are always asked to stay behind the wing of your airplane whenever your engine is running.
4. Flying stations are located behind the flight line safety barrier and on the upper field for helicopters. All aircraft shall be hand held or remain on the ground when behind the safety barrier. All airborne flight operations shall be conducted on the runway side of the safety barrier.
5. Airplanes may be taxied out of the pit area; however, returning aircraft should **NOT** be taxied back into the pit area. Engines of returning aircraft should be turned off prior to entering the pit area.
6. Pilots with gas engines shall have a proper BC fire extinguisher readily available. Turbine-powered aircraft are not permitted at this field.
7. Landing aircraft have precedence over take-offs and dead stick landings have precedence over all other model activities.
8. Children are **NOT** permitted in the pit area or on the flight line without **DIRECT** supervision by a responsible adult.
9. **WATCH YOUR PROP WASH AREA!** As a courtesy, pilots should point the exhaust and prop wash from their aircraft in a direction that does not interfere with other people or planes in the area.

Emergency Numbers: **Police: 978 671-0900** **Fire: 978 671-0940**



MCRCF Flying Field; Treble Cove Road, Billerica, MA

MCRCF Field

## Summary

The MCRCF Training Committee recommends the Hobbico Avistar 40 as the best choice for a first training aircraft. Other choices that can be used as well, but we ask that you talk with an instructor first. Training aircraft are often seen at club auctions and private sales. The best choice for a trainer aircraft is one that has a high, flat bottom wing, uses a nose gear for steering and has ailerons on the wings. Auctions and private sales are one way to save money, but look closely for structural damage to the wing, engine mount and the landing gear area.

The MCRCF Training Committee suggests that you join the AMA as soon as you make the decision to try this exciting sport. You can obtain an AMA Application from any Training Committee member or look for one inside an MCRCF Club Brochure. You need to receive your official AMA Membership Card before you can begin to receive flight training.

An MCRCF Flight Instructor will give your plane a safety inspection and suggest any areas that may need to be fixed prior to the first flight. The instructor will help you with the first flight and show you how to fly the plane once it is at a safe altitude. Following your first flight, the MCRCF flight instructor will set up a schedule for each subsequent lesson.

Flight training is a four step process. Your instructor will handle the difficult tasks of take-off and landing until you are able to control the plane at altitude without risk of crashing. Most trainer airplanes can fly for 10 to 15 minutes at a time, and are capable of making several flights in a row. A typical student will need about 20 to 30 flights before the instructor will begin to introduce take-offs to the instruction program. A total of 35 to 50 flights are typically needed for a new pilot to be able to safely complete a full flight including take-off and landing.

If you have any questions, please contact Ray Capobianca [781.944.6056] or stop by the club flying field and ask to speak with another member of the MCRCF Flight Training Committee.

**Our e-mail address:** [info@mcrcf.org](mailto:info@mcrcf.org)    **Our Mailing Address:** Ray Capobianco  
28 Griffen Drive  
Wakefield, MA 01863    **Our Website Address:** <http://www.mcrcf.org>

## Your First Trainer Aircraft



Hobbico Avistar 40 ARF / RTF Select

### The Airplane

#### Wing Type

*High semi-symmetrical wing, strip ailerons, balsa, bright colored MonoKote cover.*

#### Fuselage Type

*Box with lots of internal room, nose gear steering, solid sides, large enough to see easily.*

The MCRCF Training Committee recommends the Hobbico Avistar 40 as the best choice for a new pilot. This is an Almost Ready to Fly (ARF) package that is easy to assemble. The Avistar also comes in a Ready to Fly (RTF) Select version with pre-installed hardware. The Avistar meets all of the requirements for a first airplane; it is also capable of doing some advanced flight maneuvers (basic aerobatics). The Avistar 40 is very stable and landing speeds are relatively slow.

Avistar 40 packages can be purchased through local area hobby shops as well as several Internet sites. The RTF Select version is priced at about \$300, but includes items that should be upgraded. The ARF version is about \$110 for the plane, but you can choose your own engine and radio. This approach will require some assembly.

The MCRCF Flight Training program is free, but we are offering a "Try before you buy" program where for a fee of \$50 we will provide the plane, radio equipment, fuel and instruction for the first 30 days of your flight training program. At the end of 30 days, we'll credit \$25 towards the MCRCF Initiation fee and you can continue the training program until you solo. See an MCRCF Instructor for more details.

## Your First Radio System



**Spektrum DX7 or Futaba 6EX  
2.4 GHz, 4/7-Channel Transmitter**

### The Radio

Transmitter Type  
4 to 7 channels with  
rechargeable NiCad  
battery pack

Servos

Receiver Type  
2.4 GHz Spread Spectrum receiver  
with rechargeable NiCad  
battery pack

Standard servos (4-pack)

JR, Spektrum and Futaba each offer several entry level radio choices. The MCRCF Training Committee recommends that a new pilot purchase a spread spectrum radio system. New radios are sold as a package with matching transmitter and receiver. We have had reliability issues with less expensive radios included in some combo packages, so we now recommend several “moderately” priced systems because of their durability.

The most important feature of the student radio system is provision for attaching a “Buddy Box” to the transmitter. All MCRCF Instructors have cables and a Buddy Box that can be used with the recommended radio systems. Please check with your instructor before purchasing another brand radio.

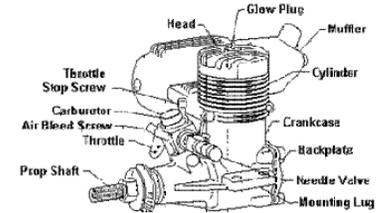
Spektrum DX7	Yes	Futaba 7C	Yes
Spektrum DX6i	No, batteries	Futaba 6EX	Yes
Spektrum DX5	No, batteries	Futaba 4YF	No, batteries/TX Mode

## Your First Engine and Ground Support Gear

### The Engine

*Internal combustion, glow fuel,  
muffler and variable throttle*

Two cycle, glow fuel engines are the most common type of power plant used in model airplanes. Their advantage is that they are simple, reliable and provide excellent power to weight ratios. All of the MCRCF instructor pilots are familiar with how to operate and maintain these engines.



There are several brands of two-cycle engines on the market. They all offer similar features. Some of the least expensive engines might not last more than one year, while a good entry level engine should be capable of providing reliable service for several years. The Hobbico Avistar 40 was designed to fly with a 0.40 cubic inch size engine. OS Engines offers several choices in this size engine. The MCRCF Training Committee recommends the OS 0.46 AX as the best choice for the Avistar trainer airplane. Priced at about \$150, this engine is an excellent value.

Some of the other ground support gear that a new flyer will need includes, glow fuel, a glow plug igniter, a high torque engine starter and a tote box to carry these supplies to the field.



For the first few flights, your flight instructor can help provide some of these supplies, but eventually you will need to provide your own.