A Type Club's Guide to Creating a Transition Training Program Part 1: Ground Study Guide

Prior to first flight in an unfamiliar aircraft it is vital that the pilot learn about the specific aircraft's design, systems, operation and handling characteristics. Much of this orientation requires guided study using available documentation (Pilot's Operating Handbooks, Flight Manuals, engine operation manuals, flight test notes, etc.). Additional insights, techniques, and suggestions for operation can come from the institutional knowledge of the supporting type club and individual flight instructors, pilots, maintainers and others intimately familiar with the aircraft type. Your role as a type club is to assemble and filter the available information, with input and buy-in from practicing flight instructors who will conduct the training, and format it into a Ground Study and Flight Training Syllabus pilots will follow as they transition into the unfamiliar aircraft.

This document will provide an outline of topics to be covered, along with commentary on important issues for the type club to consider. The outline, sample paragraphs, and commentary that follow are a starting point. Your aircraft experts will need to:

- fill in all the relevant information for your aircraft type
- delete the sections that are not applicable
- add any other information that is relevant.

The sample Ground Study Guide uses a fictious amateur-built design with multiple variations as a starting point. Your type club's aircraft may have more of less available documentation than this example, and more or less variation in the design. Where variations of the basic aircraft design exist within your aircraft type, you may need to develop multiple programs to keep the information pertinent to an individual pilot's aircraft.

To make it easy to follow and edit, the outline and sample paragraphs have a white background. Additional commentary is on the right in colored boxes you may use as you work through the development process.

Transition training for new owners of ZippyQuick (ZQ) aircraft

1. Introduction

Congratulations on your completion or purchase of a Zippy Quick (ZQ) aircraft! The ZQ is a fast, efficient, and inexpensive design. These planes can be fun and exciting, but only if the pilot understands the aircraft well and operates it safely. In the pages that follow, you will get to know the ZippyQuick aircraft.

This guide will focus on the aspects that make the ZippyQuick **different** from other airplanes. It will assume that you are already a proficient, safety-conscious pilot in some other aircraft. (If that's not the case, please get training from your local CFI before flying the ZQ.)

In our example text, we'll reference the fictitious ZippyQuick aircraft. You may want to find/replace all instances of ZippyQuick with your aircraft type, and ZQ with the abbreviated version, if there is one.

2. History

The ZippyQuick is an experimental, amateur-built (E-AB) aircraft created in 1970 by Jacob "Zippy" Quin. The early models had a tailwheel. Many builders today opt for the tricycle gear version of the design.

In 2010, John Smith bought the ZippyQuick company from its founder and has gone on to . . .

You can put as much aircraft history here as you want.

3. Understanding your aircraft

Overview

Not all ZQ aircraft are alike. The ZippyQuick company has modified and improved the design over the years. Builders and owners, too, have made changes that might only apply to their plane. Variations sold or endorsed by the ZQ company include:

- a V-tail or T-tail
- tricycle or tailwheel landing gear
- extended range tanks
- Fowler flaps
- seaplane floats

Talk with the previous owner or builder about what systems have been modified from the standard design.

Specialized terminology

The ZippyQuick aircraft has some common names for aircraft behavior or components that are unique to our aircraft type. Here are some of those terms, along with an explanation:

- Jacob's Burp: A brief stuttering of the engine common on aircraft equipped with Jacobs radial engines and carburetors.
- Sparrow Strainer: The trim tab on the aft edge of the elevator. It provides pitch stability and reduces stick forces.
- Aileron buzz: A very rapid oscillation of an aileron, at certain critical air speeds of some aircraft, which does not usually reach large magnitudes nor become dangerous. It is often caused by shock-induced separation of the boundary layer.

Systems sections should address:

- **Purpose:** *What* that specific system does.
- **Design:** *How* each system accomplishes its purpose. *Where* it is within the airplane. *How* it interacts with other aircraft systems. *What* backups exists for the system. *What* variations exist within the aircraft fleet.
- **Indications and operations:** What to inspect before flight, *How* the pilot operates the system in normal, abnormal, and emergency conditions. *How* system indications are displayed or otherwise available to the pilot.
- **Limitations and Operating recommendations:** What limitations are applied to that system? What operating recommendations are made by the manufacturer, type club, or others?

SYSTEMS

Powerplant

The ZippyQuick is commonly equipped with a Jacobs L-4, seven-cylinder radial air-cooled engine with a displacement of 757 cubic inches (12.4 liters), rated at 225 horsepower maximum at sea level. (Provide general operating guidelines or, preferably, provide a link to the applicable engine operation guide if available).

Other engine installations include…(identify alternate engines and provide similar operating guidelines for those alternatives).

Propeller

(Describe the propeller type(s) used on the aircraft and include operating considerations and limitations).

Flight controls and trim

The primary flight controls are the ailerons, rudder, and elevator. These control surfaces are operable from either front seat by interconnected side stick controls and rudder pedals. On the left the controls run through the pressure bulkheads to the non-pressurized side of the aircraft. A pressure compensator is used on older models to compensate for the effects of an expanding cabin.

All primary flight controls use centerline hinging on bearings. The ailerons and elevator are pushrod actuated. Both side stick controls have positive grip handles and should have a radio transmit button mounted on them. Other switches may be mounted on the grips. The rudder pedals actuate the rudder with stainless steel cables. The wheel brakes are actuated by pressure on the top of the rudder pedals.

The secondary flight controls are the wing flaps and speed brakes. The flaps extend from aileron to fuselage on each wing. The flaps are operated by a flap valve mounted below the throttle quadrant and are selectable to any setting between zero and forty degrees.

Electrically or manually operated speed brakes may be installed on the wings. Deployment will give the aircraft approximately a 1,300 fpm descent at a constant power setting and airspeed.

Fuel system

The aircraft has two wet wing fuel tanks. The fuel tanks vary in size from 80 gallons (standard) to 110 gallons (long range) and run from the inboard to outboard end of each wing. The tanks are vented to the outside atmosphere by ports on the bottom of the wingtip and each cell has flush type filler caps mounted above the cell. There are one or two low point drains on each wing depend on tank capacity. Fuel runs into a baffle tank on the inboard end of the cell. It has a one-way flapper valve that keeps fuel from running outboard in unbalanced flight. Generally, two gallons is unusable per wing.

The selector valve located on the floor below the throttle quadrant has LEFT, RIGHT and OFF positions. Fuel will not flow if the pilot selects an intermediate position. The pilot must select the respective tank and switch tanks often in flight in order to maintain a balanced wing.

Landing gear and hydraulics

The main gear is made of tubular steel with 15 x 600 x 6 wheel and tires, and hydraulically operated Cleveland disc brakes. The nose gear is a free-swivel conventional air/oleo strut with internal viscous shimmy dampening. Any shimmy of the nose gear is cause for an immediate inspection of the nose strut. The nose gear has a 500 x 5 wheel and tire.

The landing gear system is electrically controlled and hydraulically operated. The landing gear and flap control valves are located below the throttle quadrant and operate a rotating hydraulic valve. This hydraulic system operates at 1100 psi.

An airspeed switch mounted on the pitot tube line prevents gear retraction below 75 knots indicated airspeed. For landing gear retract tests on jacks you must blow air into the pitot tube to get enough "airspeed" to disengage the airspeed safety switch. A balloon will also do the trick. The main gear is retracted into the fuselage via full rack and pinion gears, and the nose gear also retracts aft.

Electrical system

The airplane's circuitry is dual-wire with ground return. The battery, alternator, and the magneto/start witches are located on the left subpanel. The circuit breakers are generally located on the far right of the panel. The standard battery installation is one 12- or 24-volt battery located just forward of the firewall on the right side. Some aircraft have dual alternators and dual battery installations.

A 60 or 100 ampere gear driven alternator is mounted on the right front of the engine.

A voltage regulator adjusts alternator output to the required load, which may be either 14 or 28 volts. The engine starter is located on the engine accessory case (aft right side). To energize the starter circuit, hold the magneto start switch in the START position. There is a 30 second limit on starter operation. The radio master, pitot heat and internal and external light switches are also located on the left subpanel. An ammeter/ loadmeter generally should be installed.

Pitot/static system

The aircraft will generally have one electrically heated pitot tube mounted on the underside of the left wing. The unheated static source may be on the pitot tube or mounted on the aft fuselage. Generally, a static drain is not installed. The alternate static source toggle switch (if installed) is located under the left subpanel and uses ambient cabin air as its source in unpressurized variants, and on the lower fuselage outside the cabin pressure vessel in pressurized models.

Vacuum system

A vacuum pump (if installed) is located on the engine accessory case. It delivers 4.5 – 5.4 in. Hg. of suction for the vacuum operated gyroscopic flight instruments.

Instruments and avionics

ZippyQuick aircraft tend to be highly customized by the owner. Any combination of traditional ("steam") or electronic instruments and flight displays may be fitted, with or without a Primary Flight Display (PFD) and/or Multi-Function Display (MFD) and/or GPS moving map navigators. Several different certified, surplus and experimental autopilots, from wing-levelers to fully integrated three-axis autopilots including yaw dampers, have been fitted in ZippyQuick aircraft.

A significant challenge for the transitioning pilot and his/her flight instructor will be to gain mastery of the equipment installed in the individual aircraft, including the unique ways installed avionics interact with each other and impact the pilot's actions when operating the equipment. Transition training must emphasize that as much time as is spent on learning the handling and operation of the aircraft itself must be spent on learning the use of installed instrument and avionics. The type club program must make this necessity clear, and should suggest a very conservative expansion of the transitioning pilot's personal flight envelope and limitations from day visual to instrument operations as that pilot develops experience.

Cabin climate

A heater muffler on the right engine exhaust stack provides heated air to the cabin. A fresh air intake provides air to a mixer valve that combines the heated air with a controlled quantity of unheated air to provide for the selected temperature. This air may then be routed for cabin heat, windshield defrost, or a combination of the two.

Fresh ram air enters an intake on the right side of the vertical tail. An electric blower fan and ducting routes this fresh ram air to four overhead eyeball outlets. For ground operations, the blower maintains airflow through the system. Each outlet can be positioned to direct the flow of air as desired. A system shutoff valve is installed in the duct between the tail ram air scoop and the individual fresh air outlets.

Cabin pressurization

Pressurized ZippyQuick variants have a determined maximum pressure differential, 5 PSID, which is the maximum differential between cabin and ambient altitudes that the pressurized section of the aircraft can support. Cabin pressurization is the compression of air in the aircraft cabin to maintain a cabin altitude lower than the actual flight altitude. At FL 250 and 5 PSID the cabin altitude is maintained at 9,000' MSL.

The Cabin Altitude can be manually selected and is monitored by a gauge, which indicates the pressure difference between the cabin and ambient altitudes. The rate of change between those two pressures is automatically controlled.

Compressed air is drawn from four calibrated sonic nozzles placed in the induction system. One set of two is located prior to the main intercooler. They supply hot pressurized air to the mixing or inflow valve that directs pressurized air to the cabin. An outflow valve on the aft end of the cabin pressure vessel, behind the aft baggage compartment, is controlled by a Cabin Rate controller that is in turn adjusted manually by the pilot. The outflow valve permits pressurized air to escape the cabin at such a rate to keep the rate of cabin pressure loss to the value set by the pilot, when within operational boundaries. Should the pilot forget to set the cabin altitude to just above field elevation before landing, a switch connected to the landing gear squat switches automatically opens the outflow valve upon landing.

(Provide links to information on physiological training, meteorology and flight planning and rules as they apply to flight in the Flight Levels).

OPERATING LIMITATIONS

(Provide airframe, engine, and other limitations.)

MODIFICATIONS

Common options and modifications include (provide a description, operational information, performance impact and limitations for each):

1. V-tail or T-tail
2. tricycle or tailwheel landing gear
3. extended range tanks
4. Fowler flaps
5. Seaplane floats.
6. etc.

MAINTENANCE

(Provide information on requirements and locations for required inspections, type-specific issues, Airworthiness Directives if applicable, etc.)

FLIGHT TRAINING

NOTE: The second section of the TTG provides more specific information about the development of type-specific flight training programs. This section is provided in the Ground Study guide as an overview to help brief and prepare the transitioning pilot for flight training.

The goal of transition training

Thorough transition training may take several flights to accomplish and may be presented in any order as conditions require and/or at the discretion of your instructor. Your instructor may incorporate Scenario-Based Training (SBT) techniques but should ensure that, at a minimum, all listed tasks are covered during your checkout.

There is no set amount of time required to complete the checkout. An inexperienced or noncurrent pilot, or a pilot not experienced flying high-performance single-engine piston airplanes, may require longer to complete ZippyQuick training than a current pilot with experience flying similar aircraft. In all cases the instructor should use the Federal Aviation Administration's guidance from the Airman Certification Standards, including judgment that the pilot "demonstrates mastery of the aircraft in the tasks performed with the successful outcome of each task performed never seriously in doubt."

Upon completion of the syllabus the instructor shall log all ground and flight instruction time in the pilot's logbook in accordance with Federal Air Regulations. The instructor may note the use of this guide as a reference for such training but doing so does not imply the ZippyQuick type club's endorsement of the instruction received.

The instructor may endorse the pilot for a Flight Review and/or an Instrument Proficiency check entirely at the instructor's discretion. Those endorsement, however, are not the goal of this transition training program. Instead, the purpose of this training is to ensure the pilot has a thorough understanding of the systems, operations and characteristics of his/her ZippyQuick in normal, abnormal and emergency conditions. Whether or not the instructor provides Flight Review and/or IPC endorsements as a result of the transition process, he/she should recommend additional study, practice, and/or dual flight instruction for the pilot to improve his/her skills and suggest a regimen of recurrent training that should include participation in the ZQ online community or live training to learn more about the ZippyQuick.

General notes on flight characteristics
These recommendations come from experience with techniques for avoiding the most common causes of ZippyQuick accidents:

- Do not perform touch and goes. There is a high correlation between touch and goes and inadvertent landing gear retraction on the runway. A large number of loss-of control crashes also occur during the high-workload on-runway phase of a touch and go. Make all landings to a full stop and take time to reconfigure for another takeoff and traffic pattern.
- Do not retract flaps during the landing rollout. Reconfigure the airplane only after coming to a stop on the taxiway after clearing the runway to avoid inadvertently retracting the landing gear.
- Be familiar with the weight and balance of your airplane. As fuel burns the CG moves aft. You should compute two weight and balance problems for each flight—one with fuel and cabin load prior to takeoff, the other with the fuel calculated to be remaining when you arrive at your destination or alternate. You may be under maximum gross weight and within the CG envelope at departure but beyond the aft limit upon reaching your destination. Some ZippyQuicks may be forward out of limits with full fuel and only the front seats occupied.
- Plan on having a minimum of one hour of fuel on board upon arriving at your destination or alternate. Avoid a planned fuel stop within one hundred miles or one hour of your destination- there is a great temptation to fly over the fuel stop and continue to your destination. Instead, plan your fuel stop farther from your destination to avoid this temptation.
- Always use checklists to verify your actions. Before landing use GUMP:
    - Confirm the *G*as (fuel) selector is on a main tank that has adequate fuel for approach, landing and, if necessary, missed approach or balked landing and climb before you begin your descent from cruise flight.
    - Make sure the *U*ndercarriage (landing gear) lever is down and indicators confirm gear down.
    - Set the *M*ixture to full rich or as required by field elevation.
    - Put the *P*ropeller control the high RPM.
- Undertake a program to insure your currency. Each month select a new area of concentration. Examples include instrument currency, night operations, short, soft and crosswind takeoffs and

landings, GPS operations, slow flight, stall recognition and recovery, etc. See training opportunities recognized by the ZippyQuick AVIATOR program for ideas.

A checkout following the procedures in this *Guide* covers only the basic information absolutely necessary for initial transition training. Plan on joining the ZippyQuick type club as soon as possible to learn much more about your ZippyQuick and how to safely fly it to is maximum potential. See www.ZippyQuick.com details.

Other operational considerations

Other topics that type clubs may want to cover in the flight characteristics overview.

Impact of wing loading and power loading on aircraft performance

1. ZippyQuick wing loading compared to commonly flown aircraft, and the aircraft in which the transitioning pilot is most current
2. ZippyQuick power loading compared to commonly flown aircraft, and the aircraft in which the transitioning pilot is most current
3. Anticipated handling characteristics the pilot will note in the ZippyQuick as a result of the comparative wing and power loading

Stall speeds and characteristics

1. Impact on takeoff and landing speeds
2. Stall indicating systems, when installed
3. Angle of attack indicating system, when installed
4. Comparison of stall characteristics to commonly flown aircraft, and the aircraft in which the transitioning pilot is most current

Getting training before your first flight

1. How to find flight instructors
2. Other aircraft with similar flight characteristics

The importance of using checklists

Pre-flight inspection

1. See Owner's Manual checklist when available.
2. Instructors should be alert to the possible differences between aircraft in this series such as big flaps vs. small flaps, Goodyear vs. Cleveland brakes, straight vs. crosswind gear, alternator or generator, type of fuel caps, turbocharged or not, etc.
3. Pulling the propeller through at least two revolutions to determine there is no hydraulic lock.
4. Emphasize the importance of proper tailwheel strut inflation and its effect on steering.

Weight & balance

Before Start

1. Ensure that the pilot's seat is adjusted to provide for full deflection of rudder and elevator, and that the seat is securely locked in position.
2. The pilot should use this opportunity to begin to develop a mental picture of the airplane in the 3-point attitude.

Engine start

1. Propeller control should be in the high pitch/low RPM/full aft position.
2. DO NOT pump the throttle before or during the start procedure, use the primer, 4-6 strokes when cold, 1-2 strokes when warm.
3. Crack the throttle, and leave it alone until after start.
4. Clear propeller area, engage starter.
5. As soon as the engine fires, switch ignition to “Both”.
6. Adjust idle, if necessary, and check oil pressure, then move propeller to low pitch/high RPM/forward position and reset idle to 800 RPM.

If performance data is not available for your aircraft type, you may want to consider these guidelines provided by the FAA:

(a) Best angle of climb (Vx) = 1.5 times the aircraft’s predicted lift-off speed.

(b) Best glide speed = 1.5 times the aircraft’s predicted lift-off speed.

(c) Maneuvering speed (Va) = 2 times the aircraft’s predicted stall speed.

For more information, see:

FAA’s Advisory Circular AC 90-109A *Transitioning to Unfamiliar Aircraft*

FAA Advisory Circular AC 89-90B Amateur-Built Aircraft and Ultralight Flight Testing Handbook

Taxi

1. Check brakes early in the taxi roll. Be aware that brake response can vary significantly between airplanes depending on which brand of brakes and the master cylinders installed.
2. The pilot must understand the lack of visibility during taxiing operations, particularly from the pilot’s 12 o’clock to 2 o’clock position. NEVER assume that area to be clear. If necessary, stop, turn the aircraft, and/or enlist the aid of the right seat occupant to determine whether it is safe to proceed.

Takeoff

1. Normal takeoff
    a. With the aircraft trimmed for takeoff and centered on the runway, the pilot should smoothly advance the throttle to full power while holding the elevator slightly aft of neutral.
    b. Let the tail fly off the runway to about climb attitude and the airplane will become airborne around 65 MPH.
    c. LOOK down the runway during the takeoff roll, there’s nothing in the cockpit that needs your attention until you’re airborne. Concentrate on directional control and pitch attitude, if they are normal the airplane will know when to fly, there’s no need to watch the airspeed indicator until airborne.
    d. As soon as airborne, adjust pitch for proper climb attitude (Vy 90-100 MPH) and heading to track the runway centerline.
    e. After 200 AGL, adjust pitch to climb at 100 MPH or greater.
    f. Adjust power for climb, 23” MAP 2000 RPM.
    g. Be cognizant of the effects of torque, P-factor and gyroscopic precession of the propeller as the tail is raised, the faster the tail is raised the more the airplane will try to turn left.

NOTE – Most engine applications in the ZippyQuick aircraft can be operated CONTINUOUSLY at full rated power, so there is no urgent need to reduce power setting from take-off to climb. Some STC’d applications may differ and shall have been briefed during Lesson 1.

2. Short field takeoff
3. Soft field takeoff

Climb

1. Accelerate to cruise, about 150 MPH, then reduce to cruise power 20” 2000 RPM. NOTE- Due to engine differences and owner’s preferences, power settings will vary, consult the Owner’s Handbook for limitations.
2. Lean the mixture anytime when operating below 75% power by applying carb heat to 80F and moving the mixture control slowly toward the lean position until the engine begins to run a little rough. This is easily detected by watching the cowling. Then, advance the mixture until the engine runs smoothly. This will now yield a carb temperature of about 100F.

   NOTE – Again, aircraft and owner’s preference will vary, and the above procedure would not preclude the effective use of an engine monitoring system, when installed.

Cruise

The aircraft has excellent stability and control characteristics under all conditions of speed, power, load factor, and altitude. The controls are effective throughout the speed range of stall to Vne and aircraft response to control movement is quite rapid. Nice handling characteristics in both accelerated and unaccelerated flight are evident. The rate of roll and pitch are brisk for a four-seat aircraft. The trim tabs are also effective at all speeds so that the aircraft may be easily trimmed to fly “hands off.” Flight without an operational pitch trim system is difficult and the aircraft may be uncontrollable at higher speeds.

Operation of the landing gear affects yaw stability only slightly with an oscillation as the mains extend asymmetrically. Don’t fight it. Wing flap extension as well as changes in power setting affects pitch trim, thus requiring a minimum of stick movement to maintain flight attitude.

The ZippyQuick possesses neutral static stability and positive dynamic stability in roll, and both positive static and positive dynamic stability in the pitch and yaw axis. When the aircraft is placed in an angle of bank, its tendency is to remain in that angle of bank and neither continue to roll nor return to wings level. However, if a yaw or pitch displacement is induced, the aircraft has a tendency to dampen out the resulting oscillation and returns quickly to aerodynamic equilibrium.

Descent

A timely descent, particularly from high, fast cruise in the ZippyQuick requires that you be well ahead of the aircraft. In smooth air conditions descent can be accomplished at the Vne of 174 kts. In turbulent air the aircraft must be slowed to its Vno of 120 kts.

Throughout the descent, monitor your engine instruments. If your aircraft has speed brakes, allow 3nm from destination from each 1,000 feet to descend to reach pattern or FAF altitude, or if your aircraft does not have speed brakes allow 4nm per 1,000 feet. Power should be reduced so as to maintain cylinder head temperature and oil temperature well in the respective green arcs.

Air work

1. Slow flight
   a. Reduce power to 15” MAP decelerate while maintaining level flight.
   b. Select a target airspeed of 70 MPH.
   c. Adjust power and pitch to maintain level flight and airspeed.
   d. Make shallow turns (15 – 20 degrees bank) both left and right.

When performing slow flight maneuvers it is assumed the pilot will maintain level flight unless otherwise advised by the instructor.

2. Stalls / Spins

    a. Approach - From slow flight, reduce power and attempt to maintain altitude by increasing pitch until stall occurs. Recover by simultaneously reducing pitch angle and increasing power to 23" MAP. Minimize altitude loss. This maneuver should be demonstrated with and without flaps.

    b. Departure- From slow flight, simultaneously increase power to 20” MAP and smoothly increase the pitch angle until stall occurs. Recover by reducing the pitch angle and increasing power to 23” MAP. Emphasis should be place on maintaining coordinated flight through proper use of rudder throughout the maneuver as airspeed and power changes. This maneuver should be performed during 20 degree banked turns, also.

It should be emphasized that power management in the above recoveries is for training and that more power is available by advancing all of the power controls fulyl forward in the event of an inadvertent stall entry.

3. Steep turns

    a. Establish the aircraft in straight and level flight at 140 kts and align it with a prominent landmark or section line.

    b. Roll into 45° angle of bank and apply aft stick pressure as necessary to maintain altitude.

    c. Adjust the throttle to maintain 140 kts throughout the maneuver. If the aircraft starts a descent, as first indicated on the vertical speed indicator, take out a small amount of bank, correct the nose attitude, and then reestablish the bank angle.

    d. Conversely, if the aircraft starts to climb, steepen the angle of bank to allow the nose to drop to the desired pitch setting, then reestablish 45° angle of bank.

    e. A complete maneuver will consist of on 360° turn both left and right.

4. Unusual attitudes

    a. The flight instructor will induce an unusual attitude.

    b. The ZippyQuick pilot will recover with power, pitch and roll application to straight and level flight.

    c. Nose high/ decreasing airspeed—add power, reduce angle of attack first. Roll wings level second.

    d. Extreme nose high you may want to roll to nearest horizon (nose slice) and then roll out to level as nose comes to horizon.

    e. Nose low/ increasing airspeed—reduce power, roll to wings level. Pitch to horizon.

Aerobatic maneuvers

(Provide type-specific techniques for flying approved aerobatic maneuvers).

Instrument procedures

(Provide type-specific techniques for IFR departures, climbs, cruise, descents, maneuvers, approaches, missed approaches and holding, and unusual attitude recovery).

Landing

1. Normal landing

2. Crosswind landing

3. Short field landing
4. Soft field landing
5. Partial- and zero-flap landing
6. Go-around (balked landing)

Shut-down and airplane securing

Emergency procedures

1. Ground emergencies
2. Takeoff emergencies
    a. Engine failure
    b. Door opening
    c. etc.
3. In-flight emergencies
    a. Engine failure in flight
    b. Engine fire in flight
    c. Cabin/fuselage fire in flight
    d. Electrical fire
    e. Smoke in the cockpit
    f. Electrical Failure
    g. Turbocharger failure
    h. High cylinder head temperature
    i. High oil temperature
    j. Low oil pressure
    k. Fuel pump failure
    l. Fuel tank depletion
    m. Propeller governor failure
    n. Emergency descent
    o. Manual gear extension
    p. Cabin depressurization
    q. etc.

Specialized operations

1. Obtaining a LODA for a training aircraft
2. Formation flight
3. Aerial photography
4. Use of floats/skis
5. etc.

Hopefully the sample text on the previous pages has provided your type club with an example of how each section should be completed.

Additional examples of training manuals, including the full text that you can adapt to your aircraft type, are available from the EAA Type Club Coalition (TCC) at *www.eaa.org/typeclubs.* You can use this Guide, these examples, and your type club's expertise to create your own training outline.

If you need additional assistance please contact the EAA TCC point person, **tcc.chairman@eaa.org.**