

VERIFICATION OF PRE-BUILD LEVEL FOR QUICK-BUILD KITS

1. Background

With aircraft kit manufacturers offering increasingly pre-built kits into the market, there is an increasing risk that aircraft builders may inadvertently exceed the CAA limits relating to how much of an amateur built aircraft can be commercially built. The CAA publication CAP 659 (available from the CAA website) provides guidance on how much commercial assistance is permitted. The basic intent is to allow up to 49% of the aircraft to be commercially built leaving the builder to complete the 'major portion' (51%). If this level of commercial assistance is exceeded, the aircraft cannot legitimately be granted a permit to fly as an amateur built aircraft.

Many of the advanced "Quick-Build" kits are already pre-built to this maximum allowed level. It is therefore important that the level of pre-build of new kits be checked to ensure they are no more pre-built than the approved level. This technical leaflet provides a reference to enable this check to be made.

2. Reference Data for Pre-build Level

For the purposes of this process, LAA approved aircraft kits can be separated into two groups.

Group 1 - Those that rely on FAA acceptance for compliance with the 51% rule

In this case, all kits supplied should include within the assembly manual, a copy of the FAA letter of compliance stating that the build standard complies with the FAA's major portion requirements.

Aircraft Type
Europa, Europa XS
Jabiru UL/SP, J400, J430
Kolb Mk III Extra
Rans S-6ES QB
Rans S-6S QB
Rans S-7 QB
Rans S-7S QB
Vans RV-6QB
Vans RV-6AQB
Vans RV-7/7AQB
Vans RV-8/8AQB
Vans RV-9 Std/QB
Vans RV-9A Std/QB
Vans RV-10 Std/QB

VERIFICATION OF PRE-BUILD LEVEL FOR QUICK-BUILD KITS

Group 2 - Those that rely on other means for showing compliance with the 51% rule

In this case a description of the kit is provided to enable the pre-build level of any new example of this kit to be verified. Provided new kits are no more pre-built than described in the table below, they can be assumed to be compliant with the 51% rule.

The following table lists all kits for which a pre-build level reference was available at the time of publishing.

Aircraft Type	Build Description
Dyn-Aero MCR01	T.L. 1.11 page 3
Eurostar	T.L. 1.11 page 4
Foxbat	T.L. 1.11 page 5
Ikarus C-42	T.L. 1.11 page 6
Alpi Pioneer 300	T.L. 1.11 page 7
Technam P2002	T.L. 1.11 page 8
Zenair 601	T.L. 1.11 page 9
Zenair 701	T.L. 1.11 page 10

The above covers the majority of LAA approved Quick-Build aircraft kits currently on the market. If an extensively pre-built kit is encountered, or for any other reason there is a need to clarify the level of pre-build that has been approved LAA Engineering should be consulted.

It is the builder's responsibility to familiarise himself with the rules on commercial assistance outlined in CAP 659 and for compliance with these requirements. The owner/builder cannot rely on a LAA Inspector for determination of acceptability.

An aircraft which is built in contravention to these rules, may be refused a first Permit issue or a Permit renewal at any time in the future.

VERIFICATION OF PRE-BUILD LEVEL FOR QUICK-BUILD KITS

Dyn' Aero MCR-01 Kit Description

	Condition of kit components	Work Remaining for Builder
Fuselage	Supplied with virtually all of the composite work complete. Frames 3, 4a, 4b, 5, 6 & 7 installed. Fin area complete. Tailplane support complete.	All mechanical installation including: Front & main U/C, flight control systems. Electrical systems & instrument panel. Fuel system. Seats, side panels & trim. Some cutting & drilling to facilitate mechanical installation. Preparation for painting, & painting.
Fuel Tank	Fuel tank cut, trimmed & bonded to form one piece. Fuel tank is also slosed.	Installation of fuel gauge & all fuel lines, filters & fittings. Leak test. Preparation for painting, & painting.
Canopy	Optionally the canopy may be supplied assembled.	Installation of the canopy locking system. Preparation for painting, & painting. Installation to the aircraft.
Wings	Wings supplied assembled.	Final adjustment & fitting to the A/C. Preparation for painting, & painting.
Flaps	Flaps supplied assembled.	Final adjustment & fitting to the A/C. Preparation for painting, & painting.
Ailerons	Ailerons supplied assembled.	Final adjustment & fitting to the A/C. Preparation for painting, & painting.
Instrument Panel	Supplied blank.	Cutting, drilling & installation of instruments, fuses, circuit breakers, switches, placards etc. Finishing (anodising or painting). Installation into the A/C.
Engine Installation	Main engine supports are supplied fabricated & painted. Baffles & other aluminium components are supplied laser cut. Cowls are supplied manufactured.	Preparation of the engine including removal and alteration of the ignition system & cooling parts. Protection of aluminium parts. Assembling cooling baffles, radiator & air cooler Assembly, air inlet manifold & other parts. Installation of the engine & engine lubrication, cooling, Exhaust & electrical systems. Cowls require trimming to size, installation, Preparation for painting, & painting.
Propeller	The blades & hub are supplied but require assembling. MT propellers are supplied assembled with spinner.	(not MT) Assembling the propeller. Adjusting & balancing. Cutting & installing the spinner.
Mechanical Parts	Supplied machined and or cut. Most are supplied plated or painted.	Control rods require cutting to length & end fitting Installed. Some bonding is necessary.
Commissioning		All electrical systems must be checked. All instrumentation must be checked. All flight control systems must be checked. Undercarriage & brake systems must be checked. The fuel system must be cleaned, checked and a fuel-flow test undertaken. The engine must be filled with coolant & oil and the correct procedure followed for priming the oil system. The engine must be run, carburettors balanced and all engine parameters checked. Adjustable propellers may need adjustment to give the correct engine operating conditions.

VERIFICATION OF PRE-BUILD LEVEL FOR QUICK-BUILD KITS

EV-97 Eurostar Kit Description

Pack No.	Contents
1	Fuselage sub-assy with turtle deck, upper cover and canopy temporarily removed for transport.
2	Fuselage finishing kit.
3	Upper cover kit.
HDBK	Heater duct blanking kit (cosmik).
7	Wing left.
8	Wing right.
15	Wing finishing kit.
16	Wing assembly kit.
17	Wing fillets assy kit.
22	Rudder assy.
23	Horizontal stabilizer assy.
24	Tail unit assy kit.
35	Hand control kit (includes aileron and elevator pushrods as loose items).
36	Rudder and flaps control kit.
37	Trim tab control kit.
40	Nose wheel landing gear kit.
42	Main landing kit.
44	Brake system kit.
46	Fuel system kit.
47	Fuel tank kit.
49	Pitostatic system kit.
50	Seat backrests kit.
51	Safety harness kit.
53	Equipment kit (upholstery etc).
55	Instrument panel kit.
60	Prop spinner kit.
61	Prop fitting kit.
62	Powerplant kit.
63	Engine cowling kit.
64	Exhaust parts kit
65	Cooling system kit
66	Oil system kit.
68	Engine mount kit.
70	Throttle lever control kit.
75	Electrical kit (Aerotechnik)
912 UL	Rotax 912 UL engine
995697	Radiator (Rotax)
825551	Air Filters (Rotax)
CSSK	Cooling System Supplementary kit
CK	Choke kit
TSK	Throttle Supplementary Kit
CHK	Carb heater kit
PROP	Propeller and fitting kit
OCK	Oil Cooler Kit
BFPK	Backup Fuel Pump kit
EEK	Electrical kit (Cosmic).
FIK	Flight instrument kit (Cosmic)
FPGK	Fuel pressure gauge kit (Aerotechnik)
EIK	Engine instrument kit (analogue) (Cosmik)
WTGK	Water Temp Gauge Kit
VSI	Vertical Speed Indicator
FLYDAT	Digital Engine Instrument Kit

VERIFICATION OF PRE-BUILD LEVEL FOR QUICK-BUILD KITS

A22 Foxbat Kit Description

Part No.	Contents
A.22.2.0100	Fuselage assy complete.
A.22.0.6401.01	Engine mount.
A22.0.640200	Engine mount.
0.1350.00L	Door.
0.1350.00R	Door.
0.1301.00	Screen.
0.1304.01/2	L & R plank.
0.1303	Rear screen.
0.1301.01L/R	Rear screen.
STRIP	Screen edging
0.77550.02	Seat belts.
.3.2000.00	L/R wing complete.
.3.6120.00	L/R fuel tanks.
L=550	Fuel lines x 2.
L-1150	Tank vent x 2.
.0.3700	L/R flaperon
Strut L/R	Lift strut.
0.5123	Control shaft.
0.5123.00	Control shaft.
1.5408.00	Push rod x 2.
1.5410	Flaperon control shaft.
1.54001 – 7	Flap control mechanisms.
1.5401/2	Handle
1.5402/3	Rocker.
1.5110.00	Control column
0.5122	Master cylinder
1.5132.00	Push rod
1.5183.00	Push rod rear.
1.5185.00	Bellcrank.
1.3100.00	Horizontal tail complete.
.3.3200	Elevator complete.
1.4000	Trim tab
2.2.0100	Main Leg x 2
3.4300.00	Nose leg outer.
3.4300	Nose leg slider.
Matco	Wheels.
Matco	Wheels.
Spats	X 3.
Fairing	Main gear alli fairing.
Fuel pipe	Fuel pipe tubing and end fittings
	Exhaust detail parts to be welded up.
912S	Engines & radiators & oil tank.
Newton 69" x 64" GT-2/180/VTR	1 off propeller
	Spinner blank.
1.7151	Instrument binnacle.
0.7001	Panel.
2.0100	Throttle levers.
3.6026	Throttle lever tube.
1.6051	Choke levers.
1.6055	Bowden cable 12m.
Fabric	21 metres Stiits light, 15ltrs Dope. 25m of 2" pinked edge tape, 1ltr MEK, 1ltr Dope inducer.
Paint	Dupont paint finishing system.

VERIFICATION OF PRE-BUILD LEVEL FOR QUICK-BUILD KITS

Aerosport Ikarus C-42 Kit Description

1. Fuselage

The basic fuselage construction consists of an aluminium frame with a composite covering. The framework is complete with engine mount and undercarriage structure attached. To finish the fuselage structure, the builder has to trim and fit the front and rear cockpit bulkheads, the floor and the firewall. The composite shells then have to be trimmed and fitted to cover the structure. All controls and brackets are loosely fitted for transport but generally need to be removed and reinstalled properly. The side windows are incorporated into the composite shells. The main windscreen is supplied as a flat sheet of transparent material, which has to be formed and trimmed before fixing in place.

2. Wings

The basic wing construction consists of a front and rear spar joined by compression tubes to resemble a ladder. A foam leading edge is attached and a covering bag installed into which rib battens are inserted. The kit is supplied with the basic "ladder" loosely assembled for transport. The leading edge foam has to be trimmed and fitted prior to final assembly in conjunction with fitting the covering bag. The rib battens are supplied as loose items.

3. Flight controls

The control surfaces (rudder, flap, elevator, and aileron) structures are supplied loosely assembled. All need some dismantling to fit the covering bag. The actuator drive brackets all require drilling and fitting. All pushrods, control cables and bellcranks are supplied pre-manufactured and loosely assembled. The elevator trim components are supplied loose. Installation involves drilling and mounting within the elevator.

4. Empennage

The fin and tailplane are supplied and finished as described above for the control surfaces.

5. Landing Gear

The undercarriage structure is already fixed to the fuselage frame. The wheels and brakes are supplied as loose components. The brake lines are pre manufactured.

6. Propulsion

The engine is supplied boxed but requires final fitting of exhaust, inlet, fuel system, engine controls, ignition harness etc. The fuel system is supplied as standard components, special parts such as the poly-fuel tank and a roll of fuel tubing and various end fittings. The cowlings are supplied as composite 'blank' parts, which require trimming and drilling to install.

7. Cockpit / Electrics

The instrument panel is supplied as a flat 'blank' with no holes. The electrical system is supplied as standard components, rolls of wire and various end fittings. The pitot static system is similarly supplied as a roll of tube and end fittings.

VERIFICATION OF PRE-BUILD LEVEL FOR QUICK-BUILD KITS

Alpi Pioneer 300 Kit Description

Bag No.	Contents
1	Complete LH and RH Wing including wheel well and supports for tip
2	Complete LH and RH Flaps, ply covering and nut-plates installed
2A	Complete LH and RH Ailerons, ply covering and nut-plates installed
3	Fuel Gauge senders and mounting rings, rubber seals, nut s and bolts
4	2 Fuel Necks and filler caps
5	2 Fuel tanks with fittings, hose and Andair valve
6	Rear Spar Anti-Drag Tube
7	Pitot Assembly with tube and fittings
8	Left and Right wing tips.
10	Wing centre box fasteners
12,13	Flap control rod an torque tube assemblies
15,17	Aileron control rods
31	4 x Flap Hinge assemblies and fittings
32	4 x Aileron Hinge assemblies and fittings
33	5 x Inspection covers and fittings
34	Fuselage structure incl fin spar, composite covering, U/C & eng mt fittings, ctrl cables and pulleys.
35	Centre console sub-assembly
36	Seat bases and backs, Rubber spar covers and all cockpit trim panels
37	Fuselage flap torsion bar and fittings.
38	Flap Motor including fittings
40	Left and Right undercarriage legs assembled
41	Emergency Undercarriage Crank handle
42	Undercarriage tie bar and fittings
43	Top engine mount interior brackets
46 - 48	Elevator Trim kit (boxed) plus Hinge, fittings and pushrod
49	Rubber forward Cable attachments (Nicopress)
50	Safety Belts upper and lower attachments and fittings
51	Control stick Assembly, mounting hardware and 2 x control sticks
52	Rudder pedals and mounting hardware
53	Brake Master Cylinder, mounting hardware, brake tube, fittings and hydraulic fluid
55	Underbelly panels (maybe in one piece) plus fittings
57	Sound absorbing material for rear of firewall
61	Instrument panel supports and fittings
63	Firewall (titanium) and fittings
64/R	Top and bottom cowlings for Rotax 912S plus fittings
65	Spinner Assembly (Check VP or Fixed Winged Prop)
66	Tail Cone assembly and fittings
67	Assorted fasteners for main spar
68	Engine mount and fittings for Rotax 912S
69	Nose wheel Steering assembly and fittings
70	Front Wheel Well
71	Front Undercarriage assembled
71R	Front UC Rotax Specific parts (Brackets and fittings)
72,73	Main Undercarriage retraction system - Outboard and Centre
74	Electrical Components for Flaps and Landing Gear (Not present if complete loom option purch'd)
75	Canopy
81	Rudder with 19mm Spar, ply covered and treated
82	Elevator Ply covered and treated
83,84	Stabiliser (Composite) and attach brackets
85	Elevator and Rudder hinges including fittings and fasteners
86 - 87	Rudder Control and trim Fittings
89-101	Adhesives, fabric, primer, filler etc
102-106	Construction manual, flight manual, check lists, drawings etc

VERIFICATION OF PRE-BUILD LEVEL FOR QUICK-BUILD KITS

Technam P92 and P2002 Kit Description

1. Fuselage

Space frame belly skinned only fitted, tail cone skinned. Fin & rudder skinned. No tips. Rear cabin fairing untrimmed, unglazed, un-upholstered. Engine mount frame with nose leg. Short engine – no ancillaries fitted. Fuselage panels cut & piloted. Door frames un-panelled (Echo Super), coaming cut & piloted, cowling mouldings un-trimmed. Screen formed – not trimmed or drilled. All windows un-trimmed or drilled. Gear components un-assembled. Brake system components. Canopy frame unglazed (Sierra).

All hardware/components supplied loose.

2. Wings

Main wing body spar to T/E. D.Box/Tanks in 3 sections. Flaps. Ailerons, L/E sections part piloted. Fuel parts un-piloted. Root fairings supplied raw.

All hardware supplied loose.

3. Flight Controls

Stick yoke assy. Aileron control cable harness. Rudder control cable harness.

All installation hardware & small components supplied loose.

4. Empennage

2 x stabilator skinned. 1 x Rudder skinned.

All installation hardware loose.

5. Landing Gear

Nose leg & wheel fork. All other landing gear components supplied loose.

6. Propulsion

Short engine – normally sourced by constructor separately.

Fuel system components loose. Oil system components loose. Water cooling system loose. (pipes for these three systems to be made by builder from rolls of tubing and end fittings. Throttle/choke system loose components (roll of bowden cable and end fittings).

7. Cockpit/Electrics

All cockpit parts supplied loose. Electrical components loose (incl roll of wire and end fittings).

VERIFICATION OF PRE-BUILD LEVEL FOR QUICK-BUILD KITS

Zenair CH601 Kit Description

1. Fuselage

The fuselage construction is of conventional aluminium construction. The structure is basically complete with the turtle deck and instrument cover skin temporarily pinned in place, to be removed for access and inspection.

- All brackets sheared to approximate size and require trimming and finishing.
- Canopy tubes bent to approximate shape. Canopy perspex formed but not trimmed.
- Seat components comprise 2 flat square pieces of aluminium that require trimming and drilling.

2. Wings

The basic fuselage construction is of conventional aluminium construction. The structure is basically complete with the main lower skin temporarily pinned in place, to be removed for access and inspection.

- All brackets sheared to approximate size and require trimming and drilling.
- Moulded composite wing-tip blanks are supplied which require trimming and drilling.
- Aileron trim tab supplied in component form for fit-up and assembly.

3. Flight controls

Welded assemblies for the rudder pedals and control stick are supplied.

A Roll of cable and a selection of nicopress fittings are supplied for the manufacture of the control cables.

- All brackets sheared to approximate size and require trimming, drilling and finishing.
- The control surface (Flap, elevator, and aileron) structures are supplied assemble except the skins are only partially attached.
- The rudder is supplied as part finished components for fit-up and assembly.

4. Empennage

The fin and tailplane structures are supplied assembled except the skin is only partially attached.

5. Landing Gear

All welded assemblies are supplied as 'blanks' and require fitting and hole position/drill.

Wheels, bearings, nosewheel steering all supplied as component parts.

- Nosewheel steering control rods supplied as blanks to be trimmed and drilled to suit.
- Brake system is supplied as various standard vendor parts, a roll of hydraulic pipe and a selection of end fittings.

6. Propulsion

- Engine mount is supplied as a welded assembly.
- Throttle control components are supplied as welded blanks that require drilling and fitting.
- The engine is supplied boxed but requires final fitting of exhaust, inlet, fuel system, engine controls, ignition harness etc.
- The fuel system is supplied as standard vendor components, a roll of fuel tubing and various end fittings.
- The cowlings are supplied as composite 'blank' parts, which require trimming, positioning of Dzus fasteners and drilling to install.

7. Cockpit / Electrics

- The instrument panel is supplied as a flanged bulkhead 'blank' with no cut-outs.
- Electrical system is supplied as standard components, rolls of wire and various end fittings.
- The pitot static system is similarly supplied as a roll of tube and end fittings.

VERIFICATION OF PRE-BUILD LEVEL FOR QUICK-BUILD KITS

Zenair CH701 Kit Description

1. Fuselage

The fuselage construction is of conventional aluminium construction. The structure is basically complete with the instrument cover skin temporarily pinned in place, to be removed for access and inspection.

- All brackets sheared to approximate size and require trimming and finishing.
- Canopy perspex formed but not trimmed.
- Seat components comprise 2 flat square pieces of aluminium that require trimming and drilling.

2. Wings

The basic fuselage construction is of conventional aluminium construction. The structure is basically complete with the main lower skin temporarily pinned in place, to be removed for access and inspection.

- All brackets sheared to approximate size and require trimming and drilling.
- Moulded composite wing-tip blanks are supplied which require trimming and drilling.
- Aileron trim tab supplied in component form for fit-up and assembly.

3. Flight controls

Welded assemblies for the rudder pedals and control stick are supplied.

A Roll of cable and a selection of nicopress fittings are supplied for the manufacture of the control cables.

- All brackets sheared to approximate size and require trimming, drilling and finishing.
- The control surface (Flaperon and Elevator) structures are supplied assembled except the skins are only partially attached.
- The rudder is supplied as untrimmed detail parts for fit-up and assembly.

4. Empennage

The fin and tailplane structures are supplied assembled except the skin is only partially attached.
Landing gear

- All welded assemblies are supplied as 'blanks' and require fitting and hole position/drill.
- Wheels, bearings, nosewheel steering all supplied as component parts.
- Nosewheel steering control rods supplied as blanks to be trimmed and drilled to suit.
- Brake system is supplied as various standard vendor parts, a roll of hydraulic pipe and a selection of end fittings.

5. Propulsion

- Engine mount is supplied as a welded assembly.
- Throttle control components are supplied as welded blanks that require drilling and fitting.
- The engine is supplied boxed but requires final fitting of exhaust, inlet, fuel system, engine controls, ignition harness etc.
- The fuel system is supplied as standard vendor components, a roll of fuel tubing and various end fittings.
- The cowlings are supplied as composite 'blank' parts, which require trimming, positioning of Dzus fasteners and drilling to install.

6. Cockpit / Electrics

- The instrument panel is supplied as a flanged bulkhead 'blank' with no cut-outs.
- Electrical system is supplied as standard components, rolls of wire and various end fittings.
- The pitot static system is similarly supplied as a roll of tube and end fittings.