

# Velocity

## Fast Build Flow Chart

This flow chart is provided to help you , the builder , navigate through the construction manual. This is the same basic order we use to build airplanes at the Velocity Service Center. Pay attention to the column that tells you which style Velocity ( FG / RG / ALL ) the task is meant for. Make sure you first read and understand chapter one of the manual. This will introduce you to the materials used during construction and the tips to using the manual. Make sure you clip the corners of your manuals pages off after you have completed all tasks on that page as well as check the topic off of the flow chart sheet. When your airplane is completed every single page should have its corner clipped and all tasks on the chart should also be checked. This chart is for **reference only** and will be modified as we get feedback from you.

	RG/FG/ ALL	Action	Chapter	Check Off
1	All	Read chapter one of your manual and review the construction DVD's		
2	All	Cut out Doghouse	6	
3	All	Cut out and install premolded NACA scoops	11	
4	All	Install Overhead plenum NACA (do not install plenum until flipping airplane)		
5	All	Fit keel in airplane and then remove to install control system	6	
6	All	Install wood hardpoints for control system in keel	6	
7	All	Cut out and layup inspection covers in keel	6	
8	All	Install nut plates to hold inspection covers	6	
9	FG	Cutout Speed brake on bottom of airplane	6	
10	FG	Install hard points on speed brake and finish edges of brake	6	
11	FG	Cover Speed brake hole and hinges	6	
12	RG	Cut out nose gear door hinges	7	
13	All	Install top Triax pad on firewall for Lycoming engine mount or the lower pads for a continental engine	6	
14	RG	Complete fiberglass portion of nose gear door installation	7	
15	All	Install Heater flapper valve and aluminum outlet tubes in oil cooler exit	12	
16	All	Cut out oil cooler inlet and outlet ducts	12	
17	All	Install front oil cooler ducts	12	
18	All	Install rear aileron control bracket to keel rear section	6	
19	All	Install aileron torque tube and control stick in keel	6	
20	All	Mid bearing support installed in keel (XL)	6	
21	RG	Install main gear and nose gear cylinder	7	
22	RG	Install AN fittings into main and nose gear cylinders (tape over the ends)	7	
23	RG	Install flexible hydraulic lines between nose and main gear cylinders	7	
24	All	Fit and install battery tray	4	
25	All	Fit and install Landing Light Assembly	4	
26	All	Structural Adhesive front of keel in place	6	
27	All	Install front keel stiffening layups	6	
28	FG	Install speed brake actuator	6	
29	RG	Install nose gear bushing plates	7	
30	All	Glass edges of canard cutout to seal it		
31	All	Fit and fair in nose access cover	6	
32	RG	Install nose gear gas spring and shock assembly	7	
33	RG	Install nose gear door cylinder and assembly	7	
34	RG	Install RG hydraulic power pack	7	
35	RG	Install MG pulley and cable assembly	7	
36	All	Install rudder pedals	6	
37	All	Fit instrument panel into airplane ( Once the panel has been fitted it can have the instrument holes cut out be finished and sent out to be wired.)	6	
38	All	Install seat hardpoints	6	

	RG/FG/ ALL	Action	Chapter	Check Off
39	All	Use Velocipoxy and micro to fair in back of windows	5	
40	All	Construct sump tank	9	
41	All	Glass side of canard bulkhead opposite the flange	4	
42	RG	Install sequence valve assembly	7	
43	RG	Install Dump Valve	7	
44	RG	Install nose gear guides	7	
45	RG	Install hydraulic power pack	7	
46	RG	Install hard lines for RG system	7	
47	All	Install Center Spar	6	
48	All	Install all Triax reinforcements on the forward side of the firewall between the center spar and the gear bulkhead.	6	
49	FG	Install main gear bushings (bushing in firewall and gear bulkhead are just temporarily installed for transport in the Fastbuild kit)	7	
50	FG	Triax over main gear bushings	7	
51	RG	Place airplane on jacks and remove main gear		
52	RG	Cut out fuselage to allow main gear retract and complete transverse bulkhead installation	7	
53	RG	Install main gear bushings	7	
54	RG	Triax over main gear bushings	7	
55		Permanently install steel bushings in gear legs and make aluminum spacers	7	
56	All	Install straws on MG for brake lines	8	
57		Install canard attachment reinforcements (triax)	6	
58	All	Install Canard bushings	6	
59	All	Complete all canard Triax reinforcements	6	
60	All	Install hinges on elevators	3	
61	All	Install hinge arms in canard	3	
62	All	Attach canard tips	11	
63	All	Install concentric torque tube	3	
64	All	Install counterweights	3	
65	All	Check balance of elevators	3	
66	All	Install elevator pitch trim actuator	10	
67	RG	Install main gear	7	
68	All	Install main wings prep for strake install ( you can use plain nuts to install the main wings and save your locknuts)	9	
69	All	Temporarily install doors (hinges do not have to be completed yet)	9	
70	All	Fit lower strake	9	
71	All	Cut out baggage access opening	9	
72	All	Install lower strake bottom ( If you are doing one strake at a time you may glass the bottom to the door as well. If you are doing both at the same time do not glass to door so you can remove the doors)	9	
73	All	Fit top strake	9	
74	All	After bottom strake is attached permanently you can remove wings to provide more space	9	

	RG/FG/ ALL	Action	Chapter	Check Off
75	All	Glass dyvinicel sheet to make fuel tank baffles	9	
76	RG	Cut out opening for gear and wheel well	9	
77	RG	Fit gear and wheel well	9	
78	All	Cut out baffles a little larger than templates	9	
79	RG	Glass top flange on wheel well	9	
80	All	Fit baffle bottoms to bottom strake	9	
81	RG	Fit baffle tops to top strake	9	
82	All	Reposition all baffles in bottom strake and tack in place	9	
83	All	Glass bulkheads and baffles to lower strake	9	
84	All	Install hardpoint for fuel vent and main fuel line	9	
85	All	install sight tubes	12	
86	All	Install fuel caps in strake top	9	
87	All	Plug fuel lines and remove senders and coat tank to seal with 2 coats of Jeffco or EZ-poxy	9	
88	All	Coat strake top with Jeffco or EZ-poxy in fuel tank area	9	
89	All	Cut wing access bolt hole	9	
90	All	Practice fuel strake top installation with partner	9	
91	All	Install strake top	9	
92	All	Cut wing from strake	9	
93	All	Remove wings	9	
94	All	Cut leading edge from strake that will go on the door (or is already attached to the door)	9	
95	All	Install door and glass leading edge of strake to it	9	
96	All	Install outboard end stake reinforcement	9	
97	All	Finish glassing on exterior of fuel tank bottom seams and back of spar to strake top and bottom	9	
98	All	Pressure check each main fuel tank	12	
99	All	Complete finish work between strake top and fuselage and leading edge of strake	9	
100	All	Reinstall wings		
101	All	Complete finish work between strake top and wing (recut line between wing and strake)	9	
102	All	Remove wings		
103	All	Flip airplane		
104	All	Finish glassing on exterior of fuel tank top seams	9	
105	All	Complete finish work between strake bottom and wing (recut line between wing and strake)	9	
106	All	Complete glass work between strake top and inside of baggage well	9	
107	All	Install overhead fresh air plenum	9	
108	RG	Fit main gear doors and install attach brackets onto gear legs	7	
109	All	Fill sand and prep gear legs for primer (RG's may be easier to remove legs from plane for this)	8	
110	All	Complete all finish work on bottom of airplane including all bolts that protrude through the floor and around the oil cooler exit		

	RG/FG/ ALL	Action	Chapter	Check Off
111	All	When completed with all bottom finish work the bottom of the airplane can be primed to prep it for paint		
112	All	Remove wings		
113	All	Flip airplane back onto it's gear		
114	All	Install sump tank	9	
115	All	Install fuel plumbing between main tanks and sump tank and sump tank and firewall fitting (RG's make sure you cycle your gear to make sure your gear clears your fuel lines)	9	
116	All	Install Fiberfrax and stainless steel on firewall	12	
117	All	Install oil lines to forward oil cooler ( make sure to cover them at the firewall until the flexible oil lines are installed)	12	
118	All	Install rudder cable nylaflow in airplane from pedals to the firewall	6	
119	All	Bond in rear keel (whale tail) section and install rear aileron bellcrank in keel	6	
120	All	Install Aileron push/pull cables through firewall	10	
121	All	Install Aileron torque tube	10	
122	All	Install Aileron bellcrank and bearing brackets in wing root	10	
123	All	Install Rudder hinges	2	
124	All	Install rudder horn	2	
125	All	Install rudder return spring	2	
126	All	Install Aileron hinges	2	
127	All	Install rudder cable in airplane and wing nylaflow	10	
128	All	Install rudder pulley and cable adjuster between firewall and wing root	10	
129	All	Install winglet bottom	2	
130	All	Fit top and bottom cowling and flange	11	
131	All	Install Door hinges	5	
132	All	Install secondary lock in door	5	
133	All	Install key lock	5	
134	All	Fit door trim panels	15	
135	All	Install door gas springs	5	
136	All	Assemble seat backs to bases with seat hinges	6	
137	All	Install seat belt hardpoints	6	
138	All	Remove wings		
139	All	You will now progress into engine installation. Before installing the engine it is easier to finish as much component installation onto the firewall as you can.		
140	All	Fit fiberfrax and stainless to firewall and install	12	
141	All	Install front oil cooler lines and bracket on firewall	12	
142	All	Install secondary oil cooler	12	
143	All	Install electric fuel pump	12	
144	All	Plumb aluminum lines between firewall bulkhead fitting and fuel pump	12	
145	All	If using a prewired harness you can begin routing the main harness and installing the terminal blocks on the firewall and in the rear of the airplane	Harness instruction	

	RG/FG/ ALL	Action	Chapter	Check Off
146	All	Mount the engine mount on the engine	12	
147	All	Mount the engine on the firewall	12	
148	All	Fabricate oil access door	11	
149	All	install oil and fuel line plumbing from the airframe to the engine	12	
150	All	Install engine senders on firewall and wire	12	
151	All	Plumb flexible lines between engine and senders	12	
152	All	Jack airplane up and fit brakes to gear legs	8	
153	FG	Create axle pad on gear leg	8	
154	All	Check for toe in and camber. Shim axle to correct	8	
155	FG	fit and install gear fairing cuffs at fuselage	11	
156	FG	Fit and install main and nose wheel pant	11	
157	FG	Fit nose strut fairing	11	
158	All	Installed prewired panel		
159	All	Connect panel wiring to premade harness	Harness instruction	
160	All	Install Throttle , Mixture and Prop control cables	12	
161	All	Install pitot tube	13	
162	All	Install Static port	13	
163	All	Install vacuum system and static system	13	
164	All	Install engine cooling plenum and runners to NACA scoops	12	
165	All	Cut exhaust exit in cowling	12	
166	All	Trim exhaust tubes and permanently install on engine	12	
167	All	Install prop as per manufacturers recommendations and trim or modify rear cowling as necessary to fair in	12	
168	All	Install canard	14	
169	All	complete control stick to concentric torque tube installation	10	