ROTORWAY INTERNATIONAL

A600 TALON
CONSTRUCTION MANUAL

Dear Customer,

Congratulations on what is likely to be the most rewarding project you have ever embarked upon – the building of your own ROTORWAY helicopter.

We at RotorWay have done our utmost to provide the best service possible from the first day we had contact with you, and you can be assured we will continue to do so.

Please study these manuals very carefully; it will save you hours of construction time if you understand what each step entails prior to beginning construction.

If you have any problems or questions please do not hesitate to contact RotorWay. The staff here is always ready to be of service.

So from all of us here at RotorWay – ENJOY and have fun! We look forward to seeing you at our flight and maintenance training school.

MARCH, 2008

WARNING

The construction and operation of “Home-Built Aircraft” of this type is demanding and could inflict serious injury and possible death. No such operation, construction or undertaking should be initiated unless thorough and complete knowledge, preparation and instruction are available and utilized. The seller (and its agents, servants, employees, contractors, successors, and assigns) makes no warranties express or implied regarding the clarity or correctness of the plans, ease of construction or operation nor the safety of this aircraft or any part thereof. Furthermore, buyer (and his heirs, administrators and assigns) releases and holds said seller (and its agents, servants, employees, contractors, successors, and assigns) harmless from any and all liability, damages, and causes of action which may be incurred by buyer or any third party as a result of the purchase, use, construction and/or operation of said aircraft (or any part thereof) or plans for same. Buyer assumes all risk and responsibility relative to the construction and/or operation of said aircraft. Seller admits no liability by publication of this warning.

CONTENTS

SECTION 11: Drive Train Installation
Install main drive belts; install main rotor shaft; mount main drive sprocket to hub; install secondary assembly; install fan and fan pulley; install secondary sprocket and locking assembly.

SECTION 12: Engine, Torque Link, and Clutch
Install upper engine mount cup; install engine; fit and install torque link; assemble and install idler arm, idler pulley and clutch tube; tension main drive belts; install pressure regulator and hydraulic hoses.

SECTION 13: Tail Rotor Drive Installation
Install driveshafts and gearboxes; install drive belt and tensioner; fabricate and install tail rotor pitch actuator arms; install tail rotor control cable; fit tail rotor blade tip caps; assemble and balance tail rotor; install carriage slider; install tail rotor shaft into gearbox; measure and install slider to actuator arm clevis; fit and install tail cone cover and slider cover.

SECTION 14: Fan Drive, Water Pump, and Alternator
Install fan drive countershaft, water pump, and alternator.

SECTION 15: Cog Belt Drive
Install and tension cog belt; install cog belt tensioner; fabricate and install main shaft safety spacer.

SECTION 16: Rotor Hub Assembly
Fabricate collective scissor mount; adjust slider ball clamp; position and drill control arm “G”; install collective spring; install cyclic control cables.

SECTION 17: Exhaust System
Apply heat wrap to headers; mount headers to engine.

SECTION 18: Cooling System
Fit and install fan shroud to radiator; install radiator; fit and install fan shroud ring; install cooling system hoses and components; install surge tank; fabricate sump strap and install oil sump/heat exchanger; install hose jackets and oil lines.

SECTION 19: Heat Shielding and Muffler
Construct, fit and install heat shielding; fabricate muffler straps and install muffler.

SECTION 20: Fuel System
Open holes for fuel tank caps and sender; flush fuel tanks; install fuel tank strainer fittings, crossover fittings, and return fitting; install fuel tanks; fabricate and install retention straps and fuel drain cock mounting bracket; install fuel pumps, shut-off valve/filter assembly, fuel filter, fuel pressure regulator, and all fuel hoses.

SECTION 21: Electrical System
Install instrument panel and instruments; install rotor tach sender, wiring harness, ignition modules, FADEC electrical components, spark plug wires, and overhead switch panel; fabricate inertia switch bracket and install inertia switches; fabricate compass mounting bracket and install compass; install secondary temp gauge and sensor.

SECTION 22: Seat Belts, Cabin Comfort, and Pitot Tube
Install seat belts; fabricate and install radiator collector; connect cabin comfort hoses; install cabin comfort cables and fuel shut-off cable; fabricate and install seat back brace tube; install pitot tube.

SECTION 23: Final Body Installation and Skid Pants
Final install body panels; install engine belly pan; mount fuel drain cock bracket to tub; cut holes for fuel tank filler caps; fit and install skid pants; install seats.

SECTION 24: Main Rotor Blades
Sand wood filler blocks; make and install wood end plugs; install tip weights; check trailing edges; paint the blades; cut out and install pitch horns; install aligner blocks and thrust blocks; mount retention straps; mount blades on the helicopter and perform static lead/lag adjustment and static balance.

SECTION 25: Rigging
Review all prints and follow all details of this section thoroughly. Although many details may repeat previous instructions given throughout this manual, we feel that this is absolutely necessary to stress the importance of the rigging procedures.

SECTION 26: Inspection of a New Aircraft
Post-construction checklist; pre-flight briefing notes; dynamic test; tie down procedures; instruments; fuel tank dip hose; amateur built aircraft checklist.

SECTION 27: Altitude Compensation Induction System (ACIS)
Install stepper motor controller; install man/baro sensors and hoses; install ACIS oil cooler and hoses; install ACIS air filter, housing and flex hose; tension drive belt.

INTRODUCTION

The documentation for building the RotorWay International TALON A600 helicopter consists of the following:

1. **Construction Manuals:** Consisting of 27 sections, the “See-Do” Manuals utilize a sequence of photos and text that walks the builder through each step of construction.

2. **Construction Prints:** providing details and measurements from which the various components are fabricated or assembled.

3. **Construction Video Series:** Provides detailed video instructions to further clarify each step of construction.

3. **Templates** are provided for parts that require fabrication from raw materials.

4. **Operations Manuals:** To properly maintain and operate your TALON A600, a Maintenance Manual, Engine Manual and Pilot Operating Handbook are provided.

5. **TALON A600 Parts List:** A TALON A600 parts list is provided which contains a listing of every part required for completion of the helicopter.

IMPORTANT: When building your helicopter, do not rely ONLY on the Construction Videos. Instead, use all available documentation. The Construction Manuals and Prints contain the most up-to-date information and should be consulted first. The Video Series was created as a supplement to the manuals.

RECOMMENDED BUILDING SEQUENCE

The first thing each builder should do upon receipt of their TALON A600 is to conduct a complete physical inventory of all parts shipped, compared against the TALON A600 parts list provided with the shipment. If we have back ordered a part it should be noted on the parts list as B.O. and it should not be in the shipment.

If you find a part missing that we have not indicated as back ordered, contact the factory immediately so we can update our records. We request that this process be done within the first fifteen days from receiving the shipment. This time frame allows for discrepancies to be corrected while they are still fresh in everyone’s mind. This process will also provide the builder with a thorough understanding of what all the parts look like as they review each section prior to construction.

Next we recommend you take time to open all the construction plans and templates to familiarize yourself with them as you read through the See-Do photo manuals. By taking the time to review all the documentation before you start on the actual construction, you will have a better understanding of the relationship of the individual components you construct, relative to their function in the completed helicopter.

You will notice that Section 1 of this manual contains Standard Construction Procedures that should be utilized during the construction of an aircraft. Builders should take time to review these procedures and ensure they are followed throughout the fabricating and assembling of the helicopter.

After you have completed your inventory of parts and familiarized yourself with all the documentation, you are ready to begin construction of your TALON A600. If you require assistance with anything regarding building, please call our customer service department. If you require any additional parts due to construction error, please call our parts department. When ordering parts, we request that you always identify the part you want by its specific PART NUMBER and not by just the description alone. This will help ensure that you get the correct part that you ordered.

TALON A600 NUMBERING SYSTEM

A numbering system is used for every individual part and group of parts in the helicopter. The helicopter has been divided into several component sections. Each component has an identification number of seven characters. An example is E09-2000 Tail Boom. The first three characters of the number (E09) indicates that this part is in the tail boom component, and the last four numbers identify a specific part within that component. For example, part number E09-3120 is the tail boom inspection door.

The exception to this rule is that all hardware in the helicopter has been given an E00- part number. Any E00- numbered hardware could be used in various places within the helicopter. An example is E00-2300, which is an AN3-4A (3/16" X 1/2") bolt.

COMPONENT NUMBER	DESCRIPTION
E00-0000	HARDWARE
E09-2000	TAIL BOOM
E10-2000	AIRFRAME
E11-2000	LANDING GEAR
E12-2000	AIRFRAME BRACKETS
E13-2000	LOWER ENGINE MOUNT
E14-2000	CYCLIC CONTROL
E15-2000	COLLECTIVE CONTROL
E16-2000	DIRECTIONAL CONTROL
E17-2000	TAIL ROTOR
E18-2000	TAIL ROTOR DRIVE
E20-2000	MAIN ROTOR BLADES
E22-2000	BALLAST WEIGHT
E23-2000	SECONDARY DRIVE
E24-2000, A24-2000	ENGINE
E25-2000	FUEL SYSTEM
E27-2000	CLUTCH AND TORQUE LINK
E28-2000	OIL SYSTEM
E29-2000	WATER PUMP
E30-2000	RADIATOR AND FAN SHROUD
E31-2000	FAN DRIVE
E32-2000	BODY, SEATS, FLOOR PAN
E34-2000	COOLING SYSTEM, HOSES
E35-2000	WIRING
E36-2000	INSTRUMENTS
E37-2000	GROUND HANDLING WHEELS
E38-2000	ACIS
E41-2000	DOORS
E42-2000	ALTERNATOR
E45-2000	SKID PANTS
E49-2000	ROTOR SYSTEM
E54-2000	CABIN COMFORT SYSTEM

TALON A600 CONSTRUCTION PRINTS LIST

NOTE: Drawings that have been revised are designated with a dash followed by the revision number. An example of this would be E49-2001-1, the -1 indicating the first revision of that drawing.

PRINT NUMBER	DESCRIPTION
E09-2000	TAIL BOOM ASSEMBLY
E09-2001	VERTICAL & HORIZONTAL TRIM FINS
E10-2000	AIRFRAME, LANDING GEAR
E13-2000	ENGINE MOUNT
E14-2000	CYCLIC CONTROL
E15-2000	COLLECTIVE CONTROL
E16-2000	DIRECTIONAL CONTROL
E17-2000	TAIL ROTOR
E17-2001	TAIL ROTOR DETAILS
E20-2000	ASYMMETRICAL MAIN ROTOR BLADES
E22-2000	BALLAST WEIGHT
E23-2000	SECONDARY DRIVE, ROTOR TACH SENDER MT, COLLECTIVE SPRING AND SCISSOR MOUNT
E25-2000	FUEL TANKS AND MUFFLER
E25-2001	FUEL SYSTEM
E27-2000	ENGINE CLUTCH, TORQUE LINK, DRIVE MOUNT AND UPPER ENGINE MOUNT
E30-2000	FAN SHROUD, RADIATOR, OIL COOLER
E31-2000	FAN DRIVE COUNTERSHAFT, WATER PUMP AND ALTERNATOR MOUNTING
E32-2000	TALON A600 BODY DETAILS
E35-2000	TALON A600 WIRING HARNESS
E35-2001	TALON A600 WIRING DIAGRAM
E37-2000	GROUND HANDLING WHEELS, OIL SYSTEM, COOLING SYSTEM
E41-2000	DOORS
E49-2000	ELASTOMERIC ROTOR HUB
E49-2001	ELASTOMERIC MAIN SHAFT
E49-2002	ELASTOMERIC SWASH PLATE

TALON A600 TEMPLATE LIST

NOTE: The size of the templates may vary slightly because of the process used to print them. To compensate for this, some templates have been marked with dimensions. Observe these dimensions when cutting and drilling the parts to ensure the proper fit.

TEMPLATE NUMBER	QTY.	PART NUMBER	PART NAME	LOCATION
E09-1	1 EACH	E09-3252	Vertical trim fin bracket, front	SHEET 1 OF 5
E09-2	1 EACH	E09-8330	Vertical trim fin bracket, rear	SHEET 1 OF 5
E13-1	1 EACH	E13-3190	Lower engine mount shim	SHEET 2 OF 5
E14-1	4 EACH	E14-6120	Cyclic control cable “T”	SHEET 2 OF 5
E16-1	1 EACH	E16-3120	Scissor beam (pilot)	SHEET 4 OF 5
E16-2	1 EACH	E16-3150	Scissor beam (passenger)	SHEET 4 OF 5
E17-1	2 EACH	E17-8250	Pitch actuator arm	SHEET 4 OF 5
E24-1	1 EACH	E24-9782	Exhaust heat shield top (passenger)	LARGE SHEET
	1 EACH	E24-9783	Exhaust heat shield top (pilot)	
	1 EACH	E24-9791	Lower front shield	
	1 EACH	E24-9822	Exhaust heat shield side (pilot)	
	1 EACH	E24-9823	Exhaust heat shield side (passenger)	
	1 EACH	E24-9830	Upper heat shield (pilot)	
	1 EACH	E24-9831	Upper heat shield (passenger)	
E25-1	1 EACH	E25-4550	Fuel drain cock mounting bracket	SHEET 5 OF 5
E25-2	1 EACH	E25-4770	Fuel pump inertia switch bracket	SHEET 5 OF 5
E30-1	1 EACH	E24-9850	Upper front shield	LARGE SHEET
	1 EACH	E30-3161	Radiator rear shield	
	1 EACH	E54-3022	Radiator collector	
	1 EACH	E54-3031	Collector collar	
E32-1	1 EACH	E32-6131	Seat back lower panel (passenger)	LARGE SHEET
	1 EACH	E32-6151	Seat back upper panel (passenger)	
	1 EACH	E32-6161	Seat back lower panel (pilot)	
	1 EACH	E32-6170	Seat back upper panel (pilot)	
	2 EACH	E32-6180	Seat back doubler	
	1 EACH	E35-8100	ECU mounting plate	
E32-2	1 EACH	E32-3122	Heel plate (passenger)	LARGE SHEET
	1 EACH	E32-3123	Heel plate (pilot)	
	1 EACH	E32-6121	Seat bottom access panel	
E35-1	1 EACH	E35-4036	Ignition module backing plate	SHEET 1 OF 5
E36-1	1 EACH	E36-4150	Compass mounting bracket	SHEET 5 OF 5
E41-1	4 EACH	E41-3110	Door hinge	SHEET 3 OF 5
	4 EACH	E41-3120	Body hinge	
E41-2	3 EACH	E41-1170	Door latch (left)	SHEET 3 OF 5
	3 EACH	E41-1180	Door latch (right)	