

## REFERENCE MATERIAL

Assembly diagrams and airframe part numbers can be found in the RV-10 construction manual.

Engine part numbers and maintenance instructions are found in the Lycoming parts catalog, maintenance manuals, and Operator's Manual.

Propeller servicing information can be found in the Hartzell owner's manual.

Electrical details are provided on the most recent version of the following drawings:

*DC Distribution*  
*Avionics Interconnect*

All repairs and modifications should be in accordance with standard aircraft practices, Van's Aircraft support department, and FAA AC43.13 1A and 2A.

## 100-hour and Annual Condition Inspection Checklist

Date _____	Hobbs Time _____
Tach Time _____	Total Airframe Hours _____
Total Engine Hours _____	Total Propeller Hours _____

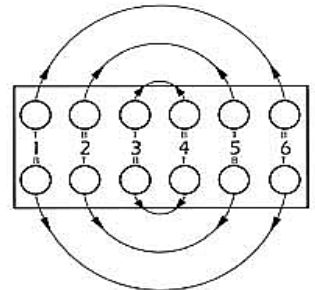
## Engine

Clean the engine before beginning the inspection  
 Remove and inspect upper and lower cowling  
 Inspect hinge pins, eyelets, lower flanges, and all 1/4-turn fasteners  
 Change oil (9 qts) and filter (48109 preferred or 48108)  
 Send oil sample for analysis  
 Open and inspect oil filter for contamination  
 Remove, clean, and install oil sump screen (AN900-16 same as MS35769-21)  
 Remove filtered air box  
 Inspect the filter for shrinking and hardening  
 Clean and recharge K&N intake air filter and reinstall F.A.B.  
 Inspect alternate air door position (closed)  
 Inspect sealing of alternate air door  
 Inspect throttle body attachment nuts/bolts  
 Inspect crankcase nose seal for oil leaks  
 Inspect oil cooler fins and external condition for leaks  
 Inspect engine and accessory case for oil leaks and repair as appropriate  
 Inspect starter pinion, ring gear for wear and condition

- Inspect starter mountings and lead connections
- Inspect alternator mount and lead connections
- Inspect alternator and alternator belt condition and tension
- Inspect alternator terminals and wires for condition
- Inspect baffles and seals for condition
- Inspect heat muffers, heat boxes and all SCAT hoses
- Pressurize exhaust pipes to check for cracks in heat muff area
- Inspect engine mount and bolts/nuts for cotter pins
- Inspect engine mount to sump clearance
- Inspect shock isolators, mounting bolts and washers for condition
- Inspect firewall for distortion and cracks
- Inspect firewall to engine ground wire
- Inspect all firewall penetrations
- Inspect all wire bundles for security and chafing
- Inspect accessories on rear case
- Inspect engine driven fuel pump with fuel system pressurized
- Inspect crankcase/sump for cracks, leaks and/or missing fasteners
- Inspect exhaust system and mounting brackets for cracks
- Inspect exhaust gaskets for blow-by leaks and re-torque mounting nuts
- Check inlet tube connector tubes for proper clamping at hose clamps
- Perform Differential Compression Test and record

Cylinders 1-6/80: 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6 \_\_\_\_\_

- Remove upper and lower plugs (Iridium UREM38S)
- Inspect spark plug condition, clean and re-gap (Gap: .016"-.021")
- Check spark plug resistance: 500-5000 ohms
- Replace spark plug gaskets (Champion M674K)
- Rotate plug position, apply anti-seize and reinstall (torque 25 ft-lbs)
- Inspect ignition harness, springs and insulators for condition
- Inspect magneto mounting clamps/nuts for security
- Check magneto timing with buzz box
- Inspect throttle control cable attachment
- Inspect mixture control cable attachment
- Inspect prop governor control cable attachment
- Inspect all engine controls for proper movement



#### NOTES:

#### Propeller / Spinner

- Grease prop hub (Aeroshell 6) per Hartzell Manual
- Inspect propeller bolts and safety wiring
- Inspect spinner and backplate for cracks
- Inspect blades for nicks, cracks and surface erosion, repair as necessary

- Inspect hub for cracks and corrosion
- Check propeller track

### Cabin

- Remove seats, seat backs and under-seat inspection panels  
*NOTE: The front seats can be removed without removing the flap tube covers*
- Inspect gear attach bolts for proper torque
- Remove all tunnel covers and baggage bulkhead
- Inspect fuel selector valve operation, lubricate as necessary
- Inspect electric fuel pump
- Pressurize and inspect fuel system for leaks
- Remove filter screen from electric fuel pump, clean, and re-install
- Inspect fuel lines in cabin for leaks and chafing
- Inspect rudder pedals, cables and attachments
- Inspect brake masters and associated tubing for leaks
- Inspect control sticks, linkages and push/pull tubes
- Inspect static air lines inside empennage and fuselage for chafing
- Inspect transponder, comm, and GPS antenna mounts and wiring
- Inspect condition of seat belts and shoulder harnesses
- Inspect fire extinguisher condition
- Inspect empennage bulkheads and stringers for cracks and loose rivets
- Inspect elevator and aileron trim servo operation and display
- Inspect security and condition of batteries
- Remove flap torque tube inspection covers
- Inspect flap operation for binding
- Inspect flap position sensor and linkage
- Lubricate flap motor arm and all flap connecting rod ends
- Inspect wire bundles in empennage for security and chafing
- Inspect wire bundles in fuselage sidewalls for security and chafing
- Inspect strobe unit in empennage
- Inspect magnetometer for security
- Verify ELT is armed
- Replace ELT main batteries every 5 years
- Perform ELT G-switch check
- Test ELT output in accordance with the manufacturer's instructions
- Inspect door latching mechanism and door latch pins and receiver holes
- Inspect canopy, windshield, and rear windows for cracks

### Panel

- Inspect instruments, wiring, and attachments
- Inspect starter contactor and associated wiring
- Inspect instrument lights and dimmers for operation
- Inspect antenna connections and mountings

- Inspect wire bundles underneath panel for security and chafing
- Inspect manifold pressure, pitot, and static tubing for security and chafing
- Inspect instruments, radios, switches, and breakers for operation

### Airframe

- Remove wing root fairings
- Inspect wing attach bolts and nuts for proper torque
- Inspect fuel sender wiring for security and chafing
- Inspect fuel vent check valves for correct operation
- Inspect flap system and torque tube and attachments for play
- Inspect flap actuator rod end and jam nut for security and lubricate
- Lubricate elevator control tube rod ends
- Lubricate aileron control tube rod ends
- Check that static ports are clear
- Inspect skin for loose rivets, corrosion, and other damage
- Remove empennage fairing and fuselage inspection plates
- Inspect rudder and vertical stabilizer for corrosion and condition
- Inspect rudder pivot bolts for proper torque and lubricate
- Inspect rudder control stops for condition
- Inspect rudder cable attachments for security and cotter pin
- Inspect horizontal stabilizer and elevators for corrosion and condition
- Inspect elevator pivot bolts for proper torque and lubricate
- Inspect elevator counterbalance weights for security
- Inspect elevator control stops for condition
- Inspect elevator trim tab, arm, and actuator rod for cracks
- Inspect and lube elevator bellcrank, horns and attachments
- Inspect vertical stabilizer spar attach points for proper torque
- Inspect horizontal stabilizer spar attach points for proper torque
- Remove wing tips
- Inspect wing structure for corrosion and condition
- Inspect strobe wiring for security and chafing
- Inspect fuel tanks, lines and drains for leaks
- Inspect fuel vents for blockage
- Inspect fuel cap and O-ring condition
- Inspect pitot tube and plumbing for security and blockage
- Inspect landing light fixtures for security
- Inspect landing lights for proper operation
- Inspect strobe and position lights for proper operation
- Inspect aileron attach bolts for proper torque
- Inspect aileron control stops and travel
- Inspect aileron bellcranks
- Inspect aileron push tubes for condition and security of jam nuts
- Inspect ailerons for joint alignment in neutral position, adjust if necessary

- Lubricate all aileron rod ends
- Inspect OAT probe
- Install wing tips

### Landing Gear

- Remove wheel pants and gear leg covers
- Raise front wheel off ground and inspect side-to-side breakout force of nose wheel. Retorque if required.
- Inspect front nose wheel swivel for security and lubricate front grease fitting
- Remove front wheel and re-pack wheel bearings
- Re-install front wheel and torque properly
- Inspect nose wheel bearing spacers and bearings for wobble/slop/damage
- Remove main tires and brake assemblies
- Check brakes and fill reservoir with MIL-H-83282 (preferred) or MIL-H-5606.
- Check and/or replace brake linings (p/n Cleveland 66-112, rivets p/n: 105-2)
- Inspect and/or replace tires (15/6.00-6 Mains, 5.00-5 Front), rotate if necessary
- NOTE: Preferred main tube PN DTR 20-500 has a 90° stem. ACS PN 06-00356
- Re-pack wheel bearings with grease
- Fill tires with recommended air pressure (40 psi Mains / 55 psi Front)
- Check brake cylinders for condition and leaks
- Check brake lines for security and chafing
- Thoroughly clean axle/brake area of dust
- Re-mount wheels, tires, and brake assemblies (torque brakes: 75-80 In-lbs DRY)
- Inspect wheel pants and attach points for cracks and security
- Inspect gear leg covers for cracks and condition, re-install and secure

### Close-Up

- Re-install interior panels, seats, flap covers, all access panels, fairings, seats, and seat cushions
- Replace any single-use fasteners or damaged fasteners

NOTES:

### **Operational Inspection**

- Visual inspection of engine/propeller
- All inspection panels and fairings secure
- Brake system check or condition new brake pads
- Check boost pump for proper pressure
- Oil pressure/oil temperature within limits
- Magneto check
- Ignition switch/both magnetos grounded check
- Check fuel gauges for operation
- Check for proper idle RPM and RPM rise upon leaning mixture
- Check static run up 2700 RPM
- Check fuel selector for engine shutoff
- Check Flight Controls Free and Correct
- Inspect external Antennas
- Thoroughly clean the aircraft
- Verify annually that the navigation and communication systems can be operated for a minimum of 45 minutes using battery power only. At the end of the test, turn on the fuel pump and landing light, and lower the flaps.
- Fly the aircraft.

### **Documentation**

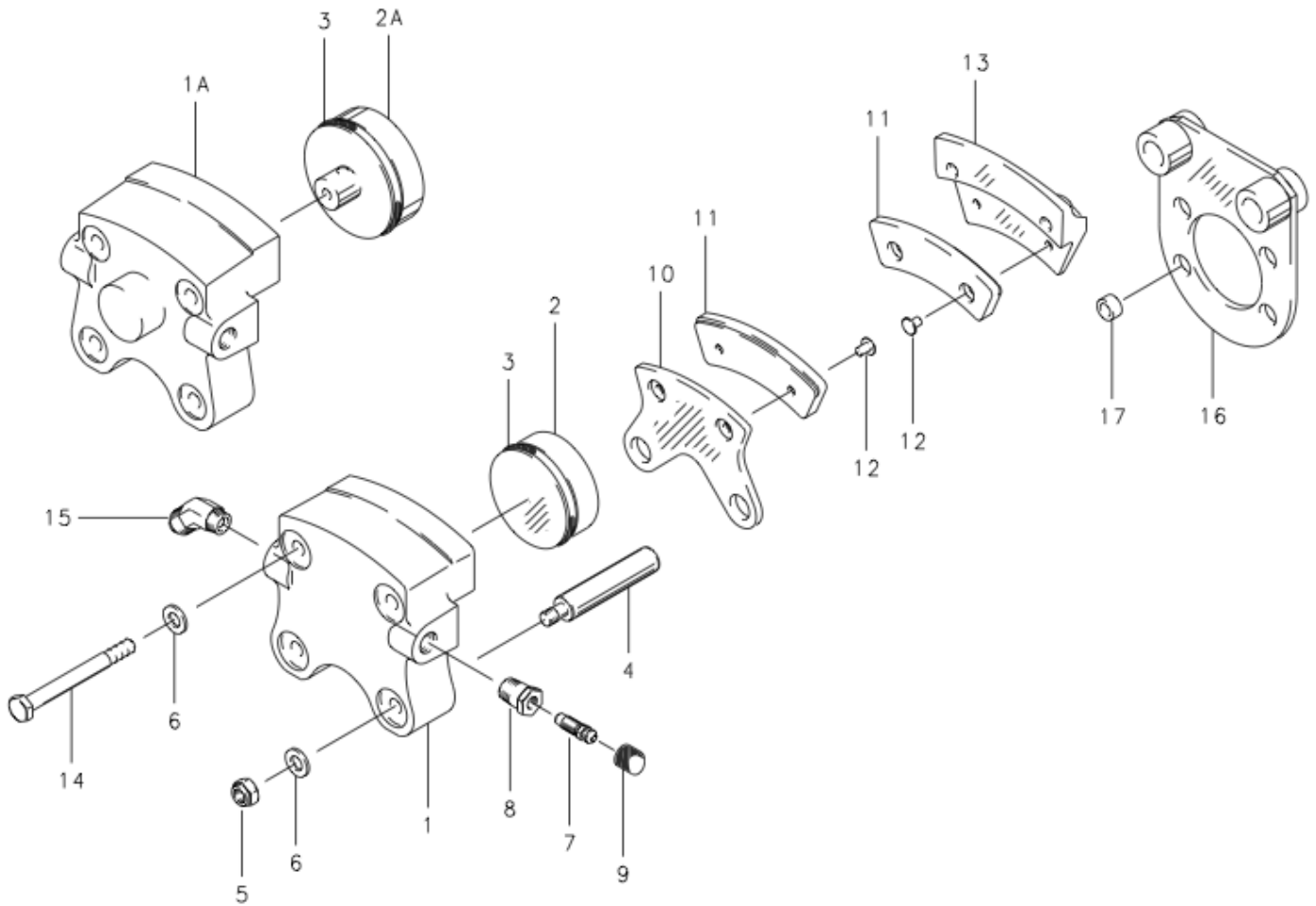
- Verify Registration and Airworthiness Certificate are displayed in the aircraft.
- Verify Operating Limitations are attached to the Airworthiness Certificate
- Verify checklist and Aircraft Operating Manual are in aircraft
- Verify the Weight and Balance report is current and in the aircraft
- Verify external data plate secure and installed
- Review AD's and SB's for applicability and compliance
- Verify IFR pitot/static test date and mark on calendar for new test reminder
- Document condition inspection and record maintenance performed

NOTES:

Excerpted from Cleveland AWBCP0001-17/USA Pages 3-12, 3-13, and 4-44.

30-53, 30-53A, 30-59, 30-59A, 30-59D, 30-59E

**Organic Lining**



# Airplane Operating Manual

## Section 8

### SERVICE & HANDLING

**30-53, 30-53A, 30-59, 30-59A, 30-59D, 30-59E**

### Organic Lining

FIG.	PART NUMBER	DESCRIPTION	QTY. PER ASSY.					
			A	B	C	D	E	F
	091-09600	Cylinder Assy.			1	1		1
	091-09800	Cylinder Assy.	1	1				
	091-11100	Cylinder Assy.					1	
1	061-07300	Cylinder	1	1				
	061-07500	Cylinder			1	1		1
1A	061-08900	Cylinder					1	
	092-01700	Piston Assy.					1	
	092-03200	Piston Assy.	1	1				
	092-04000	Piston Assy.			1	1		
2	062-03000	Piston	1	1				
	062-03900	Piston			1	1		1
2A	062-01600	Piston					1	
3	101-02700	O-Ring (MS28775-222)	1	1				
	101-05200	O-Ring (MS28775-224)			1	1	1	1
4	069-00400	Anchor Bolt	2	2	2	2	2	2
5	094-10300	Nut (MS21044-N4)	2	2	2	2	2	2
6	095-10200	Washer (AN960-416L)	4	4	4	4	4	4
7	079-00300	Screw-Bleeder	1	1	1	1	1	1
8	081-00100	Seat-Bleeder	1	1	1	1	1	1
9	183-00100	Cap-Bleeder	1	1	1	1	1	1
	073-04600	Pressure Plate Assy.	1	1	1	1	1	1
10	063-03400	Pressure Plate	1	1	1	1	1	1
11	066-11200	Lining	1	1	1	1	1	1
12	105-00200	Rivet	2	2	2	2	2	2
	074-03600	Back Plate Assy.	1	1	1	1	1	1
13	064-02900	Back Plate	1	1	1	1	1	1
11	066-11200	Lining	1	1	1	1	1	1
12	105-00200	Rivet	2	2	2	2	2	2
	103-11600	Bolt	2				2	
14	103-11700	Bolt (ABP4-20AM)			2	2		2
	103-12300	Bolt (AN4H17A)		2				
15	104-00500	Fitting (MS20823-4D)					1	
	075-07800	Torque Plate Assy.			1		1	
16	075-03700	Torque Plate Assy.				1		1
	075-14200	Torque Plate Assy.		1				
	(2)	Torque Plate Assy.	1					
17	145-01000	Bushing				2		

**Assy. Number**

- A) 30-53 (1)
- B) 30-53A LH & RH
- C) 30-59
- D) 30-59A
- E) 30-59D
- F) 30-59E**

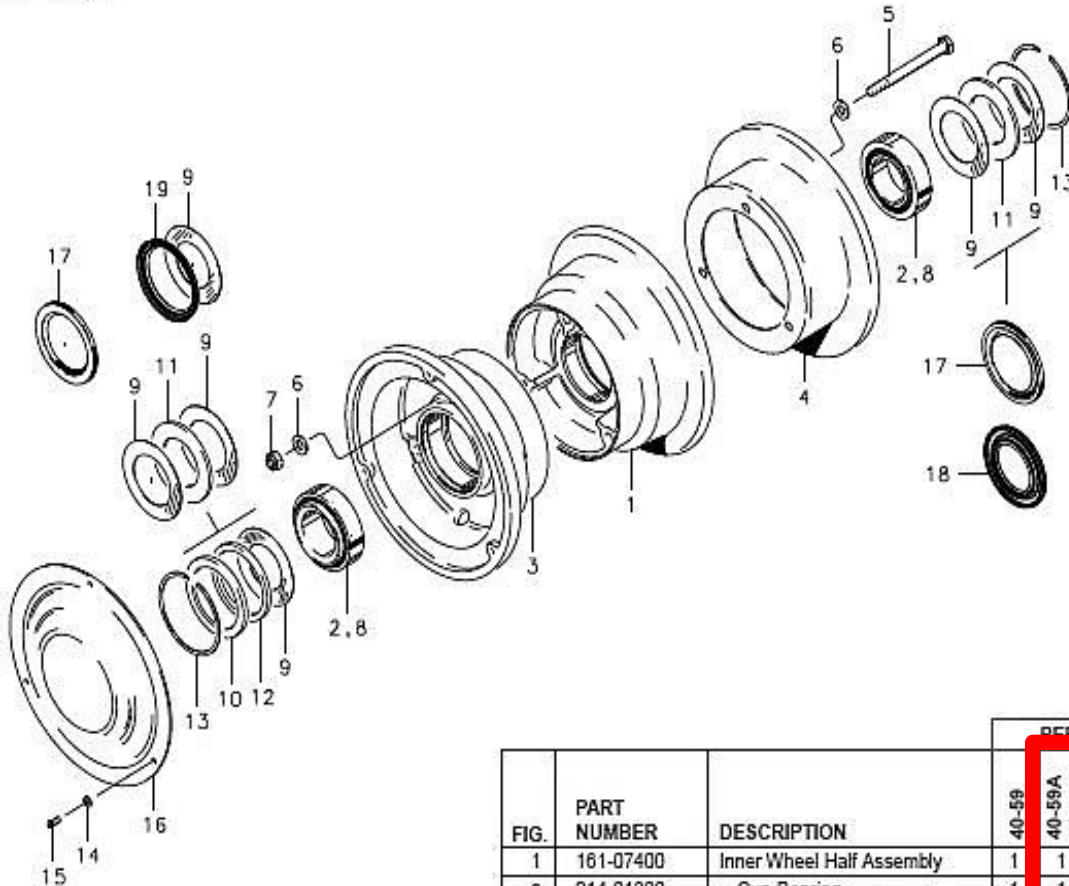
**NOTES:**

- (1) Inactive assembly – spares support only for parts listed.
- (2) Inactive part – no longer available for spares support.



40-59 **40-59A** 40-59D, 40-59E

Tube-Type



NOTES:

- (1) Alternate chrome plated disc.
- (2) Also available with chrome plated disc. To order, specify assembly number followed by "CHROME."
- (3) Performance gold disc no longer available.

		PER ASSY.				
FIG.	PART NUMBER	DESCRIPTION	40-59	40-59A (2)	40-59D	40-59E
1	161-07400	Inner Wheel Half Assembly	1	1	1	1
2	214-01300	Cup-Bearing	1	1	1	1
3	162-06900	Outer Wheel Half Assembly	1	1	1	1
4	164-06900	Brake Disc	1		1	1
	164-07500	Brake Disc		1		
	164-17500 (1)	Brake Disc - Chrome		1		
	(3)	Brake Disc - Performance Gold		1		
5	103-21800	Bolt (AN5-34A)	3	3	3	3
6	095-10500	Washer (AN980-516)	6	6	6	6
7	094-10400	Nut (MS21044-N5)	3	3	3	3
8	214-01400	Cone-Bearing	2	2	2	2
9	153-00300	Ring-Grease Seal	1	1		1
	153-00900	Ring-Grease Seal				2
10	153-01500	Ring-Grease Seal				1
11	154-00800	Felt-Grease Seal				1
12	154-01300	Felt-Grease Seal				1
13	155-00100	Snap Ring	2	2	2	2
14	095-15100	Washer-Lock (MS35333-38)			3	
15	102-00800	Screw			3	
16	157-00900	Dust Shield			1	
17	154-03000	Molded Grease Seal			2	
18	154-12000	Molded Grease Seal	1	1		
19	154-12400	Molded Grease Seal	1	1		

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**SERVICE & HANDLING**

Excerpted from Lycoming Overhaul Manual:

CRUSH TYPE ASBESTOS GASKETS		
Threads/Inch On Part To Be Tightened	ANGLE OF TURN	
	Aluminum Asbestos	Copper Asbestos
8	135°	67°
10	135°	67°
12	180°	90°
14	180°	90°
16	270°	135°
18	270°	135°
20	270°	135°
24	360°	180°
28	360°	180°
<p><b>NOTE</b></p> <p>Install all crush type gaskets, except the self centering type, with the unbroken surface against the flange of the plug or part being tightened against a seal. Turn the part until the sealing surfaces are in contact and then tighten to the angle of turn listed in for the appropriate thread size.</p> <p><b>NOTE</b></p> <p>Lubricate all threads unless otherwise specified.</p>		

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**COMMONLY REPLACED ITEMS**

ITEM	SUPPLIER	PART NUMBER
Main battery	Earth-X	ETX900
Auxiliary battery	Earth-X	ETX680
ELT batteries	Emerging Lifesaving Technologies	217-406-001
Nosewheel and Bearings	Matco Manufacturing	NW501
Tires and Tubes	Various	15/6.00-6 Mains, 5.00-5 Front
Brake pads	Cleveland or Rapco	66-112
Brake rivets	Cleveland or Rapco	105-2
Oil Screen Gasket	Various	AN900-16 or MS35769-21 (same)
Spark Plugs	Various	REM38S (Iridium)
Spark Plug Gaskets	Champion	M674
Oil Filter	Various	48109 (preferred) or 48108
Engine Oil	Various	Aeroshell 15W-50
Hydraulic (brake) Fluid	Various	MIL-H-83282 or MIL-H-5606
Wheel Bearing Grease	Various	Mobil 28
Nose Pivot and Propeller Grease	Various	Aeroshell 6

## Ground Handling

### Moving

Ground handling should usually be accomplished with a tow bar or tug attached to the front wheel. The front wheel can pivot suddenly when being pushed backwards, causing the empennage and wingtips to change direction rapidly and potentially cause damage.

The aircraft can be turned in very tight quarters if one person maneuvers each wing tip.

### Securing

Install tiedowns in each wing. Use strong ropes or chains to secure the wings.

The tail tie down is permanently installed. Use a rope or chain to secure the tail.

Use chocks under each wheel to prevent rocking.

Insert the tow bar lower tabs between the rudder pedals and the lower pedal tube. Secure the control stick with the bungee attached to the tow bar. Loop the lap belt over the T handle to secure the tow bar.

Lock the baggage door.

Lock the cabin doors by engaging the external locks.

Install the canopy cover.

END OF SECTION