START UP, RUN UP AND TAKE OFF

1. UNTIE BLADES AND PREFLIGHT AIRCRAFT.
2. OIL CHAIN AND CHECK MASTER LINK.
3. CHECK BALLAST WEIGHT LOCATION.
4. POSITION BLADE PERPENDICULAR TO THE AIRCRAFT.
5. FASTEN SEAT AND SHOULDER BELTS.
6. CHECK CONTROLS.
7. CLUTCH DISENGAGED.
8. TURN ON KEY AND INSTRUMENT SWITCH.
9. ARM FADEC SYSTEM.
10. CHECK BACKUP SYSTEM IF FUEL PRESSURE IS BELOW 5 PSI AND RE-ARM FADEC SYSTEM.
11. TURN ON FUEL VALVE.
12. TURN ON ONE FUEL PUMP SWITCH AND BOTH IGNITION SWITCHES AND CHECK FUEL PRESSURE.
13. CONTROLS IN START POSITION.
14. SET THROTTLE TO 0%
15. CLEAR AREA AND ENGAGE STARTER.
16. AFTER STARTING, CHECK AND MONITOR OIL PRESSURE AND WATER TEMPERATURE.
17. ENGAGE CLUTCH.
18. CHECK BOTH IGNITIONS, BOTH FUEL PUMPS, AND BOTH FADEC SWITCHES. ALL SWITCHES ON.
19. RESET FADEC MAX RPM AND DIAGNOSTIC. LEAVE FADEC SET TO DIAGNOSTIC.
20. TURN ON ALTERNATOR AND AVIONICS.
21. IDLE UNTIL WATER AND OIL TEMP IS IN THE GREEN.
22. CHECK FUEL PRESSURE, VOLT METER AND OVER-RUNNING CLUTCH.
23. CHECK CYCLIC POSITION AND INSTRUMENTS IN THE LIGHT POSITION.

LANDING, COOL DOWN AND SHUT OFF

1. IDLE AT ZERO THROTTLE UNTIL WATER AND OIL TEMP REDUCE FROM OPERATING TEMP.
2. TURN OFF BOTH FUEL SWITCHES.
3. WHEN ENGINE STOPS, TURN OFF FUEL VALVE.
4. TURN OFF ALL SWITCHES.
5. DISENGAGE CLUTCH.
6. REMAIN INSIDE HELICOPTER UNTIL BLADES STOP.
7. CHECK BEARING TEMPERATURES.
8. POST FLIGHT CHECK.

ROTORWAY INTERNATIONAL

EXEC 162F

FLIGHT MANUAL

This helicopter must be operated in compliance with the operating limitations defined in this manual.

Registration No._____

Serial No._____

THIS MANUAL SHOULD BE KEPT IN THE ROTORCRAFT AT ALL TIMES.

Section 9. Full Lotus Floats

A. The aircraft airspeed red line (Vne) at standard conditions is reduced to 80 MPH (69 knots) when flying the aircraft configured with floats.

B. The center of gravity limits for fore/aft change to 96.5 and 98.25 inches, and the lateral limits to -.4 and +.4 inches.

NOTE: The weight of the float system is not included in the calculation when finding the location of the balance point on the chart.

C. The horizontal trim fin must have 4 degrees positive pitch (leading edge turned upward) added to the existing setting to compensate for the additional drag on the aircraft.

D. No sliding of the aircraft on the floats is allowed during take off or landing on any surfaces except water. Damage may occur to the bottom side of the float if sliding occurs.

E. The complete weight of the float system must be subtracted from the useful load of the aircraft.

Pilot Observations/Precautions:
Any helicopter that is equipped with inflated floats requires a competent pilot with a higher knowledge and skill level. The following observations were noted and should be realized by any pilot prior to flying with an inflated float system.

A. While hovering the aircraft, most if not all of the ground effect cushion is lost, which results in almost all hover conditions being out of ground effect.

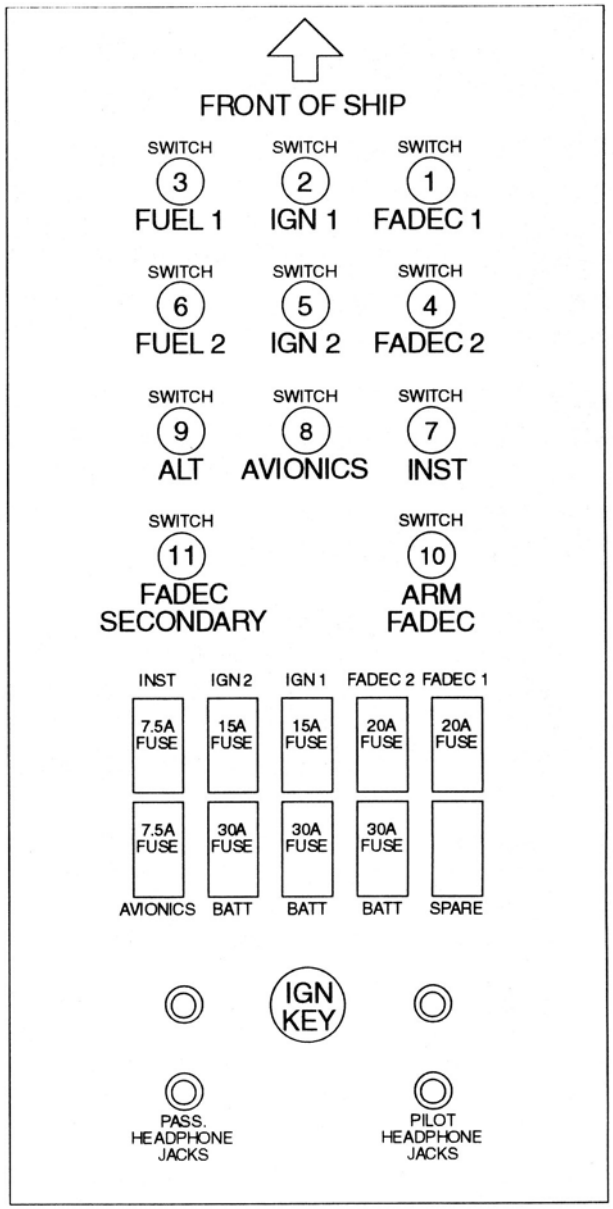
B. During autorotation, two situations will be different than during normal flight:

1. The floats attempt to push the aircraft into an inverted position, thus a higher skill of cyclic control is required.

2. The floats cause the air going through the rotor system to be turbulent, thus the pilot must be more cautious of rotor RPM and flare at the bottom of the autorotation.

CONTENTS

SWITCH PANEL DIAGRAM
(As viewed from below)



Section 2. Limitations

Max. airspeed at sea level, standard day ..... 115 MPH

Reduce IAS ..... 2 MPH for each 1000 ft. density altitude

Max. airspeed in turbulent air ..... 75 MPH

Max. sideways, rearwards airspeed ..... 20 MPH

Fuel requirements ..... 92 Octane (min.) auto fuel or 100 low lead AV gas (100LL)

Day VFR flight only

Solo flight from left seat only (right seat belt must be buckled and passenger collective must be removed).

Flight during icing conditions is prohibited.

Flight with one or both doors removed is permitted. All items in the cabin must be secured.

Max. gross weight ..... 1500 lbs.

Min. pilot weight (solo operation) ..... 150 lbs.

Max. pilot weight ..... 210 lbs.

Max. passenger weight ..... 210 lbs.

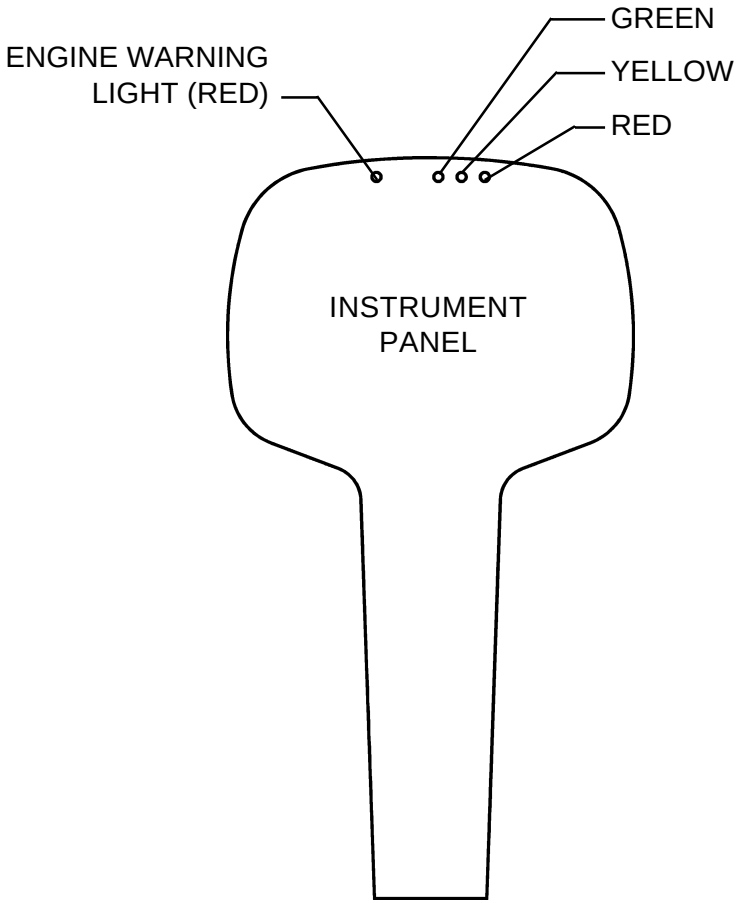
Instrument Panel Lights
Four lights are mounted at the top of the instrument panel. These indicate the following:

Engine warning light (Red) Engine has stopped or dropped below 1800 RPM

Green FADEC System is activated and operating on primary ECU

Yellow An error has occurred (check the diagnostic code that appears in the readout)

Red The primary ECU is disabled, engine is running on secondary system



Section 3. Normal Procedures

Pre-flight checks:

A. Remove front inspection panel and check:
   1. Security and condition of pedals
   2. Security of front landing gear bracket
   3. Routing and security of all electric wiring
   4. Routing and security of the oil pressure and pitot lines

B. Remove covers on the right and left seat backs and check:
   1. Torque link for cracks and security
   2. Lower bearing on the main shaft
   3. Condition of main drive belts
   4. Condition of the ignition systems
   5. All airframe tubes for cracks

C. Engine area right side check:
   1. For oil, fuel, and water leaks, and proper levels
   2. Security and routing of hoses, pipes, and wiring
   3. Heat shielding for cracks and clearance
   4. Security of the rear landing gear brackets

D. Tail rotor drive check:
   1. Condition and tension of drive belts (1 1/4 inch ± 1/8 inch at 10 lbs. pull)
   2. Condition of the pulleys and bearings
   3. Idler pulley swing arm for travel (not bottoming out in bulkhead)

IMPORTANT: New belts will tend to stretch and become loose. Belt tension must be monitored and adjusted frequently until stretching has stopped.

Values

When the display is set to read **VALUES**, the upper readout (A) will continuously indicate engine RPM. The lower readout (B) will show a value for the selected condition. To choose a particular function, press the up or down **SELECT** buttons in the lower left corner of the display unit. The corresponding light will come on to show which function is selected. The functions are as follows:

MAN PRES	Manifold pressure, kPa*****
THR POS	Throttle position, %
WTR TEMP	Water temperature, degrees C*****
AIR TEMP	Air temperature, degrees C*****
BAT VOLT	Battery voltage
EMAN PRES	External manifold pressure (barometric), kPa*****
BARO PRES	Barometric pressure, kPa*****
PULSE WIDTH	Width of fuel pulse, in milliseconds
DUTY CYC	Duty cycle of fuel injectors, %
SPK ADV	Current spark advance, degrees BTDC This reading will vary with engine RPM and load.
FUEL USED	Fuel used since start up, gallons This refers ONLY to fuel used during the current run cycle of the engine. It will automatically reset every time the ECU is turned off, and can be manually reset by pressing the **RESET** button. **THIS IS FOR REFERENCE ONLY AND MUST NOT BE USED AS AN INDICATION OF FUEL REMAINING IN THE TANKS.**
MAX RPM	Maximum RPM achieved during ECU run cycle This can be manually reset by pressing the **SET** button.
DIAG	Indicates unit is in diagnostic mode

* Refer to conversion tables on next page.

L. Main drive chain check:
   1. Security of the master link
   2. Tension of the chain
   3. Floor of the oil bath for broken rollers and link plates

M. Rotor system check:
   1. Security and wear of the scissors
   2. For cracks around the ears of the swash plate and the hood bracket
   3. For foreign matter in the bearing seal cavity area
   4. To see if washer and snap rings on the drive pin are loose
   5. End play between shaft and riser blocks
   6. For loose bolts
   7. Freedom and condition of both control rods

N. Main rotor blades check:
   1. All around bolts on retention straps for cracks
   2. Bolts for signs of bending
   3. Doublers for delamination
   4. Blades for wrinkles or cracks near the root end
   5. For separation of the skin to spar top and bottom
   6. Security of the blade tip end plugs
   7. Blade droop for any change

Before starting:

Altimeter ..... adjust
Seat and shoulder harness ..... on and adjusted
Doors ..... secure
Cyclic, collective, and pedals ..... full travel and freedom of travel

Diagnostic Codes

These codes can only be read when the **DIAG** function is selected. When there is an error in a specific part of the system, the yellow light on the instrument panel comes on and a code number appears in the digital display readout. If multiple errors occur, multiple codes will be displayed in the order in which they occurred.

The numbers that may appear in the upper readout (**A CODES**), are as follows:

1. **CRANK SENSOR** Indicates an error in the ignition sensor (ignition error).
2. **ENGINE RPM EXCEEDED** Indicates that the engine has been operated at speeds higher than the recommended RPM. This error may also result from an intermittent ignition error.
4. **INJ. DUTY EXCEEDED** Indicates that the fuel injectors have operated in excess of their normal duty cycle.
5. **IGNITION ERROR** If there is a malfunction in one of the electronic ignition units, this code will appear.
6. **LOW BATTERY** This code appears when battery voltage drops below 10 volts.
7. **CPU ERROR** This indicates that the system's computer has malfunctioned. If this happens, the FADEC system will automatically switch to the secondary control system. The pilot should make a safe landing as soon as possible until the problem can be resolved.

The numbers that may appear in the lower readout (**B CODES**), are as follows:

1. **SELF CHECK PERFORMED** (ECU error)
2. **MANIFOLD PRESSURE** Indicates an error in the manifold pressure sensor. In the event of a throttle position sensor failure, this sensor is used by the ECU to compute the engine load factor necessary for proper fuel/air ratio.
3. **THROTTLE POSITION** Indicates an error in the primary throttle position sensor. This is the primary sensor used by the ECU.
4. **AIR TEMP** Indicates an error in the air temperature sensor.

15. Clear area and engage starter.
16. After starting, check and monitor oil pressure and water temperature.
17. Engage clutch.
18. Check both ignitions, both fuel pumps, and both FADEC switches. All switches on.
19. Reset MAX RPM and diagnostic errors. Leave digital display monitor set to diagnostic.
20. Turn on alternator and avionics.
21. Idle until water and oil temp is in the green.
22. Check fuel pressure, volt meter and over-running clutch.
23. Check cyclic position and instruments in the light position.

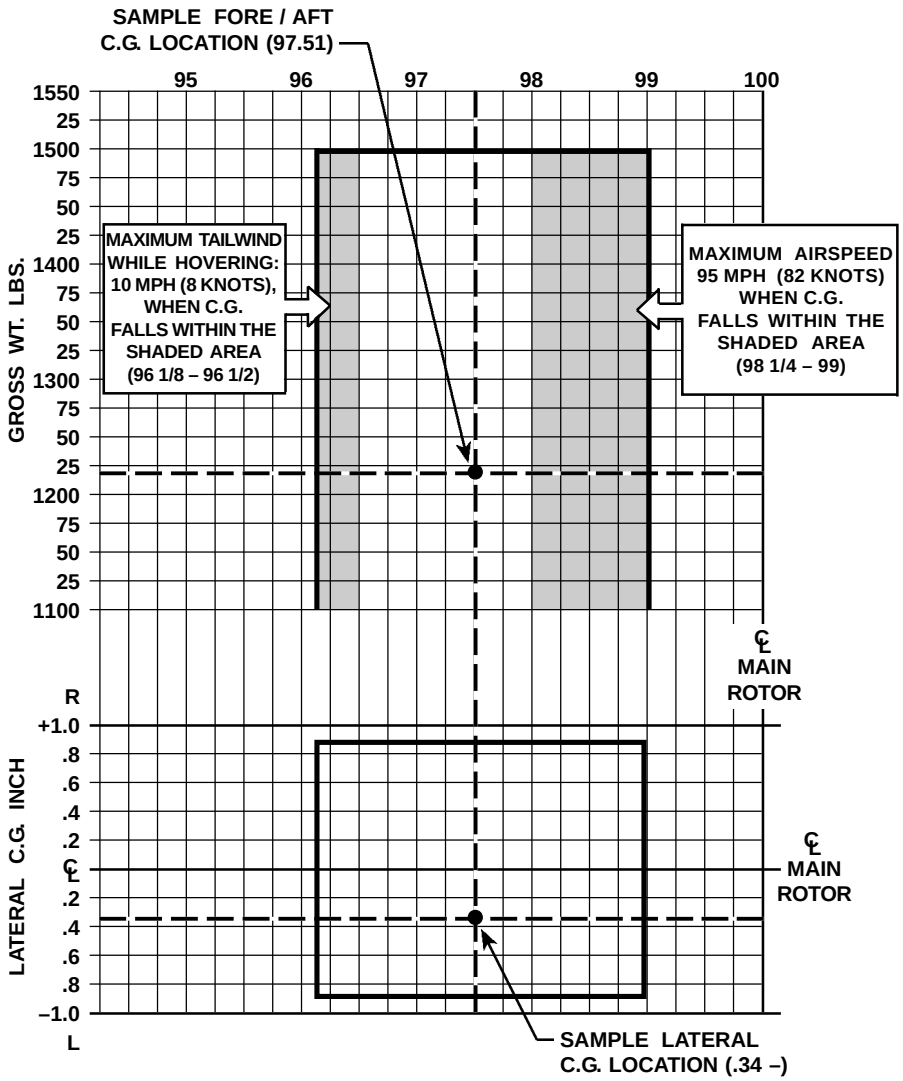
After Started:

Throttle ..... closed
Oil pressure ..... 40–80 PSI within 5 seconds
Temperatures ..... SLOWLY rising
Pedals ..... check smoothness and freedom
Cyclic ..... keep centered below 400 RPM
Collective lever ..... check collective

CAUTION: Because of the inline thermostat used in the cooling system, engine RPM **MUST NOT** exceed 2400 RPM until the coolant temperature reaches a minimum of 160° F and the thermostat opens. IF THE ENGINE IS OPERATED ABOVE AN IDLE WHILE THE THERMOSTAT REMAINS CLOSED, EXTREMELY HIGH COOLANT PRESSURES WILL DEVELOP, WHICH MAY RESULT IN DAMAGE TO THE COOLING SYSTEM AND OTHER COMPONENTS.

NOTE: When operating the helicopter in sub-freezing temperatures, it may be necessary to restrict the air flow through the radiator. This will enable the water temperature to stabilize above 160° F during flight. See Engine Manual for further details.

ROTORWAY EXEC 162F
CENTER OF GRAVITY LIMITS



After Landing:

Throttle ..... close to idle when light on the skids
Collective lever ..... lower to 3° pitch

Shutdown:

1. Idle at zero throttle until water and oil temp reduce from operating temp.
2. Turn off both fuel switches.
3. When engine stops, turn off fuel valve.
4. Turn off all switches.
5. Disengage clutch.
6. Remain inside helicopter until blades stop.
7. Check bearing temperatures.
8. Post flight check.

Post flight check:

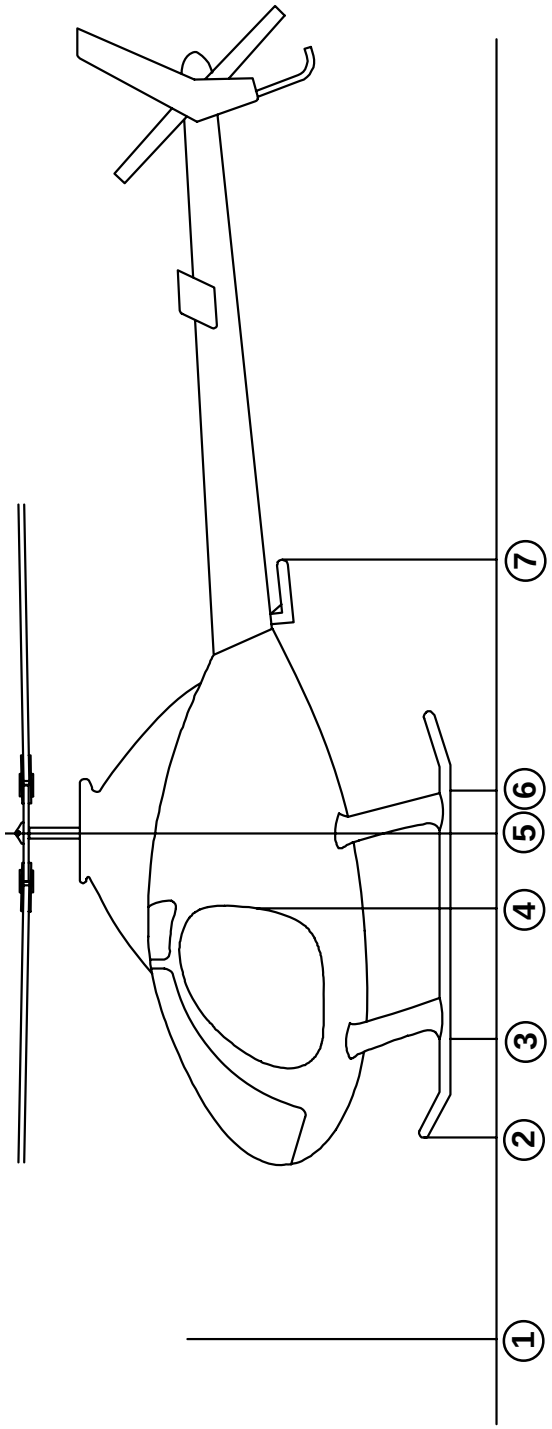
Master link on chain ..... in position
Swash plate bearing ..... check temperature
Main thrust bearing ..... check temperature
Top secondary bearing ..... check temperature
Tail boom ..... check for wrinkles and temperature of bulkheads
Tail rotor ..... inspect
Vertical stabilizer ..... secure
Main rotor blades ..... tie to tail boom

FORE/AFT ARM INCH

1. DATUM 0
2. FORWARD WEIGHT POSITION 37.25
3. FORWARD WEIGHING POINT 55.75
4. SEATS 71.0
5. MAIN SHAFT AND GAS TANKS 100.0
6. REAR WEIGHING POINT 109.25
7. REAR WEIGHT POSITION 163.0

LATERAL ARM INCH

PASSENGER SKID ..... +31.5R
PASSENGER SEAT ..... +10.5R
PASSENGER GAS TANK ..... +18.5R
PILOT SKID ..... –31.25L
PILOT SEAT ..... –10.25L
PILOT GAS TANK ..... –18.25L



DATUM SCALE IS GRADUATED IN INCHES. THESE CALCULATIONS ARE DETERMINED WITH THE MAIN ROTOR SHAFT 90 DEGREES TO THE GROUND WHEN THE AIRCRAFT IS WEIGHED.

D. Engine failure above 500 feet AGL:
   1. Lower collective to maintain rotor RPM and enter normal autorotation (see page 17).
   2. Establish a steady autorotation descent at approximately 65 MPH.
   3. Adjust collective to keep rotor RPM 100%.
   4. After a steady autorotation is established, select a landing spot and maneuver as required so the landing will be upwind.
   5. A restart may be attempted at pilot's discretion, if sufficient time is available.
   6. If unable to restart, turn off unnecessary switches and shut off the fuel valve if sufficient time is available.
   7. At about 35 feet AGL, begin a cyclic flare to reduce forward and descent speed. Level at 3 to 5 feet of clearance between the tail rotor and the ground. Allow the aircraft to settle to 30 inches above the ground. At 30 inches, increase collective pitch as necessary to cushion the ground contact.
   8. Maintain heading with the pedals.

E. Glide distance configuration:
   1. Airspeed approximately 65 MPH.
   2. Rotor RPM approximately 100%
   3. Increase rotor RPM to 104% when below 500 feet AGL.

A. EMPTY AIRCRAFT (no cabin weight, ballast weight in solo front skid location):
Fore and Aft ..... 3° aft
Lateral ..... 2° pass. side

B. PILOT ONLY 150 lbs. (ballast weight in solo front skid location):
Fore and Aft ..... 1° fore
Lateral ..... 0°

C. PILOT 210 lbs. and PASSENGER 210 lbs. (ballast weight in rear dual location):
Fore and Aft ..... 5° fore
Lateral ..... 1/2° passenger side

The results of these tests should be recorded in the appropriate columns on the diagram provided on page 23.

IMPORTANT: If you are unable to achieve the results specified above within plus or minus 1/2 degree, contact RotorWay Customer Service Department for assistance before attempting to lift off the aircraft. The weight and balance of any helicopter is critical and this helicopter should not be flown until the pilot is aware of the weight and balance schedule and the hang test has been satisfactorily performed.

Center of Gravity

In addition to the hang test, it will be necessary to find the aircraft's center of gravity. Place the aircraft on scales at the forward and rear weighing points as shown on the diagram on page 23. Then, using the example on page 25, calculate the center of gravity of your helicopter. Plot the center of gravity on the graph on page 26. Your aircraft must not be operated outside of the limits defined on this graph.

J. Tail rotor failure during hover:
1. Failure is usually indicated by a left yaw which can not be corrected by applying right pedal.
2. Immediately close the throttle and perform a hovering power off landing.
3. Keep the ship level with the cyclic and increase the collective just before touchdown to cushion landing.

K. Tail rotor failure during forward flight:
1. Failure is usually indicated by a right or left yaw which can not be corrected by applying pedal.
2. Immediately enter a shallow descent into the wind.
3. Adjust the collective and the throttle to extend the glide if sideslip is not excessive and the aircraft does not tend to spiral. Cyclic and collective are used to limit sideslip angle.
4. Select landing site and perform a run-on landing using throttle to maintain heading.

L. Engine fire during starting on the ground:
1. Turn off fuel pumps.
2. Turn off fuel valve.
3. Turn off all other switches if time permits.
4. Extinguish the fire with a fire extinguisher or whatever is available.
5. Inspect for damage.

Section 6. Weight and Balance

The center of gravity (C.G.) requirement for any helicopter is very important to its safe operation. In order to determine that your RotorWay EXEC 162F has been built correctly and is weight and balanced properly, you will have to perform a static hang test.

Prior to performing the hang test, the following operating conditions and limitations should be reviewed:

1. The empty weight of the EXEC 162F is 975 lbs.

2. The maximum take off weight is 1500 lbs.

3. The maximum variable load, consisting of pilot, passenger, fuel, and any ballast is 525 lbs.

4. Maximum pilot weight is 210 lbs.

5. Maximum passenger weight is 210 lbs.

6. SOLO flight is performed ONLY FROM THE LEFT SEAT and must have the ballast weight placed on the front passenger skid. The cyclic handle should fall within the 6 inch diameter control area of operation in a hover (see diagram on page 19).

7. DUAL flight requires the ballast weight be placed on the rear mount tube under the tail boom. Again the cyclic handle should fall within the 6 inch diameter control area of operation in a hover (see diagram on page 19).

Autorotation Procedure From Altitude:

For asymmetrical rotor blades

1. Hold approach airspeed of 65 MPH.

2. Maintain rotor RPM of 100% during steady state descent. Rotor RPM should build by 5 – 7% during flare, if the flare is performed properly.

3. Flare height is 35 feet AGL for full stop autorotation using 30 degree flare angle. Level aircraft at 3 – 5 feet of clearance between the tail rotor and the ground.

4. During level off, add collective pitch if you are settling too rapidly.

5. Allow aircraft to settle to 30 inches AGL. At 30 inches, add collective pitch as necessary.

NOTE: This envelope is designed for inexperienced, low time pilots. Out of ground effect (O.G.E.) hovers are prohibited for all Exec pilots under 150 hours.

HEIGHT VELOCITY ENVELOPE

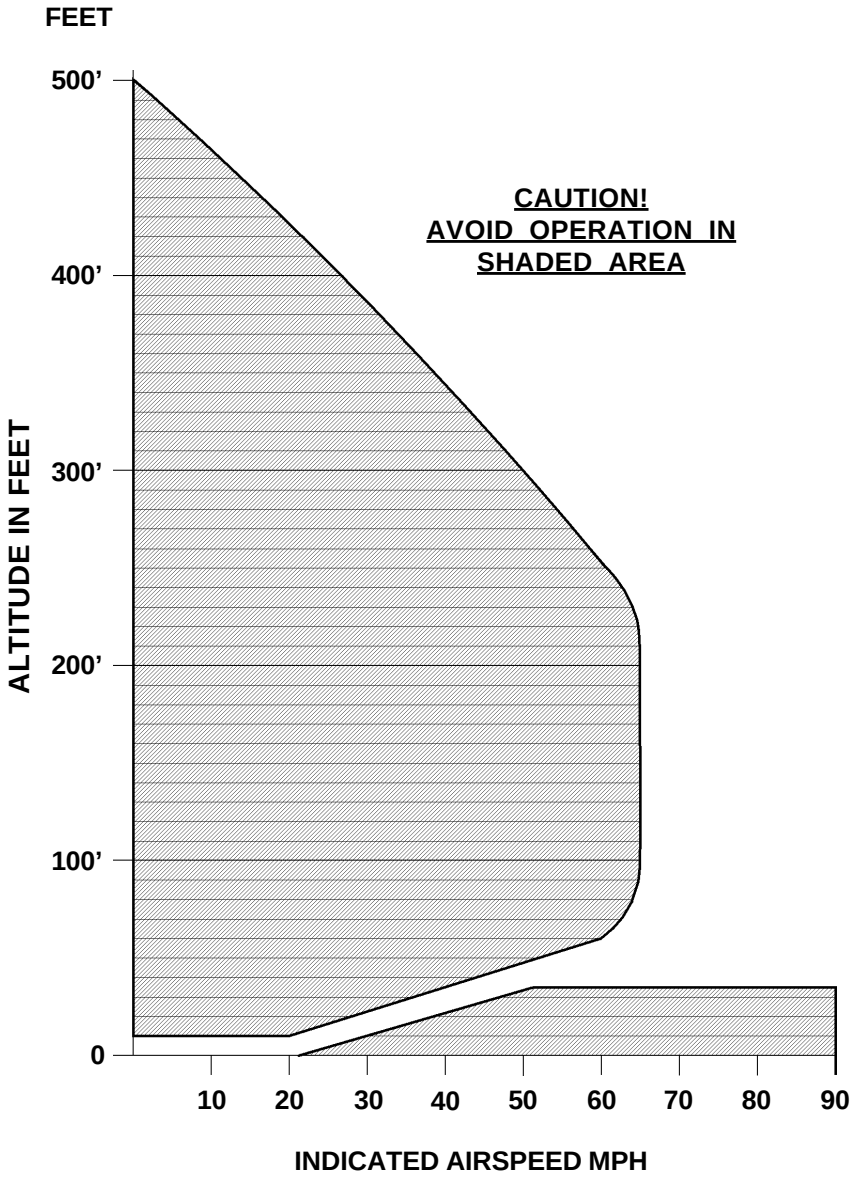
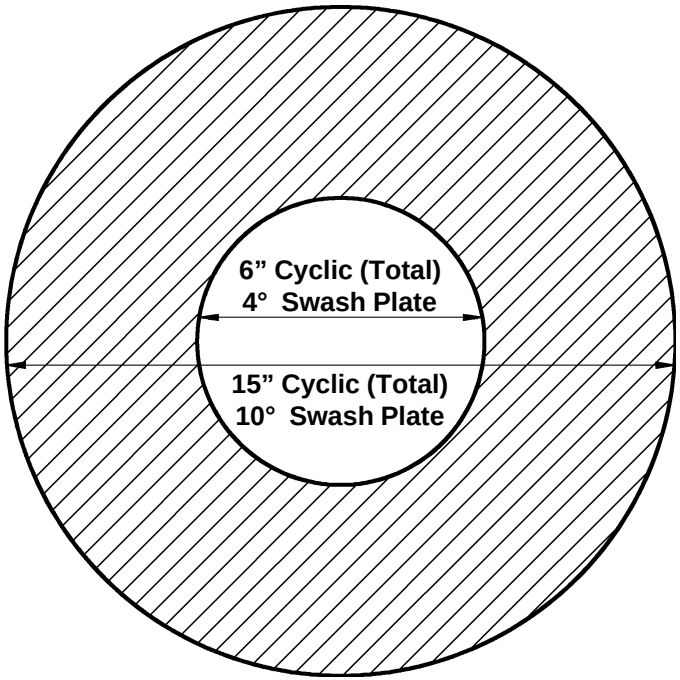


DIAGRAM OF THE CYCLIC CONTROL AREA OF OPERATION



1. Cyclic handle position is affected by weight and balance.
2. The helicopter must be rigged in compliance with the rigging instructions provided.
3. The cyclic handle should remain in the center during normal operations.
4. The shaded circle is for limited time use only.

Section 5. Performance

Hover in ground effect ..... 7000 feet

Hover out of ground effect ..... 5000 feet

Service ceiling ..... 10,000 feet

Range with maximum fuel at optimum cruise power ..... 180 miles/2hrs.

Normal cruise ..... 95 MPH

Maximum airspeed ..... 115 MPH

This test requires a facility that will allow the aircraft to be suspended approximately 6 inches from the ground, hanging from the knuckle of the main rotor shaft (see sketch below). For this test to be accurate the aircraft must be complete with the following:

1. Full coolant and oil in aircraft

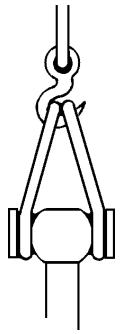
2. No fuel in tanks

3. Enclosed area, no wind

There will be three test configurations of the aircraft, each with a different cabin loading. If the helicopter falls within plus or minus 1/2 degree both laterally and fore/aft of the specified angles of the three tests, and if the helicopter has been properly rigged, the aircraft should be ready for the first run-ups and liftoffs.

Using the Weight and Balance Diagram on page 23, the following results should be obtained within 1/2 degree (plus or minus) in all three tests.

NOTE: During all tests the main rotor blades must remain in the fore and aft position (parallel to the tail boom).



NOTE: Hook should be centered over shaft to distribute weight evenly.

F. Engine fire in flight:
   1. Enter autorotation.
   2. Shut off fuel pumps then fuel valve if time is available.
   3. Execute an autorotation landing. After landing, if time permits, turn off ignition, instrument and alternator switches.
   4. Extinguish fire and inspect for damage.

G. Electrical fire in flight:
   1. Instrument, ignition, and fuel pump switches on.
   2. All other switches off.
   3. Land immediately.
   4. Extinguish fire and inspect for damage.

(**NOTE:** Do not switch ignition off unless the engine has stopped).

H. Air restart procedure:
   1. Set throttle to zero. Press starter button on the cyclic.

   CAUTION: IF AN ENGINE MALFUNCTION OCCURS, DO NOT ATTEMPT A RESTART UNTIL A SAFE AUTOROTATION IS ESTABLISHED.

I. Tachometer failure:
   If the rotor or engine tach malfunctions in flight, use the operational tach to make a normal landing.

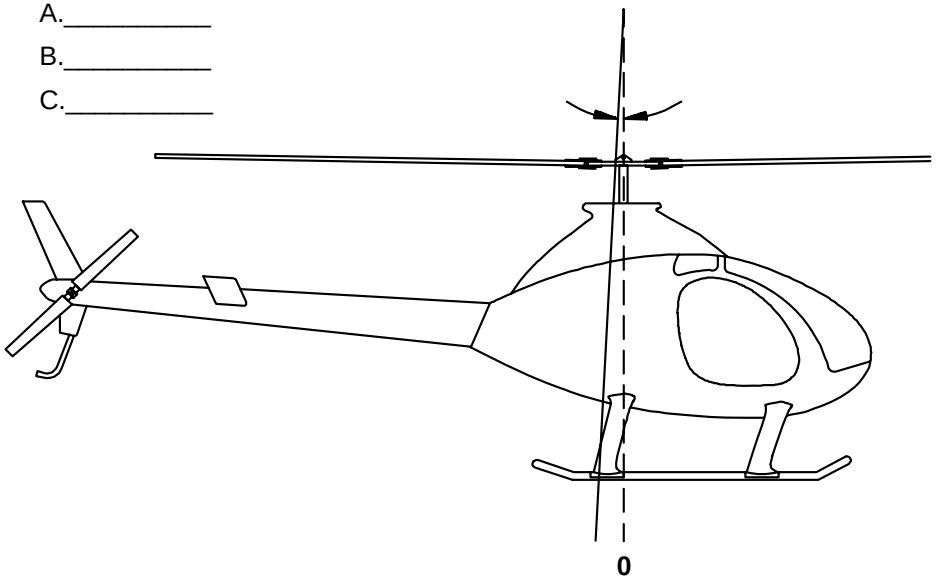
WEIGHT AND BALANCE DIAGRAM

Fore and Aft Measurements:

A._____

B._____

C._____

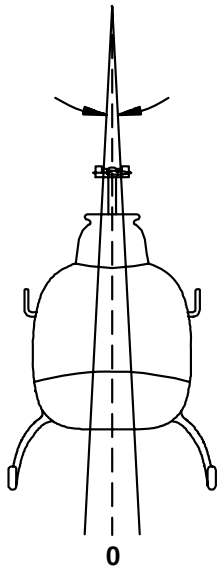


Lateral Measurements:

A._____

B._____

C._____



Section 4. Emergency Procedures

A. Engine failure General:
   1. A change in noise level, a right yaw and low oil pressure may be the first indication of an engine failure.

   2. Engine failure at high speed, high power, will result in a tendency for the helicopter to pitch nose up.

B. Engine failure below approximately 8 feet AGL:
   1. Maintain level attitude with cyclic.

   2. Apply left pedal as required to prevent yawing.

   3. Collective pitch should not be reduced by any significant extent.

   4. Increase collective just before touchdown to cushion landing.

C. Engine failure between 8 feet and 500 feet AGL:
   1. Lower collective lever to maintain rotor RPM. The amount of and duration of collective reduction depends upon the height above the ground at which the engine failure occurs.

   2. If height permits, adjust collective to achieve 100% rotor RPM.

   3. Use cyclic and collective as required to carry out engine off landing.

   4. Maintain heading with pedals.

SAMPLE WEIGHT AND BALANCE
AIRCRAFT ON SCALES
Weight x Arm Inch = Moment Inch
Total Moment Inch ÷ Total Weight = Balance Location

		WT. LBS	ARM INCH	MOMENT INCH LBS.
FORE/AFT	Front Scale	71	55.75	3958.25
	Rear Scale	853	109.25	93190.25
		924		**97148.50**
			105.13	

		WT. LBS	ARM INCH	MOMENT INCH LBS.
LATERAL	Passenger Skid	474	31.5+	14931.0
	Pilot Skid	450	31.25 -	14062.5 -
		924	**868.5**	
			.94+	

		WT. LBS	ARM INCH	MOMENT INCH LBS.
FORE/AFT	Basic Weight	924	105.13	97140.12
	Ballast Wt. Forward	27	37.25	1005.75
	Pilot	210	71.00	14910.00
	Fuel	60	100.00	6000.00
	1221		**97.51 CG**	**119055.87**

(See chart on page 26)

		WT. LBS	ARM INCH	MOMENT INCH LBS.
LATERAL	Basic Weight	924	.94+	868.5+
	Ballast Wt. Pass. Skid	27	31.50+	850.5+
	Pilot	210	10.25 -	2152.5 -
	Fuel Pilot	30	18.25 -	547.5 -
	Fuel Pass.	30	18.50+	555.0+
		1221	**.34 - CG**	**426.0 -**

(See chart on page 26)

Run up:

Oil temperature ..... green
Oil pressure ..... green
Water temperature ..... green
Clutch handle ..... in
Pedals..... centered
Cyclic ..... centered
Collective lever ..... set 3° to 3-1/2° positive
Throttle ..... slowly increase to 100% rotor RPM
Battery voltage..... check for charge

NOTE: During run up and run down, engine operation between 2500 and 3000 RPM should be limited due to main drive belt resonance frequency.

Take off:

Pedals..... even to half right pedal
Cyclic .....within 3 inches of center

The pilot should determine the correct control position during take off by noting and responding to the small movements of the aircraft when it becomes light on the skids.

Slowly raise collective, adjusting throttle to maintain rotor RPM in the green.

Economical cruise ..... manifold pressure 4 inches less than hover
Rotor RPM (in green)..... 96 – 104% maintain in flight

Take off and operation should be conducted per height velocity envelope diagram (see page 18).

During flight, check all instruments for anomalies.

Section 7. FADEC System

RotorWay International's FADEC (Fully Automated Digital Electronic Control) is an electronic engine control system that is unique in the aviation industry. The system is fully redundant; if failure of the primary system occurs, a backup system will automatically activate.

One of the outstanding features of this system is the digital display monitor. By using the **SELECT** buttons, the pilot can view a number of different engine conditions. A light will illuminate next to the chosen function, and a value for that function will appear in the readout. This information is gathered by sensors located throughout the system.

When the **DIAG** function is selected, the display will show the relevant codes. Normally, a zero will appear in each readout. However, if a problem arises, a diagnostic code number will appear. The pilot can identify the problem and respond accordingly.

NOTE: To reset diagnostic errors, max RPM and fuel used values, etc., first choose the desired function using the **SELECT** buttons, then press the **SET** button.

Starting (See Overhead Switch Panel Diagram on page 33):

1. Untie blades and preflight aircraft.
2. Oil chain and check master link.
3. Check ballast weight location.
4. Position blade perpendicular to the aircraft.
5. Fasten seat and shoulder belts.
6. Check controls.
7. Clutch disengaged.
8. Turn on key and instrument switch.
9. Arm FADEC system as follows:
   Hold momentary ARM FADEC switch on. The green FADEC light on the instrument panel should illuminate. Wait approximately 2 seconds and engage FADEC 1 switch. Release ARM FADEC switch. The green light should remain on. Then engage FADEC 2 switch. The green light should continue to remain on. **CAUTION:** if the red light comes on, immediately turn off FADEC switches. (Refer to Engine Manual for further details.)
10. Check FADEC backup system as follows:
    Perform this check ONLY if fuel pressure is BELOW 5 psi and BOTH fuel pumps are turned off.
    Set throttle to zero. Turn FADEC SECONDARY switch on. The green light on the instrument panel should go off, and the red light should come on. Increase throttle; red light should grow progressively brighter as throttle is added.
    NOTE: If fuel pressure is present during this check, fuel will be pumped directly into the powerplant. If this occurs, open the plenum drain valve to drain excess fuel from the plenum. Do not attempt to start the engine without draining the excess fuel. (Refer to the Engine Manual for further details. After this check is performed, turn the FADEC SECONDARY switch and both FADEC switches off. Then re-arm FADEC system (see 9 above).
11. Turn on fuel valve.
12. Turn on one fuel pump switch and both ignition switches and check fuel pressure (50-60 psi).
13. Controls in start position.
14. Set throttle to 0%.

5. **WATER TEMP** Indicates an error in the water temperature sensor. This sensor is used for cold starting, and has no effect at temperatures above 50° C.
6. **VOLTAGE ERROR** indicates a problem in the alternator or voltage regulator.
7. **BAROMETRIC PRESSURE** Indicates an error in the barometric pressure sensor. This sensor is used for altitude fuel mixture compensation. Loss of this sensor will cause the engine to run in a rich condition above 4000 feet and run in a lean condition below 3000 feet (default 3500 MSL).

NOTE: During start up and ignition checks, the following **A CODES** may appear: **1, 2, 5, 6.** Normally these are momentary conditions, for example, **6** (low battery) may appear during cranking. While in **DIAG** mode, pressing the **SET** button will clear these error codes and turn off the yellow light on the instrument panel.

If any **B CODES** appear during start up, do not fly the aircraft until the problem is located and resolved. Pressing the **SET** button will clear the code if the problem was momentary, but the cause of the problem should still be found. Refer to the Engine Manual for further details.

CAUTION: If any of the following codes appear during flight, the helicopter should be landed safely and flight discontinued until the problem is located and resolved:

A CODES: 1, 2, 5, 6
B CODES: 2, 3

These codes correspond to the **PRIMARY** sensors used by the main ECU. Although this system is fully redundant, loss of these sensors will result in relying only on the backup system for safety.

E. Tail rotor check:
   1. Freedom of travel
   2. Slider on key
   3. Freedom and condition of the rod ends
   4. For cracks in the skins around the 3/16 retention bolts and pop rivets
   5. End play on the blades and security of the snap rings and pivot bolts

F. Vertical trim fin check:
   1. Structural security and angle

G. Horizontal trim fin check:
   1. Structural security and angle
   2. Security of winglets

H. Tail boom check:
   1. For cracks, wrinkles, and structural security

I. Engine area left side check:
   1. Oil, fuel, and water leaks
   2. Security and routing of hoses, pipes, lines, and wiring
   3. Condition and tension of the fan drive and main drive belts
   4. Clutch and idler pulley
   5. Security of the rear landing gear brackets
   6. For cracks and security of heat shielding

J. Collective control check:
   1. Freedom of travel
   2. All linkages for security
   3. Throttle roll and butterfly travel

K. Cyclic control check:
   1. Freedom of travel
   2. Bias of the cables and security of rod ends

TEMPERATURE CONVERSION

TABLE

$$\text{Degrees F} = \frac{9 \times \text{Degrees C}}{5} + 32$$

°C	°F	°C	°F	°C	°F
37.8	100	65.6	150	93.3	200
40.6	105	68.3	155	96.1	205
43.3	110	71.1	160	98.9	210
46.1	115	73.9	165	101.7	215
48.9	120	76.7	170	104.4	220
51.7	125	79.4	175	107.2	225
54.4	130	82.2	180	110.0	230
57.2	135	85.0	185	112.8	235
60.0	140	87.8	190	115.6	240
62.8	145	90.6	195	118.3	245

PRESSURE CONVERSION TABLE

In. Hg = kPa x .296

kPa	In.Hg
20.27	6
30.40	9
40.54	12
50.68	15
60.81	18
70.95	21
81.08	24
91.22	27
101.35	30
111.49	33

Instrument Markings

Color code for instrument markings:

GREEN:	Normal operating range
YELLOW:	Cautionary operating range
RED:	Indicates maximum operating limits. The pointer should not enter the red during normal operation.

Voltage:

Green arc ..... 12-1/2 to 14-1/2

Oil pressure:

Green arc ..... 40 – 80 PSI
Red line ..... below 40 and above 80 PSI

Oil temperature:

Low yellow arc ..... 100° – 140°F
Green arc ..... 140° – 210°F
High yellow arc ..... 210° – 240°F
Red line ..... 240°F

Water temperature:

Low yellow arc ..... 100° – 140°F
Green arc ..... 140° – 190°F
High yellow arc ..... 190° – 215°F
Red line ..... 215°F

Rotor RPM:

Low red line 90%
Low yellow arc ..... 90% – 96%
Green arc ..... 96% – 104%
High yellow arc ..... 104% – 110%
High red line 110%

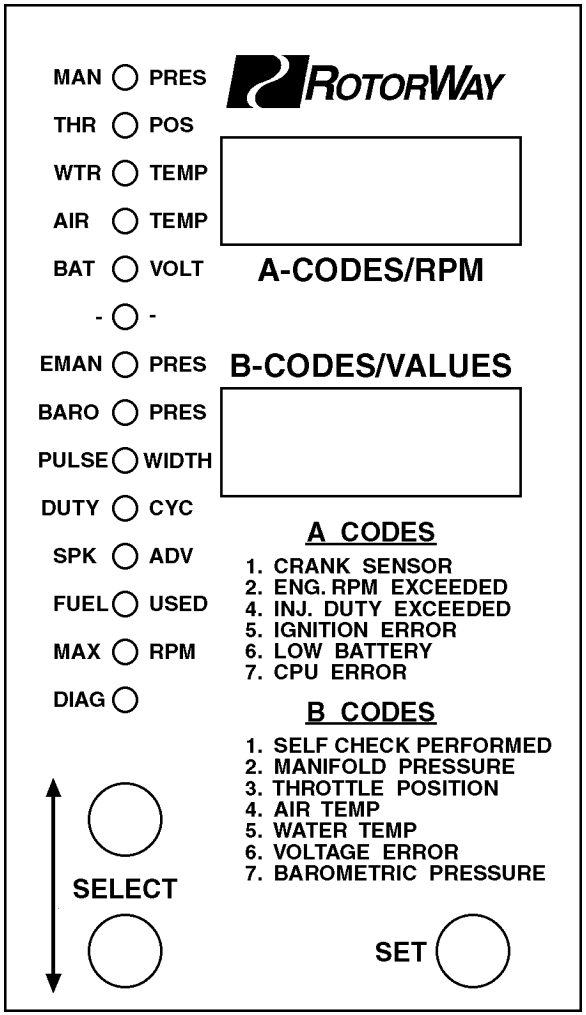
Engine RPM:

Green arc ..... 102% – 108%
High red line 110%

Airspeed:

Red line ..... 115 MPH

FADEC DIGITAL DISPLAY



Section 1. General

RotorWay Exec 162F Specifications

Powerplant	RI 162F liquid cooled, four stroke, 162 cu. in.
Seats	2
Gross weight	1500 lbs.
Empty weight	975 lbs.
Equipped useful load	525 lbs.
Fuel capacity	17 U. S. Gallons

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, number of building hours required, 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.

ROTORWAY EXEC 162F
CENTER OF GRAVITY LIMITS
WITH FULL LOTUS FLOATS