

**ROTAX®**

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**SERVICE INFORMATION**

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KODIAK RESEARCH LTD.**

## **USING AUTO FUEL IN YOUR ROTAX TWO CYCLE AIRCRAFT ENGINE**

### **(A) INTRODUCTION**

THIS INFORMATION IS INTENDED TO ASSIST THE AIRCRAFT DESIGNER, MANUFACTURER AND BUILDER TO ACHIEVE CORRECT OPERATING CONDITIONS AND ASSEMBLY FOR THE ENGINE AND CONSEQUENTLY OPTIMUM PERFORMANCE AND RELIABILITY.

### **(B) TECHNICAL DATA AND GENERAL INFORMATION**

IN ADDITION TO THESE SERVICE INSTRUCTIONS PLEASE REFER TO:

- CURRENT ISSUE OF THE OPERATORS MANUAL
- ENGINE DATA SHEET
- POWER, TORQUE AND FUEL CONSUMPTION CURVES
- CURRENT ISSUE OF THE SPARE PARTS LIST
- ENGINE INSTALLATION CHECK LIST

## **FUEL PHYSICAL AND CHEMICAL PROPERTIES, AS WELL AS IMPURITY:**

THE CLEAN AIR ACT AMENDMENTS OF 1990 HAVE RESULTED IN THE WIDE SPREAD EXPANSION OF "OXYGENATED FUELS" AND THE DEVELOPMENT OF "REFORMULATED GASOLINES." WHAT THIS MEANS IS A LARGER EMPHASIS ON CLEANER-BURNING FUELS AND LESS EMPHASIS ON PERFORMANCE AND EFFECT OF FUELS ON ENGINES AND COMPONENTS. ALL THIS DUE TO ENVIRONMENTAL CONSIDERATIONS. THE PROBLEM ALL THIS CREATES FOR US IS THE INCONSISTENCY WE ARE FINDING IN FUELS PRESENTLY AVAILABLE IN NORTH AMERICA, AND THE DETRIMENTAL PROPERTIES OF SOME FUELS ON THE TWO CYCLE ENGINE.

FUEL QUALITY IN REGARDS TO THE OPERATION OF A TWO CYCLE ENGINE IS BECOMING EVER MORE IMPORTANT. THEREFORE IT IS ESSENTIAL THAT THE OPERATOR SCRUTINIZE EACH FUEL BATCH TO DETERMINE THE FUELS OVERALL SUITABILITY. THE BASIC STEPS TO FOLLOW AND THINGS TO WATCH FOR ARE AS FOLLOWS:

(A) ALWAYS BUY FUEL FROM A LARGE SUPPLIER WHO OPENLY DISPLAYS THE CURRENT OCTANE RATINGS. MAKE ALL EFFORTS POSSIBLE TO CONFIRM THE FUEL YOU ARE BUYING IS AS ADVERTISED. TRY AND GET BASIC TECHNICAL DATA ON THE FUEL YOU ARE USING IN REGARDS TO; OCTANE RATINGS, ETHANOL/METHANOL BLENDS AS OXYGENATES, SEASONAL BLEND CROSSOVERS, ETC..

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**\*YOUR MINIMUM FUEL REQUIREMENT IS LISTED IN THE CURRENT ISSUE OF YOUR OPERATORS MANUAL FOR YOUR ENGINE TYPE. MAKE SURE YOU FOLLOW IT.**

**\*OXYGENATES (ALCOHOL ADDITIVES) ARE TO BE AVOIDED, ANY VOLUMES OVER 5% CANNOT BE USED. TESTING FOR ALCOHOL IS THE ONLY SAFE WAY TO BE SURE YOUR FUEL IS O.K. FOR USE IN YOUR ROTAX. A SIMPLE TEST KIT FOR DOING THIS IS AVAILABLE THROUGH AUTHORIZED DISTRIBUTORS OF MOGAS FOR AIRCRAFT. CONTACT YOUR LOCAL EAA FOR YOUR NEAREST MOGAS DISTRIBUTOR.**

**THE ILL EFFECTS OF ALCOHOL IN YOUR ENGINE ARE AS FOLLOWS;**

**THE ALCOHOL WILL ATTRACT WATER, THIS CAN CAUSE YOUR SEDIMENT TRAPS TO FLOOD, PLUG FILTERS AND RESTRICT FUEL FLOW. ALSO, AND VERY IMPORTANT, THE ALCOHOL COMPETES DIRECTLY WITH THE LUBRICATION, AND DEPENDING ON YOUR OILS ABILITY TO COMBAT SUCH, COULD CAUSE ENGINE DAMAGE. IMPORTANT ALSO IS THE ALCOHOL CARRIES WATER WHICH ON ENGINE SHUT DOWN AND STORAGE CAN CREATE CORROSION ON VITAL ENGINE PARTS SUCH AS CRANK MAIN AND ROD BEARINGS AS WELL AS PINS. ONCE CORROSION PITS HAVE STARTED, THE BEARINGS WILL FAIL SHORTLY AFTER.**

**\*SEASONAL BLEND CROSSOVERS CAN EFFECT YOUR FUELS VOLATILITY IF YOU USE A WINTER BLEND FUEL DURING A HOT SUMMER DAY. THIS IS A COMMON OCCURRENCE WITH PEOPLE WHO BUY A FUEL BLEND IN COLDER CLIMATES IN MARCH, BUT DON'T USE IT IN THEIR ROTAX UNTIL JUNE. EVAPORATION TEMPERATURES OF YOUR FUEL MUST BE LOW ENOUGH TO MINIMIZE CRANKCASE AND COMBUSTION CHAMBER DEPOSITS AS WELL AS SPARK PLUG FOULING WITHOUT FEAR OF VAPOUR LOCKING OR BOILING. ALWAYS MAKE SURE YOU BUY YOUR FUEL FROM A HIGH VOLUME USER, AND AVOID FUEL WHICH HAS BEEN IN STORAGE FOR LONG PERIODS OF TIME, ESPECIALLY BETWEEN SEASONS. LOSS OF OCTANE RATING IS A COMMON PROBLEM ON FUEL STORED INCORRECTLY, WHICH COULD LEAD DIRECTLY TO ENGINE STOPPAGE.**

**NOTE: CURRENT FAA GUIDELINES REQUIRE THAT AUTO FUEL APPROVED FOR AIRCRAFT (MOGAS) MEET STRICTER GUIDELINES THAN THAT OF REGULAR CAR GAS. THIS MAY BE THE SIMPLEST WAY TO MAINTAIN SOME CONTROL OVER WHAT YOUR USING, EVEN SO SCRUTINIZE CAREFULLY!**

**DANGER!**

**FAILURE TO COMPLY WITH THIS RECOMMENDATION COULD RESULT IN  
ENGINE DAMAGE AND PERSONAL INJURY!**