

# ***Aero Control***

## ***GPL-OIL INJ KIT***



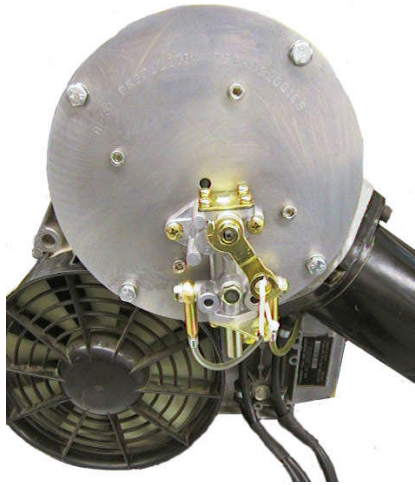
**ACE-GPL OIL INJ. KIT**

# ***INSTRUCTIONS***

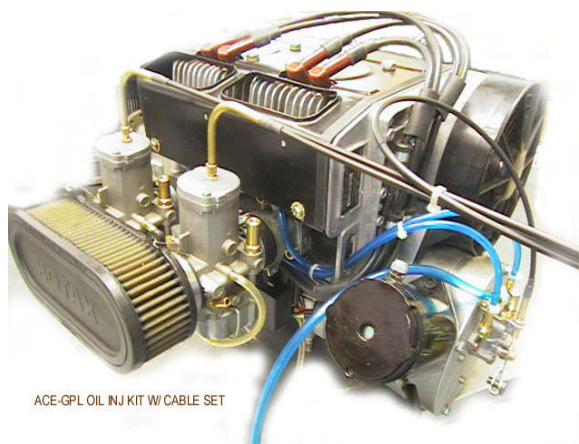
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## **OVERVIEW**

While the ACE-GPL oil inj kit can be installed to the GPL starter in one of four positions only those positions show on this page are suggested. The oil injection cable pull is different for engines mounted inverted and the upright configurations. (see photos).



**The oil injection pump should be mounted in the six o'clock (6:00 o'clock) position on an inverted engine. i.e. Challenger I and II**



**The oil injection pump should be positioned at the twelve o'clock (12:00 o'clock) position on an upright engine**

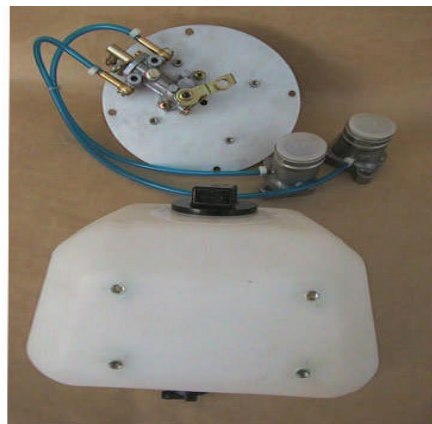
### **The “Kit” (Basic)**

Includes the face and backing plate plus all mounting screws and spacers and 1/8” oil supply lines. You supply your own oil injection pump, throttle/oil inj cable, oil tank, filter and 1/4” oil supply line and oil injection port equipped intake manifolds and intake gaskets.



### **The Kit (Deluxe)**

Includes face and backing plate with all mounting hardware and oil lines. Also included are a 1.5 liter oil supply tank, throttle cable set with oil injection cable attached plus new intake manifolds and gaskets. \*\*



\*\* not shown are the oil supply line and filter and the throttle cable with oil injection.

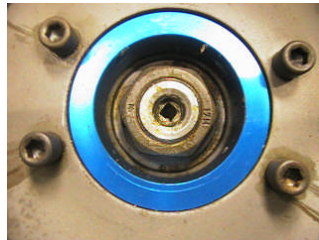


**OPTIONAL 3.0L “UNDERCOVER” TANK  
HIDES UNDER REAR CENTER GAP COVER**

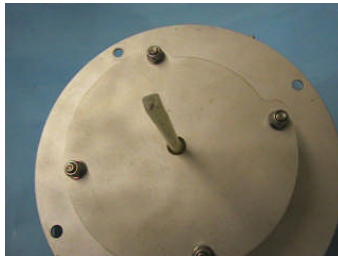
**POSITION THE GPL STARTER AS PER FACTORY INSTRUCTIONS, BUT DO NOT INSTALL COVER PLATE.**

**ASSEMBLE THE ACE-GPL OIL INJ KIT AS PER PICTURES BELOW**

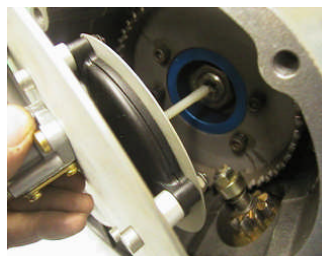
**THERE IS A CUT-OUT ON THE SMALL BACKING PLATE. MAKE SURE THAT THE CUT OUT ON THE BACK PLATE IS ADJACENT TO THE HOLE THAT THE STARTER MOTOR MOUNTS INTO. THIS CUT OUT IS TO ELIMINATE INTERFERENCE BETWEEN THE PLATE AND THE STARTER BENDIX WHEN THE BENDIX IS ENGAGED. IT IS VERY IMPORTANT TO MAKE SURE THE CUT OUT IS IN THE CORRECT PLACE.**



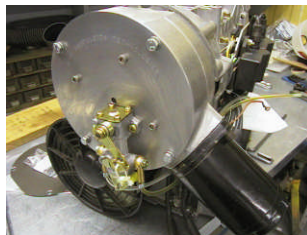
**SQUARE FEMALE HOLE (A) IN THE END OF THE CRANKSHAFT**



**SQUARE MALE PEG (B) ON THE BACK OF THE OIL PUMP**



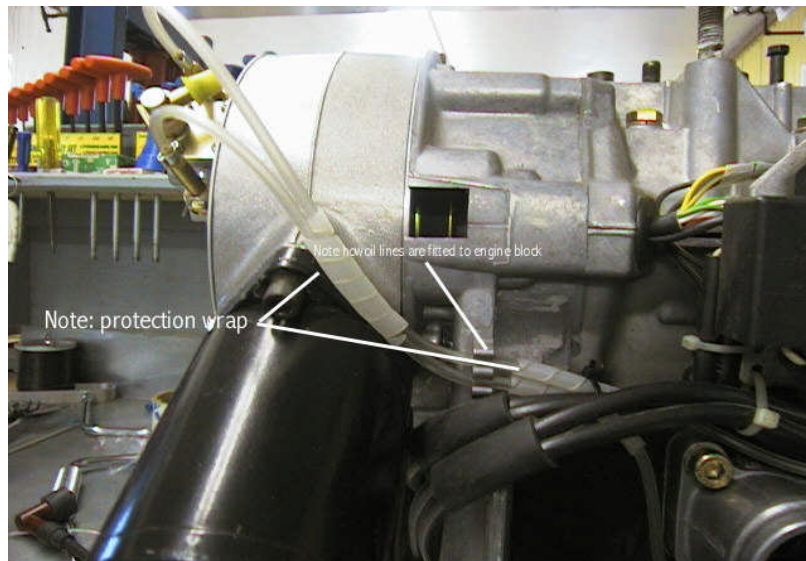
**INSTALL THE MALE PEG (B) INTO THE FEMALE SQUARE HOLE (A).**



**INSTALL THE MOUNTING BOLTS AND TORQUE TO MANUFACTURERS SPECIFICATIONS**



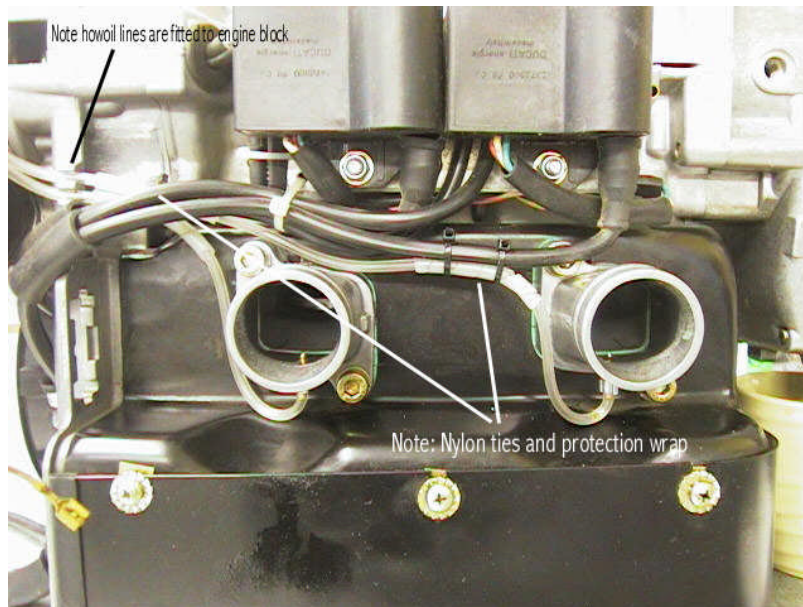
## ACE-GPL OIL INJ KIT

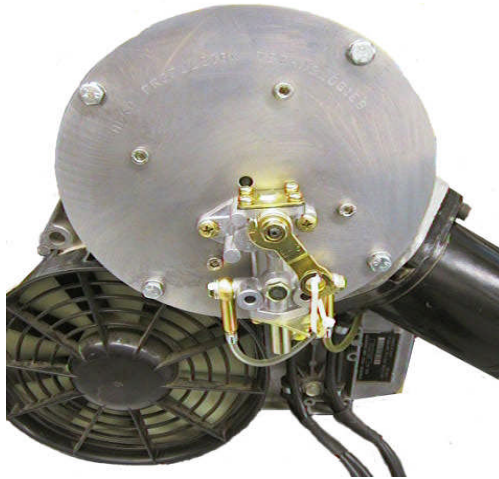


Note how oil lines are fitted to “clips” built into the engine block. Also note protection wrap on oil lines.

Note: protection wrap and nylon ties supporting oil lines. Also Note: Banjo fittings on oil pump need to be removed to fit cables close to block as shown. Use 8mm wrench to remove---make sure you do not lose aluminum washer on each side of the fitting.

The picture below shows the oil lines entering from the “bottom” of the intake manifold. The intake manifolds can be reversed so the spigots are at the “top” without any problems.



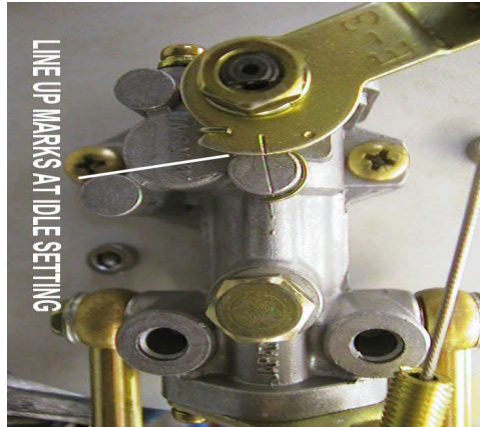


Note pump is mounted in six o'clock position (i.e. Challenger)



NOTE HOW OIL SUPPLY LINE FROM TANK GOES BEHIND THE STARTER ON A CHALLENGER INSTALLATION  
ALSO NOTE THAT THE MOUNTING PLATE IS IN THE NUMBER ONE (#1) MOUNTING POSITION ON A CHALLENGER INSTALLATION

Note: Check Valves (banjo looking fittings on oil pump) will need to be removed in order to route oil lines neatly from pump to intake manifolds.



INSTALL THE THROTTLE CABLES AND OIL INJECTION CABLE TO THE ENGINE. ADJUST THE OIL INJECTION JAM NUTS SO THAT THE TWO INDICATOR LINES ARE ADJACENT TO EACH OTHER AT IDLE POSITION.

THE OIL LINES AND PUMP WILL NEED TO BE BLED OF AIR PRIOR TO RUNNING THE ENGINE.  
FILL THE OIL RESERVOIR.

LOOSEN THE 10MM NUT ON THE FACE OF THE OIL INJECTION PUMP TO ALLOW AIR TO ESCAPE (TOTAL REMOVAL MAY BE NEEDED IF THERE IS NOT ENOUGH HEAD TO FORCE THE AIR OUT OF THE LINE- VERY LIKELY ). TIGHTEN THE BOLT AS SOON AS OIL STARTS DRIPPING FROM THE HOLE.

PREMIX ABOUT 2 GALLONS OF GAS AT 50:1 TO GUARANTEE ENGINE LUBRICATION WHILE AIR IS PURGED FROM THE OIL INJECTION LINES.

START ENGINE AND ESTABLISH A FAST IDLE SPEED (3000 RPM). MANUALLY MOVE THE CONTROL ARM ON THE OIL PUMP TO THE FULL OPEN POSITION TO PURGE ANY AIR BUBBLES FROM THE LINES. ONCE ALL THE OIL LINES ARE FILLED AND THE BUBBLES REMOVED, FILL THE BALANCE OF YOUR FUEL TANK WITH UN-PREMIXED GASOLINE.

## **ASSEMBLY** **INSTRUCTIONS**

### **ROTAX OIL INJECTOR TO ADAPTER PLATES**

1. **REMOVE OIL INJECTOR PUMP ASSEMBLY FROM ROTAX STARTER HOUSING.** FOUR TAP-TIGHT SCREWS HOLD THE BLACK PLASTIC PUMP HOUSING TO THE STARTER COVER. PULL OIL INJECTION PUMP AWAY FROM STARTER HOUSING. MAKE SURE THE SMALL STAINLESS STEEL WASHER REMAINS ON THE POST ADJACENT TO THE LARGE DRIVE GEAR ON THE OIL PUMP (THIS WILL SOMETIMES COME OFF WITH THE 9 TOOTH DRIVER GEAR).
2. **REMOVE OIL INJECTOR PUMP FROM BLACK PLASTIC PUMP HOUSING.** START BY REMOVING THE LARGER DRIVEN GEAR ON THE BACK OF THE PUMP. USE A LARGE SCREWDRIVER TO HOLD THE GEAR FROM TURNING AND USE A 10MM WRENCH TO REMOVE THE NYLOCK NUT. MAKE SURE YOU DO NOT LOSE THE NUT OR FLAT WASHER UNDER THE NUT. REMOVE THE DRIVEN GEAR. REMOVE THE TWO PHILLIPS SCREWS HOLDING THE PUMP TO THE PLACE (YOU MAY HAVE TO LOOSEN THE BANJO BOLTS AND REPOSITION THE OIL INJECTION INLET HOSES TO GAIN ACCESS TO THE PHILLIPS SCREWS). REMOVE THE PUMP FORM THE BLACK PLASTIC HOUSING.
3. **ASSEMBLY OF THE PUMP TO THE ADAPTER PLATES.** YOU ARE GOING TO SANDWICH THE LARGE ROUND (BLACK) ADAPTER PLATE BETWEEN THE OIL INJECTION PUMP AND THE BLACK PLASTIC HOUSING. USE THE LARGE PHILLIPS SCREWS RE-ATTACH THE PUMP TO THE HOUSING. REPLACE THE DRIVEN GEAR (LARGE) AND THE NYLOCK NUT AND WASHER. USE A LARGE SCREWDRIVER TO HOLD THE GEAR IN PLACE WHILE TIGHTENING THE NUT
4. **ASSEMBLY OF THE SMALL PLATE TO THE REAR OF THE BLACK PLASTIC HOUSING.** PLACE THE FOUR ALUMINUM SPACERS BETWEEN THE LARGE ADAPTER PLATE AND THE BLACK PLASTIC HOUSING. USE THE 1.5" STAINLESS STEEL MACHINE SCREWS TO SECURE. WHEN ALL FOUR SPACERS ARE IN POSITION REPLACE THE 9 (NINE) TOOTH DRIVE GEAR TO THE SMALL POST ADJACENT TO THE DRIVEN GEAR (MAKE SURE THE SMALL STAINLESS WASHER IS IN PLACE ON THE POST). POSITION THE SMALL BACKING PLATE ONTO THE FOUR MACHINE SCREWS WITH THE CUTOUT ALIGNING WITH THE STARTER BENDIX. TIGHTEN THE MACHINE SCREWS WITH THE ENCLOSED NYLOCK NUTS AND WASHERS. MANUALLY TURN THE DRIVE GEAR SHAFT TO MAKE SURE THE PUMP IS FREE TO TURN.
5. **YOU ARE NOW READY TO INSTALL THE ADAPTER PLATE TO YOUR ROTAX ENGINE.**



# **Notice**

GPL MANUFACTURING HAVE UPDATED THE CASTING THAT THE ELECTRIC STARTER MOUNTS TO.

ON THE OLD STYLE CASTING THERE WAS A SHORT ALLEN BOLT THAT IS HIDDEN INSIDE THE HOLE INTO WHICH THE STARTER MOUNTS. IN SHORT, THERE WERE THREE LONG BOLTS AND ONE SHORT BOLT THAT ATTACHED THE CASTING TO THE ENGINE.

THE OIL SUPPLY HOSE FROM THE OIL TANK CAN RUN INTO INTERFERENCE SHOULD THE PLATE BE MOUNTED INTO THE WRONG SET OF HOLES.

ON LATER MODELS, GPL HAVE OFFSET ALL THE HOLES ALLOWING FOUR LONG BOLTS TO BE USED TO ATTACH THE CASTING TO THE ENGINE.

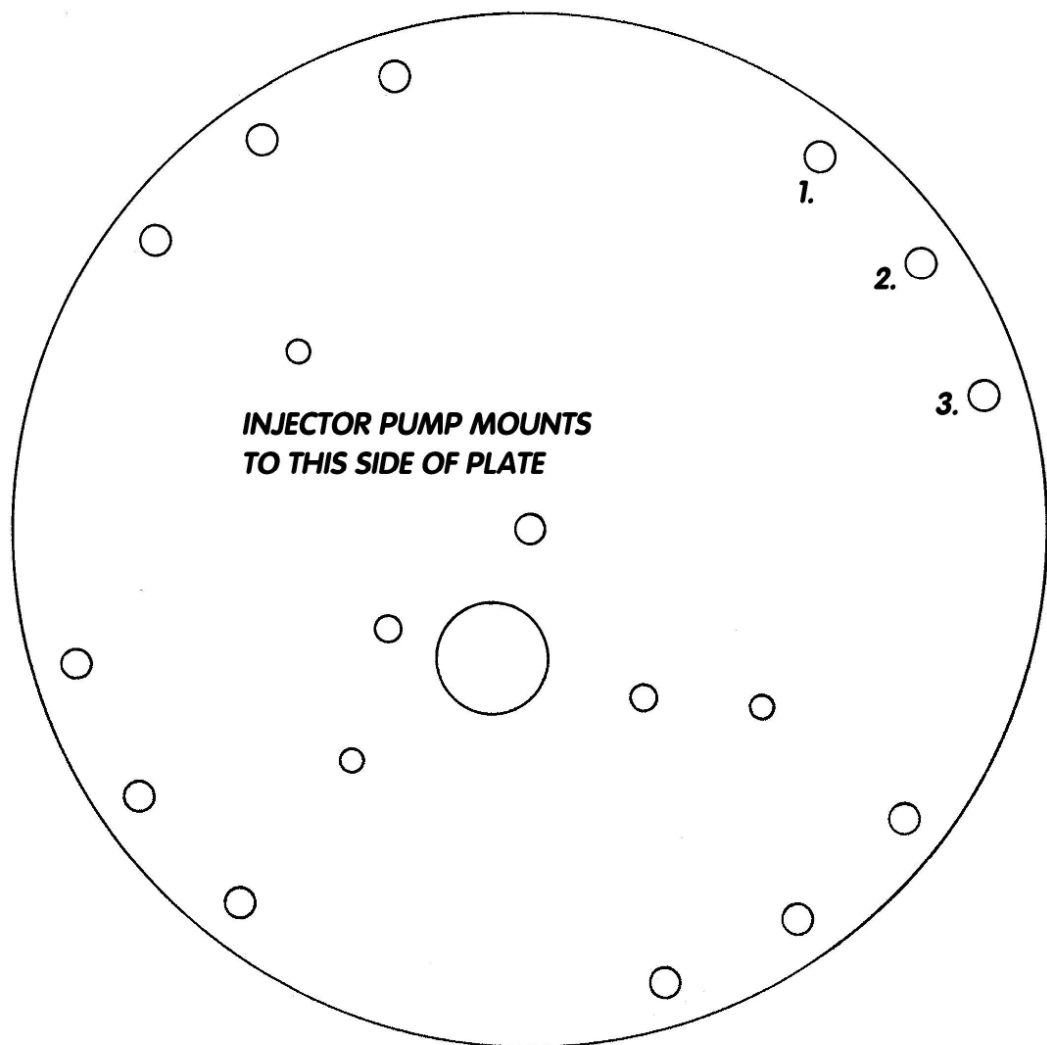
IN ORDER TO ACCOMIDATE BOTH STYLE CASTINGS, WE NOW HAVE THREE SETS OF MOUNTING HOLES TO ATTACH THE COVER PLATE TO THE CASTING.

YOU WILL FIND A DRAWING OF THE STARTER /OIL INJECTOR MOUNTING PLATE WITH THIS KIT.

PLEASE MAKE SURE YOU HAVE MOUNTED YOUR COVER PLATE CORRECTLY.

REMINDER: **OLD STYLE** – HAS THREE LONG AND ONE SHORT BOLTS MOUNTING THE CASTING TO THE ENGINE.

**NEW STYLE** – HAS FOUR LONG BOLTS MOUNTING THE CASTING TO THE ENGINE.



Note: Mounting holes 1 and 3 work with newer style GPL Starters..... Mounting hole 2 work with older style GPL Starter.

**IMPORTANT:** On Challenger Installation (using new style GPL starter ) use hole position #1 for best oil supply line routing

# PRICING (U.S. \$)

## ACE – GPL OIL INJ KIT- CONTENTS- DELUX

<u>PART NO.</u>	<u>DECSRIPTION</u>	<u>QTY</u>
	OIL INJECTION PUMP (503 CONFIGURATION) WITH DRIVE	1
	MAIN COVER PLATE	1
	SMALL COVER PLATE	1
	SPACERS	4
	8-32 MACHINE SCREWS SS – SOCKET HEAD	4
	8-32 NYLOCK NUTS – SS	4
	8-32 FLAT WSHERS – SS	4
	INTAKE MANIFOLD (CONFIGURED FOR OIL INJ.)	2
	INTAKE GASKETS (503)	2
	OIL FILTER (IN-LINE)	1
	OIL TANK (1 ½ LITER)      W 5/16" FITTING	1
	THROTTLE CABLE W/OIL INJ.      **	1
	14 ½" OIL INJ. LINE	1
	20 ½" OIL INJ. LINE	1
	3-5 CLAMPS (CRIMP STYLE)	4
	NYLON TIES (SHORT)	4
	3" PROTECTION WRAP	3
	INSTRUCTION BOOKLET	1
	OIL TANK MOUNTING BRACKETS	2

## ACE – GPL OIL INJ KIT– CONTENTS – BASIC

MAIN COVER PLATE	1
SMALL COVER PLATE	1
SPACERS	4
8-32 MACHINE SCREWS- SS-SOCKET HEAD	4
8-32 NYLOCK NUTS – SS	4
8-32 FLAT WASHERS	4
14 ½ " OIL INJ LINE	1
20 ½ " OIL INJ. LINE	1
3-5 CLAMPS (CRIMP STYLE)	4
INSTRUCTION BOOKLET	1

## OIL INJECTION KITS (FITS RTX 503 DCDI W/ GPL STARTER)

		<u>W/1.5L TANK</u>	<u>W/3.0 ALUM. TANK</u>
AC-GPL-OIK-1	BASIC	99.95 USD	99.95USD
AC-GPL-OIK-2	BASIC PLUS	199.95 USD	274.95USD
AC-GPL-OIK-3	DELUX-MINUS	249.95 USD**	324.00USD**
AC-GPL-OIK-4	DELUX	499.95 USD	574.95USD

Assumes customer send his own intake manifolds in for conversion (we have exchange program)

- OIK-1 - MOUNTING PLATES AND SPACERS FOR PUMP ONLY
- OIK-2 -OIK1 PLUS HOSES/FILTERS/OIL TANK/MOUNTING BRACKETS/THROTTLE CABLE
- OIK-3 -OIK2 PLUS INTAKE MANIFOLDS CONFIGURED FOR OIL INJ
- OIK-4 -OIK3 PLUS OIL INJECTION PUMP

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