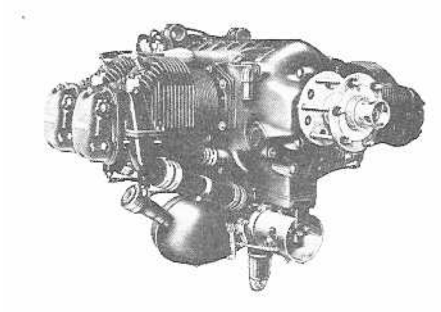
FUEL INJECTION SERVICE MANUAL

MARCH 1, 1941

**MODEL "A" FUEL INJECTION SYSTEM
FOR CONTINENTAL A-50, A-65,
A-75 AND A-80 AIRCRAFT ENGINES**



**FUEL INJECTION EQUIPMENT
FOR INTERNAL COMBUSTION ENGINES**

FUEL INJECTION CORPORATION
MUSKEGON, MICHIGAN, U.S.A.

FOREWORD

This Low Pressure Fuel Injection System, which meets the limitations of compact design, light weight and low cost without detracting from dependability or effectiveness, was developed for small four–cylinder aircraft engines by Fuel Injection Corporation. The system is applicable to and has approved type certificates on the entire four cylinder line of Continental Aircraft Engines, the same basic injector applying to all of the various models. This fuel injection system, because of the many real advantages which it offers, has, at the end of its first season in the field, many hundreds of units in service wherever small aircraft is flown.

The advantages of Fuel Injection are conceded to be: Increased Power, Improved Fuel Economy, Smoother Operation and Dependable Operation in every position of maneuvering, which continues to the maximum ceiling of the airplane. To these advantages might be added: Reduced fire hazard due to no gaseous mixture in the manifold, No chance of engine failure due to water in the gasoline, No ill effects from the cooling of the induction system in a glide, or instant acceleration after a long glide, and due to equal distribution of fuel, a more equal temperature of all cylinders and particularly the exhaust valves of all cylinders. Fuel Injection insures that each cylinder receives the same amount of fuel, therefore each cylinder produces the same amount of power, eliminating roughness due to uneven power impulses. The Fuel Injection Engine tops all others for smoothness of operation. When flying in areas of high humidity and low temperature these advantages are, however, considered secondary to the Complete Absence of Ice Formation in the Engine Injection System.

This freedom from manifold icing in a Fuel Injection engine is obtained without the application of heat to the intake air. Thus no power loss is suffered at a time when all available power is most likely to be needed. Furthermore, there can be no failure because of a late application of heat for no heat whatsoever is required. By the very nature of Fuel

Injection, as applied to Aircraft Engines, there can be no trouble from ice formation in the induction system. There can be no restricting of the system therefrom nor freezing of the throttle in any fixed position since there is no fuel vaporizing at or near the throttle to cause ice formation. This freedom from manifold icing is very important for students in training, and for inexperienced pilots, and it increases the pleasure in flying of experienced pilots.

With Fuel Injection the individual spray jets, which atomize the fuel, are all located to spray into the intake ports of the engine. The fuel delivered under pressure at the intake ports, at which point it is mixed with a measured quantity of air and vaporized by heat from the ports, assures complete combustion. It also means quicker available power as warm—up time before take—off is cut to the minimum.

The refrigerating area, which is caused by the vaporizing fuel, is moved to the combustion heated intake ports, where the water vapor likely to be present in the air cannot precipitate and freeze to cause trouble. This makes Fuel Injection Engines safer to fly, which safety has now been proved by hundreds of units which have given thousands of hours of flight in all parts of the country, under all possible conditions, and in all kinds of weather.

GENERAL CONSTRUCTION AND BASIC PRINCIPLES

Mechanically the model “A" Fuel Injection System is of simple design. The Injector unit consists of cylindrical plungers fitted into pumping bores, the plungers are reciprocated for pumpage and rotated for positive valving. As the rotation of the plungers is at one half the Injector speed, one plunger is made to serve two cylinders by alternately dis—charging first to one and then to the other. Mo—tion of reciprocation and of rotation is positive and applies equally *to* all plungers, with return springs on the plungers to keep them in contact with the cam surface. If the engine backfires the reverse rotation merely pumps from the discharge lines to the fuel intake without any injury whatsoever to the Injection device.

A refinement of design provides for two grooves on the plungers, the one nearest the tip to arrest all fuel which works down the plunger, and, through passages and a tube vent it into the intake piping. The lower of the two grooves is connected through drilled passages and ducts to the pressure side of the engine oiling system. The cam drive and gearing is also lubricated from the overflow of the pressure oiling of the engine. The surplus oil is returned to the engine crankcase to be recirculated again.

The function of the Injector is to supply metered quantities of fuel to each cylinder, each cycle. This is accomplished by making the Injector a positively driven pump of constant stroke to which the fuel is metered on its intake side. The actual metering of fuel is into some eighteen or twenty inches of vacuum produced by the pump plungers, the plungers positively forcing to the engine the fuel which is metered. The fact that the fuel is metered on the intake side, as is the air throttled on the intake side of the engine, makes the fuel and air inherently self compensating for variable load. Thus with the fuel metering valve and the air throttle linked to it held in any fixed position, if the load is reduced and the speed increases, substantially the same amount of fuel and air is divided among more cylinder inductions and each individual charge is correspondingly smaller. Inversely, if the speed is pulled down with load, again substantially the same amount of fuel and air is divided among less cylinder inductions and each charge is correspondingly larger. This is of vital importance for an Injector engine must be capable of both a power dive and also function perfectly when the speed is reduced by the extra load of a climb. The use of a variable pitch propeller is also made possible by this ability to compensate for load which is inherent in this injection system.

Another advantage of this Fuel Injection system, which is inherent, is the ability to compensate for the varying atmospheric pressure encountered when flying to altitude. This is accomplished by limiting the fuel the injector can deliver to the maximum required by the engine, as is the maximum air inducted by the engine dependent upon the valves or other breathing restrictions. With these restrictions of fuel and air comparable on the ground, and the maximum output of the engine dependent upon them, they will be comparable at other atmospheric pressures where the total output is correspondingly reduced. Likewise, any part—throttle fuel and air which is in proportion on the ground will be in proportion at any altitude for atmospheric pressure applies to them both at any and all altitudes in which the airplane is flown.

In this low pressure system the fuel is injected into the inducted air during the suction stroke of the engine. The metered quantity of fuel, which is conducted through the fuel discharge tubes, is atomized by the spray jets mounted at the intake ports of the engine. In the spray jets the fuel is passed through ducts tangent to a central depression, or whirl—chamber, which causes the fuel to revolve so rapidly that it is torn asunder or finely atomized as it is discharged from the final orifice. The final orifice, and the ducts leading to the whirl—chamber, are each a number of times larger than is the free opening in a fine mesh screen, so only the screen in the sediment bowl is needed to guard against foreign matter carried by the fuel. Light, hydraulically operated, valves in each spray jet seal the fuel in the discharge lines against the intake manifold depression and keep the fuel lines solidly filled with fuel between each spray discharge. This fog of finely atomized fuel, which is discharged in the shape of a solid cone, is picked up by the inducted air and vaporized as it is carried into the cylinder. It is the vaporizing of this fuel in the intake port, or as it is carried into the cylinder, which absorbs heat and causes a greater weight of charge to be inducted.

MOUNTING THE INJECTOR

The mounting of the Injector is at the forward end of the crankcase, just back of the propeller, and the injector drive is taken through bevel gearing at the front end of the cam shaft. The injector is enclosed in an air scoop, which conducts the air blast to the air intake unit, and thus the cold induction air augments the impact blast for cooling. A sediment bowl and fuel strainer, mounted just below the air intake unit, also receives the cooling air as does the fuel line connecting the two. The installation in the airplane merely calls for a fuel line from the fuel tank connected to the rear of the sediment bowl and an upward sloping vent line from the top of the bowl to a high point in the tank. The whole unit streamlines nearly into the cowling of the airplane with merely an opening at the front to accomodate the opening of the air scoop.

The air throttle assembly is mounted just back of the injector, on the lower side of the crankcase, and standard air intake pipes lead from the throttle assembly to the intake ports. Tubes from the injector are firmly clamped to the air intake pipes and conduct the fuel from the injector to spray jets mounted in the induction pipes just outside the intake ports. The valve which meters the fuel to the injector and the throttle controlling the air to the engine are linked together so that any degree of opening or closing simultaneously affects them both.

From the Injector mounted on the crankcase, neoprene covered tubes conduct the fuel to the spray jets at the intake ports of the cylinders. The neoprene, which closely covers the tubes, projects into skirts on the tube connectors at the ends, and this complete covering damps out all vibration and also allows rigid clamping, to prevent wear, without injury to the copper tubes which conduct the fuel. The order in which the fuel is discharged from the fuel outlets of the injector is in accordance with the firing order of the engine. As these four cylinder engines fire in the same sequence of 1 3 2 4 the plunger ports serve the outlets connected to the cylinders in that respective order. Fuel lines from the injector to the intake pipes are connected with the left front injecttor fitting going to the left front cylinder, left rear to the left rear cylinder, right front to the right front cylinder and right rear to the right rear cylinder. Thus the discharge duct of number one plunger is set to first serve the outlet to number one cylinder, and 180 degrees later the discharge port in number two cylinder serves the outlet to number three cylinder. On the second rotation of the injecttor the number one plunger has rotated until the discharge duct serves the outlet to number two cylinder, and 180 degrees later the discharge duct to the number two plunger serves the outlet to the number four cylinder. With the third rotation of the injector the cycle is repeated.

INTERNAL TIMING OF INJECTOR

The internal timing of the injector must provide for a registry of one end of the intake port in the plunger with the suction duct in the injector as the cam is rotated through its down slope, or drop portion, and a registry of the discharge port, which is the lower or single port in the plunger, with the outlet passage of the injector when the cam is rotated through its up slope, or lift portion. The plungers are gear—driven at half the speed of the cam and thus one plunger is made to serve two cylinders as the cam is being driven at engine speed.

The marking on the plunger gears and on the lower end of the drive housing to give this internal timing for clockwise rotation of the cam, as viewed from the driven end, is a number 1 stamped on the gear to be placed in line with a number 1 stamped on the end of the housing, and a number 2 stamped on the second gear to be placed in line with a number 2 stamped on the opposite end of the housing. With the plungers in this position, the cam gear is then meshed between them with the notch at the lower edge of the cam in line with the 1—1 marking.

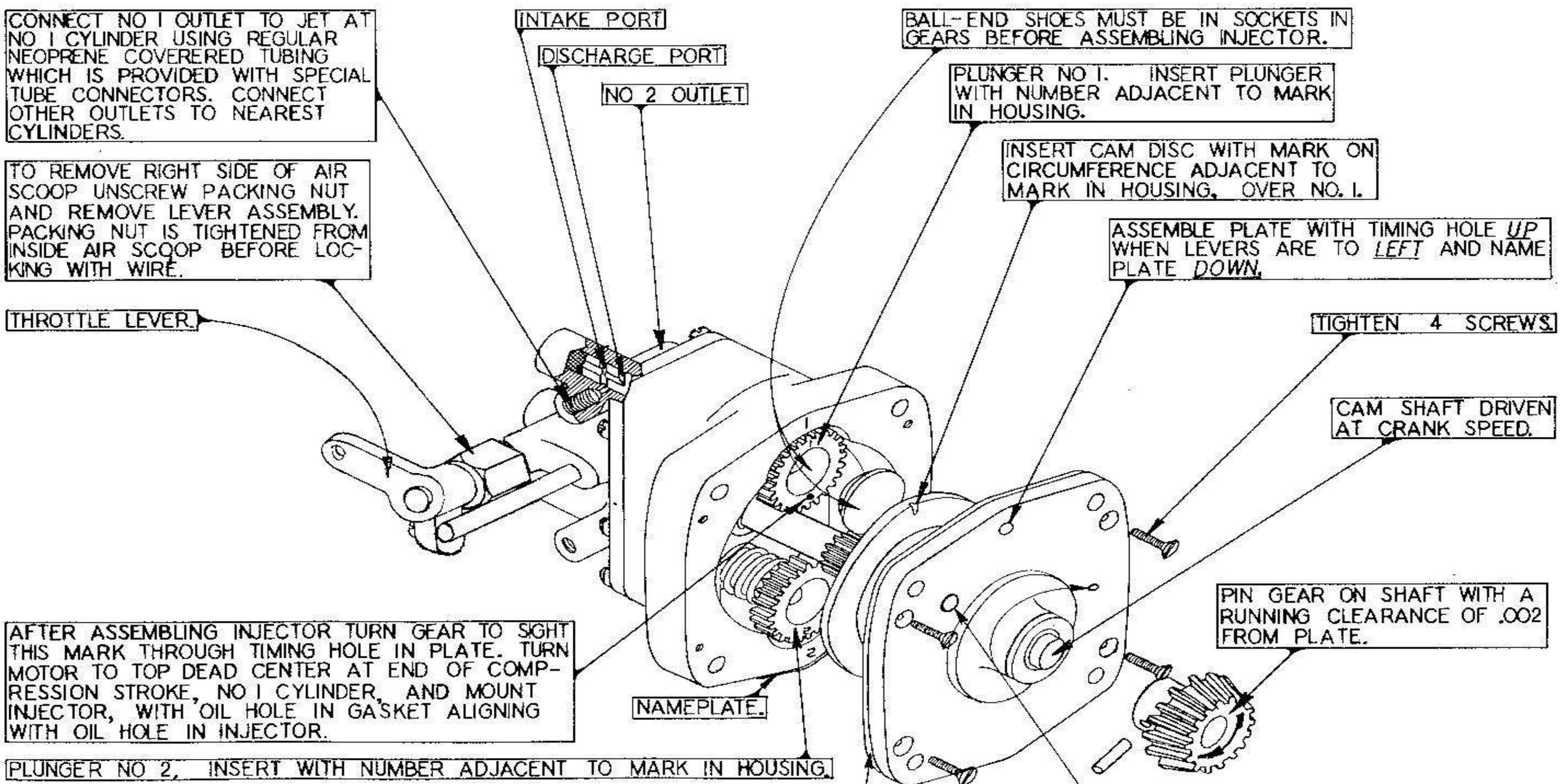
TIMING INJECTOR TO THE ENGINE

The diagram opposite entitled “Assembling and timing of Model “A” Fuel Injector” clearly shows how the injector is to be timed to the engine. When the timing mark is seen through the opening in the cover plate of the injector, the injector should be placed on the engine with the engine in such a. position that number 1 cylinder is on top dead center of the compression stroke. This mark is in line when the discharge port of the number 1 plunger is about one—third in registry with the number 2 outlet. This point is used arbitrarily for convenience in timing.

When this timing data is carried through, the time of the injection into the intake pipes is approximately at the same time the intake valve is open, except that the injection leads the intake valve by a few degrees. The end of the injection is actually 140 degrees after top center. By turning the injector pinion gear until the marked gear is seen inside of the injector, it is ready to be timed to the engine if the engine is setting on top dead center of the compression stroke of number 1 cylinder.

PERIODIC INSPECTION consists of checking all connections for tightness, checking all nuts and screws for tightness, or to make certain that they are secured with safety wire, and to empty and clean the sediment bowl and also clean the outside of the unit generally to prevent dirt from getting into the fuel—air linkage to cause undue wear. If the valve in a nozzle is leaking, which might be detected by poor acceleration from idle, the complete nozzle should be replaced.

It is evident, from the illustration shown opposite, that the Model “A” Fuel Injector is constructed such that a minimum amount of maintenance is required and it is strongly recommended that no unnecessary disassembly or tampering with the unit be allowed. While ruggedly constructed, the Injector necessarily has very accurately machined and selected mating parts, in which limits of travel must be maintained, thus this Company should be consulted before extensive servicing is undertaken.



BEFORE ASSEMBLING INJECTOR, PARTS MUST BE WASHED THOROUGHLY IN CLEAN GASOLINE AND LUBRICATED WITH CLEAN OIL. BE CERTAIN THAT THERE IS NO EXCESS OIL IN CYLINDERS OF INJECTOR, OR PLUNGERS WILL NOT ENTER TO THEIR PROPER DEPTH. PLUNGER RETURN SPRINGS MUST HAVE VELLUMOID GASKET AND STEEL WASHER BEARING AGAINST PUMP BODY AND RECESSED BRONZE WASHER BEARING AGAINST PLUNGER GEAR.

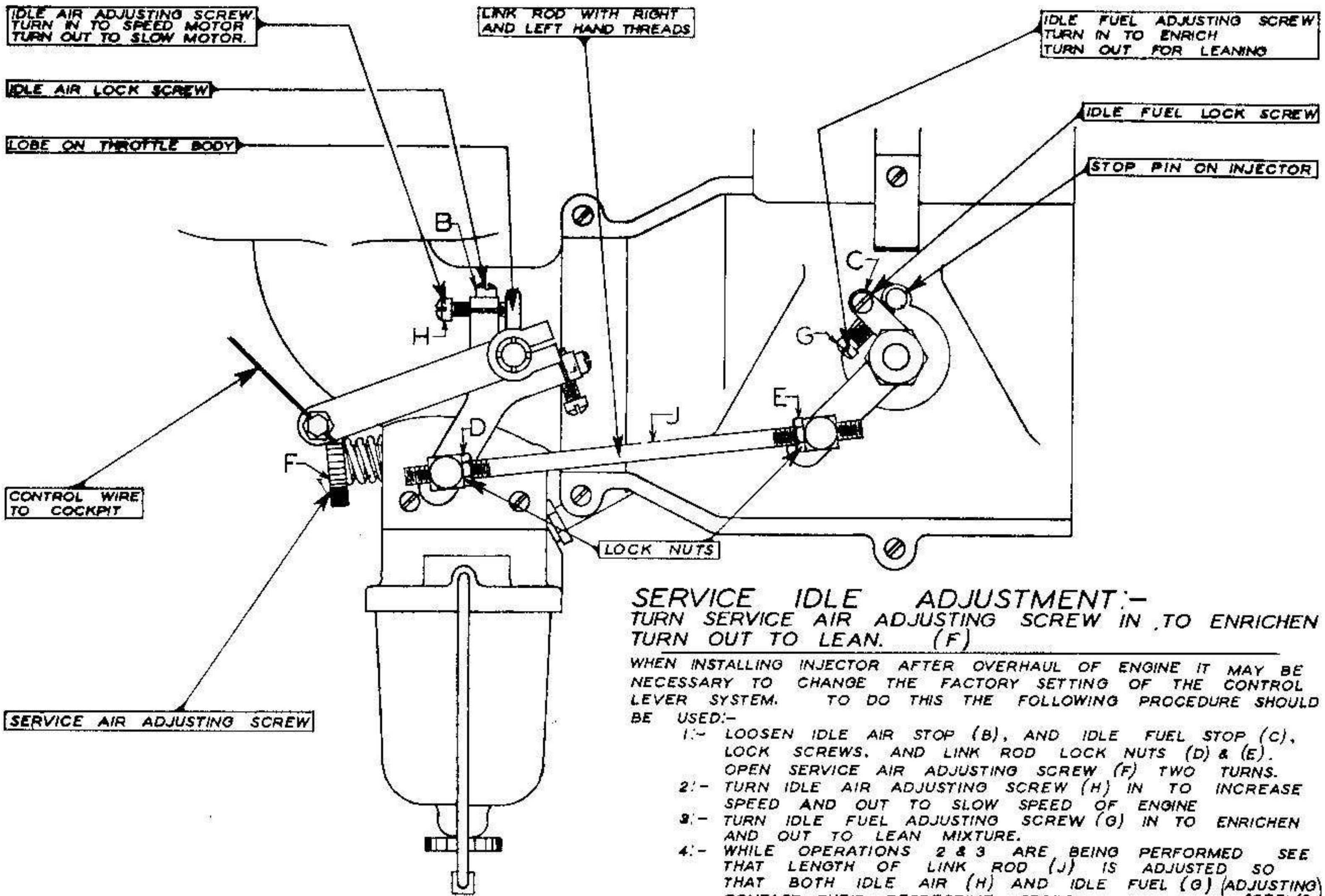
ASSEMBLING & TIMING OF
MODEL "A" FUEL INJECTOR

ADJUSTMENT OF THE FUEL INJECTOR

When it becomes necessary, for one reason or another, to adjust the Fuel Injector, the first adjustment that should be made, and probably the only one, is the adjustment in the low part throttle range or to take care of the idle. This adjustment is made as follows (referring to the illustration entitled “Fuel and Air Adjustment”):

(1) Remove end of link (J) from either lever.
(2) Back off screw (H) sufficiently to close air throttle completely.
(3) Open air adjusting screw (F) approximately two—thirds of way out (approximately seven turns).
(4) Adjust idle fuel adjusting screws (G) for richest setting giving maximum idle speed.
(5) Replace link rod (J) after adjusting to proper length so that both the idle fuel adjusting screw (G) and the air adjusting screw (H) are against their respective stops when the throttle is closed.
(6) Lock all screws and nuts on link and levers.
(7) Adjust idle speed with the air adjusting screw (F).
(8) Safety idle air adjusting screw.

The idle adjustment when properly made adjusts the injector for the entire speed range of the engine. An alternate method is to make the adjustment for the best running at 1200 to 1500 R.P.M. and then check down to idle and upward towards the full—throttle position. With this method if the idle is rich, it can be leaned with the air adjusting screw “F”. With a satisfactory low part—throttle adjustment it should not be necessary to make any further adjustments to the injector insofar as a rich or lean mixture is concerned. You will find that there is a considerable range of adjustments at idle that will allow the injector to operate properly throughout the cruising and full—throttle ranges. It is always best to favor a mixture slightly rich at idle inasmuch as this affords extra insurance against the engine ever stopping. The best idle speed is about 500 R.P.M. to 600 R.P.M.



SERVICE IDLE ADJUSTMENT:-

TURN SERVICE AIR ADJUSTING SCREW IN, TO ENRICHEN
TURN OUT TO LEAN. (F)

WHEN INSTALLING INJECTOR AFTER OVERHAUL OF ENGINE IT MAY BE NECESSARY TO CHANGE THE FACTORY SETTING OF THE CONTROL LEVER SYSTEM. TO DO THIS THE FOLLOWING PROCEDURE SHOULD BE USED:-

1:- LOOSEN IDLE AIR STOP (B), AND IDLE FUEL STOP (C), LOCK SCREWS, AND LINK ROD LOCK NUTS (D) & (E). OPEN SERVICE AIR ADJUSTING SCREW (F) TWO TURNS.

2:- TURN IDLE AIR ADJUSTING SCREW (H) IN TO INCREASE SPEED AND OUT TO SLOW SPEED OF ENGINE

3:- TURN IDLE FUEL ADJUSTING SCREW (G) IN TO ENRICHEN AND OUT TO LEAN MIXTURE.

4:- WHILE OPERATIONS 2 & 3 ARE BEING PERFORMED SEE THAT LENGTH OF LINK ROD (J) IS ADJUSTED SO THAT BOTH IDLE AIR (H) AND IDLE FUEL (G) (ADJUSTING SCREWS) CONTACT THEIR RESPECTIVE STOPS.

5:- TIGHTEN ALL LOCK SCREWS AND LOCK NUTS.

FUEL AND AIR ADJUSTMENT

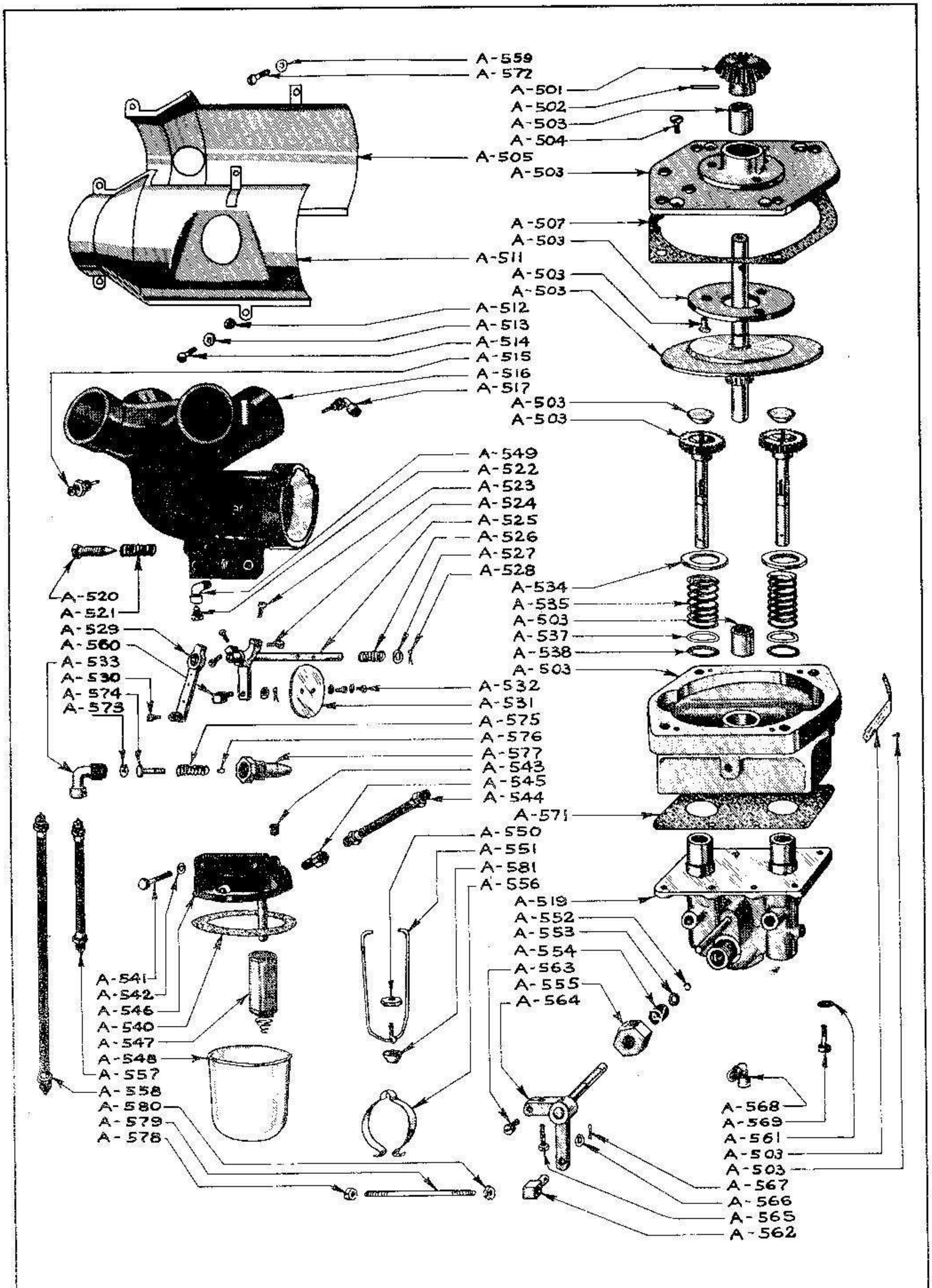
STARTING OF THE FUEL INJECTOR ENGINE

The injector engine is quite easy to start, in either hot or cold weather, provided simple instructions are followed.

The discharge nozzles which create the fuel spray in the intake pipes have check valves in them which are opened solely by pressure in the discharge lines. It is obvious, therefore, that there must be a reasonable pressure built up in the line by the injector before these cheek valves will open and allow fuel to be discharged into the intake pipes. Even though the engine may be warm, if it has been setting for several minutes, the pressure in the discharge line has fallen back. In pulling the engine through, as in ordinary cranking, sufficient pressure is not built up by the injector to cause the check valves in the discharge nozzles to open, and as a result, no new charge of gasoline is permitted to enter the cylinders.

It is necessary, therefore, that whether the engine is hot or cold, its starting should be treated as though starting a carburetor engine under cold condition. In other words, several “shots” from the primer is necessary for the initial firing of the engine. After the engine fires just once or twice, from the fuel supplied by the primer pump, then the injector has by that time built up sufficient pressure to begin to function normally.

If the engine becomes over—primed, while extremely hot, turn the switch off and open the throttle wide and pull through, preferably backwards, until the hot smudgy charge is cleared from the cylinders. When the engine kicks backwards, it usually indicates a lean hot mixture which can be corrected by slightly more prime drawn into the cylinders by pulling through with throttle closed. When the mixture within the cylinders is correct, with throttle slightly open, pulling through briskly with contact, the engine will start.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PART NO.	NAME	NO. REQ'D	ILLUST. NO.	PRICE
A—4606	FUEL INJECTOR ASSEMBLY COMPLETE . . . . Each assembly consists of an injector assembly, an air intake housing assembly, an intake manifold assembly, a sediment bowl assembly, and associated parts.	1		95.00
4606	FUEL INJECTOR UNIT ASSEMBLY COMPLETE . . . . . The following parts of the above unit assembly are replaceable:	1		68.50
A—l3—l	(2) Spring—Plunger—Fuel Injector		A—535	.20
A—9—3	(2) Seat—Plunger Spring—Oilite . .		A—534	.15
A-9—2	(2) Washer—Plunger Spring		A-537	.01
A—10—3	(2) Gasket—Plunger Spring Boss-Vellumoid . . .		A-538	.01
A—10—1	(1) Gasket—Injector Housing to Injector Pump Head		A-571	.10
A—10—2	(1) Gasket—Injector Housing to Injector Cam Bearing Plate		A—507	.10
A—11-1	(4) Screw-Flat Head-Cam Bearing Plate to Injector Housing		A—504	.02
A—15-1	(8) Screw-Fillister Head—Machine—Injector Pump Head to Injector Housing		A-569	.05
A—22—1	(8) Lockwasher—Injector Pump Head to Injector Housing		A—561	
A—29—1	(1) Circlip—Metering Shaft		A—552	.02
A-39-1	(1) Packing-Metering Shaft Gland Nut		A-554	.05
A-9-7	(1) Washer—Metering Shaft Packing		A—553	.01
A-12—1	(1) Gland Nut—Metering Shaft		A—555	.35
A—15-2	(1) Screw-Fillister Head-8—32 x 5/8—Metering Shaft Lever—Adjusting . . .		A-565	.02
A—15-3	(1) Screw-Fillister Head-8-32 x 5/8—Metering Shaft Lever Adjusting Screw—Lock .		A-563	.02
A-103	(1) Metering Control Valve Shaft Assembly- Consists of a Metering Valve, Valve Control Lever, and Pin		A—564	3.00
21402	(1) Gear—Fuel Injector—Driven		A—501	5.10
20596	(1) Pin—Fuel Injector Driven Gear to Drive Shaft		A—502	.04
A—4618	AIR INTAKE HOUSING ASSEMBLY (Right Half)—-Consists of a Right Half Intake Housing and Bracket .	1	A—511	.76
A-4619	AIR INTAKE HOUSING ASSEMBLY (Left Half)--Consists of a Left Half Intake Housing and Bracket .	1	A—505	.76
20668	Screw—#10—24 x 3/8—Air Intake Hs'g-Right to Left	3	A—514	.02
20654	Lockwasher-3/16-Air Intake Hs'g-Right to Left	3	A—513	.01
20668	Screw—#10—24 x 3/8—Air Intake Hs'g to Injector	2	A—572	.02
20654	Lockwasher-3/16-Air Intake Hs'g to Injector	2	A—559	.01
AN340—10	Nut—#10—24-Air Intake Hs'g-Right to Left . . .	3	A—512	.02

PART NO.	NAME	NO. REQ'D	ILLUST. NO.	PRICE
A-302	INTAKE MANIFOLD ASSEMBLY	1		12.00
	Each assembly consists of the following parts and assemblies:			
5463	(l) Manifold—Intake		A—516	9.50
22012	(1) Elbow—l/4—Intake Manifold Drain		A—549	.13
22019	(1) NUT & SLEEVE ASSEUBLY—INTAKE MANIFOLD DRAIN ELBOW.......		A—522	.05
22021	(1) Screw—Injector Air Bleed		A—520	.20
21513	(1) Spring—Injector Air Bleed Screw		A—521	.10
21482	(2) Screw—#8—32 x 1/2—Air Control Valve—Stop Lever—Adjusting		A—524	.02
21482	(2) Serew-#8-32 x 1/2—Air Control Valve—Stop Lever Adjusting Screw—Lock		A—523	.02
21423	(1) Lever-Throttle		A—529	.49
22089	(1) Washer—#6—Plain			.01
22090	(1) Swivel—Throttle Lever			.14
AN500-A8—5	(1) Screw—#8—32 x 3/8—Fillister Head—Drilled—Throttle Lever Swivel .		A—530	.06
20654	(1) Lockwasher—Lever Clamp Screw			.01
AN500—l0—8	(1) Screw—#l0—24 x 1/2—Fillister Head—Drilled—Lever Clamp			.02
A—l0ll	(1) AIR CONTROL VALVE SHAFT ASSEMBLY--Consists of a Control Valve Shaft, a Stop Lever, and a Pin		A—525	1.25
21481	(1) Spring—Air Control Valve Shaft		A—526	.05
2473	(1) Washer—Air Control Valve Shaft Spring		A—527	.01
AN380—3—2	(1) Cotter Pin-Air Control Valve Shaft . . .		A—528	.01
21424	(1) Valve—Throttle		A—531	.50
21431	(2) Screw—#8—32 x 5/16—Throttle Valve to Shaft		A—532	.02
21597	(1) Lockwasher—#8—Throttle Valve to Shaft Screw .		A—532	.01

A—3934	SEDIMENT BOWL ASSEMBLY	1		3.50
	Each assembly consists of the following parts and assemblies:			
A—31—2	(1) Cover & Section Tube Ass'y.-Sediment Bowl . .		A—546	2.25
A—l005	(1) Gasket—Sediment Bowl . . . •		A-540	.10
A—37—A—1	(1) Strainer Ass'y		A-547	.25
A—1006	(1) Bowl-Glass—Sediment		A—548	.35
A—l05	(1) Ball & Screw Ass'y		A-551	.40
A—l05—1	(1) Nut—Bail Screw		A—550	.10
A—l007	(1) Seat—Sediment Bowl		A—58l	.05
22051	(2) Screw—Hex Head—l/4—20 x 3/4—Drilled—Sediment Bowl Ass'y to Intake Manifold . .		A-541	.10
20522	(2) Washer—l/4—Plain-Sediment Bowl to Intake Manifold		A—542	.01
20975	(1) Plug-1/8—Pipe-Aluminum-Bowl Cover Vent Hole .		A-543	.08

A-22020	TUBE ASSEMBLY COMPLETE-SEDIMENT BOWL TO FUEL INJECTOR......	1	A-544	.30
	Each assembly consists of one 1/4" O.D. copper tube, and two nut and sleeve assemblies			

PART NO.	NAME	NO. REQ'D	ILLUST. NO.	PRICE
A-l08	ROD ASS'Y COMPLETE-INJECTOR LEVER TO THROTTLELEVER	1		1.15
	Each assembly consists of the following parts:			
21427	(1) Rod—Injector Lever to Throttle Lever . .		A—579	.35
21475	(1) Nut-Plain-Hex-#10-32-Left Hand Thread-Injector Rod—Lock		A—578	.03
21476	(1) Rod End-Left Hand Thread-Injector Lever to Throttle Lever . .		A—560	.35
2436	(1) Nut-Plain-Hex-#l0-32-Right Hand Thread-Injector Rod—Lock		A—58O	.03
21428	(1) Rod End-Right Hand Thread-Injector Lever to Throttle Lever		A—562	.35
2471	(2) Washer—#10-Rod End		A-566	.01
2501	(2) Cotter Pin—1/16 x 1/2—Rod End		A—567	.01
A-21373	TUBE ASSEMBLY COMPLETE-FUEL INJECTOR TO INTAKE ELBOW (Cylinders 3 & 4)	2	A—558	.85
	Each assembly consists of one 21" copper tube, two nut and sleeve assemblies, and one Duprene tube covering			
A-21372	TUBE ASSEUBLY COMPLETE-FUEL INJECTOR TO INTAKE ELBOW (Cylinders 1 & 2)	2	A—558	.35
	Each assembly consists of one 19—1/4" copper tube, two nut and sleeve assemblies, and one Duprene tube covering			
A—22008	TUBE ASSEMBLY COMPLETE-FUEL INJECTOR VENT . .	1	A—557	.75
	Each assembly consists of one 7—1/2" copper tube, two nut and sleeve assemblies, and one Duprene tube covering			
21466	JET ASSEMBLY COMPLETE—ENGINE INTAKE ELBOW .	4		1.70
	Each assembly consists of a nozzle- housing, whirl chamber, metering orifice, plunger, and a sleeve, plus the following parts:			
A—41—l	(1) Spring—Plunger		A—575	.02
A—39—1	(1) Lock—Snap Ring		A-573	.01
21375	(1) Elbow—Injector Jet		A.533	.14
	MISCELLANEOUS PARTS:			
22011	Coupling-Female-Sediment Bowl to 1/4" O.D. Tube	1	A—545	.13
22010	Clip—Injector Tube to Intake Pipe	4	A—556	.19
21404	Gasket—Injector to Crankcase	1		.02