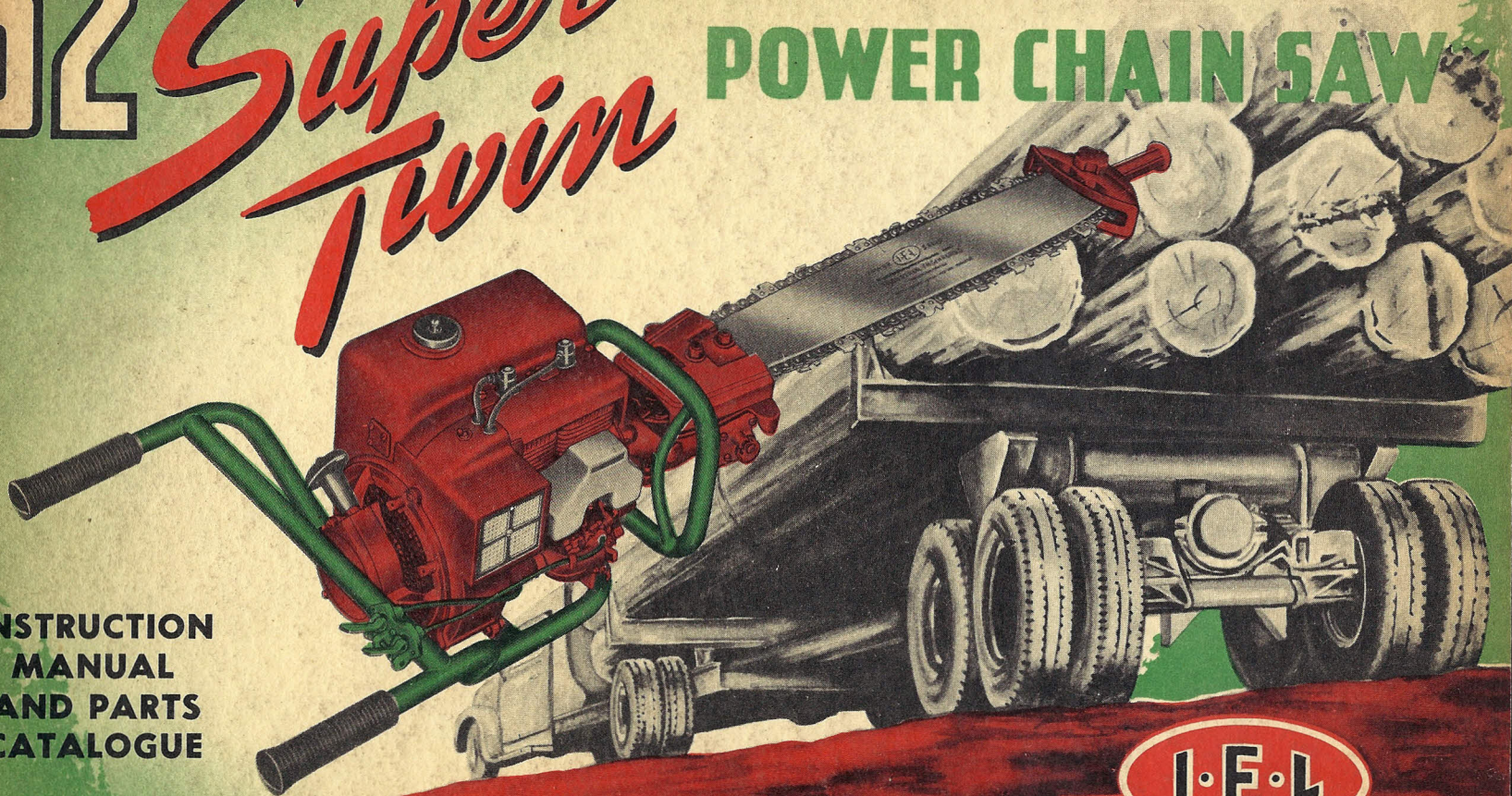


52

Super Twin

ONE & TWO MAN POWER CHAIN SAW

INSTRUCTION
MANUAL
AND PARTS
CATALOGUE



INDUSTRIAL ENGINEERING LIMITED



**Power
CHAIN SAWS**

I.E.L. is proud to present the 52 Super Twin, the latest power chain saw on the market today. The 52 Super Twin, produced by the first makers of chain saws in America, represents many years of experience and research. Tested and retested, these machines are designed and built by our engineers and staff in close collaboration with the men who use this type of equipment. This new power saw has proved to be the ultimate in a labour saving machine for use in the logging and pulpwood industries. The 52 Super Twin is also used to great advantage in many other industries, for cutting mine props, railway ties, or general construction, etc.

I.E.L. Power Chain Saws are proudly offered by the owners, who work at the benches, lathes and desks. Any criticism, comment or suggestions that users may have to offer will be most sincerely appreciated in the spirit of co-operation.

100 PER CENT OWNED AND OPERATED BY THE EMPLOYEES

INDUSTRIAL ENGINEERING LIMITED

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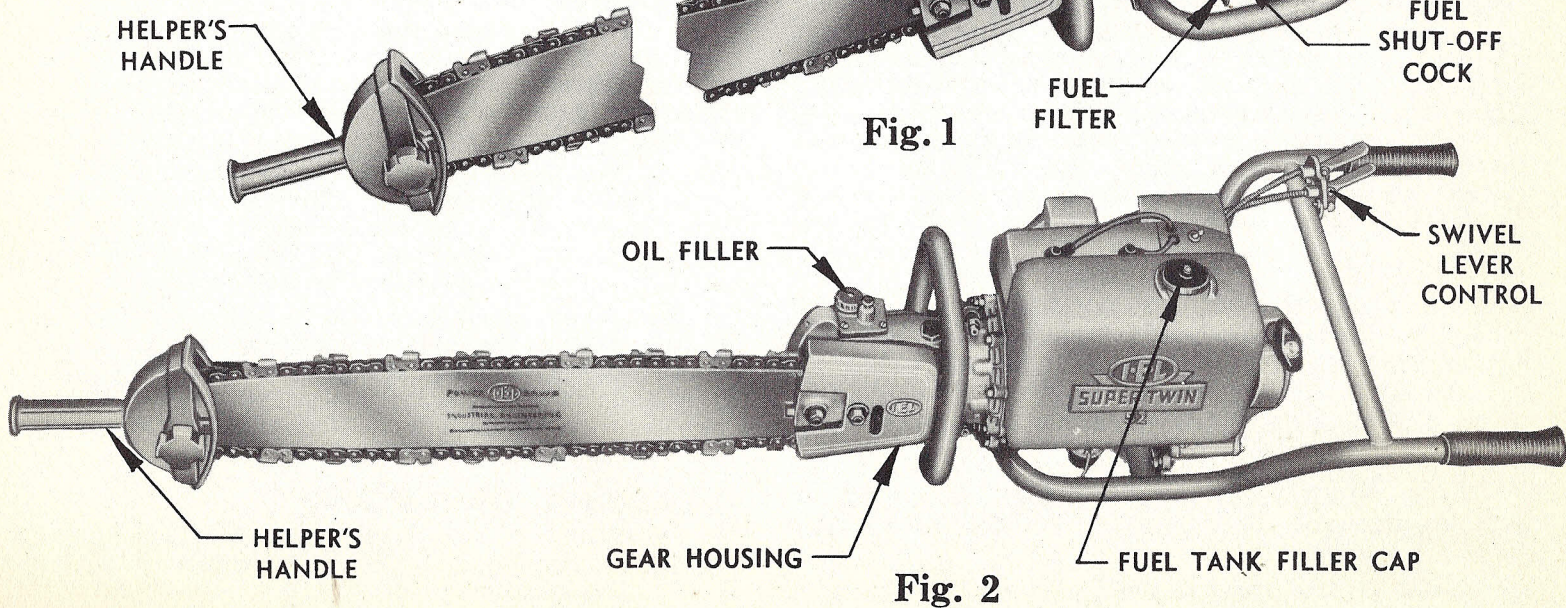
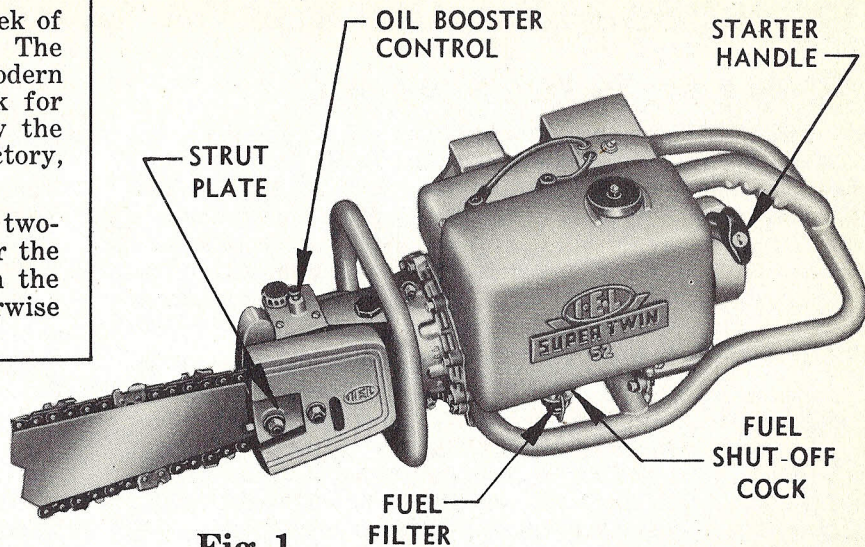
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I.E.L. Power Saws, Inc.
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TO THE OWNER

Do not work the engine too hard for the first week of usage. Treat it as you would a new automobile. The 52 SUPER TWIN is precision manufactured in a modern plant, and is designed and built to do the work for which it is intended. Give it proper care, follow the instructions outlined, and it will give you satisfactory, reliable service.

It is **IMPORTANT** to understand that this is a two-cycle motor and the only source of lubrication for the motor is the lubricating oil which is mixed with the fuel. Follow the instructions carefully, otherwise trouble is certain.



Instructions for the Operation and Care of the '52 Super Twin Chain Saw

PREPARATION FOR STARTING

The cutter bar and sawing chain should be fitted to the machine. First slacken the two nuts and the strut plate (Fig. 1). Cutter bar can then be slid on to the machine between the facing on the main casting and the strut plate. On the strut, there is a pin on the strut face which must be engaged in the corresponding hole in the cutter bar. The nuts clamping the strut in place should be almost tightened up, and the bar drawn back to its fullest extent by means of the tightener screw.

The chain should then be loosely looped over the bar, taking care that the cutter teeth are facing the machine on the underside, and fitted carefully onto the sprocket. The rest of the chain can then be guided into the groove on the bar and around the end of the bar after fitting the master rivet; the chain should then be tightened by means of the adjuster, moving the bar out until the chain can be lifted off the bar slightly, without strain. Do not tighten the chain too tightly. Finally, the two strut bolts should be tightened fully.

CAUTION:

1. Be sure tightener pin is engaged in bar hole before tightening strut nuts.
2. Do not screw tightener bolt unless strut nuts have been loosened.
3. Be sure strut nuts are tightened after chain is tightened.

It should be noted that a new chain stretches for the first few days and will require re-tightening at intervals until it is fully stretched.

The oil tank at front end of machine should be filled with oil sufficiently fluid to flow easily at prevailing tem-

peratures. If the wood is pitchy, a half and half mixture of kerosene and lubricating oil should be used. This oil is fed to the chain automatically, but a booster control is fitted to enable an extra flood of oil to be forced onto the chain. This is a small knob beside the oil filler and it should be pushed down and held for a short interval. (Fig. 1).

FUEL MIXTURE

THE FUEL TANK MUST BE FILLED WITH A MIXTURE OF REGULAR GRADE GASOLINE AND SAE-40 LUBRICATING OIL. Recommended ratio: 10 PARTS of GAS to ONE OF OIL, or 1 PINT of oil to 1½ GALLONS OF GASOLINE.

This is a two cycle unit so the only source of lubrication for the motor is the lubricating oil that is mixed in the gas. Leaded gasoline should be avoided, and oil of a type that is non-carbon forming should be utilized.

The gasoline and oil should be well mixed in a separate, CLEAN container and must be thoroughly stirred with a paddle for proper mixing. Extra care should be taken when mixing in the winter, as cold oil is harder to mix. Always shake the mixture well before pouring into the tank, if it has been standing for any length of time.

Several oil companies prepare a power saw fuel "mix". These mixtures are made up in different proportions of oil and gas according to specifications laid down by different manufacturers of power saws. You should be certain that any "mix" to be used in your machine conforms to the specifications laid down in your manual.

STARTING THE ENGINE

1. Open the fuel tank shut-off cock. (Fig. 1).
2. An ignition switch is conveniently placed at the top of the blower housing. To start have the switch in "ON" position, "OFF" position to stop.

3. If the motor is cold, close the choke on the carburetor. The choke lever is placed at the front of the carburetor, and is open when lever is pointing towards engine. The colder the weather and the motor, the more choking is needed. The main needle valve adjustment should be approximately one full turn open. If the motor is cold it may be found necessary to open the adjustment another quarter turn. Be sure this is re-adjusted before starting to saw.
4. Open the throttle and pull the starter handle (Fig. 1) easily until engagement is felt. Then give the knob a firm, sharp pull, moving the hand not more than one or two feet. Open the choke after the motor starts to warm up. Run at half throttle for a few minutes to thoroughly warm up before starting to work.

NOTES ON STARTING

If the motor does not respond to the first pull and a second also does not produce results, choking or further flooding may be necessary and points 3 and 4 should be repeated. The colder the weather and the colder the machine, the more flooding is needed. It is almost impossible to overflow the engine when it is dead cold, but excessive flooding when warm will prevent a start. If overflowing is suspected pull the motor over a few times with the needle valve closed.

If the motor is to be left to stand for a long time, it is best to run the carburetor dry by shutting off the gasoline and let the motor run. If this is not done, the gasoline evaporates leaving the lubricating oil behind, and the engine gets a large slug of almost straight lubricating oil when a start is attempted, and oiled-up plugs will result.

TROUBLE IN STARTING

1. Make sure that there is fuel in the tank and that the shut-off cock is open.

2. Check ignition by removing spark plugs and attaching ignition wires to plugs with the body of the plugs touching the engine. Fat blue sparks should appear when the motor is turned over smartly. If the spark is not good, hold the wire alone $\frac{1}{8}$ inch from the engine and pull the engine over. If a good spark appears, then the plug is faulty. If the spark is poor, check magneto points, coils and condensers. Check wires from magneto to switch for grounding or shorting.
3. Check fuel system to ensure fuel is getting through to the carburetor.

RUNNING INSTRUCTIONS

After starting the motor, allow it to warm up for a little while before starting to cut. This is particularly important when the weather is very cold or when the motor is cold. Then speed up the engine until the clutch engages and the chain starts moving and feed some oil to the chain by means of the booster valve.

Keep the motor speed low when warming the machine up and look the machine over to make sure everything is alright.

When starting a cut, do not race the motor and then jam the blade into a cut. Bring the engine up to cutting speed and then start the cut easily, opening the throttle at the same time. Keep the engine pulling hard by pressing it into the cut, but avoid lugging the engine slowly, as far as possible. The good operator is noticeable in the way he keeps the engine speed steady. A slight rocking motion to the blade gives the operator extra "feel" as to what is happening in the cut and also eases the load on the engine, giving faster cutting. If the machine is loaded down, the clutch will automatically disengage and if this happens, the throttle should be closed immediately.

NOTE: IF THE CLUTCH IS KEPT SLIPPING WITH THROTTLE OPEN, EXCESSIVE WEAR OF THE LININGS WILL OCCUR. The change from the bucking to the felling position is accomplished by pressing the swivel release trigger down and then turning the front end of the machine around by means of the front handle bar. Release of the trigger will lock the front end in the desired position.

GENERAL CARE OF THE MACHINE

1. Keep the machine clean and free of sawdust.
2. Clean the carburetor air screen and cooling screen regularly. (Fig. 7).

NOTE: DO NOT OPERATE WITH SCREEN LEFT OUT.

3. Clean the fuel filter (Fig. 1) regularly. A screen will be found in the adaptor which is the connection between fuel filter and gas tank. If clogging is suspected this point should be checked.
4. At regular intervals, remove the tank and shroud and clean dirt and sawdust from cylinder and head fins.
5. Check the tightness of all nuts and bolts on the machine regularly.
6. Keep the exhaust ports free from carbon.
7. Wash out the fuel tank if a lot of dirt appears in the filter.
8. Keep the cutting chain sharp, and properly jointed and set.

In some instances above, how often the job should be done is not given, because circumstances of operation vary the necessity for the work considerably. If a point is checked and found OK, then the interval between jobs can be lengthened. Conversely, if say the air filter is found to be very dirty, it should be cleaned more often.

CLEANING THE EXHAUST PORTS

The necessity for cleaning the carbon from the exhaust ports varies considerably and depends on the fuel and oil used, how well it is mixed, the carburetor, setting, etc.

However, once a month should be adequate. To clean the exhaust ports, the exhaust can be removed by unscrewing the four screws holding it in place. Three circular ports in each cylinder will then become visible. Remove the spark plugs and turn the motor over until one piston is at the bottom of the stroke and then clean off any carbon on the ports with a piece of wood. Try to avoid getting the carbon into the cylinder as far as possible and blow the carbon out before reassembling. Repeat this process with the second cylinder. **NOTE: DO NOT USE A METAL INSTRUMENT IN REMOVING CARBON FROM PORTS.**

CLEANING THE COOLING FINS

The dirt accumulated on the cooling fins of the cylinder heads should be removed regularly. The gas tank should first be removed and the accumulated dust and dirt cleaned out with a brush. The function of the fins is to cool the block and pistons. Great care should be taken not to break the fins while cleaning.

CARBURETOR ADJUSTMENT

There are two adjustments for idling, the idling mixture adjustment which is a small screw on the top of the carburetor toward the outside (Fig. 9), near the air intake. The screw should be around $1\frac{1}{4}$ turns open.

The other idling speed adjustment sets the opening of the throttle in the idling position and is to be found on the side nearest the operator. If motor idles too fast, back off this stop screw.

The main needle valve adjustment is placed at the lower part of the carburetor toward the outside. This should be set at approximately one full turn open.

CUTTER BAR MAINTENANCE

The cutter bar should be removed and turned over from time to time in order to distribute the wear on both sides of the bar. As wear takes place, a sharp edge is left on the

extreme edge of the bar and this should be removed with a file when it becomes noticeable. The groove should be periodically cleaned of sawdust, particularly the oil hole to permit free passage of oil from the pump.

THE CLUTCH

The clutch is automatic and works on a self-energizing principle (Fig. 4). It will adjust itself as the linings wear, but when these are worn to the point where the clutch will not hold, new linings must be installed. If excess slippage occurs, there is probably oil on the facings.

GEAR HOUSING

The Gear Housing is lubricated with good grade gear grease and a small amount should be added every few weeks to make up for leakage. When renewing your grease completely, only fill the housing up to the level of the gearshaft. Excessive amounts of grease will only pump out and place an excessive strain on the grease seals.

OIL PUMP ADJUSTMENT

As previously mentioned, the oil for the cutting chain is supplied from an automatically operated pump in the gearhousing. A by-pass valve is assembled in the oiler control body which allows part of the oil pumped to pass back into the sump. The booster control knob, when pushed down, merely closes off this by-pass hole and allows the entire flow of oil to get to the bar and chain. (Fig. 6).

The amount of oil which is by-passed can be adjusted at the by-pass valve, so that your regular oil flow can be set to suit your needs. The valve can be located by removing the oiler control body (top of gearhousing) and on the underside a locknut and valve with a screwdriver slot becomes visible. Slacken off the locknut and screwing the valve inwards gives more oil, outwards for less oil. When

desired adjustment is set, retighten locknut and re-assemble unit in place.

If oil fails to pump through, check all passages to ensure they are not blocked.

MAGNETO TIMING AND ADJUSTMENT:

To expose the magneto for inspection or repair, it will be necessary to remove the flywheel cover which is the starter housing. Remove the starter driver nut being careful not to break lugs. A sharp rap with a soft hammer on the end of the crankshaft will usually loosen the fan which can then be removed. Great care should be taken not to injure the crankshaft in this operation. Too heavy a blow may put the crankshaft out of alignment or the use of a hard hammer spoil the thread.

The faces of the contact points must be clean and free from corrosion and the gap when fully open should be .020 inches. Both point sets should be the same to ensure even firing of the two cylinders. The actual timing of the spark is 27 degrees before Top-Dead Centre. This setting is obtained by placing the mark on the edge of the brass plate opposite the mark on the aluminum housing. If any magneto parts are replaced the engine should be retimed at your nearest service centre. A puller should be utilized if flywheel is difficult to get off.

CHAIN

A Power Saw is only as good as its cutting chain, therefore, it is essential that the chain be kept sharp at all times. The section on chain filing should be carefully digested and the instructions followed.

It is highly advisable to remove the sawing chain and soak it in oil over night as regularly as possible. The chain should be cleaned with Kerosene before inserting it in the oil. The life of the sawing chain is greatly increased, if regular care of this nature is given it.