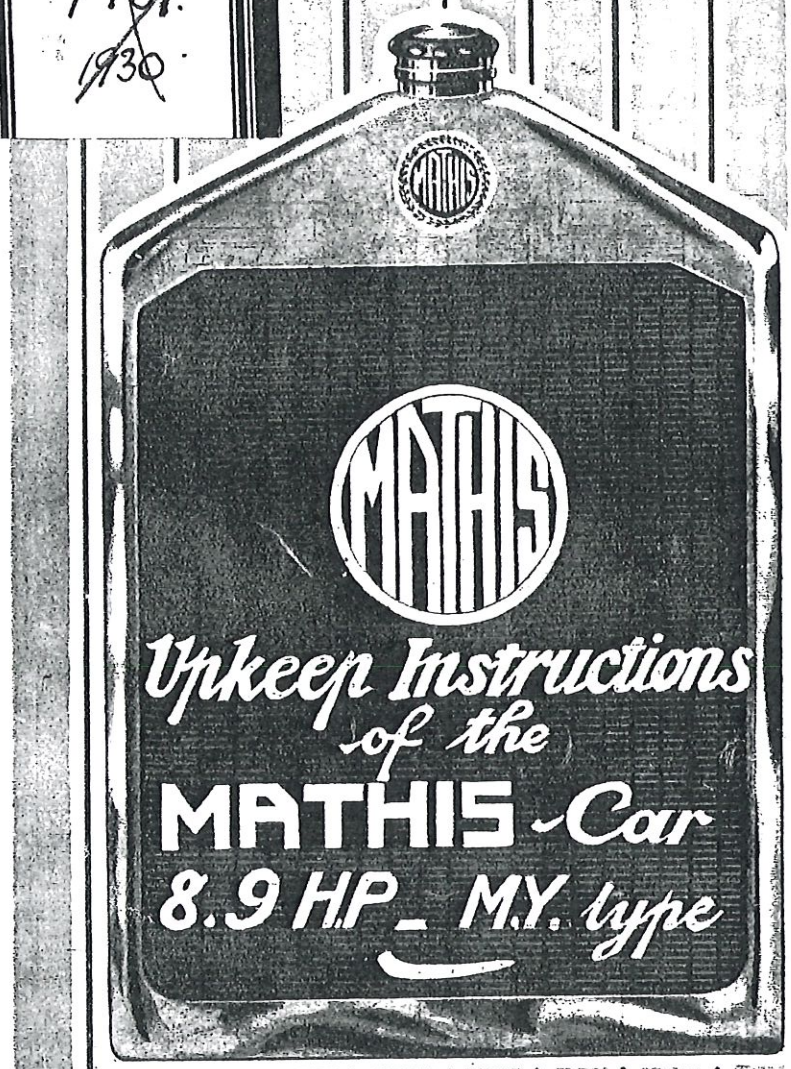
1927-1928 I. M. N° 1126

1931.
1930.



Upkeep Instructions of the MATHIS - Car 8.9 H.P. - M.Y. type

Works and Head Offices
STRASBOURG-FRANCE
200, Route de Colmar, 200
Télégr. Automathis - Strasbourg
Téléphone : 678 - 700 - 4400

PARIS - BRANCH.
143-149 Rte de la REVOLTE
LEVALLOIS-PERRET (SEINE)
Télégr. Automathis-Levallois-Perret
Telephone Wagram 93-33 93-95

UPKEEP
OF THE 8,9 HP., TYPE MY MATHIS CAR.

INDEX.

MATHIS

AUTOMOBILES - STRASBOURG

MATHIS OILS

Deliver to:

Mr. .....

of .....

..... Cases of 10 cans containing 2 litres each.

..... Cases of 25 cans containing 2 litres each.

..... Boxes of ..... kilos of grease.

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MATHIS OIL . . . . . Type A
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MATHIS OIL . . . . . Type H
MATHIS OIL . . . . . Type I
MATHIS OIL . . . . . Type S

Dispatch by:

Passenger train .....

Goods train .....

..... 192 .

Signature:

.....

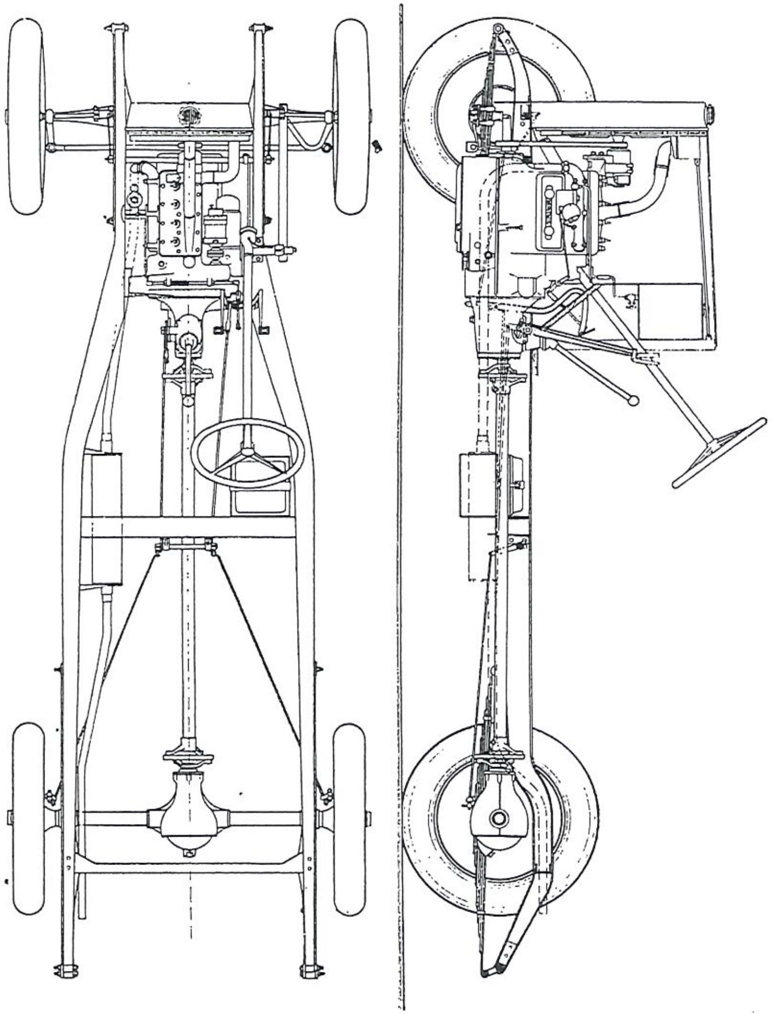

FIG. I.
PLAN AND SECTIONAL VIEW OF THE CHASSIS ASSEMBLY, 8,9 HP., MY TYPE MATHIS.

MATHIS

AUTOMOBILES - STRASBOURG

Works and Head Offices
200, Route de Colmar
STRASBOURG France
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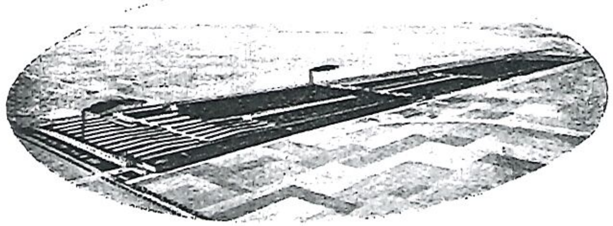


Works at 200, Route de Colmar, STRASBOURG
1,500,000 superficial square feet

UPKEEP INSTRUCTIONS

OF THE 8.9 HP., TYPE MY MATHIS CAR

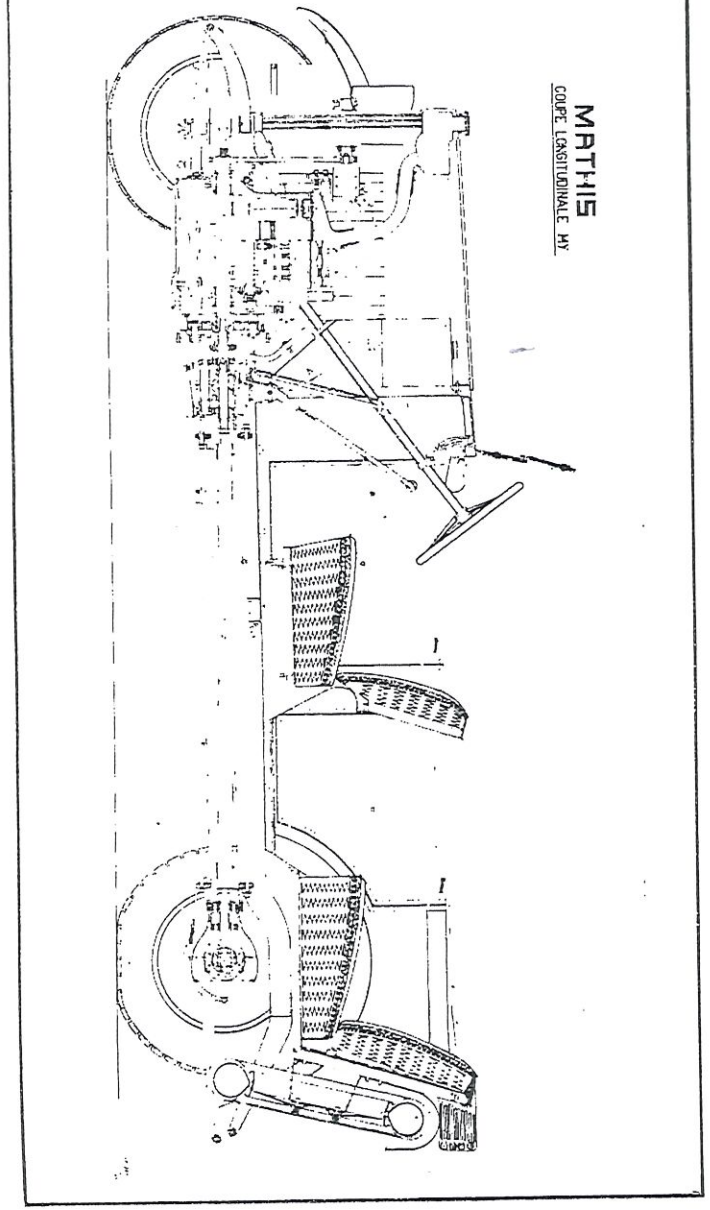


FIG. 2.
LONGITUDINAL SECTION OF THE FOURSEATER MATHIS CAR. 8.9 HP. TYPE MY. 4 CYLINDERS 60/105.

UPKEEP INSTRUCTIONS

OF THE 8.9 HP., MY TYPE MATHIS CAR.

PROLONG THE LIFE OF YOUR CAR

On the care one takes of a car during the first 600 miles depends in a large measure what service and satisfaction the owner will obtain afterwards. During this « critical period », if one can express it so, the speed must not exceed 25 miles per hour, abundant lubrication be assured with oil of the first quality, and we recommend that the increase of speed is made progressively.

The renewal of engine oil, and lubrication of the various parts must be made following the instructions contained in this notice.

However in order to retain the good condition of the engine we cannot insist too much on the importance of following the instructions concerning the renewing of the oil viz : The first time after 250 miles, the second time after 650 miles, and afterwards every 800 miles.

We advise, even if the owner is an old motorist, that this booklet be read very carefully, and the car be treated with all the care it recommends. By judicious lubrication (which one is too often apt to neglect) and following carefully the instructions contained herein, the motorist can prolong the life of his car, and obtain the complete satisfaction which one only gets from a car which fulfills ones expectations.

THE DRIVERS A. B. C.

Make sure your radiator is full.

Make a practice of often examining your oil level.

Make sure you have sufficient petrol before starting.

Do not forget to open your petrol tap.

Do not forget to switch on.

Do not forget that your engine will start easier when cold if you use your air strangler.

It is best to start in first gear, but on the level one can conveniently start in second.

Do not stay in first or second gear unnecessarily.

Drive in top gear as much as possible. The car is designed and built for it.

Do not drive at a speed of over 25 miles per hour with a new car.

Never drive at more than 42 miles per hour.

Always declutch to change gear, lifting the foot from the accelerator.

Declutch and decelerate to pass over a level crossing or bad depressions in the road.

Decelerate but do not declutch on sharp bends.

Do not rest the foot on the clutch pedal unless you are obliged to use your clutch.

Do not slip your clutch and race your engine unnecessarily.

Do not declutch descending hills.

If you are a beginner do not start to descend a hill with engine not running.

If you are an experienced motorist you may conveniently leave your engine cut out whilst descending long hills, as by judiciously using your engine as a brake, you save your brakes and economise your petrol.

Make sure that your clutch pedal does not touch the foot board.

Examine very often the quantity of liquid in your accumulators.

Make sure your dynamo is charging.

Do not run your engine if no pressure is showing on the oil guage.

Observe scrupulously the rules of the road.

Take care that you are always master of your car for speed, steering and braking.

Remember that a car without brakes is like a drifting ship, and more dangerous.

When you think you have examined everything look once more at the radiator, the oil level, the accumulators and the brakes.

Make yourself quite conversant with your instruction book.

On the road, respect all other road users.

Pay attention to local bye-laws and rules of villages and towns you traverse.

If you follow these hints and advice, you will prolong the life of your car.

You will never regret your purchase, and you will not receive summon's for breaking the laws.

MATHIS. S. A.

THE ENGINE UNIT

The MY. is a single unit component, embracing the engine, Gearbox, Clutch and pedals.

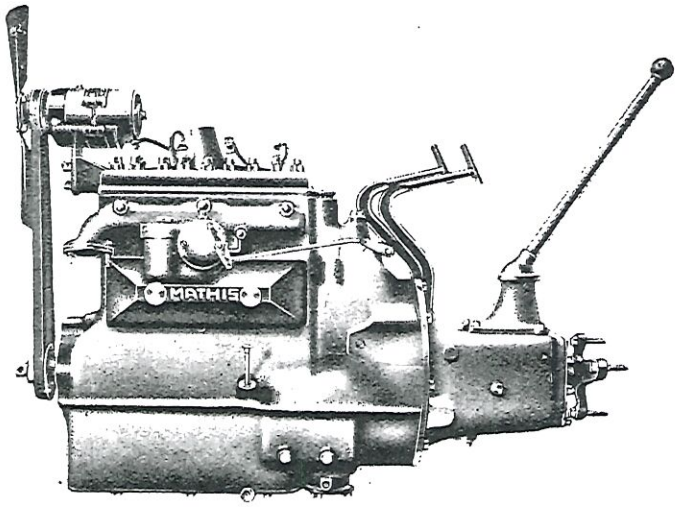


FIG. 3.
ENGINE UNIT 8.9 MATHIS, TYPE MY.

GROUP I.

ENGINE

Four cylinders, bore 60 mm, stroke 105 mm, 1200 cc, detachable head, and valves operated by adjustable tappets (see transverse section figure 4).

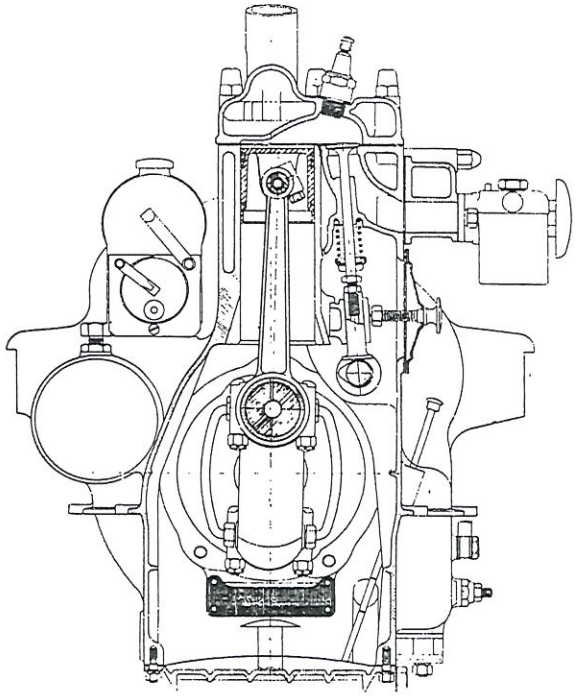


FIG. 4.
TRANSVERSE SECTION OF THE 8.9 MATHIS ENGINE, TYPE MY.

1. VALVE TIMING.

a) The inlet valve must open 0.25 mm with the piston after T. D. C. The other positions are automatically adjusted by the cam profile. Examine the timing gears to ascertain that they are assembled correctly in mesh, with their various marks corresponding, as shown in figure 5. The timing must be made from number 1. cylinder, which is the first behind radiator.

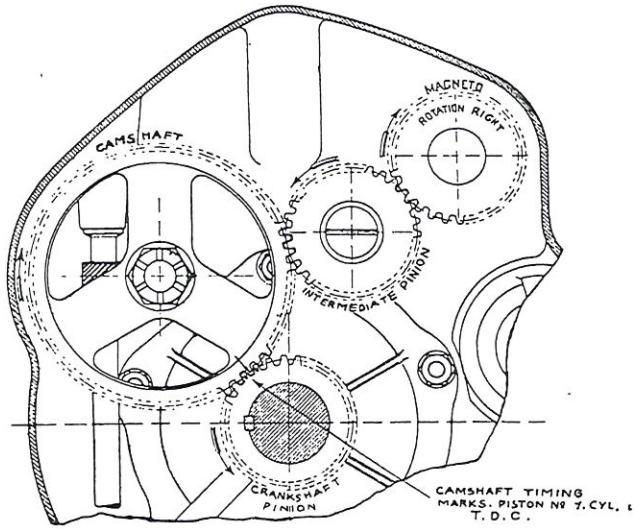


FIG. 5.
REAR VIEW OF THE TIMING PINIONS OF THE 8.9 MATHIS, TYPE MY.

We recommend that after the first 2000 miles the valves are reground, taking care to assure that the valve seatings are not less than 2,5 mm wide. This first regrinding is sometimes necessary owing to slight distortions in a new engine, which may lead to burnt valves if not corrected. After the initial adjustment it should not be necessary to regrind the valves until 10.000 miles have been run.

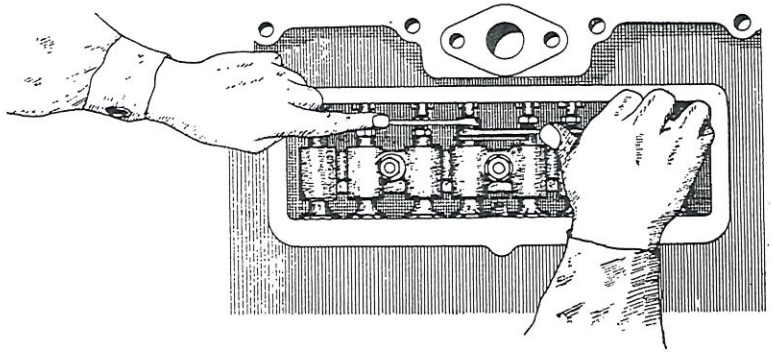


FIG. 6.
ADJUSTMENT OF THE TAPPETS.

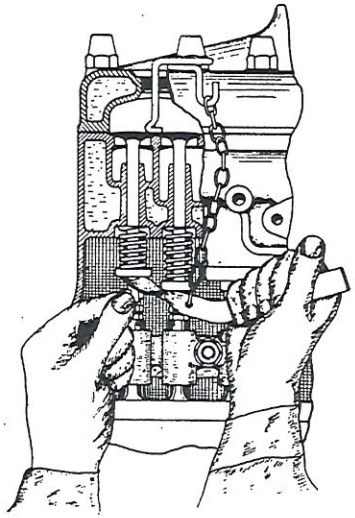


FIG. 7.
REMOVAL OF VALVES WITH THE AID OF THE MATHIS VALVE LIFTER.

b) Tappet adjustment. — The play between valve stems and tappets must be 0,25 mm, and to obtain this proceed as illustrated in figure 6.

c) Removal and adjustment of valves. — After long usage the valve seats may become pitted. In this case they must be carefully ground in. The removal of the valves and their springs is necessary to perform this operation. To facilitate the removal proceed as indicated in figure 7, using the special tools provided in each tool kit for this purpose. When the springs are removed proceed to grind in the valves, using for this purpose a mixture of very fine emery powder and oil. This operation must be effected with a screwdriver as illustrated in figure 8 and never with a hand brace, as that method is too coarse to obtain an even seating. If for any reason it has been necessary to remove the tappet cover, special care must be taken when replacing, to see that the oil retaining joint behind the cover is properly in place, also that the securing nuts are well tightened to prevent any leakage of oil.

2. IGNITION.

The ignition of the MY. engine is effected by a high tension magneto driven through a very flexible joint. To lubricate the magneto it is necessary to put one or two drops of very thin oil in the cups provided for that purpose every 300 miles. From time to time it is necessary to carefully clean the distributor, to remove the carbon deposits that come from the brushes.

The contact breaker of the magneto is the only part that requires any attention. It is solidly fixed on the armature

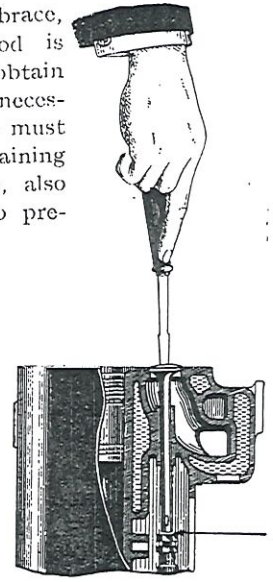


FIG. 8.
GRINDING IN VALVES.

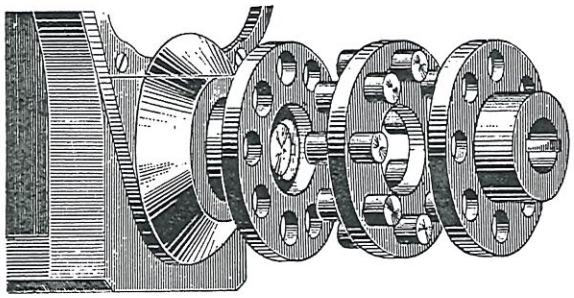


FIG. 9

RUBBER COUPLING OF THE MAGNETO (ADJUSTABLE).

shaft, and turns with it in a sleeve holding two cams diametrically opposed. The distance between the two platinum points when open must be exactly 0,35 mm. Do not remove the contact breaker more often than is absolutely necessary, but when removal is necessary, do not use a screwdriver as a lever. The platinum points must be cleaned with petrol, never with a file or emery cloth. If faulty ignition is traced to the magneto, first examine the contact breaker. Verify the spring leaf for lateral play, that the surfaces of the contact points are clean, proper, and in perfect line. See that the rocker arm works freely on its pin. Never put oil on the contact breaker.

FIRING ORDER OF THE MAGNETO.

The firing order of the cylinders is that indicated in figure 10, which order corresponds with the figures marked on the exterior of the distribution cover. When arranging the magneto cables to their respective cylinders, always start at number 1 cylinder (nearest to radiator) this being the easiest way to correct the timing. Carefully insulate the cables.

TIMING THE MAGNETO.

Turn the engine with starting handle until number 1 piston (first behind radiator) reaches 4,5 to 5 mm before top dead centre on compression stroke, which position represents the maximum advance of magneto. At this point, observe that both valves are closed, that the points of contact breaker are just starting to open, and that the distributor carbon brush is in the position that corresponds with nº 1 cylinder.

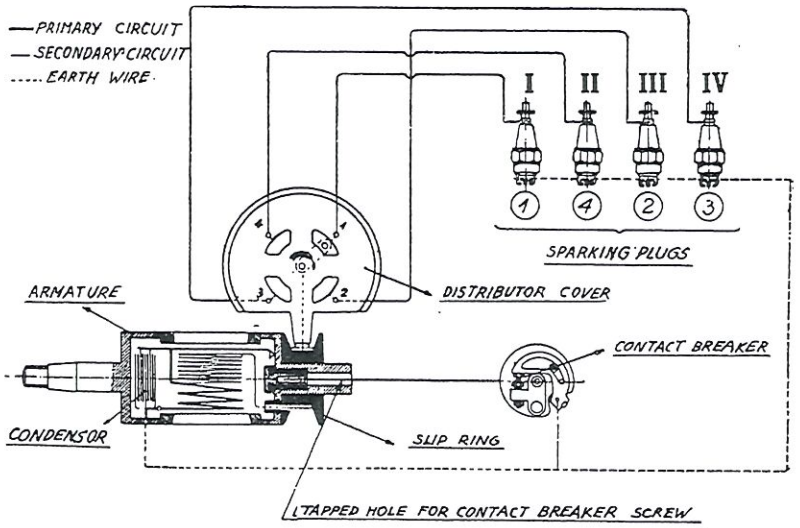


FIG. 10.

DIAGRAM SHEWING FIRING ORDER.

3. CARBURETTER.

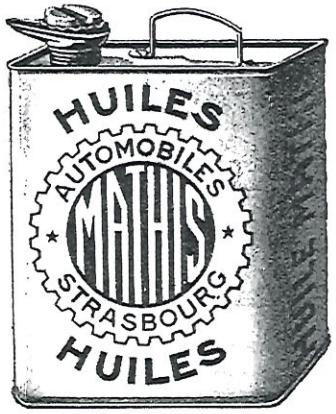
The carburetter provided with the engine is recognised as one of great simplicity. The setting is carefully adjusted before the car leaves the factory, and should not be interfered with unless under the advice of a competent technical authority. The normal setting is:

Choke tube	17
Main jet	85
Pilot jet	45

Never the less in certain countries where the temperature and qualities of petrol vary from those of France, better results can be obtained with some slight modification to the setting. To obtain the most suitable setting we recommend that owners should make a point of asking the advice of our concessionaire or representative in their respective country. A leaflet dealing with the assembly and cleaning of the carburetter is delivered with each car, and we do not consider it necessary to repeat the instructions here.

4. ENGINE LUBRICATION.

The lubrication is effected under pressure, by an eccentric pump, fixed to the outside of the crankcase, and can be removed for inspection when necessary in two or three minutes.



Use only best quality oil. MATHIS demi-fluid type M, both for Summer and Winter, responds better than any other to the needs of MATHIS engines.

MATHIS oils are delivered in sealed two litre cans (slightly under half a gallon) in cases containing 10 or 25 cans as required. When ordering oil use one of the detachable leaves found at the end of this book. For detailed information regarding MATHIS oils, ask for our leaflet (I. M. nº 1080). The oil gauge should always indicate a pressure varying between one and two kilos when the engine is running. The level of the oil, its viscosity, and exterior temperature, are all factors that influence considerably the pressure shown on the gauge. If under very bad conditions the pressure drops to 0,5 kilos there is no cause for alarm, this also applies if when the engine is cold the pressure shows higher than normal.

To adjust the oil pressure first unscrew the lock nut marked « A » in figure 14, turn the adjusting screw to the right to increase the pressure, or to the left to decrease the pressure, taking care when the adjustment is made to tighten the lock nut. On the left hand side of the engine, almost directly under the carburetter will be found an oil level dip stick, marked with two lines on its

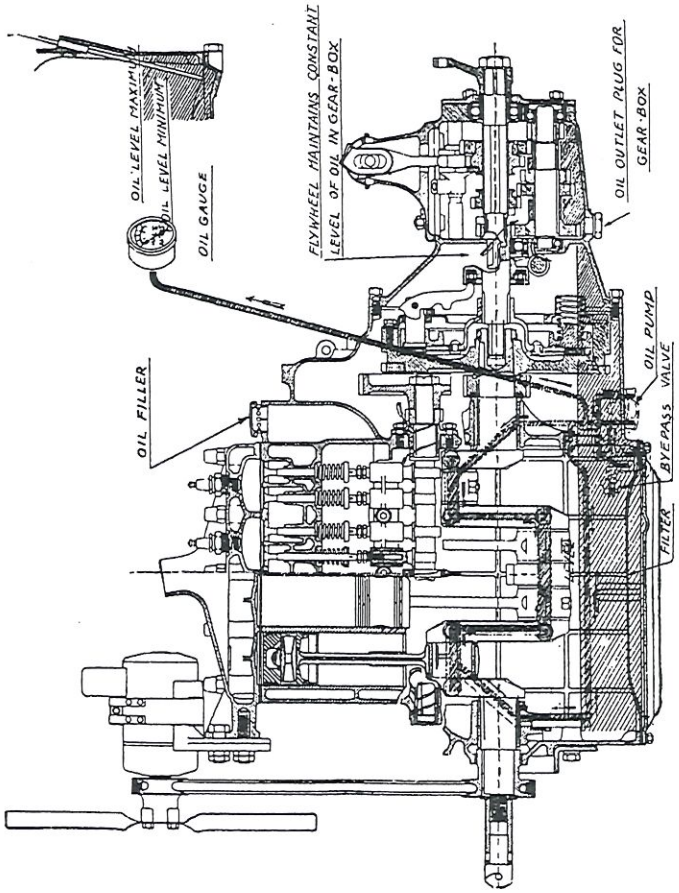
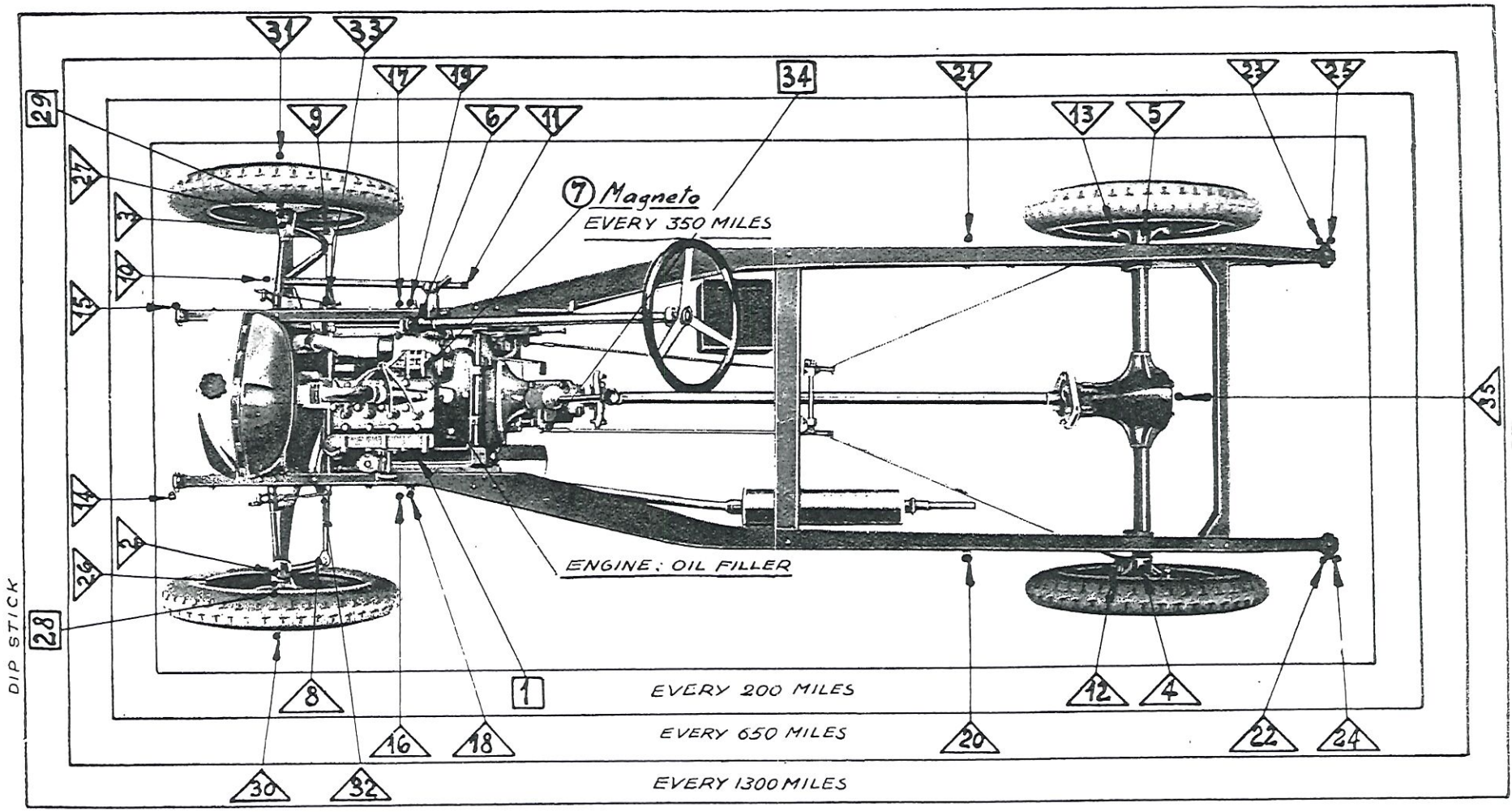


FIG. 11.

LONGITUDINAL SECTION AND DETAILS OF THE LUBRICATING SYSTEM



□ M. TYPE MATHIS OIL △ S. TYPE MATHIS GREASE

⑦ LUBRICATE MAGNETO EVERY 350 MILES WITH 2 DROPS OF VASESELINE OIL

34 EXAMINE OIL LEVEL OF GEAR BOX EVERY 650 MILES

1 EXAMINE ENGINE OIL LEVEL EVERY 200 MILES

FIG. 13.
LUBRICATING CHART FOR THE 8.9 HP. MATHIS, TYPE MY. CHASSIS.

machined face, indicating the maximum and minimum levels. It is necessary to keep the oil level between these two lines. Examine your oil level every 150 miles, change the oil completely after the first 300 miles, again after 700 miles, and afterwards at

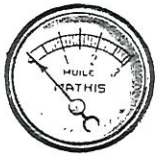


FIG. 12.

OIL PRESSURE GAUGE.

every 800 miles. To keep the engine in best possible condition we recommend that is it well washed out with paraffin every 1500 miles. To wash out the engine it is necessary to remove the bottom cover, and when doing this it is advisable to remove the filter and thoroughly wash with petrol. When replacing the flannel part of the filter it is important that the rough side of the flannel is uppermost. Two plugs are provided for emptying the oil from the engine, one being placed in the bottom cover on left hand side, and the other on right hand side leading to flywheel housing.

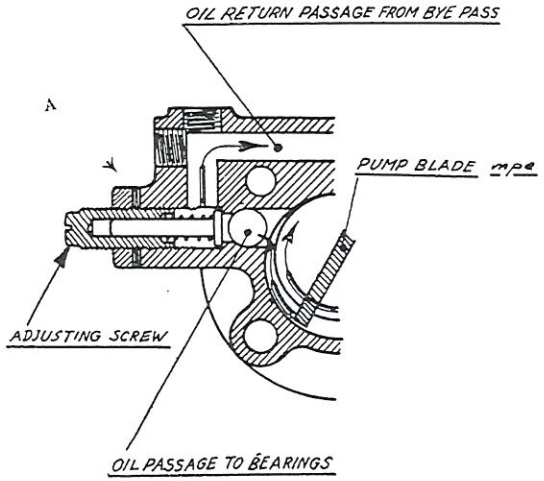


FIG. 14. - SECTION SHOWING THE OIL PRESSURE RELEASE VALVE.

The MY. engine has quite a negligible oil consumption, nevertheless our recommendation to change the oil every 800 miles should be rigourously observed. Too often owners are content to maintain their oil level constant by simply adding small quantities of fresh oil as consumed. This practice is to be condemned as it destroys all the advantages one gains from using oil of superior quality.

After a certain amount of use the best oils progressively lose their lubricating qualities. For this the oil is not responsible as actually the functioning of the engine itself is the cause. There is always a small percentage of vapour and gas entering the oil, in spite of well fitting rings, and these have a detrimental effect. It is easy to understand from this that if our recommendation concerning replacing the oil is not carried out, it may follow that complications arrive that may provoke undue wear on all the parts involved.

FIG. 15.

THE OIL LEVEL DIP STICK.

GROUP II.

CLUTCH.

The clutch of the new 8.9 HP. model is a disc type of entirely new design, functioning immersed in oil. Its sweetness of action, its progressivity and non-slipping qualities render it far superior to any other known system. Robust and of ample dimensions, one is assured of its perfect functioning on hills, or with heavy loads, without any fear of clutch slip. After close study and very complete tests we have succeeded in supressing any tendency to brake the engine when using the clutch. Ball thrust washers are provided which make the passage of the gears very easy and quiet to a remarkable degree, a great advantage, highly appreciated by all motorists. It is necessary to examine from time to time the position of the clutch pedal relative to the foot board. After use the clutch pedal may come down until it touches the board, in

which case clutch slip would follow. There must always be a minimum clearance of 10 mm between the pedal lever and footboard.

GROUP III.

GEAR BOX.

The lubrication of the gear box like that of the clutch is quite automatic. The oil thrown up by the flywheel is caught in a canal arranged in flywheel housing and from there is conducted to the interior of the gear box (see figure 11). To maintain a constant level of oil, there is an orifice pierced in the partition between the gear box and flywheel which keeps the level at 75 mm in the box. After cleaning out the gear box put in one quart of engine oil, as the flywheel takes some little time to bring the level up to normal when box is empty. Like all MATHIS cars the MY. model is provided with four gears. This has always been recognised as an advantage as it permits one to select a combination suitable for any condition, which cannot be obtained with only three gears. The strain on the engine can be very sensibly reduced by changing to third gear on long hills and by changing into second on very steep gradients. In very hilly districts one realises how advantageous it is to have the choice of two gears between top and low gear, which is not the case with cars having only three gears.

GROUP IV.

REAR AXLE.

The rear axle must be lubricated with thick oil such as MATHIS type « S », but for Summer it is advisable to use a mixture of thick grease and « S » oil. To mix these two ingredients they must be slightly warmed. A filler plug will be found in the back cover for greasing purposes. With the car standing on the flat pour in the oil until it is just level with the plug orifice. Do not overfill the axle as by doing so you risk the oil being forced into the brake drums.

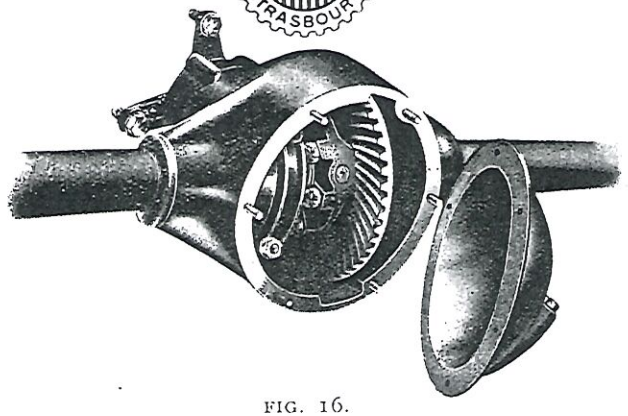


FIG. 16.
DIFFERENTIAL OF THE 8.9 HP. MATHIS MY. CAR.

Examine the oil level every 1500 miles. The bevel pinion ball-race is lubricated by means of the « Tecalmit » greaser fixed in front of the axle casing. It is necessary to lubricate this ball-race every 1500 miles. The axle casing should be thoroughly washed out with parafin once every year, care being taken to remove all trace of the parafin before refilling with oil.

GROUP V.

STEERING.

The steering box is fitted with two « Tecalmit » greasers and replenishing with thick oil from time to time is all that is necessary to keep the steering gear in good condition.

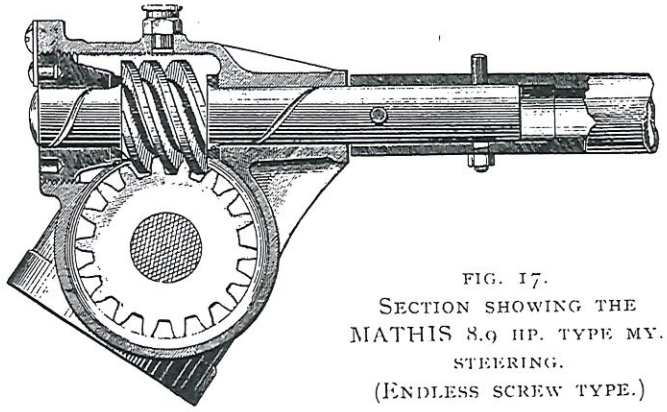


FIG. 17.
SECTION SHOWING THE MATHIS 8.9 HP. TYPE MY. STEERING.
(ENDLESS SCREW TYPE.)

The steering illustrated in figure 17 is of an irreversible type, comprising an endless screw and wheel. When these parts wear sufficient to cause too much play in the steering it is only necessary to turn the wheel one quarter turn, after removing the drop arm, to take up all the play, this operation bringing two entirely unused parts into contact. Our steering design and construction allows this adjustment to be made four times.

The steering illustrated in figure 17 *a*, is designed to meet the requirements of motorists who require a very sensitive steering. As will be seen from the illustration it follows orthodox design, but in its manufacture some important details have been added. To insure sweetness of action without any backlash, a special apparatus has been installed for providing a uniform thickness of anti-friction metal to the steel nut which operates the steering lever.

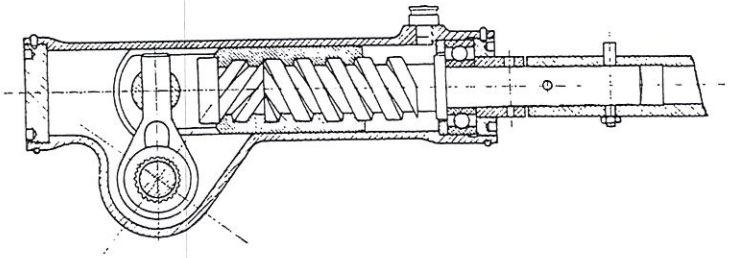


FIG. 17 *a*.

SECTION SHOWING THE MATHIS LONG TYPE STEERING.

This method retains the strength of the steel nut, and provides the frictionless action of a perfectly effortless steering. Beyond keeping it supplied with oil no attention is required, it being designed to lubricate all its parts by means of the accessable « Tecalemit » greaser placed on top of the box.

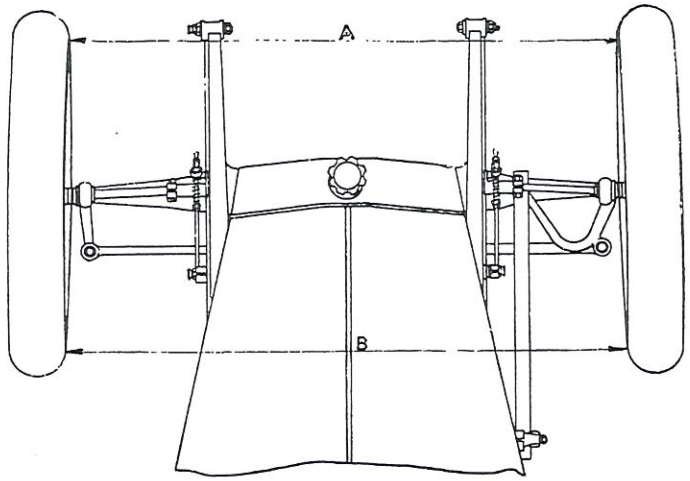
GROUP V b.

FRONT AXLE.

Every 1500 miles it is necessary to remove the wheel caps, and refill with very thick oil. « Tecalemit » greasers are provided for the lubrication of the stub axle pins

PARALLELISM OF THE FRONT WHEELS.

To reduce the wear of the tyres it is necessary to verify from time to time their parallelism. The wheels should be very slightly inclined inwards at front, but the inclination should not exceed 3 mm. On the left hand side of the cross tube will be found two lock nuts, with which it is possible to adjust this inclination. To make the adjustment, measure the inside edges of the wheel rims, at front and back of wheels, taking care that the measurement is made horizontally (see figure 18).



A. *Approximately 1,160 m.* **B.** *Approximatelly 1,163 m. Taken from rim to rim. Inclination 3 m/m.*

FIG. 18.

VIEW SHOWING FRONT WHEELS OF MATHIS 8.9 HP. TYPE MY. CAR.

GROUP VI.

CHASSIS SPRINGS AND BRAKES.

The spring shackle bolts are provided with « Tecalemit » greasers which must be replenished every three hundred miles by means of the oil pump provided in the tool kit. Use very thick oil for this purpose. A good suspension demands springs well greased, which not only improves the suspension, but also in a certain measure

prevents the breaking of the leaves. We recommend that from time to time the spring clips are tested to ascertain if the nuts are sufficiently tight. Road shocks sometimes cause these nuts to slack off, and if not tightened this considerably augments the possibility of a broken spring leaf. For the security of steering and suspension, this inspection should be carried out every 1500 miles.

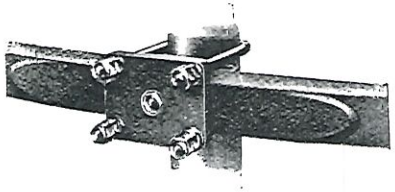


FIG. 19.
VIEW SHOWING MOUNTING OF SPRING CLIPS.

TRANSMISSION.

The cardan tube being provided with a flexible joint at each end does not require any attention.

BRAKE ADJUSTMENT.

As will be readily seen from the diagram in figure 21 the adjustment of the brakes is not difficult to accomplish. When adjustment is necessary proceed as follows :

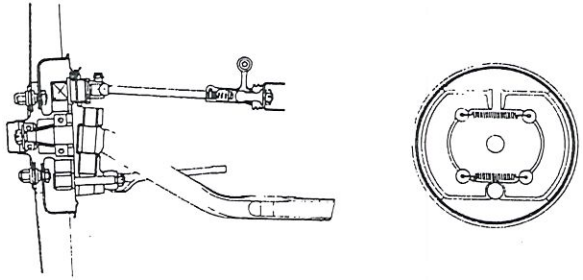


FIG. 20.
ASSEMBLY OF THE FRONT WHEEL BRAKES MATHIS 8.9 HP. MY.

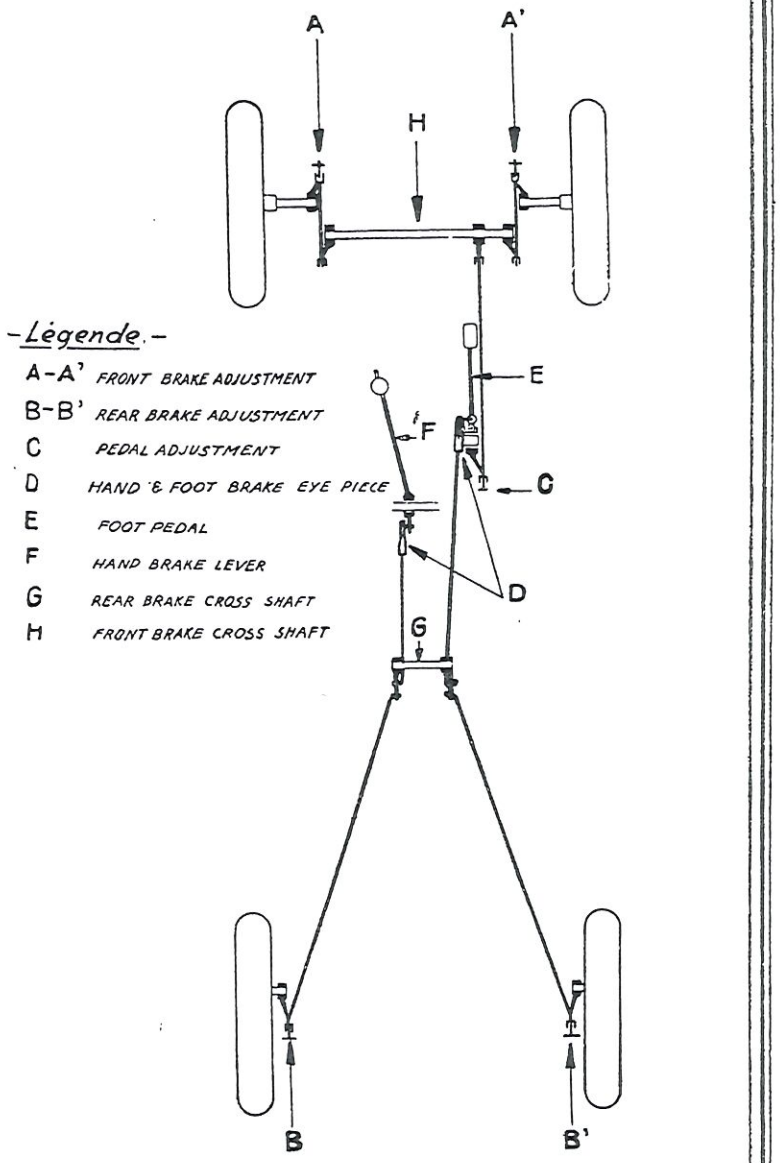


FIG. 21.
BRAKE ADJUSTMENT OF THE MATHIS 8.9 HP. MY. CHASSIS.

1. Raise all four wheels equally off the ground.

2. Straighten the front wheels so that if the car was running it would run straight ahead.

3. Apply pressure to the foot brake pedal until the brake starts to act on one wheel.

4. Adjust the brakes on the other three wheels by means of the wing nuts.

The rear wheels must start to act very slightly in advance of the front brakes, so when the rear brakes start to tighten turn the front wheels in the direction of rotation when running forward and adjust them equally. At the extreme movement of the pedal the pressure should completely lock all four wheels.

5. If after long use the brake linings are so worn that by adjusting the wing nuts the small levers are inclined beyond 20 degrees over vertical, the length of the rods can be altered by adjusting the distance pieces found at forward ends of rods.

GROUP VII.

ELECTRICAL EQUIPMENT.

Dynamo and cut-out combined.
Amperemetre.
Battery of accumulators.
Starter contact button.
Self starter.
Head lamps.
Wing lamps.
Rear lamp.
Lighting switch.
Dash lamp.
Electric horn.
Contact key.

1. DYNAMO.

The dynamo, mounted on a special support cast on the detachable head is dust and oil proof, and is driven by a flexible endless belt.

The support is adjustable. The ball bearings do not require any attention as they are self lubricated. A fuse is placed in the interior of the dynamo to protect it against a short circuit. To

change the fuse it is only necessary to unscrew the plug which holds it in place. The cut out is incorporated in the dynamo, and being automatic does not require any attention. The amperemetre placed conspicuously on the instrument board registers the charging rate of the dynamo, and the discharge of the various electrical fittings.

FIG. 22.
AMPEREMETRE.

2. BATTERY OF ACCUMULATORS

The battery is a six volt, 60 amp. hours type with negative connected direct to earth. Verify that the liquid in the accumulators sufficiently cover the plates, that is to say, the plates should be about 20 mm below the level of the liquid.

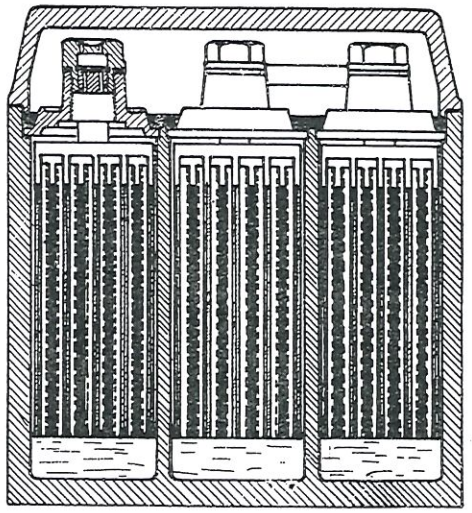


FIG. 23.
SECTION OF ACCUMULATORS, MATHIS 8.9 HP. MY. CHASSIS

If there is insufficient liquid add distilled water until the correct level is obtained. If the battery is very low, it is advisable to put it in the hands of a good electrican for refilling with acid and recharging. If the car is likely to remain unused any length of time, remove the terminals from the accumulators. Examine and well clean the terminals from time to time, and also verify the voltage with a volt metre.

3. ELECTRIC SELF-STARTER.

FIG. 24.
STARTER SWITCH.

The self starter is completely oil and dust proof, and does not require any attention. It is worked on the bendix principle, and obtains its power from the accumulators. It may happen that when the accumulators are low, the pinion teeth jam in those of the flywheel starter ring. If this occurs engage top speed, switch off the engine, and rock the car backwards and forwards until the pinions release themselves.

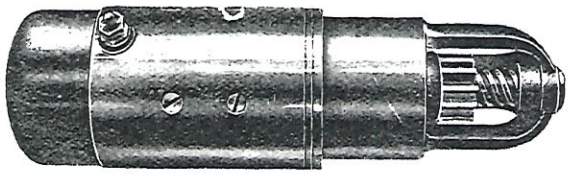


FIG. 25.
SELF STARTER OF THE MATHIS 8.9 HP. MY. CHASSIS.

4. LIGHTING INSTALLATION.

The lighting installation provides a variation ot 3 combinations by means of the switch fitted to the instrument board.

HEADLIGHT CLOSED AS FITTED TO TOURING CARS.

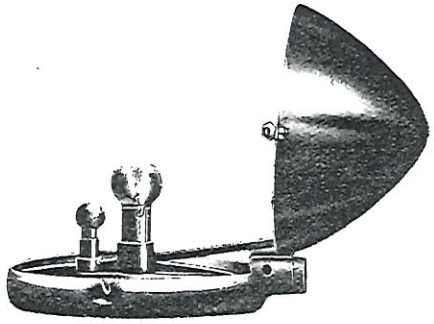


FIG. 26.

HEADLIGHT OPEN AS FITTED TO SALOON CARS.

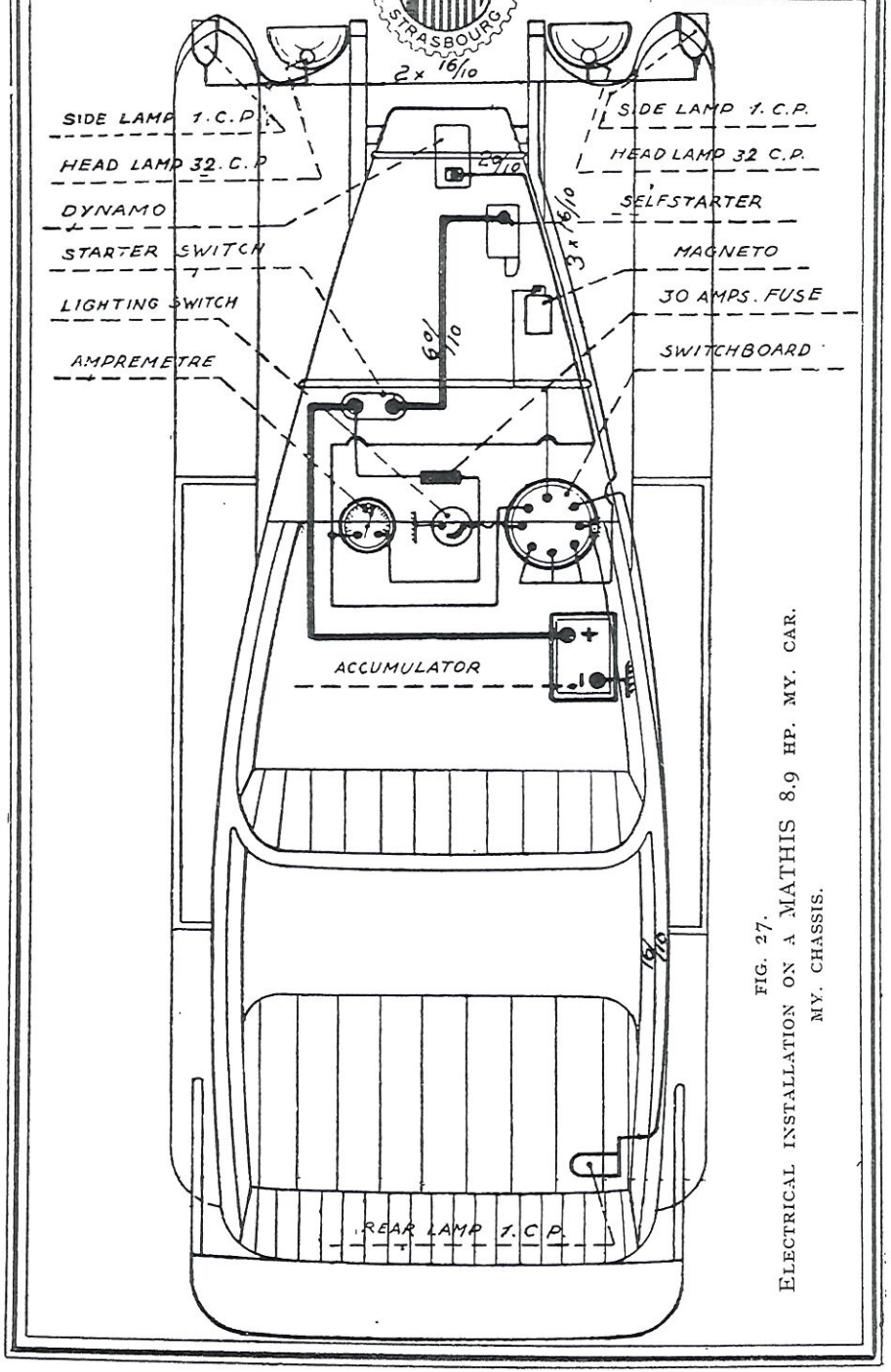


FIG. 27.
ELECTRICAL INSTALLATION ON A MATHIS 8.9 HP. MY. CAR.
MY. CHASSIS.

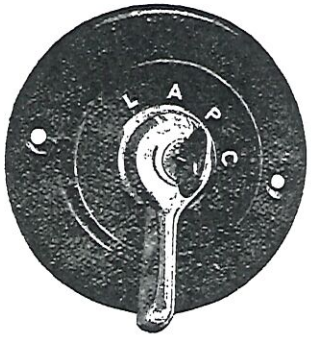


FIG. 28.

LIGHTING SWITCH OF THE MATHIS 8.9 HP. MV. CHASSIS.

1. Head, side and rear lights.
2. Side and rear lights.
3. One head light, side and rear lights.

A fuse of 30 amps. protects the installation against a short circuit. All cables are well insulated, particularly at the points where they may rub against parts of the chassis. The wires are soldered to their terminals and thoroughly insulated.

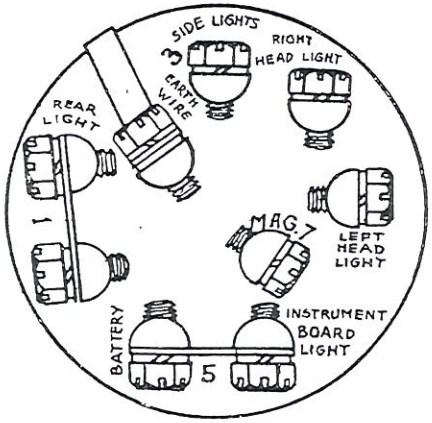


FIG. 29.

DIAGRAM OF THE SWITCH CONNECTIONS OF THE MATHIS 8.9 HP. CHASSIS

USEFUL ADVICE.

INDICATION OF SHORTAGE OF PETROL.

There are a number of motorists who before starting on a journey neglect to ascertain how much petrol they have in their tank, this neglect often causes an involuntary stop, sometimes at a considerable distance from a means of replenishment, and it may also be that the idea of the stop being due to shortness of petrol, does not immediately come into their minds, thus causing additional delay. Foreseeing this possibility we have taken precautions to avoid the natural consequences due to the negligence. In the petrol tank a tube has been placed which protrudes into the tank 30 mm. The length of this tube corresponds to a little over half gallon of petrol. At the foot of the tube a very small hole has been drilled, and as soon as the petrol level drops below that of the top of tube, the supply to the carburetter is so greatly diminished that the speed is considerably reduced, and general running indicates something wrong. As there is sufficient petrol left to run about 20 miles it is usually possible to get a fresh supply without very great inconvenience.

UPKEEP INSTRUCTIONS FOR THE WINTER.

There are four essential points to remember if you would keep your car in good condition when the temperature is in the neighbourhood of zero.

These four points are:

1. Lubrication of engine and organs.
2. Cooling of the engine.
3. Charging of the accumulators.
4. Starting of the engine.

1st. LUBRICATION OF THE ENGINE AND ORGANS.

The viscosity of the oil varies with the temperature, thus when the temperature is very low, the oil becomes thick and pump

suction difficult. For this reason it is necessary to use an oil of best quality, which resists the low temperature, and retains a degree of fluidity sufficient to assure a good lubrication. MATHIS oil type M, made specially for the engine is recommended.

2 nd. COOLING THE ENGINE.

As the car must be used in cold weather precautions must be taken to avoid the consequences of the radiator water freezing. A mixture can be made to replace the water from the following ingredients :

A. When the temperature varys between 3 and 4 degrees centigrade.

Alcohol 30 %
Water 70 %

B. When the temperature is below 3 degrees centigrade.

Alcohol 35 to 50 %
Water 50 to 65 %

We do not advise the employment of a mixture of water and glycerine or any similar mixtures.

The radiator capacity is about three gallons.

If an anti-freezing mixture is not used do not forget to empty the radiator when the car is not in use.

The plug for draining off the water will be found in front of the radiator at bottom right hand corner.

3 rd. CHARGING THE ACCUMULATORS.

In winter when the weather is very cold, lights are required more often, and the self starter undergoes a greater strain, the accumulators are run down quicker than usual, and we advise our clients to follow closely the instructions given in the following paragraph :

The accumulators must never be neglected. Verify their condition every week.

4 th. STARTING OF THE ENGINE.

To facilitate starting in cold weather.

1. Always give the engine a few turns with the starting handle to free the pistons and rings of congealed oil.

2. Flood the carburetter.

3. Close the air strangler of carburetter.

4. Firmly press the starter button but release immediately the engine starts to fire, at same time releasing the air strangler.

If the engine does not start immediately (This may occur if batteries are run down, sparking plugs oiled up, etc.) do not continue with selfstarter, but use the starting handle.

During cold weather, or for that matter any weather, never open out the engine until it has had time to « warm up ». Warming up gives the oil a chance to become fluid, and to circulate freely through all the moving parts. Adherence to this principle will save you pounds of trouble, and your engine will always give satisfaction, and never let you down.

Table N° I.

MINOR TROUBLES THAT MAY OCCUR WITH THE ENGINE ARE TABULATED BELOW

The figures in the right hand column indicate the numbers on number 2 table to be consulted for curing the trouble.

INCIDENT	CAUSE	NUMBERS ON N° 2 TABLE where cure is tabulated
Engine will not start	No petrol	1—2—3
	Mixture too weak	4—5—6—7
	Mixture too rich	8—9—10
	Loss of compression	11—12—13—13a 14—15—16—17—18—19
	Defective ignition	21—22—23—24
Engine running unevenly	Insufficient petrol	1—2—3
	Mixture too weak	4—5—6—7
	Mixture too rich	8—9—10
	Defective ignition	14—15—18—19—21—22—23
Engine stops and knocks when running slow	Mixture too rich	8—9—10
	Loss of compression	11—12—13
	Defective ignition	14—15—16—20—21—22—24
General loss of power	Insufficient petrol	2—3
	Mixture too weak	5—6
	Mixture too rich	8—9—10
	Loss of compression	11—12—13
	Defective ignition	14-15-16-18-19-20-21-22-25-26
	Engine runs abnormally hot	see paragraph below
Engine runs abnormally hot	Insufficient water in radiator Tubes clogged	Replenish or clean as already described
	Unsuitable oil, or oil that has been used too long	Clean out sump, wash out with paraffin, and refill with clean oil
	Insufficient oil (This may be serious enough to have seized the bearings	Fill up with clean oil
	Mixture too rich	8—9—10
	Defective ignition	25—26
	Fan belt slipping	Adjust as previously described
	Exhaust pipe clogged	Remove and clean
	Requires decarbonising	Remove head, clean and replace

Table N° II.

CAUSES AND REMEDIES OF MINOR TROUBLES THAT MAY OCCUR WITH THE ENGINE.

	Insufficient Petrol	
1	Petrol tank tap closed	
2	Obstruction in petrol pipe or filter	Remove and clean
3	Carburetter jet clogged	Remove and clean, take care not to increase diameter of holes
	Mixture too weak	
4	Weather very cold	Flood the carburetter, and use the air strangler.
5	Air being sucked into engine between carburettor and engine	Replace joint if tightening of nuts does not improve
6	Level too low. (Petrol too heavy)	Use a lighter petrol, or change the float for one made specially for heavier petrol
7	Needle valve jammed closed	Clean and adjust
	Mixture too rich	
8	Needle valve jammed open	Clean and adjust.
9	Hole in float	Change, or empty the petrol and repair, without increasing weight
10	Jets too large	Replace with smaller jets
	Insufficient compression	
11	Valves seating badly	Requires "grinding in" as previously described
12	Valves tight in guides	Remove and ease stems, or reamer guides
13	Valves do not close. Tappets out of adjustment	Adjust the tappets
13a	Valves burnt	Change the valves
	Defective ignition	
14	Sparking plugs oiled or sooted	Remove and thoroughly clean
15	Plug points out of adjustment	Adjust the points to 0,4 mm
16	Plug insulation broken	Replace with new plug
17	Spark too weak. Starter does not turn engine fast enough to fire	Use starting handle to start engine Battery discharged. Have it recharged
18	Earth wire from magneto shorting on some metal part	Insulate the wire to suppress the short circuit
19	Distributor dirty	Clean with petrol. Well dry before replacing
20	Platinum points dirty	Clean with petrol
21	Platinum points badly adjusted	Adjust the points to the width of the gauge, on the special magneto spanner
22	Rocker arm tight on pin	Remove and clean, if necessary carefully ease out hole in rocker arm
23	Magneto damaged and not giving current	Obtain advice of magneto specialist or return magneto to our concessionaire or works
24	Cables to sparking plugs misplaced	Reestablish the correct firing order viz: 1—3—4—2
25	Sparking plug electrodes remain incadescent and cause preignition	Use a more suitable plug
26	Magneto insufficiently advanced	Adjust the timing of the magneto

CLEANING
AND UPKEEP OF THE BODYWORK.

MATHIS bodies are covered with various kinds of materials.

1. Leather material for those made under « Weymann » patents.
2. Nitro-cellulose spraying.
3. Paint and varnish which dries by oxidisation.

The treatment for their preservation varies in each of the above cases but there are certain precautions necessary that apply to all. Tabulated below will be found the method we advise for the preservation of each.

A. — APPLICABLE TO ALL BODIES.

Wash with clean water. Do not use petrol or parafin except for the nitro-cellulose finished cars.

Do not leave the car exposed to the full glare of the sun.

See that the radiator cap is tight, and that any water cannot slop over, escape and mark the bonnet. The engine should never be allowed to get hot enough to affect the bonnet.

All leather parts can be cleaned with a damp cloth, and afterwards brushed off and lightly rubbed with linseed oil on a soft cloth.

Hoods and carpets may be brushed. If the car is staying in the garage for any length of time, raise the hood Lightly oil the door hinges, locks, and moving parts of the windscreen. This can best be done with a small brush or a feather.

The parts in polished wood can be cleaned with linseed oil.

Copper, brass and plated parts can be cleaned with a soft polishing compound such as is used for silver plate.

B. — BODIES IN LEATHER FABRIC.

If the car has been wetted by rain or washing, take care to well dry it before exposure to sun.

After cleaning lightly rub over with linseed oil or beeswax on a soft cloth.

C. — BODIES FINISHED WITH NITRO-CELLULOSE.

These cars are delivered polished or dull finished according to the taste of our clients.

For cleaning dull finished cars, lightly cover with parafin by means of a very soft brush, afterwards finish with a dry soft cloth until all trace of grease has been removed. For cars with glossy and polished surfaces, clean with a mixture of thin oil and parafin on a soft flannel cloth, afterwards finishing with a dry cloth.

For removing spots of tar, soak with petrol, afterwards rub with a dry cloth.

One can without any danger use soap, soda, or any of the other usual caustics for cleaning, as they have no detrimental effect on Nitro-cellulose. The directions given above are those that do not require anything beyond ordinary household materials, but one can if desired use the special preparations advertised for this particular style of finish.

D. — BODIES PAINTED AND VARNISHED.

Modern paints and varnishes, made specially for bodywork, dry very quickly, but one must not think that because the varnish is dry it can at once resist bad weather. It takes about a month for good varnish to harden, and during this period in particular, it is recommended to wash the car every day with plenty of clean fresh water as this helps to harden the varnish, and preserve the colour. Never use petrol or parafin for washing. If the car has been wetted either by rain or washing take care to well dry with a soft chamois leather, before exposing it to wind or sun, otherwise the varnish may turn « spotty ».

GENERAL INSTRUCTIONS

FOR THE USE OF

THE SPARE PARTS LIST.

INDENTIFICATION OF PARTS.

All the parts are numbered and when you have carefully identified the numbers, look up the parts required in the spare list, which will be found in numerical order.

The first figure of the number will usually indicate the group to which the part belongs, viz:

1 st	Group	Engine MY.	Parts	1 to	199.
2 nd	Group	Clutch MY.	Parts	200 to	299.
3 rd	Group	Gear-box MY.	Parts	300 to	399.
4 th	Group	Rear axle MY.	Parts	400 to	499.
5 th	Group	Steering and front axle MY.	Parts	500 to	599.
6 th	Group	Chassis	Parts	600 to	799.
7 th	Group	Electrical parts	Parts	800 to	899.
Special Tools			Parts	2000 to	2007.
Various supplementary parts			Parts	2008 to	2031.

When you are certain that you have found the part you require, you will see on the same line a code word, by which you can order the part if desired by telegram. Always give the type and chassis number at the same time, and to avoid mistakes write your order in « Block Letters ».

ORDERS.

Example of how to order spare parts.

Your rear brakes are too worn to act and you have decided to replace them with new shoes complete. As these are parts of the rear axle (group 4) you know that the number will be found between 401 and 500. Turn up the spare parts list for the rear axle until you find against N° 406. Aluminium brake shoes lined with ferodo, code word MYGESZUG.

It will be sufficient to send us above information by letter, indicating the chassis no, engine no, how you require the parts forwarded, and your full name and address. If the part number has been effaced send a sketch of parts required or the old parts as pattern.

EXAMPLE. Send by post one pair of aluminium brake shoes lined with ferodo, number 406, for the rear axle, of chassis number ..... engine no..... type MY.

signature and address.

The same order transmitted by telegram would read:

AUTOMATHIS STRASBOURG.

(code word)	(chassis N°)	(engine N°)
Rexpo pair.....	..... MY.	.....

Name and address.

Address all correspondence concerning spare parts to « Magazin» and do not deal with any other matter in your letter.

PRICES.

All prices are nett, and for goods taken from our concessionaires or at the Strasbourg works. In view of the fluctuation in the markets all prices are given without engagement and may be altered without previous notice.

Unless prepaid all goods are forwarded cash on delivery. This method has been adopted to assure for our clientele, in case of loss during transit, damages not less than the value of the parts lost. Carriage is always charged to purchaser.

TRANSPORT.

All goods are sent at clients risk, and it is necessary to examine the condition of the parcel before accepting delivery. In case of damage at once notify the transport agents marking the delivery sheet « DAMAGED ».

Unless otherwise ordered goods are forwarded to clients address by passenger train, except for small parcels which are sent « Parcels post ». If any other method of delivery is desired, notice must be given when goods are ordered. For telegraphic orders the following codes have been adopted:

REXPO ..... Send by post.
REXPOGA..... Send by post to station.
REXPODA ..... Send by post to my address.
REXGRAVIGA..... Send by passenger train to station.
REXGRAVIDO .... Send by passenger train to my address.
REXPEVIGA ..... Send by goods train to station.
REXPEBIDO ..... Send by goods train to my address.
REXMES ..... Send by special messenger
REXAB ..... Send by air post.

Carefully indicate the address where parts are to be sent. If parts are ordered from any other place than clients permanent address it is essential that the latter be given on the order, plainly stating to which address goods are to be forwarded. The cost of packing is charged on invoices and cases are not returnable. When parts are ordered from a foreign country clients are requested to indicate Transport agent, route desired, and give name and address ot the agent who will attend to the customs formalities on the goods arrival at frontier or customs-station.

RETURN OF PARTS.

Conforming to our declaration in the « Guarantee », all defective parts must be sent carriage paid to our works, or that of our concessionaires labelled with address of sender, and indicating chassis no. engine no. and type of car parts are required for. After examination by our technical staff, the price of the part will be credited if it is found to be defective in workmanship or material. Following our conditions of guarantee all transport costs are to be borne by the client in every case, and we do not accept any packages sent carriage forward. If parts are found defective from fair wear and tear or for any reason for which we cannot accept responsibility, a notice to that effect is sent to the client, who must claim the parts within 10 days. We decline any responsibility for demands of this nature through neglect of this rule.

VERY IMPORTANT.

Parts sent to our works by parcel post must be addressed:

MATHIS S. A.

STRASBOURG-NEUDORF,

France.

And those forwarded by passenger or goods train:

MATHIS S. A.

STRASBOURG-NEUDORF,

France. (Gare Neudorf).

It is important to mark all parcels « Station Destinataire » NEUDORF.

SENDING PARTS FOR REPAIR.

Attach a label to your parcel plainly indicating the name and address of sender. Send under seperate cover a letter detailing the parts sent, fully explaining what is required, giving the type, chassis no. and engine no. also stating how the parts are to be returned.

If desired we give an estimate for the work to be done, in which case no work will be started until the estimate has been accepted.

ADVICE CONCERNING PARTS SENT TO US FOR REPAIR OR EXCHANGE.

If you are returning an engine do not remove clutch, magneto, starter, carburetter, dynamo or sparking plugs, as these parts will be required to tune up your engine when repairs have been executed.

If you require a timing pinion, state if it is required in Steel, Cast iron, or Celeron.

If you require a piston, indicate number and width of piston ring slots.

If you return a magneto send it without wires or coupling, which parts you can reassemble on the magneto we send in exchange.

Magnetos, starters, dynamos, and switch boards should be sent to us intact so that we can examine them and put them in good condition.

Manufacturers of these parts repudiate any claims against their goods if they have been dismantled before return to their factory.

Always send a Gear-box complete with its change speed lever, but without the carden joint. If spare parts are required for a Gear-box indicate the Gear-box number as well as the chassis number.

Always send Rear axles complete with brake shoes and drums, but without carden joint.

If you require a Radiator, give the height and width, and enclose a sketch, as we have several different models of Radiators. Indicate Whether flat or pointed radiator is required, height of feet, number of fixing holes, and Manufacturers name.

If you require a front axle indicate the number, which will be found stamped on the top web.

If you require road springs, indicate the length, width at eye, and number of leaves.

If you require a petrol tank cap, give the diametre and pitch thread you require.

If you require Headlamps, state what make. If only doors are required, give diametre, state if required nickeled or black, and always send a small sketch.

If you require a hood indicate for what type body it is required.

When ordering mudguards always send a sketch as we have several models in stock.

NOTE (IMPORTANT).

If you have the slightest doubt about our being able to identify your requirements send us your old part as a pattern.

We call the « Right Side » the side on drivers right hand, when seated at steering wheel. All MATHIS cars have right hand steering.

PRINCIPAL CHARACTERISTICS OF THE MY CAR.

Cylinders	4
Bore	60 mm
Stroke	105 mm
Cubic capacity	1187 cc.
R. A. C. Rating	8,9 HP.
Number of speeds	4
Overall chassis length	12 Ft.
Overall chassis width	4 Ft. 8 1/4 Ins.
Wheel base	8 Ft. 10 ins.
Track	3 Ft. 10 1/4 Ins.
Frame	Full length of chassis
Springs	Semi-eleptic
Wheels	Michelin detachable discs.
Tyres	715 × 115 oversize.
Oil capacity (Engine and gearbox)	1 1/4 gallon.
Petrol tank capacity	5 1/2 gallons.
Approximate chassis weight	8 1/2 cwt.
Approximate weight of fourseater torpedo	13 1/2 cwt.
Weight of four door Weymann saloon	14 1/2 cwt.
Effective body load	5 cwt.

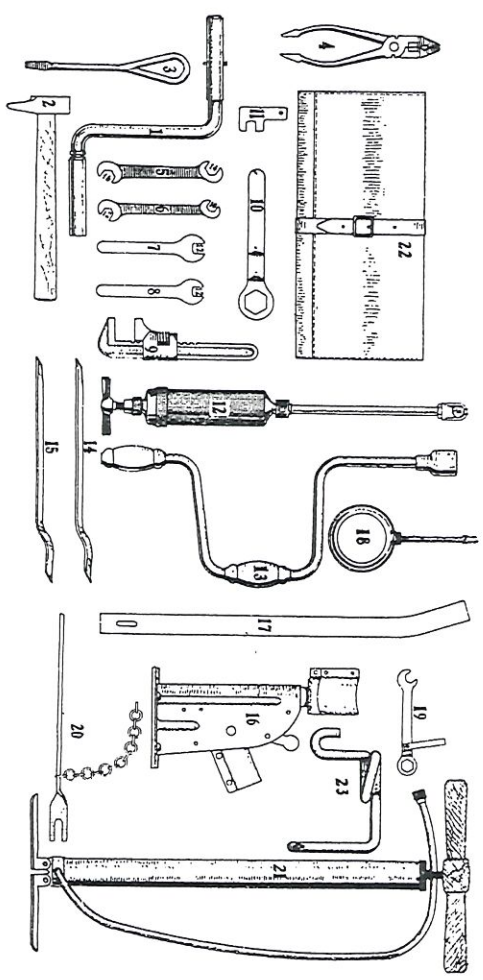


FIG. 30.

ILLUSTRATION OF THE TOOLS DELIVERED WITH THE 8,9 MATHIS MY. CAR.

1. Starting handle.
2. Hammer.
3. Screwdriver.
4. Pair of pliers.
5. Set spanner. nos 14 and 16 mm.
6. Set spanner. nos 10 and 12 mm.
7. Tappet spanner. 12 mm.
8. Tappet spanner. 12 mm.
9. Adjustable spanner.
10. Sparking plug spanner.
11. Tappet Adjuster.
12. Grease pump.
13. Wheel brace.
14. Tyre lever.
15. Tyre lever.
16. Jack.
17. Jack lever.
18. Oil can.
19. Magneto spanner.
20. Valve lifter.
21. Tyre pump.
22. Tool bag.
23. Valve stop.

ILLUSTRATIONS.