AVANCE
TRACTOR

INSTRUCTION BOOK

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FOR

THE AVANCE TRACTOR

THE AVANCE MOTOR Co. LTD.
AUGUSTENDAL
STOCKHOLM 2

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18745

INSTRUCTIONS

for the upkeep and running of the "AVANCE" tractor.

For the farmer who intends to purchase a tractor it is of the utmost importance to select a machine of high quality, and it is no less necessary that the owner as well as the driver should make themselves thoroughly familiar with the upkeep and running of the machine.

The pains bestowed on studying these instructions will be well repaid by more and better work from the tractor with reduced running and upkeep costs. Even the best machine can be spoiled by ignorance or careless handling.

The object of these instructions is to give information concerning the best way to handle an AVANCE tractor and the most important measures to be taken in order to obtain a satisfactory working result.

Instructions for the driver.

Keep the air pump of the blow lamp in perfect order and be careful that all unions and valves are tight as otherwise the pumping work will be considerably increased.

As soon as you have started the engine, make sure that the direction of rotation of the engine is the right one (See par. 2).

Strain the fuel oil and remove all water from it.

Some fuel oils have a tendency to become viscous in cold weather. If yours is of this kind, add some kerosine.

Do not drive the machine until the fuel oil tank is empty, as this will cause air to enter the pipes and pumps (See par. 9).

Clean the fuel tank at least once a year.

Take the daily supply of fuel oil, lubricating oil, grease, coulters and shares on a wagon to the ground where ploughing is taking place. This wagon can then be towed along so that it is always within easy reach.

It is absolutely necessary that the gear lever should be left in the neutral position when the engine is used for a stationary drive or when it is running idle with the tractor standing still (See A. fig. 2).

Do not engage the gears until the friction clutch has been disengaged and the shaft has come to a standstill (See D. fig. 1).

Engage the friction clutch *slowly* (See D. fig. 1). *Under no*

circumstances should the starting wheel be engaged while the engine is running (See E. fig. 1).

Do not run in the top gear on stony ground.

Do not tighten the fan belt or (with stationary drive) the main driving belt too much.

Do not use impure water for the cooler.

Do not forget to drain all water from the engine and cooler in frosty weather, otherwise some important part may get damaged.

When tightening a screw or a nut, consider its size before applying your force to the spanner.

Do not use too large a spanner for a small nut, because if you do you may easily break the nut or screw.

Do not use spanners the gaps of which are worn or out of shape.

A box spanner should not be substituted for a hand spanner.

A spanner should not be used as a hammer.

Do not strike finished or polished faces with a hard metal, but use a copper or lead hammer or put a piece of wood between.

Take good care of delicate machine parts and do not allow them to be exposed to gravel, dirt, etc.

Do not touch ball bearings etc., if your hands are dirty from gravel or grit.

Keep the lubricants in well closed cans and away from dirt as much as possible.

Do not lend anyone the spanners, oil cans and tools belonging to the tractor outfit.

If you notice a loose nut, screw, wedge, or such like, tighten it at once.

Examine the screws of the axle boxes of the driving wheels which should press on tightly, particularly during the initial period of running.

Care must be taken that no loose nuts, screws, tools, etc. are left inside, after carrying out any work inside the tractor, because such obstacles may easily cause a serious amount of damage to the machine when the engine is started.

All locking pins and washers must be replaced after reassembling.

Missing dowel pins and split pins must not be replaced by nails, iron-wire, or cord.

In case any part of the machine should break, it is as a rule cheaper and more reliable to order a new part from the Works than to send the broken part to the local blacksmith for repair.

Drive the tractor with great care when going uphill.

The implement to be towed should be drawn from the traction eye only.

Keep the right hand on the clutch lever when driving up a steep hill or when the driving wheels meet with some large obstacle, and disengage the friction clutch instantly if necessary.

Push down the brake pedal when changing gears during the ascent or descent of hills.

When a ditch or anything similar has to be crossed it is better to build a temporary bridge of sufficient strength than to risk capsizing of the tractor.

On account of racing of the driving wheels it sometimes happens that the tractor sinks into the ground if this is very soft. The best way to get the tractor out of such a position is to put a large stone, a piece of heavy board or something similar under one of the lugs on the *rear side* of each of the driving wheels and then drive *backwards*.

Always fit the protecting hoops to the driving wheels before running the tractor on the road unless this is covered with ice. Neglect of this precaution may cause serious damage to the driving wheels and to other parts.

Always give the nameplate number of the tractor and the code word of the part when ordering spare parts.

Instructions for the upkeep and running.

The working of the tractor engine.

The engine of the AVANCE tractor works on the two-stroke principle, i. e. in each cylinder there is a power stroke at each revolution.

When the piston moves upwards from the lower dead centre, air is drawn into the crank case through the air valves at the back of the engine. On its way upwards the piston closes the ports in the cylinder wall for air and exhaust gases and compresses the air in the cylinder and combustion chamber. Shortly before the piston has reached its upper dead centre, the fuel oil is injected into the combustion chamber in the shape of a very fine spray which vaporizes and mixes with the air. The ignition of the combustible mixture occurs when the piston passes the upper dead centre and thereby a high pressure is created which drives the piston downwards. The scavenging air is compressed in the crank case, and when the piston uncovers the air and exhaust ports the air rushes through the former into the cylinder expelling the burnt gases and taking their place. The engine shaft has now made one revolution and thereafter the same cycle of operation is repeated.

The arrangements for the cooling of the engine, the injection and spraying of the fuel, the governing etc. are described under the different headings.

1. Preliminaries for starting.

The fuel oil, cooling water and lubricating oil having been filled into their respective tanks, the injection-apparatus should be set in such a position (A. and L. fig. 1) that the spray of the fuel oil is directed on to the ignition plugs (B. fig. 1), the fuel control levers should be set in their forward position (C. fig. 1), the fric-

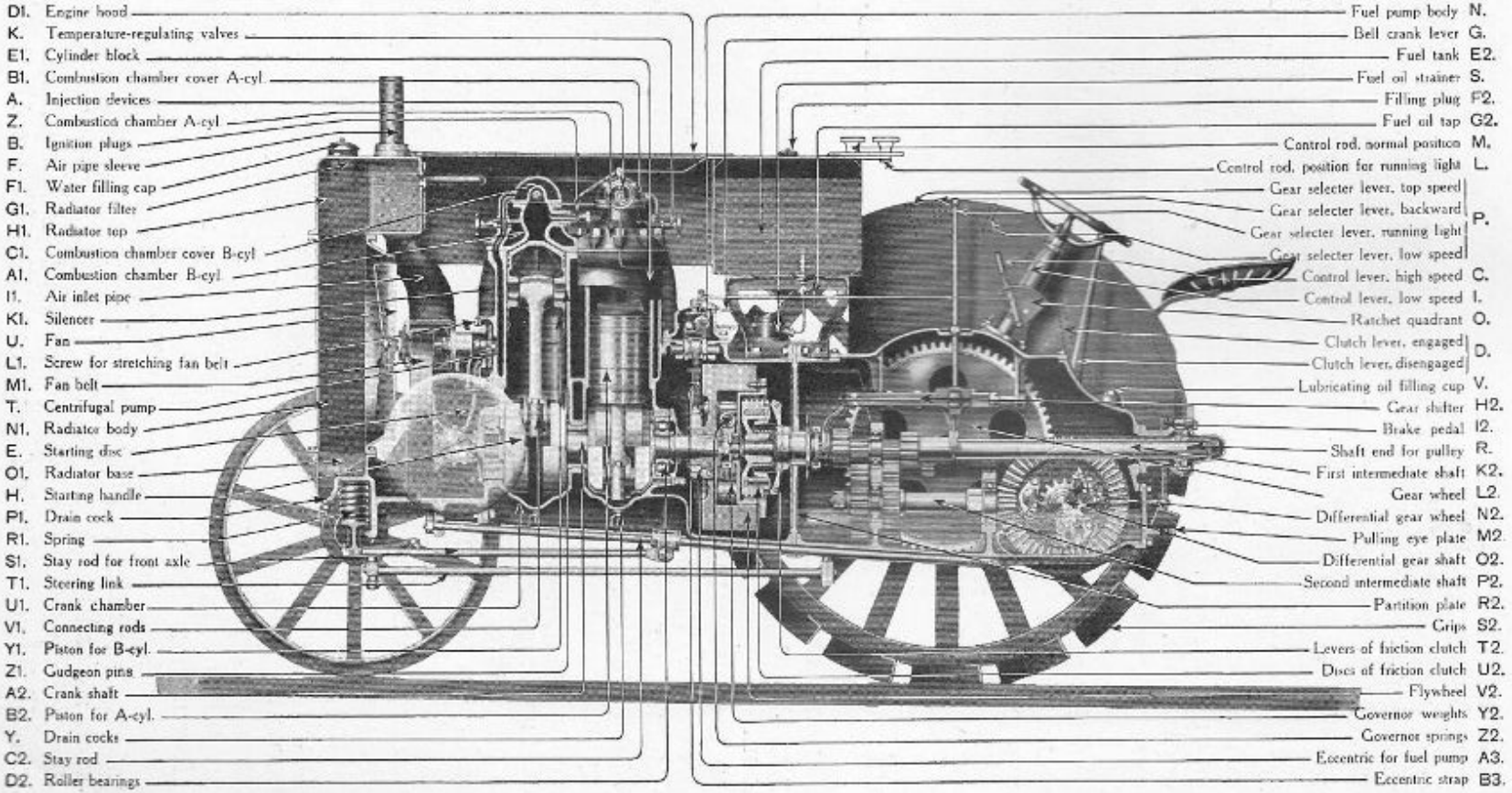

D1. Engine hood
K. Temperature-regulating valves
E1. Cylinder block
B1. Combustion chamber cover A-cyl.
A. Injection devices
Z. Combustion chamber A-cyl.
B. Ignition plugs
F. Air pipe sleeve
F1. Water filling cap
G1. Radiator filler
H1. Radiator top
C1. Combustion chamber cover B-cyl.
A1. Combustion chamber B-cyl.
I1. Air inlet pipe
K1. Silencer
U. Fan
L1. Screw for stretching fan belt
M1. Fan belt
T. Centrifugal pump
N1. Radiator body
E. Starting disc
O1. Radiator base
H. Starting handle
P1. Drain cock
R1. Spring
S1. Stay rod for front axle
T1. Steering link
U1. Crank chamber
V1. Connecting rods
Y1. Piston for B-cyl.
Z1. Gudgeon pins
A2. Crank shaft
B2. Piston for A-cyl.
Y. Drain cocks
C2. Stay rod
D2. Roller bearings
Fuel pump body N.
Bell crank lever G.
Fuel tank E2.
Fuel oil strainer S.
Filling plug F2.
Fuel oil tap G2.
Control rod, normal position M.
Control rod, position for running light L.
Gear selecter lever, top speed
Gear selecter lever, backward
Gear selecter lever, running light
Gear selecter lever, low speed
P.
Control lever, high speed C.
Control lever, low speed I.
Ratchet quadrant O.
Clutch lever, engaged
Clutch lever, disengaged
D.
Lubricating oil filling cup V.
Gear shifter H2.
Brake pedal I2.
Shaft end for pulley R.
First intermediate shaft K2.
Gear wheel L2.
Differential gear wheel N2.
Pulling eye plate M2.
Differential gear shaft O2.
Second intermediate shaft P2.
Partition plate R2.
Grips S2.
Levers of friction clutch T2.
Discs of friction clutch U2.
Flywheel V2.
Governor weights Y2.
Governor springs Z2.
Eccentric for fuel pump A3.
Eccentric strap B3.

Fig. 1.

tion clutch should be disengaged (D. fig. 1), and the starting wheel (E. fig. 1) engaged. The blow lamp container should be filled up to two thirds with paraffin or fuel oil, air pumped into it and the lamp ignited. Provided that all unions, packings and valves are tight and the pump piston is in perfect order, a sufficiently hot flame can be kept by 30 full pump-strokes per minute. After about 3 minutes the engine is hot enough for starting. In cold weather it is advisable to let the lamp burn a little longer, and before starting, to turn the engine through a couple of revolutions in order to soften the lubricating oil in the cylinders and gear case which has a tendency to stick in such weather.

Should the conditions be such that dust and sand are liable to follow the air into the engine, the sheet iron extension provided for the air intake pipe must be fitted (See F: fig. 1).

2. Starting by hand.

In order to facilitate starting *it is important that the pistons should stand equally high in both cylinders.* Inject fuel oil by handpumping for a couple of strokes (G. fig. 1), and move the starting handle with several powerful jerks up and down (H. fig. 1) until firing occurs. As soon as the engine has started to run, the starting wheel should be disengaged.

Should the engine have started in the wrong direction so that the air from the radiator fan is driven *forwards* instead of *backwards* a reversal can be made by pushing in the pump lever, and as soon as the engine has slowed down sufficiently a couple of powerful strokes should be given by the pump lever. After a little practice the desired result will easily be attained.

Should the engine fail to start, the best remedy is to clear the cylinder from burnt gases by turning the engine through a couple of revolutions with the decompression cocks on the combustion chambers open. At the same time the fuel pumps must be set in the neutral position by moving the control levers to their rearmost position (I. fig. 1). Should repeated pumping by hand have been carried out without clearing the cylinders from burnt gases, the engine has a tendency to race after starting. Racing may be prevented by choking the air inlet with the hand at the mouth of the air suction pipe.

3. Starting by compressed air and charging the air receiver.

If the tractor is equipped with a device for starting by compressed air, and assuming that the air receiver is charged to a pressure of at least 85 to 100 lbs per sq. inch, the engine can be easily started in the following manner. Open the decompression cocks and turn the engine just enough to direct the hole in the fan pulley upwards. In this position the piston has just passed its upper dead centre and is starting to go down. Disengage the starting wheel and the friction clutch, shut the decompression cocks, place the fuel control levers in their forward position and set the injection devices so as to direct the fuel spray on to the ignition plugs. Fill the oil container of the lamp and light the lamp. After

about 3 minutes inject some fuel into the engine by a few vigorous pump strokes by hand, open the valve of the air receiver, and let the compressed air through the starting valve into the cylinder. The latter valve must only be opened for a moment, otherwise compressed air is wasted and the engine fails to start. As soon as the engine has started, secure the coupling lever with the locking screw provided for this purpose, then recharge the compressed-air receiver by loosening the charging screw of the charging valve 3 or 4 turns.

In order to avoid overheating of the starting valve, the charging should not be continued for more than 2 to 3 minutes at a time. If after such charging the pressure does not amount to 185 to 200 lbs per sq. inch, charging may be continued after a while.

After charging the receiver, the starting screw as well as the valves of the air receiver should be closed.

Before the engine is stopped, it is advisable to ascertain that the receiver holds its maximal pressure; otherwise hand starting will be necessary next time.

All valves, pipes and unions must be tight, and the spindle of the starting valve should not be allowed to stick through getting burnt, but should move freely.

The setting of the injection apparatus and the temperature-regulating valves.

As long as the engine is running idle or on light load the injection devices must remain in their inclined position (A. and L. fig. 1) and the temperature-regulating valves should be closed (K. fig. 1). As soon as the load is sufficiently high the injection devices should be turned to their normal position (M. fig. 1) and the temperature-regulating valves opened. By means of these valves the temperature of the combustion chambers can on the one hand be kept at a sufficient height for running idle while on the other hand the risk of getting the engine overheated on overload is excluded.

5. Running on no load.

The setting of the fuel pump strokes is a very important detail when the engine is running on no load. The fuel quantity to be injected in this case is very small and therefore it must be divided up equally between the two cylinders in order to prevent one of them getting so cold from lack of fuel that it stops firing. Normally the adjustment of the fuel pump strokes as well as the speed of the engine is effected by means of the control levers (C. and I. fig. 1) but in case it should happen (e. g. after dismantling etc.) that the fuel pumps fail to discharge the same amount of fuel in spite of the control levers standing exactly parallel, the adjustment can be made by means of a special key and gauge as described in par. 15.

In order to control the regularity of firing, one fuel pump after the other (N. fig. 1) can be put out of action by means of the corresponding control lever (I. fig. 1). Should one of the cylinders thereon show weak or inferior ignitions, the corresponding

fuel pump stroke must be increased (see par. 15). When the best position of the control levers has been found for running the engine light, a mark should be made on the quadrants (O. fig. 1), which will greatly facilitate the future setting. This adjustment will cause no difficulties as soon as the driver has become a little accustomed to the engine. For continuous running on no or light load it is advisable to reduce the cooling by regulating the throttle-valve of the suction pipe to the cooling-water pump. In cold weather, the greater part of the radiator front may be covered with a piece of cardboard etc.

6. Running on load.

If too much load should be put on the engine the exhaust gases become dark, and excessive carbon deposit forms in the cylinder, exhaust ports, silencer and exhaust pipe. In this case it is as important as when running on light load that each cylinder should be fed with the same amount of fuel, i. e. the pump stroke must be carefully adjusted (See also par. 4 and 15).

7. Governor and speed control.

The governor serves the purpose of regulating the amount of fuel oil to the cylinders in such a way that the speed of the engine is nearly constant at various loads.

In case of the ignition being faulty or the engine being overloaded, the governor is unable to maintain the normal speed. More fuel is thereby injected than can be burnt in the engine cylinder, and this is the reason why the exhaust gases become dark (see par. 6). In this case the load must be reduced either by running on lower gear or in some other way.

A reduction from full speed to about half speed can be made by moving the control levers backwards (I. fig. 1). The engine is stopped by moving the control levers to their rearmost position, i. e. as far away as possible from the engine.

When the engine is running on light load it is not necessary to set the control levers in their foremost position (i. e. as near the engine as possible) but $^5/_8$" to $^3/_4$" from that position, measured on the quadrant, will be about right (O. fig. 1).

8. Gear box, friction clutch and pulley.

The AVANCE tractor is provided with two speeds forward and one reverse. The gears are operated by means of a common gear lever (P. fig. 1). When the tractor is standing still the gear lever must stand in position A., corresponding to neutral position (fig. 2). Position B. corresponds to slow speed forward, C. to high speed forward, and D. to reverse running.

Under no circumstances must the gears be engaged when the engine is running with the friction clutch engaged, as for instance for stationary drive. *All gear changing must be executed while the friction clutch is disengaged, i. e. with clutch lever in rear position* (D. fig. 1). Should difficulties arise in engaging the gears on account of the relative position of the gear wheels being unsuitable, the friction clutch should be engaged for a moment and then again released. As soon as the shaft has stopped, the gears

can be thrown into mesh. In order to stop the shaft it is sometimes necessary to brake it by pressing the clutch lever *backwards*. The tractor is started by engaging the friction clutch *slowly* in order to avoid a sudden jerk in starting. Slow down the engine before changing gears.

Do not walk immediately in front of or alongside of the tractor when the engine is running unless the friction clutch is disengaged and the gear lever stands in the neutral position. Stop the engine before doing any work underneath the tractor.

The pulley for stationary drive should be mounted on the shaft end (R. fig. 1) which is otherwise covered by the support for the driver's seat. This seat must therefore first be removed. The

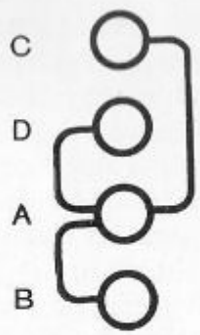


Fig. 2.

transmission of power to the belt pulley is effected directly without intermediary gears. The belt should not be tightened too much and the friction clutch should be engaged *slowly*.

The clutch lever, in its forward position, should engage itself, actuated by the spring pressure of the segment clutch. The clutch lever must not advance too far, however, after the spring pressure has started working. If it does, the segment clutch ought to be adjusted in the following manner.

Remove the hand hole cover from the front of the gear case, disengage the clutch, place the gear lever in its neutral position, turn the pulley or, if this is not mounted, remove the driver's seat with its bracket, thus making it possible to turn the shaft by means of a spanner, until the locking pin can be extracted by aid of the key supplied. While one man is holding the locking pin drawn out, an assistant turns the shaft $^1/_4$ revolution in the running direction of the engine; then the locking pin is allowed to fall into the corresponding hole.

It is only after a very long time of running that this adjustment need be made.

9. The fuel oil and its way from the tank to the combustion chamber.

It is of the utmost importance that the fuel oil should be conveyed to the engine without interruption or impediment. It is therefore advisable to filter the oil and remove any water present before filling it into the tank. The tank should be cleaned at least once a year. Do not drive the engine until the tank is empty, because then air will enter the fuel oil pipes and pumps, cause air locks and stop the pumps from working.

The air can be removed as follows: first unscrew the lid of the filter (S. fig. 1), thereby allowing the air in it to escape; then the discharge valves (A. fig. 4) of the pumps should be removed or loosened a couple of turns. After some pumping by hand (G. fig. 1) pure fuel oil without air bubbles will be observed to issue from the pipes. The valves should now be tightened and the pumping continued until the fuel reaches the injection apparatus free from air bubbles (A. fig. 1). After tightening the pipe union of the latter and pumping a few more strokes, the fuel will have reached the spray nozzle and now the whole system is free from air. Unless this work has been executed with care one or both of the pumps may stop working on account of an air lock in the system.

The fuel oil filter is mounted betwen the fuel oil tank and the fuel pumps; the cleaning of this filter must not be neglected (S. fig. 1).

The fuel pumps, valves and pipes must be well protected against such impurities as the fuel oil may contain, and the pipes must be secured to the injection apparatus in such a way that the spirals do not get deformed. Many fuel oils contain mechanical impurities such as sand etc. as well as acids which cause corrosion of the valves and pumps. Such oils are not suitable for engine fuel.

10. The fuel-oil pumps.

Both fuel oil pumps (M. fig. 4) are alike. They consist of a piston (B. fig. 4), pump body, suction- and discharge-valves (C. and A. fig. 4). The suction valve is screwed into the lower part of the pump body and the discharge valve into the upper part. The piston is carefully ground and must not be damaged by filing etc. In order to get the pump to work right it is absolutely necessary that it should contain no air and that the valves should be perfectly tight (See par. 9).

11. The injection devices.

Both injection devices (A. fig. 1) are alike except for the turning handles, one of which points upwards, the other downwards. By means of the turning handle the body can be turned in such a way that while running on no load the fuel is injected on to the ignition plugs and while running on full load the fuel is injected directly downwards towards the cylinders. The valve is mounted at the outside end of the body. The inner end of the body is provided with a bevelled seat to form a tight joint against the sleeve. Inside the sleeve there is a spring which presses the body against its seat. A tight joint between the sleeve and the

cover of the combustion chamber is also made by means of a bevelled seat without packing. Before mounting the injection device in its place the joint surfaces must be carefully cleaned in order to prevent the explosion gases leaking through, because a leakage under dirty conditions cannot be remedied by tightening the nuts.

When an injection device is to be taken out for inspection, proceed as follows: After the injection pipe and the nuts have been taken off, the device should be removed by means of two screws inserted into two corresponding tapped holes in the flange. The screws which are supplied with the engine should be tightened alternatively. If the screws work stiffly after the device has been drawn out some distance, the reason is that the flange has become deformed on account of careless tightening of the nuts.

In the event of a loose joint between the body and the sleeve, the explosion gases will leak through and form carbon. In such a case it is necessary to take out the body, clean it from carbon and regrind the seat with fine emery dust. *Perfect running of the engine depends upon tight valves and the spray nozzles being in good order.* After running the engine from 3 to 4 months it is advisable to replace the old spray nozzles by new ones.

12. Cooling.

The cooling of the engine is effected by means of water which circulates round the cylinders and other parts exposed to the heat from the explosion gases. By means of a centrifugal pump the hot water discharged from the engine jackets is pumped to a radiator and thence back again to the engine (T. fig. 1). The radiator fan is mounted on the same shaft as the pump wheel (U. fig. 1). Only clean water must be used for cooling purposes, because impurities may easily clog the narrow passages in the radiator and the engine jackets.

In order to prevent damage it is absolutely necessary *to drain the engine from water as soon as there is any likelihood of frost.*

13. The lubrication.

The most important parts of the engine are lubricated by means of a force feed lubricator (A. fig. 5). Having no valves, and all parts being positively operated, this lubricator is absolutely reliable in its working. One turn counter-clockwise of a regulating screw will reduce the lubricating oil quantity of the corresponding piston by $^1/_8$. The maximum amount of oil will be delivered when the regulating screws are screwed down as far as possible. Should any of the oil pipes have been temporarily disconnected from the lubricator *they must be filled with oil before the engine is started.* Connect one end of the pipes to the lubricator and turn the thumb nut until oil issues at the other end of the pipes, which indicates that they are now ready for connecting up permanently. The thumb nut should turn through 10—12 revs. per min. under normal running conditions. *Fill the lubricator once every three hours with good lubricating oil.*

During running make sure that the thumb nut revolves regularily without stopping. The lubricator must be cleaned at least once a year and great care must then be taken to see that the small inlet channels do not get clogged. The parts should be cleaned with paraffin. Cotton waste is not suitable for drying the parts with, because loose threads will adhere to the surfaces, and follow the oil into the small channels where they may cause stoppages.

The forward and rear main bearings of the engine are roller bearings which require only a fraction of an ounce of lubricating oil every week. Every grease cup should be given about two turns every day. In the gear case (V. fig. 1) *gear case oil* should be put in until its level stands above the lower but below the upper control cock. After about two weeks' running it is advisable to exchange the old oil for new, but in the meantime the oil level must be watched to make sure that it always is at a sufficient height.

In a two stroke engine of this kind lubricating oil must not be filled into the crank case, but the oil that collects therein must be drained off at least once a week by opening the drain cocks under the crank case (Y. fig. 1).

The lubricating oil containers of the hubs of the front wheels should be filled with ordinary oil about twice a month.

With stationary running the two lubricating cups on the gear case should be filled three times a day. The cups should be filled *while the engine is running and the clutch lever engaged.*

The moving parts of the governor and coupling should be oiled every month. The oil is injected in the holes of the fly-wheel rim.

Only one burner (B. fig. 5) is used for heating the ignition plugs and therefore both of them must share the flame equally. The burner should be adjusted in such a way that the flame nozzle points about midway between the combustion chambers. By turning the flame nozzle (C. fig. 5) to one side or the other a position will be found which imparts equal heat to both plugs. After this adjustment the screw connecting the flame pipe with the bracket should be tightened. Paraffin or fuel oil, if not to viscous, may be used as fuel for the lamp. Be careful not to allow any water to enter the container. All pipes, valves, packings and unions must be tight. In order to prevent the air from blowing back it is of great importance to keep the air valve of the pump tight (D. fig. 5). Keep the pump piston in perfect condition.

14. The quick-starting lamp and the air pump.

The packings for the valve spindles are made of asbestos cord which has previously been soaked in a mixture of tallow and graphite. Before lighting the lamp air must be pumped into the air container (E. fig. 5). When this has been done, first the air valve and then the fuel-oil valve should be opened very slightly and the escaping gas ignited by an inextinguishable match or fusee inserted through one of the holes in the flame pipe. The flame can

be increased by opening the fuel-oil valve and the air valve alternatively. The latter must not be opened too much, or the flame will blow out. The right colour of the flame is blue at the flame nozzle and light yellow at the point. Thirty to forty pump strokes per minute will be sufficient to keep the flame at the right temperature. The pump piston should be lubricated with a few drops of oil in order to make it tighter. To turn out the lamp *close the fuel-oil valve first and then the air valve.*

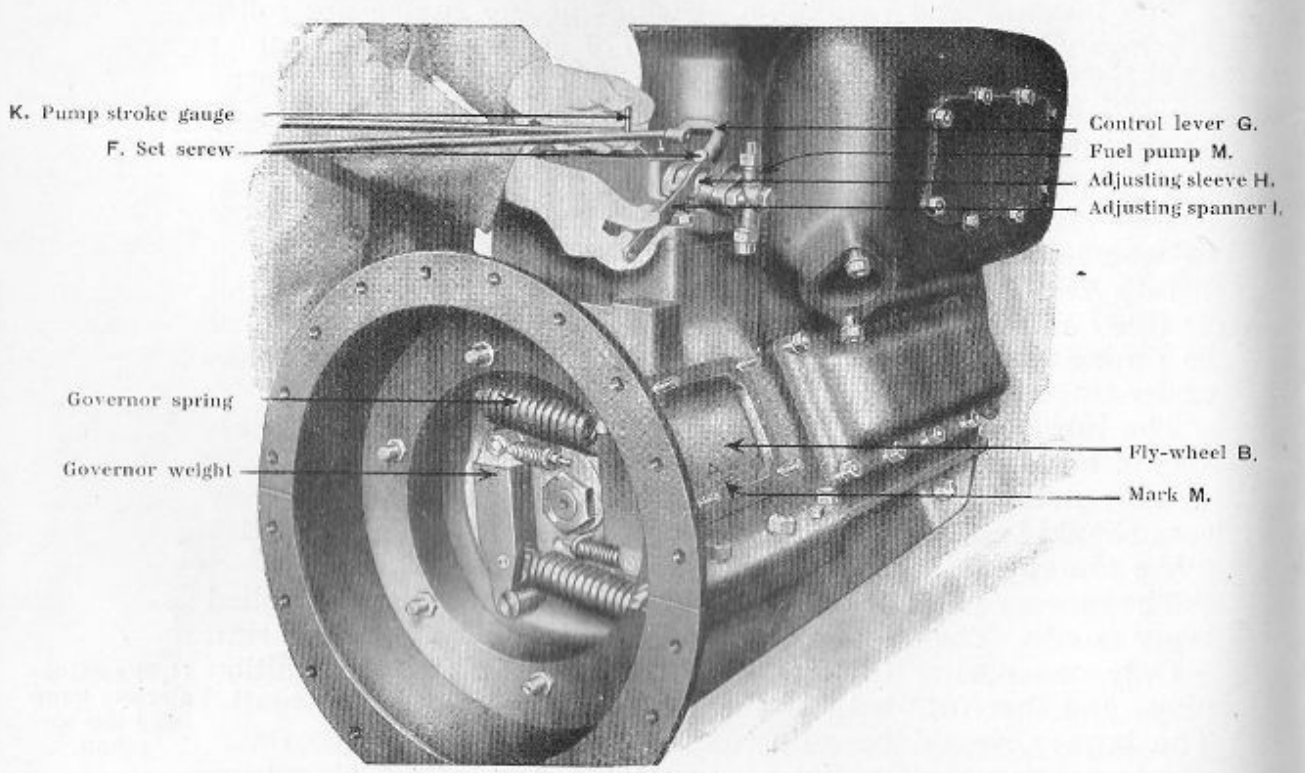


Fig. 3.

15. Adjusting the stroke of the fuel-oil pumps.

Remove the cover on the right side of the body opposite the fly-wheel (B. fig. 3) and turn the latter until the mark A on the wheel is in line with the corresponding mark on the lower edge of the hand hole (M. fig. 3). In this position the bell crank (D. fig. 4) has moved the fuel pump piston A to its innermost position. Then the cover of the pump housing (E. fig. 4) should be removed, the set screw (F. fig. 3 and 4) on the control lever (G. fig. 3 and 4) loosened and the adjusting sleeve (H. fig. 3 and 4) turned with the adjusting spanner (I. fig. 3 and 4) until the pump stroke gauge (K. fig. 3 and 4) fits exactly between the end piece (L. fig. 4) of the pump piston and the adjusting sleeve. During this operation the control lever is to be fixed in its forward position. Be careful that the control lever bears on the flange of the adjusting sleeve when tightening the set screw.

By turning the fly-wheel half a revolution, the mark B will be in line with the mark on the hand hole edge and the stroke of the pump B can be adjusted in the same way as A. (See also par. 5).

16. Adjusting the governor.

The speed of the engine may be varied by altering the tension of the governor springs. Counter clockwise turning of the two hexagonal screws in the face of the fly-wheel will reduce the tension of the springs and consequently also the speed of the engine.

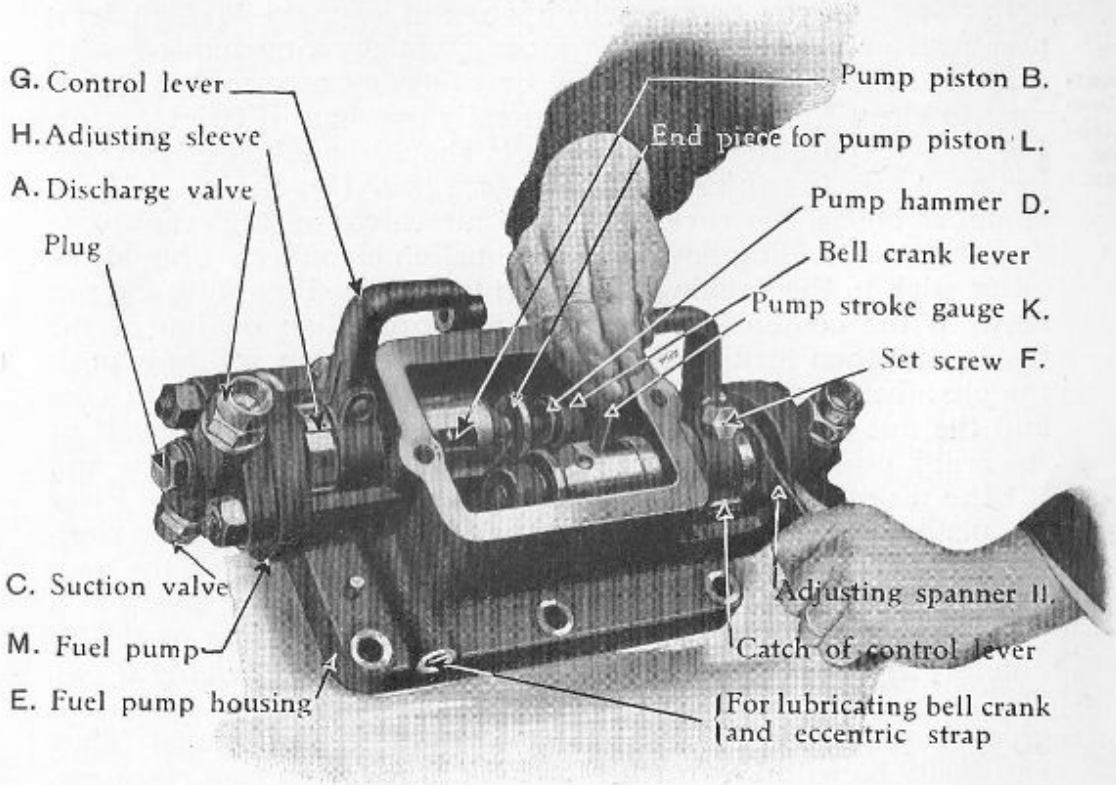


Fig. 4.

Clockwise turning will increase the speed. A special box spanner is provided for this work. It is of great importance that both springs be equally adjusted and this should be checked by means of the wire gauge provided for this purpose. In the case of the engine being overloaded the speed cannot be increased by tightening the governor springs.

17. Packings.

The most important packing joints of the engine are those of the combustion chambers (Z. and A^1. fig. 1). Care should be taken that no remains of the old packing joint are left behind and that both surfaces are scraped clean before the new packing is put in, otherwise this will not remain tight. The packing joint is to be made of the best material, about $^1/_{32}$" thick, and cut

to a good fit. A suitable packing can be made of sheet asbestos soaked in water before being put in place. Sheet copper of zinc as well as "klingerite" or asbestos compositions of equal quality can also be used. The nuts should be screwed up equally until very tight. The packing joint between the combustion chamber and its cover should be of the same materials as that already mentioned (B^1. and C^1. fig. 1).

A copper ring or, failing that, an asbestos cord will form the best packing for the ignition plugs (B. fig. 1).

Packing for covers etc. which are not exposed to high temperatures or pressures can be made from drawing paper.

18. Dismantling the engine for cleaning and inspection. Should the engine be running on everyday service it is necessary to clean the interior and generally overhaul it twice a year. For this purpose the following parts should be taken off: the injection pipes, the injection device (see par. 11), the combustion chamber hoods, the covers over the air valves on the crank case and the nuts holding down the combustion chambers. Should the latter stick to the packings they can be loosened by putting a nut between the combustion chamber and projection on top of the piston and then turning the fly-wheel. The piston will now push the chamber upwards. This work must be carried out with care and the nut must not be left behind. Take off the lower half of the crank pin bearing, turn the crank to its upper dead centre and lift the piston with the eye bolt provided for this purpose. Place the piston on a wooden trestle in such a way that the piston rings are lying free and unsupported. The locking screw for the gudgeon pin should be removed and the pin driven out by means of a brass punch. *Care must be taken to see that the edges of the oil channel in the pin do not get damaged while thus driving it out.* The piston rings can be loosened by pouring paraffin into the grooves and giving them light taps with a wooden mallet. They can easily be withdrawn with the aid of the piston ring removers.

The crank pin should be covered with paper in order to protect it from dirt. The interior of the cylinder, combustion chamber, and inlet and exhaust ports should be thoroughly cleaned from carbon and soot, and then the cylinder should be oiled with lubricating oil. If faults, however small, are observed on the bearing surfaces they must be attended to.

When inserting the piston into the cylinder, use the piston ring removers supplied, and handle the piston rings carefully.

When reassembling be careful to put the parts back into their right places according to their lettering. Regarding packing joints etc. see par. 11 and 17.

After reassembling the engine, it should be turned by hand in order to make sure that everything is in order.

19. Dismantling the tractor. In order to gain access to the gears, friction clutch etc. the tractor should be placed on a clean even floor and should be dis-

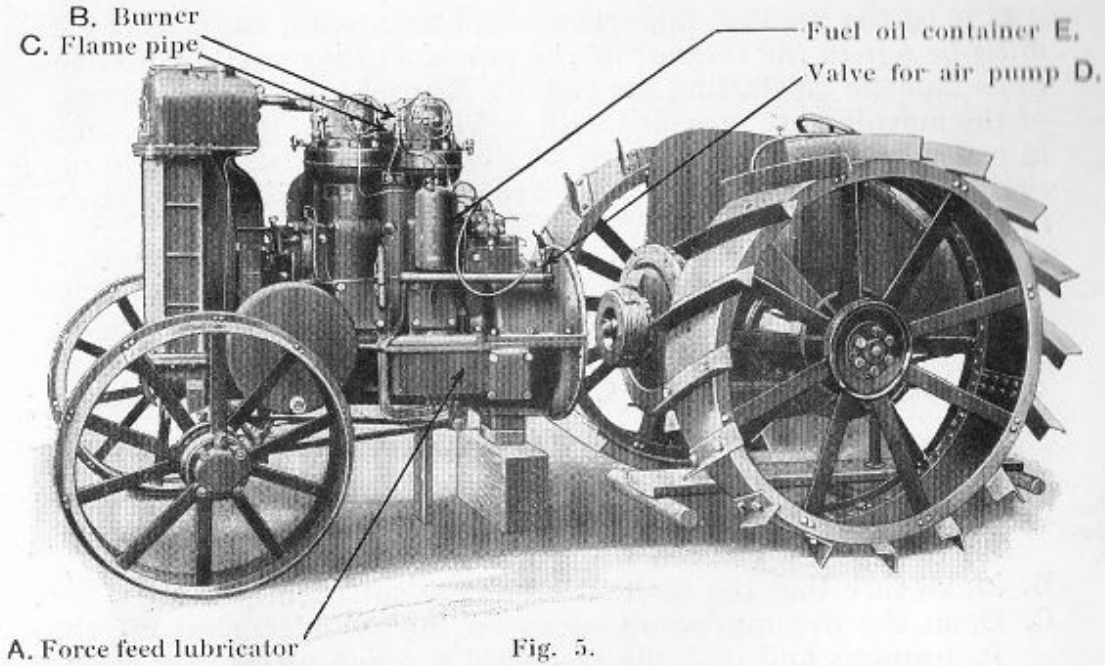


Fig. 5.

mantled in the following manner: drain all oil out of the gear case. Remove the engine hood, the fuel tank with brackets, the steering rod between the steering lever and the front axle, and the bracing rod under the tractor body. Put a prop under the two side stays of the front axle (fig. 5). Wooden wedges should then be driven into the space between the under side of the radiator and the front axle in order to obtain perfect lateral rigidity. Place a wooden trestle or, still better, a steady screw jack under the rear end of the crank case (just below the fly-wheel). Then put two rollers or pipes on the floor just below the gear case, and a board on top of these, and on top of the board a second screw jack under the extreme rear end of the gear case (by the lifting eye) to support this end when the machine is taken apart. All the screws in the round middle flange should now be loosened or removed, and then the rear part of the tractor with the driving wheels can be rolled backwards, thus separating it entirely from the forward half with the engine. During this separation the driving wheels roll on the floor, and the rear jack with the board on the rollers. If the rear jack be correctly adjusted to avoid undue strain, this separation of the two halves of the tractor thus exposing the interior parts, will be very easily accomplished. In order to gain access to the gear shifter and the gear wheels of the differential etc. all the covers, especially the large one on top, should be taken off.

The assembling should be carried out in the reverse order. Care must be taken to ensure that the six pins in the fly-wheel enter the corresponding holes in the ring surrounding the discs of the friction clutch.

It is of the greatest importance that no screws, nuts, tools etc. must be left in the interior of the machine: they would cause serious damage on starting the engine. Most of the screws and nuts of the machine are provided with locking devices of various kinds in order to prevent them from shaking loose. *It is absolutely necessary to replace such locking devices, when replacing a screw that has been removed.*

The most common causes of running troubles and the means of remedying them.

If the engine does not start properly.

A. Make sure that there is fuel left in the tank and that the fuel-oil filter is not clogged with dirt or air locked (see par. 9).

B. Make sure that the ignition plugs are sufficiently heated.

C. Open the decompression cocks on the cylinder, shut off the fuel pumps and turn the fly-wheel through a few revolutions in order to fill the cylinders with clean air.

D. Loosen the fuel-oil pipes at the injection device and pump some fuel into the hand, thus rendering it possible to observe if the oil is injected properly or if it is mixed with water. Before starting to pump by hand in this manner the pistons should be moved to an equal height in both cylinders, otherwise it may happen that the pump lever is in such a position that pumping is impossible with one of the pumps.

E. Take off the ignition plugs to see if there is any carbon deposit in them.

F. Inspect the steel-plate air valves to see if they are broken or leaky.

G. Make sure that the packing joints of the combustion chambers are tight and that the cylinders have a good compression. Overheated cylinders as well as viscous lubricating oil in cold weather may cause difficulty in starting (See also par. 2 and 3).

If the engine stops or works irregularily.

H. Se par. A.

I. Inspect the cooler to see if there is a sufficient quantity of cooling water.

J. The temperature-regulating valves (K. fig. 1) should be closed and the injection devices should be in their inclined position (A. and L. fig. 1) when the engine is running idle or on light load.

K. The temperature-regulating valves should be open (K. fig. 1) and the injection devices in their normal position (A. and M. fig. 1) when the engine is running on load.

L. Investigate the ignition to see if it is working properly (See par. 5).

M. The fuel-oil pumps may be incorrectly adjusted (see par. 15).

N. The engine may be overloaded (See par. 16).

O. Inspect the spray nozzles (A. fig. 1) to see if they are worn, or if the grooves of the spiral or the small hole in the nozzle are clogged with dirt. Renew such nozzles as do not spray the oil in a fine mist.

P. Make sure that the governor is working properly.

Q. Remove the covers of the crank case to see if any bearing has been running hot.

R. Make sure that the injection devices and the fuel-oil pumps are tight; this is very important.

LIST OF PARTS
FOR
THE AVANCE TRACTOR

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
	Engine.				
96	Central part of combustion chamber	—	WUVUR	2	1
97	Packing (lower) for combustion chamber	—	WUVYS	2	1
98		—	WUYAP		
99	Stuffing-box nut	—	WUYGD	2	1
100		—	WUYIR		
101	Cylinder block	—	WUYLJ	1	1
102	Cylinder cover for A-cyl.	—	WUYMK	1	1
103	Cylinder cover for B-cyl.	—	WUYOS	1	1
104	Cover for combustion chamber for A-cyl.	—	WUYPA	1	1
105	Cover for combustion chamber for B-cyl.	—	WUYSO	1	1
106	Hand hole cover	—	WUYUT	2	1
107	Hand hole cover with lamp bracket	—	WUYVY	1	1
108	Hand hole cover (with eye) for fly-wheel and governor	—	WUZER	1	1
109	Hand hole cover (without eye) for fly-wheel and governor	—	WUZRE	1	1
110	Ignition plug	—	WUZTO	2	1
111	Packing joint for ignition plug	—	WUZUV	2	1
112	Stud	1/2″×2″	WUZWY	8	1
113	Stud	1/2″×2 1/4″	WYAXY	6	1
114	Stud	5/8″×2 3/16″	WYBAB	28	1
115	Stud	7/8″×4 1/8″	WYBBA	2	1
116	Stud	7/8″×4 1/2″	WYBCE	16	1
117	Stud	5/8″×4 3/8″	WYBEC	8	1
118	Stud	3/8″×1 9/16″	WYBFO	4	1
119	Stud	3/8″×1 5/16″	WYBID	16	1
120	Stud	1/2″×1 3/4″	WYBOF	38	1
121	Hexagon nut	3/8″	WYBUG	42	1
122	Hexagon nut	1/2″	WYCAC	32	1
123	Hexagon nut	5/8″	WYCCA	14	1
124	Hexagon nut	7/8″	WYCED	18	1
125	Hexagon nut	3/8″	WYCGO	20	1-12
126	Packing joint for cylinder cover	—	WYCIF	2	1
127	Upper packing joint for combustion chamber	—	WYCOG	2	1
128	Packing joint for silencer	—	WYCUH	2	1
129	Packing joint for cooling-water pipe	—	WYDAD	6	1
130	Plug	1/8″ pipe thr. ×5/16″	WYDDA	2	1

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
131	Plug	3/4" pipe thr. ×19/32"	WYDEF	2	1
132	Plug	1/4" pipe thr. ×3/8"	WYDFE	2	1
133	Cap screw	1/4"×3/8"	WYDHO	2	1
134	Cap screw	1/4"×1/2"	WYDIG	14	1
135	Cap screw	5/16"×5/8"	WYDOH	3	1
136	Washer	3/8"	WYDUJ	4	1
137		—	WYEGH		
138	Intermediate hood	—	WYEJK	1	1
139	Flame distributor	—	WYELM	1	1
140		—	WYEMN		
141	Bracket for burner	—	WYENP	1	1
142	Cooling-water pipe, outlet	—	WYERS	1	1
143	Cooling-water pipe, intermediate	—	WYEWY	2	1
144	Temperature-regulating valve, complete	—	WYEZB	2	1
145	Valve stem	—	WYFAF	2	1
146	Valve housing	—	WYFEG	2	1
147	Hand wheel	—	WYFFA	4	1-12
148	Taper pin	9/64"×1"	WYFGE	4	1
149	Stuffing box nut	—	WYFJO	3	1
150	Packing	—	WYFOJ	2	
151	Compression-cock, complete	—	WYFUK	2	1
152	Compression-cock housing	—	WYGAG	2	1
153	Compression-cock plug	—	WYGGA	2	1
154	Packing for cooling-water pump	—	WYGHE	1	1
155	Packing joint for crank-case cover	—	WYGIJ	2	1
156	Packing joint for air valve	—	WYGKO	2	1
157	Packing joint for hand hole cover	—	WYGOK	3	1
158	Packing joint for hand hole cover (fly-wheel)	—	WYGUL	2	1
159	Packing joint for fuel pump case	—	WYHAH	2	1
160			WYHHA		
161			WYHIK		
162	Piston for A-cylinder, complete with gudgeon pin and rings	Standard size	WYHJE	1	2
163	Piston for A-cylinder, complete with gudgeon pin and rings	Oversize	WYHLO	1	2
164	Piston for B-cylinder, complete with gudgeon pin and rings	Standard size	WYHOL	1	2
165	Piston for B-cylinder, complete with gudgeon pin and rings	Oversize	WYHUM	1	2
166	Gudgeon pin with lock	—	WYIBD	2	2
167	Piston ring	Standard size	WYICF	8	2
168	Piston ring	Oversize	WYIJL	8	2
169			WYILN		
170	Screw with hexagon head	3/8"×1 11/16"	WYIRT	2	2
171	Nut	3/8"	WYJAJ	5	2
172	Connecting rod, compl. with bearing cap, bearing boxes and gudgeon pin bushing	—	WYJEK	2	2

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
173	Bearing boxes	—	WYJIL	2 pairs	2
174	Gudgeon-pin bushing	—	WYJJA	2	2
175	Screw with hexagon head	1/2" × 13/16"	WYJKE	2	2
176	Locking washer	—	WYJMO	2	
177	Crank-pin bearing bolt	1/2" × 3 1/4"	WYKAK	4	2
178	Castle nut	1/2"	WYKEL	2	2
179	Split pin	7/64" × 1 1/2"	WYKKA	13	
180			WYKLE		
181	Crank shaft, compl. with counter weights	—	WYKNO	1	2
182	Roller bearings	D = 5 29/32" d = 2 3/4" B = 2"	WYKON	2	2
183	Key	7/16" × 11/16" × 3 9/16"	WYKUP	4	2
184	Nut for roller bearings	—	WYLAL	2	2
185	Lubricating-oil ring with pipe	—	WYLEM	2	2
186	Locking washer	—	WYLLA	2	2
187	Intermediate washer with lock	—	WYLME	1	2
188	Nut for fly-wheel	—	WYLOP	2	2
189	Belt pulley for fan	—	WYLPO	1	2
190	Screw with countersunk head	1/4" × 1/2"	WYMAM	10	2
191	Crank shaft, complete with counterweights, type 1928	—	WYMEN	1	13
192	Ball bearing, type 1928	5 29/32" × 2 3/4" × 1 3/8"	WYMIP	1	13
193	Nut for fly-wheel, type 1928	—	WYMMA	1	13
194	Nut for flange coupling, type 1928	—	WYMNE	1	13
195	Crank chamber	—	WYMUR	1	1
196	Cover for crank chamber	—	WYNAN	2	1
197	Bearing box, upper	—	WYNEP	1	2
198	Bearing box, lower	—	WYNNA	1	2
199	Injection pipe and union for lubricating oil	—	WYNOR	2	2
200	Packing joint for roller bearing	—	WYNPE	2	1
201	Drain cock	—	WYNRO	3	2
202	Hexagon nut	3/4"	WYNUS	6	1
203	Spring washer	3/4"	WYOHL	22	1
204	Stud	5/8" × 2 5/8"	WYOJM	14	1
205	Stud	5/8" × 4 3/4"	WYOLP	4	1
206	Cap screw	1/4" × 5/8"	WYOPS	14	1
207	Hexagon nut	3/4"	WYORV	5	1
208	Screw with hexagon head	3/4" × 2 9/16"	WYOVZ	5	1
209	Hexagon nut	5/8"	WYOWB	60	1
210			WYOZD		
211	Packing joint between cylinder block and crank case, right side	—	WYPAP	1	1
212	Packing joint between cylinder block and crank case, left side	—	WYPIR	1	1
213	Packing joint for lubricator	—	WYPOS	1	1
214	Lubricating-oil pipe for roller bearing, A-cylinder	—	WYPPA	1	11
215	Lubricating-oil pipe for roller bearing, B-cylinder	—	WYPSO	1	11

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
216	Cover for lubricating-oil pipe ..	—	WYPUT	2	11
217	Screw bolt	—	WYRAR	2	11
218	Fly-wheel	—	WYRIT	1	2
219	Driving screw	—	WYROV	2	2
220	Driving screw	—	WYRRA	4	2
221	Governor weight	—	WYRSE	2	2
222	Knife edge of the governor weight	—	WYRVO	2	2
223	Bolt	$^{19}/_{32}" \times 1^{15}/_{16}"$	WYSAS	2	2
224	Bolt	$^{19}/_{32}" \times 2^{11}/_{16}"$	WYSET	2	2
225	Adjusting screw	$^{3}/_{4}" \times 6^{11}/_{16}"$	WYSIV	2	2
226	Guide bolt	$^{13}/_{32}" \times 3^{5}/_{16}"$	WYSSA	2	2
227	Link	Length $3^{7}/_{8}"$	WYSTE	1	2
228	Link	Length $3^{3}/_{8}"$	WYSUX	1	2
229	Spring grip	—	WYSWO	2	2
230	Guide plate with lock and bushing	—	WYTAT	1	2
231	Eccentric	—	WYTEV	1	2
232	Washer	—	WYTOY	1	2
233	Locking spring	—	WYTUZ	2	2
234	Bolt	$^{19}/_{32}" \times 1^{1}/_{8}"$	WYTVE	2	2
235	Taper pin	$^{5}/_{32}" \times 2"$	WYTYO	2	2
236	Castle nut	$^{3}/_{4}"$	WYUCH	10	2
237	Governor spring, large	—	WYUFK	2	2
238	Governor spring, small	—	WYUHM	2	2
239	Castle nut	$^{5}/_{16}"$	WYUJN	2	2
240	Split pin	$^{5}/_{32}" \times 1"$	WYUPT	14	
241	Split pin	$^{3}/_{64}" \times 1^{3}/_{4}"$	WYUSY	15	
242	Split pin	$^{3}/_{64}" \times 2"$	WYUTZ	5	
243	Split pin	$^{5}/_{64}" \times 1"$	WYUVB	5	
244	Split pin	$^{3}/_{16}" \times 2^{1}/_{2}"$	WYUXD	4	
245	Screw with hexagon head	$^{3}/_{8}" \times 1^{3}/_{16}"$	WYVAV	14	3
246	Screw with hexagon head	$^{1}/_{2}" \times 1^{3}/_{16}"$	WYVIX	16	3
247	Screw with hexagon head	$^{5}/_{8}" \times 2^{3}/_{4}"$	WYVOZ	4	3
248	Spring washer	$^{3}/_{8}"$	WYVUB	36	12
249	Guide plate (with lock and bushing), type 1928	—	WYVVA	1	13
250	Eccentric strap, compl. with bolts	—	WYVWE	1	
251	Eccentric strap, upper half	—	WYVZO	1	2
252	Eccentric strap, lower half	—	WYWIZ	1	2
253	Screw bolt with nut for eccentric strap	—	WYWOB	2	2
254	Hexagon nut	$^{1}/_{2}"$	WYWUC	4	2
255	Screw with hexagon head	$^{1}/_{2}" \times 2^{9}/_{16}"$	WYWYE	5	2
256	Bolt	$1" \times 3^{1}/_{16}"$	WYZAZ	1	
257	Spring washer	$^{1}/_{2}"$	WYZBE	53	
258	Spring washer	$^{5}/_{8}"$	WYZDO	158	
259			WYZEB		
260	Bell crank lever for pump	—	WYZIC	1	3
261	Taper pin	$^{13}/_{64}" \times 1^{3}/_{4}"$	WYZOD	2	3
262			WYZUF		
263	Set screw for end piece	—	WYZZA	2	3
264	Locking washer for set screw	—	YAACS	2	3

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
265	Fuel-pump case	—	YAADT	1	3
266	Fuel pump, compl. for A-cylinder	Right hand threaded	YAAHY	1	3
267	Fuel pump, compl. for B-cylinder	Left hand threaded	YAALC	1	3
268	Fuel pump body for A-cylinder	Right hand threaded	YAAMD	1	3
269	Fuel pump body for B-cylinder	Left hand threaded	YAANF	1	3
270	Adjusting sleeve for A-cylinder	Right hand threaded	YAARJ	1	3
271	Adjusting sleeve for B-cylinder	Left hand threaded	YAASK	1	3
272	Control lever	—	YAATL	2	3
273	Screw for control lever	1/4" pipe thr. ×1 1/4"	YAAWN	2	3
274	Gland	—	YABAR	2	3
275	Fuel-pump piston	—	YABIT	2	3
276	Fuel-pump hammer	—	YABOV	2	3
277	End piece	—	YABRA	2	3
278	Stud	1/2" ×1 7/8"	YABSE	8	3
279	Taper pin	5/16" ×1 9/16"	YABVO	2	3
280	Pin	1/4" ×1 1/4"	YABYX	2	
281	Fuel-pump spring	—	YACAS	2	3
282	Discharge valve, compl.	—	YACET	2	3
283	Suction valve, compl.	—	YACIV	2	3
284	Steel ball	5/16"	YACSA	3	3
285	Valve spring	—	YACTE	2	3
286	Valve screw	—	YACUX	2	3
287	Cover for fuel-pump case	—	YACWO	1	3
288	Bracket for bell crank	—	YACZY	1	3
289	Shaft for bell crank	—	YADAT	1	3
290	Fuel-oil pipe for A-cylinder	9/32" ×62"	YADEV	1	3
291	Fuel-oil pipe for B-cylinder	9/32" ×63 3/8"	YADOY	1	3
292	Packing for suction and discharge valve	—	YADTA	4	3
293	Packing for fuel-pump piston	—	YADUZ	2	3
294	Plug for pump body	—	YADVE	2	3
295	Injection device for A-cylinder, compl.	—	YADYO	1	3
296	Injection device for B-cylinder, compl.	—	YAEBS	1	3
297	Injection-valve sleeve	—	YAECT	2	3
298	Injection-valve spindle	—	YAEGY	2	3
299	Nut for valve spindle	—	YAELD	2	3
300	Key for valve spindle	5/32" ×1/4" ×1/2"	YAEMF	2	3
301	Spring for valve spindle	—	YAENG	2	3
302	Injection valve, compl.	—	YAEPH	2	3
303	Steel ball	1/4"	YAERK	2	3
304	Valve spring	—	YAEWP	2	3
305	Valve screw	—	YAFAV	2	3
306	Spray nozzle, compl.	—	YAFIX	3	3—6
307	Hand wheel	—	YAFOZ	1	1

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
308	Control lever for injection device for A-cyl.	—	YAFUB	1	3
309	Control lever for injection device for B-cyl.	—	YAFVA	1	3
310	Bolt for link	—	YAFWE	1	3
311	Link	—	YAFZO	1	3
312	Control rod	—	YAGBO	1	3
313	Support	—	YAGIZ	1	3
314	Support screw	—	YAGOB	1	3
315	Air-valve housing	—	YAGUC	1	3
316	Valve plate	—	YAGWA	4	3
317	Stop plate	—	YAGYE	4	3
318	Air-inlet pipe	—	YAHCO	1	3
319	Air-pipe sleeve	—	YAHEZ	1	3
320	Air pipe	—	YAHIB	1	3
321	Screw with hexagon head	$^1/_2" \times 1^9/_{16}"$	YAHOC	4	3
322	Packing	—	YAHUD	1	3
323	Packing	—	YAHYA	1	3
324	Flange	—	YAHZE	1	3
325	Packing	—	YAIBT	1	3
326	Connecting link, complete	—	YAIFY	1	11
327	Link, threaded	—	YAIGZ	1	11
328	Link with eyes	—	YAIKD	1	11
329			YAILF		
330			YAIRL		
331	Air strainer, complete		YAJAZ	1	13
332	Filter		YAJBE	1	
333	Filter cloth		YAJDO	1	
334			YAJEB		
	Radiator.				
335	Radiator base	—	YAJIC	1	4
336	Screw for stay rod	—	YAJOD	1	4
337	Split pin	$^3/_{16}" \times 1^3/_4"$	YAJUF	3	
338	Drain cock	—	YAJYG	1	4
339	Screw with hexagon head	$^5/_{16}" \times 1^9/_{16}"$	YAJZA	46	4
340	Screw with hexagon head	$^1/_2" \times 1^3/_{16}"$	YAKAB	8	4
341	Stud	$^5/_8" \times 3^3/_{16}"$	YAKBA	2	4
342	Hexagon nut	$^5/_{16}"$	YAKCE	46	4
343	Spring washer	$^5/_{16}"$	YAKEC	56	
344	Packing joint for radiator body	—	YAKFO	2	4
345			YAKID		
346	Packing for cock	—	YAKOF	1	4
347			YAKUG		
348	Radiator body	—	YAKYH	1	4
349	Radiator top	"Avance"	YALAC	1	4
350	Radiator top	"El Sueco"	YALCA	1	4
351	Filling cap with chain	—	YALDE	1	4
352	Radiator filter	—	YALED	1	4
353	Radior-side piece	—	YALGO	2	4
354	Fastening iron	—	YALIF	4	4
355	Radiator stay	—	YALJY	1	11
356	Screw with hexagon head	$^5/_{16}" \times 1^3/_{16}"$	YALOG	10	4

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
357	Hexagon nut	5/8"	YALUH	94	4
358	Throttle	—	YALYJ	1	4
359	Packing for throttle	—	YAMAD	1	
360			YAMDA		
361			YAMEF		
362			YAMFE		
363			YAMHO		
364			YAMIG		
365			YAMKY		
366			YAMOH		
367			YAMUJ		
368			YAMYK		
369			YANAF		
	Cooling-water pump and fan.				
370	Pump body	—	YANEG	1	4
371	Bearing bracket	—	YANFA	1	4
372	Cover for ball bearing	—	YANGE	1	4
373	Bushing	—	YANJO	1	4
374	Stuffing-box nut	—	YANLY	1	4
375	Locking arm	—	YANOJ	1	4
376	Lining	—	YANUK	1	4
377	Packing for ball bearing	—	YANYL	2	4
378	Ball bearing	D=2 3/64" d=51/64" B=19/32"	YAODY	1	4
379	Bearing box	—	YAOJD	1	4
380	Packing ring	—	YAOLG	1	4
381	Washer	1/2"	YAONJ	3	4
382	Set screw	1/4"×5/16"	YAOPK	1	
383	Locking washer	—	YAORM	1	4
384	Grease cup	—	YAOWR	1	4
385	Grease cup	—	YAOZT	12	4
386			YAPAG		
387			YAPGA		
388			YAPHE		
389			YAPIJ		
390	Fan pulley	—	YAPKO	1	4
391	Impellor	—	YAPMY	1	4
392	Shaft	—	YAPOK	1	4
393	Key	1/4"×5/16"×1 3/16"	YAPUL	1	4
394	Key	1/4"×5/16"×2"	YARAJ	1	4
395	Key	1/4"×5/16"×1 5/16"	YAREK	2	4
396	Nut	5/8"	YARIL	1	4
397	Split pin	1/8"×1 1/2"	YARJA	2	
398	Castle nut	5/8"	YARKE	10	4
399	Delivery pipe	—	YARMO	1	4
400	Cooling-water inlet pipe	—	YARPY	1	4
401	Cooling-water outlet pipe	—	YARYP	1	4
402	Hose connection	—	YASAK	1	4
403	Clip for hose connection	—	YASEL	2	4

Catalogue No	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
404			YASKA		
405	Cooling-water pump, complete with fan	—	YASLE	1	13
406	Fan, compl.	—	YASNO	1	4
407	Fan hub	—	YASON	1	4
408	Fan blade	—	YASUP	4	4
409	Distance sleeve	—	YATAL	1	4
410	Fan belt	—	YATEM	1	4
411	Fan protection	—	YATLA	1	11
412			YATME		
413			YATOP		
414			YATPO		
415			YATRY		
416			YATYR		
417			YAUCY		
418			YAUDZ		
419			YAUHD		
	Starting arrangement.				
420	Bevel gear wheel for starting	—	YAUJF	1	4
421	Key	$^{5}/_{16}" \times ^{15}/_{32}" \times 1^{9}/_{16}"$	YAURN	1	4
422	Nut	1"	YAUSP	1	4
423	Coupling lever	—	YAUXT	1	4
424	Catch	—	YAVAM	1	4
425	Bolt	$^{15}/_{32}" \times 2^{3}/_{8}"$	YAVEN	1	4
426	Split pin	$^{7}/_{64}" \times 1"$	YAVIP	14	
427			YAVMA		
428			YAVNE		
429			YAVSY		
430	Starting disc	—	YAVUR	1	4
431			YAVYS		
432			YAWAN		
433	Bearing cap	—	YAWEP	1	4
434	Bushing	—	YAWNA	1	4
435	Set screw	$^{1}/_{2}" \times 1^{1}/_{8}"$	YAWOR	1	4
436			YAWPE		
437			YAWRO		
438	Starting handle, complete	—	YAWTY	1	4
439	Spring for starting handle	—	YAWUS	1	4
440			YAWYT		
441			YAYAP		
442			YAYGD		
443			YAYIR		
444			YAYLJ		
445			YAYMK		
446			YAYOS		
447			YAYPA		
448			YAYSO		
449			YAYUT		

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
	Lubricating arrangement.				
450	Force-feed lubricator, complete	—	YAYVY	1	5
451	Container	—	YAZER	1	5
452	Pump body	—	YAZRE	1	5
453	Cover for container	—	YAZTO	1	5
454	Cover for crank case	—	YAZUV	1	5
455	Filling cap	—	YAZWY	1	5
456	Oil strainer	—	YEACY	1	5
457	Connecting rod	—	YEADZ	2	5
458	Roller	—	YEAHD	2	5
459	Nut	—	YEAJF	1	5
460			YEANK		
461	Pawl	—	YEASP	3	5
462	Fiber washer with pipe	—	YEAWS	1	5
463			YEAXT		
464	Stuffing box	—	YEBBO	1	5
465	Shaft	—	YEBIZ	1	5
466	Cross head with seats	—	YEBOB	1	5
467	Taper		YEBUC		
468	Plug with square hole	—	YEBWA	1	5
469	Gland	—	YEBYE	1	5
470	Cap screw	$^5/_{32}" \times 1^1/_4"$	YECAY	5	5
471	Pin for filling cap	—	YECCO	1	
472	Spring for filling cap	—	YECEZ	1	
473	Coupling	—	YECIB	1	5
474	Ratchet wheel	—	YECOC	1	5
475	Lever bracket	—	YECUD	1	5
476	Lever	—	YECYA	1	5
477	Connecting rod	—	YECZE	1	5
478	Bolt	$^{13}/_{32}" \times 1^1/_4"$	YEDAZ	2	5
479	Set screw	$^5/_{16}" \times ^{15}/_{16}"$	YEDBE	1	5
480	Nut	$^5/_{16}"$	YEDEB	1	5
481	Fiber washer	—	YEDGY	1	5
482	Pin for pawl	$^5/_{64}" \times ^{19}/_{32}"$	YEDIC	4	
483	Cylinder	—	YEDOD	5	5
484	Piston with nut	—	YEDUF	5	5
485	Eccentric	—	YEDYG	1	5
486	Eccentric with gear teeth	—	YEDZA	1	5
487	Pipe union	—	YEEBY	10	5
488	Screw for cap	—	YEEGD	2	5
489	Washer	—	YEELJ	5	
490	Pawl holder	—	YEEMK	1	5
491	Slotted screw for stuffing box	$^3/_{16}" \times 28$ thr.	YEERP	19	5
492	Slotted screw for cap	$^1/_4" \times ^3/_4"$	YEEVS	2	5
493	Adjusting nut	—	YEEWT	5	5
494			YEFAB		
495	Pawl spring	—	YEFBA	3	5
496	Spring for piston	—	YEFCE	5	5
497	Spring for ball	—	YEFEC	1	5
498	Hexagon nut	$^3/_{16}"$	YEFFO	6	5
499	Shaft for hand pumping	—	YEFHY	1	5
500	Universal joint	$^5/_{16}"$	YEFID	1	5

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
501			YEFOF		
502			YEFUG		
503	Lubrication controller, complete	—	YEFYH	1	11
504	Controller frame with drip tube	—	YEGAC	1	11
505	Sight glass	—	YEGCA	1	11
506	Cover	—	YEGDE	1	11
507	Packing for glass	—	YEGED	1	11
508	Packing for cover	—	YEGGO	1	11
509	Lubricating-oil pipe for A- and B-cylinders	$^7/_{32}" \times 46^1/_2"$	YEGIF	2	
510	Lubricating-oil pipe for A-cylinder	$^7/_{32}" \times 57"$	YEGJY	1	
511	Lubricating-oil pipe for B-cylinder	$^7/_{32}" \times 56"$	YEGOG	1	
512	Lubricating-oil pipe for crank pin, A-cylinder	$^7/_{32}" \times 15^3/_4"$	YEGUH	1	
513	Lubricating-oil pipe for roller bearing, A-cylinder	$^7/_{32}" \times 12^3/_4"$	YEGYJ	1	
514	Lubricating-oil pipe for gudgeon pin, A-cylinder	$^7/_{32}" \times 48^7/_8"$	YEHAD	1	
515	Lubricating-oil pipe for gudgeon pin, B-cylinder	$^7/_{32}" \times 46^1/_4"$	YEHDA	1	
516	Lubricating-oil pipe for crank pin, A-cylinder	$^7/_{32}" \times 38^3/_4"$	YEHEF	1	
517	Lubricating-oil pipe for crank pin, B-cylinder	$^7/_{32}" \times 43^1/_8"$	YEHFE	1	
518	Lubricating-oil pipe for intermediate bearing	$^7/_{32}" \times 38"$	YEHHO	1	
519	Lubricating-oil pipe for eccentric	$^7/_{32}" \times 56"$	YEHIG	1	
520	Pipe union	—	YEHKY	4	5
521	Lubricating oil pipe from central oil container to controller	—	YEHOH	1	
522	Lubricating oil pipe from controller to A-cylinder	—	YEHUJ	1	
523	Nipple	$^1/_8" \times ^1/_8"$	YEHYK	1	11
524	Oil-level pipe	—	YEIBZ	1	11
525	Protection for pipes, complete (2 halves)	—	YEIFD	1	11
526			YEILK		
527			YEITS		
528			YEIZY		
529			YEJAF		
	Starting lamp.				
530	Fuel-oil container, complete	—	YEJEG	1	5
531	Fuel-oil container, proper	—	YEJFA	1	
532	Bottom pipe with nut	—	YEJGE	1	5
533	Branch union	—	YEJJO	1	5
534	Filling cap, complete	—	YEJLY	1	5
535	Air screw	—	YEJOJ	1	5
536	Packing for filling cap	—	YEJUK	1	5
537			YEJYL		

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
538			YEKAG		
539			YEKGA		
540			YEKHE		
541	Air pump, complete	—	YEKIJ	1	5
542	Pump barrel	—	YEKKO	1	5
543	Cover	—	YEKMY	1	5
544	Valve housing	—	YEKOK	1	5
545	Valve	—	YEKUL	1	5
546	Rubber for valve	—	YELAH	1	5
547	Valve spring	—	YELHA	1	5
548	Nut	—	YELIK	1	5
549	Pump piston, complete	—	YELJE	1	5
550	Pump piston proper	—	YELLO	1	5
551	Washer	Dia.=$1^1/_4$"	YELNY	1	5
552	Washer	Dia.=$1^1/_8$"	YELOL	1	5
553	Screw	—	YELUM	1	5
554	Nut	—	YELYN	1	5
555	Piston rod	—	YEMAJ	1	5
556	Handle	—	YEMEK	1	5
557	Holding screw for handle	—	YEMIL	1	5
558	Cap	—	YEMJA	1	5
559	Buffer spring	—	YEMKE	1	5
560	Pipe union	—	YEMMO	1	5
561	Angle bolt	—	YEMPY	1	5
562	Split pin	$^7/_{64}$"×$^3/_4$"	YEMYP	6	
563	Hose with pipe	—	YENAK	1	5
564			YENEL		
565			YENKA		
566	Rapid starting burner, complete	—	YENLE	1	6
567	Flame pipe	—	YENNO	1	6
568	Valve housing	—	YENON	1	6
569	Valve spindle with knurled head	L=$2^3/_4$"	YENYP	1	6
570	Valve spindle with knurled head	L=$3^1/_4$"	YEOXY	1	6
571	Stuffing box screw	—	YEPAL	2	6
572	Packing	—	YEPEM	2	
573	Burner valve, complete	—	YEPLA	1	6
574			YEPME		
575	Bracket	—	YEPOP	1	6
576	Nut	—	YEPPO	1	6
577	Screw with hexagon head	$^1/_4$"×$^5/_8$"	YEPRY	1	6
578	Hexagon nut	$^1/_4$"	YEPYR	1	6
579	Cap screw	$^5/_{16}$"×$^1/_2$"	YERAN	1	6
580			YEREP		
581			YERNA		
582	Air pipe	$^7/_{32}$"×$11^1/_4$"	YEROR	1	6
583	Fuel oil pipe	$^7/_{32}$"×$10^7/_8$"	YERPE	1	6
584			YERRO		
585			YERTY		
586			YERUS		
587			YERYT		
588			YESAP		
589			YESIR		

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
	Fuel-oil tank.				
590	Tank	—	YESOS	1	6
591	Filling plug	—	YESPA	1	6
592	Fuel-oil strainer, complete	—	YESSO	1	6
593	Packing for plug and strainer	—	YESUT	2	6
594	Fuel-oil tap	1/2" pipe thr.	YESVY	1	6
595			YESYV		
596	Forward strap	—	YETER	1	6
597	Rear strap	—	YETRE	1	6
598	Hexagon nut	3/8"	YETUV	12	6
599	Bracket for fuel oil tank, right	—	YETWY	1	6
600	Bracket for fuel oil tank, left	—	YEVAR	1	6
601	Stay rod	—	YEVIT	2	6
602	Countersunk head screw	3/8"×1"	YEVOV	8	6
603			YEVRA		
604			YEVSE		
605			YEVVO		
606	Fuel-oil strainer, complete	—	YEVYX	1	6
607	Strainer housing	—	YEWAS	1	6
608	Lid	—	YEWET	1	6
609	Strainer body, complete	—	YEWIV	1	6
610	Packing	—	YEWSA	1	6
611	Plug	3/8" pipe thr. ×13/32"	YEWTE	1	6
612	Fuel-oil pipe between tank and strainer	11/32"×10"	YEWUX	1	6
613	Fuel-oil pipe between strainer and A-pump	11/32"×15 1/2"	YEYAT	1	6
614	Fuel-oil pipe between strainer and B-pump	11/32"×30 3/4"	YEYBD	1	6
615	Oil-level indicator, complete	—	YEYCF	1	11
616	Indicator	—	YEYEV	1	11
617	Sight glass	—	YEYHK	1	11
618	Packing	—	YEYJL	1	11
619	Locking ring	—	YEYLN	1	11
	Silencer.				
620	Silencer	—	YEYMP	1	6
621	Hand hole cover	—	YEYOY	1	6
622	Stud	3/8"×1 3/8"	YEYTA	12	6-12
623	Stud	1/2"×1 5/8"	YEYUZ	8	6
624	Packing joint for hand hole cover	—	YEYVE	1	6
625	Packing joint for exhaust pipe	—	YEZAV	2	6
626	Exhaust pipe	—	YEZIX	1	6
627	Blank flange	—	YEZOZ	1	11
628			YEZUB		
629			YEZVA		
630			YEZWE		
	Friction clutch.				
631	Outer holding ring for discs	—	YEZZO	1	6
632	Inner holding ring for discs	—	YIAGH	1	6

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
633	Outer discs	—	YIAHJ	5	6
634	Inner discs	—	YIAJK	4	6
635	Clamping discs	—	YIALM	1	6
636	Holding ring for levers	—	YIAMN	1	6
637	Lever	—	YIANP	4	6
638	Bolt for lever	—	YIARS	4	6
639	Push pin	—	YIAST	4	6
640	Locking pin	—	YIAWY	1	6
641	Spring for locking pin	—	YIAZB	1	6
642	Coupling sleeve	—	YIBAC	1	6
643			YIBDE		
644	Set screw	$^3/_8'' \times ^{13}/_{16}''$	YIBED	1	
645	Spring	—	YIBGO	1	6
646	Holding ring for tightening bolt	—	YIBIF	1	6
647	Tightening bolt	—	YIBJY	6	6
648	Tightening ring	—	YIBOG	1	6
649	Distance sleeve	—	YIBUH	1	6
650			YIBYJ		
651	Clutch lever	—	YICAD	1	6
652	Lever with shaft	—	YICEF	1	6
653	Key	$^1/_4'' \times ^5/_{16}'' \times 1^9/_{16}''$	YICFE	1	6
654			YICHO		
655	Hook	—	YICIG	1	6
656	Link	—	YICKY	2	6
657	Bolt	$^9/_{16}'' \times 2^3/_{16}''$	YICOH	2	6
658	Flange coupling, type 1928	—	YICUJ	1	13
659	Holding ring for outer discs, type 1928	—	YICYK	1	13
660	Bolt, type 1928	—	YIDAF	6	13
661	Split pin, type 1928	$^5/_{32}'' \times 1^3/_8''$	YIDEG	6	13
662			YIDFA		
663			YIDGE		
664			YIDJO		
	Gear case.				
665	Gear case	—	YIDLY	1	7
666	Screw with hexagon head	$^1/_2'' \times 1^3/_{16}''$	YIDOJ	14	7
667	Stud	$^3/_4'' \times 2^3/_4''$	YIDUK	6	7
668	Stud	$^5/_8'' \times 2^3/_8''$	YIDYL	6	7
669	Screw with hexagon head	$^5/_8'' \times 2^9/_{16}''$	YIEBD	19	7
670	Screw with hexagon head	$^5/_8'' \times 1^9/_{16}''$	YIECF	8	7
671	Screw with hexagon head	$^5/_8'' \times 2^3/_8''$	YIEJL	1	7
672	Plug with packing	$^3/_4''$ pipe thr. $\times ^5/_8''$	YIELN	4	7
673	Lubricating-oil filling cap	—	YIEMP	1	7
674	Cock with packing	$^3/_8''$ pipe thr.	YIERT	2	7
675	Packing joint for filling cap	—	YIEVY	1	7
676	Packing joint for gear-case cover	—	YIEWZ	1	7
677	Packing for bearing box	—	YIFAG	2	7
678	Packing for hand hole cover	—	YIFGA	2	7
679	Packing joint for cover for differential	—	YIFHE	2	7

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
680	Packing joint for pulling eye plate	—	YIFIJ	1	7
681	Packing for bearing box for first intermediate shaft	—	YIFKO	1	7
682	Hand hole cover for gear case	—	YIFMY	1	7
683	Hand hole cover for gear case	—	YIFOK	1	7
684			YIFUL		
685	Partition plate, upper half	—	YIGAH	1	7
686	Partition plate, lower half	—	YIGHA	1	7
687	Screw with hexagon head	$^3/_8$"×1$^3/_8$"	YIGIK	4	7
688			YIGJE		
689	Packing	—	YIGLO	3	7
690	Castle nut	$^3/_8$"	YIGNY	4	7
691	Cover for differential bearing	—	YIGOL	1	7
692			YIGUM		
693	First intermediate shaft	—	YIGYN	1	7
694	Sleeve for ball bearing	—	YIHAJ	1	7
695	Nut	—	YIHEK	1	7
696	Locking washer for nut	—	YIHIL	1	7
697	Key	$^5/_{16}$"×$^{15}/_{32}$"×2$^3/_4$"	YIHJA	2	7
698	Key	$^5/_{16}$"×$^{15}/_{32}$"×3$^1/_8$"	YIHKE	3	7
699	Countersunk head screw	$^3/_{16}$"×$^5/_8$"	YIHMO	6	7
700	Sleeve for ball bearing	—	YIHPY	1	7
701	Ball bearing	D=4$^{23}/_{32}$" d=2$^5/_{32}$" B=$^{13}/_{64}$"	YIHYP	2	7
702	Ball bearing	D=2$^{55}/_{64}$" d=1$^3/_8$" B=$^{21}/_{32}$"	YIJAK	1	7
703	Ball bearing	D=4$^{11}/_{32}$" d=1$^{31}/_{32}$" B=1$^1/_{16}$"	YIJEL	1	7
704	Distance sleeve	—	YIJKA	1	7
705	Castle nut	1$^1/_4$"	YIJLE	1	7
706	Washer	1$^1/_4$"	YIJNO	1	7
707	Split pin	$^7/_{32}$"×3$^1/_4$"	YIJON	2	7
708	Gear wheel for slow speed	14 teeth	YIJUP	1	7
709	Gear wheel for high speed	18 teeth	YIKAL	1	7
710	Gear wheel for high speed	23 teeth	YIKEM	1	7
711	Gear wheel for reverse	11—16 teeth	YIKLA	1	7
712	Bushing	—	YIKME	2	7
713	Bearing box	—	YIKOP	1	7
714	Tightening ring	—	YIKPO	1	7
715	Packing	—	YIKYR	1	7
716	Packing for ball bearing	—	YILAM	1	7
717	Screw with hexagon head	$^5/_8$"×2$^3/_{16}$"	YILEN	3	7
718	Sleeve	—	YILIP	1	7
719			YILMA		
720	Second intermediate shaft	—	YILNE	1	7
721	Key	$^3/_8$"×$^9/_{16}$"×4$^5/_{16}$"	YILUR	2	7
722	Key	$^3/_8$"×$^9/_{16}$"×2$^3/_4$"	YILYS	4	7
723	Distance sleeve	—	YIMAN	1	7

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
724	Castle nut	$1^1/_2$"	YIMEP	1	7
725	Washer	$1^1/_2$"	YIMNA	1	7
726	Gear wheel for low speed	40 teeth	YIMOR	1	7
727	Gear wheel for high speed	36 teeth	YIMPE	1	7
728	Gear wheel for high speed	31 teeth	YIMRO	1	7
729	Gear case for differential	—	YIMUS	1	7
730	Gear case for differential (Road tractor)	—	YIMYT	1	7
731	Screw with hexagon head	$^1/_2$"×1"	YINAP	12	7
732	Bevel gear ring	50 teeth	YINIR	1	7
733	Screw with hexagon head	$^5/_8$"×$1^3/_8$"	YINOS	9	7
734	Bevel gear ring (Road tractor)	50 teeth	YINPA	1	7
735	Screw with hexagon head (Road tractor)	$^1/_2$"×$1^3/_{16}$"	YINSO	12	7
736	Bevel gear pinion	13 teeth	YINUT	1	7
737	Bevel gear pinion	20 teeth	YINYV	1	7
738	Ball bearing	D=$5^{33}/_{64}$" d=$2^9/_{16}$" B=$1^{19}/_{64}$"	YIOCH	3	7
739	Nut	—	YIOFK	1	7
740	Differential gear shaft	—	YIOHM	1	7
741	Key	$^3/_8$"×$^9/_{16}$"×$2^3/_8$"	YIOJN	1	7
742			YIONS		
743	Differential gear wheel	6 teeth	YIOPT	6	7
744	Differential gear pinion	15 teeth	YIOSY	2	7
745	Bearing for gear wheel	—	YIOVB	6	7
746			YIOXD		
747	Reverse shaft	—	YIPER	1	7
748	Distance sleeve	—	YIPRE	1	7
749	Coupling fork for clutch	—	YIPTO	1	7
750	Screw with hexagon head	$^5/_8$"×3"	YIPUV	2	7
751	Intermediate part, type 1928	—	YIRAS	1	13
752	Hand hole cover for intermediate part, type 1928	—	YIRET	1	13
753	Packing for hand hole cover, type 1928	—	YIRIV	1	13
754	Screw with hexagon head, type 1928	$^5/_8$"×$2^1/_8$"	YIRSA	20	13
755			YIRTE		
756			YIRUX		
757			YIRWO		
758			YIRZY		
759			YISAT		
	Manœuvring.				
760	Gear case cover	—	YISEV	1	8
761	Cover for gear selector lever	—	YISOY	1	8
762	Packing joint for cover	—	YISTA	3	8
763	Screw with hexagon head	$^3/_8$"×$^7/_8$"	YISUZ	3	8
764	Column for steering-wheel shaft	—	YISVE	1	8
765	Taper pin	$^5/_{16}$"×$1^3/_8$"	YISYO	2	8
766	Taper pin	$^5/_{16}$"×$1^3/_4$"	YITAV	2	8

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
767	Plug	1/2"	YITIX	1	8
768	Set screw	1/2"×7/8"	YITOZ	2	8
769	Steering wheel shaft	—	YITUB	1	8
770	Washer	—	YITVA	2	8
771			YITWE		
772	Nut	—	YITZO	1	8
773	Steering wheel	—	YIUGM	1	8
774	Worm gear segment	—	YIUHN	1	8
775	Bolt for worm gear segment	—	YIUJP	1	8
776	Bolt for link	—	YIUMS	1	8
777	Nut	3/4"	YIURY	1	8
778	Washer	—	YIUSZ	1	8
779	Link	—	YIVBO	1	8
780	Bushing	—	YIVIZ	2	8
781	Bolt for link	—	YIVOB	1	8
782	Steering lever, inner	—	YIVUC	1	8
783	Steering lever, outer	—	YIVWA	1	8
784	Key	5/16"×15/32"×1 9/16"	YIVYE	1	8
785	Ball for steering link	—	YIWAY	2	8
786			YIWEZ		
787	Oiler for gear shifter	—	YIWIB	2	8
788	Lubricating-oil hose	—	YIWOC	1	8
789	Lubricating-oil pipe	—	YIWUD	1	8
790	Gear selector lever	—	YIWYA	1	8
791	Shaft for gear shifter	—	YIZAB	1	8
792	Pawl with lock	—	YIZBA	2	8
793	Pin for pawl	—	YIZCE	2	8
794	Gear shifter for low speed	—	YIZEC	1	8
795	Spring for pawl	—	YIZFO	4	8
796	Gear shifter for high speed and reverse	—	YIZHY	1	8
797			YIZID		
798			YIZOF		
799			YIZUG		
800	Pump handle	—	YIZYH	1	8
801	Pump lever	—	YOAGM	1	8
802	Pump spindle	—	YOAHN	1	8
803	Spring	—	YOAJP	1	8
804	Control rod	L=38 1/4"	YOAMS	1	8
805	Control rod	L=40"	YOANT	1	8
806	Control lever	—	YOARY	2	8
807	Screw with hexagon head	3/8"×1 5/8"	YOASZ	1	8
808	Pawl	—	YOAWD	2	8
809	Spring	—	YOBAH	2	8
810	Ratchet quadrant	—	YOBHA	1	8
811	Control rod, type 1928	L=43 3/4"	YOBIK	1	13
812	Control rod, type 1928	L=45 1/4"	YOBJE	1	13
813			YOBLO		
814	Casing for brake wheel	—	YOBOL	1	8
815	Ball bearing packing	—	YOBUM	1	8
816	Screw with hexagon head	3/8"×1 3/16"	YOBYN	8	8
817	Cover for brake wheel case	—	YOCAJ	1	8
818	Brake wheel	—	YOCEK	1	8

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
819	Set screw	1/2"×1 1/16"	YOCIL	1	8
820	Brake band, compl.	—	YOCJA	1	8
821	Hexagon nut	5/8"	YOCKE	3	8
822	Brake lever	—	YOCYP	1	8
823	Screw with hexagon head	5/8"×1 3/4"	YODAK	1	8
824	Split pin	3/16"×2 1/4"	YODEL	1	
825	Brake pedal	—	YODKA	1	8
826	Spring for pedal	—	YODLE	1	8
827			YODNO		
828			YODON		
829			YODUP		
830			YOECK		
	Rear axle.				
831	Bearing box	—	YOEGN	2	9
832	Cover for bearing box	—	YOELS	2	9
833	Packing for ball bearing	—	YOEMT	2	9
834	Driving wheel shaft	—	YOENV	2	9
835	Nut	—	YOERZ	2	9
836	Split pin	5/16"×3 1/2"	YOEVD	2	
837	Ball bearing	D=5 29/32" d=2 3/4" B=1 3/8"	YOEWF	4	9
838	Washer	—	YOFAL	2	9
839	Screw with hexagon head	5/8"×1"	YOFEM	2	9
840	Locking plate	—	YOFLA	2	9
841	Packing	—	YOFME	2	9
842	Distance sleeve	—	YOFOP	2	9
843	Gear wheel	70 teeth	YOFPO	2	9
844			YOFYR		
845			YOGAM		
846			YOGEN		
847			YOGIP		
848			YOGMA		
849			YOGNE		
	Front axle.				
850	Front axle	—	YOGSY	1	9
851	Axle arm	—	YOGUR	2	9
852	Thrust flange	—	YOGYS	2	9
853	Bolt for thrust flange	—	YOHAN	2	9
854	Bushing	—	YOHEP	2	9
855	Bushing	—	YOHNA	2	9
856	Bolt for axle arm	—	YOHOR	2	9
857	Steering arm, right	—	YOHPE	1	9
858	Steering arm, left	—	YOHRO	1	9
859	Bushing for steering arm	—	YOHTY	2	9
860	Key	5/16"×5/16"×1"	YOHUS	2	9
861	Nut	1"	YOHYT	4	9
862	Spring washer	1"	YOIKS	4	
863	Taper pin	15/32"×2 3/4"	YOILT	2	9
864	Guard	—	YOIPY	2	9
865	Stay rod for front axle	—	YOIRB	2	9

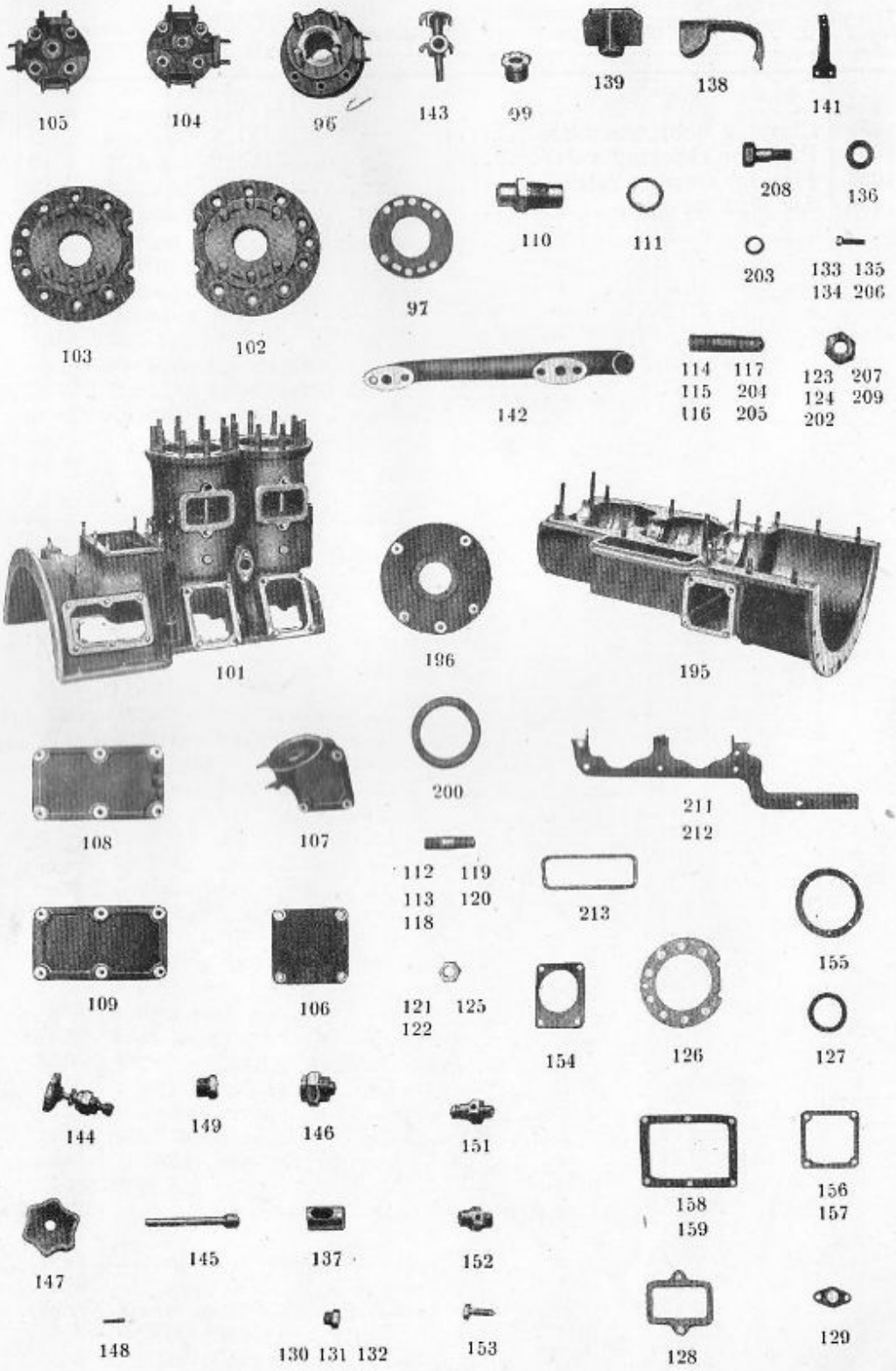
Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
866	Intermediate link	—	YOJAP	1	9
867	Pulling link	—	YOJIR	1	9
868	Cap for pulling link	—	YOJOS	2	9
869	Supporting iron	—	YOJPA	1	9
870	Bolt for supporting iron	—	YOJSO	1	9
871	Bolt for intermediate link	—	YOJUT	2	9
872	Strap for stay rod	—	YOJVY	1	9
873	Stay rod	—	YOKER	1	9
874	Screw with hexagon head	$^1/_2" \times 2^1/_8"$	YOKRE	6	9
875	Castle nut	$1"$	YOKTO	1	9
876	Cap for stay rod	—	YOKUV	1	9
877	Screw with hexagon head	$^7/_8" \times 3^9/_{16}"$	YOKWY	1	9
878	Hexagon nut	$^7/_8"$	YOLAR	1	9
879	Split pin	$^1/_4" \times 1^3/_4"$	YOLIT	2	
880	Spring	—	YOLOV	1	9
881	Stay iron, type 1928	—	YOLRA	1	13
882	Steering link, type 1928	—	YOLSE	1	13
883			YOLVO		
884			YOLYX		
885			YOMAS		
	Wheels.				
886	Front wheel, complete	—	YOMET	2	9
887	Bushing	—	YOMIV	2	9
888	Hood	—	YOMSA	2	9
889	Lubricating plug	—	YOMTE	2	9
890	Packing for plug	—	YOMUX	2	9
891	Sheet iron ring for packing ..	—	YOMWO	2	9
892	Packing	—	YOMZY	4	9
893	Stud	$^1/_2" \times 2^7/_8"$	YONAT	8	9
894	Cap screw	$^3/_{16}" \times ^3/_8"$	YONEV	2	9
895			YONOY		
896			YONTA		
897			YONUZ		
898			YONVE		
899			YONYO		
900			YOOHR		
901			YOOJS		
902			YOOKT		
903	Rear wheel, right, complete ..	—	YOOLV	1	9
904	Rear wheel, left, complete	—	YOONY	1	9
905	Grip for right wheel	—	YOOPZ	16	9
906	Grip for left wheel	—	YOORC	16	9
907	Screw with hexagon head	$^5/_8" \times 1^3/_4"$	YOOSD	64	9
908	Screw with hexagon head	$^3/_4" \times 2^1/_2"$	YOOVG	12	9
909	Clamping bushing	—	YOOZK	2	9
910	Protecting band (one half)	—	YOPAV	4 halves	9
911	Screw for protecting band	—	YOPCY	16	9
912	Hexagon nut	$^3/_4"$	YOPIX	17	9
913	Sheet iron ring for packing ..	—	YOPOZ	4	9
914	Packing	—	YOPUB	4	9
915			YOPVA		
916			YOPWE		

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
917			YOPZO		
918			YORAY		
919			YORCO		
	Driver's seat.				
920	Bracket for seat	—	YOREZ	1	8
921	Hexagon nut	1/2"	YORIB	54	8
922	Spring for seat, compl.	—	YOROC	1	8
923	Seat	—	YORUD	1	8
924	Washer	5/8"	YORYA	3	8
925			YORZE		
926			YOSAZ		
927			YOSBE		
928			YOSDO		
929			YOSEB		
930	Pulling eye plate	—	YOSIC	1	10
931			YOSOD		
932			YOSUF		
933			YOSYG		
934			YOSZA		
	Guard.				
935	Engine hood, complete	—	YOTAB	1	10
936	Hood clamps with holder	—	YOTEC	4	10
937			YOTHY		
938	Floor plate, right	—	YOTID	1	10
939	Floor plate, left	—	YOTOF	1	10
940	Stay	—	YOTUG	1	10
941	Countersunk head screw	1/2" × 15/16"	YOTYH	4	10
942	Countersunk head screw	3/8" × 1 1/4"	YOUHS	8	10
943	Protecting sheet	—	YOUJT	1	11
944			YOUMY		
945	Wheel guard, right	—	YOURD	1	10
946	Wheel guard, left	—	YOUSF	1	10
947	Countersunk head screw	3/8" × 7/8"	YOVAC	10	10
948	Fastening iron, right, for wheel guard	—	YOVCA	1	11
949	Fastening iron, left, for wheel guard	—	YOVDE	1	11
950	Side stay	—	YOVED	2	11
951	Cross stay	—	YOVGO	2	11
952			YOVIF		
953			YOVJY		
954			YOVOG		
	Accessories.				
955	Pulley for stationary drive	—	YOVUH	1	10
956	Tool box, complete	—	YOVYJ	1	10
957	Screw driver	—	YOWAD	1	13
958	Pump stroke gauge	—	YOWDA	1	10
959	Gauge for governor spring	—	YOWEF	1	10

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
960	Claw spanner for fuel pump..	—	YOWFE	1	10
961	Tool for adjusting the disc clutch	—	YOWHO	1	10
962	Extracting tool for fly-wheel ..	—	YOWIG	1	10
963	Stud for extracting tool	—	YOWKY	2	10
964	Spanner	gap $2^{18}/_{32}$"	YOWOH	1	10
965	Spanner for pipe union	—	YOWUJ	1	10
966	Socket wrench	gap $^{20}/_{32}$"—$1^{1}/_{16}$"	YOWYK	1	10
967	Socket wrench	gap $2^{9}/_{16}$"	YOYAF	1	10
968	Brass puncheon	$^{3}/_{4}$"×7"	YOYEG	1	10
969	Brass puncheon	$^{1}/_{2}$"×$5^{1}/_{2}$"	YOYFA	1	10
970	Screw with hexagon head	$^{1}/_{2}$"×$3^{1}/_{8}$"	YOYGE	2	10
971	Hammer	—	YOYJO	1	10
972	Adjustable wrench	—	YOYMZ	1	10
973	Spanner	gap $^{33}/_{64}$"	YOYNB	1	10
974	Spanner	gap thin $^{19}/_{32}$"	YOYOJ	1	10
975	Spanner	gap $^{7}/_{16}$"—$^{23}/_{32}$"	YOYUK	1	10
976	Spanner	gap $^{19}/_{32}$"—$^{25}/_{32}$"	YOYZM	1	10
977	Spanner	gap $^{29}/_{32}$"—$1^{5}/_{32}$"	YOZAG	1	10
978	Spanner	gap $1^{5}/_{16}$"—$1^{11}/_{32}$"	YOZGA	1	10
979	Spanner	gap thin $1^{3}/_{16}$"	YOZHE	1	10
980	Spanner	gap $1^{12}/_{32}$"	YOZIJ	1	10
981	Spanner	gap length 16"—$2^{1}/_{32}$"	YOZKO	1	10
982	Eye bolt	$^{1}/_{2}$"	YOZMY	1	10
983	Piston ring remover	—	YOZOK	3	10
984	Oil can	—	YOZUL	1	10
985	Oil syringe	—	YUAHS	1	10
986	Funnel	—	YUAJT	1	10
987	Valve spanner	—	YUARD	1	10
988	Screw driver	width $^{3}/_{8}$"	YUASF	1	10
989	Slotted screw for injection valve	—	YUAWJ	2	10
990	Funnel for fuel oil	—	YUBAM	1	10
	Extra accessories.				
991			YUBEN		
992	Canvas roof, complete	—	YUBIP	1	11
993	Side bow, right	—	YUBMA	1	11
994	Side bow, left	—	YUBNE	1	11
995	Roof bow	—	YUBSY	1	11
996	Canvas	—	YUBUR	1	11
997	Strap	—	YUBYS	2	11
998	Fastening iron	—	YUCAN	4	11
999	Hexagon screw	$^{3}/_{8}$"×$^{3}/_{4}$"	YUCEP	10	11
1000	Spark arrester		ZINON	1	13
	Lubricating arrangement (Ratchet Roller Drive).				
1001	Ratchet roller drive, complete ..	—	ZINUP	1	12
1002	Spindle	—	ZIOXY	1	12
1003	Woodruff key	$^{5}/_{32}$"×$^{13}/_{16}$"	ZIPAL	1	12
1004	Bearing box	—	ZIPEM	1	12

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
1005	Cover for bearing box	—	ZIPLA	1	12
1006	Gland	—	ZIPME	1	12
1007	Spring	—	ZIPOP	1	12
1008	Ratchet wheel casing	—	ZIPPO	1	12
1009	Ratchet wheel	—	ZIPRY	2	12
1010	Ratchet roller	—	ZIPYR	6	12
1011	Spring with socket	—	ZIRAN	6	12
1012	Partition disk	—	ZIREP	1	12
1013	Spring ring	—	ZIRNA	1	12
1014	Bushing	—	ZIROR	1	12
1015	Washer	—	ZIRPE	1	12
1016	Packing for spindle	—	ZIRRO	1	
1017	Packing for bearing box	—	ZIRTY	1	12
1018	Spring washer	3/16"	ZIRUS	4	12
1019			ZIRYT		
1020			ZISAP		
	Starting device for compressed air.				
1021	Starting valve, complete	—	ZISIR	1	12
1022	Valve box	—	ZISOS	1	12
1023	Lever	—	ZISSO	1	12
1024	Valve spindle	—	ZISUT	1	12
1025	Locking screw	—	ZISVY	1	12
1026	Taper pin	1/8" × 7/8"	ZISYV	2	12
1027	Bolt for lever	—	ZITER	1	12
1028	Split pin	1/16" × 15/32"	ZITRE	1	
1029	Stuffing box screw	—	ZITUV	1	12
1030	Packing	—	ZITWY	1	
1031	Winged nut	—	ZIUGH	1	12
1032	Spring	—	ZIUHJ	1	12
1033	Compression cock	—	ZIUJK	2	12
1034	Washer	—	ZIULM	1	12
1035	Hand-wheel	—	ZIUMN	1	12
1036	Charging valve, complete	—	ZIURS	1	12
1037	Valve box	—	ZIUST	1	12
1038	Valve seat	—	ZIUZB	1	12
1039	Pipe union	—	ZIVAR	1	12
1040	Valve spindle	—	ZIVIT	1	12
1041	Stuffing box screw	—	ZIVOV	1	12
1042	Packing	—	ZIVRA	1	
1043	Steel ball	9/16"	ZIVSE	2	12
1044	Tubular cone	—	ZIVVO	1	12
1045	Nut for cone	1/2" × 9/16"	ZIVYX	1	12
1046			ZIWAS		
1047			ZIWET		
1048	Air receiver, complete	—	ZIWIW	1	12
1049	Air receiver		ZIWUX	1	12
1050	Valve cock	—	ZIYAT	2	12
1051	Double nipple	1/2" × 1/2"	ZIYBD	4	12
1052	Pressure gauge	2 9/16"	ZIYCF	1	12
1053	Locking nut	1/4" pipe thr.	ZIYEV	1	12
1054	Plug	1/2" pipe thr.	ZIYHK	1	12

Catalogue No.	Name of the part	Specification	Code-word	Number per tractor	Pl. No.
1055			ZIYJL		
1056	Clasping hoop, complete	—	ZIYLN	2	12
1057	Pipe for charging valve	—	ZIYMP	1	12
1058	Pipe for starting valve	—	ZIYOY	1	12
1059	Air pipe for lamp	—	ZIYTA	1	12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Pl. 1.

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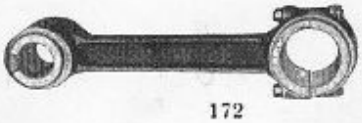

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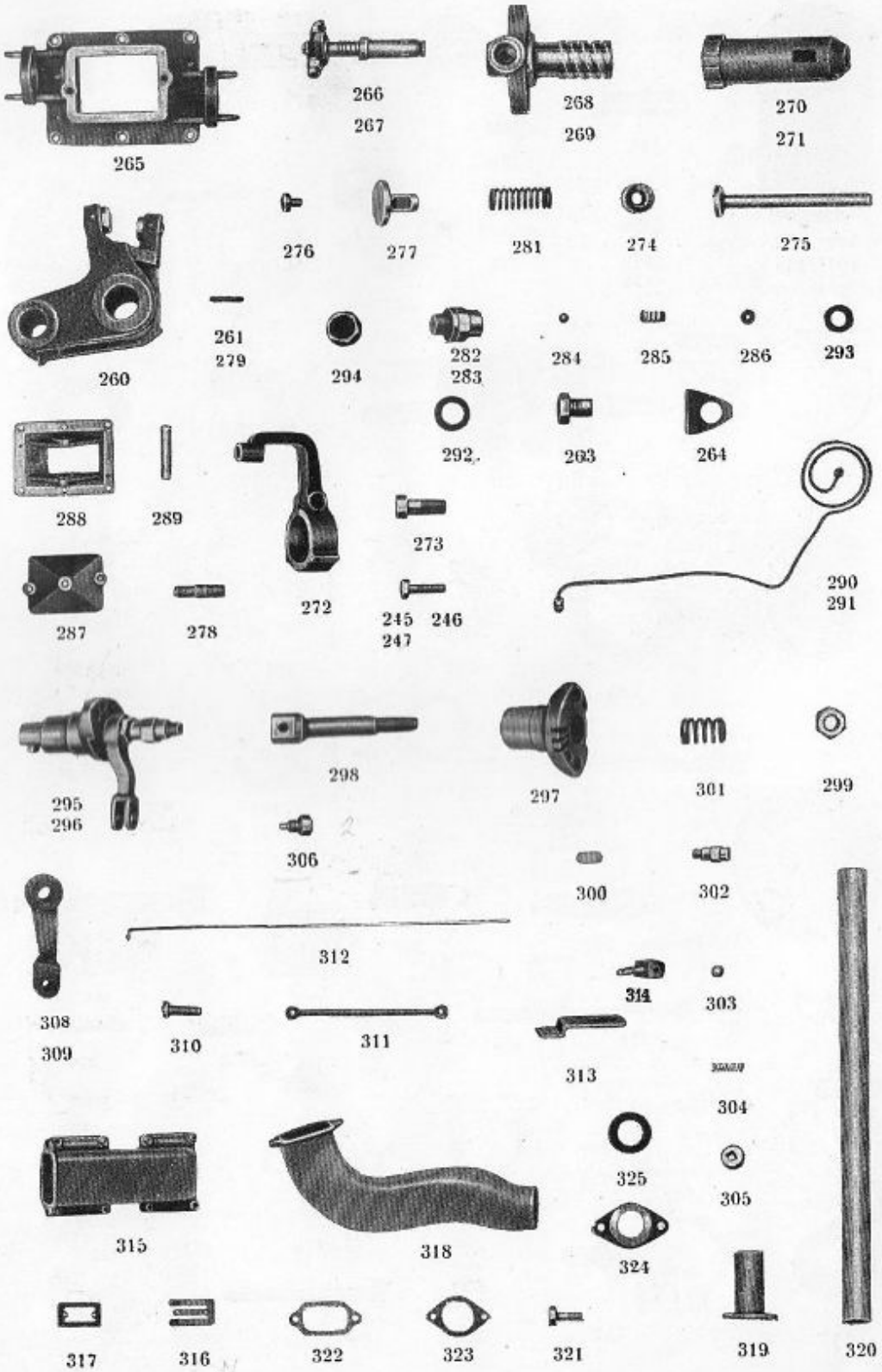
Pl. 2.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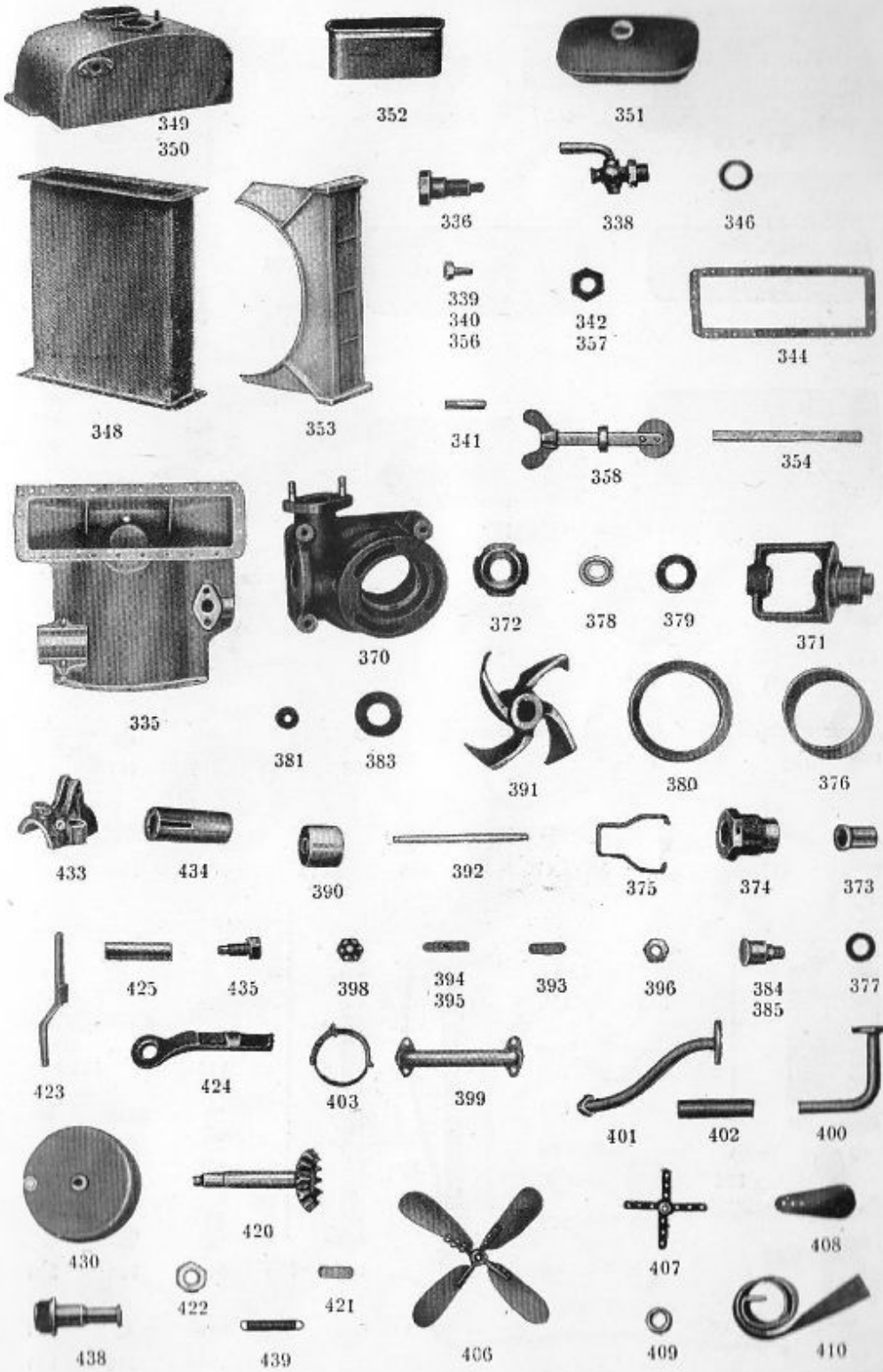
Pl. 3.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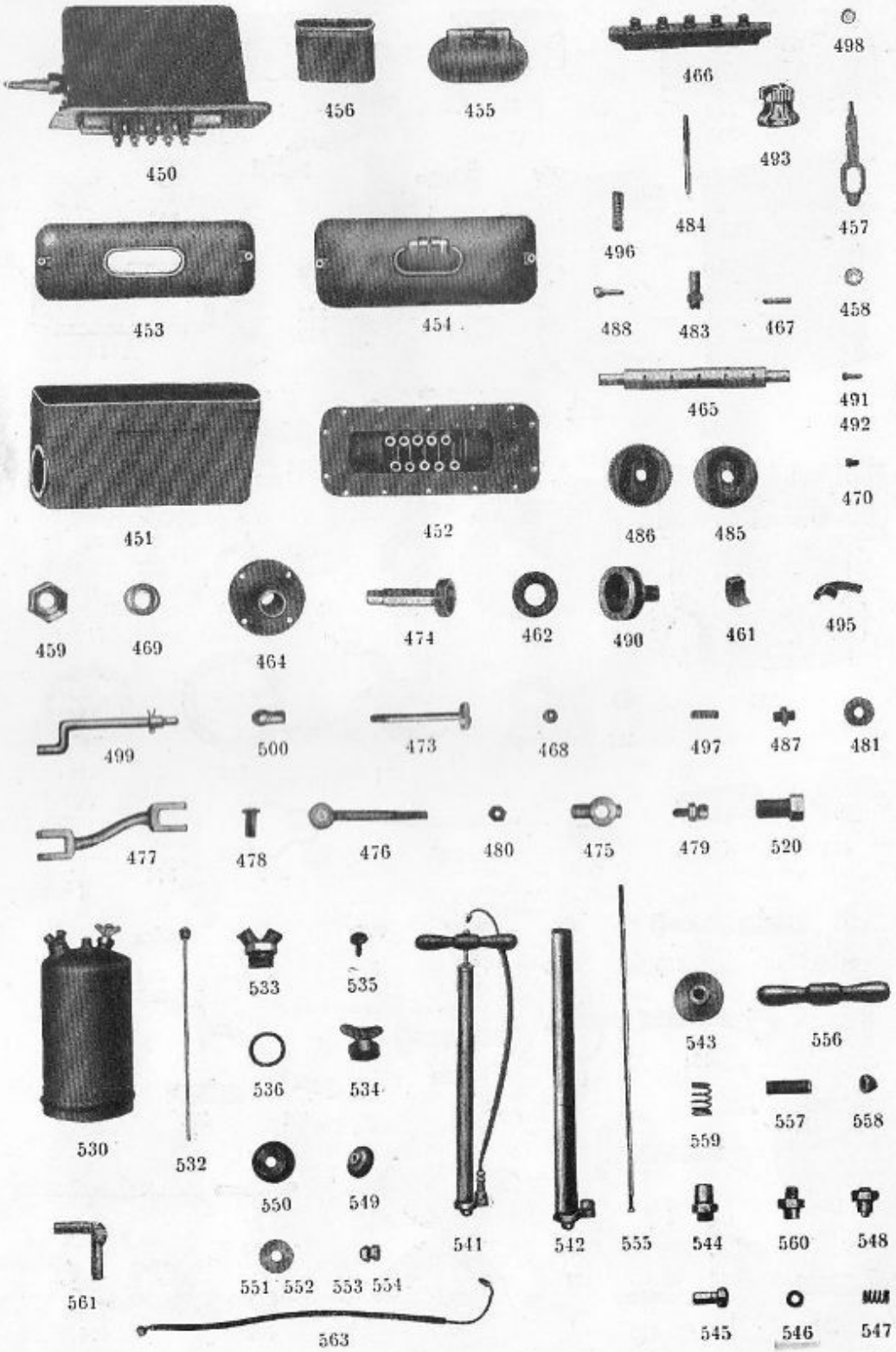
Pl. 4.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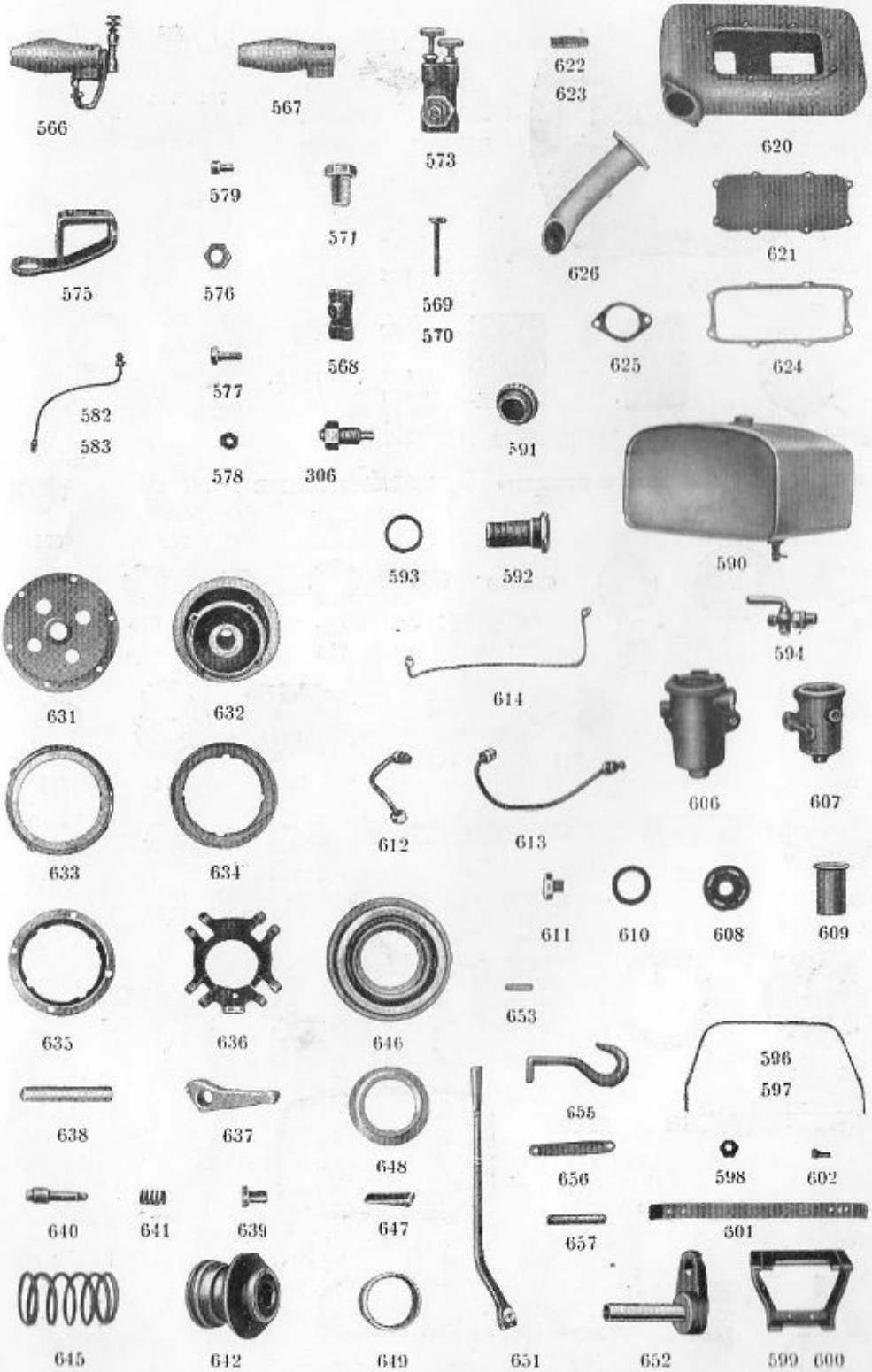
Pl. 5.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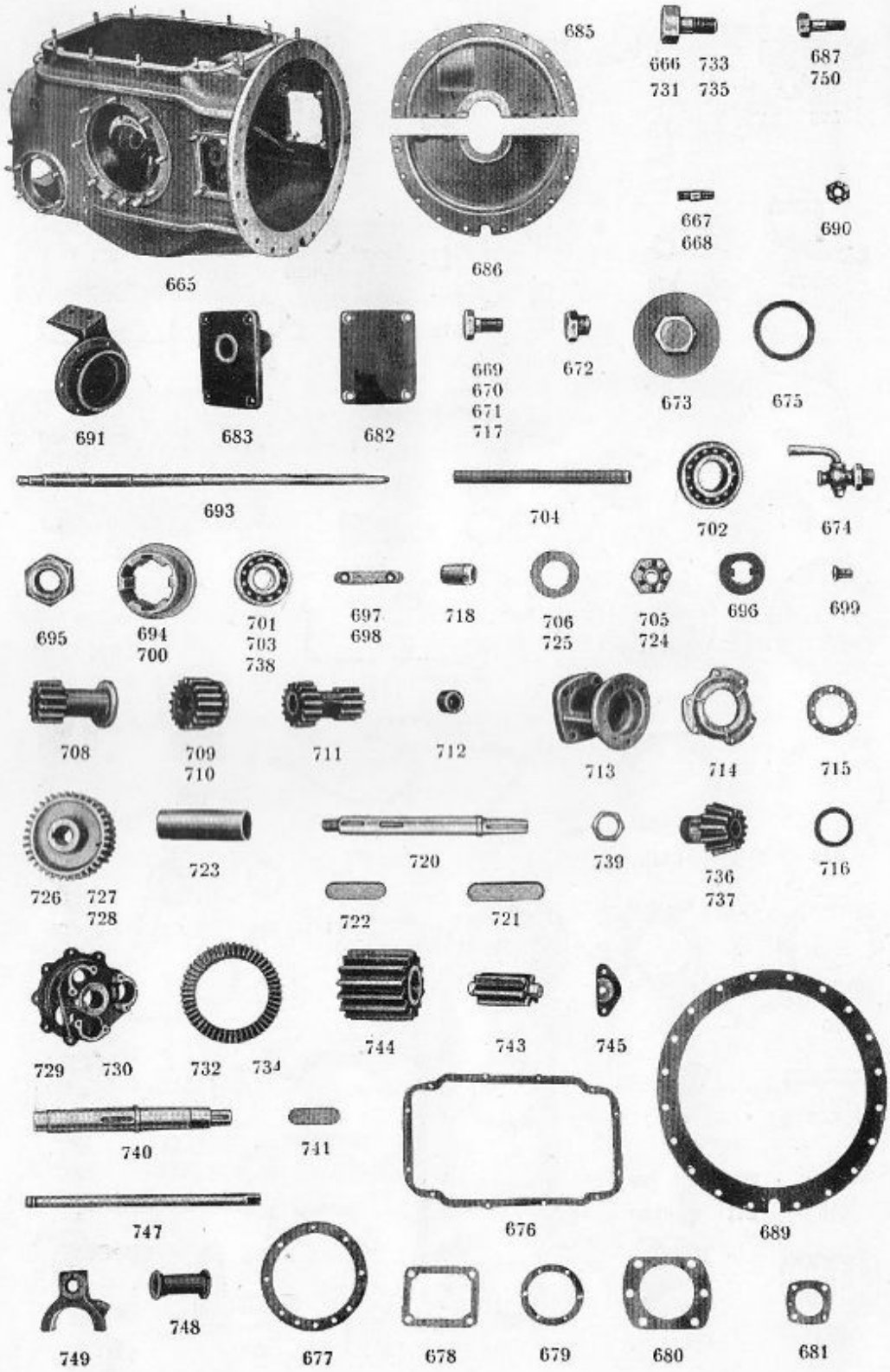
Pl. 6.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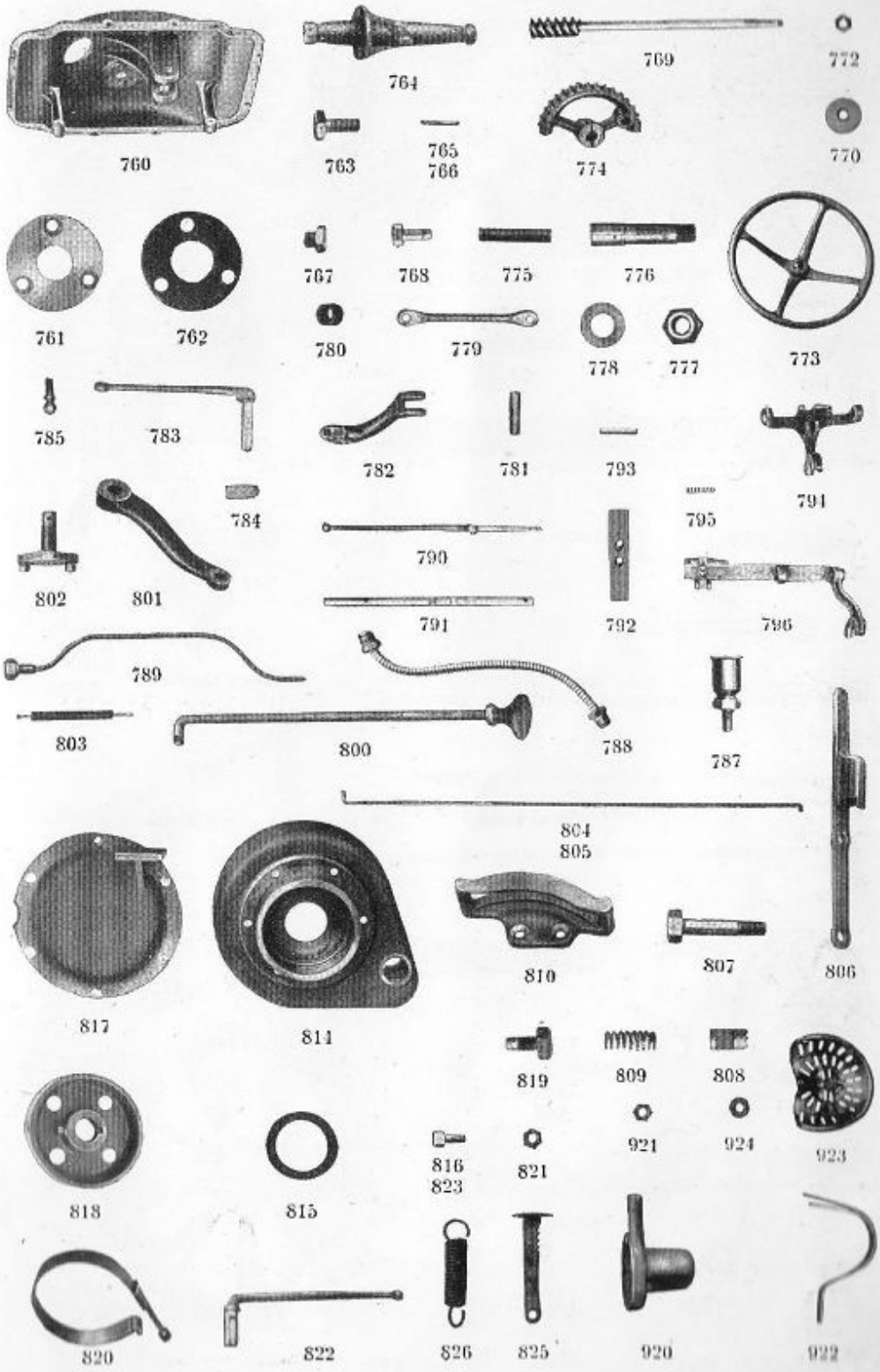
Pl. 7.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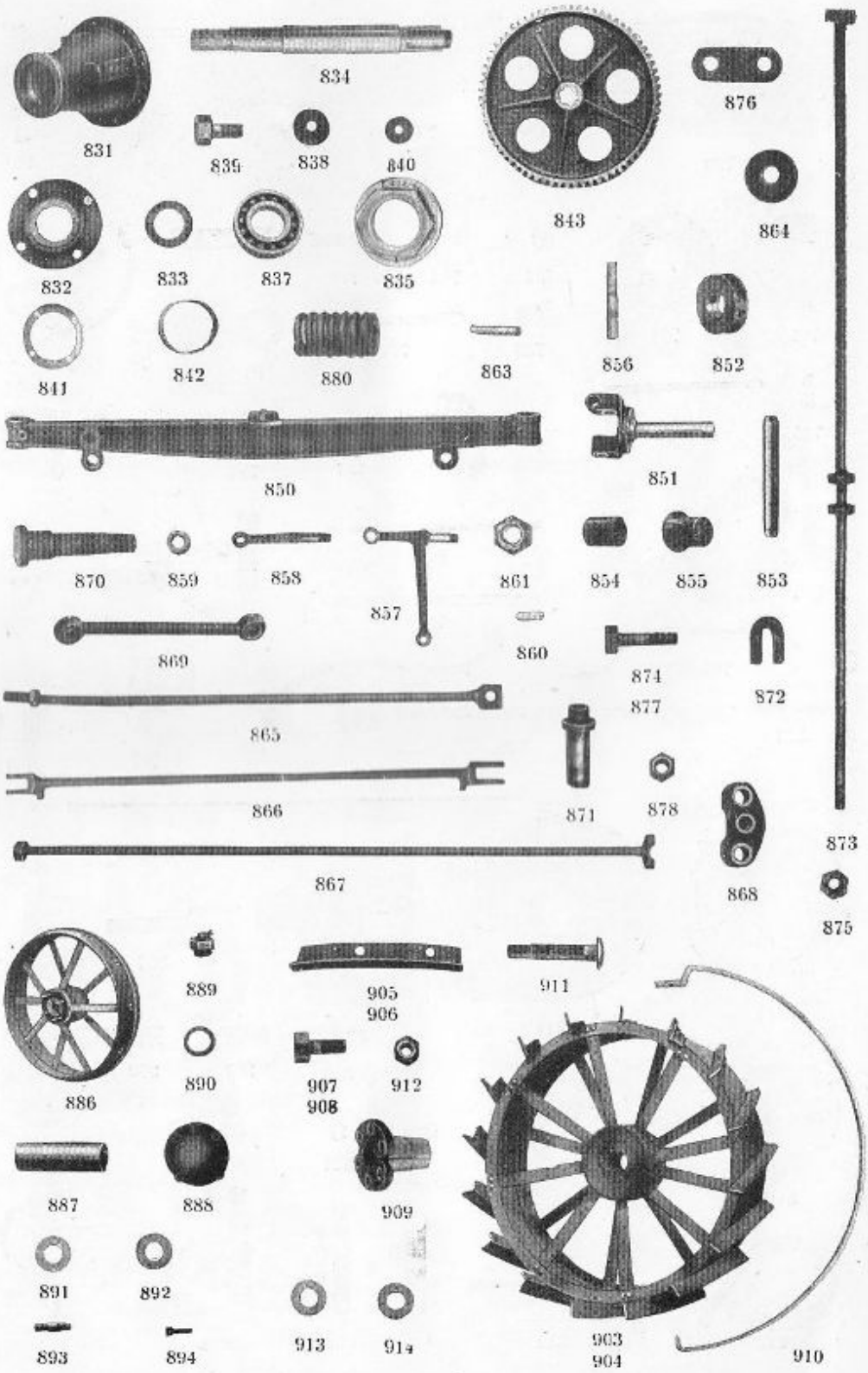
Pl. 8.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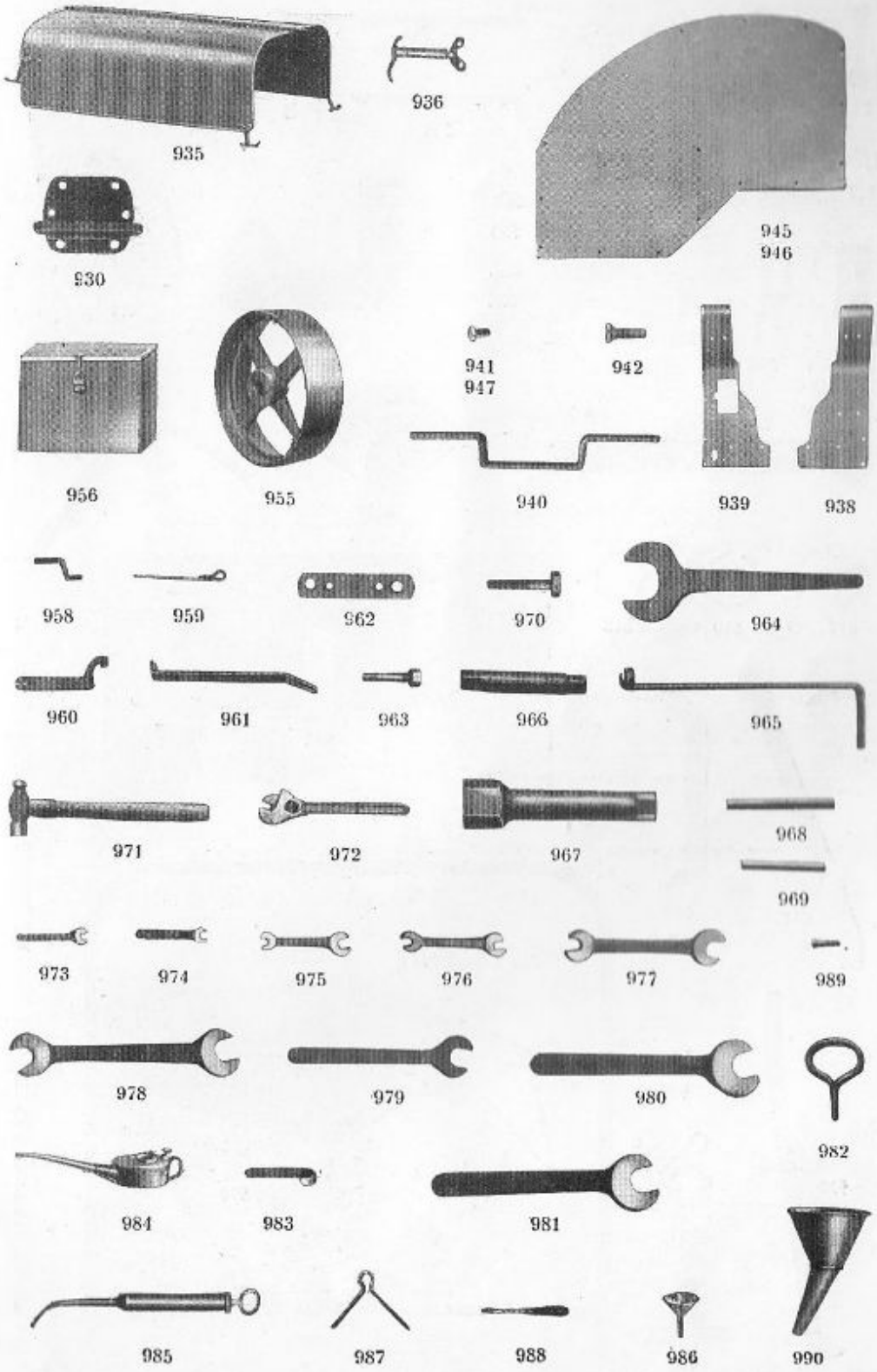
Pl. 9.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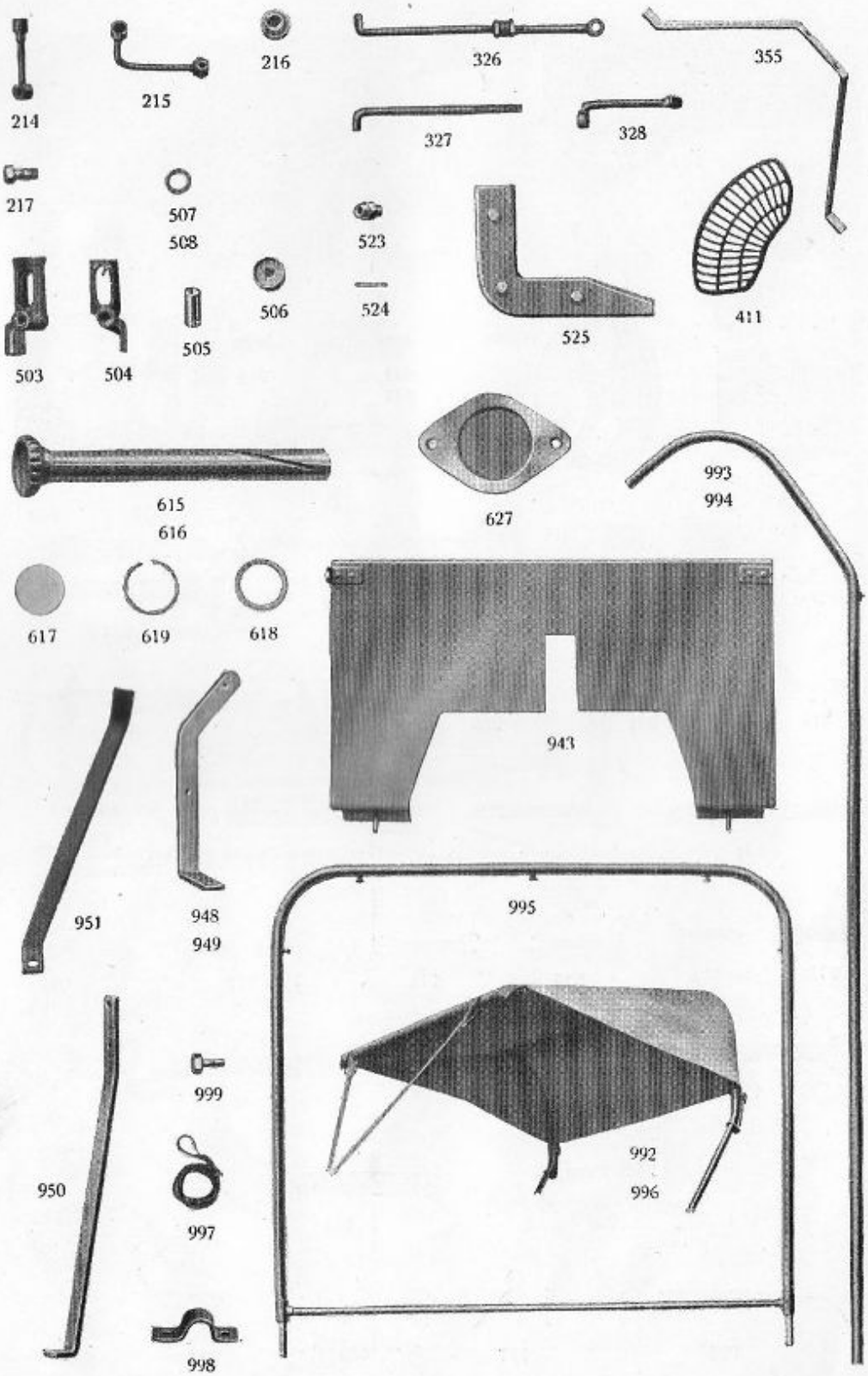
Pl. 10.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Pl. 11.


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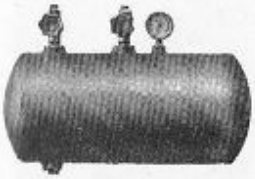
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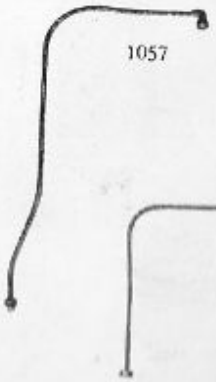
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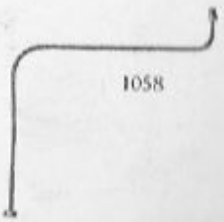
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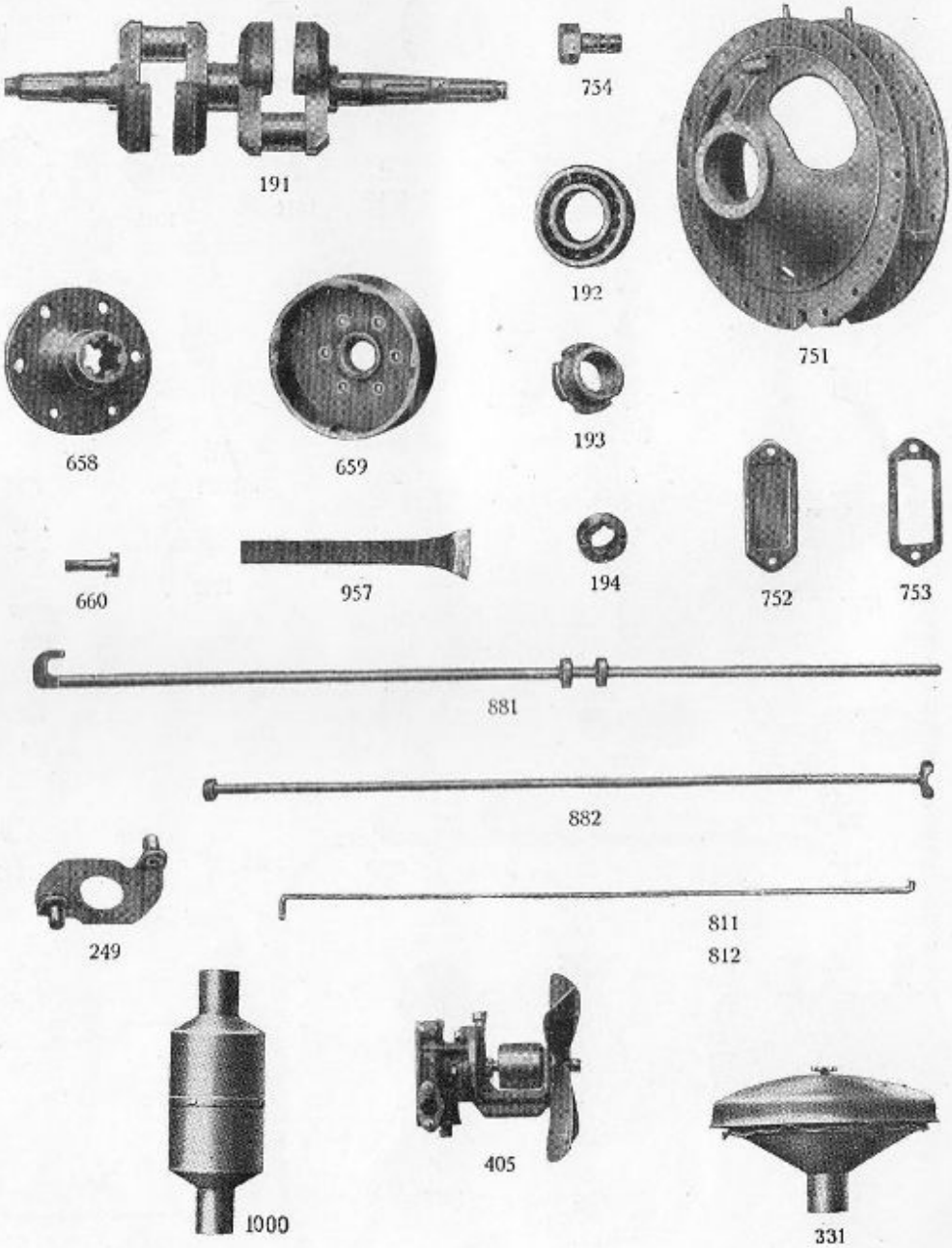
Pl. 12.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Pl. 13.