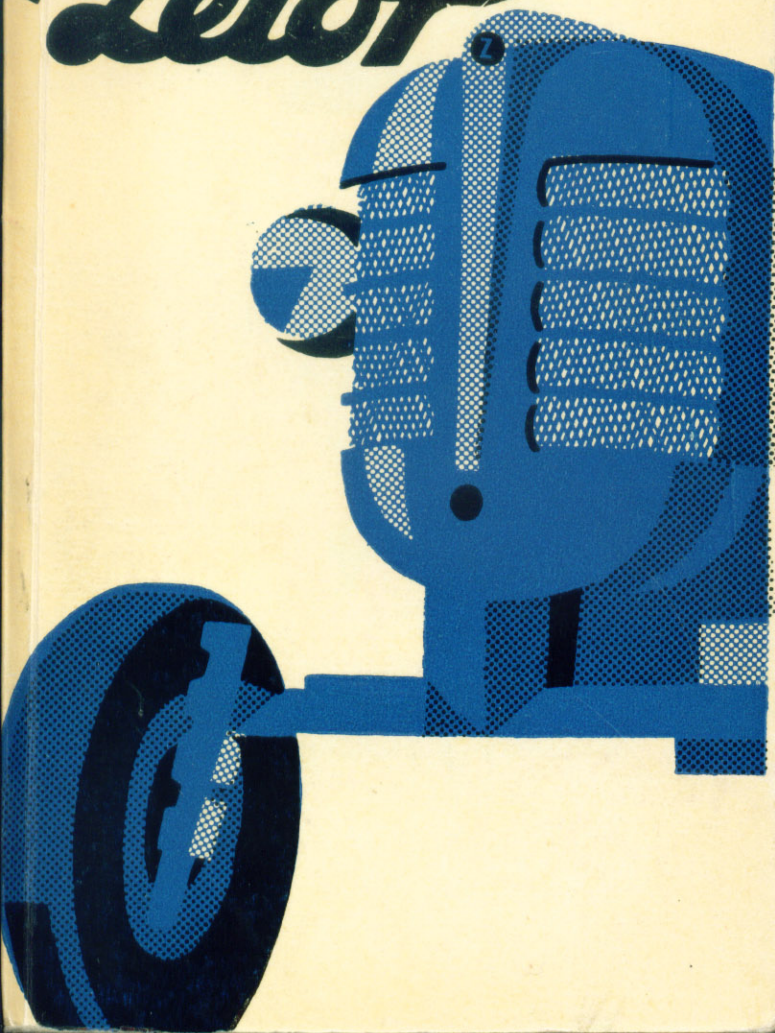
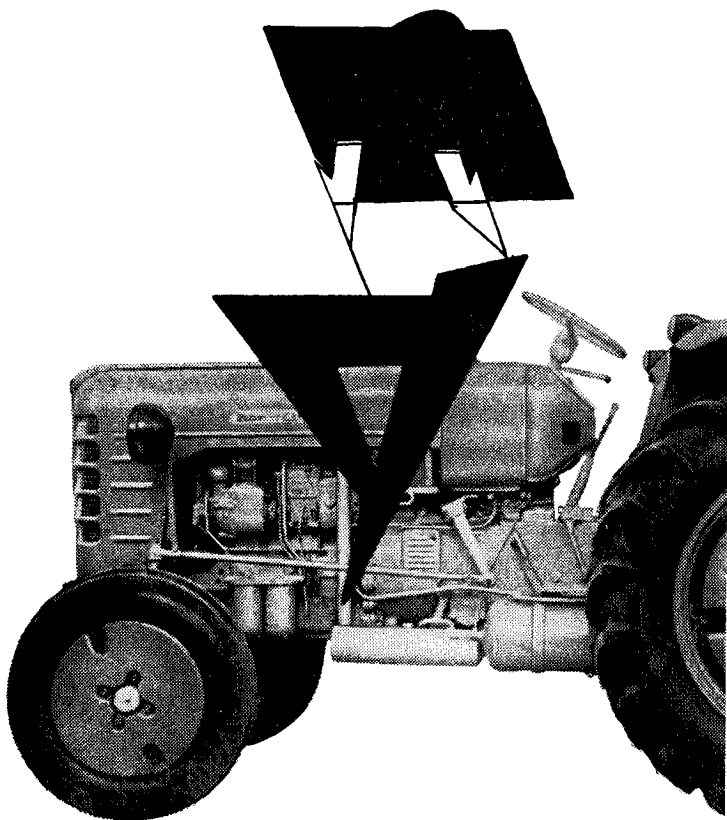


OPERATOR'S MANUAL

Fetor





**The Perfect, Reliable, Modern
Tractors of Unified Series**

Dear tractor owner,

You were surely asking for perfection and elegance in selecting one type of the unified series tractors, the Zetor 2011, Zetor 3011 or Zetor 4011 — and your choice was correct.

The Zetor trade mark is a traditional mark of good work and a token of perfection and safety. We take the liberty to submit to you this Manual, in which you will find many valuable advices as to how to operate, use, and maintain the unified series tractors.

Operations concerning repairs, dismounting and mounting of the tractors have been dealt with in the Workshop Manual, including a detailed construction specification.

The servicing personnel in your country is well acquainted with Zetor tractors and will carry out repairs promptly at a low price and carefully.

By following all the instructions quoted in this Manual you will ensure trouble-free operation, safe running, economy in utilization and a long service life of the tractor.

Because 80 per cent of the components are common for all three types, also the Operating Manual is common for these tractors.

The basic unit is the already well-known Zetor 3011 tractor. In instances where the new tractor types, i. e. the Zetor 2011 or Zetor 4011 differ, we call your attention to this difference in the text.

For repairs use only genuine spare parts which are a guarantee of reliability.

When making inquiries or ordering spare parts, kindly quote always the tractor series No. (Fig. 1), the year of production and the Catalogue No.

Unified Series Tractors in General

The Zetor 2011, Zetor 3011, Zetor 4011 wheel tractors are the basic types of tractors of the new uniform series with the maximum number of common components.

With its output the Zetor 2011 tractor falls under the category of 25 H. P. tractors, the Zetor 3011 under the category of 35 H. P. tractors and the Zetor 4011 under the category of 45 H. P. tractors.

The Zetor 2011, Zetor 3011 and Zetor 4011 tractors serve for general-purpose application, the Zetor 3011 and Zetor 2011 tractors can also be used for cultivation work.

The conception of unified series tractors fulfils all requirements of a modern agricultural machine. The design of the gear box and the double-purpose clutch allow the application of reduced speeds in addition to the normal ones, and the many-sided use of the P. T. O. shaft independently on the tractor travel or depending on the travel speed. The same method is employed for the drive of the hydraulic pump.

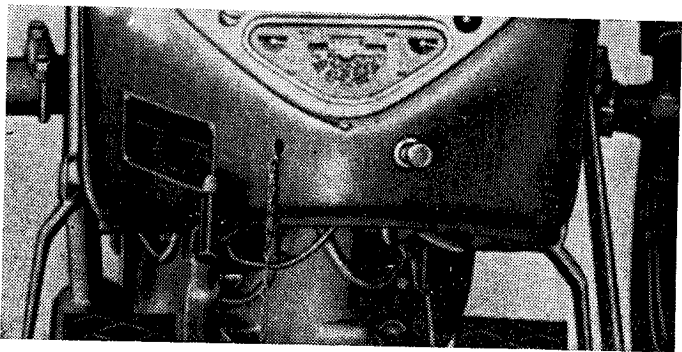
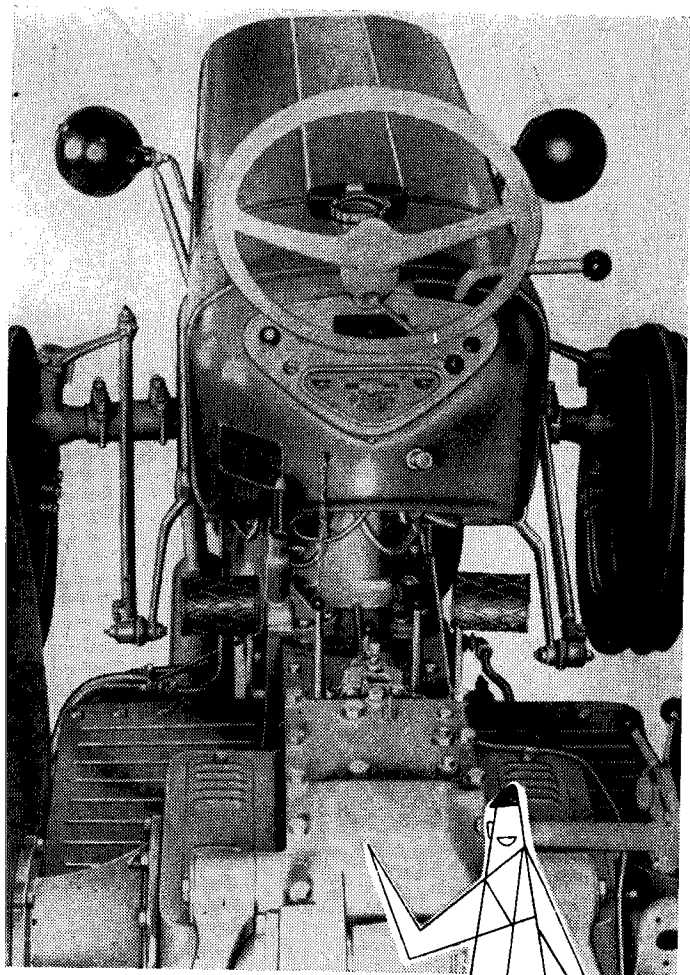
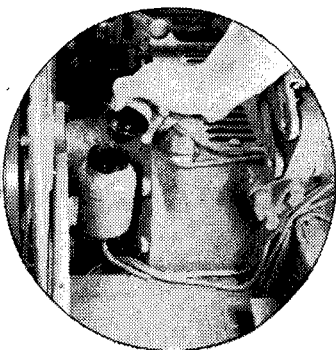
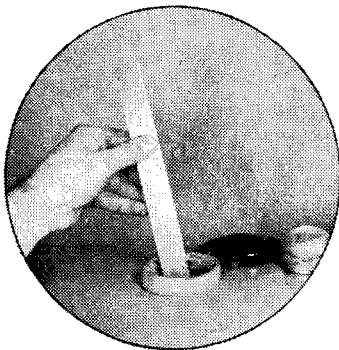
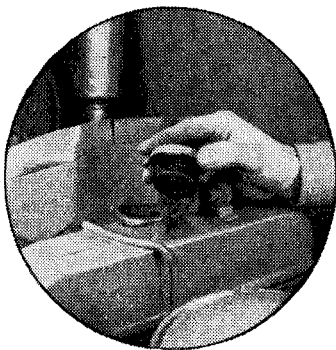
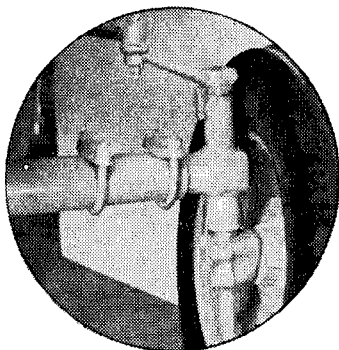
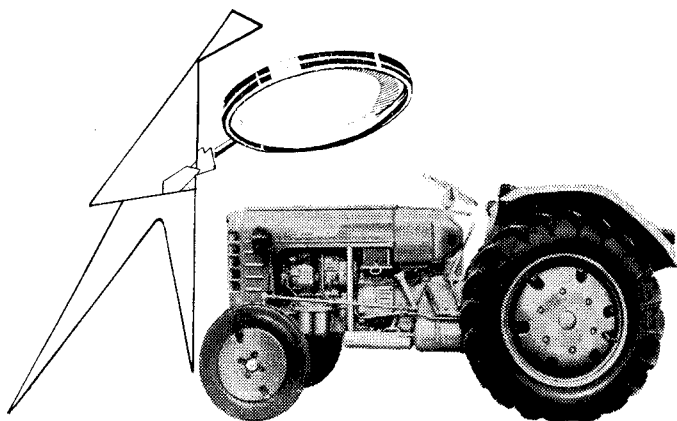


Fig. 1

<https://truckmanualshub.com/>



Operation of Tractor



Preparation of the Tractor for Travel

Check daily before commencing work with the tractor:

1. Condition of steering — connection of the steering levers.
2. Amount of water in radiator — swing away the hood cover.
3. Amount of fuel — refuel if necessary.

If there is fuel only on the bottom of the tank, on cleaning the fuel filters, or in the case that you have forgotten to open the fuel cock for starting, it is necessary to carry out de-aerating of the fuel system.

4. Amount of brake fluid (trade mark "Brake-Fluid-Lock-Heed No. 5") refill, if necessary.
5. Amount of oil according to "Lubrication Chart".
6. Tightening of the bolts and nuts at important connections.
7. Function of the brakes, making sure that the pedal, being depressed, puts up a resistance.

After having set the tractor going, try out the brakes. Inspect if the lever of the brake change-over device is in its middle position.

Because the brake fluid tank of the hydraulic brakes was filled in the production works with brake fluid of the "Synthol Red No. 1" mark, it is necessary before re-filling it with another type of fluid, to drain the original fluid and to rinse the whole braking system with alcohol. In re-filling the fluid, care for cleanness scrupulously.

8. Pressure in the tyres (Page 31, 32).

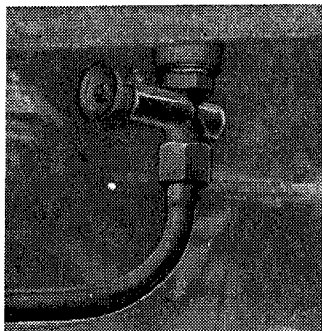


Fig. 2

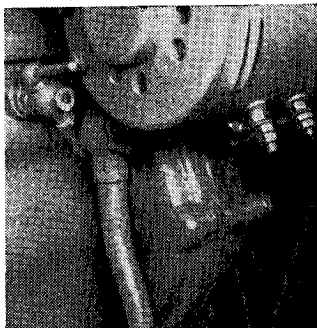


Fig. 3

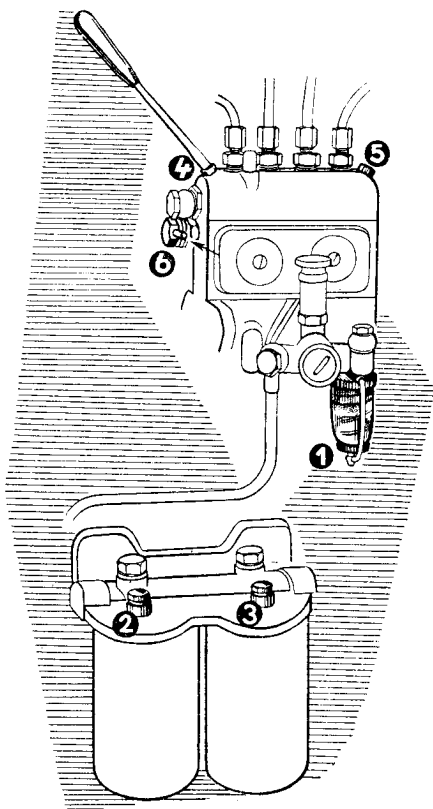


Fig. 4

How to De-aerate the Fuel System

1. Open the fuel cock (Fig. 2) and loosen the stirrups of the precleaner bowl (Fig. 4/1) so that the bowl is filled with fuel without air bubbles. Attach the bowl by tightening the stirrup.
2. Loosen the bleeding screws of the fuel filters (Fig. 4/2, 3) and pump manually until Diesel oil flows out without bubbles from both of them. Tighten the screw of the coarse filter (Fig. 4/2) and proceed with pumping for another moment. Then tighten also the screw (Fig. 4/3) of the second filter.
3. Loosen the bleeding screws of the fuel injection pump (Fig. 4/4, 5) and pump manually until Diesel oil without air bubbles escapes around these screws. Without interrupting the pumping, tighten the screw 4 and then the screw 5.

Starting the Engine

Before starting the engine make sure that the gear shifting lever and the auxiliary drive shifting lever are in neutral position and that the hand brake is put on.

- put the switch key to "0" position
- depress the clutch pedal
- set up the maximum fuel delivery
- depress the starter push button
- do not start longer than for 5 seconds (the control elements are on Page 10).

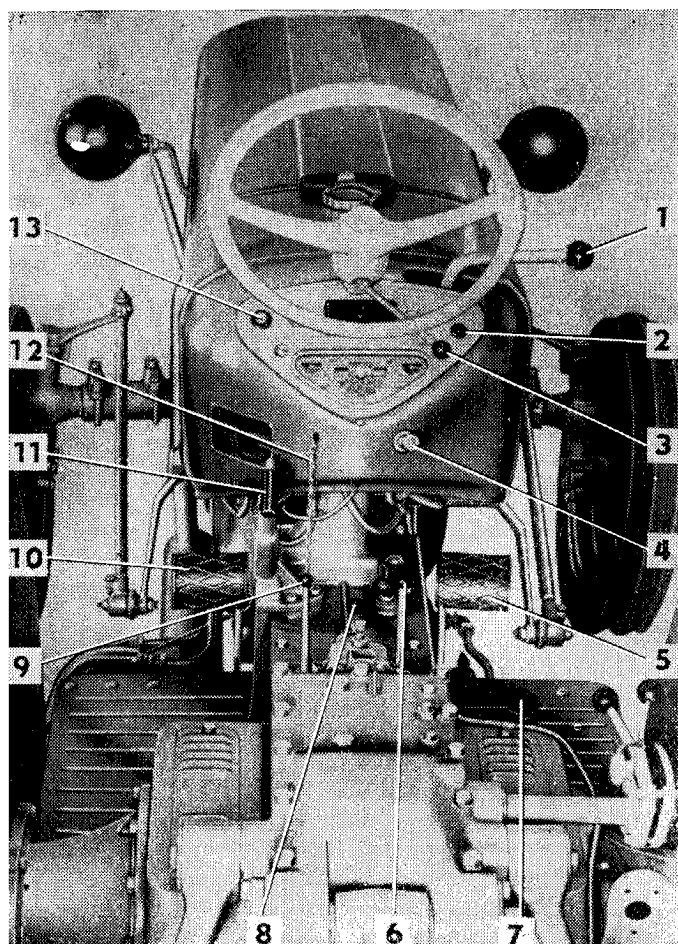
If the engine does not start immediately for the first time, repeat the starting, but not until 30 seconds are gone. If the starting is difficult or the temperature is low, use the decompression device:

Slightly pull out the decompression device button (Fig. 5), and when the engine begins to rotate, first release the decompression device push button, and after starting the engine release the starter push button.

The correction starter considerably facilitates the starting of the engine; it is put into operation by depressing the push button (Fig. 4/6) and is switched off automatically by the least movement of the fuel delivery governor lever.

Starting the Engine during Winter Season

In cold weather first crank up the engine manually several times. At temperatures below -5°C (23°F) it is suitable



- 1 Gear shift lever
- 2 Horn push button
- 3 Hand fuel control lever
- 4 Decompression device button
- 5 Hydraulic brake pedal
- 6 Roadway and reduced gear shifting lever
- 7 Foot fuel control pedal
- 8 Hydraulic brake change-over device
- 9 Drive shifting lever
- 10 Double-purpose clutch pedal
- 11 Hand brake tie rod
- 12 Radiator screen controlling chain
- 13 Starter push button

Fig. 5

to preheat the engine with hot water, until tepid water flows out from the drain cock (Fig. 3).

How to Start Moving the Tractor

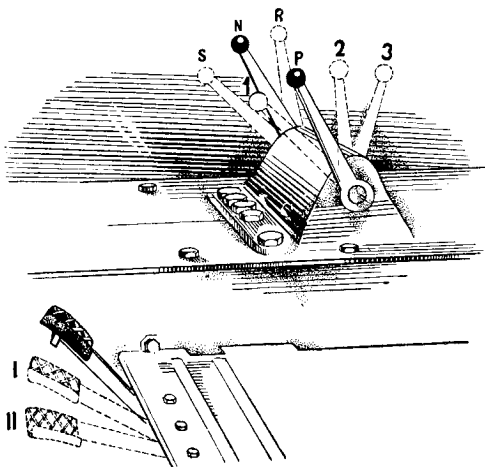
Inspect, if the little shifting lever (N) for normal and reduced speeds is in position S (normal travelling speeds) or in position R (reduced speeds).

Reduce the engine revolutions to idling speed, depress the clutch pedal to one half of its whole downward travel (I), thus disengaging the travel clutch and engage the chosen speed. If it is impossible to engage the speed, release the clutch pedal and depress (I) it once more again. If the tractor stands on level ground, release the hand brake, slowly engage the clutch pedal and increase the revolutions of the engine until the tractor starts moving. The clutch pedal position "II" is used for engaging auxiliary drives.

The Manner of Gear Shifting

Reduce the revolutions of the engine, depress the clutch pedal, depress it again and shift in the next required speed, whereupon release smoothly the clutch pedal.

Gear shifting must be carried out noiselessly and smoothly.



Changing from higher to lower speeds (for instance from the 5th speed to the 4th, 3rd, etc.) carry out with "intermediate gas", that is, reduce the engine revolutions, depress the clutch pedal to the position "I", shift out the speed, release the clutch pedal, increase the engine speed (in accordance with the speed at which the tractor moves on), depress the clutch pedal to the position "I", shift in a lower gear and release smoothly the pedal.

Control of the Tractor during Its Travel

Watch during travel:

- the pilot lamp of engine lubrication — green colour (Fig. 6/1);
if it lights up during operation, this indicates a defect; have it remedied immediately.
- the charging pilot lamp — red colour (Fig. 6/2);
if it lights up during running, this indicates a defect in the charging circuit.
- the water thermometer (Fig. 6/3) — the most advanced engine operation temperature is within the

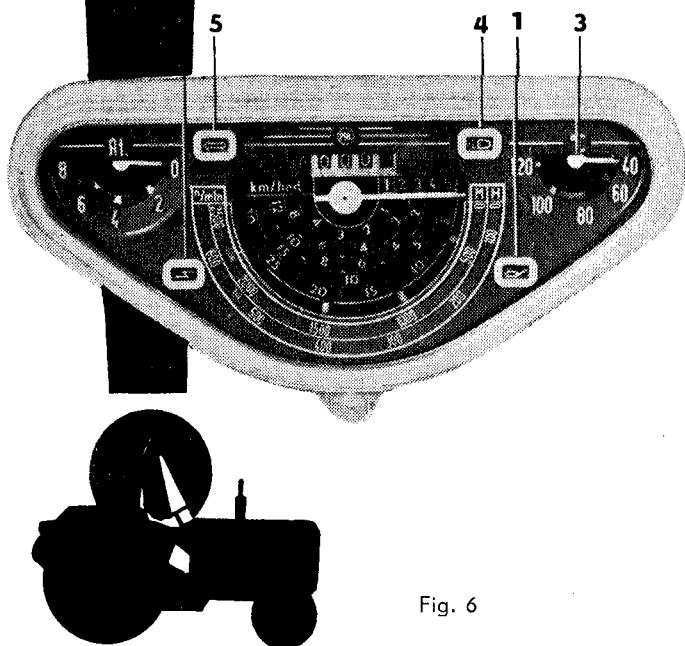


Fig. 6

limits of 80° to 95° C (176° to 203° F) at a lower temperature cover the radiator with a screen (Page 33).

The engine-hours counter (Fig. 7) gives the number of the tractor worked off hours with the engine running.

It indicates on scale "M" the speed (number of revolutions) of the engine.

On scale "H" the speed of the independently driven P. T. O. shaft.

On scale 1 to 5 the normal travelling speeds are marked with large figures, the reduced speeds with small figures, in km. p. hr.

The pilot lamp of the direction indicator (Fig. 6/5).

The pilot lamp of the distance lights (Fig. 6/4) — it lights up when the distance lights are switched on.

Electrical Equipment of the Tractor

On the dashboard are positioned: the push button of the horn (Fig. 5/2), the socket which serves for connecting the inspection lamp or the windscreen wiper for the cab front glass, the change-over switch of the di-



Fig. 7

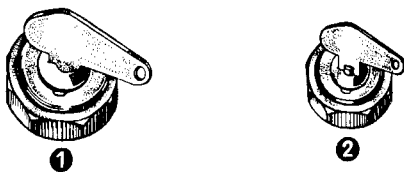


Fig. 8

rection indicator and the switchbox (Fig. 8) which serves for switching the electric circuits.

It has four positions:

Position "0" — the starting circuit, charging, pilot lamp of oil pressure, of direction indicator and the socket for the inspection lamp are switched on.

Position "1" — the tail lights and contour lights, the complex panel instrument lighting and the spot light for ploughing, if necessary, light up.

Position "2" — the distance lights light up.

Position "3" — instead of the distance lights the dimmed lights light up.

The switch key being put in by one half of its length (Fig. 8/2), only the lights necessary for lighting of the tractor, without the pilot lamps of oil pressure and direction indicator are on in the positions "0" to "3".

The horn and the stop light are connected directly to the storage battery.

L a m p s

— front direction indicator

— rear combined lamp is equipped with:

direction light

contour light

stop light

(in addition, the left combined lamp is adapted for lighting of the state identification number plate).

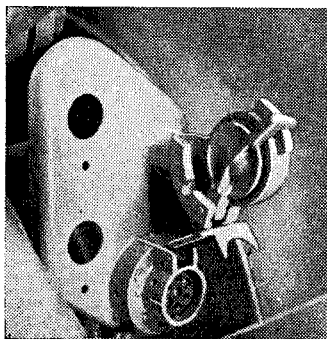
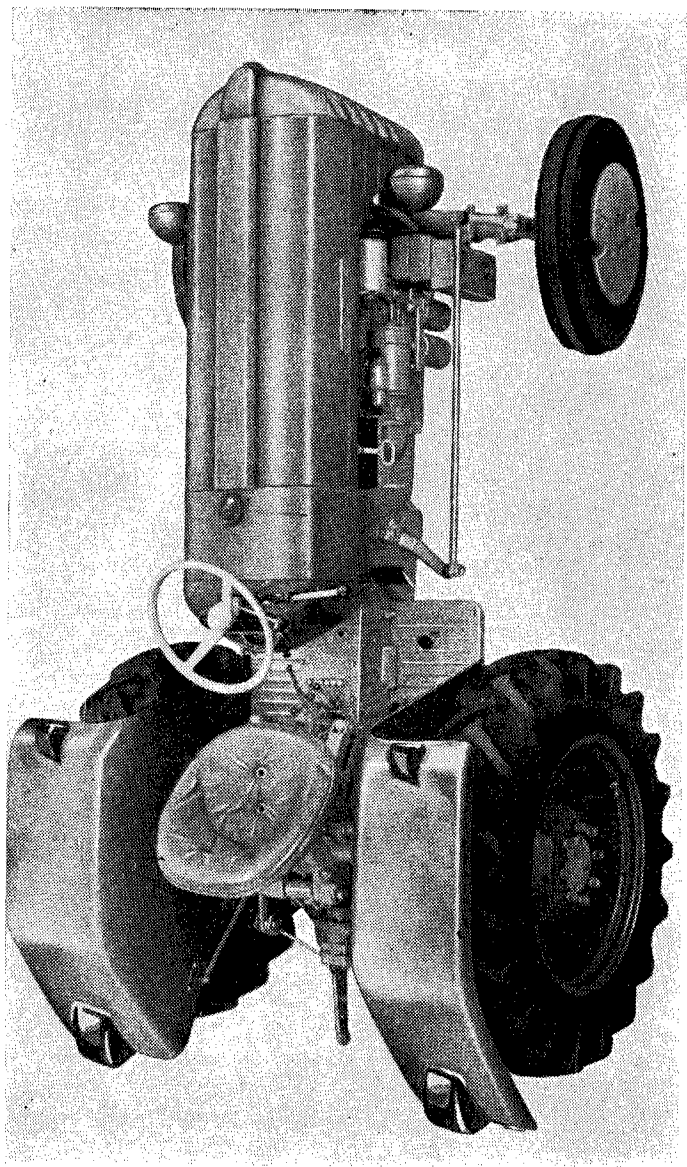


Fig. 9



— the front headlamps are provided with distance, dimmed and contour lights.

A socket serves for lighting of the trailer (Fig. 9) .

Fuse Box

This contains the fuses of the individual appliances

- 1 — Front headlamps — distance lights
- 2 — Front headlamps — dimmed lights
- 3 — Front contour lights
- 4 — Tail lights and rear contour lights
- 5 — Interruptor of the direction indicator
- 6 — Socket for inspection lamp, wiper and oil control
- 7 — Stop lights
- 8 — Horn

Types of Bulbs

For the front headlamp (9) — 12 V, 25/25 W

For the contour light (10) — 12 V, 1.5 W

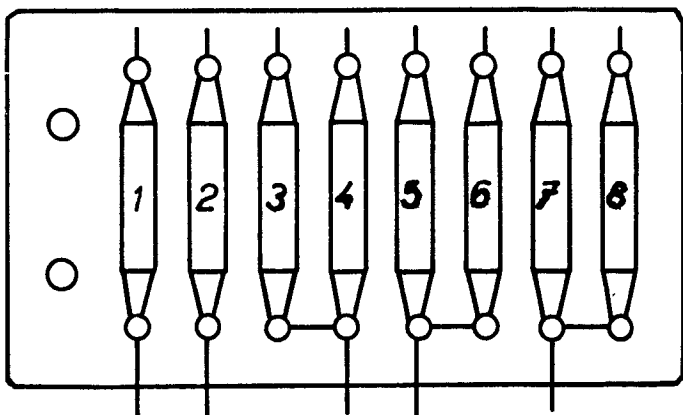
For the direction indicator (11) — 12 V, 20 W

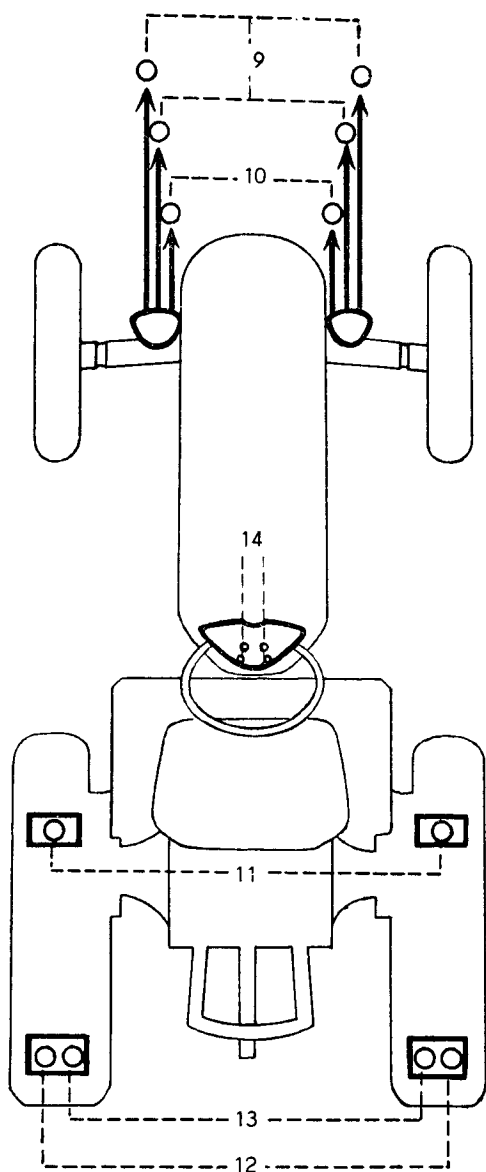
In the rear combined lamp (12) — 12 V, 20/5 W

— 12 V, 20 W (13)

For the control instruments (14) — 12 V, 1.5 W

Do not replace the direction light bulbs unless the change-over switch lever of the direction indicator is in its middle position.





Brakes

Hand brake — to be applied to secure the tractor at a standstill.

Braked off (Fig. 10)

Braked (Fig. 10)

Hydraulic foot brake — on braking use only a moderate pressure upon the pedal, the brakes are very efficient.

The hydraulic brake change-over device (Fig. 11) enables:

To brake both wheels simultaneously — the lever in position 1.

To brake each wheel separately — the lever in position 2 or 3.

While travelling on a roadway, always keep the change-over device lever in its middle position (Fig. 11/1).

If any of the rear wheels slips through in the field, use the differential locking device (the differential locking device puts the differential out of function — the rear wheels have then conformable revolutions, but only while the pedal is depressed).

Do not use the differential locking device turnings.

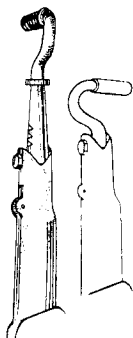


Fig. 10

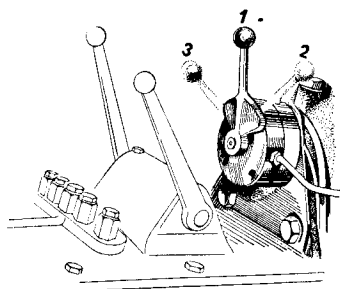


Fig. 11

Auxiliary Drives and Double-purpose Clutch

The design of the double-purpose clutch and of the auxiliary drives enables extensive use of the tractors for various work in agriculture, civil engineering and forest industries.

General Instructions for the Application of Auxiliary Drives

All kinds of auxiliary drives can be used both for stationary machines (e. g. thrashing machines, groats mill, circular saw) and movable machines.

The design of the auxiliary drives enables to drive various machines by constant revolutions (standardized ones) and by revolutions through the gear box. At the same time the tractor could travel by means of the reduced or road-way gears.

The revolutions of the P. T. O. shaft through the gear box are stated in the chapter "Technical Characteristics".

Shifting of the Drives

Shifting of the auxiliary drives is being carried out by the little lever "P" (Fig. on Page 11).

At the full clutch pedal depressing (II) shift the little lever to position "1" — in this position the P. T. O. shaft and the hydraulic pump are driven at standardized revolutions (540 r. p. m.). For working, it is possible to use:

- a) P. T. O. shaft
- b) Hydraulic pump
- c) P. T. O. shaft and hydraulic pump simultaneously (Fig. 12).

At the first clutch pedal depressing (I) shift the little lever to position "2" — in this position the P. T. O. shaft is driven through the gear box (Fig. 13).

At the first clutch pedal depressing (I) shift the little lever to position "3" — in this position the hydraulic pump is driven through the gear box (Fig. 14)

In position "N" no drive is driven.

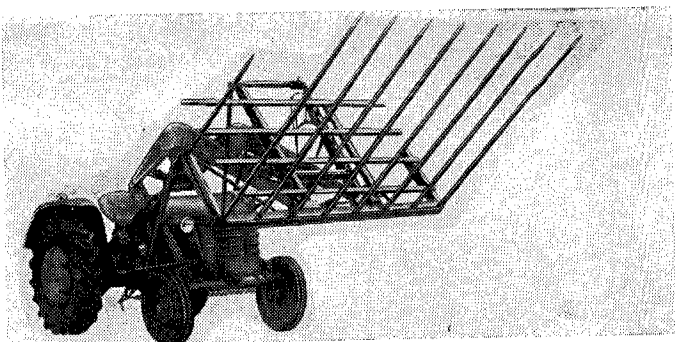


Fig. 12

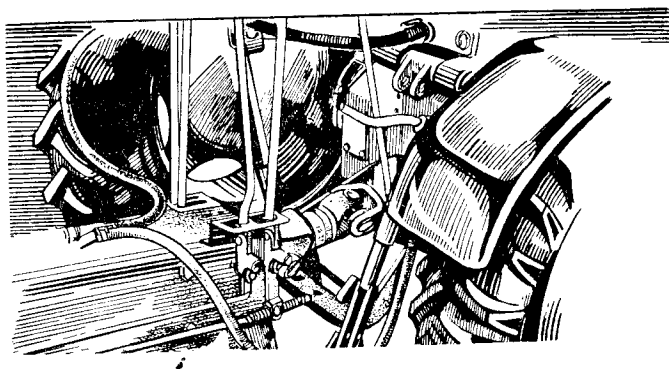


Fig. 13

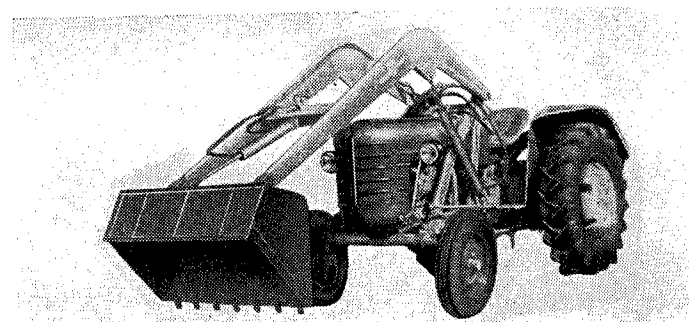


Fig. 14

Use of Auxiliary Drives for Various Machines (Fig. on Page 11)

The most used and suitable machines with the auxiliary drive lever shifted in position:

A. Lever of drives in position "1" — the standardized revolutions:

1. P. T. O. shaft (standardized revolutions). This drive is very convenient for a reaper-and-binder, sprinkler, beet gathering combine, potato digger, flax puller, manure spreader, rotators, ensilage combine (Fig. 15) etc.
2. P. T. O. shaft (standardized revolutions) — the tractor is at a standstill; the lever for shifting of travelling and reduced speeds is in "N" position.
This drive is suitable for UZA 100, UZA 150 irrigation pumps, soil borer (Fig. 16) and others.
3. Drive of the hydraulic pump (standardized revolutions). This drive is suitable for carried implements without the use of a drive for the working equipment e. g. carried ploughs (Fig. 17) and others.
4. Drive of the hydraulic pump and P. T. O. shaft (simultaneous use of both drives). This drive is suitable for the K 150 air compressor, hay-loader, for work with a winch and others (Fig. 18).

B. Drive lever in position "2" — the revolutions through the gear box:

This drive is particularly convenient for trailers having a driven axle (belt pulley for driving of stationary machines and others — Fig. 19).

Note:

For work with a trailer having a driven axle use reduced gears (tractor rear wheel revolutions at a tyre size of 11—28 correspond to the revolutions of the trailer driven wheels).

C. Drive lever in position "3":

Hydraulic pump driven through the gear box — this is used for machines having their own hydraulic equipment (Fig. 20) for which it is necessary to supply pressure oil of the tractor hydraulic circuit, namely a larger quantity of oil than that which the pump supplies when it is driven independently through the gear box (stan-

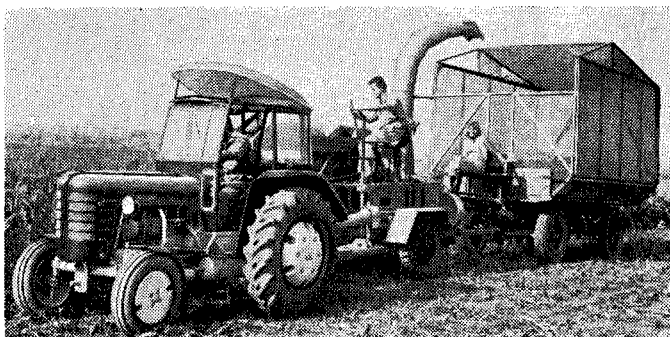


Fig. 15

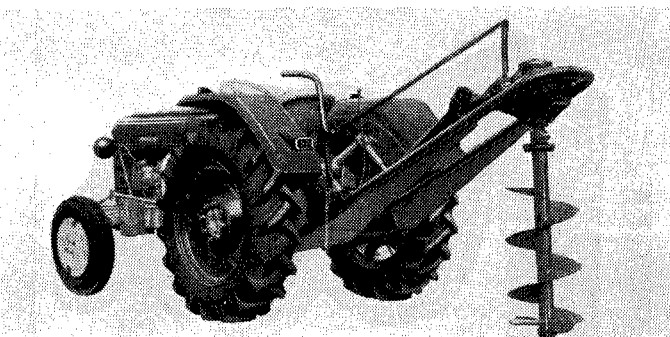


Fig. 16

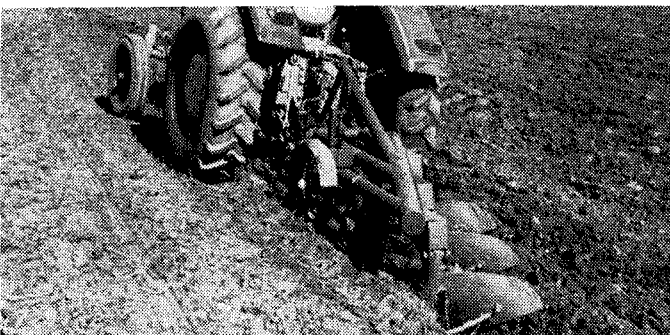


Fig. 17



Fig. 18

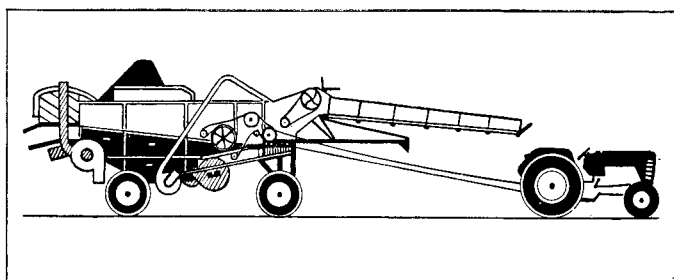


Fig. 19

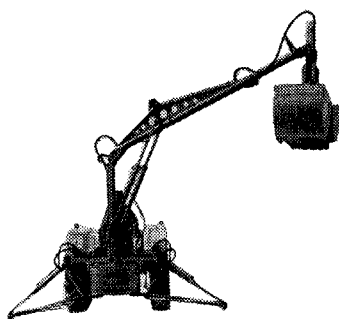


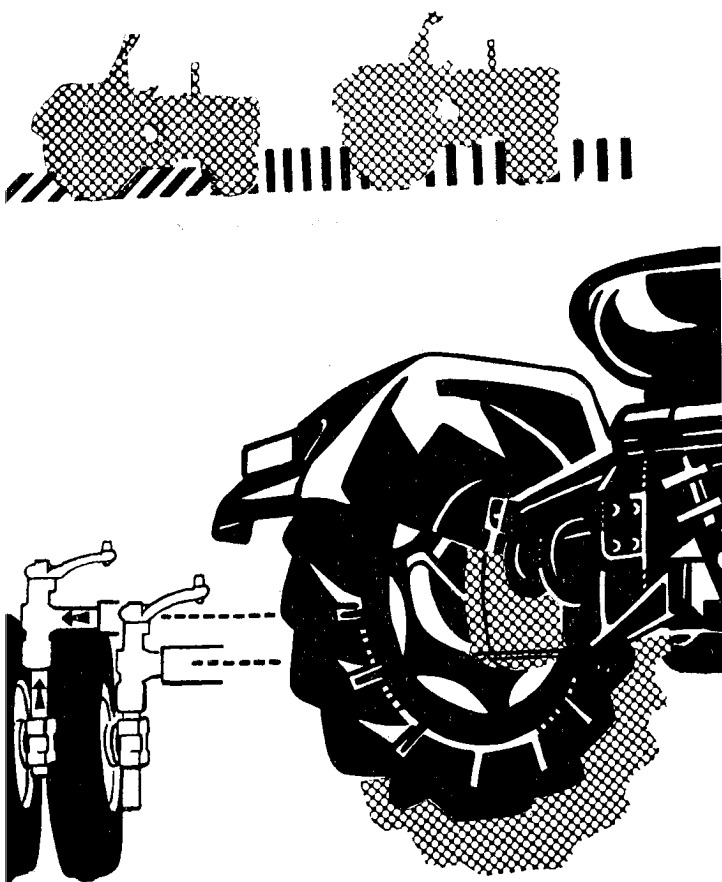
Fig. 20

standardized revolutions). A larger quantity of oil is supplied by the pump when it is driven through the gear box and with the 4th and 5th gear engaged.

Cultivating Tractor

One tractor only for each job.

Simple conversion of the ploughing tractor into a cultivating one.



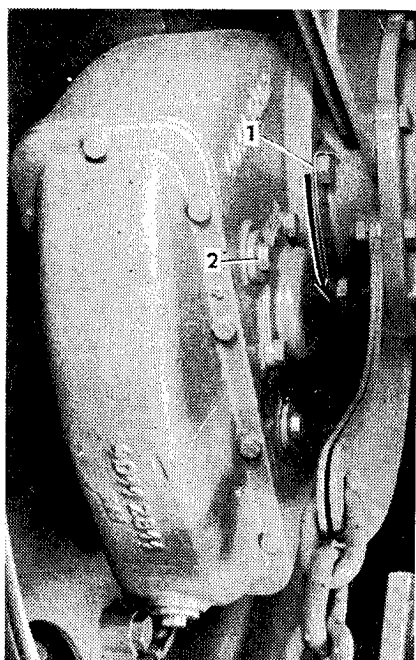
1. Setting-up the road clearance of the front axle.

Unlock and loosen four bolts (21/1) and shift the wheel with the hub into the bottom groove (the pin in the wheel hub — Fig. 21/5 — engages with the groove on the vertical pivot).

After having done this operation tighten the bolts and lock them. It is necessary to carry out these operations with the front axle lifted.

2. Setting-up the road clearance of the rear wheels (to be carried out by moving round the housings of the side gearing).

By means of a lifting jack lift the tractor rear axle. Unlock and remove screws M 14×45 (1) and move round the housing of the side gearing (2) by one hole on the screw pitch diameter (in the direction of the arrow). Insert the bolts, washers and nuts and tighten them using a torque wrench. The **Zetor 3011** using a torque of 7 to 8 kgm (50.64 to 57.88 lbs. ft.); the



Zetor 2011 using a torque of 5 to 6 kgm (36.17 to 43.4 lbs. ft.).

(The torque wrench is being supplied in tool set under Order No. 95 9264.)

The **Zetor 4011** tractor is not used for cultivation.

Setting-up the Wheel Track of the Front Wheels

The **Zetor 2011** and **Zetor 3011** have three positions of the wheel track viz of 1275—1575—1725 mm (50.18"—62"—67.91").

The **Zetor 4011** has two positions viz of 1350—1750 mm (53.14"—68.89").

Carry out the setting-up as follows: Loosen the stirrup (Fig. 21/2). Pull out the extension (Fig. 21/4) to the required position so that the pin on the stirrup (Fig. 21/3) engages with the groove on the extension. Mount the stirrup with pin (Fig. 21/3) and tighten both stirrups. Check the front wheel toe-in.

After alteration of the wheel track to the third position (in the case of the **Zetor 4011** tractor to the second position), adjust the front wheel toe-in (Page 46).

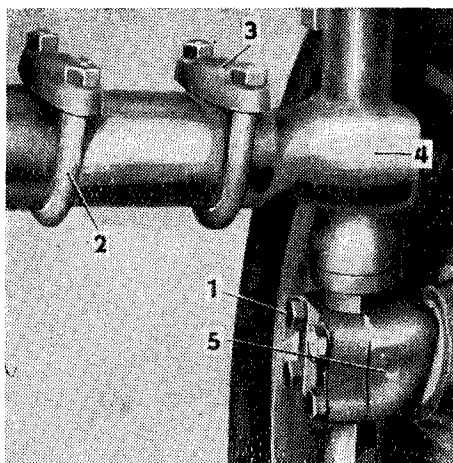
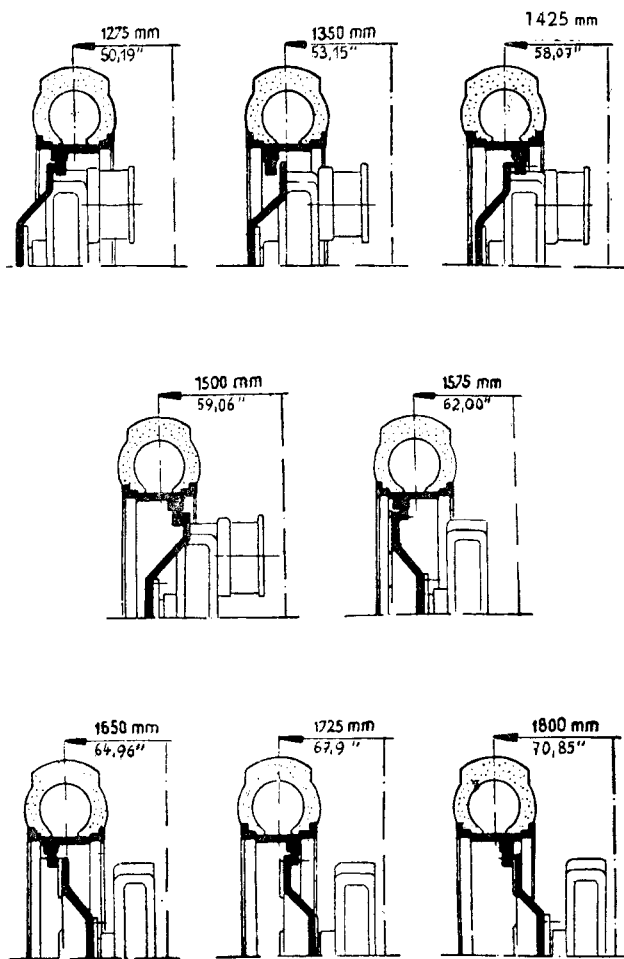


Fig. 21



Setting-up the Wheel Track of the Rear Wheels

It is possible to adjust the wheel track of the rear wheels in 8 different positions altogether. Change the wheel track only with the rear part of the tractor lifted so that the wheels rotate freely. Before lifting same secure the tractor against movement by supporting the front wheels. The setting-up of the individual wheel tracks is carried out by altering the mutual position of the rims and disks. When mounting, tighten the bolts properly so that, whilst running, the rim on the wheel disk cannot get loose.

Zetor 2011 and **Zetor 3011** tractors are supplied from the works with the wheel track of the rear wheels set up to 1350 mm (53.14") and with the minimum wheel track of the front wheels of 1275 mm (50.18").

The **Zetor 4011** tractor is supplied with the wheel track of the rear wheels set up to 1425 mm (56.10") and with a minimum wheel track of the front wheels of 1350 mm (53.14").

For cultivation it is necessary to change the rims and tyres; choose the wheel track according to the rows of plants.

Seat

The seat is well sprung and can be adjusted in accordance with the weight and figure of the driver (Fig. 22). The distance of the seat from the steering wheel can be changed by loosening the nut (1) on the base plate (2) and shifting the seat (3) to the chosen positions: I, II, III. Springing rigidity — it is necessary to fasten the spring 4 in the hole 5 for a heavier driver, for a lighter driver as well for permanent driving on good roadways it is necessary to fasten the spring in the hole 6. Damping of vibrations — the more uneven the field, the more vibrations of the seat must be damped, i. e., by tightening or loosening the wing nut (7).

Running-in of the Tractor

The care and attention which you pay to the new tractor when running it in, will be repaid to you many times in terms of trouble-free operation, low fuel consumption and longer service life.

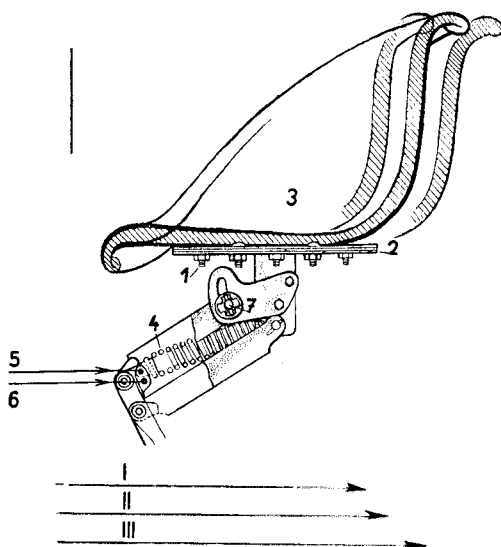


Fig. 22

Observe the following rules when doing this:

1. Drive without load for the first 20 operating hours.
2. For another 50 operating hours use the tractor with implements without overloading it (i. e. drills, harrow, drags, sprinklers and others).
3. During the time of running-in mind the shorter intervals for maintenance.

Maintenance of the Tractor when Running it in (to be carried out in the case of a new or over-hauled tractor)

Carry out after having worked off 30 engine-hours:

1. Operations of the daily attendance (Page 37).
2. Change of oil in the crank case and rinsing (Page 56).
3. Cleaning of oil filters (Page 56).
4. Draining of the oil from the tyre inflator (provided the tractor is equipped with an air compressor).

After having worked off 60 hours, besides the daily atten-

dance and the 1st Technical Inspection (description of operations on Page 38), clean the fuel filters (Page 43). Adjusting of the valve play and tightening of the cylinder heads will be carried out in a specialized service workshop within the scope of service inspections. After having worked off 180 engine-hours, change oil in the gear box and in the housings of the side gearings (Page 60), and rinse them.

After further tractor operation carry out the prescribed technical maintenance.

After having worked off 100, 300 and 600 engine-hours take the tractor to a specialized service workshop for carrying out the service inspection.

Loading of the Tractor and Inflating of Tyres

In accordance with your option we can supply the tractors with a sprung or unsprung front axle.

If the tractor is equipped with an unsprung front axle, it is possible to use loaders or other adapting equipments, but the pressure in the tyres must be increased according to the maximum load of the front and rear axle.

To Inflate the Front Tyres

Type of tractor	Permissible maximum load of front axle	Pressure in tyres	Note
Zetor 2011	800 kgs (1764 lbs.) 1000 kgs (2205 lbs.)	2 atm. g. (28.4 p. s. i.) 3 atm. g. (42.7 p. s. i.)	(only for speeds up to 6 km/h — 3.726 m. p. h.)
Zetor 3011	1000 kgs (2205 lbs.) 1200 kgs (2646 lbs.) 1500 kgs (3307 lbs.)	2 atm. g. (28.4 p. s. i.) 2.5 atm. g. (35.6 p. s. i.) 3 atm. g. (42.7 p. s. i.)	(only for speeds up to 6 km/h — 3.726 m. p. h.)
Zetor 4011	1100 kgs (2425 lbs.) 1600 kgs (3527 lbs.)	2 atm. g. (28.4 p. s. i.) 3 atm. g. (42.7 p. s. i.)	(only for speeds up to 6 km/h — 3.726 m. p. h.)

The rear tyres of tractors with adapting equipments must be inflated for all tyre sizes to 1.5 atm. g. (21.3 p. s. i.) For tractors with front tyres thus inflated the following maximum load on the rear axle is permitted:

Zetor 2011 1200 kgs (2646 lbs.) for tyres 8—28
1600 kgs (3527 lbs.) for tyres 10—24

Zetor 3011 1500 kgs (3307 lbs.) for tyres 9—32
2000 kgs (4409 lbs.) for tyres 11—28

Zetor 4011 2600 kgs (5732 lbs.) for tyres 13—28

The measuring of the load on the rear and front axle in the case of tractors with adapting equipment, is carried out on a weightbridge with the adapting equipment fitted, including the equipment with which the adapting equipment is used (e. g. adapting equipment for displacing earth and others).

For ploughing inflate the front tyres:

Zetor 3011 and **Zetor 2011** — 1.75 atm. g. (24.9 p. s. i.)
Zetor 4011 — 2 atm. g. (28.4 p. s. i.)

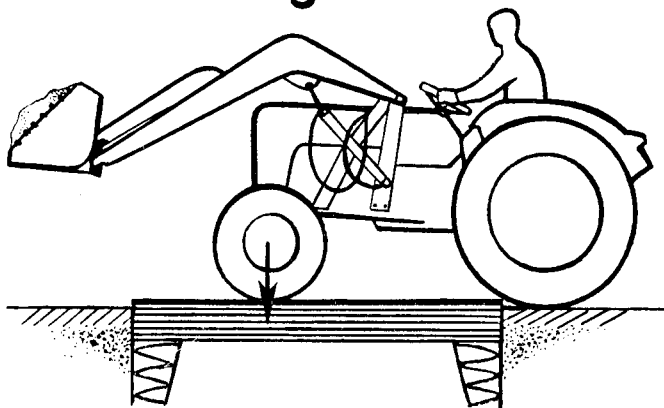
rear tyres: to 0.8 atm. g. (11.4 p. s. i.)

For road transport inflate the front tyres:

Zetor 3011 and **Zetor 2011** — 1.75 atm. g. (24.9 p. s. i.)
Zetor 4011 — 2 atm. g. (28.4 p. s. i.)

rear tyres of all sizes to 1.5 atm. g. (21.3 p. s. i.)

kg



Operation of the Tractor under Special Conditions

When operating the tractor in winter (at a temperature lower than -5°C , 23°F), the tractor calls for a somewhat greater care when starting and maintaining the storage battery (Page 41). Before passing over to the winter operation, it is necessary to change oil as well in accordance with the instructions given in the Lubrication Chart. For the cooling circuit use an antifreezing compound.

Provided that a liquid is used as a ballast in the rear tyres, fill the tyres also with an antifreezing compound (Page 75). To maintain the operating temperature of the engine use a radiator screen.

Provided that water is used for cooling, drain it after finishing work by means of a cock on the radiator (Fig. 23) as well as on the crank case.

Operation in the Tropics

For operating the tractor under tropical conditions adhere to these main rules:

1. Never use the radiator screen.
2. Inspect every day the volume of electrolyte in the storage battery (Page 41).
3. Cleanse every day the top bowl of the air filter (Page 59).
4. Adhere to the oil grades in accordance with the individual oil characteristics which are recommended by the production works.
5. Inspect daily and fill up water in the radiator and

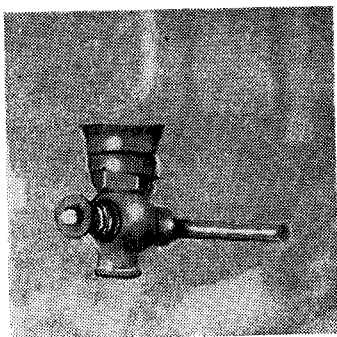
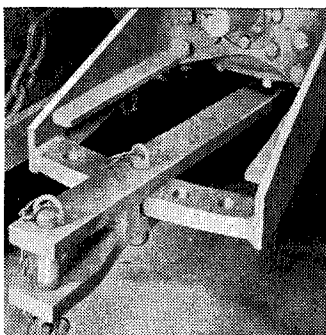
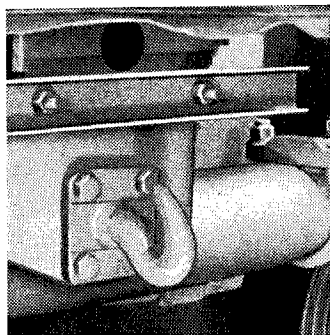


Fig. 23



examine the seat of the overpressure lock for tightness. (The overpressure plug being fitted on, the water temperature may attain 111° C, 232° F.)

Suspensions

On the bracket of the front axle the tractor is equipped with a towing hook which serves only for towing-away the tractor. The 5 position swinging drawbar serves for the suspension of drawn implements.

Storing of the Tractor

Should the tractor not be used for a longer period of time, follow these instructions:

- a) Drain water from the radiator and from the crank case.
- b) Ease the tyres by placing the tractor on blocks.
- c) Have the storage batteries attended to by a specialist and store them in such a way that they do not freeze up in winter. If they have been stored for more than one month, they must be recharged.

Once a week crank the engine manually several times, so as to lubricate the cylinder walls.

Directions for Running the Tractor

For each sort of work choose such a gear ratio which corresponds to the required speed for the particular kind of work.

Before driving uphill, engage a gear so as to drive up the hill smoothly.

When driving downhill with a freight, engage a gear which it would be necessary to engage for driving up the same hill.

When driving downhill, do not go beyond the maximum engine speed, i. e. 2200 r. p. m. If this speed is exceeded a defect to the engine may result.

The R. H. and L. H. brake must brake simultaneously. It is forbidden to drive on the roadway with the change-over device of the hydraulic brakes changed over to the L. H. or R. H. wheel.

When using the tractor as a driving machine (for threshing, sawing and the like), see to it that the tractor stands on even ground, that it is braked and locked by means of underlaid shaped wedges against shifting and moving. Secure the knuckle-shaft for driving machines by a protecting guard. As long as the drive of the knuckle-shaft is not disengaged, do not leave the tractor (danger of accident).

Before working on a sloping ground, take into consideration the working possibilities so that dangerous inclination of the tractor does not take place. A skilled and cautious driver should be entrusted with the operation of the tractor on a sloping ground.

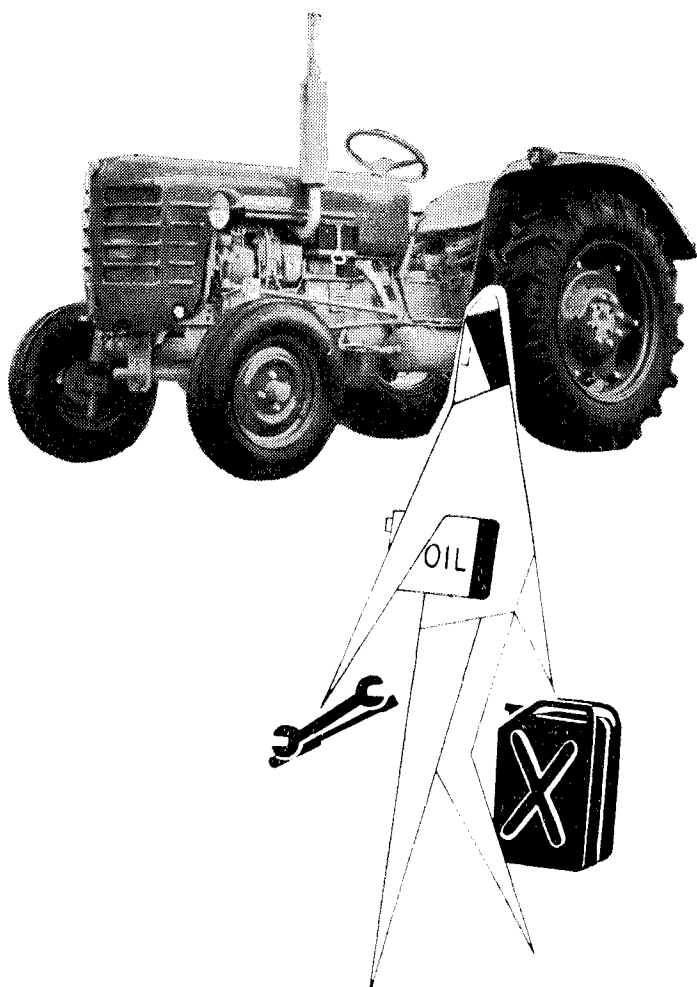
It is not recommended to use the ballast weights of the front wheels for road transport in the case of **Zetor 2011** and **Zetor 3011** tractors, same being designed for the heaviest field work only. For road transport the front axle ballast weight is more suitable.

Do not inspect the level of the storage battery electrolyte when using a naked fire.

The engine being overheated, do not open the radiator closing plug and do not pour cold water into the radiator. Do not fit additional weights to the cultivation tractor, the specific pressure is increased and the tyres are overloaded otherwise.

A long service life and absolute satisfaction are guaranteed if you pay special care to the maintenance of the tractor.

Technical Maintenance



Technical Maintenance of the Tractor

Maintenance carried out in due time and regularly ensures troublefree operation. It is necessary to carry out the maintenance of the mounted implements simultaneously with the maintenance of the tractor.

If you have not a specialist and a perfectly equipped workshop at your disposal, we recommend to carry out the technical maintenance — Technical Inspections TP II, TP III and TP IV at a specialized "Zetor" service workshop. The chapter "Technical Maintenance of the Tractor" has been compiled so that first the individual operations of the respective degree of technical maintenance are briefly recorded and, further, the procedure of these operations is described.

The operations which are in relation to lubricating of the tractor, are quoted summarily at the end of this chapter.

Summary of Individual Technical Maintenance Operations

A. Daily attendance (to be carried out after working off 8 to 10 engine-hours) consists of these operations:

1. Clean the tractor and implements. Inspect for tightness the screws and nuts (joints of the individual tractor elements), especially the fixing bolts of the front and rear wheels, the additional weights and the bolts of the steering levers.
2. Replenish fuel and inspect for tightness the joints of the fuel set.
3. Replenish water and inspect for tightness the cooling system.
4. Ascertain the quantity of oil and inspect for tightness the joints of the oil system.
5. Test the function of the hydraulic brakes, eventually of the pneumatic brakes.
6. After starting the engine test the regularity of running, the function of lubrication, charging, the function of lights and the horn.
7. Test the air pressure in the tyres.
8. Inspect the drawing coupling device — especially the tightening of bolts and the function of the locking devices.

B. Technical Inspection I

This should always be carried out after 70 engine-hours.

9. Daily attendance (points 1 to 8).
10. Carry out lubrication of the tractor according to the Lubrication Chart.
11. Clean the oil filters No. 1 and 2 (Page 56).
12. Test the tightening of the fan belt.
13. Clean the glass sedimentation bowl of the transfer pump (drain oil from the tyre inflator).
14. Inspect the electrolyte level in the storage battery (15 mm — .59" — above the upper border of plates), clean the oxidized cable terminals and apply grease (Page 41).
15. Inspect the brake fluid level (capacity 0.3 litres — .53 pints).

C. Technical Inspection II

This should always be carried out after 245 engine-hours.

16. Lubricate the tractor thoroughly in accordance with the Lubrication Chart.
17. Replace No. 1 coarse fuel filter element.
18. Check the play between the release of the clutch and the sleeve.
19. Clean the fins of the radiator of outer impurities — flush them with water.
20. Dismount the bottom cover of the crank case and clean it. Clean the strainer of the oil pump.

D. Technical Inspection III

This should always be carried out after 490 engine-hours.

21. Daily attendance (points 1 to 8).
22. Technical Inspection I to II (points 10 to 19).
23. Replace No. 2 fuel filter element (Page 43).
24. Check the tightening of the bolts of the cylinder heads.
25. Check the play of the valves (Page 44).
26. Test the injectors and, if need be, adjust the pressure to 160 atm. g. (2275.6 p. s. i.).

27. Test the toe-in of the front wheels and the play of the tapered-roller bearings of the front and rear wheel hubs (Page 46).
28. Test, if need be, adjust the hand brake (Page 47).
29. Flush the cooling system with clean water to remove sediments (Page 50).
30. Rinse the fuel tank.

E. Technical Inspection IV

This should always be carried out after 980 engine-hours.

31. Daily attendance and TP I to III — points 1 to 30.
32. Lubricate the tractor thoroughly (see the Lubrication Chart).
33. Inspect the tightening of the bolts of the main and connecting rod bearings and of the screws of the crankshaft counterweights.
34. Test for tightness the injection pump elements by a pressure gauge.

We recommended to carry out the operations of technical maintenance Nos. II to IV which are quoted under points 24 to 27, 33 and 34, in a specialized workshop. After 2000 engine-hours take the tractor to a specialized "Zetor" service workshop, where the somewhat more pretentious operations of technical maintenance are to be carried out.

Description of Operations of Technical Maintenance

Operations of technical maintenance I

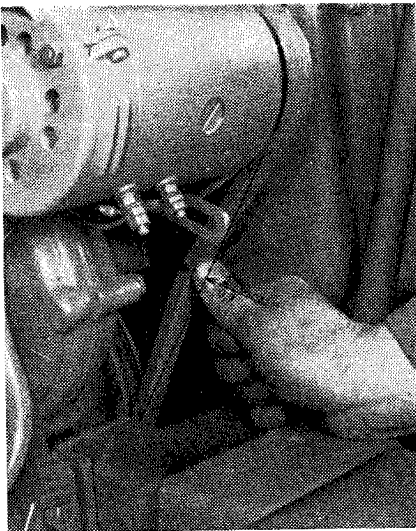
sub 12) Testing of the sag of the water pump and dynamo belt.

The sag of the belt under average finger pressure must not exceed 20 mm (.79").

Carry out the tightening as follows: Loosen the bolts and move the dynamo slightly around in the direction away from the engine. Tighten the bolts well.

sub 13) Inspection of the sedimentation bowl of the transfer pump.

Remove impurities from the bowl, rinse the sieve with petrol or Diesel oil and replace it.



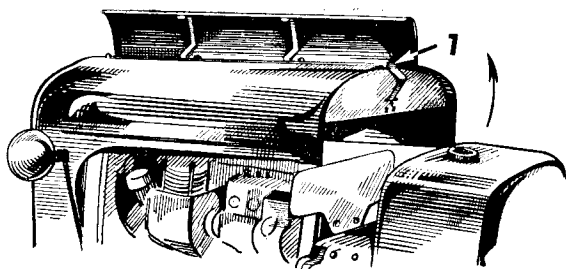


Fig. 24

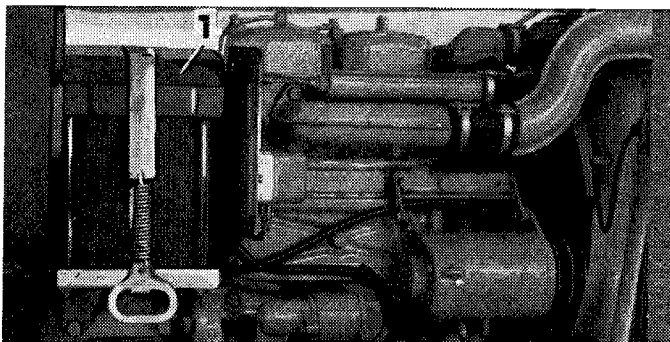


Fig. 25

sub 14) Inspection of the electrolyte level

Zetor 2011 and Zetor 3011: Lift the hood by depressing the spring (Fig. 24/1) and turn it over. Underneath the hood the storage battery is located. Remove the cover (Fig. 25/1).

Zetor 4011: Unscrew the cover of the floor and remove the cover of the storage batteries (they are on both tractor sides).

Unscrew the plugs (Fig. 26) and inspect the electrolyte. The electrolyte must overtop 15 mm (0.59") the upper border of the plates. For filling up use distilled water only. From time to time clean the battery terminals and apply a thin layer of vaseline. If electrolyte has been poured out, fill up the cells with electrolyte of the prescribed density, i. e.

for normal conditions	1.28 (32° Bé) and
for the tropics	1.23 (27° Bé).

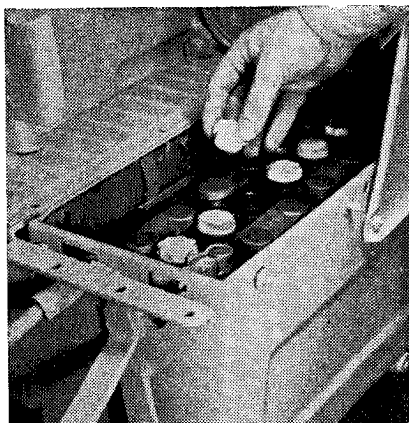


Fig. 26

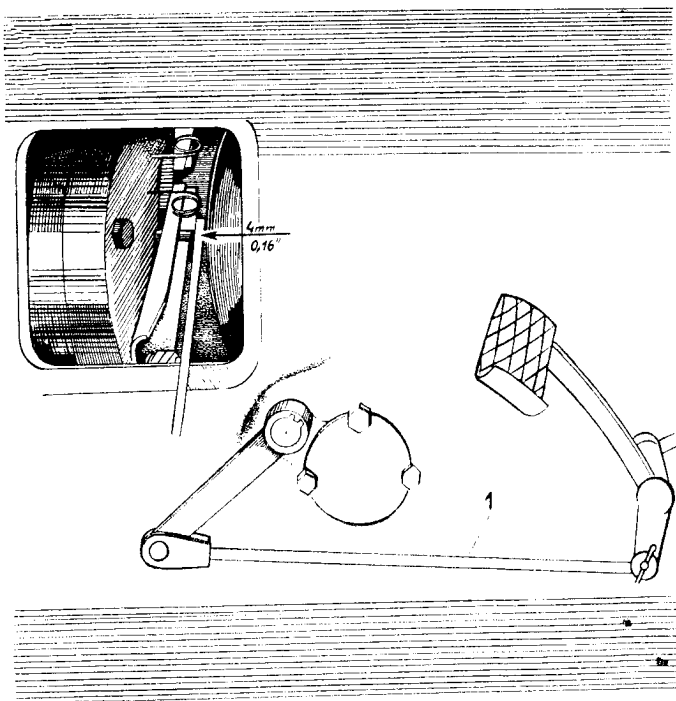


Fig. 27

Operations of technical maintenance II sub 18) Checking of the play between the release levers of the clutch and sleeve

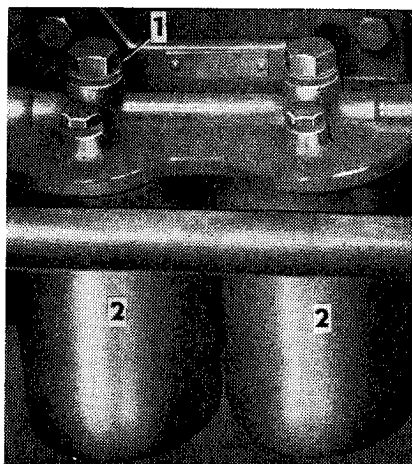
The play between the disengaging bearing and the release levers of the travel clutch (Fig. 27) must be 4 mm (.16"). To find out and take-up the play proceed as follows:

1. Remove the lid (Fig. 27).
2. By means of a flat bar of 4 mm (.16") thickness measure the play.
3. If it is necessary to set up the play, remove the split pin from the clutch pedal and slip out the tie rod.
To increase the play, unscrew the tie rod (Fig. 27/1), to reduce the play, screw it in.

Operations of technical maintenance III sub 17 and 23) Replacing of the elements

Loosen the closing central bolts (1), take off the bowls (2) and rinse them carefully with pure Diesel oil.

Warning: When reassembling, take care that the gaskets of the bowls are not damaged and the elements are not intermixed. The elements are marked in accordance with the holders.

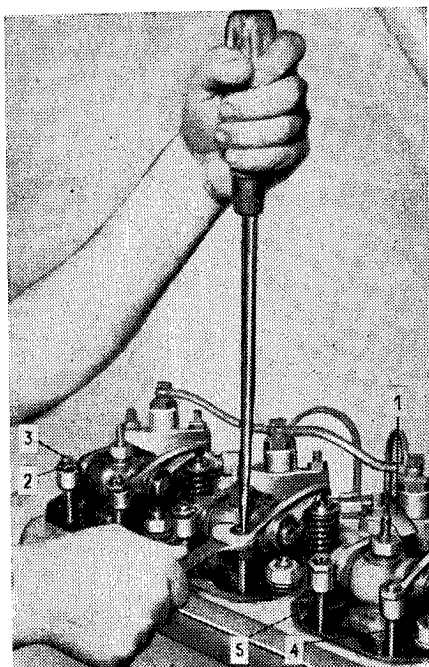


sub 25) Checking the play of valves — we recommend to carry out this operation in a specialized workshop.

The valve play should be adjusted when the engine is cold.

Play of the intake valve	0.20 mm (.0079")
Play of the exhaust valve	0.30 mm (.0118")

Carry out the adjusting as follows: Take off the valve covers and crank the engine, until both the valves of the cylinder, on which the checking of the play is being carried out, are closed. Using a feeler gauge (1) check the play between the contact pin of the rocker arm and the valve stem. Adjust the prescribed play by a set screw (3), having loosened the nuts (2). By tightening the screw the play diminishes, by loosening the screw, it increases. When adjusting the play, leave the feeler gauge between the contact surfaces of the rocker arm and valve. Having adjusted the play, tighten the securing nut. Proceed in the same way, when checking the valve play also in the case of other cylinders. To facilitate orientation note that the



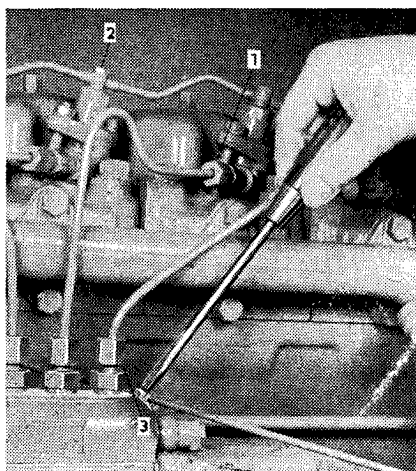


Fig. 28

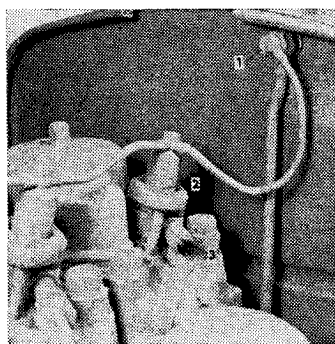


Fig. 29

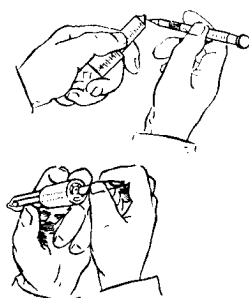


Fig. 30

shorter rocker arms (4) belong to the intake valves, and the longer ones belong to the exhaust valves (5).

sub 26) In the case of a serious defect of the fuel systems — of the injection pump, take the tractor to a specialized repair shop.

A current defect, such as choked holes of the injection nozzle, is remedied as follows: Disconnect the fuel piping from the injection valve by loosening the cap nut (Fig. 28/1). Dismount the discharge piping by unscrewing the closing

screws (Fig. 28/2) and the cap nut on the discharge piping. In the case of the **Zetor 4011** tractor unscrew the hollow screw (Fig. 29/1). Unscrew two nuts (Fig. 29/2), strip the stirrup from the bolts and take out the defective holder with the nozzle from the head. By a needle for cleaning nozzles clean the carbonized holes in the nozzle (Fig. 30).

When reassembling the injectors, fit the holder with the nozzle to the cylinder head so that its feed pipe (29/3) leans against the front screw (which is nearer to the exhaust piping) of the stirrup. Attach the piping well.

Ascertain the defect of the injector as follows:

1. Set the engine running at minimum speed.
2. Loosen the cap nut (Fig. 28/3); if the engine revolutions diminish — the injector is good, if the engine revolutions do not change, the injector is defective and it is necessary to clean the holes of the nozzle, or to replace the injector with a new one.

sub 27) Testing of the front wheel toe-in and taking-up the play bearings

The toe-in should be checked both during the 2nd TP inspection and the last changing of the wheel gauge of the front wheels.

Adjustment of the toe-in of wheels.

The toe-in of the wheels is adjusted by shortening or lengthening of the steering tie rods (Fig. 32). By shortening the tie rods the toe-in increases (the tie rods should be moved round in the direction of the arrow 1). By lengthening the tie rods, the toe-in diminishes (the tie rods should be moved round in the direction of the arrow 2). The toe-in should be measured on the rims (Fig. 31).

Checking and Taking Up the Play of Front Wheel Bearings (Fig. 33).

1. Insert a lifting jack under the front axle bracket so that the wheel is free to rotate.
2. Ascertain on the wheel periphery, if there is no great play in the bearing. The play should be adjusted by tightening the nut of the bearing, having first removed the cap and pulled out the split pin.
3. Having taken up the bearing play, the wheels must rotate freely, while the bearings should not exhibit

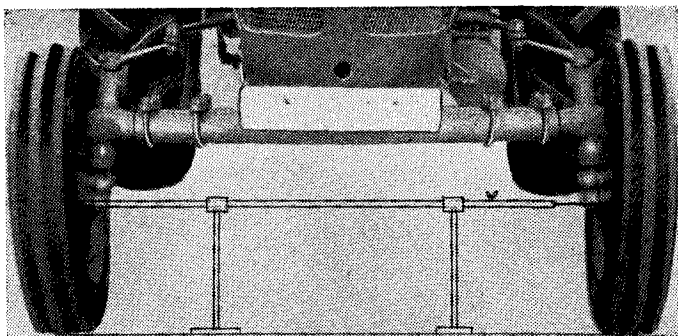


Fig. 31

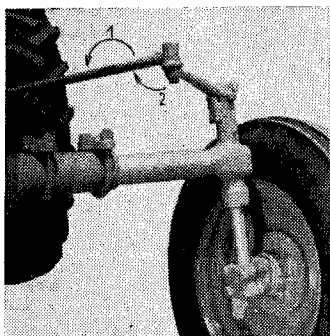


Fig. 32

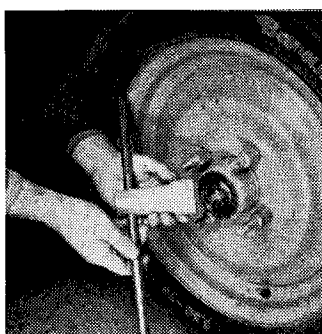


Fig. 33

any noticeable play (swinging out of the wheel on the bearing is imperceptible).

4. After adjustment secure the nut by a split pin, fill the bearing with grease and screw on the cap.

sub 28) Testing of Brakes and Adjustment of the Hand Brake

The hand brake must be adjusted in such way that it brakes effectively already on the third tooth of the catch. The adjustment should be carried out as follows: Slightly loosen screw holding fast the guard and remove the latter. Pull out slowly the tie rod of the hand brake until the catch (Fig. 35/3) locks the brake on the third tooth. Leave the lever in this position, loosen the top nut and

tighten the bottom nut until the brake band contacts the brake drum. Tighten the lock nut. From below lift the pin holding the spring of the band (Fig. 34), put on the guard of the brake and secure it with a little screw. In the same way proceed also in the case of the second brake band.

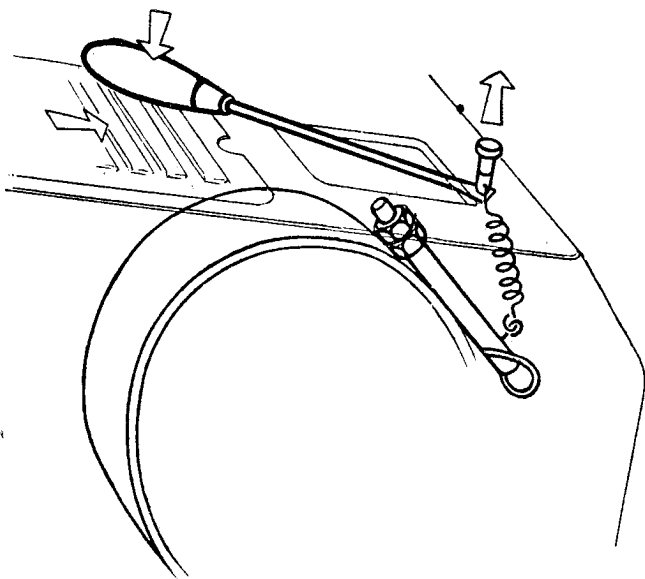


Fig. 34

- 1 Brake pedal
- 2 Tie rod for attaching pneumatic brakes
- 3 Master cylinder
- 4 Hydraulic brakes pressure switch
- 5 Brake fluid equalizing tank
- 6 Hydraulic brake change-over device
- 7 Change-over device de-aerating screw
- 8 Wheel brake cylinder
- 9 Brake shoe
- 10 Brake drum
- 11 Hand brake tie rod
- 12 Catch
- 13 Disengaging lever
- 14 Adjusting screw
- 15 Brake band

While inspecting the hydraulic brakes take care that no fluid escapes from the pipe couplings or brake cylinder. When testing the action of the brakes, ascertain in the first place the brake fluid level in the tank. Water, which has entered the fluid, causes corrosion of the inner metal parts of the brake set. The brake fluid damages the lacquered surface of parts. Adjusting of the play of the master brake cylinder in the case of in being dismantled is carried out in a specialized repair shop.

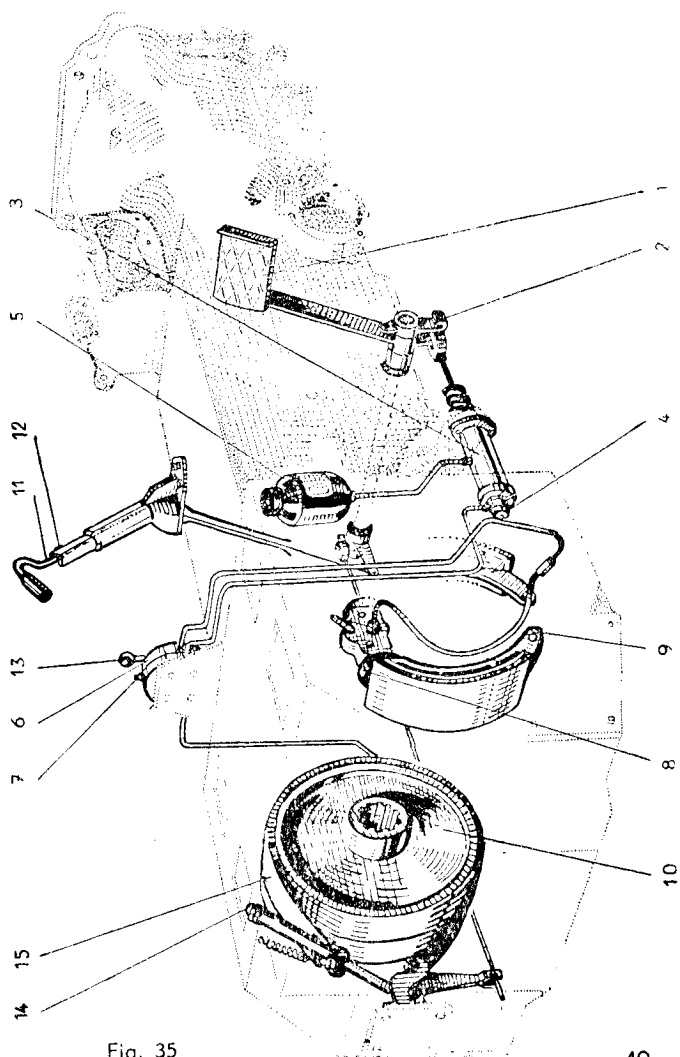


Fig. 35

De-aeration of the Hydraulic Brakes

If any of the pipe couplings has been dismantled, or the brake fluid has escaped and has been replenished, perfect de-aeration of the brake system must be carried out as follows:

Fill up the tank with brake fluid, slip on a rubber hose to the narrowed end of the de-aerating screw of the brake change-over device and immerse the other end of the hose in the fluid in a transparent vessel (Fig. 36).

Loosen the de-aerating screw about two turns and depress the brake pedal. Thus the fluid together with air bubbles is drained. Keep on depressing the pedal until the fluid flows out without bubbles. In the end, depressing the pedal simultaneously, tighten the de-aerating screw. Proceed in the same way in the case of both brake cylinders. At the same time take care that there is enough fluid in the tank.

Remember when de-aerating:

- a) The level in the auxiliary vessel must be higher than the mouth of the de-aerating screw.
- b) During the de-aerating procedure depress the pedal quickly and release it slowly.

The brake cylinders of the brake shoes should not be adjusted, because they are self-adjusting.

sub 29) Drain water from the radiator and fill up the radiator with clean soft water (rain-water) and let the engine run at an average speed. Drain water and rinse

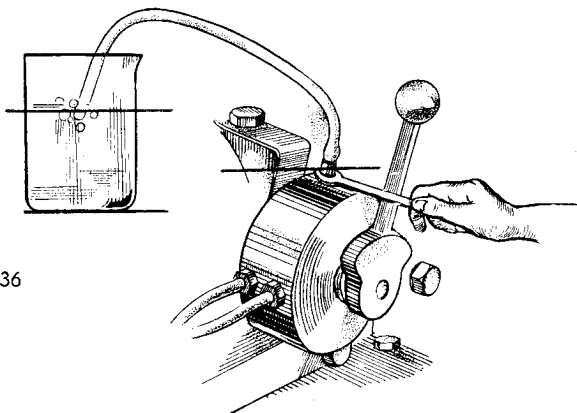


Fig. 36

the radiator. Fill the radiator up to its filler and the tractor is ready for further operation.

Always after 2000 hours of operation, remove the settled incrustations from the use of spring water. Drain water from the radiator and crank case and fill up the radiator with a solution of 1 kg (2.21 lbs.) of sodium carbonate or 1.5 kg (3.31 lbs.) of potash (potassium carbonate) per 10 litres (2.2 imp. gallons) of water. Allow the solution to act for 8 to 10 operating hours. Drain the solution and rinse the cooling unit several times with clean water.

Tyres

Pay great care to servicing and attendance. Correct inflation (Page 31) and well adjusted toe-in of the front wheels are very important for the service life of the tyres.

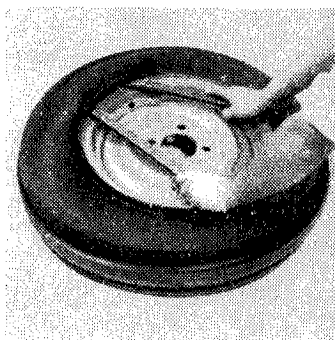


Fig. 37a



Fig. 37b

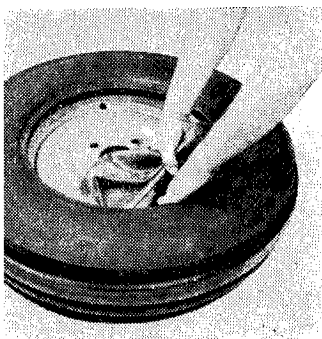


Fig. 37c

a) To Dismount the Front Wheel

1. Lay the wheel with tyre down on the ground and deflate the air from the inner tube by screwing out the valve.
2. Press the tyre down on the side opposite to the valve into the hollow of the disk and slide the tyre levers of the tractor's equipment into the disk in the place of valve location under the tyre border (Fig. 37a).
3. The tyre border pull out above the disk border and by shifting the tyre levers (Fig. 37b) by degrees move the whole tyre border over the disk border.
4. Lift a little the tyre border opposite to the valve by one hand and by the other hand pull out the inner tube (Fig. 37c). Before pulling out the inner tube completely, slide the valve in the disk.
5. Put the wheel in vertical position and displace the disk from the tyre using one of the tyre levers (Fig. 38a).
6. Take the tube strip off the disk.

Note: Carry out moving of the tyre over the disk carefully, in order not to damage the steel wire which is being vulcanized in the tyre border.

b) To Mount the Front Wheel

1. Put the tube strip on the disk and take care that the hole in the tube strip is on the hole in the disk.



Fig. 38a

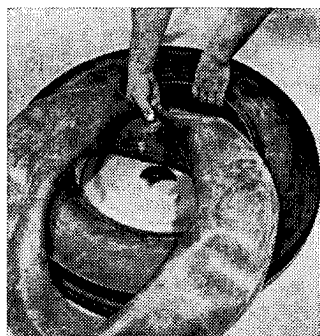


Fig. 38b

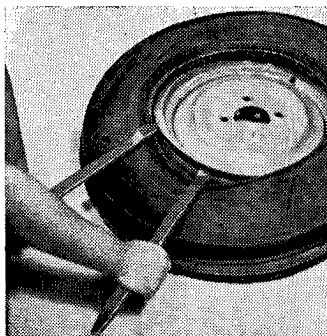


Fig. 38c

2. Pour the talcum powder into the tyre and turn the tyre round in order that the talcum powder is all round the whole periphery of the tyre.
3. Lay the disk down on the ground, put the tyre to it and put it by its one side, using the tyre lever, on the disk. Always mount the tyre in direction from the outer side of the disk.
4. Put the inner tube, with the valve being upwards (Fig. 38b), to the tyre; take out the cap of the valve.
5. Fold the inner tube at the valve, grip it by your right hand, lift the tyre a little by your left hand and slide the valve in the hole of the disk (Fig. 38b).
6. Lift the tyre a little and put the whole inner tube into the disk. Put the tyre lever opposite to the valve and step on the tyre by your foot. Put the tyre lever alternatively from the L. H. and R. H. side until the tyre is slid in completely (Fig. 38c).
7. Mounting is completed at the valve. Inflate the assembled wheel a little and find out, if the tyre border is sitting well all over the disk. It is advised to tap on the tyre by a wooden helve or to knock the wheel against the ground. Only then inflate the tyres to correct pressure.

c) To Dismount Rear Wheel

1. Lay the wheel with tyre down on the ground on a wooden block (Fig. 39). Deflate the air from the inner tube by screwing out the valve and screw

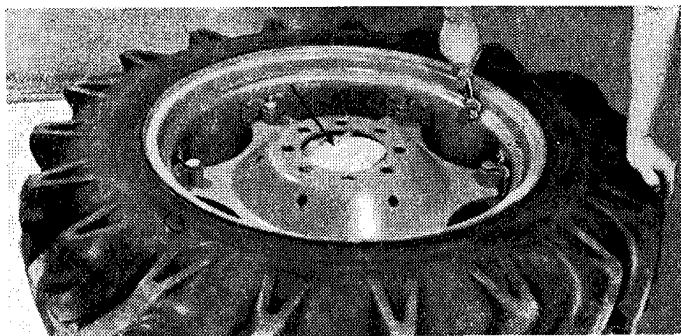


Fig. 39

off the nut (Fig. 39) attaching the inner tube to the rim.

2. Press the tyre border down into the hollow of the rim all round the whole periphery of the tyre and slide the tyre levers of the tractor's equipment into the rim in the place of valve location under the tyre border.

Get along with it in the same way as on dismounting the front wheel.

d) To Mount the Rear Wheel

1. Put the tube strip on the rim by the taking-out to the hole for the valve.
2. Lay the rim down on the ground by its outer side downwards. Put the tyre to it in order that the figures on the tyre point always by the arrow forwards. (Note the direction of the figures at the L. H. and R. H. wheel.)
3. Wet the tyre borders in order that they slip easier into the rim.
4. Put the tyre lever opposite to the valve, push the tyre in to the rim edge, hold the tyre and by means of the tyre lever slip it, alternatively from the L. H. and R. H. side, on the rim.
5. Put the inner tube to the tyre in order that the valve is opposite to the hole in the rim upwardly.
6. Fold the inner tube at the valve and slide it into the tyre. At the same time lift the tyre border a

little by one hand in that place where you want to slide in the inner tube.

7. Slide the valve through the hole in the wheel rim and secure to the valve by the nut.
8. Wet the other tyre border and put the tyre levers opposite to the valve, under the tyre border. Secure the tyre by your foot in order that the tyre does not move off the rim border.
9. Put the tyre levers alternatively from the L. H. and R. H. side until the tyre is completely slid in the rim.
10. Carry out the inspection of correct sitting of the tyre on the rim and inflate then the tyre to correct pressure.

Electrical Equipment and Accessories

inspect the connections of the wires periodically, you will thus prevent unnecessary defects of the electrical equipment. Have the maintenance procedures of the dynamo, starter and voltage regulating relay carried out in a specialized repair shop.

Lubrication of the Tractor

Lubrication and changing of oil constitute the substantial part of the technical maintenance of the tractor.

Tractors of the unified series have a very simple system of lubrication. Carry out the individual procedures at time intervals according to the "Lubrication Chart" of the tractor.

For filling of the tractors the production plant uses oils, which comply with the characteristics of oils stated in the following chart. In accordance with this chart choose the grades of oil of your producers.

SAE	Lubricating points according to "Lubrication chart"	Characteristic climatic viscosity (cSt)		Index of viscosity minimum	Point of congealing 0° C (32° F)
		at 50° C (122° F) max.	at 100° C (212° F) min.		
40	4, 15, 12, 14, 16	95.00	13.20	75	—10 (14)
20 W		45.00	7.50	80	—25 (—13)
The above-mentioned data are valid for the engine					
20 W	6, 9, 10, 5, 8	68.00	9.30	45	—24 (—11.2)
40		99.00	12.20	45	—10 (14)
The above-mentioned data are valid for gears					

Changing of Oil in the Engine

Change oil at the prescribed periods always after ending the run, while oil is still warm:

1. Unscrew the magnetic drain plug (Fig. 40) and drain oil completely. Clean the plug.
2. Unscrew the closing nuts (1) of the oil filters and remove the bowls (2) with inserts (3) and wash them simultaneously in kerosene or petrol. At the same time remove the wire mesh disks from their centering pins, do not mistake the coarse "I" for fine "II". Dry up the bowls and inserts, because even slight residues of the cleaning agents debase the oil.

After reassembly of the inserts fill the filter bowls to about one half of their capacity with fresh oil and fit them back to the holder. Pour the oil into the crank case up to the top gauge mark on the oil dip stick (Lubrication Chart — 13), crank manually several times and start. At low revolutions watch immediately the lubrication pilot light on the dashboard (the green bulb does not light) and also find out, if the filter bowls are tightened properly.

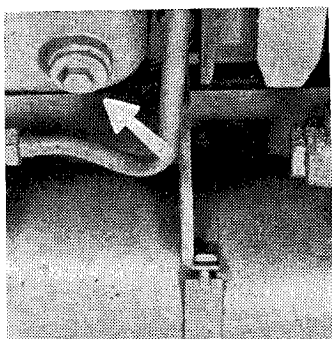
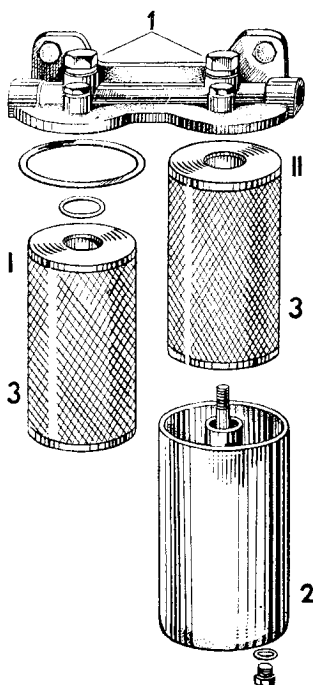


Fig. 40



How to Rinse the Engine

Rinsing of the engine is being carried out for the purpose of removing the impurities from the lubrication circuit. Loosen the filter bowl, take out the filter inserts and drain the used oil. Fill the bowls, without inserts, with rinsing oil and fit them back to the holder. Then pour rinsing oil B1 or B2 into the engine until the level is within the gauge marks on the oil dipstick. Start the engine and let it run at minimum revolutions for about 10 minutes. Drain rinsing oil from the engine and oil filter, put on the filter inserts and fill up the engine with fresh prescribed oil.

How to Clean the Strainer of the Oil Pump (Fig. 41)

After having drained the used oil, take off the bottom cover of the crank case, dismount the strainer of the oil pump and clean it in kerosene, petrol or Diesel oil. Fit the completely drained strainer back to the pump, secure it against loosening and put the bottom cover on the crank case. Tighten the bottom screws so that oil does not leak.

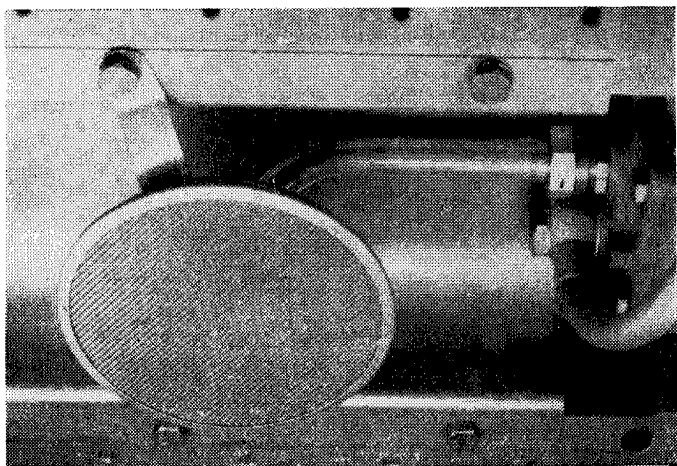
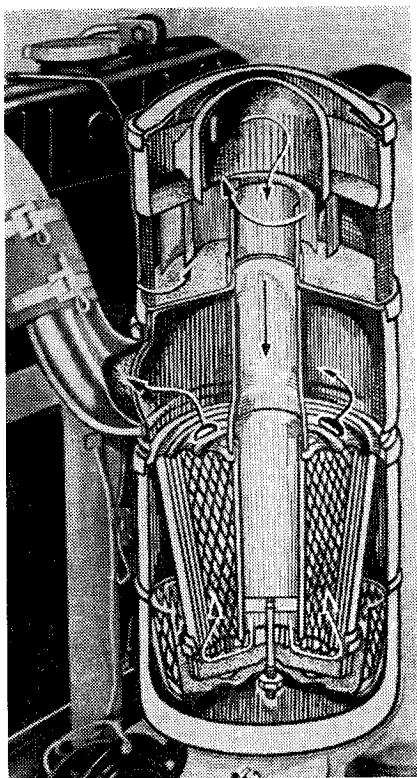


Fig. 41

Air Cleaner

1. Inspection of the oil volume and cleaning of the pre-cleaner of dust (to be carried out at 1st Technical Inspection)
 - a) Lift the hood.
 - b) Take off the string from the hocklet and tilt the hood.
 - c) Unscrew the nut and remove the precleaner cover.
 - d) Loosen three quick-acting clips, remove the whole precleaner upwards and clean it.
 - e) Inspect, if oil is up to the gauge mark in the cleaner casing, if need be, refill it.



2. Change of oil (to be carried out after 60 engine-hours). Dismount in accordance with point 1.

Wash the cleaner casing and the cleaner elements in petrol or Diesel oil and dry them before reassembling. Take care that the protective strainer around the intake slots is not choked. Having finished the cleaning, join the parts by means of a bolt and nut and insert them into the casing filled with unused engine oil up to the gauge mark. Fit the casing back to the cleaner cover. Grease the contact surface of the cover and of the sealing ring on the neck of the insert.

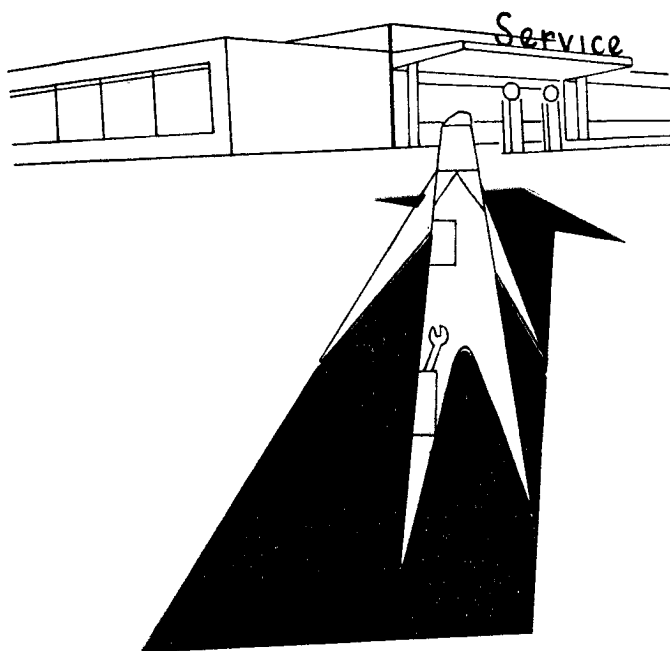
Changing of Oil in the Gear Box and Main Gear Casing

After having ended the run, drain oil from the gear box and from the main gear casing. Clean the plugs and pour rinsing oil into the boxes. Drive the tractor for about 10 minutes and drain the rinsing oil. Refill the boxes with prescribed oil (Lubrication Chart).

Common Defects and Their Remedy

A defect may arise on the tractor during operation, in most cases it is caused by gross negligence and bad maintenance.

Every defect, even the slightest one, remedy immediately after having ended the operation, if need be, even during the operation. The driver is able to remove common operational defects by himself. In the case of a more serious defect of the engine, injection pump, electrical and hydraulic equipment have the repair carried out in a special ZETOR service repair shop.



Engine Defects:

Impossible to start the engine

Cause:

Storage battery discharged

The fuel injection pump does not supply fuel:

- a) the fuel cock is closed
- b) the fuel system is de-aerated insufficiently
- c) the fuel filters are contaminated heavily
- d) fuel supply regulation is not set for full delivery

Remedy:

Recharge the storage battery

open the fuel cock

de-aerate the fuel system (Page 9)

clean the fuel filters (Page 43)

set the lever for full delivery, use the correction starter, if necessary (Page 9)

The engine runs irregularly

- a) air is in the fuel piping
- b) some tightening nuts of the fuel pipes between the injection pump and injectors are tightened insufficiently and Diesel oil leaks
- c) some injector nozzles are choked
- d) dirt in the seat of the delivery valve

loosen the cap nuts on the injectors and crank the engine manually until Diesel oil flows out without air bubbles (de-aerate), Page 9

tighten the nuts

inspect and clean some (Page 45)

dismantle and clean some

The engine output is insufficient

- a) some nozzles are seized or choked
- b) injectors are not adjusted properly
- c) the injection pump is not adjusted correctly

inspect, replace the nozzle, if necessary

have the injectors adjusted preferably in a specialized workshop

adjust the pump in a specialized workshop

Cause:

- d) the fuel injection beginning is adjusted incorrectly

Remedy:

adjust the fuel injection beginning to 18° before T. D. C. (for engines Z 4001 up to the No 15 219, for engines Z 3001 up to the No 50 439 and for engines Z 2001 up to the No 3097 and from the No 3401 up to 3477) and to 20—21° before T. D. C. (for engines Z 4001 from the No 15 220, for engines Z 3001 from the No 50 440 and for engines Z 2001 from the No 3098 up to 3400 and from the No 3478) in a specialized service repair shop

- e) insufficient compression pressure in the cylinders which may be caused by:

1. untight valves

regrind the valves in their seats

2. incorrectly adjusted valve play

adjust the correct valve play

3. a defective gasket between the head and crank case

replace the gasket

4. loosened head stud bolts

tighten according to diagram (see the Workshop Manual)

5. baked piston rings

loosen the rings and clean the grooves in the pistons

(Have the defects quoted under points 1, 2 and 4 repaired in a specialized service workshop)

- f) soiled fuel filters, the pump supplies little fuel at higher loading

clean the filters
(Page 43)

The engine gets overheated

- a) little water in the radiator

fill up the radiator

Cause:	Remedy:
b) the V-belt of the water pump is slack	stretch out the belt (Page 40)
c) the radiator is clogged with water incrustation	clean the radiator (Page 50)

Lubricating System Defects

Defect:	Cause:	Remedy:
The pilot lamp lights	a) defect of the pressure switch	new pressure switch
	b) little oil in the housing	fill up some until the level is up to the gauge marks of the dipstick
	c) leakage of the lubricating system piping	examine the piping couplings, tighten
	d) fully choked oil filter	clean the filter (Page 56)
	e) choked strainer	clean the strainer (Page 58)
The pilot lamp does not light	a) defect of the electrical system	examine, have same repaired in a specialized repair shop
	b) the bulb is burnt	replace with a new one
The pressure is sufficient at higher engine revolutions, at low revolutions, it is low	a) defect of the pressure switch	replace the pressure switch (Page 66)
	b) defect of the reduction valve	take it out, clean and repair (Page 66)
	c) thin, debased oil	drain, replace with a fresh one
	d) choked oil filter	clean the filter (Page 56)
	e) leakage in the lubricating system piping	examine the couplings and tighten
Heavy oil consumption, blue smoke from exhaust	a) baked-in piston rings	loosen the rings, clean the grooves in the pistons (in a specialized workshop)

Defect:	Cause:	Remedy:
Heavy oil consumption, blue smoke from exhaust	b) bushings of the valve stems have excessive play	replace (in a specialized workshop)

Defects of the Electrical Equipment and Accessories

Defect:	Cause:	Remedy:
The dynamo does not charge	a) the dynamo brushes are worn out	replace the brushes
	b) the commutator is too soiled	clean with a rag dipped in petrol and dry properly
	c) some brush springs are broken	replace the broken spring with a new one
	d) voltage regulating relay is damaged	have it repaired in a specialized workshop, replace it with a new one, if necessary
The starter does not function	a) the connecting cables to the starter are loosened	repair, tighten
	b) the storage battery has insufficient voltage	test, have the storage battery charged
	c) worn brushes	replace with new brushes
	d) the brush spring is broken	replace it with a new one
	e) the commutator is soiled	cleanse it
	f) defect in the electromagnetic coil	repair

The defects under points "a" to "f" should be repaired in a specialized workshop.

Slow running of the starter	a) insufficient voltage of the storage battery	test, have the storage battery recharged
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Defect:	Cause:	Remedy:
Slow running of the starter	b) congealed oil in the crank case	crank the engine manually, start subsequently
The horn does not sound	a) damaged insulating washer	replace with a new one
	b) loosened or missing adjusting screw	replace with a new one, adjust

Defects of the Hydraulic Brakes

Defect:	Cause:	Remedy:
The path of the brake pedal is too long,	insufficient quantity of fluid	fill up the brake fluid (Page 7)
The path of the brake pedal is too long, the pedal springs when it is depressed	air in the braking	de-aerate the braking system (Page 50)

Instructions for Remedying the Defects

The defects of units which have not been described till now.

1. Replace the oil pressure switch (Fig. 42):
disconnect the cable (1) and with the use of wrench "24" screw out the pressure switch (mind the washer).
2. Dismount and repair the reduction valve of the lubrication circuit (Fig. 43); unscrew the reduction valve by means of wrench "22" and wash it in Diesel oil.
3. Inspect the connecting cable of the starter: tighten the cables well (Fig. 44).
4. Adjusting of the horn (Fig. 45).
This is carried out on its rear side. To do that it is not necessary to dismount the horn from the tractor. If you cannot achieve correct adjustment, dismantle the horn, if need be, have it repaired in a specialized repair shop (the procedures of this repair are quoted in the Workshop Manual).

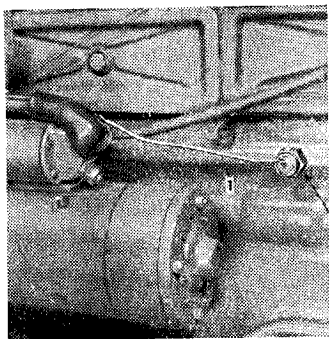


Fig. 42

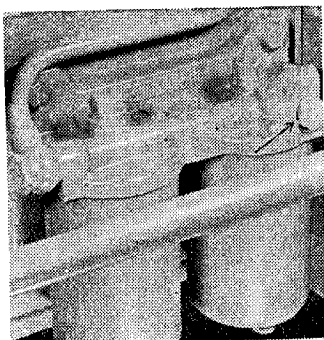


Fig. 43

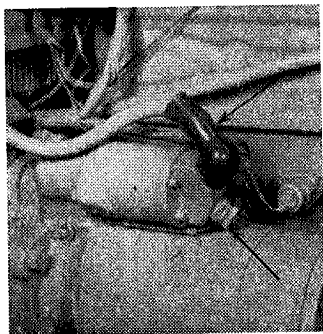


Fig. 44

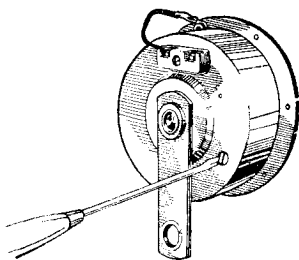
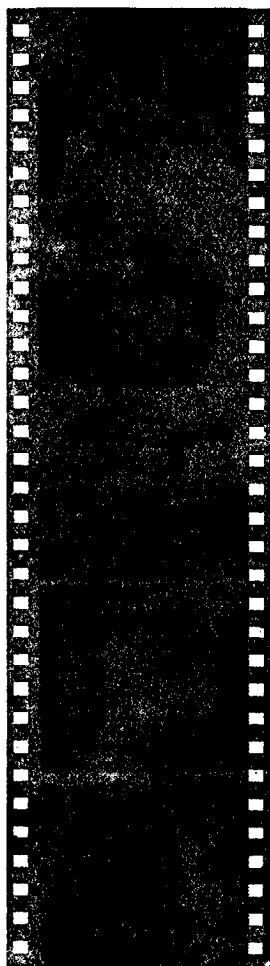
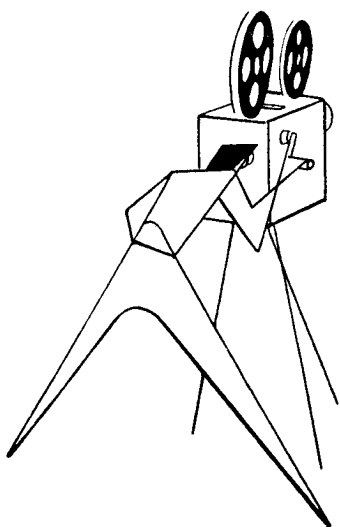


Fig. 45



Special Accessories

On your particular option we shall supply to you a wide assortment of special accessories which you can order mounted on the tractor or as a separate delivery.

We supply special accessories in the following assortment:

Decompression device

Cooling set for the tropics (on the **Zetor 4011** tractor it is mounted as standard)

Front wheel sprung pull-out extensions

+ Front P. T. O. shaft

Front mud guards

Air compressor including tyre inflator and complete hose

Pneumatic brakes

Belt pulley

Hydraulic power lift

Three-point suspension

Vertically adjustable drawbar

Suspension for single-axle trailer

Cab and its electrical equipment

Front axle ballast weights and front wheel ballast weights

Rear wheel ballast weights

Seat for driver's mate

Rear spot light

Valve for filling the tyres with water

+ Frame for agricultural implements

Front suspension for trailers

+ Lateral exhaust

+ Bottom exhaust

+ Double fitting of tyres

Fork adjustable in height in fixed positions

+ Lengthened swinging drawbar and suspension for trailers

Outer circuit outlets

The special accessories marked are not supplied for the **Zetor 4011** tractor. Front wheel ballast weights are mounted on the **Zetor 4011** tractor as standard.

Should you order special accessories as a separate delivery, it is recommended to have them mounted in a special service repair shop. Otherwise you can carry out the mounting according to the Workshop Manual for tractors of the unified series.

Cooling Set for the Tropics

When using the tractor at higher altitudes or when the temperature is higher, it is necessary to intensify the efficiency of the engine cooling. For this purpose serves a fan with multiple vanes and a special radiator cap with an overpressure and underpressure valve. By using this special cap, the boiling point of the cooling liquid increases up to 111° C (232° F). The **Zetor 4011** tractor is normally equipped with a tropical cooling system.

Front Wheel Sprung Pull-out Extension (Fig. 46)

These extensions make it possible to adjust the wheel track to 1275—1575—1725 mm (50.18"—62"—67.91") on **Zetor 2011** and **Zetor 3011** tractors. On the **Zetor 4011** tractor it is possible to adjust the wheel track to 1350 to 1750 mm (53.14"—68.89").

Maintenance

After 60 engine-hours grease the vertical pin of the front axle with grease A00.

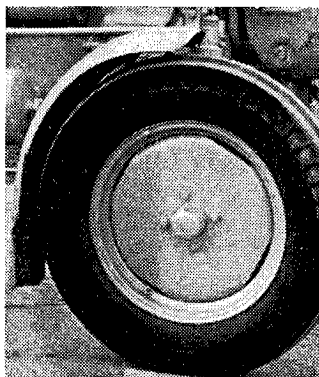
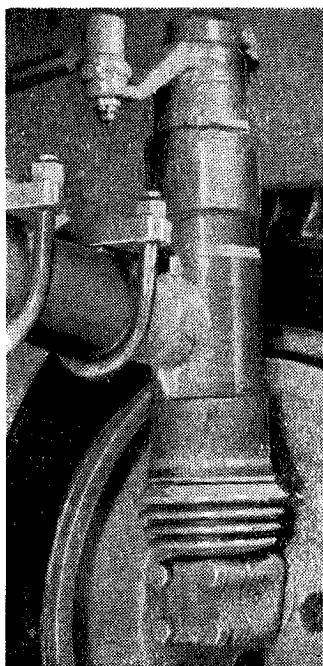


Fig. 47

Fig. 46

Front Mud Guards (Fig. 47)

These are attached by two screws. When ploughing, it is necessary to remove the mud guards.

Front P. T. O. Shaft (Fig. 48)

This is used for the same applications as the standard mounted rear P. T. O. shaft and also the dimensions for connecting of implements are the same. Engaging of the P. T. O. shaft is carried out by a small lever (Fig. 49), the clutch pedal being fully depressed. (Gear shifting and the speeds are the same as of the rear P. T. O. shaft.)

Air Compressor (Fig. 50)

This is used for inflating tyres and for pneumatic brakes.

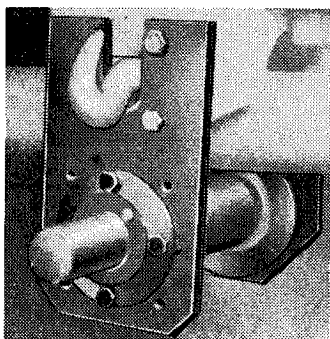


Fig. 48

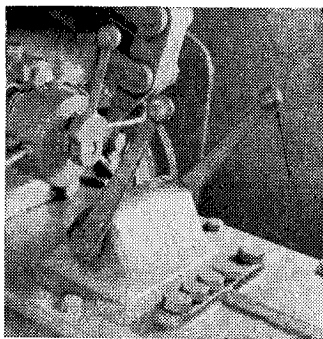


Fig. 49

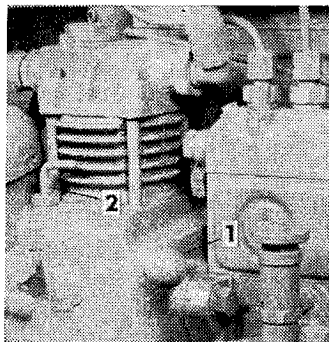


Fig. 50

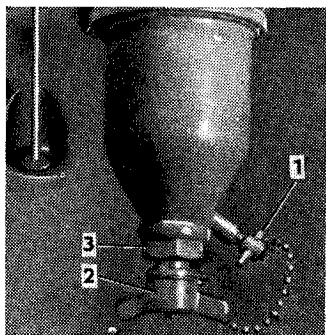


Fig. 51

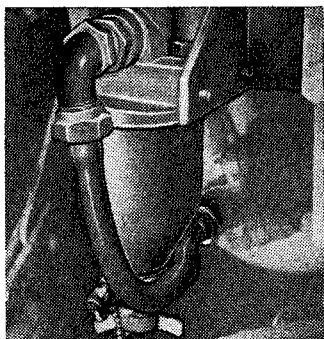


Fig. 52

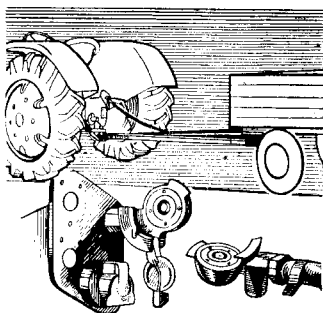


Fig. 53

Control:

Engagement is carried out at idling speed of the engine (500 r. p. m.) by the shift lever (1). When engaging or disengaging, it is necessary always to lift up lock (2).

How To Inflate Tyres

Before proceeding with tyre inflating, drain the settled impurities by unscrewing the screw (Fig. 51/1) on the inflator casing.

On **Zetor 3011** and **Zetor 4011** tractor the tyre inflator is situated on the crank case — Fig. 51, on the **Zetor 2011** tractor on the bracket of the main gear casing — Fig. 52. Having drained the impurities, unscrew the protecting nut (Fig. 51/2) and screw on the hose for inflating tyres.

Maintenance

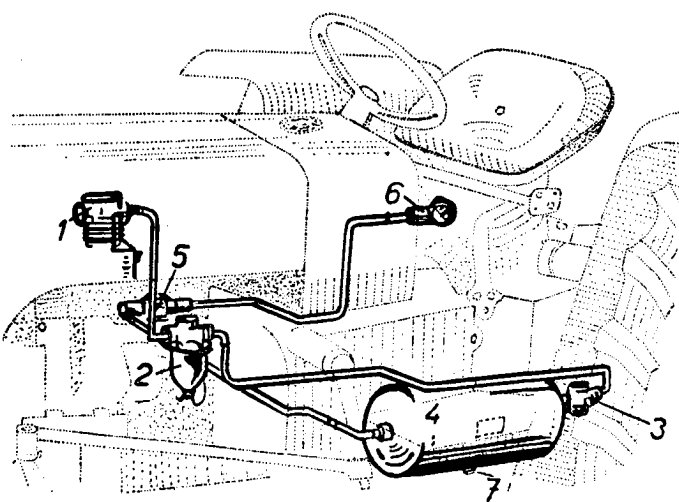
At every IInd Technical Inspection (always after 980 engine-hours) change the inflator insert as follows:

Unscrew the bottom nut (Fig. 51/3), where by the inflator

covering is loosened. Replace the insert with a new one and cleance the covering.

Pneumatic Brakes

These serve for braking the trailer. They are operated by the same pedal as the hydraulic brakes. Before connecting the trailer to the pneumatic brakes, brake the tractor by the hand brake. Connect the hose with the coupling from the trailer to the coupling head on the tractor (Fig. 53). Engage the air compressor and watch the pressure on the pressure gauge, until it reaches 6 atm. g. (85.3 p. s. i.). After having reached the operation pressure, test the function of the brakes when driving. The force for braking the trailer depends on the pressure applied to the pedal. Do not continue driving, if the braking equipment is out of order. When driving without a trailer, shift the cap of the coupling head on the bearing surface.



- 1 Air compressor
- 2 Tyre inflator
- 3 Air pressure equalizer
- 4 Air reservoir
- 5 Brake valve
- 6 Coupling head with relief vavle
- 7 Draining plug

Fig. 54

Maintenance

On the air tank is a plug (Fig. 54/7) for draining the impurities or water, which must be drained when freezing.

Adjusting of Pressure

If the pressure gauge does not indicate the prescribed operation pressure, i. e. 6 atm. g. (85.3 p. s. i.) it is necessary to adjust the pressure gauge as follows:

Blow out air from the air tank by depressing the brake pedal several times. Then engage the air compressor and wait until the pressure gauge indicates the pressure of 6 atm. g. (85.3 p. s. i.). In this moment the air pressure equalizer (Fig. 54/3) should blow out the air pressure excess through the relief valve. If the relief valve blows out the air earlier or later than at 6 atm. g. (85.3 p. s. i.) adjust the prescribed pressure by tightening or loosening the bolt (Fig. 55/1) which is secured by a nut. When the pressure decreases by 0.3 atm. (4.3 p. s. i.), the air compressor must start again to replenish the air. It is recommended to remove this defect in a specialized service repair shop. If the air is not replenished by the air compressor at a pressure decrease of 0.3 atm. (4.3 p. s. i.), have this defect repaired in a specialized service repair shop.

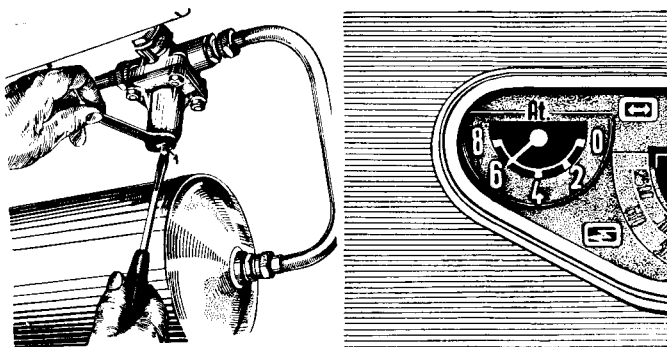


Fig. 55

Rear Tyres for Filling with Water

An increase in adhesion and tractive force of the tractor can be attained, in addition to the ballast weight, also by filling-up the tyres with water.

During the winter season fill the tyres with an anti-freezing compound.

Instruction for Preparation of the Solution

1. Calcium chloride anhydrous Ca Cl_2 should be added to water, never conversely.
2. This solution is not dangerous, but it is necessary to be cautious while treating it. Wash off the spilt drops with clean water.
3. Before filling let the solution cool down; adhere to the prescribed amount of slaked lime.
The solution must not come into touch with metal parts and the electric installation (it does not harm the inner tube valve).

The anti-freezing solution produced according to the table, must not be used for filling of the radiator.

Table of Anti-freezing Solutions for Filling Tractor Tyres

Water for production of the solution in litres (imp. gallons)	Calcium chloride anhydrous Ca Cl_2 in kgs (lbs.)	Slaked lime in kgs (lbs.)	Density of the solution at 20° C (68° F) (approxim.)	Congeeing point °C (°F) approxim.	Total volume in litres (gallons)	Total additional weight in kgs (lbs.)
45 (9.9)	11.8 (26.02)	0.21 (.46)	1.13	-18 (-4)	50 (11)	56.5 (124.58)
45 (9.9)	13.9 (30.65)	0.23 (.51)	1.18	-25 (-13)	50 (11)	58.9 (129.87)
45 (9.9)	15.4 (33.96)	0.25 (.55)	1.21	-29.5 (-21)	50 (11)	60.4 (133.18)

Water filling in rear tyres:

Zetor 2011 tractor 2× 62.5 kgs (137.81 lbs.) — tyre 10—24

Zetor 3011 tractor 2×100 kgs (220.46 lbs.) — tyre 11—28

Zetor 4011 tractor 2× 50 kgs (110.23 lbs.) — tyre 13—28

Filling Procedure

For filling can be used a gravity tank (Fig. 56) for anti-freezing solution or pressure filling (Fig. 57).

1. Ease the tyres by means of a lifting jack and turn the valve upwards.
2. Deflate the air completely and unscrew the valve air part (Fig. 58/1).
3. Screw on the water valve (Fig. 59/1) with air extension (Fig. 59/2) and slip on it the hose for the liquid. Fill up the tyre with the prescribed amount of liquid.
4. After filling-up same with the liquid screw on the valve air part (Fig. 58/1) and inflate the tyres to the prescribed pressure (Page 31).

Procedure for Draining Water from Tyres

1. Unscrew the air part of the inner tube valve. Caution, the water will squirt out!
2. When draining, turn the wheel slightly from time to time to get the valve in the upper position and turn the wheel back, thus placing the valve in its bottom position.
3. Remove the residue of water — screw on the water valve (Fig. 60) and inflate the tyre with air until water ceases to flow out from the pipe.
4. After draining the inner tube unscrew the water valve, screw back the valve air part and inflate to the prescribed pressure.

Finally, screw on the protection cap (Fig. 58/2) to the valve.

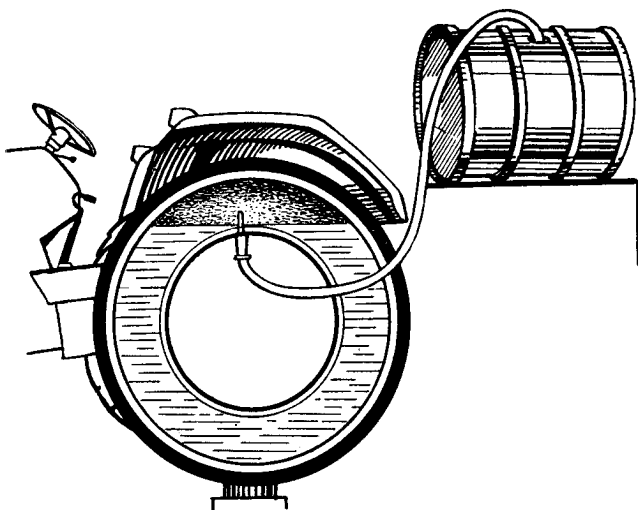


Fig. 56

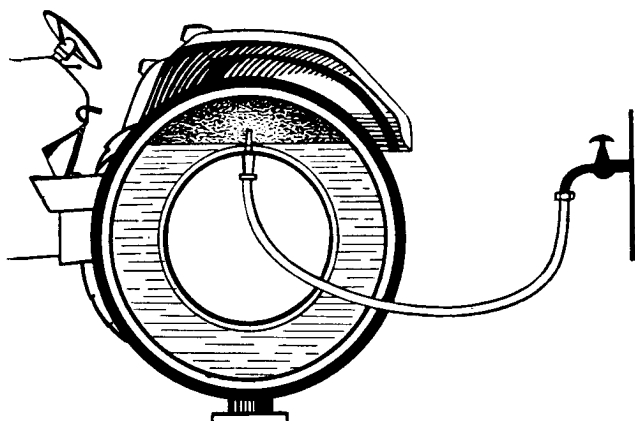


Fig. 57

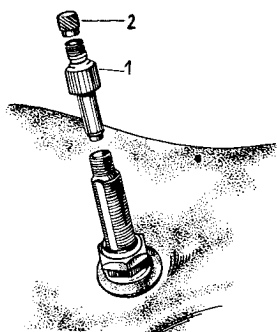


Fig. 58

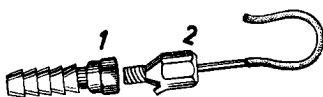


Fig. 59

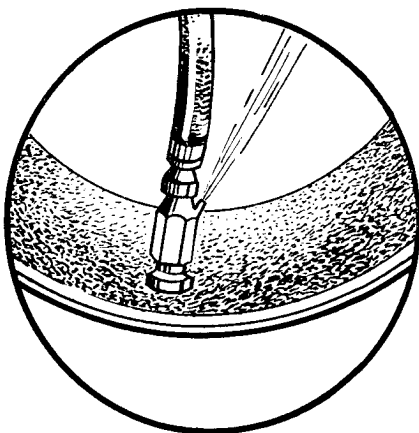


Fig. 60

Belt Pulley

This is used for driving stationary machines. It is possible to mount it on the tractor in a simple way by sliding the belt pulley body on the splines of the P. T. O. shaft and screwing it on by four screws. By rotating it through 180° , the clockwise direction changing into the counter-clockwise one.

Manipulation

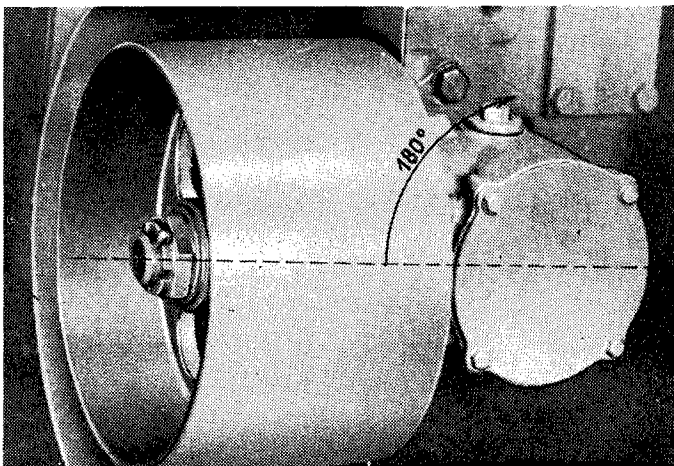
The tractor is put out of service by shifting the R. H. small lever on the gear box cover to the neutral position and securing it against moving by shaped wedges. The belt pulley revolutions can be independent on the shifted gearing or dependent through the gear box (the shifting is similar to that of the P. T. O. shaft — Page 71).

After having attained the standard belt speed, engage the 5th gear, which corresponds to the peripheral speed of the belt pulley:

Zetor 2011 — 15.3 metres p. s. (50.2 ft. p. s.)

Zetor 3011 — 15.1 metres p. s. (49.54 ft. p. s.)

Zetor 4011 — 15.1 metres p. s. (49.54 ft. p. s.)



Revolutions and Peripheral Speeds of the Belt Pulley

Zetor 3011 and Zetor 4011

Gearing engaged	Belt pulley revolutions	Peripheral speed	
1st	216 r. p. m.	2.83 m. p. s.	(9.29 ft. p. s.)
2nd	322 r. p. m.	4.22 m. p. s.	(13.85 ft. p. s.)
3rd	449 r. p. m.	5.88 m. p. s.	(19.29 ft. p. s.)
4th	680 r. p. m.	8.91 m. p. s.	(29.23 ft. p. s.)
5th	1153 r. p. m.	15.1 m. p. s.	(49.54 ft. p. s.)
reverse	282 r. p. m.	3.69 m. p. s.	(12.11 ft. p. s.)

Zetor 2011

1st	190 r. p. m.	2.99 m. p. s.	(9.81 ft. p. s.)
2nd	275 r. p. m.	4.33 m. p. s.	(14.21 ft. p. s.)
3rd	376 r. p. m.	5.91 m. p. s.	(19.39 ft. p. s.)
4th	602 r. p. m.	9.45 m. p. s.	(31 ft. p. s.)
5th	974 r. p. m.	15.3 m. p. s.	(50.2 ft. p. s.)
reverse	269 r. p. m.	4.22 m. p. s.	(13.85 ft. p. s.)

Lengthened Swinging Drawbar

This is supplied besides the normal drawbar which is included in the standard accessories of the tractor. Elongation is carried out by an extension (Fig. 61).

Vertically Adjustable Drawbar (Fig. 62)

This serves for suspending lighter drawn implements (cultivators, fertilizer sprayers and others). The necessary height can be adjusted by lifting the hydraulic power lift arms.

Vertically Adjustable Fork in Fixed Positions (Fig. 63)

This is used for attaching of towed implements, they should keep the same position. The necessary height is adjusted by shifting the tie rods which are secured by screws.

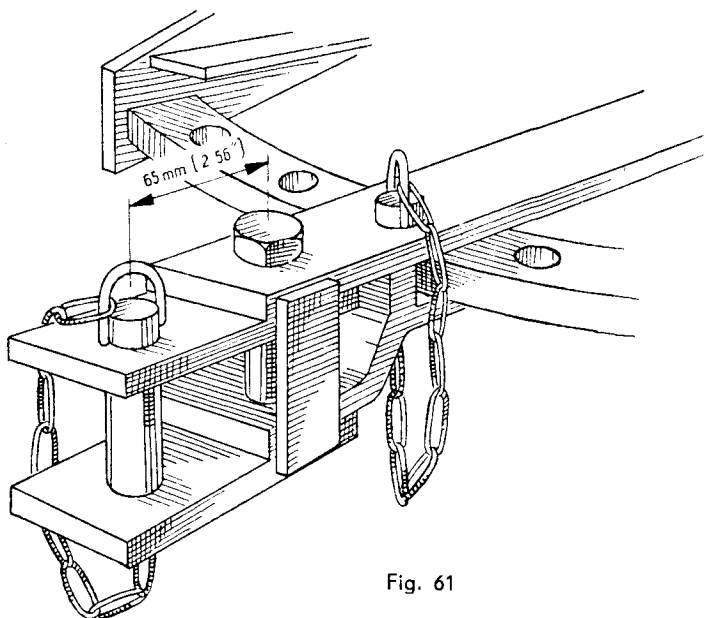


Fig. 61

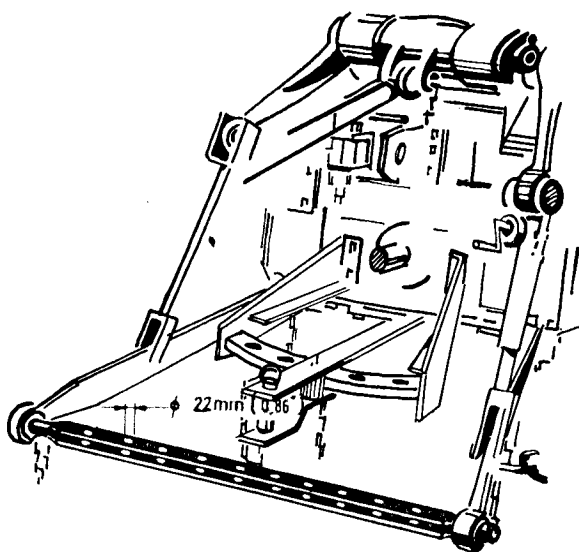


Fig. 62

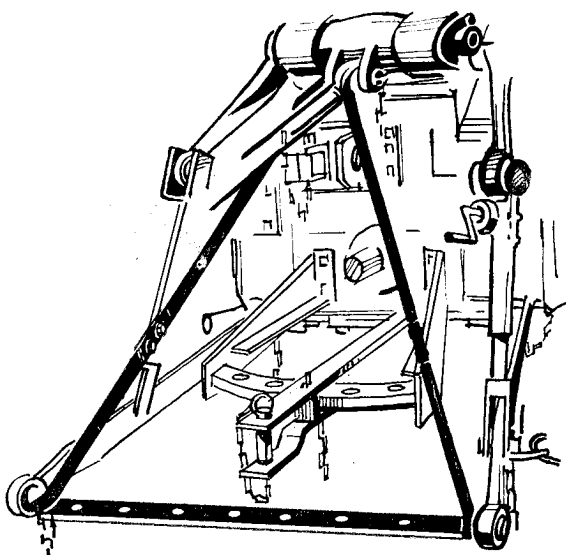


Fig. 63

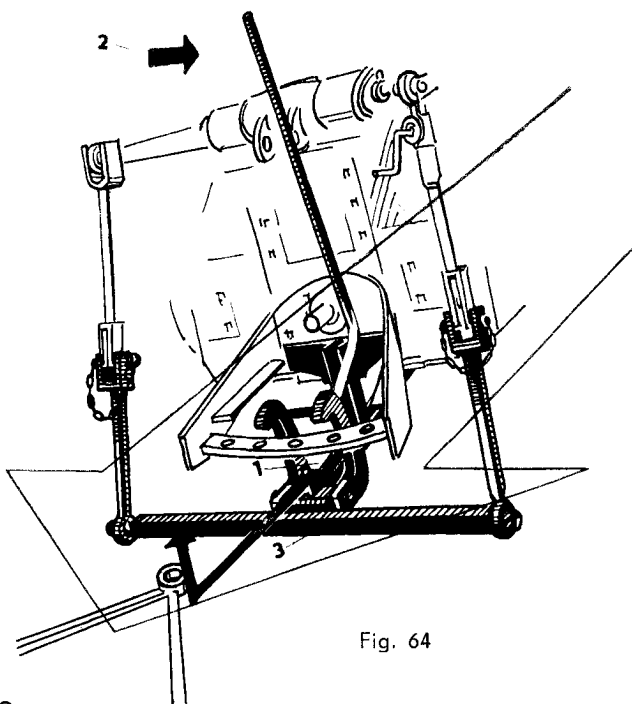


Fig. 64

Suspension for Single-axle Trailer (Fig. 64)

This serves for automatic coupling of single-axle trailers to the tractor.

Attach the single-axle trailer as follows:

Shift the hydraulic power lift lever for the inner circuit to the position "free" so that the suspension pin (1) is under the level of the trailer eye (position 1). By moving the lever (2) lift the suspension (3). Engage the reverse gear and run the tractor so that the trailer eye gets above the pin (1). Then shift the hydraulic power lift lever to lifting. Lift the suspension on the tractor and at the same time disengage the lever (2). Carry on the lifting until the suspension engages behind the trailer eye and the locking hooks engage behind the segment of the fixed bar. Then shift the hydraulic power lift lever a little backwards.

Disengage the trailer as follows:

By means of lever (2) lift the suspension (3) and lower it until pin (1) is below the level of the trailer eye. Then drive the tractor away and shift the suspension into the original position (the pin of the suspension must engage with the hole of the bar).

Front Hitch for Wagons (Fig. 65)

The hitch can be installed instead of standard hook on the following tractors (provided they are not fitted with front P.T.O. units): **Zetor 2011, Zetor 3011, Zetor 4011, Zetor 3011** with half-track conversion, **Zetor 4011** with half-track conversion. The hitch facilitates manoeuvring with trailers, their hitching to tractor, short-distance pushing, etc.

The construction of the hitch is calculated to sustain the maximum effort of 500 kp. The wiring of the front-hitched trailer (i. e. its tail and stop lights) cannot be connected to the tractor electric system.

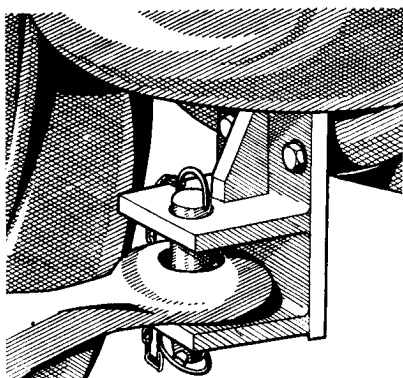


Fig. 65

Frame for Agricultural Implements (Fig. 66)

This serves for attaching of special agricultural implements which are carried either in front of the tractor or on its side between the front and rear wheel.

Double Fitting of Tyres

This is used for the **Zetor 3011** tractor on a ground of low bearing capacity. Carry out the mounting in accordance with Fig. 67.

Bottom Exhaust (Fig. 68)

This is especially suitable for work in orchards.

Lateral Exhaust (Fig. 69)

This is especially suitable for tractors with implements operated by another worker.

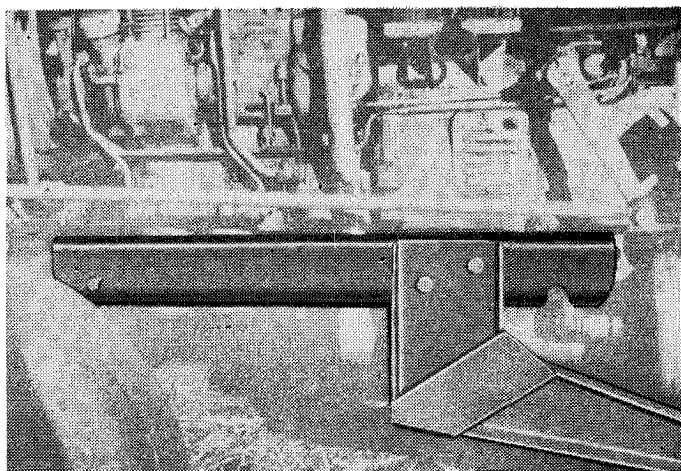


Fig. 66

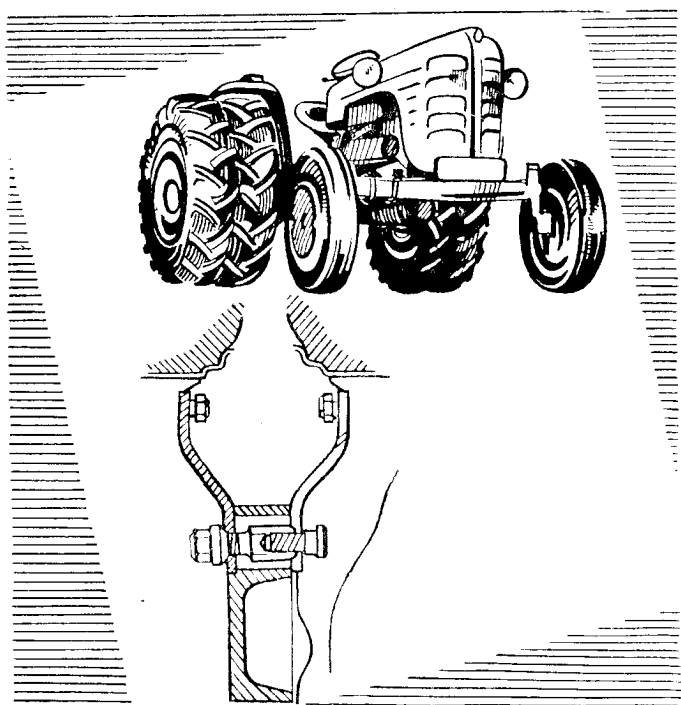


Fig. 67

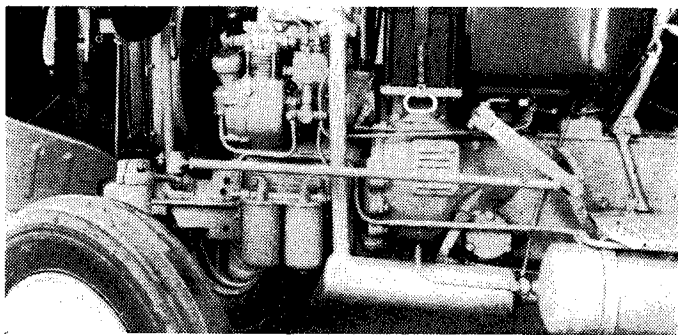


Fig. 68

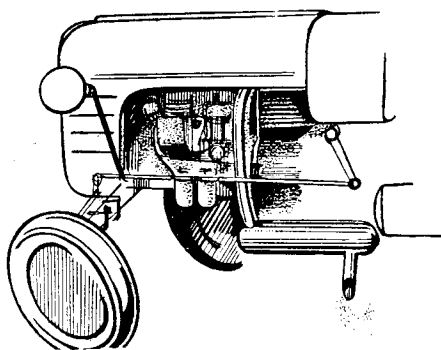


Fig. 69

Cab (Fig. 70)

This protects the driver and his mate against unfavourable weather. It is provided with sliding door. The front windscreen is provided with an electric wiper. When ploughing in cold weather, it is possible to draw a tilt over the driver's mate seat and to secure its bottom edge by means of hooklets to the holders on the rear axle housings.

The ventilation of the cab consists in (Fig. 71):

1. Lifting the shield underneath the roof over the front windscreen.
2. Removing the rear wall.
3. Lifting the roof.
4. Unhanging the windows.

The cab is glazed with safety glass which must not be replaced with a usual one (breakable one). Do not clean

the glass when it is dry, also the wiper makes scratches on a glass covered with dust and thus decreases its transparency.

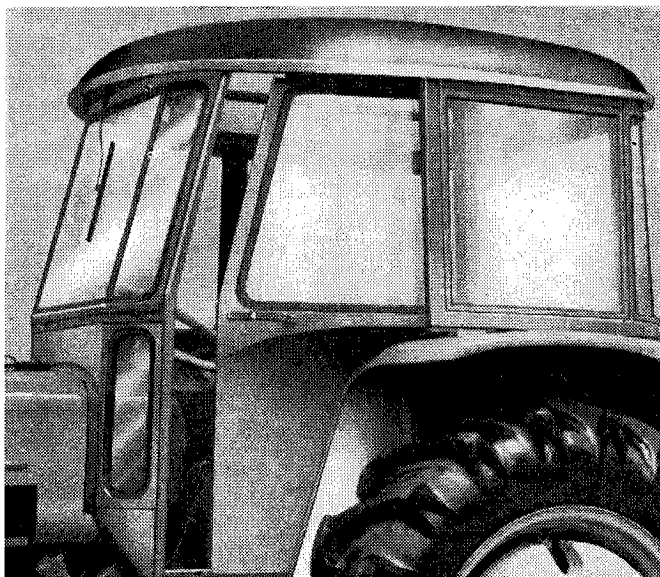


Fig. 70

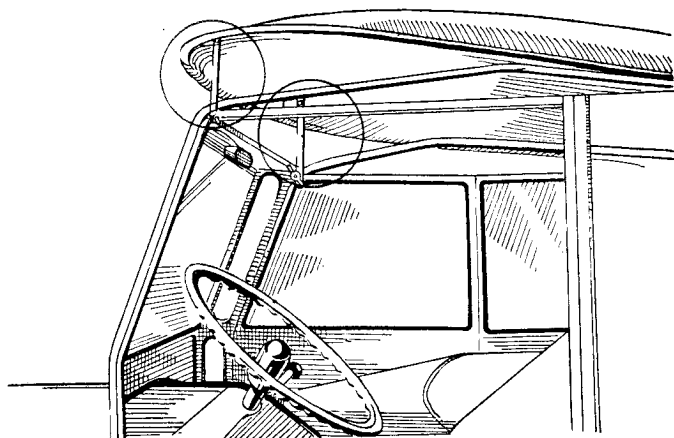


Fig. 71

Additional Ballast Weights

1. Front axle ballast weight:

- a) Front wheel ballast weights — on the **Zetor 4011** tractor are supplied as standard.
- b) Front axle ballast weights (Fig. 72) — carry out the mounting as follows:
First slide on the top bolt to the bracket and put on it the basic weight (1). Then insert the bottom bolt, apply the additional weight (2) and tighten by nuts.

On **Zetor 2011** and **Zetor 3011** tractors the front wheel ballast weights are designed only for the heaviest field work, the maximum permissible speed being 15 km p. h. (9.32 m. p. h.). It is not recommended to use the weights for road transport, where it is more suitable to use front axle ballast weights.

2. Rear wheel ballast weights (Fig. 73)

are mounted on the disks. They consist of basic weight I (1) and weight II (2). Weight I is mounted on the disk and the necessary number of pieces of weight II are mounted on it.

Spot Light for Night Ploughing (Fig. 74)

This is switched on by means of a change-over switch. By loosening the nut (1) it is possible to adjust the necessary direction of light.

Seat for the Driver's Mate (Fig. 75)

This can be used both on tractors with cab and without cab. While sitting on it, rest your left foot against the screw.



Fig. 72

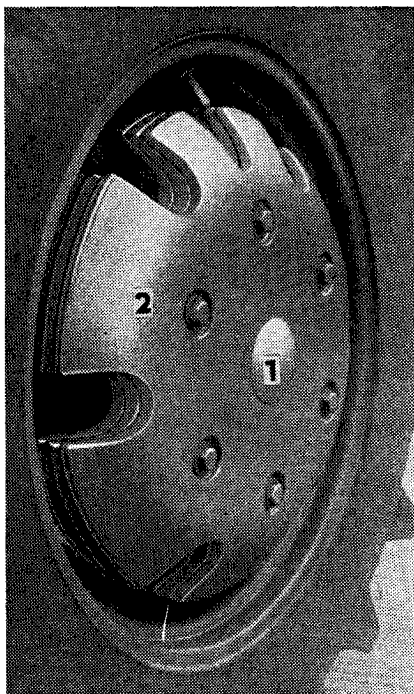


Fig. 73

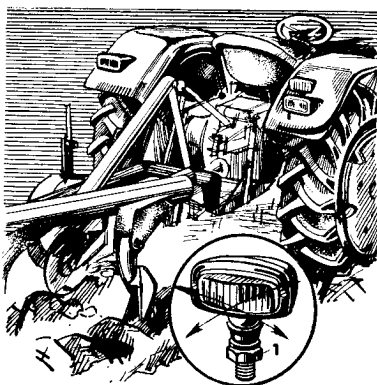


Fig. 74

Three-point Suspension of the Hydraulic Power Lift

(Fig. 76)

This serves for attaching the mounted implements. The top tie rod is adjustable within a length range of 540 to 840 mm (21.26" to 33.07"), the R. H. bottom tie rod is adjustable in height by means of the R. H. tie rod strut. The lateral swing of the tie rods is limited by lock chains. Ball joints are supplied in the following sizes:

1. The top and bottom one having a hole dia. of 25.4 mm (1").
2. On special request the top one with a dia. of 22 or 19 mm (.87" or .75").

On special request bottom one with a dia. of 22 or 28 mm (.87" or 1.1").

L. H. Telescopic Strut (Fig. 77)

This is mounted instead of the L. H. standard strut. It is used for some kinds of mounted or towed implements (e. g. sowing machines).

Outer Circuit Outlets (Fig. 78)

are used for connecting a working machine having its own hydraulic circuit, to which pressure oil from the tractor hydraulic system is supplied. Connect the pressure hoses to the outer hydraulic power lift outlet after mounting the second part of the quick-acting coupling (1,2) on the hose from the working machine.

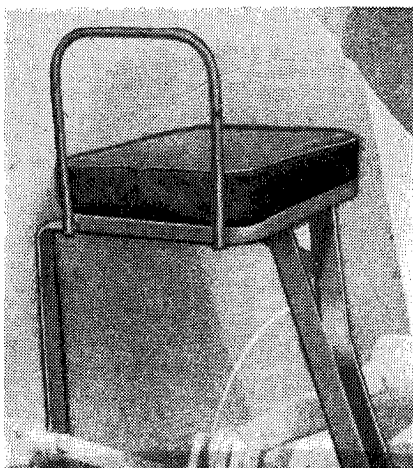


Fig. 75

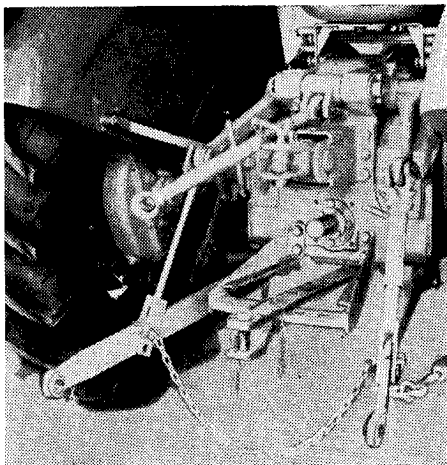


Fig. 76

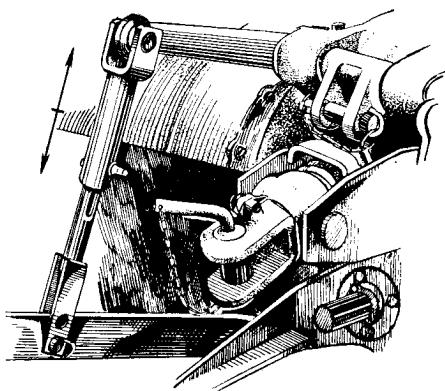


Fig. 77

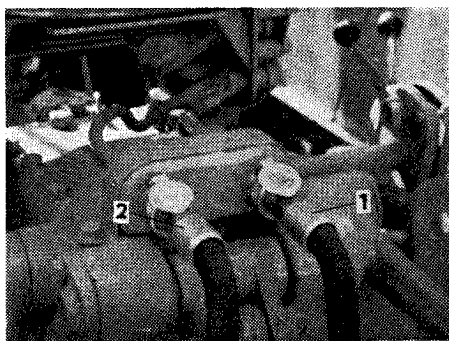


Fig. 78

Hydraulic Power Lift

The hydraulic power lift consists of two circuits (Fig. 79). The lever for the inner circuit is further away from the seat, the lever for the outer circuit is nearer to the seat.

A. The inner circuit has three positions:

Controlled one (lifted)

(Fig. 80/1)

- this is used for the transport of implements. When lowering the implements from the "lifted" position, shift the lever to the "free" position, then the implements are lowered quickly. In case of shifting the lever to the "anti-skid" position, the heavy implements are lowered slowly, the light ones are not lowered at all.

Free one (Fig. 80/2)

- the suspension is free to move within the whole range of the lift.

Soft one (anti-skid)

(Fig. 80/3)

- in this position increases the rear wheel adhesion owing to the implements. The lower we shift the lever the greater is the force relieving the implements. This

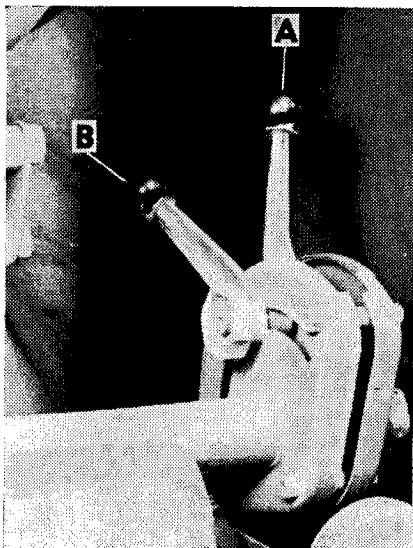


Fig. 79

position is used for ploughing, and cannot be used permanently, as overheating of oil would result.

In case of increasing of the resistance, when working with the hydraulic power lift (e. g. when ploughing), the hydraulic system is protected against damage by a protection device.

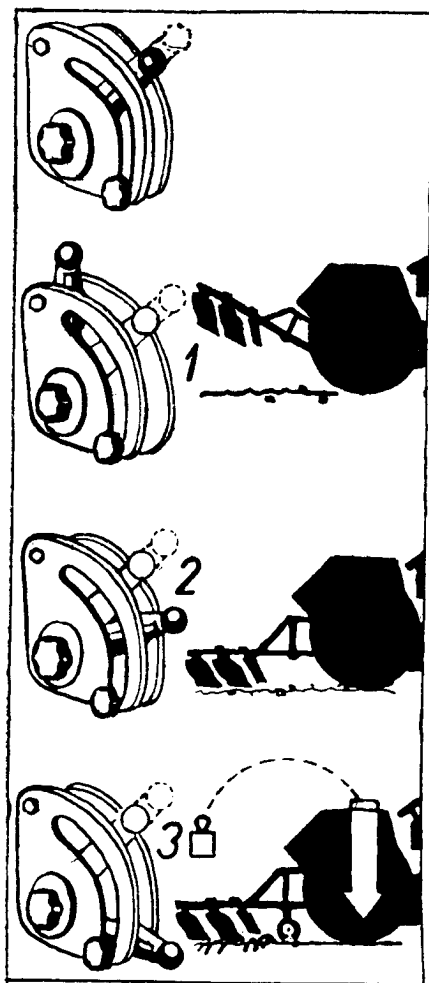


Fig. 80

B. The outer circuit has 5 positions (Fig. 81)

outlet 1 (Fig. 78/1)

— is a pressure one, being connected to single-acting cylinders (tiltable towing cars)

outlet 2 (Fig. 78/2)

— is used only for connecting double-acting cylinders (a bulldozer share and others)

neutral

— in this position the lever is held automatically (from the working position release the lever only to stop lowering or lifting of the machine working equipment)

charging (lifting)

(Fig. 81/3)

— terminal to position with double-acting cylinders

discharging (lowering)

(Fig. 81/4)

— terminal bottom position with double-acting cylinders

charging (Fig. 81/1)

— terminal top position with single-acting cylinders

discharging

(Fig. 81/2)

— intermediate position under the cylinder neutral position with single-acting cylinders

The lever must be held or locked in the position for charging or discharging. It would return otherwise to the neutral position automatically.

The described function in the individual positions of the double-acting cylinder depends on connecting the hoses to the outlet "1" or to the outlet "2".

Maintenance

In the case of the hydraulic power lift pay special attention to cleanness when changing oil in the gear box. Fill it up with the prescribed oil only, using a filler provided with a fine mesh sieve. The hydraulic power lift filling is common for the gear box and the main gear casing.

If the tractor is used under extreme conditions on very steep slopes, it is suitable to ensure the correct function of the hydraulic power lift by increasing the oil level in the gear box above the top gauge mark of the oil dipstick by 3 litres (.66 imp. gallons) in the case of the **Zetor 2011**

tractor, 4 litres (.88 imp. gallons) in the case of the **Zetor 3011** tractor and 5 litres (1.1 imp. gallons) in the case of the **Zetor 4011** tractor.

At least once a year remove the bottom cover of the hydraulic power lift and clean the pump strainer by rinsing it with Diesel oil.

Have all defects of the hydraulic power lift repaired in a specialized service repair shop.

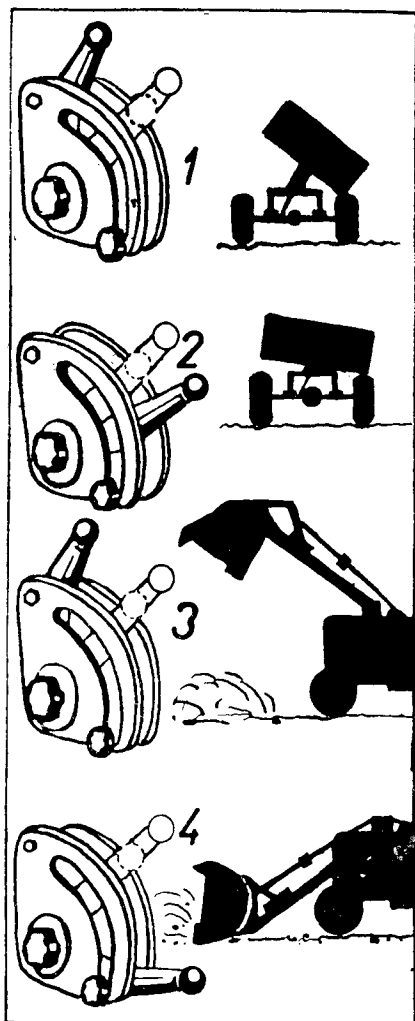


Fig. 81

Accessories Supplied with the Tractor

Set of Tools

Pcs	Designation
1	wrench 7, open, single-ended
1	wrench 9—10, open, double-ended
1	wrench 11—12, open, double-ended
1	wrench 14—17, open, double-ended
1	wrench 19—22, open, double-ended
1	wrench 24—27, open, double-ended
1	wrench 30—32, open, double-ended
1	socket wrench 9—10
1	socket wrench 14—17
1	socket wrench 19—22
1	socket wrench 24—27
1	tommy bar dia. 5 for wrench
1	tommy bar dia. 8 for wrench
1	tommy bar dia. 10 for wrench
1	tommy bar dia. 12 for wrench
1	nut brace for fitting front disks with hole dia. 19 mm (.75") and for fitting rear disks with hole dia. 27 mm (1.06")
1	tyre lever short
1	tyre lever long
1	injection pump valve remover
1	screw driver 4 mm (.16") with handle
1	screw driver 8 mm (.32") with handle
1	combination pliers 180
1	mechanical lifting jack with lever-lifting capacity 1.5 t - 3639 lbs. (lift 250 to 630 mm — 9.84" to 24.8")
1	locksmith's hammer 500 g (1.1 lbs.) with handle
1	monkey wrench 224
1	grease gun 125
1	starting crank
1	wrench 90 (for bleeding screw of hydraulic brakes)
1	hose to de-aerating screw of hydraulic brakes)
1	tyre pump with hose — not supplied if the tractor is equipped with an air compressor
1	hose for filling tyres — is supplied if the tractor is equipped with an air compressor
1	holder with needles for cleaning nozzle holes

Set of Spare Parts

Pcs	Designation
2	nozzle DOP 150 S 525 — 53 for the Zetor 2011 tractor
3	nozzle DOP 150 S 525 — 53 for the Zetor 3011 tractor
4	nozzle DOP 150 S 525 — 53 for the Zetor 4011 tractor
1	injection pipe of the 1st cylinder for the Zetor 2011 , Zetor 3011 and Zetor 4011 tractor
1	injection pipe of the II nd cylinder for the Zetor 2011 , Zetor 3011 and Zetor 4011 tractor
1	injection pipe of the III rd cylinder for the Zetor 3011 and Zetor 4011 tractor
1	injection pipe of the IV th cylinder for the Zetor 4011 tractor
1	cylinder head gasket for the Zetor 2011 tractor
2	cylinder head gasket for the Zetor 3011 tractor
3	cylinder head gasket for the Zetor 4011 tractor
4	fuse 8 amps.
1	set of bulbs
2	band
2	clip
2	split pin 5×30
1	bottom cover gasket
2	switch-key

TECHNICAL DATA OF ZETOR 2011, 3011, 4011 TRACTORS

I. Engine

Engine type	Zetor 2011—2001 Zetor 3011—3001 Zetor 4011—4001
Engine type	Diesel engine, four-stroke, with direct fuel injection
Number of cylinders	Zetor 2011—2 Zetor 3011—3 Zetor 4011—4
Bore	95 mm (3.74")
Stroke	110 mm (4.33")
Cylinder volume	Zetor 2011 — 1560 c. c. (95.16 cu. in.) Zetor 3011 — 2340 c. c. (142.74 cu. in.) Zetor 4011 — 3120 c. c. (190.32 cu. in.)
Compression ratio	17 : 1
Valve gear	O. H. V. system
Fuel injection timing	Zetor 2011:1—2 Zetor 3011:1—3—2 Zetor 4011:1—3—4—2
Fuel consumption	Zetor 2011 — 195±5 g/H. P./hr. (.43±.011 lbs./H. P./hr.) Zetor 3011 — 195±5 g/H. P./hr. (.43±.011 lbs./H. P./hr.) Zetor 4011 — 195±5 g/H. P./hr. (.43±.011 lbs./H. P./hr.)
Nominal engine speed	2000 r. p. m.
Fuel injection beginning	18° before T. D. C. (for engines Z 4001 up to the No 15 219, for engines Z 3001 up to the No 50 439 and for engines Z 2001 up to the No 3097 and from the No 3401 up to 3477) 20—21° before T. D. C. (for engines Z 4001 from the No 15 220, for engines Z 3001 from the No 50 440 and for engines Z 2001 from the No 3098 up to 3400 and from the No 3478)

Injection pressure of nozzles	160 atm. (2275.6 p. s. i.)
Injection pump	Zetor 2011 — PAL PP 2A 8P 315g Zetor 3011 — PAL PP 3A 8P 315g Zetor 4011 — PAL PP 4A 8P 115g
Engine power output governor	Zetor 2011 — PAL RV 8A 225/1000 — 2807 Zetor 3011 — PAL RV 7A 225/1000 — 2804 Zetor 4011 — PAL RV 7A 225/1000 — 2804
Transfer pump	PAL CD 1A—2206
Nozzles	PAL-DOP 150S 525—53
Air cleaner	consists of a cyclone type pre-cleaner and of the cleaner proper with oil filling
Cooling	forced-water circulation type with thermostat
Lubrication	pressure type, circulation-system with wet crank case
Capacity of cooling set	Zetor 2011 — 7.5 litres (1.65 imp. gallons) Zetor 3011 — 9.5 litres (2.09 imp. gallons) Zetor 4011 — 13 litres (2.86 imp. gallons)
Capacity of fuel tank	Zetor 2011 — 40 litres (8.8 imp. gallons) Zetor 3011 — 40 litres (8.8 imp. gallons) Zetor 4011 — 80 litres (15.4 imp. gallons)
Oil filling in engine	Zetor 2011 — 6 litres (1.32 imp. gallons) Zetor 3011 — 8 litres (1.76 imp. gallons) Zetor 4011 — 11 litres (2.42 imp. gallons)
Oil filling in gear box	Zetor 2011 — 15 litres (3.3 imp. gallons) Zetor 3011 — 19 litres (4.18 imp. gallons) Zetor 4011 — 25 litres (5.5 imp. gallons)
when working with hydraulic power lift in hilly ground	Zetor 2011 — 17 litres (3.74 imp. gallons) Zetor 3011 — 23 litres (5.06 imp. gallons) Zetor 4011 — 31 litres (6.82 imp. gallons)

when working
with hydraulic
power lift in
mountainous
ground

Zetor 2011 — 19 litres (4.18 imp. gallons)
Zetor 3011 — 27 litres (5.94 imp. gallons)
Zetor 4011 — 37 litres (8.14 imp. gallons)

Design weight
of engine
(without
accessories)

Zetor 2011 — 230 kgs (507.1 lbs.)
Zetor 3011 — 300 kgs (661.39 lbs.)
Zetor 4011 — 340 kgs (749.57 lbs.)

II. Clutch

double-purpose one, consisting of two friction disks viz.
of a disk for tractor travel and a disk for driving the
P. T. O. shaft.

III. Gear Box

There are 10+2 gears, i. e. 5 road gears and 1 reverse
gear, 5 reduced gears and 1 reduced reverse gear.

Speed of the tractor with tyres 10—24
(Zetor 2011):

Ist gear	4.2 km. p. h.	(2.61 m. p. h.)	1.02 km. p. h.	(.63 m. p. h.)
IInd gear	6.1 km. p. h.	(3.79 m. p. h.)	1.48 km. p. h.	(.92 m. p. h.)
IIIrd gear	8.3 km. p. h.	(5.15 m. p. h.)	2.03 km. p. h.	(1.26 m. p. h.)
IVth gear	13.3 km. p. h.	(8.26 m. p. h.)	3.24 km. p. h.	(2.01 m. p. h.)
Vth gear	21.6 km. p. h.	(13.41 m. p. h.)	5.24 km. p. h.	(3.25 m. p. h.)
reverse	5.94 km. p. h.	(3.69 m. p. h.)	1.45 km. p. h.	(.9 m. p. h.)

Speed of the tractor with tyres 11—28
(Zetor 3011):

Ist gear	4.77 km. p. h.	(2.96 m. p. h.)	1.12 km. p. h.	(.7 m. p. h.)
IInd gear	7.1 km. p. h.	(4.4 m. p. h.)	1.66 km. p. h.	(1.02 m. p. h.)
IIIrd gear	9.9 km. p. h.	(6.15 m. p. h.)	2.31 km. p. h.	(1.43 m. p. h.)
IVth gear	15.2 km. p. h.	(9.44 m. p. h.)	3.55 km. p. h.	(2.2 m. p. h.)
Vth gear	25.4 km. p. h.	(15.77 m. p. h.)	5.93 km. p. h.	(3.68 m. p. h.)
reverse	6.24 km. p. h.	(3.88 m. p. h.)	1.46 km. p. h.	(.91 m. p. h.)

Speed of the tractor with tyres 13—28
(Zetor 4011):

Ist gear	4.82 km. p. h.	(2.99 m. p. h.)	1.13 km. p. h.	(.7 m. p. h.)
IInd gear	7.17 km. p. h.	(4.45 m. p. h.)	1.67 km. p. h.	(1.04 m. p. h.)
IIIrd gear	9.9 km. p. h.	(6.2 m. p. h.)	2.34 km. p. h.	(1.45 m. p. h.)
IVth gear	15.34 km. p. h.	(9.53 m. p. h.)	3.59 km. p. h.	(2.23 m. p. h.)
Vth gear	25.6 km. p. h.	(15.89 m. p. h.)	5.99 km. p. h.	(3.72 m. p. h.)
reverse	6.29 km. p. h.	(3.91 m. p. h.)	1.47 km. p. h.	(.91 m. p. h.)

IV Steering

of self-locking type

V. Brakes

Foot operated, shoe type, hydraulically controlled, operated by one pedal, with change-over device which makes it possible to brake each wheel separately.

Lining dia.	220 mm (8.66")
Lining width	60 mm (2.36")

Hand operated, band type, dia.	234 mm (9.21")
Lining width	50 mm (1.97")

VI. Drive

The standard speed of the P. T. O. shaft at the engine speed of 2000 r. p. m. is 541.6 r. p. m.; **Z 2011** — 545 r. p. m.

The speed of the P. T. O. shaft driven through a gear box at engine speed of 2000 r. p. m. is the same for normal and reduced speeds

	Zetor 2011	Zetor 3011—4011
Ist	199.9 r. p. m.	227.7 r. p. m.
IInd gear	289.7 r. p. m.	338.8 r. p. m.
IIIrd gear	395.3 r. p. m.	472.1 r. p. m.
IVth gear	632 r. p. m.	724.7 r. p. m.
Vth gear	1023.3 r. p. m.	1210.5 r. p. m.
reverse	282.4 r. p. m.	297.2 r. p. m.
Number of revolutions of the P. T. O. shaft for driving a trailer — reduced speeds	Zetor 2011 — 11650 revolutions per km. for tyre 10—24 Zetor 3011 — 12247 revolutions per km. for tyre 11—28 Zetor 4011 — 12122 revolutions per km. for tyre 13—28	

VII. Belt Pulley

Belt pulley dia: Zetor 2011 — dia. 300 mm (11.81"), width 120 mm (4.72")
Zetor 3011 — dia. 250 mm (9.84"),
Zetor 4011 width 150 mm (5.91")

The standardized belt speed of 15.3 metres p. sec. (50.2 ft. p. s.) is attained when driving the belt pulley in the Vth gear.

Speed of the belt pulley through gear box

	Z e t o r 2011	Z e t o r 3011—4011
Ist gear	190 r. p. m.	216 r. p. m.
II nd gear	275 r. p. m.	322 r. p. m.
III rd gear	376 r. p. m.	449 r. p. m.
IV th gear	602 r. p. m.	680 r. p. m.
V th gear	974 r. p. m.	1153 r. p. m.
reverse	269 r. p. m.	282 r. p. m.

Belt pulley speed for the independent drive of the P. T. O. shaft (540 r. p. m. of the P. T. O. shaft)

Zetor 2011 — 519 r. p. m.
Zetor 3011 — 516 r. p. m.
Zetor 4011 — 516 r. p. m.

VIII. Hydraulic Power Lift

Working pressure 120 atm. g. (1706.78 p. s. i.)

Pump output at
1200 r. p. m. and
at a pressure of
120 atm. g. (1706.78 p. s. i.) - 20 litres p. m. (4.4 imp. gallons)

Lifting force on the end
of the tie rod

Zetor 2011 — 750 kg (1654 lbs.)
Zetor 3011 — 1000 kg (2204 lbs.)
Zetor 4011 — 1200 kg (2646 lbs.)

IX. Electrical Equipment

Dynamo	Zetor 2011 — 12 V, 130 W Zetor 3011 — 12 V, 130 W Zetor 4011 — 12 V, 150 W
Starter	Zetor 2011 — 12 V, 1.8 H. P. Zetor 3011 — 12 V, 4 H. P. Zetor 4011 — 12 V, 4 H. P.
Storage battery	Zetor 2011 — 12 V, 6 SST 85 a. h. Zetor 3011 — 2×6 V, 3 SST 120 a. h. Zetor 4011 — 2×12 V, 6 SST 85 a. h.

X. Tyre Sizes

Front tyres	Zetor 2011: 5.50—16 Zetor 3011: 6.00—16 Zetor 4011: 6.00—18
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Rear ploughing tyres Zetor 2011: 10—24
 Zetor 3011: 11—28
 Zetor 4011: 13—28

XI. Fuel Consumption

The fuel consumption	Zetor 2011 —
when ploughing to a	4 litres p. h. (.88 imp. gallons)
depth of 25 cm (9.84")	Zetor 3011 —
in medium heavy soil	6 litres p. h. (1.32 imp. gallons p. h.)
with a three-share	Zetor 4011 —
mounted plough	8.7 litres p. h. (1.91 imp. gallons p. h.)

XII. Main Dimensions

Zetor 2011	ploughing design (tyres 10—24)	cultivation design (tyres 8—28)
Length	2980 mm (117.32")	
Width (rear wheel track being 1350 mm — 53.14")	1620 mm (63.83")	1585 mm (62.45")
Height up to upper rim of steering wheel	1455 mm (57.28")	1555 mm (61.22")
Road clearance	360 mm (14.17")	460 mm (18.11")
Height of swinging drawbar with fork (bottom border)	310 mm (12.20")	410 mm (16.14")
Wheel base	1745 mm (68.70")	1600 mm (62.99")
Front wheel track adjustable	1275 mm—1575 mm—1725 mm (50.18"—62"—67.91")	
Rear wheel track adjustable by 75 mm (2.95")	1275 mm—1800 mm (50.18"—70.86")	
Centre of gravity height above ground	620 mm (24.40")	750 mm (29.53")
Minimum turning radius (without braking one wheel)	3.2 m (125.98")	3 m (118.11")
Passage clearance when turning (without braking one wheel)	6.6 m (259.84")	6.4 m (253.96")

Zetor 2011	ploughing design (tyres 10—24)	cultivation design (tyres 8—28)
Lateral stability of tractor (with special accessories and water in tyres, rear wheel track being 1350 mm — 53.14")	$\alpha = 47^\circ$	$\alpha = 42^\circ$
Front wheel ballast weights 2 pcs 45 kg (99.2 lbs.) each	90 kg (198.42 lbs.)	
Rear wheel basic ballast weights 2 pcs 34 kg (74.97") each 4 pcs 38 kg (83.79") each	68 kg (149.94 lbs.) 152 kg (335.16 lbs.)	
Water filling in rear tyres 2×62.5 kg (2×137.81 lbs.)	125 kg (275 lbs.)	
Weight of tractor stand- dard design without special accessories	1300 kg (2866 lbs.)	1260 kg (2778 lbs.)
including: front axle load	550 kg (1213 lbs.)	480 kg (1058 lbs.)
rear axle load	750 kg (1654 lbs.)	780 kg (1720 lbs.)
Weight of tractor with special accessories and with water in tyres	1880 kg (4145 lbs.)	
including: front axle load	640 kg (1411 lbs.)	
rear axle load	1240 kg (2734 lbs.)	

Zetor 2011	ploughing design (tyres 10—24)	cultivation design (tyres 8—28)
Output		
Tractive force at suspension, with additional ballast weights, on dry concrete roadway	1100 kp (2425 lbs.)	
Zetor 3011	(tyres 11—28)	(tyres 9—32)
Length	3016 mm (118.83")	
Width (rear wheel track being 1350 mm — 53.14")	1652 mm (65.50")	1642 mm (64.64")
Height up to upper rim of steering wheel	1525 mm (60.03")	1635 mm (64.37")
Road clearance	400 mm (15.75")	510 mm (20.07")
Height of swinging drawbar with fork (bottom border)	350 mm (13.78")	460 mm (18.11")
Wheel base	1918 mm (75.55")	1770 mm (69.68")
Front wheel track adjustable	1275 mm—1575 mm—1725 mm (50.18"—62"—67.91")	
Rear wheel track adjustable by 75 mm (2.95")	1275 mm—1800 mm (50.18"—70.86")	
Centre of gravity height above ground	677 mm (26.65")	784 mm (30.86")
Minimum turning radius (with braking one wheel)	2.7 metres (106.29")	2.6 metres (102.36")
Passage clearance when turning (with braking one wheel)	5.6 metres (220.64")	5.4 metres (212.59")

Zetor 3011	ploughing design (tyres 11—28)	cultivation design (tyres 9—32)
Lateral stability of tractor with special accessories and water in tyres, rear wheel track being 1360 mm (53.58")	$\alpha = 45^\circ$	$\alpha = 40^\circ$
Tractor height, cab including	2150 mm (84.65")	2260 mm (88.97")
Front wheel ballast weights 2 pcs 45 kg (99.2 lbs.) each	90 kg (198.42 lbs.)	
Front axle bracket weights 6 pcs	100 kg (220.46 lbs.)	
Rear wheel basic ballast weights 2 pcs 50 kg (110.23 lbs.) each	100 kg (220.46 lbs.)	
6 pcs 40 kg (88.19 lbs.) each	240 kg (529 lbs.)	
Water filling in rear tyres 2×100 kg (2×220.46 lbs.)	200 kg (440.92 lbs.)	
Weight of tractor of standard design without special accessories	1480 kg (3263 lbs.)	1440 kg (3175 lbs.)
Including: front axle load	650 kg (1433 lbs.)	650 kg (1433 lbs.)
rear axle load	830 kg (1830 lbs.)	790 kg (1742 lbs.)
Weight of tractor with special accessories, with water in tyres, cab and front mud guards	2590 kg (5710 lbs.)	

Zetor 3011	ploughing design (tyres 11—28)	cultivation design (tyres 9—32)
Including: front axle load	910 kg (2007 lbs.)	
rear axle load	1680 kg (3704 lbs.)	

Output

Tractive force at suspension, with additional ballast weights, on dry concrete roadway

1500 kp
(3307 lbs.)

Zetor 4011	ploughing design (tyres 13—28)
Length	3250 mm (127.95")
Width (rear wheel track being 1425 mm — 56.1")	1790 mm (70.47")
Height up to upper rim of steering wheel	1620 mm (63.77")
Road clearance	436 mm (17.16")
Height of swinging drawbar with fork (bottom border)	500 mm (19.68")
Wheel base	2125 mm (83.36")
Front wheel track — adjustable	1350 mm (53.14") to 1750 mm (68.89")
Rear wheel track — adjustable by 75 mm (2.95")	1425 mm (56.10") to 1800 mm (70.86")
Centre of gravity height above ground	760 mm (29.9")
Tractor height including cab	2230 mm (87.78")
Front axle bracket weights 6 pcs	100 kg (220.46 lbs.)
Rear wheel basic ballast weights	
2 pcs 50 kg (110.23 lbs.) each	100 kg (220.46 lbs.)
6 pcs 40 kg (88.19 lbs.) each	240 kg (529.1 lbs.)

Zetor 4011	ploughing design (tyres 13—28)
Water filling in rear tyres 2×150 kg (330.69 lbs.)	300 kg (661.39 lbs.)
Weight of tractor of standard design without special accessories	1965 kg (4332 lbs.)
including: front axle load	850 kg (1874 lbs.)
rear axle load	1115 kg (2458 lbs.)
Weight of tractor with special accessories, with cab, front mud guards and water in tyres	3015 kg (6647 lbs.)
including: front axle load	1000 kg (2205 lbs.)
rear axle load	2015 kg (4442 lbs.)
O u t p u t	
Tractive force at suspension, with additional ballast weight, on dry concrete roadway	2100 kp (4630 lbs.)

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Lubrication Chart

No.	Lubrication point	Procedure	Grade summer - winter SAE SAE		Zetor 2011	Zetor 2011	Zetor 4011
Lubrication after 8 to 10 operating hours (daily attendance)							
13	Engine	Inspection	40	20 W	6 litres (1.32 imp. gallons)	8 litres (1.76 imp. gallons)	11 litres (2.42 imp. gallons)
16	Air cleaner	Inspection	40	20 W	1.3 litres (.29 imp. gallons)	1.3 litres (.29 imp. gallons)	1.3 litres (.29 imp. gallons)
Lubrication after 70 operating hours (1st TI)							
4 15	Engine	Change	40	20 W	6 litres (1.32 imp. gallons)	8 litres (1.76 imp. gallons)	11 litres (2.42 imp. gallons)
5	Gear box	Inspection	40	20 W	15 litres (3.3 imp. gallons) 17 litres (3.74 imp. gallons)	19 litres (4.18 imp. gallons) 23 litres (5.06 imp. gallons)	25 litres (5.5 imp. gallons) 31 litres (6.82 imp. gallons)
					when working with hydraulic power lift in hilly ground		
					19 litres (4.18 imp. gallons)	27 litres (5.94 imp. gallons)	37 litres (8.14 imp. gallons)
					when working with hydraulic power lift in mountainous ground		
6	Outer gearing portal housing	Inspection	40	20 W	2.5 litres (.55 imp. gallons)	2.5 litres (.55 imp. gallons)	2.5 litres (.55 imp. gallons)
12	Injection pump	Inspection	40	20 W	0.1 litres (.02 imp. gallons)	0.16 litres (.035 imp. gallons)	0.2 litres (.044 imp. gallons)
16	Air cleaner	Change	40	20 W	1.3 litres (.29 imp. gallons)	1.3 litres (.29 imp. gallons)	1.3 litres (.29 imp. gallons)
1	Water pump	To be turned by one thread	A 4				
11	Clutch disengaging sleeve	To be filled up	40	20 W	0.06 litres (.013 imp. gallons)	0.06 litres (.013 imp. gallons)	0.06 litres (.013 imp. gallons)
	Front axle pin	To be greased thoroughly	A 00		0.1 kg (.22 lbs.)	0.1 kg (.22 lbs.)	0.1 kg (.22 lbs.)
3	Front axle vertical pins	To be greased thoroughly	A 00		0.04 kg (.088 lbs.)	0.04 kg (.088 lbs.)	0.04 kg (.088 lbs.)
7	Housing of hydraulic power lift suspension	To be greased thoroughly	A 00		0.03 kg (.066 lbs.)	0.03 kg (.066 lbs.)	0.03 kg (.066 lbs.)
Lubrication after 245 operating hours (IInd TI)							
4 15	Engine	Flushing with	B1 or B2		4 litres (.88 imp. gallons)	6 litres (1.32 imp. gallons)	9 litres (1.98 imp. gallons)
Lubrication after 980 operating hours (IVth TI)							
5 8	Gear box		B1 or B2		10 litres (2.2 imp. gallons)	13 litres (2.86 imp. gallons)	15 litres (3.3 imp. gallons)
6	Outer gearing portal housing	Change	40	20 W	2.5 litres (.55 imp. gallons)	2.5 litres (.55 imp. gallons)	2.5 litres (.55 imp. gallons)
2	Front wheel hubs	To be filled up	AV 2				
Lubrication after 2000 operating hours							
12 14	Injection pump	Change	40	20 W	0.1 litres (.02 imp. gallons)	0.16 litres (.035 imp. gallons)	0.2 litres (.044 imp. gallons)
9 10	Steering	Change	40	20 W	1.6 litres (.35 imp. gallons)	1.6 litres (.35 imp. gallons)	1.6 litres (.35 imp. gallons)

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