



**GOLDONI S.p.A.
FABBRICA MACCHINE AGRICOLE**

MAXTER



**GOLDONI S.p.A.
FABBRICA MACCHINE AGRICOLE**

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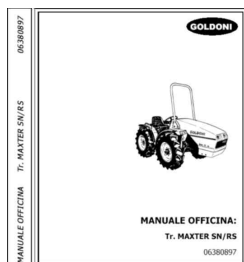
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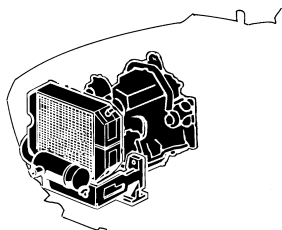
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INTRODUCTION

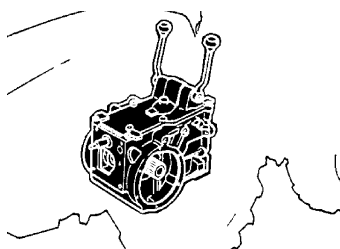




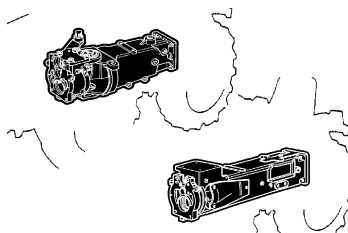
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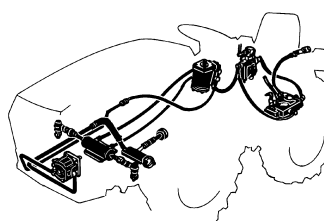
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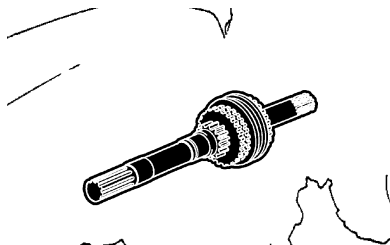


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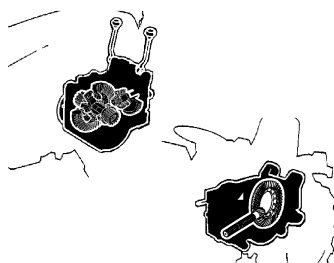
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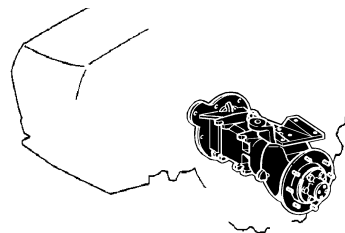
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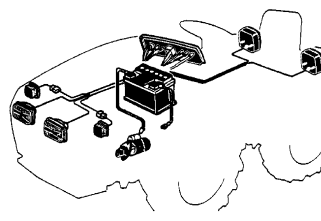
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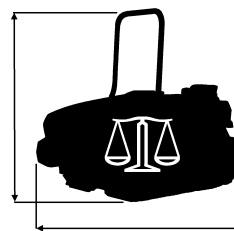
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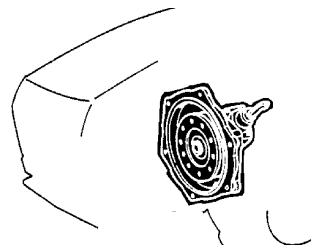
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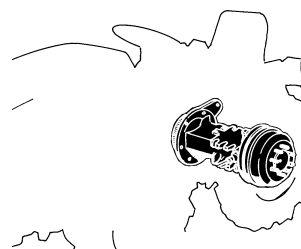
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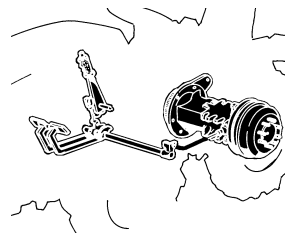
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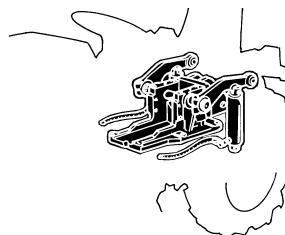
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SAFETY NOTES



Failure to comply with the safety instructions is the cause of the majority of accidents in workshops.

The machines are designed and built to make repairs and maintenance work easy. However, this is not enough to prevent accidents from happening.

Only a careful mechanic who complies with the following safety regulations is the best safeguard for both himself and others.

1. Carefully comply with the procedures described in the manual.
2. Proceed in the following way before carrying out maintenance work or repairs of any type:
 - Lower any implements to the ground.
 - Stop the engine and remove the key.
 - Disconnect the ground cable of the battery.
 - Affix a card to the steering position, prohibiting any controls to be used.
3. Make sure that all rotating parts on the machine (power take-offs, universal couplings, pulleys, etc.) are well protected.
4. Do not wear unbuttoned or loose objects and garments that could become caught up by moving parts of the machine.
Depending on the jobs required, wear approved safety clothing such as: a helmet, footwear, gloves, dungarees and protective goggles.
5. Do not work on the machine when persons are seated at the controls unless these persons are trained and are helping with the operations required.
6. Never inspect or work on a machine with the engine running unless specifically told to do so.
In this case, ask for help from an operator seated in the driving seat and who keeps the mechanic under visual control.
7. Never have the machine or implements connected operated from any position other than the driving one.
8. Before removing caps and covers, make sure that there are no objects in your pockets that could drop into open housings. The same care should also be taken of the tools used.

9. Do not smoke near inflammable liquids or products.
10. To deal with emergency cases, it is essential:
 - To keep an efficient extinguisher and a first-aid kit ready to hand.
 - To keep the telephone numbers of the Hospital casualty department and fire-brigade near the telephone.
11. When the brakes are rendered inactive for maintenance requirements, the machine must be kept under control by means of adequate blocking systems.
12. When towing, use the coupling points provided by the manufacturer and make sure that the towing attachments are correctly fixed.
Keep well away from bars or ropes when they pull tight for towing requirements.
13. When a machine is being loaded on to a means of transport, take great care to ensure that the machine itself is securely fastened.
Loading and unloading operations must always be carried out with the transport means on flat ground.
14. Use hoists or other equipment to lift or move heavy parts. Make sure that the lifting chains, ropes or belts used are efficient.
Have all bystanders move away from the area.
15. For safety and toxicity reasons, never pour gasoline or diesel fuel in large, open vessels. Never use these products as detergents. Only use the proper non-inflammable and non-toxic products available on the market.
16. Wear goggles with side guards when compressed air must be used to clean parts.
17. Before starting an engine in a closed place, make sure that the gas exhaust device has been routed outdoors.
If this device is unavailable, make sure that the room is adequately and continuously ventilated.
18. Operate with care and take all the necessary precautions when work must be carried underneath the machine outside the workshop. Choose flat ground, block the machine in an adequate way and wear protective garments.
19. Oil stains and puddles of water must be cleaned from the work area.
20. Do not throw rags dirtied with oil or grease into heaps as they could represent a fire hazard. These rags must be thrown into metal containers which must be kept tightly closed.
21. Wear approved protective garments such as a helmet, goggles, gloves safety footwear and special dungarees when using grinders, lapping machines and similar.

22. Wear approved protective garments such as a helmet, dark glasses, gloves, safety footwear, leg guards and special dungarees when carrying out welding work. If help from an assistant is required, he must also wear such garments.
23. Avoid creating (and therefore inhaling) dust when work is carried out on parts containing asbestos fiber.

The new technologies have allowed asbestos to be eliminated from almost all processes in which it was previously used, but the above mentioned precaution still remains valid since the parts the mechanic may encounter during work on the machines may have been produced prior to the new standards. When working on such parts, avoid using compressed air and do not carry out brushing or grinding work. Always wear a protective mask on these jobs. Any spare parts we send that contain asbestos fiber will bear the relative indication.
24. Unscrew the radiator plug very slowly to allow the pressure to be relieved from the system.

The expansion plug must also be treated with the same care and attention when installed.
25. Do not use flames or create sparks near the battery as this could lead to explosions. Do not smoke.
26. Never test the battery charge by making jumpers between the terminals with metal objects.
27. To prevent injuries from battery acid:
 - Wear rubber gloves and protective goggles.
 - Top up in a well ventilated place and do not inhale the fumes as they are toxic.
 - Prevent the electrolyte from spilling or dripping.
 - Only charge batteries in a well ventilated place.
 - Do not charge frozen batteries as they can explode.
28. Fluid under pressure that leaks from a tiny hole can be almost invisible but have the force to penetrate under the skin, causing serious infection or dermatitis.

Never use the hands to check for leaks from the circuit. Use a piece of cardboard or wood.
29. Check the pressure in hydraulic circuits with the proper instruments.

30. ***THE SAFETY STRUCTURES OF THE TRACTOR (FRONT AND REAR ROLL-BARS, PTO SHIELDS, NETS GUARDING THE SPINNING PARTS, SUPPORTS AND TOW HOOKS, SEAT, ETC.) HAVE BEEN SUBJECTED TO APPROVAL TESTS AND AS SUCH, HAVE BEEN CERTIFIED; THESE STRUCTURES MAY NOT BE MODIFIED OR USED FOR PURPOSES OTHER THAN THOSE ENVISAGED BY THE MANUFACTURER, AS-SUCH ACTION COULD VOID THE RELATIVE APPROVAL.***

MACHINE IDENTIFICATION



Fig. 1



Fig. 2

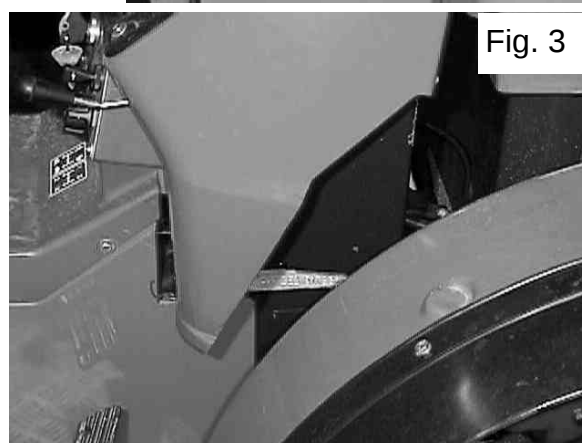


Fig. 3

State the machine identification data each time you need to contact our assistance service for technical explanations or if spare parts are required.
These data are:

1. Type and model of the machine.
2. Chassis and serial number.

The type of machine, serial and chassis numbers are to be found on the identification tag of fig. 1, attached to all machines, or are stamped on the metal data plate of fig. 2, affixed to the machine in an easily accessible place.

The chassis number is also stamped on the actual chassis itself, as shown in fig. 3. Consult the manuals supplied by the respective manufacturers for the engine ratings.

UPDATES

Future updates of the manual will be made by reprinting the sections describing the assemblies or parts of them involved in the modifications or additions, which will then be sent to your offices.

You shall then update the manual by substituting the modified parts.

The modified parts can be discarded since the updates will illustrate the operations required prior to and after the modification plus the work needed if conversion is obligatory.

WARNING

The words "*right*", "*left*", "*front*" and "*rear*" used in the descriptions of the interventions refer to the direction in which the machine or implements are driven.

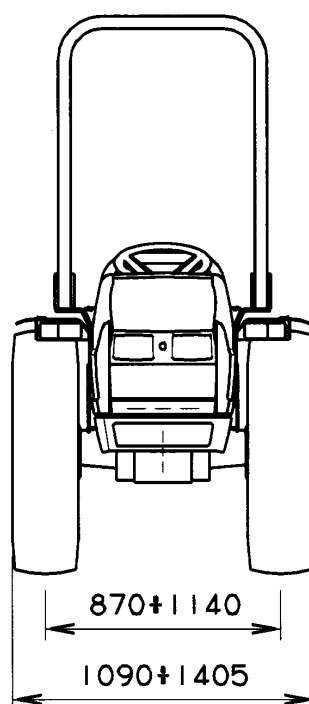
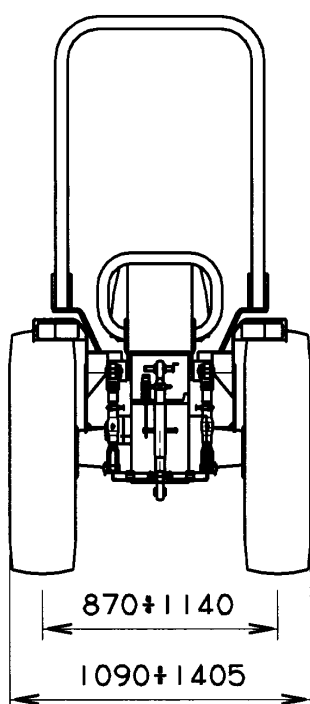
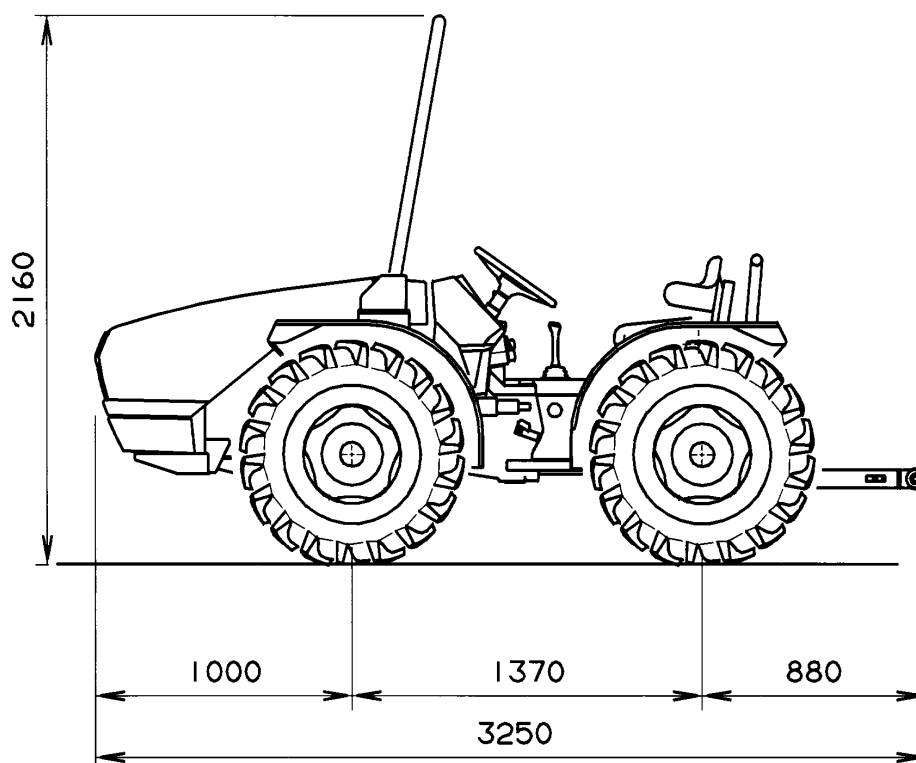
DIMENSIONS, TRACK WIDTHS SPEEDS, WEIGHTS



Maxter SN RS

Assembly 03

Tractor dimensions: SN



The tractor mainly consists of the engine assembly, a chassis, a gear-box and two front and rear differential assemblies.

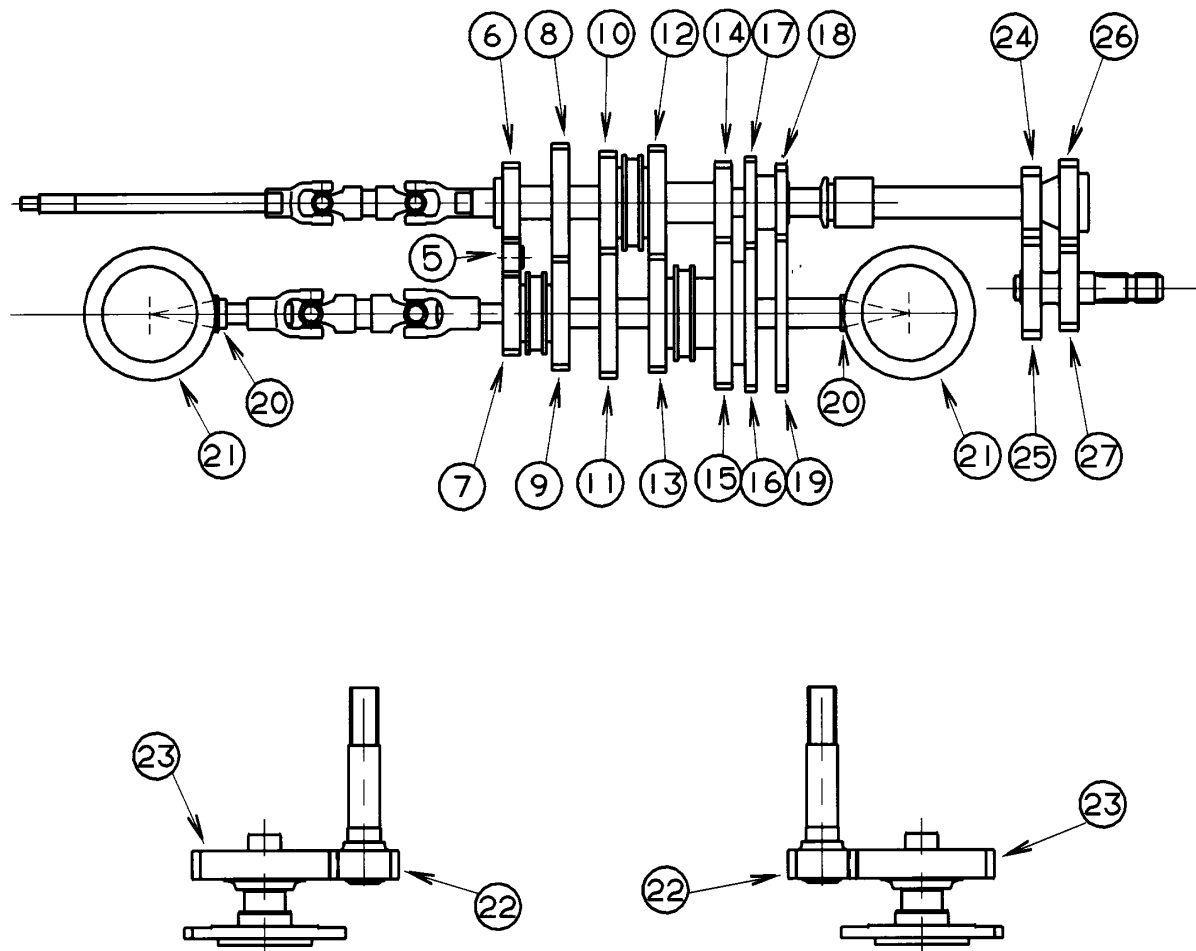
MECHANICAL TRANSMISSION 12 FWD / 4 REV SPEEDS

NO-LOAD GROUND SPEEDS WITH ENGINE AT TOP RATE									
G E A R S	TRANSMISSION RATIOS		2600 rpm						
			Speeds with Tyres as shown (kph)						
	GEAR-BOX	TO-TALS	8.25 -16 CIRC. ROT. mm 2450	280/70 R18 CIRC. ROT. mm 2513	250/80-18 CIRC. ROT. mm 2545	11.5/80-15.3 CIRC. ROT. mm 2576	260/80 R20 CIRC. ROT. mm 2796	300/70 R20 CIRC. ROT. mm 2796	
NORMAL									
F O R W A R D	1	17.18	319.237	1.20	1.23	1.24	1.26	1.37	1.37
	2	10.98	204.057	1.87	1.92	1.95	1.97	2.14	2.14
	3	7.86	146.074	2.62	2.68	2.72	2.75	2.99	2.99
	4	5.00	92.801	4.12	4.22	4.28	4.33	4.70	4.70
	5	3.19	59.319	6.44	6.61	6.69	6.77	7.35	7.35
	6	2.29	42.463	9.00	9.23	9.35	9.46	10.27	10.27
	7	4.27	79.356	4.82	4.94	5.00	5.06	5.50	5.50
	8	2.73	50.724	7.54	7.73	7.83	7.92	8.60	8.60
	9	1.95	36.311	10.53	10.80	10.93	11.07	12.01	12.01
	10	1.65	30.725	12.44	12.76	12.92	13.08	14.20	14.20
	11	1.06	19.639	19.46	19.96	20.21	20.46	22.21	22.21
	12	0.76	14.059	27.19	27.89	28.24	28.59	31.03	31.03
R E V	1	11.22	208.469	1.83	1.88	1.90	1.93	2.09	2.09
	2	3.26	60.601	6.31	6.47	6.55	6.63	7.20	7.20
	3	2.79	51.821	7.38	7.57	7.66	7.75	8.42	8.42
	4	1.08	20.064	19.05	19.54	19.79	20.03	21.74	21.74

TRANSMISSION RATIOS	
GEARBOX	SEE RELATIVE TABLES
BEVEL GEAR PAIR RATIO	9 : 38
FINAL DRIVE RATIO	10 : 44
TOTAL RATIOS	SEE RELATIVE TABLES

MAXIMUM SPEED MEASURED	
Maximum speed measured with tyres (300/70 R20 110 A8) kph :	32.6

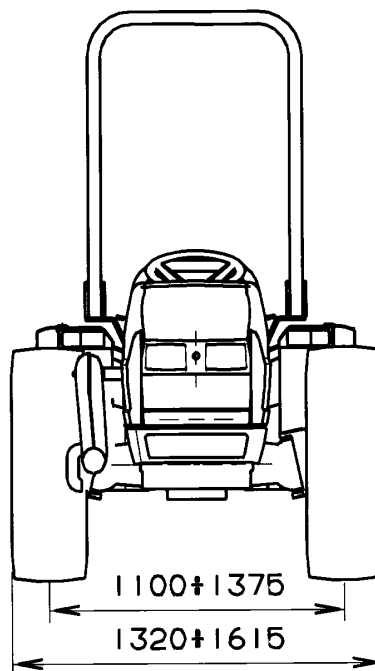
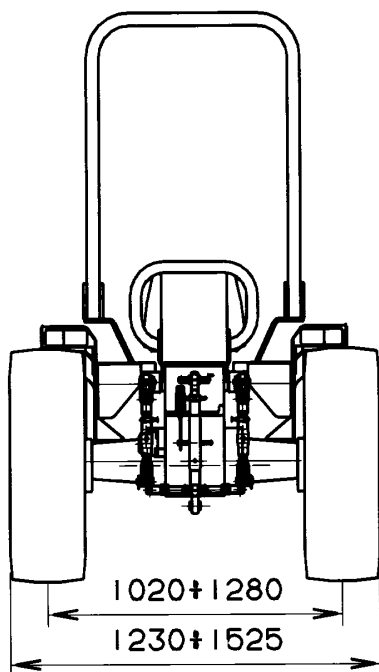
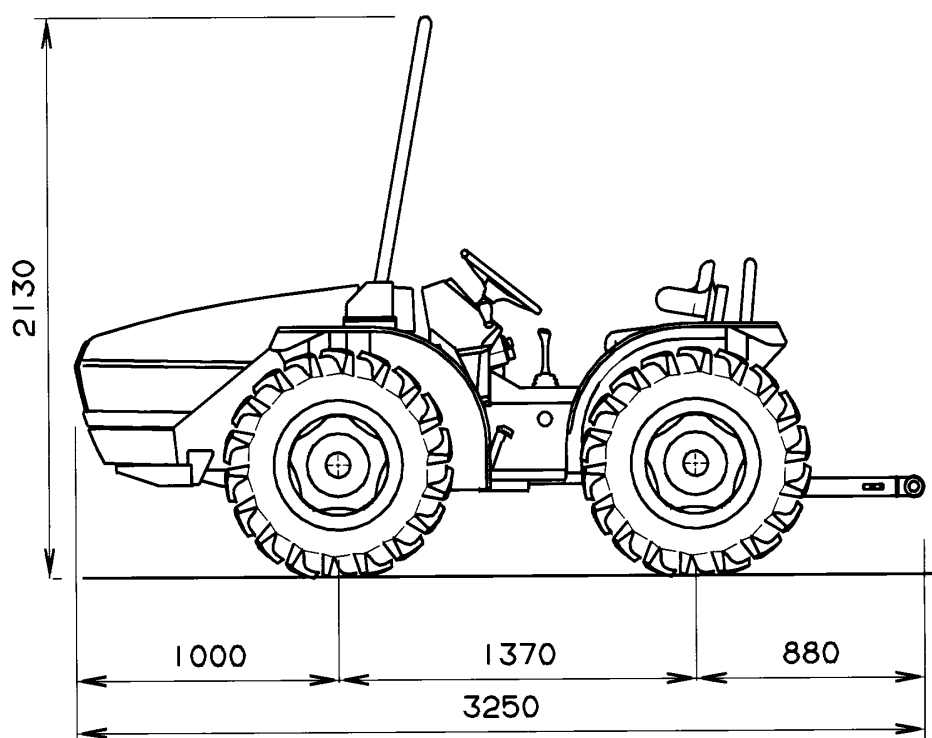
TRANSMISSION DIAGRAM



TRANSMISSION		
POS	N° TEETH	
5	Z =	21
6	Z =	25
7	Z =	27
8	Z =	26
9	Z =	43
10	Z =	35
11	Z =	37
12	Z =	28
13	Z =	37
14	Z =	21

TRANSMISSION		
POS	N° TEETH	
15	Z =	48
16	Z =	25
17	Z =	44
18	Z =	22
19	Z =	43
20	Z =	9
21	Z =	38
22	Z =	10
23	Z =	44

Tractor dimensions: RS



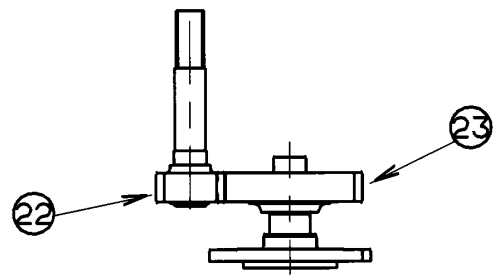
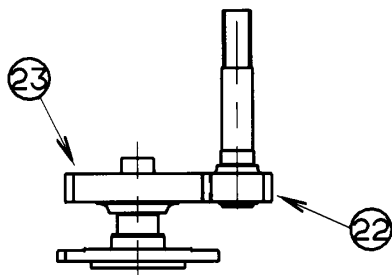
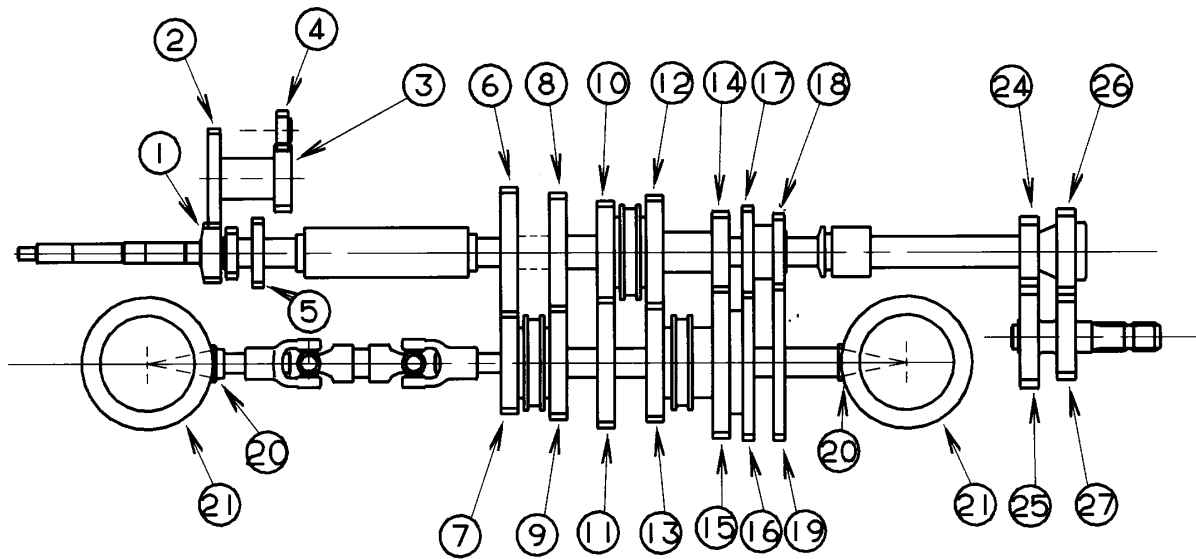
The tractor mainly consists of the engine assembly, a chassis, a gear-box and two front and rear differential assemblies.

NO-LOAD GROUND SPEED WITH ENGINE AT TOP RATE									
GEARS	TRANSMISSION RATIOS		2600 rpm						
			Speed with Tyres as shown (kph)						
	GEAR-BOX	TOTALS	260/70 R16	33x12.50-15	8.25 -16	280/70 R18	250/80-18	11.5/80-15.3	
			CIRC. ROT. mm 2262	CIRC. ROT. mm 2387	CIRC. ROT. mm 2450	CIRC. ROT. mm 2513	CIRC. ROT. mm 2545	CIRC. ROT. mm 2576	
NORMAL									
FORWARD	1	23.75	441.20	0.80	0.84	0.87	0.89	0.90	0.91
	2	17.18	319.24	1.11	1.17	1.20	1.23	1.24	1.26
	3	10.98	204.06	1.73	1.83	1.87	1.92	1.95	1.97
	4	7.86	146.07	2.42	2.55	2.62	2.68	2.72	2.75
	5	6.90	128.26	2.75	2.90	2.98	3.06	3.10	3.13
	6	3.19	59.32	3.80	4.01	4.12	4.22	4.28	4.33
	7	5.90	109.67	5.95	6.28	6.44	6.61	6.69	6.77
	8	2.73	50.72	8.31	8.77	9.00	9.23	9.35	9.46
	9	5.00	92.80	3.22	3.40	3.49	3.57	3.62	3.66
	10	2.29	42.46	4.45	4.69	4.82	4.94	5.00	5.06
	11	4.27	79.36	6.96	7.34	7.54	7.73	7.83	7.92
	12	2.29	42.46	9.72	10.26	10.53	10.80	10.93	11.07
	13	1.95	36.31	8.31	8.77	9.00	9.23	9.35	9.46
	14	1.65	30.72	11.48	12.12	12.44	12.76	12.92	13.08
	15	1.06	19.64	17.97	18.97	19.46	19.96	20.21	20.46
	16	0.76	14.06	25.10	26.49	27.19	27.89	28.24	28.59
REVERSE	1	33.10	615.01	0.57	0.61	0.62	0.64	0.65	0.65
	2	23.95	445.00	0.79	0.84	0.86	0.88	0.89	0.90
	3	15.31	284.44	1.24	1.31	1.34	1.38	1.40	1.41
	4	10.96	203.62	1.73	1.83	1.88	1.93	1.95	1.97
	5	9.62	178.78	1.97	2.08	2.14	2.19	2.22	2.25
	6	4.45	82.69	2.73	2.88	2.96	3.03	3.07	3.11
	7	8.23	152.88	4.27	4.50	4.62	4.74	4.80	4.86
	8	3.81	70.71	5.96	6.29	6.46	6.62	6.71	6.79
	9	6.96	129.36	2.31	2.44	2.50	2.56	2.60	2.63
	10	3.19	59.19	3.19	3.37	3.46	3.54	3.59	3.63
	11	5.95	110.62	4.99	5.27	5.41	5.55	5.61	5.68
	12	3.19	59.19	6.97	7.36	7.55	7.75	7.84	7.94
	13	2.72	50.62	5.96	6.29	6.46	6.62	6.71	6.79
	14	2.31	42.83	8.24	8.70	8.93	9.15	9.27	9.38
	15	1.47	27.38	12.89	13.61	13.96	14.32	14.50	14.68
	16	1.05	19.60	18.01	19.01	19.51	20.01	20.26	20.51

TRANSMISSION RATIOS	
GEARBOX	SEE RELATIVE TABLES
BEVEL GEAR PAIR RATIO	9 : 38
FINAL DRIVE RATIO	10 : 44
TOTAL RATIOS	SEE RELATIVE TABLES

MAXIMUM SPEED MEASURED	
Maximum speed measured with tyres (11.5 / 80-15.3 8 PR) kph :	31.1

TRANSMISSION DIAGRAM



TRANSMISSION		
POS	N° TEETH	
1	Z =	21
2	Z =	28
3	Z =	22
4	Z =	22
5	Z =	23
6	Z =	21
7	Z =	48
8	Z =	26
9	Z =	43
10	Z =	35
11	Z =	37
12	Z =	28

TRANSMISSION		
POS	N° TEETH	
13	Z =	37
14	Z =	21
15	Z =	48
16	Z =	25
17	Z =	44
18	Z =	22
19	Z =	43
20	Z =	9
21	Z =	38
22	Z =	10
23	Z =	44

WEIGHT OF TRACTOR SN WITH DRIVER WEIGHING 75 kg	
ON FRONT AXLE	950 kg
ON REAR AXLE	640 kg
TOTAL	1590 kg

**TYRES, INFLATION PRESSURES AND LOADS
TOLERATED FOR THE SN VERSION**

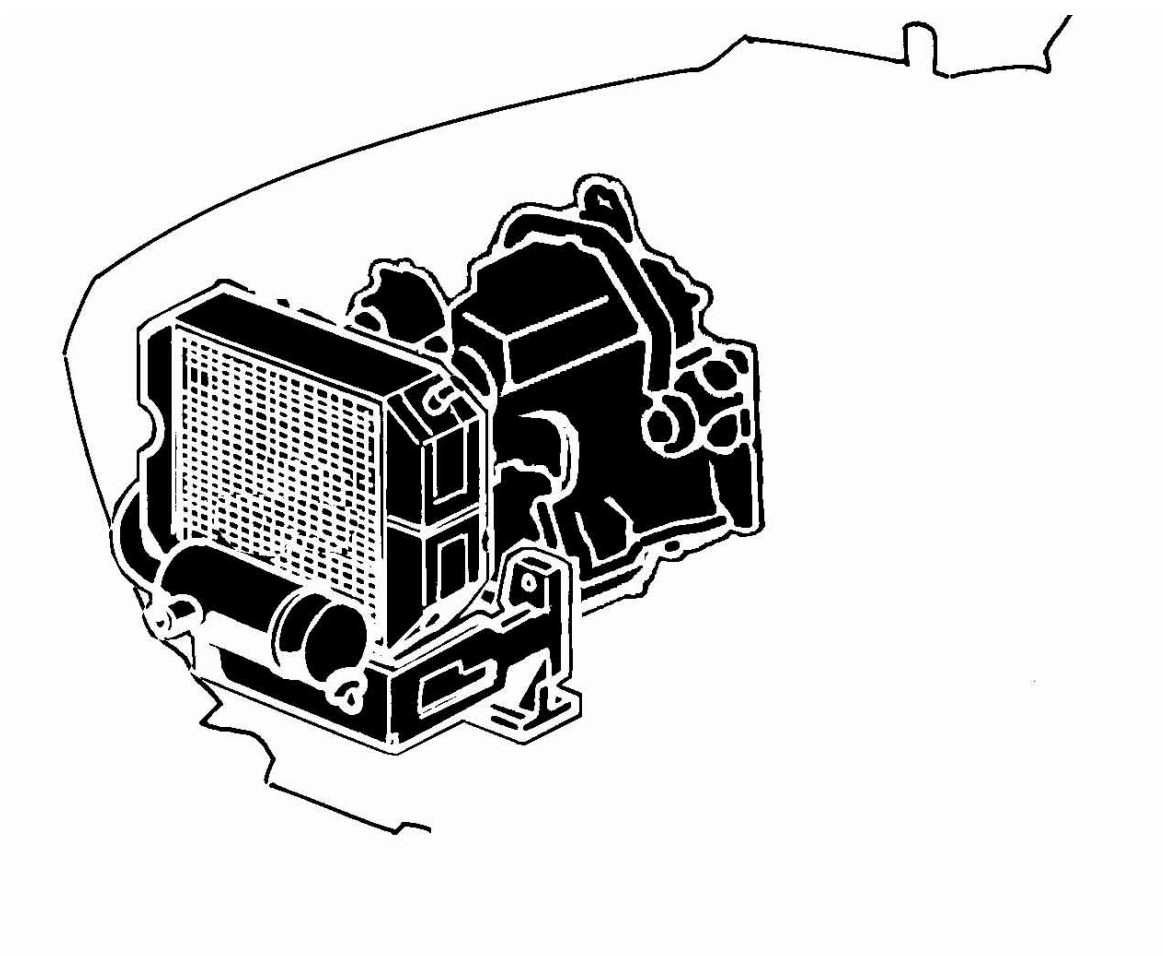
TYRES	TYPE	MAX LOAD PER AXLE (kg)	PRESSURE (Bar)	SPEED (kph)
FRONT	300/70 R20 110 A8	2180	1.6	35
REAR	300/70 R20 110 A8	2180	1.6	35
ALTERNATIVE TY- RES	TYPE	MAX LOAD PER AXLE (kg)	PRESSURE (Bar)	SPEED (kph)
FRONT 1)	8.25-16 10 PR	1900	3.5	30
2)	250/80-18 8 PR	2100	3.2	30
3)	260/80 R20 106 A8	1950	1.6	35
4)	280/70 R18 114 A8	2520	2.4	30
5)	11.5/80-15.3 8 PR	2345	2.7	30
REAR 1)	8.25-16 10 PR	1900	3.5	30
2)	250/80-18 8 PR	2100	3.2	30
3)	260/80 R20 106 A6	1950	1.6	35
4)	280/70 R18 114 A8	2520	2.4	30
5)	11.5/80-15.3 8 PR	2345	2.7	30

WEIGHT OF TRACTOR RS WITH DRIVER WEIGHING 75 kg	
ON FRONT AXLE	950 kg
ON REAR AXLE	640 kg
TOTAL	1590 kg

**TYRES, INFLATION PRESSURES AND LOADS TOLERATED
FOR THE RS VERSION**

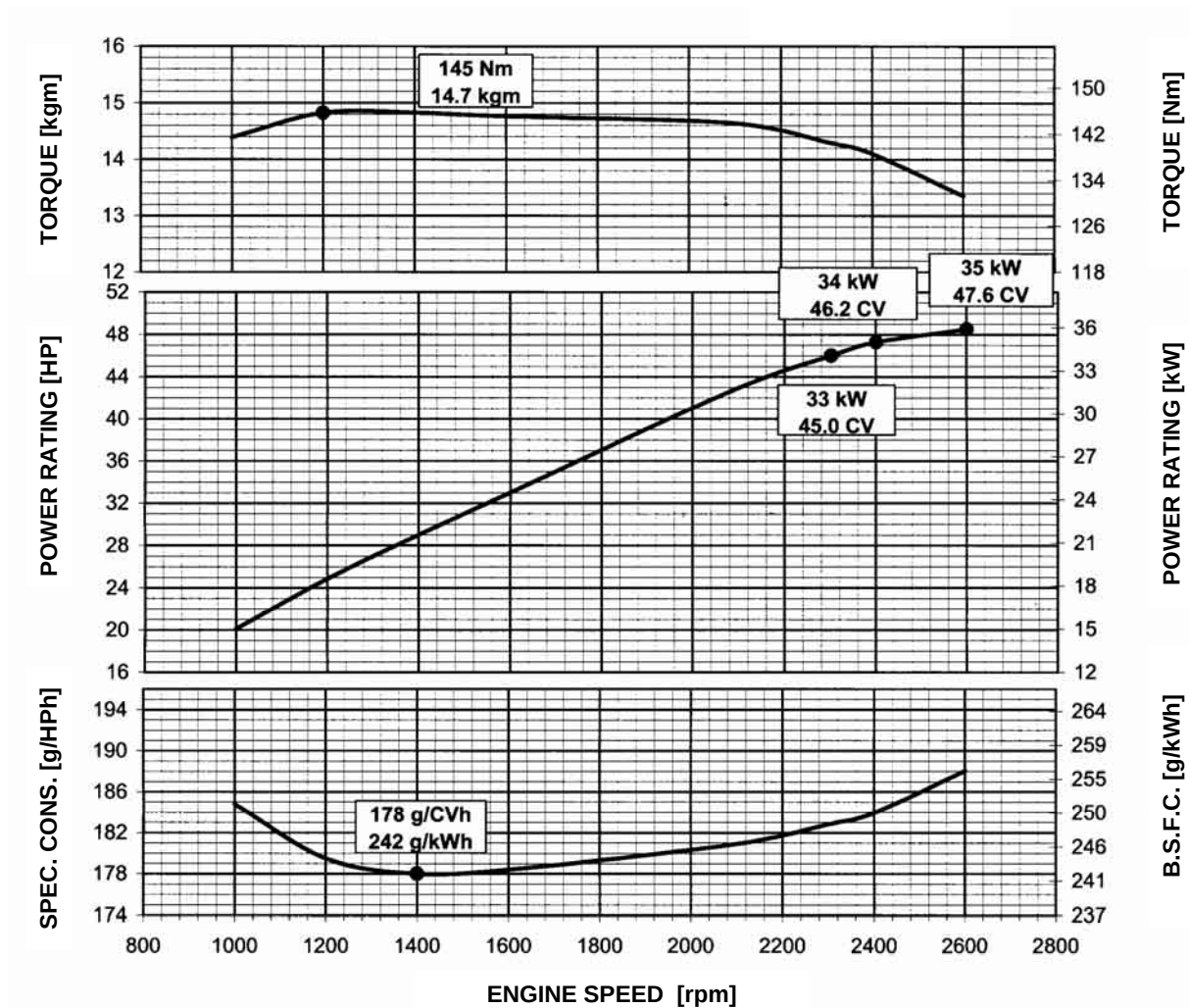
TYRES	TYPE	MAX LOAD PER AXLE (kg)	PRESSURE (Bar)	SPEED (kph)
FRONT	11.5/80-15.3 8 PR	2170	2.7	35
REAR	11.5/80-15.3 8 PR	2170	2.7	35
ALTERNATIVE TY- RES	TYPE	MAX LOAD PER AXLE (kg)	PRESSURE (Bar)	SPEED (kph)
FRONT 1)	8.25-16 10 PR	1900	3.5	30
2)	250/80-18 8 PR	1950	3.2	35
3)	260/70 R16 109 A8	2200	2.4	30
4)	280/70 R18 114 A8	2430	2.4	35
5)	33x12.50-15 4 PR	2160	1.4	30
REAR 1)	8.25-16 10 PR	1900	3.5	30
2)	250/80-18 8 PR	1950	3.2	35
3)	260/70 R16 109 A8	2200	2.4	30
4)	280/70 R18 114 A8	2430	2.4	35
5)	33x12.50-15 4 PR	2160	1.4	30

ENGINE



ENGINE SPECIFICATIONS

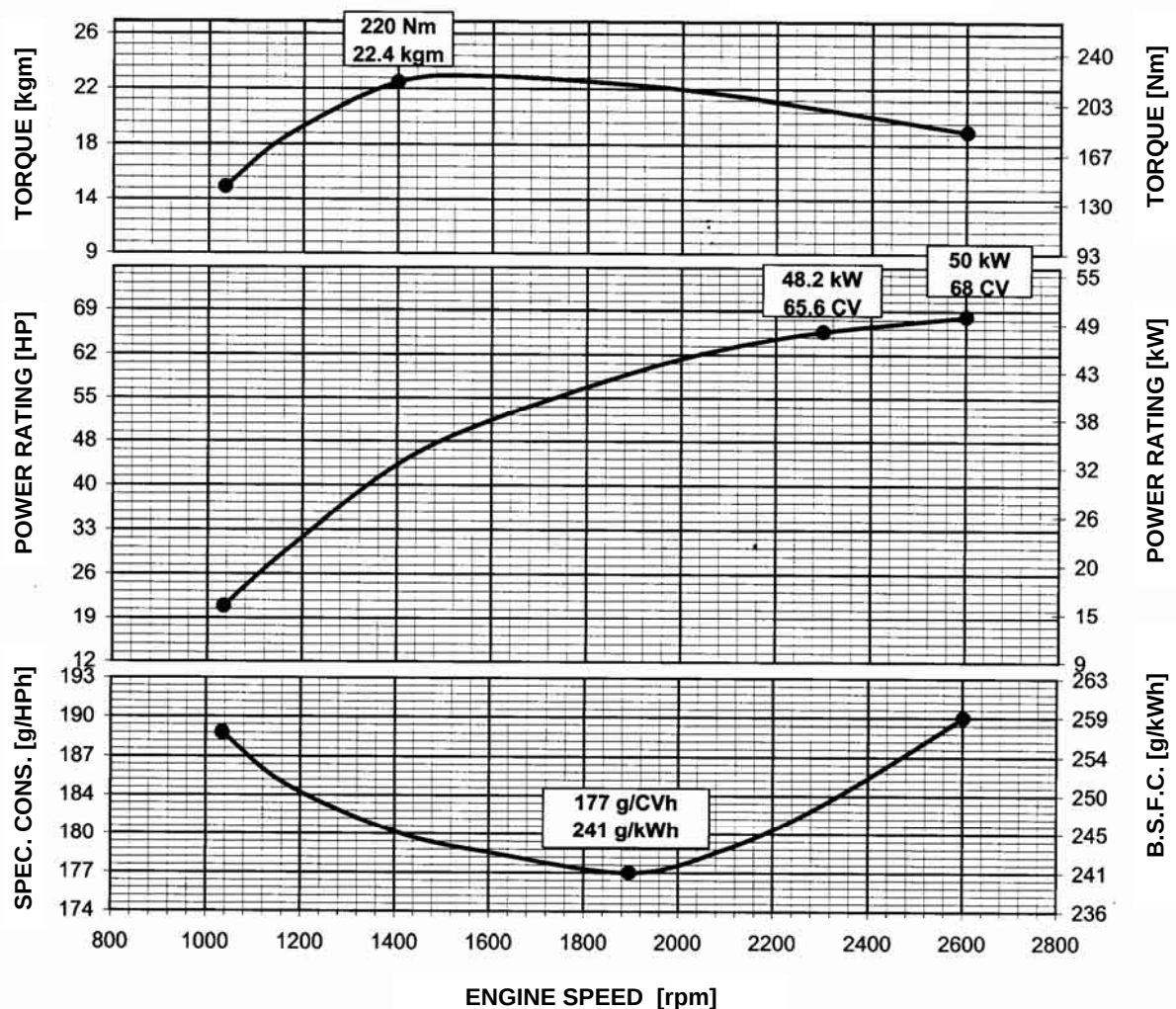
Engine	15C / 3	D 703 E2
Power rating	kW 35 - (HP 48)	
Type	Diesel	
N° cylinders	3	
Swept volume	2082	
Cooling	Water	



Contact one of VM Motori S.p.A.'s authorized workshops if engine repairs are required. Consult the operation and maintenance manual of the engine for filter replacement, greasing and oil changes.

ENGINE SPECIFICATIONS – TURBO —

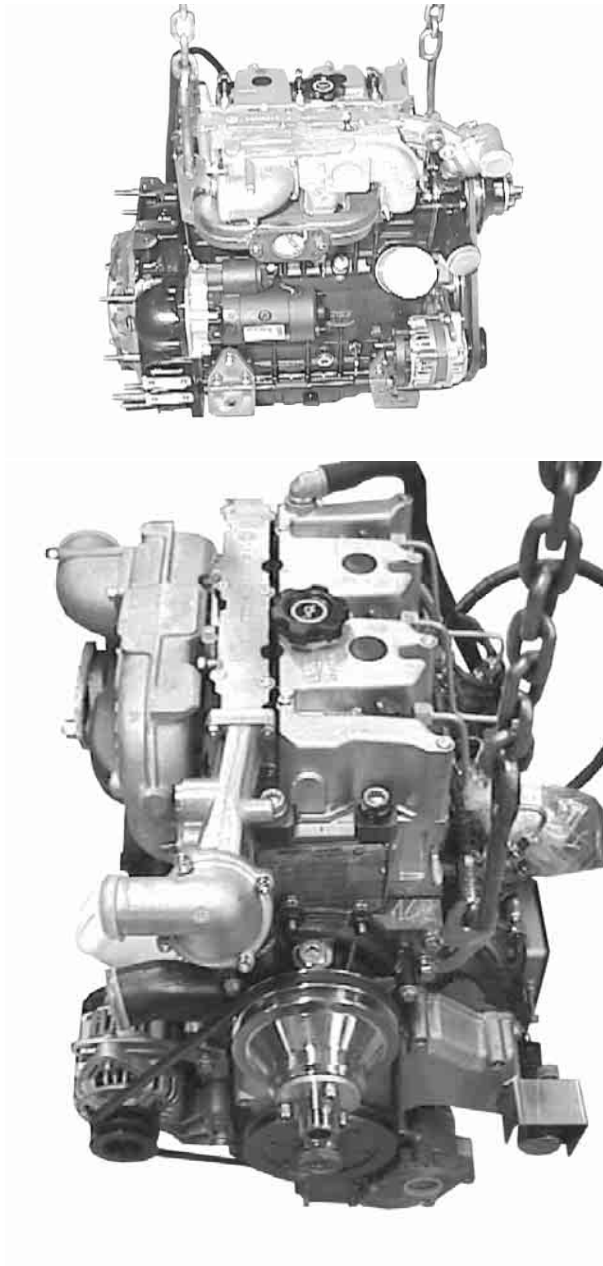
Engine	16C / 3 - D 703 TE 1
Power rating	Cv. 67 - 49 kW
Type	Diesel
N° cylinders	3
Swept volume	2082
Cooling	Water



Contact one of VM Motori S.p.A.'s authorized workshops if engine repairs are required. Consult the operation and maintenance manual of the engine for filter replacement, greasing and oil changes.

ENGINE SPECIFICATION TABLE			
		15C / 3 D 703 E2	16C / 3 D 703 TE 1
Cylinders	N°	3	3
Swept volume	cc.	2082	2100
Bore	mm	94	94
Stroke	mm	100	100
Compression ratio		18:1	18:1
Rpm		2600	2600
Power rating kW/HP at 2600 rpm	kW/HP	35-48	50-68
Maximum torque	Nm (kgm)	145 (14.7)	220 (21)
3rd drive engine speed ratio		1:1	1:1
Idling rate rpm		850	850
Oil consumption (Max, rpm – Power NA)	kg/h	0.025	0.025
Oil sump capacity	l.	4.5	4.5
Minimum oil pressure tolerated	kg/cm ²	1.5	1.5
Max. tolerated slant for discontinuous service (instantaneous)		25° (35°)	25° (35°)
Dry weight	kg	190	196
Recommended battery	V/ah	12/80	12/80

Contact an authorized VM Center if the engine's Workshop Manual is also required.



The photos on the left show how the engine must be handled if it must be de-mounted from the tractor.

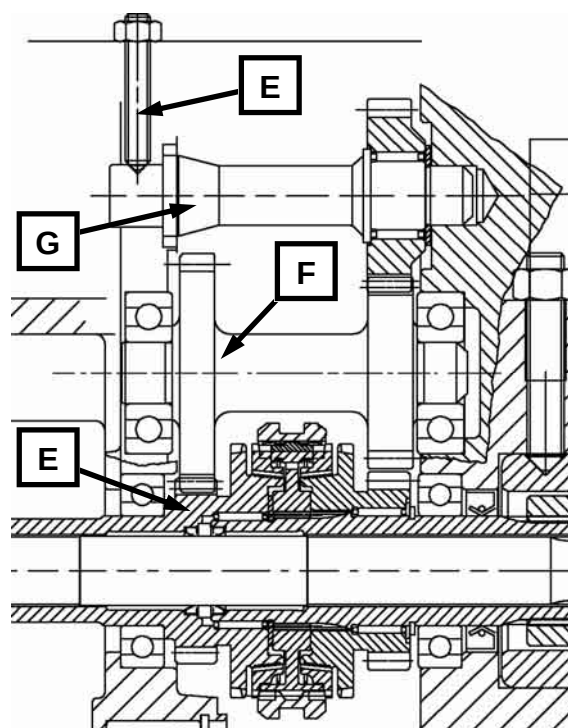
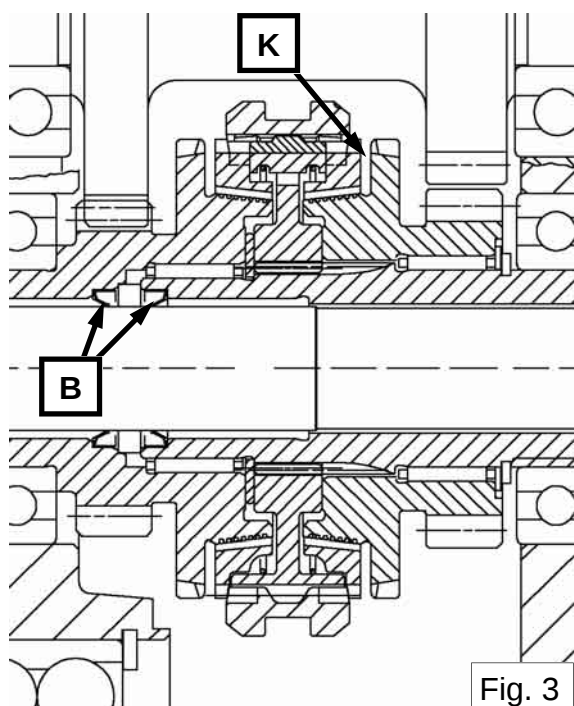
Take great care to prevent damage to the alternator and motorstop on the propulsor side during these operations.

DRIVING TORQUES

M10x65 bolts fixing the clutch bowl to the engine	7	Kgm
M10 countersunk screws to fix clutch	7	Kgm

REVERSE SHUTTLE





The reverse shuttle assembly is illustrated in the above pictures. Remember that the reverse shuttle is only mounted in the RS and reversible version. The assembly is installed in the front part of the tractor, after the axial pivot and right behind the front differential housing. To disassemble the reverse shuttle assembly, first reinstall the longitudinal pivot of the tractor as described in the specific chapter.

Fig. 1



After the longitudinal pivot has been disassembled from the front differential housing, the components will be in the condition shown in fig. 1 on the left. The reverse shuttle selector fork mounted on the selector rod can also be seen. As shown in fig. 1, the plug that positions the idle shaft of the reverse shuttle guide pulley (the parts of which are described on the following pages) must also be removed.

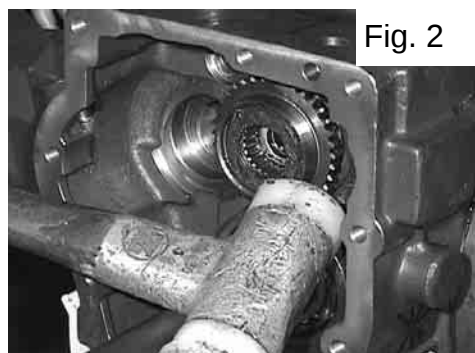


Fig. 2

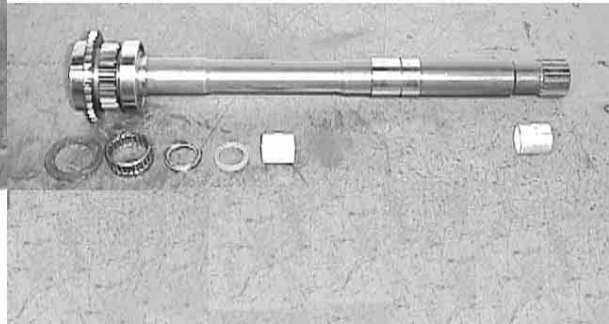
As shown in fig. 2, the synchromesh parts can now be disassembled in order to check the cone material for wear. If the synchromesh unit is worn, always replace the gears or shafts on which it works. As already explained for the gearbox synchromesh units, the space K in fig. 3 must be between 1.8 and 2 mm when the cones are still new.

This space will gradually reduce depending on the state of wear of the synchromesh unit.

Fig. 4



Fig. 5



The individual parts of the reverse shuttle unit are shown in the photographs (fig.4-5).

Remember to mount the two seals B of fig. 3 to prevent oil leaks in the clutch bowl or longitudinal pivot. The two seals are kept in position by the intermediate spacer.

Fig. 6



Fig. 7

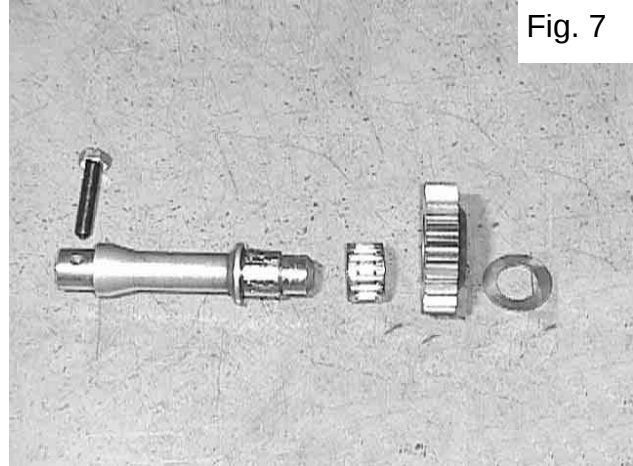


Fig. 3 shows the mounting assemblies of the 3 shafts, marked with the 3 letters F- H- G (see fig. 8).

These 3 shafts must be mounted at the same time. Take care to remember the relative spacers and seals.

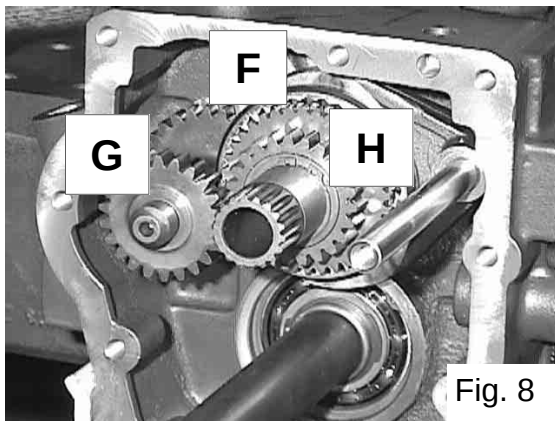


Fig. 8

Fig. 9

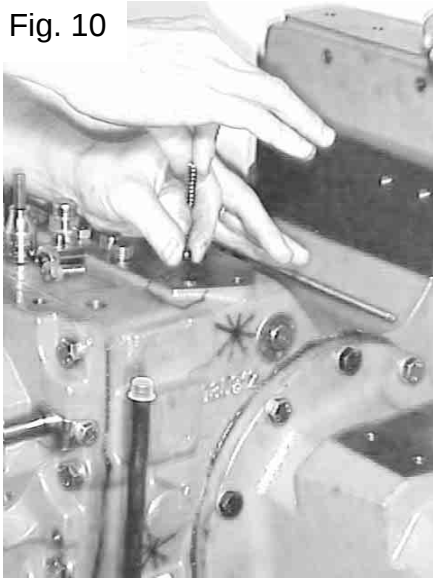


Carry out the following inspections while mounting the reverse shuttle selector on top of the rod formed by the plug, the spring and ball:

- first grease the rod lightly before mounting the front differential housing;
- once the reverse shuttle unit has been mounted on the front differential housing, check to make sure that the reverse shuttle control has been correctly mounted and operates in the right way:

Load the spring by means of the upper plug, creating a sufficient preload between

Fig. 10



en the ball and rod to ensure that the control is not too hard in the idle position. Make sure that the reverse shuttle control fork keeps the synchromesh ring fixed in the central neutral position;

- make sure that at the end of travel points, the spring load on the selection is such that the ball prevents the rod from passing the race point by more than about 3 mm.

Fig. 11



As illustrated in figs. 10 and 11, mount the O-Ring and relative retainer plate held in position by the fixing screw on the selector rod to prevent oil from oozing. Take care not to pinch the seal when it is mounted.

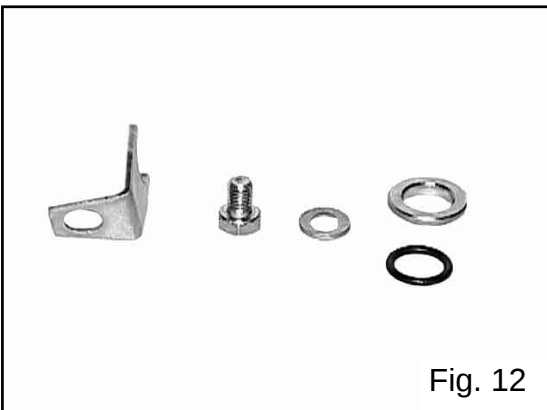
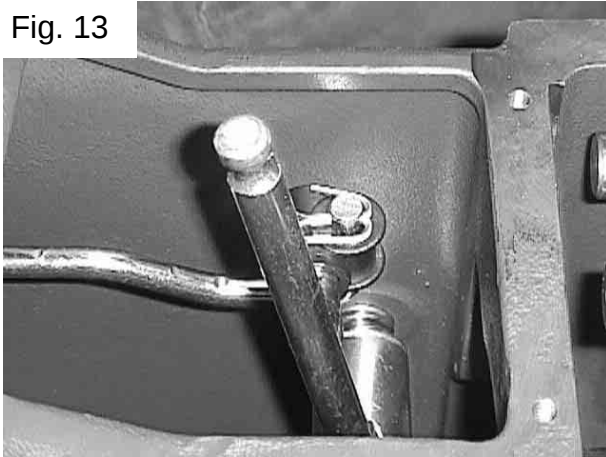


Fig. 12

In pict. 12 are represented all the elements which make up the seal on the reverser rod.

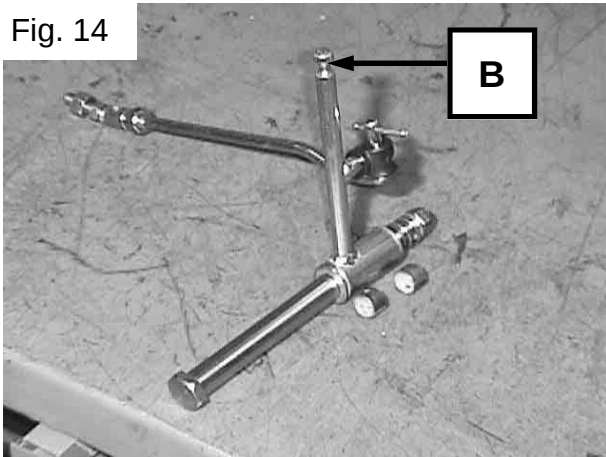
The reverse shuttle housing holds 9.2 liters of oil.
The oil used is SAE 80W/90.

Fig. 13



The external levers of the reverse shuttle control must be adjusted so that there are never any interferences between the control itself and the wall of the casting of the longitudinal pivot when the forward or reverse directions are selected.

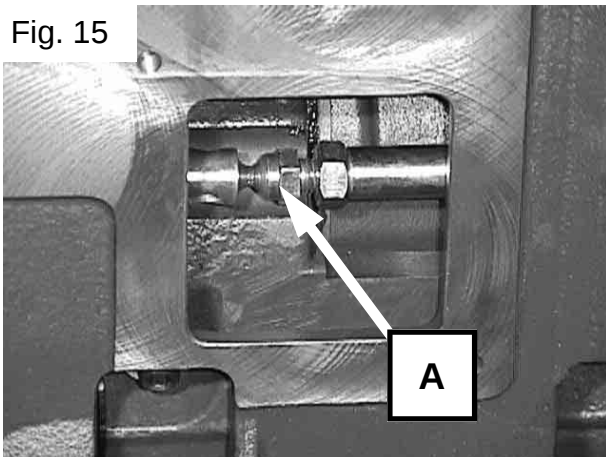
Fig. 14



Figs. 14 and 15 show the control levers of the reverse shuttle unit which are housed in the longitudinal pivot of the tractor.

The ends of travel of lever B of fig. 14 can be determined by correctly adjusting part A of fig. 15 so that they do not interfere with the casting.

Fig. 15



The steering wheel control of the reverse shuttle lever, which is fixed to the power steering support, is also mounted on lever B.

Fig. 16

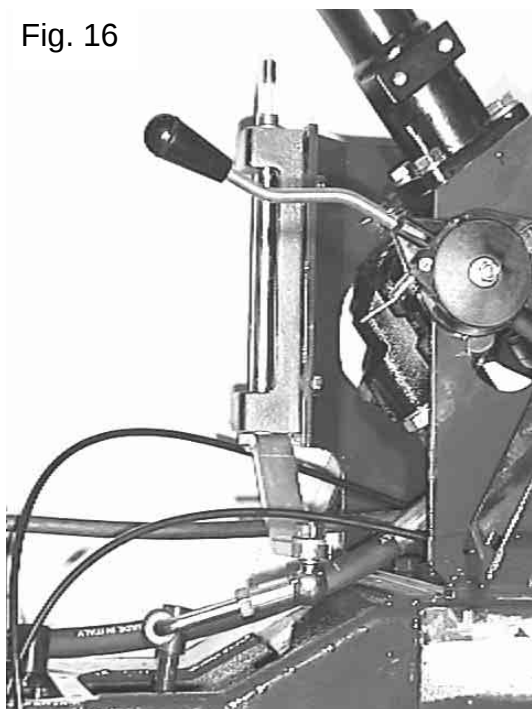
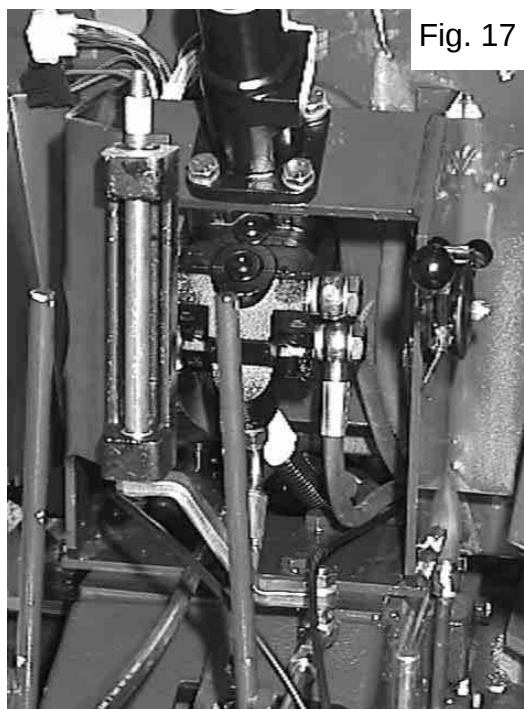


Fig. 17



Assembly of the reverse shuttle transmission for the RS version is illustrated in the photos above.

The rod with the head should be fully screwed on to the threaded section. Once the check nut has been torqued to 4 kgm, fix the self-locking nut on to the head with a 3 kgm load.

Make sure that when the forward speed is selected, the coupling is unable to interfere with the casting (there must be a space of about 4-5 mm).

Adequately grease the bushes and upper keyed section before fitting on the plastic lever.

Once all the linkages have been mounted, make sure that the reverse shuttle can be engaged correctly without the linkages sticking or jamming.

The plastic lever on the dashboard engages the forward speed when engaged from the driver's side and the reverse speed when engaged towards the engine side.

DRIVING TORQUES

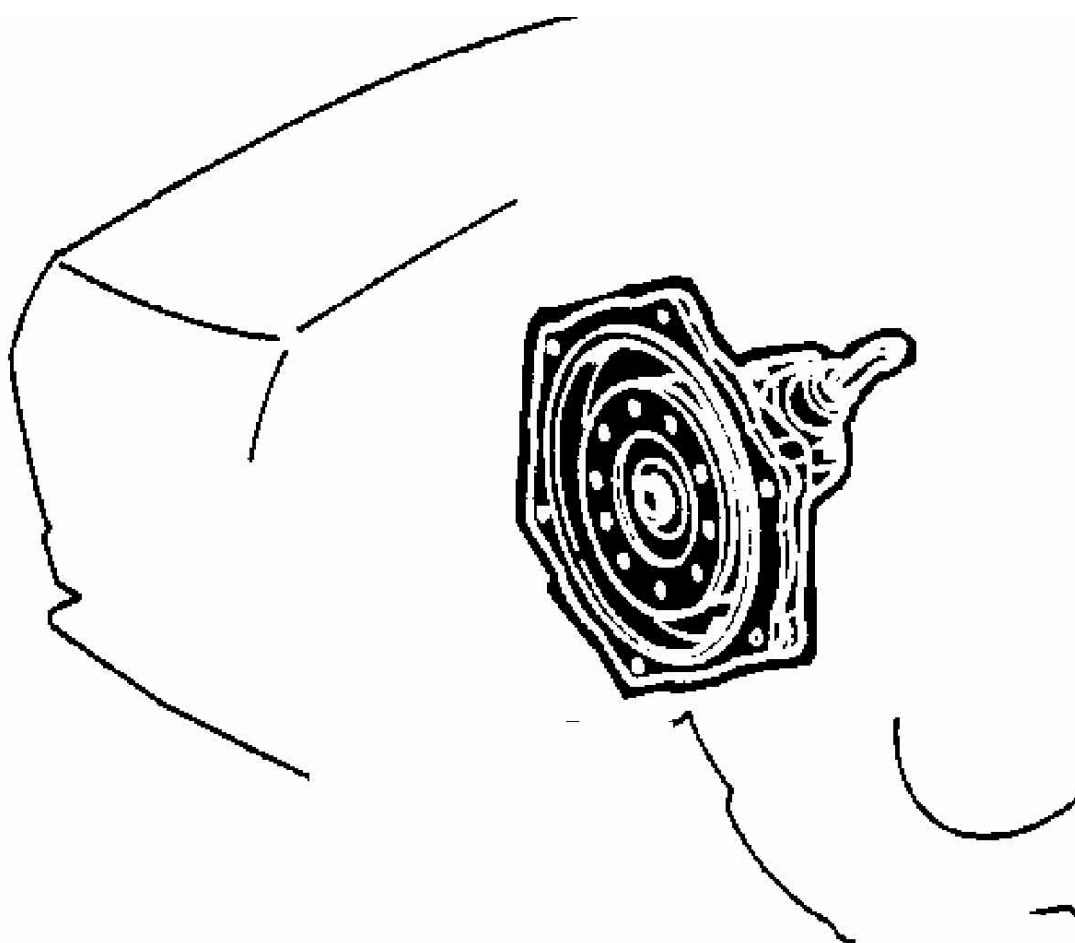
Screw to fix the bearing plate, reverse shuttle rod	4	Kgm
Check nut for the reverse shuttle rod coupling	4	Kgm
M10 reverse shuttle casing screws	7	Kgm

LUBRICATION

Oil	ARBOR TRW90 (SAE 80W-90, API GL-5)	9,2	Liters
Grease	ARBOR MP EXTRA (NLGI2)		

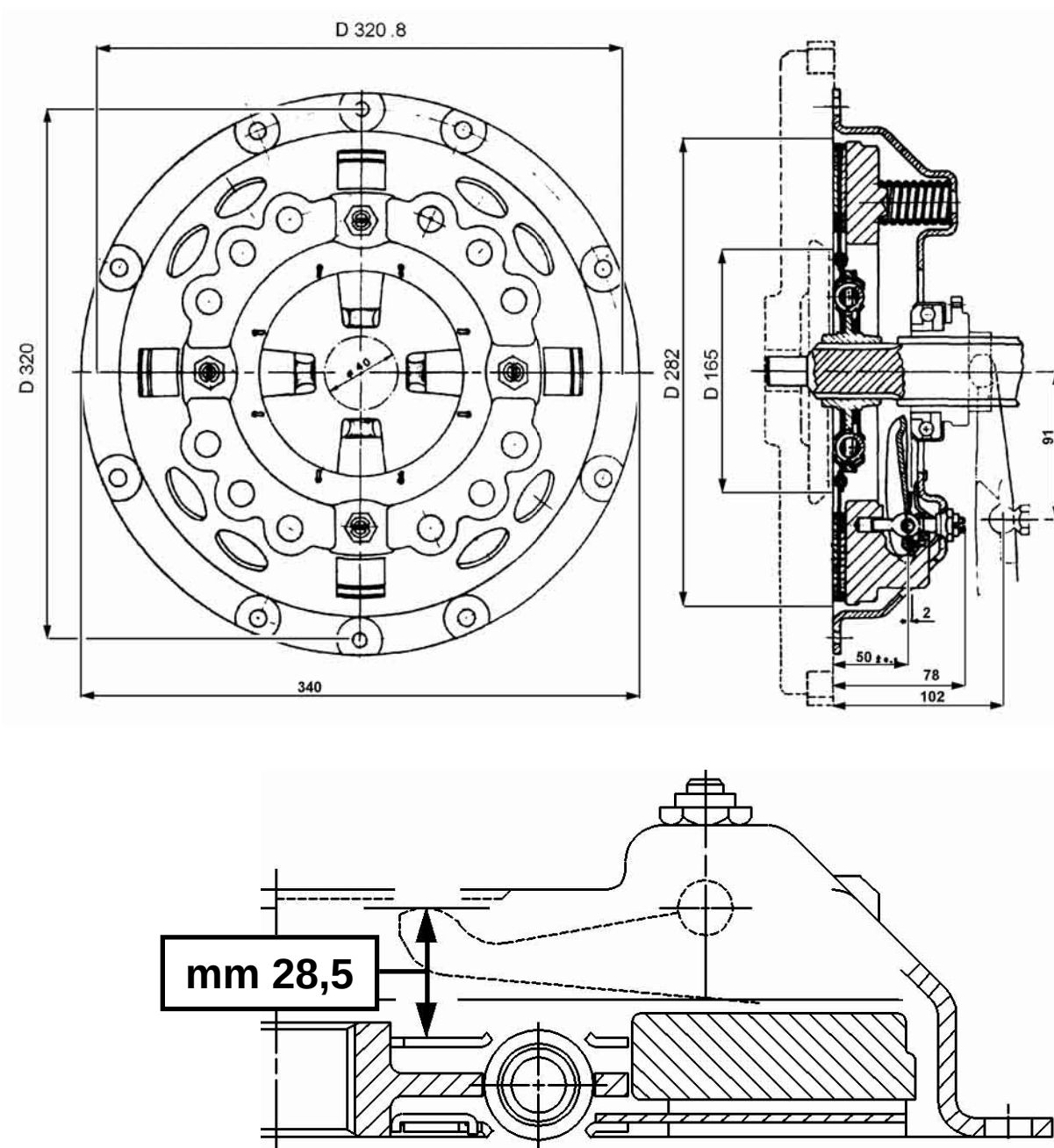
We recommend lubricants and liquid by: **FL SELENIA**.

CLUTCH



Clutch	Driven plate with flexible coupling
Type	M 280

Dimensions and specifications of the driven plate unit of the tractor's clutch assembly.



The figure shows the dimensions and specifications of the clutch plate.

Manufacturer: Pitteri e Violini

The drawing also gives the assembly dimensions (pin adjustment, wear allowances and other specific dimensions of the clutch assembly in assembly conditions).

Besides the clutch plate illustrated on the previous page, which forms the heart of the driving clutch assembly, Maxter tractors have (on request in the articulated version) a second clutch assembly with oil-cooled plates which operates the power take-off.

A second consideration must also be made:

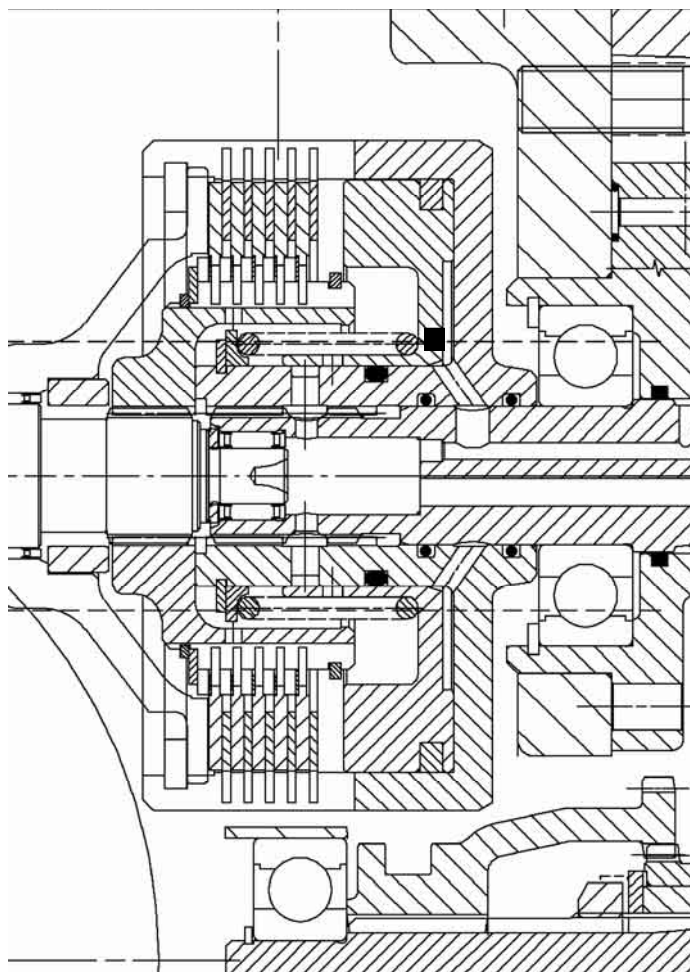
While the second clutch assembly in the **RS** tractor is fully independent from the driving one to all effects, the PTO clutch in the **SN** version is secondary to that of the driving clutch.

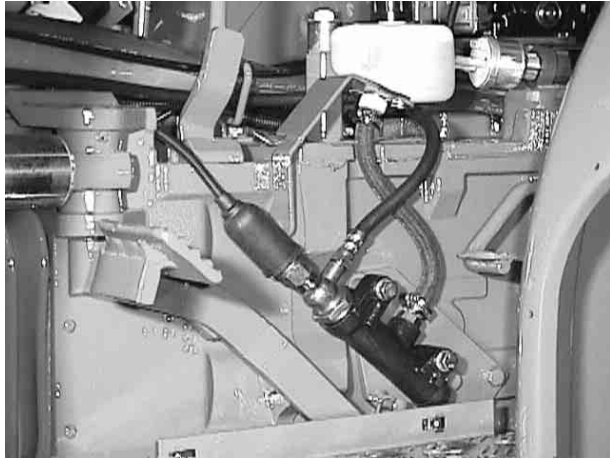
This means that if the driving clutch is operated when the PTO is engaged, the power take-off will also stop.

The electrohydraulic clutch of the PTO is situated in the rear part of the gearbox, above the differential. The clutch consists of an annular piston and a series of plates that are compressed by the pressure of the oil.

The thickness of the clutch pack is formed by 5 steel plates and 5 plates made of antifriction material. The clutch works on the shaft coming straight from the engine in the **RS** version and on the shaft coming from the driving clutch unit in the **SN** version. A brake operates on the outer bowl of the PTO clutch. This prevents the PTO from spinning once it has been disengaged.

PTO CLUTCH ASSEMBLY.





Until machine: C551387.

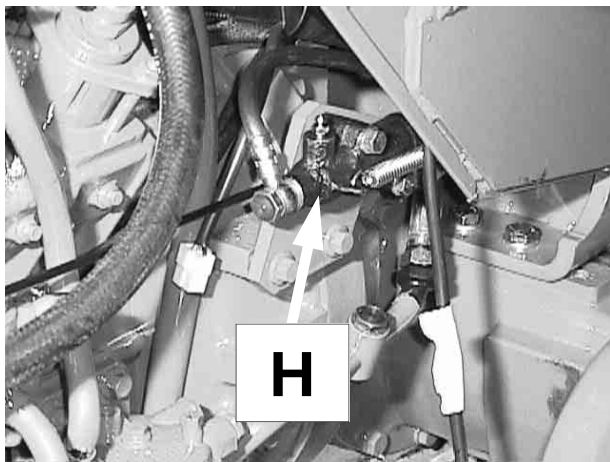
DOT 4 (brake fluid) is used in the hydraulic circuit in the quantity of approximately 400 grams.

From machine: C551388.

OSO 15 (mineral oil) is used in the hydraulic circuit in the quantity of approximately 400 grams.

Until machine: C556146.

ATF II D (brake fluid) is used in the hydraulic circuit in the quantity of approximately 400 grams.

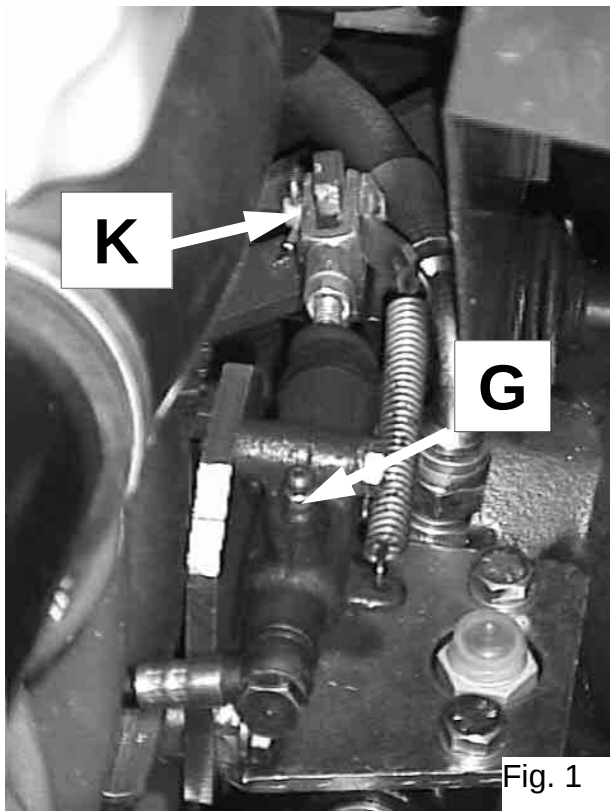


The photos on the left represent the clutch operating and adjustment system of the clutch that governs traction.

The operation is mechanical-hydraulic.

The first photo shows the pump operated by the clutch pedal.

This pump moves a piston inside the cylinder H fitted near the clutch drum that in turn operates the relay rod of the thrust bearing inside the clutch drum.

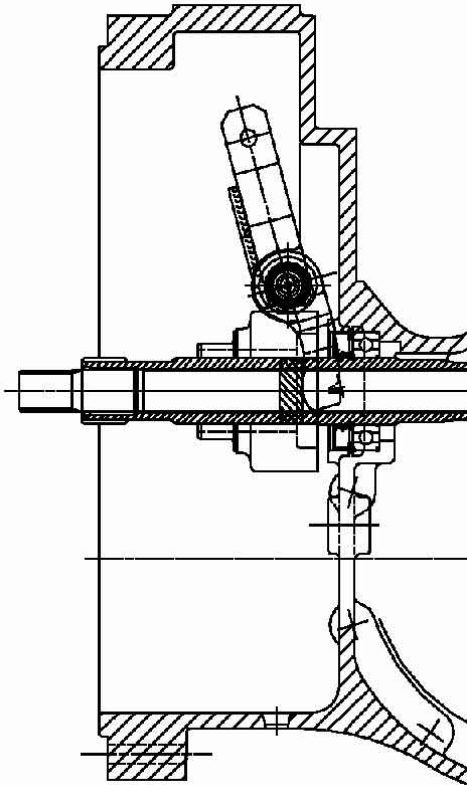


On the pump operated by the clutch pedal there is the supply tank from which to fill the circuit; while on the operating cylinder there is the vent (part G of Fig. 1) to eliminate the air inside the system, in consideration of the fact that this is the highest point.

The fork K then permits adjusting the clutch lever strut and eliminating any excessive play.

After making the adjustment so that the lever that governs the pressure plate doesn't remain jammed and that there is no excessive play on the fork K, tighten the lock nut on the fork and block the adjustment.

Fig. 1



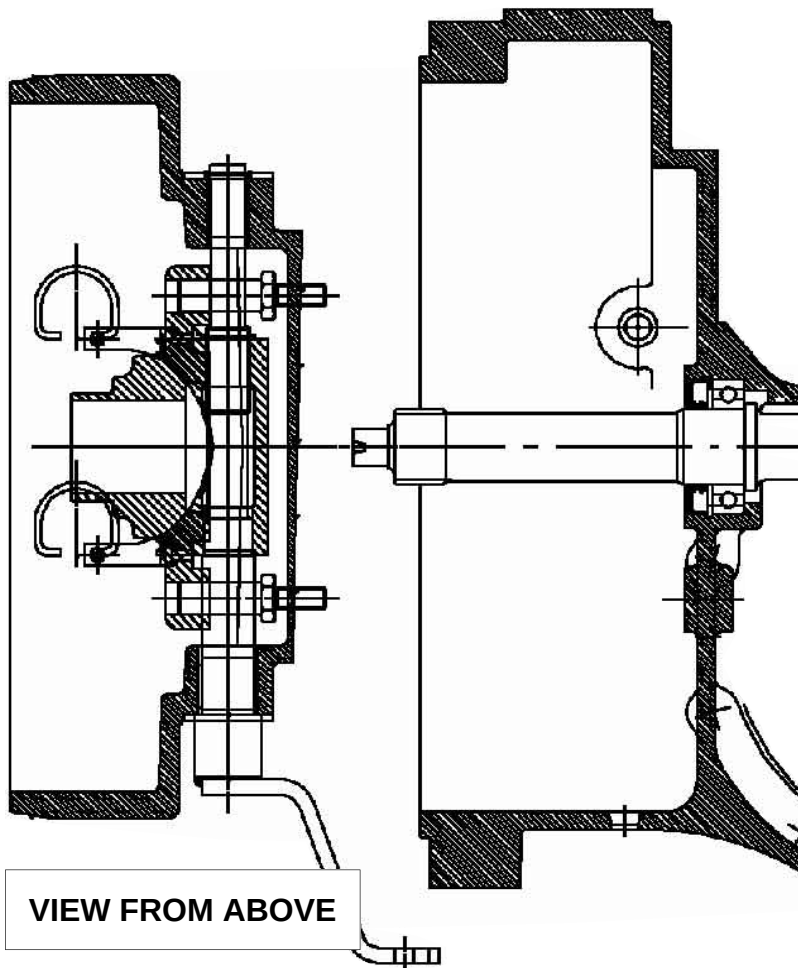
The figure illustrates the clutch bowl with the thrust bearing control lever in the **RS** version

The hermetic bearing installed inside the clutch bowl can also be seen.

The figures at the bottom show the side view and view from above of the clutch bowl with the thrust bearing and thrust bearing control lever premounted in the **SN** version.

As already mentioned, the **RS** version has two concentric shafts to separately operate the PTO and the gearbox. There is only one shaft in the **SN** version.

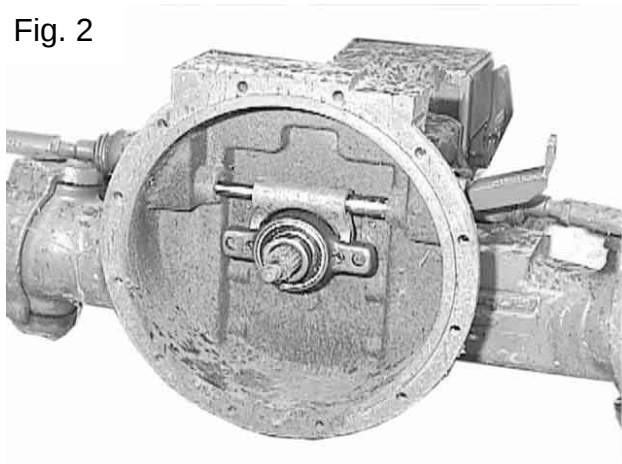
The flywheel, which is common to both versions, is fitted with two different flanges.



VIEW FROM ABOVE

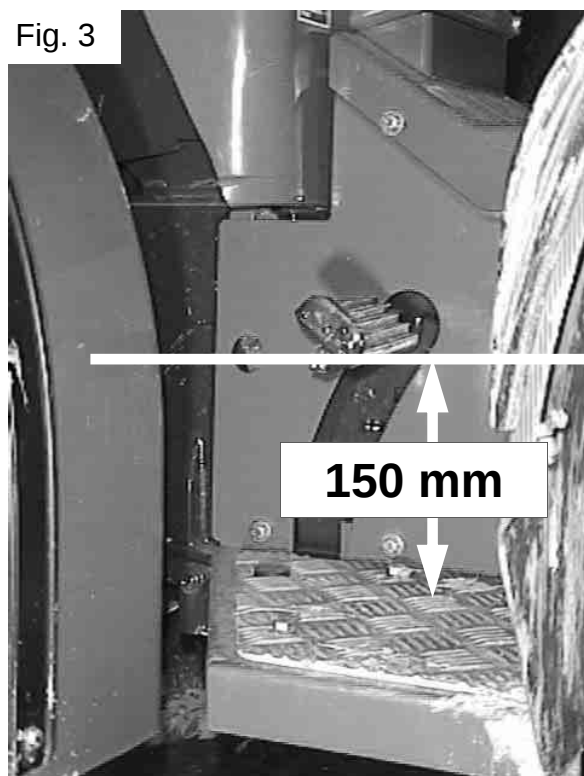
In the **RS** version, the flange on the flywheel must also transmit drive to the PTO shaft on which the oil-cooled multiple-plate PTO clutch assembly (also described on the previous pages) is mounted. This clutch assembly can also be installed in the **SN** version although in this case, drive is transmitted in a different way.

Fig. 2



The photos alongside show the internal transmission mechanisms of the levers that control the thrust bearing.

Fig. 3



After the adjustments to the driving clutch unit described on the previous page have been carried out, the clutch pedal, which has a starting point determined as the high position, will travel about 150 mm as indicated in fig. 3. Of these 150 mm, about 40 mm are play while the remainder is working travel.

Periodically check the level of the oil in the expansion tank by unscrewing the top plug which can be accessed from outside the tractor.

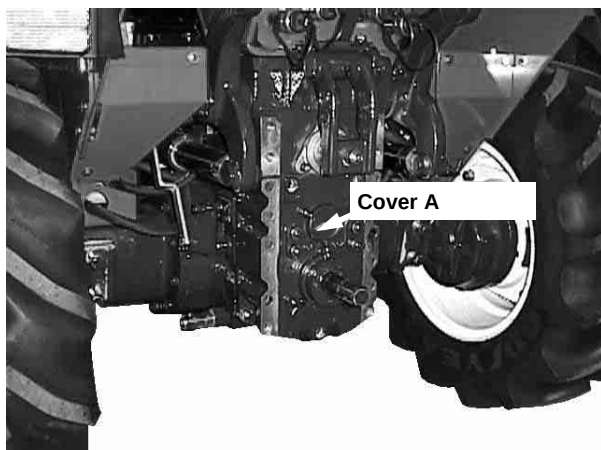


Fig. 4

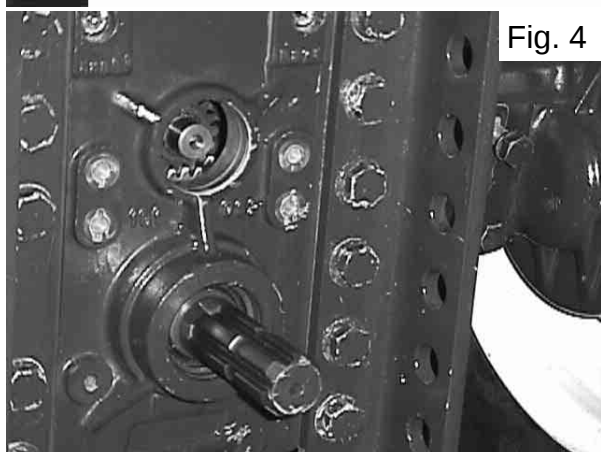


Fig. 5



Fig. 6

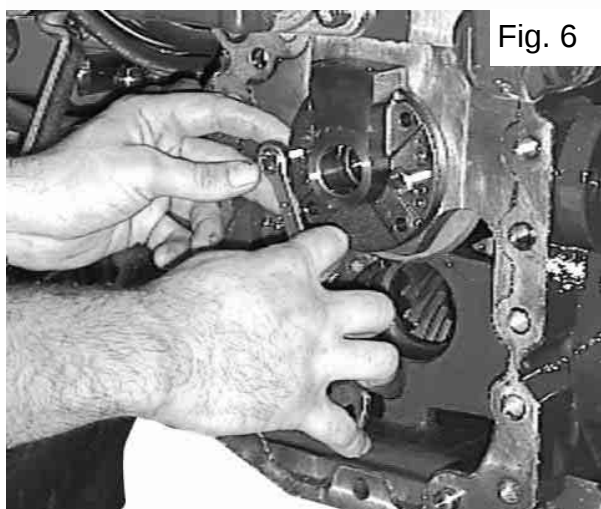
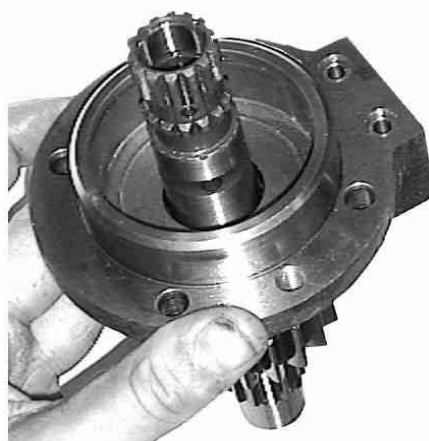


Fig. 7



Proceed in the following way if the seals on the PTO clutch shaft need to be changed or inspected:

- remove the rear cover from the PTO as illustrated in the photographs alongside;
- allow the oil to drain into a suitable vessel;
- the PTO shaft has a thread at the top to facilitate removal with the aid of a tool, as shown in fig. 5;
- remove the shaft by tapping with the tool shown in fig. 5;
- as the shaft is removed or afterwards, loosen the screws that fix the flange of the timing system as shown in fig. 6 in order to remove the complete shaft as in fig. 7 and disassembled the quadring seals of fig. 8 (part Q) on the work bench.
- check all the seals and replace any worn ones as necessary.

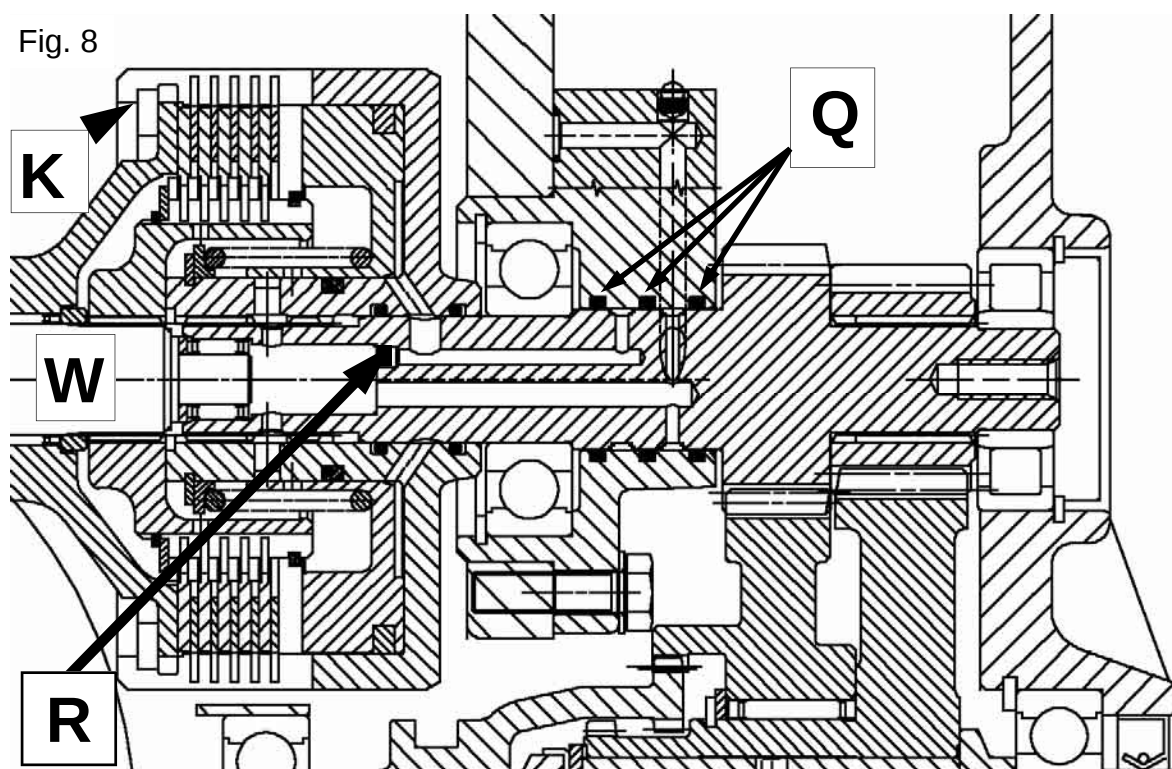
Fit all parts back in place, taking care to prevent the new seals from being damaged during the reassembling phase.

Work through the previously described operations in reverse order.

The power lift casing must be disassembled if the PTO clutch plates must be replaced because they are worn.

Proceed as illustrated below if you decide to continue with the disassembling operations in order to inspect and/or replace the clutch plates in the clutch pack:

- remove the power lift casing so as to have free access to the clutch pack;
- disassemble the brake assembly that acts on the clutch by unscrewing the 3 screws that hold it in that position;
- disassemble the circlip **K** shown in figure 8 ;
- dismantle the tractor on a level with the front longitudinal articulation so as to advance shaft **W** and remove it from the rear of the tractor;
- it will now be possible to disassemble the clutch pack and check both the 5 metal discs and the 5 friction discs made of sintered material.



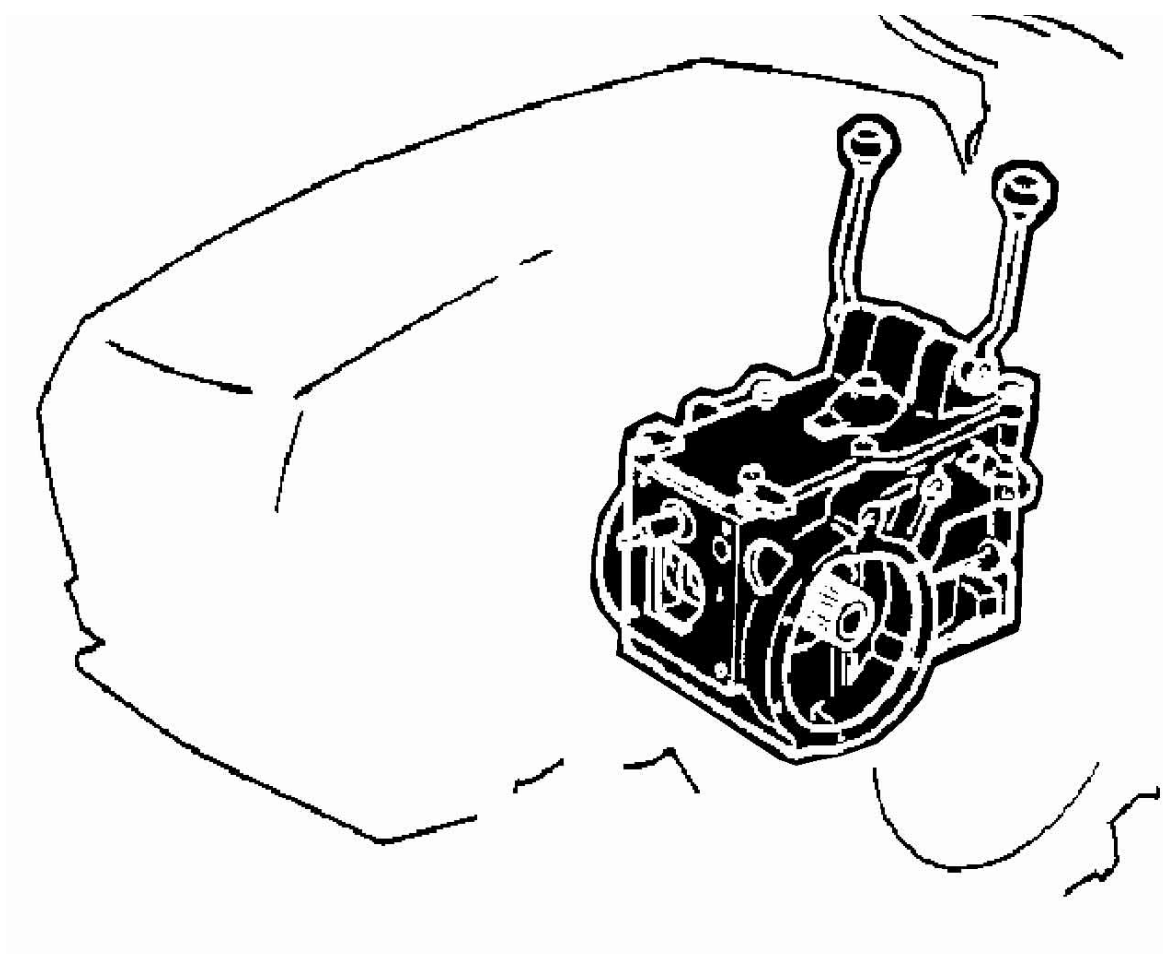
Once the any worn discs have been inspected and/or replaced, fit all parts back in place by working through the previously described operations in reverse order.

Always remember to mount the plug indicated by the letter R when the clutch unit is assembled: if this plug is accidentally forgotten, the clutch assembly will be unable to operate correctly and the whole unit will have to be disassembled again. Once plug R has been fitted in the smallest hole, punch it with the aid of a pin driver in order to lock it in the correct position.

DRIVING TORQUES

M10 screws fixing the engine—engine casing	7	Kgm
M10 screws to fix the clutch assembly on the flywheel	7	Kgm
1/4" perforated screw for the hydraulic lutch pump	2	Kgm
Hydraulic clutch pump fixing screws	5	Kgm

GEARBOX



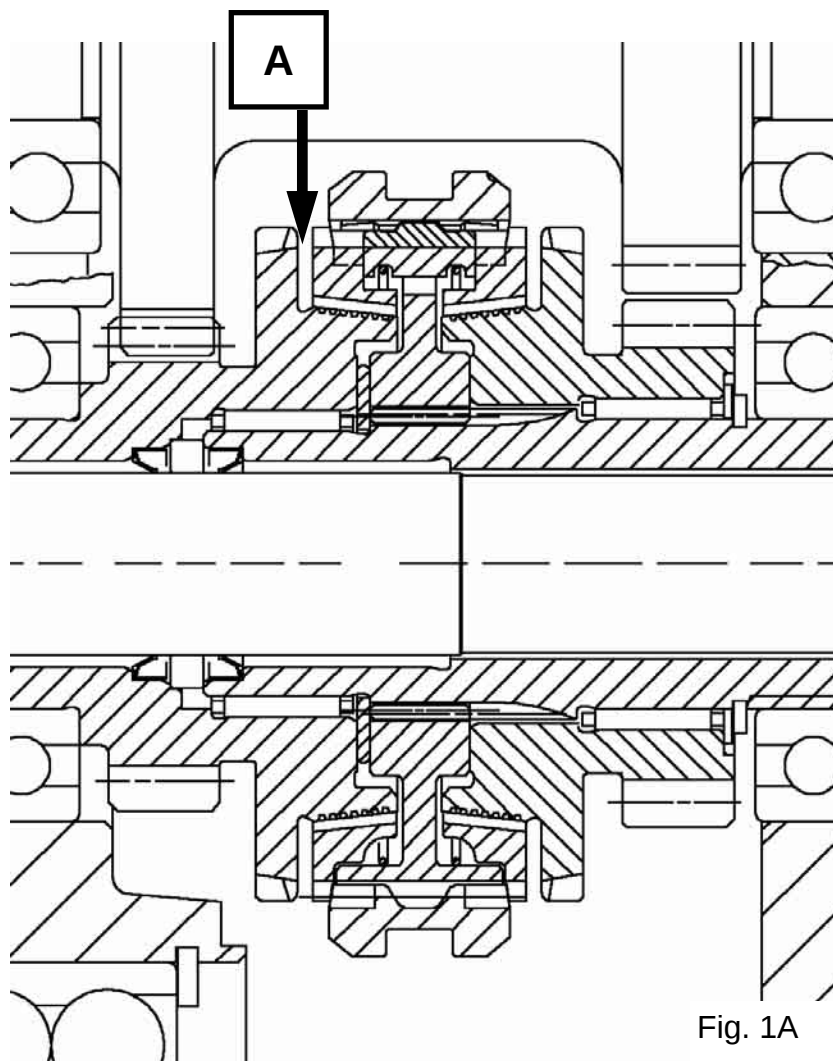


Fig. 1A

Apart from its specific use (reverse shuttle, gearbox, final drive.....), the synchromesh is certainly a very important part when it comes to the correct operation of the mechanical parts of the tractor.

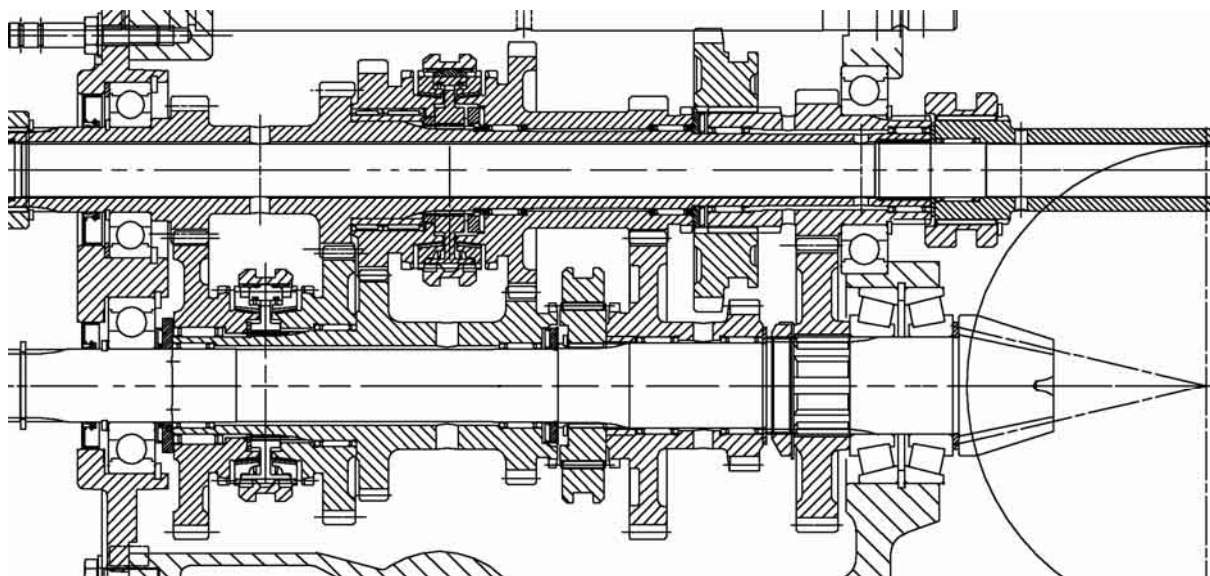
The main characteristics of the type of synchromesh used in this tractor and that are common to all its used, are briefly illustrated in this foreword.

As illustrated in fig. 1A, when the synchromesh is new and the cones are not worn, gap A must measure **1.8-2 mm**.

This gap will gradually become smaller as the synchromesh wears.

When the gap has been reduced to zero, the synchromesh is completely worn and will no longer be able to carry out its function.

Besides this wear travel, there is another operating parameter of the synchromesh that must be kept under control. This is the float, which must be around 0.5-0.8 mm. This is the measurement that allows the synchromesh pack to exercise its braking action on the conical surfaces.

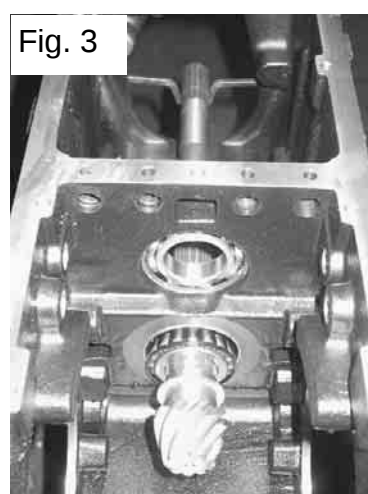
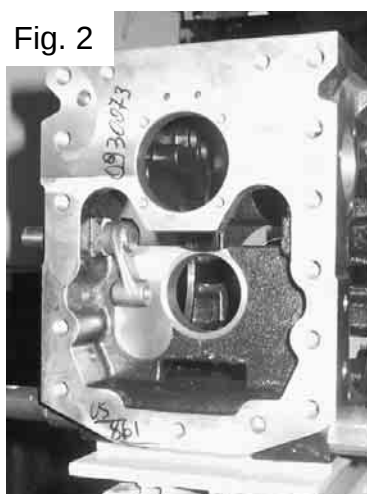
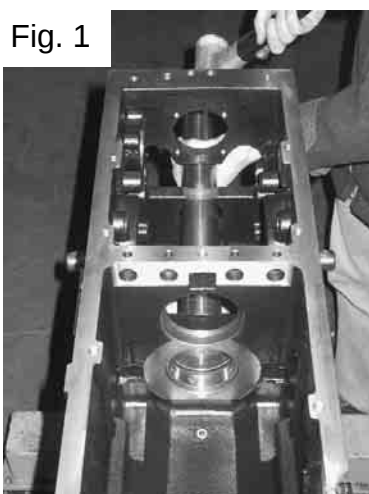


The gearbox assembly depicted here is that of the RS version.
The articulated version will be described further on.

When the gearbox is assembled, the first thing to do is to position the outer shells of the taper bearings which will position the rear taper pinion as illustrated in fig. 1. Use a plug as shown in the figure.

Before proceeding with the assembly operations, do not forget to position the PTO selector fork support as shown in fig. 2.

As illustrated in fig. 3, mount the taper pinion after having also mounted the bearing on the upper shaft as shown in fig. 3.





The bottom part of the PTO can also be mounted separately as shown in fig. 4 by inserting the bearings and relative spacers and circlips visible in the photograph.

The shims will have been established previously and no additional adjustments will be required.

Fig. 4

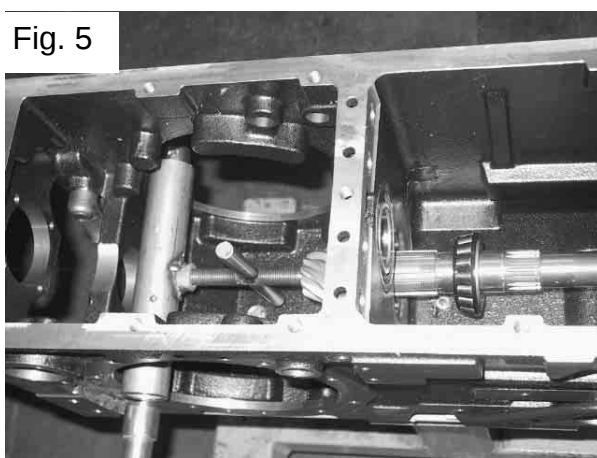


Fig. 5

Fig. 5 shows how pinion assembly continues with the aid of a positioned, which keeps the pinion in position while the second taper bearing is mounted.

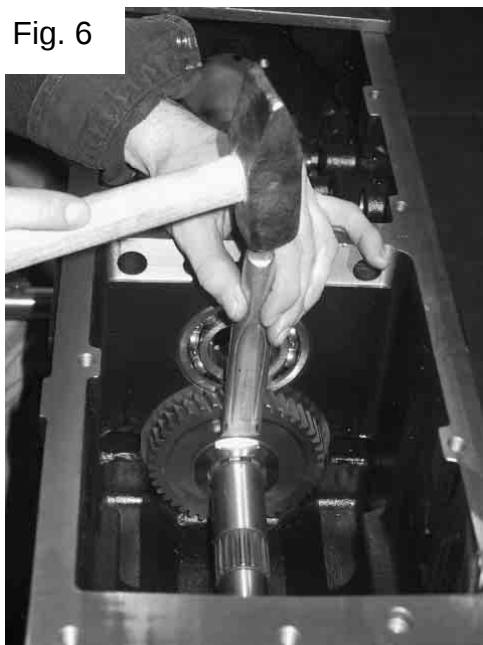


Fig. 6

Fig. 6 shows how to mount the ring nut and ring nut retainer plate after the gear has been mounted on the taper pinion.

Comply with the following procedure to tighten the ring nut:

- fully tighten the ring nut, then loosen it 1/4 of a turn. Check to make sure that the pinion turns freely, then strike it a couple of times with a plastic mallet to bed and torque again to 3 Kgm.

Clinch the ring nut retainer, make sure that the pinion turns smoothly, strike it again with the hammer to bed until you are certain that all parts have fully seated.

The PTO clutch assembly can now be mounted. The clutch assembly has already been described in the relative chapter.

The premounted clutch pack is used and merely the closing circlip removed as illustrated in fig. 7 in order to be able to mount the PTO shaft.



Fig. 7

As illustrated in fig. 8, premount the main shaft of the gearbox above the PTO shaft, taking care to only mount the roller cage from the clutch side and the roller cage plus spacer from the gearbox side.

Now mount the PTO selector sleeve on the main shaft. Pay attention to the turning inside the sleeve which must point towards the engine once the shaft has been mounted inside the gearbox housing as illustrated in fig. 9.



Fig. 8



Fig. 9



Fig. 10

Now mount the entire shaft in the gearbox housing (as shown in fig. 10), including the circlip that closes the PTO clutch.

The clutch pack will have already been installed in the gearbox housing as can be seen in fig. 10. It is held in position by the bearing of the rear shaft of the PTO, assembly of which has already been described.



Tilt the assembly as shown in fig. 10 in order to fit it inside the housing.

Match the spline of the main shaft with the one inside the PTO clutch while you carry out the operation shown on the previous page.

Fig. 11

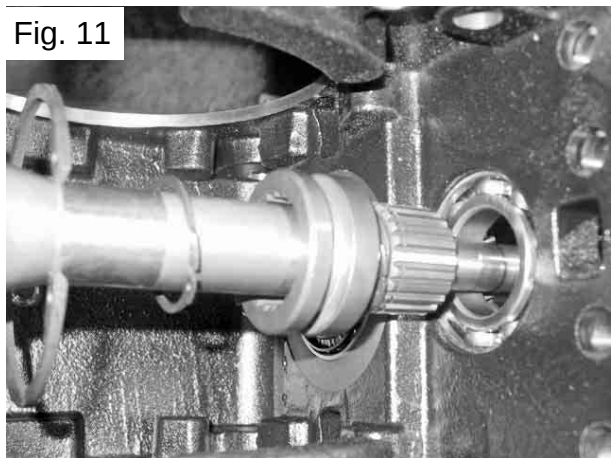


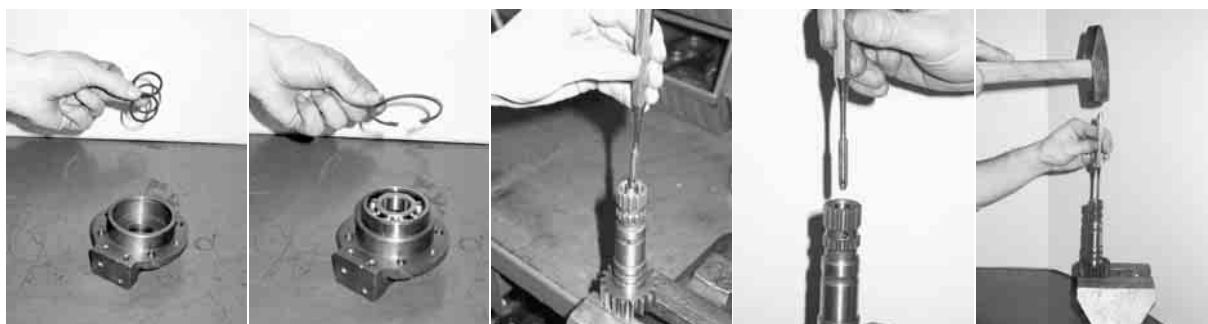
Photo 11 shows the moment in the assembly sequence when all the circlips have been premounted on the shaft, ready to be fitted in their respective housings.

Fig. 12

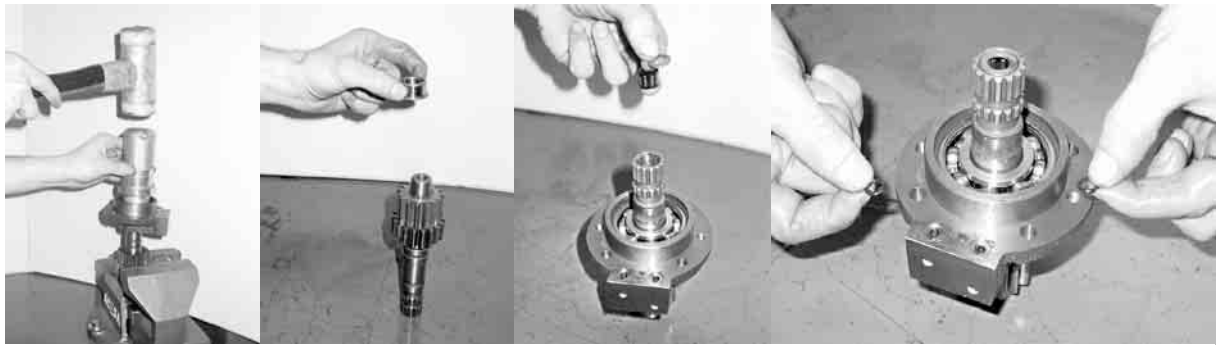


Now position the rear shaft of the PTO with the main PTO gears. This operation is illustrated in fig. 12 which shows the correct direction of the flange that acts as a timing system for the clutch pack.

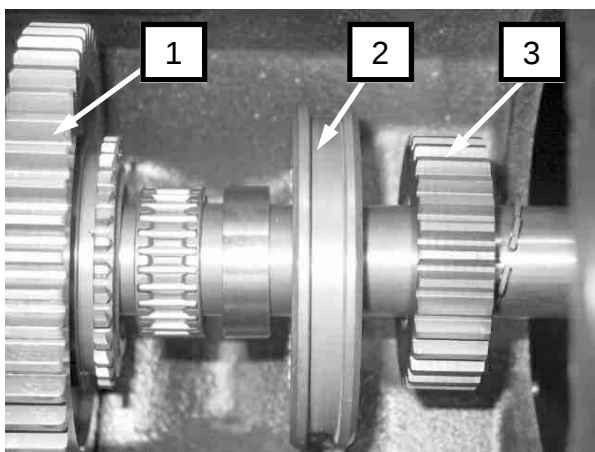
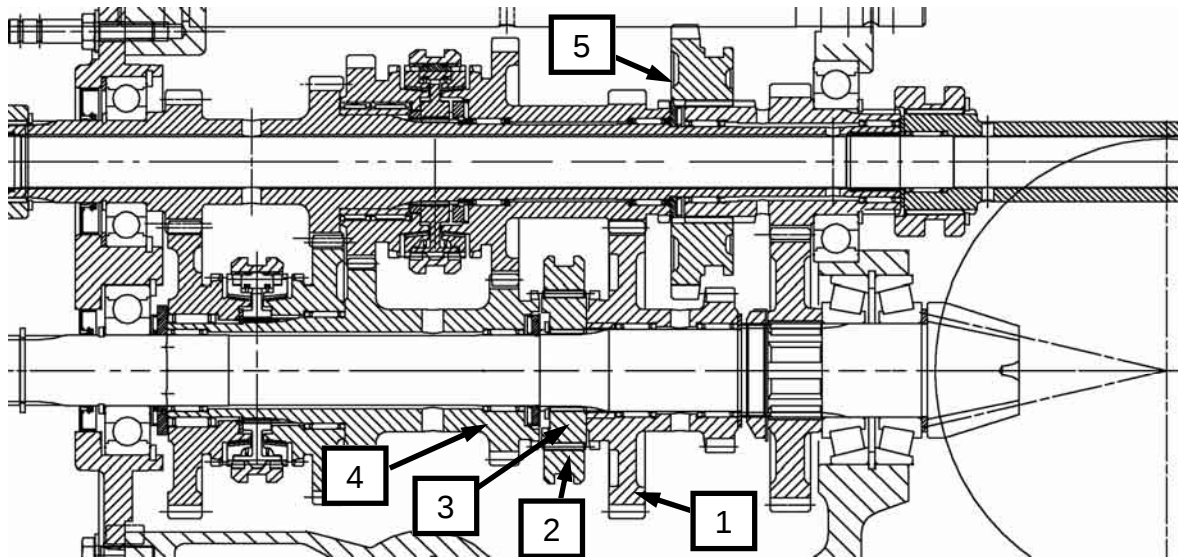
The main phases whereby the rear shaft of the PTO is mounted are described below (see fig. 12).



As illustrated in the sequence above, fit the plug in the small hole of the rear shaft of the PTO then clinch it with the pin driver to prevent it from accidentally working loose.



The photos above show the conclusive phase of the PTO shaft assembly sequence. Do not forget to mount the O-Rings in the channel that supplies oil to the clutch pack as illustrated in the last photo, or the entire assembly will have to be demounted again.



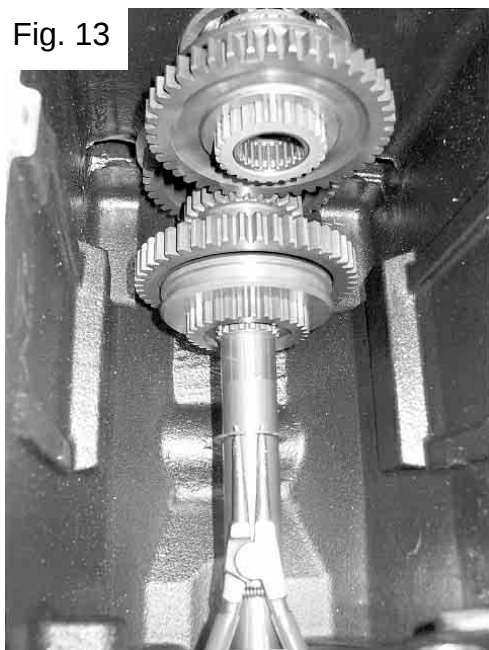
The figure at the side shows how the lower shaft is mounted in the gearbox housing.

Numbers 1,2 and 3 indicate the parts of the assembly and the same parts again during the assembly sequence.

During the assembly phase, insert the spacer and circlip between parts 3 and 4 as shown.

Before mounting gear 1 of the assembly, position gear 5 and part of the upper shaft so that the next operations can be carried out correctly.

Fig. 13



At the same time as the lower shaft is mounted in the gearbox housing, begin to mount the upper main shaft as illustrated in fig. 13, taking care to ensure that the respective gears mesh correctly and setting them in position as illustrated in fig. 13.

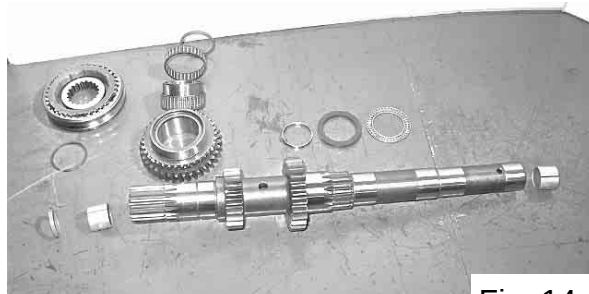


Fig. 14

Fig. 14 shows some of the components of the upper main shaft that can be prepared for assembly.

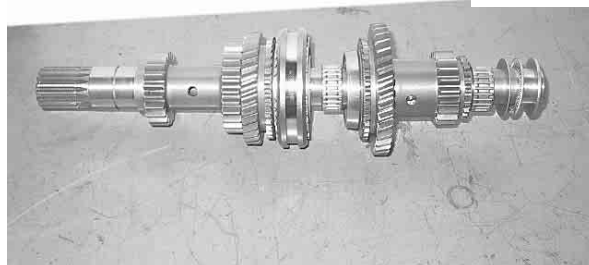
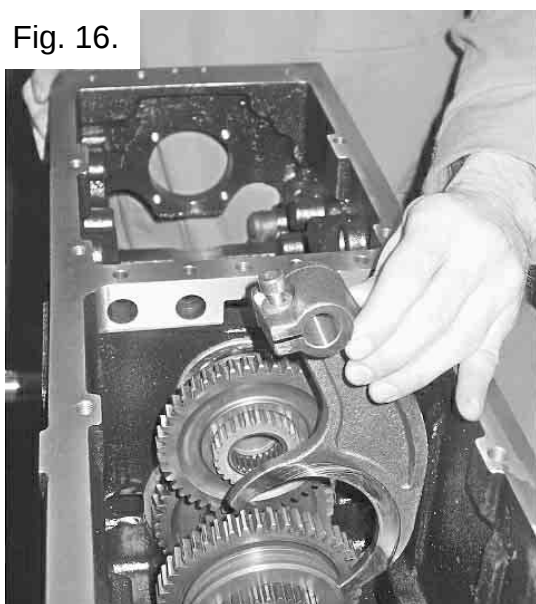


Fig. 16.



While the pre-assembled pack is positioned in the gearbox housing, the control fork of the final drive must also be positioned as shown in fig. 16.

Do not forget to mount the circlip that positions the central sleeve in the synchromesh pack as shown in fig. 15 (part K).

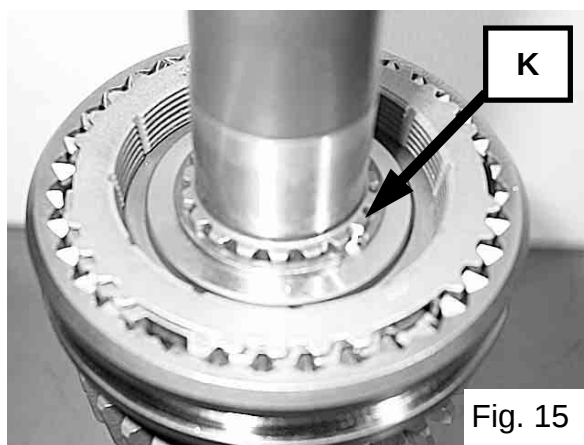


Fig. 15

Fig. 17



Mount the upper main shaft as shown in fig. 17.



Fig. 18

Proceed by mounting the lower shaft down to the lower synchromesh. Do not forget to also mount the retaining circlip of the central sleeve in this synchromesh unit.

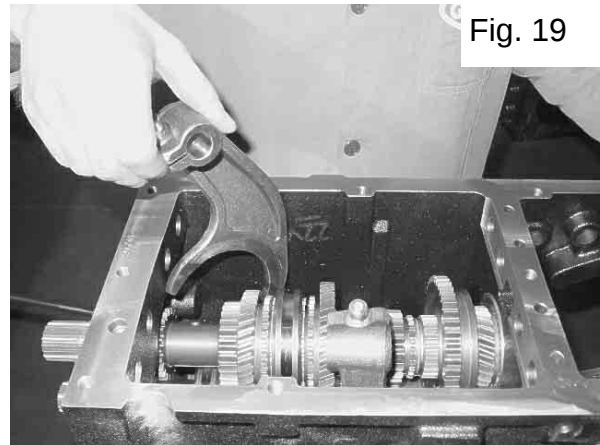


Fig. 19

Now mount the gear selector fork on the lower shaft as shown in fig. 19.

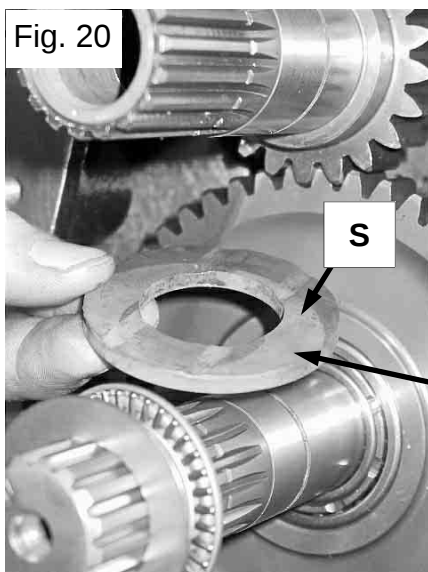
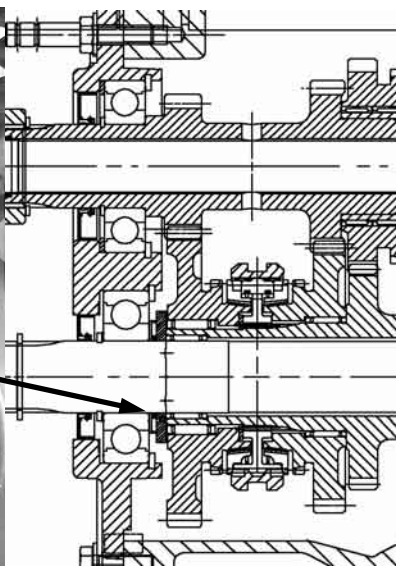


Fig. 20



Besides the axial bearing, do not forget the spacer S of fig. 20 that keeps the roller cages under the gears and one of the two tracks of the axial bearing, when closing the synchromesh pack of the lower gear.

Fig. 21



The closing flange can be premounted by premounting the bearings and circlips. Do not forget the spacer that should be mounted behind the upper one.

The closing circlip of the bearing on the lower shaft should also be shimmed after the front flange has been mounted and its surfaces spread with silicone.

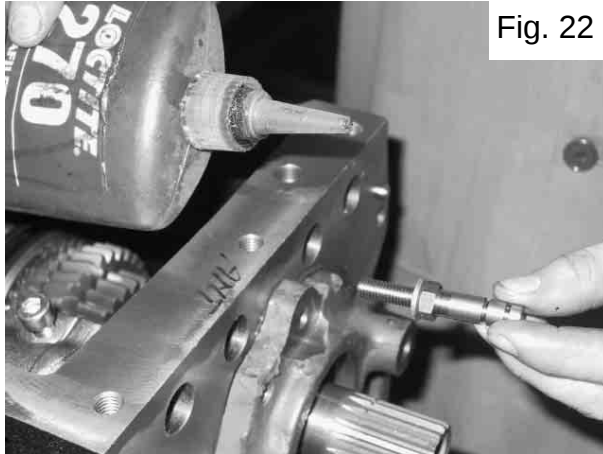


Fig. 22 Tighten the M8 fixing screws of the front flange to a 3 Kgm torque after having applied Loctite 270 to the upper screws as illustrated in fig. 22.

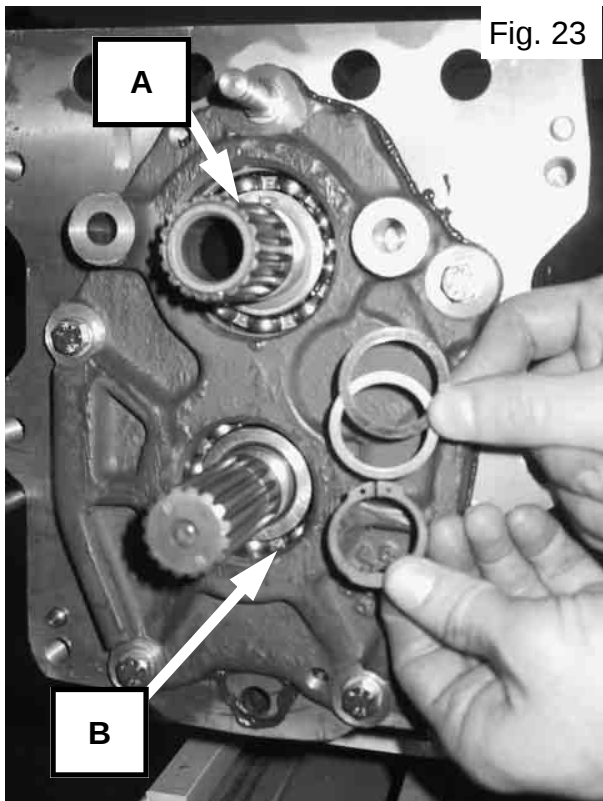


Fig. 23 While all that's needed is to mount the shaft closing circlip on shaft A of fig. 23, shaft B must be shimmed between the circlip and bearing as described below:
- form a pack with the bearing, then shim with two 0.2-0.4 mm spacers and mount a reinforced circlip depending on the play required by the synchromesh unit.

Working from above with a screwdriver, divide the play amongst the taper rings of the synchromesh and check that a 0.6-0.8 mm play remains on each side with the central ring in the neutral position. Now check that the gears engage on the synchromesh, first on the right then on the left, and make sure that there are all the play allowances required to ensure that the synchromesh unit operates correctly.

Lastly, using a brush, grease the seal on the oil retainer mounted on shaft A of fig. 23 before mounting the central PTO shaft.

Once the operations described above have been carried out, mount the retention rings on shafts A and B of fig. 23 and proceed with the following operations.

Mount the end of travel circlips in the relative housings on the sliding couplings of the same shafts.

NOTE: When the mechanical parts of the gearbox are replaced, always replace all seals (oil retainers and O-Rings) as these can be damaged when the shafts are mounted and demounted and this damage is often not visible.

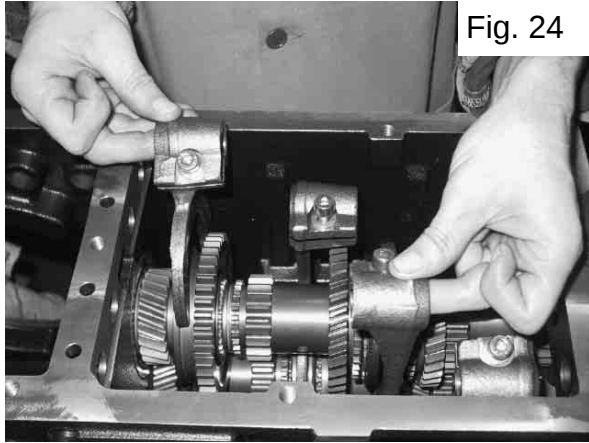


Fig. 24

As illustrated in fig. 24, you can now proceed by mounting the upper forks: the one that operates the 3rd and 4th gears and the one that operates the final drive.

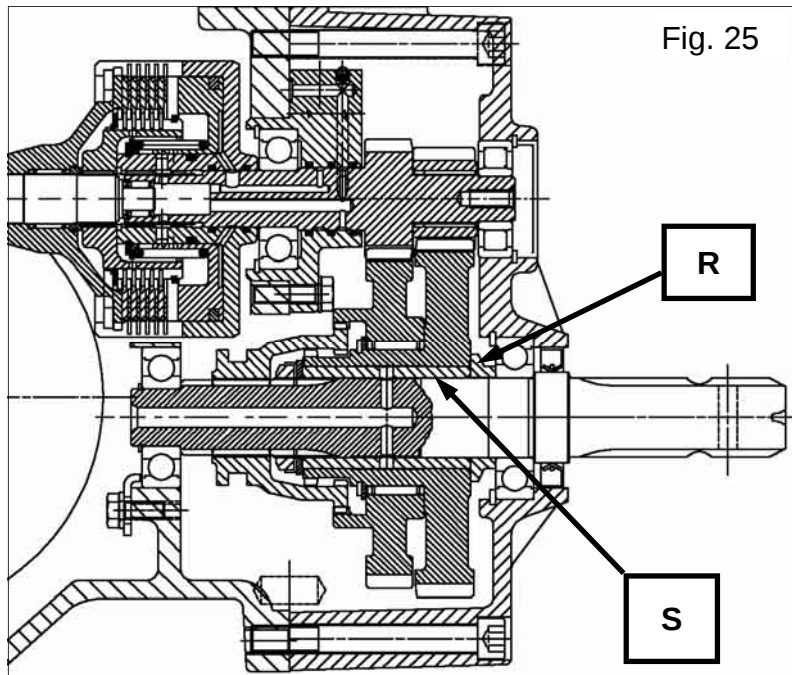


Fig. 25



Fig. 25 a

Before going further with assembling the forks and gearbox rods, it is advisable to finish the rear part of the PTO. Pre-mount the upper roller bearing and lower PTO shaft on the rear part, as shown in figs. 25 and 25a.

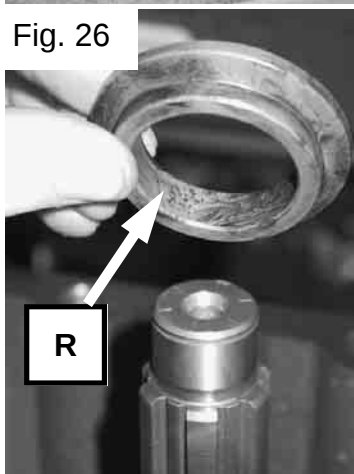


Fig. 26

Figs. 26-27 illustrate the successive phases to carry out when mounting the lower shaft of the PTO. Pay attention to the direction in which the spacer in fig. 26 is mounted, then proceed as shown in fig. 27 and mount the sulphurized bush.

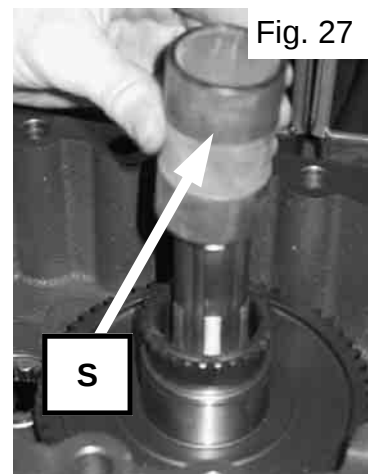
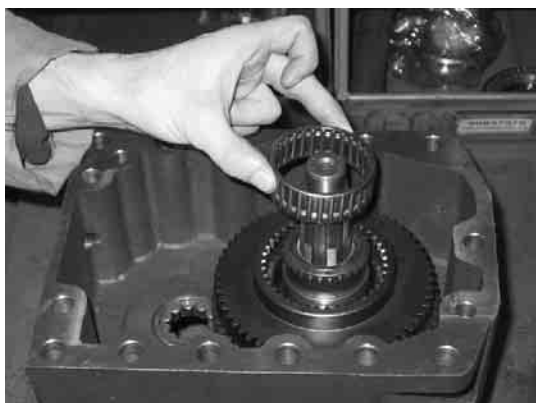


Fig. 27



Proceed with the mounting operations in compliance with the sequence indicated in succession in the photographs.

Take care to mount the parts in the correct order: spacer, retainer plate and ring nut.

Fully tighten the ring nut to an 8 Kgm torque, then clinch the ring nut retainer washer on both sides.



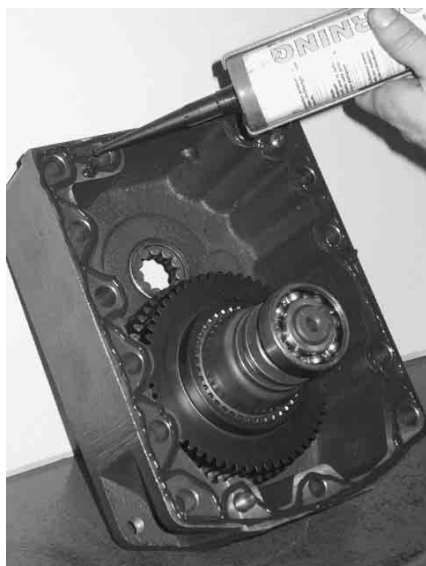
Complete the assembly by mounting the selector sleeve, the bearing and circlip that holds the bearing in place.

Before finally mounting the rear casing, do not forget to position the PTO speed selector fork inside the previously mounted control fork.



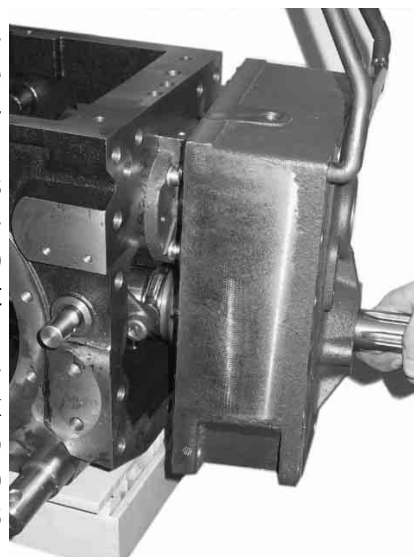
After the rear casing is mounted (after having been carefully siliconed), move the PTO selector sleeve towards the bearing to make it easier to mesh the fork and the relative race.

Thoroughly silicone the entire profile of the casing that couples with the end part, also including the two small supports inside the casing itself.



As shown in the sequence alongside, turn the PTO shaft when assembling the rear cover and, using the other hand as shown in the photograph, insert the fork into the sleeve in the correct way.

When fixing the end casing, tighten the M 12 x 100 Allen screws to a 6 Kgm torque and the two M 14 x 40 screws to an 8 Kgm torque.



After having tightened the screws, check to make sure that the fork engages the sleeve when activated externally: turn the PTO with one hand and test the function with the other.



The external PTO speed selection parts can now be mounted.

The selector plate mounted outside the casing is first mounted without tightening the fixing screws: adjustment of the neutral point and the play in the two selection conditions (540 and 750 rpm) of the PTO must be checked.



As illustrated in fig. 28, the Allen screw is used to preload the spring in order to obtain sufficient pressure on the ball to prevent the selection from being disengaged by the vibrations and operating conditions of the machine. Now tighten the check nut.

Lastly, fix the screws that lock the plate in position to a 2 Kgm torque value.

Fig. 28

NOTE:

Use the same identical procedure to adjust the selection plate of the PTO control lever on the right-hand side of the tractor.

The operations required and their sequence are the same.

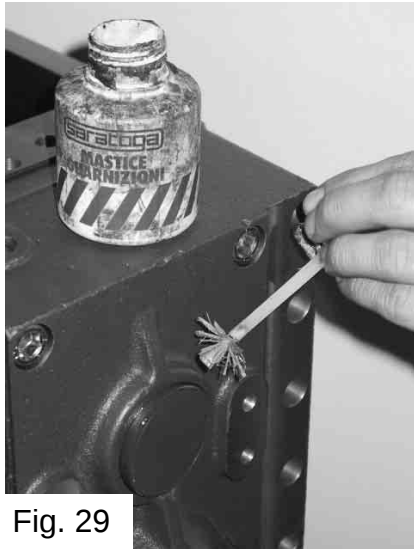


Fig. 29

As shown in fig. 29, shut off the top hole of the PTO cowling with a plug and cement.

Now proceed by mounting the PTO selection control rod (for independent or synchronized operation) as illustrated in fig. 30.

The support of the internal control fork should be pinned on the previously mounted control rod, as shown in fig. 32.

Comply with the previous instructions in order to adjust the plate externally.

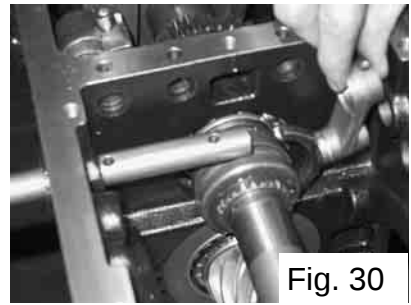


Fig. 30



Fig. 31



Fig. 32

As shown in fig. 33, mount the rod positioning circlips with a pair of circlip pliers.

Before pinning the PTO control lever, position the oil retainer O-Ring on the rod as shown in fig. 34.



Fig. 33

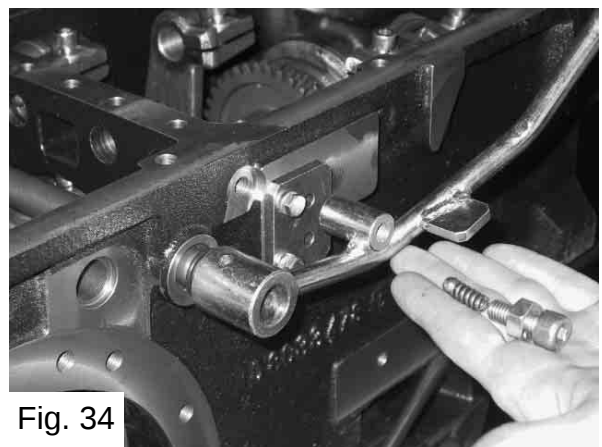


Fig. 34



As illustrated previously, mount the O-Ring, the spacer and then, when it comes to the external linkage of the differential lock, the diff lock pedal hub.



As shown in the two photos alongside, mount the diff lock pedal and then complete this part of the assembly.

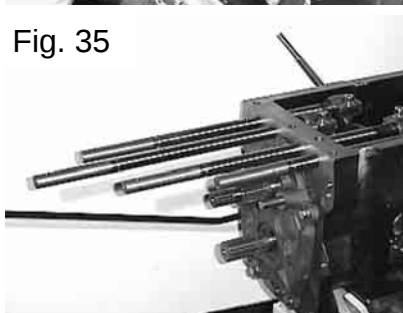


Fig. 35

Lastly, mount the gearbox and final drive rods and their relative retainers. First mount the two rods towards the center of the machine. Set the two innermost rods in the neutral position and insert the two retainer pawls as illustrated in fig. 36.

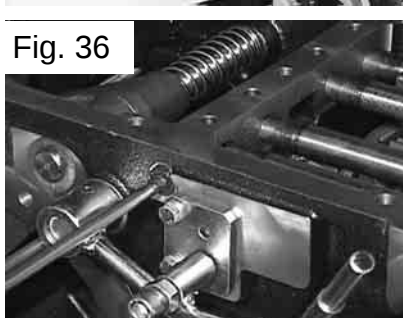


Fig. 36

- Mount the two outermost rods, fitting the retainer pawls between the two consecutive rods.

During the assembly operations, it is important to keep all four rods with the sleeve fixing hole vertical. This can be done with the aid of a pin driver. Now tighten everything temporarily, make sure that all parts have been installed then check the travels and make sure that everything engages properly.

Remember that the first rod from the left (1) has a small fork that acts on the main shaft while the second (2) rod acts on the transmission shaft.

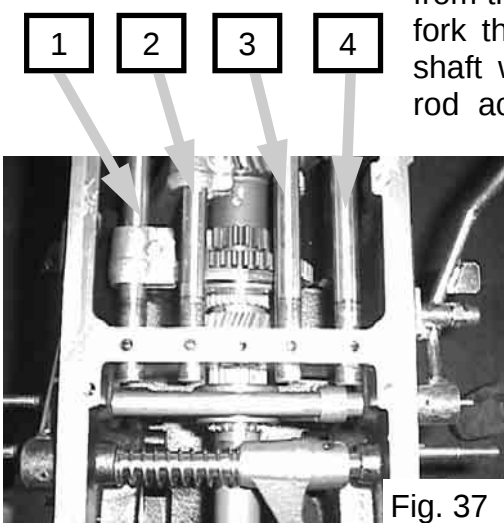


Fig. 37

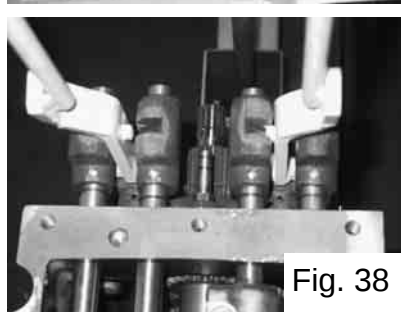
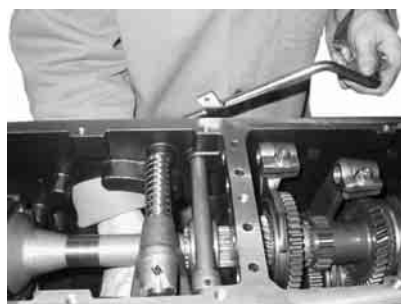


Fig. 38



Fig. 39

The third rod (3) operates by means of a long fork on the transmission shaft while the fourth rod (4) operates by means of a short fork on the main shaft.

The rods must be mounted with the selection races obligatorily pointing upwards.

Once the retainers have been inserted through the holes in the casing, shut off the holes themselves with the relative plugs after applying silicone to prevent oil leaks.

The forks can now be definitively torqued on the rods:

With the fork in the neutral position on the synchromesh, find the neutral position on the rod by loosening the Allen screw of the fork itself. Distribute the play equally between the end of travel points.

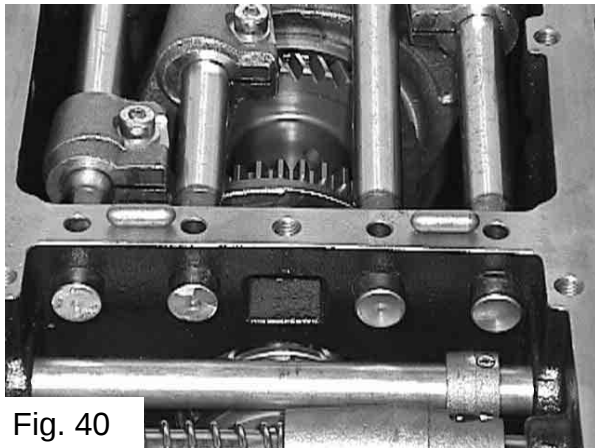


Fig. 40

The figure on the left shows where the two retainers are positioned.

Bear the following considerations in mind when assembling the gear and final drive engaging sleeves: (see fig. 38 and 39).

- both the two control sleeves of the final drive and those of the gear control must slightly converge one towards the other so that the central lever is unable to slip out of the setting.

When the control engages in the sleeve, a gap of about 2 mm must remain on the opposite side (gap A of fig. 41).

The last thing to do is to check how the retainers operate: keeping the lever (both on the gear side and final drive side) in the central position and attempt to engage both sleeves in the selection position. This must be impossible to do.

If this is not the case, check the size of the retainer which will certainly be incorrect.

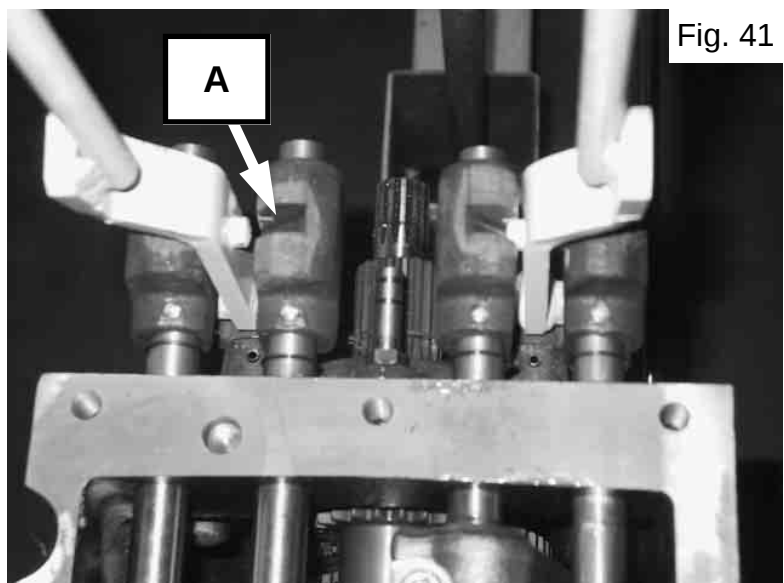


Fig. 41

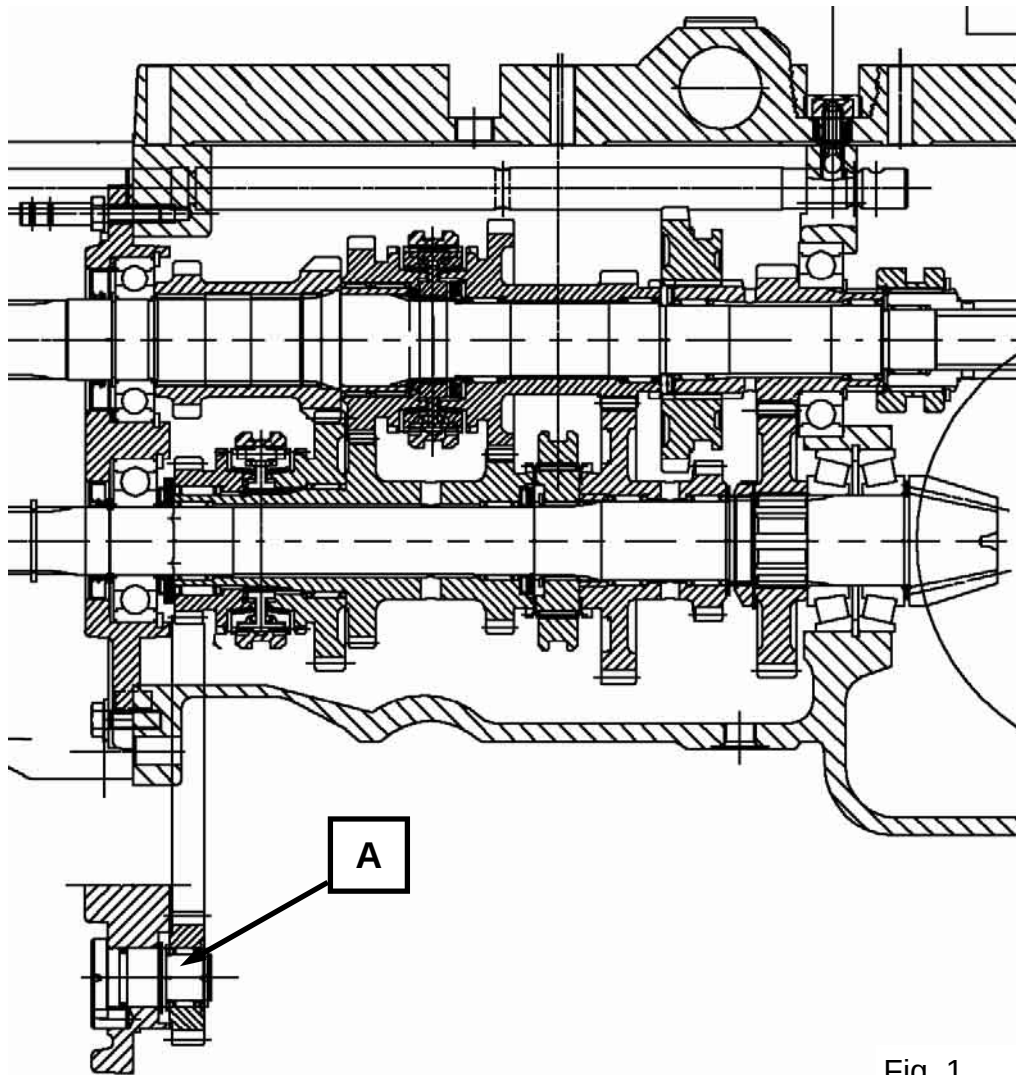


Fig. 1

As shown in the power train diagram, unlike the RS version, the SN version does not have a reverse shuttle but just the REV function (shaft A of fig. 1). Instead of being a 16+16 type, it is a 12+4 one. When it comes to the other gearbox assembly specifications, there are no significant difference in relation to the RS version so comply with the instructions given on the previous pages.

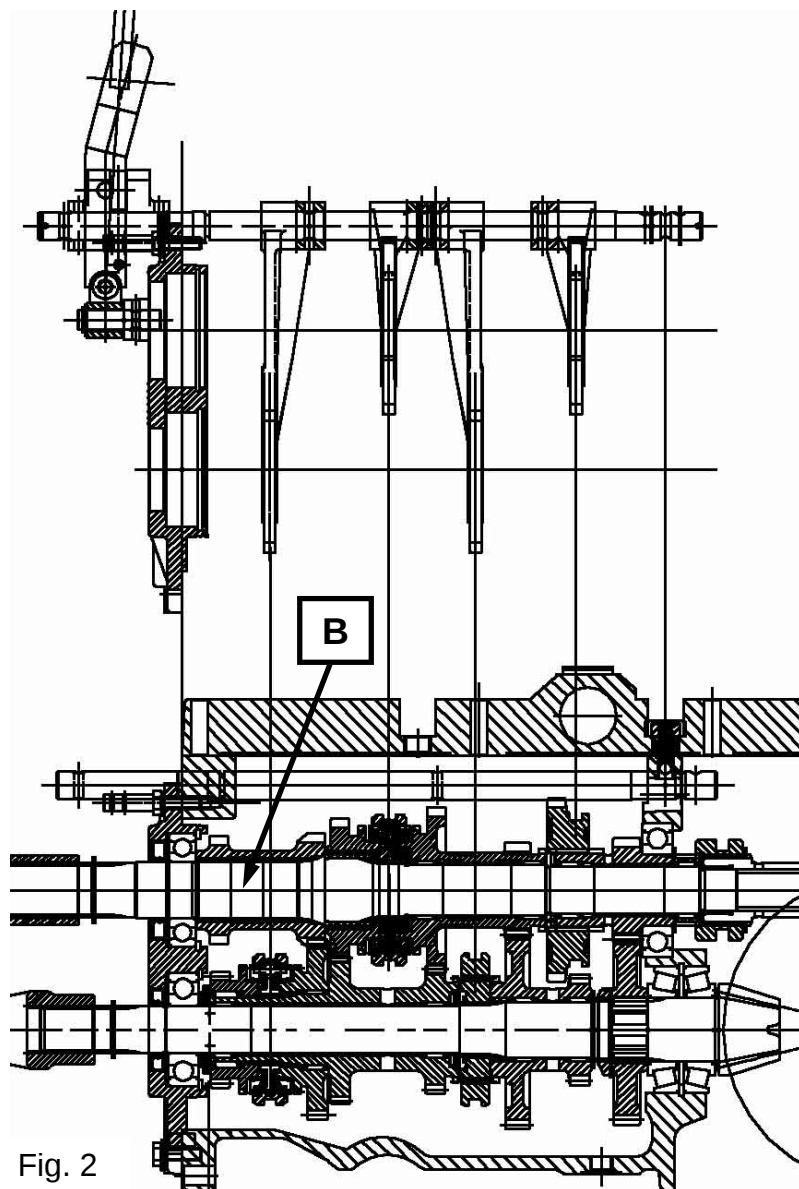


Fig. 2

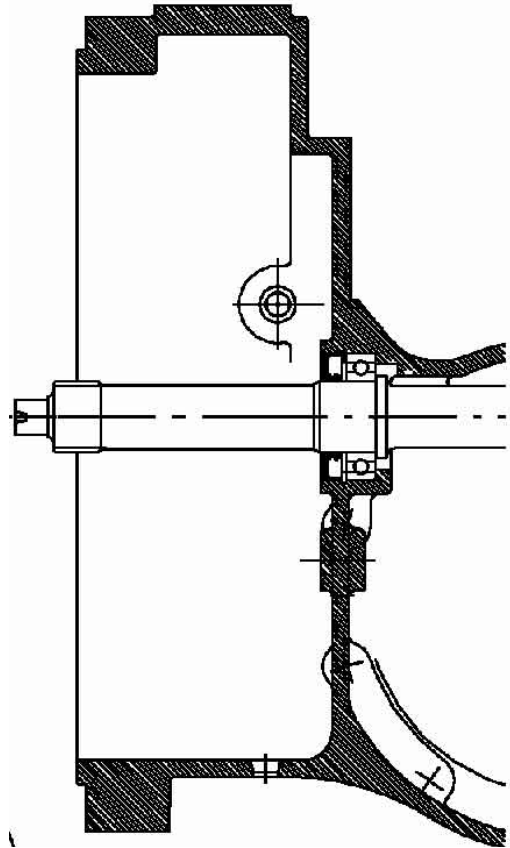
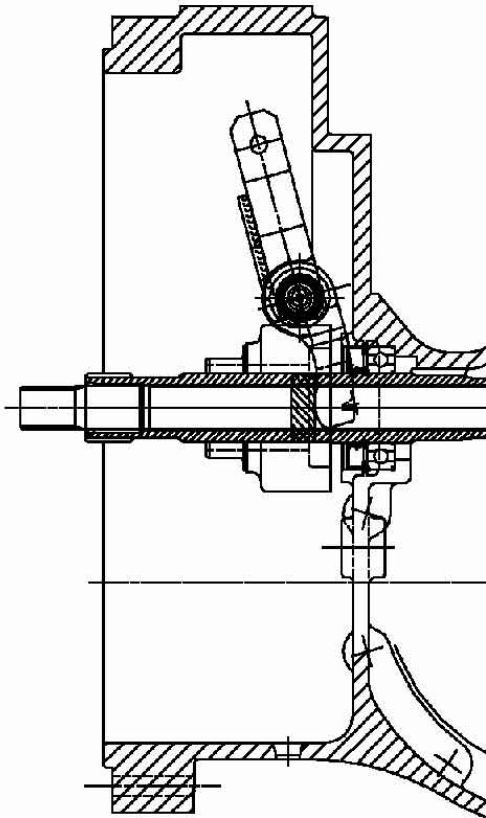
With reference to the slightly different set-up of the gearbox and the different number of speeds, the positions of the gearbox forks and the gears on which the forks act are illustrated in fig. 2.



One of the other parts that differs in the RS and SN versions is the main shaft.

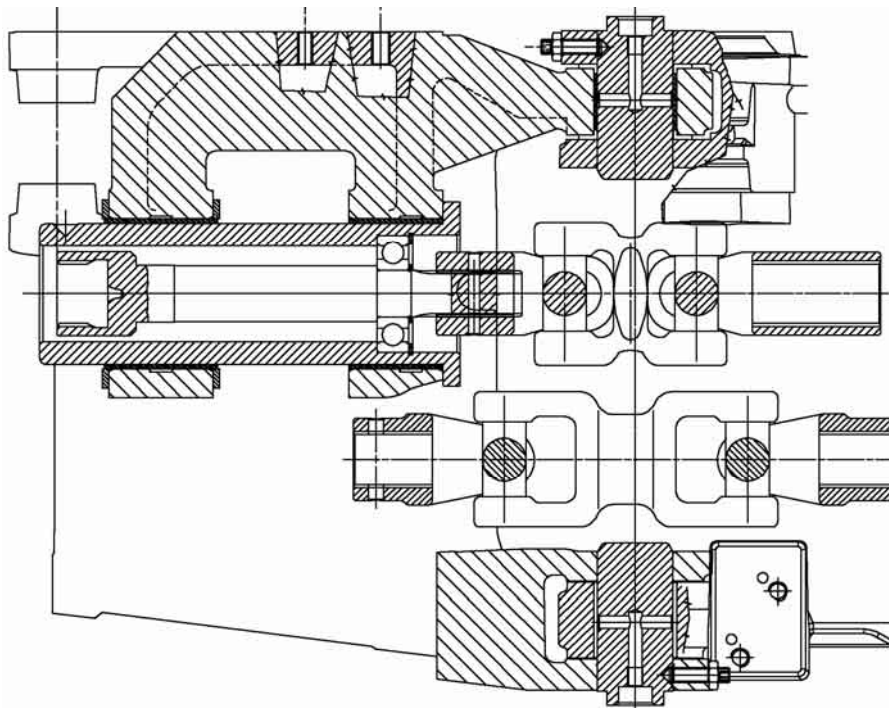
As already described in relation to the oil-cooled disc clutch that acts on the PTO, there is a substantial difference between the articulated version and the RS version: while in the RS version, the PTO shaft is independent from that of the driving clutch and takes its movement from the flywheel, it is the drive shaft that transmits movement to the PTO in the SN version.

This means that the RS version has a hollow main shaft housing the PTO shaft while in the SN version, the main shaft is one and only and solid.



The two drawings above show the differences between the main shafts in the RS and SN versions.

The indications already given for the RS version are also valid for the SN version when it comes to the adjustments required by the front and rear differentials.



There is no casing that houses the reverse shuttle assembly in front of the pivot as in the RS version, but the casing of the front differential.

Moreover, the oil in the gearbox housing in the articulated version is the same as that of the RS version, i.e. 22 liters, and the type of oil is again: SAE 15W/40.

On the other hand, the oil in the front differential housing is 11,5 liters of SAE 80-W/90 in the SN version.

Fig. 3

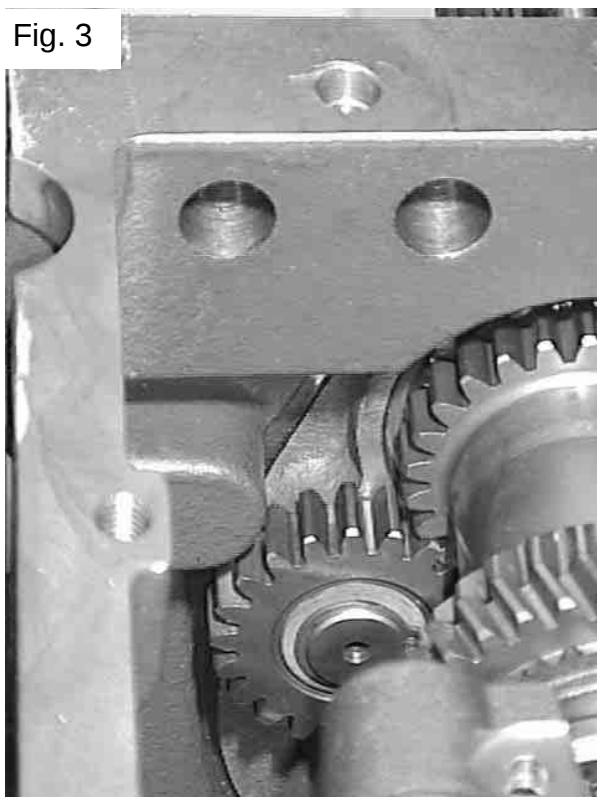
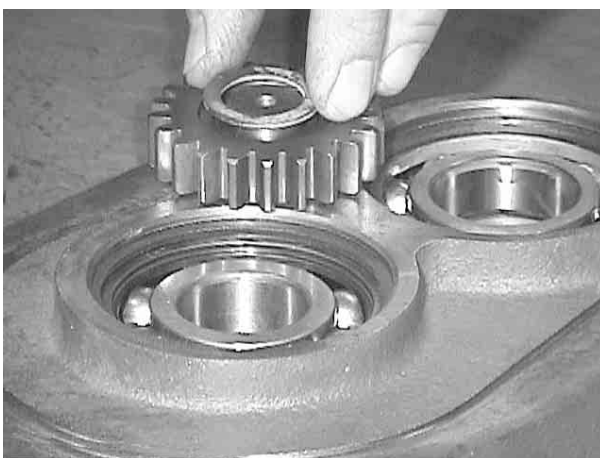


Fig. 3 illustrates a detail of the REV gear. The photo below shows how the reverse gear is mounted on the closing flange of the gearbox housing.



DRIVING TORQUES

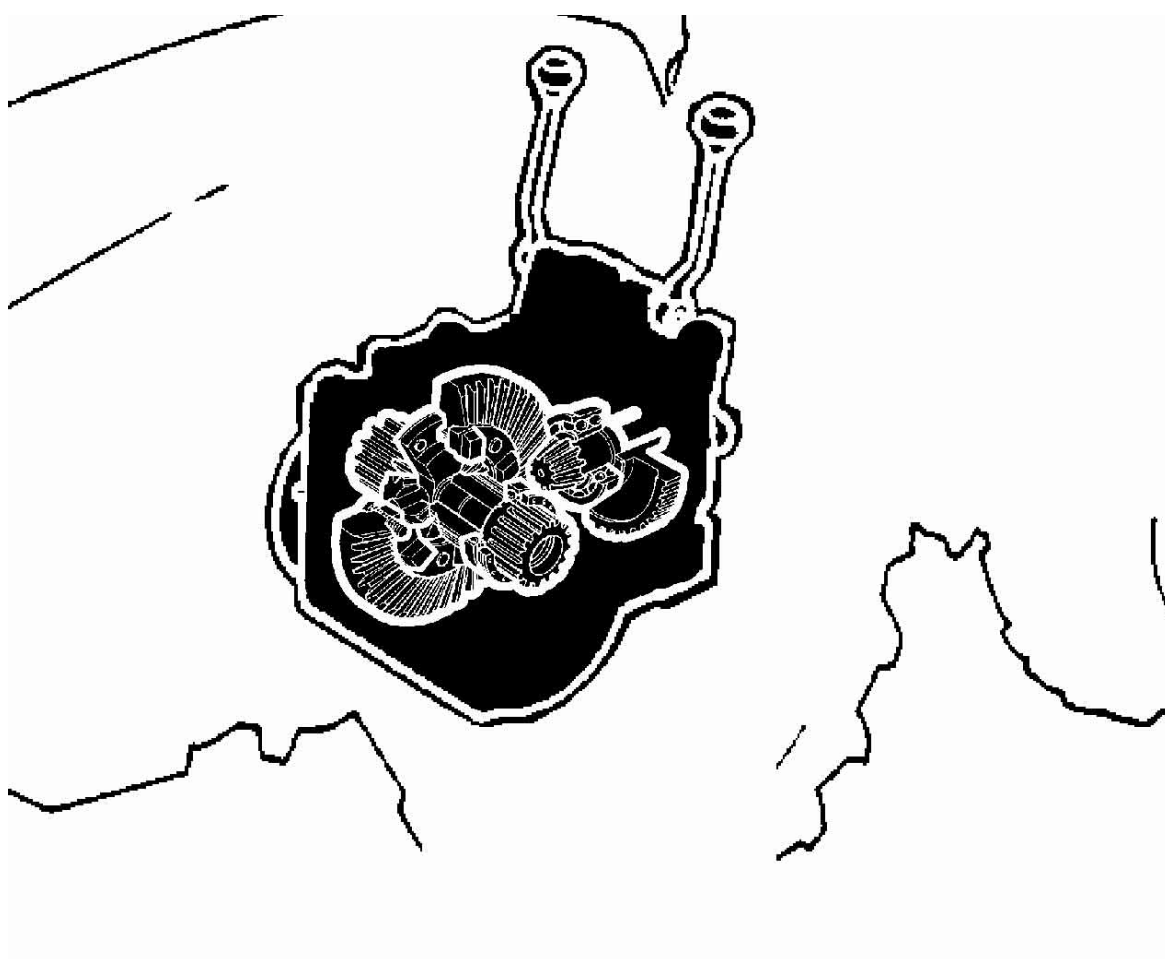
Gearbox cover fixing screws	6	Kgm
PTO end casing fixing screws	8	Kgm
PTO selection plate fixing screws	2	Kgm
M12 screws fixing the PTO end casing	6	Kgm
PTO ring nut (lower shaft)	8	Kgm
Front closing flange fixing screws	6	Kgm

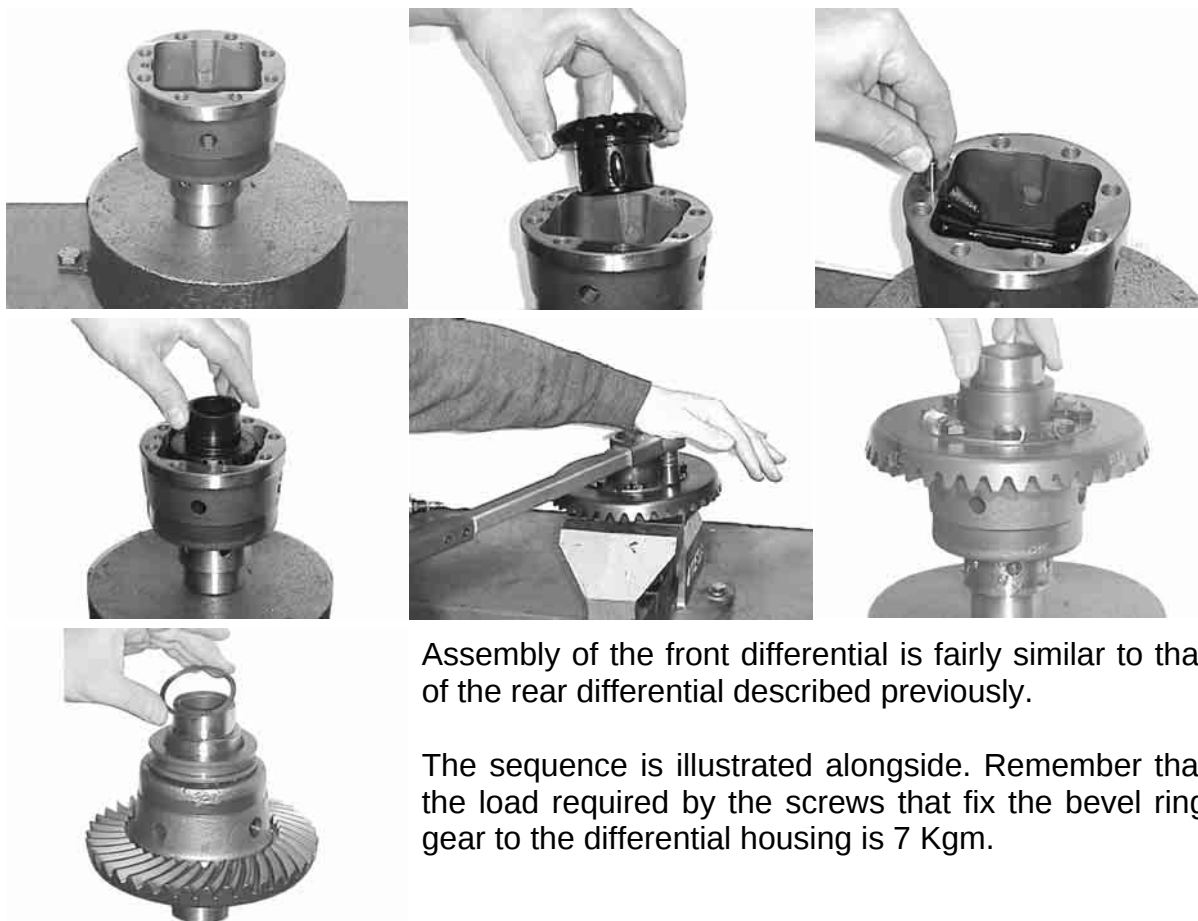
LUBRICATION

Oil	ARBOR UNIVERSAL 15W-40 (SAE 15W/40) Gearbox	22	Liters
Oil	ARBOR TRW90 (SAE 80W-90, API GL-5)	11,5	
Grease	ARBOR MP EXTRA (NLGI2)		

We recommend lubricants and liquid by: FL SLENIA .

FRONT DIFFERENTIAL





Assembly of the front differential is fairly similar to that of the rear differential described previously.

The sequence is illustrated alongside. Remember that the load required by the screws that fix the bevel ring gear to the differential housing is 7 Kgm.

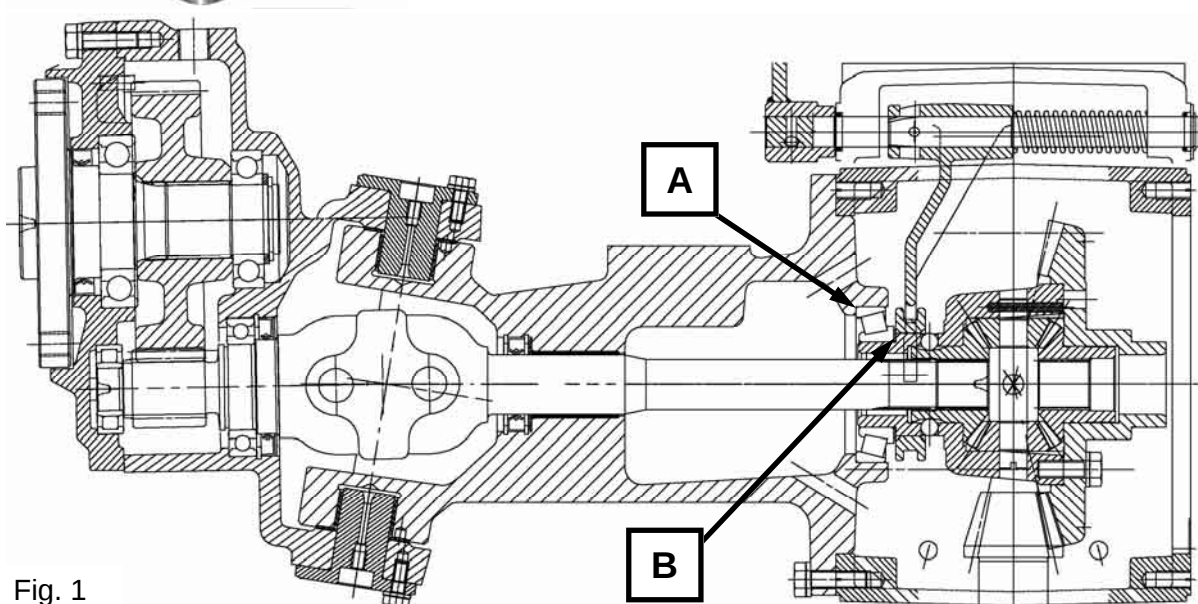


Fig. 1

Shimming and assembly of the front final drives on the front differential housing needs a further explanation.

Unlike the rear differential, the shims to add to both sides of the ring bevel gear in the front differential equal 0.1 mm (part B of fig. 1).

Shim 0.8 mm from the side of the front final drives, part A of fig. 1, shimming behind the external ring of the bearing.

Assemble both the front hubs, fixing them with 3 screws only per side.

- Check the play between the pinion and ring bevel gear, which must be between 0.1 and 0.2 mm in relation to the entire gear.

The pinion and ring gear must also be free to turn with a slight force.

If the meshing play is excessive or if the bevel gear pair is too tight, increase or decrease the thickness of the spacers between the bearing and hub in order to obtain the required result.

To decrease the pinion—ring gear play, reduce the shimming from the opposite side of the ring gear and increase the shims on the opposite side to an equal extent.

To increase the play, work through the instructions given above, but invert the shimming operations.

However, the shims required for both the front and rear differentials are those determined in the factory, which guarantee a correct meshing play between the pinion and ring gear and the correct preload on the taper bearings of the differentials.

The play between planetary gears and crown wheels must be between 0.1 and 0.3 mm.

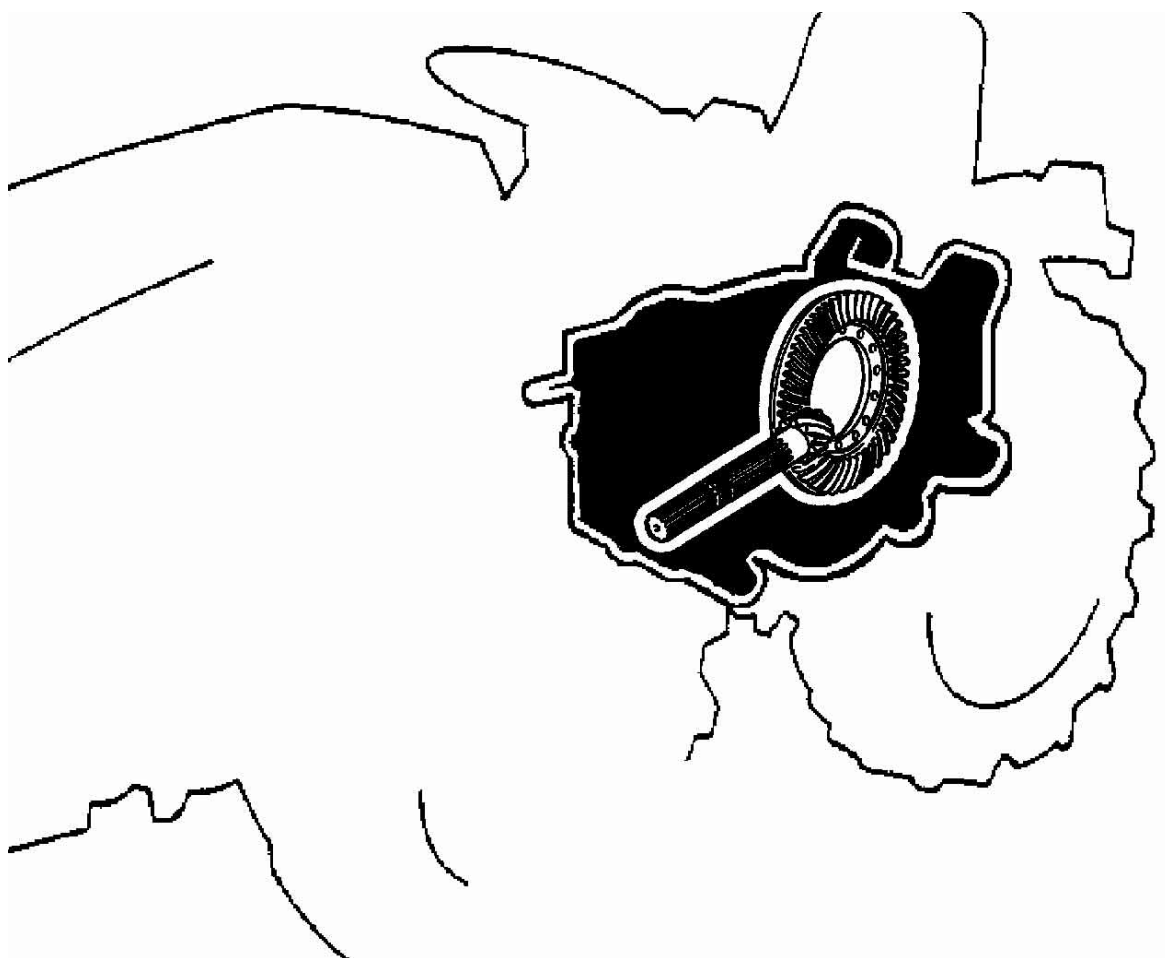
If the play is more, check the pin and replace it if necessary.

Once the correct bevel gear pair shimming has been established, definitively mount the front hubs and tighten the M 10 fixing screws to a 6-7 Kgm torque value.

DRIVING TORQUES

Screws fixing the ring gear of the differential housing	7	Kgm
Screws fixing the front hubs to the differential housing	7	Kgm

REAR DIFFERENTIAL



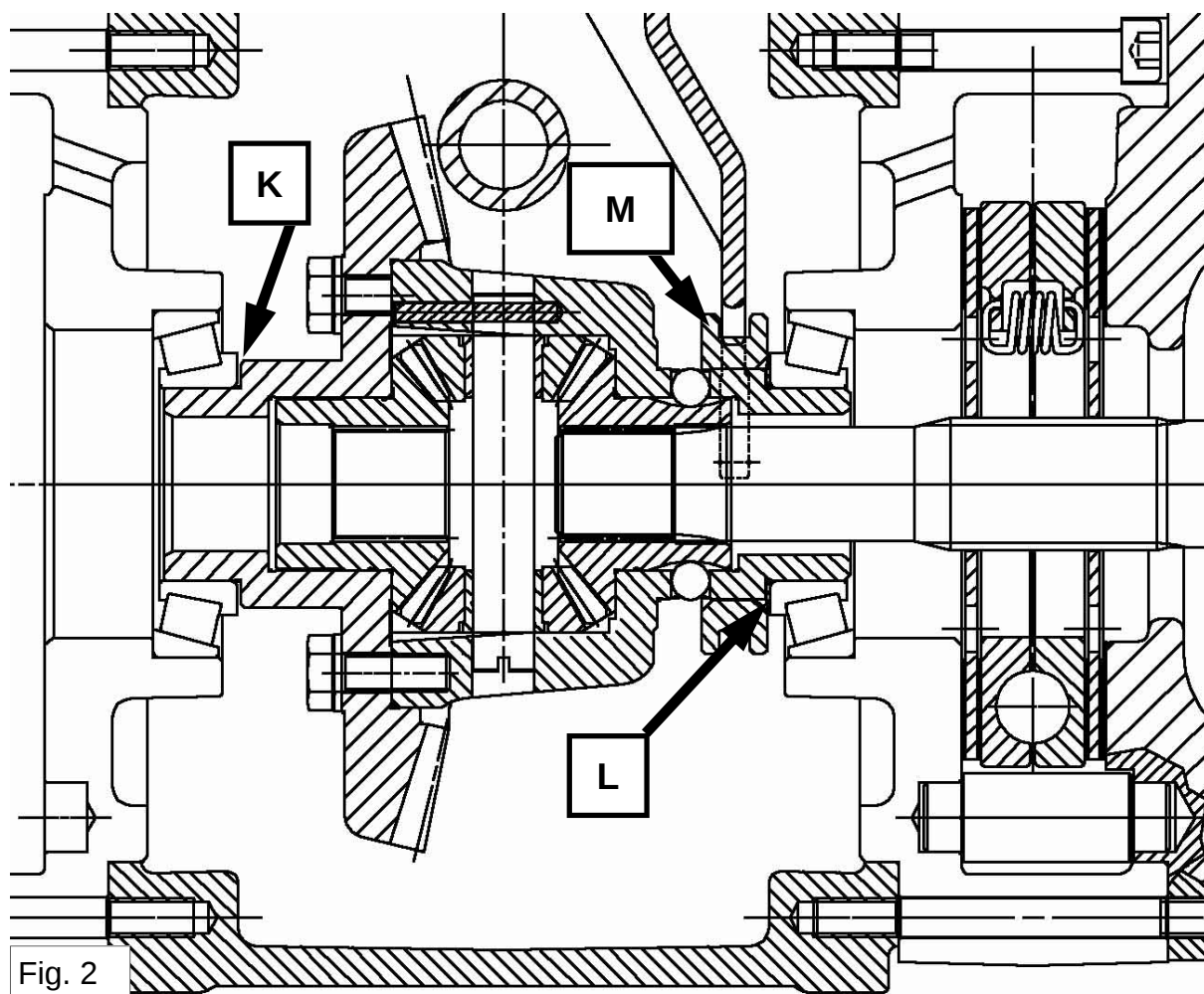
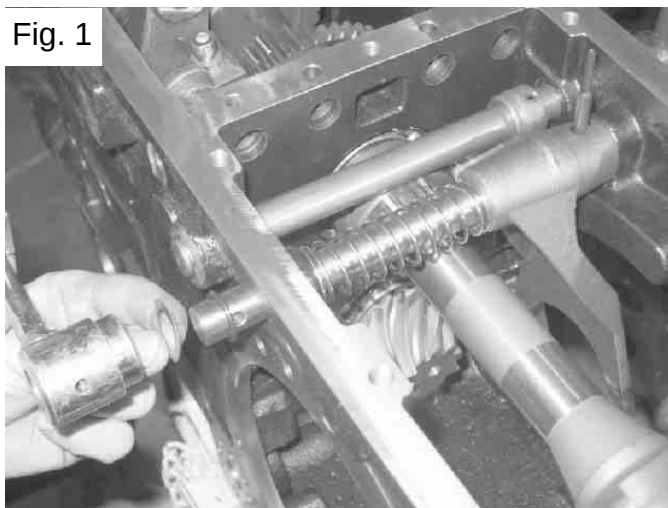


Fig. 2

Before beginning to mount the rear differential, pre-mount the rod and control fork of the diff lock as shown in fig. 1.

Pin the fork, mount the retainer O-Ring on the rod, the spacer and lastly, mount the diff lock pedal as illustrated in the figure.

Fig. 1





The photos alongside illustrate how the rear differential assembly is mounted.

It is advisable to set the external housing of the differential in the vertical position as illustrated and to carry out all the assembly operations inside it. Start with the crown wheel, then go on to the 4 planetary gears and the second crown wheel until reaching the bevel gear pair.

Tighten the special M10 screws that fix the ring bevel gear to a 7 Kgm torque value.

Do not forget the retainer pin on the spider plug. To mount it with the aid of a screwdriver, turn the planetary gear plug until the pin hole has been completely freed (see fig. 4).

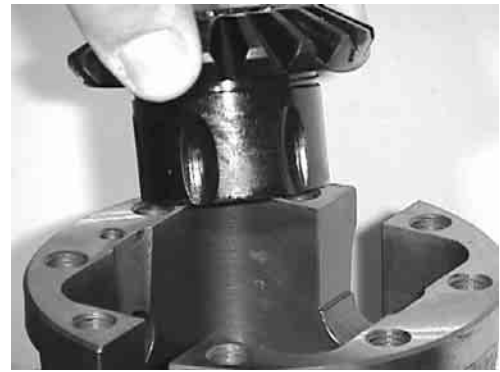
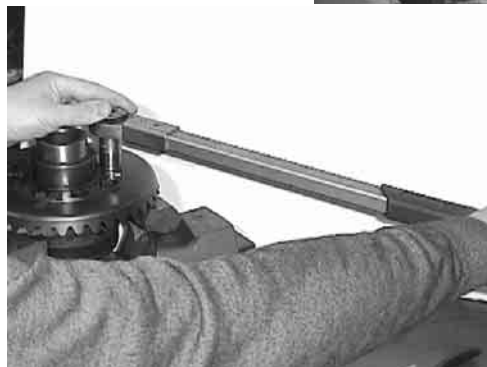
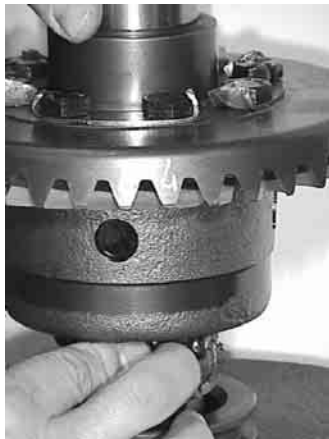


Fig. 4



Clinch the retainer plates around the bevel gear pair fixing screws to prevent them from working loose.





Complete the pre-assembly operations for the rear differential as indicated in the enclosed sequence.

During the pre-mounting phase of the differential assembly, there is a standard shimming operation to carry out that can be finished when the differential assembly is fitted into the gearbox housing if it proves to be unsatisfactory.

This shimming is as follows:

- **0.8 mm** from the side of the diff lock (balls);
- **0.6 mm** from the side of the bevel ring gear fixing screws.

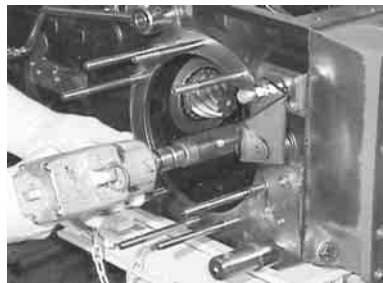
The points where shimming must be carried out are indicated with the letters

K and L in fig. 2:

K -0.6 mm

L- 0.8 mm.

Shim L also acts as a support for the diff lock ring. Make sure that the diameter of the spacer is correct to prevent incorrect positioning of the locking ring from causing the balls to slip out.



NOTE:

The rear differential housing can be distinguished from the front one as it has an extra hole and slot.

The rear hubs should be mounted without any spacers between the taper bearing on the differential and the hub. Once both rear hubs have been pre-mounted along with the braking weights, check the meshing play (0.10-0.20 mm) between the bevel pinion and ring gear along the entire circumference. Make the necessary adjustments and shimming as described for the front differential.

DIFFERENTIAL LOCK

It is worthwhile making a few considerations about how the diff lock is mounted and operated (part M of fig.2).

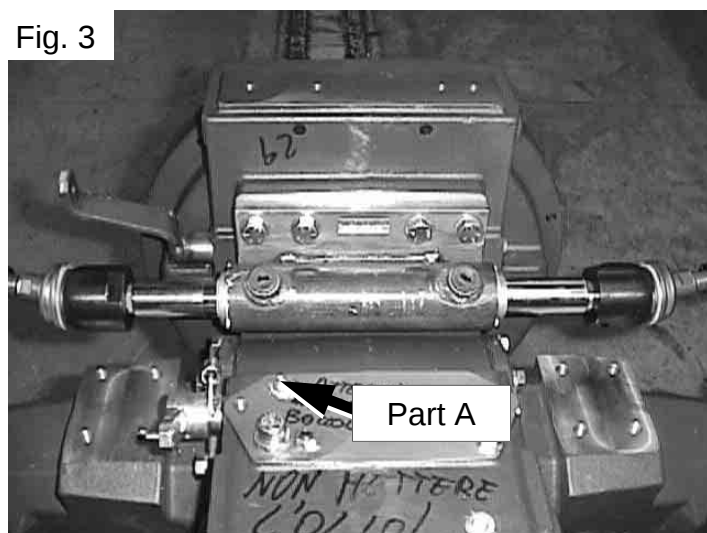
Differential locking is achieved by means of a collar that by moving, forces the balls to move towards the center, making the crown wheel to form a solid pack with the housing.

The same collar, balls and shims are mounted at both the front and rear.

When the retainer pin of the fork that meshes on the collar, is mounted on the control shaft, make sure that the pin notch is unable to rub against the sliding surfaces of the fork.

It is worthwhile remembering that one turn of the lock control shaft corresponds to a movement of the fork thanks to a pin en bloc with the shaft and a slanting notch on the fork.

Fig. 3



Since there is a relative movement between the pin and fork during sliding, if the pin were to be mounted with the notch touching the groove in which it must slide, the two parts could mesh together and cause the mechanism to operate incorrectly.

To remove the retainer pin from the front diff lock, take off the upper plug (part A of fig. 3) from the casting of the front assembly: to perform this it is necessary to disassemble all the parts that are above the group (see fig. 3).

DRIVING TORQUES

Bevel gear pair screw	7 Kgm
-----------------------	-------

LUBRICATION

Oil	ARBOR TRW90 (SAE 80W-90, API GL-5)	11,5	Liters
Grease	ARBOR MP EXTRA (NLGI2)		

We recommend lubricants and liquid by: <i>FL Selenia</i> .

REAR FINAL DRIVE

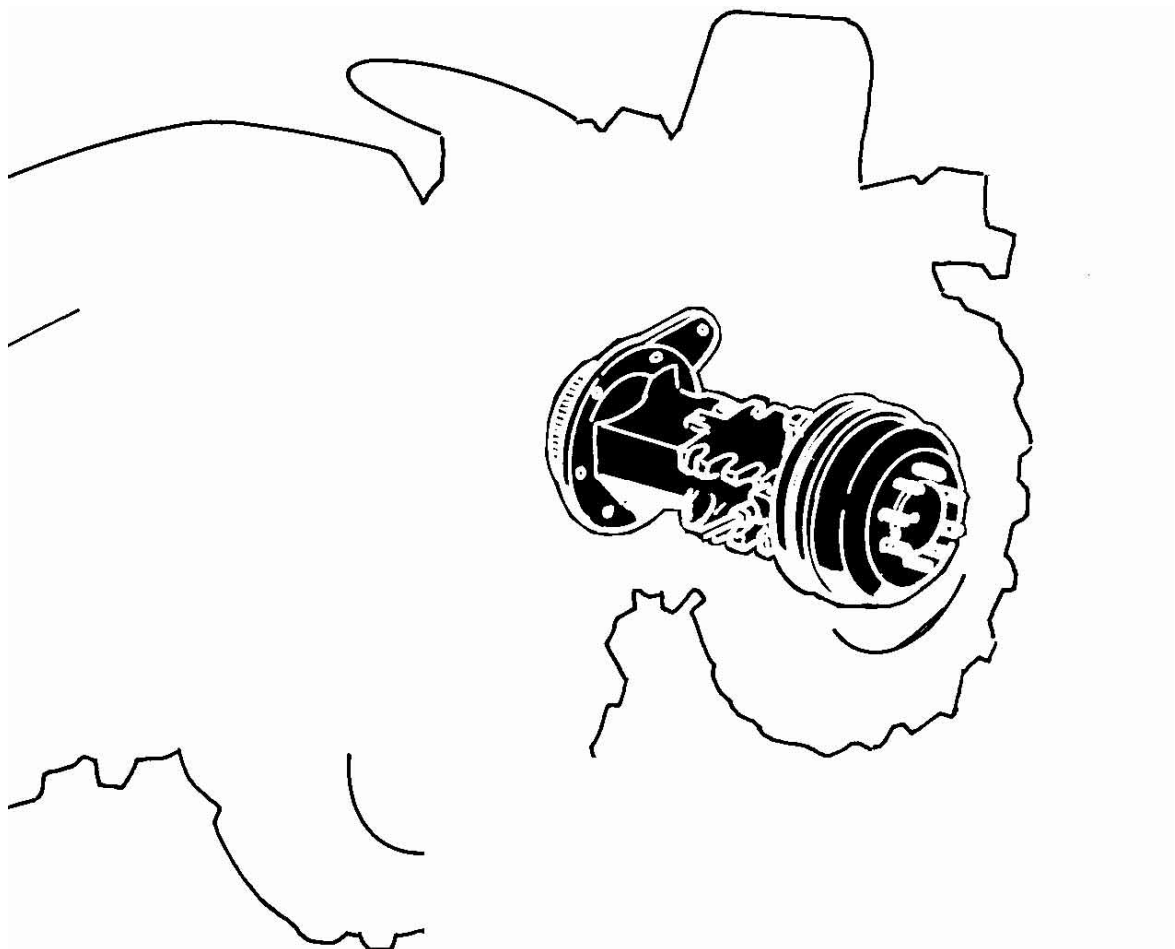


Fig. 1

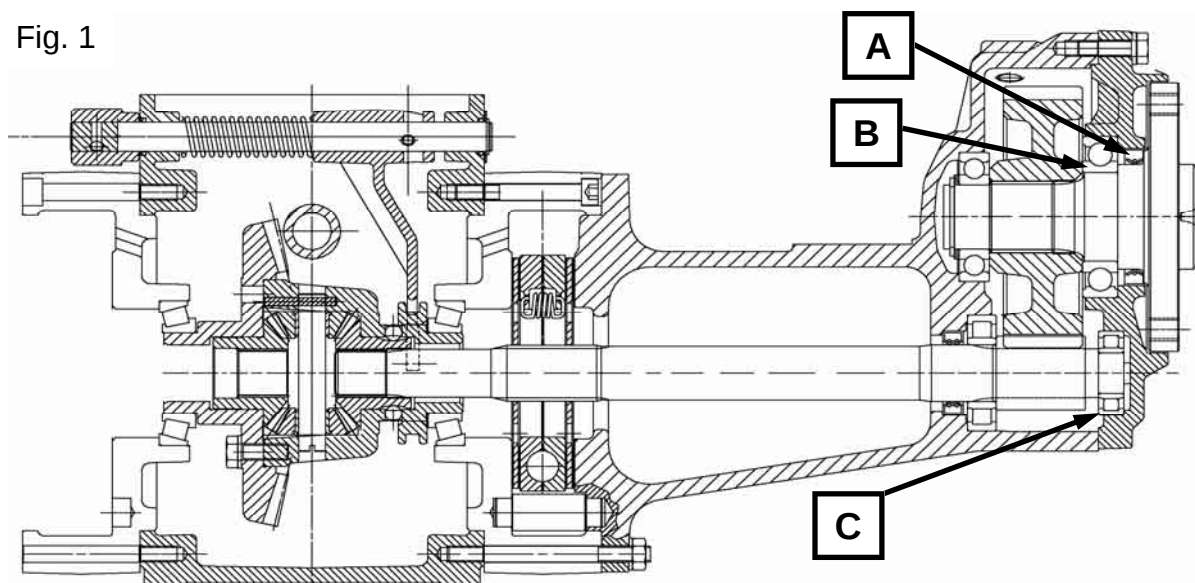


Fig. 2



Fig. 3



The photos on this page illustrate the assembly sequence for the rear hubs in the RS version, many of the elements of which are the same as the front hubs. The first thing to do is to pre-assemble the rear hub closing unit by first mounting seal A of fig. 1, then bearing B and lastly, the other parts as depicted in fig. 2.

The next thing to do is to mount the seal and roller bearing inside the hub as shown in fig. 3 and fig. 4. Lastly, figs. 5 and 6 show how the closing unit is mounted on the hub. Take care to prevent the roller bearing on the closing unit from being damaged, then proceed by tightening screws M 10 x 30 which fix the closing unit itself, to a 6 Kgm torque value.

As already illustrated for the front hubs, inject 0.7 liters of oil per hub using a syringe.

The type of oil required is SAE 80/90 W. Breathers are installed on the top part of the closing units.



Fig. 4



Fig. 5

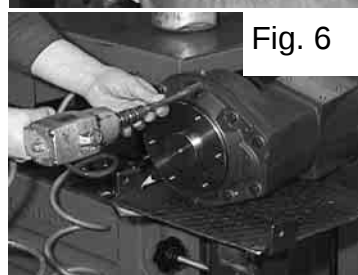


Fig. 6

Fig. 7

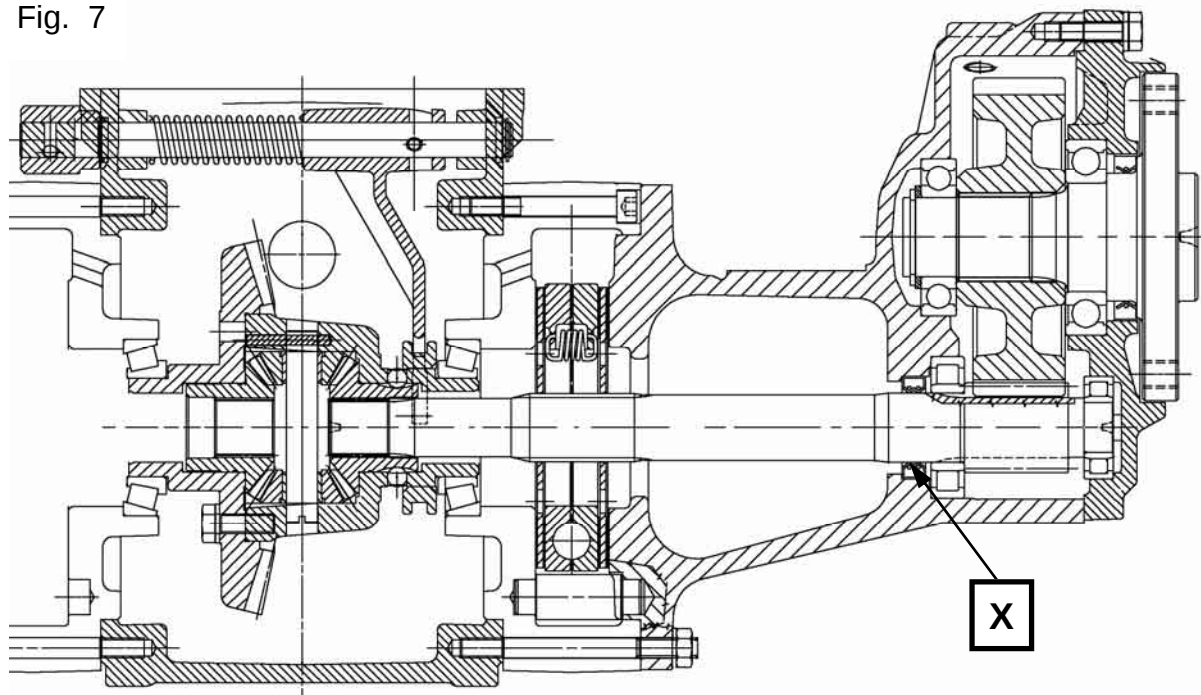


Fig. 7 illustrates the rear hub assembly for the SN version.

The assembly operations, the shims of both the hub and rear differential are the same as those already described for the RS version.

The type and amount of oil used to fill the rear final drives is the same as that described for the RS version.

The only thing that changes slightly is the length of the hub (casting), which is shorter than the RS version.

Here again, seal **X** of fig. 7 divides the final drive from the rear differential housing as in the RS version.

An all-purpose oil is used in the differential housing to cool the brakes and carry out hydraulic functions, while gear oil is used inside the final drive.

DRIVING TORQUES

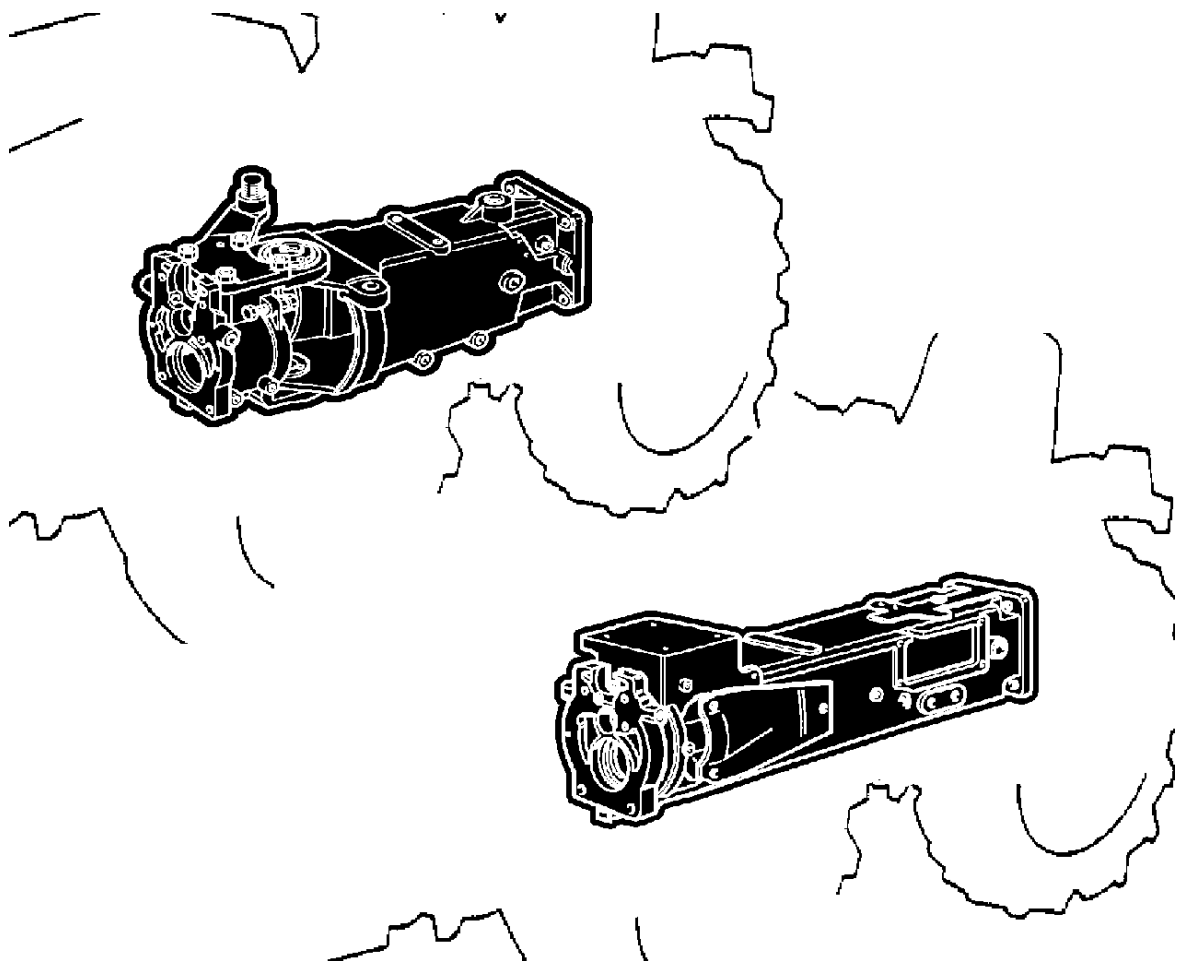
Screw to fix the rear closing unit	6	Kgm
Screw to fix the rear hub-rear diff. housing	6	Kgm
Breather on the rear closing units	8	Kgm
Hub closing plug with Teflon	3	Kgm

LUBRICATION

Oil	ARBOR TRW90 (SAE 80W-90, API GL-5)	0,7	Liters
Grease	ARBOR MP EXTRA (NLGI2)		

We recommend lubricants and liquid by: **FL SELENIA**.

CENTRAL PIVOT



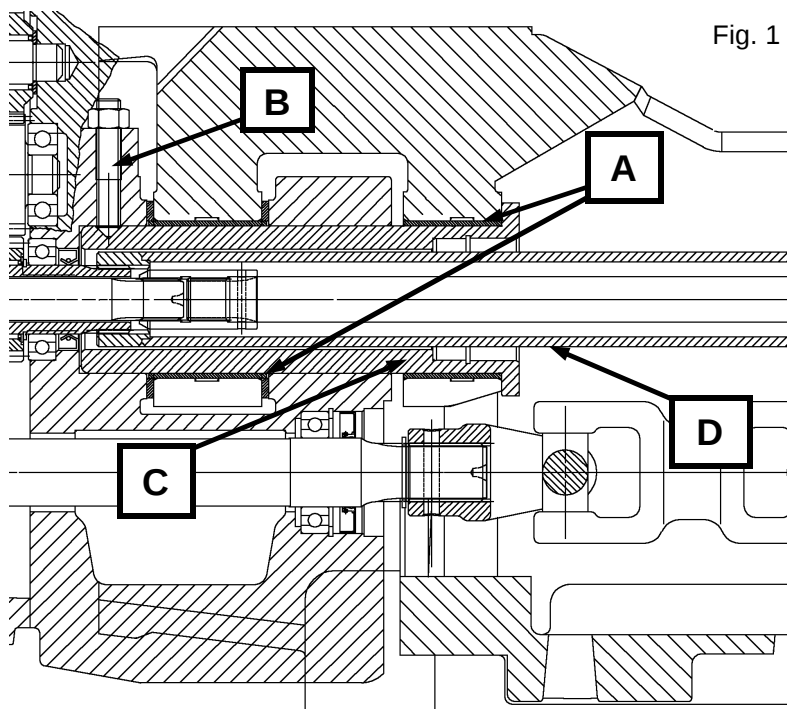


Fig. 1 The central pivot pin part C of fig. 1 has two central frontal threaded holes to allow it to be disassembled. In the RS version, the universal coupling that transmits drive to the front assembly is mounted between two circlips that leave space for sliding. The universal coupling is only mounted on the lower shaft since the upper shafts are coaxial with the rotation pin and therefore do not swing.

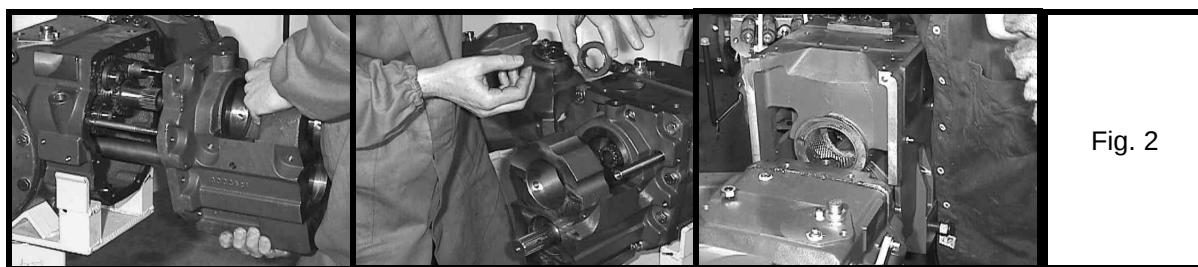


Fig. 2

The sequence above illustrates the assembly operations for the central pivot in the RS version, including completion of the reverse shuttle assembly operations and positioning of bushes A of fig. 1, which should be adequately greased before they are mounted. After this, using a hoist or lifting mechanism, position the two castings so that pivot pin C of fig. 1 can be inserted into the bushes.

As illustrated in fig. 2, proceed by mounting the lower part of the transmission (bearing and seal on the front bevel pinion) before the central pivot is mounted.

Once the pivot pin has been inserted, fix it in place with the
Fig. 3 M8 x 30 screws torqued to 5 Kgm.

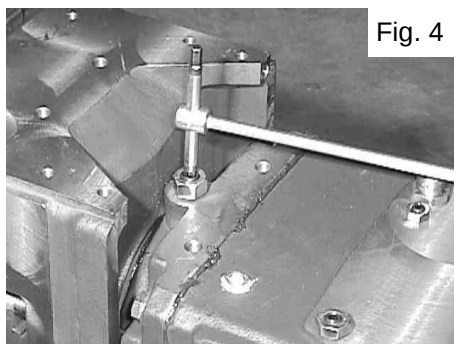
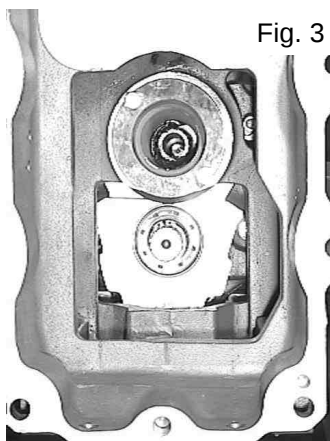


Fig. 4

Now tighten the fixing plug part B of fig. 1, also shown in fig. 4, torquing the relative check nut to 6-8 Kgm.



The sequence on the left illustrates the conclusive phases of the adjustments required for the RS version pivot.

After having tightened the upper plug (part B of fig. 1—previous page), also tighten the other four fixing plugs of the pivot pin that keep this in position.

Now adjust the two register screws of the pivot travel end as depicted in the photo alongside. Keep the adjuster screw approximately level with the height of the retainer check nut.

Mount the two shafts inside the pivot. Ease the upper one in place by turning the main shaft from the clutch bowl side.

Proceed by mounting the rear differential (gearbox) on the pivot.

Here again, the operation can be facilitated by turning the shafts with the aid of large pliers inserted between the openings of the central pivot if necessary.

Lastly, tighten the M 12 x 35 screws that connect the central pivot to the gearbox housing to an 8 Kgm torque value.

Take care during this assembly phase to prevent the shaft splines from being damaged by using hoists or wheeled trucks to insert the couplings in the relative splines in axis.

NOTE:

Once the longitudinal pivot has been mounted, do not forget to mount the grease nipples and to thoroughly grease the tractor articulation.

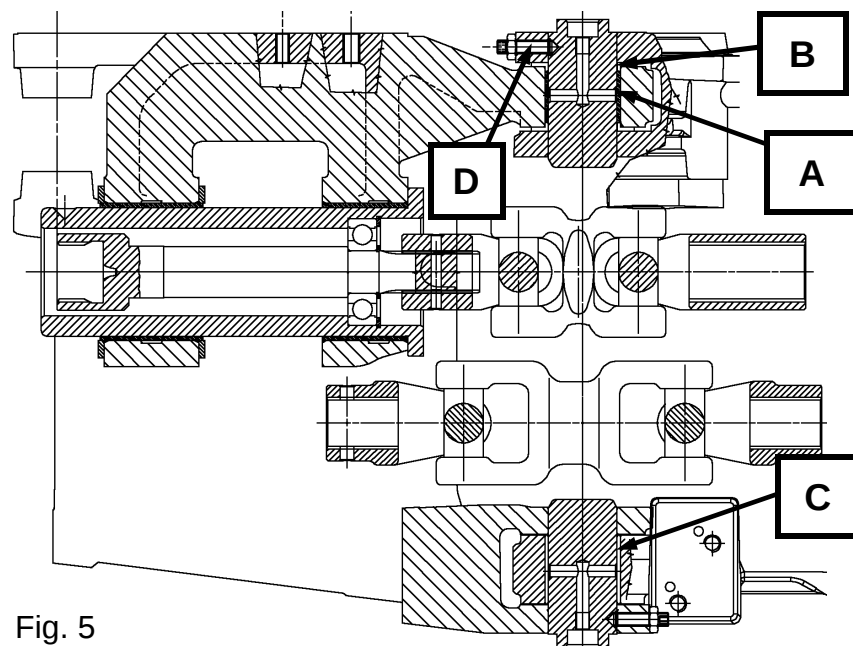


Fig. 5

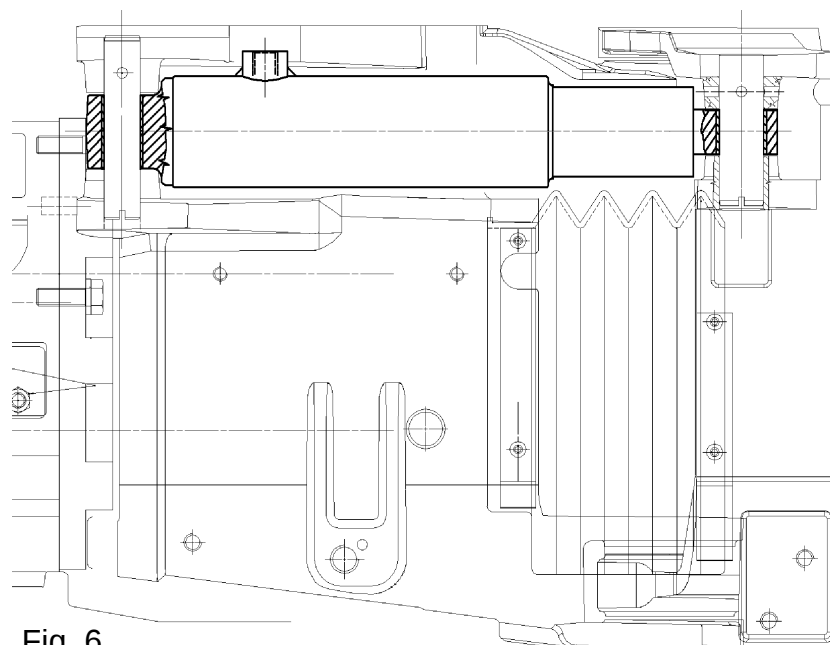


Fig. 6

The drawings above illustrate the central pivot of the articulated version and the articulation of the steering cylinder.

The configuration of the longitudinal articulation of the tractor is the same as that of the version with steering wheels and the relative assembly instructions have already been given in the previous pages.

The central connection in articulated tractors allows a double rotation: a rotation of about 15 degrees (as in the RS version) on each side between the front assembly and gearbox in order to allow for irregularities on the ground, plus a rotation between the same parts in order to steer the tractor.

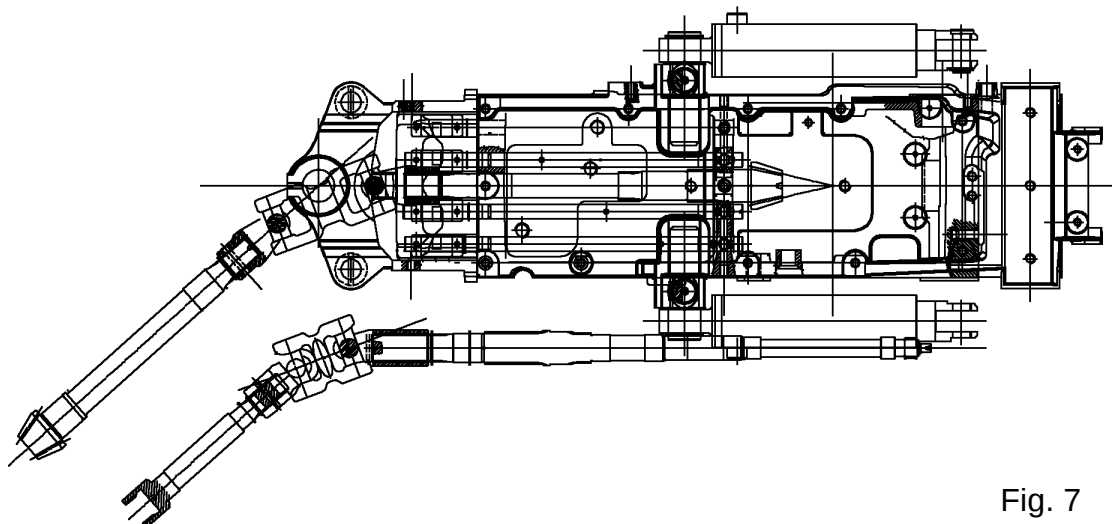


Fig. 7

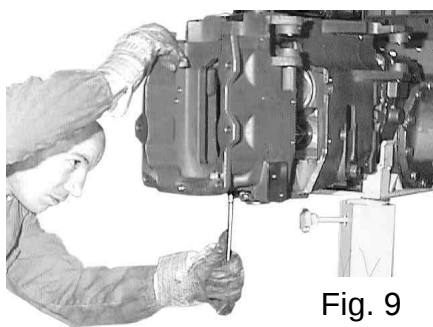


Fig. 9

These photographs illustrate the assembly sequence for the articulation in the SN version.

Using a hoist, near the two castings forming the pivot to each other and insert the pivot pins into the bushes as shown in fig. 5, taking care to prevent the actual bushes from being damaged.

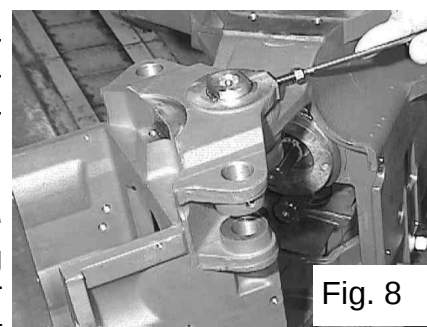


Fig. 8



Fig. 10

As illustrated in fig. 5, the upper part of the pivot is different from the lower part.

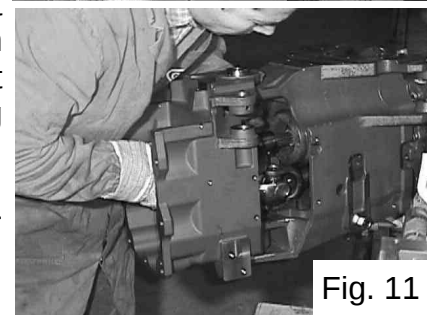


Fig. 11



Fig. 13

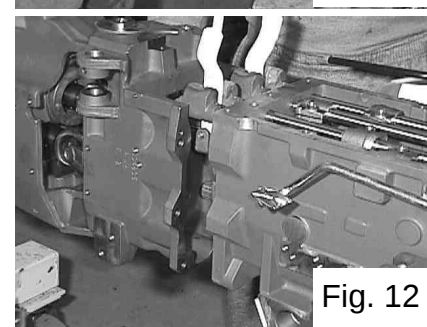


Fig. 12

The spacers (part B of fig. 5) act as centering devices for the upper pin and support the two castings in a vertical direction. They are only installed in the upper part.

The lower part of the pivot just has bushes C that allow the articulation to pivot but do not support it vertically in any way. Part D of fig. 5 is mounted in fig. 8 and is the plug that holds the vertical pivot pin in position.

The lower pin must also be subjected to the same operation.

Once these parts have been mounted, do not forget to mount the grease nipples and to thoroughly grease the parts with the aid of a grease gun until the lubricant oozes from both the upper and lower part of the articulation.

As illustrated in figs. 11-12-13, once the articulation has been mounted, proceed by centering the shafts on the pivots and mounting the gearbox housing on the pivot. Tighten the screws that fix the gearbox housing to the pivot to a 7 Kgm torque value with the aid of a wrench as shown in fig. 13.

The following phases are more or less the same as those already described for the RS version, the only difference being assembly of the steering cylinder, the characteristics of which have already been described in the part about the hydraulic circuit.

Also for this version it is necessary to mount and fix the two travel and plugs. (see RS version).

Fig. 6

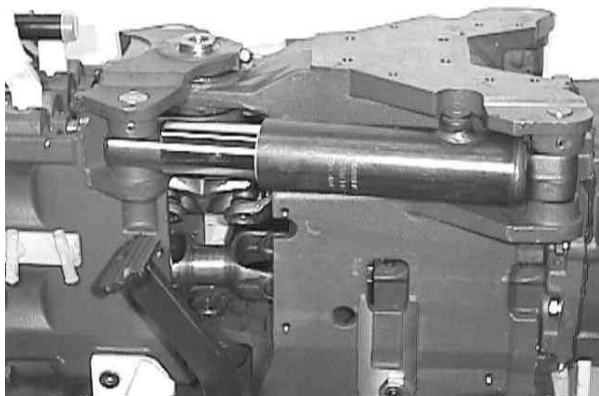
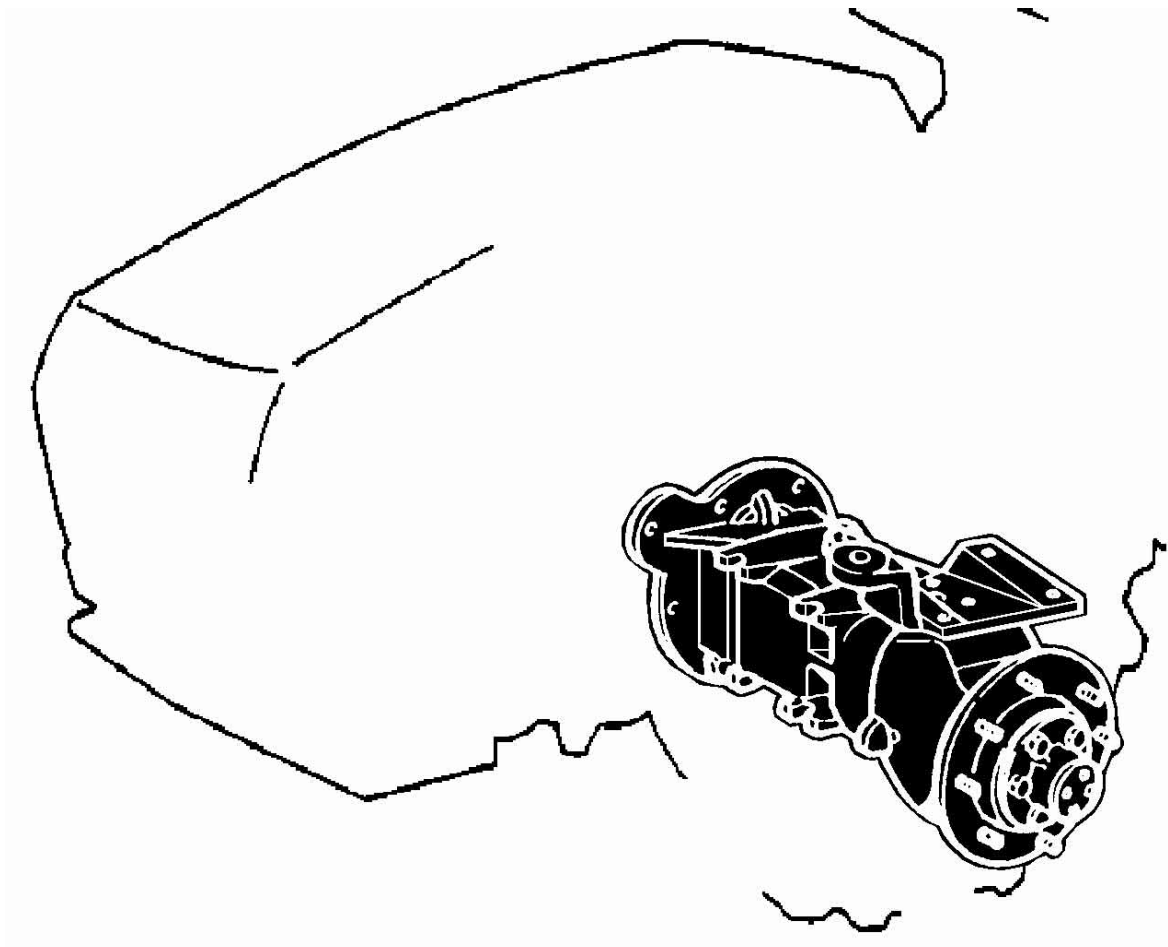


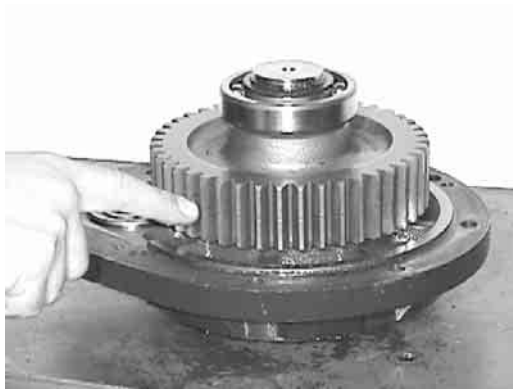
Fig. 6 shows how the steering cylinder is mounted in the SN version, using two plugs fixed by a pin and with two bushes in between that must be kept adequately greased.

DRIVING TORQUES

Pivot—gearbox housing fixing screw	7-8 Kgm
Pivot pin check nut	6 Kgm
M 8 x30 pivot pin fixing screws	5 Kgm
Check nut for the pivot end of travel plug	8 Kgm

FRONT FINAL DRIVES





The first thing to do is to preassemble the flange of the front final drive as shown in the photograph alongside (**RS VERSION**)

The roller bearing allows the axle shaft to be subsequently inserted as illustrated in the photograph.

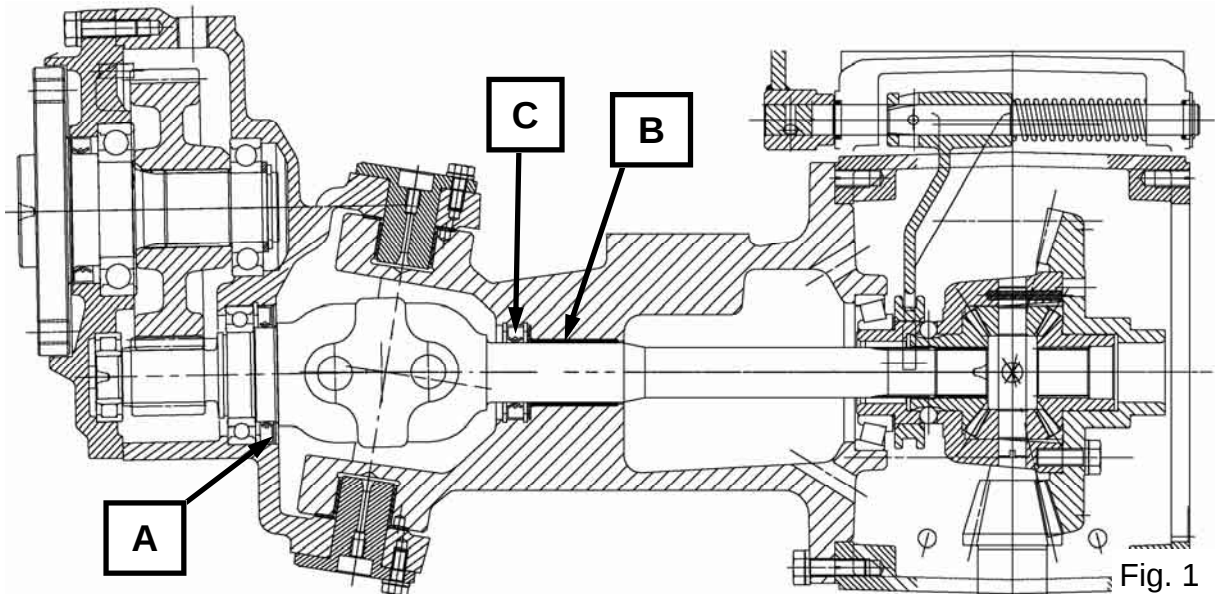


Fig. 1

The main thing to do is to immediately mount the bearing, the circlip and the seal in the casting before proceeding with the assembly operations (part A of fig. 1).

To prevent the front ring gears from being mistaken for the rear ones, remember that the front ring gear has one tooth less than the rear one.

Now mount the other part of the front hub, fixing the axle shaft guising sleeve part B of fig. 2 with the aid of a plug.

Mount the seal C and the relative positioning circlips along with the retaining spacer.



Maxter SN RS



Fig. 2

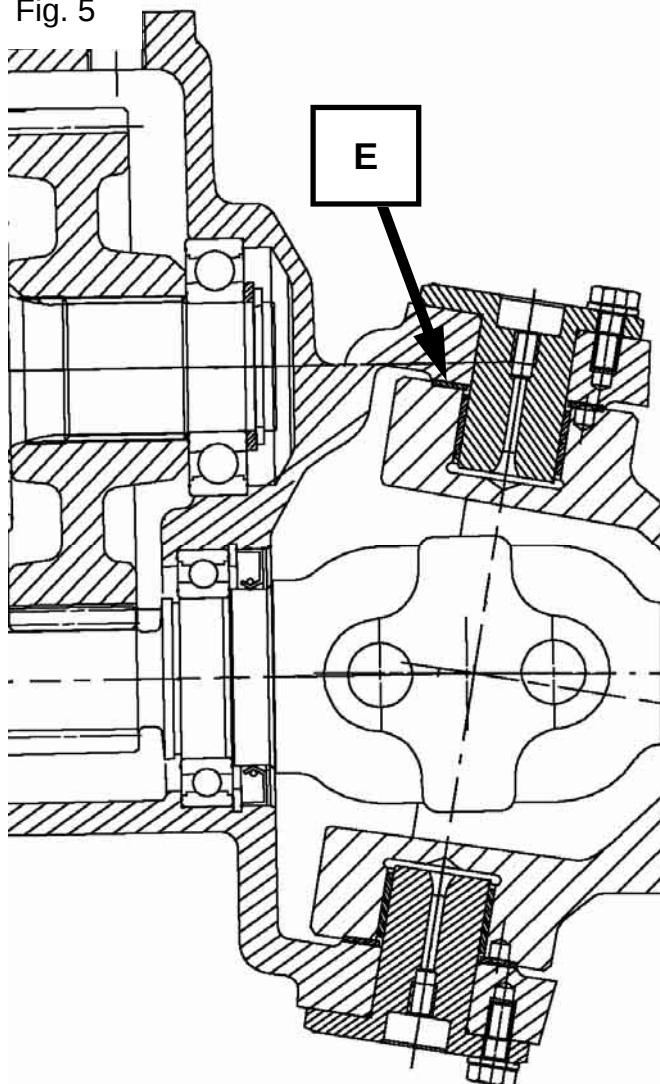
Again with the aid of a plug, now insert the two guiding bushes of the pivot pins of the steering wheel articulation.



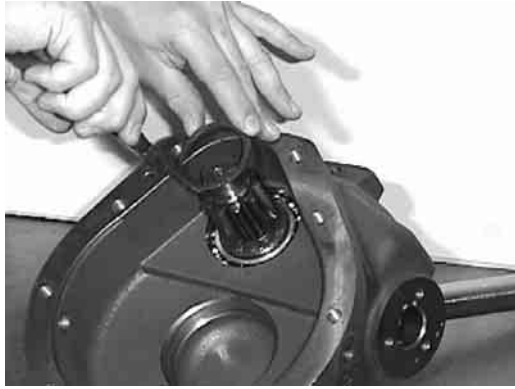
The photo alongside shows how the shim is fitted between the two flanges of the steering wheel articulation, which is held in place by the pin shown in the photograph, part E of fig. 5.



Fig. 5



Now mount the axle shafts as shown in the photo above, with the aid of a plastic mallet.



Once the axle shaft has been inserted, mount the positioning circlip as shown in the photo alongside, with the aid of a pair of circlip pliers.



Once the front differential has been mounted (refer to the specific chapter for the assembly and adjustment operations), proceed by mounting the front final drives into the chassis, beginning with the rigid part shown in the photo on the left, and then proceeding with the other parts.



Fix the rigid part of the front final drive with the aid of a hoist as shown in the photo. Temporarily tighten the fixing screws so as to position the part.

Thoroughly grease the bushes that support the steering articulation kingpins.



Mount the outer closing unit of the hub, setting the pivot pins in the relative housings and turning the axle shaft by hand in order to center the spline inside the front differential.

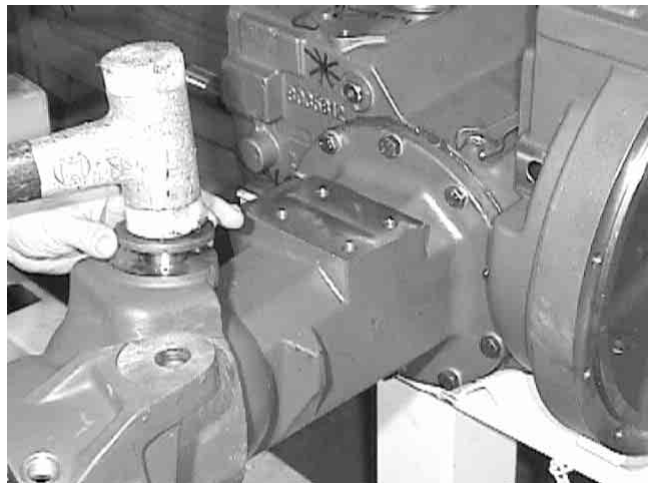


Finish the assembly operations as shown in the figure by fixing the front flange of the closing unit and tightening the M 10 screws to a 7 Kgm torque value.

Do not forget the flange centering pin shown in the photograph. Once the steering articulation pivot pins have been mounted, thoroughly grease them using the grease nipples mounted as last part on the pins, until grease oozes out. See photos below.

Inject 0.7 kg of SAE 80/90 W oil into each clo-

sing unit, using the top fill plug.



NOTE:

The cover of the closing element of the front final drive has two threaded holes used to disassemble the actual cover itself with the aid of two M8 screws.

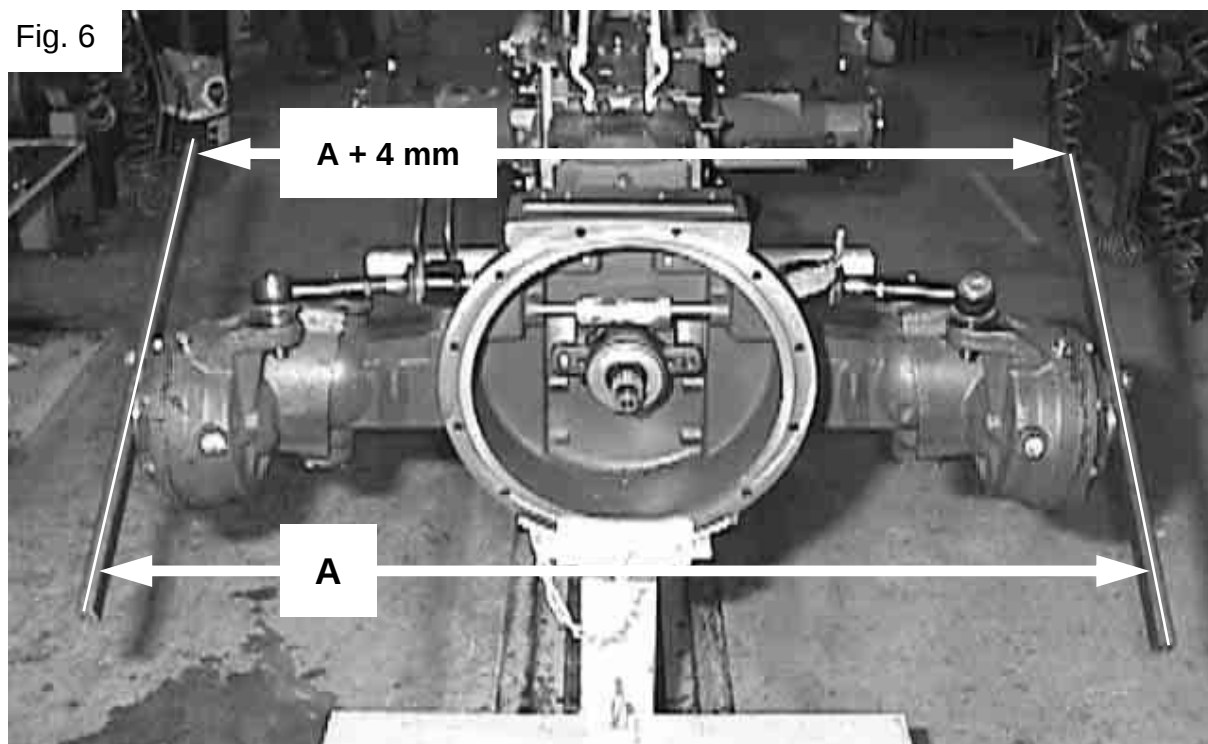
Once the axle shaft has been disassembled, make sure that the cross journal can turn in all directions without jamming and that the surface on which the axle shaft slides on the self-lubricated bush shows no signs of abnormal wear.

Breakage of the oil retainer on the fixed part causes oil to leak from the front gearbox housing and rapid wear on the sliding bush.

Check the play of the steering part in relation to the fixed part which must be absolutely imperceptible.

Replace the bushes if this is not the case.

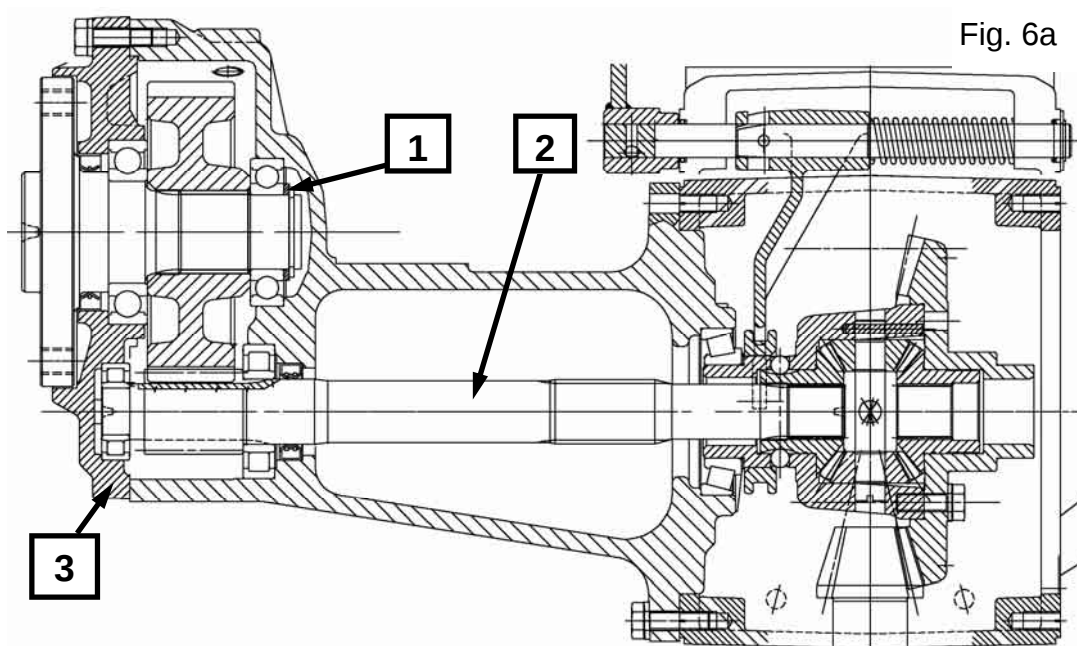
Fig. 6



Comply with the indications in fig. 6 to adjust the toe-in of the front axle in order to ensure correct tyre wear.

Comply with the following instructions in addition to the indications in the figure:

- to center the position of the steering cylinder, place two 75 mm spacers on the 2 uncovered parts of the cylinder before making the measurement of fig. 6 and locking the check nuts that position the steering couplings in order to obtain the conditions shown in the figure;
- make two 70 cm length rods that can be mounted as shown in the figure, centered in relation to the axis of the two front wheels, then take the measurements shown in fig. 6 and lock the front steering couplings in the indicated position.



The SN version has fixed front hubs. The final drives are mounted at the ends of these (see fig. 6a).

The hub houses the bearing and oil retainer of the axle shaft which meshes with the crown wheel of the differential.

For the front differential shims, which also become those of the front hubs, comply with the specifications given for the differential and hubs of the RS version.

The axle shaft 2 of fig. 6a can only be disassembled after the final drive has been removed (using two M10x1.5 bolts to screw into the relative threaded holes on flange 3 and removing circlip 1 that retains the axle shaft itself).

During the assembly operations, check the wheel hub play in the final drive. It must be imperceptible.

Check the condition of the oil retainers, final drive gear toothing and the bearings.

No adjustments are required during the assembly phase.



In the SN version too (as for RS), in the front hubs employ oil 80W-90 in quantity of kg. 0,7.

The front hub is not communicating with the differential box and the oil types are different.

DRIVING TORQUES

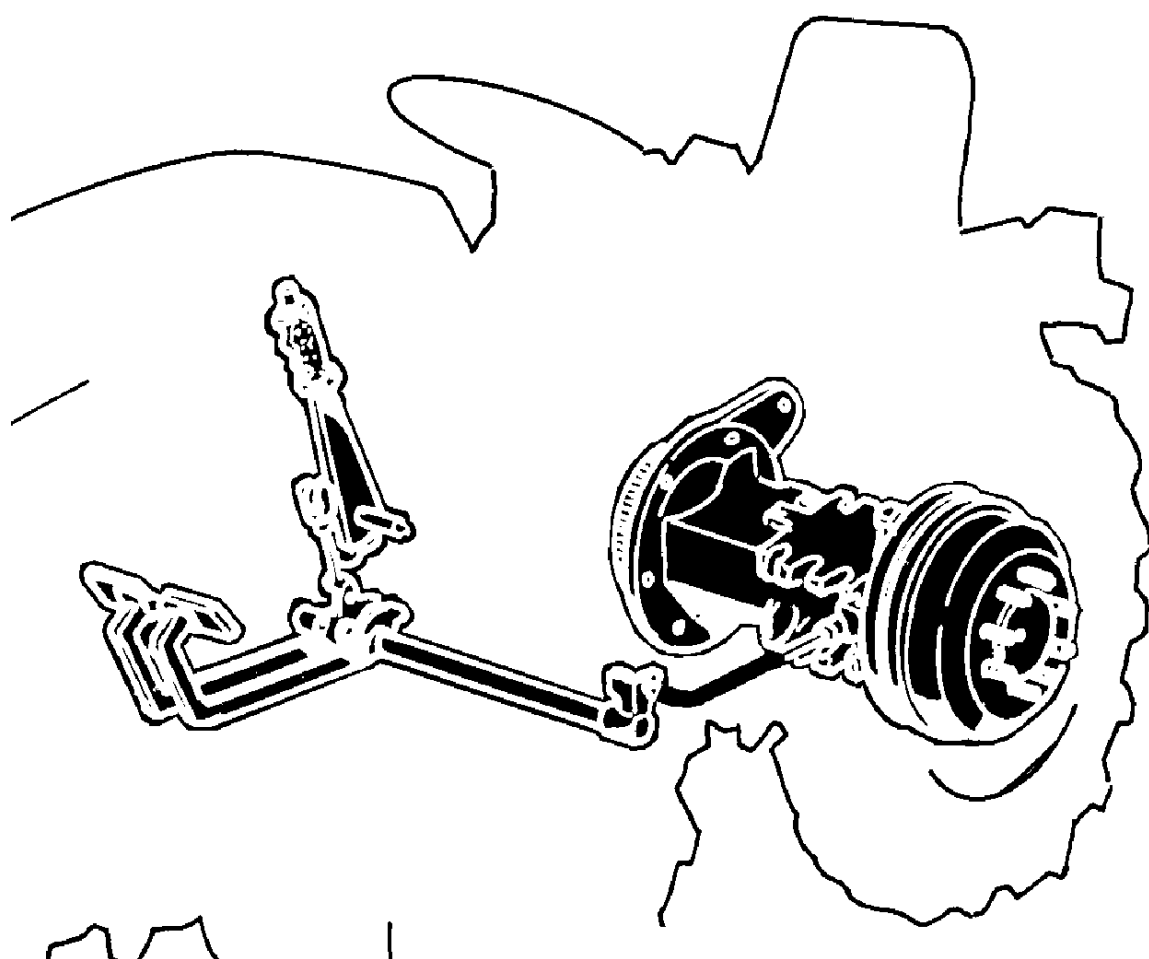
Screw fixing the closing unit flange	7	Kgm
Screw fixing the hub to the casing	6	Kgm
M 8 screws fixing the RS steering pivot pins	4	Kgm
Nut fixing the RS steering link	11	Kgm
Self-locking nut fixing the steering head	10	Kgm
Screws fixing the RS steering cylinder	7	Kgm
Oil drain plugs with Teflon on front final drives	3	Kgm
Front closing unit breathers	8	Kgm

LUBRICATION

Oil	ARBOR TRW90 (SAE 80W-90, API GL-5)	0,7	Liters
Grease	ARBOR MP EXTRA (NLGI2)		

We recommend lubricants and liquid by: **FL SELENIA**.

BRAKES

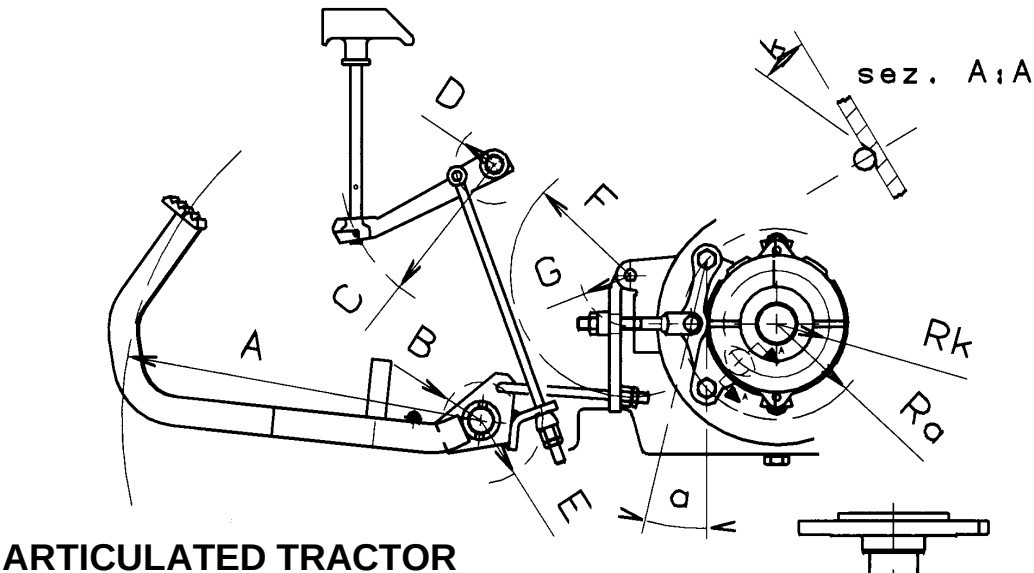


Maxter SN RS

Assembly 57

BRAKING SYSTEMS

- **MAIN BRAKES:** With oil-cooled discs, mechanical pedal control, acting on the fast axle shafts of the rear wheels.
- **PARKING BRAKES:** Acting on the main brakes, with manually operated mechanical transmission. Equipped with mechanism to prevent the control from being reversed.



ARTICULATED TRACTOR

TOTAL BRAKING AREA 74560
mm²

N° DISCS PER WHEEL: 2

BRAKING SPECIFICATIONS

OUTER DISC DIAMETER	mm	142.2
INNER DISC DIAMETER	mm	91.4
BRAKE TRANSMISSION LEVER (F)	mm	125
BRAKE TRANSMISSION LEVER(G)	mm	53
ACTIVATED LEVER (Ra)	mm	89
RESISTANT LEVER (Rk)	mm	60
ACTIVATED LEVER ANGLE (o)	mm	19
RESISTANT LEVER ANGLE (k)	mm	24

FRICTION MATERIAL
ISI – BOND 314

MAIN BRAKE LEVER SPECIFICATIONS

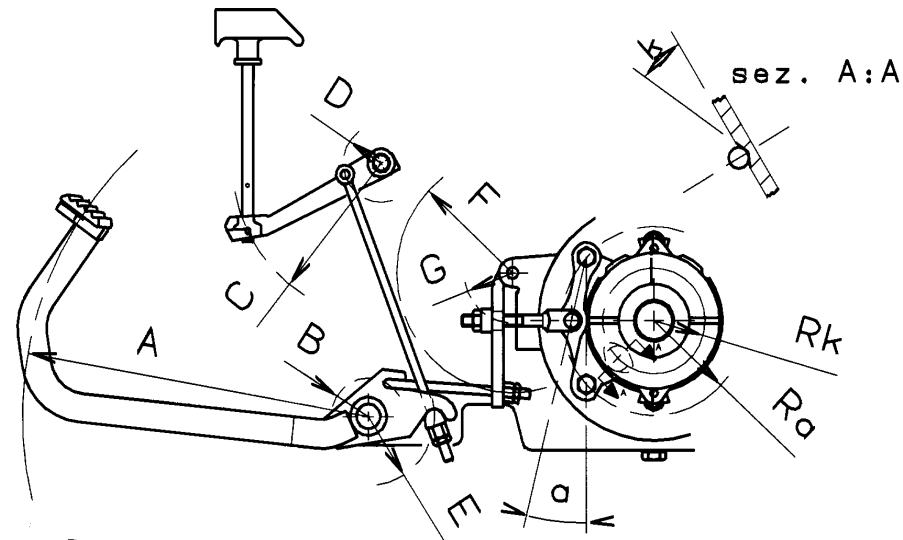
BRAKE PEDAL LEVER (A)	mm	375
TRANSMISSION LEVER (B)	mm	40

PARKING BRAKE LEVER SPECIFICATIONS

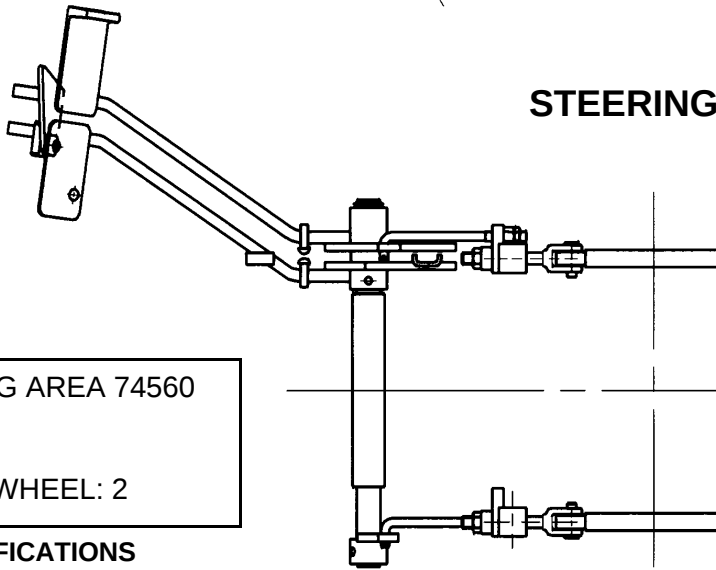
BRAKE LEVER (C)	mm	162
TRANSMISSION LEVER (D)	mm	28

BRAKING SYSTEMS

- **MAIN BRAKES:** With oil-cooled discs, mechanical control with two pedals that can be latched together, acting on the fast axle shafts of the rear wheels.
- **PARKING BRAKE:** Acting on the main brakes, with manually operated mechanical transmission, equipped with mechanism to prevent the control from being reversed.



STEERING TRACTOR



TOTAL BRAKING AREA 74560
mm²

N° DISCS PER WHEEL: 2

BRAKING SPECIFICATIONS

OUTER DISC DIAMETER	mm	142.2
INNER DISC DIAMETER	mm	91.4
BRAKE TRANSMISSION LEVER (F)	mm	125
BRAKE TRANSMISSION LEVER(G)	mm	53
ACTIVATED LEVER (Ra)	mm	89
RESISTANT LEVER (Rk)	mm	60
ACTIVATED LEVER ANGLE (o)	mm	19
RESISTANT LEVER ANGLE (k)	mm	24

FRICTION MATERIAL
ISI – BOND 314

MAIN BRAKE LEVER SPECIFICATIONS

BRAKE PEDAL LEVER (A)	mm	375
TRANSMISSION LEVER (B)	mm	40

PARKING BRAKE LEVER SPECIFICATIONS

BRAKE LEVER (C)	mm	162
TRANSMISSION LEVER (D)	mm	41
TRANSMISSION LEVER (D)	mm	72

Fig. 1

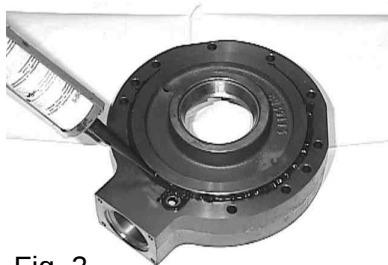
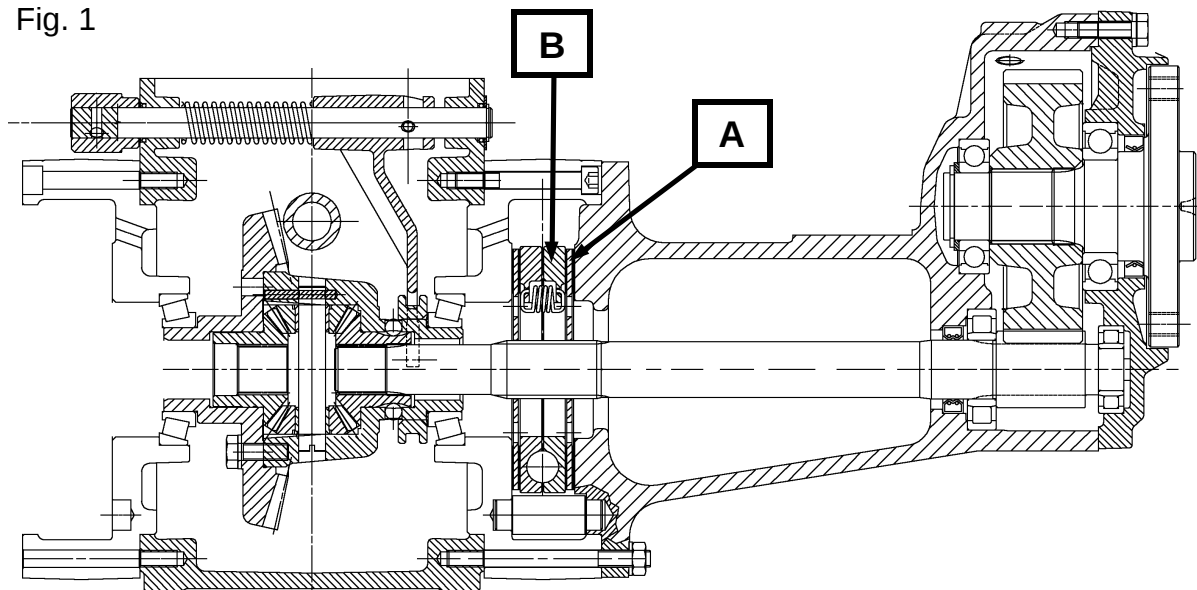


Fig. 2

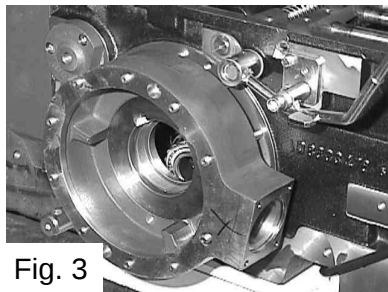


Fig. 3

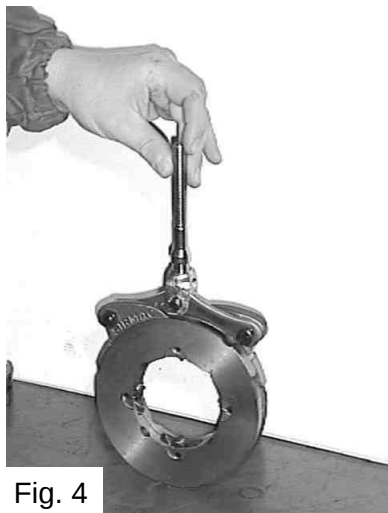


Fig. 4

The tractor is equipped with oil-cooled disc brakes.

As shown in fig.1, the brake assembly mainly consists of a central expander unit (part B of fig. 1) and two oil-cooled friction discs (part A of fig. 1).

The brake assembly must be mounted on the rear differential housing before the rear final drives are mounted.

As shown in figs. 2 and 3, the first thing to do is to mount the brake housing casting, then the first friction disc and the expander, as shown in fig. 5.

The other friction disc must be positioned on the rear axle shaft before it is mounted on the rear differential housing of the rear hubs.

As shown in fig. 6, to make it easier to couple the rear hub, screw two long screws into the flange of the axle shaft and turn this latter forwards and backwards so as to mesh the spline. The hub must be lifted and kept in position with the aid of a trestle or hoist.

Now screw on the two hubs and brake housing with ten M10 nuts (7 Kgm torque value).

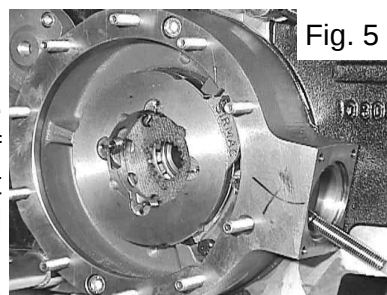


Fig. 5

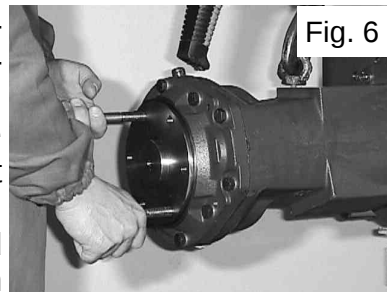
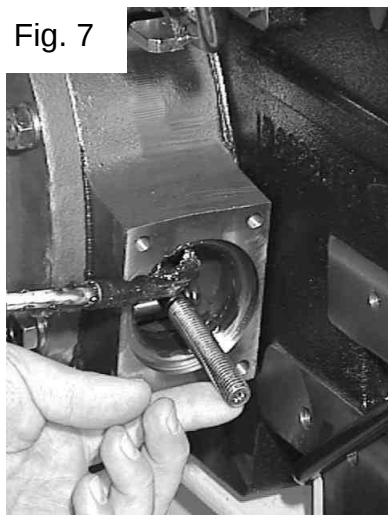


Fig. 6

Fig. 7



When the cowling and retainer O-ring are mounted as illustrated in figs. 7 and 8, thoroughly grease the rod and make sure that the rubber cowling is mounted without being damaged.

If necessary, use a plug as shown in fig. 9.

Proceed by mounting the front plates on the hub mills.

Mount the outer linkage on the plates and tighten the self-locking nuts that act straight on the rod of the expander unit.

When the machine is tested, adjust the two self-locking nuts on the right and left braking systems so that the rear wheels lock at the same time if the tractor is suddenly braked.



Fig. 8

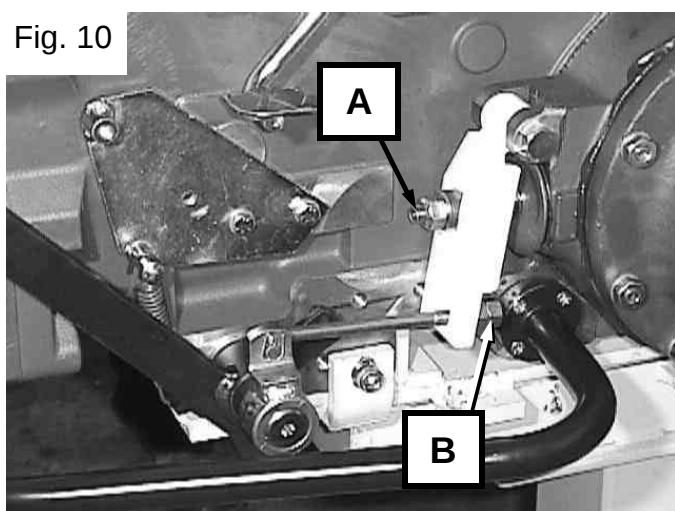
To correctly adjust the hand brake (the lever must shift 3 positions when pulled with a force of about 20 kg), use the self-locking adjuster nut that connects the hand brake linkage to the main brake pedal.

Fig. 9



As illustrated in fig. 10, the adjustments to balance the braking action between the rh and lh wheels can be made with both nuts A and B.

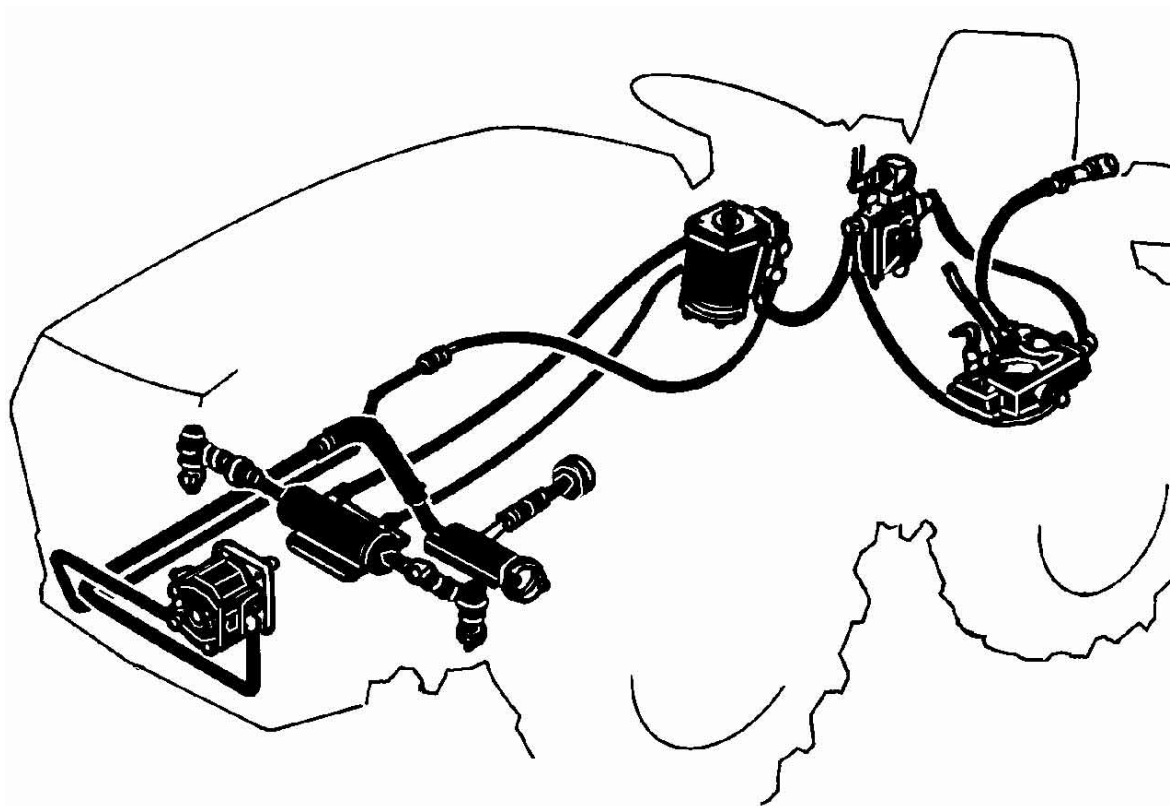
Fig. 10



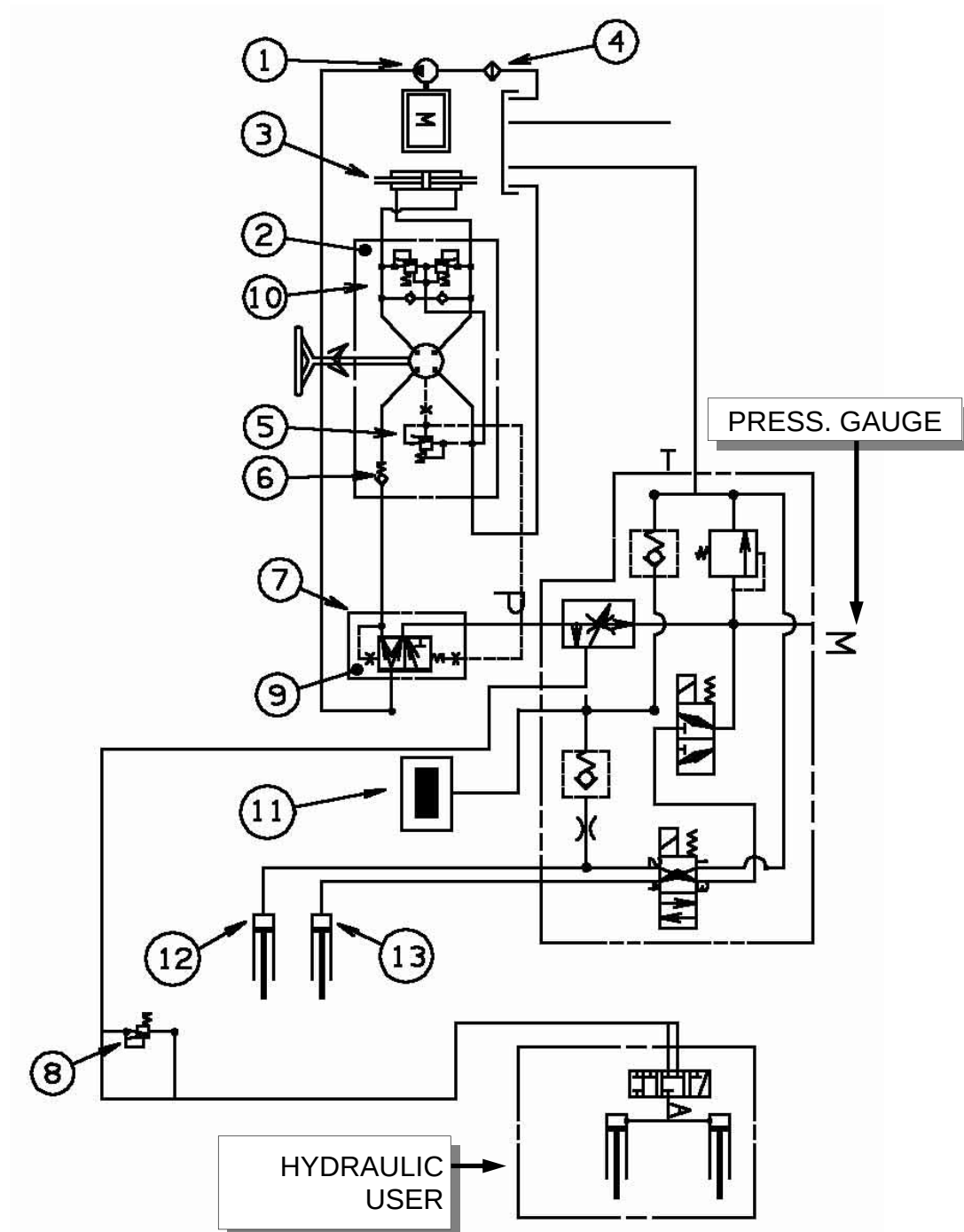
DRIVING TORQUES

Screws fixing the rear hubs and brake housing	7	Kgm
Screws fixing the brake retainer closing covers	3	Kgm

HYDRAULIC CIRCUIT

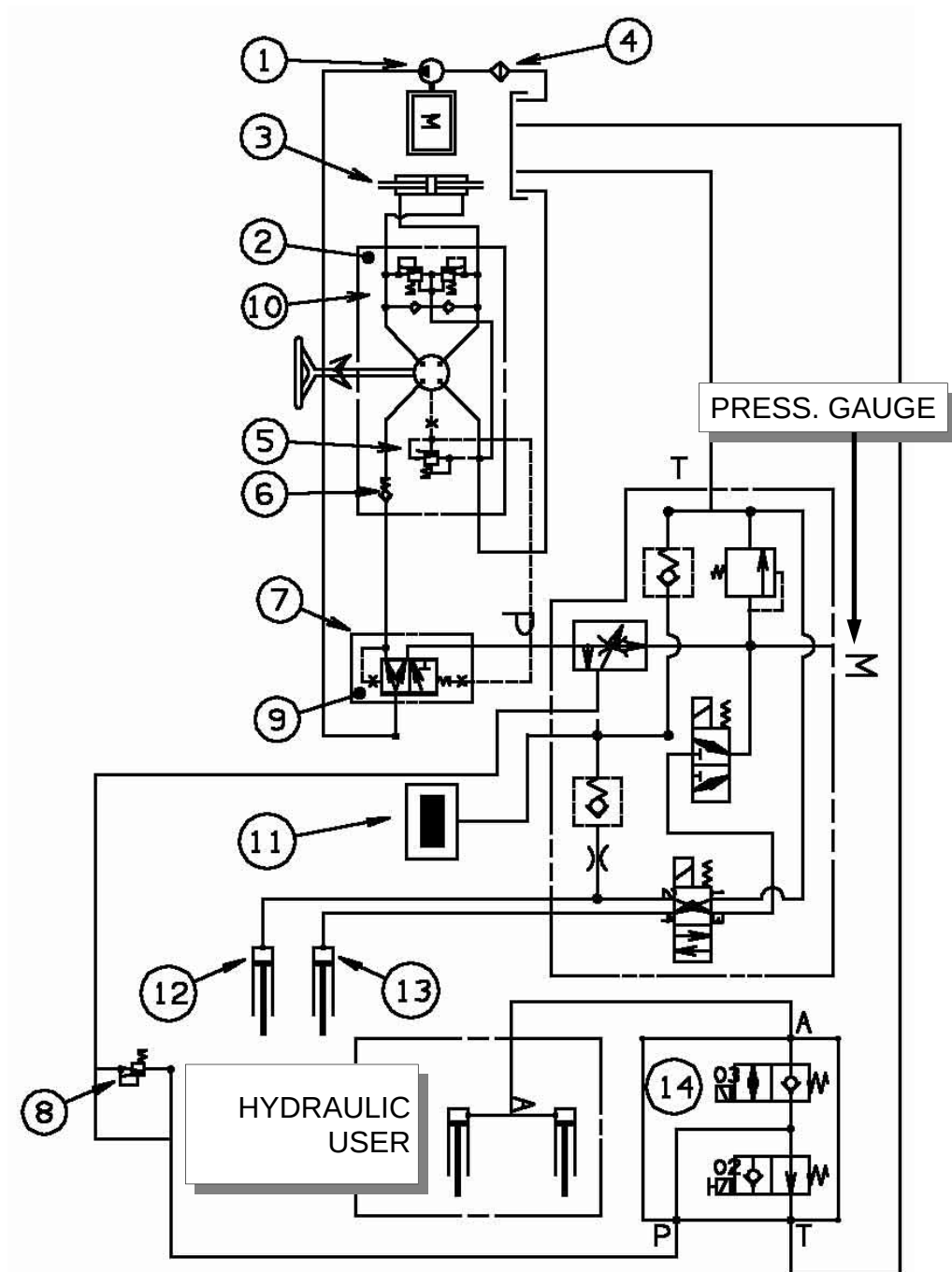


HYDRAULIC CIRCUIT LAYOUT OF THE TRACTOR WITHOUT POSITION AND DRAFT CONTROL POWER LIFT



- | | |
|---------------------------|--------------------------------------|
| 1) HYDRAULIC PUMP | 8) VALVE SYSTEM |
| 2) POWER STEERING | 9) PRIORITY VALVE WITH MAX. PRESSURE |
| 3) STEERING CYLINDER | 10) ANTI-SHOCK VALVE |
| 4) OIL FILTER | 11) DRAINAGE |
| 5) MAXIMUM PRESSURE VALVE | 12) BRAKE |
| 6) ONE-WAY VALVE | 13) CLUTCH AND ACCUMULATOR |
| 7) PRIORITY VALVE | |

HYDRAULIC CIRCUIT LAYOUT OF THE TRACTOR COMPLETE WITH POSITION AND DRAFT CONTROL POWER LIFT.



- | | |
|---------------------------|---|
| 1) HYDRAULIC PUMP | 8) VALVE SYSTEM |
| 2) POWER STEERING | 9) PRIORITY VALVE WITH MAXIMUM PRESSURE |
| 3) STEERING CYLINDER | 10) ANTI-SHOCK VALVE |
| 4) OIL FILTER | 11) DRAINAGE |
| 5) MAXIMUM PRESSURE VALVE | 12) BRAKE |
| 6) ONE-WAY VALVE | 13) CLUTCH AND ACCUMULATOR |
| 7) PRIORITY VALVE | 14) POWER LIFT SOLENOID VALVE |

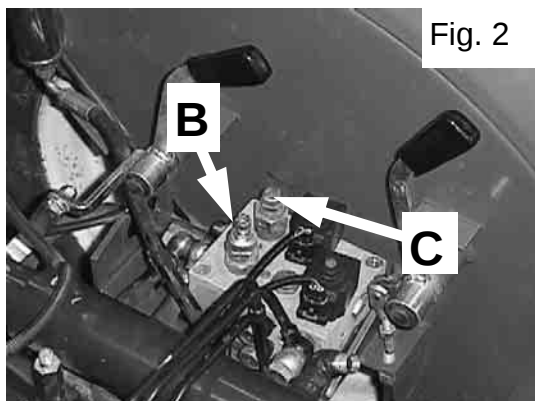


Fig. 2

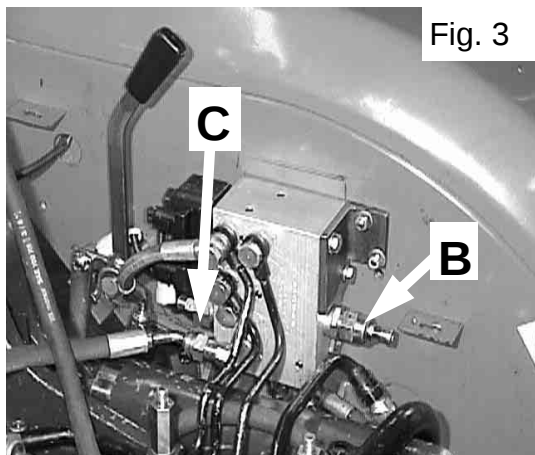


Fig. 3



Fig. 5

The 3.5 liters of oil per minute can be measured with the aid of a can and a chronometer, collecting the oil straight from the tube that supplies the clutch pack.

The oil outlet from the group of solenoid valves lubricates the upper front bearing of the PTO in both the RS and SN versions.

Figs. 2 and 3 illustrate the group of solenoid valves that control the rear power take-off. Fig. 2 shows the solenoid valve version for the tractor with steering wheels, while the version for the articulated tractor is shown in fig. 3.

The operating principle is the same as are the adjustments required.

Letter B indicates the maximum pressure regulating valve that must be set at 21 bar with cold oil, corresponding to about 18 bar with oil at operating temperature.

This pressure can be checked by applying a pressure gauge with 1/4" connection straight on the delivery tube that operates the clutch, and by momentarily detaching the accumulator of fig. 4 as shown in fig. 5

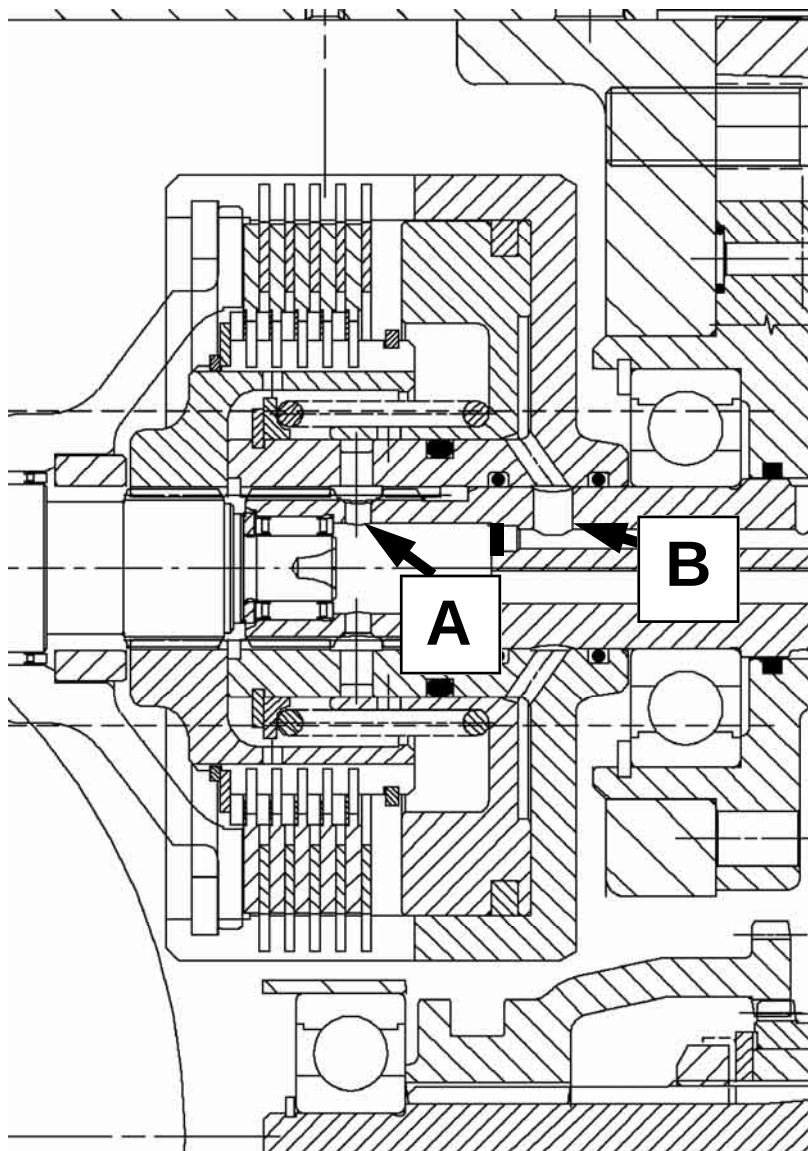
Letter C indicates the priority valve which must supply a flow rate of about 3.5 l. when the engine idles and with oil at the temperature of 20 degrees. Mark the hydraulic pipes with a felt tip pen if they must be dismantled for any reason.



Fig. 4

Should the quantity of oil supplied by the priority valve be incorrect, unscrew the cap on top of the priority valve and then tighten it gradually to increase the amount of oil or unscrew it to decrease the amount.

Take care to prevent the position of the plug from being changed when the cap is screwed back on after this operation.



The letter A in the drawing above has been used to indicate the branch that supplies fluid to the cylinder that operates the PTO clutch, corresponding to the tube indicated with the letter G in fig. 6. The letter B has been used to indicate the drained oil that is always supplied to the group of solenoid valves when the clutch is not closed. It prevents the PTO from turning through accidental contact between the clutch plates.

This tube is indicated with letter H in fig. 6 and enters the gearbox housing at the side of the previous tube.

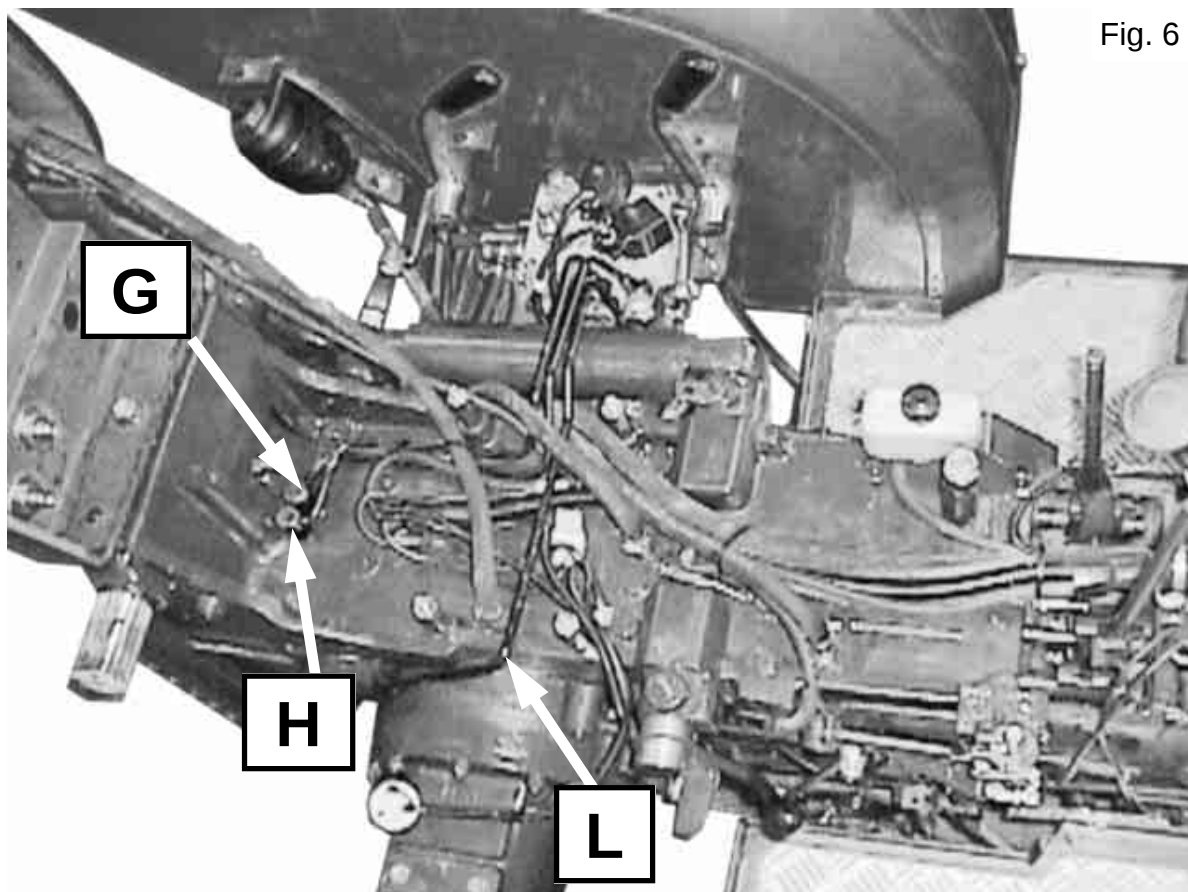


Fig. 6

The accumulator with 0.5 liter displacement and 1 bar preload pressure allows the PTO to be engaged gradually and is mounted in parallel with the delivery tube that activates the PTO clutch.

Letter L in fig. 6 indicates the tube that delivers fluid to the brake.

When the independent PTO is selected, the external cap of the PTO clutch acts on the brake shown in fig. 7 along with the oil drained between the clutch plates.

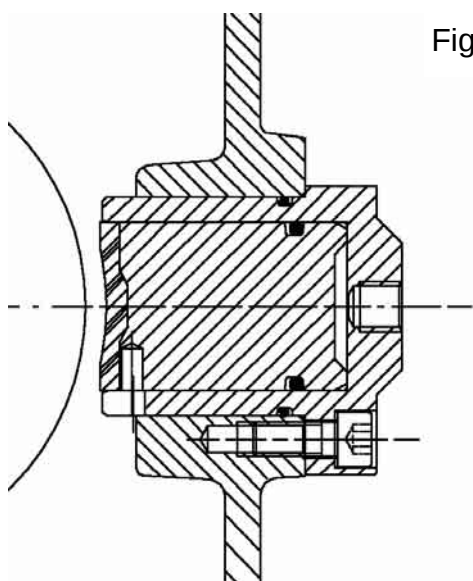


Fig. 7 Along with the drained oil, this contributes towards preventing the PTO from turning when not required. A pressure of about the same entity as the one that operates the clutch (18-20 bar) acts on the piston that operates the brake.

Further operating checks can be carried out on the group of solenoid valves by installing a pressure gauge on the tube that delivers fluid to the brake and checking the pressure value when the PTO is selected (independent) and the clutch is not engaged.



The filters of the hydraulic circuit are visible in the two photos alongside.

There is a filter on the intake with a 90 micron filtering capacity. It is made of gauze and can be easily inspected. Clean the cartridge and re-position it in the filter casing.

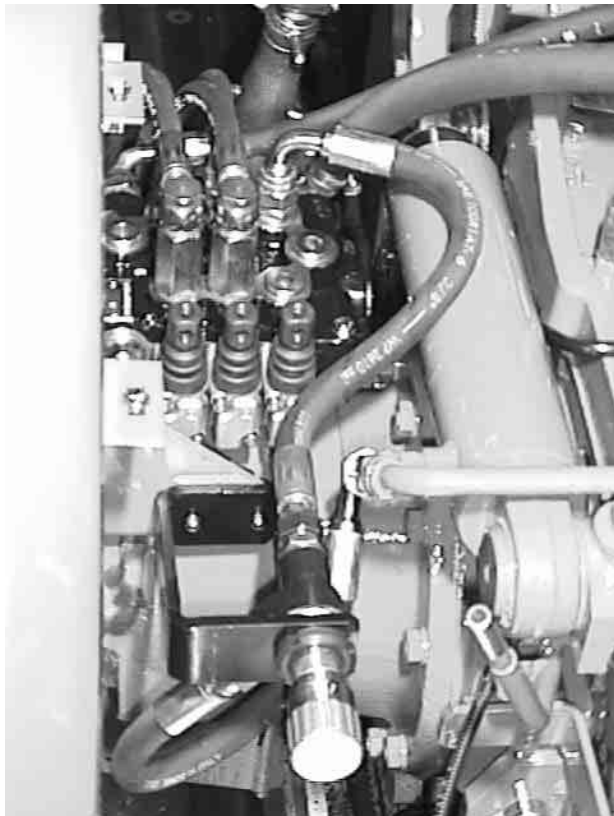
The other is a filter on the delivery with 20 micron filtering capacity and paper cartridge to replace according to the servicing frequency indicated in the Operation and Maintenance Manual.



Only use the cartridges supplied by our Spares Service.

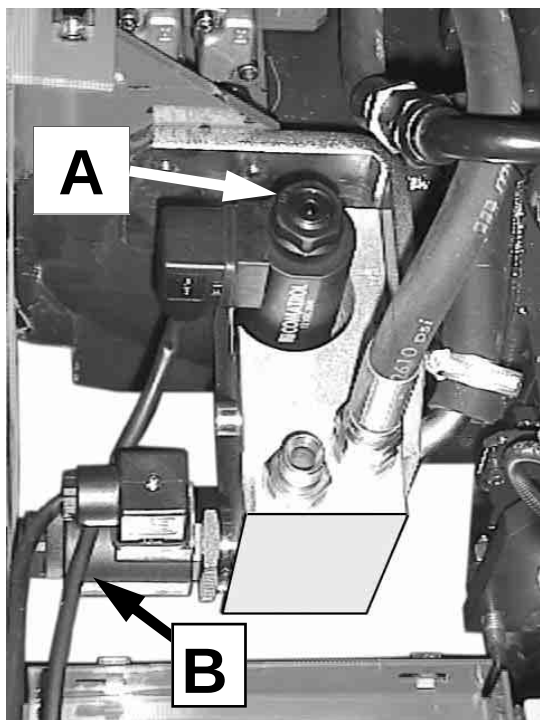
A two-way throttle cock is mounted on the line that delivers fluid to the rear power lift whether the machine is equipped with a position and draft control power lift or with a simple up and down lift. This cock allows the operator to select the correct lifting and lowering speed of the power lift to suit the implement hitched.

The hydraulic gear pump with 15 cc displacement is installed on the front part of the engine under the radiator.



In the event of faults, the hydraulic pump can be accessed by demounting the water radiator and relative connections.

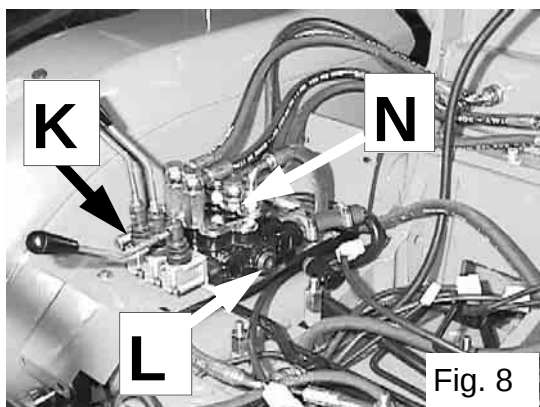
If the tractor is equipped with the position and draft control power lift, there is a further group of solenoid valves on the right side of the tractor that controls the lifting cylinder.



In the position and draft control version, oil from the rear control valves supplies the group of solenoid valves depicted here and positioned under the seat near the rh rear mudguard.

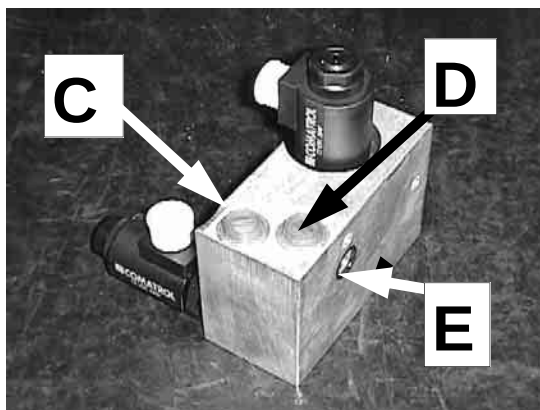
Solenoid valve **A** controls the lifting phase of the implement hitched to the power lift while solenoid valve **B** controls power lift lowering.

The operating pressure of this group of solenoid valves is 150 bar and is determined by the setting of the maximum pressure valve of the rear control valves.



The maximum pressure regulating valve of the circuit is represented by the letter **K** in fig. 8. It is positioned above or under the seat protection, depending on whether the tractor is the articulated or steering type.

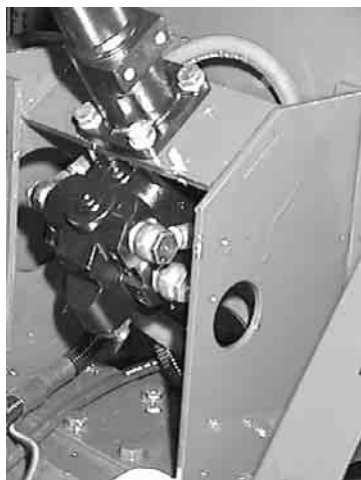
The solenoid valve that controls the power lift is operated by two sensors that detect the position and draft and whose regulation will be described in the chapter about the electrical system.



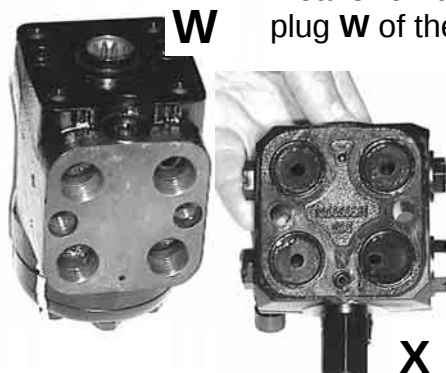
When the solenoid valve that controls the position and draft control function is installed, the rear valve system housing is equipped with a carry-over, i.e. tube **N** of fig. 8 becomes the tube that delivers fluid to the group of power lift solenoid valves while the tube that is applied in point **L** becomes the outlet.

In the group of power lift solenoid valves, the tube fixed in hole **D** comes from the carry-over of the rear control valves, the tube fixed in hole **C** goes to the two-way throttle cock whose functions have been described above, and the tube fixed in hole **E** conveys oil to the outlet in the rear differential housing.

The oil inlet casing for the hydraulic pump is the one at the rear. The amount of oil in the rear housing is about **18 kg** and the type is 15W/40.
The front axle contains about **9.5 kg** of oil type SAE 80/90W.



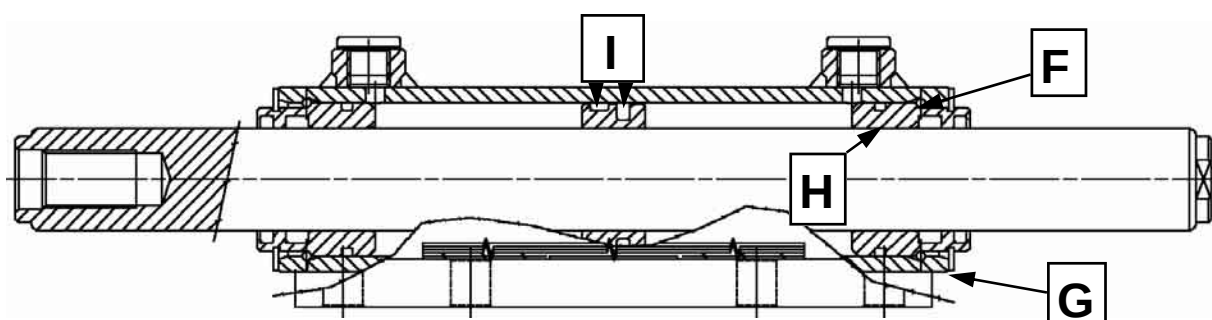
The photo at the side shows how the power steering unit is mounted on the machine. The power steering system is an **80 cc** load - sensing type. The power steering system's maximum valve setting is obtained by means of the adjuster screw under plug **W** of the photo alongside.



Tighten the screw to increase the pressure value or unscrew it to decrease the value.

The correct value is about 120 bar and is gauged by mounting a pressure gauge inside.

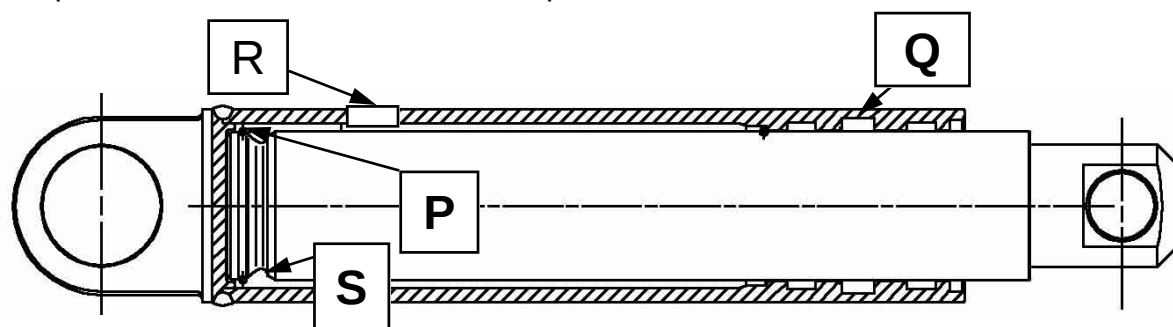
The relative housing on the delivery tube, at the level of the engine's water pump. Once the pressure gauge has been installed, bring the steering cylinder to end of stroke on the right or left side so as to trip the maximum valve of the power steering system and check the pressure value on the gauge. Letter **X** in the photo marks the control hole on the load-sensing unit. The power steering system becomes hard to operate if this orifice clogs (especially during the first starts, before the filters have completely cleaned the oil). On request, the workshop manual of the entire power steering system can be supplied as it contains instructions on how to completely overhaul the internal valve system.



The figure above depicts the steering cylinder in the RS version.

To disassemble the cylinder and replace the internal seals, remove circlip **G** with the aid of a pair of tweezers. Push the entire cylinder block **H** towards the inside of the cylinder in order to access ring **F**, then remove it from its housing with the aid of a screwdriver. It will now be possible to remove the entire internal part of the stem and replace the internal seals **I**. Take care to prevent damage to the chromium plating on the stem during these operations.

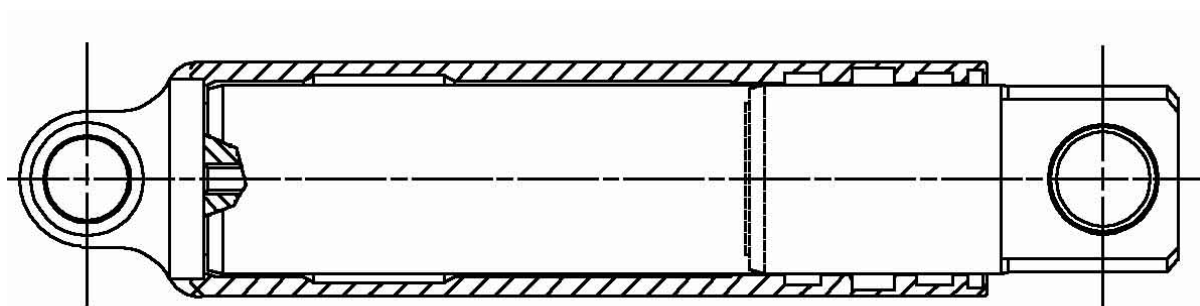
Work through the previously described operations in reverse order to reassemble the parts, once the seals have been replaced.



The drawing above depicts one of the two lifting cylinders that operate the rear power lift.

Comply with the following operations to replace the seal in **Q** and the adjacent guides:

- with the aid of a screwdriver, remove ring **P** from its housing through cylinder supply hole **R**;
- take out the entire stem and replace the worn seals;
- insert the ring inside slot **S** on the piston and then fit the piston back in the cylinder;
- position ring **P** correctly in its housing through opening **R**.

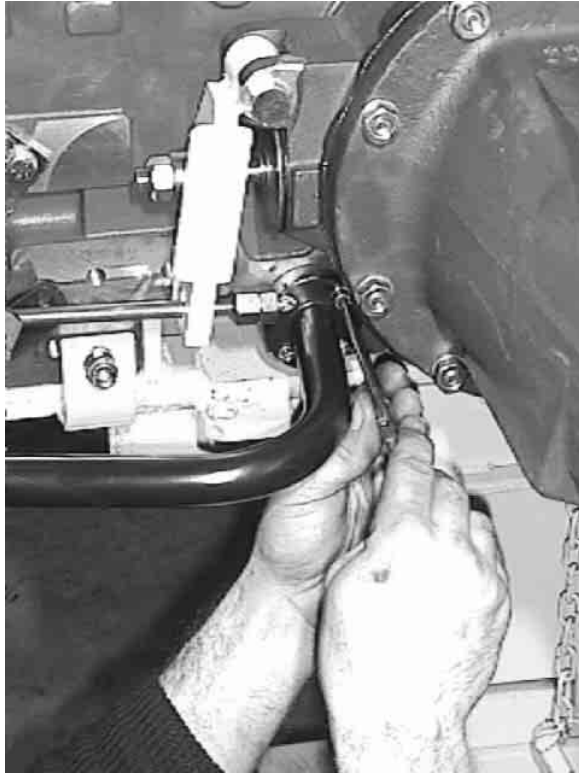


The figure above shows one of the two cylinders that operate the steering system in the articulated tractor.

In this latter case, it is very easy to replace the internal piston seals and the adjacent guides.

Just remove the internal piston without having to carry out any additional operation and access the seals.

Take care to prevent damage to the chromium plating on the stem during this and the subsequent remounting operations.



The photo on the left shows the main oil inlet tube that is positioned at the side of the rear gearbox housing and that supplies oil to the hydraulic gear pump installed in the front part of the tractor under the coolant radiator.

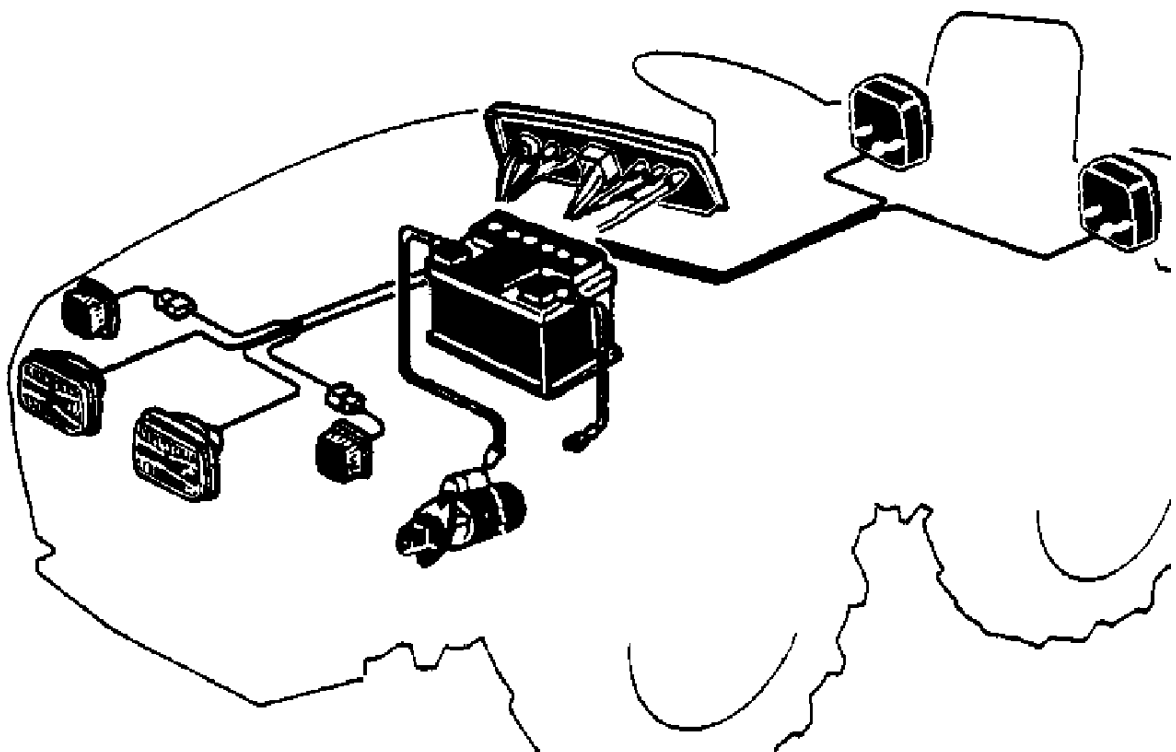
When this tube is mounted, grease the O-Ring and tighten the flange fixing screws to a 1.5 Kgm torque value in a crossed fashion so as to evenly clamp the flange itself.

LUBRICATION

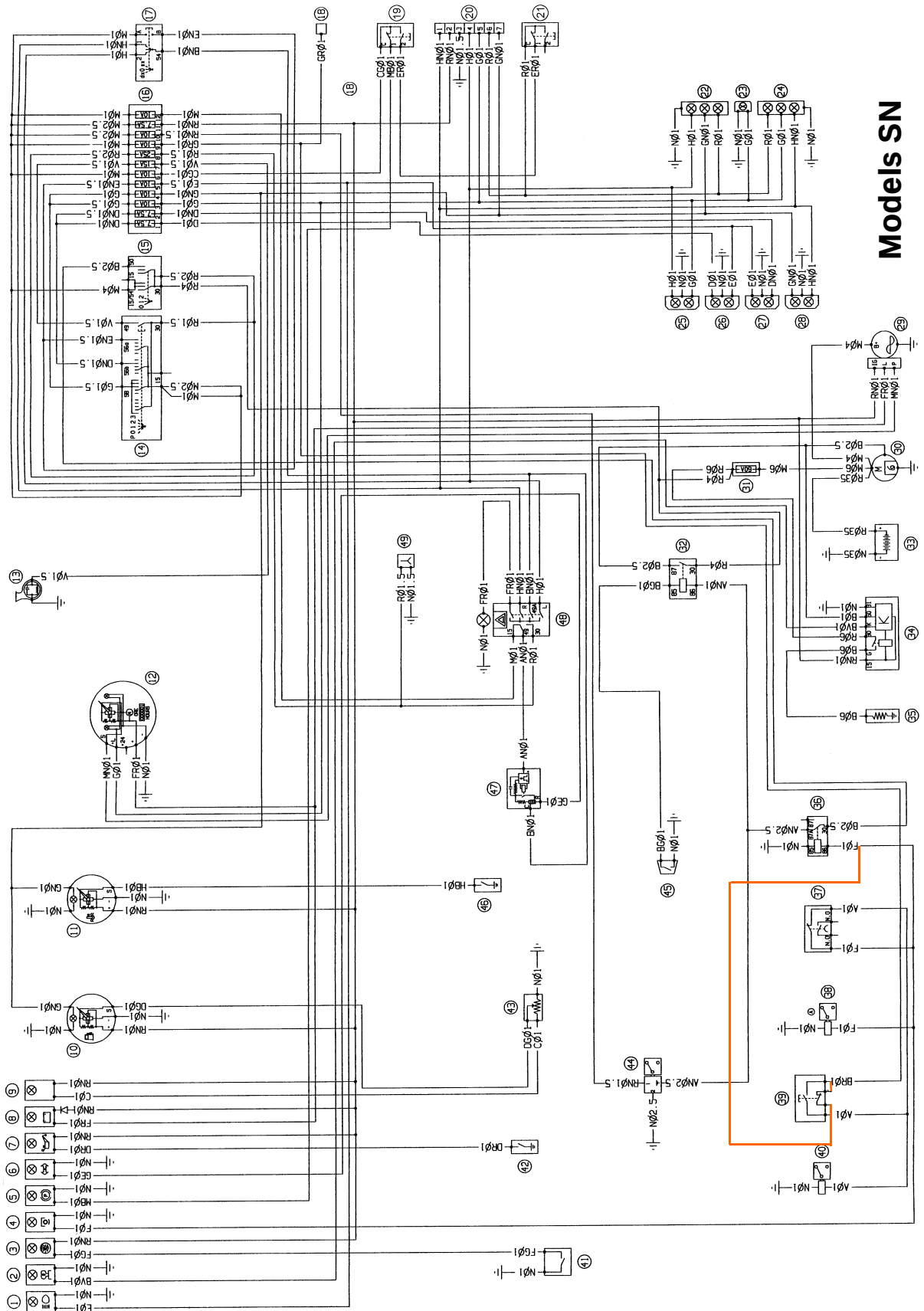
Oil	ARBOR UNIVERSAL 15W-40 (SAE 15W/40)	18	Liters
Oil	ARBOR TRW90 (SAE 80W-90, API GL-5)	9,5	Liters
Grease	ARBOR MP EXTRA (NLGI2)		

We recommend lubricants and liquid by: **FL SELENIA**.

ELECTRICAL SYSTEM



WIRING DIAGRAM



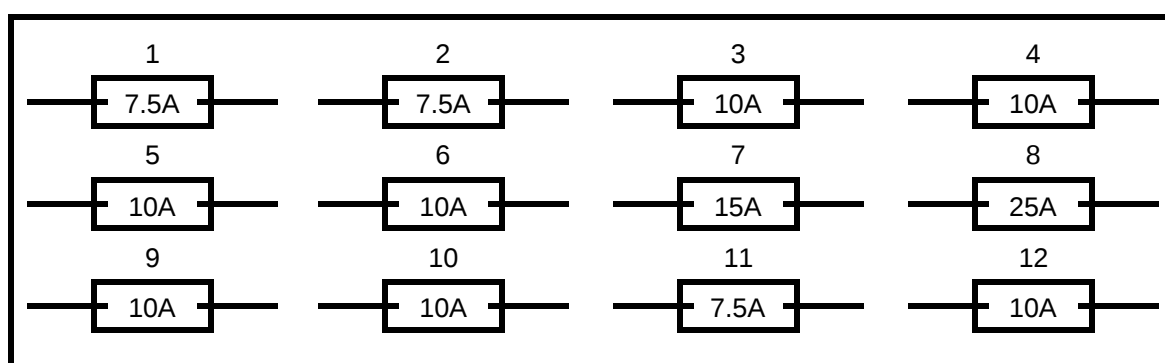
Key to wiring diagram for mod: **Articulated**

- 1 Driving beam indicator - blue
- 2 Glow plug preheating indicator
- 3 Clogged air filter indicator - red
- 4 PTO indicator
- 5 Parking brake indicator - red
- 6 Turn indicator indicator - green
- 7 Oil pressure indicator - red
- 8 Battery charger indicator - red
- 9 Fuel reserve indicator - orange
- 10 Fuel level gauge
- 11 Coolant temperature gauge
- 12 Rpm meter—hour meter
- 13 Horn
- 14 Light switch
- 15 Ignition switch
- 16 Fuse box
- 17 Turn indicator switch
- 18 Position - draft control plant connector
- 19 Parking brake switch
- 20 7-pin socket
- 21 Brake light switch
- 22 Rh rear light
- 23 License plate light
- 24 Lh rear light
- 25 Rh turn indicator, side light
- 26 Rh headlight
- 27 Lh headlight
- 28 Lh turn indicator, side light
- 29 Alternator
- 30 Motorino avviamento
- 31 Main maxi fuse
- 32 Ignition relay
- 33 12V battery
- 34 Glow plug preheater plant
- 35 Thermostarter
- 36 PTO relay
- 37 PTO engaging switch
- 38 Drainage solenoid valve
- 39 PTO selector switch
- 40 PTO solenoid valve
- 41 Clogged air filter sensor
- 42 Engine oil pressure sensor
- 43 Fuel level float
- 44 Motor stop solenoid
- 45 Ignition enabling pressure switch
- 46 Coolant temperature sensor
- 47 Turn indicator blinker
- 48 Hazard light switch
- 49 1-pin socket

Cable colours	
A Orange	G Yellow
B White	H Light blue
C Pink	M Brown
D Grey	N Black
E Green	R Red
F Blue	V Purple

Description of fuse box for mod:

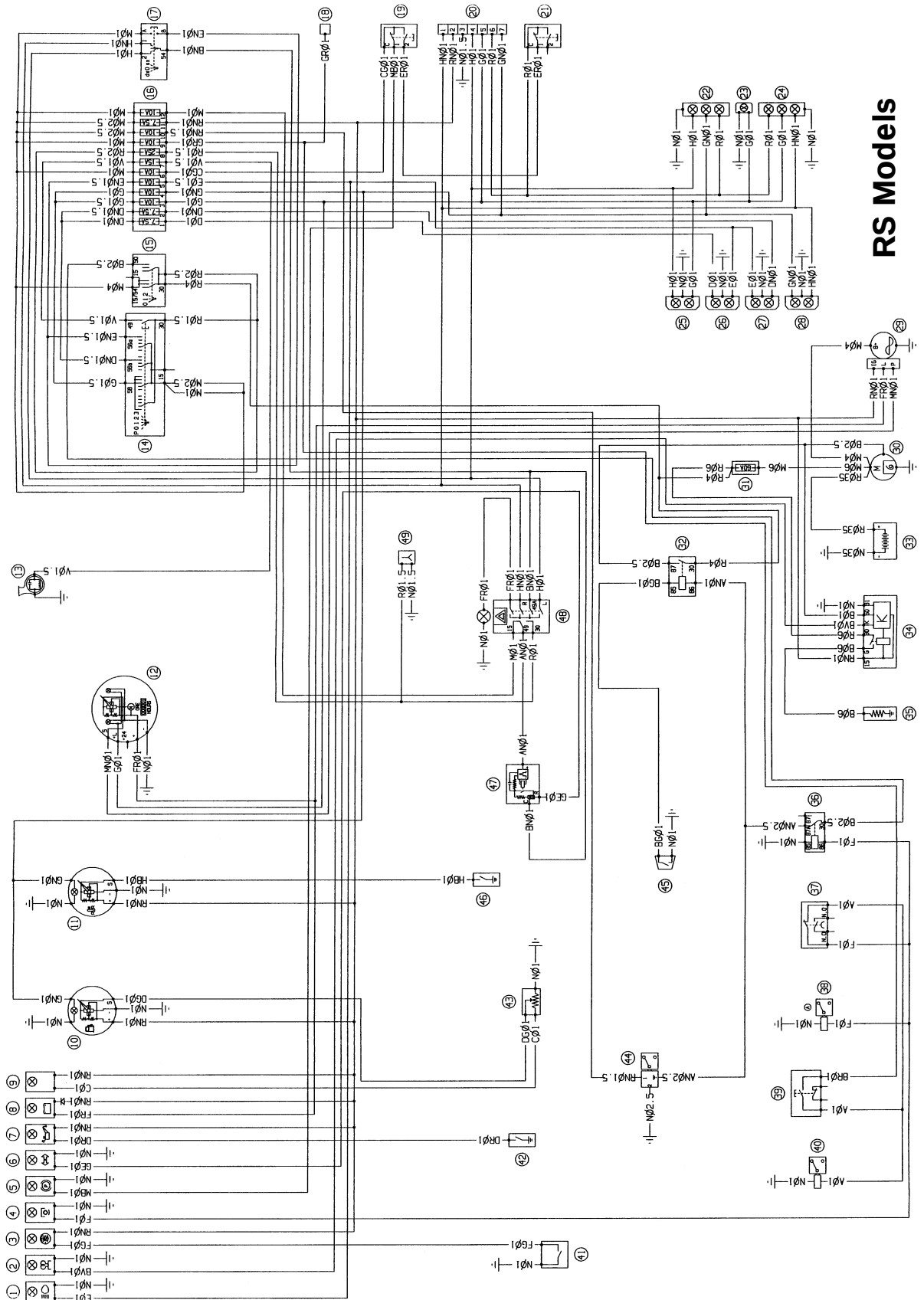
Articulated



USERS

- 1 Rh dipped beam
- 2 Lh dipped beam
- 3 Rh front, lh rear side lights, 7-pin socket, license plate light, rpm meter - hour meter light
- 4 Lh front, rh rear side lights, 7-pin socket, coolant temperature indicator, fuel gauge indicator lighting
- 5 Driving beams, driving beam indicator, driving beam blinker
- 6 Parking brake switch power supply
- 7 Horn
- 8 +30 power supply of 1-pin socket, hazard light switch
- 9 Power supply of rear draft energizing connector, PTO selector switch
- 10 Power supply of motor stop solenoid
- 11 Alternator, preheater plant energizing, power supply for 7-pin socket power, clogging filter indicator, engine oil pressure indicator, generator indicator, fuel reserve indicator, fuel level indicator instrument, coolant temperature indicator instrument
- 12 +15 power supply of hazard light switch

WIRING DIAGRAM



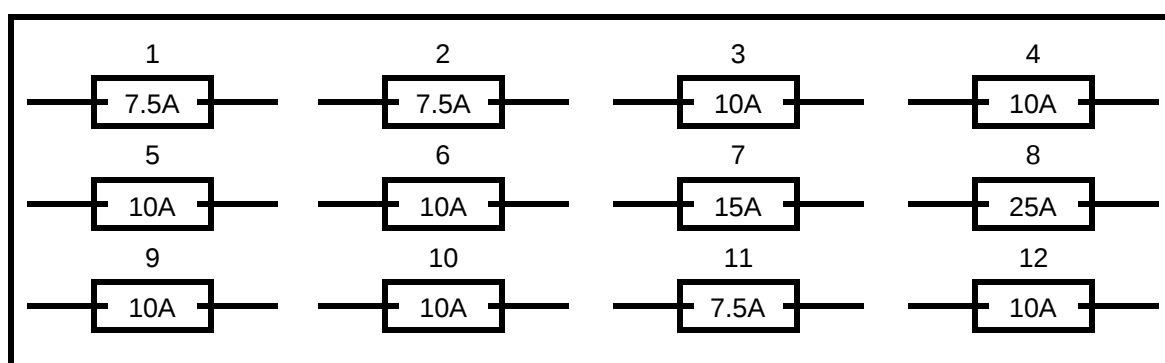
Key to wiring diagram for mod: **Steering**

- 1 Driving beam indicator - blue
- 2 Glow plug preheater indicator
- 3 Clogged air filter indicator - red
- 4 PTO indicator
- 5 Parking brake indicator - red
- 6 Turn indicator indicator - green
- 7 Engine oil pressure indicator - red
- 8 Battery charger indicator - red
- 9 Fuel reserve indicator - orange
- 10 Fuel level gauge
- 11 Coolant temperature gauge
- 12 Rpm meter - hour counter
- 13 Horn
- 14 Light switch
- 15 Ignition switch
- 16 Fuse box
- 17 Turn indicator switch
- 18 Position - draft control plant connector
- 19 Parking brake switch
- 20 7-pin socket
- 21 Brake light switch
- 22 Rh rear light
- 23 License plate light
- 24 Lh rear light
- 25 Rh turn indicator, front side light
- 26 Rh headlight
- 27 Lh headlight
- 28 Lh turn indicator, front side light
- 29 Alternator
- 30 Starter motor
- 31 Main maxi fuse
- 32 Ignition enabling relay
- 33 12V battery
- 34 Glow plug preheater plant
- 35 Thermostarter
- 36 PTO relay
- 37 PTO engaging switch
- 38 Drainage solenoid valve
- 39 PTO selector switch
- 40 PTO solenoid valve
- 41 Clogged air filter sensor
- 42 Engine oil pressure sensor
- 43 Fuel level float
- 44 Motor stop solenoid
- 45 Ignition enabling pressure switch
- 46 Coolant temperature sensor
- 47 Turn indicator blinker
- 48 Hazatd light switch
- 49 1-pin socket

Cable colours	
A Orange	G Yellow
B White	H Light blue
C Pink	M Brown
D Grey	N Black
E Green	R Red
F Blue	V Purple

Description of fuse box for mod:

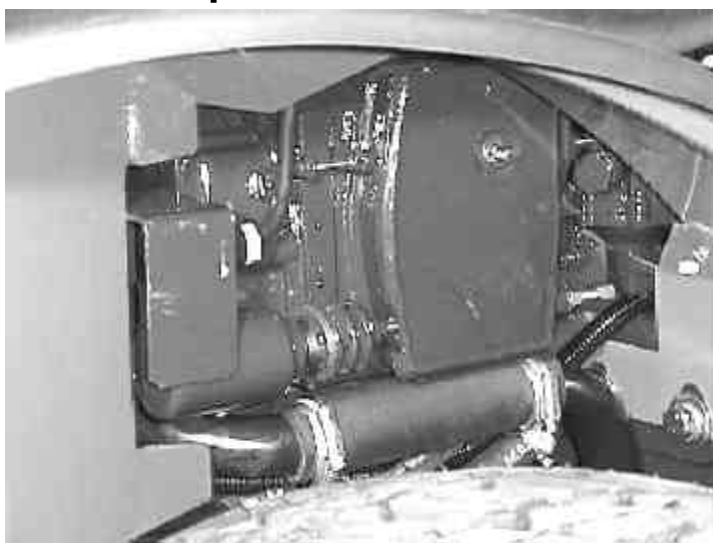
Steering



USERS

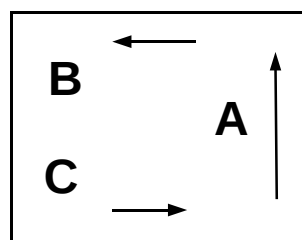
- 1 Rh dipped beam
- 2 Lh dipped beam
- 3 Rh front, lh rear side lights, 7-pin socket, license plate light, rpm meter - hour counter
- 4 Lh front, rh rear side lights, 7-pin socket, coolant temperature indicator, fuel level indicator lighting
- 5 Driving beams, driving beam indicator, driving beam blinker
- 6 Power supply of parking brake switch
- 7 Horn
- 8 +30 power supply of 1-pin socket, hazard light switch
- 9 Power supply of rear draft energizing connector, PTO selector switch
- 10 Power supply of motor stop solenoid
- 11 Alternator, preheater plant energizing, power supply of 7-pin socket, clogging filter indicator, engine oil pressure indicator, generator indicator, fuel reserve indicator, fuel level indicator instrument, coolant temperature indicator instrument
- 12 +15 power supply of hazard light switch

Motor stop



The electrostop is shown in the photo on the left. To be correct, the solenoid must be connected as shown in the diagram below.

←
DRIVING DIRECTION

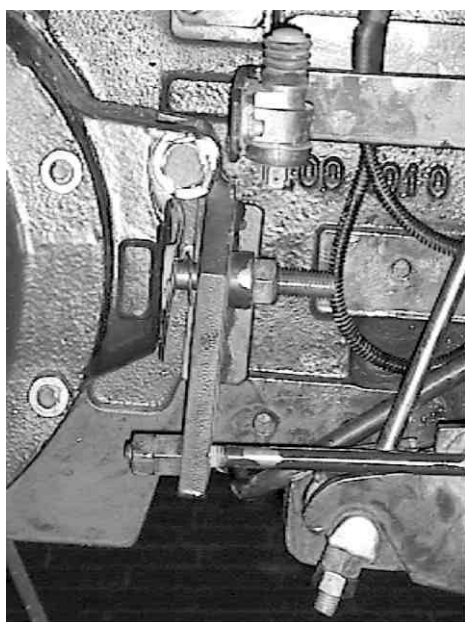


Prod **A** of the solenoid must be connected to the 50 of the ignition key.

Prod **C** must be connected to the ground connection.

Prod **B** must be connected to the 15 of the key.

There are two circuits in the electrostop that are energized at the same time during the ignition phase after which only the circuit powered by 15 remains and keeps the engine running.



Adjustment of the PTO selector switch shown in the photograph is of particular importance.

The two narrowest prods (orange white red wires) in the switch must be connected. The switch must be pressed when the lever is down, i.e. with the independent PTO selected.

In this condition, without the PTO turning, a screwdriver can be used to check that the coil indicated with letters A and B in the RS and SN versions respectively, is energized (see enclosed photos).

When the PTO is engaged by pressing the knob of fig. **C** down and turning, voltage is also supplied to solenoid valve **E** and the PTO starts to slowly turn because the oil must also fill the accumulator in parallel on the actuator cylinder of the PTO clutch.

The wires in switch **C** in the figure must be connected to terminals **C** and **+** marked on the base of the switch itself.

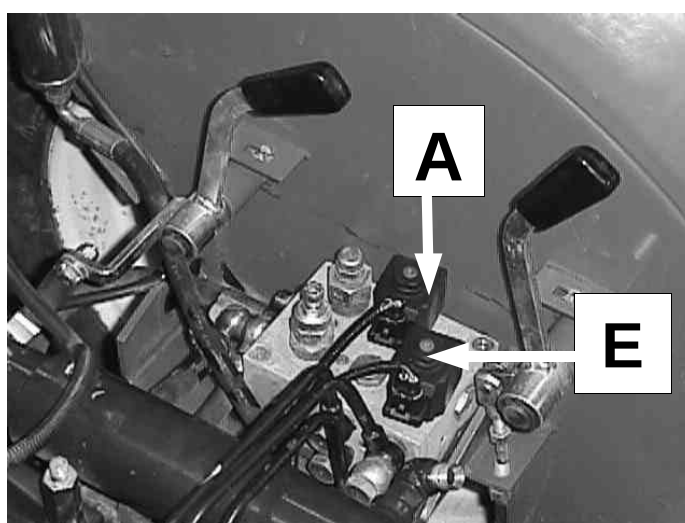
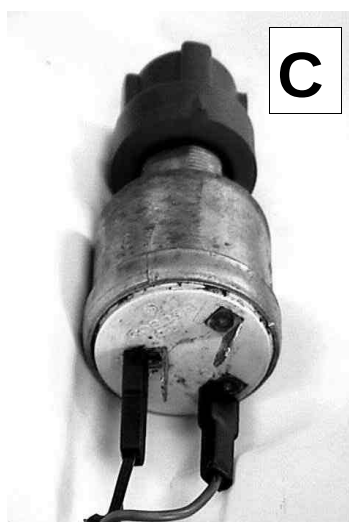
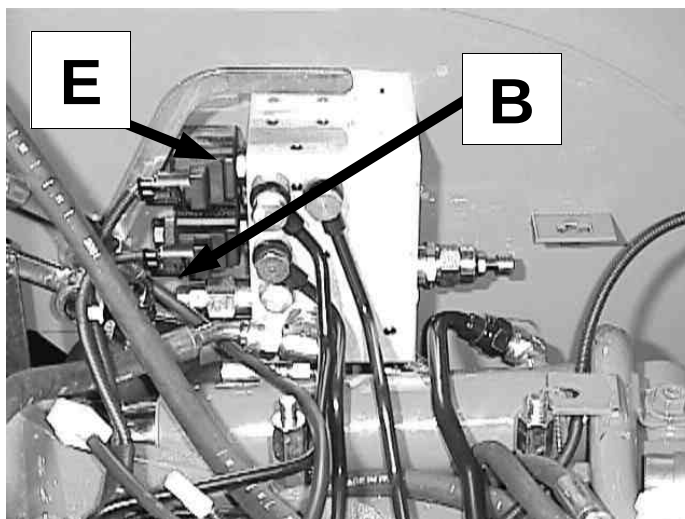
Both solenoid valves de-energize when the synchronized PTO is selected by moving the PTO selector lever up.

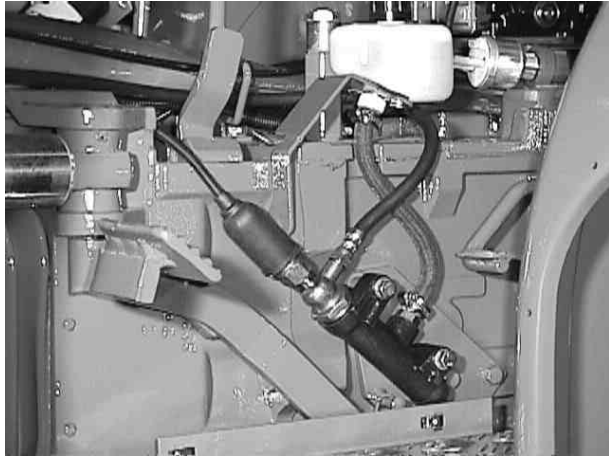
There is a safety device via a relay under the dashboard which prevents the tractor from successively starting if its engine is switched off with the PTO engaged (knob **C** engaged).

In this case, switch **C** must be disarmed before the machine can be started again.

Neither will the machine start if the synchronized PTO engaged.

In this case, the independent PTO lever must be moved down (to engage), knob **C** must be disarmed, after which the tractor can be started.

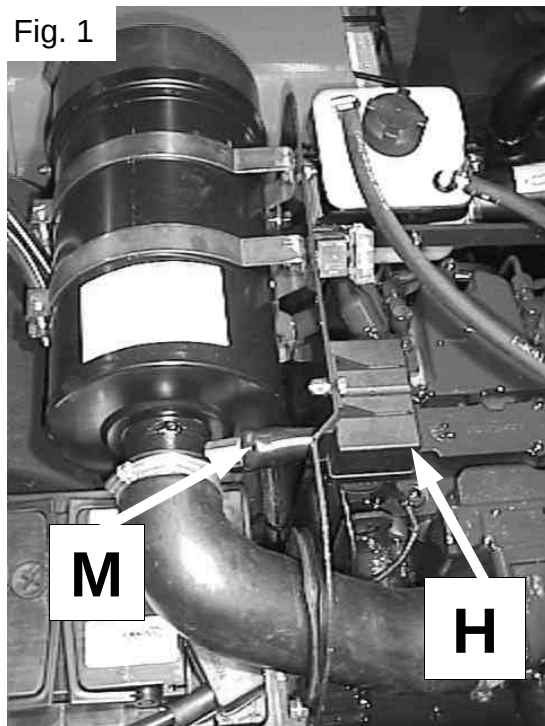




The clutch is operated hydraulically. There is a pressure switch on the hydraulic pump that controls the clutch which transmits a signal to a relay positioned under the dashboard, thus enabling the tractor to start.

If the tractor is difficult to start, check the pressure switch and relay to make sure that they are efficient, as shown in the wiring diagram of the tractor.

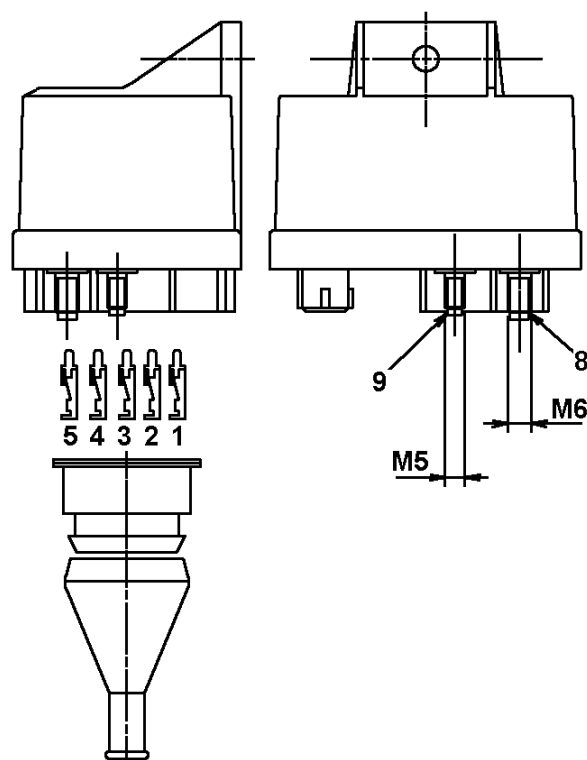
Fig. 1



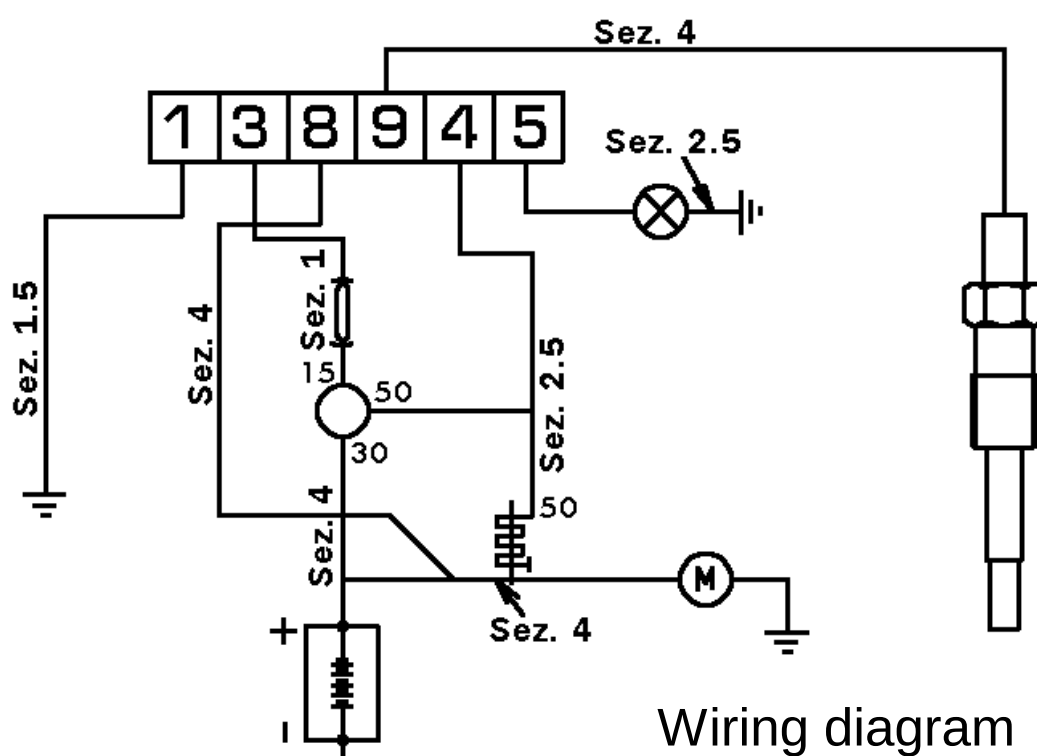
The letter H in the photograph indicates the glow plug plant. To lower the amount of exhaust produced when direct injection engines are started, these latter are equipped with this device which is specific for all direct injection VM engines with monitored exhausts.

The wiring diagram is given on the following page, showing the connections involved if the part needs to be replaced or in the event of faults.

COMPLETE DEVICE FOR PREHEATER GLOW PLUGS
ENGINE D 703 L / LT
REF. VM 13002151F

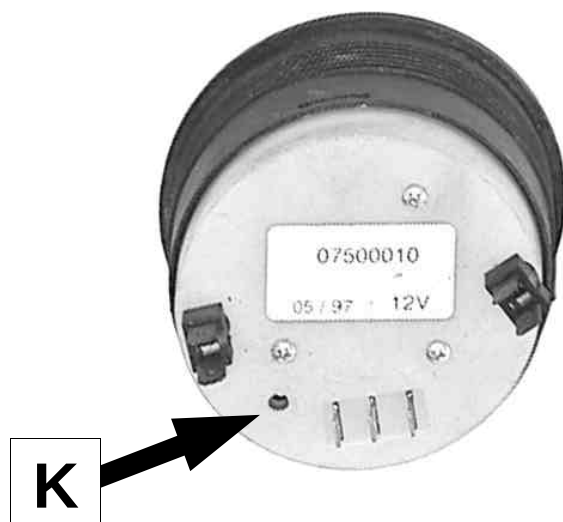


TECHNICAL SPECIFICATIONS OF THE GLOW PLUGS
VOLTAGE 12 V
SURGE CURRENT 10A



Wiring diagram

The letter **M** in fig. 1 on page 10 indicates the air filter clogging bulb that turns on an indicator light on the dashboard.
If the air filter clogs, this bulb transmits a ground signal.

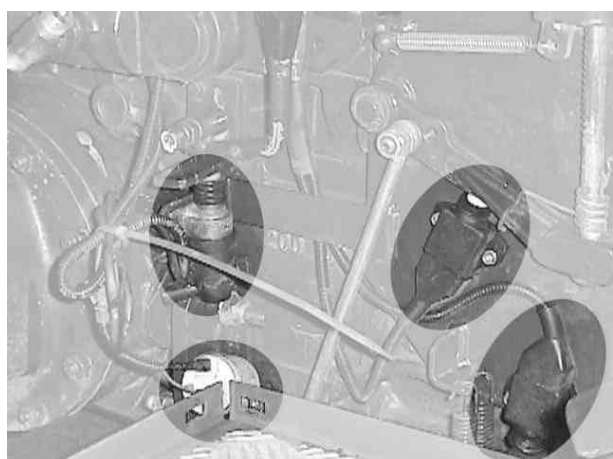


The photo above shows the rear part of the hour counter - rpm meter. Letter **K** indicates the rpm meter adjuster screw.

With the engine idling (800-850 rpm), adjust screw **K** so that the indication on the rpm meter corresponds to the engine rate.

To make sure that the engine rate is 800-850 rpm, check again on the engine or PTO with another instrument.

The tractor's rpm meter - hour counter operates by measuring the engine revolutions from those of the alternator.



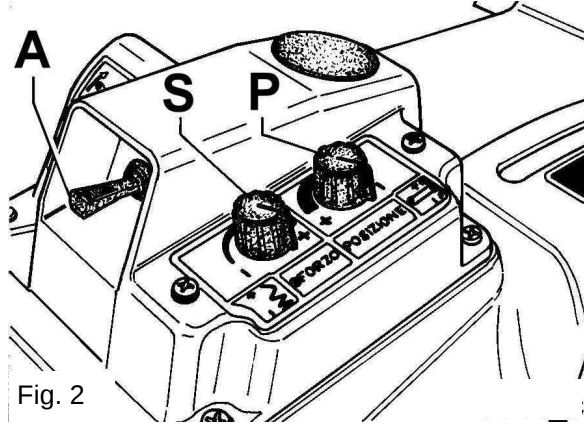
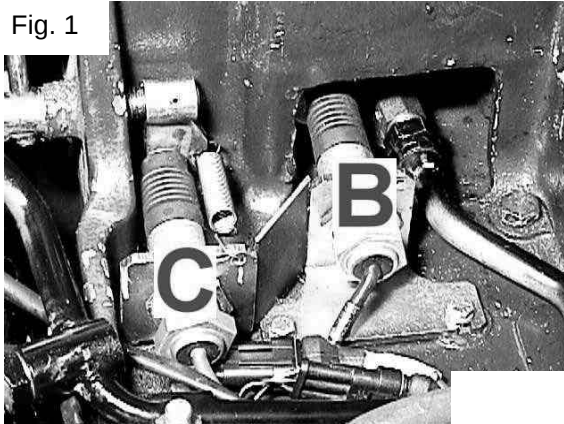
Installation of all the switches on the rear part of the tractor is shown in the photo on the left.

Besides the switch under the PTO lever, which has been described in full on the previous pages, the photo shows the switch that turns on the hand brake engaging switch and the switch on the brake pedals that turns on the brake lights.

REGULATION OF THE POSITION AND DRAFT CONTROL POWER LIFT FOR MAXTER W60 - W70

This adjustment is only required for tractors with the rear position and draft control power lift.

Fig. 1



Carry out the following operations to ensure that the position and draft control system operates correctly: (Dismount the seat and the rear seat protection plates to access the two sensors).

(1) POSITION CONTROL ADJUSTMENT

- Loosen the check nut of position control sensor **C** on the right in relation to the other sensor **B** (**depending on the driving direction**) (**Draft**).
- Start the tractor.
- Set switch **A** of the power lift to the floating position (down).
- Set the left-hand potentiometer **S** (draft) to the end of travel position in the **clockwise** direction Fig. 2
- Set the right-hand potentiometer **P** (position) to the end of travel position by turning it in the **clockwise** direction Fig. 2
- Tighten sensor **C** until an idle travel of the links of about 50 mm is obtained (idle travel meaning with the links fully lifted). The links will rise as soon as the sensor is screwed. Pull switch A of Fig. 2 up to check the maximum link lifting position.
- Tighten the sensor check nut.

2) - DRAFT CONTROL ADJUSTMENT

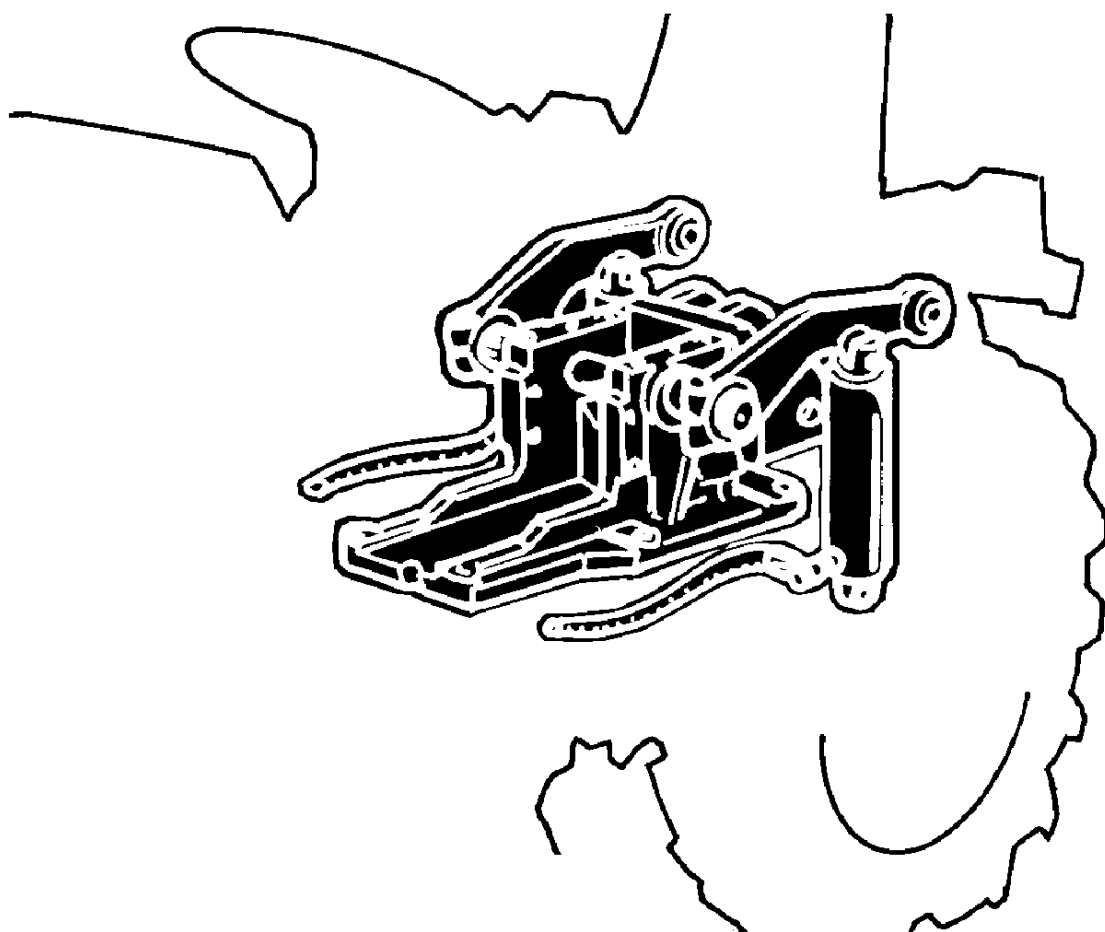
- Loosen the check nut of draft control sensor **B** (see figs. 1 and 2 on the previous page).
- Set the left-hand potentiometer (draft) **S** to the end of travel position in the **anti-clockwise** direction.
- Start the tractor.
- Set switch **A** of the power lift to the floating position (down).
- Set the right-hand potentiometer **P** (position) to the end of travel position in the **anti-clockwise direction** (links fully lowered).
- Bring sensor **B** in contact with the 3rd point until the engine lags and its rate starts to drop.
- Unscrew the same sensor very slowly until the lift links lower (limit adjustment).
- Tighten the check nut of sensor **B**.

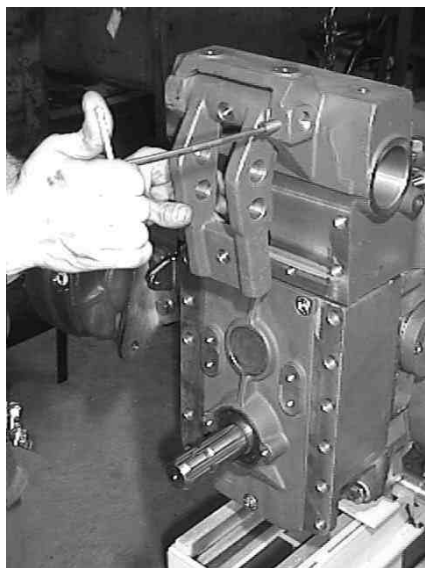
Once all the adjustments have been made and the positioning check nuts of the sensors have been tightened, fit the closing plates and seat back in position and re-mount the guard on top of switch **A**.

Additional wiring (of which the relative diagram showing the connections to the various components is enclosed) is used to connect the position and draft sensors, the electronic plant that monitors the power lift, the power lift and the two position and draft control potentiometers on the tractor.

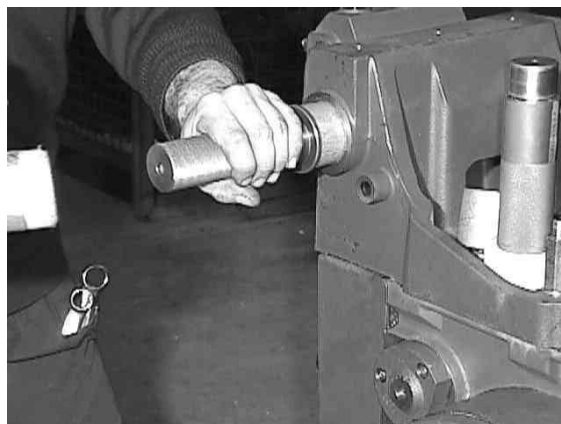
This wiring is interfaced with the standard tractor wiring on the rear part of the machine, under the central plate that protects the seat.

POWER LIFT

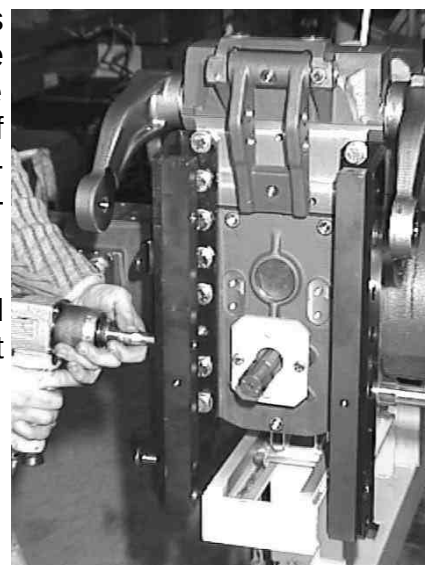




The sequence illustrated in these photographs, briefly shows how the rear power lift is mounted. The most delicate phase is the one when the bushes are mounted inside the casting. This must be done with the aid of a plug. Make sure that the internal part of the bushes is not damaged during this operation.



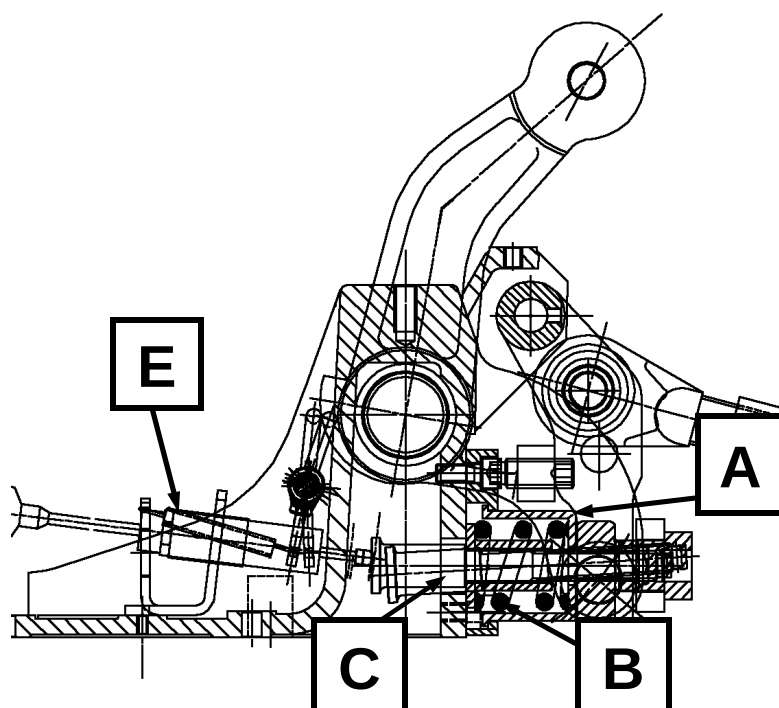
Care is also required when mounting the draft sensitive unit.



The assembly drawing alongside shows how the components that form the sensitive part of the mechanical draft control unit are mounted.

Base A encapsulates reaction spring B. Pin C, which receives a thrusting action from the third point, transmits this to base A and sensor E connected to the electronic plant (see electrical system).

This unit is optional and is not installed on all machines.



DRIVING TORQUES

Screws fixing the rear tow hook blades	8	Kgm
Gearbox housing and power lift fixing screws	5	Kgm
M10 screws fixing the third point support	6	Kgm
M 12 screws to fix the rear roll – bar	6	Kgm

FAULTS - CAUSES, REMEDIES



FAULTS	POSSIBLE CAUSES	REMEDIES
CLUTCH		
The clutch slips	1) - Clutch plate dirtied with oil 2) - Incorrect clutch play	1) - Eliminate any oil leaks (replace the oil retainer on the main shaft if necessary). Thoroughly clean the flywheel and replace the clutch plate. 2) - Adjust the clutch rod. Replace the clutch plate if the fault persists.
The clutch fails to disengage	1) - Ondulated clutch plate 2) - Clutch disengaging lever bent. 3) - Pressure plate levers incorrectly adjusted. 4) - Clutch plate jammed on to fly-wheel surface 5) - Excessive clutch play	1) - Replace the clutch plate. 2) - Replace the clutch disengaging lever 3) - Make sure that the levers are not worn. Adjust them if this is not the case. 4) - Start the machine, lock it with the brakes, repeatedly engage and disengage the clutch. Demount the clutch and clean it if the result of these tests is negative. 5) - Adjust the external linkages and the internal ones if necessary.
GEARBOX		
The gears disengage	1) - Synchromesh pack and speed selection gears with too much float. 2) - Incorrect synchronism between speed selector rod and sliding engaging sleeve. 3) - Sliding sleeve and selection gear with worn teeth owing to incorrect operation of the synchromesh.	1) - Adjust play to prescribed value. 2) - Reset drive transmission, eliminating play and replacing the rod, spring and selector ball if necessary. 3) - Replace the complete synchromesh units and the selection gears.
The gears fail to engage	1) - The clutch fails to disengage. 2) - Synchromesh with wavy brake ring 3) - Synchromesh pack and speed selection gears with not enough float.	1) - Adjust the clutch as indicated. 2) - Replace the brake ring. 3) - Reset the prescribed play.
The gearbox, final drive or reverse shuttle are hard to engage	1) - Make sure that the linkages are greased.	1) - Grease the linkages
The final drive—reverse shuttle fail to engage	1) - The clutch fails to engage. 2) - Ratio separator not adjusted.	1) - Adjust the clutch as indicated. 2) - Adjust the separator function, replacing the components of the device.

FAULTS	POSSIBLE CAU-	REMEDIES
GEARBOX		
The reverse shuttle grates	1)- Worn synchromesh units	1)- Dismount the front assembly and replace the synchromesh units
The gearbox grates	1)- Worn synchromesh units	1)- Dismount the gearbox and replace the synchromesh units
The gearbox is noisy when it operates	1)- Oil level too low 2)- Worn bearings 3)- Play on the front or rear bevel gear pair	1)- Check the oil level 2)- Replace the bearings 3)- Adjust the bevel gear pair
REAR DIFFERENTIAL		
Noisy axle	1)- Diff lock control not adjusted 2)- Linkages in diff lock not adjusted 3)- Bevel gear pair not adjusted	1)- Adjust the control 2)- Adjust the linkages 3)- Adjust the pinion - ring gear pair
The diff lock fails to function	1)- Broken retainer pin between the shaft and fork 2)- Broken pin between shaft and control lever 3)- Balls or shaft damaged 4)- The balls have come out of their housings	1)- Replace the pin 2)- Replace the pin 3)- Replace the balls and crown wheel 4)- Make sure that the collar travel is correct
Noisy or squeaking differential	1)- Play on the bevel gear pair 2)- Insufficient oil level	1)- Adjust the bevel gear pair 2)- Check the oil level
FRONT DIFFERENTIAL		
Dull noise from the differential during acceleration or deceleration phase	1)- Too much play between planetary gears and spider pin	1)- Replace the planetary gears and pin
The differential makes an alternate type of noise	1)- Worn bevel gear pair bearings	1)- Replace the bearings

FAULTS	POSSIBLE CAUSES	REMEDIES
POWER TAKE-OFF		
The clutch slips or fails to transmit drive	1)- Worn discs 2)- Insufficient oil pressure 3)- The controlling solenoid valve fails to open the oil passage 4)- Worn seals on the shaft	1)- Replace the clutch discs 2)- Calibrate pressure valve or flow rate of solenoid valve unit. Check seals on control piston. 3)- Check the electrical connections and/or clean the valves. 4)- Replace the seals.
The clutch fails to disengage	1)- The solenoid valve fails to function 2)- The solenoid valve has not received its enabling signal	1)- Check electrical connections and make sure that the valve switch operates correctly 2)- Check the electrical connections and adjustment of the switch
Oil leak from the shaft	1)- Rear oil retainer damaged	1)- Dismount the rear end of the PTO and replace the oil retainer.
Play on the PTO shaft	1)- Damaged bearings	1)- Dismount the rear end of the PTO and replace the bearings.
The PTO disengages	1)- Driving or synchronized PTO control not regulated 2)- 540-540E-1000 rpm selection control not adjusted	1)- Adjust the selection as indicated
The PTO fails to engage	1)- The clutch fails to disengage 2)- Driving or synchronized PTO not regulated	1)- Adjust the clutch as indicated 2)- Adjust the selection mechanism as indicated
The PTO is noisy	1)- When implements requiring little force and with uneven rotation are hitched 2)- Selection of the 540-540E-1000 rpm ratio not proportional to that of the implement 3)- PTO shaft float	1)- There is no remedy to a fault that involves interventions on the implement 2)- Select an appropriate ratio 3)- Adjust the shaft as indicated and make sure that the drivelines connected to it operate smoothly

FAULTS	POSSIBLE CAUSES	REMEDIES
REAR FINAL DRIVES		
Noisy wheels	1)- Slack rim and flange fixing screw 2)- Float on the axle shafts	1)- Torque the screws 2)- Eliminate the play as described
FRONT FINAL DRIVES		
Noisy wheels	1)- Slack rim and flange fixing screws 2)- Float on the axle shafts	1)- Torque the screws 2)- Eliminate the play as described
Noisy final drive	1)- Worn bearings or gears	1)- Replace the bearings and check the gears
Noise from the wheel hubs can be heard during the steering manoeuvres	1)- The axle shaft cross journal (RS) is damaged or the fixed bush is worn	1)- Replace the cross journal and check the fixed bush
Play on the hub	1)- Worn shims or bushes 2)- The steering heads are damaged	1)- Replace the bushes or shims 2)- Replace the bushes
Oil leaks on the wheel side	1)- Damaged oil retainer	1)- Replace the oil retainer
BRAKES		
The machine fails to brake	1)- Brakes not adjusted 2)- Brake discs worn	1)- Adjust the emergency and parking brakes 2)- Replace the discs
The machine remains braked	1)- Brakes not adjusted 2)- Broken return springs 3)- Controls hardened because they are not lubricated	1)- Adjust the emergency and parking brakes 2)- Replace the springs 3)- Make sure that the controls operate smoothly
Irregular braking action	1)- Brakes not adjusted	1)- Adjust the main brakes, making sure that they operate at the same time

FAULTS	POSSIBLE CAUSES	REMEDIES
STEERING SYSTEM		
Loss of control when driving the machine	1)- Steering cylinder with worn retention rings 2)- Power steering with badly adjusted anti-shock valves	1)- Replace the retention rings on the cylinder 2)- After thoroughly cleaning the valves, make sure that the pressure is at the prescribed value. Replace the power steering system if these values cannot be obtained
Oil leaks from the power steering system	1)- Slackened unions 2)- Worn retention rings 3)- Power steering outlet clogged	1)- Tighten the unions 2)- Replace the retention rings 3)- Check the condition of the drain pipe and make sure that the power lift's valve system operates correctly
Steering difficult	1)- Power steering system with low pressure 2)- Air in the circuit 3)- Priority valve LS not regulated 4)- Inefficient gear pump	1)- Check the restore the max pressure in the circuit 2)- Thoroughly clean the intake circuit and make sure that it is tight 3)- Clean and accurately mount the valve. Check it for wear and make sure that it operates smoothly 4)- Overhaul the gear pump
CENTRAL PIVOT		
Pitching when articulated tractors are steered	1)- Bushes seized	1)- Grease the bushes
The tractor does not follow the land contours	1)- Coupling pin seized	1)- Grease the bushes
Noise is heard when tractor is steered	1)- Axle shaft cross journals worn	1)- Replace the driveline cross journals
The front assembly moves during the braking and starting operations	1)- Worn coupling pin and bushes	1)- Replace the coupling pin and bushes

FAULTS	POSSIBLE CAUSES	REMEDIES
POWER LIFT		
The power lift has difficulty in bearing the load: there is a rhythmic swing when the engine is running and the load lowers when the engine is at a standstill	1)- Worn piston seal	1)- replace the seal
Rhythmic swing occurs when the links are in the end of upward travel position, while the load fails to lower when the engine is at a standstill.	1)- Incorrect adjustment of the position control end of travel setting	1)- Adjust the position control setting, limiting link travel in the upward direction.
The power lift lifts in a jerky way	1)- Hydraulic pump intake filter clogged 2)- Air in the intake pipe of the hydraulic pump	1)- Clean the filter and replace it if necessary. 2)- Tighten the unions of the intake circuit and identify any leaks.
Position control fails to function. The power lift only lifts and lowers with the draft control lever	1)- Position control lever not regulated	1)- Adjust the position control setting.
Pump overheated	1)- Pressure too high 2)- Cavitation	1)- Lower the pressure 2)- Clean the intake components and check the unions
Pump with null pressure	1)- Pump shaft broken	1)- Replace the pump
Noisy pump	1)- Cavitation 2)- Imperfect seal on pump shaft 3)- Pump casing not tight	1)- Clean the intake components and check the unions 2)- Replace the oil retainer ring 3)- Tighten the screws of the pump unit and replace the retention rings
Oil in the circuit that becomes foamy and increase in volume in an abnormal way	1)- Air in the circuit 2)- Pump cavitation	1)- Check the oil level and eliminate any air 2)- Clean the intake components
The lifter doesn't reach the scheduled lift power .	1) - Calibration of the pressure relief valve is not correct.	1) - Adjust the pressure value following the instructions given in the paragraph relative to the hydraulic system

FAULTS	POSSIBLE CAUSES	REMEDIES
ELECTRICAL SYSTEM		
The starter motor fails to operate	1)- Battery discharged or faulty 2)- Starter motor defective 3)- Ignition switch defective 4)- Battery cables tarnished or broken at the terminals 5)- Ignition switch on the machine not regulated 6)- PTO selector switch pressed	1)- Recharge the battery. Replace it if it fails to remain charged. 2)- Overhaul the starter motor and replace it 3)- Replace the switch 4)- Clean or replace the tarnished terminals 5)- Adjust the enabling switches and replace them if necessary 6)- Disengage the rear PTO (red knob)
The generator indicator light fails to go out even at a high engine rate	1)- Regulator inefficient 2)- The alternator fails to charge sufficiently	1)- Replace the regulator 2)- Overhaul or replace the alternator
The battery becomes deformed	1)- The battery is charged too much	1)- Advise the customer who works for many consecutive hours to turn on the headlights when working in order to lower the battery charge.
The water in the battery turns black	1)- Faulty element	1)- Replace the battery
The speed indicator fails to operate	1)- The powering pulse fails to arrive 2)- Instrument with irregular setting 3)- Faulty instrument	1)- Repair the circuit 2)- Adjust the instrument 3)- Replace the instrument

FAULTS	POSSIBLE CAUSES	REMEDIES
ENGINE		
Engine efficiency poor	1)- Fuel filter clogged 2)- Injector return partially clogged 3)- Air in the circuit 4)- Injectors not regulated 5)- Air filter clogged	1)- Replace the filter 2)- Remove the obstruction 3)- Make the circuit tight 4)- Overhaul the injectors 5)- Clean the filter and replace the cartridge if necessary.
The engine starts badly	1)- Injection pump badly regulated 2)- Injectors badly regulated 3)- Fuel pump inefficient	1)- Overhaul the pump 2)- Overhaul the injectors 3)- Replace the pump
The engine fails to start	1)- Faulty electrostop 2)- Broken fuse	1)- Replace the electrostop 2)- Check the fuse box, eliminate the fault that caused the short-circuit and replace the fuse.
The engine fails to stop	1)- The diode on the alternator indicator light has broken	1)- Replace the diode.

FAULTS - CAUSES, REMEDIES



FAULTS	POSSIBLE CAUSES	REMEDIES
CLUTCH		
The clutch slips	1) - Clutch plate dirtied with oil 2) - Incorrect clutch play	1) - Eliminate any oil leaks (replace the oil retainer on the main shaft if necessary). Thoroughly clean the flywheel and replace the clutch plate. 2) - Adjust the clutch rod. Replace the clutch plate if the fault persists.
The clutch fails to disengage	1) - Ondulated clutch plate 2) - Clutch disengaging lever bent. 3) - Pressure plate levers incorrectly adjusted. 4) - Clutch plate jammed on to flywheel surface 5) - Excessive clutch play	1) - Replace the clutch plate. 2) - Replace the clutch disengaging lever 3) - Make sure that the levers are not worn. Adjust them if this is not the case. 4) - Start the machine, lock it with the brakes, repeatedly engage and disengage the clutch. Demount the clutch and clean it if the result of these tests is negative. 5) - Adjust the external linkages and the internal ones if necessary.
GEARBOX		
The gears disengage	1) - Synchromesh pack and speed selection gears with too much float. 2) - Incorrect synchronism between speed selector rod and sliding engaging sleeve. 3) - Sliding sleeve and selection gear with worn teeth owing to incorrect operation of the synchromesh.	1) - Adjust play to prescribed value. 2) - Reset drive transmission, eliminating play and replacing the rod, spring and selector ball if necessary. 3) - Replace the complete synchromesh units and the selection gears.
The gears fail to engage	1) - The clutch fails to disengage. 2) - Synchromesh with wavy brake ring 3) - Synchromesh pack and speed selection gears with not enough float.	1) - Adjust the clutch as indicated. 2) - Replace the brake ring. 3) - Reset the prescribed play.
The gearbox, final drive or reverse shuttle are hard to engage	1) - Make sure that the linkages are greased.	1) - Grease the linkages
The final drive—reverse shuttle fail to engage	1) - The clutch fails to engage. 2) - Ratio separator not adjusted.	1) - Adjust the clutch as indicated. 2) - Adjust the separator function, replacing the components of the device.

FAULTS	POSSIBLE CAU-	REMEDIES
GEARBOX		
The reverse shuttle grates	1)- Worn synchromesh units	1)- Dismount the front assembly and replace the synchromesh units
The gearbox grates	1)- Worn synchromesh units	1)- Dismount the gearbox and replace the synchromesh units
The gearbox is noisy when it operates	1)- Oil level too low 2)- Worn bearings 3)- Play on the front or rear bevel gear pair	1)- Check the oil level 2)- Replace the bearings 3)- Adjust the bevel gear pair
REAR DIFFERENTIAL		
Noisy axle	1)- Diff lock control not adjusted 2)- Linkages in diff lock not adjusted 3)- Bevel gear pair not adjusted	1)- Adjust the control 2)- Adjust the linkages 3)- Adjust the pinion - ring gear pair
The diff lock fails to function	1)- Broken retainer pin between the shaft and fork 2)- Broken pin between shaft and control lever 3)- Balls or shaft damaged 4)- The balls have come out of their housings	1)- Replace the pin 2)- Replace the pin 3)- Replace the balls and crown wheel 4)- Make sure that the collar travel is correct
Noisy or squeaking differential	1)- Play on the bevel gear pair 2)- Insufficient oil level	1)- Adjust the bevel gear pair 2)- Check the oil level
FRONT DIFFERENTIAL		
Dull noise from the differential during acceleration or deceleration phase	1)- Too much play between planetary gears and spider pin	1)- Replace the planetary gears and pin
The differential makes an alternate type of noise	1)- Worn bevel gear pair bearings	1)- Replace the bearings

FAULTS	POSSIBLE CAUSES	REMEDIES
POWER TAKE-OFF		
The clutch slips or fails to transmit drive	1)- Worn discs 2)- Insufficient oil pressure 3)- The controlling solenoid valve fails to open the oil passage 4)- Worn seals on the shaft	1)- Replace the clutch discs 2)- Calibrate pressure valve or flow rate of solenoid valve unit. Check seals on control piston. 3)- Check the electrical connections and/or clean the valves. 4)- Replace the seals.
The clutch fails to disengage	1)- The solenoid valve fails to function 2)- The solenoid valve has not received its enabling signal	1)- Check electrical connections and make sure that the valve switch operates correctly 2)- Check the electrical connections and adjustment of the switch
Oil leak from the shaft	1)- Rear oil retainer damaged	1)- Dismount the rear end of the PTO and replace the oil retainer.
Play on the PTO shaft	1)- Damaged bearings	1)- Dismount the rear end of the PTO and replace the bearings.
The PTO disengages	1)- Driving or synchronized PTO control not regulated 2)- 540-540E-1000 rpm selection control not adjusted	1)- Adjust the selection as indicated
The PTO fails to engage	1)- The clutch fails to disengage 2)- Driving or synchronized PTO not regulated	1)- Adjust the clutch as indicated 2)- Adjust the selection mechanism as indicated
The PTO is noisy	1)- When implements requiring little force and with uneven rotation are hitched 2)- Selection of the 540-540E-1000 rpm ratio not proportional to that of the implement 3)- PTO shaft float	1)- There is no remedy to a fault that involves interventions on the implement 2)- Select an appropriate ratio 3)- Adjust the shaft as indicated and make sure that the drivelines connected to it operate smoothly

FAULTS	POSSIBLE CAUSES	REMEDIES
REAR FINAL DRIVES		
Noisy wheels	1)- Slack rim and flange fixing screw 2)- Float on the axle shafts	1)- Torque the screws 2)- Eliminate the play as described
FRONT FINAL DRIVES		
Noisy wheels	1)- Slack rim and flange fixing screws 2)- Float on the axle shafts	1)- Torque the screws 2)- Eliminate the play as described
Noisy final drive	1)- Worn bearings or gears	1)- Replace the bearings and check the gears
Noise from the wheel hubs can be heard during the steering manoeuvres	1)- The axle shaft cross journal (RS) is damaged or the fixed bush is worn	1)- Replace the cross journal and check the fixed bush
Play on the hub	1)- Worn shims or bushes 2)- The steering heads are damaged	1)- Replace the bushes or shims 2)- Replace the bushes
Oil leaks on the wheel side	1)- Damaged oil retainer	1)- Replace the oil retainer
BRAKES		
The machine fails to brake	1)- Brakes not adjusted 2)- Brake discs worn	1)- Adjust the emergency and parking brakes 2)- Replace the discs
The machine remains braked	1)- Brakes not adjusted 2)- Broken return springs 3)- Controls hardened because they are not lubricated	1)- Adjust the emergency and parking brakes 2)- Replace the springs 3)- Make sure that the controls operate smoothly
Irregular braking action	1)- Brakes not adjusted	1)- Adjust the main brakes, making sure that they operate at the same time

FAULTS	POSSIBLE CAUSES	REMEDIES
STEERING SYSTEM		
Loss of control when driving the machine	1)- Steering cylinder with worn retention rings 2)- Power steering with badly adjusted anti-shock valves	1)- Replace the retention rings on the cylinder 2)- After thoroughly cleaning the valves, make sure that the pressure is at the prescribed value. Replace the power steering system if these values cannot be obtained
Oil leaks from the power steering system	1)- Slackened unions 2)- Worn retention rings 3)- Power steering outlet clogged	1)- Tighten the unions 2)- Replace the retention rings 3)- Check the condition of the drain pipe and make sure that the power lift's valve system operates correctly
Steering difficult	1)- Power steering system with low pressure 2)- Air in the circuit 3)- Priority valve LS not regulated 4)- Inefficient gear pump	1)- Check the restore the max pressure in the circuit 2)- Thoroughly clean the intake circuit and make sure that it is tight 3)- Clean and accurately mount the valve. Check it for wear and make sure that it operates smoothly 4)- Overhaul the gear pump
CENTRAL PIVOT		
Pitching when articulated tractors are steered	1)- Bushes seized	1)- Grease the bushes
The tractor does not follow the land contours	1)- Coupling pin seized	1)- Grease the bushes
Noise is heard when tractor is steered	1)- Axle shaft cross journals worn	1)- Replace the driveline cross journals
The front assembly moves during the braking and starting operations	1)- Worn coupling pin and bushes	1)- Replace the coupling pin and bushes

FAULTS	POSSIBLE CAUSES	REMEDIES
POWER LIFT		
The power lift has difficulty in bearing the load: there is a rhythmic swing when the engine is running and the load lowers when the engine is at a standstill	1)- Worn piston seal	1)- replace the seal
Rhythmic swing occurs when the links are in the end of upward travel position, while the load fails to lower when the engine is at a standstill.	1)- Incorrect adjustment of the position control end of travel setting	1)- Adjust the position control setting, limiting link travel in the upward direction.
The power lift lifts in a jerky way	1)- Hydraulic pump intake filter clogged 2)- Air in the intake pipe of the hydraulic pump	1)- Clean the filter and replace it if necessary. 2)- Tighten the unions of the intake circuit and identify any leaks.
Position control fails to function. The power lift only lifts and lowers with the draft control lever	1)- Position control lever not regulated	1)- Adjust the position control setting.
Pump overheated	1)- Pressure too high 2)- Cavitation	1)- Lower the pressure 2)- Clean the intake components and check the unions
Pump with null pressure	1)- Pump shaft broken	1)- Replace the pump
Noisy pump	1)- Cavitation 2)- Imperfect seal on pump shaft 3)- Pump casing not tight	1)- Clean the intake components and check the unions 2)- Replace the oil retainer ring 3)- Tighten the screws of the pump unit and replace the retention rings
Oil in the circuit that becomes foamy and increase in volume in an abnormal way	1)- Air in the circuit 2)- Pump cavitation	1)- Check the oil level and eliminate any air 2)- Clean the intake components
The lifter doesn't reach the scheduled lift power .	1) - Calibration of the pressure relief valve is not correct.	1) - Adjust the pressure value following the instructions given in the paragraph relative to the hydraulic system

FAULTS	POSSIBLE CAUSES	REMEDIES
ELECTRICAL SYSTEM		
The starter motor fails to operate	1)- Battery discharged or faulty 2)- Starter motor defective 3)- Ignition switch defective 4)- Battery cables tarnished or broken at the terminals 5)- Ignition switch on the machine not regulated 6)- PTO selector switch pressed	1)- Recharge the battery. Replace it if it fails to remain charged. 2)- Overhaul the starter motor and replace it 3)- Replace the switch 4)- Clean or replace the tarnished terminals 5)- Adjust the enabling switches and replace them if necessary 6)- Disengage the rear PTO (red knob)
The generator indicator light fails to go out even at a high engine rate	1)- Regulator inefficient 2)- The alternator fails to charge sufficiently	1)- Replace the regulator 2)- Overhaul or replace the alternator
The battery becomes deformed	1)- The battery is charged too much	1)- Advise the customer who works for many consecutive hours to turn on the headlights when working in order to lower the battery charge.
The water in the battery turns black	1)- Faulty element	1)- Replace the battery
The speed indicator fails to operate	1)- The powering pulse fails to arrive 2)- Instrument with irregular setting 3)- Faulty instrument	1)- Repair the circuit 2)- Adjust the instrument 3)- Replace the instrument

FAULTS	POSSIBLE CAUSES	REMEDIES
ENGINE		
Engine efficiency poor	1)- Fuel filter clogged 2)- Injector return partially clogged 3)- Air in the circuit 4)- Injectors not regulated 5)- Air filter clogged	1)- Replace the filter 2)- Remove the obstruction 3)- Make the circuit tight 4)- Overhaul the injectors 5)- Clean the filter and replace the cartridge if necessary.
The engine starts badly	1)- Injection pump badly regulated 2)- Injectors badly regulated 3)- Fuel pump inefficient	1)- Overhaul the pump 2)- Overhaul the injectors 3)- Replace the pump
The engine fails to start	1)- Faulty electrostop 2)- Broken fuse	1)- Replace the electrostop 2)- Check the fuse box, eliminate the fault that caused the short-circuit and replace the fuse.
The engine fails to stop	1)- The diode on the alternator indicator light has broken	1)- Replace the diode.

