

ZEETOR

4712 • 4718

5711 • 5718 • 5745 • 5748

6711 • 6718 • 6745 • 6748

2/76

OPERATOR'S MANUAL

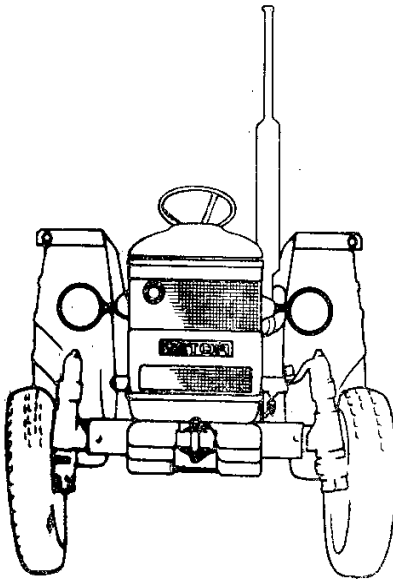
Dear Owner of the New ZETOR Tractor.

The present manual contains many valuable and important items of advice for a correct operation, employment and maintenance of your ZETOR tractor. When observing all these items of advice referred in the present manual you will assure a trouble free performance and service, safe travelling, economical exploitation and long life of your tractor.

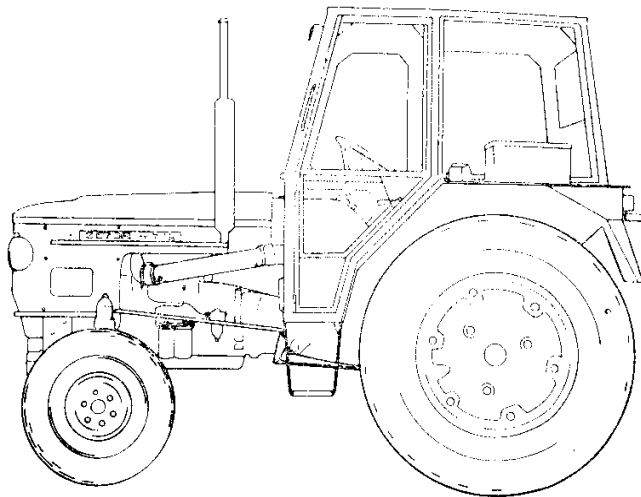
Because of permanent improvements of our products it may happen that the reading of this manual as well as relative illustrations will not correspond completely with the delivered vehicle.

All items of information about the weights of tractors mentioned in this manual are of an informative character only.

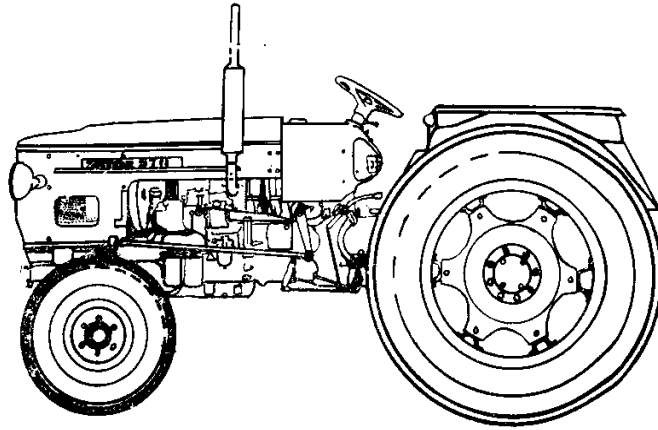
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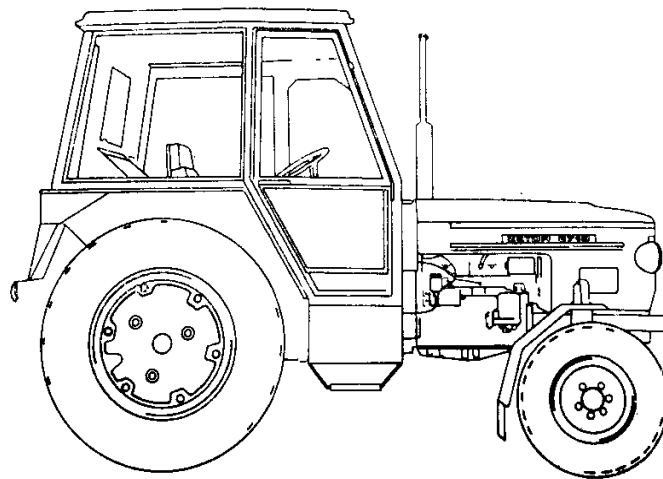
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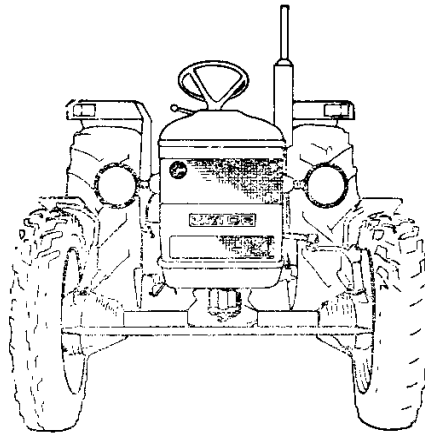
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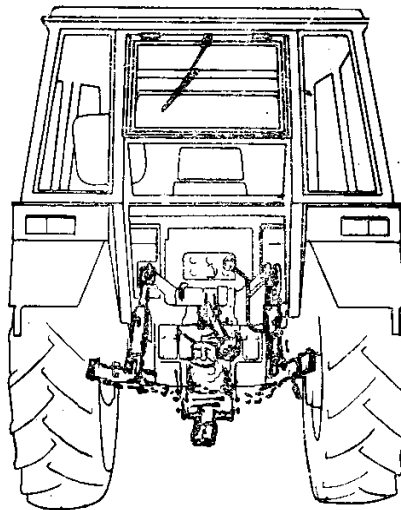
ZETOR 5711



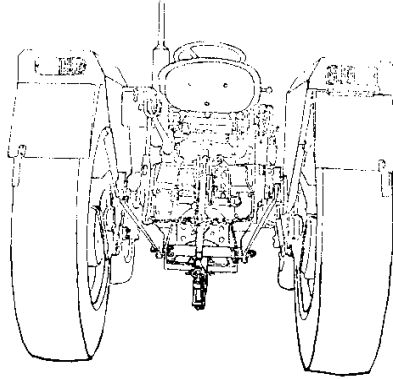
ZETOR 5718



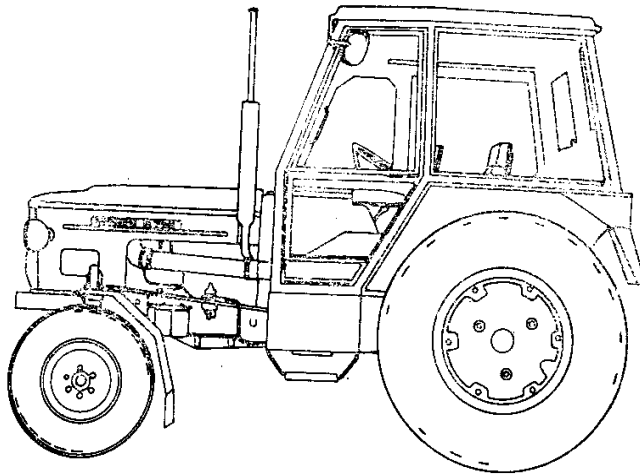
ZETOR 5745



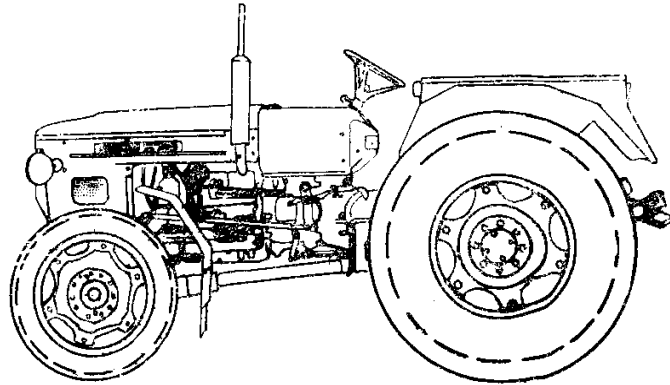
ZETOR 5748



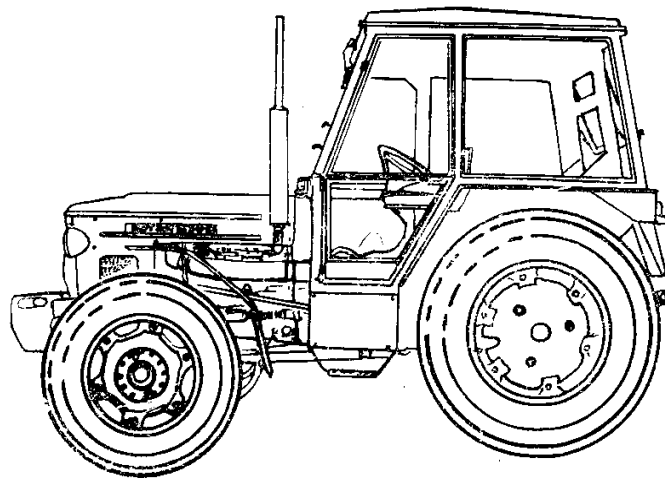
ZETOR 6711



ZETOR 6718



ZETOR 6745



ZETOR 6748

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SPECIFICATIONS

Tractor	Z 4712	Z 4718
Engine Model	Z 4701	
Type	4 strokes diesel with direct injection	
No. of Cylinders	3	
Bore	3.94" (100 mm)	
Stroke	4.33" (110 mm)	
Compression Ratio	17.0 : 1	
Efficiency Class	45 HP	
Cylinder Liners	wet, independent for each cylinder	
Nominal Revolutions	2200 RPM	
Injector Timing	21° ± 1° before TDC	
Nozzles of Injection	DOP 160 S 625—4343	
Engine Weight	595 lbs. (270 kg)	
Cooling System	Forced Circulation Water Cooling with Thermoregulator	
Oil Pump	Geared	
Oil Cleaner	Full-flow-type	
Fill up Data:		
Engine Oil Sump	1.76 imp. galls. (8 litres)	
Injection Pump	0.04 imp. galls. (0.2 litre)	
Air Cleaner	0.28 imp. galls. (1.3 litre)	
Gearbox		
— on flat ground	4.18 imp. galls. (19 litres)	
— on unplain ground	5.50 imp. galls. (25 litres)	
Portals	0.84 imp. galls. (3.8 litres) (2×0.42 imp. galls. = 2×1.9 litre)	
Steering Box	0.42 imp. galls. (1.9 litre)	
Cooling System	2.09 imp. galls. (9.5 litres)	
Fuel Tank	10.34 imp. galls. (47 litres)	
Brake Liquid Vessel	0.04 imp. galls. (0.2 litre)	

Clutch Doble acting, power assisted (it is possible to install the clutch with independent hand operated disengagement of the power-take-off shaft)

Gearbox

10 speeds forward: 5 road and
5 reduced ones,
2 reverse speeds: 1 road and
1 reduced one

Speeds of the
tractor provided
with tyres

12.4/11-28

Road speeds:

1st speed	2.76 m. p. h. (4.44 km/h.)
2nd speed	4.10 m. p. h. (6.60 km/h.)
3rd speed	5.71 m. p. h. (9.19 km/h.)
4th speed	8.77 m. p. h. (14.12 km/h.)
5th speed	14.64 m. p. h. (23.58 km/h.)

Transmission Ration
for Reduction Speeds

4.2762

Reduced Speeds:

1st speed	0.64 m. p. h. (1.04 km/h.)
2nd speed	0.96 m. p. h. (1.55 km/h.)
3rd speed	1.33 m. p. h. (2.15 km/h.)
4th speed	2.05 m. p. h. (3.30 km/h.)
5th speed	3.42 m. p. h. (5.51 km/h.)

Reverse Speeds:

Road speed	3.60 m. p. h. (5.79 km/h.)
Reduced speed	0.84 m. p. h. (1.35 km/h.)

Steering System

Unilateral, ball-type (when a trouble
occurs not to disassemble it)

Brakes:

Foot brakes	Double pedal hydraulic control
Hand brake	Band-type mechanical control

PTO Drive

PTO Standard Revolutions
540 $\pm$ 10 RPM at 2000 engine RPM

PTO dependent revolutions on the shifted-in speed (through the gearbox)	at the 1st speed	250.4 RPM
	at the 2nd speed	372.7 RPM
	at the 3rd speed	519.3 RPM
	at the 4th speed	797.2 RPM
	at the 5th speed	1331.6 RPM
	at the reverse speed	-326.8 RPM

Hydraulic Power Lift

Operating Pressure	1707 lbs./sq. in. (120 kp/sq. cm)
Pump Efficiency	4.4 imp. galls./min. (20 litres/min.)
Lifting power at Ball Joints (31.5" = 800 mm)	2205 lbs. (1000 kps)

Electrical Equipment

Storage battery	12 V
Dynamo	12 V/12 Amp.
Voltage regulating relay	12 V/12 Amp.
Starter	12 V/4 H. P.

Tyre Size

Front tyre standard	6.60-16
Front tyre optional	6.50-16
Rear tyre standard	12.4/11-28
Rear tyre optional	14.9/13-28 12.4/11-32 9.5/ 9-32

Main Dimensions and Weights

	Z 4712	Z 4718
(of tractors provided with standard tyres)		
Overall length (without suspension linkage)	124" (3160 mm)	
Overall width (at rear wheel track of 56" = 1425 mm)	68" (1727 mm)	
Height up to the steering wheel upper border	63" (1600 mm)	66" (1670 mm)
Ground clearance	12" (298 mm)	
Height of the swinging bar	14" (371 mm)	
Wheel Base	79" (1988 mm)	

Front wheel track — adjustable	50"—54"—69" (1280—1375—1750 mm)	
Rear wheel track — adjustable	53"—71" (1350—1800 mm)	
Height of the centre of gravity	27" (690 mm)	29" (745 mm)
Front axle ballast weights	309 lbs. (140 kg) totaly	
Rear wheel ballast weights	618 lbs. (280 kg)	463 lbs. (210 kg)
Water in rear tyres	2×220 lbs. (2×100 kg)	
Travel ready tractor provided with hydraulic power lift	4519 lbs. (2050 kg)	5070 lbs. (2300 kg)
of which front axle load	1675 lbs. (760 kp)	1841 lbs. (835 kp)
of which rear axle load	2844 lbs. (1290 kp)	3229 lbs. (1465 kp)
Maximum tractor weight together with hydraulic power lift, front axle ballast weights and rear wheels ballast weights	5456 lbs. (2470 kg)	5842 lbs. (2650 kg)
of which front axle load	1984 lbs. (900 kp)	2161 lbs. (980 kp)
of which rear axle load	3472 lbs. (1570 kp)	3681 lbs. (1670 kp)
Overall height of the tractor	87" (2210 mm)	88" (2400 mm)

Tractor Power

Traction power of the tractor in suspension	4188 lbs. (1900 kp)	4409 lbs. (2000 kp)
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SPECIFICATIONS

Tractor	Z 5711	Z 5718	Z 5745	Z 5748
Engine Model	Z 5501			
Type	4 strokes diesel with direct injection			
No. of Cylinders	4			
Stroke	4.33" (110 mm)			
Bore	3.74" (95 mm)			
Compression Ratio	17.0 : 1			
Efficiency Class	55 HP			
Cylinder Liners	wet, separate for each cylinder			
Nominal Revolutions	2200 RPM			
Injector Timing	21° ± 1° before TDC			
Injection Nozzles	DOP 150S 525—53			
Engine Weight without Accessories	871 lbs. (395 kg)			
Cooling System	Forced Circulation Water Cooling with Thermoregulator			
Oil Pump	Geared			
Oil Cleaner	Centrifugal, full flow type			
Fill up Data:				
Engine Oil Sump	2.64 imp. galls. (12 litres)			
Injection Pump	0.04 imp. galls. (0.2 litre)			
Air Cleaner	0.28 imp. galls. (1.3 litre)			
Gearbox				
— on flat ground	5.50 imp. galls. (25 litres)		5.94 imp. galls. (27 litres)	
— in terrain	7 imp. galls. (32 litres)		7.5 imp. galls. (34 litres)	
Portals	0.84 imp. galls (3.8 litres) (2×0.42 imp. galls. = 2×1.9 litre)			
Steering Box	0.42 imp. galls. (1.9 litre)			
Front Driven Axle Box	—	—	0.66 imp. galls (3 litres)	
Driven Axle Double Joints Box	—	—	2×0.16 imp. galls (0.75 litre×2)	
Power Assisting Steering Device Tank	0.88 imp. galls (4 litres)			

Fuel Tank	17.4 imp.galls (79 litres)	15 imp.galls (67 litres)	17.4 imp.galls (79 litres)	15 imp.galls (67 litres)
Cooling System	2.86 imp. galls (13 litres)			
Brake Liquid Vessel	0.04 imp. galls (0.2 litre)			
Clutch	Double acting, power assisted (it is possible to install the clutch with independent hand operated disengagement of the PTO)			
Gearbox	10 speeds forwards: 5 road and 5 reduced ones 2 reverse speeds: 1 road and 1 reduced one (4th and 5th speeds synchronized — optional only) The torque multiplier delivered also as an optional equipment doubles the number of speeds			
Speeds of the tractor provided with tyres	14.9/13-28 No torque multiplier m. p. h. (km/h.)	14.9/13-28 With torque multiplier m. p. h. (km/h.)		
Road speeds:				
1st speed	2.70 (4.35)	3.54/2.70 (5.70/ 4.35)		
2nd speed	4.00 (6.47)	5.28/4.00 (8.49/ 6.47)		
3rd speed	5.59 (9.01)	7.23/5.59 (11.83/ 9.01)		
4th speed	8.58 (13.83)	11.27/8.57 (18.16/13.83)		
5th speed	14.30 (23.07)	14.30/10.9 (23.07/17.60)		
Transmission ratio for reduction	4.2762			
Reduced speeds:				
1st speed	0.63 (1.02)	0.82/0.63 (1.33/1.02)		
2nd speed	0.94 (1.52)	1.22/0.94 (1.98/1.52)		
3rd speed	1.30 (2.11)	1.71/1.30 (2.77/2.11)		
4th speed	2.00 (3.24)	2.63/2.00 (4.25/3.24)		
5th speed	3.35 (5.40)	3.35/2.55 (5.40/4.11)		
Reverse speeds:				
Road speed	3.51 (5.67)	4.61/3.51 (7.44/5.67)		
Reduced speed	0.82 (1.33)	1.07/0.82 (1.74/1.33)		
Steering System	Unilateral, ball-type (when a trouble occurs not to disassemble it)			

Brakes

Foot brakes	Double pedal hydraulic control
Hand brake	Band-type mechanical control

PTO Drive

PTO standard revolutions:
540 RPM at 2000 engine RPM
1000 RPM at 2050 engine RPM

PTO dependent revolutions on the shifted-in speed (through the gear box)	Tractor not provided with torque multiplier	Tractor provided with a torque multiplier
at the 1st speed	250.4 RPM	328.8 RPM
at the 2nd speed	372.7 RPM	489.2 RPM
at the 3rd speed	519.3 RPM	681.2 RPM
at the 4th speed	797.2 RPM	1046.6 RPM
at the 5th speed	1331.6 RPM	1331.6 RPM
at the reverse speed	-326.8 RPM	-439.2 RPM

Hydraulic Power Lift

Operating pressure	1707 lbs./sq. in. (120 kp/sq. cm)
Pump capacity	4.4 imp. galls/min. (20 litres/min.)
Lift at hydraulic power lift ball joints (31.5" = 800 mm)	3749 lbs. (1700 kp)

Electrical Equipment

Storage battery	12 V
Dynamo	12 V/12 AMP
Voltage regulating relay	12 V/12 AMP
Starter	12 V/4 HP

Tyre Sizes	Z 5711	Z 5718	Z 5745	Z 5748
Front tyre standard	6.50-16		9.5/ 9-24	
Front tyre — optional	7.50-16		8.3/ 8-24	
Rear tyre standard	14.9/13-28		16.9/14-28	
Rear tyre — optional	16.9/14-28		14.9/13-28	
	16.9/14-30		16.9/14-30	
	12.4/11-36		12.4/11-36	
	12.4/11-32			

Main Dimensions and Weights

(of tractors provided with standard tyres)

	Z 5711	Z 5718	Z 5745	Z 5748
Overall length (without suspension linkage)	139" (3520 mm)		139" (3520 mm)	
Overall width (at rear wheel track of 56" = 1425 mm)	71" (1790 mm)		71" (1790 mm)	
Height of the steering wheel	64" (1630mm)	69" (1745mm)	65" (1660mm)	70" 1775 mm)
Ground clearance	17" (440 mm)		13" (342 mm)	
Height of the swinging bar	12.6" (395 mm)		16.7" (425 mm)	
Wheel base	81" (2247 mm)		87" (2200 mm)	
Front wheel track — adjustable	50"—54"—69" (1280-1375-1750 mm)		58" (1480 mm) (rigid)	
Rear wheel track — adjustable per 2.95" (75 mm)		56"—71" (1425—1800 mm)		
Height of the centre of gravity	30" (758 mm)	32" (812 mm)	29" (747 mm)	32" (812 mm)
Front axle ballast weights	in total 353 lbs. (160 kg)			
Rear wheel ballast weights	618 lbs. (280kg)	461 lbs. (210 kg)	618 lbs. (280 kg)	461 lbs. (210 kg)
Water in rear tyres	661 lbs. (300 kg)		970 lbs. (440 kg)	
Minimum weight of travel ready tractor provided with hydraulic power lift	5622 lbs. (2550 kg)	6084 lbs. (2760 kg)	5996 lbs. (2720 kg)	6459 lbs. (2930 kg)
of which front axle load	2006 lbs. (910 kp)	2094 lbs. (950 kp)	2402 lbs. (1090 kp)	2512 lbs. (1140 kp)
of which rear axle load	3616 lbs. (1640 kp)	3990 lbs. (1810 kp)	3594 lbs. (1630 kp)	3947 lbs. (1790 kp)
Maximum tractor weight including hydraulic power lift, front axle ballast weights, rear wheels ballast weights	6591 lbs. (2990 kg)	6899 lbs. (3130 kg)	6965 lbs. (3160 kg)	7274 lbs. (3300 kg)
of which front axle load	2380 lbs. (1080 kp)	2424 lbs. (1100 kp)	2589 lbs. (1175 kp)	2788 lbs. (1265 kp)
of which rear axle load	4211 lbs. (1910 kp)	4475 lbs. (2030 kp)	4376 lbs. (1985 kp)	4486 lbs. (2053 kp)

	Z 5711	Z 5718	Z 5745	Z 5748
Overall height of the tractor (up to exhaust top)	76" (1940mm)	96" (2435mm)	78" (1970mm)	97" (2465mm)
Admissible load of the front axle	2424 lbs. (1100 kp)			
of the rear axle	6922 lbs. (3140 kp)			
	3306 lbs. (1500 kp)			
	7055 lbs. (3200 kp)			

Tractor Power

Traction power of the tractor in suspension	4849 lbs. (2200 kp)	5070 lbs. (2300 kp)	5180 lbs. (2350 kp)	5511 lbs. (2500 kp)
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SPECIFICATIONS

Tractor	Z 6711	Z 6718	Z 6745	Z 6748
Engine Model	Z 6701			
Type	Diesel, 4 strokes with direkt fuel injection			
No. of Cylinders	4			
Bore	3.94" (100 mm)			
Stroke	4.33" (110 mm)			
Compression Ratio	17.0 : 1			
Output Class	60—65 HP			
Cylinder Liners	Wet, separate for each cylinder			
Nominal Revolutions	2200 RPM			
Injector Timing	21° ± 1° before TDC			
Injection Nozzles	DOP 160S 625—4343			
Engine Weight without Accessories	892 lbs. (405 kg)			
Cooling System	Forced circulation water cooling with thermoregulator			
Oil Pump	Geared			
Oil Cleaner	Centrifugal, full flow type			
Fill up Data:				
Engine oil sump	2.64 imp. galls (12 litres)			
Injection pump	0.04 imp. galls (0.2 litre)			
Air cleaner	0.28 imp. galls (1.3 litre)			
Gearbox				
— on flat ground	5.5 imp. galls (25 litres)	5.94 imp. galls (27 litres)		
— in terrain	7 imp. galls (32 litres)	7.50 imp. galls (34 litres)		
Portals	0.84 imp. galls = 2×0.42 (3.8 litres = 2×1.9)			
Steering box	0.42 imp. galls (1.9 litre)			
Front driven axle housing	—	—	1.54 imp. galls (7 litres)	
Front wheels planet reduction gears	—	—	2×0.22 imp. galls (2×1 litre)	
Power assisting steering device tank	0.88 imp. galls (4 litres)			

Fuel tank	17.4 imp.galls (79 litres)	15 imp.galls (67 litres)	17.4 imp.galls (79 litres)	15 imp.galls (67 litres)
Cooling system	2.86 imp. galls (13 litres)			
Brake liquid vessel	0.04 imp. galls (0.2 litre)			
Steering damper tank	—	—	0.13 imp. galls (0.6 litre)	

Clutch Double acting, power assisted (it is possible to install the clutch with independent hand operated disengagement of the PTO)

Gearbox 10 speeds forward: 5 road and 5 reduced ones, 2 reverse speeds: 1 road and 1 reduced one
(4th and 5th speeds synchronized — optional only)
The tractor can also be provided with a torque multiplier as an optional equipment which doubles the number of speeds

Speeds of the tractor provided with tyres	14.9/13-28	14.9/13-28
	Tractor not provided with torque multiplier m. p. h. (km/h.)	Tractor provided with a torque multiplier m. p. h. (km/h.)

Road speeds:

1st speed	2.70 (4.35)	3.54/ 2.70 (5.70/ 4.35)
2nd speed	4.00 (6.47)	5.26/ 4.00 (8.49/ 6.47)
3rd speed	5.59 (9.01)	7.23/ 5.59 (11.83/ 9.01)
4th speed	8.57 (13.83)	11.27/ 8.57 (18.16/13.83)
5th speed	14.30 (23.07)	14.30/10.90 (23.07/17.60)

Transmission ratio for reduction

4.2762

Reduced speeds:

1st speed	0.63 (1.02)	0.82/0.63 (1.33/1.02)
2nd speed	0.94 (1.52)	1.22/0.94 (1.98/1.52)
3rd speed	1.30 (2.11)	1.71/1.30 (2.77/2.11)
4th speed	2.00 (3.24)	2.63/2.00 (4.25/3.24)
5th speed	3.35 (5.40)	3.35/2.55 (5.40/4.11)

Reverse speeds:

Road speed	3.51 (5.67)	4.61/3.51 (7.44/5.67)
Reduced speed	0.82 (1.33)	1.07/0.82 (1.74/1.33)

Steering System Unilateral, ball-type
(when a trouble occurs not to
disassemble it)

Brakes

Foot brakes Double pedal hydraulic control
Hand brake Band-type mechanical control

PTO Drive PTO standard revolutions:
 540 RPM at 2000 engine RPM
 1000 RPM at 2050 engine RPM

PTO dependent revolutions on the shifted-in speed (through the gear-box)	Tractor provided with no torque multiplier	Tractor provided with a torque multiplier
at the 1st speed	250.4 RPM	328.8 RPM
at the 2nd speed	372.7 RPM	489.2 RPM
at the 3rd speed	519.3 RPM	681.2 RPM
at the 4th speed	797.2 RPM	1046.6 RPM
at the 5th speed	1331.6 RPM	1331.6 RPM
at the reverse speed	-326.8 RPM	-439.2 RPM

Hydraulic Power Lift

Operating pressure	1707 lbs./sq. in. (120 kp/sq. cm)
Pump capacity	4.4 imp. galls/min. (20 litres/min.)
Lift at ball joints	3749 lbs. (1700 kp)

Electrical Equipment

Storage battery	12 V
Dynamo	12 V/12 AMP
Regulating relay	12 V/12 AMP
Starter	12 V/ 4 HP

Tyre Sizes

Front tyre — standard	7.50-16	11.2/10-24
Front tyre — optional	6.50-16	—
Rear tyre — standard	14.9/13-28	16.9/14-28
Rear tyre — optional	16.9/14-28	16.9/14-30
	16.9/14-30	12.4/11-36
	12.4/11-36	

Main Dimensions and Weights **(of tractor provided with standard tyres)**

	Z 6711	Z 6718	Z 6745	Z 6748
Overall length (without suspension linkage)	139" (3520mm)	139" (3520mm)	139" (3520mm)	139" (3520mm)
Overall width (at rear wheel track of 56" = 1425 mm)	71" (1790mm)	71" (1790mm)	72" (1820mm)	72" (1820mm)
Height of the steering wheel	64" (1635mm)	69" (1750mm)	65" (1665mm)	70" (1780mm)
Ground clearance	13" (330mm)	13" (330mm)	14" (355mm)	14" (355mm)
Height of the swinging bar	16" (395mm)	16" (395mm)	17" (425mm)	17" (425mm)
Wheel base	81" (2247mm)	81" (2247mm)	80" (2220mm)	80" (2220mm)
Front wheel track — adjustable	56"—65"—71" (1430—1655—1805mm)		59" (1510mm)-rigid	
Rear wheel track adjustable per 2.95" (75 mm)	56"—71" (1425—1800 mm)		56"—71" (1425—1800 mm)	
Height of the centre of gravity	30" (765mm)	32" (826mm)	35" (899mm)	36" (923mm)
Front axle ballast weights	353 lbs. in total (160 kg)		353 lbs. in total (160 kg)	
Rear wheels ballast weights	618 lbs. (280 kg)	463 lbs. (210 kg)	618 lbs. (280 kg)	463 lbs. (210 kg)
Water in rear tyres	662 lbs. (300 kg)	662 lbs. (300 kg)	970 lbs. (440 kg)	970 lbs. (440 kg)
Maximum weight of travel ready tractor pro- vided with hydrau- lic power lift	5775 lbs. (2620 kg)	6238 lbs. (2830 kg)	6636 lbs. (3010 kg)	7100 lbs. (3220 kg)
of which front axle load	2094 lbs. (950 kp)	2204 lbs. (1000 kp)	2865 lbs. (1300 kp)	2975 lbs. (1350 kp)
of which rear axle load	3681 lbs. (1670 kp)	4034 lbs. (1830 kp)	3771 lbs. (1710 kp)	4125 lbs. (1870 kp)
Maximum tractor weight together with hydraulic power lift, front axle ballast weights, rear wheels ballast weights but without water in tyres	6746 lbs. (3060 kg)	7053 lbs. (3200 kg)	7604 lbs. (3450 kg)	7913 lbs. (3590 kg)

	Z 6711	Z 6718	Z 6745	Z 6748
of which front axle load	2424 lbs. (1110 kp)	2556 lbs. (1160 kp)	3261 lbs. (1480 kp)	3372 lbs. (1530 kp)
of which rear axle load	4322 lbs. (1950 kp)	4497 lbs. (2040 kp)	4343 lbs. (1970 kp)	4541 lbs. (2060 kp)
Overall height of the tractor (up to exhaust top)	75" (1910mm)	96" (2455mm)	76" (1923mm)	97" (2475mm)

Tractor Power

Traction power of the tractor in suspension	5070 lbs. (2300 kp)	5400 lbs. (2450 kp)	6062 lbs. (2750 kp)	5952 lbs. (2700 kp)
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Main Specifications of the Power Assisted Steering Device

valid also for Z 5711, Z 5718, Z 5745, Z 5748

1. Cylinder

Cylinder inner diameter	1.96" (50 mm)
Length at shifted/in piston rod	23.07" (586 mm)
Length at shifted/out piston rod	34.88" (836 mm)
Maximum operating pressure	1138 PSI (80 kg/sq. cm)

2. Pump

Maximum input	3.5 HP
Operating liquid at the surroundings temperature of $+14^{\circ}$ up to $+140^{\circ}$ F (-10° up to $+60^{\circ}$ C)	ON 3
At the surroundings temperature of -40° up to $+50^{\circ}$ F (-40° up to $+10^{\circ}$ C)	ON 1
Maximum operating pressure	1138 PSI (80 kg/sq. cm)
Range of revolutions	250 up to 1200 RPM
Delivery of pressure oil ON 3 at the temperature of $68^{\circ} \pm 9^{\circ}$ F ($20^{\circ} \pm 5^{\circ}$ C) and the pressure of 1138 PSI (80 kg/sq. cm) at 1200 RPM of the pump	2.2 imp.galls/min.(10 litres/min).

3. Tank

Filling capacity

2.4 imp. galls (11 litres)
(proper filling of the power
assisted steering device
— 0.88 imp. galls or 4 litres)

SOMETHING ABOUT THE TRACTOR

Dash board (Fig. 1, 2)

1. Switch box with key

Key fully inserted

position 0 — starting circuit, charging circuit and its pilot lamp are switched on

position 1 — contour (side) and parking lights as well as tail lights and illumination of instruments are on

position 2 — high beam, high beam pilot lamp, tail lights, illumination of instruments and side lights are on

position 3 — dipped lights, tail lights, illumination of instruments and side lights are on

If the key is only half inserted, circuits of position 1, 2 or 3 can be switched on.

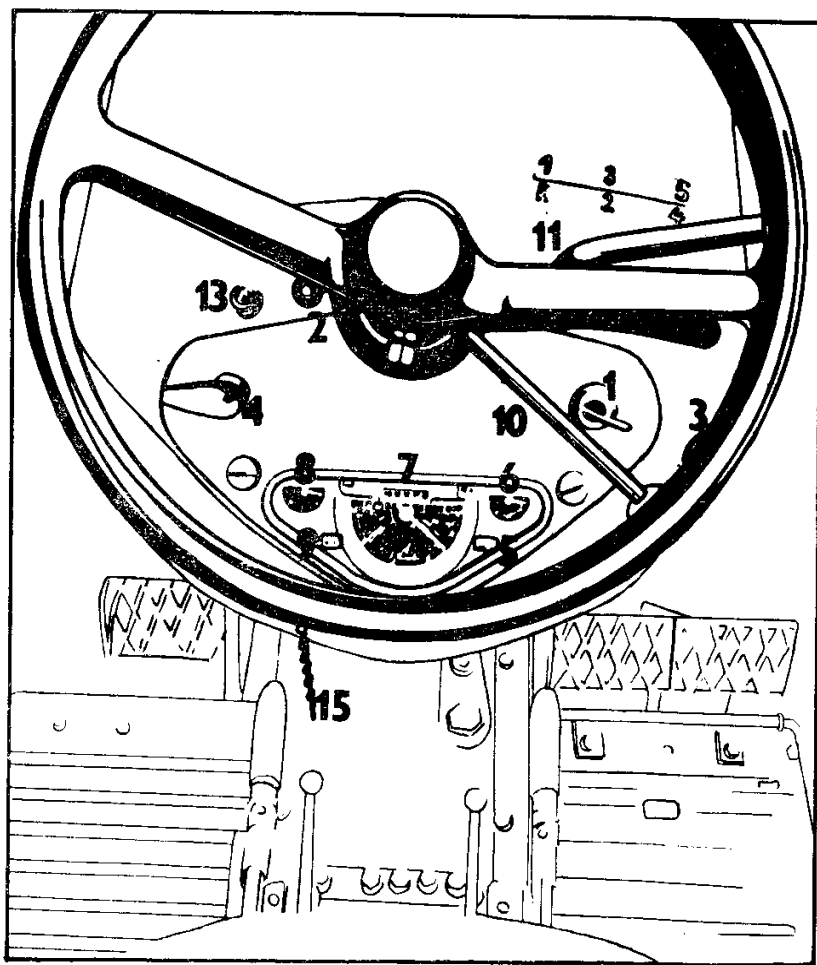


Fig. 1

2. Dashboard illumination switch
switching on is carried out when drawing the button slightly up.
3. Push button of the starter.
4. Trafficator switch with electric horn push button — the right-hand or left-hand trafficator is switched on by turning the lever to the right or to the left; by depressing the button the horn is operated.
5. Oil pressure gauge (for Z 6711, Z 6718, Z 6745, Z 6748 only) — correct oil pressure ranges from 43—71 PSI (3—5 kg/sq. cm) at the temperature of 176° F (80° C). Lubrication pilot lamp (Z 4712, Z 4718, Z 5711—Z 5748) — red — if it is on during the tractor performance, it means a trouble in the lubrication system.

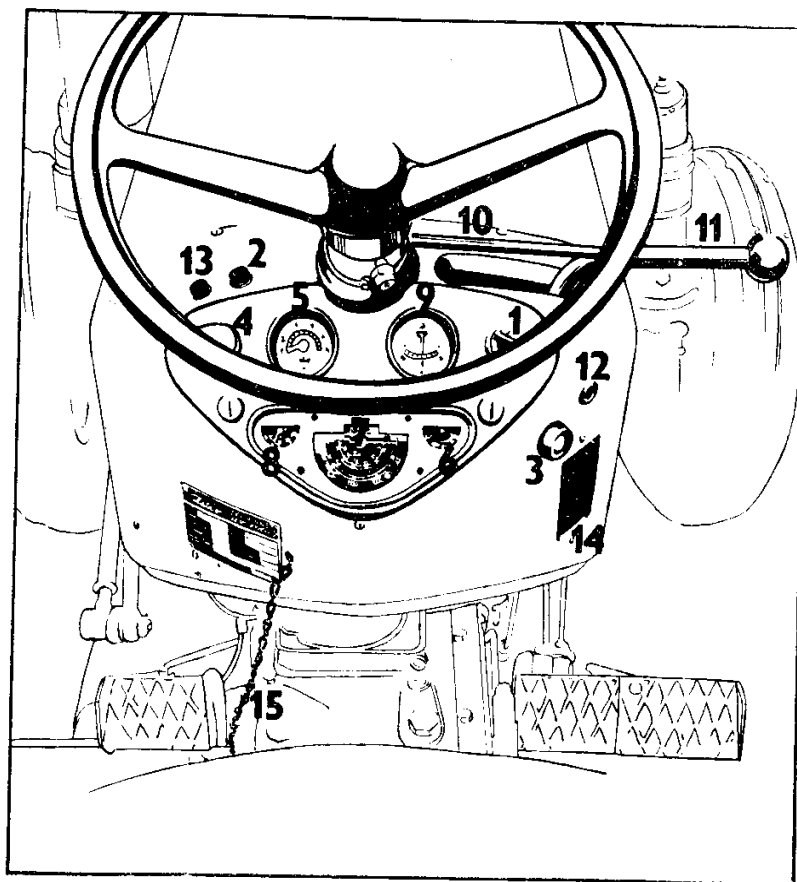


Fig. 2

6. Water thermometer
performance water temperature of the engine should range from 176°—203° F (80°—95° C), the radiator over-pressure plug opens the cooling circuit at 223 to 233 °F (106°—111° C) automatically.
7. Engine hour counter with speed indicator with the engine running at 1600 constant RPM, one hour, the engine hour counter indicates one engine-hour.
8. Air pressure gauge
performance pressure of the air is 82.5—85.35 PSI (5.8 to 6 kg/sq. cm).
9. Ammeter (on Z 5748, Z 6711, Z 6718, Z 6745 and Z 6748 only). Charging pilot lamp (on Z 4712, Z 4718, Z 5711—Z 5745) is red; if it is on during the performance of the tractor, it means some trouble in charging system.
10. Hand operated accelerator — the fuel dose gets increased when displacing the control lever rearwards.
11. Speed shifting lever.
12. Socket for the lamp for mounting purposes.
13. Switch of the headlamp for night work.
14. Fuse box.
15. Radiator blind.

Pedals and levers

1. Travel clutch pedal (Fig. 3/1).
2. Hand controlled disengagement of the PTO clutch (Fig. 3/2)
lower position — PTO clutch is engaged
upper position — PTO clutch is disengaged
Clutch disengagement by hand can be carried out for a short period only. There is a left-hand shifting lever, placed on the gearbox cover which serves for permanent disengagement of the PTO (Fig. 4/4).
3. Torque multiplier control pedal (Fig. 3/3)
(on Z 5711—Z 5748 and Z 6711—Z 6748 tractors only).
4. Both the PTO and hydraulic power lift control lever (Fig. 4/4)
 - a) hydraulic power lift — control lever down, 2nd position — lowermost (hydraulic power lift put into operation but without the PTO, which does not rotate),

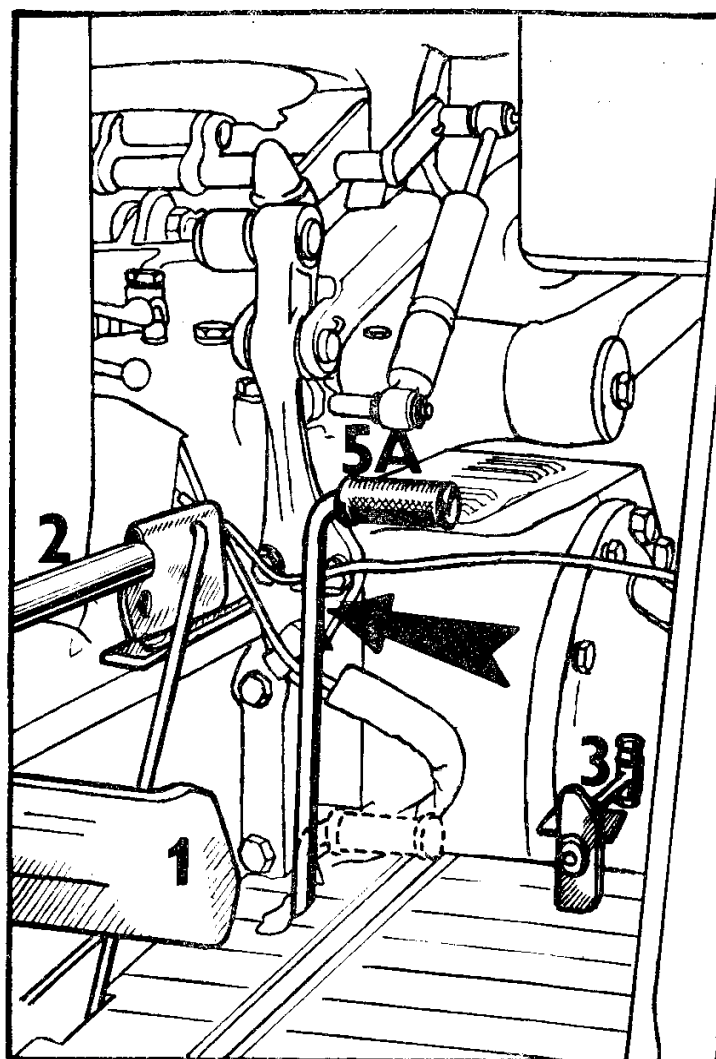


Fig. 3

- b) PTO together with hydraulic power lift into operation — control lever down — 1st position,
- c) neutral position,
- d) PTO put into operation through the gearbox — control lever up; PTO revolutions depend on the engaged speed.
- 5. Reduced and road speeds control lever (Fig. 4/5)
 - a) up — road speeds
 - b) centre — neutral position
 - c) down — reduced speeds
- 5A. Front axle drive control lever (Fig. 3/5A)
 - a) up — engagement
 - b) down disengagement

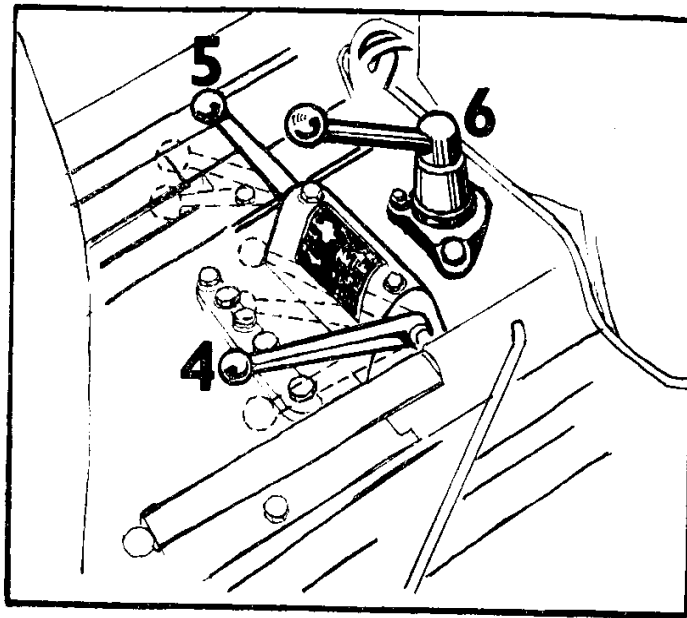


Fig. 4

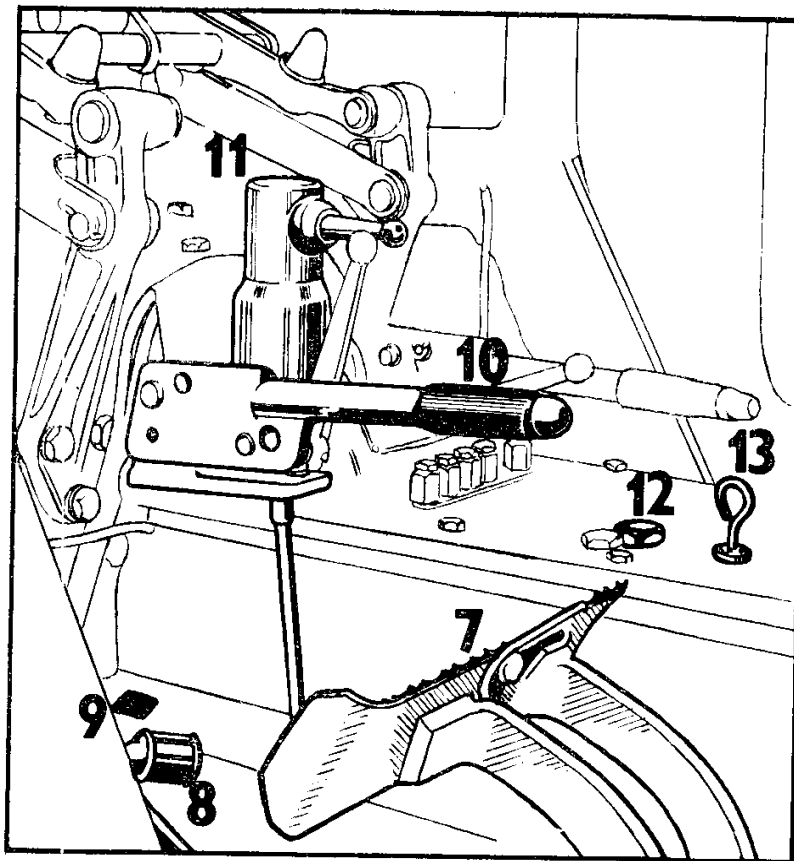


Fig. 5

6. PTO revolutions control lever (Fig. 4/6)
(on Z 5711—Z 5748 and Z 6711—Z 6748 tractors only).
control lever displaced forwards/in the sense of the tractor travel — neutral position;
control lever displaced to the left — 540 RPM of the PTO
control lever displaced to the right — 1000 RPM of the PTO.

IMPORTANT

When changing PTO exchangeable end pieces (Fig. 5/11) from 540 RPM (1000 RPM) to 1000 RPM (540 RPM) and vice versa it is necessary to put the PTO revolutions control lever in its neutral position and only then change the PTO end part. This operation being carried out, 1000 RPM (540 RPM) can be engaged again.

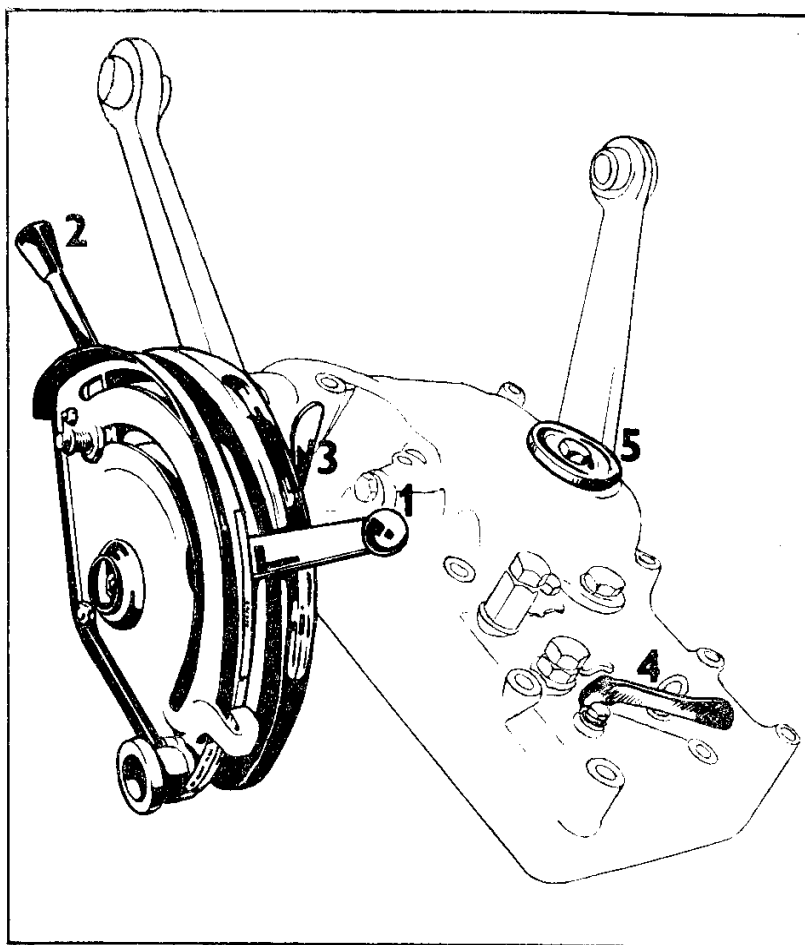


Fig. 6

7. Foot brake pedals are connected by means of a catch (Fig. 5/7).
8. Accelerator pedal (Fig. 5/8).
9. Differential lock pedal (Fig 5/9).
10. Hand brake control lever (Fig. 5/10)
bottom position — unbraked
top position — braked

Both hydraulic and pressure air system control levers

1. Hydraulic power lift remote circuit control lever (Fig. 6/1).
2. Hydraulic power lift inner circuit control lever (Fig. 6/2).
3. Hydraulic power lift selector lever (Fig. 6/3) can be dis-

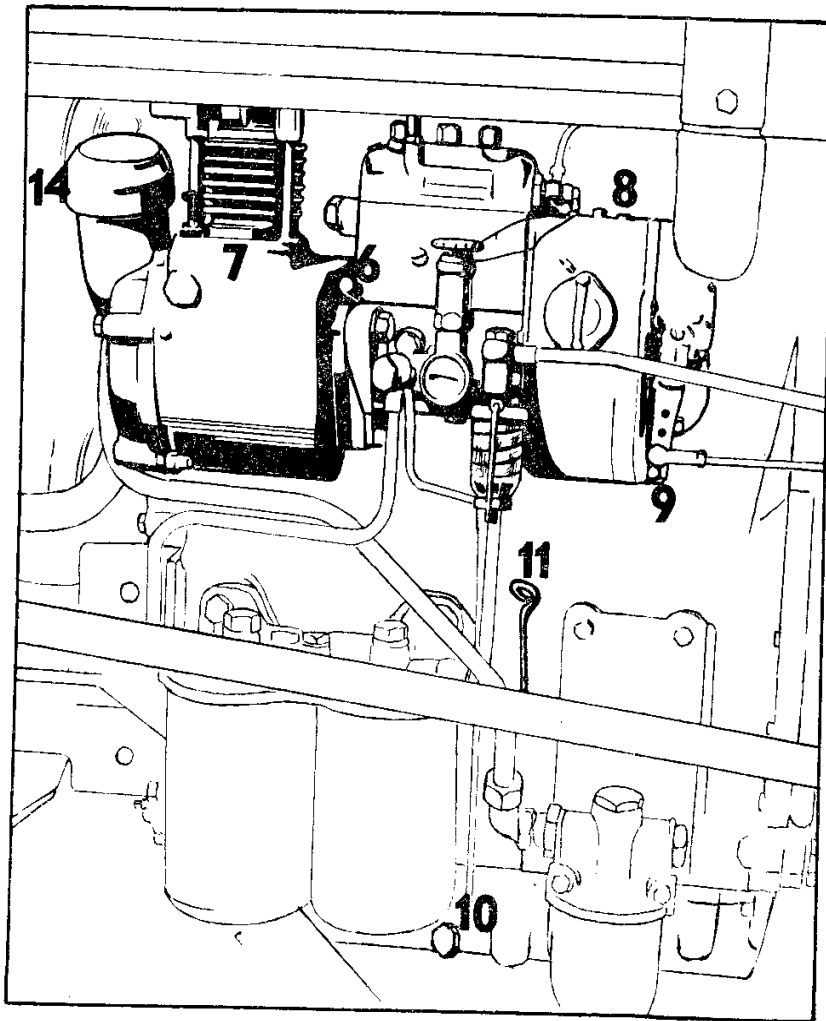


Fig. 7

placed in three positions according to the selected regulation system:

- draft control
- mixed control
- position control.

4. Hydraulic power lift response lever (Fig. 6/4).
5. Oil cleaner magnetic plug of the hydraulic power lift (Fig. 6/5).
6. Compressor control lever (Fig. 7/6).

Compressor engagement should be carried out at minimum engine revolutions, at the simultaneous lock lifted upwards and lever engaged in the sense toward radiator.

7. Lock (Fig. 7/7).

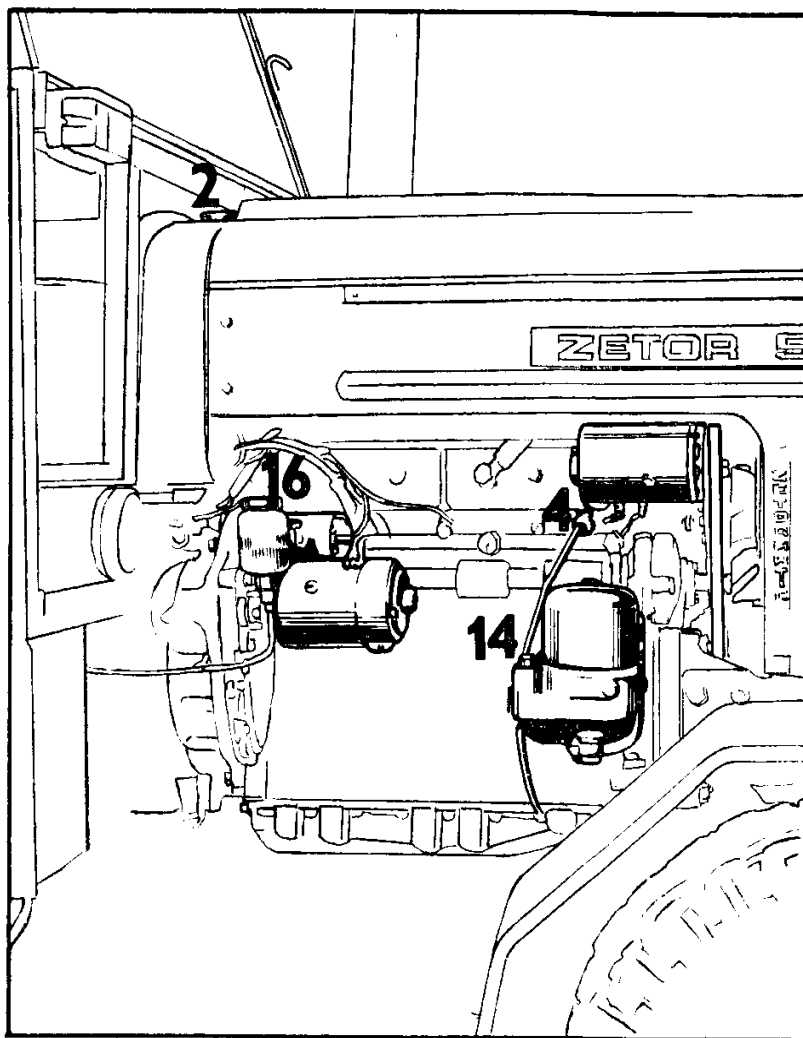


Fig. 8

Filling and Draining Orifices

1. Coolant filling orifice in the radiator (Fig. 10/1).

NOTE: In the winter season, when the cooling system is not filled up with antifreeze solution, water must be drained by means of taps situated on the crankcase as well as on the radiator bottom part.

2. Fuel filling orifice (Fig. 8/2).
3. Water drain tap from the radiator (Fig. 10/3).
4. Water drain tap from crankcase (Fig. 8/4).
5. Oil filling and draining orifice of the steering box is situated on the left-hand top part of the gear-box under the fuel tank.

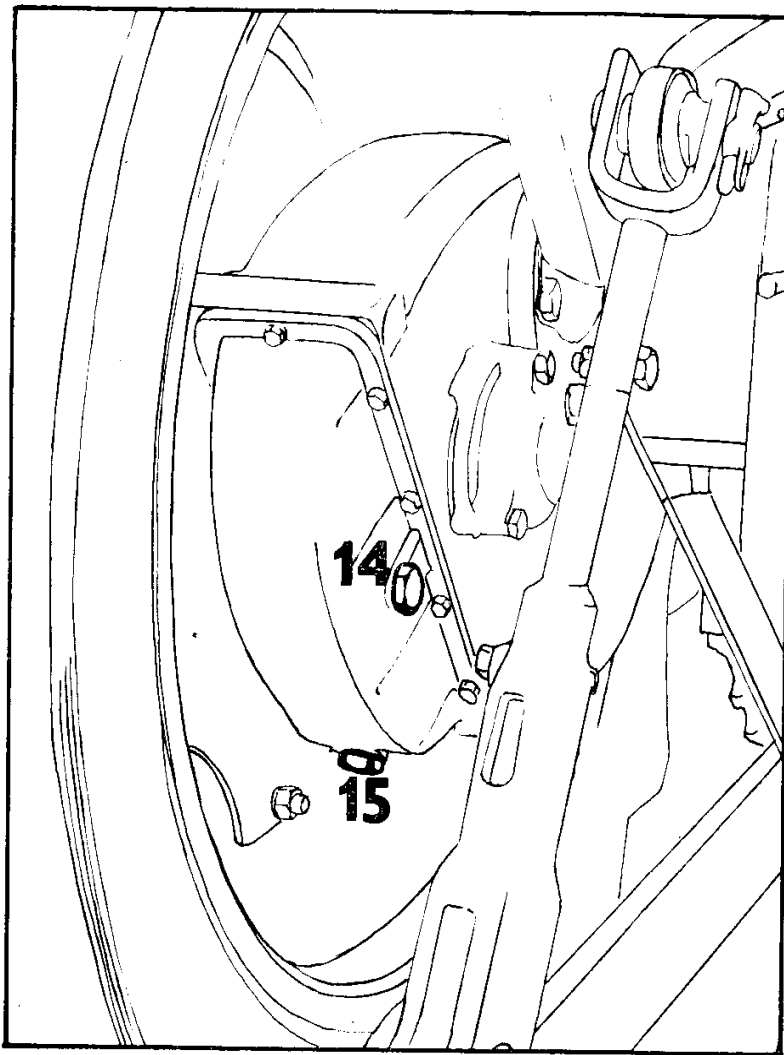


Fig. 9

6. Draining bolt of oil from the gearbox is situated in the gearbox bottom part between the front and rear cover.
7. Oil filling orifice of the injection pump and governor (Fig. 7/8).
8. Engine oil filling orifice (Fig. 7/14) of Z 4712 and Z 4718 tractors, (Fig. 8/14) of Z 5711—Z 5748 and Z 6711—Z 6748 tractors.
9. Oil draining hole of the injection pump and governor (Fig. 7/9).
10. Engine oil drain bolt (Fig. 7/10).
11. Oil dipstick for checking of the oil level in the engine sump (Fig. 7/11).
12. Oil filling orifice of the gearbox and main transmission housing (Fig. 5/12).
13. Oil dipstick for checking of the oil level in the gearbox and the main transmission housing (Fig. 5/13).

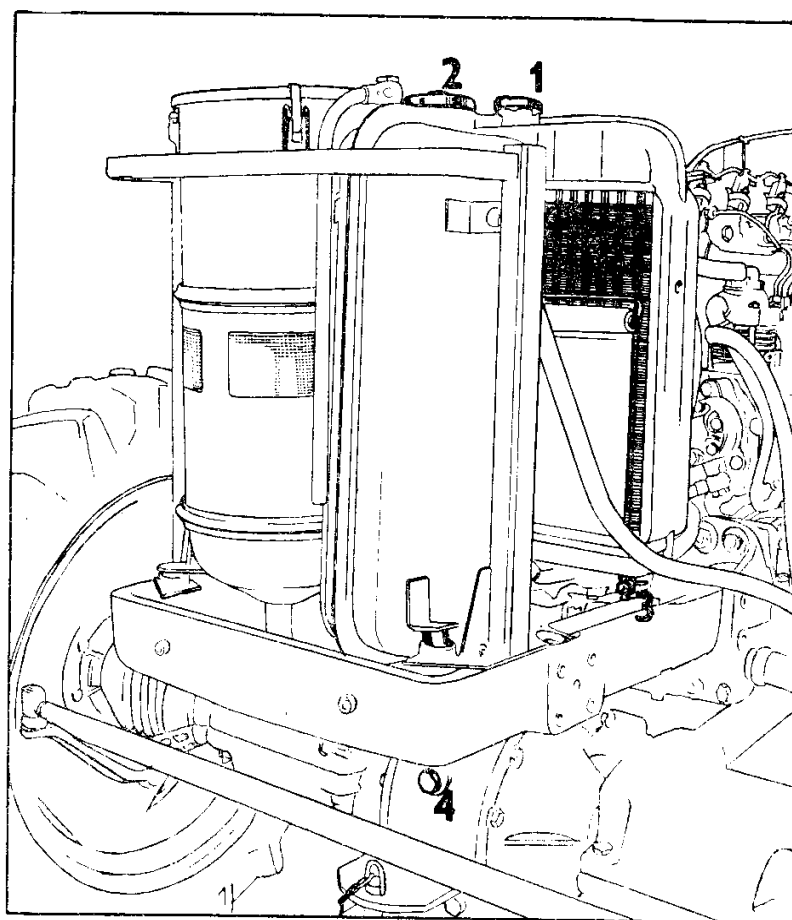


Fig. 10

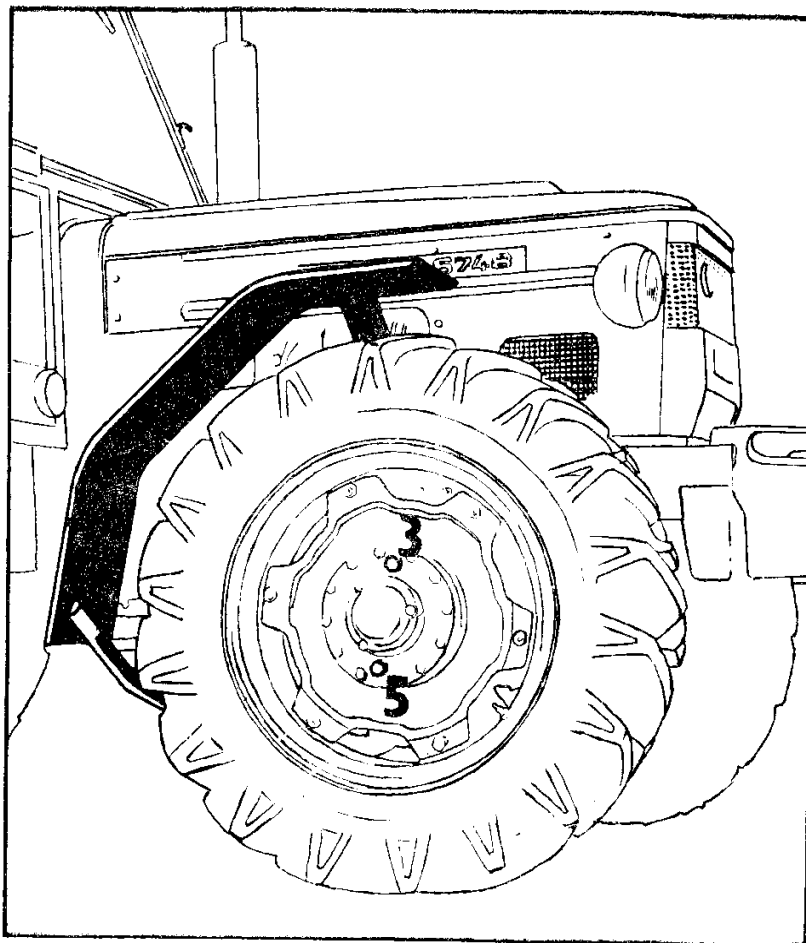


Fig. 11

14. Rear half-axle oil filling hole (Fig. 9/14).
15. Rear half-axle oil draining hole (Fig. 9/15).
16. Brake liquid filling orifice (Fig. 8/16).
17. Power assisted steering device oil filling orifice (Fig. 10/2).
18. Front driven axle oil filling orifice (Fig. 10/4).
19. Draining orifice for oil from the front driven axle is situated on the front driven axle housing bottom part.
20. Oil filling and draining orifice of double joint are situated on the top and bottom part of the RH and LH joint of the Z 5745 and Z 5748 tractor.
21. Oil filling orifice of reducers (Fig. 11/3).
22. Oil draining orifice of reducers (Fig. 11/5).

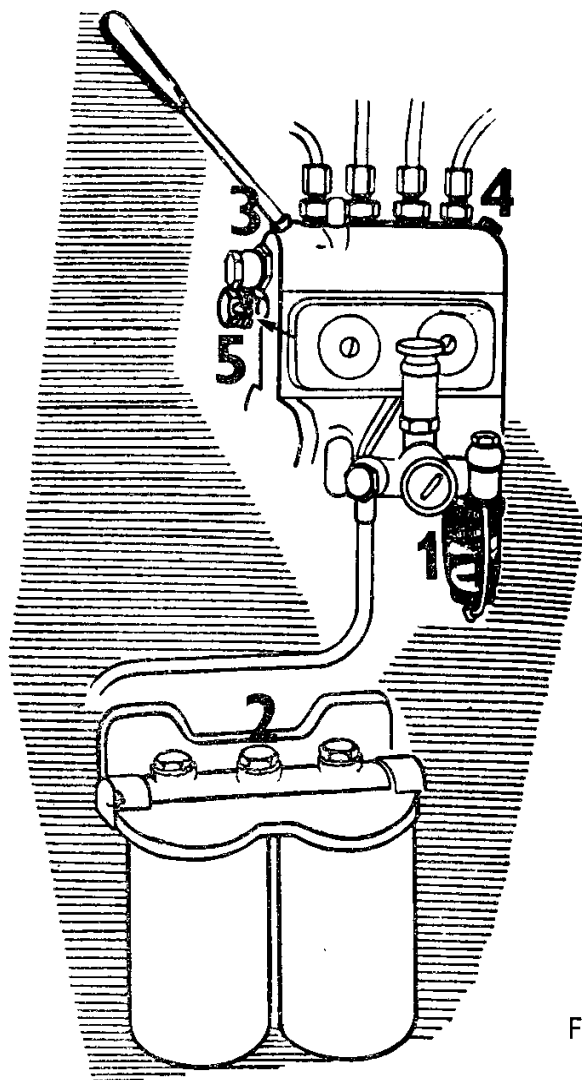


Fig. 12

Bleeding of the Fuel System (Fig. 12)

1. Open the fuel tap on the fuel tank in order to fill up the precleaner glass bowl 1 with fuel free of air bubbles.
2. Loosen a bolt of fuel filters 2 and operate manually the fuel delivery pump until fuel flows out from both cleaners free of any air bubble. Tighten the fuel cleaner bolt and keep on pumping manually for a short period.
3. Loosen the bleeding screw 3 situated on the fuel injection pump and pump manually until fuel escapes around the screw free of any air bubble. Keep on pumping and tighten the bleeding screw gradually on the fuel injection pump. The bleeding being finished, clean up the engine soiled with the fuel.

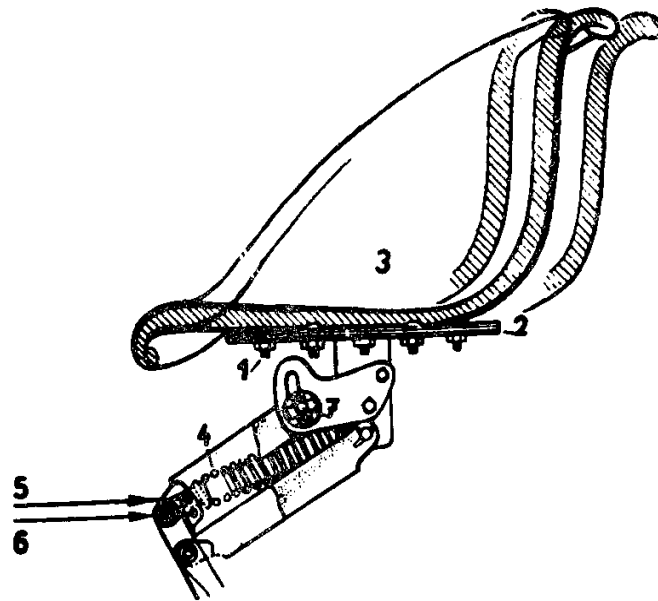


Fig. 13

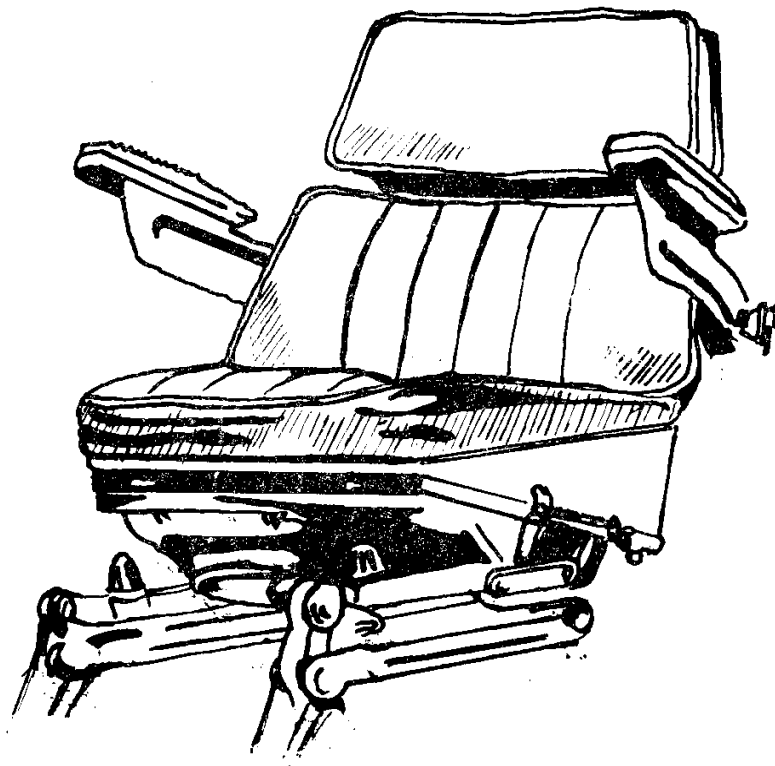


Fig. 14

Driver's Seat (Fig. 13)

The seat is duly springy and its position can be changed according to the weight and size of the driver's body. The distance of the seat from the steering wheel is changeable by loosening nuts 1 placed on the base plate 2 and by displacing the seat either forwards or rearwards as well.

Driver's Seat "AEROLASTIC" (Fig. 14)

The seat is pneumatically springy. The pressure in the diaphragme can increase according to the driver's weight up to 35.6 PSI (2.5 kg/sq. cm) as a maximum. The seat is adjustable in its longitudinal axis from its central position of 3" (75 mm) forwards or rearwards. Better comfort of the driver is assured with introduction of adjustable rests for hands and a back rest as well.

Driver's mate's seat is situated on the driver's left-hand side. On Z 4718 tractor model the mate's seat is situated behind the driver.

ELECTRICAL EQUIPMENT AND ACCESSORIES

Storage Battery

During the tractor travel the storage battery is charged automatically. If the current consumption is higher that the D. C. generator is capable to deliver, it is necessary to charge the battery outside the tractor from time to time. Water gets evaporated during the charging process and the electrolyte density increases. Therefore it is necessary to dilute the electrolyte by topping up with distilled water. Never apply ordinary water even if it looks like to be clean — the storage battery could be damaged. Electrolyte with a specified density of 1.28—1.285, i. e. 32° Bé is used for filling the storage battery only in such a case when it has been spilled. If the storage battery is supplied from the Manufacturer's empty and uncharged, it must undergo the so called first charge in strict accordance with instructions of the Manufacturer.

Attendance

Check every week or every fortnight (according to the atmosphere temperature) whether the electrolyte reaches

0.59" (15 mm) above the plates upper border. If the storage battery is not used for a longer period it should be charged and attended once for 4 or 6 weeks. If the storage battery is to be put out operation for a longer period, it is recommended to have stored it in a specialized repairshop. Terminals of the storage battery should be cleaned up from time to time and sediments caused by evaporation of the cells removed too. The life of a storage battery will be extended if it will be charged and attended in a specialized repairshop after its each 3 months operation. The storage battery should be protected against frosts during the winter season as a discharged battery freezes particularly easy.

IMPORTANT: Please follow instructions of the Manufacturer of storage batteries at all the time.

Starter Motor

Maintenance of the starter motor is limited to regular inspections, during which the following principles should be respected:

1. The input cable terminals should be tightened well and protected against corrosion with a thin coating of vase-line to avoid their corrosion. Damaged cables should be replaced by new ones.
2. Check collector, carbon brushes and brush holding springs once for six months.
3. Have the starter tested in a specialized repairshop once o year.

Voltage Regulating Relay

If the function of the voltage regulating relay had been disturbed have remedy the trouble in a specialized repairshop. Any inexpert intervention can lead not only to the destruction of the relay but also to serious damage of further electrical accessories.

How to Prepare the Tractor for Travelling

Before starting to operate with the tractor check daily:

1. Condition of the steering system — steering linkage unions, tightening of bolts and nuts, steering wheel dead course.
2. Water level in the radiator; replenish with soft (rainy) water free of sediments. Apply non freezing coolant during the winter season.
3. Fuel level in the tank — replenish if necessary. If the fuel level sinks to the bottom or if you have forgotten to open the fuel tap when starting the engine, it is necessary to bleed the fuel system and the whole injection unit as well.
4. Brake fluid level in the compensating jar — if the fluid level sinks, replenish the jar (maximum level — up to the top margin of the Manufacturer's trade mark PAL; minimum level — top margin of the metallic holder).
5. Oil level of the engine oil sump.
6. Tightening of important joints — bolts, screws, nuts particularly those of disks and wheel lugs).
7. Brakes — if some resistance is felt when depressing latched and unlatched pedals.
8. Condition of the electrical system — inspect lamps, lights, trafficators etc., replace defective bulbs or fuses.
9. Pressure in tyres — inflate fully if necessary.
10. When the tractor started to travel check the brakes efficiency (both the hand and foot brakes). Brake pedals must be latched.

How to Start the Engine

Before starting the engine make sure that the speed gear shifting levers as well as those of auxiliary drives are in their neutral positions and that the hand brake is on.

Then

- insert the key into the switch box in its "0" position (the key should be fully inserted),
- depress the clutch pedal,
- open the fuel throttle to its maximum,
- depress the starter button.

IMPORTANT: Do not start longer than for 5 seconds. If the engine fails to start immediately for the first time, repeat starting after 30 seconds only, particularly in the winter season. Do never help stopping the engine by means of the starter. Wait until the engine stops completely, otherwise the starter could be damaged.

If necessary, especially in the winter season, depress the fuel overcharge button (Fig. 12/5) at simultaneous displacement of the accelerator hand control lever for full fuel supply.

How to Start the Engine in the Winter Season

It is advisable to preheat the engine at first by means of hot water in the season of lower temperature in such a way that lukewarm flows out from the crankcase drain tap. Starting should be carried out at disengaged travel clutch after having driven fuel through the fuel system pumping manually with the fuel delivery pump situated on the fuel injection pump. Excess starting fuel dose is automatically added when the accelerator hand control lever is displaced in its position for full fuel dose at stillstood engine and the fuel overcharge button placed on the fuel injection pump is simultaneously depressed.

When the engine starts to run it is advisable to let it run at higher revolutions and covered radiator with its blind until the engine gets warmed up a little. Before the thermometer placed on the dashboard does not indicate a temperature of 113° F (45° C), accelerate slowly and do not go over 1800 RPM of the engine. (The engine warming-up is faster and more economical when the tractor travels than at idle run of the engine and stopped tractor.)

How to Start to Travel with the Tractor

Inspect air pressure on the air pressure gauge when trailer or similar transport means is coupled to the tractor (minimum air pressure at the moment the tractor starts to travel should reach 64 PSI or 4.5 kg/sq. cm).

1. Select road or reduced speed.
2. Reduce the engine RPM down to idle run and depress the clutch pedal completely.
3. Engage the first speed by means of the shifting lever placed under the steering wheel at its RH side.

4. Let up slowly the clutch pedal when simultaneously depressing the accelerator pedal thus augmenting engine revolutions.
5. When changing lower speeds by higher ones (e. g. the second speed by the 3rd one), first depress the clutch pedal and simultaneously displace the speed shifting lever in its neutral position. Engage the clutch again, disengage it once more, shift in a higher speed engaging slowly the clutch again.

Speed change from a higher to a lower one should be carried out with intergas; reduce the engine RPM, disengage the clutch, shift off the previous higher speed, engage the clutch, augment engine RPM (according to the instantaneous travel speed of the tractor) disengage the clutch, insert a lower speed and engage slowly the clutch at continuously increase of engine revolutions.

Reduced speeds should be shifted in by means of the same shifting lever as applied for road speeds.

If the tractor stands on a flat ground, release the hand brake, engage the clutch slowly and augment engine revolutions in such a way that a smooth start of the tractor is enabled. If the tractor stands on a slope, release the hand brake at simultaneous engagement of the clutch and increase of engine revolutions.

How to Drive the Tractor

1. Having started the engine but before commencing to travel with the tractor, warm up the engine to its sufficient performance temperature (warming up the engine when driving the tractor under a small load is quicker and more economical).
2. Start to travel continuously without useless delays on lower speeds.
3. When running up a slope shift in the necessary lower speed in time.
4. When travelling down a longer steep hill or slope, shift in the lower speed the steeper is the slope. This lower speed should be shifted in still before starting to run down the slope (do not overturn the engine).
5. During the tractor travel should be followed:
 - oil pressure pilot lamp
 - air pressure gauge (correct air pressure ranges from 82 to 85.35 PSI or 5.8 to 6 kg/sq. cm), if the compressor is in operation.

- charging pilot lamp (ammeter)
- water thermometer — most convenient engine performance temperature is 176°—203° F or 80°—95° C. If the temperature is lower as referred, cover the radiator with the blind.

Engine hours counter indicates the speeds of the tractor with shifted-in 5th gear, including revolutions and the number of the tractor service hours at running engine. Traf-ficator pilot lamp (green), high beam pilot lamp (blue — it is on when high beam is on, too), charging circuit pilot lamp as well as the lubrication pilot lamp are red. At higher revolutions both the charging circuit and lubrication pilot lamps are off. If they are on, a trouble is signaled.

6. When a trailer, provided with pneumatic brakes, is coupled with the tractor, check before starting to travel, if the compressor operates, if the minimum air pressure is 64 PSI (4.5 kg/sq. cm), if pneumatic brakes function is all right, if the trailer is hitched safely and if trailer lights are in order.
7. When transporting attached implements be means of the hydraulic power lift, lock the hydraulic power lift inner circuit control lever in its position "UP". Before descending from the tractor on the ground, lower the attached implements down to the ground at first.
8. The travel speed of the tractor loaded with attached implements should correspond with the structure of such implements.
9. It is prohibited to drive a tractor on the road with unlatched brake pedals.
10. Before starting to work with the tractor on a slopy terrain, consider well all possibilities of the work in order to prevent any dangerous inclination of the tractor.
11. When applying the tractor to loosen a stuck vehicle, proceed very carefully in order to prevent any accident.
12. Do never use the tractor for pushing other vehicles or trailers with the aid of a bar or plank introduced between the tractor and the pushed object.
13. Do not carry out any maintenance work on the tractor with the running engine except when checking brakes efficiency and charging of batteries.

14. Do not open quickly the overpressure radiator plug when the engine is overheated and do not pour cold water into the radiator in such a case. It is always necessary to suspend the overpressure by turning the plug to the half open position.
15. The articulated shaft for driving agricultural machines should be provided with a safeguard. Do never descend from the tractor unless the articulated shaft is disengaged.
16. No more than in the technical certificate specified number of persons can be transported in the driver's cab only.
17. Do never drive the tractor downhill without an engaged speed.
18. Do never use the differential lock driving the tractor in a curve.
19. Broken down cab safety frame (repaired after a breakdown eventually) should no longer be installed and used on the tractor from safety reasons.

Running-in of the Tractor

1. Drive the tractor neither with any machines or load nor with engaged auxiliary drives for approximately 10 first performance hours.
2. Do not load tractor during its next 20 performance hours more than to its half output and do not work with the tractor at full engine revolutions. Use such implements only which do not overload the tractor (e. g. sowing machines, harrows, drags, weeders, etc.).
3. Do not load the tractor more than to its $\frac{3}{4}$ output during its following next 20 performance hours (i. e. 50 engine hours). Do not apply the hydraulic power lift during the running-in period of the tractor.

Each 50 engine hours change the oil in the engine and in the injection pump.

Each 200 engine hours change the oil in gearbox and portals.

HYDRAULIC EQUIPMENT OF THE TRACTOR (Fig. 6)

The geared pump of the hydraulic system of the tractor is housed in the space of the main transmission housing. It is possible to select following controls by means of the selector control lever:

- (a) draft control
- (b) mixed control
- (c) position control

to (a) With the draft control engaged, the attached implement is automatically held in the position which corresponds approximately with the same traction power of the bottom drawbars of the three point linkage.

to (b) With mixed control engaged, a combination of position and draft control is carried out.

to (c) With position control engaged, the attached implement is automatically held in the position which corresponds with the position of the control lever.

The Inner Circuit Control Lever controls

- (a) lifting and lowering of implements,
- (b) heights setting-up of the three point linkage at the position control,
- (c) traction power setting-up of the draft or mixed control eventually,
- (d) floating position setting-up (for work carried out with implements equipped with their own sustaining wheel).

The Remote Circuit Control Lever

By means of this lever the feed of the pressure oil into the remote circuit outlets, provided with quick couplings, and back in the tractor, is controlled. Following positions can be selected in this case:

- (a) lifting (single or double acting cylinder)
- (b) stop position (neutral)
- (c) locked floating position — the lever remains in its position (lowering at the single acting cylinder)
- (d) forced lowering (double acting cylinder).

The control mechanism is provided with labels containing inscriptions of above mentioned functions and respective positions of individual control levers.

BRAKES

The foot brakes are controlled hydraulically by means of two pedals (both the LH and RH wheel can be braked separately). Braking action both of the left-hand and the right-hand wheel is governed by means of a pressure compensator (equalizer). When driving the tractor on the road, brake pedals must be latched. The hand brake serves to keep standing the tractor. It is put into operation when moving the control lever upwards (toward the driver). Releasing of the control lever should be carried out in such a way that moving it upwards slightly at first (toward the operator), depress simultaneously its button and return it back in its lower position (the tractor is unbraked).

Differential Lock (Fig. 5/9)

If one of the tractor rear wheels spins in the terrain, apply the differential lock (which puts the differential out of operation so that both the rear wheels keep the same revolutions but during the time of depressed lock pedal only).

IMPORTANT: Differential lock should never be applied when driving the tractor in a curve.

FRONT AXLE

Extensions with wheels can be springy or solid. In both cases it is possible to change the tractor front wheel track to 56"—65"—71" i. e. 1430—1655—1805 mm (basic front wheel track adjusted at Manufacturer's is 56" or 1430 mm) for Z 6711 — Z 6718 tractors. The front wheel track of Z 4712, Z 4718, Z 5711—Z 5718 tractors makes 1280—1375—1750 mm i. e. 50"—54"—69" (the basic front wheel track set up by the Manufacturer is 54" or 1375 mm).

The change of the front wheel track (Fig. 15) should be carried out in the following way:

1. Put a jack under the front axle and lift same.
2. Unscrew nuts (Fig. 15/1) from bolts of the front axle extensions and remove the bolts.
3. Unscrew the nut from the steering system interconnecting rod and draw it slightly out.
4. Pull out a little both extensions (Fig. 15/2) untill the required wheel track is attained and lock them again with bolts and nuts.

5. Screw on and lock the bolt in the steering system interconnecting rod.
6. Check the front wheel toe-in (see page 73).

The change of the springy extension in a solid one can be carried out by fitting in a stop (valid for Z 5711, Z 5718, Z 6711 and Z 6718 tractors only).

This change should be done in the following way:

1. Unscrew four screws from the covering lids situated on the extension body and remove the lids (Fig. 5/3).
2. Check if there is a spline in the locking coupling positioned exactly against the hole of the extension body and adjust this correct position eventually by depressing or lifting slightly the axle.
3. Slide the locking inserts in holes of the extension body — the milled part must fit into the spline of the locking coupling.
4. Put elastic inserts (rubber rolls) in cavities of locking inserts.
5. Reinstall covering lids with their packing on the extension body and tighten them with screw (it is necessary to overcome the resistance of elastic inserts).

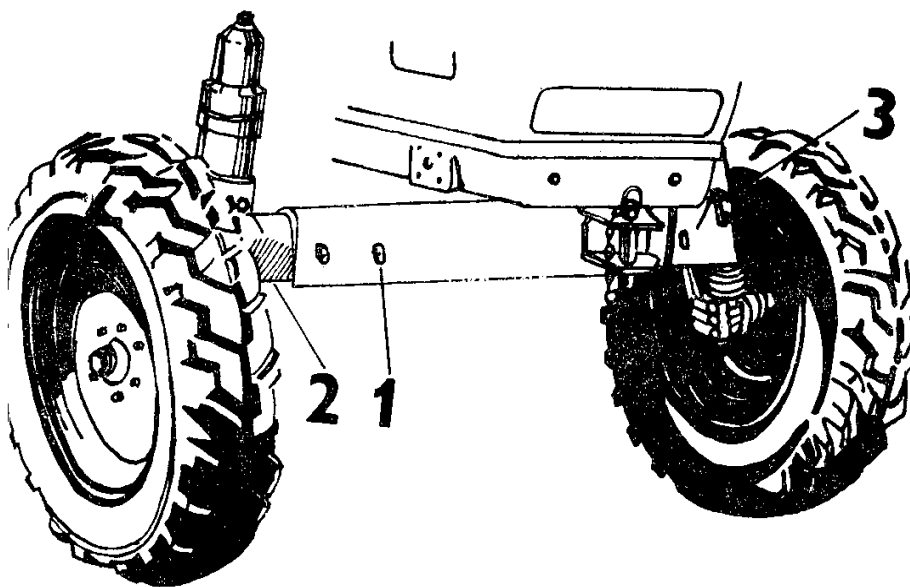


Fig. 15

When removing locking inserts apply the plug from the filling orifice for their taking off as the lug can be screwed in the inner thread of the locking insert.

Front wheel track of the four wheel drive front axle remains permanently unchanged — it makes 1480 mm = 58" on Z 5745 and Z 5748 tractors and 1510 mm = 59.5" on Z 6745 and Z 6748 tractors. These tractors are not provided with vertically adjustable extensions.

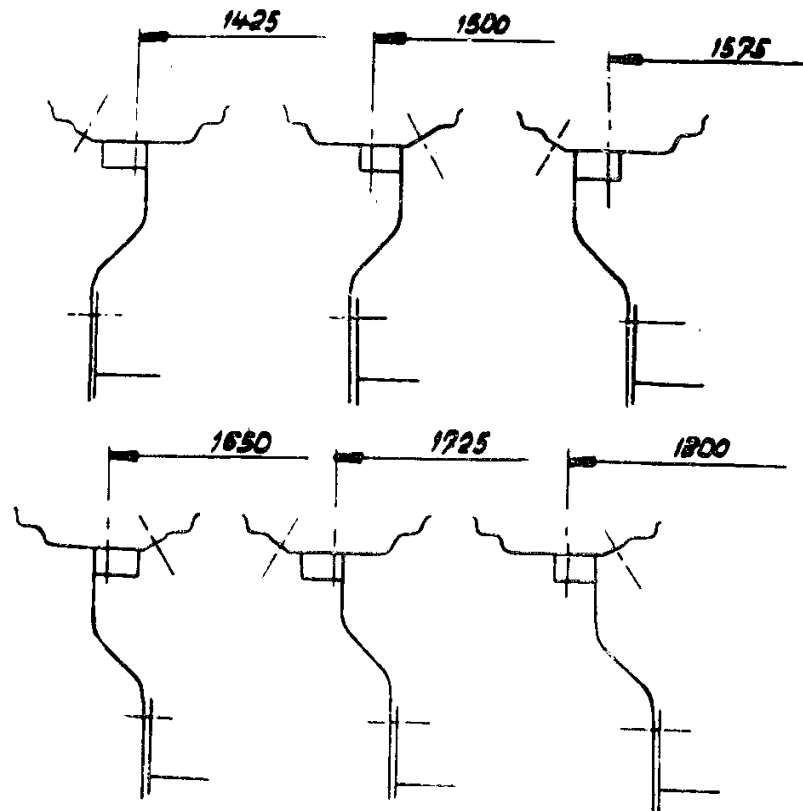


Fig. 16

Rear Wheels — provided with standard type of tyres

The rear wheel track can be adjusted in six (seven) different positions in the range of 56"—71" (1425—1800 mm) (on Z 4712 and Z 4718 tractors in the range of 53"—71" or 1350—1800 mm). The change of the track should be carried out at slightly lifted tractor rear axle only and in such a way that wheels could rotate freely. Before lifting the tractor rear axle, front wheels should be blocked thus avoiding to move the tractor. Adjustment of individual tracks is carried out by changing rims and disks.

Screws should be tightened well.

Screws joining the disk to the wheel rim should be tightened by 86.5—93.9 lbs. ft. (12—13 kpm) as well as nuts joining the disc with shaft by 267—288 lbs. ft. (37—40 kpm).

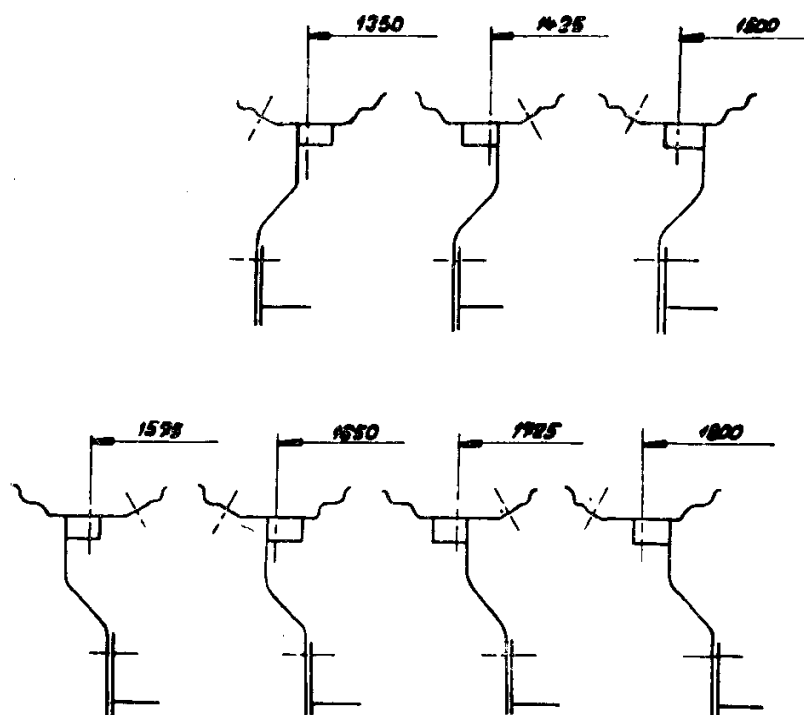


Fig. 17

Tyre Inflating

Tyre Size	Inflating in PSI (kg/sq. cm)	Carrying Capa- city of One Tyre in lbs. (kgs) *	Kind of Work
6,00-16	35.50 (2.5)	1146 (520)	Field labour, transport
9,5/9-32	28.44 (2.0)	2205 (1000)	Field labour, transport
12,4/11-28	21.33 (1.5)	2723 (1235)	Field labour, transport
6,50-16	35.50 (2.5) 42.66 (3.0) 53.32 (3.75)	1301 (590) 1367 (620) 2734 (1240)	Field labour, transport work with industrial units at maximum travel speed of 3 ³ / ₄ m. p. h. (6 km/h.)
7,50-16	35.50 (2.5) 44.08 (3.1)	1654 (750) 3308 (1500)	Field labour, transport work with industrial units at maximum travel speed of 3 ³ / ₄ m. p. h. (6 km/h.)
9,5/9-24	28.44 (2.0) 35.50 (2.5)	2017 (915) 3024 (1372)	Field labour, transport work with industrial units at maximum travel speed of 3 ³ / ₄ m. p. h. (6 km/h.)
8,3/8-24	28.44 (2.0) 35.50 (2.5)	1598 (725) 2396 (1087)	Field labour, transport work with industrial units at maximum travel speed of 3 ³ / ₄ m. p. h. (6 km/h.)
14,9/13-28	14.22 (1.0) 21.33 (1.5)	2959 (1345) 3694 (1675)	Field labour Transport
16,9/14-28	14.22 (1.0) 21.33 (1.5)	3352 (1520) 4224 (1920)	Field labour Transport
16,9/14-30	15.64 (1.1) 21.33 (1.5)	3804 (1775) 4685 (2125)	Field labour Transport
12,4/11-36	14.22 (1.0) 21.33 (1.5)	2387 (1085) 3025 (1375)	Field labour Transport
12,4/11-32	14.22 (1.0) 21.33 (1.5)	2266 (1030) 2871 (1305)	Field labour Transport

*) The carrying capacity of tyres can be exploited only up to the value admissible for the load capacity of axles mentioned under basic tractor specifications.

The carrying capacity of rear tyres can be increased of 20 % at maximum travel speed of the tractor of 12.4 m. p. h. (20 km/h.). But it is not allowed to pass over the value of the permitted pressure force of the axle.

Tyre Inflating

Tractors are provided with a tyre inflator which belongs to the tractor standard equipment. If the tractor is equipped with pneumatic brakes or with a torque multiplier, a combined pressure regulator is installed in the tractor thus fulfilling the function of the pressure equalizer, tyre inflator and the safety valve as well. When inflating tyres, unscrew the butterfly nut from the combined pressure regulator screwing a hose for tyre inflating on its place. This hose should be duly screwed in till its last thread in order to depress the non-return valve. The tyre cannot be inflated in the moment of opened release valve of the combined pressure regulator but only at the moment when the pressure in the pneumatic system drops below 82.5 PSI (5.8 kg/sq. cm) and the release valve is closed. When the tyre is inflated, screw the butterfly nut back in its place again.

Rims

Wheel rims for both the rear and front wheels are of Wide Base type. When changing tyres the same size of Barum factory should be applied. When employing tyre casings of foreign trade marks, only such types can be used, rolling radius of which correspond with specified Czech tyre sizes. Both the front (of Z 5745, Z 5748, Z 6745, Z 6748 tractors) and rear wheels are delivered with valves for water filling of tyres.

How to Fill Tyres with Water

An increase of tractor adhesion and its traction force can also be obtained by filling the inner tubes of tyres with water. Although it is possible to fill tyres with water also by means of normal valve, the inner tubes are provided with a special valve for this purpose which facilitates speedy and easy filling. It is recommended to use an antifreeze agent for filling tyres during the winter season.

Filling Technique

Apply a vessel or gravity tank for tyre filling. Ease the tyre by means of a filling jack and turn it so that the valve faces upwards. Deflate the air completely. Connect the valve with the tank containing the solution by means of a hose and pump the solution into the inner tube. Then inflate the tyre to the specified pressure.

Draining Technique

Caution — water squirts out when unscrewing the valve air section. A vacuum can be caused in the tyre when draining water from it and therefore it is necessary to turn the wheel slightly from time to time so that the valve comes into its upper position. Screw on the bottom valve section the water valve body and the inner tube valve air section on it. Inflate the inner tube with air until water stops flowing out through the tube of the body. After emptying all the water from the inner tube, screw off the water valve.

SPECIAL ACCESSORIES

Tractors referred in this manual can be equipped with following optional accessories:

Air Cleaner with Paper Cartridge

Maintenance of this air cleaner is mentioned on the label stuck on the cleaner itself.

Hand Operated Disengagement of the PTO Clutch

(See Fig. 3/2). It serves for independent disengagement of the PTO drive. In its disengaged position the control lever is blocked by means of a safety lock. When torque multiplier is installed in the tractor, hand operated disengagement of the PTO clutch carries out simultaneously the disengagement of the tractor travel.

Torque Multiplier

(Only for Z 5711 — Z 5748, Z 6711 — Z 6748 tractors). This equipment enables practically shifting-in of transmission of 1.31 under load. Thus 20 forwards and 4 reverse speeds can be obtained. Both the engagement and disengagement of the torque multiplier is carried out without any disengagement of the clutch so that no wheel drive is set off i. e. no interruption of the engine power transmission on the tractor rear wheels is caused.

IMPORTANT:

- (a) at engaged torque multiplier the tractor does not brake by means of the engine,
- (b) at engaged torque multiplier the tractor travel must

- be disengaged by means of the hand operated control lever only (Fig. 3/2),
- (c) when employing the torque multiplier the compressor should work permanently.

Synchronizing Clutch

(For Z 5711 — Z 5748, Z 6711 — Z 6748 tractors only.) It can be installed on both the 4th and 5th speed gear, thus assuring a noiseless shifting-in of the 4th and 5th speed.

Front Driven Axle (Fig. 10, 11) of Four Wheel Drive Tractors

(On Z 5745, Z 5748, Z 6745, Z 6748 tractors.) This axle is wobbling at maximum swing of $\pm 15^\circ$. It is driven from the drive box by means of the protected articulated joint shaft. The drive is distributed on both front half-axes by means of the differential gear. The attendance of four wheel drive Z 5745, Z 5748, Z 6745 and Z 6748 tractors differs from that of basic tractor types by front wheel drive only.

The front wheel drive is controlled from driver's seat by means of an engagement lever, placed on at the left-hand gearbox side (Fig. 3/5A). The shifting in of the drive is carried out by means of a gear clutch. When displacing the engagement control lever upwards and getting dropped the catch into the slot of the floor, the shifting-in spring, which engages automatically the front wheel drive during the tractor travel, will be pre-loaded. Shifting-out the catch and displacing the control lever downwards cause the front wheel drive disengagement. Both the engagement and disengagement of the front wheel drive can be carried out during the tractor travel without any disengagement of the travel clutch.

Power Assisted Steering Mechanism (Fig. 18)

This equipment makes the tractor steering easier as it reduces the force on the steering wheel which is needed for steering of wheels especially when travelling in the terrain or employing agricultural or industrial units. It simultaneously damps shocks of steered wheels. The power assisted steering mechanism works only in the case when the engine is running. When the engine does not work the tractor can be steered by force of the driver executed on the steering wheel by means of the mechanical transmission only.

IMPORTANT: When turning the steering wheel up to its stop, it should be than turned a little back. There are not adjustable stops in the steering box and from this reason when levers bear against stops on the front axle, the driver has still the possibility to turn the steering wheel a little thus enabling to displace the slide valve in the cylinder. This situation causes a strain of the whole steering mechanism by maximum force of the device for power assisted steering (220 lbs./100 kps/approximately) and oil is warmed up very quickly so that the pump could be damaged. A similar situation occurs when the tractor travels in a deep furrow groove and the driver tries to get the

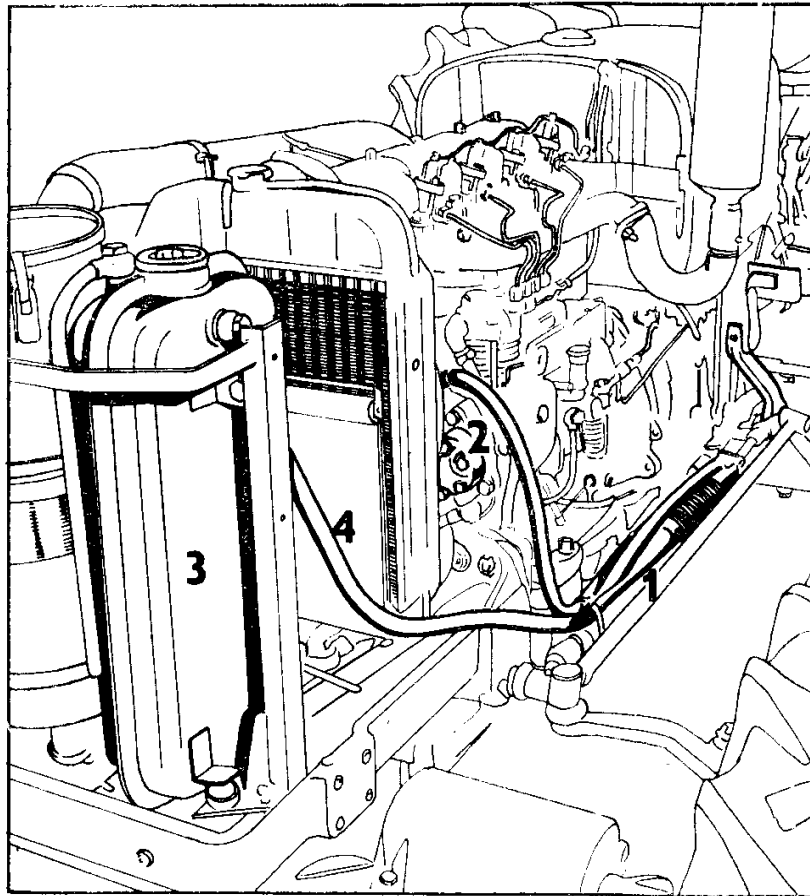


Fig. 18

tractor out of it by turning wheels aside by means of the device for power assisted steering and he does not succeed. Thus the slide valve is displaced causing excess strain of the steering mechanism, too; from this reason it is necessary to turn back the steering wheel in its original position after 30 seconds at the latest.

The power assisted steering device consists of

1. a cylinder with slide valve distribution (Fig. 18/1)
2. a pump (Fig. 18/2)
3. a tank and accessories (Fig. 18/3)
4. high pressure hoses (Fig. 18/4)

Three Point Linkage (Fig. 19)

The three point linkage consists of bottom links, vertical links and the upper link. The vertical links are fitted by their ball joints on lifting arms outer pins. Both links have the possibility to alter continuously their length. Maximum adjustable length is 4" (100 mm).

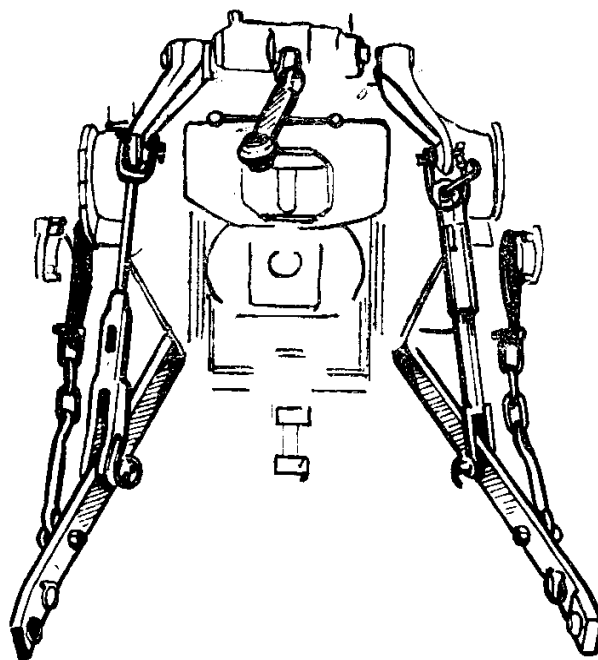


Fig. 19

Trailer Coupling (Fig. 20)

The trailer coupling is fitted into the bracket fork, the bracket being fixed by bolts to the main transmission housing rear wall and interconnected with a pin which is locked by means of a mechanical lock. The trailer coupling is adjustable vertically in three positions. The pin dia is 1.5" (38 mm).

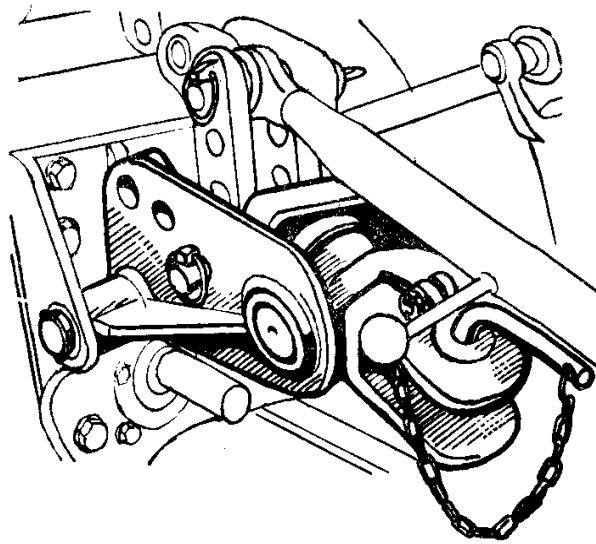


Fig. 20

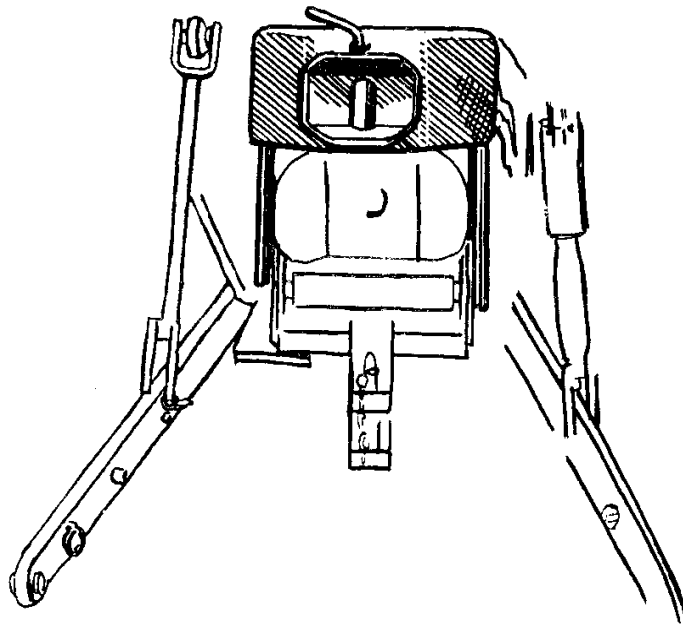


Fig. 21

Multistage Suspension Linkage (Fig. 21)

This equipment serves for coupling trailers. It is vertically adjustable in four positions and without the fixed and swinging bar, in seven positions. Permissible vertical static load is maximum 2860 lbs. (1300 kps) for Z 6711 — Z 6748 tractors, 2646 lbs. (1200 kps) for Z 5711 — Z 5748 tractors and 2205 lbs. (1000 kps) for Z 4712 — Z 4718 tractors.

PTO for 540 RPM and 1000 RPM

Design I (Fig. 5)

Engagement of PTO respective revolution number can be carried out at stillstanding engine only. The PTO end piece for 540 RPM is six-splined, that for 1000 RPM with involute profile is twenty-one-splined.

At Manufacturer's Works tractor are provided with six-splined PTO end piece 540 RPM. When changing the PTO piece it is necessary to remove the cover at first, to unscrew the plug and the screw with which the PTO end piece is fixed to the adapted PTO end. Now the PTO end piece can be slid off the PTO and replaced by another end piece provided with 21 splines and determined for a drive at 1000 RPM. The new end piece must be taken off from the guide on the gearbox cover at first; the end piece is safeguarded with a control lever (Fig. 5/11) which can be removed very easily from the PTO end piece splines. In order to facilitate sliding off of the end piece from the guiding it is necessary that the control lever and thus also the end piece are in their central i. e. neutral position. The PTO end piece, provided with six splines and removed from the PTO end should be inserted in the guide situated on the gearbox cover in the reverse way. The locking device of the locking mechanism allows to turn the control lever in the only sense according to the applied PTO end piece. The PTO end piece for 540 RPM is engaged by means of the PTO piece for 1000 RPM fitted in the control lever and vice versa.

Design II (Fig. 4/6)

PTO is provided with a six-splined profile only but it is possible to engage 540 RPM (control lever to the left) or 1000 RPM (control lever to the right).

A tractor equipped in such a way allows to choose following alternatives:

When displacing the control lever (Fig. 4/4) in its position I,

the hydraulic power lift pump is put into operation only; this pump rotates according to the selected system either by 540 RPM or 1000 RPM.

When displacing the control lever from its position I into the position II, the geared coupling displaces in such a way that not only the hydraulic power lift pump but also the PTO are driven by selected RPM.

In N (neutral) position all functions are off. Position III assures PTO drive through the gearbox.

Positions I, II, N, III — see label on the gearbox lid.

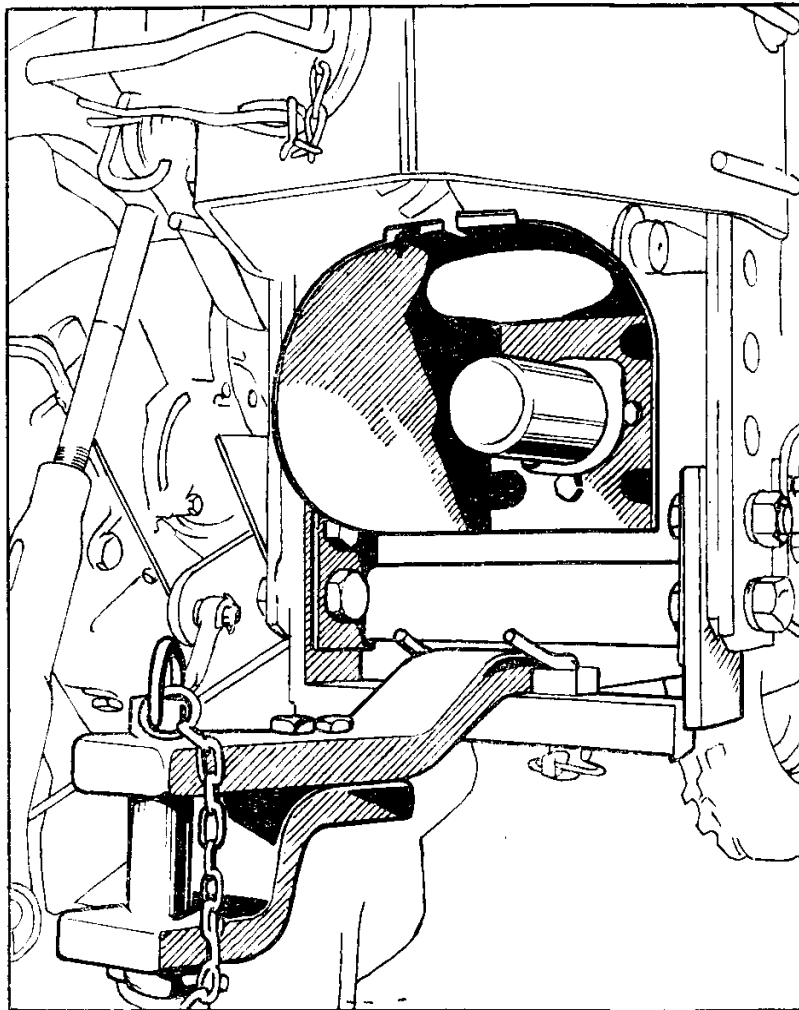


Fig. 22

Swinging Drawbar (Fig. 22)

The swinging bar consists of a bracket provided with a pin, the bracket being bolted to the main transmission housing bottom wall, and of the swinging drawbar itself. The swinging drawbar can be adjusted in five positions horizontally and fixed to the bar by means of two pins and safety pins. Permissible vertical static load of the swinging drawbar is maximum 1323 lbs. (600 kps).

Belt Pulley (Fig. 23)

The belt pulley serves for driving of stationary machines. It is fixed on the PTO and its drive is carried out by shifted in 5th speed but the reduction speed control lever must be displaced in its neutral position and the PTO drive control lever in its top position. By turning the belt pulley through 180°, the clockwise sense is changed in the counter-clockwise one. In such a case it is necessary to install the bleeding plug on the belt pulley body reverse side in order to avoid oil leaking.

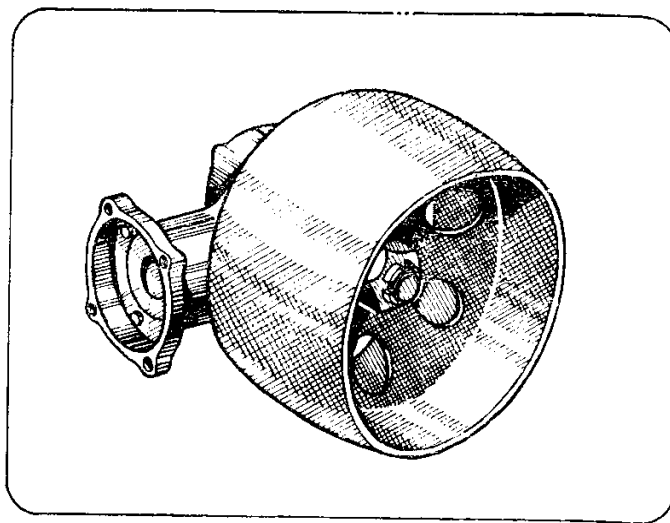


Fig. 23

Front and Rear Ballast Weights (Fig. 24)

Serve for additional increase of tractor adhesion weight.

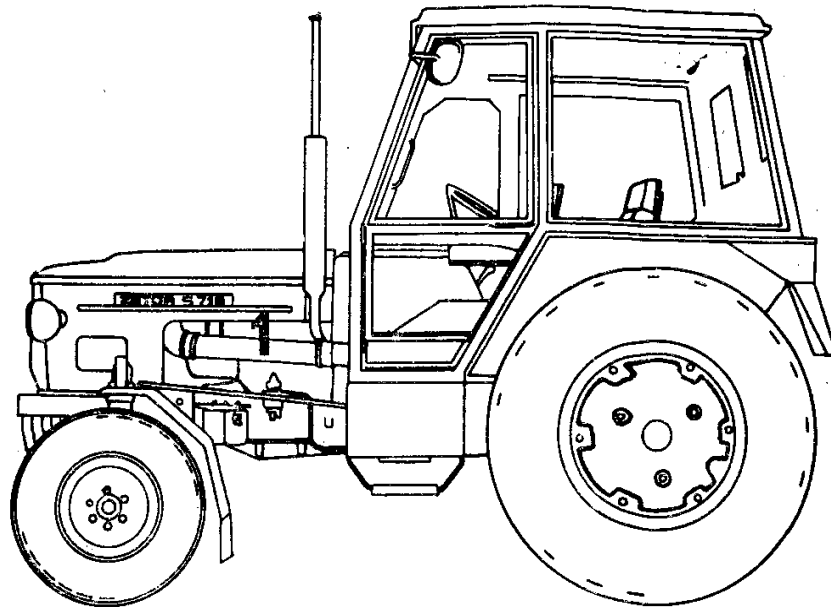


Fig. 24

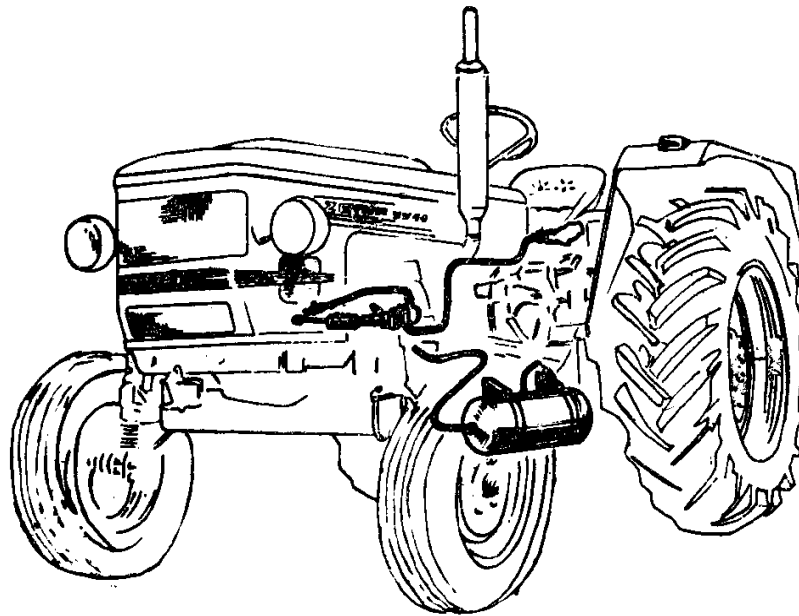


Fig. 25

Pneumatic Brakes (Fig. 25)

The pneumatic system consists of a compressor, combined pressure equalizer, air container, brake valve, pressure gauge, brake valve control carried out by means of the brake pedal as well as by the hand brake, coupling head and connecting pipes. The brake valve leverage, controlled by means of the hand brake control lever, is set up in such a way that the trailer is braked simultaneously with the tractor. The operating pressure is set up to 85 PSI (6 kg/sq. cm). When coupling the trailer with the tractor, the latter must be immobilized by means of the hand brake that the relief valve is not under the pressure. Is the tractor used for transport, it is necessary to follow the air pressure gauge placed on the dashboard. The Z 6748 tractors are moreover equipped with a warning device, that in case of a lower pressure than the value of 3.9 kg/sq. cm causes the intensive lightening of red pilot lamp situated on the dashboard. Operate therefore the tractor with the trailer only when the pressure is higher than 3.9 kg/sq. cm and the warning pilot lamp lights only with a faint red light.

Suspension Linkage for Single-axle Trailer (Fig. 26)

Suspension linkage for single-axle trailer serves for automatic coupling of these trailer to the tractor. It is fitted instead of the swinging drawbar on the central pin of the final transmission housing and attached by chains to the bottom links. The hitch setting-up in its operation position is facilitated by a guiding bolted to the bracket. The hitch together with the trailer beam are lifted by means of hydraulic power lift arms and bottom links until the moment when the hitch fits in arms where it should be locked by means of a pin and a lock. When uncoupling the trailer from the tractor, the hitch together with the trailer beam should be lifted a little by means of the hydraulic power lift and unlocked by deviation of the control lever in the direction from the driver rearwards. Only then the lowering can follow. Permissible maximum vertical static load of the suspension linkage for the single-axle trailer is 2860 lbs. (1300 kps) for Z 6711—Z 6748 tractors, 2645 lbs. (1200 kps) for Z 5711—Z 5748 tractors and 2205 lbs. (1000 kps) for Z 4712—Z 4718 tractor. The diameter of the trailer beam eye for the hitch is 2" (50 mm).

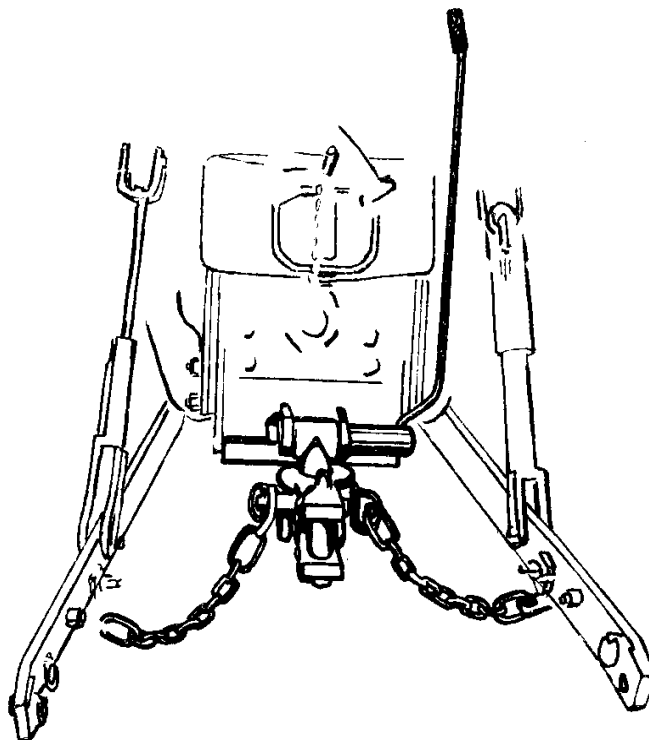


Fig. 26

Driver's Cab (Fig. 24, 27)

The driver's cab is provided with a safety frame which represents the base of the whole cab. The cab is fixed to the tractor body by means of silentblocks which reduce essentially vibrations in the cab inner space. The cab is glazed with safety glass.

IMPORTANT: A repaired cab after an accident (or a cab attacked considerably by corrosion) should be no more mounted on the tractor.

Hot Air Heating of the Cab (Fig. 24/1)

In order to improve the driver's work conditions, Zetor tractors are provided with hot air heating equipment which output is 8.730 B. Th. U. approximately (2200 kcal/h.). Hot air is supplied in the cab by means of a flexible hose from the air collector top part.

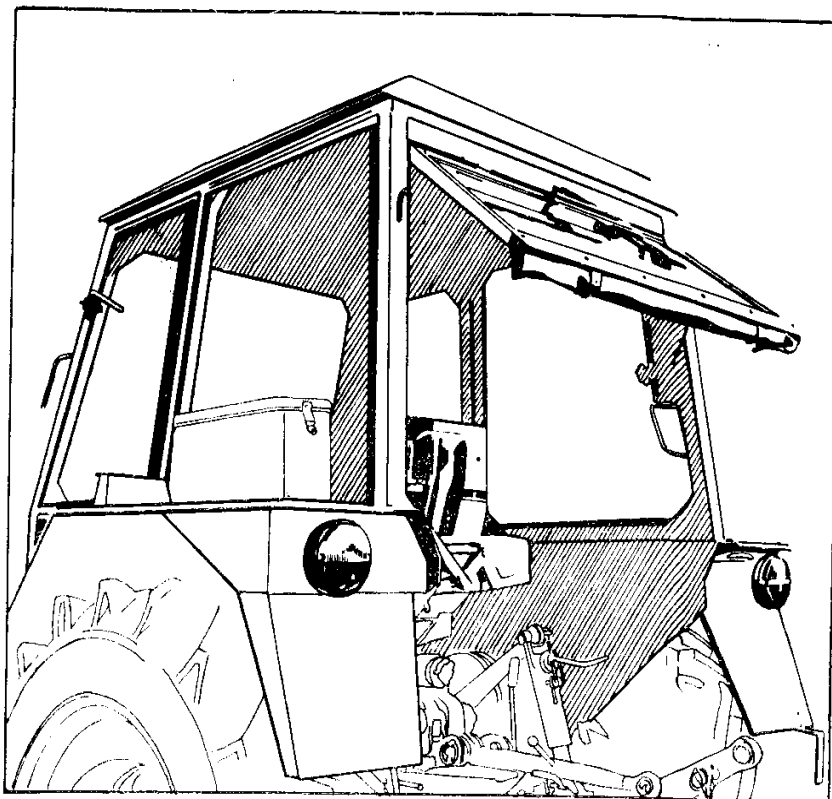


Fig. 27

The driver of the tractor provided with hot air heating equipment should follow during its performance particularly:

- (a) engine temperature
- (b) amount of the coolant
- (c) and keep the cooling system in good conditions
- (d) if the surroundings temperature is higher than 59° F (15° C) do not employ antifreezing solution for the cooling system
- (e) the heating equipment collector should be removed from the tractor when the surroundings temperature attains more than 59° F (+ 15° C).

Front Mudguards (Fig. 24)

Front mudguards can be fitted on wheels at all front wheel track ranges except of that of 50.5" (1280 mm).

Headlamp for Night Labours

This equipment is fitted on the rear right-hand mudguard; it is switched on by means of a switch (Fig. 1/13).

Couplings Elements

1. Quick couplings (Fig. 28/1).
2. Head for coupling the trailer hose from the brake air container (Fig. 28/3).
3. Socket for trailer lightening (Fig. 28/2).

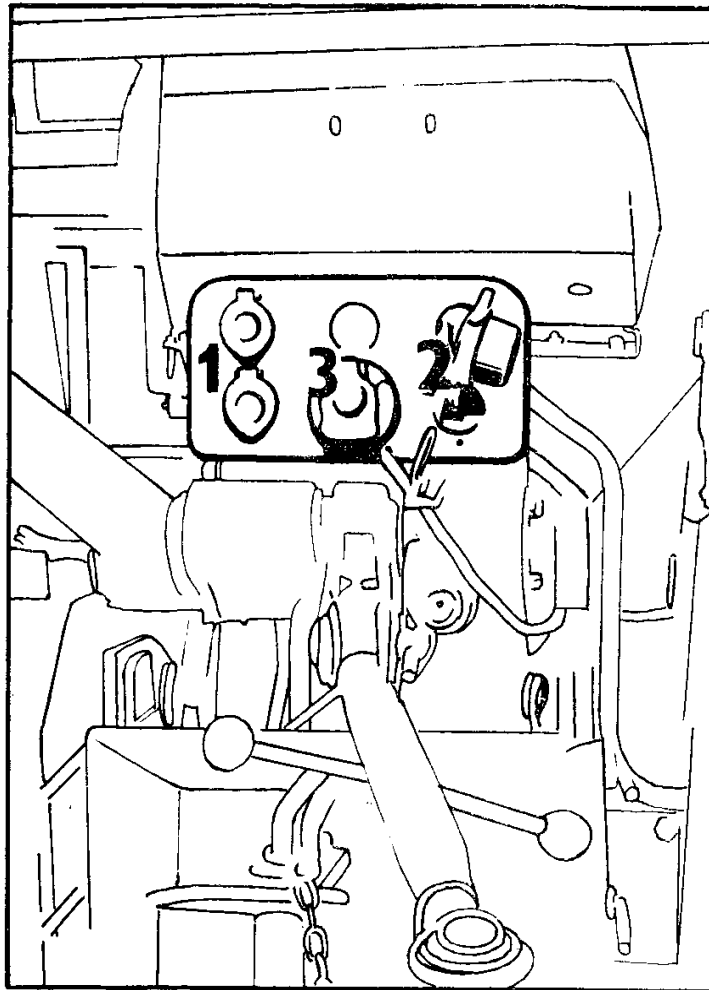


Fig. 28

MAINTENANCE AND ADJUSTMENT

Maintenance of tractors is one of the most important operations. Maintenance which is carried out in due time and correctly ensures trouble-free tractor performance. If there are no sufficient experiences and good technical equipment of the repairshop it is better to have carried out all necessary maintenance in a specialized workshop.

Average fuel consumption is 0.9—1.3 galls/h. (4.5—6 litres/h.). All following instructions should be carefully observed.

Daily Attendance (to be carried out each 8—10 hours)

1. Clean both the tractor and implements.
2. Replenish fuel and inspect for tightness joints of the fuel system.
3. Check water level and inspect for tightness joints of the cooling system.
4. Check oil level and inspect for tightness joints of the lubricating system.
5. Check oil level in the air cleaner and clean pre-filter removing dust from it. When installing the air filter VTCP 250 (provided with a paper cartridge) on the tractor as optional equipment — see maintenance instructions for it written on a label stuck on the air filter.
6. Check function both of the foot and hand brake and air pressure indicated by the air pressure gauge. Check pneumatic brakes system for tightness and brake efficiency of the tractor coupled with a trailer.
7. Inspect if electrical system is all right lights, direction indicator etc. Check at running engine regular run, correct lubrication and charging.
8. Check air pressure both in the front and rear tyres, screw on caps and tighten them well.
9. Check brake liquid level in the vessel and fluid brakes for tightness. Drain oil from the tyre inflator.
10. Check bolts, screws and nuts of steering system linkage if tightened well.
11. Check if DC generator and water pump V-belt is tightened correctly.
12. Inspect oil level in the tank of the device for power assisted steering.

13. Check trailer state and both of the coupling and locking elements before starting to drive with trailers or semi-trailers.
14. When starting to employ the hydraulic power lift unscrew the magnetic oil cleaner from its housing (Fig. 6/5) after a short period of the hydraulic power lift performance. Rinse and blow off the screen and clean the magnet. Amount of impurities in the air cleaner depends on the performance period of the hydraulic power lifting equipment therefore it is recommended to inspect and clean the magnetic oil filter after some 10—100 service hours during the starting period of working of the hydraulic power lift.

Check each 30—50 engine hours the oil level in the injection pump.

Technical Inspection 1 (TI 1)

This inspection should be carried out after 110 galls. (500 litres) of fuel consumption or after 100 engine hours of the tractor performance.

All operations 1—14 should be carried out at first.

15. Check oil in the crankcase oil sump and clean the centrifugal oil cleaner drum rotor (oil cleaner at Z 4712 tractor).
16. Inspect oil level in portals.
17. Inspect oil level in the gearbox.
18. Inspect oil level in the steering damper tank.
19. Unscrew the butterfly nut from the air cleaner, remove the cover and check the state of the sedimentation bowl. Untie three bottom quick couplings and remove the complete precleaner upwards (empty the dust) and complete air cleaner body downwards. Wash air cleaner jacket, cartridge, blade distributor and rebound plate in petrol or gasoil and dry them before assembly. Suction slots protecting strainer should also be clean. Bolt parts with screw and nut together and put them into the cleaner jacket filled up before with pure unused engine oil to the relative margine and fix the body to the air cleaner cover. Lubricate contact surface of the cover and sealing rubber ring with grease on the cartridge neck.
20. Lubricate the water pump by turning the greasing

nipple through one turn and check fan belt sag — maximum 0.6" (15 mm).

21. Oil clutch disengaged sleeve.
22. Lubricate front axle bracket, wheel extensions, disengaging clutch shaft, pedals, RH strut, stirrup of the draft control, struts — tension nuts, collar with steering wheel small control lever by means of a greasing nipple press.
23. Inspect the electrolyte level in the storage battery -- which should reach 0.6" (15 mm) above the upper border of plates. Clean corroded cable terminals.
24. Lubricate Bowden cable at braked tractor by means of the hand brake with few drops of oil PP 80 (SAE 80).
25. Clean plug of power assisted steering tank.
26. Inspect oil level in the front axle housing and wheel reducers as well (Z 5745, Z 5748, Z 6745, Z 6748 tractors).

Technical Inspection 2 (TI 2)

The inspection should be carried out after 220 galls (1000 litres) fuel consumption or after 200 engine hours of the tractor performance.

All operations 1—26 should be carried out at first.

27. Change oil in the crankcase oil sump, injection pump body and governor.
28. Clean duly the centrifugal oil cleaner (at Z 4712 tractor oil cleaner only).
29. Replace cartridge of the coarse fuel filter.
30. Check clearance between clutch disengaging levers and the sleeve.
31. Inspect and if necessary, clean and set up the injector.

Technical Inspections 3 (TI 3)

This inspection should be carried out after 660 galls. (3000 litres) of fuel consumption or after 600 engine hours of the tractor performance.

All operations 1—31 should be carried out at first.

32. Replace the fine fuel filter cartridge.
33. Grease cab door pins.

34. Check valve clearance (have do it in a specialized repairshop respectively) on the cold engine — intake valve 0.008" (0.2 mm), exhaust valve 0.01" (0.3 mm).
35. Check front wheel toe-in and the play of front wheel head taper roller bearings, replenish grease in front wheel heads.
36. Check and adjust hand brake if necessary.
37. Flush cooling system under the pressure of pure water in order to remove sediments.

Technical Inspections 4 (TI 4)

To be carried out after 1320 galls (6000 litres) fuel consumption or after 1200 engine hours of the tractor.

Operations 1—37 to be carried out at first.

38. Replenish oil in the steering box.
39. Change oil in portals.
40. Clean suction strainer of the oil pump.
41. Replace tyre inflator cartridge at the compressor.
42. Have checked tightness of injection pump elements in a special workshops.
43. Change oil in the circuit of the device for power assisted steering.

Current Repair (CR)

To be carried out after 2640 galls (12 000 litres) fuel consumption or after 2400 engine hours of the tractor.

Operations 1—43 to be carried out at first.

44. Check or have repaired the steering wheel play according to the steering wheel dead point position.
45. Check charging unit, check starter motor — in a special repairshop.
46. Clean and rinse radiator with sodium solution.
47. Turn front wheel tyre casings with respect to one side wear.
48. Have ground-in engine valves in a specialized workshop.
49. Change oil in the front driven axle housing as well as in double joints and reducers housing.

Running-in of an Overhauled Tractor

To be carried out after 55 galls (250 litres) fuel consumption or after 50 engine hours of the tractor performance.

Operations 1—14 to be carried out at first.

50. Check oil cleaner for tightness (and clean its rotor).
51. Drain oil from the crankcase oil sump and replenish with new pure engine oil. Change oil in the injection pump housing and governor box.
52. Change oil in the steering box.
53. Inspect connecting bolts for tightness:
 - of the front bracket with the engine
 - of the front axle with extensions
 - of front and rear wheels nuts
 - of beads of rear wheels and ballast weights.
54. Inspect oil level in the gearbox.
55. Check fan V-belt for tightness — maximum sag of 0.6" (15 mm).

Technical Inspection 1 (TI 1)

Maintenance to be carried out after 110 galls (500 litres) fuel consumption or after 100 engine hours of the tractor performance.

Operations 1—26 to be carried out at first.

56. Check cylinder head stud nuts for tightness (tightening torque 130—137 lbs. ft. (18—19 kpm) — have done in a specialized workshop.
57. Set up valve clearance (at a cold engine — intake valve 0.008" (0.2 mm), exhaust one 0.01" (0.3 mm) have carried out in a specialized workshop.
58. Clean fuel filters 1 and 2 (drain mud from jars).

Technical Inspection 2 (TI 2)

Maintenance to be carried out after 220 galls. (1000 litres) fuel consumption or after 200 engine hours of the tractor.

Operations 1—31 to be carried out at first.

59. Change oil in portals.
Change oil in gearbox, clean suction strainer of the hydraulic power lift and inspect due function of the shock absorber of the aerolastic seat.

Technical Inspection 3 (TI 3)

Maintenance to be carried out after 660 galls. (3000 litres) fuel consumption or after 600 engine hours of the tractor.

Operations 1—37 to be carried out at first.

60. Change oil in the box of the device for power assisted steering, in the gearbox and portals. Check oil in steering box.

Overhaul

An overhaul of the tractor should be carried out after 4000—6000 engine hours of the tractor:

- if reliability of individual tractor parts can no longer be assured and if the whole technical state of the tractor jeopardizes safety performance of it,
- if very many tractor parts need to be repaired,
- if further tractor performance is no more economical.

MAINTENANCE INSTRUCTIONS

Oil filling for engine lubrication

Replenish oil in the crankcase oil sump till the top gauge mark of the oil dipstick. Then start the engine and let it run for 2—3 minutes at low RPM. After the oil level is calmed again, check the oil level and top up the oil to the upper gaugemark of the oil dipstick.

Oil should be always changed after the tractor travel is finished while it is still warm. Unscrew first the magnetic drain plug on the bottom crankcase cover. Clean the plug removing caught metal particles.

Centrifugal Oil Cleaner

Cleaning of this oil cleaner should be carried out in the following way: unscrew the butterfly nut, remove the cover, take off the rotating part, unscrew nut M 32 and separate rotating parts from themselves. Wash thoroughly inner and bottom parts and reassemble them again. The gauge marks stamped both on the top and bottom rotor parts should face each other in order not to violate the dynamic equilibrium of rotating parts. The lubrication pressure is monitored by the pressure gauge.

Oil Pump Suction Strainer cleaning

Drain old oil, remove the crankcase bottom cover, take off the oil pump suction strainer and wash it in petrol or Diesel oil. Reinstall duly dried suction strainer back to the oil pump, lock against loosening and fix the bottom cover to the crankcase. Tighten well bottom bolts to prevent oil leaking.

Injection Unit Lubrication (Fig. 7)

A plug serves for filling oil into the housing both of the injection pump and output governor. A screw indicates the oil level. For draining old oil from the housing serves a plug situated on the bottom of the injection pump and another plug on the output governor bottom. The engine oil should be applied for lubrication both of the fuel injection pump and output governor. The specified period for oil change in the engine oil sump should be profitted also for oil change in the whole injection unit. Before taking the

tractor off its performance for a longer period, it is necessary to drain oil from the injection unit no matter how many miles the tractor covered.

Brakes

Check correct function of brakes and the brake fluid level in the bowl which should always be full. The bowl is filled at the Manufacturer's with SYNTHOL 190 HD brake fluid. The brake fluid level should never be allowed to sink right to the bottom, otherwise air would enter the brake system and render the brakes inoperative. Observe perfect cleanliness when replenishing the brake fluid. If reusing for topping up the brake fluid caught during the bleeding operation, pour it into the bowl through a fine sieve or a clean rag only. Water that penetrates into the brake fluid causes corrosion of the inner metallic parts of the brake shoes thus reducing the braking effect.

Brake System Bleeding

If some connecting pipe union had been removed or the brake fluid had leaked and had been refilled, a perfect bleeding operation of the brake system should be carried out.

If you are not sufficiently experienced, have this work carried out in a specialized repairshop.

Bleeding of the brake system should be carried out in the following way:

Fill the bowl with brake fluid. Slip a rubber small hose on the tapered end of the brake cylinder bleeding screw and immerse the other end of it into the fluid contained in the transparent bowl. Loosen the bleeding screw by about two turns depress the relative brake pedal, thus driving out the brake fluid together with air bubbles. Keep on depressing the brake pedal until only brake fluid free of bubbles flows out. Depress finally the pedal and tighten the bleeding screw. Make sure to have always sufficient brake fluid in the bowl.

When bleeding, observe following instructions:

- (a) brake fluid level in the bowl must be higher than the orifice of the bleeding screw. Watch the fluid level in the equalizing bowl,

- (b) do not tighten the bleeding screw until the pedal is fully depressed,
- (c) during the bleeding operation, pedal should be depressed quickly and released slowly,
- (d) having finished the bleeding operation, replenish the brake fluid in the bowl and by depressing the unlatched pedals by a force of 132 lbs. (60 kg) approx. check the tightness in joints.

IMPORTANT: Bleeding procedure should be carried out with disconnecting pedals only.

Hand Brake

Unscrew the small bolt which fixes the brake band cover and turn the cover aside. Pull the hand brake control lever until it fits into the third tooth of the paw l. Leave the control lever in this position, loosen the lock nut and tighten the brake band by means of the bottom nut on the brake drum. Lock the adjusted band with the adjusting nut, turn the brake band cover back in its position and fix it with the small bolt. The same procedure should be carried out also for the second brake band of the hand brake. When the hand brake control lever is released the bands on the brake drums are released in such a degree, that during the tractor travel no harmful overheating of brakes takes place. Check correct function of the brakes as the last operation.

IMPORTANT:

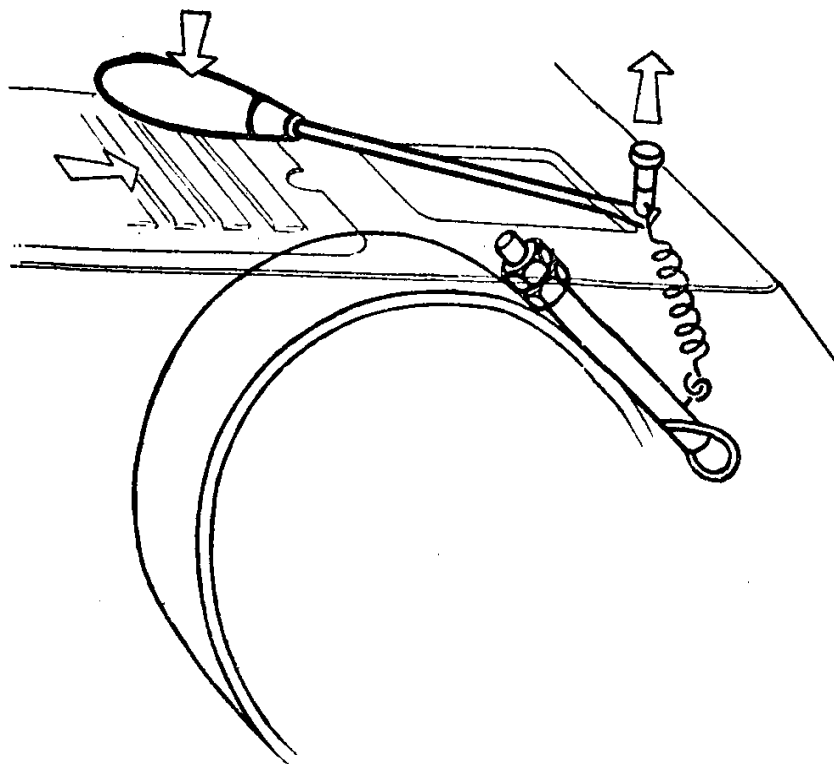
Before starting to adjust brake bands make sure that hand brake band control lever pins are in their basic position of the band bracket. It is also necessary that the hand brake control lever placed on the gearbox cover is in its unbraked position. In case that the pins are not in their basic position of the band bracket, it is necessary to adjust them by means of the adjusting nut placed on the brake tie rod by its loosening or retightening. This adjustment should be done in a specialized workshop.

Play Adjustment of Front Wheel Taper Roller Bearings

(Z 4712, Z 4718, Z 5711, Z 5718, Z 6711, Z 6718 tractors)

This adjustment should be carried out at lifted front axle in the following way:

1. Unscrew front wheel locking nut.



2. Remove cotter pin and tighten duly castellated nut.
3. Loosen it a little back in such a way that the next cut of the castellated nut corresponds with some hole in the pivot. The wheel has to rotate freely without any play in this state, but it should not jam. The wheel swing on the bearings is quite slight.

Pre-loading of bearings reduces considerable their life.

4. Lock nut by means of a split pin in this position and screw on the front wheel locking nut.

Front Wheel Toe-in Adjustment:

1. Loosen counternuts of both articulated heads of steering system connecting bar.
2. Set up specified front wheel toe-in when turning the connecting bar central part — toe-in measured on the rim side.
3. Tighten counternuts — upper surfaces of articulated heads must be parallel.

Toe-in

ranges at Z 4712, Z 4718, Z 5711, Z 5718, Z 6711, Z 6718 tractors from $.23'' \pm .15''$ (6 ± 4 mm).

ranges at Z 5745, Z 5748 tractors from $.12''$ up to $.19''$ (3—5 mm).

Divergency at Z 6745 and Z 6748 tractors between front wheels is $.46''$ — $.59''$ (12—15 mm).

Steering System

is ball-type as a kind of nut and screw with the only steering bar arm at LH tractor side.

Power Assisted Steering Device

For the power assisted steering oil ON 3 for summer season and ON 1 for winter one should be applied — amount .88 galls (4 litres) approx.

1. Check oil level.
2. Inspect hoses and end-pieces.
3. Observe oil change in summer and winter months.

Oil Quality Parameters (acc. ČSN)

	ON 1	ON 3
cinematic viscosity ($68^{\circ}\text{F c St} = 20^{\circ}\text{C c St}$)	29.5—45.2	not specified
corresponds with $^{\circ}\text{E}$	4—6 approx.	
cinematic viscosity ($122^{\circ}\text{F c St} = 50^{\circ}\text{C c St}$)	not specified	21—29
corresponds with $^{\circ}\text{E}$		3—4 approx.
minimum viscosity index	40	50
setting point	— 58°F (— 50°C) — 13°F (— 25°C)	

Belt Pulley

The belt pulley is provided with a plug for filling and draining oil. The same oil sort as for the gearbox should be applied. Amount: .2 galls (0.9 litre). Change oil each 2000 belt pulley performance hours. When employing belt pulley permanently check and refill oil if necessary.

Maintenance and Attendance of Tyres

Due attention to the maintenance and care of tyres should be paid. Correct tyre inflating is very important for them. Insufficient inflation causes quick cracking of tyre sides and danger of fissures in the texture. Excessive inflation of tyres prevents normal bending of tyre sides so that the runners are worn only in the centre. Incorrect front wheel toe-in adjustment leads to considerable tyre wear (wheels diverge or too converge). Irregular brake function causes a shortening of tyre life. One of the greatest dangers of tyre life is unskilled, unexpert and forceful tyre fitting. Tyres and rims are designed in such a way that no excessive effort and force are needed for fitting them on the wheel. Make sure that rims are always free from dirt and particularly from rust.

TROUBLES AND THEIR REMEDIES

Engine Troubles

It is not possible to start the engine

Cause :

Remedy :

Fuel injection pump does not supply fuel:

- | | |
|---|---|
| (a) fuel system bled insufficiently | bleed fuel system |
| (b) fuel filters contaminated excessively | clean fuel filters or replace cartridge |

Engine runs irregularly

- | | |
|-------------------------------------|--|
| (a) air in fuel line | loosen cap nuts on injectors and crank the engine until Diesel oil flows out free of air bubbles |
| (b) some injector nozzle is clogged | inspect and clean it |
| (c) dirt on the delivery valve seat | remove and clean it |

Engine output is insufficient

- | | |
|--|---|
| (a) some nozzle is seized or clogged | check and replace the nozzle if necessary |
| (b) injectors adjusted incorrectly | have adjusted in a specialized repairshop |
| (c) fuel injection pump adjusted incorrectly | have adjusted in a specialized repairshop |
| (d) insufficient compression pressure in cylinders which may be caused by: | |
| 1. untight valves | regrind valves in their seats |
| 2. incorrectly set up valve play | set up the correct valve clearance |
| 3. defective gasket between cylinder head and the crankcase | replace the gasket |

Cause :	Remedy :
4. loosened cylinder head stud bolts	tighten to specified torque
5. baked piston rings	release rings and clean grooves in pistons

Engine gets overheated

(a) little water in radiator	replenish water in the radiator
(b) V-belt of the water pump is slack	stretch out the V-belt
(c) radiator considerably clogged with water incrustation	clean the radiator

Troubles of the Electrical Equipment

Insufficiently charged battery

Cause :	Remedy :
(a) D. C. generator drive belt spins	stretch the belt in order to achieve maximum sag of $\frac{1}{5}$ — $\frac{1}{3}$ " (5—8 mm) under the finger pressure of 4.4 lbs. (2 kps) approx.
(b) defective battery	test it
(c) voltage regulating relay is set up to low voltage	have it repaired in a specialized repairshop
(d) defective D. C. generator	have it repaired in a specialized repairshop

Excessively charged battery (electrolyte boils and evaporates)

(a) short circuit in one battery cell	check battery and have it repaired if necessary
(b) defective voltage regulating relay	have it repaired in a specialized repairshop

Starter does not work

Cause :	Remedy :
(a) connecting cables to the starter motor are released	tighten them
(b) worn carbon brushes	replace them by new ones

Cause :	Remedy :
(c) carbon brush spring broken	replace it by a new one
(d) collector is soiled	clean it
(e) defect in the electro-magnetic coil	have it repaired in a specialized repairshop

Slow run of the starter motor

insufficient voltage of the battery	check and have charged the battery
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Troubles of Hydraulic Brakes

Brake pedal travel too long

Cause :	Remedy :
insufficient amount of brake fluid	top the brake fluid bowl

Brake pedal travel too long, pedals springy when depressing them

air in braking system	bleed the braking system
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Insufficient efficiency of the hand brake too long travel	adjust it
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It is not possible to inflate tyre by means of the combined pressure regulator

Remedy :

- (a) screw in the hose for tyre inflating tiil its last thread
- (b) let drop the pressure in the pneumatic system bellow 82.5 PSI (5.8 kg/sq. cm) in order to shut the release valve of the combined pressure regulator
- (c) have repaired the combined pressure regulator in a specialized repairshop

Incorrect Function of the Power Assisted Steering Device

Cause :	Remedy :
insufficient amount of oil in the tank	replenish and bleed the power assisted steering system

Troubles of the Torque Multiplier

1. After having put in operation the torque multiplier the speed of the tractor does not change; this trouble is caused by:
 - (a) small air pressure in the air pressure tank check pneumatic system for tightness
 - (b) incorrectly adjusted clutch levers adjust them*)
2. After having put in operation the torque multiplier the tractor power drops as the clutch slips; this trouble is caused by:
 - (a) incorrectly adjusted clutch levers adjust them*)

*) How to set up clutch release levers

1. Disconnect the clutch pedal tie rod and remove the clutch side lid.
2. Adjust clutch release levers for tractor travel in such a way that the disengaging sleeve clearance is .23" (6 mm).
3. Set up clutch release levers for the power take off shaft in the same way that the disengaging sleeve clearance is .59" (15 mm).
4. Connect the clutch pedal and adjust the tie rod in such a way that the set up clearance decreases to .15" (4 mm).

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