

May 2/97

WINTERSTEIGER seedmach division

Wintersteiger America, Inc.
3838 N. 63rd Street
Lincoln, Nebraska 68507
Telephone (402) 464-6429
Telex 510-601-5300
Telefax (402) 464-7506

old combine
(over 1st combine)

(H1)

nurserymaster elite

This operator's manual is mainly for the driver of the machine. It is to make clear the mode of operation of the Wintersteiger NURSERMASTER ELITE in all its details, and it is to enable the operator to correctly operate (handle) and adjust this powerful and versatile plot combine. Furthermore, this manual will instruct you in the appropriate and correct maintenance of the plot combine which is necessary to achieve a continuous and proper functioning and a long life without any malfunction.

All the measurements, weights and technical data needed for operating the machine are included in this manual. The tables show the power and control values necessary for obtaining full operational capacity. These data enable you to adjust the machine at optimum value before the beginning of the harvest and; therefore, gain precious harvesting time.

That is why we recommend to thoroughly read the manual. When adhering to all the given instructions, we can guarantee that even under the most varied operating conditions the highest results can be obtained from harvesting corn and threshing special crops.

We wish you much success and a great harvest.

Wintersteiger America
3838 North 63rd Street
Lincoln, NE 68516
(402) 464-6429
Telefax: 1-402-464-7506
Telex: 510 601 5300

PLEASE NOTE:

To ward off any danger, the instructions in this manual must be read and heeded by anyone who operates, maintains, services or controls the machine. In particular, read the section titled "Safety".

Preface	0.1
Contents	0.2
Nameplate, Machine-No., Motor-No.,	
Cutter Bar-No., Corn Header-No.	0.7
Safety	0.9
1. General Directions	
Technical Data	1.1
Legend	1.5
Plan of Machine	1.7
Assembly and Mode of Operation	1.7
Basic Rules for Combining	1.9
2. Unload-Transport-Ship	
In general	2.1
Sea Box	2.2
Container	2.4
Train or Truck	2.6
3. Before Starting Apparatus	
Inspect and observe before starting apparatus	3.1
<u>Driver's platform</u>	3.2
Accelerator - Steering column	3.3
Instrument box	3.3
Hydraulics - Steering gear	3.4
Starting lever	3.4
Driver's seat	3.4
Mounting ladder	3.4
<u>Driving the combine</u>	3.5
Starting the engine	3.5
Power transmission	3.6
Gear shift	3.7
Stopping	3.7
Steering	3.7
Braking	3.8
Turning off the engine	3.8
Towing	3.8
4. Basic Positioning and Threshing	
<u>Cutter bar 125cm/150cm</u>	4.1
Crop Divider	4.1
Outside fender	4.1
Inside fender	4.1
Sickle	4.2
-change of sickle	4.2
-adjusting knife length	4.2
Cutter bar tubs	4.2
Relief springs of cutter bar	4.2
Depth of the cut	4.2
Reel	4.3
-adjusting reel prongs	4.3
-adjusting reel speed	4.3
-horizontal adjustment of reel	4.4
Conveyor belt - long - in front	4.4
Conveyor belt - short - at the top	4.4

Cutter bar clutch	4.5
Cutter bar (dis)assembling	4.5
Supplementary equipment:	4.6
Extra long crop divider	4.6
Crop lifters	4.6
Vertical cutter bar right & left	4.6
Brushes	4.7
Rubber flaps	4.7
<u>Threshing Parts</u>	4.8
Turning on thresher	4.8
Adjusting concave	4.8
Changing concave	4.9
Awner bars	4.9
Fouling	4.10
Threshing drum	4.10
-Threshing drum - chain drive	4.10
-Disengage threshing drum	4.11
Turning drum	4.11
deflector	4.11
Supplementary equipment:	4.12
Various inserts for concave	4.12
Chain wheel Z=30 for 2 additional rates of revolutions of threshing drum	4.12
Chain wheel Z=52 for extremely slow rates of revolutions of threshing drum	4.12
Threshing drum	4.13
Spiked drum and spiked concave	4.13
<u>Shaker and Cleaning</u>	4.14
Shaker (graepel type)	4.14
-changing	4.14
-adjusting the stroke	4.14
Conveyor belt	4.15
Strainer	4.15
Grain pan	4.15
Cleaning Sieve	4.16
-adjusting	4.16
-changing	4.16
Cleaning wind	4.16
Blower shutter for threshing grass seeds	4.17
Straw hood	4.17
Wind cover (plastic)	4.17
Supplementary equipment:	4.18
Shaker (graepel type)	4.18
Sieves	4.18
Adjustable sieves	4.18
-adjusting	4.18
<u>Corn Transport - Sacking Device</u>	4.19
Seed drawer and frame	4.19
Supplementary equipment:	4.19
Pneumatic sacking device	4.19
-Blower	4.20
-Injector sluice	4.20
-Hose pipe	4.21
-Cyclone - attachment of sack	4.21
-Platform for sacking device	4.21
-Double sack holding device	4.21

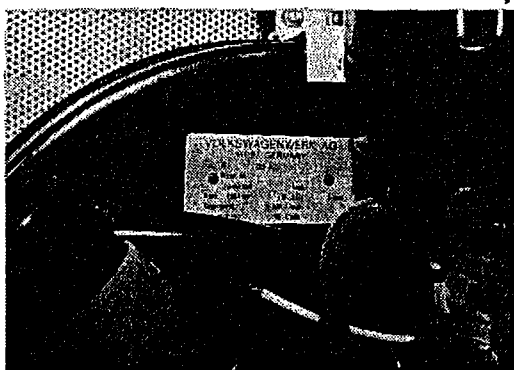
<u>Additional Complementary Equipment</u>	4.22
Weighting system	4.22
Platform scale	
One-person sacking device	
Platform scale for one-person sacking device	
Grain tank	4.50
-Filling of grain tank	4.50
-Two-way switch point	4.50
-Discharging of grain tank	4.50
-Discharge pipe of grain tank	4.50
-Turning on discharging of grain tank	4.50
-Safety equipment	4.51
-Cleaning the grain tank	4.51
-Building up the grain tank	4.51
Corn picking header (one row and two rows)	4.52
-Operation and adjustment	
-(Dis)assembling	
Sunflower harvesting 125/150	
-Operation and adjustment	
-(Dis)assembling	
Lighting of work place	
Street lighting	
Sun deck	
Time clock	
5. Notes Concerning Plot Harvesting	
Making adjustments before starting to thresh (check list)	5.1
Mode of driving to the plot	5.2
Controlling while threshing	5.3
Factors of influence on performance	5.4
Adjustment table	5.6
Probing for a mix-free thresh	5.10
6. Maintenance	
Important maintenance notes	6.1
Maintenance table	6.2
Table of lubricants	6.4
Lubrication chart for the combine	6.5
Lubrication chart for the corn picking header	6.6
Hydraulic plant	6.7
Hydrostatic drive	6.7
-Maintenance instructions	6.7
-Recommendations for use of oil	6.8
-Error detection	6.9
-Instructions for exchanging motor parts	6.11
-Starting apparatus after exchange	6.13
-Adjusting O-position	6.14
-Addresses of Sauer-service	6.15
Hydraulic	6.19
Exchange of hydraulic oil	6.19
Exchange of oil filter	6.20
Cleaning the oil radiator	6.20
Hydraulic reel drive	6.20
Ventilating the steering hydraulic	6.20

Gear shift	6.21
Adjusting the gear shift	6.21
Changing the variable speed belt	6.22
Threshing drum	6.22
Blower	6.22
Rate of rotations of turning drum	6.23
Adjusting the thresher drive	6.23
Adjusting the cutter bar drive	6.23
Replacing the cutter bar-conveyor belt	6.24
Replacing the mower cutter bar-wearing plate	6.24
Corn picking header	6.25
Generals	6.25
Oil level in the gear box	6.25
Error detection	6.30
Cutter bar	6.30
Threshing parts	6.31
Shaker	6.33
Cleaning	6.33
Sacking device	6.34
Grain tank	6.35
Loss of grain	6.35
Scale system	
Platform scale	
Corn picking header	6.50
Sunflower harvesting	
Suggestions for sheltering the combine in winter	6.55
 7. Motor	
Motortypes-Warranty-Motorservice	7.1
How to recognize the motor type	7.1
Preliminary filter and air filter for the motor	7.2
Fuel system	7.2
Liquid cooling system for motor types	
068.5 and 026.2	7.3
Fan blade V-belt	7.3
Cooling liquid	7.3
Protection against corrosion	7.4
Warning signs	7.4
Temperature of cooling water	7.4
Radiator guard	7.5
Overpressure	7.5
Battery	7.5
Three-phase-current generator	7.6
Error detection of motor - refer to motor - operator's manual	
Suggestions for sheltering the motor in winter-refer to motor - operator's manual	
 8. Wiring Schemes	



NAME PLATE

The name plate is located directly beneath the driver's seat (fig. 1).



MOTOR-NO.

VW-gasoline - type 122 - air cooled (fig. 2)



VW-Diesel - type 068.5 - water cooled (fig. 3)



VW-gasoline - type 026.2 - water cooled (fig. 4)

CUTTER BARS

The cutter bar number can be read from the name plate on the left side outrigger.
(fig. 5)

CORN PICKING HEADER

The manufacturing number can be read from the nameplate.
(fig. 6)

1. The machine may be used as authorized only, otherwise, we do not assume any liability for malfunctions resulting thereof.
2. Driving on public roads is prohibited with the NURSERY-MASTER ELITE. Changing towns on public roads must, therefore, be carried out by a hauling equipment (truck or trailer).
3. Working with the combine requires tight-fitting clothes.
4. Before starting the engine, watch for persons in the immediate area around the combine.
5. Before starting work, check the cutter bar, the grain tank, the shaker, and the strainer for parts carried along loosely.
6. On principal, working in or on the combine should be done only with the motor being shut off and the ignition key being removed. All of the operation levers shall be in the "Neutral" position and no hydraulic lead shall be under pressure.
7. Working on the motor and on the electric system requires the disconnection of the battery cable. (-).
8. Be careful when opening the radiator lid. The radiator is under pressure when the motor is hot.
9. Do not remove the safety devices when operating the combine.
10. Working beneath the cutter bar or the corn picking header is permitted only with safe support.
11. The spring-loaded variable speed pulleys must be securely blocked before taking off the belts (refer to "maintenance").
12. The motor, the exhaust, the brakes, the gear unit, etc., and all of the surrounding parts must be cleaned thoroughly to prevent the danger of fire. Please inspect the parts mentioned more often and clean them, if necessary, if there is very dry threshing material and strong occurrences of dust.
13. People other than the driver are not permitted on the combine if in operation.
14. Protruding machine parts like crop divider and discharge pipe of grain tank are either to be taken off or folded into the machine body when machine is being driven on public roads. All traffic regulations are to be heeded.

15. Before leaving the combine, turn off the motor, remove the ignition key, put in gear, apply the hand brake, and, if necessary, secure the combine with wedges.
16. It is absolutely necessary to use the first gear on roads with a descent of more than 10% (brake effect of motor!).
17. Never leave the driver's platform while engine is running - there is an increased danger of causing an accident by a self-acting start of the combine when the accelerator is unintentionally touched.
18. After having mounted a wheel, tighten up the wheel nuts and screws after the first 10 operating hours. Then, check them every 50 operating hours (refer to "technical data")
19. The mounting of a tire may be alone with lifting apparatus of permitted carrying capacity only, according to the commensurate total weight of the machine.
20. There are worm conveyors in the grain tank which cannot be completely secured. Adequate means, for example pestles and bailers, are to be used when removing obstructions and when taking samples.
21. There is an increased danger of accruing injuries when (dis)assembling the sickle - in particular with a crooked and heavily soiled knife beam.
22. Mowing unit, reel, conveyor belt, and the like cannot be completely secured through constructive measures because of their function; that is why an appropriate distance towards these moving parts needs to be maintained during operation.
23. The driving characteristics of a combine are influenced, for example, by the road, the load and mounted implements; therefore, the way of driving needs to be adapted to the ground. Special attention is necessary when working and changing directions on a slope and with a full grain tank.
24. Warning signs attached to the combine offer important instructions for a safe operation; heeding them is for your safety.

TECHNICAL DATA

NOTE: In front of, behind, right, and left are always meant to be in the direction of driving. Technical directions, measurements and weights are not binding. The equipment mentioned is best suited for the respective use. If this equipment is part of the standard supply, schedule depends solely on the price list.)

Cutter bar:

Width of cutting	1.25m (50")	1.50m (60")
Crop divider	3 parts, adjustable on the side to the left and right	
Adjustable width of the points	1.15m to 1.35m	1.40m to 1.60m
Adjusting the height	hydraulic	
Adjusting the cutting height	2 ranges:	
	1. from -100mm (-4") to +625mm (+25")	
	2. from -25mm (-1") to +825mm (+33")	
Ground clearance of the header	1.455 mm (18")	
	2.600 mm (24")	
Reel	prongs, 4-part	
Reel drive	hydraulic	
Reel speed	0 - 45/min	
Adjusting the reel speed	hydraulic	
Feeding	conveyor belts: 3 layers (rubber)	
Cutter bar clutch	instant stopping with belt clutch	

Threshing unit:

Concave	with quick-changing device cassette system - various concaves
width	800mm (32")
bars	8 pieces
awnor bars	2 pieces
quick-action adjustment	with one lever by the divider; with exact reading
Threshing drum	
diameter	350mm (14")
width	780mm (31")
beater bars	6 pieces
speed with change gears	280, 472, 670, 845, 1055, 1380, 1888/min
speed with V-belt - variable speed control	from 330 to 1500/min continuously with reading

Shaker:

Type	shaker w/quick-changing device
Lengths of stroke	2
Number of strokes	287 double strokes/min.
Range	1.6m ²
Perforation	Graepel
	various diameters of hole

Cleaning:

Cleaning sieve

Lengths of stroke

4

Range

0.65m²

Type

nose sieve with quick-changing device

perforation

Graepel, various diameters of hole

or:

Type

perforation

small USA lamella

big USA lamella

Blower

cross current blower

Regulating the wind volume

continuous V-belt variable speed control

blower shutter for threshing grass seeds

Self-cleaning time

8 - 15 seconds

Sacking device:

Seed drawer

carrying capacity: 18 liters

operation

2 persons

or:

Pneumatic sacking device

blower, injector sluice, cyclone, turnable double sack holding device and platform

size of sack

up to approx. 50 liters

operation

1 person

continuous operation possible

compressed air-blasting device for machine cleaning

Grain tank:

Contents

300 liters

Discharge pipe

mechanically turnable

Drive

hydraulic

Discharge volume

150 liters/min.

Motors:

Manufacturer/motor type

VW 122

VW-Golf

VW-Audi

4 cylinders/stroke vol. (cm)

1192

068.5

026.2

Rated speed

3000

1588

1781

Max. torque (Nm)

72

3000

3000

Bore/stroke (mm)

77/64

95

144

KW/HP

21/29

76.5/86.4

81.0/86.4

Cooling

30/41

43/58

43/58

Fuel

air

water

water

Capacity of fuel tank (liters)

gasoline

gasoline

gasoline

45

45

45

Electrical system:

12 V

12 V

12 V

Three-phase current generator

38 A

45 A

45 A

Battery

12V 36Ah

12V 60Ah

12V 36Ah

GENERAL DIRECTIONS

1.3

Drive:

Hydrostatics

continuously forward and backward

Pressure

max 210 bar

Gear shift

2 gears - forward and backward

Gear stages

tires: 7.50-16 / 10.0/75-15.3 / 31x15.50-15

1. gear: continuously from 0 to 7 km/h

2. gear: continuously from 0 to 14 km/h

tires: 7.00-12 / 26 x 12.00-12

1. gear: continuously from 0 to 5.5 km/h

2. gear: continuously from 0 to 11 km/h

Traction drive

side gear box - grease lubrication

Steering:

hydrostatic

Brakes:

Service brake

with driving pedals through hydrostatics

Locking brake

independent, mechanic disk brake

Tires and air pressure:

Driving axle - front	7.50-16	10.0/75-15.3	31x15.50-15	7.00-12	26x12.00-12
Tire marking					
Tire air pressure (max)	1.6 bar (22 psi)	1.5 bar (21 psi)	0.9 bar (13 psi)	2 bar (28 psi)	0.9 bar (13 psi)
Bearing strength for each tire up to 30km/h	600 kg (1323 lb)	950 kg (2094 lb)	900 kg (1984 lb)	615 kg (1356 lb)	650 kg (1433 lb)
Steering axle		7.0/85-10		5.00-8	18x9.50-8
Tire marking					
Tire air pressure (max)		2 bar (28 psi)		2.3 bar (33 psi)	1.7 bar (24 psi)
Bearing strength for each tire up to 30km/h		500 kg (1102 lb)		300 kg (661 lb)	470 kg (1036 lb)

If the ground conditions are permitting, the maximum tire air pressure should be maintained to assure an optimum life-span of the tires.

Measurements in mm (inches):

wheel track: driving axle
steering axle

Ground clearance

Wheel base

Work positioning

Length incl. cutter bar

5360 (211)

Width: cutter bar 1.25m

2000 (79)

cutter bar 1.50m

2250 (89)

Height: not incl. cyclone 2180 (86)

2120 (83)

incl. cyclone 2380 (94)

2320 (91)

incl. grain tank 2480 (98)

2420 (95)

Transport positioning

Length incl. cutter bar	4600 (181)
Width: cutter bar 1.25m, not incl. cyclone	1825 (72)
incl. cyclone	1930 (76)
incl. grain tank	2020 (80)
cutter bar 1.50m, not incl. cyclone	1945 (77)
incl. cyclone	2050 (81)
incl. grain tank	2120 (83)

Height

The same as in work positioning

Tipping angle, to the side, at standstill 30° (60%)

Weight

from 1280 kg (from
162820)

Axle weight front

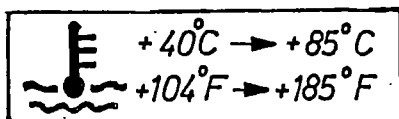
980 - 1200 kg, depend-
ing on equipment

rear

420 - 580 kg, depend-
ing on equipment

Performance

80 - 140 plots per
hour or 0.3 - 0.5
ha/h

LEGEND

1



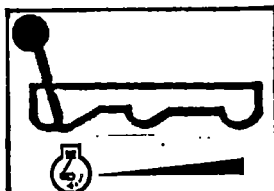
2



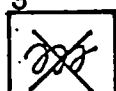
3



5



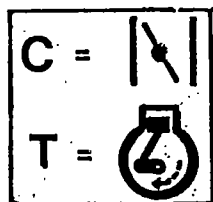
7



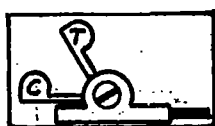
4



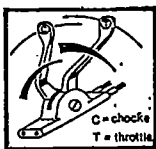
6



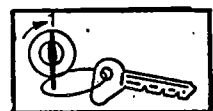
8



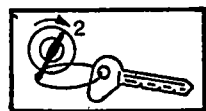
9



10



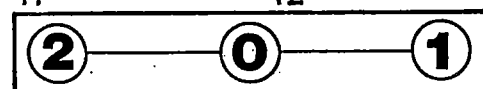
11



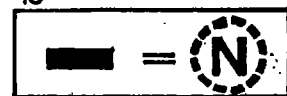
12



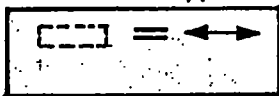
14



13



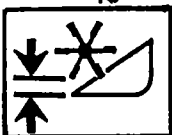
15



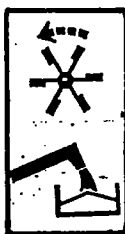
16



17



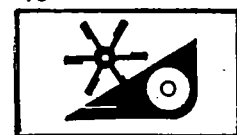
18



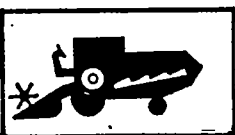
20



19



21



22



23

1) Motor temperature - range of temp.
 VW-Otto carburetor motor 026.2

2) Adjustment of motor speed
 0 idle speed
 1 full throttle
 VW-diesel motor 068.5

3) Glow plug (green) - start
 4) Glow plug (green) - stops glowing
 5) Pull the accelerator for a cold start
 6) Push back the accelerator for cold start
 7) Adjustment of motor speed

VW-air cooled motor 122
 8), 9), 10)

C = Choke, throttle valve

T = Adjustment of motor speed

Driving

11) Ignition key on stage one
 026.2 automatic start
 068.2 preliminary glowing

12) Ignition key on stage two

Start the motor

13) Gear shift

14) Hand brake

15) Neutral position (stop) - driving
 pedals - hydrostatics pump

16) Pedals for driving forward and backward

Threshing

17) Cutter bar - lifting/lowering

18) Reel - lift/lower

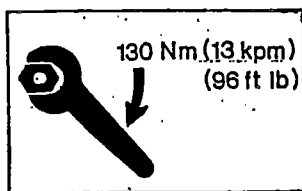
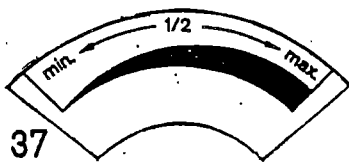
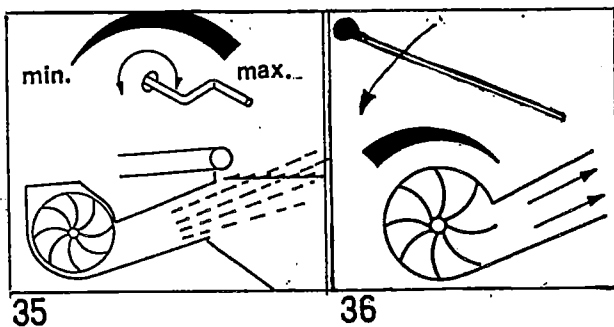
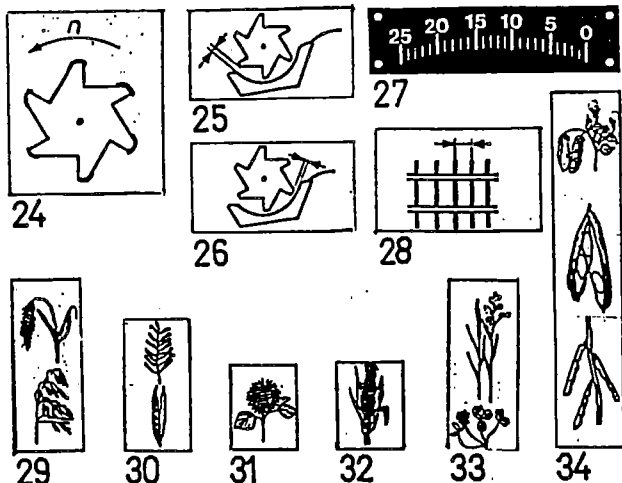
19) Three-way lever - discharge of grain tank - reel drive

20) Speed adjustment - reel and discharge pipe of the grain tank

21) Cutter bar clutch on

22) Threshing unit clutch on

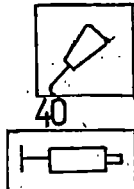
23) Clutches off



38



39

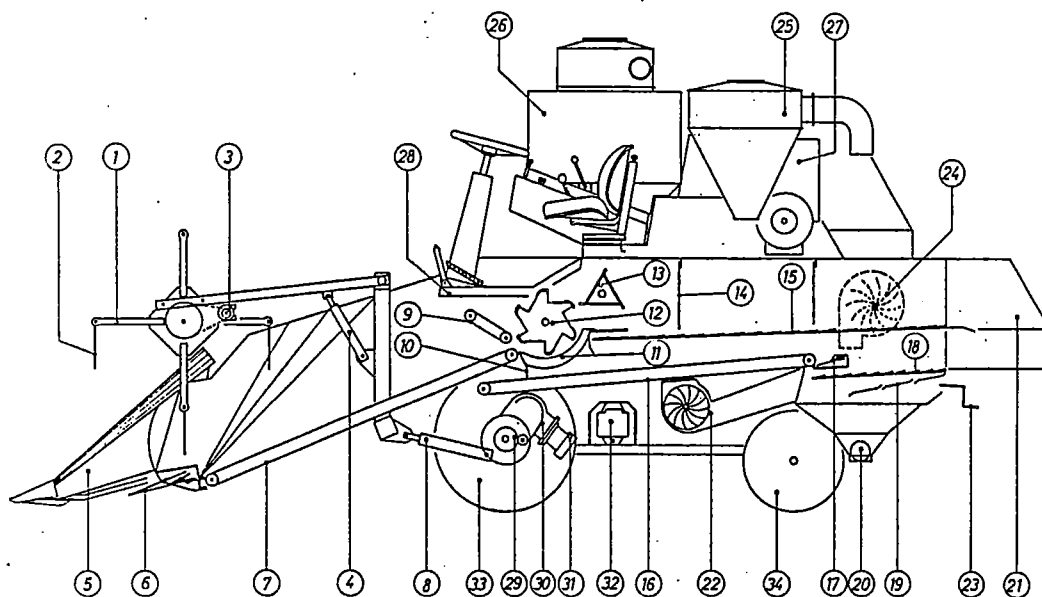


40

Achtung - Attention	
Automatic Transmission Fluid	
Dichte Density Densité	g/ccm 0,87 - 0,89
Viskosität Viscosity Viscosité	+50°C cSt 26 - 28 °E 3,6 - 3,8
Flammpunkt Flashing point Point d'inflam.	+°C 190 - 230
Stockpunkt Run cold point Point d'figeage	-°C 40 - 50

42

- 24) Speed adjustment of the threshing drum
- 25) Distance from concave to threshing drum (front)
- 26) Distance from concave to threshing drum (rear)
- 27) Gauge of concave distance in mm
- 28) Wire size of concave in mm
- 29) Grain
- 30) Rye
- 31) Sun flowers
- 32) Maize
- 33) Grasses, clover
- 34) Peas, beans, soybeans
- 35) Speed adjustment - variator - cleaning blower
- 36) Maximum speed - quick action adjustment of variator - cleaning blower
- 37) Throttle valve - transport wind blower
- Maintenance**
- 38) Torque of wheel screws
- 39) Tires - air pressure-tire sizes
- 40) Lubrication (according to lubrication chart)
- 41) Hydraulic oil (specification)



- | | |
|---------------------------|--------------------------------------|
| 1) Reel | 18) Graepel-sieve or adjusting sieve |
| 2) Reel prongs | 19) Wind plates |
| 3) Reel drive (oil motor) | 20) Injector |
| 4) Reel cylinder | 21) Straw hood |
| 5) Crop divider | 22) Cleaning blower |
| 6) Crop lifter | 23) Blower adjustment |
| 7) Conveyor belt (long) | 24) Grain blower |
| 8) Cutter bar cylinder | 25) Cyclone |
| 9) Conveyor belt (short) | 26) Grain tank |
| 10) deflector (short) | 27) Motor |
| 11) Concave | 28) Driver's platform |
| 12) Threshing drum | 29) Side gear box |
| 13) Turning drum | 30) Gear shift |
| 14) deflector | 31) Hydrostatic motor |
| 15) Shaker | 32) Axial piston pump |
| 16) Conveyor belt | 33) Traction tires |
| 17) Grain pan | 34) Steering tires |

ASSEMBLY AND MODE OF OPERATION

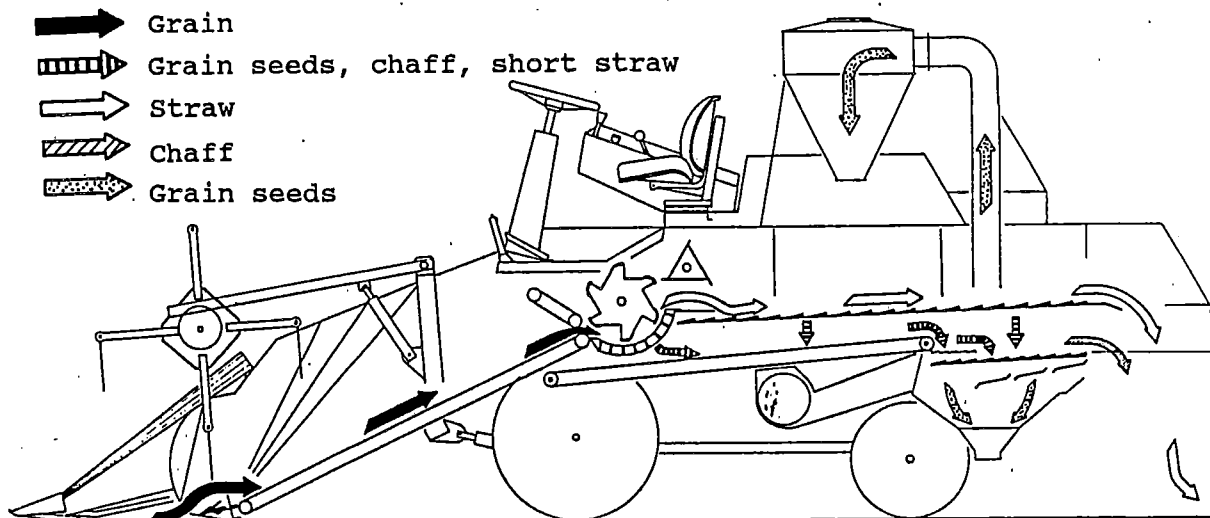
Cutter bar:

Stalk divider separates the standing crop from the crop to be cut.

Crop lifters prevent the loss of lodged grain.

The reel brings the cut crop onto the conveyor belt.

The threshing material that is directed towards the middle of the cutter bar by the side walls is transported to the threshing parts by the conveyor belts. The conveyor belts work continuously. Neither grain nor ears will remain in the cutter bar.

Threshing parts:

The threshing drum and the concave do the actual threshing. Here the bulk of the grain is placed on the conveyor belt along with chaff and short straw. The turning drum directs the remaining grain and the straw onto the shaker. A plastic curtain behind the turning drum directs loose grain onto the shaker.

Awning:

Additional awner metal sheets can be fastened to the concave if grain types and crops that are difficult to awn require so.

Shaker:

The shaker separates the grain from the straw. The straw leaves the machine through the straw hood. Grain that has been shaken out falls onto the conveyor belt, too. The conveyor belt transports the grain-chaff mix onto the small grain pan.

Cleaning:

The swinging of the grain pan loosens up the grain, chaff and short straw mix and directs this towards the sieves. The blast pressure caused by the cleaning fan carries all of the light particled (chaff) to the back and out of the machine. The grain falls through the sieve into the trough and on into the seed drawer or the injector of the sacking device. All of the particles that are heavier than the chaff and bigger than the grain remain on the sieve and fall to the ground.

Sacking device:

The air current coming from the fan transports the grain from the injector to the cyclone or the grain tank. The grain falls into the sack that is fastened to the lower end of the cyclone.

Grain tank:

After having turned the discharge pipe outward, the grain tank can be unloaded onto a trailer in a short time.

BASIC RULES FOR COMBINING

Please, be aware of this when combining!

1. Wait for complete ripeness before you do the combining (this results in higher yield, dryer crop, easier threshing).
2. Set crop lifters tight when heads are hanging up and spread wide.
3. Thresh softly brittle straw and grain.
Lower rate of rotations of the drum, open the concave.
Too much short straw makes cleaning more difficult and the break of grain diminishes the quality.
4. Tighten concave and increase rate of rotations of the drum when the straw is long, damp, and tenacious.
5. Clean regularly the concave, the shaker, the conveyor belt and the sieves in a moist climate and when there is weed in the crop.
6. The combine features blast pressure cleaning. Sufficient wind and a commensurate size of the sieve-openings and a proper opening of the adjustable sieves, respectively, will prevent an extensive forming of mats on the sieves and unnecessary losses.
7. Fasten additional awner bars on the concave for crops that are difficult to awn.
8. The combine works flawlessly only with a correct rate of rotations. The rate of rotations (944-10 r.p.m.) is to be checked at the straw drum before the harvest begins.
9. Regular cleaning of the air filter, clean gasoline, and regular oil change are essential for obtaining high performance and long durability of the motor.

IN GENERAL

1. Take the operator's manual out of the tool box.
2. Assembly and disassembly of enclosed parts are to be done according to the operator's manual.
3. Start the motor according to the motor-operator's manual.
4. Start the combine according to the operator's manual (refer to "Before starting apparatus"),

SEA BOX

- 1.
- 2.
3. After removing the custom's seal
unscrew and take away front walls.
4.
 - 1) Unscrew and remove lid.
 - 2) Unscrew and remove side wall.
 - 3) Loosen clamps
 - 4) Remove wedges.

5. Fasten all of the parts that are in space - saving assembly or entraining in the appropriate position of the machine.
6. IMPORTANT: Check delivery for completeness on the basis of the specification list and the order! Complaints can be accepted only if the delivery is examined immediately and if an acceptance receipt is filled out together with a railway official, forwarding agent or shipping company.
7. Insurance:
If a transportation insurance exists, a certificate of damage must be issued immediately by authorized personnel (railway official, forwarding agent, shipping company) in the case of a transportation damage or missing parts (theft).
8. Start the motor according to the motor-operator's manual.
9. Start the combine according to the operator's manual (refer to "before starting apparatus").

CONTAINER

- 1.
- 2.
3. Remove the custom's seal and open the gate of the container.
4. Loosen clamps of the cutter bar which is set aside and take the cutter bar out of the container.
5. Loosen clamps of the accessories on the left side of the NURSERYMASTER ELITE, loosen clamps of the reel and take all parts out of the container.
6. Loosen clamps of the combine. Remove wedger.
7. Start motor according to the motor-operator's manual and drive machine out of the container.
8. Assemble the cutter bar to the combine (refer to "Cutter bar (dis)assembling" 4.5).
9. Assemble the reel to the cutter bar.
10. Fasten all of the parts that are in space - saving or entraining in the appropriate position of the machine.
11. IMPORTANT: Check delivery for completeness on the basis of the specification list and the order!
Complaints can be accepted only if the delivery is examined immediately and if an acceptance receipt is filled out together with a railway official, forwarding agent or shipping company.
12. Insurance:
If a transportation insurance exists, a certificate of damage must be issued immediately by authorized personnel (railway official, forwarding agent, shipping company) in the case of a transportation damage or missing parts (theft).
13. Start the combine according to the operator's manual (refer to "before starting apparatus").

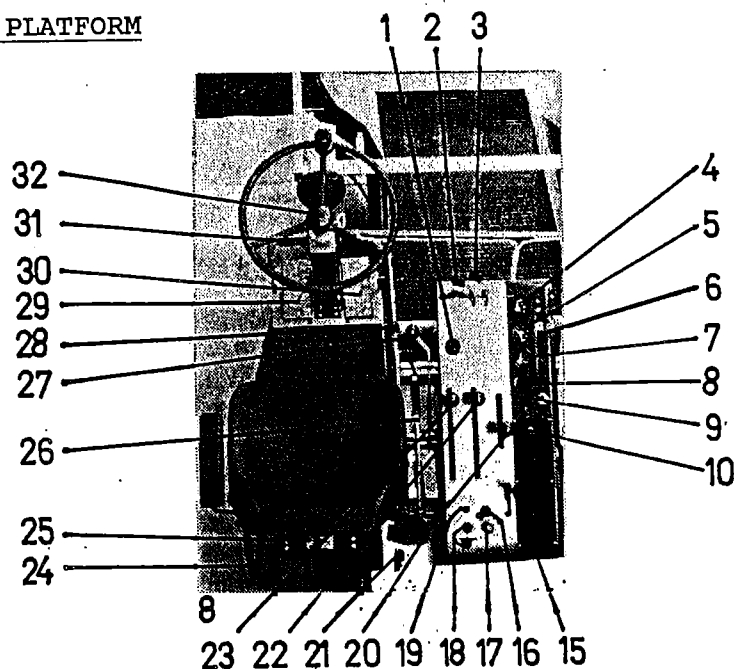
LOOSELY ON TRAIN CAR OR TRUCK

1. IMPORTANT: Check delivery for completeness on the basis of the specification list and the order!
Complaints can be accepted only if the delivery is examined immediately and if an acceptance receipt is filled out together with a railway official, forwarding forwarding agent or shipping company.
2. Insurance:
If a transportation insurance exists, a certificate of damage must be issued immediately by authorized personnel (railway official, forwarding agent, shipping company) in the case of a transportation damage or missing parts (theft).
3. Loosen clamps.
Remove wedges.
4. Start motor according to motor-operator's manual.
5. Drive combine out of train car or truck.
6. Fasten all of the parts that are in space - saving assembly or entraining in the appropriate position of the machine.
7. Start combine according to the operator's manual (refer to "before starting apparatus").

INSPECT AND OBSERVE BEFORE STARTING APPARATUS

1. Type of oil and oil level in the motor (observe table of lubricants)
2. Examine air filter for cleanliness and proper fit of filter element
3. Level of radiator water
4. Battery (acid level and acid density)
5. Gasoline gauge
6. Oil level in the gear unit
7. Oil level in the hydraulic system. To prevent damages to the hydraulics, let the motor run at no-load speed for about 5 minutes when the hydraulic oil is cold (below 12°C/53.6°F).
8. Functioning of the brakes
9. Setting of O-position as well as functioning and easy movement of the regulator for setting the driving speed (foot pedal - remotely controlled cable line - governor level of the hydro-pump).
10. Tightness and condition of the V-belt and the chains. Check the tightness of new V-belts that are not equipped with a self-acting tightness device after the first 2 to 3 operating hours and retighten if necessary.
11. Free travel of clutch disks of all of the V-belts.
12. Examine the setting of the relief springs of the cutter bar and adjust them, if necessary. Refer also to "basic positioning and threshing."
13. Check if all screws are sufficiently tightened and tighten them up, if necessary (check in particular all of the screw nuts on the driving unit and the steering). Check if all securing pins are present. Check all gib-head keys for secure fastening.
14. Free travel of the rocking levers of the shaker (they are not to strike the slits).
15. Distance of the concave - the drum is not to touch the concave.
16. Clean thoroughly the planes of all of the regulating pulleys before reapplying the regulating belts.
17. Check the wheel ruts and wheel screws for secure fastening (refer to "technical data").
18. The motor, the exhaust, the brakes, the gear unit, etc., and all of the surrounding parts must be cleaned thoroughly to prevent the danger of fire. Please inspect the parts mentioned more often and clean them, if necessary, especially if there is very dry threshing material and strong occurrences of dust.

Then, lubricate the combine according to the lubrication chart. Examine the functioning of all aggregates before every season.

DRIVER'S PLATFORM

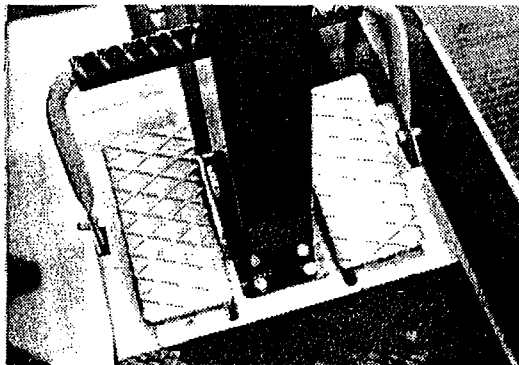
- 1) Adjustment of reel speed
- 2) Adjustment of reel height/discharging the grain tank
- 3) Adjustment of the cutter bar height
- 4) Motor temperature
- 5) Threshing drum speed gauge (for threshing unit variator only)
- 6) Motor oil pressure, battery charge, glow plug, fuel gauge
- 7) Motor oil pressure (for VW-diesel engine 068.5 and VW-gasoline engine 026.2 only)
- 8) Time clock
- 9) Ignition
- 10) Light switch
- 11) Blinker switch
- 12) Press button for motor-horn
- 13) Control lamp for high beam
- 14) Fuse box
- 15) Adjustment lever for the motor speed (for VW-diesel 068.5 only)
- 16) Adjustment for the motor speed-potentiometer (for VW-gasoline 026.2 only)
- 17) Pull-button for cold start (for VW-diesel 068.5 only)
- 18) 2 sockets - 5 terminals for scale, etc.
- 19) Socket-fuse
- 20) Gear shift
- 21) Choke (for VW-air cooled engine 122 only)
- 22) Operating lever for the cutter bar clutch
- 23) Operating lever for the threshing unit clutch
- 24) Speed adjustment of the threshing drum
- 25) Seat adjustment
- 26) Hand brake lever
- 27) Max. speed adjustment for the cleaning blower
- 28) Concave adjustment - central
- 29) Foot pedal left - backward
- 30) Foot pedal right - forward
- 31) "Neutral" pedal
- 32) Steering wheel

Accelerators - Steering Column:

Accelerators are on either side of the steering column. They are operated by lightly stepping on them.

Right accellerator = forward movement
 Left accellerator = backward movement

Speed may be increased by stepping on accelerator more firmly (fig. 9).



9

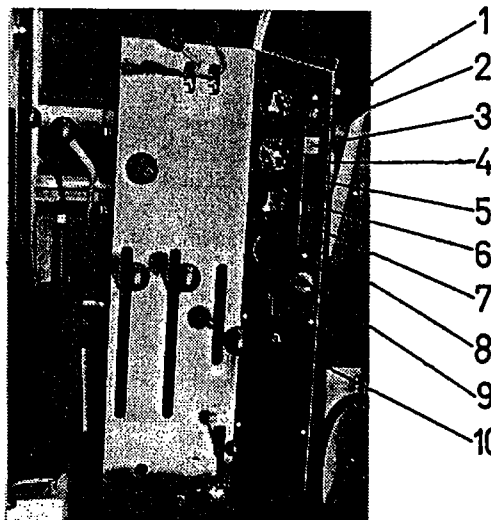
WARNING: Never leave the driver's platform while engine is running - there is an increased danger of causing an accident by a self-acting start of the combine when the accelerator is unintentionally touched.

Instrument Reading:

- 1) Changing control
- 2) Oil pressure check (VW-gasoline-motor type 122 only)
- 3) Free
- 4) Glow plug light (VW-Diesel-motor type 068.5 only)
- 5) Free
- 6) Fuel gauge
- 7) Free
- 8) Free
- 9) Ignition lock
 stage 1 = turning ignition on
 stage 2 = starting engine

Supplementary equipment: Lighting system for road travel

- 10) Lighting switch
 Stage 1 = Turning on boundary and back lights
 Stage 2 = Additionally turning on head lights
- 11) Switch for direction signal
 forward = direction signal left
 backward = direction signal right
- 11a) Light check for direction signal
- 12) Control knob for horn
- 13) Light check for high beam
- 14) Fuse box



Hydraulics - Steering Gear:

- 1) Setting of the reel speed
 turning right = slower reel speed, min. = 0/min
 turning left = faster reel speed, max. = 45/min

NOTE: Lifting of cutter bar or reel is not possible when reel is set at maximum speed of about 90 min!

- 2) Lever for setting the height of the reel (emptying the grain tank, respectively)
- 3) Lever for setting the height of the cutter bar
 lever (2,3) forward = lower
 lever (2,3) backward = lift

Levers return to "Neutral" position self-actingly. (fig. 11)

Starting lever:

D = Starting lever for threshing unit
 S = Starting lever for cutter bar

lever (D,S) forward = turned off
 lever (D,S) backward = turned on

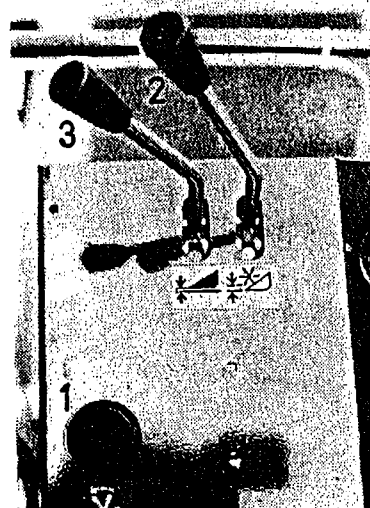
Always turn on or off lever completely. The levers must be locked in position.
 (fig. 12)

Driver's Seat:

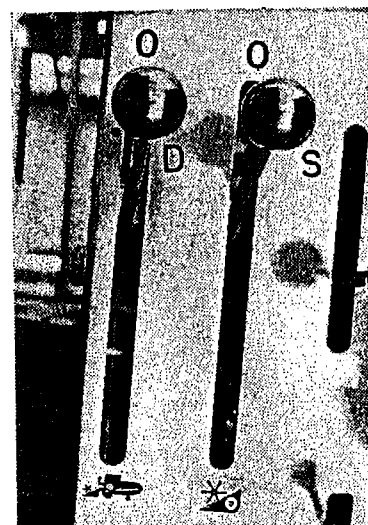
The driver's seat can be moved forward and backward by operating lever (A). By turning hand lever (B) the spring can be adapted to the driver's weight. (fig. 13)

Mounting Ladder:

When using the tires 10.0/75-15.3, 31x15.5-15, or 26x12-12, the lower stage of the mounting ladder is to be unscrewed.



11



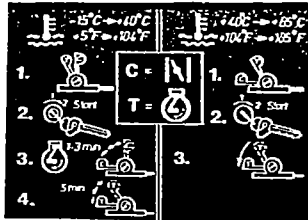
12



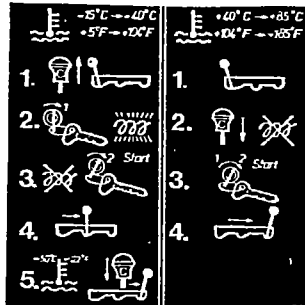
13

DRIVING THE COMBINEStarting the engine (description of a cold start)

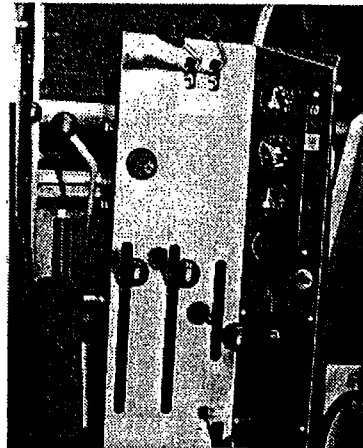
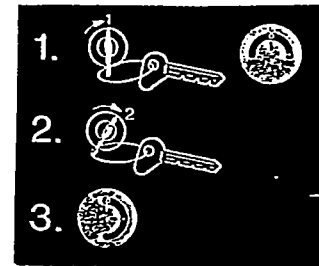
VW-gasoline type 122
air-cooled



VW-Diesel 068.5
water-cooled



VW-gasoline 026.2
water-cooled



*Hand levers (A + B) forward = clutches of threshing unit and cut bar off

*Step on "Neutral" pedal

*Shut down choke (min.)

*Accelerator lever (T) forward (halfway) = position of halfway throttle

*Outside temperature below 0°C/32°F = full throttle
above 0°C/32°F = idle speed

*Pull knob (C) = cold start accelerator

*Turn ignition key on pos. 1

*Wait until the glow plus turns off after approx. 1 min.

*Turn ignition key on pos. 1

*Turn switch for engine speed on idle speed

*Start engine by turning the ignition key in pos. 2

After Starting

*Turn accelerator lever on halfway throttle

*Turn accelerator lever on halfway throttle

*Turn switch for engine speed on full throttle

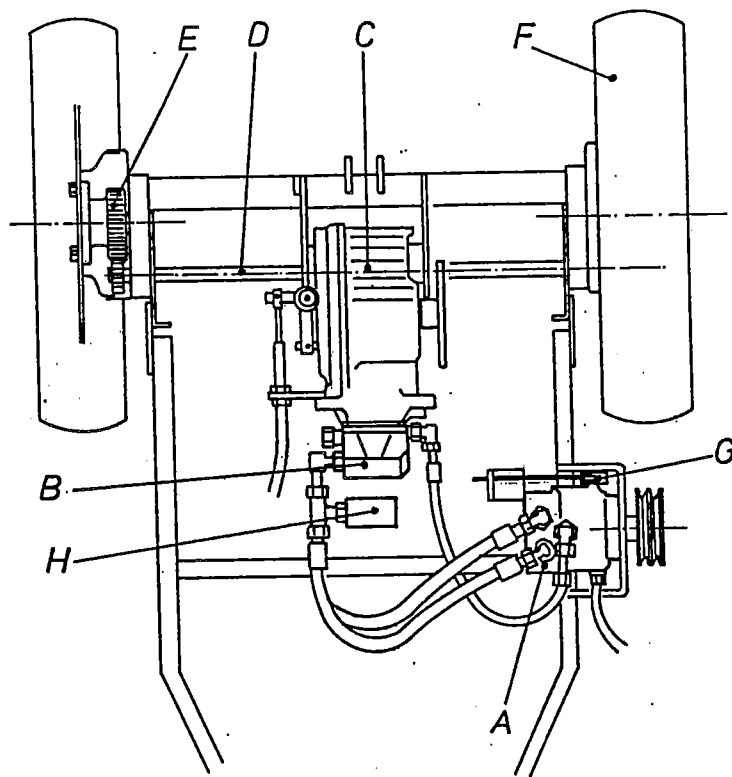
*Let the motor run and warm for a short time

*The accelerator lever must be in the position of full throttle while working!

*Also refer to the operator's manual of the engine manufacturer.

Power transmission:

The engine propels the hydraulic pumps (A) with v-belts via the gearing on the right side of the frame. This axial piston pump transmits the torque via a high-pressure oil stream onto the hydraulic engine (B). This engine is directly flanged to the gearing unit (C). The differential in the gearing unit transmits the power via driving shafts (D) and side gearing (E) to the driving wheels (F). The high-pressure oil stream between the hydraulic pump (A) and the hydraulic motor (B) can be regulated via levers with the foot pedals on the driver's platform. This results in positive control of the driving speed in both gears - forward as well as backward.



Gear Shift:

Press "Neutral" pedal to bottom.

Put in the desired gear.

Shift lever (A) forward = 2. gear
= 0 - 14 km/h (0-8.7mph) = road

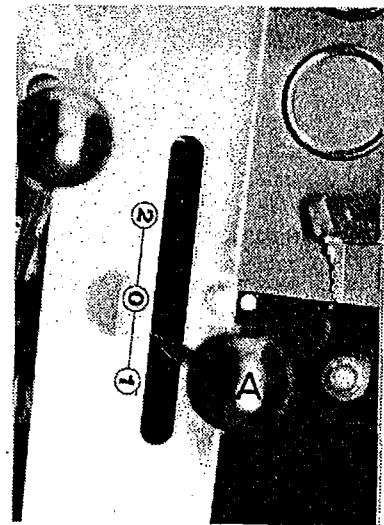
Shift lever (A) backward = 1. gear
= 0 - 7 km/h (0-4.4mph) = field

Shift lever in middle position
= neutral gear = towing

After putting in the gear, you can slowly start driving by carefully stepping on the foot pedals (left = backward, right = forward). Step more firmly on pedal to increase speed.

Do not put in the second gear when driving on the field with a full grain tank. (fig. 17)

It is absolutely necessary to use the first gear on roads with a descent of more than 10% (brake effect of motor!).



17

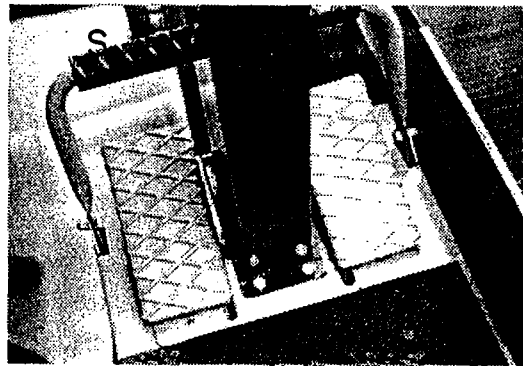
Stopping:

Slowly move the foot pedals into a middle position. (fig. 18)

In case of an emergency:

- press "Neutral" pedal to bottom
- pull hand brake

Before leaving the combine, put in the first gear. In addition, secure the combine with wedges on a slope.



18

Steering:

The combine is easily steered with the rear axle because of the hydrostatic steering. Attention when driving on roads and on narrow curves: The combine swings out in the back!

The steering keeps functioning when the engine is turned off.

Braking:

During operation, braking is done by the hydrostatics (take back pedals = smaller quantity pumped = fewer rotations of the hydraulic motor = slower driving speed).

Hand brake:

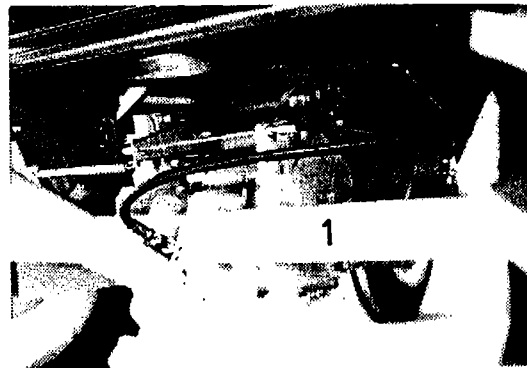
The hand brake works independently from the hydrostatics. It is a disk brake that has an effect on the gearshaft when operating the hand brake lever. The lever should grip after the first 3 or 4 teeth. For the matter of traffic safety, be sure that the latch is securely snapped in the toothed segment even after a long time of operation.

Turning Off the Engine:

Move the accelerator lever to the position of idle speed, turn off the threshing unit, turn back and remove the ignition key.

TowingForward:

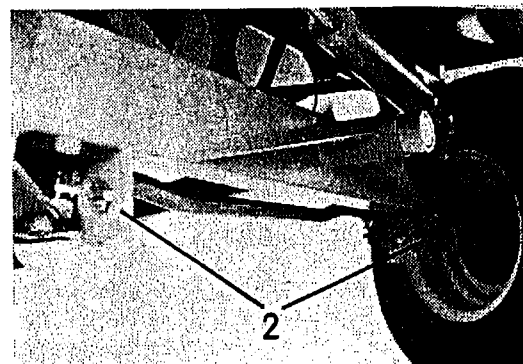
Towing the combine in a forward direction can be done by fastening the towing rope or chain to the axle bracing tube of the front axle. (fig. 20)



20

Backward:

Towing the combine in a backward direction can be done by hanging the towing rope or chain in the two eyelet attachments (2) to the left and right. (fig. 21)



21

Note:

*When towing, the gear shift lever (fig. 17) must be placed in the O-position (middle position)! Not doing so will result in damages to the gear shift and the hydrostatic driving unit.

*Use the hand brake to brake

*Maintain the maximum towing speed of 10 km/h (6.2 mph).

CUTTER BAR 125 cm/150 cmCrop Divider:

The tripartite crop divider consists of a divider nosing (A), an adjustable, short inside fender (B) and a long outside fender (C). The crop divider is fastened to the cutter bar with a snap closure. (fig. 22)

The crop divider is to be adjusted to all crop conditions. The divider nosing is to be moved closely to the reel.

Taking off the crop divider:
Remove the linch pin (D) and press down the tip of the crop divider as to free the divider. Remove the crop divider by lifting. (fig. 23)

Side adjustment:
By adjusting the screw nuts (E) the width of the tip of the crop divider can be adjusted as follows:
Cutter bar 125cm : 1.15m - 1.35m
Cutter bar 150cm : 1.40m - 1.60m

Outside Fender:

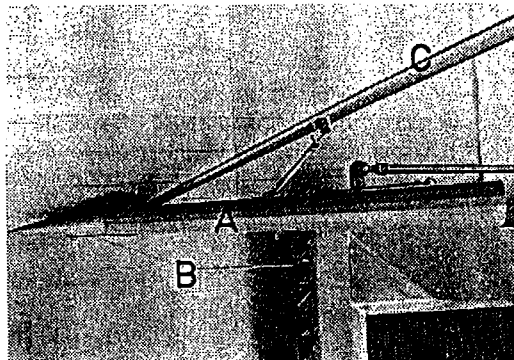
The outside fender pushes the overhanging grain crops back to the standing grain. After loosening the tommy screws (G and H) the fender is adjustable side and heightwise.

Set the outside fender more to the outside and at a lower level with lying and extensively hanging grain than with standing and short grain. (fig. 24)

Inside Fender:

The inside fender directs the grain to the middle of the cutter bar and prevents winding at the drawbeam. Adjust the inside fender in such a way that the reel moves by closely but does not touch it. (fig. 25)

Remove the inside fender when using the rubber flaps on the reel.



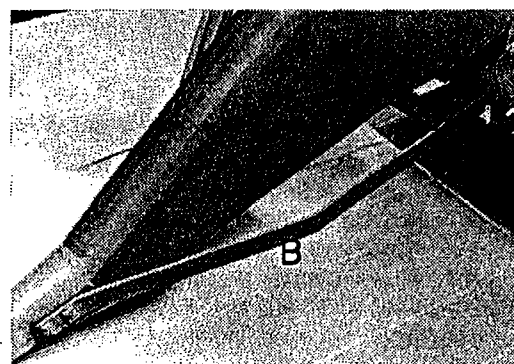
22



23



24



25

Sickle:

The knife is propelled by the V-belt disk (I) with eccentric pins via driving shaft (K) and knife toggle lever. Keep V-belt tight. (fig. 26)

-Change of sickle:

- *loosen screw (M), remove holding (N)
- *change sickle
- *examine whether the knife blades protrude the middle of the fingers evenly (measurement O).

Note: Increased danger of getting injured when (dis)assembling the sickle. Be particularly careful with withdrawing the knife when the knife beam is crooked or heavily soiled.

-Adjusting knife length (fig. 27):

- *loosen the counter nuts (R), loosen the screw nuts (T) and knock the ball end (S) out of the cone
- * (un)screw ball end
- *tighten screw nuts (T)
- *check length (P), repeat procedure if necessary
- *tighten counter nuts (R)

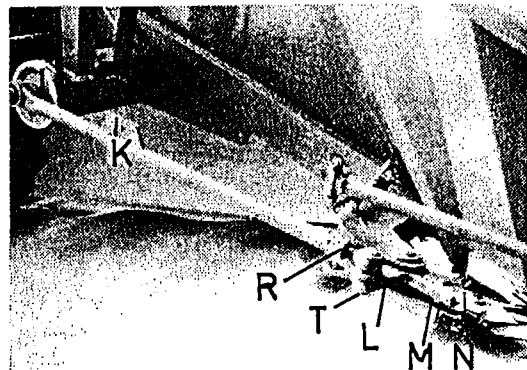
Cutter Bar Tubs:

The cutting height at the ground is directed by the landing skids (U). By loosening and fastening the screw (V), an adjustment of the minimum cutting height between 20 and 120mm is possible. We recommend a higher minimum cutting height with standing grain to avoid pulling in stones and damp low-growing weed. (fig. 28)

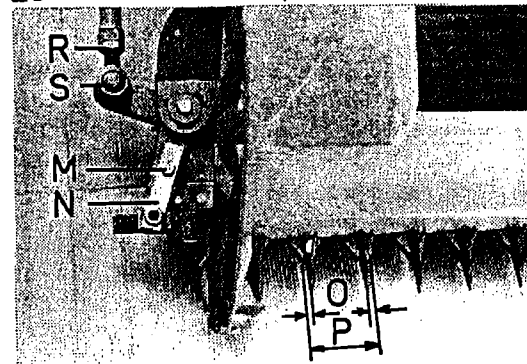
Relief Springs of Cutter Bar:

The two springs used for the balance of weight (W) on the left and right side should at all times be tightened firmly so that one person can lift the header at the mower cutter bar. The header will then adapt self-actively to the unevenness of the ground. Adjustments can be made with the screw nuts (X). (fig. 29)

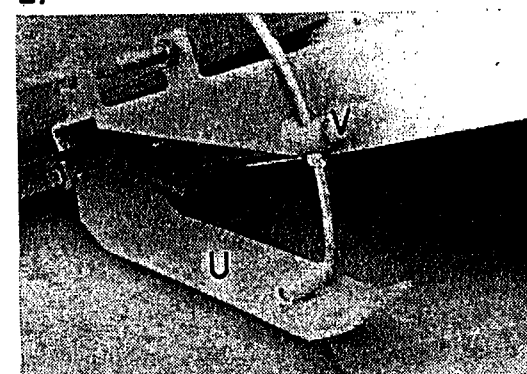
The depth of the cut can be adjusted by hydraulic lowering and lifting between 2 cm and 62 cm (82 cm, respectively) from the driver's platform.



26



27



28

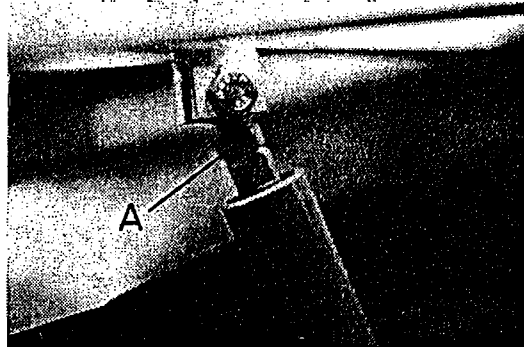


29

Reel:

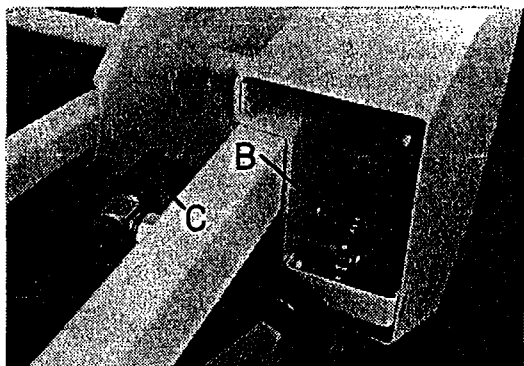
The reel transports the grain from the knife to the conveyor belt. The reel is adjustable in height from the driver's platform with the hydraulics steering gear via two hydraulics cylinders: the height should be set lower with lying grain and higher with standing grain.

The adjustment of the eyebolts (A) of the two hydraulics cylinders must be changed should the reel prongs touch the cutter bar knife in the lowest reel position. (fig. 30)



30

The reel is propelled by the hydraulics engine (C) via steel roll chain (B). Keep the chain tightened. (fig. 31)



31

- Adjusting reel prongs:

Set the reel prongs in a vertical position or slightly to the front under normal harvesting conditions. With heavy lying grain or short thresh set the reel prongs on the grip. (fig. 32)

The various positions of the reel prongs can be adjusted with the slotted plate (D). After opening the setscrew (E):

- Turn lever (F) backward = prongs will move forward
- Turn lever (F) forward = prongs will move backward (onto the grip)

NOTE: Too strong a positioning of the grip leads to winding of the reel.

- Adjusting the reel speed:

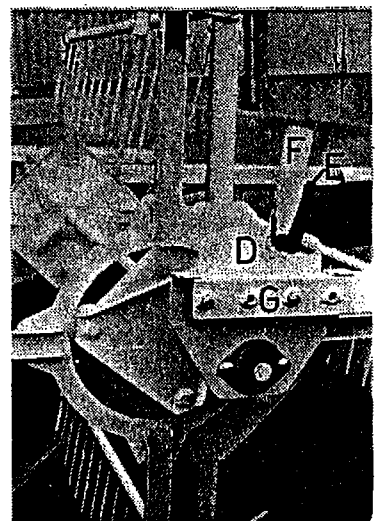
The reel speed can be adjusted to the various harvesting conditions from the driver's platform by turning the hand wheel of the hydraulics regulating valve on the instrument box.

To the left = faster-min.=0/min

To the right = slower-max.=45/min

The peripheral speed should be slightly higher than the driving speed at all times. Too high a reel speed leads to losses with fragile crop;

too low a speed leads to blockings at the sickle beam.



32

- Horizontal adjustment of reel (mechanical):

After removing the screws (G) the reel can be adjusted on both sides forward or backward. Then, the screws are to be put back in place and tightened. Under normal harvesting conditions the reel is to be set in a vertical position above the knife beam. Move the reel more to the front only when there is a lot of lying grain, in particular, if it can be harvested from the back only. Watch for a parallel position to the knife beam. (fig. 32)

Conveyor belt - long - in the front:

Adjustment:

This is mostly done at the idling rolls (I). However, the driving pulleys can be adjusted also. The conveyor belt is tightened with the tightening screws (H) on the side to which the belt is running. It can be slackened on the other side if it is already tightened firmly. (fig. 34 and 35)

Important:

* During the first week of operation the conveyor belts need to be checked for smooth travel - check and correct repeatedly!

* At all times watch for plant parts winding around the rolls. The centric travel of the belts would be disturbed! It is dangerous with damp harvesting conditions and grass and weed threshing.

* Before driving backward, lift the header immediately. If not doing so, mechanical damage (rupture) of the conveyor belt through stones etc. can occur.

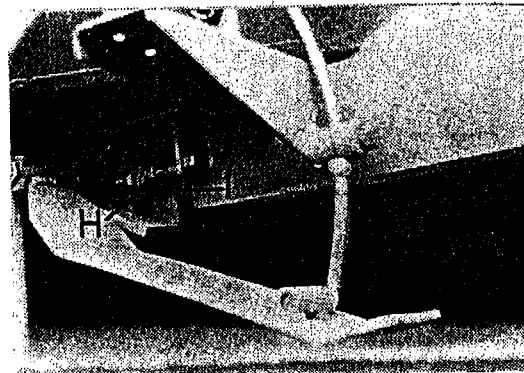
Warning:

Never touch moving conveyor belts! There is an increased danger of causing an accident - even with loose clothes.

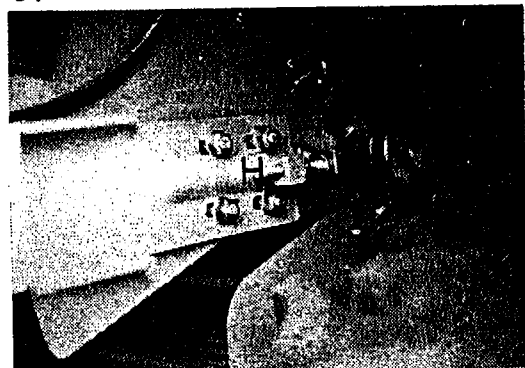
Conveyor belt - short - at the top:

Adjustment:

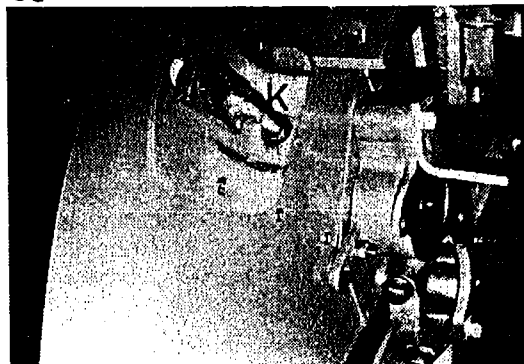
This is done with the tightening screws (K) on both sides - analogous to the long conveyor belt.



34



35



36

Cutter bar clutch:
(Immediate stop)

The cutter bar, including all parts of the feeding apparatus, can be stopped immediately with the clutch lever of the cutter bar (A) via the V-belt clutch (B) if sudden disturbances (e.g. foreign body in the cutter bar) occur.

Clutch lever of the cutter bar backward:

Cutter bar is clutched.

Clutch lever of the cutter bar forward:

Cutter bar is disengaged.

Press down the grip to shift. Shift the lever to the end at all times. (fig. 37 and 38)

Cutter bar (dis)assembling:

Changing the cutter bar can be accomplished in approx. 2 to 3 hours. This may be necessary for experimental reasons (different cutting width - 125 cm or 150 cm) or the machine may be used for maize harvesting. (fig. 38, 39, 40)

*Stop machine on an even plane and secure through wedges:

*Lift the cutter bar and unscrew nuts (C) of the balance of weight on the left and right side;

*Lower cutter bar, loosen split pin and remove bolt (D);

*Lower reel, loosen and separate hydraulics pipe (E);

*Separate drive leads of the reel at clutches (F);

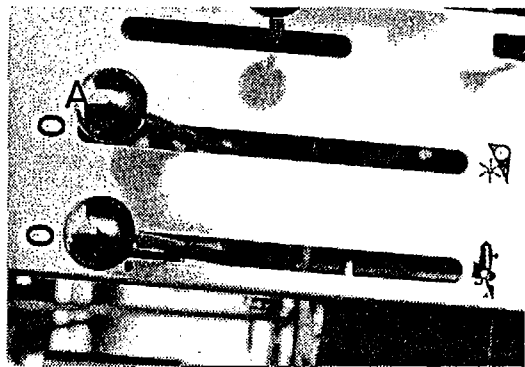
*Disassemble driving V-belt (G);

*Unhinging of the cutter bar is done by loosening the screw (H) and removing the half shells of the pivot; withdraw the cutter bar to the front;

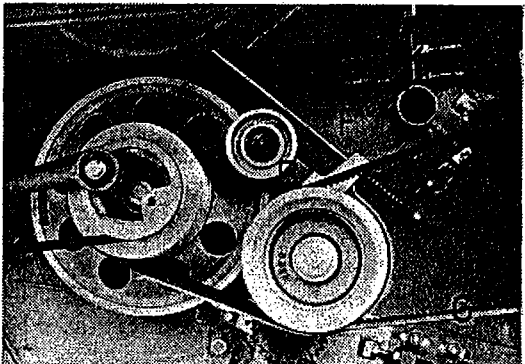
*Assemble in opposite order.

Important:

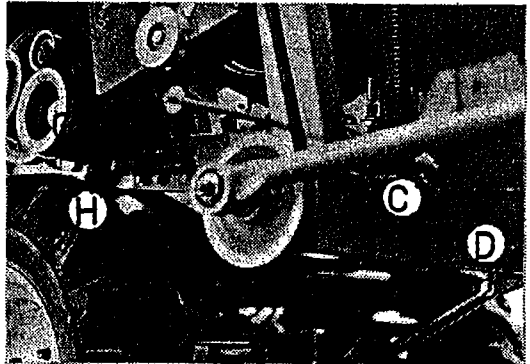
Afterwards, readjust the relief springs of the cutter bar (C).



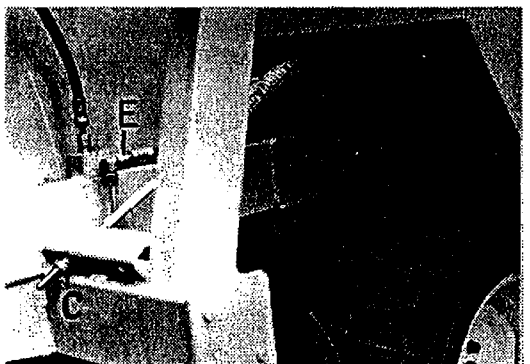
37



38



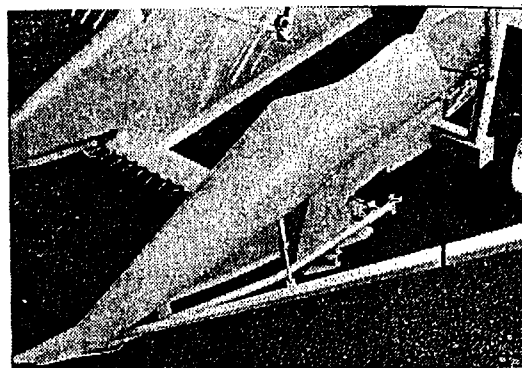
39



40

SUPPLEMENTARY EQUIPMENT:Extra Long Crop Divider:

Right or left. A better separation of the plot will be attained by this. Manual plot separation will thus be economized with many crop types. The reel fender (I) should also be assembled here. (fig. 41)

Crop Lifters:

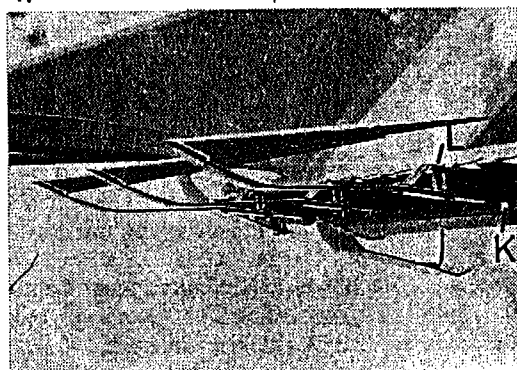
The number of crop lifters depends on the condition of the crop to be threshed. Set it on every fourth to sixth cutter bar finger when cutting lying and weedy grain. Narrow the crop lifters when cutting short standing grain and hanging ears.

- *loosen the nut (K);

- *place the crop lifter between disk and upper nut while, at the same time, setting part (L) on the finger tips;

- *firmly tighten the nut.

Do not cover the outer two cutter bar fingers when assembling the crop lifters. (fig. 42)

Vertical Cutter Bar:

Right or left. This vertical cutter bar can be assembled in place of the crop dividers. In bigger plots of vegetables, herbs, and rapeseeds, smaller losses will be achieved at the disconnecting points.

Tearing apart these crops by crop divider or by hand will result in big losses because of grain seeds falling out - this is in particular true for riper crops.

Assembly of the cutter bars:

Right:

- *remove crop divider

- *put vertical cutter bar in place and fasten with screws,

- *assemble support system,
- *tighten 2 screws (use nuts, if necessary)
- *disassemble knife driving shaft and assemble new driving shaft with flap,
- *fasten ball end with screws to flap,
- *check knife length and adjust at nut, if necessary

Left:

Assembling the left vertical cutter bar should be done in the factory or in a good workshop by a WINTERSTEIGER service mechanic only.

Brushes:

Brushes (X) and the sheet cover (Z) provide for a clean cutter bar for all crop types. Cleaning the cutter bar with a hand broom is not necessary.

When threshing legumes and pods, brushes or rubber flaps on the reel prevent overripe grain seeds from spilling out.

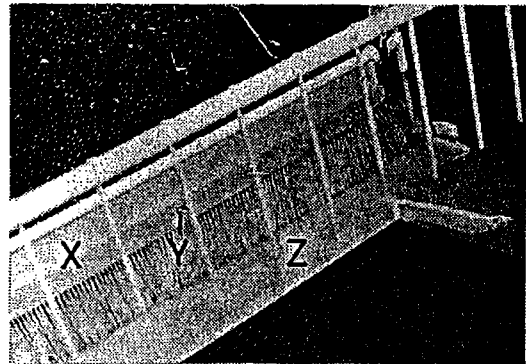
Therefore, there will only be very small losses in the range of the cutter bar.

Brushes are assembled in front of the reel prongs with stirrup bolts (Y). (fig. 46)

Rubber Flaps:

Rubber flaps can be assembled in place of brushes. Rubber flaps are particularly useful with short-growing plants like lentils, peas, etc.

Using rubber flaps requires unscrewing of the inside fender on the crop divider.



46

Changing Concave:

1. When changing over to a different crop. Choose size of concave according to table.

- *Open up the front side cover to the right and secure;
- *Unscrew and remove cover (I);
- *Loosen clamps on both sides by turning the nut (K) to the left;
- *pull out the concave insert by hand (L);
- *Clean insert frame;
- *Assemble in opposite order. (fig. 54)

2. After damaging the concave with small stones or after jamming the concave through other means (paint, dirt, etc.)

- *Disassemble the shaker and the sieves (refer to sections 4.14 and 4.16);
- *loosen and remove 4 screws (K & M);
- *Place long board on inner conveyor belt (extending over conveyor belt rolls);
- *Pull concave out to the back;
- *Assemble the concave in opposite order.



54

Warning: Danger of Accident!

When entering the area of the shaker, remove ignition key! Make sure that nobody can start the machine.

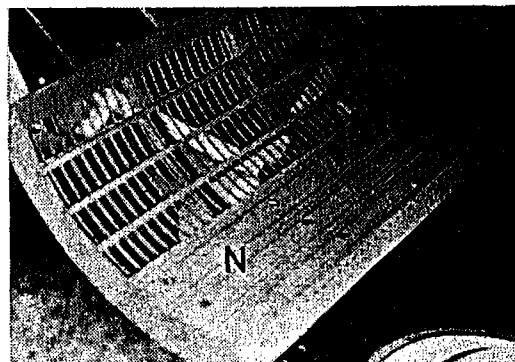
Awner Bars:

They should be screwed in in case of crop types that are difficult to awn:

- a) To achieve better awning;
- b) To obtain purer thresh.

Assembly:

- *Disassemble the concave insert - see above;
- *Place awner bars on 1. and 2. concave openings (maybe, additionally, on 3. and 4. openings);
- *From above press countersunk screws (N) in concave with screw driver and tighten washer and nut from below. (fig. 56)



56

THRESHING PARTSTurning on Thresher:

Press shift lever (B) backward. The V-belt for the drive of the threshing unit is tightened by a roller and the entire threshing unit is driven by the motor drive disk via transmission.

NOTE: In the idling position, turn the threshing unit on or off quickly. Press down the grip for shifting. Shift the lever to the end at all times. (fig. 50)

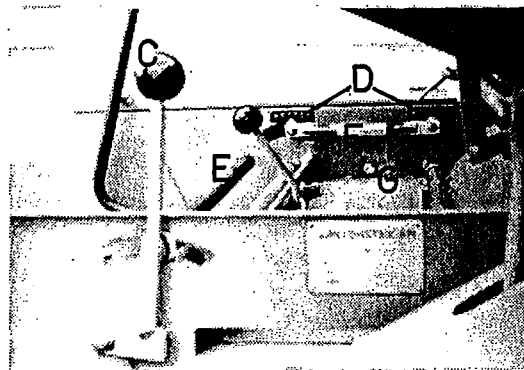
Adjusting Concave:

The distance of the concave to the threshing drum can be adjusted continuously at both ends of the concave at the same time with the concave lever (C). (fig. 51)

The setting can be read on the scales (D) to the right between 0-25mm. The concave can be set in a parallel as well as a shifted way.

- * Loosen the nut of the grip (E),
- * Place lever (C) in desired position and tighten nut (E);
- * Set the rear distance with the shaft (F). Check the nut (G).

The basic positioning for the respective crop can be read in the standard value table. Unnecessary narrowing hampers the threshing and can lead to broken grain. Too great a distance results in bad threshing and can lead to drum winding.



Fouling:

The concave, the threshing drum, the spare behind the concave and the front of the shaker are heavily soiled through weeds and damp weather. This can result in mixtures and reduced separation at the concave and will lead to the shaker being overstrained, the threshing drum being imbalanced and the sieves being unevenly strained.

To maintain a trouble-free functioning of the combine, it is very important to check these parts and clean them, if necessary. To avoid imbalance, all beater bars of the drum are to be cleaned evenly. The lid with the snap-closure of the threshing box and the easy disassembly of the concave facilitate the inspection and the cleaning.

Threshing Drum:

Only if the beater bars are neither deformed nor too worn out will the threshing drum (O) work satisfactorily. The threshing drum has been balanced by the manufacturer. (fig. 58)

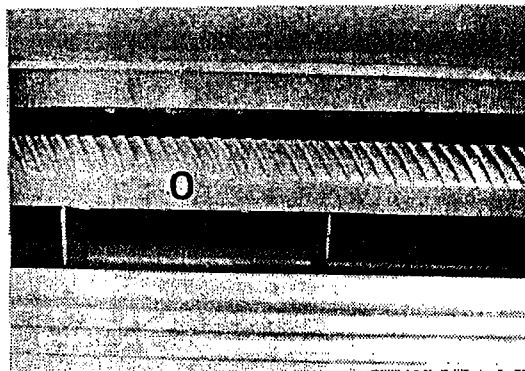
Repairs on the drum are to be made by the specialist only!

- Threshing drum - chain drive:

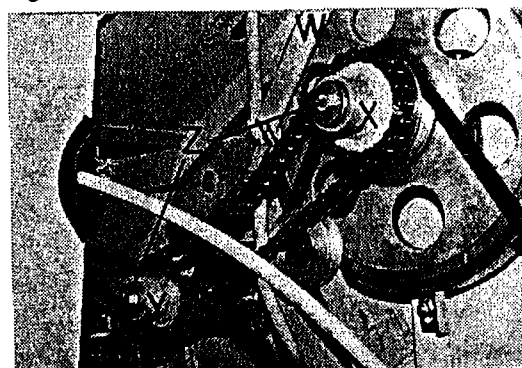
The drive results with chain wheels from the turning drum shaft.

The rate of rotations should be low with brittle straw and grain, but higher with damp and tenacious straw. The adjustment should be done beneath the driver's seat on the left side as follows:

- *Loosen and remove screws (Z);
- *Loosen screw (W) at chain tightener;
- *Withdraw chain wheels and chain at the same time. (fig. 59)



58



59

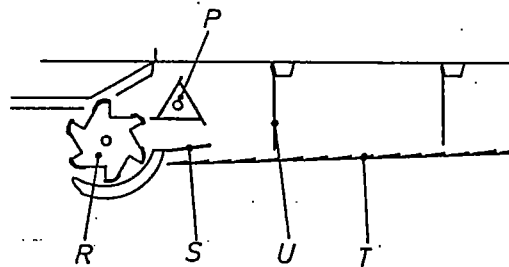
Four chain wheels with 15, 17, 19, and 21 teeth have been delivered (2 are assembled). With 2 pairs of chain wheels 4 different stages of speed can be set.

The chain length remains the same at all times.

- Disengage threshing drum:
Set biggest distance from the concave to the threshing drum and disengage the threshing drum with a strong flat bar over the beater bars and the threshing drum shaft.

Turning Drum:

The turning drum (P) breaks down the straw coming from the threshing drum (R) and directs it over the straw leading grate onto the front of the shaker. The plane of the shaker is, therefore, utilized fully.



Deflectors:

A deflector behind the turning drum takes up loose grain and directs it onto the front of the shaker. If the curtain is worn out, the loose grain will be cast too far back onto the shaker and it will not be separated in time. Check curtain for defects and replace it, if necessary. When threshing corn, a deflector with massive connecting strips is to be built in.

SUPPLEMENTARY EQUIPMENT:Concave Inserts:

The following concave inserts can be delivered:

Size of concave	Passage	Crop Type
6 mm	3 mm	Clover, grasses, millet, rape, mustard, linseed, poppy
12 mm	9 mm	Grain, soybeans, peas, sunflowers
18 mm	15 mm	Beans, soybeans, peas, sunflowers, lupins
24 mm	19 mm	Maize, medium-sized beans
36 mm	33 mm	Large field beans

Chain Wheel Z = 30:

For 2 additional rates of rotations of threshing drum, and for chain. There can be higher and lower speed achieved with them. Assemble the chain wheel (together with Z = 15 only) like standard chain wheels. (fig. 63)

Chain Wheel Z = 52:

A very low threshing drum speed for threshing very easily breakable beans/peas can be set with this chain wheel. Assemble the chain wheel Z = 52 (together with Z = 15 only) like standard chain wheels. (fig. 64)

Warning: Danger of injury!

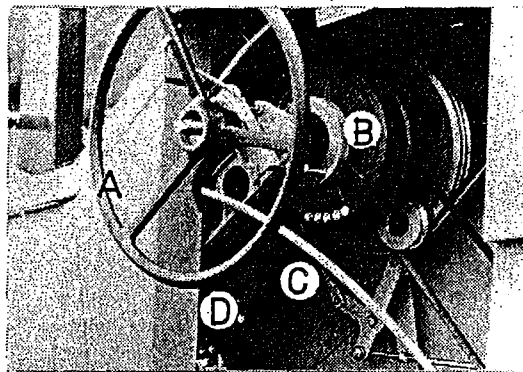
Never assemble chain wheels the opposite way. This could result in breaking the drum because the maximum permissible threshing drum speed would be exceeded!

Threshing Drum - variable speed drive

The threshing drum speed along with the moment adjustment of the concave permits a quick adaptation to the different conditions of the thresh. Long, damp straw as well as crops that are difficult to thresh and awn require a higher threshing drum speed than dry and break-sensitive thresh.

Regulate the threshing drum speed with the hand wheel (A). The set speed can be read on the meter (fig. 8, pos. 5)

The threshing drum is driven by the turning drum shaft via the mechanically adjustable variable speed pulley (B), the threshing drum V-belt (C), and the spring-loaded variable speed pulley (D). The threshing drum - variable speed drive allows for a continuous speed regulation from 330 to 1500 rpm. (fig. 65)



65

Spiked Drum and Spiked Concave:

The NURSERYMASTER ELITE can be delivered with a spiked threshing unit for harvesting rice plots. Assembling a spiked threshing unit later should be done in the factory or in a good workshop by a WINTERSTEIGER service mechanic only.

SHAKER and CLEANINGShaker:

The large shaker separates the last grain from the straw and leads the straw to the straw hood. Because of easy facility of inspection the shaker can very easily be checked for fouling and plant remains from the back.

- Changing:

Shakers with different diameters of holes are to be used for different crop types according to the focusing table. Changing the shaker can be done in approx. 10 minutes as follows:

- *Loosen 4 nuts (E) and press screws (F) into them;
- *Lift the shaker in the back and insert shaft (G) in (H);
- *Pull out the shaker to the back;
- *Assemble in opposite order.

Attention:

Screw (F) must fit in cone (I). Tighten nut (E) well and counterhold at (F).

- Stroke adjustment:

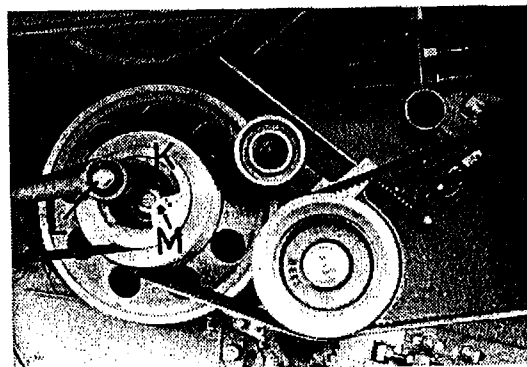
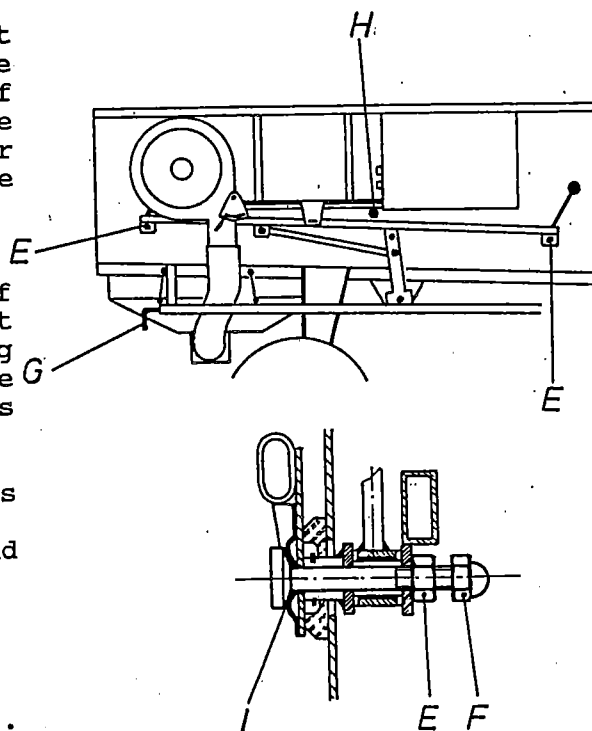
The stroke of the shaker can be adjusted with the v-belt disk (K).

Pos. L = long stroke = quick transport of straw on shaker

Pos. M = short stroke = slow transport of straw on shaker

Set shorter stroke for damp, heavy straw and large quantities of straw. This results in longer duration, better shaker work, and smaller losses by the shaker.

Set longer stroke for dry, light straw and small quantities of straw. This results in a better straw transport. (fig. 70)



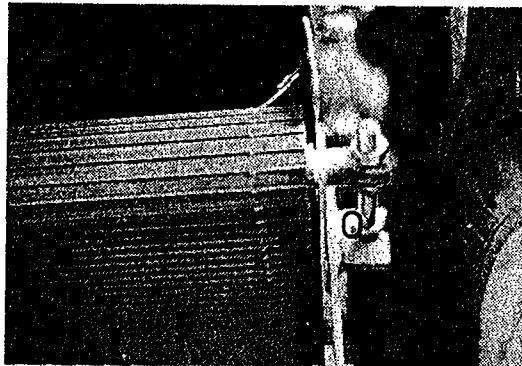
Conveyor Belt:

The grain-chaff-short straw mixture separated by the concave and the shaker falls onto the conveyor belt. The conveyor belt transports the mix over the short grain pan to the cleaning sieve.

In particular with small seeds a heavily soiled conveyor belt can lead to mixtures. Therefore, keep the conveyor belt clean at all times. Check more often and clean, if necessary, in damp weather.

Adjustment:

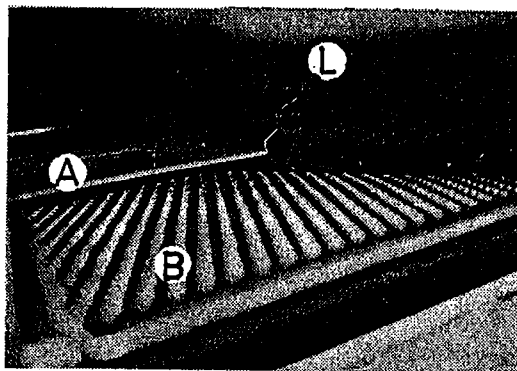
This is usually done at the idling rolls. However, the driving pulleys can also be adjusted. The conveyor belt is tightened with the tightening screws (O) on the side to which the belt is running. It can be slackened on the other side if it is already tightened firmly. (fig 71)



71

Strainer:

- A - Grain pan
 - B - Cleaning sieve
 - C - Wind baffle plate
 - D - Elevation adjustment of sieve
 - E - Strainer
- (fig. 72 + 76)



72

Grain Pan:

The grain-chaff mix coming from the conveyor belt is loosened up in the range of the cleaning wind by the swinging of the strainer and is transported to the cleaning sieve.

ATTENTION:

Danger of fouling in damp conditions leading to mixtures. Check and clean, if necessary.

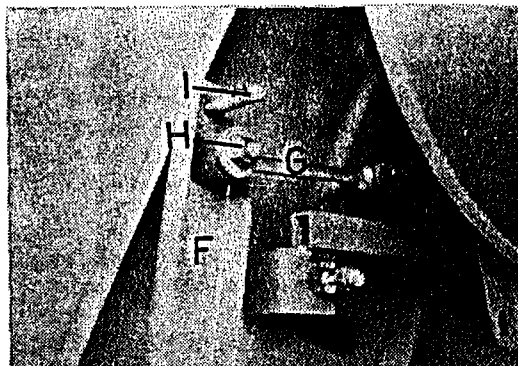
Cleaning Sieve:- Adjusting:

The sieve diameter of hole is determined by the crop type. The length of stroke and the slope of the sieve influence the transporting speed and the cleaning effect. When adjusted correctly, the grain is sieved after three fourths of the sieve plane.

Adjusting the stroke is done at the rocking lever (F) by unscrewing the driving shaft (G) at (H) and fasten it at (I) or vice versa (fig. 74).

Driving shaft in pos. H - long stroke
= quick transport of the sieve

Driving shaft in pos. I - short stroke
= slower transport of the sieve.



74

Attention:

Watch for the same setting on the left and the right side!

The slope of the sieve can be adjusted at the sieve lever (D) by the clamp lever (K).

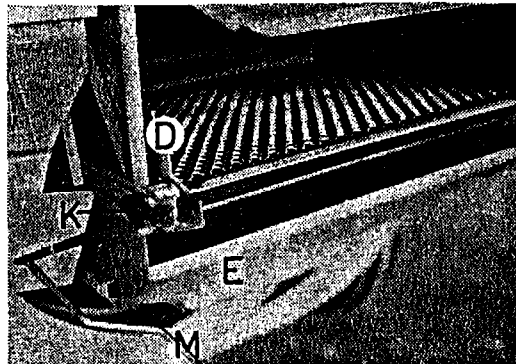
Flat setting = quick transport (less sieving);

Steep setting = slow transport (more sieving).

The basic positioning can be selected according to the focusing table.

- Changing:

Loosen clamp lever (K) and push backward in the slit. Lift back part of the sieve with one hand, grab beneath the sieve with the other arm and unhinge in the front at the flaps (L). (fig. 76)



76

Cleaning Wind:Regulating the quantity of wind:

The cleaning blower blows all of the light particles out of the combine from beneath, preventing too thick a mat forming of grain, chaff, and short straw on the sieve with sufficient wind and supports the loosening up.

The quantity of wind can be adjusted continuously with the hand crank (M).

Wind stronger = turn crank to the right (+)

Wind weaker = turn crank to the left (-)

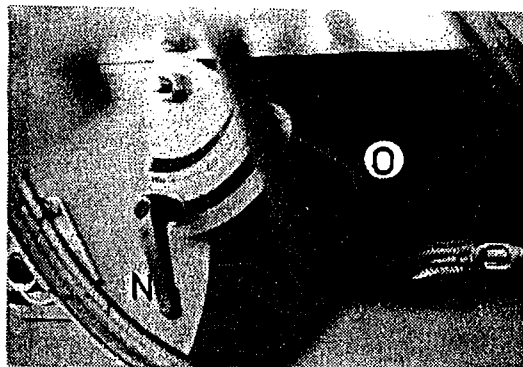
The effect can be observed at the same time. (fig. 76)

Rule: Turn on the wind rather strong - commensurate with the crop type. If adjusted correctly the grain quantity will be sieved after three-fourths of the sieve plane. Operate the variable speed drive only when the combine is working.

The maximum quantity of wind can be set and the threshing box can be cleaned off with the hand lever (fit. 8, pos. 26) by a quick-action adjustment at the end of the plot. It goes back to the original position automatically.

Blower shutter for threshing grass seeds

The shutter (O) in front of the front suction port can be shut completely or partially should the cleaning wind be too strong for light seeds even at the lowest blower speed. Loosen clamp lever (N), close the shutter and retighten clamp lever. (fig. 77) Adjust cleaning wind with the hand crank.



77

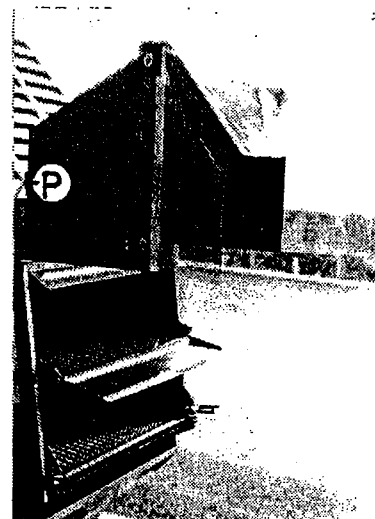
ATTENTION: Open the shutter completely for heavy seeds and make sure by firmly tightening the clamp lever that it does not shut by itself because of vibration.

Straw Hood:

The straw hood can be lifted upright and set with the holder (P) to better observe the cleaning process.

Wind Cover (plastic):

In addition, a wind cover can be fastened to the straw hood prevents the draft (wind) from lessening the effect of the cleaning wind.



78

SUPPLEMENTARY EQUIPMENT:Shaker:

For various types, there are shakers with the following diameters of hold (Graepel-type) available:

diam. = 6 mm, 10 mm, 14 mm, 20 mm,
24 mm

Cleaning Sieves:

The following diameters of hole are available:

diam. = 4 mm, 6 mm, 8 mm, 12 mm,
16 mm, 20 mm, 24 mm, 28 mm

Adjustable Sieves:

Adjustable sieves may be used in place of cleaning sieves with graepel-type diameters of hold.

Small US lamelle = 4-20 mm adjustable

Large US lamelle = 16-32mm adjustable

-Adjusting:

The sieves are adjustable to all grain sizes with the governor level (R). The sieve is adjustable by the governor level (R) in total length. If adjusted correctly, the grain is sieved after three-fourths of the sieve plane.

CORN TRANSPORT - SACKING DEVICESeed Drawer and Frame:

This is the easiest way of grain removal. 2 persons are required for this. The seed drawer is to be inserted from the rear left at a diagonal angle. Secure with lever (A).

Carrying capacity = 18 liters = approx. 14 kg. of wheat

It is usually utilized for very light grass seeds. However, it may also be used for plot threshing of other crop types if sufficient personnel is available.

Fastening of the frame:

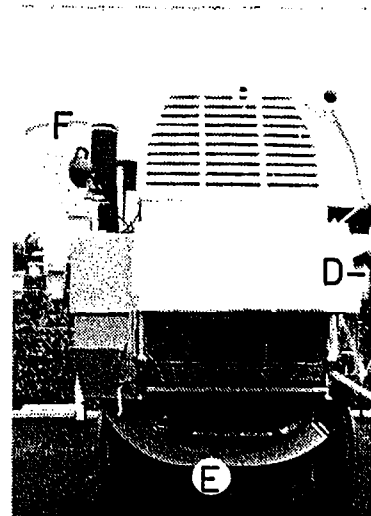
Fix frame on screws (B) and tighten with nuts (C). (fig. 80)

SUPPLEMENTARY EQUIPMENT:Pneumatic Sacking Device:

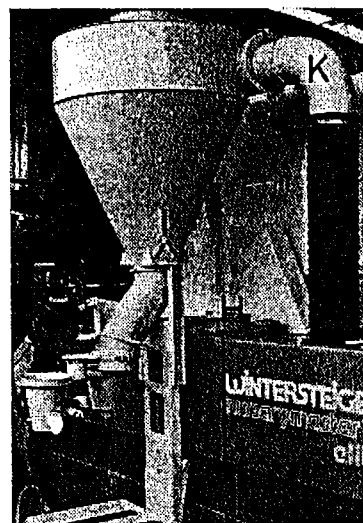
The grain transport results from an air flow which is caused by the blower (D) assembled on the right side. The grain drops into the injector sluice (E) (installed instead of the seed drawer) and are carried into the cyclone (F) fastened on the left side with the air flow. In the cyclone the air escapes upward and the grain drops into the sack fastened below. The device is operated on the left side by one person only. All sack sizes with a minimum width of 25 cm can be used. Even paper sacks (minimum width of 20 cm) can be fastened on the revolving sack holder for very small plots. (fig. 81-85)

The sacking device can also be assembled instead of the seed drawer as follows:

*Place blower on provided screws and tighten screws and nuts;



*Screw injector sluice tight with 10 screws (G);
 *Screw sacking device tight with screws (H);
 *If cyclone (I) has been disassembled fasten with screws;
 *Fasten tube turn (K);
 *Assemble hose pipes and fasten with clamps (L);
 *Insert V-belt and tighten in the screw slits by moving the blower;
 *Hang in the sacking platform and secure with screws.
 The sacking device is now ready for operation.



82

-Blower:

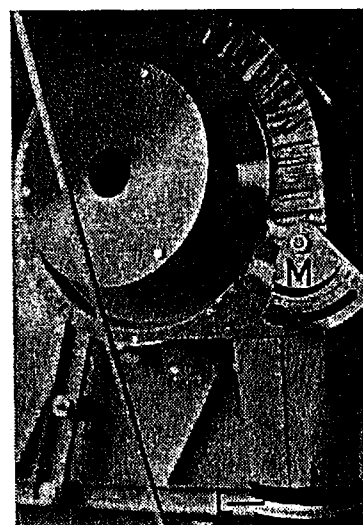
The air flow can be adapted to the various crop types with the shutter (M). (fig. 83)

Heavy seeds = open

Light seeds = close

No grain will escape through the cyclone if the shutter has been adjusted correctly!

ATTENTION: Keep driving belt of blower well tightened at all times!

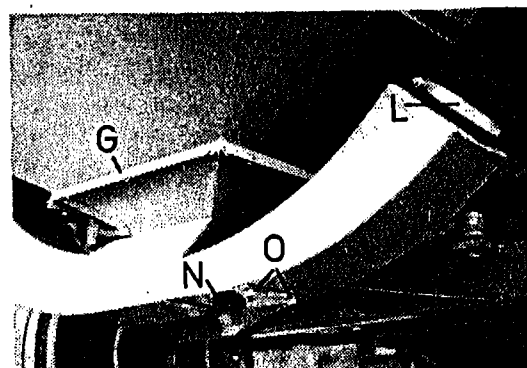


83

-Injector sluice:

Here, the air flow first carried the grain. In case of blockings and for the purpose of cleaning, the bottom shutter can be opened by unscrewing the nuts (O).

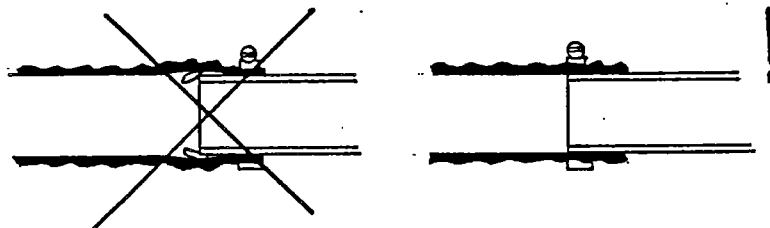
ATTENTION: At times, check for mat forming and posting when harvesting damp grain. Clean, if necessary. Otherwise, mixtures could occur. (fig. 84)



84

- Hose Pipes:

Check for good fastening and correct positioning of the clamp.



- Cyclone:

Grain drops - air rises;
baffle plates in the inside cause
immediate emptying of the cyclone.

ATTENTION: At times, check for mat
forming and posting when harvesting
damp grain. Clean, if necessary.
Otherwise, mixtures could occur.

- Attachment of Sack:

Pull sacks with opening over rear
handle - tighten sack rims towards
the front and superimpose on sack
holder - wedge with the bent lever
tightener (R). Watch for smooth
travel of the bent lever tightener -
lubricate! (fig. 85)

- Platform for Sacking Device:

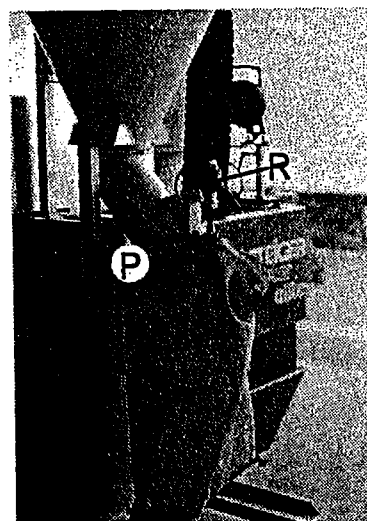
The sacking platform (S) can be
adjusted in height and can be adapted
to the size of the sack.

- Turnable Double Sack Holding Device

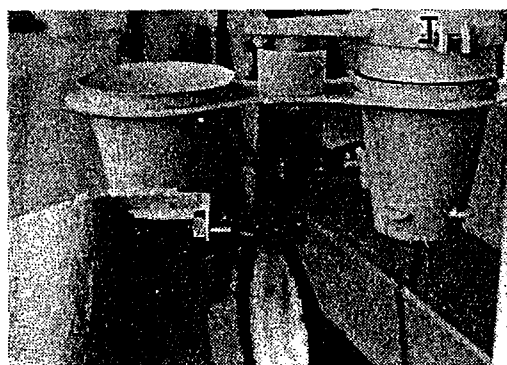
A double sack holding device may be
fastened (with screws T) to harvest
small plots (1 - 5 m²). (fig. 86)

The sack is changed while harvesting
the plot. After the NURSERYMASTER
ELITE has been emptied, the double
sack holding device needs to be
turned only. This saves time for
changing the sack and an even higher
performance can be achieved in the
small plot.

e.g.: in wheat plots with the length
of 1m; 2 persons = 180 plots/hour.



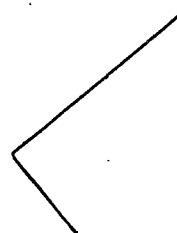
85



86

A D D I T I O N A L S U P P L E M E N T A R Y E Q U I P M E N T

Weight System:



Grain Tank:

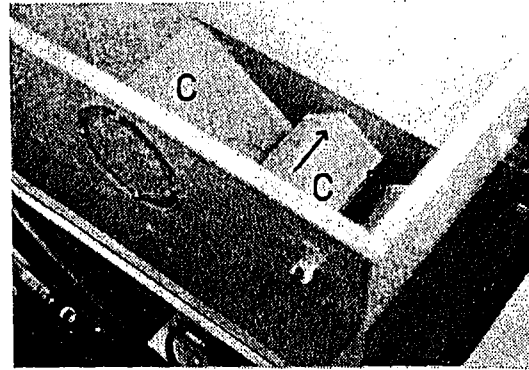
- Filling of grain tank:

2 possibilities:

1. After having switched the two-way switch point, the grain tank is filled with pipe (A) by pneumatic transport.

2. With the weighting system, the grain tank is filled via injector and pipe (A).

The half-cyclone (B) fastened above the middle of the grain tank on the lid provides for complete filling and makes maximum use of the grain tank.



87

- Two-way switchpoint:

Adjusting:

Pull spike (X) and move lower pipe holding device.

Position Y = Transporting into the grain tank

Position X = Transporting into the cyclone

Spike (X) must snap well after adjustment.

- Discharging of grain tank:

The grain is lead to the lower worm shaft by inclined planes (C). The grain is then transported to the right (arrow) and on from the outlet worm shaft in the discharge pipe of the grain tank onto the hauling equipment. (fig. 87)

- Discharge pipe of grain tank:

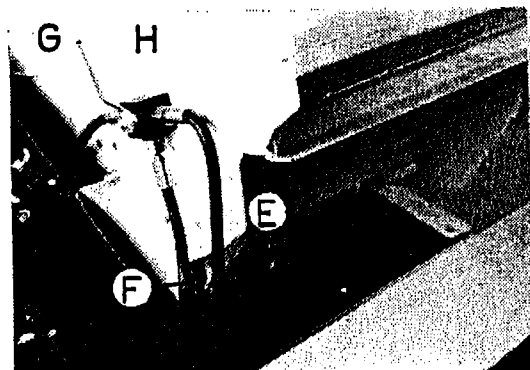
By hand, pivot outward the discharge pipe of the grain tank to place in working position and pivot sideward for transport. Lubricate to maintain smooth travel of the rotating track. (fig. 88) The drive of the lower worm shaft results from the oil engine (E) and the roller chain (F). Keep chain tightened well at all times.



88

- Turning on discharging of grain tank:

Turn on the cutter bar clutch. Turn off the clutch of the threshing unit. Switch three-way top in position (G). Then, turn left the hand wheel (fig. 11, pos. 1) to adjust the reel speed. After the discharge turn back the three-way tap immediately! (fig. 89)



89

VTENTION: Turn on the lower worm shaft when the discharge pipe of the in tank is pivoted outward only.

- Safety Equipment:

The relief-valve jet in the hydraulics system opens when the lower worm shaft is overstrained (foreign body, etc). By this, damage by an unintentional turning on of the lower worm shaft is avoided when the discharge pipe is pivoted sideward.

- Cleaning grain tank:

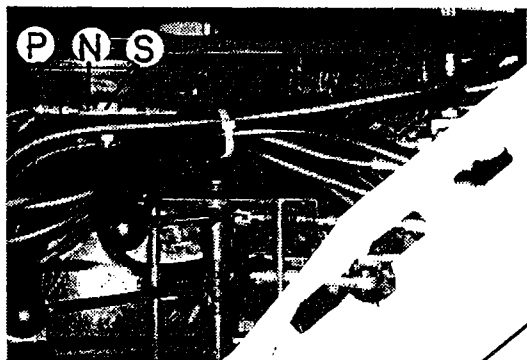
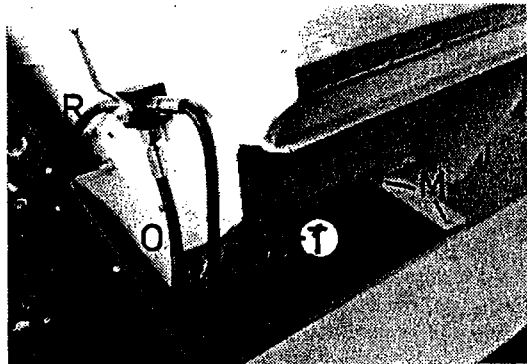
After emptying the grain tank, when changing the crop type, the plot or the multiplication, the grain cleaning process is done as follows:

- *put trough beneath the grain tank;
- *loosen wing nuts (I) and remove the bottom shutter (K);
- *remove the lid of the grain tank and clean the grain tank with a hand broom;
- *the discharge pipe of the grain tank is to be cleaned after opening the shutter (L) when changing the crop type;
- *close shutter (L) and bottom shutter (K) after the cleaning process. (fig. 90)

ATTENTION: Increased danger of bodily injury. Before cleaning the grain tank, turn off the combine and remove the ignition key. Never let the worm shaft run with opened cleaning shutters!

- Building up the grain tank:

- *put the grain tank into the provided place and fasten it with 4 screws (M);
- *lay hydraulics pipes:
 - loosen screwing (N) and connect pipe (O) with pipe (P);
 - attach pipe (R) to T-piece (S);
 - After removing the stopper attach return pipe (T) to the distributor block;
- *fasten the holder for the discharge pipe with screws;
- *put up pipe and fasten it. (fig. 91 + 92)



At
sh.
gra.

Corn Picking Header (one row and two rows):Operation and Adjustment:- Drive:

Keep straps and chaine tightened but do not overtighten.

- Conveyor Belt:

Watch for good tightening and centric travel. The tightening is done at the driving pulley on the side to which it is running.

- Guards

Watch for good fastening of the guards. Often, check for damage and disformations, respectively. Repair and straighten them in time.

ATTENTION: Rubbing of the picking chains leads to excessive wear - danger of accident and fire!

- Divider Points:

These are adjustable in height. The adjustment needs to be done in such a way that the gliding planes of the picker are still approx. 50 mm away from the ground when the tips of the divider touch the ground. Adjust all divider points evenly.

- Picking Chains:

For retightening and for the maintenance of the picking chains, please note:

- a) Take off removable divider tips and remove the intermediate caps;
- b) Tighten the chain with the tightening screw often loosening the counter nut. The front guide sprocket wheel must be movable freely if the chain is pulled from the side by hand.

There should be a distance of a min. of 3 mm and a max. of 8 mm between the quill-gear and the disk. A greater distance could result in damage of the chain.

- c) The picking chain must be shortened if the distance from the guide block is shorter than 5 mm. Shortening the chain: Remove two outer and one inner chain link. Connect with the coupler link that is provided in the accessories.

The life span can be prolonged significantly by an exchange in pairs if there is a strong wear of the rivet heads and corrugation on the bottom side of the picking chain. At the same time, examine the line of the chain wheel, the distance from the chain to the skimmer bar and the chain tightening.

-Adjusting rollers and guide rails of the picker:

Adjust the rollers and the guide rails of the picker jointly with the governor level. In advance, loosen the counter nut.

Distance of the rollers (front):
35mm (measurement between the bearing bodies)

Distance of the guide rails (front):
30mm

Distance of the guide rails (rear):
35mm

Adjustment of the guide rails:

This can be done independently from the rollers. It is done after loosening the hexagon cap screws (front) and the hexagonal nut.

- Fingers of the skimmer:

The fingers of the skimmer are replacable. They could block the ends of the rollers if they are worn out after a long working time.

- Wiping knife:

The corn picker has a wiping knife for each picking roller to avoid plant fibers winding around the roller.

The wiping knife should be placed as close to the picking rollers as possible. The distance between the blades of the picking roller and the wiping knife may be 2 mm at the maximum.

Due to manufacturing tolerances the blades of the picking rollers can exhibit irregularities in small limits. Under no circumstances may the knife rub the picking roller.

After loosening the screws the wiping knife can be adjusted.
After having adjusted the picker, turn it on with care.

- Gear Unit:

The tapered roller bearing of the driving shafts of the picking chains are adjustable with the eye nut beneath the protecting cap.

- Row Distance:

The picker cannot be adjusted to the side (concerning the one-row picking header). The row distance of the two-row picker cannot be adjusted neither (it is set on 75 cm). Due to the oblique grouping of the pickers, row widths from 70 cm to 80 cm can be harvested.

Threshing Drum:

Screw in the sheet covers between the beater bars. Grain breakings can thus be reduced and a clean thresh will be obtained.

The maximum threshing drum speed with sheet covers is 900/min (rpm).

ATTENTION: Never exceed the maximum speed of 900/min! Sheet covers would be deformed - resulting in imbalance, damage and possibly even bodily injury!

- Concave:

When harvesting corn install a concave with the size of 24 mm (refer to "changing concave", 4.9). To relieve the adjusting linkage, fasten the concave with 4 additional screws to the thresher box after having adjusted the concave.

- Deflector:

The deflector behind the turning drum must be changed. The curtain with the massive connecting strips must be installed.

(Dis)assembling:

The assembling should be done on even ground. A lift truck or a hoisting crane is of significant help. After disassembling the grain cutter bar, assemble as follows:

*Insert the corn picking header into the NURSERYMASTER ELITE from the front with a lift truck or crane. The rear roller bearing of the conveyor belt lies in the cutter bar bearing and the frame support on the front axle.

*Fasten the bearing housing with screws;

*Fasten the yoke with screws;

*Fasten the hydraulics cylinder with bolts; secure bolts with split pins;

*Screw on the hydraulics pipe tightly for the reel (with ball);

*Put on the V-belt and tighten it with an idler pulley;

*Fasten and adjust the divider points.

Disassemble in opposite order.

MAKING ADJUSTMENTS BEFORE STARTING TO
THRESH (CHECK LIST):

Before you start threshing you should check and make the following adjustments on the machine. Our factory did not adjust anything.

- * Set the minimum cutting height with the landing skids.
- * Assemble the crop lifters for lying crops.
- * Assemble the long crop divider on the right side for improved separating of the plots, if necessary.
- * Check the setting of the reel prongs and attach the brushes or the rubber flaps for easily rolling crops (beans, peas, soybeans).
- * The vertical cutter bar may be assembled on the right side to cut open longer plots of rape and vegetables.
- * Set the threshing drum speed according to the adjustment table.
- * Set the size (sizes 6, 12, 18, 24 or 36 mm) and the distance of the concave according to the adjustment table.
- * Screw in awner bars for better awning.
- * Examine the perforation of the shaker and build in a different shaker according to the adjustment table, if necessary.
- * Insert appropriate cleaning sieve and set the sieving height and stroke according to the adjustment table.
- * Regulate the quantity of the cleaning wind with a crank (variator) according to the adjustment table.
- * If the sacking device is used with the blower and the cyclone, the correct quantity of air should be set at the blower with the shutter.
- * To protect the cleaning process in case of strong tailwinds, the plastic cover should be fastened to the straw hood.
- * When working on the field drive in first gear and turn the engine to full speed (full throttle).

After having completed these basic adjustments, you should harvest a side plot for a length of about 5 - 10 m and examine the result concerning

Threshing and broken grain and cleaning and loss

Should you not obtain the result desired, you would need to correct the settings. Adjust each item at a time and examine the result after every adjustment before further corrections.

You may start with the plot threshing after having attained the optimum adjustment.

MODE OF DRIVING TO THE PLOT

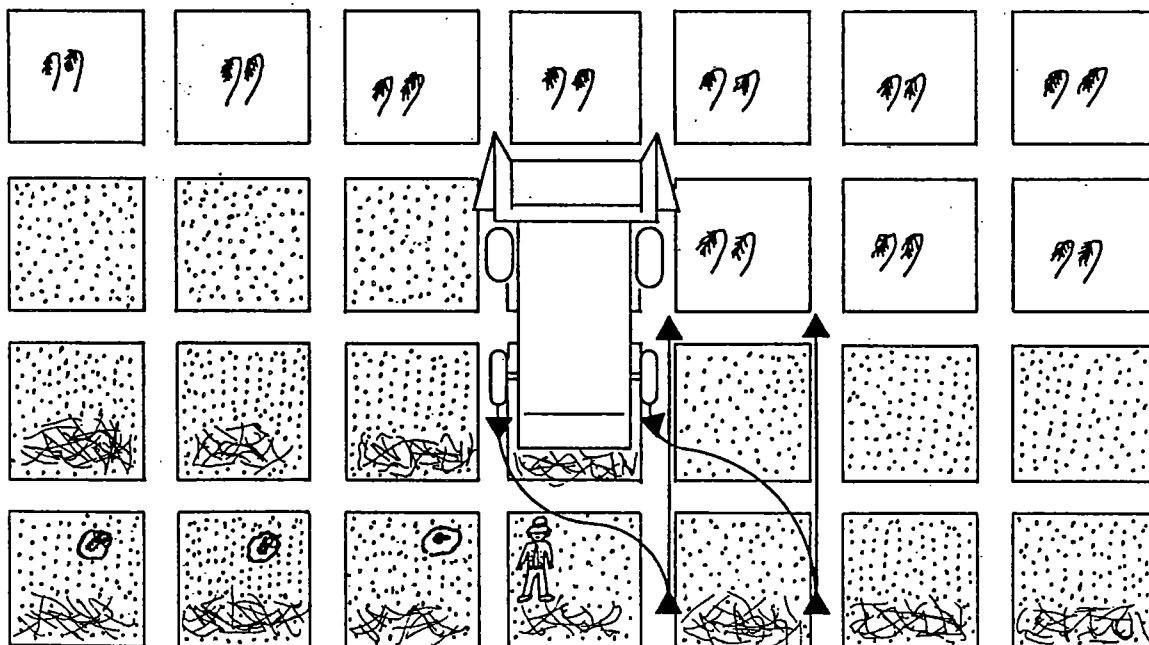
The NURSERYMASTER ELITE and its hydrostatic drive offers you two ways of cultivating plots: You can cultivate the plot lengthwise but, according to the form of the nursery, you can also harvest the plot in the width. The advantage of this method of operation is that the operators do not need to follow the row all the way with the sacks and the writing equipment. They can put them down and move them only from one plot to the other (refer to drawing). After having harvested the plot, the driver presses the lever to the front while driving backward. (fig. 8, pos. 26)

The thresher box is thus cleaned and the NURSERYMASTER ELITE empties while driving backward. The driver reverses to the next plot and waits.

At this time, the seed drawer is emptied, the sack is changed or the double sack holder is pivoted outward.

The next plot can be harvested when the operators signal to do so.

This allows the operators not to get too tired. The main work is done by the machine. The team for operating the machine cooperates best in this way because the driver can transmit any information to the operators - and vice versa - in the shortest way possible.



CONTROLLING WHILE THRESHING

*Do not mow lower than absolutely necessary. Damp ground weed and, in particular, soil lead to fouling and overstraining of the threshing and the cleaning units. In addition, a mixture-free harvest could not be guaranteed any more. Small stones can cause damage to the conveyor belt, the threshing and straw drum, the concave and the shaker. In certain cases, this may require the replacement of these parts.

*It is absolutely necessary to lift the header immediately when starting to drive backward. Straw, soil, and small stones being pressed may cause mechanic damage (rupture) to the conveyor belt.

*Adapt driving speed to the compactness of the crop, the crop type and the harvesting conditions. Drive as smoothly as possible at all times to assure continuous charging of the threshing unit. The hydrostatic drive will be of significant help!

*Control the temperature of the hydraulics oil and the oil lever. Should the temperature exceed 80°C or if there is not enough oil, stop immediately, turn off the engine and check for its cause.

*Watch for motor oil pressure and battery charge. Should a lamp light up and the motor oil pressure drop on the pressure gauge, stop immediately, turn off the engine and check for its cause (refer to "Motor operator's manual"). For diesel engines, check the temperature of the cooling medium on the distance thermometer. Should the temperature exceed 100°C, turn off the engine and check for its cause (refer to "error detection motor operator's manual").

*Check for a sufficient tightening of the double V-belt (for the drive of the threshing unit) with the hand brake (refer to "maintenance" 6.22). Should a squeaking be noticeable (belt is slipping) with high strains, increase the spring pressure by adjusting the counter nuts on the linkage.

*When threshing damp, weeded lying crop, check the concave for fouling rather often. It is absolutely necessary to turn off the threshing unit in this case. Only after the engine has been turned off can the snap closure above the drum be opened. Clean concave, if necessary.

*An idle time of approx. 10 seconds is necessary after having harvested a plot. Should an idle time of more than 15 seconds be necessary, check for foulings in the machine. However, the idle time can be longer in damp weather.

FACTORS

1. Dependent on Threshing

Not Influencable		
Size of plot	Condition of crop	Condition of field
- short - long 10 m²	- standing - lying - short straw - long straw	- even - slope - dry ground - wet ground - light ground - heavy ground

Partially Influencable	
Degree of ripeness	Degree of moisture
- overripe - dead ripe - uniformly mature - ununiformly mature - too little ripe	- grain - max. 20%

2. Dependent on Machine and Operators

Influencable		
Condition of machine	Maintenance	Equipment
- good - bad	- regularly - poor	- proper - sufficient - wrong - too little
Adjustment	Driving speed	Idle time
- right - wrong	- continuously adapted to the threshing conditions - jerky - too fast - too slow	- short - long

With uniform maturity, low degree of moisture, standing crop, and even field, 85 plots of wheat (10m²) have been harvested in one hour. This outstanding performance has been achieved with the pneumatic sacking device by only two operators.

Therefore, the performance of the machine depends on many factors. The following are some suggestions on how to improve the performance of your NURSERYMASTER ELITE:

Correct Timing of Harvesting:

Early threshing does not only lower the hourly performance but it also damages the machine. Reduction in germinating power can occur if the degree of moisture (for grain) is higher than 20%. Furthermore, damp weeds may cause mixtures.

Size of Plots:

The number of harvested plots will be very high when they are small. However, the performance per hour-area ratio will be rather low. When the plots are bigger (10 m and more) the number of harvested plots per hour will decrease while the performance-area ratio will be high. This is due to the part that the idle time sum diminishes with a decreasing number of plots per hour.

Condition of Crop and Field:

Wet straw, heavily lodged crop and strongly growing weeds decrease the performance of the NURSERYMASTER ELITE. Even, dry, and heavy ground requires less power for the drive; a higher degree of engine performance can be utilized for the threshing unit. Harvesting on slopes, and on wet or light ground will require more power for the drive, resulting in a lower threshing performance.

Machine and Operators:

Basic requirements for achieving an optimum performance include good condition of the NURSERYMASTER ELITE because of regular maintenance and care, proper and sufficient equipment, and the right adjustment. A well cooperating team (2 or 3 persons) assures an exact working schedule and makes the best use of the machine.

The driving speed is of particular importance. The speed should be adapted to the condition of the fruit and it should be continuous. Working on a slightly sloped hill does not result in any disturbances. A strong sloping position will result in the harvest load sliding sideward. Then, the cleaning process will not be thorough. Reduce driving speed. When driving down a slope the machine will process the harvest load at a slower pace. Slow down. When driving up a slope place the cleaning sieve in a steeper position and set the cleaning wind at a slower pace. The driving speed regulates the quantity of grain processed by the NURSERYMASTER ELITE. Jerky and fast driving results in a grain build-up at the header. This causes a reduced threshing speed and, therefore, worse thresh and worse cleaning. Avoid also a momentary slow-down of speed.

The idle time has significant effect on the performance of the machine. It is, therefore, kept very low at the NURSERYMASTER ELITE. Depending on the type and condition of the crop the idle time lasts 8-15 seconds. A longer idle time indicates fouling in the machine. (refer to error detection).

ADJUSTMENT TABLE

The data in this threshing table are average values calculated from various kinds of crops and from different conditions. These values result from many tests and practical applications. During our tests we noticed that the ability to thresh separate breeding plots (of the same crop type) and its degree of maturity can differ tremendously. Therefore, this table can be considered a suggestion only because of our experience.

The actual adjustment depends on the respective harvesting conditions and must be ascertained separately in each case. Proceed from the basic adjustments.

ADJUSTMENT CROP TYPE		M=Combining S=Swathing St=Stationary	Position of reel prongs	Reel speed depending on driving speed	Threshing drum speed $n = \text{min}^{-1}$	Awner bars qty.	Size of concave	Distance from concave to threshing drum	
								front	rear
Clover Alfalfa	Trifolium Medicago	M/S/St	Vertical	medium	1500-1900	approx. 2	6	5	2
Grass easy to thresh difficult to thresh		M/S/St	on grip	medium	1200-1400	approx. 2	6	10	4
		M/S/St	on grip	medium	1400-1900		6	5	2
Rape	Brassica napus	M/S	to the front	slow	900-1100		6	15	15
Mustard	Sinapis	M/S	vertical	medium	900-1100		6	10	5
Radish Oil Radish	Raphanus sativus	M/S	vertical	medium	600-900		6	15	5
Linseed	Linum usitatissimum	M	vertical	medium	1000-1500	approx. 2	6	15	7
Sesame		St			600-900		6	10	5
Poppy	Papaver	M	vertical	medium	800-1100		6	8	4
Panicle Millet	Panicum williaceum Setaria italica	M	vertical	medium	1500-1900		6	8	4
	Ornithopus sativus	S	vertical	medium	1000-1400		6	8	3
Caraway Fennel	Carum carvi Foeniculum vulgare	S	vertical	medium	1000-1400		6	10	5

Perforation of shaker in mm	Stroke of shaker	Perforation of swinging sieve	Stroke of sieve	Height of sieve	Blower shutter	Force of cleaning wind	Force of transporting wind to the cyclone	Force of wind (at sacking tank device)	Remarks
6, 10	short	4, 6	long	medium	close	1/4	1/4	1/4	In damp weather use shaker A20 and racking sieve diam. 16 or 20. When transport not possible with pneumatic sacking device, use seed drawer instead. Maybe, vertical cutter bar
6, 10 6, 10	short	4, 6 4, 6	long	medium medium	close close	1/4 1/4	1/4 1/4	1/4 1/4	
6, 10	short	6, 8	long	flat	open	1/2	1/2	1/2	
6, 10	short	6, 8	long	flat	open	1/2	1/2	1/2	
10, 14	short	8, 12	long	flat	open	1/2	1/2	1/2	
10, 14	short	8, 12	long	flat	open	1/3	1/2	1/2	
6, 10	short	6, 8	long	flat	possibly close	1/4	1/4	1/4	
6, 10	short	4, 6	long	flat	open	1/4	1/4	1/4	
10, 14	short	8, 12	long	medium	open	1/3	1/2	1/2	
6, 10	short	6, 8	long	medium	open	1/3	1/2	1/2	
6, 10	short	6, 8	long	medium	open	1/3	1/2	1/2	

WINTERSTEIGER

NOTES CONCERNING PLOT HARVESTING

5.8

CROP TYPE \ ADJUSTMENT		M=Combining S=Swathing St=Stationary	Position of reel prongs	Reel speed depending on driving speed	Threshing drum speed $n = \text{min}^{-1}$	Awner bars qty.	Size of concave	Distance from concave to threshing drum	
								front	rear
Sorghum	<i>Sorghum adanas</i> <i>Andropogon sorghum</i>	M	vertical	medium	600-900		12	10	5
Rice	<i>Oryza sativa</i>	M	on grip	medium	800-1100		12	15	10
Rye	<i>Secale cereale</i>	M	vertical	medium	1200-1500		12	12	5
Summer barley	<i>Hordeum distichum</i>	M	possibly on grip	medium	1200-1500	2-4	12	5	3
Winter barley	<i>Hordeum distichum</i>	M	vertical	medium	1300-1700	2-4	12	5	3
Triticale	<i>Triticale</i>	M	vertical	medium	1300-1700	2-4	12	8	4
Wheat	<i>Triticum aestivum</i>	M	vertical	medium	1000-1400	maybe 2	12	10	5
Oat	<i>Avena sativa</i>	M	vertical	slow	1200-1500		12	10	5
Rape	<i>Beta vulgaris</i>	St			1000-1400		12	20	15
Sunflower	<i>Helianthus</i>	M	vertical	slow	600-900		12	23	17
Lentil	<i>Lens culinaris</i>	M	vertical	slow	350-500	4	9	3	2
Peas	<i>Pisum sativum</i>	M/S	vertical	slow	350-700		12	12	10
Chick-peas	<i>Cicer arietinum</i>	M/S	vertical	slow	350-500	2	12	15	12
Lupins	<i>Lupinus</i>	M/S	vertical	slow	600-1400	2-4	12	12	10
Soybeans	<i>Glycine</i>	M	vertical	slow	280-1400		12	15	10
Small beans	<i>Phaseolus vulgaris</i>	M/S	vertical	slow	280-500		12	12	10
Field beans	<i>Vicia faba minor</i>	M	vertical	slow	280-500		18	15	15
Large beans	<i>Phaseolus multiflorus</i> <i>Vicia faba major</i>	M	vertical	slow	280-500		36	15	15
Maize	<i>Zea mays</i>	M			650-900		24 (18)	24	18

NOTES CONCERNING PLOT HARVESTING

5.9

Perforation of shaker in mm	Stroke of shaker	Perforation of swinging sieve	Stroke of sieve	Height of sieve	Blower shutter	Force of cleaning wind	Force of transporting wind (at sacking device)	Remarks	
14	short	10, 12	long	medium	open	3/4	1/1	1/1	
20	short	16, 20	long	medium	open	3/4	1/1	1/1	Use specified threshing unit and wide set of tires when working for a rather long period of time.
14, 20	short	16, 20	long	medium	open	3/4	1/1	1/1	Adjust the stroke of the shaker to "long" when there is very light and dry straw. The adjustable sieve (USA small) may be used instead of the Graepel-sieves sizes 16mm and 20mm.
20	short	16, 20	long	medium	open	1/1	1/1	1/1	
20	short	16, 20	long	medium	open	3/4	1/1	1/1	
20	short	16, 20	long	medium	open	3/4	1/1	1/1	
20	short	16, 20	long	medium	open	1/1	1/1	1/1	
20	short	16, 20	long	high	open	3/4	1/1	1/1	
20	short	20, 24	long	high	open	3/4	1/1	1/1	
20	short	20, 24	long	flat	open	1/2	3/4	3/4	Use sunflower header; maybe, adjustable sieve. USA small, adjust to 8mm.
14, 20	long	16, 20	short	high	open	1/1	3/4	3/4	Attach the rubber flaps to the reel
20	long	20, 24	short	high	open	1/1	1/1	1/1	
20	long	20, 24	short	high	open	1/1	1/1	1/1	
20	long	20, 24	short	high	open	1/1	1/1	1/1	
20	long	20, 24	short	high	open	1/1	1/1	1/1	
20	long	20, 24	short	high	open	1/1	1/1	1/1	
28	long	24	short	high	open	1/1	1/1	1/1	
28	long	28	short	high	open	1/1	1/1	1/1	
28	long	24	long	high	open	1/1	1/1	1/1	Use corn picking header instead of grain cutter bar; place sheet covers on drum.

CONTROLLING A PLOT COMBINE FOR A MIXTURE-FREE THRESH

It depends to a large extent on the operators whether a plot combine works mixture-free. Naturally, the machine must provide the basic provisions for a mixture-free work. It is absolutely necessary, however, to observe some very important points while harvesting to assure a mixture-free work in the future, too. Soil, weeds, damp thresh, etc. could cause grain to remain in the combine and be brought on to the next plot.

To assure an optimum performance even under poor conditions the combine must be checked, at times, for mixture-free work as follows:

1. Check threshing drum, concave, conveyor belts, skimmer, shaker, deflectors and strainer of the combine through control openings for foulings and damage, respectively, by small stones, soil, weeds, etc.
It is absolutely necessary to remove foulings! Repair damages and replace parts, if necessary.
2. Check the cover sheet of the conveyor belt under the mower cutter bar for foulings when header is lifted; unscrew and clean, if necessary.
3. Harvest a peripheral plot and empty the NURSERYMASTER ELITE so that no straw remains in the machine (regular procedure).
4. Disengage the threshing unit, empty the seed drawer, and reinsert in or change the sack at the cyclone.
5. Clutch the threshing unit shortly 2 or 3 times and let it run with full speed.
6. Check the seed drawer, the movable trough, or the sack for grain that might still have been in the machine. If so, carry out controls 1. and 2. more thoroughly (refer to the section "error detection") and repeat procedure to point 5.

IMPORTANT MAINTENANCE NOTESChains:

Lubricate free-traveling steel-roller chains with transmission oil daily. Remove all steel-roller chains after the harvest, clean them with diesel fuel, immerse them into warmed chain grease or lubricate them well with chain oil and reapply. This does not apply to the elevator chains and the feeding chains. When applying the chains, the clips of the chain locks must point into the direction of course with the closed side.

Correct tightness of the chain:

The steel-roller chains are tightened correctly if, with the pressure of the thumb, you can press down the chain in the middle between the chain wheels by approx. 2% from the respective axle distance - when there is a small working load. Control the tightness more often when the chains are new.

Shorten chains that become too long by removing a double link.

Belts:

Keep all V-belts well tightened at all times. Oil-smeary belts may be cleansed with cleansing lye. Do not use gasoline or a similar medium.

Variable speed control:

In order to be able to fully utilize the variable speed range you must remove straw and dust build-up between the disc halves regularly.

Screws:

Check if all screws are tightened well. Tighten up, if necessary (in particular all nuts on the steering and driving units). Check tightening valves of the wheel studs according to the maintenance table (tightening valves: refer to "technical data"). Make sure that no retaining nuts and split pins are missing.

Imbalance:

Unsmooth travel of the combine leads to fatigue of material and breaks. Remove dirt build-ups in rotating machine parts, particularly in the threshing drum, regularly and thoroughly.

Tire pressure:

Observe the tire pressure as specified (refer to "technical data").

Engine:

Control condition and fastening of the cooling-water hosepipe and the air intake. Renew them, if necessary.

Lubrication:

Observe the times for oil changes, the oil types in the motor, the hydraulics system and the gear box as specified. For lubrication of the machine use branded grease and oil only. Before lubricating remove the dirt from the grease nipples. Lubricate regularly according to the lubrication chart.

[illegible]

MAINTENANCE

6.3

[illegible]

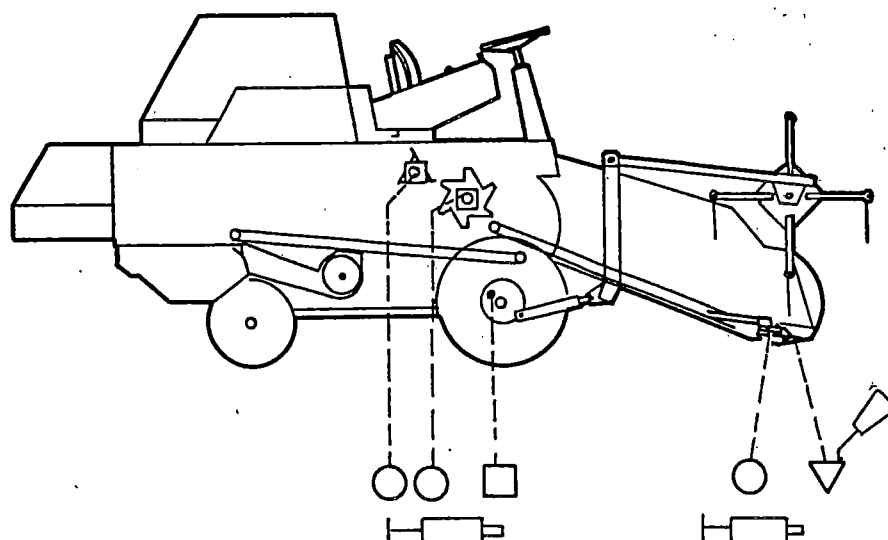
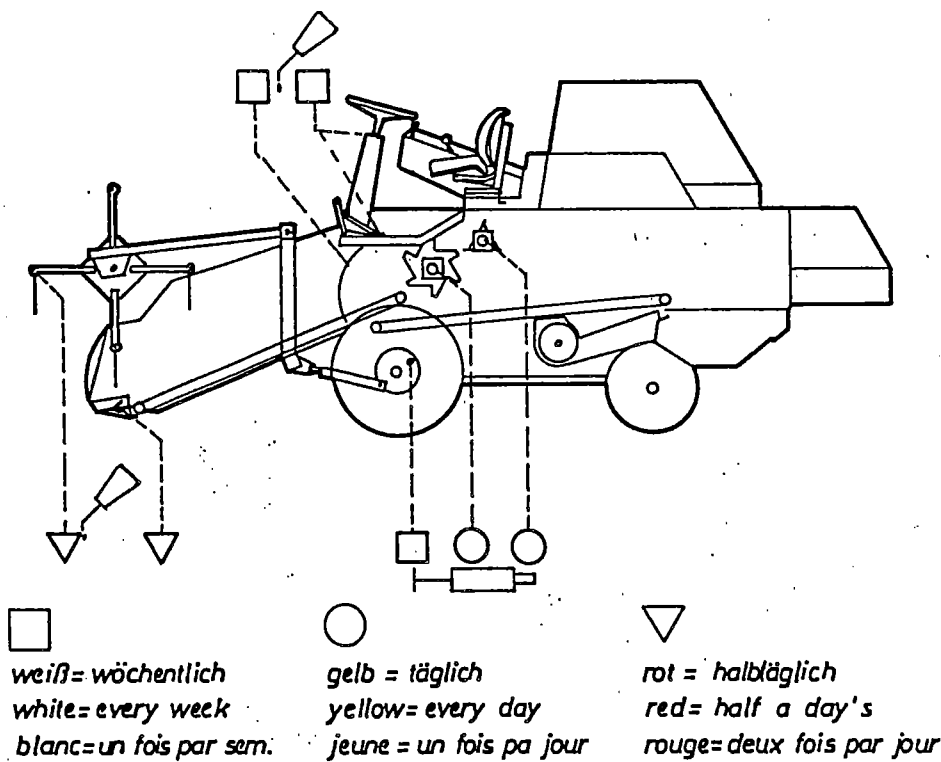
MAINTENANCE

6.4

TABLE OF LUBRICANTS

Machine part	Filling capacity	Lubrication medium	SAE-sort	Oil change	Further oil changes	Control
Gear shift	3,5 l	Transmission oil (MIL-L-2105) API-GL-4-90	SAE 90	40 oper. hours	once a year (500 oper. hrs)	weekly
Hydraulics system	24 l	hydraulics oil, refer to recommendations for use of oil		40 oper. hours	once a year (500 oper. hrs)	daily
VW-gasoline engine 122, air-cooled	2,5 l	motor oil (MIL-L-46152 B) API-SF	from -24 to -5 SAE 10W from -10 to +10 SAE 20/W20	10 oper. hours	every 75 oper. hours	daily
Air filter	0,2 l	motor oil (MIL-L-46152 B) API-SF		10 oper. hours	every 75 oper. hours	daily
Speed governor	0,1 l	motor oil (MIL-L-46152 B) API-SF		10 oper. hours	every 75 oper. hours	weekly
VW-diesel engine 168.5, water-cooled	3,5 l	motor oil (MIL-L-46152) API-CC, or (MIL-L-2104 C) API-CD	from 0 to +30 SAE 30	75 oper. hours	every 75 oper. hours	daily
VW-gasoline engine 026.2, water-cooled	3,0 l	motor oil (MIL-L-46152 B) API-SF		150 oper. hours	every 150 oper. hours	daily
Engine conservation	up to the minimum mark on the gauge stick	motor oil corrosion protection (e.g. Shell Ensis 20)	SAE 20	Change after harvest and before		
Cooling system	approx. ½ l for 10 l of cooling water	cooling water - a mixture of corrosion protection (e.g. Shell Donax C)		Before sheltering for the winter		
Steel-roller chains	when needed	transmission oil (MIL-L-2105) API-GL-4-90	SAE 90	Apply daily		
Corn picking header Picker gear box	2,5 l	transmission oil (MIL-L-2105) API-GL-4-90				

LUBRICATION CHART FOR THE COMBINE



LUBRICATION CHART FOR CORN PICKING HEADER

HYDRAULICS SYSTEMHydrostatic Drive:

The hydrostatics in the NURSERMASTER ELITE is made by Sauer-Sundstrand. Before leaving the manufacturer's plant the hydrostatics must pass rigorous production controls. Fundamentally, all requirements for a long life-span are thus given. Observing the following directions will facilitate the appropriate service and assure faultless functioning. It is absolutely necessary to observe the following at all times:

Utmost cleanliness when working on gearing units, connecting cables and other parts linked to the hydraulic system! Waste - oil, sand, dirt, and other foreign particles do not only limit the functioning and the life-span, they can cause damage leading to a complete failure of the system.

ATTENTION: Any work done on the hydrostatic gear unit or elements thereof by non-authorized workshops or mechanics result in the immediate cancellation of the warranty. Therefore, contact the Sauer-customer service in your country when repairs or service-work on the hydrostatic system seem necessary (refer to the address list of Sauer-customer services). Trained personnel help you save time and anger. If, for some reason, you cannot but work on the hydrostatics yourself, however, we ask you - in your interest - to precisely adhere to the following directions:

- Maintenance Instructions:

1. Suction filter (fig. 102, pos. B)
Under normal conditions, replace the filter element (filter cartridge) after 10 operating hours for the first time and, then, after every 200 operating hours.
The filter element must also be replaced as soon as the pressure gauge on the suction filter indicates an underpressure of more than 0.25 bar (red range) under hot running conditions of the gear box.
ATTENTION: Use filter cartridges with a screen aperture of 10 my only!
2. Change of the hydraulics oil
Under normal conditions, replace the hydraulics oil after 40 operating hours for the first time and then after every 500 operating hours.
The hydraulics oil must be changed under hot running conditions!
Take possible oil sludge out of the receptable! ATTENTION: Use recommended hydraulics oil only!
3. Sealing
Control the sealing of the gear box, the pump, and the engine with all cables, filters, valves, governing devices, etc. regularly. Tighten up screwings and links in a pressureless condition only.

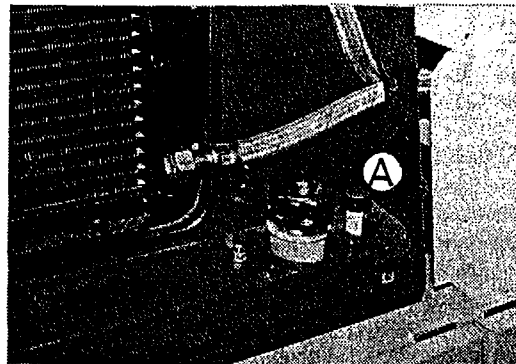
4. Cleanliness

Clean the ventilation of the oil reservoir regularly of dust and dirt to avoid fouling. Clean the cooling plane at the same time.

5. Oil level control

Check the oil level in the reservoir daily (with the gauge stick (A)).

ATTENTION: Add recommended oil only! (fig. 92)



92

- Recommendations for use of oil:

To assure long time, trouble-free operation of hydraulic machinery, a careful quality selection of tested hydraulic fluids as well as an oil change after a prescribed number of operating hours are indispensable.

If the ambient temperature is higher than minus 12°C (higher than 10°F (+)), you can use the following hydraulics oils. We ask you to contact us and provide specific statements about the expected operating conditions if the ambient temperature is below minus 12°C (below 10°F (+)).

Name	Product	Density g/cm ³	Viscosity up to 50°C (722 F)	Flash- Point °C	Setting Point °C
First Filling		0,870	28 3,8	210	-45
Castrol	Automatik TQ Type: A Suffix a AQ-ATF-2418 A	0,890	26,5 3,65	227	-40
Esso	Automatic Transmission Fluid (ATF)	0,886	27 3,7	202	-48
Aral	P 6049	0,890	28 3,8	204	-50
Mobil	Mobilfluid 300	0,885	25,9 3,6	191	-47
Shell	Donax T 6	0,890	27,5 3,8	200	-45

The highest permissible operating temperature of 80°C in the receptable may not be exceeded.

If oil needs to be refilled or renewed during outside operating and the oil typew mentioned are not available, we recommend the use of ATF-oil (Automatic Transmission Fluid). Never mix any kind of oil with another.

- Error detection:

1. The gear box (pump and engine with all cables, filters, valves, governing devices, etc.) does not work in either direction:

TROUBLEHELP

- A. Too little oil in the gear box

1. Check the oil level in the hydraulics oil receptable (18l) and refill, if necessary
2. Find leakage points that cause the loss of oil and clear them

- B. Error in the adjusting linkage to the governor level

Check the adjusting linkage for free traveling, proper functioning, and faultless links

- C. Interrupted shaft link

Examine whether the clutch from the driving engine to the pump as well as the clutch on the shaft slips or is broken

- D. Low or no inflation pressure

1. Attach a pressure gauge (scale up to 20 bar) in the 3/4 - 16 UNF 2 B straight SAE - thread of the inflation pressure connection to the side of the main pump
2. Let the pump run at a minimum driving speed; if the inflation pressure is below 5 bar when the pump adjustment is swung out - i.e., with a turning oil motor - it can result from:

- a) The filter or the section pipe being clogged
- b) The cam of the feed pump being sheared off
- c) The relief valve jet not being closed
- d) Damage inside the pump or the engine

Clean or replace the filter element; clean the pipe
Replace the corn

Replace the relief valve jet

Replace the unit

- E. Low and changing inflation pressure

1. There is air in the gear box. Air causes noises in the gear box. Check all connections, in particular on the filter and the suction pipes from the receptacle to the filter, and find out where the air gets in. Tighten up all connections through which air reaches the gear box.
2. There is damage inside the pump or the engine. Replace the unit.

- F. Defective back-pressure valves

1. Check with both back-pressure valves of the pump:
 - a) if a cone or a ball is missing in the valve
 - b) if the valve disk is damaged or worn

Replace both back-pressure valves in both cases at all times.

G. Damage inside the pump or the engine is noticeable because of:

- a) Low or no inflation pressure. There can also be a large variation in the inflation pressure
- b) Brass parts, splinters, or exfoliations in the receptacle and the filter
- c) One unit (pump or engine) being very noisy

Refer to 1. D & E

Replace the units

Refer to 1. E

ATTENTION: If you find one of the units rather heavily worn or damaged check the other unit carefully, too.

2. The gear box works in one direction only.

TROUBLE

A. Defective back pressure valves

HELP

Refer to 1. F

3. The gear box is running hot (temperature above 80° C)

TROUBLE

A. Too low an oil level

HELP

Fill up oil

B. The oil radiator is clogged

Clean the cooling planes

C. Oil flows through the by-pass valve of the oil radiator

- 1. The by-pass valve of the radiator (if installed) does not close;
- 2. Disassemble and clean the valve; replace, if necessary

D. The filter or the suction pipes are clogged

- 1. Insert a new filter element;
- 2. Clean or replace the suction pipes

E. Points of leakage inside (usually with a subsequent loss of acceleration and power)

- 1. Check the inflation pressure (refer to 1. D)
- 2. Inner parts of the pump or the engine (or of both) are damaged (refer to 1. G)

4. Noise in the gear-box

TROUBLE

A. Air in the gear box

HELP

- 1. Low oil level in the receptacle: fill up oil
- 2. The suction pipes between the receptacle and the filling pump, including the filter, have points of leakage which suck air into the gear box. A significant quantity of foam in the receptacle is a clear sign for air in the gear box.

- | | |
|---|--|
| | 3. The end of the overflow oil pipe in the receptacle does not immerse into the oil; extend the pipe |
| | 4. Before starting the apparatus the gear box has been filled with no or with too little oil |
| B. Hose pipes and cables are not sufficiently insulated | 1. Hose pipes and cables may not touch any metal that can function as a sounding board for natural hydraulic oscillations;
2. Insulate the clamps of the hose pipes and cables with rubber casing |
| C. Inside damage | Refer to 1. G
Replace the unit(s) |
| 5. Slow acceleration and delay: | |
| <u>TROUBLE</u> | <u>HELP</u> |
| A. Air in the gear box | Refer to 4. A |
| B. Low inflation pressure | Refer to 1. D |
| C. Wear or damage on the inside | Refer to 1. G |
| D. Reduced performance of the driving motor | Check the driving motor |

- Instructions for exchanging motor parts:

Before exchanging an aggregate, clean the combine and, in particular, the hydrostatics system with a high-pressure cleaner or with steam jet and compressed air. Maintain utmost cleanliness when exchanging any part.

1. Exchanging the axle piston - adjustment pump:

Disassembly:

- a) Clear the gear box of any weight to prevent oil pressure in the pipes;
- b) Loosen and remove the governor level
- c) Loosen the lid or the ventilation of the oil receptacle to eliminate possible pressure in the gear box;
- d) Place an oil collecting reservoir beneath the pump;
- e) Loosen the pipes and insert clean plastic plugs in the hose pipes and cables and pump connections, respectively, to prevent loss of oil through the disassembled pipes and entering of foreign particles. (Do not use cleaning rags!);
- f) Remove the 2 fitting bolts;
- g) Loosen the pump from the centering and disassemble it.

Assembly:

- a) Place the pump in the centering; tighten up the 2 fitting bolts firmly;
- b) Remove the plugs of the connections. Connect the pipes and tighten the screwings firmly. It is absolutely necessary to keep the openings of the connections or pipes clean of foreign bodies. (Do not interchange pipe connections! Refer to the diagram of laying the cables.);
- c) Assemble the governor level
- d) Refer to "starting apparatus" for further work.

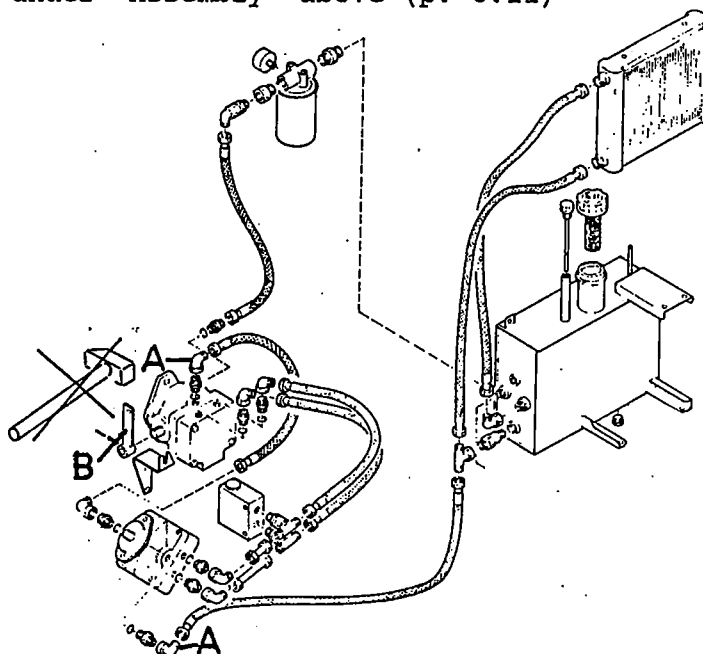
2. Exchanging the axle piston - hydrostatic motor:**Disassembly:**

- a) Refer to 1.a) on page 6.11 (Clean...);
- b) Refer to 1.c) on page 6.11 (Loosen...);
- c) Place an oil collecting reservoir beneath the motor;
- d) Same as 1.e) on page 6.11 (Loosen...), but replace "pump connections" with "motor connections";
- e) Remove the 2 fitting bolts;
- f) Loosen the motor from the centering and disassemble it.

ATTENTION: It is absolutely necessary to avoid axial strain (hammer strokes) on the shaft ends of the governor pump or the hydrostatic motor when assembling. This can cause damage to or complete failure of the system.

Assembly:

- a) Place the motor in the centering; tighten up the 2 fitting bolts firmly;
- b) The same as b) under "Assembly" above (p. 6.11)



- Starting the hydrostatic system after exchanging a hydrostatics aggregate:

1. Starting the system can only be done at ambient temperatures of more than 12° C (54° F); warm up the oil, if necessary.
2. Maintain utmost cleanliness when assembling any part, e.g. close (stop up) open pipe connections immediately.
3. Grease the screwings and tighten them up firmly (they must be sealed).
4. After assembling a hydrostatic motor or pump you must fill up the exchanged aggregate with oil through the upper connection of the overflow oil pipe (fig. 93, pos A). Use a funnel with a fine-meshed sieve (screen aperture of 10 my).
5. Fill the oil tank slowly up to the upper rim of the gauge glass (use specified oil according to the table).
6. Put in the second gear, place the gear-shift lever (fig. 17, pos. A) in the front position. Control: by loosening the hand brake and pushing against the combine, you can check if the gear snapped.
7. Back the combine with a wood block so that both drive gears can rotate freely. Temporarily, block the right drive gear in both directions of rotation with wood blocks.
8. It is absolutely necessary to the governor level (fig. 93, pos. B) of the axle piston - swinging pump in the "O"-position while starting.
This is done by pressuring the "Neutral" pedal (fig. 94, pos. B) (= both driving pedals in the middle position). If something has changed on the mechanic operation from the driver's platform to the governor level (fig. 94, pos. A), the left drive gear would start rotating in the presumed "O"-position of the governor lever during the starting process. By immediately stepping (softly!) on the pedals in direction of the wheel stoppage you will set up the "O"-position at once.
ATTENTION:
Starting the driving motor while the pump is even only slightly swung out (the governor lever is not in the "O"-position) can cause damage, possibly resulting in the complete failure of the new aggregate.
9. Let the driving motor run through the starter for approx. 15 seconds. Set up the "O"-position of the governor lever by immediately stepping (softly!) on the pedals. Lock the pedals in this position.
10. Remove the wood blocks from the right drive gear.
11. Start the driving motor and let it run at idling speed for about 5 minutes. During this time, loosen the screwing on the hydrostatic motor (fig. 93, pos. A) and wait for the oil to escape bubble-free. Then, slightly tighten the screwing. Turn off the driving motor and tighten the screwing firmly.

12. a) Start the driving motor in the "O"-position of the governor level and let it run at a slightly higher idling speed (1/4 throttle).
b) Press the right pedal slowly and softly down to the stop by hand. Remain in this position for 10 seconds. Then, press the left pedal slowly and softly down to the stop (the wheels change the direction of rotation) and remain in this position for 10 seconds, too. Repeat this working cycle twice.

ATTENTION:

When pressing down the pedal you should neither feel a bumpy resistance nor should you hear a squeaky noise. If you do, however, you should put in the middle position immediately and turn off the engine. Noise in the hydrostatics gear boxes and resistance at the pedal indicate air in the hydrostatics system. Air leads to friction and damage. Refer to "error detection".

13. Let the motor run with full throttle and repeat the working cycle as described under 12. b) four times. The process of ventilating the system is completed then.

- Adjust "O"-position:

14. In case the drive gears are still rotating slowly at full throttle and at pressed "Neutral" pedal, you need to set the "O" position by adjusting the nut (A) on the joint (while keeping the "Neutral" pedal pressed).

This is necessary in order to attain the "O"-position for every start later on. Remain idle in the "O"-position for a few seconds for every start later on before pressing the pedals.

15. Turn off the engine, check the oil level in the hydraulics receptacle (upper rim of the gauge glass) and add, if necessary.
16. Remove the wood blocks; the NURSERYMASTER is ready to be driven.

ATTENTION:

In case of not complying with every single point of these instructions for starting the hydrostatics after repairs, the customer will lose any warranty privileges on hydrostatics parts delivered subsequently. In that case, we cannot offer any warranty for the proper functioning either.

- Sauer Hydrostatic Transmission World Service:**(D) Bundesrepublik Deutschland**

SAUER GETRIEBE AG
Krokamp 35, D-2350 Neumünster
Postfach 2460

☎ (04321) 871-1, Telex 299708
Telefax (04321) 871355
Teletex (2627) 432119

SAUER GETRIEBE AG
Service Center + FLUIDTECHNIK
Neumünster, Werk II
Rügenstraße 10, D-2350 Neumünster
☎ (04321) 871-1, Telex 299776

SAUER GETRIEBE AG
c/o Prometheus GmbH
Am Silechen 4, D-6430 Bad Hersfeld
☎ (06621) 75077, Telex 493345

Anwendungstechnik Nord
SAUER GETRIEBE AG
Steinbrink 2, D-3012 Langenhagen 7
☎ (0511) 781850, Telex 921416

Anwendungstechnik West
SAUER GETRIEBE AG
Neuer Markt 3-5, D-5657 Haan
☎ (02129) 2021, Telex 8515046

Anwendungstechnik Ost
SAUER GETRIEBE AG
Keplerstraße 1, D-8750 Aschaffenburg
☎ (06021) 46362, Telex 4188352

Servicestelle West
SAUER GETRIEBE AG
Nordstraße 78, D-5100 Aachen-Brand
☎ (0241) 528054, Telex 8329247

Anwendungstechnik Südwest
SAUER GETRIEBE AG
Waldburgstraße 80
D-7000 Stuttgart 80
☎ (0711) 7351255, Telex 7255876

Anwendungstechnik Südost
SAUER GETRIEBE AG
Maria-Eich-Straße 118
D-8032 Gräfelfing
☎ (089) 851008, Telex 5216512

SAUER GETRIEBE AG
»HT-TECHNIK«
Rommelweg 8, D-5106 Roetgen
☎ (02471) 2419, Telex 8329677

(A) Österreich

SAUER GETRIEBE
Neubauzeile 5, A-4020 Linz
☎ (0732) 82651, Telex 22333

WINTERSTEIGER GMBH & CO.
Dimmelstraße 9, Postfach 204
A-4910 Ried/Innkreis
☎ (07752) 4426, Telex 27738

HÖRBIGER FLUIDTECHNIK KG
Prinz-Eugen-Straße 70, A-1040 Wien
☎ 222 65 67 01, Telex 133687

(AUS) Australia

AUSTRALIAN HYDRAULICS CO.
2-8 South Street, P.O. Box 227
Rydalmere N.S.W. 2116, Australia
☎ 638 5000, Telex 22735

(B) Belgique

NV SAUER BENELUX S.A.
Industriezone Ternat
Industrielaan 13
B-1740 Brussel (Ternat)
☎ (2) 5211419, Telex 61266

(BG) Bulgaria → (CH) IPTC**(BR) Brasil**

FREDMONT LTDA.
Calxa Postal 61505 CEP 05424
Sao Paulo - SP, Brasil
Telex 1135199

MUNCK-SUNDSTRAND TRANSMISSÕES HYDROSTATICAS
Via Raspo Tavares Km. 26
Cotia-Sao Paulo, Brasil
Telex 391-1124639

(CAN) Canada

NL RUCKER PRODUCTS
8503 Davies Road, Edmonton, Alberta
Canada T6E 4N3
☎ (403) 465-7536, Telex 037-2361

(CH) Schweiz/Suisse

BIBUS HYDRAULIK AG
Gelssacher 8, CH-8126 Zumikon ZH
☎ (01) 9180815, Telex 52316
Telefax (1) 9180129

IPTC
Industrieprodukte Aktiengesellschaft
Postfach 188, CH-8024 Zürich
☎ 252 52 34, Telex 52164

(CS) ČSSR/RGW Czechoslovakia

ZTS-ZÁVODY ŤAŽKÉHO STROJÁRSTVA
01841 Dubnica n.V.
☎ 204/205 + 251/252
Telex 75320, 75218

(DK) Danmark

AS HYDROPOWER
Lammefjordsvej 2, DK-6700 Esbjerg
☎ 5-144444, Telex 54284

(E) España

SAUER ESPAÑOLA S.A.
Calle de Alfonso Gomez 27, Madrid
☎ 7541412, Telex 42784

(ET) Egypt

E.N.E.-EGYPTIAN NATIONAL CO.
for Building, Construction and Road Equipment Ltd.
3, Ibn El Eksheed Str., Kobry El Galaa,
Dokki-Gizah-Cairo
☎ 732069, Telex 21694

(F) France

SAUER HYDRAULIQUE S.A.
322, Rue de Seine
F-77190 Dammarie-les-Lys
☎ (6) 4379133 + (6) 4379211
Telex 690207 + 692413
Telefax 64379133460

SAUER LYON
CD 42 Le Favier
F-69230 Saint Genis Laval
☎ (7) 8562586, Telex 900315

(GB) Great Britain

SAUER UNITED KINGDOM LIMITED
Doddington Road
Lincoln LN 6 3RA, Great Britain
☎ (522) 685244, Telex 56381
Telefax (522) 685244

(GR) Hellas

EOTA AG
P.O. Box 51046, GR-14510 Kifissia
☎ 8075603 + 8075702, Telex 215051

(H) Hungary

IKR
Nagyimand, H-2942
☎ 28, Telex 27297

KITE
Nadudvar, H-4181
☎ 777823, Telex 72431 + 72432

(H) Hungary → (CH) IPTC

WINTERSTEIGER

(I) Italia

SAUER ITALIANA S.R.A.
Via Cerelle, 4 (Loc. Valdarno)
I-21041 Albizzate (Varese)
☎ (0331) 99 53 00, Telex 334 312

(IS) Iceland

LANDVÉLAR HF.
Smidjuvegur 66, IS-202 Kopavogur
☎ 91-7 66 00, Telex 2205

(J) Nippon, East Asia

DAIKIN INDUSTRIES LTD.
Hydraulics + Lubricating Division
700-1 Hitotsuya
Settsu-SHI, Osaka 564
☎ (0 63 49) 73 61, Telex 523-3064
Telefax (6349) 6 789

NIHON SPINDLE MFG. CO. LTD.
1 Shininida, Shimo machi
Kaneoka, Kyoto, Nippon
☎ (07712) 2 33 51, Telex 54 42 804

(KWT) Kuwait, Emirats arabes unis

**BOO DAI TRADING
COMPANY LTD.**
P.O. Box 1287, Safat - Kuwait
☎ 427159, Telex 2 20 50

(MA) Maroc

SMAC
29, Bis Rue Mohamed Diouri
Casablanca
☎ (212) 30 55 65, Telex 27749

(MEX) México

LUCAS S.A.
Av. Parque Lira 79, Tacubya, DF.
Apdv. Post 11-338, Mexiko 11, DF.
☎ 51605 00

(N) Norge

HYCON AS
P.O. Box 73, Bjerkealleen 4B
N-1322 Høvik
☎ (02) 53 94 63, Telex 77 539

(NL) Nederland

SAUER BENELUX B.V.
Industrieterrein Barvoutswaarder
Bierbrouwersweg 23
3449 HW Woerden, Nederland
☎ (0 34 80) 174 30, Telex 40 686

(P) Portugal

HIDROMAC, Lda.
Av. Columbano Bordalo Pinheiro, 84-C
P-1000 Lisboa
☎ 7 26 30 11, Telex 13 685

(RA) Argentina

**HIDRAULICA INDUSTRIALE
S.A.C.I.I.F.**
Balbastro 2432, 1604 Buenos Aires
☎ 6329117 + 11307317, Telex 9900

FASTER S.A.
Bartolome Mitre 2141
1039 Buenos Aires
Telex 390-18 467

(RO) Rumania → (CH) IPTC
(RCH) Chile → (BR)
(ROU) Uruguay → (RA)
(S) Sverige

SAUER NORDISKA AB
Mariehällsvägen 44
P.O. Box 20092
S-16120 Bromma
☎ 08-7 64 75 20, Telex 12 800

(SF) Suomi Finland

M-TEK OY
P.O. Box 19, SF-01621 Vantaa 62
☎ 89 03 22, Telex 12-2996

(TR) Türkiye

**MERT TEKNİK FABRIKA
MALZEMELERİ
TİCARET ve SANAYİ A.Ş.**
Tersane Cad. No. 43, Karaköy, İstanbul
☎ (11) 4372 36, Telex 30 221

(USA) United States of America

**SUNDSTRAND
HYDRO-TRANSMISSIONS**
2800 E. 13th Street, Ames, Iowa 50010
☎ 515-239-6568, Telex 910 520 1150
Telefax 515-2396 318

ROTARY POWER INC.
2200 Wilson Road
Columbus, Ohio 43228
☎ 614-876, Telex 810 339 2554

(YU) Jugoslavia → (CH) IPTC

(VV) Venezuela
POWER SYSTEMS INC. C.A.
P.O. Box 15045, Maracaibo
Telex 395-61181

(ZA) Republic of South Africa

AXIOM HYDRAULICS LTD.
P.O. Box 5176, 17 Heidelberg Road
Village Main, Johannesburg IHB 2000
☎ 331 38 03, Telex 89 805

**ASW ENGINEERING
(PTY) LTD.**
P.O. Box 50814, Randburg 2125
☎ 7931330 + 7934829 + 7931305
Telex 426390

Hydraulics:

V-belt pump drive:
control tightness and tighten up, if necessary;

A = tightening crew (fig. 100)

Control the oil level daily:

B = oil gauge stick

C = opening for filling in the oil (fig. 101)

ATTENTION: To fill up, use recommended hydraulic oils only! (refer to "recommendations for use of oil, 6.8).

Pump 1: reel drive/grain tank
Pump 2: cutter bar/lifting the reel
Pump 3: steering

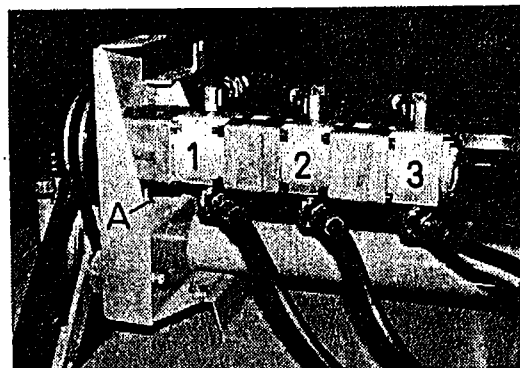
D = hydraulic oil - return pipes

E = hydraulic oil filter

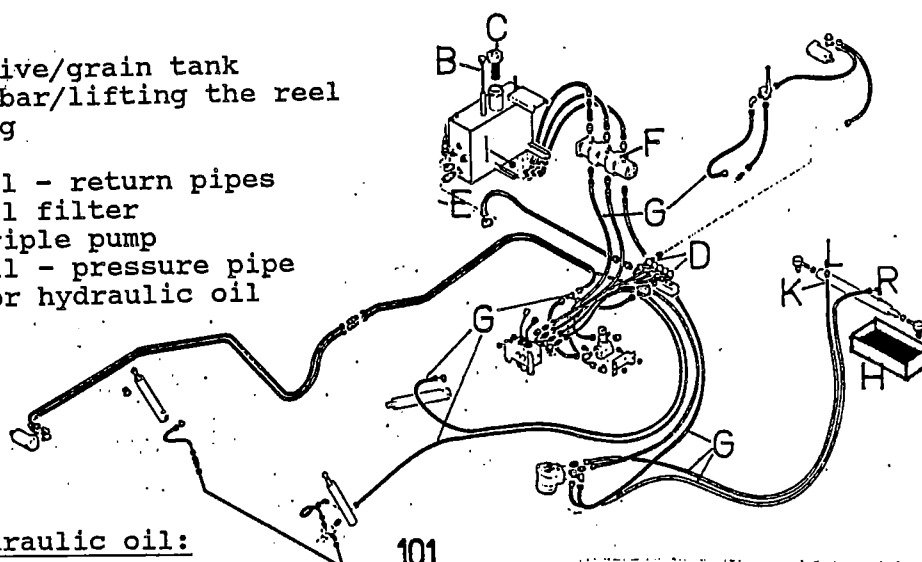
F = hydraulic triple pump

G = hydraulic oil - pressure pipe

H = drain pan for hydraulic oil



100



101

Changing the hydraulic oil:

*Retract all hydraulic pistons; turn off the engine.

*Open the chain plug (I) and discharge the hydraulic oil into sufficiently large (24 liters) reservoir (fig. 102).

*Unscrew one of the hydraulic pipes (R or L) on the steering cylinder and put it into a receptacle. Turn the steering wheel in the respective direction until the remaining hydraulic oil is pumped out of the system.

*Remove possible oil sludge from the receptacle

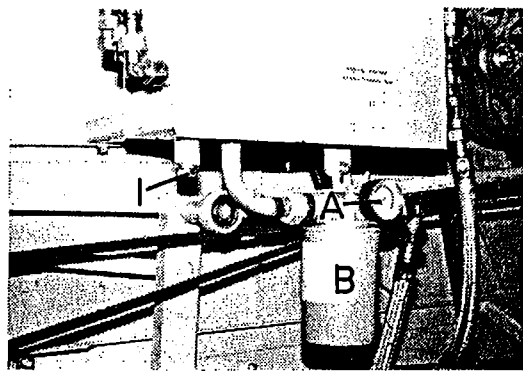
After the hydraulic oil receptacle has been refilled the steering hydraulic must be ventilated.

ATTENTION: Use recommended hydraulic oils only (refer to "recommendations for use of oil", 6.8)!

Changing the oil filter (B):

Time of change: At the time of an oil change, or when the pressure gauge (A) indicates an underpressure of more than 0.25 bar under hot running conditions. If the filter is fouled:

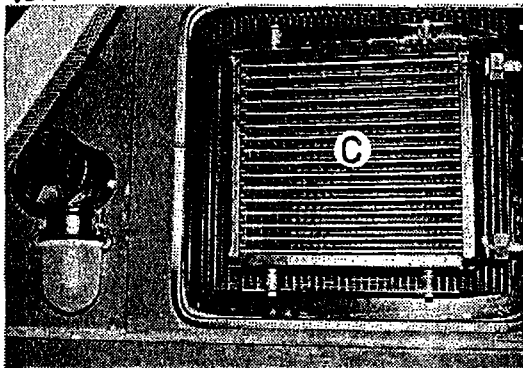
- *unscrew the filter (to the left);
- *oil the seal ring of the new filter a little bit and screw tight the filter by hand. (fig. 102)



102

Cleaning the oil radiator:

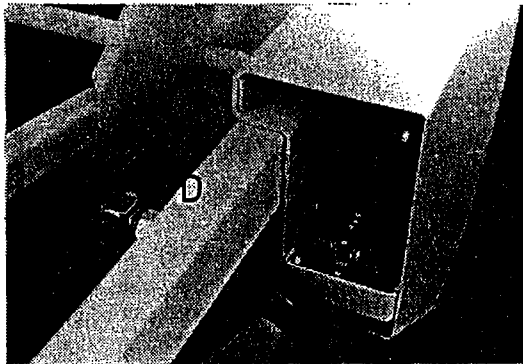
To assure flawless cooling of the hydraulic oil the oil radiator (C) needs to be cleaned daily. Treat with compressed air, if necessary. Observe these directions in particular if the ambient temperature is above 30°C (86°F)! (fig. 103)



103

Hydraulic reel drive:

The oil motor drives the reel with a roller chain. Maintain a well-tightened chain but do not tighten too firmly. The pump (fig. 100, pos. 1) drives the oil motor via the volume regulating valve, ball valve, and pipes.



104

Ventilating the steering hydraulic:

After every assembling work on the steering hydraulic and its hoses, the hydraulic hoses need to be ventilated while the engine is running (two persons are necessary to do this):

1. Back up the steering axle to relieve the steering wheels. Place a clean receptacle beneath the steering assist cylinder to collect the hydraulic oil.
2. Turn the steering wheel to the left stop. Unscrew the hydraulic hose on the steering assist cylinder.

Turn the steering wheel to the right until the oil flows out of the hydraulic hose bubble-free. Screw on the hydraulic hose. Turn the steering wheel to the right up to the stop.

3. Unscrew the hydraulic hose on the steering assist cylinder. Turn the steering wheel to the left until the oil flows out of the hydraulic hose bubble-free. Screw on the hydraulic hose.

ATTENTION: While ventilating, control the oil level in the oil receptacle and fill up, if necessary!

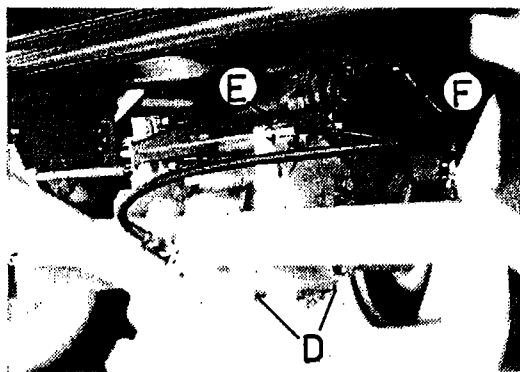
GEAR SHIFT

Oil change:

D = oil drain plug and magnetic stopper

E = oil filler screws

Clean the magnetic stopper in the oil drain plug with every oil change. (fig. 106)



106

ADJUSTING THE GEAR SHIFT

Adjust the flexible remote control cable on the threaded couplings in such a way that the indexing wheels fully interlock and that the detent balls of the control shafts snap. (fig. 106)

CHANGING THE VARIABLE SPEED BELTS

Be careful when working on the variable speed control. Never grab between the disc halves with the hands - there is an extreme danger of bodily injury!

Variable speed belts of the threshing drum and the blower:

Regulate both variable speed controls on the highest speed while the motor is running and the threshing unit is turned on. Both the mechanically-operated variable speed pulley (A) and the spring-loaded variable speed pulley are adjustable. Turn off the threshing unit and the motor. (fig. 107)

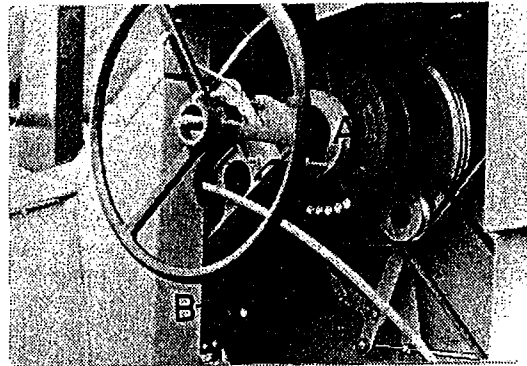
Variable speed control of the threshing drum:

- *Unscrew the mounting ladder;
- *Unscrew the screw cap (C) from the speed gauge (fig. 108);
- *Hold an edged piece of hardwood with a diameter of 45mm between the spring-loaded disk and loosen the counter disk with the hand wheel until the piece of hardwood is clamped;
- *Unscrew the hand wheel completely and press apart the mechanically-operated variable speed pulley;
- *Take out the belts of both disks.

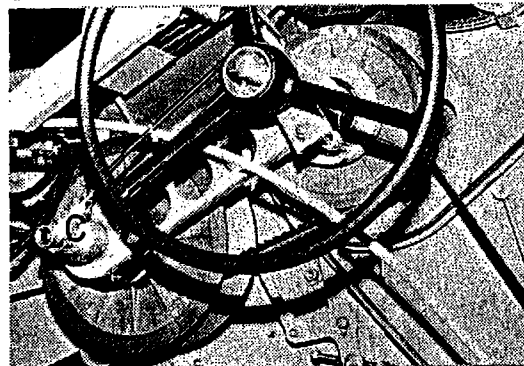
Variable speed belt of the blower:

After having taken off the variable speed belt of the threshing drum:

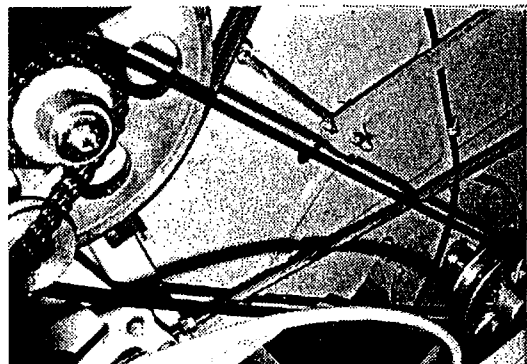
- *Screw back the belt tightener completely with the hand crank;
- *Take out the belts of both disks;
- *After reapplying tighten the belts firmly between the disk halves (fig. 109)



107



108



109

TURNING DRUM SPEED

The correct speed of 944-10 r.p.m. is necessary for a good working combine. It is measured with a speedometer on the turning drum shaft; this speed must be maintained. Control the speed at least before every harvest when the machine is not strained and at full engine speed.

ADJUSTING THE THRESHER DRIVE

To assure uniform tightness of the V-belt, it is necessary that the pressure spring (G) at the linkage does not exceed 65mm when the starting lever of the thresher is pulled. Readjust the nuts in time.

Adjusting the belt guides:

Adjust the belt guides at points 1 to 3 so that the measurement (Y) between the belt's back and the guides is 3mm in circumference.

Run a test and correct these adjustments, if necessary (fig. 111 + 112).

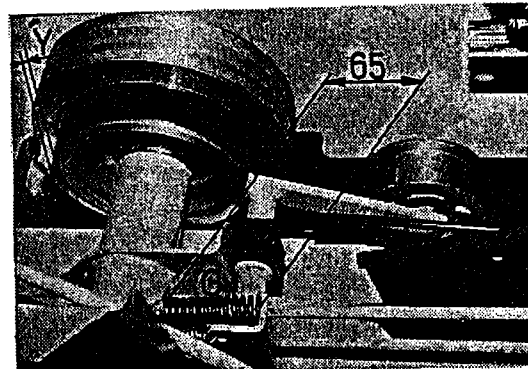
ADJUSTING THE CUTTER BAR DRIVE

Adjust the nuts (I), while the belts are tightened, so that the spring measures 63mm in length. Retighten the counter nuts.

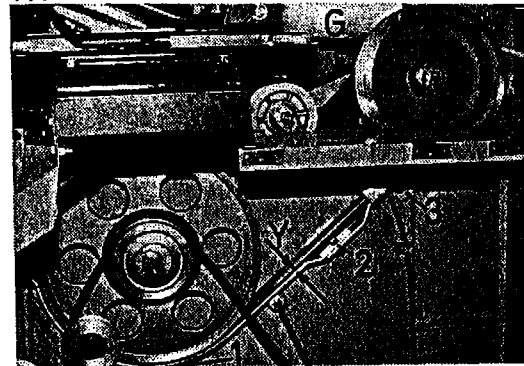
Adjusting the belt guides:

Adjust the belt guides at points K and L so that the measurement (X) between the belt's back and the guides is 3mm in circumference when the belt is tightened.

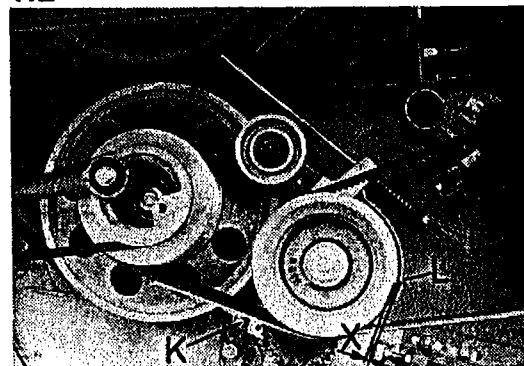
Run a test and correct these adjustments, if necessary. (fig. 113)



111



112



113

REPLACING THE CUTTER BAR - CONVEYOR BELT (without disassembling the cutter bar)

- *Lift the cutter bar and secure it (wood block);
- *Loosen the nuts and take off the conveyor belt cover;
- *Unscrew the tightening screws and take out the conveyor belt roller;
- *Turn up the right side cover in the front, take off the V-belt, loosen the screw and take off the V-belt disk;
- *Using a hexagon spanner, unscrew the shaft with the gear wheel by turning it to the right; counterhold at conveyor belt roller with a pipe wrench;
- *Unscrew the bearing bolt on the left side;
- *Exchange the conveyor belt (note the right direction of course);
- *Assemble in opposite order;
- *Pre-tighten the conveyor belt on both sides uniformly; the exact adjustment will be done with the tightening screws at a test run.

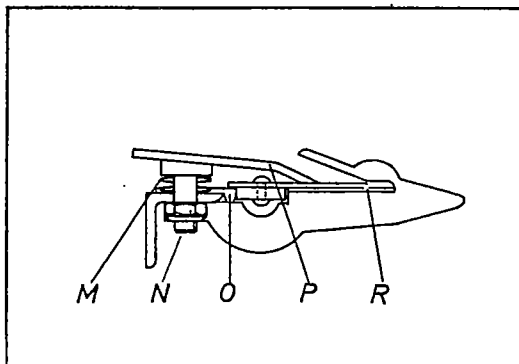
ATTENTION: Danger of bodily injury! Take off the driving belt of the cutter bar during the test run. Set the gear shift lever in the middle position and pull the hand brake.

REPLACING THE CUTTER BAR - WEARING PLATE

A worn wearing plate (O) must be replaced as follows:

- *Lift the header hydraulically and secure it (wood block);
- *Loosen the nuts (N) and remove the sheet cover (P);
- *Replace the wearing plates (O) or place plates underneath up to the appropriate height; the sickle must be set to the points of the knife sections as tight as possible;
- *Install the sheet cover and tighten the nuts (N) uniformly.

ATTENTION: Install the cup springs correctly; the crank drive of the sickle must be turnable by hand.



CORN PICKING HEADER

Maintenance work beneath the lifted picker may be done only if the picker rests on the support legs to the left and to the right. Otherwise, there is danger of bodily injury.

Careful maintenance work and proper operation assure proper functioning and a long life span of the head picker.

We recommend, in particular, the use of adequate lubricants and the observing of lubrication instructions.

Oil level in the gear box:

The oil level must be 50-60mm when the gear box is in a horizontal position (measured at the filling hole). When the picker is mounted, it can be controlled also after unscrewing the control screw for the oil level in a lowered position. If necessary, refill oil until it flows out of the tophole.

oil: SAE 90, 2.5 liters per gear box; oil change, yearly.

ERROR DETECTIONTROUBLECutter bar:

Cutter bar does not cut well:

Sickle stops abruptly

Lodged grain is not taken up well

Cloggings at the divider points

The cutter bar lifts too slowly, the reel stops too easily

The conveyor belt and the cutter bar stop too easily

The cutter bar is inclined

HELP

It is absolutely necessary to shut off the combine for all works on or in the cutter bar. Additionally, support the cutter bar when working beneath it - there is danger of bodily injury!

1. Adjust the sickle reversal of stoke;
2. Adjust the press pad plate correctly;
3. Sharpen the sickle;
4. Straighten the cutter bar;
5. Replace damaged sickle blades;
6. Remove dirt build-ups on the cutter bar.

1. Remove the foreign body;
2. Renew strongly deformed fingers;
3. Tighten the driving V-belt for the sickle drive;
4. Set the landing skids at a higher level.

1. Select the correct distance between the crop lifters;
2. Adjust the position of the reel prongs;
3. Possibly, approach the plot differently;
4. Correct the adjustment of the relief springs of the cutter bar;
5. Set the reel further to the front;
6. Set the landing skids at a lower level.

1. Take off the crop divider; separate the plots by hand or with an extra long crop divider or with a side cutter bar (supplementary equipment);
2. Possibly, renew the landing skids.

1. Tighten up the V-belt of the hydraulic pump;
2. Check the level of the hydraulic oil and fill up oil, if necessary;
3. Have the hydraulic oil pressure checked.

1. Control the tightness of the belt; tighten up, if necessary;
2. Tighten the driving belt of the cutter bar as prescribed;
3. Adjust the tightener of the cutter bar - V-belt clutch

1. Straighten the cutter bar at the suspension

- | | |
|--|--|
| The cutter bar does not clutch | <ol style="list-style-type: none"> 2. Adjust the relief springs of the cutter bar on the left and right side uniformly; 3. Control the air pressure of the types |
| The conveyor belt roller at the cutter bar is often winded with weeds and soil | <ol style="list-style-type: none"> 1. Adjust the belt guides of the cutter bar clutch correctly; 2. Clean the V-belt disks of the cutter bar clutch |
| Uneven thresh feeding | <ol style="list-style-type: none"> 1. Adjust the minimum cutting height with the landing skids to a higher level; 2. Lift the header at the end of the plot immediately (before the return); 3. Disassemble and clean the conveyor belt roller |
| Plant material winds on the sides of the reel | <ol style="list-style-type: none"> 1. Control the tightness of the conveyor belt and retighten, if necessary; 2. Adjust the reel prongs and the reel speed correctly; 3. Do not cut at a very low level |
| Plant material winds on the reel prongs | <ol style="list-style-type: none"> 1. Adjust the inside fender more to the inside and, possibly, to a higher level 2. Adjust the reel to a higher level; 3. Bend the reel prongs more to the front; 4. Adapt the reel speed to the driving speed |
| The reel prongs reach the sickle at the lowest level | <ol style="list-style-type: none"> 1. Adjust the reel at the eyebolts of the hydraulic cylinder to a higher level |
| The reel is inclined during lifting | <ol style="list-style-type: none"> 1. Adjust the eyebolts of the reel cylinder uniformly; 2. Lift the reel high, check the hydraulic cylinder for sealing and seal it, if necessary |
| Too many stones are taken up | <ol style="list-style-type: none"> 1. Attach fewer crop lifters; 2. Do not cut at a very low level (with lodged grain, the crop lifters are to lift the grain) |
| <u>Threshing parts:</u> | <p>Fouled threshing parts lead to mixtures, imbalance, and grain losses; worn threshing parts leads to poor threshing performance and threshing losses.</p> |
| Drum winder | <ol style="list-style-type: none"> 1. Narrow the concave; 2. Increase the drum speed when the thresh is damp; |

TROUBLEHELP

Stones and other foreign
bodies damage the threshing
unit

3. Check the basic adjustment of the concave according to the table;
4. Observe uniform feeding of the cutter bar;
5. Check the rate of rotations of the turning drum (922-10 r.p.m.) and have it corrected, if necessary;
6. Slow down if dampness increases;
7. Adjust the tightener and the spring for the V-belt of the threshing unit drive correctly;
1. Do not cut deep on stony ground;
2. Lift the reel and adjust it backward;

Speed fluctuates strongly

3. Increase the distance between the crop lifters
1. Adjust the tightener and the spring for the V-belt;
2. Check the engine (refer to "engine trouble")

High belt wear

1. Remove the rust from and clean the V-belt disks;
2. Clean and lubricate the disk planes of the regulating pulleys;
3. Clean the belts that are fouled by oil with a lye solution;
4. Turn on the machine at the idling speed;
5. Adjust the belt tightening devices correctly

Insufficient straw separation

1. Narrow the concave;
2. Increase the speed of the threshing drum;
3. Check the basic adjustment of the concave according to the table;
4. Have worn or damaged parts of the threshing unit repaired;
5. Adapt the adjustment of the concave inlet to the concave outlet to the crop conditions;
6. Possibly, use a different concave;

Imbalance of the machine

7. Possibly, install awner bars
1. Clean the fouled threshing drum;
2. Remove dust build-ups in the variable speed pulleys;
3. Have the damaged threshing drum repaired

Broken grain

1. Reduce the speed of the threshing drum;
2. Widen the concave;
3. Reduce the drum speed through supplementary equipment (chain drive) when break-sensitive crops are harvested;

Trouble
Help

Poor awning

4. Disassemble the awner bars;
5. Open the wind shutter on the transport blower of the sacking device only as wide as is necessary for a clog-free transport of the grain

Losses during the threshing process

SHAKER

Dust cloggings on the shaker

1. Increase the speed of the threshing drum;
 2. Narrow the concave;
 3. Install awner bars;
 4. Choose the latest time of maturity
- If the short deflector on the concave is worn or torn-renew it

Grain losses on the shaker

1. Have the speed of the turning drum adjusted to 944-¹⁰ r.p.m.;
a) tighten the driving belt of the shaker
b) correct the engine speed
2. Remove foulings on the shaker;
3. Check the lever system of the shaker for proper functioning (it may not butt the ends of the slits)
4. Clean the fouled concave;
2. Replace worn or torn deflectors;
3. Set a small shaker stroke at the lever system;
4. Install a shaker with a larger diameter of hole

Cleaning:

Losses between the conveyor belt and the side of the machine

1. Check the conveyor belt for centric travel and readjust, if necessary;
2. The sealing rubber flaps are fouled or worn and do not fit tightly - clean and replace them, respectively

The strainer knocks

1. Remove the dirt build-ups above the cleaning blower;
2. Tighten up all screws of the strainer fastening;

TroubleHelp

Uncontinuous feeding of the sieve	3. Tighten the sieve fastenings; 4. Have the strainer bearing renewed 1. Clean the grain pan; 2. Tighten up the conveyor belt or the driving belts, if necessary; 3. Refer to "uncontinuous feeding of the thresh"
The sieve is overloaded with short straw and chaff	1. Check whether the concave and shaker have been installed with the right diameter of hole according to the adjustment table; 2. Reduce the threshing drum speed (broken straw and grain); 3. Widen the concave; 4. Set wind at higher speed
Poor transport at sieve	1. Adjust the sieve to a flatter level; 2. Set longer sieve stroke
Unclean grain	1. Increase wind; 2. Install smaller cleaning sieve; 3. Attach the plastic wind protection (supplementary equipment) to the straw hood when there are tailwinds
Grain losses on the cleaning sieve	1. Reduce wind; 2. Install a bigger cleaning sieve; 3. Slow down the sieve transport (sieve steeper, sieve stroke shorter)
Too long an idling time of the machine (more than 15 seconds)	Check the threshing drum, the concave, the conveyor belts, the skimmer, the shaker, the deflectors, and the strainer of the NURSERYMASTER ELITE for foulings and damage. It is essential to remove the foulings and repair the damage (if possible, replace parts)!
<u>Sacking device:</u> Clogged pipes	1. Open the wind shutter on the transport blower of the sacking device more; 2. Control the belt tightening of the blower drive
Too long an idling time of the sacking device	1. Remove the foulings in the sluice and in the pipes, respectively 2. Increase the transport wind at the blower (the grain will remain in the pipe bends)

TROUBLEGrain tank:

The discharge of the grain tank does not function

Grain losses:

a) Grain losses at the cutter bar and harvest losses

b) Grain losses because of poor straw separation

HELP

1. Tighten up the V-belt of the hydraulic pump;
2. Check the hydraulic oil level; fill up, if necessary
3. Have the hydraulic pressure checked;

4. Tighten up the roller chain;
5. Straighten bent worm shafts
There are various reasons for grain losses. Therefore, find out first where the grain comes from. Check all transition points on the combine for sealing.
Grain lying on the ground because of inclement weather cannot be added to the grain losses of the combine.

The following grain losses can possibly be caused by the combine:

- a) grain losses at the cutter bar and harvest losses;
 - b) grain losses because of poor straw separation;
 - c) grain losses on the shaker;
 - d) grain losses at the strainer.
1. Adapt the position of the reel prongs to the given conditions;
 2. Adapt the reel speed to the driving speed;
 3. Place a crop lifter on every second finger when harvesting grain with hanging heads;
 4. Adjust the crop divider so that no jamming occurs;
 5. Possibly, adjust the reel horizontally
1. Have the worn or damaged threshing drum repaired;
 2. Adapt the speed of the threshing drum to the grain conditions;
 3. Adapt the distance of the concave to the threshing conditions;
 4. Control the basic adjustment of the concave according to the adjustment table;
 5. Adapt the relation of the concave inlet to the concave outlet to the thresh;

TRQUBLE

c) Grain losses on the shaker

d) Grain losses at the strainer

HELP

6. Adjust the cutter bar so that a continuous flow of grain will be achieved;
7. Possibly, install awner bars
1. Set the speed of the turning drum to $944_{-10}^{} \text{ U/min}$;
2. Set a short shaker stroke; control the shaker drive, the linkage, the rocking lever, etc;
3. Maintain a continuous feeding of the threshing parts;
4. Clean the concave and the space behind the concave;
5. Clean the fouled shaker;
6. Reduce the speed of the threshing drum and narrow the concave;
7. Slow down;
8. Renew the deflector above the shaker;
9. Take up less weeds
1. Avoid a strong mat forming;
2. Adapt the cleaning wind to the grain conditions;
3. Lift the cutter bar to a level so that as few weeds as possible arrive in the combine;
4. Reduce the speed of the threshing drum when there is a lot of short straw; possibly, widen the concave outlet;
5. Maintain easy travel of the blower disks;
6. Use a bigger sieve and open the adjustable sieve more, respectively, and increase the wind;
7. Clean the sieve and the grain pan;
8. Slow down

TROUBLECorn picking header:

There are too many maize stalks in the machine

Maize cobs are pulled between the skimmer bars and squeezed

Winding of the picking rollers

HELP

1. Adjust the picking rollers correctly (they are set either too wide or too narrow);
2. Widen the skimmer bars when cutting very thick stalks
Narrow the skimmer bars

SUGGESTIONS FOR SHELTERING THE COMBINE IN WINTER

Sheltering the plot combine in winter is necessary to enjoy this machine's work for a long time. You can save time and money when restarting the machine at the next harvest if the combine has been maintained continuously with care and if worn and damaged parts have been replaced.

1. Wash off dust and grease from all bearing points with diesel fuel.
2. Clean the combine thoroughly; in the inside, in particular, the drum, the concave, the space behind the drum, the grain pan, and the shaker.
3. Conserve the combine including the points of lubrication that are to be maintained yearly (bearing points with plastic plugs) after the harvest by pressing in branded lubricants. Let the machine run shortly until there has formed a small grease rim on the outside of the bearings to assure an even distribution of the grease. To prevent the penetration of moisture and dirt "BP Grease A" has been used for the initial delivery of the combine. Use this or another branded grease with the same dropping point, degree of penetration and protection against corrosion only.
4. Open all shutters. Take out the sieves and remove the guards.
5. Take off the chains, wash them with diesel fuel and immerse them in hot chain grease or oil them with chain oil.
6. Untighten the V-belts and take off the belts of the variable speed controls (refer to "maintenance").
7. Conserve all clear parts, e.g. cutter bar and crop lifters, against rust - grease these parts.
8. Hydraulics system:
Change the hydraulics oil and the hydraulics filter (refer to "maintenance").
9. After cleaning, examine the combine and have necessary repairs made.
10. Shelter the combine, after having conserved the engine, in a dry place that is protected against weather. Do not store fertilizer in the same shelter!
11. Support the cutter bar to relieve the hydraulics system.
12. Back up the combine so that the total weight does not rest on the wheels and paint the tires with tire protective varnish to prevent the rubber from drying out.

Motor Types - Warranty - Motorservice:

Depending on the customer's needs, the NURSERYMASTER ELITE is equipped with one of the following 3 motors. Each motor type requires a specific service. Concerning necessary maintenance work, refer to the enclosed service plan, please. The conditions of warranty are stated in this service plan, too.

Observe, in particular, the oil level in the motor which is to be controlled several times a day during the initial period of operation (approx. 150 operating hours).

A specific motor operator's manual comes along with the combine. Refer to this manual, please, concerning the maintenance of the motor.

The on-load speed of the motor is 3000/min(r.p.m.). It is only at this motor's speed that the threshing parts operate at the correct rates of rotations!

How to recognize the motor type:

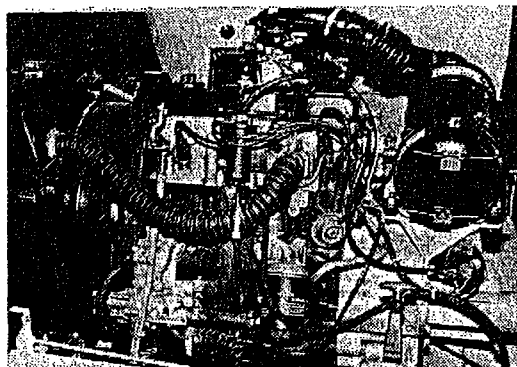
The motor type can be identified by the first 3 or 4 figures respectively, of the motor number on the name plate. The motor operator's manual tells you where to find the name plate. In case you should have difficulties reading the name plate -e.g., because of damage - there are some characteristics that facilitate your determining the motor type.

VW - industrial motor, type 122
= air-cooled 1.2l motor with
standing blower
= gasoline fuel, not a lower
octane-rating than 87
The on-load speed is set on 3000/min.

VW - industrial motor, type 068.5
= 1.6l, 4-cylinder-diesel motor
without turbosupercharger,
water-cooled
= diesel fuel, not a lower
octane-rating than 45
The on-load speed is set on 3000/min.

VW - industrial motor, type 026.2 (fig. 122)
= 1.8l, 4-cylinder-Otto carburetor engine, water-cooled
= gasoline fuel, not a lower octane-rating than 91

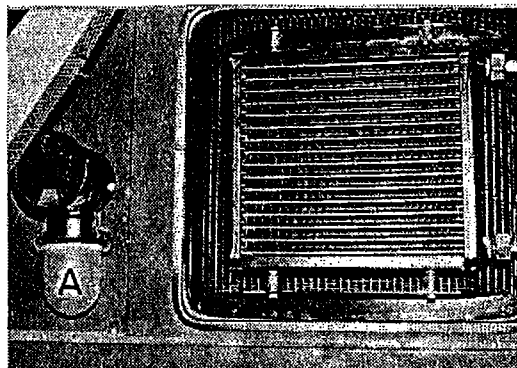
The on-load speed is set on 3000/min.



122

Preliminary filter and air filter for the motor:

The preliminary filter (not on type 122) is to be controlled and emptied several times a day when there is strong dust build-ups. The reservoir (A) on the preliminary filter must be emptied as soon as it is filled 1/4 (fig. 123).



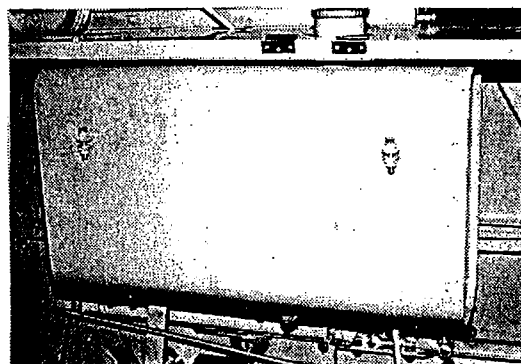
123

Check air filter daily and clean it according to the motor operator's manual.

Fuel system:

The fuel tank holds 45 liters. The electrical fuel pilot lamp on the instrument board starts glowing at a reserve level of 6-8 liters. This is sufficient for another 1-2 operating hours depending on the motor type as well as on the strain placed on the combine.

NOTE: Never drive the tank empty since this can require ventilating the fuel pipe to the motor. Should it happen, however, it usually suffices to fill the fuel tank completely and attempt to start the motor for a few times (20-30 seconds each time). This requires a good battery condition, however. Drive with clean fuel only. Shut the tank tightly after every refueling. To avoid the forming of condensed water in the fuel tank the combine must be refueled immediately after a day's work (fig. 124)



124

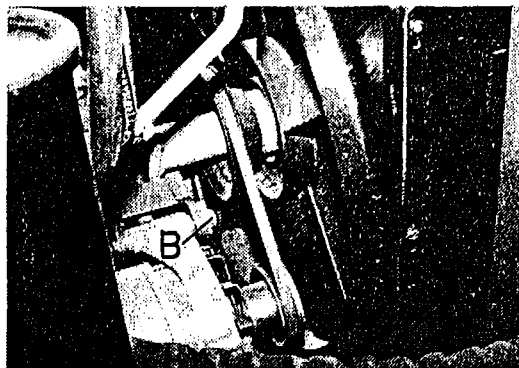
Liquid cooling system:
for the motor type 068.5 and 026.2

- Fan blade - V-belt:

Regularly check the tightness of the V-belts by moderately pressing the thumb into the middle of the longest V-belt piece. The V-belts can be pressed down approx. 10mm if correctly tightened. Tighten up the V-belts if they can be pressed down by 15mm or more.

Tighten up a loose V-belt on the dynamo.

Loosen the dynamo fastening at B a little. Loosen the lower setscrew. Press the dynamo outward and refasten the lower setscrew. Fasten the dynamo tightly. (fig. 125)



125

- Cooling liquid:

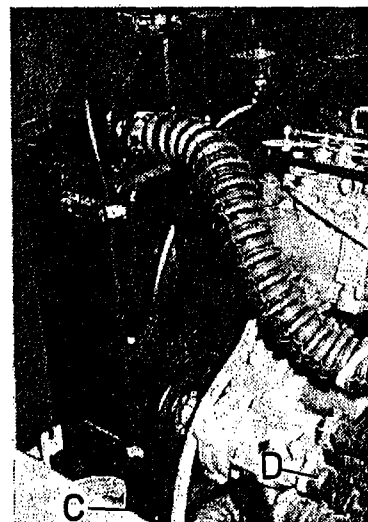
The motors are equipped with antifreezing solution upon delivery. Control the freezeproofness before the winter starts.

Renew all cooling water hoses on the motor.

Filling in the water cooler:

- Close the discharge cock (C);
- Close the discharge shutter on the water pump;
- Fill the radiator with cooling liquid. Let the motor run for a short time. Turn off the motor, check the level of the cooling water again and fill up, if necessary. (fig. 126)

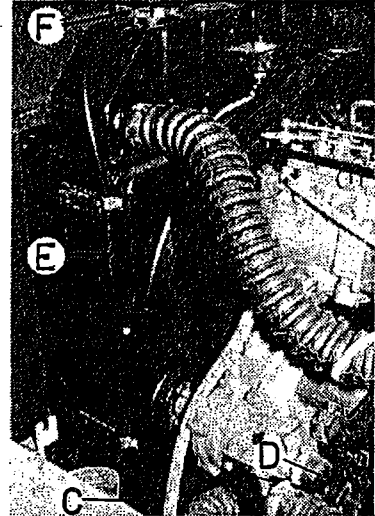
Add an adequate quantity of antifreeze solution to the cooling water if operating the combine in winter.



126

- Protection against corrosion:

Drain the cooling water in the radiator (C) and the motor block (D) in time (before the winter) if the cooling system is not filled with an antifreeze solution. In this case, it is recommended to add a corrosion preventative to the circulating cooling water before starting the motor to prevent corrosion (refer to "table of lubricants" and "suggestions for sheltering the motor in winter"). Oil separation caused by adding antifreeze solutions does not affect the protection against corrosion.



127

- Warning sign:

If there is no water in the radiator during the sheltering time a warning sign reading "ATTENTION! Radiator without water!" should be fastened onto the filler socket and even on the steering wheel.

Firmly tighten up the radiator lid. Do not add cold water to a hot running motor. Use clean water with few lime and chlorine elements out of a clean receptacle only.

- Temperature of cooling water:

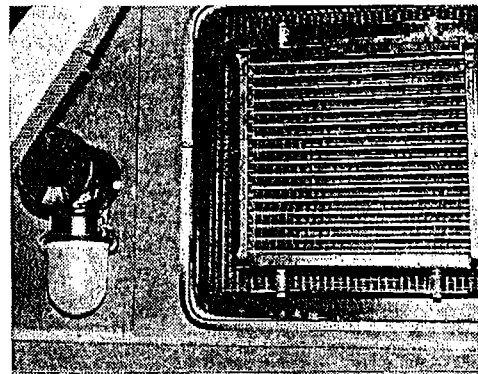
The temperature of the cooling water is indicated by an instrument-bound thermometer. During operation of the combine the temperature of the cooling water should be 80°C to 95°C.

- Radiator guard:

A fouled radiator guard or radiator results in overheating of the motor. Check the radiator guard and the radiator regularly and, if necessary, clean them with the motor standing idle.

Unlatch and take off the guard. Radiator and guard are now easily accessible.

- a) After it has cooled down, clean the radiator from the side of the motor.
- b) Let a motor that has become too hot run at idling speed for a while before turning it off.
- c) The radiator guard including the frame should have a good fit. (fig. 130)



130

- Overpressure:

The membrane beneath the radiator lid (F) is compressed when there is overpressure in the radiator system. The water vapor can thus escape through the overflow pipe (E). (fig. 127)

Be careful when opening the hot radiator! Loosen the radiator lid a little only and let the overpressure escape first.

Battery:

The battery is located on the left side behind the motor (beneath the guard).

The combine is equipped with a 12 V-battery. The battery is filled with diluted sulfuric acid. Control the acid level regularly, at least every 14 days. Fill up with distilled water, if necessary. The acid level must be approx. 10mm above the plates.

At times, have the acid density measured with an acid siphon.

Charge the battery before sheltering the combine for the winter; recharge it every 6 weeks or have a battery-service take care of the battery (refer to "suggestions for sheltering the motor in winter").

Three-phase current generator:

- a) The cables between the generator and the battery may never be separated while the generator is still running.
- b) When connecting the battery, check for the right polarity to prevent the diodes from becoming destroyed.
- c) Working on life parts should be done only if the battery has been disconnected in advance.
- d) Because this is a three-phase current generator, the ground should not be tapped to check for voltage in a cable. The semiconductors would be damaged.
- e) Disconnect the cables on three-phase current generator when welding electrically on the combine!
- f) The three-phase current generator is energized by the battery via the charging control lamp. Bulbs that have turned out are thus to be replaced to ensure a secure energization.