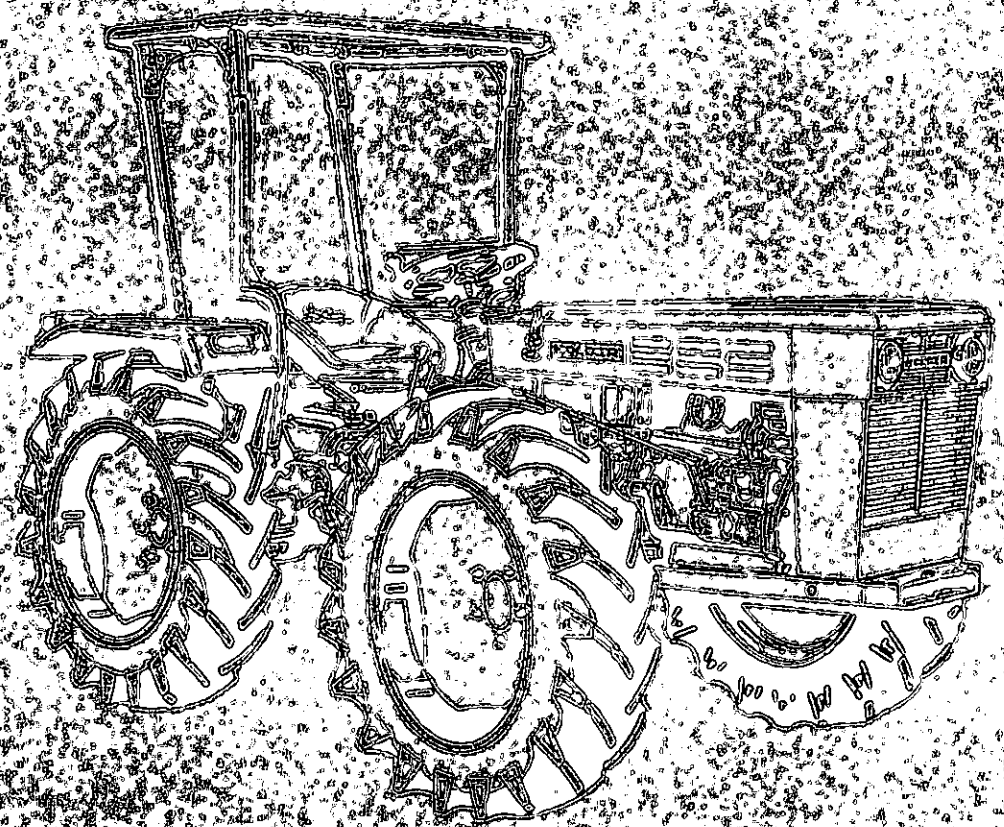
HOLDER

A 55
A 55 F



Betriebsanleitung

Operating Instructions

Notice d'emploi

Instrucciones de servicio

1975

Gebrüder Holder Maschinenfabrik
7418 Metzingen Western Germany
Telefon (07123) 2038* Telex: 0724530

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Engine and Tractor

A) Description

The experience achieved by the Holder Company in the course of more than 80 years of designing and manufacturing agricultural tractors, combined with the latest knowledge in engineering and production, have gone into your new Holder tractor, which will impress you with its economy, driving comfort, and high performance in all cultivations.
To keep your tractor ready for service at any time, please read this manual carefully, for it contains all instructions necessary for thorough care and maintenance of the tractor. **The operation manual belongs into the hands of the tractor driver.**

For all inquiries please indicate:

a) Type of tractor . . . . . e.g. A 55 resp. A 55 F
b) Engine serial No. . . . . e.g. V3 20 500
c) Tractor serial No. . . . . e.g. 35 30 101
d) Date of sale: . . . . . e.g. 2/4/74 and, if necessary, date of reclamation
e) Tractormeter reading: . . . . . e.g. 500 operation hours

The tractor serial No. is embossed on the type plate affixed to the dash panel (32. Ill. 4), or on the connection housing (31 Ill. 4). RH side in driving direction. The engine No. is to be found on the cylinder crankcase (68 Ill. 9) – exhaust side.

Technical data, illustrations and measurements, as stated in this manual, are not obligatory for us, and no claims can be derived from these. We reserve the right to make improvements in the tractors without changing this operation manual.

B) Technical Data

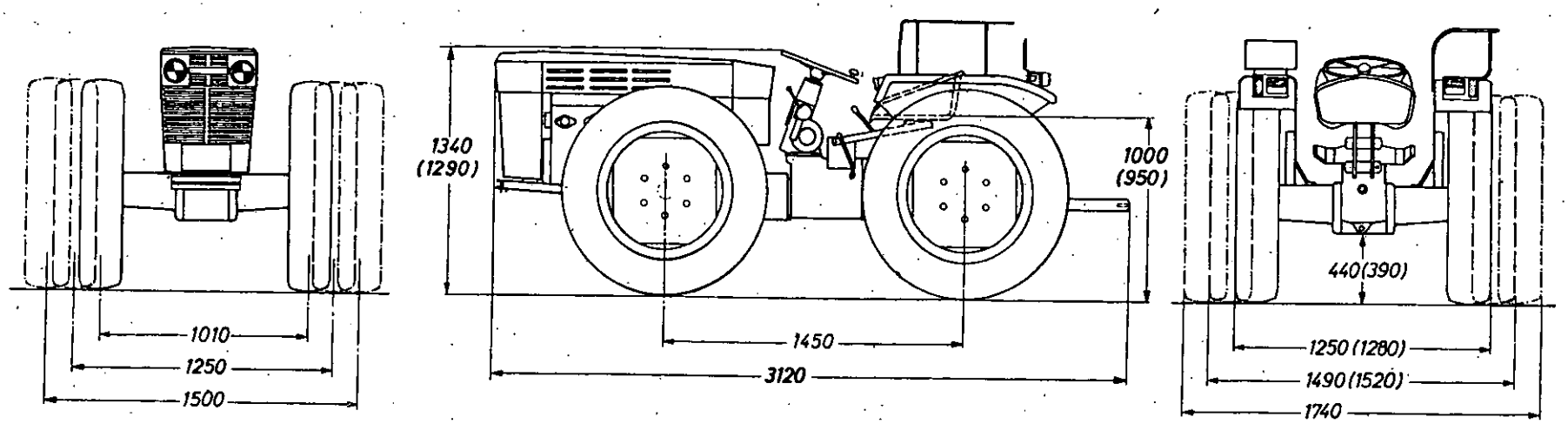
1. Engine

Manufacturers:	Gebrüder Holder, Maschinenfabrik, 7418 Metzingen/Württ.
Type:	VD 3
Design:	in-line, vertical engine
Mode of operation:	four-stroke
Combustion:	Direct fuel injection
Number of cylinders:	3
Cylinder bore:	95 mm
Stroke:	95 mm
Cylinder capacity:	2020 cc
Compression ratio:	1 : 16,8
Air gap: (cold/warm)	0,25 mm
Fuel consumption:	245 g/kW/h (180 g/HPh)
Cooling:	Water circulation cooling with thermostatically controlled pump
Air filter:	Oilbath air filter with cyclone preselector
Lubrication system:	Force-feed lubrication with gear pump
Oil pressure:	$4\ ^{+1}_{-0,5}$ bar atm.
Oil filter:	Change-cartridge in main stream (M & H - W 9.20)
Speed:	2300 min^{-1} (rpm)
Idling speed:	800 min^{-1} (rpm)
Max. torque at 1800 min^{-1} (rpm)	112,8 Nm (11,5 mKp)
Capacity according to DIN 70020	27 kW (36 PS)
Capacity according to SAE:	40 HP
Transmission:	Gear drive 8 forward, 4 reverse
Clutch:	Single-plate dry clutch KS 200 (make F & S) (with yellow springs)

Fuel system

Fuel injection pump with regulator:	Bosch 0 400 463 093
Fuel injection nozzle:	Bosch DLL 140 S 591
Injection pressure:	175 bar (atm.)
Fuel filter:	Micronic filter cartridge – built into the tank –
***Commencement of delivery of fuel injection pump:**	12,6 mm b. T.D.C. (before top dead center) Unscrew cover of injection pump. Turn regulator sleeve with gear ring forward by approx. 2/3. (Take care that markings of gears in gear control housing will correctly match).

*Detailed instructions for timing in VD2/VD3 Workshop Manual.



Dimensions and measurements of tractors (Dimensions in brackets relate to 10.5-20 tyres)

Wheel base:	1450 mm
Track widths:	1010/1250/1500 mm
Overall width:	1250/1490/1740 mm (1280/1520)
Overall length incl. 3-point linkage:	3120 mm
Overall height without safety frame:	1340 mm (1290 mm)
Overall height incl. safety frame:	1920 mm (1870 mm)
Diameter of minimum inner turning circle	4000 mm (3800 mm)

Weights:	**A 55 with tyres**		**A 55 F with tyres**	
	9.5-9-24 AS(6+8ply)	10.50-20 AS (8ply)	9.5-9-24 AS (8ply)	10.5-20 AS (8ply)
Empty weight with driver total	1545 kg	1525 kg	1660 kg	1680 kg
front	890 kg	880 kg	960 kg	970 kg
rear	655 kg	645 kg	700 kg	710 kg
permissible total weight	3000 kg	3000 kg	3000 kg	3000 kg
permissible load on axle front	1500 kg	1500 kg	1500 kg	1500 kg
permissible load on axle rear	1500 kg	1500 kg	1500 kg	1500 kg
permissible load				

2. Transmission

a) **Gearbox:** 8 forward speeds and 4 reverse speeds. Four-wheel drive via two differentials with spiral bevel gears, front diff-lock operated by spring-loaded foot pedal. (4 III. 1). Rear diff-lock operated by spring-loaded hand lever (9 III. 1).

b) **Speeds at max. engine revs (2300 min^{-1} (rpm)**

		with rubber-tyres 9-24 (6 and 8 ply rating	with rubber tyres 10.5-20 (8 ply rating)
Forward:	1st speed	1,30 km/h	1,10 km/h
	2nd speed	2,20 km/h	2,00 km/h
	3rd speed	3,60 km/h	3,20 km/h
	4th speed	5,70 km/h	5,10 km/h
	5th speed	4,70 km/h	4,20 km/h
	6th speed	8,10 km/h	7,20 km/h
	7th speed	13,10 km/h	11,70 km/h
	8th speed	21,00 km/h	18,80 km/h
Reverse:	1st speed	1,80 km/h	1,50 km/h
	2nd speed	3,00 km/h	2,70 km/h
	3rd speed	4,90 km/h	4,40 km/h
	4th speed	7,80 km/h	7,00 km/h

c) **Tractormeter:** (2 III. 3) Registering ground speed, engine and P.T.O. rpm. and hours. The tractormeter registers one hour based at an engine speed of 1650 min^{-1} (rpm).

d) **Diff-lock:** Foot-pedal operated front-axle diff-lock. (4 III. 1). Hand lever operated rear-axle diff-lock.

e) **P.T.O.:** Standardised P.T.O. with 540 min^{-1} (rpm) at 2100 min^{-1} (rpm) of the engine or 590 min^{-1} (rpm) at 2300 engine min^{-1} (rpm).

f) **Steering:** ZF type pivotal steering, acting on all four wheels, with full hydromatic steering assistance.

g) **Brakes:** Acting on all four wheels, two independent braking systems, footbrake and handbrake acting on all four wheels. The handbrake consists of a ratchet lever.

h) **Trailer hitcl**

i) **Hydraulics:**
Max lifting
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Control valv
Oilfilter:

k) **Implement l**
standards DI

l) **Electrical sy**
Starter:
Dynamo:
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Dynamo cap
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Headlights:
Front traffic
Tail lamp:
Braking light
Rear traffic l
Licence plat
Pilot light sy
Rear reflecto
Horn:
Socket for tr
Socket for w
Combined cc

h) **Trailer hitch:** adjustable for height and revolving, with a pistol-type handle grip for one-man operation.

i) **Hydraulics:** Holder two-cylinder hydraulics with Bosch gear pump.

Max lifting capacity — as measured on lower linkage arm of the field bar:		14000 N (1400 kg)
Capacity of hydraulic pump: with hydromatic steering		11 cc per rev. (26 l/min) at 2300 min^{-1} (rpm) max. engine speed
Working pressure:		175 bar (atm.)
Hydraulic oil supply tank:	situated in front gearbox	HD-B-SAE 20 engine oil
	for temperatures below −10° C	HD-B-SAE 10
Control valve:		Bosch HY/SEA 5/175/1
Oilfilter:		situated in return flow pipe

k) **Implement linkage:** Standard Cat. 1 three-point-linkage with drawbar. Corresponding with German specification standards DIN 9674.

l) **Electrical system (12 Volt system)**

Starter:		Bosch 0001 362 012 Type JF
Dynamo:		Bosch EH (R) 14 V 11 A 19
Dynamo voltage:		12 V
Dynamo capacity:		90 W
Mode of regulation:		Voltage regulation
Battery capacity:		88 Ah
Headlights:		2
Front traffic lights:		2
Tail lamp:	Three-chamber lamp	
Braking light:		2
Rear traffic light		
Licence plate light:		1
Pilot light system		yes
Rear reflectors:		2
Horn:		yes
Socket for trailer lighting:		yes
Socket for windscreen wiper of tractor cab:		yes
Combined control instrument:		yes

C) Operation levers and control instruments

Ignition lock

The ignition lock allows the selection of three different positions with the ignition key:
0 = engine clear for starting, engine can be started
1 = parking light on
2 = dimmed headlight on

No.	Ill.	Description of part:
1	3	Combined control instrument
2	3	Tractormeter
15	2	Ignition lock with ignition key
17	2	Warning light impulse transmitter
16	2	Glow starter switch
19	2	Fuse box
5	1	Traffic light switch
35	4	Horn button
3	1	Hand throttle lever
29	4	Foot lever (gas)

No.	Ill.	Description of part:
34	4	Cut-out rod
26	4	Hydraulic operation lever
27	4	P.T.O. selector lever
6	1	Gear selector lever
7	1	Selector lever (preselection)
4	1	Foot-pedal for diff-lock operation (front)
9	1	Hand lever for diff-lock operation (rear)
10	1	Clutch pedal
30	4	Foot brake pedal
33	4	Hand brake

Driver seat

Can be adjusted to the operator's weight. Adjustment with lever (8 Ill. 1).
(W) = soft springing
(H) = hard springing
} Fix lever (Y Ill. 1) accordingly.

D) Preparations for taking the tractor into service

For the first 20 hours do not operate engine under full load for a prolonged period of time.

Before taking your tractor into service, examine it thoroughly for traffic and operation safety. Make the following check-up:

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1. Preparatio
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a) Fuel supply in tank (36 Ill. 5)
b) Oil level in engine (42 Ill. 7) — never allow tank of oil sump to run entirely empty

For temperatures below −10° C	HD-B-oil SAE 10 W
from −10° C to +20° C	HD-B-oil SAE 20
above + 20° C	HD-B-oil SAE 30

Use only HD-B oils for diesel engines. HD-B oils are high-grade branded oils for diesel engines corresponding to the specification MIL-L-2104 B. Please ask your Holder distributors or dealers for advice. List of recommended oils see page 60.
In order to avoid damages caused by the use of inferior lubrication oils, we recommend to use only branded oils of the large oil companies, and to stick to the initially chosen brand.

c) To check cooling water level, remove radiator cap (46 Ill. 6).

d) All four tyres must have the same pressure:

9-24 AS (6ply)	1,5 bar (atm.)
9-24 AS (8ply)	2,5 bar (atm.)
10.5-20 AS (8ply)	2,5 bar (atm.)

e) Check lighting system

f) Check trailer hitch

Make a short trial run in order to control:
a) Clutch and steering
b) Foot and hand brakes.

Repair any irregularities at once!
When driving on public roads please pay strict attention to your local traffic regulations.

E) Taking tractor into service

1. Preparation

Shift gear selector lever into neutral (6 Ill. 1)

Starting at normal temperatures
a) Move hand throttle lever (3 Ill. 1) to approx. half revs.
b) Insert key (15 Ill. 2) in ignition lock till charging lamp (21 Ill. 3) lights up red, and oil pressure indicator (22 Ill. 3) lights up yellow.

c) Pull out glow starter button (16 Ill. 2) as far as stop. The starter is now in operation. As soon as engine has sprung to life, release the button. **Never operate the starter** with running engine. If engine fails to fire after 10 seconds, release button and repeat the starting procedure. After the engine has sprung to life, glow starter indicator (22 Ill. 3) and oil pressure indicator (22 Ill. 3) must go out.
d) Select desired engine speed with the hand throttle lever (3 Ill. 1), resp. with the foot gas pedal (29 Ill. 4).

Starting at low temperatures

a) Move hand throttle lever (3. Ill 1) to approx. half revs.
b) Insert key (15 Ill. 2) in ignition lock till charging lamp (21 Ill. 3) lights up red, and oil pressure indicator (22 Ill. 3) lights up yellow.
c) Pull glow starter button (16 Ill. 2) out to first position and hold for approx. 1 minute (preglow), i.e. till glow starter indicator (18 Ill. 2) lights up bright red, then pull out button as far as stop. (The starter now turns over the engine). After the engine has come to life, glow starter indicator (21 Ill. 3) and oil pressure indicator must go out.
d) Select desired engine speed with the hand throttle lever (3 Ill. 1), resp. foot gas pedal (29 Ill. 4).

2. Driving

Before using the gear lever, the hand throttle lever resp. foot gas pedal (3 Ill. 1 and 29 Ill. 4) should be shifted to neutral. Then depress clutch pedal (10 Ill. 1) (declutch). Preselect desired gear by means of the presselector lever (7 Ill. 1). Shift gear lever (6 Ill. 1). (See gear selection diagram Ill. 16). Release hand brake (33 Ill. 4).
If the gear proves difficult to engage, depress clutch pedal (10 Ill. 1) a second time (never use force), release clutch pedal (10) slowly. Control speed within desired gear range with the hand throttle lever (3 Ill. 1), or with the foot gas pedal (29 Ill. 4). (Whilst driving, take your foot off the clutch pedal). Security can be increased
With the hydraulicylly assisted steering system, uncalculably high pressures might develop

a) if the permissible steering angle is not maintained
b) when passing over obstacles with high speed, or pushing away heavy objects with the drive wheels.

In such events, the steering system is bound to be overstressed and can be damaged.

Never let tractor run in unventilated space!

Carbon oxydes are scentless and invisible.

Driving on steep slopes

We draw your particular attention to the fact that driving on extremely steep slopes, whether in line with, or diagonally across the slope, is at your own risk!

Take particular care whilst using the tractor — set on narrow track, and with heavy implements attached — in uneven territory, specially when turning the machine downhill on slopes.

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3. Braking
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Trailer lighting:
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4. Diff-lock
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5. Adjustment
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Should it happen that the machine has turned over under an extreme working condition, pay attention to the following:
An open inlet valve allows the oil of the air filter to enter the cylinder, blocking up the engine. This oil must be drained through the opening of the nozzle holder.
Security can be increased by using Holder hub spacers, or Holder wheel ballast weights. Please ask your Holder dealer for advice

Stationary operation
For a lengthy stationary operation of the tractor, i.e. when using the P.T.O., for instance to drive a water pump, take care that the machine stands on level ground.
We recommend to increase the oil level of the rear gearbox by approx. 2 litres.

3. Braking
The foot brake (30 III. 4) is used when the tractor is moving. Test the brakes for proper function before each use of the tractor. The brakes have the advantage of acting at any time uniformly on all four wheels. A slight outward turn of the hand ratchet lever (33 III. 4) releases the handbrake. When parking the tractor on a slope, use suitable chocks, turn the engine off, and shift the gear lever to a low gear.
When using the tractor with an attached trailer, pay attention to your local traffic and safety regulations.

Trailer lighting: Please pay attention to local traffic and safety requirements. Where rear reflectors, traffic, and brake lights, are required by law, a 7-pole plug DIN 72576, can be supplied.

Pay attention to your local traffic and safety regulations.
Driving with attached trailers, specially drive axle trailers, or other trailed vehicles, is at your own risk.

4. Diff-lock
To obtain power transmission through both, rear or front wheels, when working in soft, slipping ground, the differential gear can be locked. The front diff-lock is pedal-operated (4 III. 1), and the rear diff-lock is hand lever operated (9 III. 1).
Attention! With locked differential, i.e. if the wheels are rigidly locked, the tractor must be steered straight ahead only.

5. Adjustment of track width
To alter the track width, change over both pairs of wheels from right to left. The arrow on the tyres must always point to forward driving direction. Fenders [illegible]

track widths. The tyre size must be the same for all four wheels. Ranges of adjustment see on page 29.
Tyre pressure with tyres: 9-24 AS (6ply) 1,5 bar (atm.), 9-24 AS (8ply) 2,5 bar (atm.), 10:5-20 AS (8ply) 2,5 bar(atm.) Check wheel nuts for tightness regularly, specially after having changed over the wheels. The steering angle must always remain as adjusted by the manufacturers.
Do not use larger tyre sizes for the following reasons:
a) The permissible speed must never be exceeded
b) Sufficient distance between the tyres must remain at maximum steering angle
c) Larger tyres will overstress the transmission.

Track widths (measured from wheel centre to wheel centre)
To avoid an overstress of the bearing points, the max. track widths allowed from the works must never be exceeded.
Max. track width = 1500 mm — wheel spacers type 5092-2 (125 mm)
A 55 F max. track width = 1250 mm.

6. Wheel ballast weights
A 55 50 kg for each wheel, front or rear, with A 55 F in front only.
The weights must always be used in pairs. If ballast weights are used, water in the tyres, or other ballasts, are not allowed.

Filling the tyres with water

Water filling valve
The A 55 tractor both, with tyres 9-24 and 10.5-20, has a water filling valve for standard equipment.

Filling in water (III. 15a)
Jack up the tractor and turn the wheel till the air valve is on top. Remove the valve insert and screw the water filling valve into the hose valve. Connect the water hose, and let water flow in till it comes out on the little ventilation valve — L —. Then remove water filling valve, refit valve insert, and pump up the tyre to the prescribed pressure.

Draining the water from the tyres (III. 15a)
Jack up the tractor, remove valve insert, and drain the water. To drain completely, fit combined valve, and pump up air. The air pressure will cause the last drop of water to come out of the ventilation tube. Then remove combined valve, refit valve insert, and pump up tyre to required pressure.

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F) Service a
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Water filling in winter
When frost is expected, add an anti-freeze mixture to the water used for filling the tyres.

7. Hydraulic power lift
The hydraulic lift arms (26 Ill. 4) are actuated by means of hydraulic lever (73 Ill. 13) via the control valve. A forward push of the lever („Senken") will cause lowering, and a rearward pull („Heben"), will cause lifting, of the implements. In intermediate position, the implement is locked in instant height. At the bottom of the travel, the level is held, and the control element in its working (floating) position. The hydraulic pump continously working, the hydraulic lever must only be used for lifting or lowering the implements.
Caution: When parking the tractor unattended (even during working breaks), the hydraulic cylinders must be discharged, i.e. the implements must be lowered to the ground, in order to prevent accidents. When using implements, always pay attention to the corresponding local traffic regulations!
The distributor (85 Ill. 5) has a throttle valve plate for standard equipment.

8. Stopping tractor
Let engine run idle, declutch, shift gear lever (6 Ill. 1) to neutral position „0". Put on hand brake.

9. Shutting engine off
Shift hand throttle lever (3 Ill. 1) forward to neutral. Pull cut-out lever (34 Ill. 4) till engine shuts off. Remove ignition key.

F) Service and Maintenance
(See also Service Chart on pages 58/59)

Always bear in mind:
Thorough service will pay! Oil changed in time and punctual lubrication are cheaper than repairs which become necessary due to negligance!

1. Engine
a) **Oil change** – for the first time after 20 operation hours, thereafter every 150 operation hours. Remove oil drain screw (A_1 Ill. 9) and (86 Ill. 9) with tractor standing on level ground. Drain oil (to do so engine should still be warm so that the old oil drains well). Clean oil drain screw and magneto plug.

Replace filter element (67 Ill. 9). When fitting new cartridge the gasket must be flush.
Attention! With every engine oil change, fit a new filter element Part No. of change filter catridge 000 022 96 51 (M & H No. W 9.20).
Refit oil drain screw (A_1 Ill. 9) in oil sump, and oil drain screw (86 Ill. 9) in steering box, and tighten well. Only after this has been done, fill in fresh oil through the oil filler plug (43 Ill. 6), **(observe utmost cleanliness).** The ventilation filter of the oil filler plug (43 Ill. 6) must also be cleaned with every oil change. After the oil change, make a short trial run. Thereby, observe oil pressure indicator (22 Ill. 3). Check gasket of filter element! After this, check oil level with shut-off engine. Max. diprod mark (42 Ill. 7) can be exceeded by approx. 5 mm.

Oil Filling quantities: 6,0 Ltr.
Incl. micro-mesh oil filter.

Use only scrupulously clean HD-B oil for diesel engines

below	-10^{o} C	HD-B SAE 10
up to	$+20^{0}$ C	HD-B SAE 20
above	$+20^{o}$ C	HD-B SAE 30

Clean the ventilation filter of the fuel injection pump (41 Ill. 5) after every 150 hours of operation in diesel oil.

b) **Oilbath air filter:** Clean according to dust development, if necessary daily. Remove oil basin (70 Ill. 10), and wire gauze insert (69 Ill. 10), and clean in diesel fuel. Let wire gauze drip dry, and top-up to mark with fresh engine oil.

Clean cyclone. Pay attention to outlet port. (Situated below).
Check, resp. clean inlet pipe in air filter.

c) **Cooling system:** Check cooling water level daily, possibly when engine is cold. Be careful if engine is still warm. Lift radiator cap (46 Ill. 6) carefully as far as stop, and let excess pressure escape. Only then remove radiator cap entirely. The cooling agent thermometer (25 Ill. 3) has a three-colour scale. **White:** sub-temperature of engine. **Green:** normal working temperature. **Red:** engine temperature too high – shut-off at once! Excessive cooling water temperature can have the following causes:
dirty radiator, insufficient cooling water, defective water pump, thermostat not responding, V-belt slack or torn. If frost is expected, add anti-freeze mixture, or have cooling water concentration checked.
Cleaning radiator: Remove insects and dust deposits by blowing through radiator fins from the engine side with compressed air.
Draining cooling water: Open drain screw (Aw Ill. 9) at the radiator bottom.
Open drain screw (66 Ill. 9) at the engine.

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d) **V-belt:** The V-belt (60 Ill. 9) has the right tension, if you can press it down with your finger between the 2 V-belt pulleys of ventilator and dynamo (62 Ill. 9) by approx. 1 cm. To retighten the V-belt, slacken both screws (61 Ill. 9) on the adjustment shackle as well as the two screws (63 Ill. 9) on the dynamo retainer. Then press dynamo outwards, till the V-belt has the right tension. Thereafter, retighten screws.

We recommend:

e) **Regulator of fuel injection pump** – (50 Ill. 7) – after every 300 hours of operation, drain excessive oil on control plug (49 Ill. 7). Have fuel injection pump, injection nozzles, and regulator, checked by a Bosch service station after every 1500 service hours. Have oil in regulator renewed.

f) **Injection nozzles:** Dismantle after every 600 operation hours, clean, and check with Bosch nozzle testing device (Test pressure 175 bar (atm.).

g) **Valve clearance** (Have valve clearance checked and adjusted by an expert only!)
After the first 20 operation hours, check valve clearance with a feeler gauge (warm and cold 0,25) thereafter – under normal working conditions – check valve clearance after every 300 service hours.

Adjustment of valve clearance:
The sequence of cylinders, as mentioned below, is as seen from the radiator side.
Direction of rotation of engine „clockwise" as viewed from the V-belt pulley of the crankshaft.
VD 3

Adjustment of cylinder I	valves:	at the point of opening of cylinder III outlet valve.
Adjustment of cylinder II	valves:	at the point of opening of cylinder I outlet valve.
Adjustment of cylinder III	valves:	at the point of opening of cylinder II outlet valve.

The clearance between rocker arm and valve – on both, inlet and outlet valve – should „only just" allow the feeler gauge (84 Ill. 14) to be inserted. If the clearance proves to be either too narrow, or too wide, slacken counternut (83 Ill. 14) and readjust setcrew in a way, which will allow, with counternut retightened, the feeler gauge to be removed without resistance.

h) **ZF spindle-type hydromatic steering**
The hydromatic steering assistance, considerably reduces the force required for steering. Steering assistance responds only if the engine is running. Should the steering aid cease to function, the tractor can still be steered, but with increased force. (Oil change see under the heading „Front transmission".)

Check steering angle to both sides with gauge (P Ill. 4a). Measurement 1150 mm.

Readjustment: Slacken hexagon nut (1374 Ill. 4a) and adjust thread pin (1375 Ill. 4a) so that the check measurement of 1150 mm is obtained when the thread pin meets the forked piece (1386 Ill. 4a).

i) Ventilation („bleeding") of fuel system

The fuel system must be ventilated („bled") if:

a) fuel tank is empty

b) fuel pipes have been disconnected, or removed, i.e. if air has entered the pipes, or the intake chamber of the fuel injection pump (e.g. if fuel tank has been run dry).

Slacken the ventilation screw (51 Ill. 7) of the fuel injection pump. The fuel must come out without bubbles. Then tighten ventilation screw.

k) Renewing fuel filter

The fuel filter cannot be cleaned. (Part No. of filter element: 000 022 6751, M & H No. 7070)

The fuel filter, built into the fuel tank (36 Ill. 5) must be replaced, depending on the degree of dirt, approx. after every 300 hours of operation.

As soon as the fuel filter has been removed, the valve in the fuel tank automatically prevents the fuel from entering the tank. After the fuel filter has been refitted, the fuel flow into the tank is resumed.

Fuel

It is absolutely essential, to use only high-grade fuel. Fuels corresponding with the German specification standards DIN 51601, or the British specification standards BS 2859: 1957 class A – high speed, will fulfill all requirements of a good fuel. The proportion of sulphur should not exceed 0,5 %.

Attention! To avoid trouble during the cold season, we recommend that you provide for winter fuels well in time. Your filling station will advise you.

l) Battery maintenance

Regular control and renewal of the acid level is of particular importance.

The liquid level must be 15 mm above upper edge. Use only distilled water for refilling. Check every 4 weeks, during the warm season every two weeks.

At this opportunity we recommend to also check tight fitting of battery and terminals. This is particularly important to obtain sufficient current for starting.

Avoid oxidation by thoroughly cleaning the terminals and by greasing them, particularly at the lower side, with acid-free battery grease.

An entirely charged battery is particularly important for starting in cold weather because then more energy is required than in warm seasons. If the tractor is used for short periods only, the charge via generator is insufficient and the battery must be charged with a charging unit now and then.

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2. Transmission

a) Grease the lubrication nipples (S_K) of the universal cross after every 1500 operation hours. Grease all other lubrication nipples (S) after every 300 operation hours. Under unfavourable working conditions, and in tropical areas, lubrication should be effected in shorter intervals. To lubricate the universal crosses, the tractor must be in maximum steering angle to one side, and the position of the universal shaft must be so that the grease nipples are visible. Grease guns with spacer pieces, that permit to reach the nipples, are commercially available.

b) **Front gearbox** – (hydraulic oil supply tank).
Change oil for the first time after 150 hours, thereafter every 1500 operation hours. The front gearbox contains normally HD-B SAE 20 engine oil, in case of temperatures below 10° C, HD-B SAE 10 oil.
A 55 = 7,0 Ltr. + 2,0 Ltr. in hydromatic steering, and hydraulic system.

Draining oil:

1. Press hydraulic lever (73 Ill. 13) of hydraulic power lift down as far as stop.
   Move hydraulic operation lever to lowering „Senken" (26 Ill. 4)
2. Open drain plug (A Ill. 1) of steering, and turn steering wheel left and right to steering lock.
3. Drain oil on front transmission through drain screw (A_2 Ill. 11).

Refilling oil and ventilation:

1. Fill in oil on filler sight glass (E_2 Ill. 4) 7.0 Ltr. HD-B oil, SAE 10 or 20.
2. Start engine and let it run in idling speed. Turn steering wheel several times from right to left steering lock. Ventilation is automatically effected through the ventilation filter in the front gearbox.
3. Refill with approx. 2,0 Ltr. HD-B oil.
4. Lift and lower hydraulics several times under load.
5. Shut engine off. Lower hydraulics. Check oil level on filler sight glass (E_2 Ill. 4), with lowered hydraulics (front loader). The system has been correctly ventilated, if the oil level is visible at the mark of the filler sight glass. If necessary, top-up to mark.

c) **Rear gearbox**
Change oil for the first time after 300, thereafter every 1500 operation hours. The rear gearbox contains SAE 80 gear oil = 9,0 Ltr.
If the tractor stands on level ground, the oil must at least be visible at the centre of the sight glass (K Ill. 4).
Drain screw (A_3 Ill. 13). Filler screw (E_3 Ill. 1).
If the tractor is used stationary for some period of time, e.g. for driving a water pump, we recommend to increase the oil level by approx. 2 litres, and to stand the machine on level ground.

d) Reduction gears
Check oil level on control plug (K III. 5 and III. 13). If necessary, top-up with SAE 80 gear oil.

3. Brakes, Clutch, Lighting system
Brakes, clutch and lighting system must be in full order at any time.

a) Brakes – Clutch
Check function before each use. Apply every week a few drops of oil to the clutch operating shaft, brake pedal bearings, etc.

b) Lighting
Have lighting system checked after every 150 operation hours (Wiring diagramme III. 20).

Resetting clutch
In the course of time, lost motion will be reduced owing to wear of the clutch plate linings, resp. increased through wear of the graphite seal. Lost motion of the clutch pedal must be regularly controlled and reset. At its press-fit, hold threaded part (11 III. 1) tight with a pair of pliers, and adjust lost motion to approx. 15–20 mm by turning the collar nut (12 III. 1). Lost motion of the clutch pedal is the way the pedal takes before a resistance can be felt.
Attention! Unnecessary sliding of the clutch will cause premature wear. Therefore, do not use the clutch pedal as a foot rest.

4. Washing the tractor
When washing the tractor down with water, disconnect battery terminals, or still better, remove battery entirely. Protect air filter opening, and fuel injection pump, from a direct contact with water.

G) Position of rear licence plate on four-wheel drive tractor

Traffic regulations in Germany prescribe for agricultural and forestry machines with a speed not exceeding 30 km/h a licence plate of the size 240 x 130 mm. In order to be correctly lighted by the licence plate lamp, the plate must be fitted to the tractor as shown on illustration No. 15.

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H) Transporting persons

Traffic regulations in Germany probibit the transporting of persons unless a suitable seat is provided. Please pay attention to your corresponding local regulations.

I) Three-point linkage for standard Cat. I. implements

The three-point linkage is suitable for attachment of standard Cat. I implements. Horizontal adjustment is made with the crank handle (79 Ill. 13). Whilst adjusting, please discharge hydraulics. Lateral swing of the implement is adjusted on the check chains (74 Ill. 13). The length of the upper linkage arm (77 Ill. 13) can be altered

K) How to value a tractor

A motorcar is generally valued according to driven kilometers and age. A tractor is best valued according to operation hours and age, with the following guiding principles:

1 operation hour	=	75 driven km of a motorcar
10 operation hours	=	750 driven km of a motorcar
250 operation hours	=	18750 driven km of a motorcar
500 operation hours	=	37500 driven km of a motorcar
1000 operation hours	=	75000 driven km of a motorcar
2000 operation hours	=	150000 driven km of a motorcar
2500 operation hours	=	187500 driven km of a motorcar.

L) List of recommended oils

The oils to be used with Holder diesel engines must be in conformity with the American Military Specification **MIL-L-2104 B.** The following oils correspond to the above mentioned specification and are recommended by us:

1. ARAL

ARAL diesel engine oil SAE 10 W	= SAE 10 W
ARAL diesel engine oil SAE 20 W/20	= SAE 20
ARAL diesel engine oil SAE 30	= SAE 30

2. BP

BP Vanellus-T-SAE 10	= SAE 10 W
BP Vanellus-T-SAE 20	= SAE 20
BP Vanellus-T-SAE 30	= SAE 30

3. ESSO

Essolube HDX SAE 10 W	= SAE 10 W
Essolube HDX SAE 20	= SAE 20
Essolube HDX SAE 30	= SAE 30

4. FINA

FINA Delta Motoroil SAE 10	= SAE 10 W
FINA Delta Motoroil SAE 20	= SAE 20
FINA Delta Motoroil SAE 30	= SAE 30

5. GASOLIN

GASOLIN HD SAE 10 W	= SAE 10 W
GASOLIN HD SAE 20-W-20	= SAE 20
GASOLIN HD SAE 30	= SAE 30

6. MOBIL-OIL

MOBIL Delvac Oil 1210	= SAE 10
MOBIL Delvac Oil 1220	= SAE 20
MOBIL Delvac Oil 1230	= SAE 30

7. SHELL

SHELL Rotella Oil S SAE 10 W	= SAE 10 W
SHELL Rotella Oil SAE 20 W/20	= SAE 20
SHELL Rotella Oil S SAE 30	= SAE 30

8. VALVOLINE

VALVOLINE Super HPO SAE 10	= SAE 10 W
VALVOLINE Super HPO SAE 20	= SAE 20
VALVOLINE Super HPO SAE 30	= SAE 30

9. VEEDOL

VEEDOL Engine oil (Heavy duty plus) HD 901 Special	= SAE 10 W
VEEDOL Engine oil (Heavy duty plus) HD 902 Special	= SAE 20
VEEDOL Engine oil (Heavy duty plus) HD 903 Special	= SAE 30

Our foreign agents are requested to check the oils they have so far recommended, and which are being used by Holder tractor owners, in the light of these instructions. This means, that the relevant mineral oil companies should be asked whether their recommended oils are in conformity with the American Military Specification **MIL-L-2104 B.**

Service Chart We recommend to have the following services carried out by an accredited Holder Workshop.

A **To be carried out by agent immediately upon receipt, and before taking tractor into service.**	B **When handing tractor over to client.** If possible, carry out all jobs, and give all explanations, in the presence of the tractor owner, or his authorised person, and the tractor driver.	C **After every 8 to 10 operation hours (daily)**	D **After the first 20 operation hours** **1st Service**
1. Grease all lubrication nipples. 2. Check oil level in engine and gearbox. a) Engine: Optimum oil level upper diprod mark. Use only clean, branded HD-B oils for diesel engines. For temperatures below −10° C HD-B SAE 10, from −10° C up to +20° C HD-B SAE 20, above +20° HD-B SAE 30 b) Rear gearbox: oil level centre of sight glass. SAE 80 gear oil. c) Front gearbox: Check oil level on filler sight glass! HD-B SAE 20 engine oil, for temperatures below −10° C HD-B SAE 10. d) Reduction gears A 55: Check oil level on control plug. SAE 80 gear oil. 3. Retighten wheel nuts. 4. Check oil level in air filter, if necessary top-up with engine oil. 5. Check cooling water level. If frost is expected, check cooling water concentration! 6. Check tyre pressure 7. Trial run engine, check function of tractor and hydraulic system.	1. Check tractor for completeness. Check tools. 2. Instructions according to operation manual. 3. Before taking tractor into service, in the presence of client: a) Check oil level of engine, explain oil change. (Point out oil filter). Observe scrupulous cleanliness when filling in oil. b) Explain cooling system. In danger of frost, check cooling water concentration! c) Check V-belt tension. d) Rear and front transmission, show sight glass, resp. filler screw, and explain oil change. e) Reduction gears A 55, point out overflow control screw, and lubrication points. f) Show lubrication nipples, oil control screws, and lubrication points. g) Explain air filter and ventilation of fuel pipe. h) Check oil level of air filter, and explain cleaning. i) Point out to battery maintenance k) Show steering stop bolts, and explain their function. Check steering angle measurement. 4. Check tyre pressure. 5. Check function of engine, gearbox, diff-lock, give practical demonstration of hydraulics. Point out to correct way of parking tractor — discharging hydraulics, lowering of implements (danger of accidents). 6. Check electrical system. Explain fuse box, and battery maintenance. 7. Give practical field demonstration of purchased implements. 8. Explain maintenance of implements in accordance with operation manual. 9. Issue warranty file card, and return to Messrs. Gebrüder Holder. 10. Pay attention to your local traffic and safety regulations	1. Check oil level of engine. (When driving on steep slopes, the oil level should reach the upper mark. Oil quality see column A-2a. 2. Depending on dust development, clean air filter and top-up with fresh engine oil. 3. a) Check cooling water level. b) If necessary, depending on operation conditions, check and clean, radiator fins. c) Check whether air intake rubber part is blocked.	**1. Replace filter cartridge.** **2. Change oil in engine (according to operation manual)** **3. Check valve tolerance (warm and cold 0,25)** **4. Retighten cylinder head screws once more with torque wrench set to break at 90 Nm (9,0 kpm.)**

2nd Service	3rd Service	4th Service	5th Service
E	F	G	H
After every 150 operation hours. If possible, carry out all jobs, and give all explanations, in the presence of the owner, or his authorized person, and the tractor driver.	**After every 300 operation hours.** Latest 6 months after having handed tractor over to client. If possible, all jobs should be carried out, and all explanations given, in the presence of the tractor owner, or his authorized person, and the tractor driver.	**After every 600 hours, resp. annually**	**After every 2500 operation hours.**
1. Engine a) Replace filter cartridge. b) Change engine oil. c) Clean ventilation filter (sealing cover) d) If necessary, clean oil filter, and top-up with fresh oil. e) Check V-belt tension. f) If necessary, blow through radiator fins with compressed air, from inside out. If frost is expected, check cooling water concentration! g) Clean ventilation filter of fuel injection pump. 2. Change gear oil for the first time, thereafter every 1500 operation hours. Front gearbox: A 55 = 7,0 Ltr. (+ 2,0 Ltr. in hydromatic steering and hydraulic system). HD-B SAE 20 engine oil, for temperatures below -10^{0} C HD-B SAE 10. 3. Grease all lubrication nipples. 4. Check complete electrical system, incl. battery. 5. Check clutch play, if necessary readjust. 6. Check brakes, if necessary readjust. 7. Retighten all screws, particularly check wheel nuts. 8. Check tyre pressure. 9. Trial run tractor and, if necessary, give another practical field demonstration of the implements.	1. Engine a) Check valve tolerance (0,25). (If necessary, replace cork seal of cylinder cap) b) Check oil level of injection pump. 2. Replace fuel filter in tank (do not clean). 3. Change oil in gearbox for the first time, then every 1500 operat.hours: Rear gearbox: A 55 = 9,0 Ltr. SAE 80 gear oil. 4. A 55: Check oil level of reduction gears (if necessary, top-up filler screw SAE 80 gear oil). 5. Steering a) Check steering play and, if necessary, reset. b) Check steering angle and stop bolts. If the number of operation hours, as prescribed for the intervals between oil changes, are not reached, the oil must be changed at least once a year.	Remove injection nozzles, clean and check with Bosch test device. Test pressure 175 bar (atm.)	1. Engine a) Check compression pressure (24 ± 2 bar). 2. Check engine clutch. 3. Have injection pump with regulator checked by a Bosch Service Station. Have oil in regulator housing renewed. 4. Steering a) Check steering play b) Check according to manufacturers (ZF) instructions. 5. Check pivot axle seat. 6. Retighten all screws. 7. Remove fuel tank and rinse. Fit new filter.

Lubricating grease
The lubricating grease must neither contain resin, nor acid, or other detrimental compounds. „Stauffer" grease must not be used for lubrication. We recommend lithium-saponified multi-purpose lubricating grease with a penetration quota of 260 to 290.

N) List of possible engine troubles

Troubles	Possible cause	Remedy
Engine does not spring to life.	Empty fuel tank	Refill fuel tank and ventilate fuel pipes
	Air in fuel injection system	Renew fuel filter
	Fuel filter clogged — in winter owing to separation of paraffin	Use winter fuel
	Leaking fuel pipes	Check all pipe connections for tightness, and retighten screw unions.
Engine proves difficult to start.	Battery capacity insufficient	Have battery checked.
	Battery terminals loose and oxidizing	Clean battery terminals, and apply vaseline-free battery grease
	Starter turns too slowly.	
	In winter: engine oil too viscous	Use engine oil according to ambient temperatures.
	Fuel feed insufficient: fuel system blocked owing to paraffin separations.	Renew fuel filter. Check pipe connections for leaks, and tighten screw unions. In cold weather, use winter fuel.
	Coarse leakage of pistons and cylinder heads.	Have checked by a skilled mechanic.
Engine operates irregularly, and performs badly.	Insufficient fuel feed	Replace fuel filter, check pipe connections for leaks, and tighten screw unions.
	Air filter system dirty.	Clean air filter system
	Relief valve of fuel injection pump not working correctly	Have checked by a skilled mechanic
	Required valve tolerance not in order	Have valve tolerance reset, have valve springs renewed
	Nozzle needles jammed	Have checked by an expert mechanic
Exhaust smokes excessively	Oil level in engine too high	Reduce oil level to upper diprod mark
	Oil level in oilbath air filter too high	Reduce oil level to mark
	Bad combustion owing to coked, or broken combustion rings, or incrorrect valve tolerance	Have combustion rings and pistons checked by a skilled mechanic. Reset valve tolerance
	Incorrect injection timing	Have checked by an expert mechanic
	Air filter system dirty	Clean air filter system

Troubles	Possible cause	Remedy
Engine overheats	V-belt loose or torn	Check V-belt tension, renew V-belt
	Radiator fins blocked	Blow through radiator fins from inside out, with compressed air
	Thermostat defective	Replace thermostat
	Air filter dirty	Clean air filter
	Injection nozzles defective	Have checked by an expert mechanic
	Delivery of fuel injection pump not precisely adjusted	Have re-adjusted by an expert mechanic
Engine without oil pressure	Leaks in lubrication system	Check screw unions of oil pipes and of lubrication oil filter for leaks, and retighten
Oil pressure warning indicator lights up	Crankshaft bearings too much tolerance	Consult an accredited workshop
	Oil pressure warning indicator defective, or faulty electrical conductor	
Charging lamp lights up during operation	V-belt loose or torn	Check V-belt tension, renew V-belt
	Battery not charged by dynamo because same, or regulator switch, defective	Have checked by a skilled mechanic.
Charging lamp doses not light up before starting	Bad cable connections	Tighten battery terminals
	Glower lamp defective	Check cable connections
	Battery discharged	Have battery checked.

O) Safety Frame/Make Fritzmeier

(Adjustable from wide to narrow track width and vice versa).

For installation of the safety frame principally use the prescribed parts only. Instructions for installation must be strictly observed. By law, and for reasons of safety, deviations are not permissible. To alter the frame from narrow to wide track, displace sockets with fenders accordingly on the axle housings. On the safety frame, the angle tubes (E) must be fitted as shown on Ill. 18, and the clamping clips (K) must be newly bored.

1. **Installation of the support tubes (Ill. 18)**
   Insert the lefthand frame support (A) and the righthand frame support (B) in the sockets of the axle housing. The retaining shackles with shims (C) must be flush with the fenders. As shown on Ill. 19, insert the 2 tubes (D) also in the sockets of the axle housing. Using ovalhead screws M 12x70, screw frame supports (A + B), as well as tube (D) onto the axle housing sockets (do not tighten)!
   Screw angle tube (E) onto left and right frame support by means of oval-head screws (M 12x70). Do not tighten!
   Attention: Pay attention to the different possibilities of installation (narrow or wide track). Screw tubes (F) also onto angle tube by means of oval-head screws M 12x70 (do not tighten)!

2. **Installation of the top of the safety frame**
   Rub talcum powder or something similar into the neck protection (G). Then slide it onto the tube of the right half of the frame (HR). Fit both halves of the frame together (check measurement 1090 mm).
   Fit crown of frame with front clamping clips (I) in available bores by means of oval-head screws M 12x70 (do not tighten)!
   Attention! The available bores (X Ill. 19) must be positioned from low at the outside, upwards at the inside. Now fit top of frame with rear clamping clips (K) as well. Use oval-head screws M 12x70, but do not tighten! The now loosely assembled top of the frame must be aligned so that the width of 1090 mm (Ill. 18) is maintained (measurement taken from centre to centre of tube). The measurement of the top of the frame overlapping the tractor in front is 183 mm (Ill. 19) (measured from the centre of the top tube to the extreme edge of the clamping clip).

3. Final assembly

If the crown of the frame has been aligned according to the required measurements, the top and retaining shackles can be bored up (13 mm dia.), and then all screws can be tightened with torque wrench set to break at 70 Nm (7 kpm). Care must be taken that all screw heads point inwards. With the exception of the 2 screws in the centre of the frame (X III. 19) which must be fitted in a way to permit slackening of their nuts inside on top. Fit the supplied plastic caps over these nuts.

Attention! For safety's sake, the self-locking screws can be used once only!

P) Assembly of the 3-way Valve 5080/1 (III. 17).

For additional, hydraulically operated implements, a 3-way valve with clamping sleeve can be installed. Remove seat with seat base. Disconnect pressure pipe between control valve and distributor. Assemble pressure pipe (1012 III. 17) from distributor to three-way valve, and pressure pipe (1013 III. 17) from control valve to three-way valve. Reassemble seat with base. Screw three-way valve (1015 III. 17) with retainer to the seat base.

Ill. No.

1 Comb
2 Tracto
3 Hand
4 Foot p
5 Blinke
6 Gear s
7 Select
8 Adjust
9 Hand l operat
10 Clutch
11 Threac
12 Collar
13 Set scr
14 Set scr
15 Ignitic
16 Glow s
17 Warnir
18 Glow s
19 Fuse b
a Fuse -
b Fuse -
c Fuse -
d Fuse -
e Fuse - transm
20 Socke
21 Chargi
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23 Blinke
24 Blinke
25 Tempe
26 Hydra
27 P.T.O.
28 Brake

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Ill. No.	Description
1	Combined control instrument
2	Tractormeter
3	Hand throttle lever
4	Foot pedal for front diff-lock
5	Blinker light switch
6	Gear selector lever
7	Selector lever (preselection)
8	Adjustment lever for seat springing
9	Hand lever for rear diff-lock operation
10	Clutch pedal
11	Thread piece (clutch cable)
12	Collar nut
13	Set screw for brake adjustment
14	Set screw for steering play
15	Ignition with ignition key
16	Glow starter switch
17	Warning light impulse transmittor
18	Glow starter indicator
19	Fuse box
a	Fuse - blinker light
b	Fuse - brake light
c	Fuse - parking light, left
d	Fuse - parking light, right
e	Fuse - warning light impulse transmittor
20	Socket
21	Charging lamp
22	Oil pressure indicator
23	Blinker pilot light/tractor
24	Blinker pilot light/trailer
25	Temperature indicator
26	Hydraulic operation lever
27	P.T.O. selector lever
28	Brake light switch

Ill. No.	Description
29	Foot gas pedal
30	Brake pedal
31	Machine serial No.
32	Type plate
33	Hand brake lever
34	Cut-out lever
35	Horn button
36	Fuel tank
37	Battery
38	Tool box
40	Horn
41	Ventilation filter (injection pump)
42	Oil diprod
43	Oil filter plug
44	Cyclone preselector
45	Air intake rubber part
46	Radiator cap
47	Air filter
48	Tractormeter drive shaft
49	Overflow control screw
50	Fuel injection pump
51	Ventilation screw (injection pump)
52	Blinker light
56	Temperature indicator
57	Exhaust
58	Thermostat
59	Cooling water pump
60	V-belt
61	Screws for adjustment shackle (dynamo)
62	Dynamo
63	Screws for dynamo support
64	Starter
65	Oil pressure control switch

Ill. No.	Description
66	Radiator drain screw (engine)
67	Change oil filter
68	Engine serial No.
69	Air filter insert
70	Oil basin for air filter
71	Stop bolt
72	Stud for steering angle
73	Hydraulic lever
74	Check chains
75	P.T.O. shaft
76	Trailer socket
77	Upper linkage arm
78	Three-chamber rear reflector
79	Crank handle for adjustment spindle
80	Trailer hitch with pistol-type handle grip
82	Glow plug
83	Counter nut for valve adjustment screw
84	Feeler gauge
85	Distributor piece
86	Oil drain screw
E1	Filler plug (engine)
E2	Filler sight glass (front gearbox)
E3	Filler screw (rear gearbox)
A1	Drain screw (engine)
A2	Drain screw (front gearbox)
A3	Drain screw (rear transmission)
Aw	Drain screw (radiator)
K	Control plug (reduction gears) resp. sight glass (rear gearbox)
S	Lubrication nipples
SK	Lubrication nipple in yoke
Y	Ratchet lever

Single-drum Forestry Rope Winch Type Holder 5073-2

Make Schlang and Reichart

Operation Instructions

Technical data:

Wire rope optionally Ø 9 mm x 70 m (breakload 7.500 kg), or Ø 11 mm x 50 m (breakload 10.800 kg).

Payload and rope speed at a P.T.O. speed of 540 min^{-1} (rpm)

	Lower rope position	Medium rope position	Upper rope position
Payload (kg)	5000	4000	3600
Rope speed m/sec.	0,45	0,55	0,65

Operation:

Place tractor in direction of pull. Angular deviations up to 75° are possible, though the full pulling capacity must no longer be used.

1. Lower three-point hydraulics, and, in consequence, the butt plate.
2. Engage P.T.O.
3. Release brake of winch by means of hydraulic operation lever. Unwind wire rope and fit load. Avoid loops and sharp angles!
   Unwinding of the rope is braked on the rope drum by means of a small sliding brake, and can be adjusted by means of the laterally situated screw (188 Ill. 30).
4. a) **Winding up rope in normal operation** (P.T.O. engaged)
   To wind up the rope, operate the cable control against pull-off spring — clutch of winch closed. When released, the control lever is guided into „0" position by means of the return spring. The rope drum is automatically braked.

b) **Winding up rope with a very careful pull.**
Depress clutch pedal of tractor, engage P.T.O., close clutch of the winch by means of the guide lever (102 Ill. 23) and start using the tractor clutch.

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c) Slow starting by means of the clutch, and slow release of the brake, is permitted if the hand lever of the winch control is very carefully operated. However, in this way, the clutch, resp. brake plates, are forced to slide – hence increased wear.

If, with a heavy load, or when meeting an obstacle, the clutch of the winch slides, the rope must be slackened before making a renewed trial. Each repeated pull with a **tight** rope will considerably reduce the pulling power and will cause unnecessary wear and heating of the clutch.

Clutch and brake must be left sliding for very short intervals only.
When not using the winch for longer intervals (e.g. road drive), disengage the P.T.O.

Service and Maintenance

Lubricate the grease nipple of the swivel pulley once a week with grease. Change oil in gearbox (2,5 ltr. GX 140) for the first time after 50, thereafter every 200 operation hours. We strongly recommend to use only oils of the SAE 140 class. Oil drain screw (115 Ill. 30), filler screw (116 Ill. 30).

This installation of the winch permits the attachment of a trailer by means of the standard trailer hitch (119 Ill. 31) and, when removing the butt plate, the 3-point linkage and P.T.O. (117 Ill. 31) can be used (e.g. for attachment of a rotary cultivator (Ill. 32). Thereby use mounting plate (120 Ill. 32), part No. A20 060 A29.

Unwinding of the rope is braked on the rope drum by means of a small sliding brake, and can be adjusted by means of the laterally situated screw (118 Ill. 30).

Double-drum Forestry Rope Winch Type Holder 5073-7

Make Schlang and Reichart

Operation Instructions

Technical data

Wire rope optionally Ø 9 mm x 70 m (breakload 7.500 kg), or 11 mm Ø x 50 m (breakload 10.800 kg).

Payload per drum and rope speed at 540 min^{-1} (rpm)

	Lower rope position	Centre rope position	Upper rope position
Payload kg	3000	2500	2200
Rope speed (m/sec.)	0,45	0,55	0,65

Operation

Place tractor in direction of pull. Angular deviations up to 90° are possible, though the full pulling capacity must no longer be used.

1. Lower butt plate (100 Ill. 22) by means of operation lever (101 Ill. 23) and press it into the soil.
2. Engage P.T.O.
3. Release brake of the winch by means of hydraulic operation lever (102 Ill. 23). Unwind wire rope and fit load. Avoid loops and sharp angles!
   Unwinding of the rope is braked on the rope drum by means of the laterally situated slot screw (114 Ill. 25).
4. **a) Winding up rope in normal operation** (P.T.O. engaged)
   To wind up the rope, operate the winch control (102 Ill. 23) against pull-off spring. When releassed, the control lever is guided to „0" position by means of the return spring. The rope drum is automatically braked.

b) Winding up rope with a very careful pull
First close clutch of the winch (102 Ill. 23), engage P.T.O. and start by means of the P.T.O. clutch.

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c) Very careful operation of the winch control lever (102 Ill. 23) permits slow starting with the clutch of the winch, and a slow release of the brake. However, clutch, resp. brake plates, are thereby forced to slide – increased wear.
If with a heavy load, or when meeting an obstacle, the clutch of the winch is caused to slide, the rope must be slackened for a renewed trial. Each repeated pull with **tightened** rope will considerably reduce the pulling capacity and cause unnecessary wear and heating of the clutch.
Let clutch and brake slide for very short intervals only!
When not using the winch for longer intervals (e. g. road drive), disengage the P.T.O.

Service and Maintenance

The rotating point of the rocker bracket (104 Ill. 24), the bearings of the hydraulic cylinder, and the bevel pinion shafts, must be kept free from dirt and protected from corrosion and seizure by a permanent oil film.

Grease once a week the two grease nipples of the butt plate linkage points (106 Ill.25) and the swivel pulleys (107 Ill. 24), as well as the lubrication nipple of the hitch. Check oil filling in bevel gear (108 Ill. 27 +134 Ill.28), and worm gear transmission (109 Ill. 25) on the oil level control screw.

Change oil in worm gear transmission for the first time after 50 hours, thereafter every 200 hours of operation. Filling quantities and brand of oil (SAE 140 only) can be read off the oil plate.
1,0 l, e.g. Mobilube GX 140, ARAL oil BG 98, BP gear oil EP SAE 140, ESSO gear oil Sp 140,
SHELL gear oil 140.
Oil drain screw (110 Ill. 26), filler screw (111 Ill. 28), control screw (109 Ill.26).

Change oil in bevel gearbox for the first time after 500 hours, thereafter every 1000 hours of operation.
Filling quantities and brands of oil are indicated on the oil plate.
0,25 l e.g. MOBILGEAR 629, ARAL oil BG 28, BP gear oil EP SAE 90, ESSO gear oil GP 90,
SHELL gear oil 90.
Oil drain screw (112 Ill. 27), filler screw (113 Ill. 27), control screw (108 Ill. 27).
Change oil in small bevel gearbox for the first time after 500 hours, thereafter every 1000 hours of operation.
Filling quantities and brand of oil can be read off the oil plate.
0,25 ltr. e.g. Mobilgear 629, Aral oil BG 28, gear oil EP SAE 90, Esso gear oil GP 90, SHELL gear oil 90.
Filler and drain plug (134 Ill. 90).
When changing oil, the old oil must be sucked off. To do so, unscrew plug (134 fig. 28).

Hydraulic oil supply tank (130 Ill. 25)
Change oil for the first time after 500 hours of operation, thereafter every 1500 hours.
2,5 ltrs. hydraulic oil Mobil Vac HL P 36.
Clean oil filter (131 Ill. 25) for the first time after 50 hours, thereafter every 500 hours.
Drain hydraulic oil by slackening the swivel screw union (132 Ill. 25). Filler plug (133 Ill. 25).

At the occasion of each regular service, have all screws examined for tight fit.

Instructions for handling the wire rope

The wire ropes supplied by us have been tested by the manufacturers for their breakload and rechecked by us for proper condition. On the ground of these tests (test certificates available) claims for replacement must be principally rejected.

Each wire rope is made additionally anti-corrosive and receives a coating of dry lubricant through immersion or spraying with a fast-drying sliding agent which, already a few minutes after its application, prevents the adhesion of dirt and sand, e.g. Molykote 165 X. A clean wire rope is a prerequisite for this treatment.

When fitting a new rope, the rope must be unwound from the rope ring. Each loop caused by lateral unwinding, or by pulling, will damage the rope.

One end of the rope is fitted in the rope drum by means of a clamping wedge – the other end has a loop with sliding hook for fitting the load. Instead of the loop with sliding hook, a wedge lock with clamping wedge and draw hook can be used.

Before first use, and before handling heavy loads, we recommend to unwind the rope until only 3 layers remain, to hook one end into a firm point, and to pull, with slightly closed handbrake, the tractor back to the firm point. This initial tension of the rope will create a smooth „package of rope" which will not be cut into by overlaying layers of rope – damages can in this way be avoided to a large degree.

Should, in one or the other event, the pulling capacity of the rope prove insufficient, a reversing pulley will help to double it (with half the pulling speed). Thereby, the end of the rope with the draw hook must not be fitted on the tractor, but another firm point must be found (e.g. another tree).

As an option, the double-drum forestry rope winch can be supplied with keyboard control or with radio control.

Operation of keyboard control (Ill. 33).
The controls for unwinding and winding up of the rope have different colours for each drum.

Drum I
Unwinding cable rope: Press key (122 Ill. 33) and fix by turning it.
Winding up rope: the key for unwinding the rope must be back to „0" position. The cable rope is wound up by means of pressing the key (124 Ill. 33). When releasing the key, winding up stops and the drum is automatically braked. The speed is adjusted by pressing the key (121 Ill. 33) which also can be fixed in position by turning it.
The same procedure applies to drum 2.

Radio control
Special instructions must be observed which please apply for if necessary.

Transporting stacked logs
Prepare the logs as shown on Ill. 34. Reverse the tractor till it has reached the pile of logs. Lower the butt plate. Lock stirrup with rope pulleys in uppermost position. Wind the ropes around the pile of logs as shown on Ill. 34 and hook them to the butt plate. (See Ill. 35). Pull in the ropes uniformly, then lift the butt plate.
Attention: Take care not to hit the rope pulleys.

Front-mounted Rolling and Stacking Blade Type 5036-1 or 5036-2
Ill. 36 shows type 5036-2 which differs from Ill. 5036-1 by being equipped with a double-acting hydraulic cylinders (128 Ill. 36) instead of the rigid connecting rod. The type 5036-2 has an additional adjustment possibility for the blade out of its horizontal position.

Operation
Levers (126 and 127 Ill. 36) operate the front-mounted rolling and stacking balde via the control valve and the hydraulic cylinder.

Maintenance:
Grease the lubrication nipples (S Ill. 36) once a week.

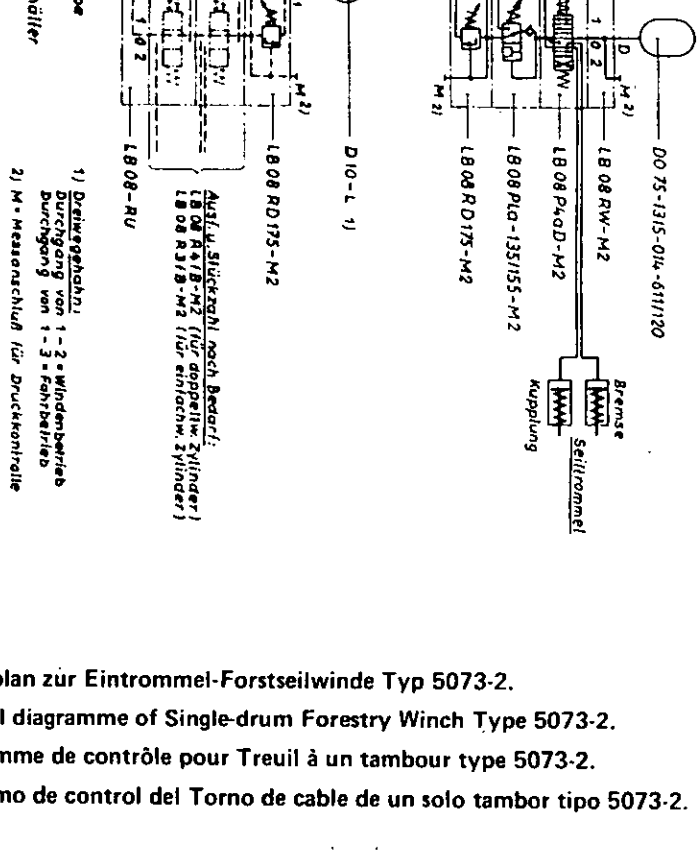


Abb. 37

Abb. 37 Schaltplan zur Eintrommel-Forstseilwinde Typ 5073-2.
Control diagramme of Single-drum Forestry Winch Type 5073-2.
Diagramme de contrôle pour Treuil à un tambour type 5073-2.
Diagramo de control del Torno de cable de un solo tambor tipo 5073-2.

Abb. 40

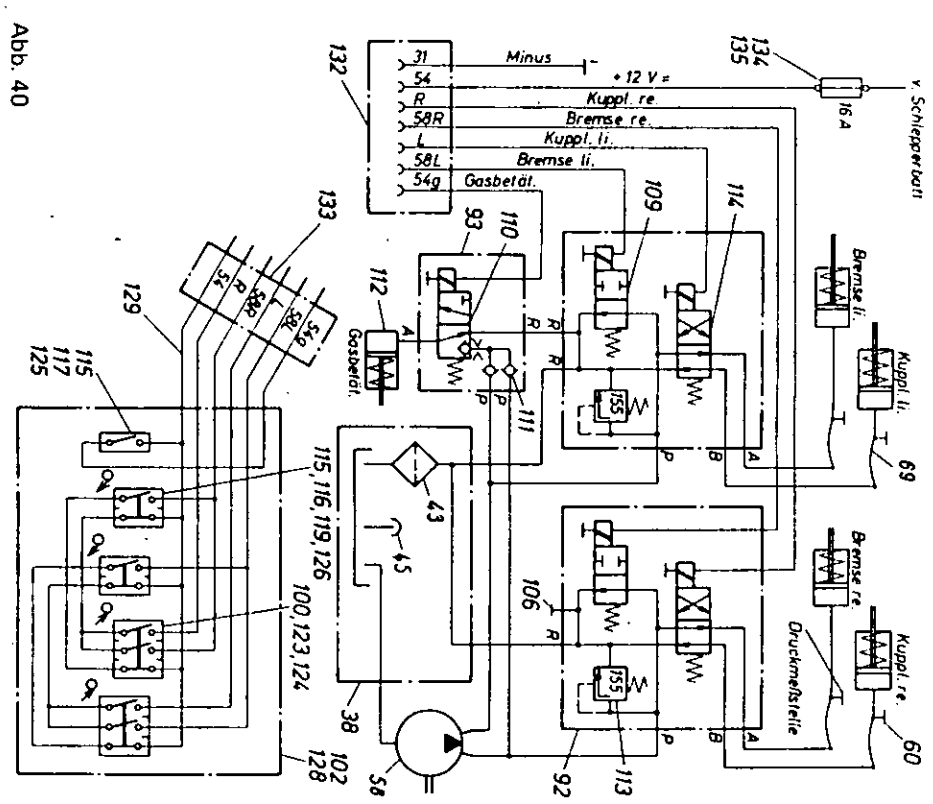
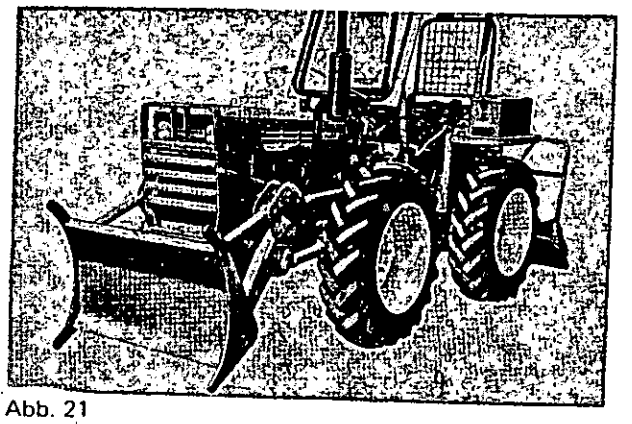


Abb. 40 Schaltplan zur Doppeltrommel-Forstseilwinde mit Drucktastensteuerung.
Control diagramme of double-drum winch with keyboard control.
Diagramme de contrôle du treuil jumelé de la commande par touche.
Diagramo de control del torno gemelo de cable con caja de mando de botones.



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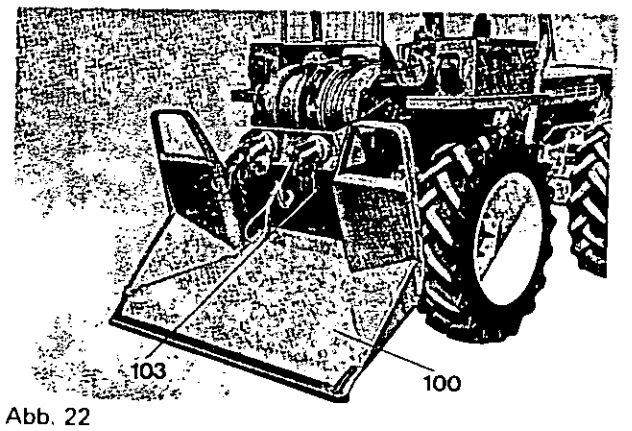

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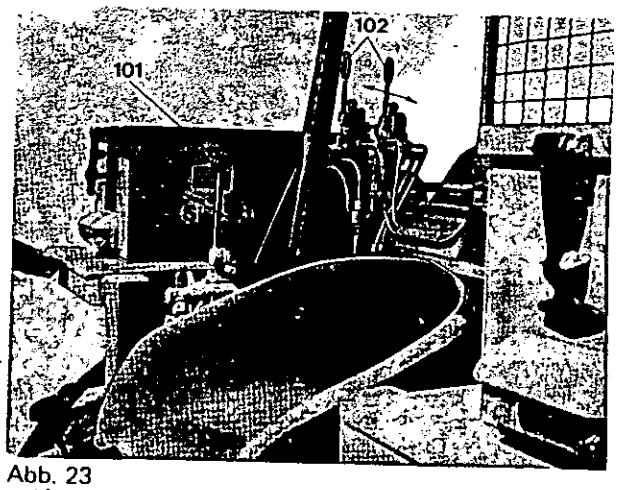

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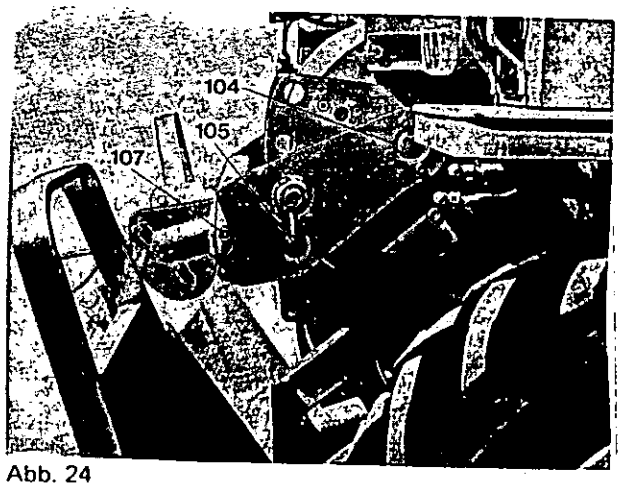

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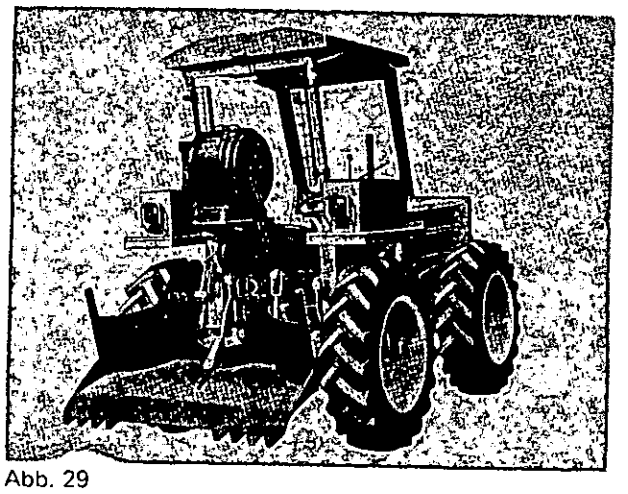

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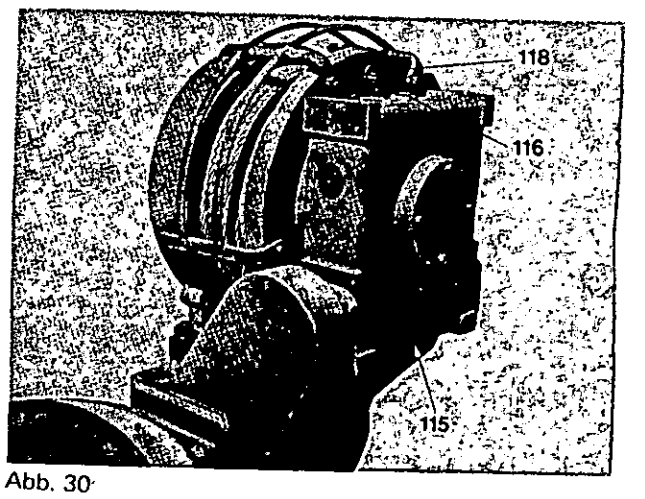

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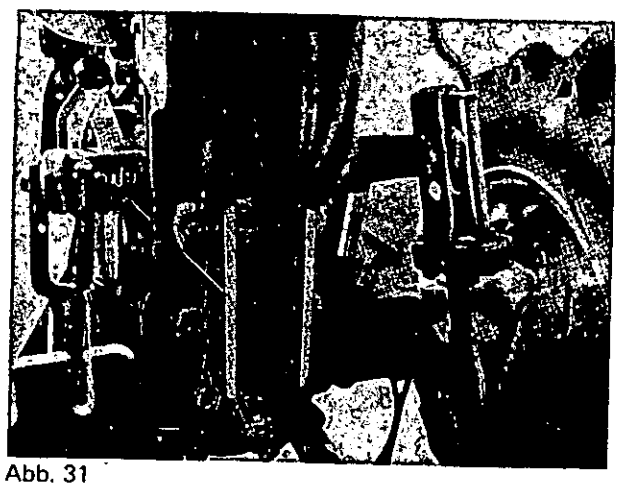

Abb. 31

Abb. 32

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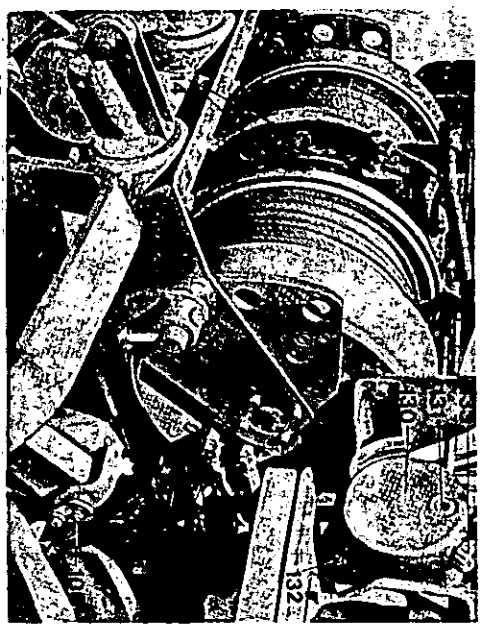
Abb. 25



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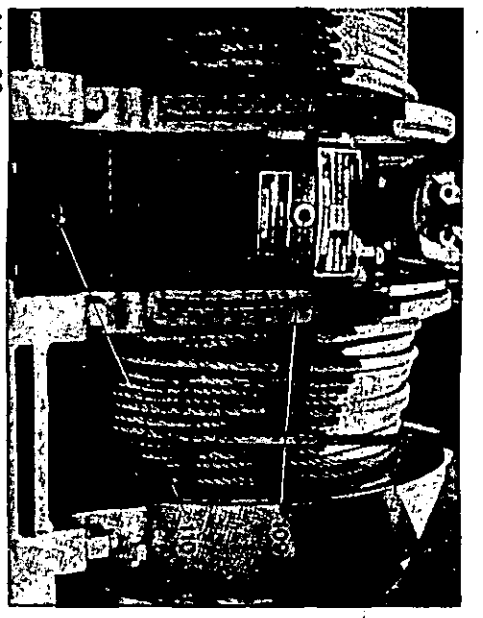

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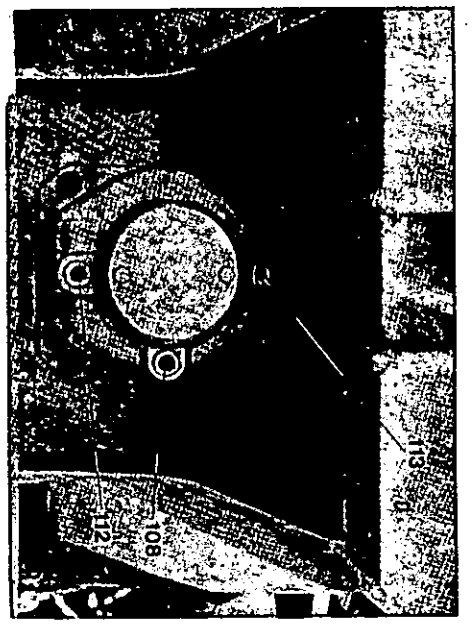

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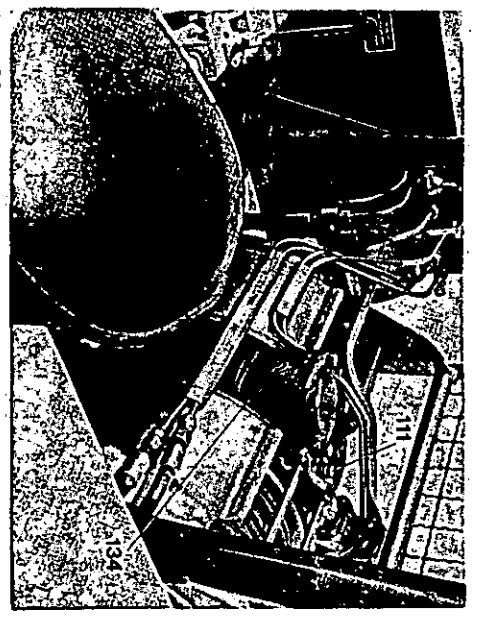

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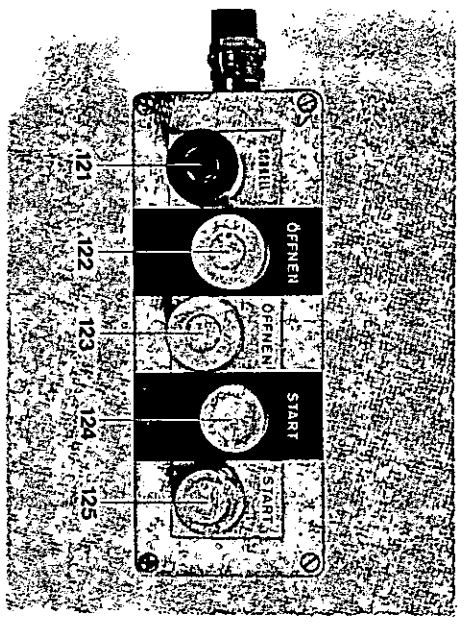

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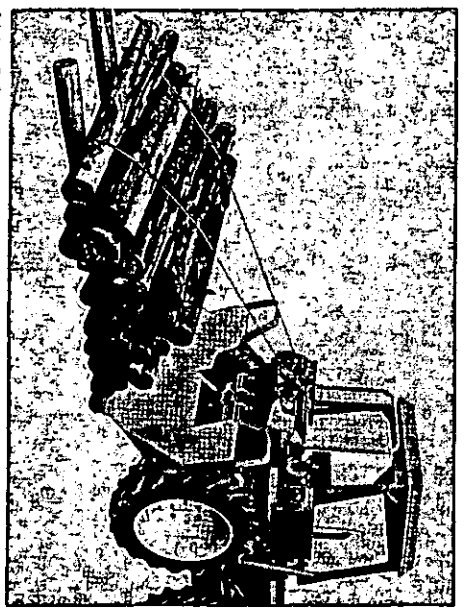

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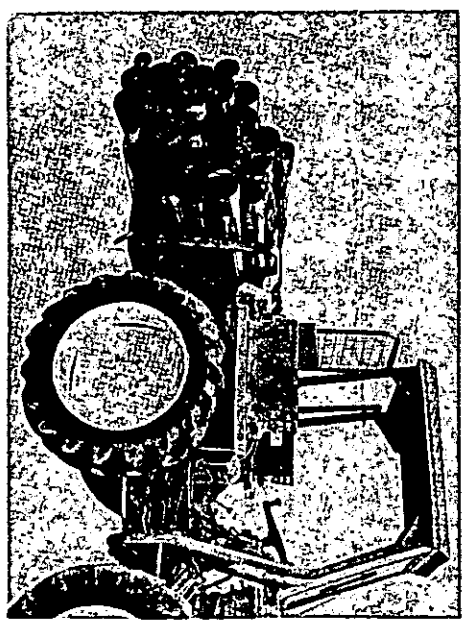
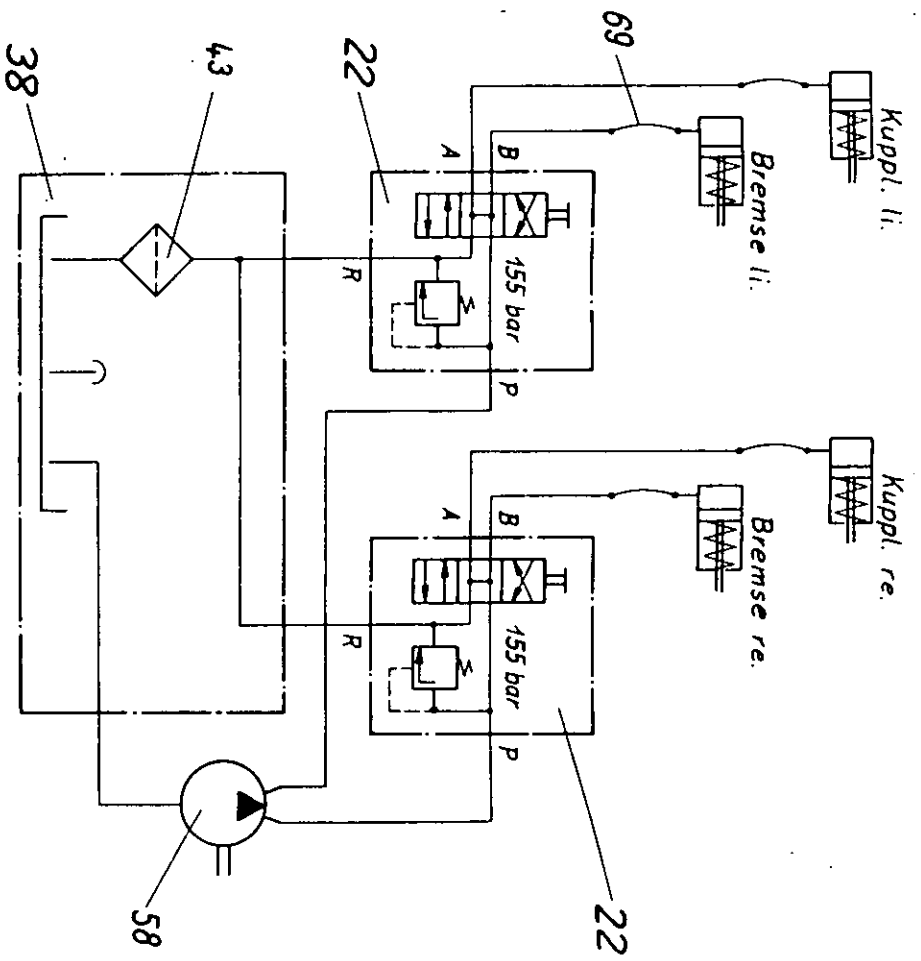


Abb. 36

Abb. 38



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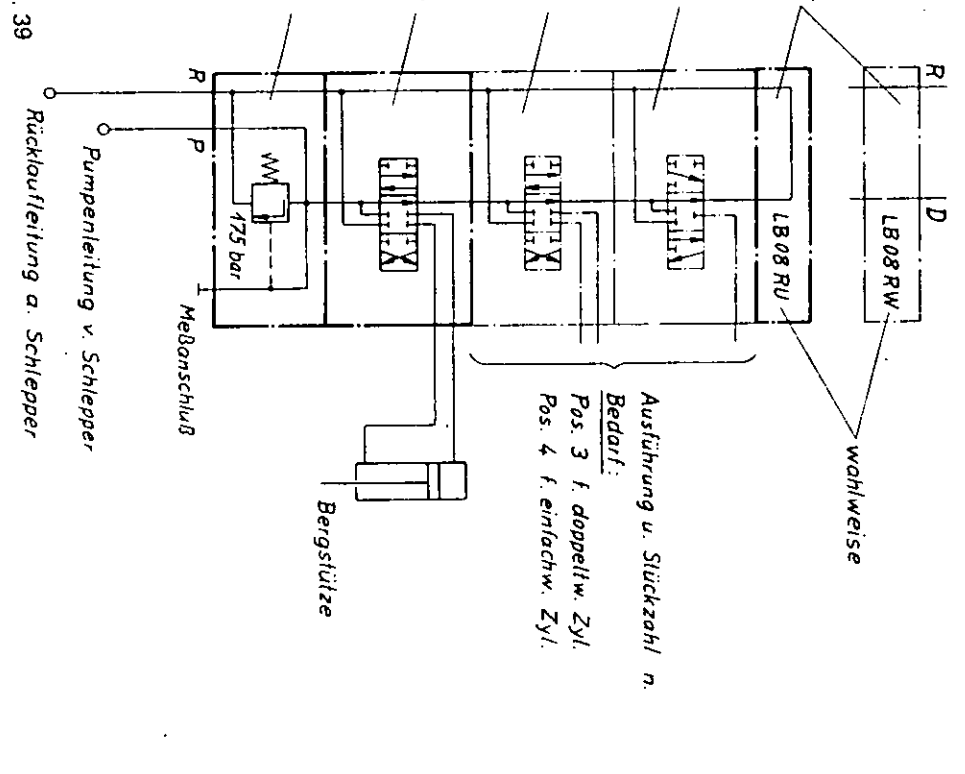
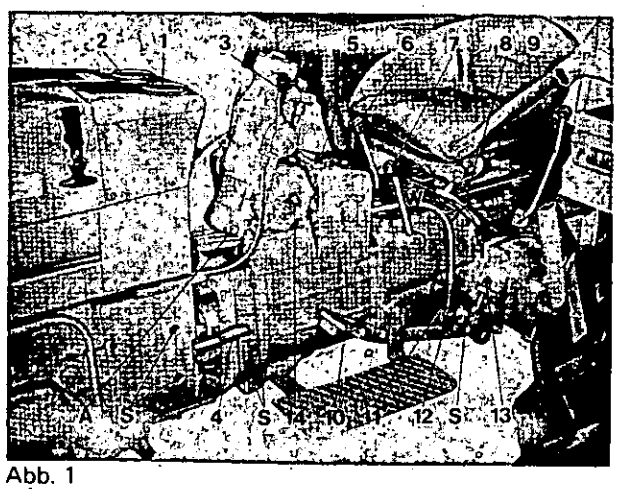


Abb. 38 Schaltplan zur Doppeltrommel-Forstseilwinde Type 5073-7.
Control diagramme of double-drum forestry winch type 5073-7.
Diagramme de contrôle pour treuil jumelé type 5073-7.
Diagramo de control del torno gemelo de cable tipo 5073-7.

Abb. 39 Schaltplan zur Bergstütze der Doppeltrommel-Forstseilwinde.
Control diagramme of butt plate for winch type 5073-7.
Diagramme de contrôle pour la lâme du treuil jumelé.
Diagramo de control del pala del torno gemelo de cable.



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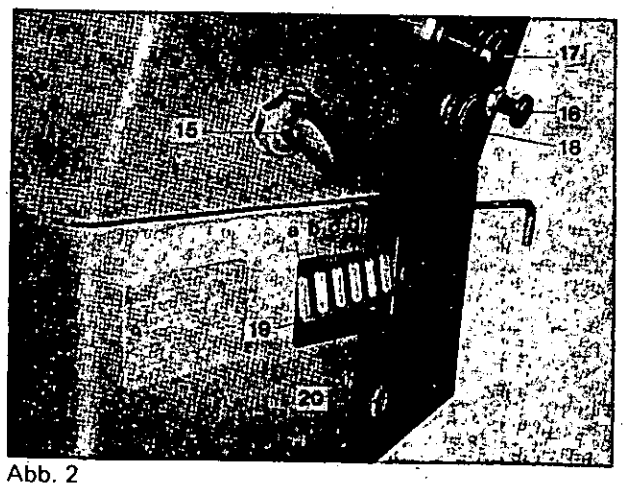

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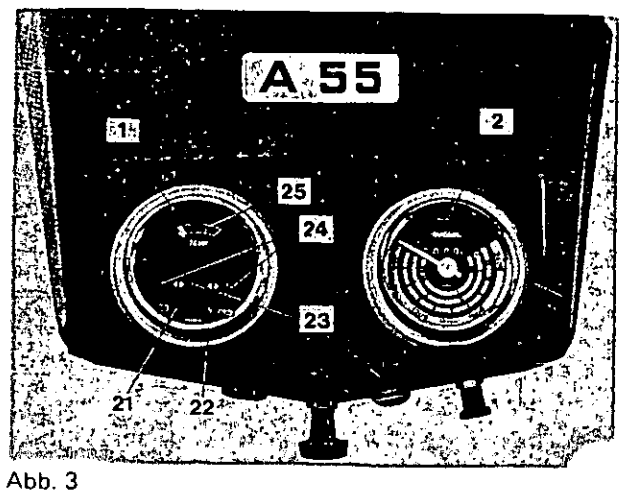

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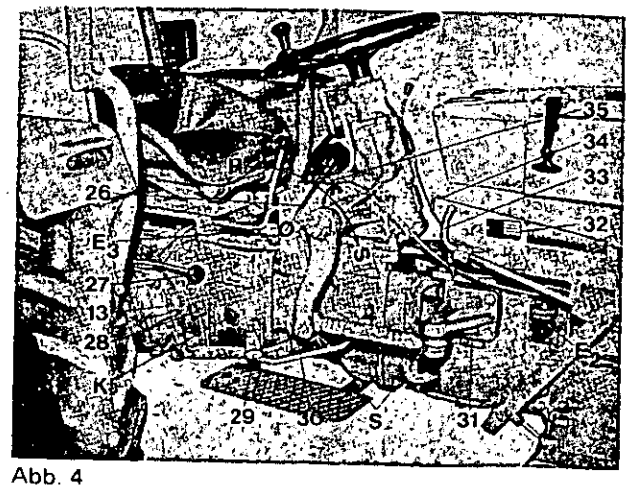

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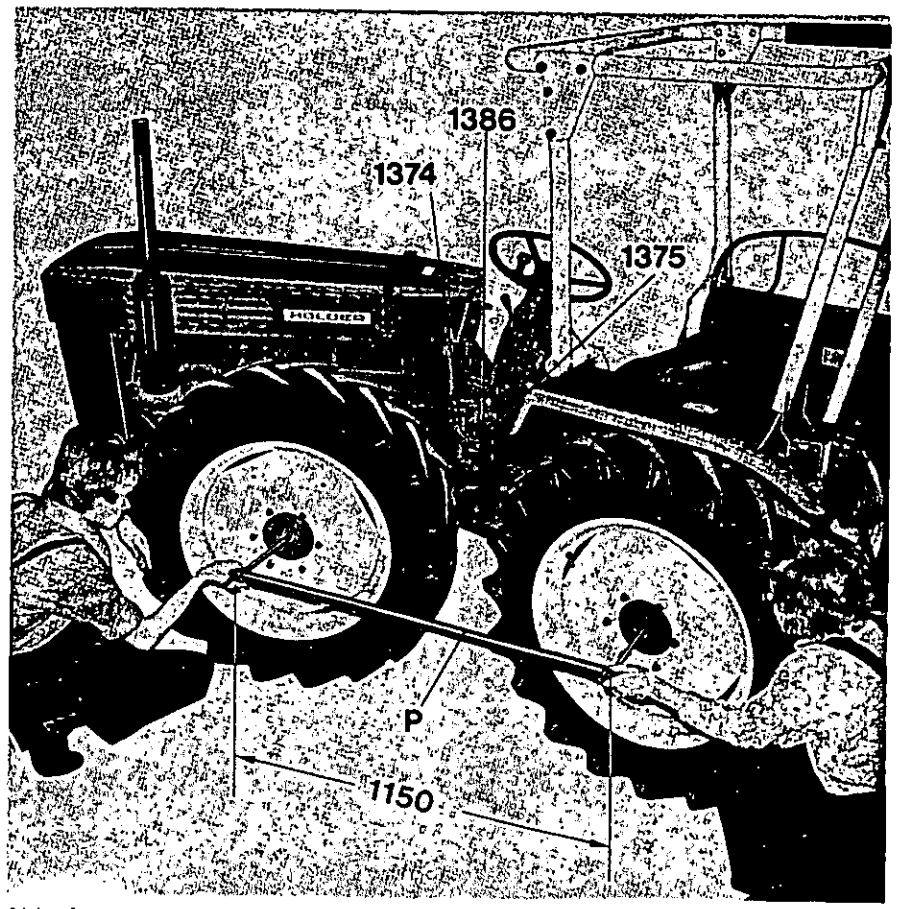

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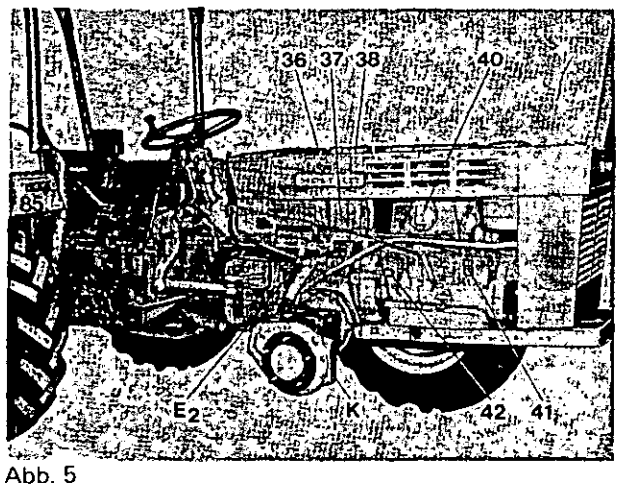

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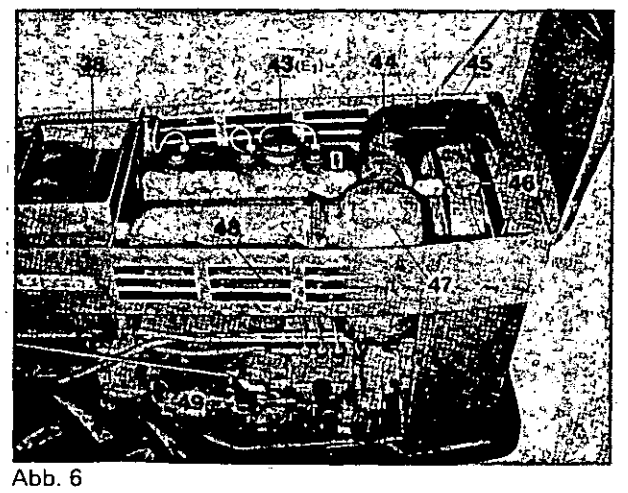

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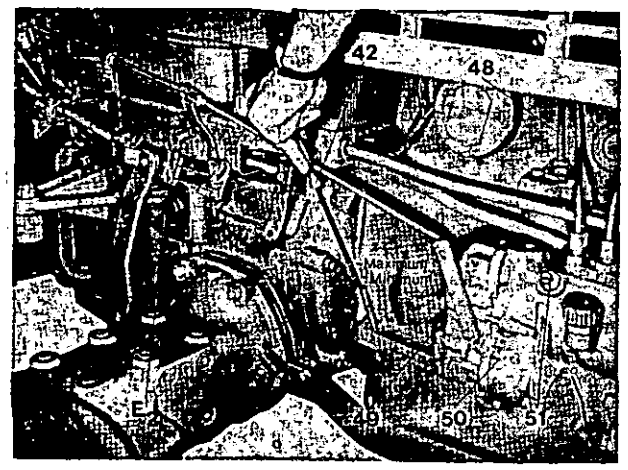

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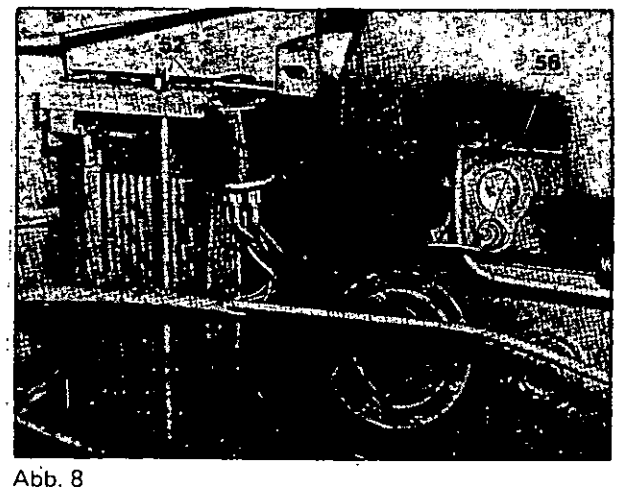

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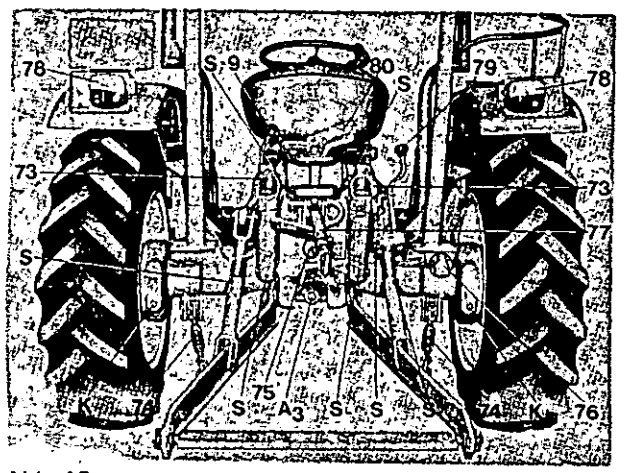

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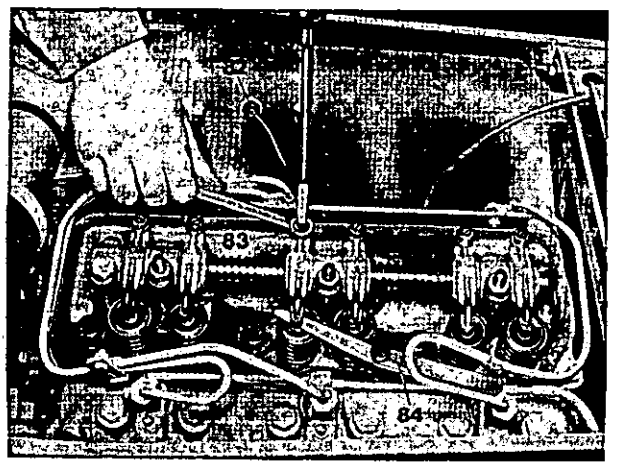

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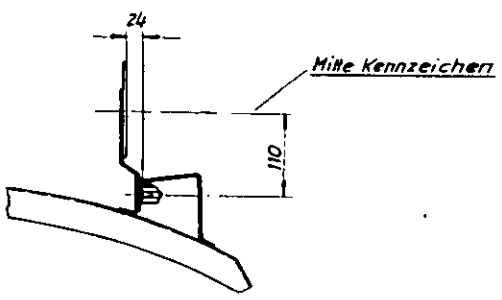

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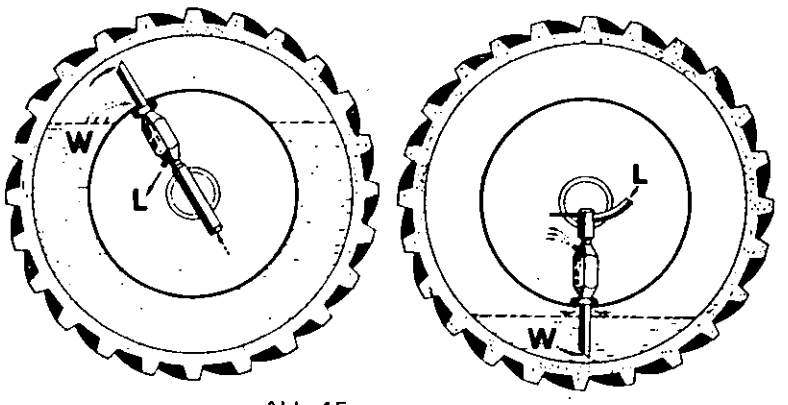

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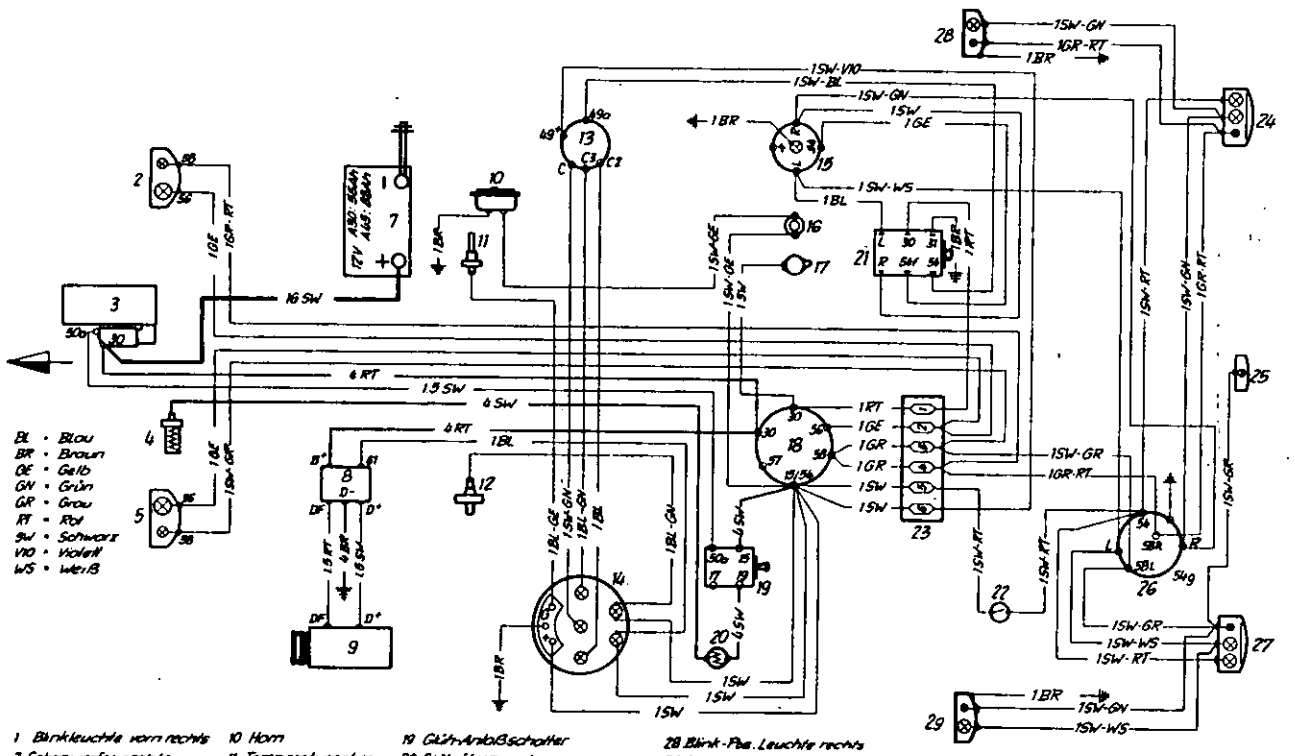

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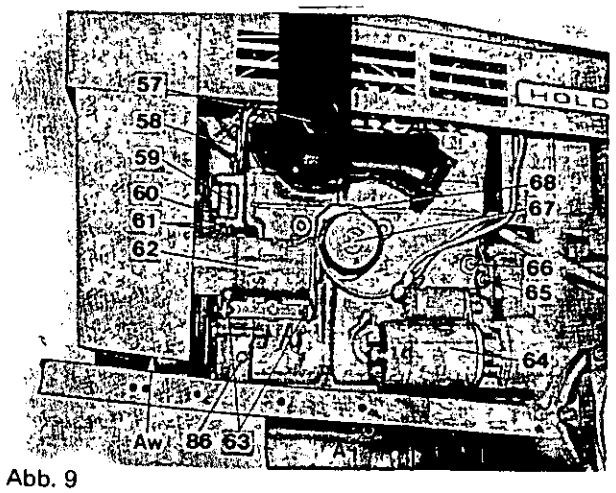

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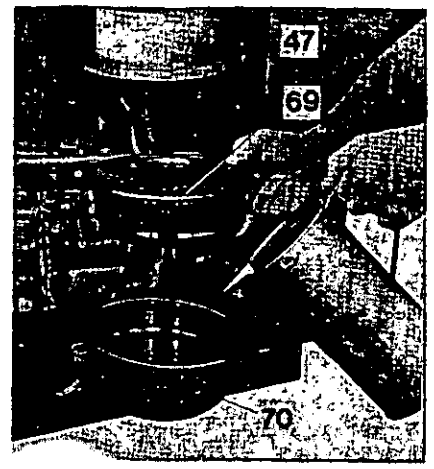

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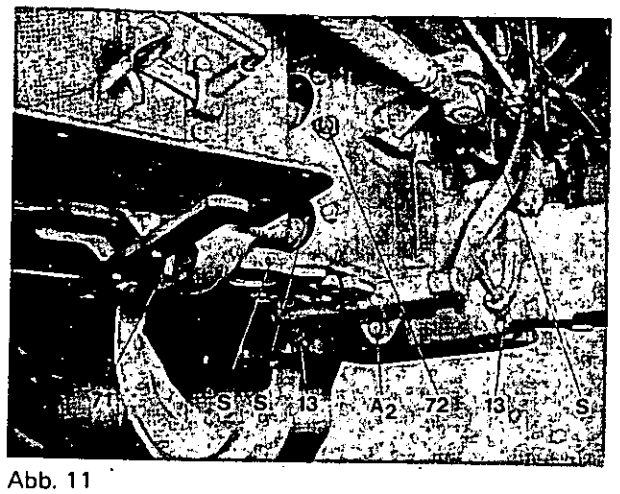

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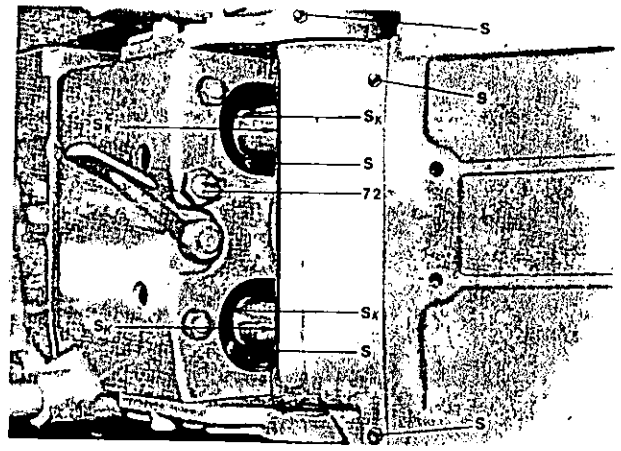

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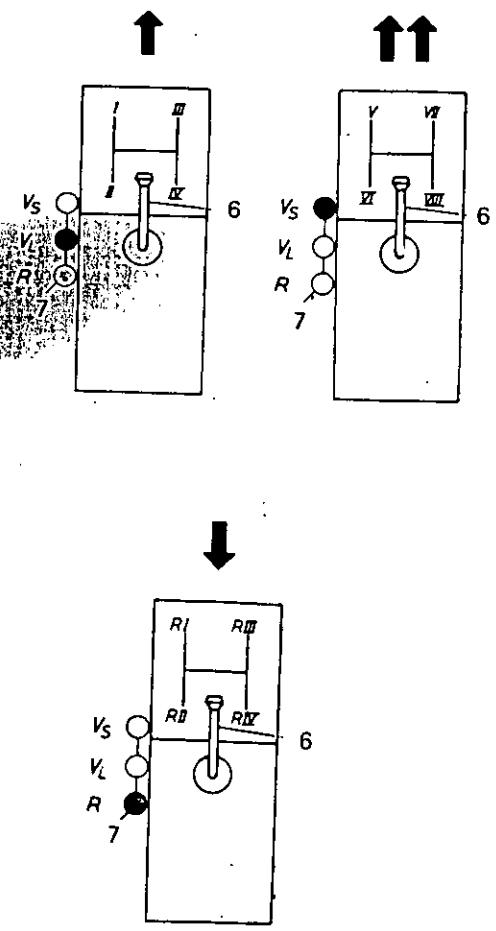

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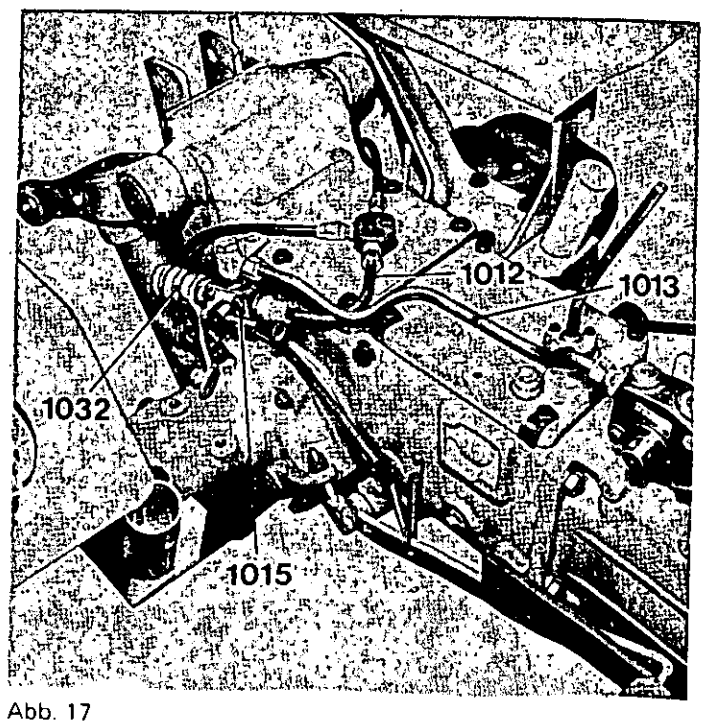

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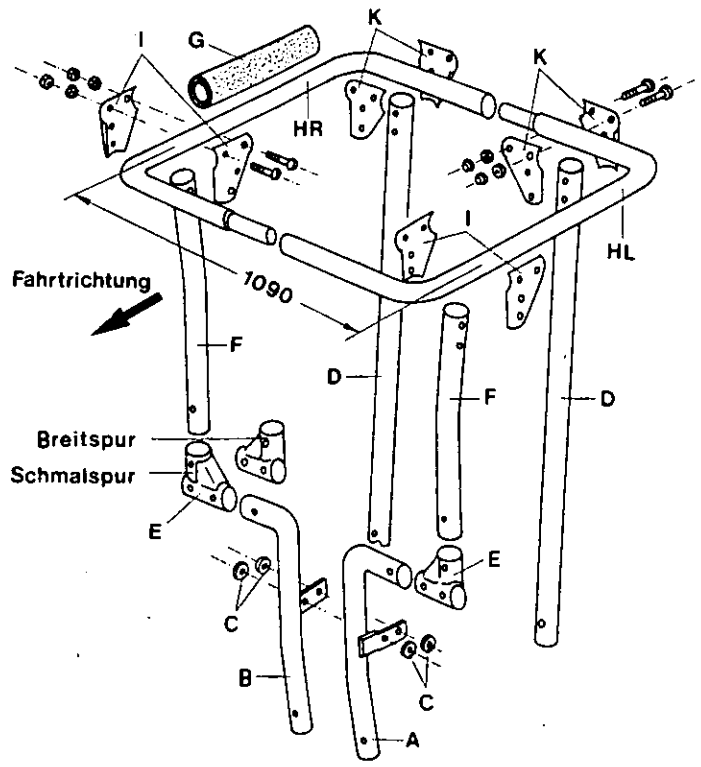

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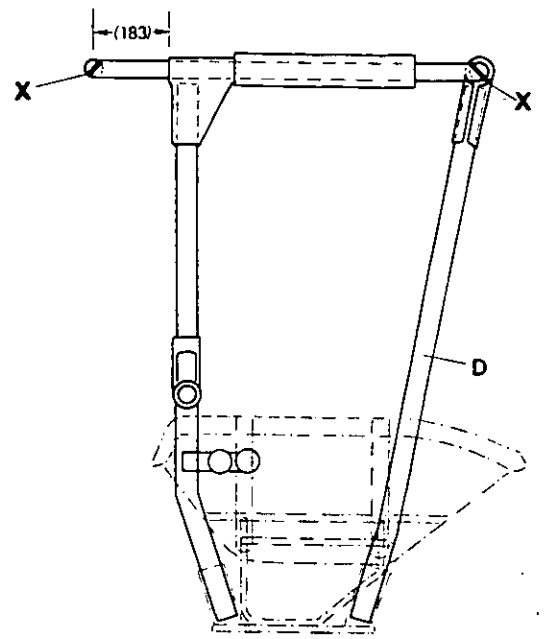

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