HOLDER Wartungs- und Inspektionstabelle für Type A 40/A 50

Wir empfehlen, durch eine anerkannte Holder-Vertragswerkstatt nachfolgende kostenpflichtige Kundendienste durchführen zu lassen.
Ausführliche Hinweise über die Durchführung der Wartungsarbeiten entnehmen Sie der Betriebsanleitung Abschnitt „Wartung und Pflege".

	Siehe Betriebsanleitung Seite	Beim Empfang durch Händler	Bei Übergabe	Täglich	nach den ersten 20 Betriebsstunden	nach jeweils 150 Betriebsstunden	nach jeweils 300 Betriebsstunden	nach jeweils 600 Betriebsstunden	nach jeweils 1500 Betriebsstunden
Einweisung lt. Betriebsanleitung			●						
1. Motor									
a) Ölstand prüfen	31	●	●	●					
Motor-Ölwechsel (Verschlußdeckel reinigen)	31				●	●			
Schmierölfilterpatrone austauschen	31				●	●			
b) Luftfilteranlage überprüfen ggf. reinigen	32-34		●3	nach akust. Wartungsanzeiger					
c) Kühlsystem überprüfen * ggf. Kühlernetz reinigen	34/35	●	●	●	●	●			
d) Keilriemenspannung u. -zustand prüfen, ggf. nachstellen	35		●		●	●			
e) Ventilspiel prüfen, ggf. nachstellen	36				●		●		
f) Einspritzpumpe und Regler überprüfen (Ölstand)	36					●			
g) Einspritzdüsen prüfen 185 bar (atü)	36							●	
h) Kraftstoffilterpatrone austauschen	37						●		
i) Kompressionsdruck prüfen (24 ± 2 bar (atü)	–								●
k) Einspritzpumpe mit Regler von einer Bosch-Werkstatt überprüfen lassen.									●
l) Entlüftungsfilter an Einspritzpumpe reinigen	36					●			
Nur A 50 mit Turbo-Motor m) Schlauchverbindungen der Luftführungsrohre auf Dichtheit überprüfen	–						●		
2. Getriebe a) Ölstand im Getriebe hinten und vorne und im Planetengetriebe (Achsen) prüfen.	38/39	●	●			●			
b) Getriebeöl wechseln „Getriebe vorn"	38					●1			●
c) Getriebeöl wechseln „Getriebe hinten"	38					●1			●
d) Planetengetriebe (achsen) Getriebeöl wechseln	39					●2		●	
3. Hydraulik- und Lenkungsanlage a) Hydraulikölstand prüfen	39	●	●		●	●			
b) Hydraulikölwechsel	40							●4	
c) Hydrauliksaugfilter reinigen bzw. austauschen	40							●4	
d) Hydraulikölfilter austauschen (Druckfilter)	40/41				●		●		
e) Entlüftungsfilter reinigen	41				●		●		
f) Höchstdruckschläuche von Lenkung zum Lenkzylinder überprüfen	44		●			●			
g) Lenkzylinder und Servostat auf Ölverlust und mechanische Schäden überprüfen	44						●		
4. Kupplung a) Bremsflüssigkeit für hydr. Fahrkupplung prüfen, richtigstellen.	–					●			
b) Überprüfung der lastschaltbaren Zapfwellenkupplung	42	●	●			●			
c) Kupplungseinstellung (Fahrkupplung) prüfen.	42				●	●			
5. Bremsen Bremssystem überprüfen ggf. nachstellen	41	●	●		●	●			
6. Schmierung Schmiernippel Alle Schmiernippel (S) abschmieren	37	●			●	●			
Schmiernippel (S_1–S_7) am Knickpunkt	37	●		●	●				
Schmiernippel (S_k) in den Gelenkkreuzen	37	●						●	
Schraubenbefestigung Zylinderkopfschrauben mit 95 Nm (9,5 mkp) nachziehen	–				●				
Alle Schraubbefestigungen n. Drehmomentangabe nachz.	46				●	●			
Alle Radmuttern nachziehen (einschl. Nabenzwischenstück) 215 Nm (21,5 mkp)	–				●	●			
Elektrische Anlage Elektrische Anlage überprüfen	Abb. 47	●	●			●			
Batterie überprüfen	43	●	●			●			
Vorglühanlage, Funktion vor der kalten Jahreszeit überpr.	–	●	●						
Heizungsanlage und Warmwasserschläuche überprüfen	–					●			
Frischluftfilter (Kabine) reinigen (Sonderzubehör)	–					●			
Aktivkohlefilter erneuern (Sonderzubehör)	51							●	oder jährl.
Luftdruck in Reifen prüfen	6	●	●	●					
Probelauf Motor und Funktionsprüfung Maschine	–	●	●						
Garantiekarte ausstellen und an Fa: Holder einsenden	1		●						
Praktische Einweisung der Anbaugeräte	–		●						

Zeichenerklärung: * = Bei Frostgefahr Kühlwasserkonzentrat prüfen.
●1 = Erstmalig nach 150 Betriebsstunden, dann jeweils nach 1500 Betriebsstunden.
●2 = Erstmalig nach 150 Betriebsstunden, dann jeweils nach 600 Betriebsstunden.
●3 = Jeweils bei Bedarf reinigen.
●4 = Erstmalig nach 600 Betriebsstunden, nach jeweils nach 1500 Betriebsstunden

Empfehlungsliste für Motor-Öle und Fette

Ölmarken die der US-Militär Spezifikation für schwere Bedingungen entsprechen.
MIL-L-46152 bzw. nach API die Qualität CC/SE
MIL-L-2104C bzw. nach API die Qualität CD/SE

	EINBEREICHSÖLE		MEHRBEREICHSÖLE	FETTE
	MIL-L-46152 API CC/SE	MIL-L-2104C API CD/SE	MIL-L-46152 + MIL-L-2104C API CC/SE/SF API CD/SE/SF	Penetrationszahl 260 – 290
ARAL	Aral Super Kowal Motor Oel	Aral Turboral Motor Oel	Aral Multi Turboral SAE 15 W-40	Mehrzweckfett Langzeitfett H
BAYWA	BAYWA HD Extra DB	BAYWA HD Superior	BAYWA Super 2000 CD BAYWA HDC 1540	Mehrzweckfett Spezialfett FLM
BP	BP Energol HD-S	BP Vanellus C3	BP Vanellus Multigrad SAE 15 W-40	BP Energrease LS 2 Mehrzweckfett L2
CASTROL	Castrol Deusol CRX	Castrol Deusol CRD	Castrol Deusol RX Super	Castrol Spheerol AP 2
ESSO	ESSOLUBE HDX PLUS +	ESSOLUBE XD-3 X	ESSOLUBE XD-3 + 15 W-40 Multigrade, MOTORENÖL MHC 15 W-40	EXXON Mehrzweckfett, BEACON 2
ELF	ELF 8000 Tours ELF Performance 2 B	ELF Performance 3 C	ELF Multi Performance 3 C 15 W-40 ELF Presti Diesel	ELF Multi 2 ELF Rolexa 2 ELF Epexa 2
FINA	Fina Delta Ultra Motor Oil	Fina Kappa Plus Motor Oil	Fina Kappa Plus Multigrade Motor Oil SAE 15 W-40	Marson L 2
FUCHS	Renolin HD Titan HD Super	Renolin HD Superior Titan Universal HD	Titan Universal HD 1540 Renolin HD Superior 1540	Renolit MP, Renolit Adhesiv 2, Renolit FLM 2
MOBIL	Mobil Delvac 1210, 1220, 1230, 1240	Mobil Delvac 1310, 1320, 1330, 1350	Mobil Delvac Super 15 W-40	Mobilgrease MP
SHELL	Shell Rotella X	Shell Rimula X	Shell Myrina, Shell Myrina T Shell Rimula X Multigrad	Shell Retinax A
TEXACO	Havoline Motor Oil Ursatex	Ursa Super LA	Ursa Super LA Multigrade SAE 15 W-40	Multifak 20
VALVOLINE	Valvoline HDS	Valvoline HDS Topflite C 3	Valvoline HDS Topflite XRC	VALVOLINE LB-2
VEEDOL	Veedol Heavy Duty Plus	Veedol Cadol HD Ultra	Veedol Dieselstar SAE 15 W-40	–

Die Auswahl erhebt keinen Anspruch auf Vollständigkeit; selbstverständlich sind auch Produkte nicht genannter Firmen zugelassen, soweit diese erwiesenermaßen unseren Vorschriften entsprechen.

Empfehlungsliste für Hydraulik- und Getriebe-Öle

HYDRAULIKÖLE:	unter –10° C	–10° C bis + 40° C	GETRIEBEÖLE: MIL-L2105 bzw. API-GL 4
ISO-Viskositätsklasse HLP (HM) HV	VG 32 HV	VG 68 HV	SAE 80
ARAL	Vitam HF 32	–	EP SAE 80
AVIA	AVILUB HVI 32	AVILUB HVI 68	–
BP	BP Bartran HV 32	BP Bartran HV 68	EP SAE 80
CASTROL	HYSPIN AWH 32	HYSPIN AWH 68	HYPOY 80
CHEVRON	EP Hydr. Oil 32 HV	EP Hydr. Oil 68 HV	–
ESSO	UNIVIS J 32	UNIVIS N 56	GP-D 80
ELF	Hydrelf 32	Hydrelf 68	Tranself EP
FINA	HYDRAN HV 32	HYDRAN HV 68	PONTONIC N SAE 80 W
FUCHS	RENOLIN MR 520	RENOLIN MR 1030	RENOGEAR MP 80
OPTIMOL	HYDO MV 5035	HYDO MV 5065	–
MOBIL	DTE 13	DTE 16	MOBILUBE GX 80 W-A
SHELL 2)	Tellus Öl T 32	Tellus Öl T 68	Spirax MA 80 W
TEXACO	Rando Oil HD AZ-32	Rando Oil HD CZ-68	Geartex EP-A SAE 80 W
VALVOLINE	VALVOLINE ETC-25	VALVOLINE ETC-35	VALVOLINE X-18 SAE 80
HD Motorenöl 1)	SAE 10 W 30 können ganzjährig eingesetzt werden.		

1) nach API-CC bzw. MIL-L-2104B und MIL-L-46152
2) Nicht mit Motorenöle mischbar.

Kraftstoff
Auf Verwendung einwandfreier Kraftstoffe muß größter Wert gelegt werden. Motorkraftstoffe nach DIN 51601 bzw. British-Specification - BS 2859 : 1970 - A1 bzw. ASTMD 975-2D erfüllen die Anforderungen, die an einen guten Kraftstoff gestellt werden. Der Schwefelgehalt soll 0,3 % nicht übersteigen.
Achtung! Um Störungen zu vermeiden, empfehlen wir, rechtzeitig Winterkraftstoff zu beschaffen. Über Winterkraftstoffe lassen Sie sich von Ihrer Tankstelle beraten.

Motorenöle (Ölqualität)
Zur Schmierung des Motors müssen hochwertige HD-Motorenöle verwendet werden. Vorgeschrieben sind Schmierölqualitäten nach der US-Military Spezification MIL-L-46152 bzw.nach API „CC".
für **schwere** Betriebsbedingungen werden die höher legierten Motorenöle nach (MIL) „MIL-L-2104C" bzw. nach (API) „CD" empfohlen.
Siehe Empfehlungsliste.
Um Schäden durch Verwendung minderwertiger Schmieröle vorzubeugen, empfehlen wir nur Markenöle namhafter Ölfirmen zu verwenden und die einmal gewählte Ölsorte beizubehalten.

Ölviskosität
Unter –10° C	SAE 10 W
–10° C bis + 20° C	SAE 20
über + 20° C	SAE 30

Ventilspiel für Ein- und Auslaßventil warm und kalt 0,25 mm.

Füllmengen (Nachfüllmengen)	**A 40**	**A 50 u. A 50 Turbo**	
Motor mit Filteraustausch:	4,00 Ltr.	6,00 Ltr.	s.oben Motorenöle
Öl im Reglergehäuse:	0,35 Ltr.	0,375 Ltr.	Motorenöl HD SAE20
Hydraulikanlage (Tankfüllung):	14,00 Ltr.	14,00 Ltr.	Hydr.Öl Mobil DTE 16
Getriebegehäuse vorn:	10,25 Ltr.	10,25 Ltr.	Getriebeöl SAE 80
Getriebegehäuse hinten:	6,25 Ltr.	6,25 Ltr.	Getriebeöl SAE 80
Getriebe hinten mit angebautem Kriechgang:	7,55 Ltr.	7,55 Ltr.	Getriebeöl SAE 80
Planetengetriebe:	0,30 Ltr.	0,30 Ltr.	Getriebeöl SAE 80
Kraftstofftank:	40,00 Ltr.	40,00 Ltr.	Dieselkraftstoff
Kühlsystem (Gesamtmenge):	6,00 Ltr.	9,00 Ltr.	Wasser + Frostschutz
Glysantin bis –30° C vom Hersteller ganzjährig eingefüllt:	2,50 Ltr.	3,80 Ltr.	
Bremsflüssigkeit der hydr. Kupplungsbetätigung:	0,25 Ltr.	Bremsflüssigkeit N DOT 3	

Bremsflüssigkeit nach jeweils 2 Jahren wechseln.

Maßgebend für den richtigen Ölstand sind die Markierungen an den zugehörigen Meßstäben bzw. Kontrollschrauben oder Ölstandsaugen.

Schmierfett
Wir empfehlen lithiumverseiftes Mehrzweckfett mit einer Penetrationszahl von 260 bis 290.

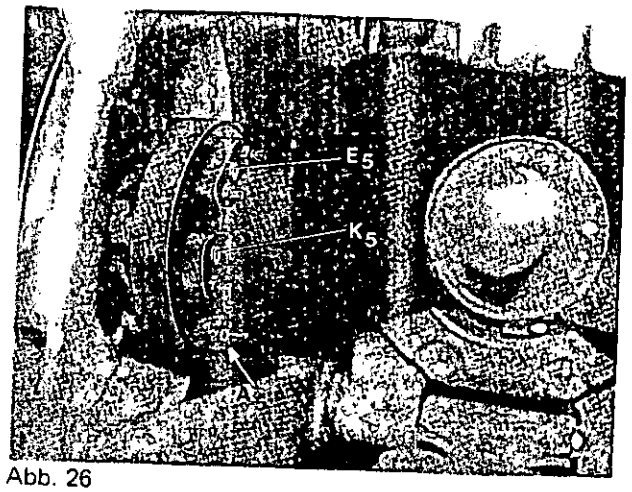
Bei nicht Erreichen der entsprechenden Betriebsstunden, die für die einzelnen Ölwechselintervalle vorgeschrieben sind, muß der Ölwechsel mindestens jährlich 1 x vorgenommen werden.

Anzugsmomente für Schraubverbindungen

Sechskant- und Stiftschrauben	M 8	M 10	M 12	M 24
Schraubenqualität 8.8	25 Nm (2,5 mkp)	49 Nm (4,9 mkp)	86 Nm (8,6 mkp)	135 Nm (13,5 mkp)
Schraubenqualität 10.9	35 Nm (3,5 mkp)	69 Nm (6,9 mkp)	120 Nm (12 mkp)	190 Nm (19 mkp)
Sechskant- u. Stiftschrauben	**M 16**	**M 18**	**M 20**	
Schraubenqualität 8.8	210 Nm (21 mkp)	300 Nm (30 mkp)	425 Nm (42,5 mkp)	
Schraubenqualität 10.9	295 Nm (29,5 mkp)	430 Nm (43 mkp)	610 Nm (61 mkp)	

Radmuttern und Nabenzwischenstücke	=	215 Nm (21,5 mkp)
Zylinderkopfschrauben	=	95 Nm (9,5 mkp)
Sechskantschrauben M10 (Servostat am Lenkungsträger)	=	40 Nm (4,0 mkp)
Spannschrauben für Hydrauliksteuerventile	=	25 Nm (2,5 mkp)
Achsen an Getriebegehäuse M12	=	86 Nm (8,6 mkp)
Achstrichterdeckel M10 (Planetentrieb)	=	69 Nm (6,9 mkp)
Pendellager M12	=	86 Nm (8,6 mkp)
Pendelanschlagschiene M16	=	210 Nm (21 mkp)
Anhängeschiene für Anhängemaul M14	=	135 Nm (13,5 mkp)

Abb. 25



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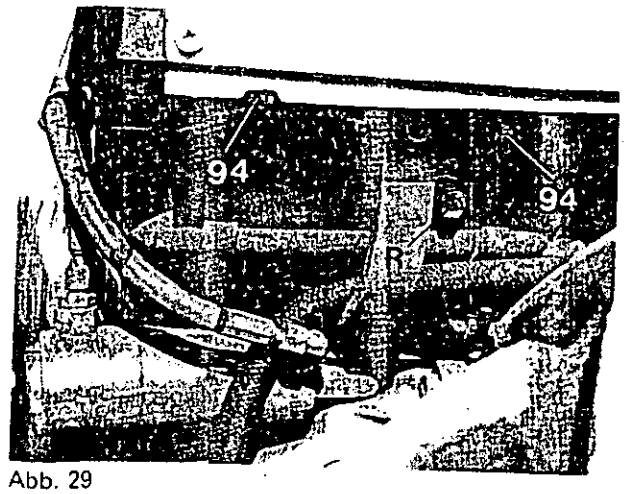

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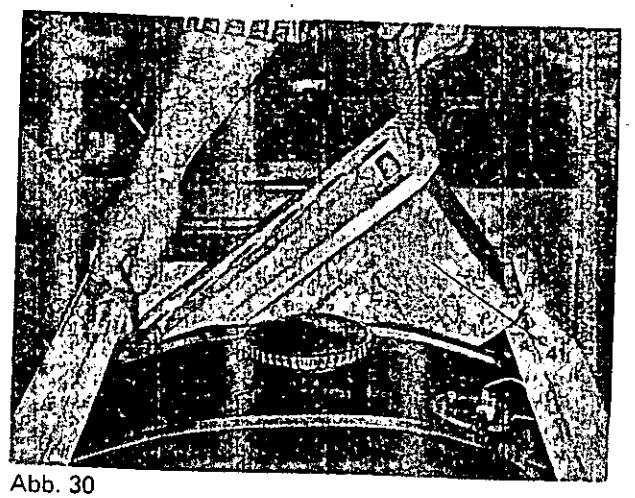

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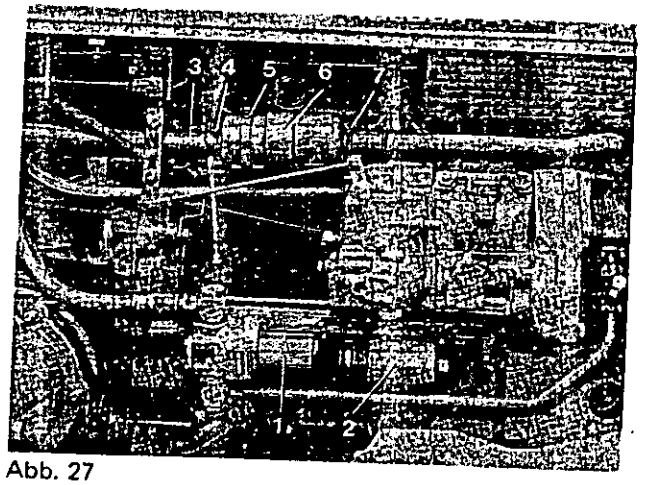

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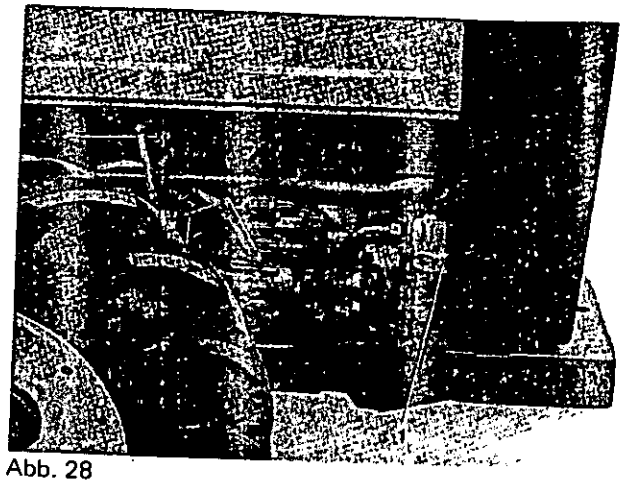

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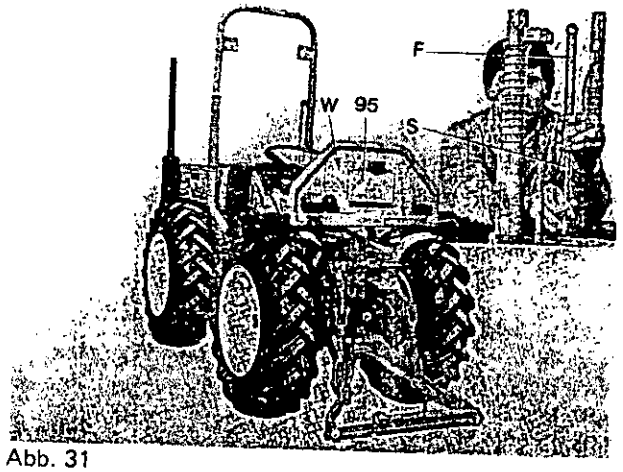

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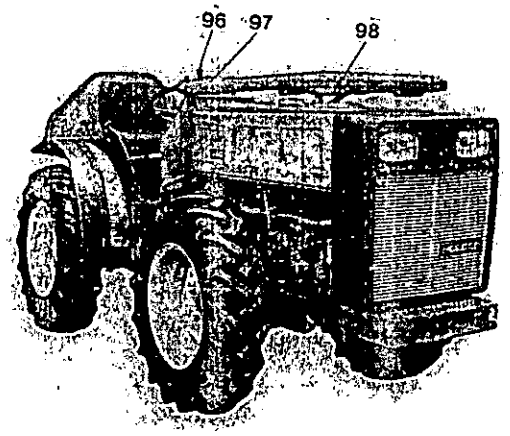

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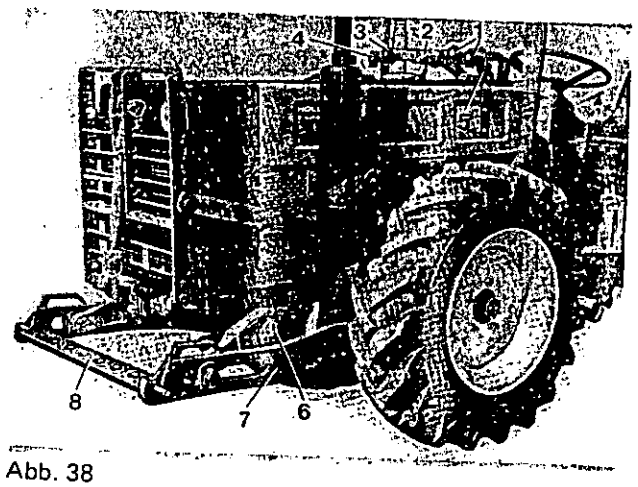
Abb. 37



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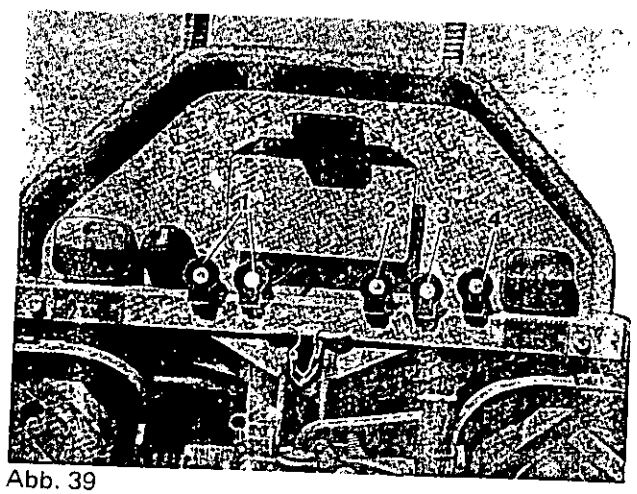

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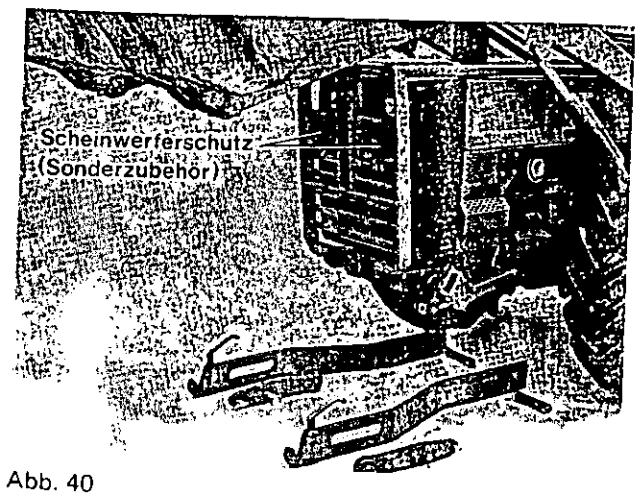

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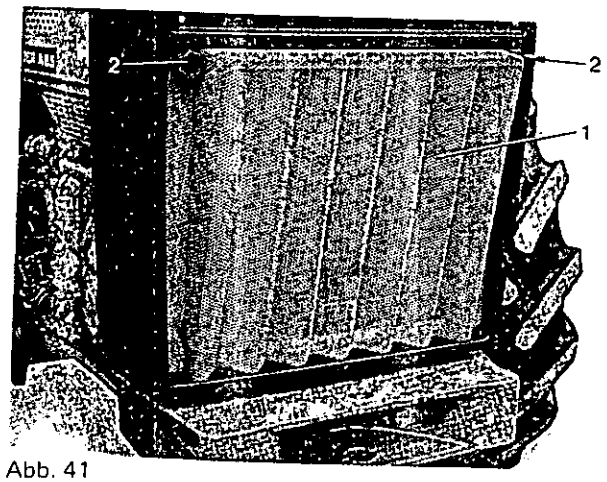

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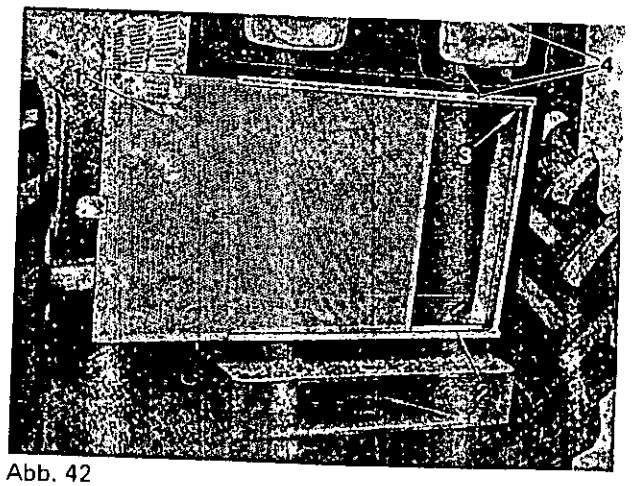

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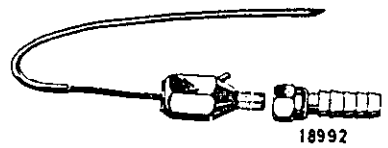

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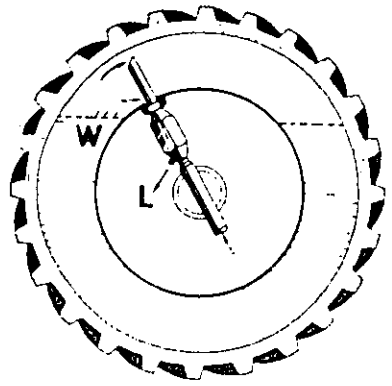

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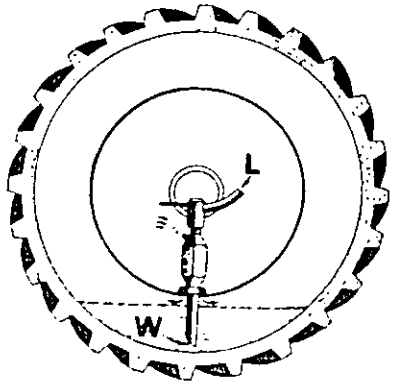

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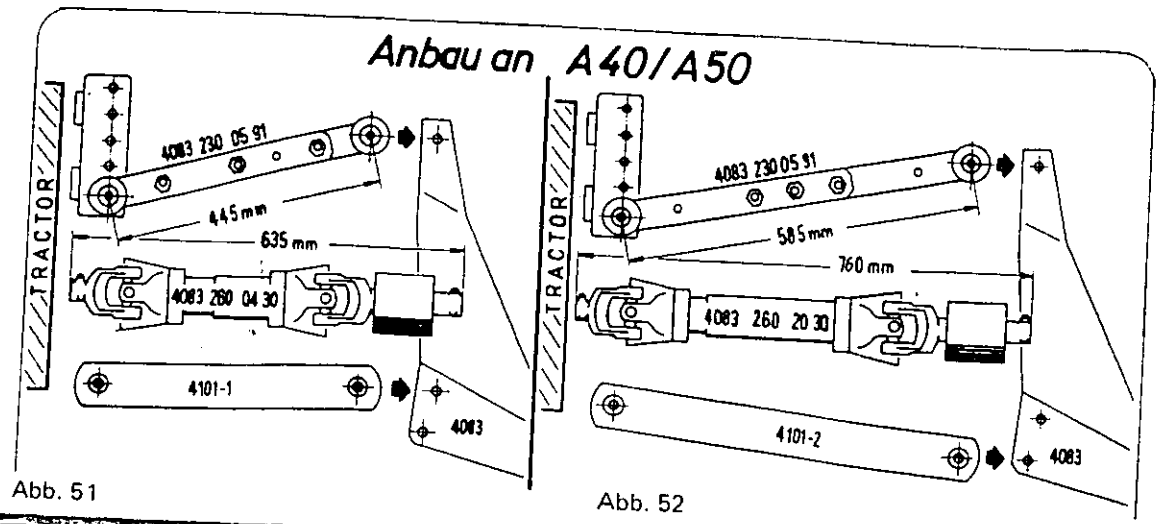

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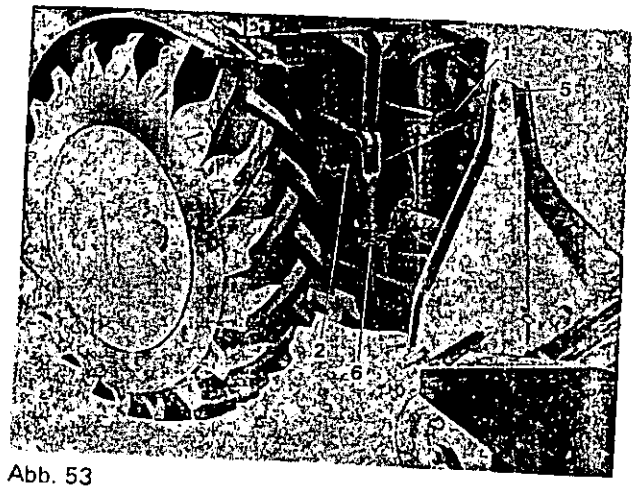

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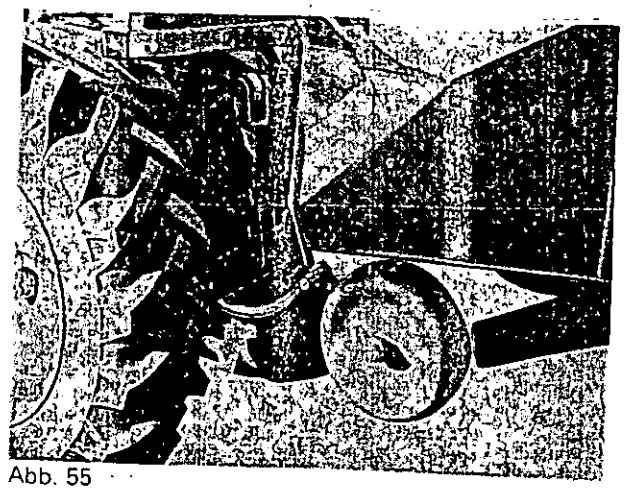

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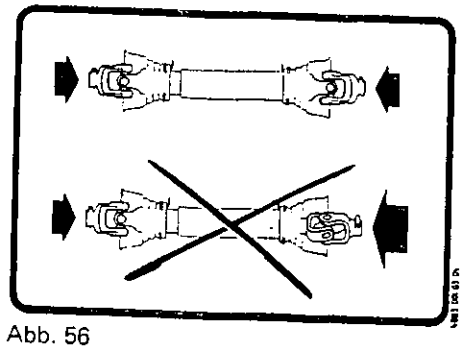

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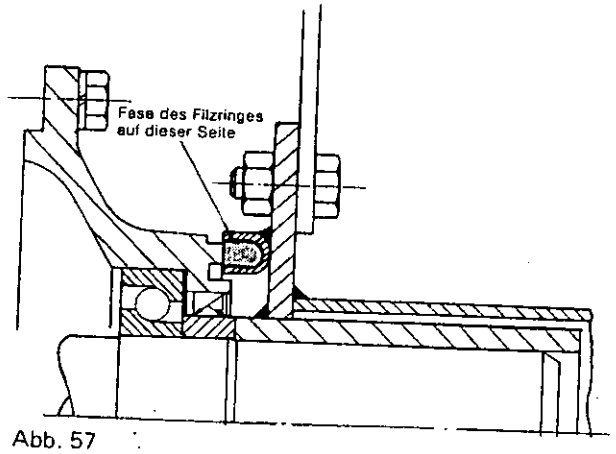

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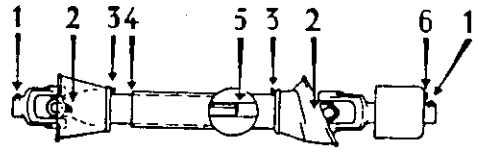

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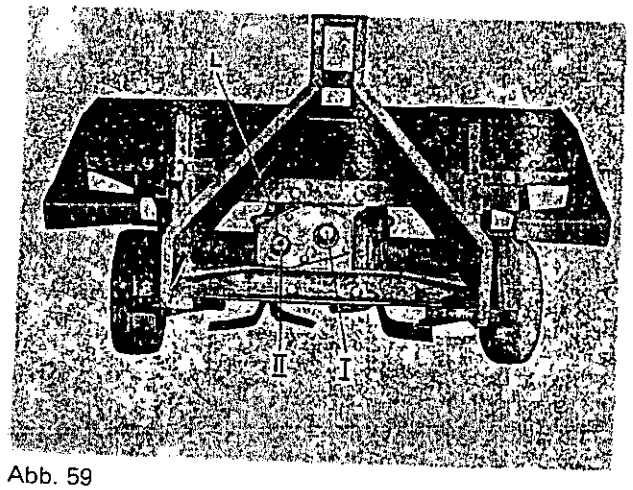

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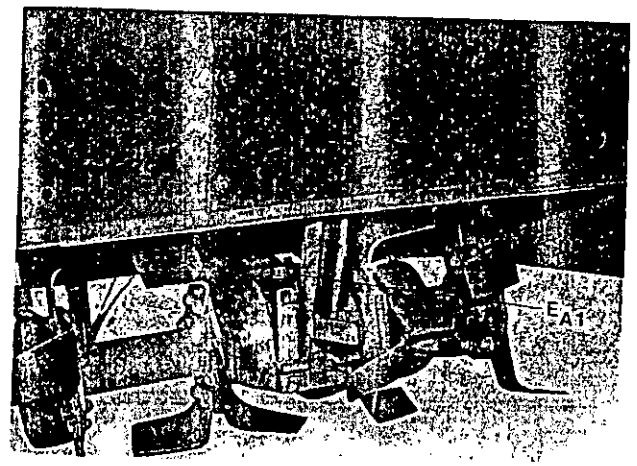

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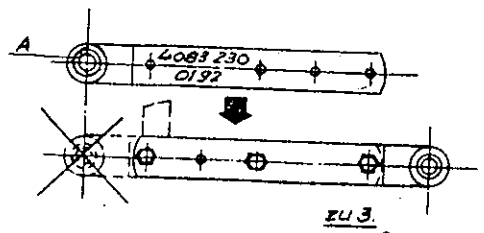

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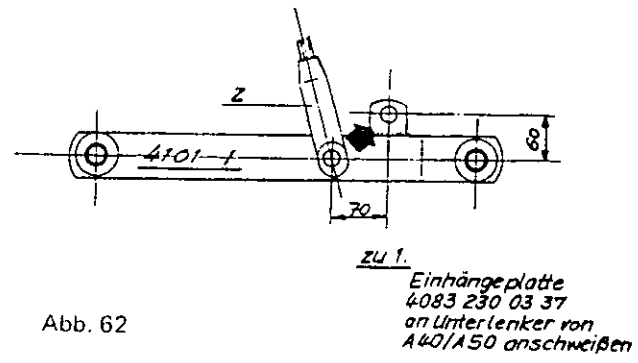

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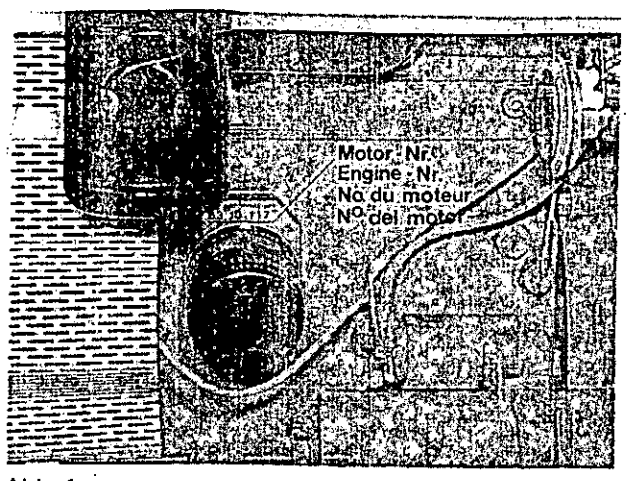

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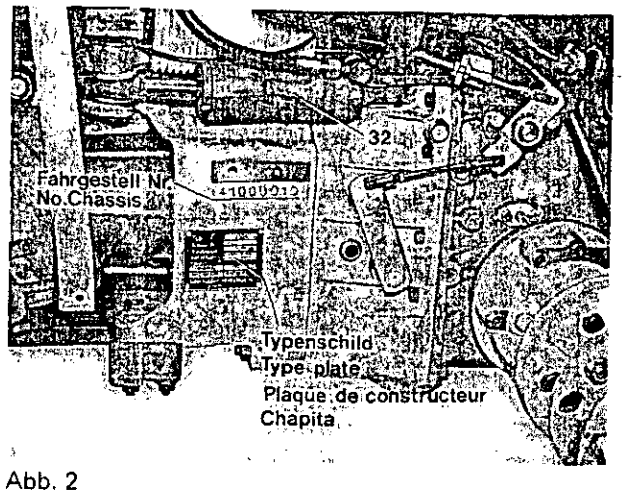

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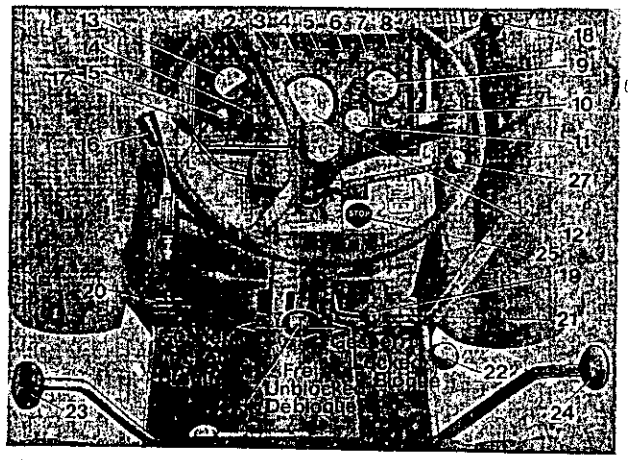

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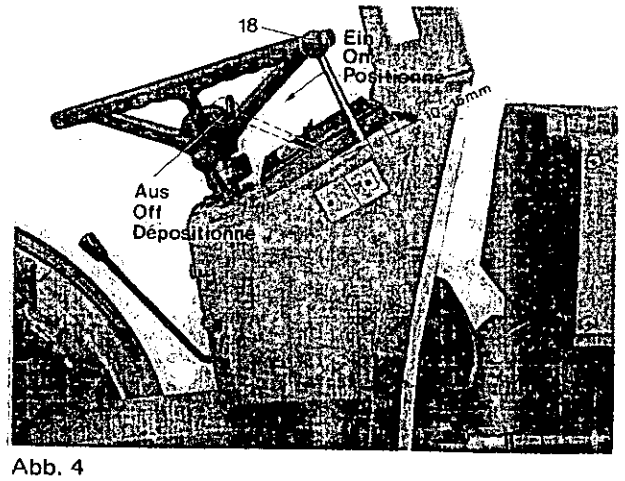

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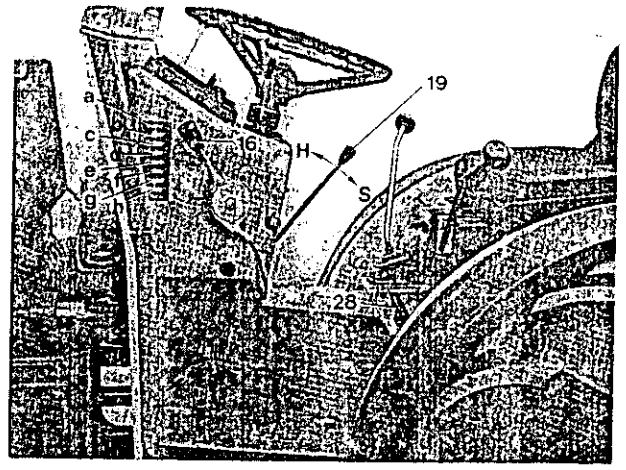
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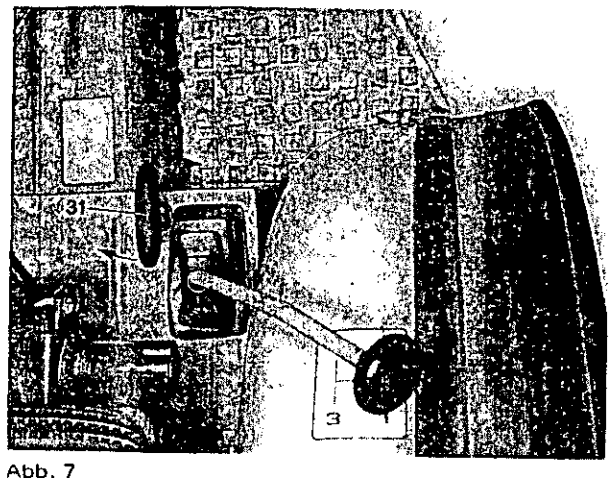
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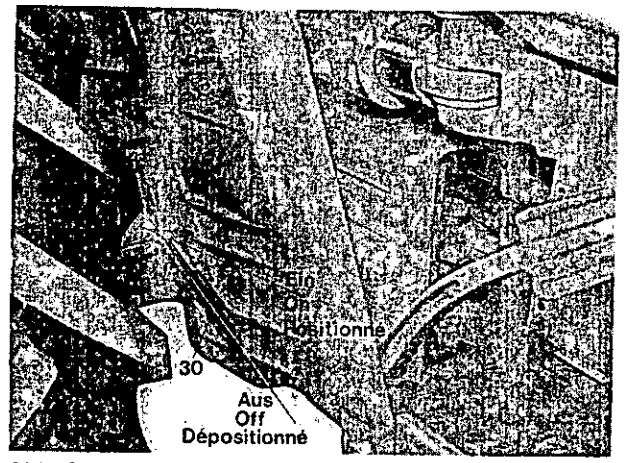

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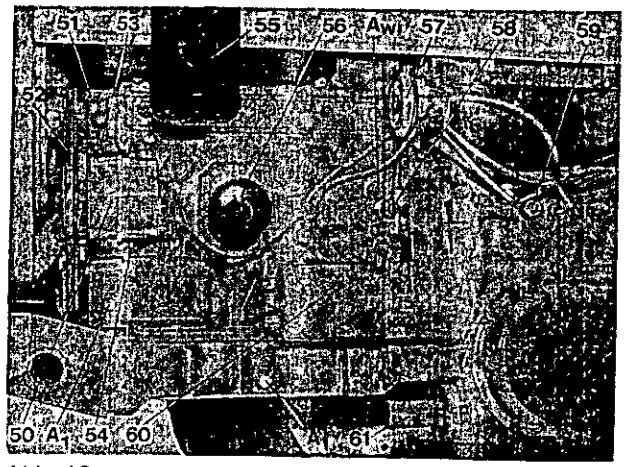
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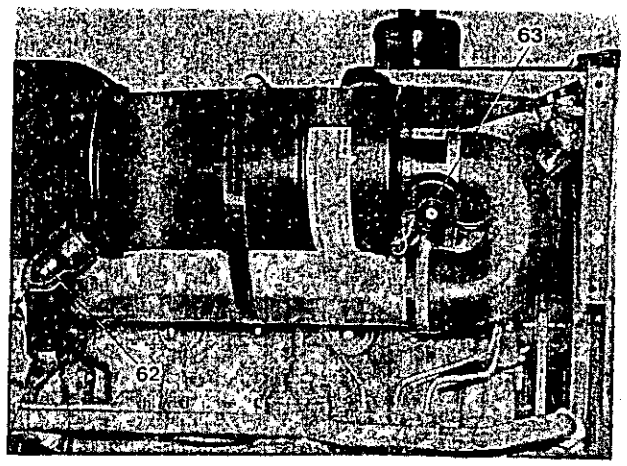
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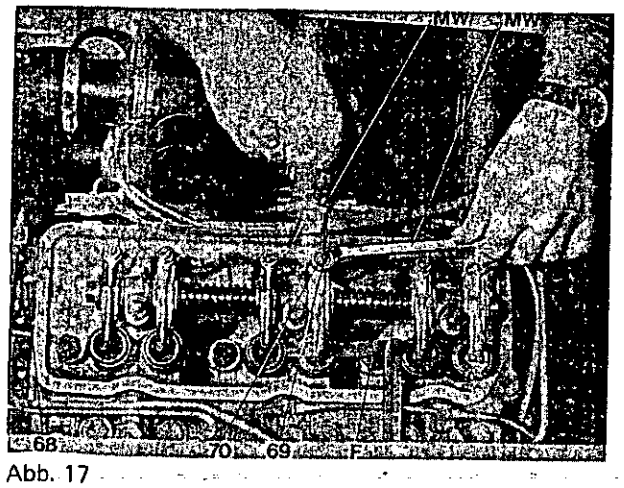
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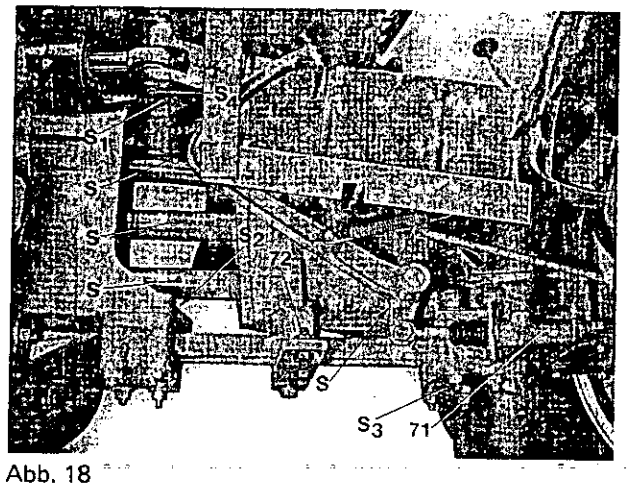
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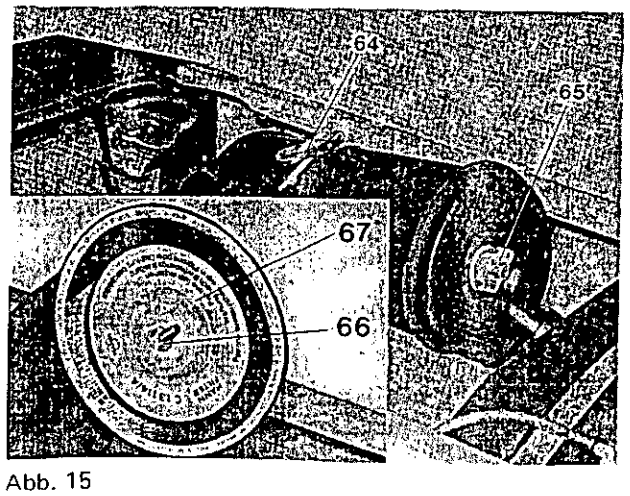
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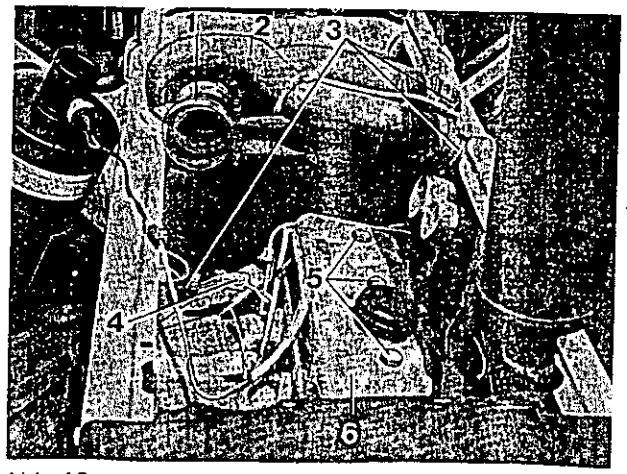
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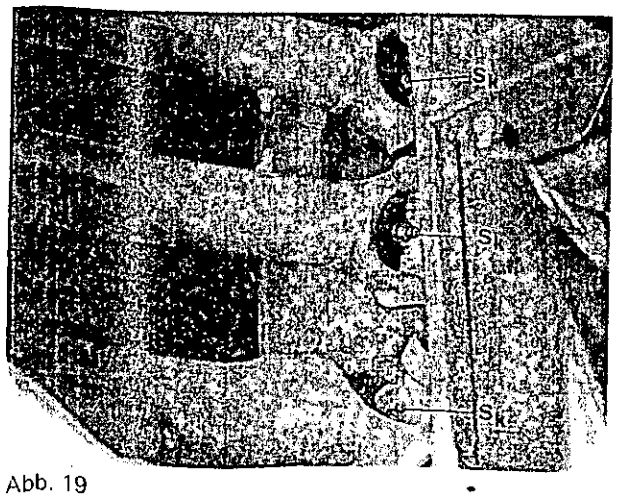
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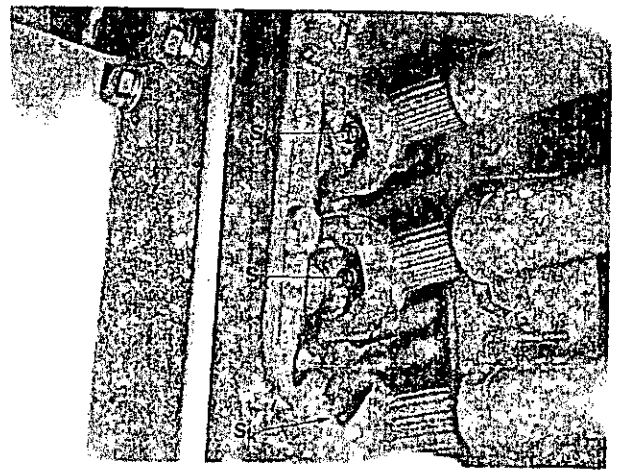
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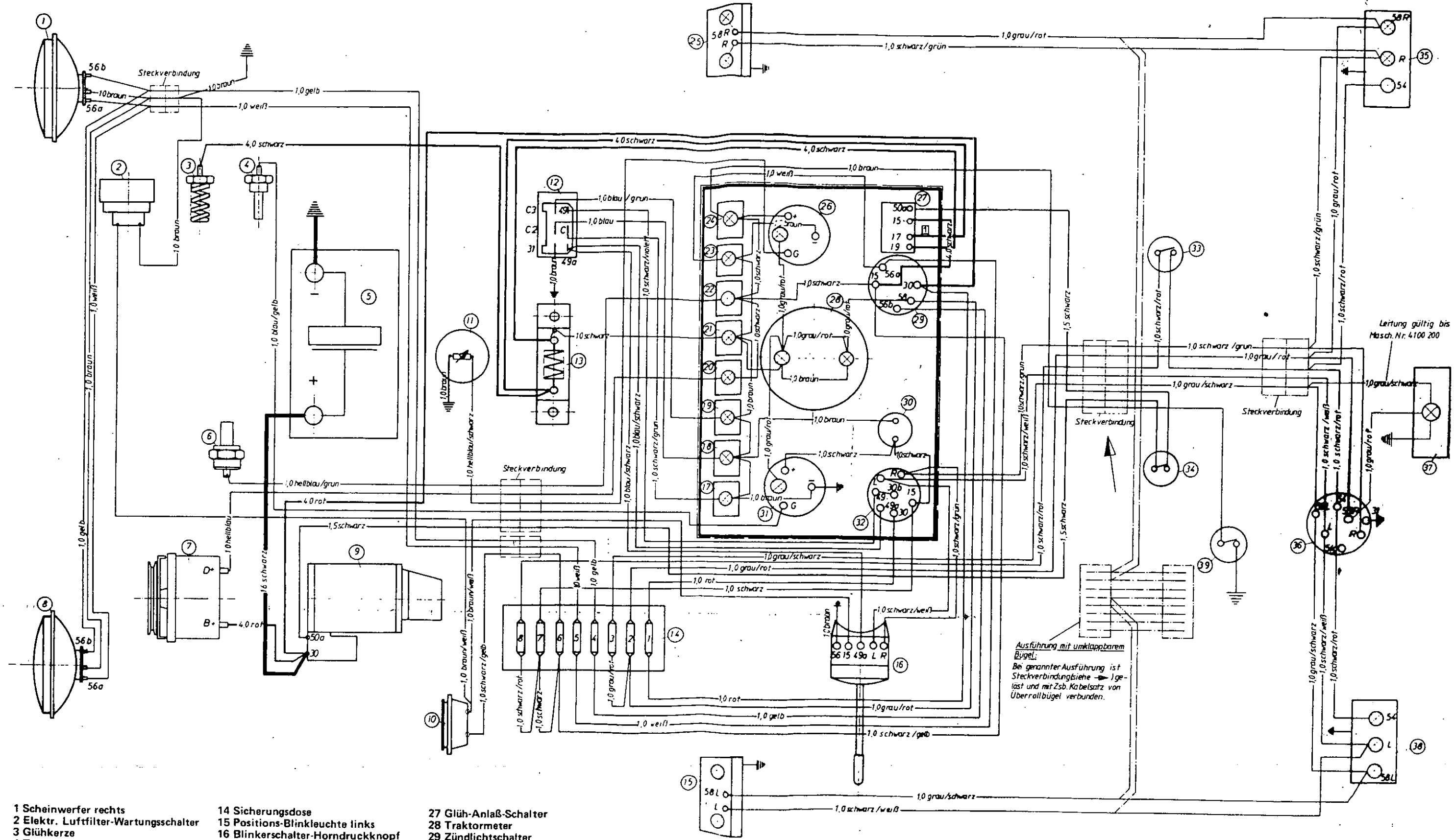


1 Scheinwerfer rechts
2 Elektr. Luftfilter-Wartungsschalter
3 Glühkerze
4 Temperaturgeber
5 Batterie
6 Öldruckgeber
7 Drehstromgenerator
8 Scheinwerfer links
9 Anlasser
10 Signalhorn
11 Tankgerät
12 Richtungswarnblinkgeber
13 Vorwiderstand
14 Sicherungsdose
15 Positions-Blinkleuchte links
16 Blinkerschalter-Horndruckknopf
17 Blinkkontrolleuchte
18 Blinkkontrolleuchte 1. Anhänger
19 Blinkkontrolleuchte 2. Anhänger
20 Batteriekontrolleuchte
21 Vorglühkontrolleuchte
22 Motoröldruckkontrolleuchte
23 Fernlichtkontrolleuchte
24 Feststellbremskontrolleuchte
25 Positions-Blinkleuchte rechts
26 Kraftstoffvorratsanzeiger
27 Glüh-Anlaß-Schalter
28 Traktormeter
29 Zündlichtschalter
30 2-pol. Steckdose
31 Elektric-Fernthermometer
32 Warnlichtschalter
33 Bremslichtschalter
34 Startsicherheitsschalter
35 Schluß-Brems-Blinkl. rechts
36 Steckdose 7-polig
37 Kennzeichenleuchte
38 Schluß-Brems-Blinkl. links
39 Feststellbrems-Kontr.Schalter

Funktion der einzelnen Sicherungen
Sicherung 1 = Warnlichtschalter
Sicherung 2 = Standlicht rechts
Sicherung 3 = Standlicht links
Sicherung 4 = Abblendlicht
Sicherung 5 = Fernlicht
Sicherung 6 = Signalhorn
Sicherung 7 = Blinklicht
Sicherung 8 = Bremslicht

Important Instructions for our Customers

1. Detach warranty file card, have it filled in by your dealer, and return it to Messrs. Gebrüder Holder GmbH & Co., 7430 Metzingen/Württ., Fed. Rep. of Germany, within 4 weeks upon sale of the tractor.

2. The tractor must not be used for any other work or purpose than it was originally designed for. Otherwise no liability will be taken over for consequential damage. This applies also to observing manufacturer's operation and servicing instructions,and the exclusive use of original replacement parts. The tractor must only be used, serviced and maintained by reliable staff who know the machine and have been instructed about possible dangers. Local safety regulations must be strictly complied with.

3. **Service**
   Please have all prescribed services (in accordance with service chart) regularly carried out by your local Holder dealer (Service Shop), and have them confirmed in the operation manual by stamp and signature.
   Warranty can only be claimed if the regular services have been punctually carried out!

4. **Tractor data**

Tractor model: ..... Chassis No.: .....

Engine No.: ..... Implement No.: .....

Tractor owner: .....

Address: .....

Date of taking tractor over: ..... Registration No.: .....

Dealer: .....

(Stamp)

RANCAIS

5. **The following services have been carried out:**
(Entering these data is necessary to maintain your warranty claims).

	carried out on:	by:
1st Service at 20 operation hours	.....	
2nd Service at 150 operation hours	.....	
3rd Service at 300 operation hours	.....	
4th Service (annully, ... op. hours)	.....	
5th Service (annually, ... op. hours)	.....	
6th Service (annually, ... op. hours)	.....	

The jobs prescribed by Messrs. Holder in writing have been carried out:

Date	Holder Letter Ref. Date	Carried out through Holder Dealers
a)		.....
b)		.....
c)		.....

6. For repairs, insist on the **use of original Holder replacement parts.**
Only these will guarantee top quality and give full satisfaction to customers.

Gebrüder Holder GmbH & Co., 7430 Metzingen/Fed. Rep. of Germany, Phone: 0 71 23 / 166-0
Telex No. 7245319

Engine and Tractor

A) General Information

Please read and follow the instructions contained in this manual very carefully which will render your tractor ready for service at all times. The booklet contains all information necessary for a thorough service and maintenance of your machine. You should take particular care to have your tractor punctually serviced. This will make it always ready for work, and guarantee a long service life.

Have all prescribed services regularly carried out through your accredited Holder dealers who also should be consulted in case of failures, and for repairs.

The orange-coloured double warranty file card should be returned to Messrs. Gebrüder Holder by the dealer immediately after handing over the tractor to its future owner.

When making inquiries in writing, or over the phone, see to have the following data at hand:
(You can then be sure to get a speedy reply).

a) Tractor model:	e. g. A 50
b) Engine serial No.:	e. g. 63 10 220
c) Chassis serial No.:	e. g. 411 01 560
d) Date of sale:	e. g. 2-6-86 and, if necessary, date of reclamation
e) Tractormeter reading:	e. g. 500 hours of operation

The chassis No. is embossed on the type plate and the connection housing (Ill. 2) (RH side viewed in driving direction). The engine serial No. is to be found on the cylinder crankcase (exhaust side) (Ill. 1).

Technical information, illustrations and dimensions, as contained in this manual, are non-obligatory, and no claims can be derived from these. We reserve the right to make improvements on the tractor, without changing this manual.

The coefficient of emission (exhaust gas) is marked on the type plate.

B) Technical data

Engine in	**A 40 (24 kW/33 PS-37 HP)**	**A 50/A50 S (36,5 kW -50 PS - 56 HP)**	**A 50 Turbo (43 kW -59 PS - 64 HP)**
Manufacturers:	Gebrüder Holder GmbH & Co., 7430 Metzingen-West Germany		
Type:	6001-2	6001-3	6001-4
Design:	In-line vertical engine	In-line vertical engine	In-line vertical engine
Mode of operation:	Four-stroke diesel	Four-stroke diesel	Four-stroke diesel
Injection system:	Direct injection	Direct injection	Direct injection
Number of cylinders:	2	3	3
Cylinder bore:	100 mm	100 mm	100 mm
Stroke:	100 mm	100 mm	100 mm
Cylinder capacity:	1571 cm^3	2356 cm^3	2356 cm^3
Compression ratio:	16,55 : 1	16,55 : 1	16,55 : 1
Compression pressure:	24 $\pm$ 2 bar	24 $\pm$ 2 bar	24 $\pm$ 2 bar
Charging pressure:	–	–	0,6 bar
Valve tolerance (cold/warm):	0,25 mm	0,25 mm	0,25 mm
Fuel consumption:	241 g/kWh at n=1600 rpm	238 g/kWh at n=1780 rpm	233 g/kWh at n=2275 rp
Cooling:	Water circulation cooling with pump and thermostat		
Air filter:	MANN dry-air filter with accustical warning system		
Lubrication system:	Force feed lubrication with gear pump		
Oil filter:	Change cartridge in main current (M & H. W 9.20)		
Oil pressure at N = 2000 rpm:	$4\ ^{+1}_{-0,5}$ bar	$4\ ^{+1}_{-0,5}$ bar	$4\ ^{+1}_{-0,5}$ bar
Rated speed:	2500 rpm	2500 rpm	2500 rpm
Max idling speed:	2670 rpm	2670 rpm	2670 rpm
Min. idling speed:	850 rpm	850 rpm	850 rpm
Max. torque:	at n = 1600 rpm: 103 Nm	at n = 1780 rpm: 153 Nm	at n = 1825 rpm: 176 Nn
Capacity after DIN 70020 at n = 2500 rpm:	24 kW - 33 PS - 37 HP	36,5 kW - 50 SP - 56 HP	43 kW - 59 PS - 64 HP
Clutch: (drive clutch)			
Design:	Single-plate clutch make Fichtel & Sachs MF 240, green colour mark		
Mode of operation:	hydraulic	hydraulic	hydraulic
Resetting:	automatic	automatic	automatic
Fuel system:			
Injection pump with regulator:	Bosch PES 2A 80D 410/3 RS 1329	Bosch PES 3A 80D 410/3 RS 1313	Bosch PES 3A 80D 410/3 RS 1336
Injection nozzle:	Bosch DLLA 156 S 911	Bosch DLLA 156 S 911	Bosch DLLA 156 S 911
Injection pressure:	185 bar	185 bar	185 bar
Fuel filter:	Micronic filter cartridge - built into the tank - with shut-off valve		
Commencement of fuel iniection:	9,7 mm b.T.D.C.	9,7 mm b.T.D.C.	9,7 mm b.T.D.C.

Weight A 40 w. tyres:	7,50-18 Impl. 7,50-18 Golf		10,5/80-18 Impl.		400-15,5 350/60-17,5		31x11,5-15LT		31x15,50-15	
	w.4-post rollover bar	w.folding rollover bar	w.4-post rollover bar	w.folding rollover bar	w.4-post rollover bar	w.folding rollover bar	w.4post rollover bar	w.folding rollover bar	w.4-post rollover bar	w.folding rollover bar
Empty weight (incl. driver 75 kg) total: kg	1375		1430		1440		1356		1416	
front: kg	833	843	860	870	865	875	828	838	853	863
rear: kg	542	532	570	560	575	565	538	528	563	553
Weight A 50 and A 50 Turbo Empty weight (incl. driver 75 kg) total: kg	1455		1510		1520		1446		1496	
front: kg	935	945	962	972	967	977	930	940	955	965
rear: kg	520	510	548	538	553	543	516	506	541	531

Note: with full cab, the empty weights are increased by 120 kg (40 kg in front, 80 kg at rear)
with open cab, the empty weights are increased by 24 kg (12 kg in front, 12 kg at rear)

A 40/A 50 and A 50 Turbo - all above versions:

Permissible total weights: 2700 kg
Permissible load on front axle: 1500 kg
Permissible load on rear axle: 1500 kg

Permissible supporting load on trailer hitch

A 40/A 50/A 50 Turbo with 4-post rollover bar, or cab: 600 kg
A 40/A 50/A 50 S/A 50 Turbo with folding rollover bar: 680 kg.

Tyres – Air pressure – Wheel weights

Tyres	Ply	Profile	Tube	Air pressure	Wheel weights Type	Wheel weights Weight
7.50-18 Impl. and Golf w.water valve	8	AS traction a. lawn	yes	2,75 bar (atm.)	4134/1	appr. 42 kg
10.5/80-18 Impl. w. water valve	6/8	MPT traction	yes	1,5 bar (atm.)	4134/1	appr. 42 kg
400-15.5 Trelleborg	6	agric. profile	yes	1,0 bar (atm.)	4134-2	appr. 43 kg
31x15.50-15 Terra	4	XTRA-trac	yes	1,5 bar (atm.)	4134-2	appr. 43 kg
350/60-17,5	4	Agric. profile	yes	1,0 bar (atm.)	4134-2	appr. 43 kg
31x11,5-15 LT	4	Wrangler XT	no	1,5 bar (atm.)	4134-2	appr. 43 kg

Note for the use of snow chains: (cannot be used with tractor set on narrow track)

Which chains for which tyres: (Snow chains of other makes can be used provided their shape and meassurements will correspond with the recommended chains.)

Tyres	RUD chains Ref. No.
7.50-18 Impl.	24 545 and 22 545
10.5/80-18 Impl.	24 553 and 22 553-only possible with 100 mm hubs T.5092-3
31x11,5-15 LT	22 539
31 x 15,5-15 Terra	22 546
400-15.5 Trelleborg	22 173

Instructions for ballasting the machine for different equipment and applications.

Ballast weights must be principally applied parallel and with the same weight on each axle.

Examples for ballasting:

Tractor version	Front axle Wheel weights 2 pieces/axle	Water filling	Rear axle Wheel weights 2 pieces/axle	Water filling
A 40/A 50 with vineyard cultivator or rotary hoe	●	for extreme slopes	–	–
A 40/A 50 with tractor-mounted sprayer	●	for extreme slopes	–	–
A 40/A 50 with plough	●	–	●	–

Tractor version	Front axle Wheel weights 2 pieces/p.axle	Water filling	Rear axle Wheel weights 2 pieces/p.axle	Water filling
A 40/A 50 with front loader and rear weight in 3-point linkage appr. 600 kg	–	–	●	–
A 40/A 50 with snow plough, snow blade etc. and rear weight in three-point linkage approx. 600 kg, or with mounted sand/salt distributor w. filling	–	–	●	–

If used with a front-mounted loader type 4128-3/4 the tractor must be equipped as follows:

Tyres	Type	Use without hub spacers possible - yes or no -	Use with hub spacers type 572 - 55 mm possible - yes or no -	Use with hub spacers type 5092-3 - 100 mm possible - yes or no -
7.50-18	4131-1/5	yes	yes	yes
7.50-20	4131-7	no	yes	yes
10.5/80-18	4131-2	no	no	yes
31x11.50-15	4131-4	no	no	yes
31x15.50-15	4131-8	no	no	yes
350/60-17,5	4131-11	no	no	no
400-15,5	4131-6	no	no	no

Prerequisites for mounting of front loader:

Upswept exhaust Type 5234-9

Hydraulic kit type 4180-15 resp. 4180-16

Wheel weights rear, and rear weight in three-point linkage of approx. 600 kg minimum (see ballasting table).

Hub spacers required for A 40 in connection with front lift

Tyres	Type	Required hub spacers	
7,50-18	4131-1/5	Type 572 (55 mm)	Only required if tractor set on narrow track
10,5/80-18	4131-2	Type 572 (55 mm)	
31x11,5-15	4631-4	Type 572 (55 mm)	
31x15,5-15	4131-8	Type 572 (55 mm)	
350/60-17,5	4131-11	Type 572 (55 mm)	
400-15,5	4131-6	Type 572 (55 mm)	

Dimensions of A 40/A 50

Tyres	Type	Overall height with rollover bar c	Overall height with folding bar c	Medium seat height d	Ground clearance e	Trailer hitch lowest pos. f	Trailer hitch centre pos. f	Trailer hitch highest pos. f
		mm	mm	mm	mm	mm	mm	mm
7.50-18 Impl. and Golf	4131-1/-5	2025	2055	885	255	605	645	685
10.5/80-18 Impl.	4131-2	2047	2077	909	279	627	667	707
o 10.5/80-18 Impl.	A50S	2047	2077	909	279	627	667	707
o 400-15.5 Trelleborg	4131-6	2014	2044	890	260	594	634	674
31x15,50-15 Terra	4131-8	1978	2008	840	210	558	598	638
31x11,50-15 LT	4631-4	1998	2028	860	230	578	618	658
o 350/60-17,5	4131-11	2014	2044	890	260	594	634	674

Note: All four wheels must be principally equipped with the same tyre size with identical profile.

o Not possible in connection with front loader.

Water filling of tyres (with 75 % filling)

Tyres	Increase of weight when filled with clear water approx. kg/tyre	Anti-freeze agent up to −20° C Chlormagnesium and * water approx. kg/tyre	Anti-freeze agent up to −20° C Chlormagnesium and * water approx. kg/tyre	Anti-freeze agent up to −20° C Weight approx. kg/tyre
7.50-18 Impl.	39	17	28	45
10.5/80-18 Impl.	53	22	38	60

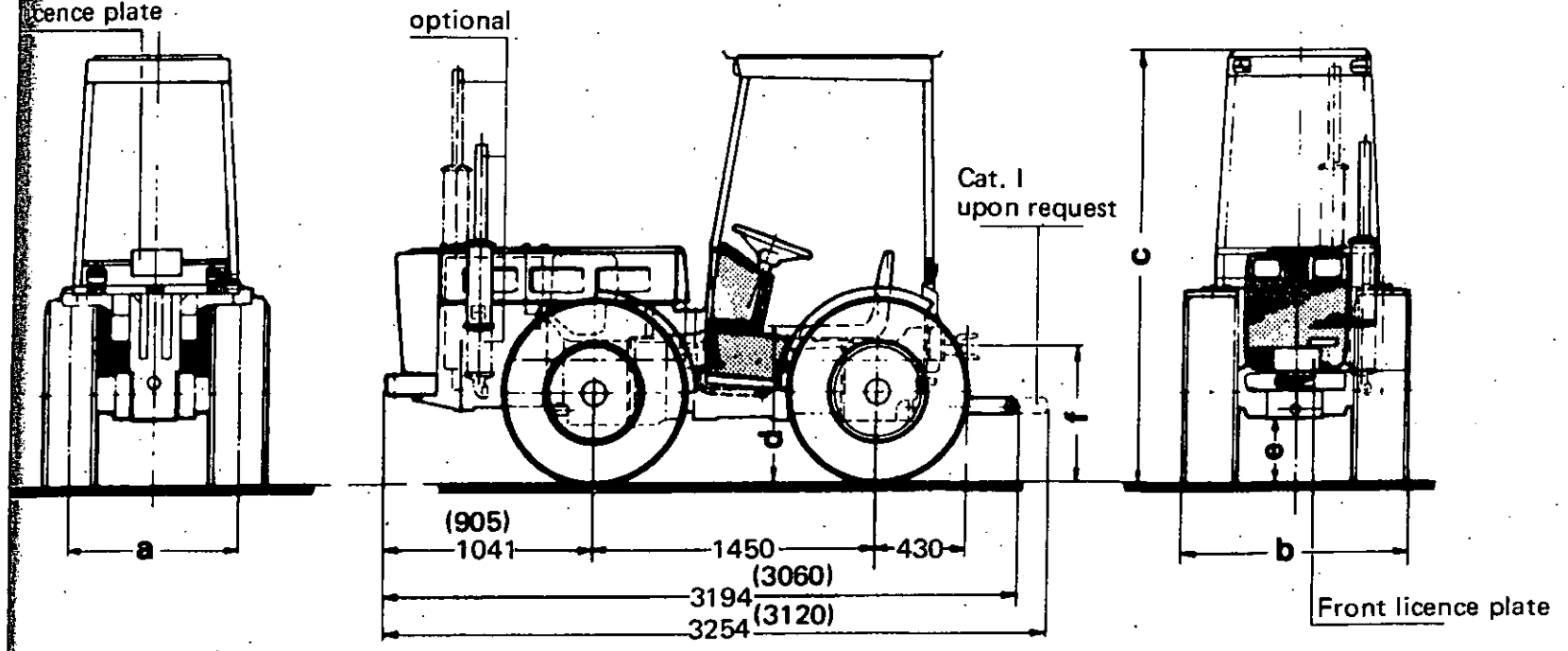
* Commercially available 46% chlormagnesium (Chlormagnesium Mg Cl_2)

Note: In case of anti-freeze agent up to −30° C: Increase chlormagnesium by 25%, reduce water by 10%.

Track resp. overall widths

Min. turning circle dia. (acc. to DIN 70020) measured on most extreme point of vehicle)	Standard track				With hub spacers							
	Track width a		Overall width b		Type 572 = 55 mm Track width a		Overall width b		Type 5092-3 = 100 mm Track width a		Overall width b	
m	mm		mm		mm		mm		mm		mm	
5,45 at track 701	701 *	941	910 *	1150	811	1051	1020	1260	901	1141	1110	1350
5,64 at track 814	814	830	1088	1104	924	940	1198	1214	1014	1030	1288	1304
5,55 at track 740	740 *	904	1014 *	1178	850	1014	1124	1288	940	1104	1214	1378
5,86 at track 904	904	–	1309	–	1014	–	1419	–	1104	–	1509	–
5,83 at track 904	904	–	1272	–	1014	–	1382	–	1104	–	1472	–
5,63 at track 774	774*	870	1074*	1170	884	980	1184	1280	974	1070	1274	1370
5,74 at track 844	844	–	1199	–	954	–	1309	–	1044	–	1399	–

These track widths and overall widths are not possible in connection with turbo engine.



Filling quantities (Refill)	A 40	A 50
Engine incl. change of filter:	4,00 ltr. (HD oil for diesel engine)	6,00 ltr. (HD oil for diesel)
Oil in regulator housing:	0,35 ltr. (HD SAE 20)	0,375 ltr. (HD SAE 20)
Hydraulic system (tank capacity):	14,00 ltr. (HD oil SAE 20)	14,00 ltr. (HD oil SAE 20)
	Instead of hydraulic oil DTE 16 engine oil SAE 20 can be used, or the hydraulic oil can be mixed with HD SAE 20 engine oil. However, to avoid inferior quality use engine oil for top-up only if there is no hydraulic oil aivailable with increased viscosity index.	
Front gearbox:	10,25 ltr. (SAE 80 gear oil)	10,25 ltr. (SAE 80 gear oil)
Rear gearbox:	6,25 ltr. (SAE 80 gear oil)	6,25 ltr. (SAE 80 gear oil)
Rear gearbox with assembled creep gear:	7,55 ltr. (SAE 80 gear oil)	7,55 ltr. (SAE 80 gear oil)
Planetary gears:	0,30 ltr. (SAE 80 gear oil)	0,30 ltr. (SAE 80 gear oil)
Fuel tank:	40,00 ltr. (Diesel oil)	40,00 ltr. (Diesel oil)
Cooling system (total quantity):	6,00 ltr. (water+anti-freeze agent)	9,00 ltr. (water+anti-freeze
Anti-freeze agent „Glysantine" to −30° C filled in from the factory all the year round:	2,50 ltr. (Glysantine)	3,00 ltr. (Glysantine)
Brake fluid for hydraulic clutch:	0,25 ltr. (N-DOT 3)	0,25 ltr. (N-DOT 3)

The correct oil level can be determined by means of the markings on diprods and control screws, or oil sight glasses.

2. Transmission A 40 and A 50

a) Gears: 8 forward, 4 reverse } fully synchronized

Design: group gearing

b) Kit for subsequent assembly of Super Creep Gear Type 4164-1 / 4162-3

For subsequent assembly please follow separate instructions.

c) Tractormeter: Registering speeds of the most important gears, with speedometer for engine and P.T.O., and with hour meter.

Theoretical driving speeds

Idling engine speed: 800 rpm **Rated engine speed: 2500 rpm**

Tyres:			7,50-18	10,5/80-18	31x15,50-15	31x11,5-15	400-15,5	350/60-17,5
	Prese-lection	Gear	km/h	km/h	km/h	km/h	km/h	km/h
Creep gear Type 4164-1	L	0	0,2- 0,64	0,2- 0,68	0,2- 0,60	0,2- 0,60	0,2- 0,65	0,2- 0,66
Creep gear Type 4162-3	L	0	0,1- 0,23	0,1- 0,25	0,1- 0,22	0,1- 0,22	0,1- 0,24	0,1- 0,24
Forward:	L	1	0,4- 1,4	0,5- 1,5	0,4- 1,3	0,4- 1,3	0,4- 1,4	0,5- 1,4
	L	2	0,8- 2,5	0,8- 2,7	0,7- 2,3	0,7- 2,4	0,8- 2,5	0,8- 2,6
	L	3	1,3- 4,2	1,4- 4,4	1,2- 3,9	1,3- 3,9	1,3- 4,2	1,4- 4,3
	L	4	2,1- 6,5	2,2- 6,9	1,9- 6,0	2,0- 6,1	2,0- 6,5	2,1- 6,7
	S	1	1,6- 4,9	1,7- 5,2	1,5- 4,9	1,5- 4,7	1,6- 5,0	1,6- 5,1
	S	2	2,9- 9,0	3,0- 9,5	2,7- 8,3	2,7- 8,5	2,9- 9,0	3,0- 9,3
	S	3	4,8-14,9	5,0-15,7	4,4-13,8	4,5-14,1	4,8-15,0	5,0-15,5
	S	4	7,4-23,1	7,8-25,1	6,8-21,3	7,0-21,8	7,4-23,3	7,7-24,0
Reverse:	R	1	0,5 - 1,6	0,6 - 1,7	0,5 - 1,5	0,5 - 1,5	0,5 - 1,6	0,5 - 1,7
	R	2	0,9 - 3,0	1,0 - 3,1	0,9 - 2,7	0,9 - 2,8	1,0 - 3,0	1,0 - 3,0
	R	3	1,6 - 4,9	1,7 - 5,2	1,5 - 4,6	1,5 - 4,8	1,6 - 5,0	1,6 - 5,1
	R	4	2,4 - 7,6	2,6 - 8,1	2,3 - 7,0	2,3 - 7,2	2,5 - 7,7	2,5 - 7,9

d) Diff-lock: Simultaneously actuated on front and rear axle, hydraulically via hand lever.

e) P.T.O. shafts:

	A 40	**A 50**	**A 50 S**	**A 50 Turbo**	
Version	4100-1	4100-4	4100-9	—	= gear depending P.T.O.
Version	4100-2	4100-5	4100-10	4100-15	= motor depending P.T.O. and with independent front P.T.O. - live P.T.O., shifting under load.

Direction of revolution as viewed in driving direction:	front anti-clockwise, rear clockwise rear 540/min. (rpm) at n = 2200/min. (rpm) engine speed front 1000/min. (rpm) at n = 2360/min. (rpm) engine speed
P.T.O. connections:	splined profile 1 3/8" (acc. to DIN 9611 - Germ. specif. stds.)
P.T.O. Clutch:	
Design:	Multi-plate wet clutch
Operation:	Hand lever

f) Steering

Design:	Hydrostatic power transmission with two steering rams.
Make:	Danfoss Orbitrol

g) Brakes:

Design:	„Simplex" drum-type brake, mechanical cam-type actuation
Driving brake and parking brake:	Acting on all four wheels
Parking brake:	Actuated via foot pedal, and by slackening handle grip

h) Trailer hitch: Adjustable for height, and revolving, with pistol-type handle grip
Make Rockinger or Cramer

i) Hydraulic system: Two-cylinder hydraulics in A 50
Single-cylinder hydraulics in A 40 (upon request also 2-cylinder)

Hydraulic pump: Bosch or Plessey gear pump

Capacity: (in case of A 40) 14 cc per rev. (35 l/min.) at rated engine speed

Holder No.	Bosch No.	Pleassey No.
000 070 14 55	0 510 525 321	TA 214-S 80

Optionally: (in case of A 50/A 50S) 16 cc/rev. (40 l/min.) at rated engine speed. (In case of A 40 only possible if the second hydraulic cylinder is fitted).

Type 5234-75 MP	Bosch No.	Plessey-No.
000 070 15 55	0510 625 326	TY 271 - SA

Working pressure: 180–190 bar (atm.)

Filter:	Passage filter in pressure pipe (Fineness of filter: size of pores 25 µm)
Oil supply tank w. compensation tank:	Hydraulic oil Mobil DTE 16.
Control valves:	Bucher control valve block, cons. of: Inlet plate with current distributor LA 06 PQ A11-M06/1 Intermediate plate with pressure limitation valve LA 06 PBA 190 3/3-way valve LA 06 P3BA-M 06 Cover plate LA 06 PU
Additional control valves:	For extension, the following types are available: Type 4180-8 Additional control valve, single-acting, with pipes and coupling, rear Type 4180-9 Additional control valve, double-acting, with pipes and coupling, rear Type 4180-4 Kit for oil circulation with pipes and coupling, rear Type 4180-10 Kit for pressureless return flow rear with coupling Type 4180-11 Kit for pressureless return flow front with coupling Type 4180-6 Kit hydraulic coupling front (only supplied in addition to kits 4180-8 and 4180-9). Type 4180-7 Fixture for hydraulic couplings front
Rear implement linkage:	Standard Cat. 0 three-point linkage with steep vertical lift, optionally Cat. I Max. lifting capacity, measured at lower link arm on field bar:

	Single-cylinder hydraulics (in A40 only)	Double-cylinder hydraulics
Cat. 0	10 000 N (1000 kp)	20 000 N (2000 kp)
Cat. I	9 000 N (900 kp)	18 000 N (1800 kp)

Electrical system:	**A 40**	**A 50**
Battery:	Capacity 12 V/55 Ah Nominal voltage 12 V	Capacity 12 V/88 Ah Nominal voltage 12 V

Three-phase generator with built-in transistorized voltage regulator:	Rated voltage 14 V Amperage 33 A	Rated voltage 14 V Amperage 33 A
Starter:	Capacity 2,4 kW (3,25 HP)	Capacity 2,4 kW (3,25 HP)
(screw-push starter)	Rated voltage 12 V	Rated voltage 12 V

Incandescent lamps:

Headlight	35 W/35 W	Tractormeter light	3 W
Traffic light front	21 W	Warning light switch	3 W
Traffic light rear	21 W	Remote thermometer	3 W
Rear reflector	10 W	Fuel supply indicator	3 W
Licence plate light	5 W	Control lamps	3 W
Brake light	21 W	Position lamps	5 W

C) Function of operation levers and control units

Ignition and lighting switch (11 Ill. 3)
The ignition and lighting switch has 6 positions which are switched on with the ignition key.

P = Parking light
0 = Everything off
1 = Engine clear for starting
2 = Parking light
3 = Dimming light } Dashpanel lighting on
4 = Main beam

Heater plug pull-push switch (10 Ill. 3)
The heater plug has 2 positions:
1st position (groove) = Preglow system on (cold-start device)
(Pre-glowing is completed if „ready-for-starting" control lamp (5 Ill. 3) lights up)
2nd position (stop) = Starter is actuated

Fuel supply indicator (9 Ill. 3)
The fuel supply indicator shows the fuel level in the fuel tank. (Never run fuel tank entirely empty).

Tractormeter (12 Ill. 3)

Upper section	=	Hour meter
Lower section	=	Driving speeds with various gears and engine revs
Markings	=	P.T.O. speed 540/min. (rpm) (for front P.T.O. ≙ 1000/min. (rpm)

The tractormeter registers one hour based on an engine speed of 1670/min. (rpm)

Remote thermometer for engine temperature (13 Ill. 3)

The remote thermometer has 3 colour divisions:

White	(40°– 65° C)	=	Engine temperature too low
Green	(65°–105° C)	=	Normal operation temperature
Red	(105°–120° C)	=	Engine overheating. Shut-off at once. Locate cause and remedy.

Warning light switch (15 Ill. 3)

When switching on, all flashlights (also those of trailers) will simultaneously light up in certain intervals. Pay attention to local regulations for use of the warning flashlights.

Control lamp panel (Ill. 3)

1 = Control lamp for tractor flashlight
2 = Control lamp for flashlight of 1st trailer
3 = Control lamp for flashlight of 2nd trailer
4 = Charging indicator lamp
5 = „Ready-for-starting" control lamp
6 = Engine oil control lamp
7 = Main beam control lamp
8 = Hand brake control lamp

Socket (14 Ill. 3)

The socket serves for connection of a 12-Volt consumer.

Manual speed regulator and shut-off lever (16 Ill. 3 + 6)

The manual speed regulator serves to adjust the engine speeds to a constant driving speed, or P.T.O. speed. To shut-off the engine, move the manual speed regulator lever forward beyond the notch until the engine will come to a standstill.

Engine shut-off knob (25 Ill. 3)

The engine is shut-off by pulling the shut-off knob (25 Ill. 3)

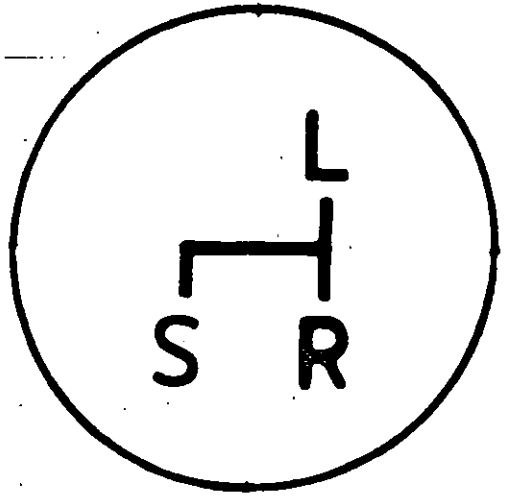
Speed adjustment pedal (22 Ill. 3)
When driving on the road, the speed is adjusted by means of the foot pedal.

Multi-purpose switch (17 Ill. 3)
The multi-purpose switch serves to actuate the traffic indicators and the horn.

Lever forward (R)	=	RH flashlight
Lever rearward (L)	=	LH flaslight
Lever upwards (H)	=	Actuation of horn

Fuse box (Ill. 6)
8 pieces 8 ampère (arrangement see wiring diagram Ill. 39).

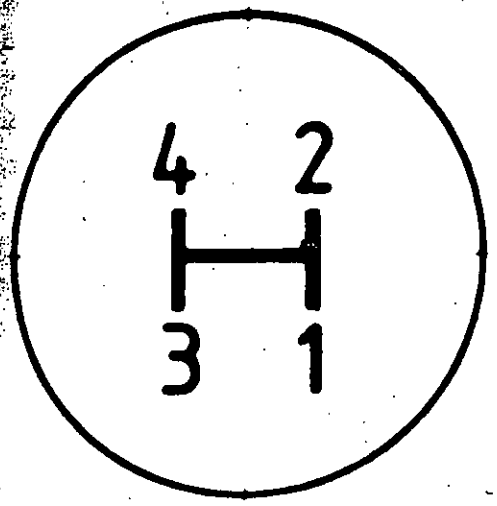
Selector lever for gear groups (23 Ill. 3)



R = Reverse gear group
L = Slow gear group
S = Fast gear group

The speed selection for the forward gear groups is synchronized, i. e. whilst driving, you can change over from the fast gear group to the medium gear group, resp. from medium to slow group, provided that, when shifting back, the driving speed has already been slowed down so that it lies within the range of the lower gear group. (This is absolutely important for **driving safety**)! Table of driving speeds see page 83.
Changing from forward to reverse, and vice versa, should only be done if the tractor is not moving.

Gear selector lever (24 Ill. 3)



Gear selection is synchronized

Driving brake (21 Ill. 3)

Through the brake pedal, the driving brake acts immediately on the rear wheels and, via the transmission, from rear to front, on the front wheels. In extreme conditions, for instance when driving downhill, the additional operation of the diff-lock (27 Ill. 3) will cause a safe braking effect on all four wheels.

Parking brake

Actuate the parking brake by pulling the hand lever (28 Ill. 6 and 9) upwards. Open it by turning to the right and at the same time push down the locking brake lever. The front wheel brake kit Type 4134-15 is supplied upon request. The parking brake is built into the front axle.

Clutch pedal (drive clutch) (20 Ill. 3)

To actuate the group gear and P.T.O. selector levers (gear depending P.T.O.) depress clutch pedal as far as stop.

A 40/A 50 with gear depending P.T.O.

Depress the drive clutch, press P.T.O. selector lever (29 Ill. 5) outwards, and move it forwards. The P.T.O. is now engaged. 540/min. (rpm) at 2200/min. (rpm) engine speed.

Note:

For the operation of P.T.O. driven implements, with a large revolving flywheel mass, the use of a cardan shaft with freewheeling is absolutely essentiel.

Otherwise, gears must only be changed if P.T.O. implement and tractor are immobile. Not paying attentio to this instruction will result in less operation safety, and increased wear of the synchronous rings.

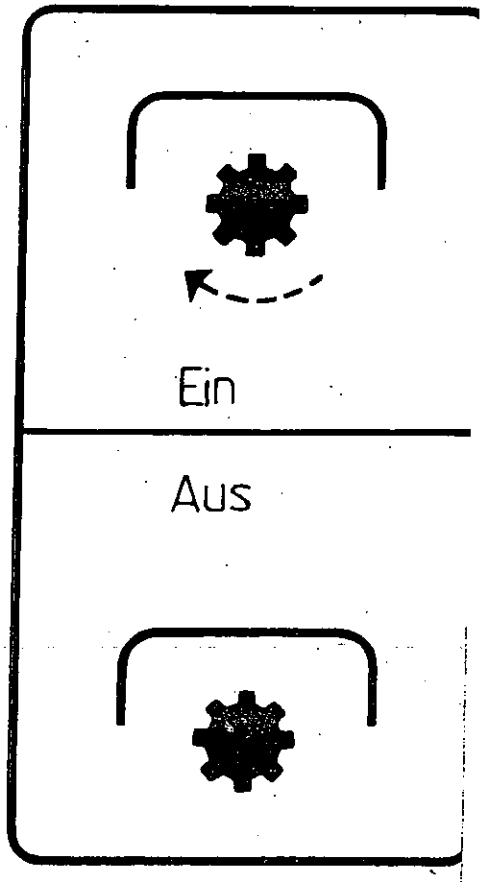
A 40/A 50 with motor depending P.T.O. (live P.T.O.)

Independent P.T.O. clutch (shifting under load)
Thanks to the P.T.O. clutch being independent from the driving clutch, the P.T.O. can be actuated with the tractor moving, or standing still.

Operation by means of clutch lever (18 III. 4).

Only with running engine:
In its function, the clutch lever can be compared with the clutch pedal of the driving clutch. If the P.T.O. driven implement is to be shut-off for a short while, use this clutch lever.

If the P.T.O. driven implements remain declutched for some lengthy period of time, e. g. when driving on public roads, it is necessary to disengage the P.T.O. by means of the **clutch lever** after having decoupled the transmission.



Operating the P.T.O. shafts
Declutch – pull the clutch lever (18 III. 4) to the rear „AUS" (off-position). Then, by means of the corresponding P.T.O. selector lever (29 III. 5) engage rear P.T.O. (30 III. 8) resp. front P.T.O.

Coupling – smoothly engage the clutch lever (18 III. 4) towards „EIN" (on-position).

Attention!
For coupling, slide clutch lever (18 III. 4) towards „EIN" (on-position) until you can feel the straining point to have been overcome.

General instruction
Always shut-off the engine before attaching implements to the P.T.O. shafts.

Diff-lock

For guided power transmission through all four wheels in soft, muddy ground, the compensation gears can be locked. This applies to traction work, and also to breaking. The diff-lock is hydraulically operated (from an engine speed of 1000 rpm + 100 rpm) by depressing the hand lever (27 Ill. 3). It unlocks automatically, when the hand lever is released.

Attention! The diff-lock must only be used when driving straight ahead.

Hydraulic operation lever (19 Ill. 6) with locking device (26 Ill. 3)

Moving lever in direction of arrow to position „H": Rear-mounted implement lifted

Moving lever in direction of arrow to position „S": Rear-mounted implement lowered (floating position)

Lever in centre position: Rear implement locked in instant position

Locking device: To lock the hydraulic selector lever, slide the locking device to the right or to the left. In centre position, the hydraulic selector lever becomes unlocked. The hydraulic lever support ass. type 5251-2 serves as an additional locking device for the hydraulic levers (e. g. when fitting a rear ballast weight). The support is fitted to the mounting bracket.

Fit the support in the hole rail for the trailer hitch below the hydraulic levers in a manner that both levers are supported and cannot be unintentionally lowered. This is practical and recommended if, e. g. rear ballast is carried along when working with the frontloader for some period of time, or for front-mounted implements, such as centrifugal snow plough, mulching units etc.

It is recommended to prop back hoes or mounted distributors on that support.

Load will thus be taken off the rear hydraulics.

If mounted in the hole rail of the trailer hitch above the hydraulic levers, and-with these supported by it hydraulically, the support serves to lock the three-point linkage. In this manner, heavy rear-mounted implements, such as hay tedders, sprayers, etc. can be attached to the field bar without the danger of the linkage being lifted.

For operation of the additional control valves look up section „Special Accessories" on page 115.

Driver seat (Make Bostrom) (Ill. 9)

The seat is adjustable for height, length, and driver's weight. The height is adjusted with the lock button (37). (Can only be done whilst the seat is occupied).

For longitudinal adjustment, press lever (36) outwards. Spring suspension is adjusted by means of the stop lever (38).

Soft springing	=	Move lever several times from bottom to top	fix stop lever as desired
Hard springing	=	Move lever several times from top to bottom	

Special Accessories

Creep gear selector lever (31 Ill. 7)	Operation see page 116
Operation lever for front loader	Operation see page 121

D) Preparation for taking tractor into service

Neither operate the engine unloaded, nor under full load, during the first 20 hours of operation.

Before each use, check your tractor for operation, and for traffic safety. Check up on the following:

a) Fuel supply in tank according to supply indicator (9 Ill. 3)

b) Oil level in engine (K_1 Ill. 12)
(Filler opening E_1 Ill. 11).

Never run tank, resp. oil sump, entirely dry. (Before opening and refilling the tank, thoroughly clean the tank cap and its vicinity).

For temperatures below	-10^{o} C	HD SAE 10 W oil
For temperatures from	-10^{o} C $+20^{o}$ C	HD SAE 20 oil
For temperatures above	$+20^{o}$ C	HD SAE 30 oil

For engine lubrication, use only high-grade HD engine oils. The prescribed lubrication oil quantities should correspond with the US Military Specification MIL-L-46 152, resp. API „CC".
For heavy operation conditions, we recommend to use the high-grade oils „MIL-L-2104C" according to MIL, resp. „CD" according to API. List of recommended oils see page 123.
To avoid damages resulting from inferior lubrication oils, we recommend to use only branded oils of the reknowned oil companies, and to stick to the initially chosen brand.

c) Unscrew radiator cap (E_W Ill. 11) to check the cooling water level.
d) All four tyres must have the same pressure (see page 60).
e) Check lighting system
f) Check trailer hitch

Make a short test run to check:
a) Clutch and steering system, resp. high-pressure hoses from steering to steering cylinder.
b) Operation and parking brake.

Repair any irregularities at once!

When driving on public roads, pay attention to local safety regulations.
Also observe instruction for driving and working with a frontloader on page 122.

Safety measures and accident prevention.

Persons must not stand in the vicinity of the articulation range of the tractor.

During repairs on the machine the selector levers must be in neutral position.
Never drive downhill without having engaged a gear. Never take along more passengers than seats are provided for (see instructions on fender).
Before each drive, examine the tractor for its traffic and operation safety. Take utmost care when driving diagonally across slopes.
Principally, drive with utmost care on the road to avoid accidents. Before setting about a job in the field, consider carefully how it can best be tackled. This will help you to cope with each and every situation, and to avoid unnecessary damages to your machine.

The following points should be thoroughly observed when driving with attached trailers and implements:
1. Do not drive any faster than safety permits. Be particularly careful when taking a bent on slippery ground and near ditches.
2. When driving with attached trailers, always keep within a speed that will permit you to stop the tractor with the shortest possible stopping distance, and, thereby, bear in mind that the trailer will push in case of sharp braking.
3. Any trailer must be equipped with at least one braking device that either can be operated from the tractor driver's seat, or acts automatically. Whether the trailer has a handbrake, an overrunning brake, or a

pneumatic brake, is of no consequence as long as the brake is capable of braking trailer and load to a large degree independent of the tractor, even on steep slopes. Traffic regulations require the load not to be heavier than the capacity of the brake.

4. Particular care should also be taken when turning fast with lifted implements.
5. When transporting implements on public roads, their extreme edges must be clearly marked. Pay strict attention to regulations prescribed for the transportation of implements.

Pay attention to your local safety and traffic regulations!
Driving with attached trailers, specially drive-axle trailers, or other vehicles, is on your own risk!

E) Taking tractor into service

1. Preparation

Move gear selector lever (24 Ill. 3) to neutral position.

General instructions for starting

Do not use the starter button for more than 10 seconds actuate the starter with running engine.
Always wait 5—10 seconds before repeating the starting procedure.

Never let tractor run in enclosed space!

Starting at normal temperatures

a) Adjust manual speed regulator (16 Ill. 6) to approx. half load. Engine shut-off knob (25 Ill. 3) must be pushed in.
b) Insert ignition key in ignition lock (11 Ill. 3) and turn right to position 1 until charging lamp (4 Ill. 3) and oil pressure control lamp (6 Ill. 3) light up.
c) Pull out button of glow starter switch (10 Ill. 3) as far as stop. **Note: The driver must be ready in his seat, and depress the clutch pedal (20 Ill. 3), for only then the electric starter circuit can be closed.** The engine is turned through the starter. As soon as the engine springs to life, let glow starter switch go. As soon as the engine has come to life, charging lamp and oil pressure control lamp must go out.
d) Select desired engine speed either with the manually operated, or the foot pedal operated speed adjustment device (16 Ill. 6) resp. (22 Ill. 3).

Starting at low temperatures

a) Adjust manual speed regulator to approx. half load. Engine shut-off knob (25 Ill.3) must be pushed in.
b) Insert key in ignition lock and turn right to position 1 until charging lamp (4 Ill. 3) and oil pressure control lamp (6 Ill. 3) lights up.

c) Pull out button of glow starter switch to 1st groove. Preglow for about 1 minute, i. e. until „ready for starting lamp" (5 Ill. 3) lights up then pull button further out to stop. **Note: The driver must be ready on his seat and depress the clutch pedal (20 Ill. 3), for only then the electric starter circuit can be closed.** The engine is turned through the starter. As soon as engine springs to life, let go of glow starter switch. After the engine has come to life, charging lamp and oil pressure control lamp must go out.

d) Select the desired engine speed with the manually operated (16 Ill. 6), resp. foot pedal operated speed regulator (22 Ill. 3).

Important instructions for changing the gears of the synchro-meshed transmission

1. Entirely declutch driving transmission.
2. Do not clasp the speed selector lever, but use it with your open hand.
3. When changing gears, do not actuate the selector lever in jerks, but press and engage it.
4. To ensure a long service life of the synchronization, we strongly recommend not to shift to the next lower gear before the driving speed of the tractor has slowed down to be within the range of the low gear.
   Proceed analogously when shifting to a faster speed. Pay attention to the diagramme of driving speeds on page 83.

2. Driving

Preparations for starting

a) Set speed regulator to idling position, depress clutch pedal (20 Ill. 3).
b) Select desired gear group by means of the preselector lever (23 Ill. 3).
c) Engage the corresponding gear (24 Ill. 3)
d) Increase engine speed and, at the same time, slowly declutch.
e) Control speed with the manual or foot-pedal operated speed regulator.

Attention! Do not let your foot rest on the clutch pedal.

Instructions for starting uphill

Pay attention to points a—c above. Slowly declutch. Increase engine speed, and then open fixing brake by pulling the handle grip (26 Ill. 9). Handbrake control lamp (8 Ill. 3) must go out.

Shifting gears

Shifting to a higher gear

a) Depress clutch pedal and, simultaneously, reduce engine speed.
b) Shift selector lever to the next higher gear.
c) Declutch and, at the same time, increase engine speed.

Shifting to a lower gear

a) Release the speed regulator pedal, depress clutch pedal, with slight pressure, shift the selector lever to the next lower gear.
b) Declutch and, simultaneously, increase speed.

All forward gear groups, and the gear selection system being synchronized, it is not necessary, to open the throttle in between.

Important! The preselector lever should only be shifted from a forward to a reverse gear, or vice versa, when the tractor is immobile.

Stopping the tractor

Throttle the engine down to idling speed, depress clutch pedal, shift gear selector lever to position „0" and declutch. If necessary, put on the brake. Actuate the locking brake (25 Ill. 9). Handbrake control lamp lights up (8 Ill. 3).

Shutting off the engine

Move the manual speed regulator (16 Ill. 6) forwards. Pull out engine shut-off knob (25 Ill. 3) until the engine will stop. Move the ignition key to 0 position and take it off. If the engine has been working under heavy load let it idle for 1 - 2 minutes before shutting it off (temperature regulation).

Instructions for taking the tractor in tow

1. The towing hitch is fitted in front, on the engine (34 Ill. 10).
2. Move gear selector and preselector lever to neutral.
3. If possible, the engine should be running, otherwise, in case of a defect of the engine, or hydraulic pump, increased steering power must be used.

Water filling in winter
In danger of frost, an anti-freeze agent must be added to the water. (See page 61.)

Hydraulic implement lift
The lift arms are actuated via control valve and lift cylinder by means of lever (19 Ill. 6). Pushing the lever forward („Heben") will cause the implements to lift, pulling it rearwards („Senken") will cause them to be lowered. In intermediate position, the implement remains locked in instant height. At the end of the lowering movement, the control valve is in floating position.

Note: Actuate the hydraulic system only with warm oil, if necessary, let the engine run for a few minutes, otherwise, the system might not properly function.

Attention: When interrupting work for some lengthy period of time, the load must be taken from the hydraulic cylinders, i. e. the implement must be lowered to the ground. (Accident prevention)!
Since the hydraulic pump is continuously running, the lever must only be actuated for moving the implements.
When using implements with your tractor, take care to pay attention to your local safety regulations.

During transport, the mechanical locking device (28 Ill. 3) must be put on. (See instructions on page 73).

Whilst **driving,** approx. 4 litres of hydraulic oil can be taken from the hydraulic oil supply tank for additional hydraulic implements.

For **stationary operation,** 11 litres can be taken (e. g. for operating an hydraulic dumper) if the machine stands on level ground.

Note: Before taking the machine back into **driving service,** the steering capacity of the hydrostatic steering must be checked. If necessary, turn the steering wheels several times to the right and to the left which causes the system to be automatically ventilated.

Note: Prior to fitting hydraulic couplings, plug and coupling must be thoroughly cleaned.

Three-point linkage
The three-point linkage Cat. 0 and Cat. I takes up implements which are provided with a three-point connection. Horizontal adjustment on the adjustable draw rod (81 Ill. 22). The nut (82 Ill. 22) prevents unintentional turning. The length of the upper link arm (86 Ill. 22) can be changed. Here the nut also prevents torsion. The lateral range of the implement is adjusted on the lock of the tension chains (85 Ill. 22).

For transport purposes lift the implement, tighten the tension chains, and fix the control valve lever by means of the mechanical locking device. If necessary secure in addition with the hydraulic lever support (See note on page 91).

Note: During working breaks principally lower the implement to the ground. Pay attention to your local safety regulations for implements.

F) Service and Maintenance

(Pay attention to the attached Service and Inspection Chart).

Never forget it:

A regular and proper service will always pay! Oil change and lubrication, carried out at the right time, are cheaper than consequential repairs!

Prior to lubrication, carefully clean lubrication nipples, oil filler, and oil drain plugs, and their vicinity.

Service Kit for A 40, Ref. No. 108 062, cons. of:

Pieces	Ref. No.	Denomination
3	019 468	Replacement filter
2	109 670	Gasket
1	019 465	Filter insert
1	010 635	V-belt
3	110 248	Filter cartridge, hydraulics

Service kit for A 50, Ref. No. 108 283, cons. of:

Pieces	Ref. No.	Denomination
3	019 468	Replacement filter
2	109 670	Gasket
1	019 465	Filter insert
1	010 635	V-belt
3	110 248	Filter catridge, hydraulics

1. Engine

Check oil level daily with engine shut-off and tractor standing on level ground. Before measuring, wipe the dipstick (K_1 Ill. 12) with a clean cloth. The oil level is correct if it is between the minimum and maximum mark. If the oil reaches only to minimum mark, top-up at once!

Attention! Never fill in more oil than the prescribed quantity.

a) **Oil change** for the first time after 20 hours of operation, thereafter every 150 hours. With the tractor on level ground, slacken oil drain screws (A_1 Ill. 13, 2 pieces). Drain oil (engine should be warm from operation so that the old oil drains well). Clean oil drain screws.

Replacing the filter cartridge (56 Ill. 13)
Remove worn filter cartridge (56 Ill. 13) and throw it away. For frozen filters use a solution. The connection plate must be free from any remnants of sealing. Oil the gasket of the new filter and screw it tightly by hand.

Attention! Replace the filter cartridge with every oil change.
Part reference No. of Replacement filter cartridge: 019 468 (M & H No. W 9.20).
In addition the oil level of the injection pump must be checked at the occaison of every oil change. Drain superfluous oil on the control screw (A2 Ill. 12) and if necessary top-up through the filler opening (E2 Ill. 12) with HD SAE 20 oil.

Refit one of the oil drain screws (A1 Ill. 13) in the oil sump, and screw the other drain screw (A1 Ill. 13) back into the control valve, tighten well. Only after having done so, fill with fresh oil through oil filler plug (E1 Ill. 10). **(Take care to be scrupulously clean)!** Clean ventilation filter in oil filler cover (E1 Ill. 11) at the occasion of every oil change. The oil change completed, make a short trial run, whereby the oil pressure control light (6 Ill. 3) must be observed. Check filter for trightness, if nec. retighten. Then check the oil level with shut-off engine.

Filling quantity: (incl. filter cartridge)	**A 40 = 4,0 ltr.** **A 50 = 6,0 ltr.**	Use only clean HD oil for diesel engines of the proper grade and viscosity. (List of recommended engine oils see page 123).
		Below −10° C — HD SAE 10 oil
		up to +20° C — HD SAE 20 oil
		above +20° C — HD SAE 30 oil

b) Dry-air filter with accoustical warning indicator (63 Ill. 14)
The dry-air filter consists of a cyclone preselector and a micro-filter cartridge forming, in one hou a highly effective unit. Guide blades between filter cartridge and casing cause the sucked in dust a swirl and to be led around the filter cartridge so that, along the wall of the housing, the dust is ca out through a dust outlet valve.

SERVICE
Dust outlet valve (62 Ill. 14)
Remove baked dust by pressing the valve together now and then.

Filter cartridge
Servicing time: the filter cartridge must be serviced if the degree of contamination has reached it maximum permissible value. This is indicated by sounding of the horn.

Replacement of the filter cartridge

Shut-off the engine. **Note:** for better demonstration, the photo was taken without the lateral part. Remove the bonnet cover. Slacken the part (44 Ill. 11) and remove air filter fixing socket (64 Ill. 15). Put the air filter diagonally upwards (Ill. 15). Slacken wing nut (65 Ill. 15) and remove the cover. Slacken hexagon nut (66 Ill. 15) and take off dirty cartridge (67 Ill. 15). Use a wet cloth to clean the filter housing, specially the contact surface of the cartridge. Take care that no dust will enter the clean-air pipe and from there go to the engine.

Fastest and cleanest service is to replace the dirty cartridge by a new one.

Ref. No. of MANN-micro-pop cartridge = C 13 114/4, Holder No. 020 606.

Assemble the new, or the clean filter cartridge, in reverse order.

Attention! The dust outlet valve must point outwards (62 Ill. 14).

leaning of the filter cartridge

By blowing out with compressed air

For this purpose, the compressed air pistol should be provided with a tube with a 90° bent at its end. The tube should reach down to the filter bottom. By moving the tube up and down in the cartridge blow it out with compressed air from inside out until there will be no dust left.

By washing

The filter cartridges can be washed up to 6 times. For washing air filter cartridges of paper we recommend the MANN detergent 053. This detergent has proved ideal for the cleaning of filter cartridges because it will remove any kind of dirt, such as soot etc. Instead of the MANN 053 detergent, we can also recommend the comparable industrial detergent P3RST.

Washing solution

Mix approx. 20 g detergent 053 (approx. 3 spoorns full) with 1 litre water (1:50). Put the detergent into the water and stir.

Since the detergent may have an adverse effect on your skin we recommend to wear rubber gloves when cleaning the filter cartridge. At least, protect your hands with a lotion. Should the solution get into your eyes wash them out with clear water at once.

Washing:

Note: If the dirt in the cartridge consists of loose dust we recommend to blow it out as described before washing it.

1. Soak cartridge for ten minutes in handwarm washing solution (approx. 40° C).
2. Move it in the washing solution for 5 minutes.
3. Rinse it in clear water (also under the tab, or with a hose, but not with a sharp jet) until the water comes off clean.
4. Thoroughly shake the cartridge, put it in a dust-free room and let it dry with the clean-air side covered up. Never let the cartridge dry in temperatures of more than 60° C. When reusing the cartridge it must be absolutely dry.

c) **Provisionally by beating**

Only in emergency cases where blowing out or washing is not possible. With its front side, put the cartridge on a firm base and beat it until the dust will come off. Use no force. Avoid damages to the cartridge.

Every time the filter cartridge has been cleaned, before reassembly check it for damages of the paper bellows. To do so insert a lamp into the centre tube of the cartridge. The bellows is damaged if light shines through. Cartridges with damaged paper bellows or gaskets must not be re-used, but must be re-placed by new ones.

We recommend not to wash filter cartridges of paper more than three times. At any rate they should be replaced after two years.

Every 300 hours check hose unions of air guide tubes for tightness. (Applies to A 50 Turbo only).

Cooling system

Check cooling water level daily, if possible whilst the engine is cold. Be careful if the engine is warm. Lift radiator cover (Ew Ill. 11) carefully as far as stop, and let excess pressure escape. Only then open radiator cover entirely. The cooling agent thermometer (13 Ill. 3) has three sections of different colour. **White:** engine temperature too low. **Green:** normal operation temperature. **Red:** engine too hot — shut-off at once.

Heating of the cooling water can be caused by the following:
radiator dirty, insufficient cooling water, defective water pump, thermostat not responding, V-belt loose or torn. In danger of frost, fill in anti-freeze agent, resp.have cooling water concentration checked. (Glysantine – effective to –30° C –22° F – filled in by the manufacturers all the year round.

Cleaning the radiator:
Remove insects and dust deposits by blowing through the radiator grille with compressed air from the engine side.
For coarse cleaning, slacken the two sealing screws (35 Ill. 34) and remove the front shutter, then „sweep" the front off the radiator grille.

Under extreme operation conditions, where the radiator can get specially dirty, (e. g. with a front-mounted slasher) we recommend to use the special accessories listed below:
a) Radiator grille (1 Ill. 41) for tractors without radiator guard Ref. No. 117 680.
b) Radiator grille (slide screen - 1 Ill. 42) for tractors with radiator guard Ref. No. 118 649.
For assembly and cleaning see „Special accessories" page 115.

Draining the cooling water: Open drain screw (A_W Ill. 12) at the bottom of the radiator.
Open drain screw (A_W Ill. 13) on the engine.

Application for winter service with snow centrifuge, snow plough, and snow clearing blade; or front-loader for loading snow.
When using the A 50 for winter service with the above mentioned implements, a snow cloud tends to develop, coming up to engine height, i. e. reaching the air filter.
The intake opening of the air filter is situated at the front of the radiator fins. Therefore, if conditions are disadvantageous, the snow dust may be sucked in, causing melted snow water to collect in the air filter. Sucked into the combustion chamber, this will lead to damages of conrods, valves, etc., water being incompressible. Not paying attention to our following recommendation is bound to lead to comprehensive consequential damages!

Our recommendation:
Whilst operating the machines in winter with the above mentioned implements, the moulded part (44 Ill. 11) should be removed.
Winter service completed, it is absolutely essential to refit the moulded part in order to avoid overheating of the engine under high load.

V-belts:
The V-belt (52 Ill. 13) has the right tension if you can press it down with your finger between the two V-belt pulleys of fan and dynamo (50 Ill. 13) by approx. 1 cm. To retighten the V-belt, slacken both screws (53 Ill. 13) on the adjustment bracket as well as screw (54 Ill. 13) of the dynamo retainer. Then press dynamo outwards, until the V-belt has the right tension. Too tight adjustment of the V-belt will cause premature wear of the bearings whilst, if left too loose, pulley and bearings will run hot. It also will cause insufficient capacity of the dynamo.

Note: New belts tend to become untightened after only a few hours of operation. Therefore, we recommend to check their tightness already after several hours, and to retighten, if necessary.

Valve clearance (have checked by a skilled mechanic only).
After the first 20 hours of operation, check valve clearance with a feeler gauge (warm and cold 0,25). Thereafter under normal operation conditions, check valve clearance every 300 hours of operation.

Adjusting valve clearance
The following sequence of cylinders is starting on the radiator side. Direction of rotation of the engine „clockwise" as viewed from the V-belt pulley of the crankshaft.

Adjusting valve clearance
For adjusting the valve clearance remove valve cover (6 Ill. 16) by slackening 3 screws (5 Ill. 16).
On the A 50 Turbo air filter and air guide tubes must also be removed. To do so slacken the fixing sockets (3 Ill. 16).

6001-2 (A 40)
Adjustment of cylinder I valves: at the point of closing of cylinder II inlet valve.
Adjustment of cylinder II valves: at the point of opening of cylinder I outlet valve.

6001-3 (A 50)
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 (F Ill. 17) to be inserted. If the clearance proves to be either too narrow, or too wide, slacken counter nut (70 Ill. 17) in a way which will allow, with counternut retightened, the feeler gauge to be removed without resistance.

Regulator – Fuel injection pump – (49 Ill. 12) after every 150 hours of operation, drain superfluous oil of regulator on control screw (A_2 Ill. 12). After every 1500 hours of operation, have injection pump, nozzles and regulator checked by a Bosch Service Station. Have oil in regulator renewed.
The ventilation filter (E_2 Ill. 12) must be cleaned in Diesel oil every 150 hours of operation.

Injection nozzles (42 Ill. 11) – after every 600 hours of operation, take off, clean, and have them checked with a Bosch nozzle test device. (Test pressure 185 bar - atm.)

Replacing the fuel filter (43 Ill. 11)
The fuel filter cannot be cleaned.
(Part. Ref. No.of the filter insert 019 465, M & H No. 7070)
Depending on the degree of contamination, the fuel filter, built into the fuel tank, must be replaced after approx. 300 hours of operation. **As soon as the fuel filter has been removed, the valve in the fuel tank automatically shuts off the fuel flow.** After the fuel filter has been refitted, the fuel will flow freely again.

Ventilating the fuel system
The fuel system must be ventilated if
a) the fuel tank is empty
b) the fuel pipes have been disconnected, resp. removed, i. e. if air has entered the pipes, or the suction chamber of the injection pump (if, e. g. the fuel tank has run empty).

Slacken ventilation screw (4 Ill. 2) on injection pump. As soon as the fuel comes out free from bubbles, the ventilation screw can be retightened.

Fuel

It is absolutely necessary to use the proper fuel. Fuels which comply with the German Specification Standards 51601, or British Specification BS 2859: 1970 A 1, or ASTMD 975-2D fulfill all requirements of good fuels. The proportion of sulphur should not exceed 0,5 %.

Attention! To avoid trouble, we recommend to procure winter fuel well in time. Your filling station will advise you.

Gearbox

Grease nipples

Lubricate the grease nipples (S1—S4 Ill. 18 and S_5 Ill. 21, S4 and S5 on both sides) **daily,** the grease nipples (S_k Ill. 19 + 20) of the cross and bearings yokes must be lubricated after every **600 hours of operation** (annually). To do so, turn steering on full lock to one side. Lubricate all other grease nipples (S) after every 300 hours of operation.

Grease nipples for wheel stabilizers

Daily grease the lubrication nipples S6 and S7 Ill. 33.

Note: Wheel stabilizers are standard equipment of A 50 only. For all other types the wheel stabilizers must be ordered as optional accessory.

Under extreme operation conditions, and in tropical areas, grease nipples should be lubricated in shorter intervals.

Note: The lubrication grease must neither contain resin, nor acid, or other detrimental agents. Cup grease must not be used for lubrication. We recommend the use of lithium saponified multi-purpose grease with a penetration ratio of 260 to 290.

Examples:

SKF	MOBIL	BP	ESSO	ELF	ARAL	SHELL	VALVOLINE	TEXACO
Wälzerol FM	Mobil Grease MP	BP Ener-grease LS 2	EXXON Multi-pur-pose grease BEACON 2	ELF Multi 2 ELF Rolexa 2 Elf Epexa 2	Multi-pur-pose long-time grease H	SHELL Retinax A	VALVOLINE LB 2	Multifak 20

Instructions for changing the oil
For any oil change to be carried out, the oil which is to be drained should have operation temperature, and the tractor should stand on level ground.

Front gearbox
Change the oil for the first time after 150 hours of operation, thereafter every 1500 hous. Unscrew drain screw (A_3 Ill. 21), and clean in diesel oil. Then refit and take care that the screw is properly tight. Unscrew filler screw (E_3 Ill. 21) and fill with 10,25 ltrs. SAE 80 gear oil. Oil level control on sight glass (K_3 Ill. 21).

Rear gearbox
Change the oil for the 1st time after 150 hours of operation, thereafter every 1500 hours. Open drain screws (A_4 Ill. 22 and Ill. 23), with assembled creep gear (A_4 Ill. 22 and Ill. 24), and clean in diesel oil. Then refit and see that screws are perfectly tight. Fit filler screw so that the venting bore points forward in driving direction. Oil level control on oil sight glass (K_4 Ill. 25).

Attention when refilling!
The filling quantity of 6,25 ltrs. **must be strictly kept.**

If used stationary for some lengthy period, i. e. to drive a water pump, the machine must stand on level ground.

Planetary gears (axles, 4 pieces)
Change the oil for the first time after 150 hours of operation, thereafter every 600 hours. Otherwise, check the oil level every 150 hours of operation. If necessary, top-up. **Oil change:** Unscrew drain screw (A_5 Ill. 26), and filler screw (E_5 Ill. 26). Let oil flow out. Clean drain screw and refit. Take care that sealing is in order. Through filler bore (E_5 Ill. 26) refill with approx. 0,3 ltr. SAE 80 gear oil, resp. up to lower edge of screw hole (drain screw (K_5 Ill. 25)

Attention when refilling!
The filling quantity of 0,3 ltr. **must be strictly kept.**

Note: The filler, control and drain screws of the planetary gearing are provided with a socket hexagon SW 6.

Hydraulic system

Oil level in hydraulic system

Never control the oil level, or refill oil, unless the engine has been shut-off, and the piston rods of the working cylinder have been retracted.
The oil level is visible on the plastic tank (compensation tank), and must not exceed the mark (K III. 11).

Hydraulic oil change

Change the hydraulic oil for the **first** time after 600 hours of operation.
Change the hydraulic oil for the **second** time after 1500 hours of operation.
Thereafter change the hydraulic oil **every 1500 hours,** or once a year, independent of operation hours.

With the machine standing on level ground slacken the suction hose (3 III. 27) and drain the hydraulik oil. (Change the oil whilst the tractor is still warm from operation). Before refilling the oil tank thoroughly clean it from deposits of oil.
Refilling completed, let the engine run for a short while. Actuate steering and hydraulic system several times. The system is automatically ventilated. Then shut-off the engine, check the oil level and top-up, if necessary.
Filling quantity = 14 litres hydraulic oil DTE 16.

Attention: With every change of the hydraulic oil, the suction filter (6 III. 27) must be cleaned or replaced.

Cleaning and replacing the suction filter (6 III. 27).

1. Drain the hydraulic oil (see hydraulic oil change.
2. Dismantle the fixing socket (5 III. 27).
3. Slacken the hose clips (4 and 7 III. 27).
4. Take off the complete suction filter.
5. Rinse the suction filter with diesel oil opposed to the direction of suction.

Note: The suction filter housing can be unscrewed. However, the filter element cannot be individually replaced because it is glued.

Assembling the suction filter

1. When refitting the suction filter take care that the arrow of the filter housing points towards the hydraulic pump (direction of suction).

2. Fill in the hydraulic oil as described under hydraulic oil change.
3. Start the engine and let it idle. Check filter and filter connections for tightness.
4. Then, through the filler socket (EH III. 11) fill with hydraulic oil Mobil DTE 16 up to mark (K III. 11) on hydraulic compensation tank.

Passage filter (1 III. 27)

Clean passage filter and ventilator the first time after 20 hours of operation. Thereafter every 300 hours.

Dismantling the passage filter

1. The hydraulic system must be pressureless, with lowered hydraulic arms
2. Use spanner SW 19 to unscrew filter housing (A 50, 1 III. 27; A 40, 1 III. 28) on hexagon.
3. Pull off paper insert (1 III. 27 forward, resp. downwards and throw it away.
4. Wash filter housing in diesel oil.
5. Check whether 0-ring and shim on upper section are in proper condition. (Replace damaged parts).

Reassembling passage filter

1. Slide new paper insert onto outlet socket.
2. Slide filter insert very carefully over the paper insert, screw it to the upper section as far as stop, and use spanner SW 27 for tightening.

3. Start engine and let it idle in order to check the filter for tightness.
   Slacken the 4 screws (39 III. 10) and remove bonnet. Wash ventilation filter (40 III. 11) also in diesel oil. Then, if necessary, top-up to mark (K III. 11) on hydraulic compensation tank with SAE 20 engine oil through filler socket (E5 III. 11).
   Then, if necessary, refill on filler socket (E4 III. 11) up to mark (K III. 11) on hydraulic compensation tank (40 III. 11) with hydraulic oil Mobil DTE 16. Instead of hydraulic oil Mobil DTE 16 engine oil HD SAE 20 may also be used, i. e. the hydraulic oil filled in from the factory can be mixed with HD SAE 20 engine oil. However, to avoid inferior quality engine oil should only be used for refilling if no hydraulic oil of a high viscosity index is available.

Brakes

Check braking effect after the first 20 hours of operation and, if necessary, readjust. Thereafter, check function prior to each operation and, if necessary, reset. Have this procedure principally carried out

through an accredited workshop.
Adjust locking brake on both sides of the wheels by means of set nut (89 Ill. 23).
Adjust driving brake on both sides of the wheels with set nut (90 Ill. 23).
Adjustment of the front wheel brake (special equipment) see on page 116.

Checking the live P.T.O. clutch
After every 150 hours of operation, check the tolerance of the clutch lever in on-position („EIN") between clutch lever and „limit stop of housing" (min. 10—15 mm) (Ill. 4). Readjustment is effected by screwing in the clevis on the drawrod, (G. Ill. 21) until a tolerance of 10—15 mm has been obtained on the clutch lever. The lead-sealing on the clevis must be removed for adjustment by an **accredited workshop only.**

Note:
The clutch cable of the multi-plate clutch has received an optimum adjustment and has been colour-sealed by the manufacturers on the set nuts of the abutment. This adjustment must never be altered.

Clutch pedal (drive clutch)
Have clutch play checked by an accredited workshop for the 1st time after 20 hours of operation, thereafter every 150 hours.

Checking the adjustment of the clutch: Depress clutch pedal and move gear selection and preselection to neutral position. Then, with the engine shut-off, it must be possible to turn the centre crankshaft by hand. With the engine running, the centre crankshaft must stop.
Adjustment should be made by an accredited workshop, or see repair manual No. 4100 003 01 21.
Attention! Unnecessary slipping of the clutch results in premature wear. Therefore, do not use the clutch pedal as a support for your foot.

Lighting (electrical system)
Have the lighting system, including the pilot lamps of the dashpanel, checked by a skilled mechanic after every 150 hours of operation (wiring diagramme see Ill. 47).

Lighting of implements – Front and rear mounted

When using agricultural and forestry implements, and trailers, pay attention to your local regulations with regard to lighting.

Ill. 46 shows which lightings are available.

(1) = 3-section lighting ass.

(2) = position lights (3-section lighting ass. must be available)

If the headlights are covered up by front-mounted implements, auxiliary lights must be fitted.

Instructions for removing the battery

Slacken 2 hexagon nuts SW 13 (94 Ill. 29), slide battery to the right as far as stop (viewed in driving direction), place it upwards, towards lefthand side, and remove (Ill. 30).

Additional assembly jobs with hydraulic couplings mounted in front:

1. Remove protection caps of interior hydraulic couplings forwards. (The exterior left and right couplings must not be removed).
2. Remove the circlip and then pull the coupling with hydraulic hose out of their fixture and put them aside. Remove battery upwards.

Servicing the battery

Regular control and renewal of the acid level is of particular importance. The liquid level must be approx. 15 mm above the battery plates. The acid level is continuously reduced through evaporation, and must be topped-up. For this purpose, use only distilled water.

Check every 4 weeks, during the warm season, every 2 weeks. At this opportunity, we recommend to also check tight fitting of battery and terminals.

A tight connection – free from grease and oxidation – of battery terminals and pole heads, is particularly important when starting, in order to obtain sufficient current.

Avoid oxidation by thoroughly cleaning the battery terminals, specially their lower sides, and by greasing them with acid-free battery grease.

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

Attention! To avoid short circuits, which may destroy the battery, take care to first remove the earth pole from the minus pole whenever disconnecting the battery cables. When reconnecting, first connect the positive lead with the positive pole.

With a 3-phase generator, the following points must be paid attention to:

1. Never operate generator before all terminals have been connected, otherwise, the rectifiers will be damaged.
2. Prior to charging built-in batteries, disconnect the battery terminals.
3. Never carry out any welding jobs on the engine or tractor, before having disconnected the generator connections (damage to rectifier).
4. Always disconnect battery terminals before applying any test devices or meters.
5. Never operate the engine (generator) unless the battery has been connected.

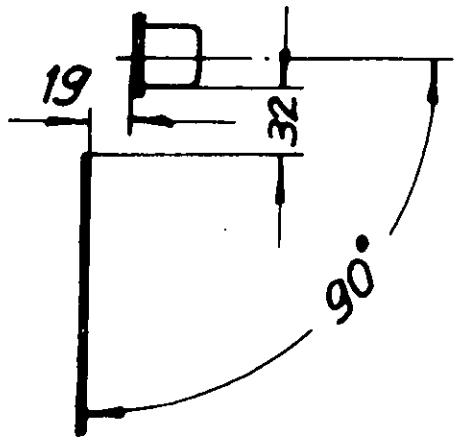
Steering – „Danfoss-Orbitrol"

a) After every 150 hours of operation (daily in forestry, or similarly extreme operation conditions) check the high-pressure hoses of the steering cylinders for damages (e. g. friction points) and, if necessary, replace.
At the same time, have a look at the steering cylinders and the mechanical joints.
Attention! The high-pressure hoses have been tested with 5-fold working pressure (test pressure 510 bar). For replacement use, therefore, only original high-pressure hoses!

b) In case of oil leakage, under any circumstances look for the leaking spot and repair the damage at once. At any rate, examine the hoses and unions.
Have repairs of the hydrostatic steering system principally carried out by accredited Danfoss Service Stations, or by mechanics who have been specially trained for this purpose.
Note: If, for instance, the hydraulic pump fails, the steering can still be operated for a short while, but with increased steering force.
Have the cause of the failure remedied at once through an accredited workshop!

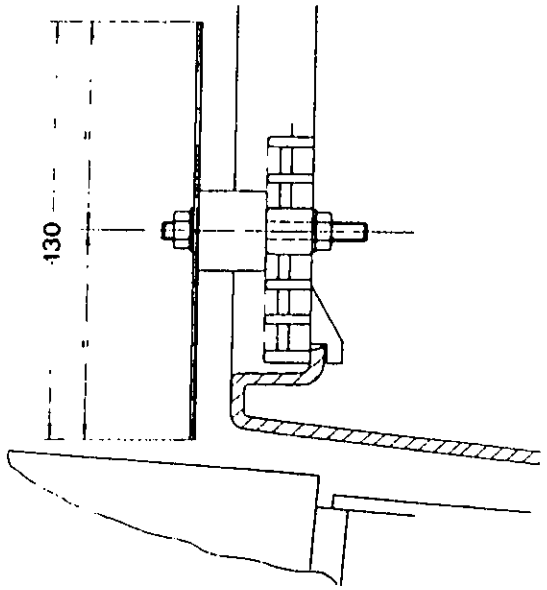
G) Position of rear licence plate

Pay attention to local regulations.
To comply with traffic regulations in the Fed. Rep. of Germany, the rear licence plate must be fitted as illustrated.



Mounting Position for Front Licence Plate on Four-wheel Drive Tractors

The front licence plate can be fitted symetrically on the buffers of the radiator shutters.
(See illustration).



H) Transporting Persons

Pay attention to your local traffic and safety regulations.

I) 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 = 50 driven kilometers	300 operation hours = 15000 driven kilometers
10 operation hours = 500 driven kilometers	600 operation hours = 30000 driven kilometers
150 operation hours = 7500 driven kilometers	1500 operation hours = 75000 driven kilometers

K) Tightening torques for screw unions

Hexagon screws and studs	M 8	M 10	M 12	M 14	M 16
Screw quality 8.8	25 Nm (2,5 mkp)	49 Nm (4,9 mkp)	86 Nm (8,6 mkp)	135 Nm (13,5 mkp)	210 Nm (21 mkp)
Screw quality 10.9	35 Nm (3,5 mkp)	69 Nm (6,9 mkp)	120 Nm (12 mkp)	190 Nm (19 mkp)	295 Nm (29,5 mkp)

Cylinder head screws	= 95 Nm (9,5 mkp)
Hexagon screws M 10 (servostat on steering frame)	= 40 Nm (4 mkp)
Tension screws for hydraulic control valves	= 25 Nm (2,5 mkp)
Axle housing on gearbox M 10	= 49 Nm (4,9 mkp)
Axle housing cover (planetary gears)	= 69 Nm (6,9 mkp)
Self aligning bearing M 12	= 86 Nm (8,6 mkp)
Stop rail M 16	= 210 Nm (21 mkp)
Attachment rail for trailer hitch M 14	= 135 Nm (13,5 mkp)
Wheels (incl. hub spacers)	= 215 Nm (21,5 mkp)

L) Folding Rollover Bar Type 4134-3

Folding down the rollover bar in cultivations

Slacken the knurl screw (96 Ill. 32), slide on tubes (97 and 98 Ill. 32), and fix with knurl screw. Fold down rollover bar forwards (Ill. 32).

Whenever putting the tractor to use outside cultivations, we recommend to have the rollover bar up. See to it that sliding tube and knurl screw are correctly assembled.

Attention! When driving diagonally to slopes, principally put up the rollover bar (Ill. 31).

M) Application for winter service with snow centrifuge, snow plough, and snow clearing blade; or front-loader for loading snow.

When using the A 50 for winter service with the above mentioned implements, a snow cloud tends to develop, coming up to engine height, i. e. reaching the air filter.
The intake opening of the air filter is situated at the front of the radiator fins. Therefore, if conditions are disadvantageous, the snow dust may be sucked in, causing melted snow water to collect in the air filter. Sucked into the combustion chamber, this will lead to damages of conrods, valves, etc., water being incompressible. Not paying attention to our following recommendation is bound to lead to comprehensive consequential damages!

Our recommendation:
Whilst operating the machines in winter with the above mentioned implements, the moulded part (44 Ill. 11) should be removed.
Winter service completed, it is absolutely essential to refit the moulded part in order to avoid overheating of the engine under high load.

N) Special accessories

Rain protection for exhaust (Standard equipment in A 50 Turbo).
The upper end of the exhaust pipe can be provided with a rain protection (Ref. No. 6090 140 01 78).

Radiator screen (slide screen) No. 118 649 (Ill. 42)
Can be used on tractors with or without radiator guard instead of the standard radiator screen.
Under special operation conditions, where the radiator screen is particularly exposed to dirt, the radiator screen can be cleaned fast and easy, and without tools, just by beating it, because most of the dirt will come off by itself thanks to the diagonal shape of the screen.

Radiator screen (slide screen) No. 118 649 (Ill. 42)
Can be assembled on tractors with and without radiator guard instead of the standard radiator screen.
Under special operation conditions, where the radiator is particularly exposed to dirt, the side screen can be pulled out for cleaning sideways, fast, easy, and without tools.

Assembly

1. Slacken the 2 sealing screws (35 Ill. 10) and remove the standard radiator screen.
2. Fit the assembly frame (2 Ill. 42) and secure it with 2 cross-head slit screws. (If the radiator guard is assembled, slacken the 2 upper fixing screws and tilt the radiator guard forwards until the assembly frame (2 Ill. 42) can be fitted.
3. Slide the screen (1 Ill. 42) into the assembly frame and secure with a dowel pin.

Front-wheel brake Type 4134-15

The front-wheel brake is a drum-type brake, assembled in the front axle and acting on all 4 wheels. It is actuated in the same manner as the standard brake.

Resetting of the front-wheel brake is effected by means of the set nut on the brake rods. Reset uniformly on the wheels of both sides.

Creep gear

Type 4164-1 for 0,2 to 0,68 km/h
Type 4162-3 for 0,1 to 0,25 km/h } at 2500 rpm engine speed.

Selector lever for creep gear (31 Ill. 7)

The creep gear must only be used with the group selector lever in position L (slow).

Actuate the creep gear only if the driving clutch is disengaged, and with the tractor immobile. When the creep gear is engaged, the two gear selector levers must be in neutral position.

Engaging the creep gear

Let the engine idle, depress the clutch pedal. Turn the selector lever (31 Ill. 7) to the right and at the same time pull the selector lever upwards. The procedure is facilitated by „playing" with the pedal of the driving clutch. Then engage group L (slow). After the creep gear has been engaged, gear selection remains blocked in idling position, same as the creep gear is blocked if a gear has been engaged on the selector lever.

To **disengage** the creep gear press selector lever (31 Ill. 7) downwards.

The creep gear is only intended for obtaining an extremely slow speed for use with certain implements, (such as planting machines etc.). It is not there to increase traction.

Wheel stabilizers Type 4131-11 (for A 50 S) Ill. 33
Wheel stabilizers are recommended for difficult conditions, such as small track widths, extreme slopes, or with heavy implements. All four wheels are held stable on the ground in any driving condition and load by means of a spring package. Optimum traction on slopes is thus obtained, possibilities of working on steep slopes are increased, driving comfort and driving safety are perfect.

Servicing: Grease the lubrication nipples (S_6 + S_7 - Ill. 33) daily.

Sectional cab Type 4134-6 (cannot be used on A 50 S)
The tractor must be equipped with a 4-post safety frame type 4134-5.
Consists of windscreen, windscreen wiper, and roof.

Complete cab (Not possible with A 50 S)
The tractor must be equipped with 4-post safety frame type 4134-5.

The cab comprises:	Sectional cap Type 4134-6
	Extension kit sectional cab to complete cab Type 4134-12
	Cab heating Type 4134-70
Upon request:	Active charcoal filter Type 4134-70

Operation controls of cab (1 Ill. 35)
Twist-button shut-off valve for heating (1 Ill. 35)

A	=	on
Z	=	off

Feed of warm cooling agent can be regulated on the twist-button whereby the heating capacity will be either reduced or increased.

Two-step switch for heating and ventilation nozzles (2 Ill. 35)

Heating and ventilation nozzles
4 adjustable nozzles (4 Ill. 35), above in front for windscreen and side windows.
2 nozzles below, in front, for the foot space.

Switch for windscreen wiper (5 Ill. 35)

Sunshade (6 Ill. 35)

Active charcoal filter (3 Ill. 36) Type 4134-74

The active charcoal filter protects effectively against spray chemicals.
The filter is completed by a layer of active charcoal which takes away the characteristic smell of the used chemicals and vaporizes small quantities of spray agents which may enter the cab.
A coarse-mesh pre-filter (for dust and leaves) avoids premature clogging of the active filter.

Assembling the active charcoal filter

1. Remove the plastic roof of the standard cab.
2. Slacken cap nuts to remove the cover plate (3 Ill. 34) of the fresh-air filter.
3. Remove the filter insert too.
4. Remove the air deflector plate behind the fresh-air filter from above.
5. Assemble the suction air regulator flap with its drawrod. To do so first insert the drawrod in the standard bore of the heating box inside the cab at (3 Ill. 35) and then assemble the flap hinges with the screws of the fresh-air filter (2 Ill. 34).
   Note: The return spring of the air flap must be on the righthand side.
6. Assemble the filter insert and the cover plate of the fresh-air filter. Thereby take care to adjust the spacer nut M6 so that the cover plate will bear.
7. Assemble the knob (3 Ill. 35) on the drawrod.
8. Place the sheet metal roof (1 Ill. 36) on the safety frame, and at the same time put the fixing screws (2 Ill. 36) on the edge of the plastic roof, and then tighten the hexagon nuts.

Operation

Use knob (3 Ill. 35) to preselect the air suction.
Lever (3 Ill. 35) pulled out = Air flows in through the fresh-air and active charcoal filter.
Lever (3 Ill. 35) pushed in = Air flows in through the active charcoal filter only.

Operation and Service Instructions

Whilst bringing out spray chemicals tightly shut doors and windows and adjust the air fan to 1, i. e. slow speed.

Intervals of filter replacement

The filter must be replaced when clogged, or as soon as spray chemicals can be smelled in the cab.
In any case the filter must be replaced every 300 hours of operation, or once a year.

Replacing the filter

Slacken 4 hexagon nuts (5 Ill. 36), take off cover plate and filter cartridge upwards (3 Ill. 36). Insert the new filter so that the air flows first through the absolute anti-aerosole filter, and only then through the active charcoal filter. See also arrow on filter. Be careful of correct sealing.
If the filter is assembled incorrectly, or the wrong way round, we cannot guarantee its effectiveness and besides, incorrect assembly of the filter can be extremely dangerous.
To increase the service life of the filter we recommend to use it only for spray campaigns. If the tractor is used for other work, keep the filter in an airtight, well sealed bag.

Note: The new sealed filter, in its original package, has a service life of 5 years from date of manufacture. Thereafter it cannot be used any longer.

The expiry date is stated sideways on the filter.

Filters which have been taken out of their original packing must be replaced one year after unpacking, even if they are new.

Ref. No. of replacement filter: 82 663 ED.

Auxiliary hydraulic equipment

Below the steering can be fitted 4 additional control valves or 3 control valves with adjustable flow distributor.

Type	Description	Required
4180-8	Additional hydraulic control valve, single-acting (2 Ill. 37) with coupling to the rear (2 Ill. 39)	–
4180-9	Additional hydraulic control valve, double-acting (3 Ill. 37) with coupling to the rear	–
4180-4	Additional control valve for circulation oil (4 Ill. 37) with adjustable flow distributor (6 Ill. 37) from 1 - 24 l/min. depending on engine speed, with coupling to the rear (3 Ill. 39) and with coupling front (3 Ill. 38)	Type 4180-70 Type 4180-10 resp. Type 4180-11
4180-7	Fixture for front coupling (5 Ill. 38)	–
4180-10	Pressureless return flow (4 Ill. 39) to the rear	–

Type	Description	Required
4180-11	Pressureless return flow (4 Ill. 38) front	
4180-6	Hydraulic coupling front. Required quantity: for single-acting = 1 pc. for double-acting = 2 pcs.	Type 4180-7

Operation of auxiliary hydraulic control valves

Hand levers and corresponding couplings are provided with identically coloured stickers (red, white, yellow, blue).

Red: = Operation lever and hydraulic coupling for air circulation oil. The operation lever (4 Ill. 37) is locked with bolt (5 Ill. 37) (see Ill. 37).

Blue: = Operation lever and hydraulic coupling for single-acting control valve.

Yellow: = Operation lever and hydraulic coupling for double-acting control valve.

Important Instruction: Never let the engine run, or drive the tractor with the hydraulic operation lever for circulation oil locked, if no consumers are connected with the couplings for circulation oil and for the pressureless return flow. Otherwise the hydraulic oil would get over-heated resulting in entire damage of the complete hydraulic system.

Positions:

H = Lift
S = Lower (floating position)
D = Push
0 = Neutral
U = Circulation oil.

Front Lift Type 4151-7 (A 40 Type 4151-8)

Necessary equipment: Front lift Type 4151-7

Upon request:
Double-acting lift cylinder Type 4180-12
Radiator guard with connection for upper link arms Type 5234-20
Fixture for radiator guard
for tractors without front-mounted loader Type 5234-93
for tractors with front-mounted loader Type 5234-84
For A 40 hub spacers, see page 65.

For P.T.O. driven implements: P.T.O. extension Type 5262-1

Operation of the front lift

The front lift is operated with the hydraulic selector lever for front lift.

Because of the unit construction system and the varying number of auxiliary control valves the operation lever for the front lift can be situated in 1, 2, 3 or 4 places beside the standard operation lever for the rear three-point implement lift.

Whilst working with a front-mounted implement, the operation lever should be always locked in transport position so that the implement is allowed to adapt itself to unevenness of the ground.

Pendulum system of the front lift

The front lift is provided with a pendulum system for adaptation of the implements to uneveness of the soil even in their vertical position. The pendulum effect is obtained by removing, in unloaded condition, the pin (6 Ill. 38) on both sides.

Servicing

Grease the lubrication nipples of the bearing points once a week.

Front-mounted loaders

Type 4128-3 = Front-mounted loader with single-acting lift cylinder
Type 4128-4 = Front-mounted loader with double-acting lift cylinder.

Hub spacers - see page 79.

Additionally required:

Type 4180-15 hydraulic kit for front loader Type 4128-3, resp. hydraulic kit for front-loader Type 4128-4.

The tractor must be equipped with 2 rear wheel weights and rear ballast weight of approx. 500 kg.

Operation	**Position:**		
Hydraulic lever (2 Ill. 37) for dumping device	Lever forward	=	empty
	Lever towards driver seat	=	fill
	Centre position	=	neutral
Hydraulic lever (3 Ill. 37) for loader arms	Lever forward	=	lift
	Lever towards driver seat	=	push, resp. float position
	Centre position	=	neutral

Transport lock (7 Ill. 37)

Lock (7 Ill. 37) to the right: Only lever for rear hydraulics locked
Lock (7 Ill. 37) to the left: All hydraulic levers locked
Lock (7 Ill. 27) in centre position: All hydraulic levers free

Important instruction:
When the front-loader is used the windscreen must be shut.
By means of the 2 hooks the windscreen can, however, be opened approx. 10 cm without the danger of being damaged by the loader arms.
If front-loader and front lift are simultaneously mounted, the front lift arms must be removed when working with the loader, or a bar must be fitted in the front lift arms. Otherwise the hydraulic pipe of the dumping system will be damaged.

Servicing:
Grease the lubrication nipples on the bearing points once a week.

Please pay attention to the following instructions when driving and working with an attached front-loader:

1. Use a ballast weight or an implement in the three-point linkage.
   Thereby the stability of the tractor is increased, and load taken off the the front axle.
2. With lifted load:
   Do not start or brake sharply when reversing. Never drive faster than circumstances permit. When driving on slopes, and when taking bends, lower the load and drive slowly.
3. Never put one-sided loads on the loader arms because of the danger of sideways turning with uncentred loads.
4. For working with the frontloader set the tractor on widest possible track.
   Thereby stability is further increased.
5. When driving on public roads the implement must be empty, the loader arm entirely lifted, and the control valve lever locked. Unintentional lowering of the frontloader can have difficult consequences.
6. Never operate the front loader whilst persons are within its working range.
7. When interrupting work lower the implement.
8. For carrying out repairs on the loader, or its hydraulic system, lower the loader so that there is no longer any pressure, and shut-off the engine.
9. Never use the loader as an „assembly platform", or for transporting persons.
10) With lowered front loader move control valve to neutral position before starting the engine.

O) List of recommended engine oils

Brands of oil corresponding with the US Military Specification: MIL-L-46152 resp. API quality CC/SE
for heavy operation conditions: MIL-L-2104C resp. API quality CD/SE

Company	Single-grade oils		Multi-grade oils	Lubricants
	MIL-L-46152 API CC/SE	MIL-L-2104C API CD/SE	MIL-L-46152+MIL-L-2104C API CC/SE/SF, API CD/SE/SF	Penetration ratio 260 - 90
ARAL	Aral Super Kowal Motor Oil	Aral Turboral Motor Oil	Aral Multi Turboral SAE 15 W-40	Multi-purpose grease Long-service grease H
BAYWA Motorenöle	BAYWA HD Extra DB	BAYWA HD Superior	BAYWA Super 2000 CD BAYWA HD Superior 1540	–
BP	BP Energol HD-S	BP Vanellus C3+	BP Vanellus Multigrad SAE 15 W-40	BP Energrease LS 2
CASTROL	Castrol Deusol CRX	Castrol Deusol CRD	Castrol Deusol RX Super	Castrol Spheerol AP2
ESSO	ESSOLUBE HDX PLUS +	ESSOLUBE XD-3 +	ESSOLUBE XD-3 + 15 W-40 Multigrade Engine Oil MHC 15 W-40	EXXON multi purpose grease BEACON 2
ELF	ELF 8000 Tours ELF Performance 2 B	ELF Performance 3 C	ELF Multi-Performance 3 C 15 W-40 ELF Presti Diesel	ELF Multi 2 ELF Rolexa 2 ELF Epexa 2
FINA	Fina Delta Ultra Motor Oil	Fina Kappa Motor Oil	Fina Kappa Multigrade D Motor Oil SAE 15 W-40	Marson L 2
FUCHS	Renolin HD Titan HD Super	Renolin HD Superior Titan Universal HD	Titan Universal HD 1540 Renolin HD Superior 1540	Renolit MP, Renolit Ad- hesiv 2, Renolit FLM 2
MOBIL	Mobil Delvac 1210, 1220, 1230, 1240	Mobil Delvac 1310 1320, 1330, 1350	Mobil Delvac Super 15 W-40	Mobilgrease MP
SHELL	Shell Rotella X	Shell Rimula X	Shell Myrina, Shell Myrina T Shell Oil RX 1540	Shell Retinax A
TEXACO	Havoline Motor Oil Ursatex	Ursa Super LA	Ursa Super LA Multigrade SAE 15 W-40	Multitak 20
VALVOLINE	Valvoline HDS	Valvoline HDS Topfite C - 3	Valvoline HDS Topfite XRC	Valvoline LB-2
VEEDOL	Veedol Heavy Duty Plus	Veedol Cadol HD Ultra	Veedol Dieselstar SAE 15 W-40	–

We do not claim this list to be complete. Oils of other companies can be used too, provided they comply with regulations.

P) List of recommended hydraulic and gear oils

HYDRAULIC OILS	below −10° C	−10° C bis + 40° C	GEAR OILS MIL-L2106 resp. API-GL4
ISO-viscosity class HLP (HM) HV	VG 32 HV	VG 68 HV	SAE 80
ARAL	Vitam HF 32	–	EP SAE 80
AVIA	AVILUB HVI 32	AVILUB HVI 68	–
BP	BP Bartran HV 32	BP Bartran HV 68	EP SAE 80
CASTROL	HYSPIN AWH 32	HYSPIN AWH 68	HYPOY 80
CHEVRON	EP Hydr. Oil 32 HV	EP Hydr. Oil 68 HV	–
ESSO	UNIVIS J 32	UNIVIS N 56	GP-D 80
ELF	Hydrelf 32	Hydrelf 68	Tranself EP
FINA	HYDRAN HV 32	HYDRAN HV 68	PONTONIC N SAE 80 W
FUCHS	RENOLIN MR 520	RENOLIN MR 1030	RENOGEAR MP 80
OPTIMOL	HYDO MV 5035	HYDO MV 5065	–
MOBIL	DTE 13	DTE 16	MOBILUBE GX 80 W-A
SHELL 2)	Tellus Öl T 32	Tellus Öl T 68	Spirax MA 80 W
TEXACO	Rando Oil HD AZ-32	Rando Oil HD CZ-68	Geartex EP-A SAE 80 W
VALVOLINE	VALVOLINE ETC-25	VALVOLINE ETC-35	VALVOLINE X-18 SAE 80
HD engine oils 1)	SAE 10 W 30 oils can be used all the year round		

1) after API-CCresp. MIL-L-2104B and MIL-L-46152
2) cannot be mixed with engine oils

Q) List of possible Engine Problems

Problems	Possible Cause	Remedy
Engine does not spring to life	Fuel tank empty	Fill tank and ventilate fuel pipes.
	Fuel filter clogged, in winter because of paraffin separation	Replace fuel filter, use winter fuel.
	Fuel pipes untight	Check all pipe connections for tightness and tighten screw unions
Engine starts badly	Battery capacity insufficient. Battery terminals loose and oxidizing. Starter turning slowly.	Have battery checked. Clean terminals, tighten, and cover with acid-free grease. Use the right engine oil for existing outside temperatures.
	Engine oil too viscous.	
	Fuel feed insufficient. Fuel system clogged because of paraffin separation.	Replace fuel filter, check pipe connections for tightness and tighten screw unions. In cold weather, use winter fuel.
	Coarse leaks on pistons and cylinder head.	Have checked by a skilled mechanic.
Engine works irregularly and performs badly.	Fuel feed insufficient	Replace fuel filter, check pipe connections for tightness and tighten screw unions.
	Air filter system dirty	Clean air filter system
	Relief valve of fuel injection pump not properly working	Have checked by a skilled mechanic
	Prescribed valve tolerance not in order.	Have valve tolerance adjusted
	Valve spring broken	Have valve spring replaced
	Nozzle needle jammed	Have checked by a skilled mechanic
Exhaust smokes heavily light smoke (oil) dark smoke (fuel)	Oil level of engine too high	Drain oil to upper diprod mark
	Bad combustion through seized or broken combustion rings, or incorrect valve tolerance	Have combustion rings and pistons checked by a skilled mechanic. Have valve tolerance adjusted.
	Incorrect injection timing	Have checked by a skilled mechanic
	Air filter system dirty	Clean air filter system
Engine overheats	V-belt loose or torn	Check V-belt tension, replace V-belts
	Cooling fins blocked	Clean radiator fins with compressed air (from inside out)
	Thermostat defective	Replace thermostat
	Air filter dirty	Clean air filter
	Delivery of fuel injection pump not precisely adjusted	Have adjusted by a skilled mechanic
	Injection nozzles defective	Have checked by a skilled mechanic

Problems	Possible Cause	Remedy
Engine without oil pressure **Oil pressure warning indicator lights up**	Leaks in lubrication system Crankshaft bearings too much tolerance Oil pressure control switch defective, or faulty electrical conductor	Check screw unions of oil pipes and lubrication oil filter for tightness, and tighten Otherwise, go to a skilled mechanic
Charging lamp lights up during operation	V-belt loose or torn Battery not charged by dynamo	Check V-belt tension, replace V-belts Have checked by a skilled mechanic
Charging lamp does not light up before starting	Bad cable connection. Glow lamp defective. Battery discharged	Tighten battery terminals Check pipe connections Have battery checked
Oil pressure control lamp does not light up prior to starting	see above or possibly defective oil pressure control switch	see above

List of possible problems in exhaust turbo-charger system

First check the engine as listed above, specially the fuel injection system.

Failure	Possible cause	Remedy
Abnormal smoke development and loss of power (charging pressure insufficient)	Leak between intake manifold and turbo-charger	Retighten tension straps, if necessary replace connecting elements.
	Leak between exhaust manifold and turbo-charger	Retighten screws, if necessary replace gaskets.
	Leak between intake manifold and cylinder head, resp. exhaust manifold and cylinder head.	Retighten screws, if necessary replace gaskets.
	Oil leak on condensor side	Replace turbo-charger
	Gears of turbo-charger frozen	Replace turbo-charger
Abnormal smoke development and loss of power in connection with abnormal noise	Leaks in piping system	see above
	Gears of turbo-charger colliding with housing	Replace turbo-charger

R) List of possible problems in hydraulic system and steering

Problem	Possible Cause	Remedy
Power lift or hydraulic cylinder does not lift even though pilot valve can be normally moved. No pressure building up (steering works normal)	Pressure limitation valve jammed by foreign body	Dismantle and clean pressure limitation plate LA 06 PBA. Take care not to alter pressure adjustment
Lifting capacity of power lift insufficient	Pressure adjustment insufficient Lack of oil	Readjust pressure on pressure gauge (190 bar) Top-up with prescribed brand of oil.
Operation pressure only obtained under high revs.	Pump defective	Replace pump
Manual pilot valve jammed	Radial torsions Dirt	Tension screws tightened irregularly, or too tight. Max. tightening torque 25 Nm (2,5 mkp). Dismantle and clean valve
Oil heating up fast, system fights against excess pressure (engine under load)	Radial torsion of pilot valve. Control lever remains in operation position (instead of automatically returning to neutral) Cylinder on limit stop Implement not connected, or control lever in working position (coupling)	Slacken torsion as before Move valve to neutral (free circulation) Move valve to neutral (free circulation)
Front-loader not working properly (Valves see above)	Coupling incorrectly connected Double-action cylinder connected crosswise	Check along pipes and connect correctly
Oil foams	Leaks in suction range	Check pipe connections and, if necessary, seal.
Hydraulic system working slowly, whistling noise	Insufficient oil Temperatures too low	Top-up according to instructions Fill with proper oil Hydraulic oil Mobil DTE 16

Problem	Possible Cause	Remedy
Steering does not work	Distributor dirty	Dismantle distributor (LA 06 PQ A11-M06/1) and clean
	Relief valve in hydraulic steering not responding	Dismantle and clean
Lost motion of steering when counter steering fast	Leak in return flow of steering	Seal return flow hose

These instructions only apply to valve arrangements in correspondence with our diagrammes.

S) Ill. Nos. and Explanation

Fig.	Ill. No.	Explanation
1	—	Engine No.
2	—	Chassis No.
	32	Steering cylinder
3	1	Pilot light for tractor traffic light
	2	Pilot light for traffic light of 1st trailer
	3	Pilot light for traffic light of 2nd trailer
	4	Charging lamp
	5	Preglow pilot lamp
	6	Engine oil control lamp
	7	Headlight control lamp
	8	Handbrake control lamp
	9	Fuel indicator
	10	Glow starter switch
	11	Ignition switch
	12	Tractormeter
	13	Remote thermometer for engine temperature
	14	Socket
	15	Pilot light switch
	16	Manuel speed regulator
	17	Multi-purpose switch
	18	Clutch lever für P.T.O.
	19	Hydraulic lever
	20	Clutch pedal
	21	Brake pedal (driving bake)
	22	Speed regulation pedal
	23	Group selector lever
	24	Gear selector lever
	25	Engine shut-off knob
	26	Lock for hydraulic lever
	27	Hand lever for diff-lock
4	18	Clutch lever for P.T.O.
5	29	Selector lever for rear P.T.O.
6	16	Manuel speed regulator
	19	Hydraulic lever for rear 3-point lift
	28	Parking brake lever

Fig.	Ill. No.	Explanation
6	a	Fuse for pilot light switch
	b	Fuse for RH parking light
	c	Fuse for LH parking light
	d	Fuse for dimming light
	e	Fuse for headlight
	f	Fuse for horn
	g	Fuse for traffic light
	h	Fuse for brake light
7	31	Creep gear selector lever (special equipment)
8	30	Selector lever for front P.T.O.
9	28	Parking brake lever
	33	Brake fluid for hydraulic clutch control
	36	Adjustment lever
	37	Height adjustment button
	38	Adjustment lever for seal springing
	H	Seat higher
	T	Seat lower
10	34	Front hitch
	35	Sealing screws for radiator grille
	39	Lock for engine bonnet
	73	Headlight adjustment screw
	74	Headlight adjustment screw
	ED	Filling opening for fuel
11	40	Venting filter for hydraulic oil
	41	Battery
	42	Injection nozzles
	43	Fuel filter
	44	Air induction piece
	45	Sealing screw
	46	Air filter
	E1	Filling opening (sealing cover for engine oil)
	EH	Filling opening for hydraulic oil
	EW	Filling opening for cooling water
	K	Mark for hydraulic oil
12	1	Clutch slave cylinder

Fig.	Ill. No.	Explanation
12	2	Injection pump with regulator
	3	Measuring connection for hydr. system
	4	Venting screw on injection pump
	5	Tractormeter drive shaft
	K1	Oil diprod for engine oil
	A2	Drain and control screw for regulator oil
	E 2	Filling opening for regulator oil
	AW	Drain screw for cooling water
13	50	Three-phase generator
	51	Water pump w. sealing screw for connection with heating
	52	V-belt
	53	Screw for adjustment bracket } for three-phase
	54	Screw for retaining frame } generator
	55	Exhaust
	56	Filter for engine oil (replacement)
	57	Horn
	58	Oil pressure control switch
	59	Hollow screw w. venting hose for front gearbox
	60	Starter
	61	Front P.T.O.
	A1	Oil drain screw for engine oil (2 pcs.)
	AW	Drain screw for cooling water
14	62	Outlet valve
	63	Service switch
15	64	Fixing socket
	65	Wing nut
	66	Hexagon nut
	67	Filter cartridge
16	1	Fixing socket
	2	Air guide tube
	3	Fixing sockets
	4	Fixing socket for air filter
	5	Collar nuts
	6	Valve cover
17	68	Thermostat for cooling water
	69	Counter nut
	70	Valve adjustment screw
	F	Feeler gauge
	MW	Assembly tool

Fig.	Ill. No.	Explanation
18	71	Clutch master cylinder
	72	Stop screw for clutch pedal
	S	Lubrication nipple
	S1-S3	Lubrication nipple for articulation
	S4	Lubrication nipple for steering cylinder cushion
19	SK	Lubrication nipple for rear cross and bearings
20	SK	Lubrication nipple for rear cross and bearings
21	G	Clevis for adjustment of P.T.O. clutch
	A3	Oil drain screw for front gearbox
	K3	Sight glass for gear oil, front
	E3	Filler opening for gear oil front
	S5	Lubrication nipple for steer. cylinder cushion
22	77	Rear reflector
	78	Socket for trailer lighting
	79	Trailer lighting
	80	Rear P.T.O.
	81	Adjustable drawbar
	82	Nut
	83	Licence plate light
	84	Rigid drawbar
	85	Tension chain with lock nut
	86	Long upper link arm (415 - 655 mm)
	87	Field bar on Cat. I three-point linkage
	88	P.T.O. guard
	A4	Oil drain screw for rear gear oil (2 pcs.)
23	89	Set screw for parking brake
	90	Set screw for driving brake
	A4	Oil drain screw for rear gear oil (2 pcs.)
24	A4	Oil drain screw for rear gear oil w. creep gear
25	E4	Filler opening for gear oil, rear
	K4	Sight glass for gear oil
26	A5	Oil drain screw for oil of planetary gears
	E5	Filler opening for oil of planetary gears
	K5	Control screw for oil of planetary gears
27	1	Filter insert for hydraulic pressure filter
	2	Filter housing
	3	Suction hose
	4	Hose clip
	5	Fixing clip
	6	Suction filter

Fig.	Ill. No.	Explanation
27	7	Hose clip
28	1	Hydraulic filter on A 40
29	94	Hexagon nuts for battery connection
	R	Connection for return flow of hydraulic oil
30	41	Battery
31	95	Licence plate fixture
	F	Guide tube
	S	Locking device of collapsible safety frame
	W	Fixture
32	96	Screw
	97	Slide tube
	98	Slide tube
33	S_2	Lubrication nipple for lower pivot bearing
	S_3	Lubrication nipple for rear pendulum bearing
33	S6	Lubrication nipple for wheel stabilizers
	S7	Lubrication nipple for wheel stabilizers
34	1	Outer mirror
	2	Limitation and traffic lights
	3	Fresh-air filter
	4	Windscreen wiper
	5	Fixture
35	1	Shut-off valve for heating
	2	Switch for heating and ventilation fan
	3	Operation lever for air flap
	4	Heating and ventilation nozzles
	5	Switch for windscreen wipers
	6	Sun screen
36	1	Roof
	2	Fixing nuts
	3	Active charcoal filter
	4	Cover for fresh-air filter
	5	Fixing nuts

Fig.	Ill. No.	Explanation
37	1	Hydraulic lever for rear hydraulics
	2	Hydraulic lever for single-acting control valve
	3	Hydraulic lever for double-acting control valve
	4	Hydraulic lever for circulation oil
	5	Locking device for circulation oil
	6	Adjustable flow distributor
	7	Locking device for hydraulic selector lever
38	1	Double-acting control valve
	2	Single-acting control valve
	3	Control valve for circulation oil
	4	Control valve for pressureless return flow
	5	Fixture for front coupling
	6	Mounting plate for pendulum device
	7	Lower link arm of front lift
	8	Field bar (special equipment)
39	1	Double-acting control valve
	2	Single-acting control valve
	3	Control valve for circulation oil
	4	Control valve for pressureless return flow
40		Dismantled lower link arms of front lift
41	1	Radiator grille
	2	Fixing screws for radiator grille
42	1	Radiator grille No. 118 649
	2	Mounting frame
	3	Fixing screws
	4	Adjustment screws for headlights
43		Water filling and drain valve
44		Water filling
45		Water draining
46		Examples for lighting implements
47		Wiring diagram

General Information

HOLDER 1-speed Rotary Hoe Type 4083-25 to -33; 2-speed type 4083-35 to -43

The unit construction system permits various working widths by merely interchanging the hoeing tines. For working laterally, e. g. beneath low hanging branches, the hoe shaft can be displaced assymetrically to the right. Changeover is easy and fast thanks to a new, instant attachment of the hoeing tines by means of a sturdy pitman (see diagramme). The protective hood with its adjustable lateral flaps can be adapted to the various working widths. Assemble protection rail accordingly. Lateral flaps and protection rail are a must.

The 2-speed rotary hoe has two P.T.O. connections. A different hoe shaft speed can be obtained by simply displacing the universal shaft (Ill. 59).

Hoe shaft speed at 590/min. (rpm) of the tractor P.T.O. shaft

1-speed hoe	**2-speed hoe**	
175/min. (rpm)	175/min. (rpm)	257/min. (rpm)
I Ill. 59	I Ill. 59	II Ill. 59

The next page gives a survey of the parts required for working widths of 80, 100, 125 cm symetrical arrangement, and 125 cm laterally offset arrangement.

Conversion kits for rotary hoes type 4083 to obtain different working widths

4 knives square flanges

from / to	4083-25/35 80 cm	4083-26/36 100 cm	4083-27/37 125 cm sym.	4083/28/38 125 cm offset
80 cm 4083-25/35	---	---	1 pitman 4083 250 00 37	---
100 cm 4083-26/36	2 hoe knives, left 183 244 22 10 2 hoe knives, right 183 244 23 10 8 Hex. screws M12x30 DIN933-8.8 8 Lock nuts 000 990 01 62		1 pitman 4083 250 00 37	---
125 cm symetrical 4083-27/37	---	1 end hoeing tine ass. 4083 240 06 43, left 1 end hoeing tine ass., right 4083 240 07 43 1 pitman 4083 250 01 37	---	1 inner hoeing tine ass., left 4083 240 16 16 1 end hoeing tine ass., left 4083 240 06 43 1 pitman 4083 250 01 37 1 lateral hood, left 4083 330 04 13
125 cm offset 4083-28/36	---	1 inner hoeing tine ass., left 4083 240 20 16 2 outer hoeing tines, right 4083 240 06 17 1 pitman 4083 250 02 37	1 interior hoeing tine ass., left, 4083 240 20 16 2 outer hoeing tine ass., right, 4083 240 06 17 1 pitman 4083 250 02 37	---

Explanation: 1-speed hoe type 4083/25 to 28
1-speed hoe type 4083/35 to 38

Conversion kits for rotary hoes type 4083 to obtain different working widths

6 knives square flanges

from / to	4083-30/40 80 cm	4083-31/41 100 cm	4083-32/42 125 cm sym.	4083-33/43 125 cm offset
80 cm 4083-30/40	———	———	1 pitman 4083 250 00 37	———
100 cm 4083-31/41	3 hoe knives, left 183 244 22 10 3 hoe knives, right 183 244 23 10 12 hex. screws M12x30 DIN933-8.8 12 lock nuts 000 990 01 63	———	1 pitman 4083 250 00 37	———
125 cm symetrical 4083-32/42	———	1 end hoeing tine ass., left 4083 240 08 43 1 end hoeing tine, right 4083 240 09 43 1 pitman 4083 250 01 37	———	1 inner hoeing tine ass., left 4083 240 18 16 1 end hoeing tine ass., left 4083 240 08 43 1 pitman 4083 250 01 37 1 lateral hood, left 4083 330 04 13
125 cm in-line 4083-33/34	———	1 inner hoeing tine ass., left 4083 240 21 16 1 outer hoeing tine ass., right 4083 240 07 17 1 pitman 4083 250 02 37	1 inner hoeing tine ass., left 4083 240 21 16 1 outer hoeing tine ass., right 4083 240 07 17 1 pitman 4083 250 02 37	———

Explanation: 1-speed hoe type 4083/30 to 33
2-speed hoe type 4083/40 to 43

Before attaching the hoe, pay attention to the following:

Which three-point linkage is the tractor equipped with?

a) For Holder A 40 and A 50 tractors, equipped with standard 3-point linkage Cat. 0, type 4101-1 (for steep vertical lift) a rigid upper linkage arm 445 mm, and cardan shaft 635 mm long, are required (See Ill. 51).
   Part No. of cardan shaft 4083 260 04 30.
   Part No. of upper linkage arms 4083 230 05 91

b) For Holder A 40 and A 50 tractors with Cat. I standard three-point linkage type 4001-2, rigid upper linkage arm 585 mm, and cardan shaft, long, 760 mm, required (See Ill. 52).
   Part No. of cardan shaft 4083 260 20 30.
   Part No. of upper linkage arms 4083 230 05 91.

The lifting height is fixed by the limit stop of the hydraulic cylinder.

Attachment of the Rotary Hoe on tractors with Cat. 0 (steep vertical) linkage and with Cat. I (standard three-point) linkage

Insert upper link arm (1 Ill. 53) into the bottom bore of tractor mounting bracket (2 Ill. 53) resp. (4 Ill. 54). Lower hydraulics. Fit both lower link arms of the 3-point linkage 4101-1 resp. std. Cat. 0, 3point-linkage on the upper, inwards pointing trunnion (3 Ill. 54) and secure with dowel pin.

In case of the three-point linkage 4101-2 resp. standard 3-point linkage Cat. I, the lower link arms must be fitted to the outwards pointing trunnion (4 Ill. 54). Make sure the lower link arms are symetrical. (If necessary, readjust the drawbar). Fit upper link arm on suspension frame (5 Ill. 53) of the rotary hoe. To facilitate assembly, slightly lift the lower link arms by means of the hydraulics.

Important! Take care to assemble the cardan shaft with safety clutch with the clutch towards the rotary hoe.

Now place the retaining chain of the cardan shaft guard (6 Ill. 53) around the drawbar and secure. To avoid breakages, take care not to fit the chain too tightly.

Before assembling the cardan shaft, check the position of the journals.

Attention! Journals must lie in the same parallel position as shown in the upper section of Ill. 56, and transfer picture on end guard of universal shaft. Any other position, e. g. as shown in the lower part of Ill. 56, will result in a broken cardan shaft. Adjust check chains and lower link arms to give the hoe a lateral play of approx. 5 cm.

Important! Take care to assemble the cardan shaft with safety clutch with the clutch towards the rotary hoe.

Now place the retaining chain of the cardan shaft guard (6 Ill. 53) around the drawbar, and secure. To avoid breakages, take care not to fit the chain too tightly.

Adjusting hoeing depth
Depth is adjusted on the two support wheels. Countersinkings on both support wheels guarantee their symetrical adjustment.

Adjust the hoeing depth so that the safety clutch will not respond unless meeting cumbrous obstacles, such as large stones, tree stumps, roots etc.

The rotary hoe is lowered and lifted by means of the hydraulic lift, operated from the driver seat.
Do not engage P.T.O. before the hoe shaft has touched ground. Before lifting the hoe shaft, cut-off P.T.O.

Tractor speed, resp. hoe shaft speed depends on whether a fine or a coarse tilth is required.
We recommend:

For 1-speed hoe: (with 2-speed hoe cardan shaft connection I Ill. 59)
Tractor 1st speed: for fine tilth
Tractor 2nd speed: for coarse tilth with a high area coverage.

For 2-speed hoe: (cardan shaft connection II Ill. 59)
Tractor 1st speed: for super fine tilth
Tractor 2nd speed: for fine tilth with a high area coverage.

The hoeing tines are held together with the pitman. They can be optionally equipped with 4 or 6 knives. When fitting outer, resp. inner hoeing tines, take care to thoroughly clean the outer surface of the inner hoeing tine flange so that the carrier plate will correctly bear. The flange of each inner hoeing tine has a labyrinth packing (Ill. 57), with a felt washer (Ref. No. 000 997 27 40) inserted in it for protection of the gearbox sealing. Every 100 to 150 hours of operation, clean this labyrinth packing from dirt. If necessary, replace the felt washer. **Attention!** Felt washers must be saturated in oil prior to assembly. The remaining space must be filled with grease. In sandy soils, check earlier. After the first 20 hours of operation, examine all screw unions for tightness and, if necessary, retighten. Repeat this regularly.

Change-over from hoeing tine with 4 knives to hoeing tine with 6 knives
Hoeing tines with 4 knives are recommended for coarse cultivation. If a fine tilth is required, the use of hoeing tines with 4 knives is advisable. The special design of the flange permits conversion from 4-knives tine to 6-knives tine.

Caution:
Be sure to lift the rotary hoe when taking bends and when reversing. Otherwise, its protective enclosure will be damaged.

SERVICE AND MAINTENANCE

Thorough and regular service and maintenance will save you problems, time and unecessary cost. It will also render the unit serviceable at any time, and increase its service life.

The cardan shaft, being the power transmitting element, is subject to high stress and needs a careful treatment.

The following points are of particular importance! (Ill. 58)

1. Before each assembly, grease slide pins.
2. Lubricate joints after every 8–10 hours of operation (daily). If the hoe is not continuously used, lubricate at least once a week. Go on lubricating until the grease comes out on the gaskets of cross and bearing. Use ball bearing grease.
3. Lubricate ball bearing of the protection tubes every 8–10 hours of operation (daily).
4. In case of continuous shearing stress, and heavy dirt development, clean and grease protection tubes every 8–10 operation hours. (Daily).
5. Grease multi-spline, resp. square profile of shaft every 8–10 hours of operation (daily).
6. The safety clutch is adjusted to a torque of 1050 Nm (105 kpm). If the safety clutch has to be readjusted, this ought to be left to an accredited workshop, where readjustment must be effected to the original torque. For lubrication, use SAE 80 gear oil. Check the oil level after every 200–250 operation hours, if necessary, top-up. Thereby, put cardan shaft in vertical position. Then secure sealing screw with wire.

Hoeing Tines

The cutting edges of the hoeing tines must always point in the direction of revolution. Replace damaged or worn hoeing tines at once. Make sure that the carrier plate of each following hoeing tine will correctly bear with the seat of the previous one.

A dirty seat will prevent the hoeing tines from being correctly fitted together by the pitman. Insert the pitman from the right, as viewed in driving direction which will prevent the pitman nut from slackening. Tighten the pitman nut with the special spanner supplied as standard equipment of the hoe, and check it regularly for tightness. Secure nut with a split pin.

Lubrication of gearbox

The gearbox of the 1-speed hoe contains two litres, and that of the 2-speed hoe 4 litres SAE 80 gear oil. The oil level can be controlled with the oil dipstick (E_A 1 Ill. 60). With the hoe standing on level ground, the oil level should be between upper and lower dipstick mark.

Plug (L Ill. 59) serves as a sealing plug in the 1-speed hoe, and as a ventilation plug in the 2-speed hoe.

Change oil for the first time after 10 hours of operation, thereafter every 450 to 500 hours.

Regularly grease the lubrication nipples on the hub of the depth adjustment wheels.

Safety measures:

During working breaks, or when parking the tractor, lower the rotary hoe to the ground.

Shut-off the tractor engine, whenever carrying out any job on the rotary hoe.

When driving on the road, secure the hydraulic control lever (19 Ill. 6) with the locking device (26 Ill. 3).

Instructions for the attachment to A 40/A 50 tractors of former type rotary hose 4083 which may have been previously used on AM2 / AG3 / A30/A45 tractors

In such cases, the following modification is necessary:

The modification kit, consisting of the following parts, can be ordered:

1 – Cardan section Ref. No. 4083 230 01 92
2 – Mounting bracket Ref. No. 4083 230 01 92

For tractors with Cat. I three-point linkage type 4101-2, only the cardan section Ref. No. 4083 230 01 92 is required.

Modification (Ill. 61 and 62)

1. Weld the mounting bracket 4083 230 03 37 to the lower link arm (steep vertical lift only) as shown on illustration.
2. Then fit draw rods (Z) on welded mounting bracket.
3. In case of Cat. 0 and Cat. I fit the upper link arm with small lug (A) and without limit stop in the bottom bore of the hitch on the tractor.

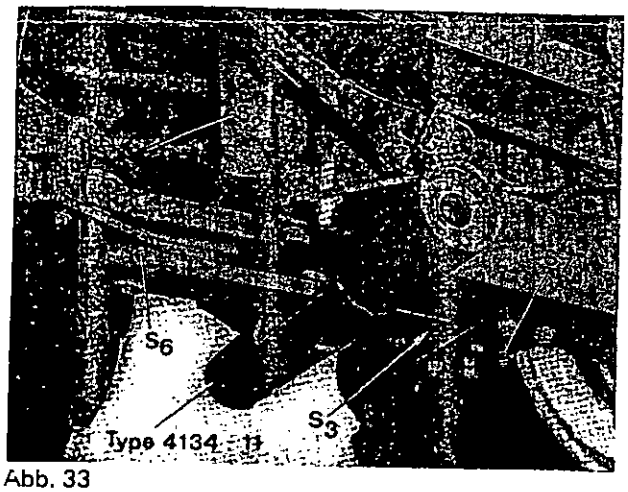
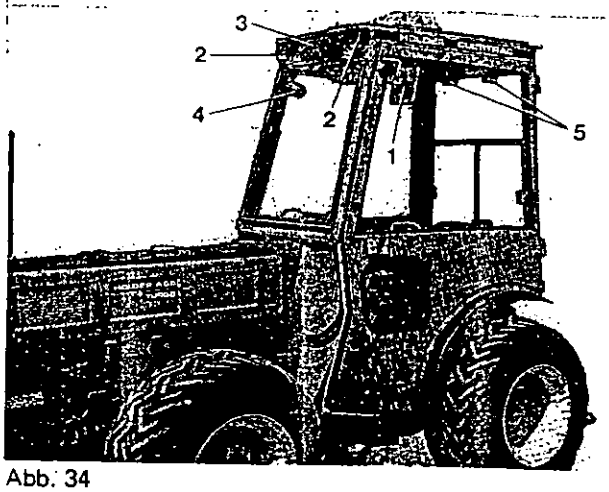


Abb. 33



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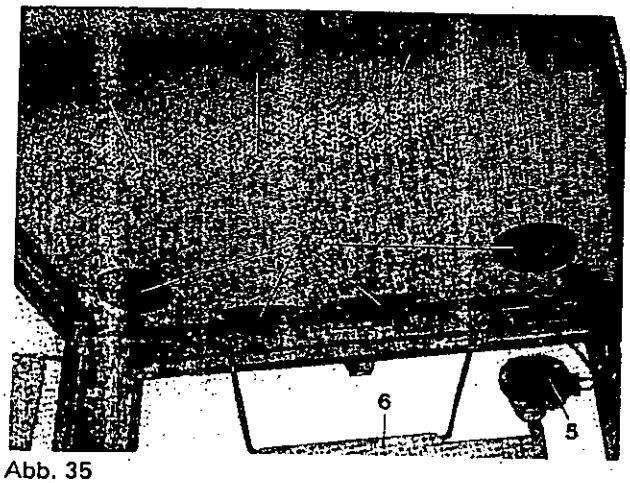

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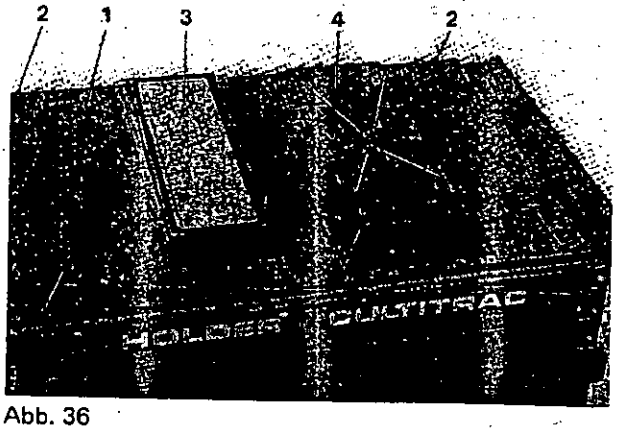

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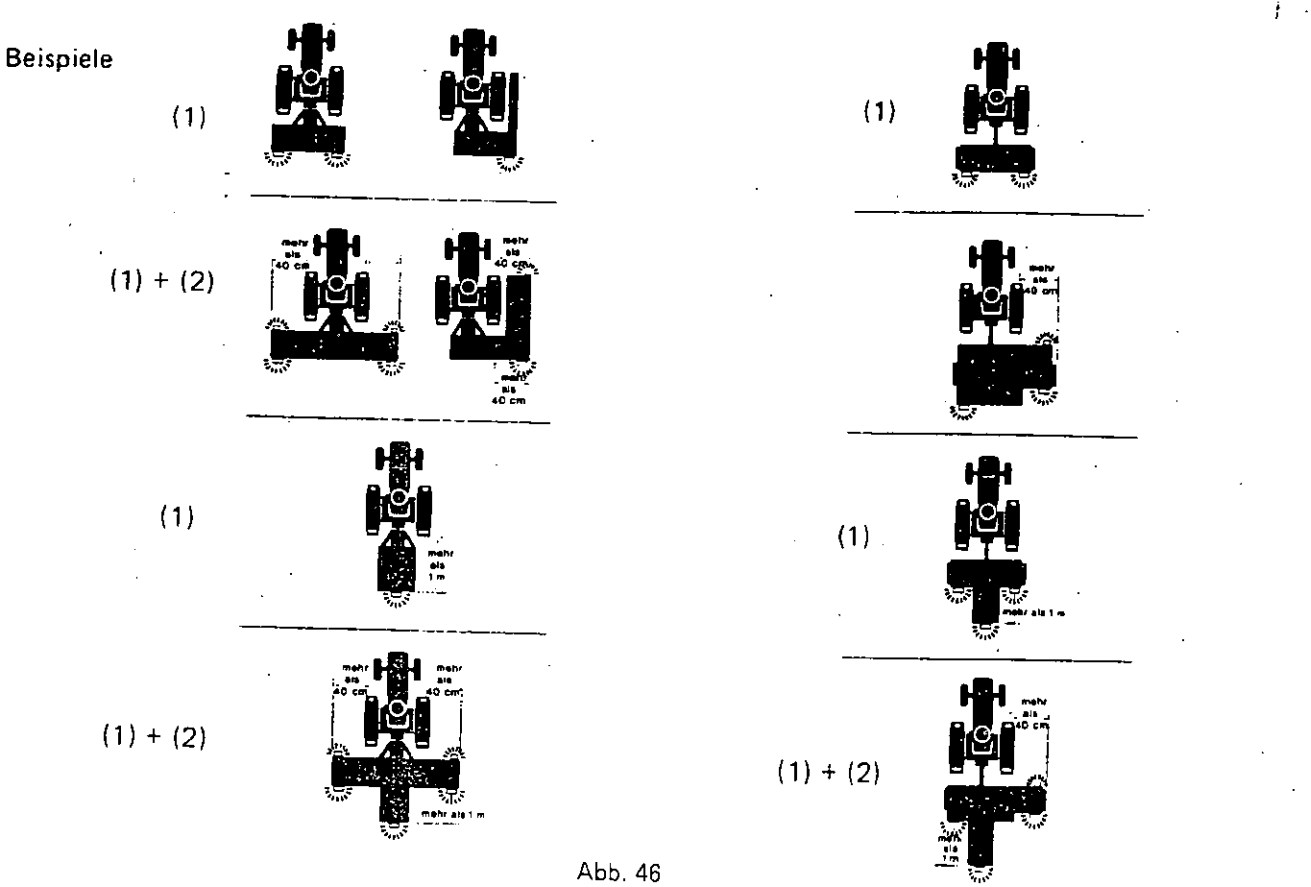

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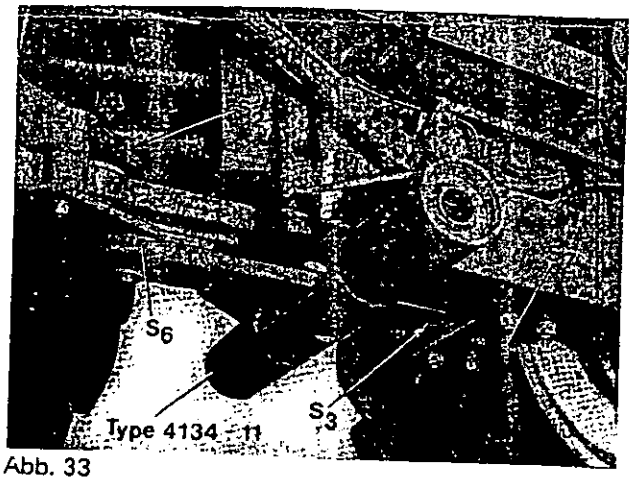

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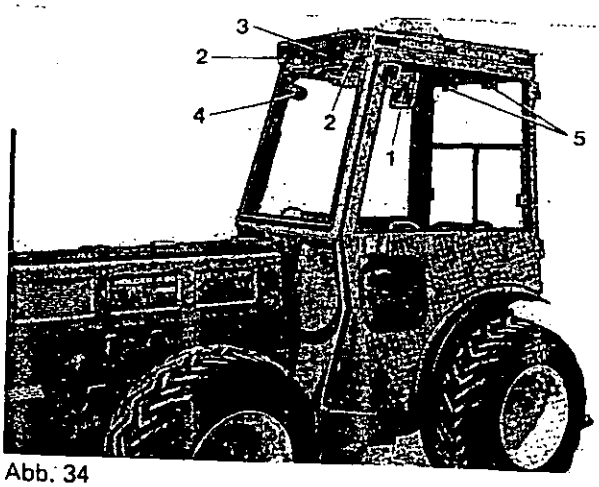

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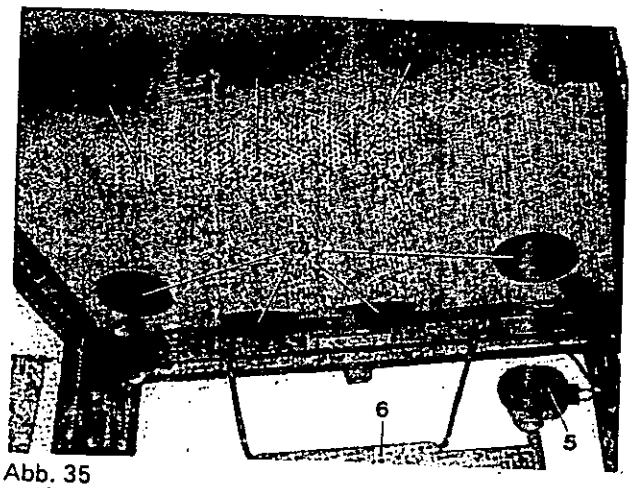

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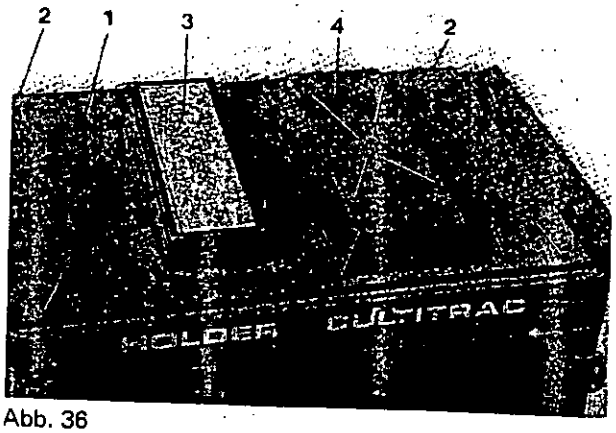

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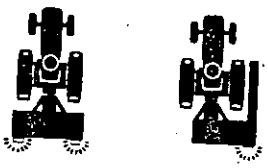

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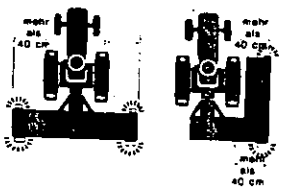

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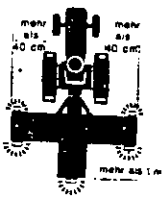

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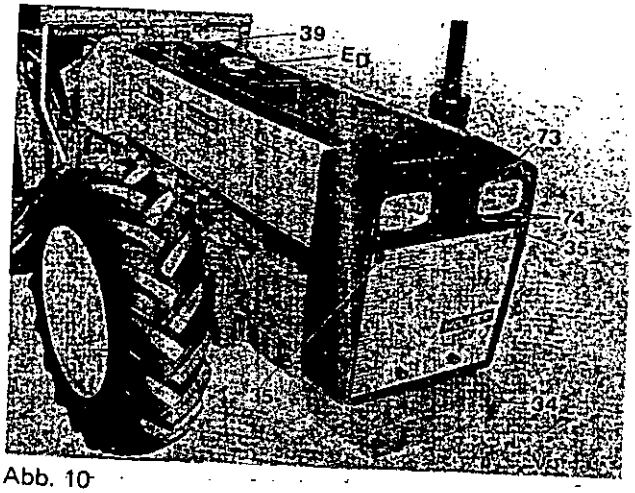

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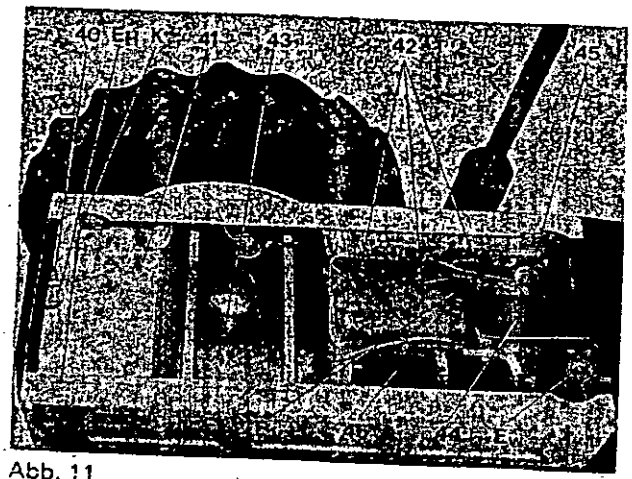

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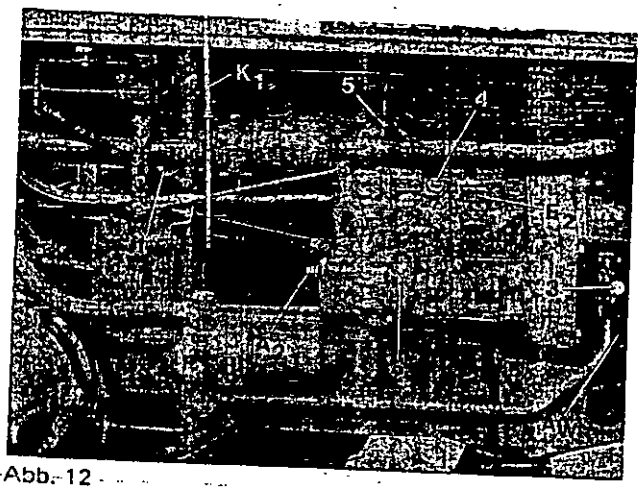

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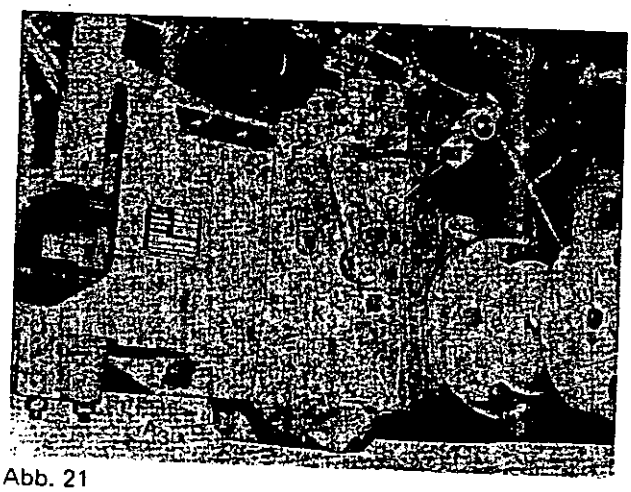

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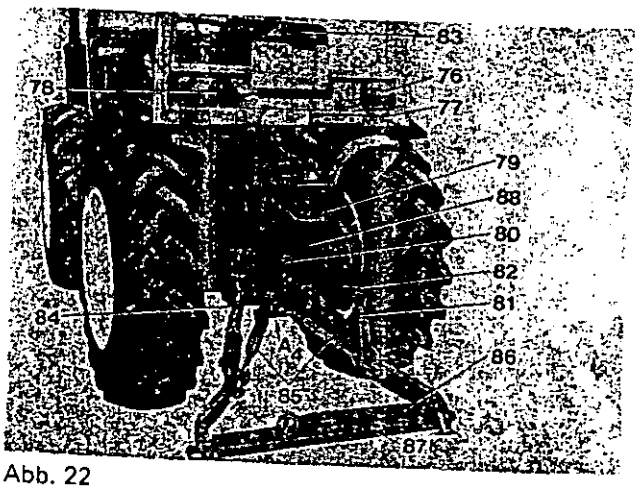

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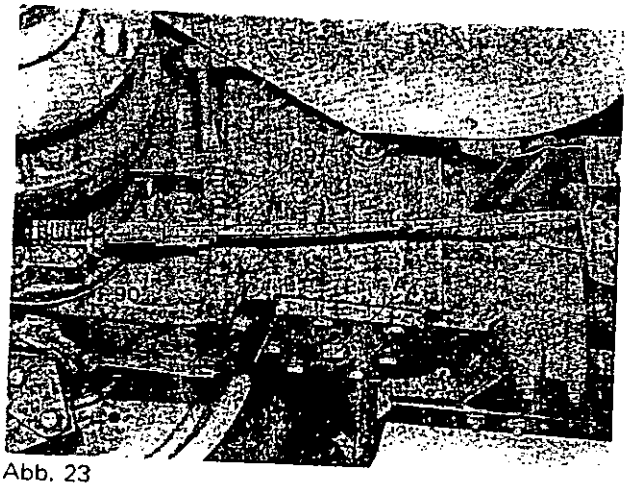

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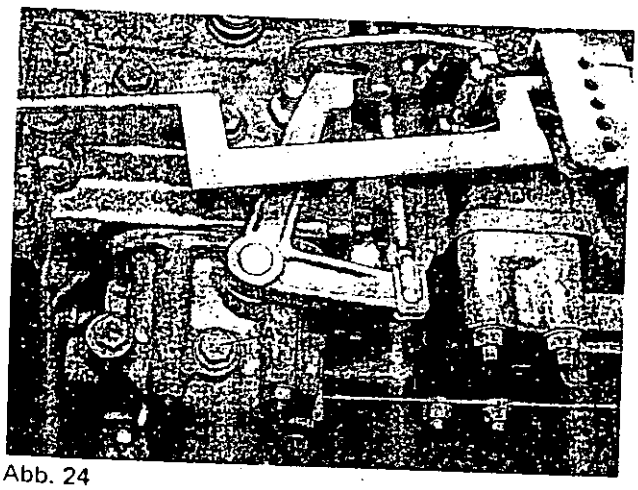

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