

Operator's Manual



Menzi Muck AG Maschinenfabrik
9443 Widnau / Switzerland

Tel +41 (0)71 727 12 12
Fax +41 (0)71 727 12 13
info@menzimuck.com
www.menzimuck.com

menzi
muck

TECHNICAL MODIFICATIONS



The edition of this manual refer to the date on the front page. Innovative improvements require technical changes on the Menzi Muck. Mutations, which are not yet integrated in this manual, you will find in the appendix with amendment date.

INDEX

Safety instruction	11	Technical Data	23
1 Safety instruction	11	3 Technical Data	23
1.1 Obligations and liability	11	3.1 Weight	23
1.2 Warnings and use instructions	12	3.2 Engine	23
1.3 Safe handling of fuel	12	3.3 Hydraulics	24
1.4 Emergency preparedness	12	3.4 Drive	24
1.5 Safe handling of starter fluids	12	3.5 Set of tyres	24
1.6 Wearing protective clothing	12	3.6 Noise emissions	25
1.7 Noise protection	12	3.7 Forces (ISO 6015)	25
1.8 Safety during maintenance tasks	13	3.8 Lifting force diagram	25
1.9 Safe maintenance of the cooling system	13	3.9 Buckets	26
1.10 Good workplace ventilation	13	3.10 Dimensions A111	27
1.11 Precautions for high-pressure liquids	13		
1.12 Avoiding heat build-up around pressurised lines	13		
1.13 Removing paint before welding or heating	14		
1.14 Compliant disposal of waste	14		
1.15 Users and their responsibilities	14		
1.15.1 User roles	14		
1.15.2 Operating modes	15		
2 Directions of safe operation	16		
2.1 Operators	16		
2.2 Operating	16		
2.3 Operating instructions	16		
2.4 Road driving	16		
2.5 Danger Zone	16		
2.6 Safety distance	16		
2.7 Stability	16		
2.8 Working in the region of underground cables	17		
2.9 Working in the region of overhead wires	17		
2.10 Working underground or in enclosed areas	17		
2.11 Working interruptions	17		
2.12 Lifting operations	18		
2.13 Servicing, maintenance	18		
2.14 Protective guards	18		
2.15 Articulated steering lock	19		
2.16 Valves, hydraulic hoses	20		
2.17 Starting operation	20		
2.18 Shut-off operation	20		
2.19 Excavator operation	21		
2.20 Tips for the operator	22		

Operation

28

4	Basic functions	28	6	Controls	45
4.1	Machine overview	28	6.1	Main switch	45
4.2	Overview – Operator’s cab	29	6.2	Emergency shut down switch	45
4.3	Operator’s seat	29	6.3	Ignition lock	45
4.3.1	Operator’s seat Klepp	29	6.4	Speed adjustment	46
4.3.2	Operator’s seat Grammer (optional)	30	6.4.1	Speed reset	46
4.3.3	Safety belt	30	6.4.2	Engine speed governor at low temperatures	46
4.4	Foot pedal adjustment	31	6.4.3	Emergency speed	47
4.5	Windscreen and door	31	6.5	Heating/Air conditioning	47
4.5.1	Opening front window	31	6.5.1	Air vents	47
4.5.2	Opening the side window	31	6.5.2	Control	48
4.5.3	Opening the door	32	6.5.3	Heating	48
4.6	Tilting cab	33	6.5.4	Cooling	48
4.7	Opening and closing the covers	34	6.6	Windscreen washer system	49
4.7.1	Opening and closing the rear cover	34	6.6.1	Windshield cleaner reservoir	49
4.7.2	Opening and closing the right rear cover	34	6.6.2	Windscreen wiper	49
4.7.3	Opening and closing the left rear cover	35	6.7	Lights	50
4.8	Refuelling system	35	6.7.1	Warning indicator unit	50
4.8.1	General information	35	6.7.2	Direction indicator unit	50
4.8.2	Filling upper diesel tank	35	6.7.3	Panorama indicator lamp (optional)	50
4.8.3	Filling chassis tank	36	6.7.4	Street lighting MFK (optional)	50
4.8.4	Transferring fuel to chassis tank	36	3.7.5	Working headlamps	50
5	Display and comand elements	37	6.7.6	Side working headlamps light cluster (optional)	50
5.1	Control Panel	37	6.8	Central lubrication (optional)	51
5.2	Display indicator	38	6.9	Fine mode	51
5.2.1	Design	38	7	Operating the upper structure in working mode	52
5.2.2	Keyword index	38	7.1	General	52
5.2.3	Safety and operation instructions	38	7.1.1	Working regulations for hoisting operation in the EC.	52
5.2.4	Commissioning	39	7.1.2	Safety conditions	52
2.2.5	Main menu design	39	7.1.3	Working steps	52
5.2.6	User controls	39	7.1.4	Sector range of hoisting operation	52
5.2.7	Main displays	39	7.2	Operating the arm, shaft, bucket, telescope and swivel device	53
5.2.8	Operating and status displays	40	7.3	Operating the hydraulic auxiliary connections	54
5.2.9	Fault table of the status displays and message windows	41	7.3.1	Hydraulic auxiliary connection (large)	54
5.2.10	Detail menu	43	7.3.2	Powerline	55
5.2.11	Brightness / contrast	44	7.3.3	Hydraulic quick changer	56
5.2.12	Date and time	44	8	Operating Chassis	57
			8.1	Caution when articulating the chassis	57
			8.2	Sprag claws	57
			8.3	Joystick left	58
			8.4	Joystick right	59

9	Operating auxiliary equipment	60
9.1	Changing the bucket	60
9.2	Tilt rotator	60
9.2.1	Operating the right joystick	60
9.2.2	Operating the left joystick	60
9.3	Traction winch	61
9.4	Forestry model - Woody 50 harvester head	62
9.4.1	Assembling the Woody 50	62
9.4.2	Disassembling the Woody 50	62
9.4.3	Operation	62
9.4.4	Operating the Woody 50 left joystick	63
9.4.5	Operating the Woody 50 right joystick	63
9.4.6	Auxiliary keypad	64
9.5	Naarva Grip Feller Head	64
9.5.1	Operating the right joystick	64
9.5.2	Operating the left joystick	64
10	Operation traction drive	65
10.1	General	65
10.1.1	Traction drive	65
10.1.2	Driving	65
10.1.3	Driving up steep roads	65
10.2	Driving mode / steering mode	66
10.2.1	Conventional driving mode	66
10.2.2	Automatic driving operation	66
10.2.3	Controlling the traction drive speed	66
10.2.4	Braking	66
10.3	Driving positions	67
10.3.1	Menzi Muck A111 T1.8	67
10.3.2	Menzi Muck A111 T2	67
11	Transport	68
11.1	Transport instructions	68
11.2	Loading example	69
11.3	Transport by helicopter, crane or skyline crane	70
11.4	Component mass	71
11.4.1	Cab	71
11.4.2	Center section	71
11.4.3	Chassis	72
11.4.4	Stabilizers	72
11.4.5	Mountain stabilizer	73
11.4.6	Boom	73

Maintenance and repairs 74

12	Tips and hints	74	15	Hydraulic system	103
12.1	Maintenance	74	15.1	Hydraulic oil tank	103
12.2	The main points in brief	76	15.2	Oil types	103
12.3	Lubricant table	76	15.3	Check hydraulic oil level	104
12.4	Maintenance schedule	77	15.3.1	Machine setting	104
12.5	Boom lubrication schedule: 8h or daily	81	15.3.2	Oil level indicator	104
12.6	Telescoping boom lubrication schedule: 8h or daily	82	15.4	Replacing hydraulic oil filter	105
12.7	Lubrication schedule Chassis: 50 h or daily	83	15.4.1	Replacing the return filter	105
12.8	Lubrication schedule chassis: 50h or weekly	84	15.4.2	Changing the supply pressure filter	106
12.9	Central lubrication (optional): 8h or daily	84	15.4.3	Replacing the partial flow filter (optional)	107
13	Engine and air-conditioning unit	85	15.5	Changing the hydraulic oil	107
13.1	General	85	15.6	Oil filling procedure	108
13.1.1	Welding work	85	15.7	Hydraulic pumps	108
13.2	Inspection cooling water	85	15.8	Bleeding the hydraulic pumps	109
13.3	Cooling water quality	86	15.9	Distributor gear	109
13.4	Cleaning radiator	86	15.9.1	Draining the oil	109
13.5	Servicing the air filter	87	15.9.2	Replenishing the oil	109
13.6	Engine oil and filter change	88	15.10	Installation instructions for pipe and hose lines	110
13.7	Fuel filter replacement	90	15.11	Hydraulic diagram	111
13.7.1	Bleeding the fuel system	91	16	Swing	113
13.7.2	Drain off condensation at the fuel filter	91	16.1	Swing gear	113
13.8	Cleaning the crankcase bleed pipe	92	16.1.1	Maintenance	113
13.9	Checking and adjusting valve play	92	16.2	Rotating ball bearing joint	114
13.10	Heating/Air conditioning system maintenance	93	16.2.1	Internal gearing through a permanent bath	114
13.10.1	Coolant	93	17	Telescope	115
13.10.2	Filling	93	17.1	Readjusting at front side	115
13.10.3	Cooling oil	93	17.2	Readjusting at front top and bottom	115
13.10.4	Repairs to the coolant circuit	93	17.3	Readjustment at rear	115
14	Electrical equipment	94	18	Drive mechanism	116
14.1	General	94	18.1	Maintenance	116
14.2	Fuses	95	19	Faults and fault rectification	117
14.2.1	Main fuse (70 A)	96	19.1	Trouble shooting on the engine	117
14.2.2	ECU fuse (3 A)	96	19.1	General trouble shooting on the machine	121
14.3	Relays	96	20	Tightening torque table	124
14.4	Control module menu	97	21	Proof of service as per service schedule	125
14.5	Status menu of the RC4-4/20	97	22	Warranty provisions	127
14.6	Joystick diagnostic menu	99		Appendix	128
14.7	Output module diagnostics menu	99			
14.8	Service menu	102			
14.9	Service code	102			

PREFACE

The Operator's Manual contains important information on the operation, servicing, maintenance and inspection of your

Menzi Muck A111.

A copy of this Operator's Manual should always be kept in the pocket provided for it in the driver's cab.

We recommend that you read through the Operator's Manual carefully and repeatedly and take note of the information given therein. The Operator's Manual does not contain instructions for carrying out major repairs and installations. The performance and availability of your MENZI MUCK walking excavator is not just dependent on the machine but are largely influenced by the operating personnel. Continuing operational reliability is only guaranteed if the machine is correctly handled and serviced. Operating errors and inadequate maintenance, on the other hand, lead to breakdowns in use and avoidable repairs. It is therefore in your interest to work in accordance with the operating instructions. The suitability and ability of the excavator driver are of great importance. Frequent changing of the excavator driver may impair the functioning of the machine and should be avoided. Better performance is achieved if the excavator driver handles the machine sensitively and without using force. MENZI MUCK AG has an extensive customer service organisation with well-trained specialist personnel, who will check over and repair your Menzi Muck in case of need. When ordering please observe the ordering instructions in the spare parts book. When making written or telephone enquiries, state the type designation and the machine number.

Type-plate

On the intermediate wall in the cab underneath the operator's seat you can find the type-plate with following contents: producer's address, type of machine, chassis-No. and engine-No., year of construction and engine rating, total weight (without bucket) and max. permissible weight, axle load front and rear.

CE	Menzi Muck AG Maschinenfabrik CH-9443 Widnau Switzerland Tel. ++41(0)71/727 12 12 Fax ++41(0)71/727 12 13	menzi muck
Maschinentyp	_____	
Chassis Nr.	_____	
Motor Nr.	_____	
Baujahr	_____	
Motorleistung	_____	kW
Maschinengewicht	_____	kg
Zul. Ges. Gewicht	_____	kg
Achslast vorne	_____	kg
Achslast hinten	_____	kg

Notes for spare part orders

Use only original Menzi Muck spare parts.

For every order, specify the complete part number, name and quantity of the required parts.

For every order, specify the type and production number of the machine (type plate).

The buyer is responsible for any incorrect deliveries as the result of incomplete ordering information.

Prepare telephone orders carefully. In order to avoid inconvenient enquiries and possible incorrect deliveries, an order must contain precise listings of address, postcode, shipment method, and destination, and these must be easily legible.

SALES AGENCY AND SPARE PARTS DEPOT

SCHWEIZ - SUISSE SVIZZERA - SUIZA

Menzi Muck AG
Maschinenfabrik
CH-9443 Widnau
Tel. +41 (0)71 727 12 00
Fax +41 (0)71 727 12 01
www.menzimuck.com
info@menzimuck.com

Zentralschweiz

Menzi Muck Service
Zentralschweiz
Husmattstrasse 5
CH-6416 Steinerberg
Mobil +41 (0)79 357 81 74

Suisse romande

Menzi Muck SA
Machines de chantier
CH-1957 Ardon
Tel. +41 (0)27 306 36 36
Fax +41 (0)27 306 36 51
menziardon@bluewin.ch

Kanton Bern

Winkler Jakob
Baumaschinenservice, Hubeli
CH-3635 Uebeschi
Tel. +41 (0)33 345 53 54
Fax +41 (0)33 345 31 77

Ticino

Ferrari Macchine Edili
Via Piodella
CH-6933 Muzzano
Tel. +41 (0)91 994 98 04
Fax +41 (0)91 994 31 86
info@ferrarimacchine.ch

INTERNATIONAL

Australia

Rock Engineering (Aust) Pty
Ltd.
Unit 2, 16 Maiella Street
Stapylton, QLD 4207
Tel. +61 7 33 82 6380
Fax +61 7 33 82 63 81
johnnglisson@rockeng.com.au
www.rockengineering.com.au

Bolivia

Anglarill cia. Ltda.
Lic. Erlan Anglarill Arenales
Calle Mercado 221 2do. Piso
Casilla 676
Santa Cruz
Tel. +591 3 333 3219
Fax +591 3 334 5955
anglaril@mail.zuper.net

Bulgarien

East West Capital Group Ltd.
81 Bulgaria Blvr.
BG-2000 Samokov
Tel. +359 (0)722 66492
Fax +359 (0)722 66872
office@ewc-group.com
www.ewc-group.com

Canada

Menzi Muck Canada Inc.
110, rue Lucien
Ville de Saguenay
Secteur Canton Tremblay
G7H 5A8, Canada
Tel. +1 418 690 3277
Fax +1 418 690 3276
menzimuck@sympatico.ca
www.lnmachinerie.zip411.net

Croatia

GRAPO
Gospodarska 5b
HR-10255 Zagreb Stubnik
Tel. (01) 6531-077, 6531-078 i
6531-079
Fax (01) 6531-080
gra-po@zg.t-com.hr
www.gra-po.hr

Deutschland

Otto Th. Menke GmbH
Maschinen & Ersatzteile
Overweg 22
D-59494 Soest
Tel. +49 02921 965 40
Fax +49 02921 965 480
info@otto-th-menke.de
www.menke-
umwelttechnologie.com

Ecuador

Griffmetal S.A.
Sr. Arturo Griffin Barros
Av. Diego de Almagro 2033
y Whymper, of. 502
Quito
Tel. +593 2 567 263
Fax +593 2 522 709
agriffin@pi.pro.ec

España

Dalper S.L.
Av. Moncayo 2 Nave 15
E-28703 S.S. Reyes (Madrid)
Tel. +34 91 653 48 01
Fax +34 91 623 80 61
administracion@dalpersl.com
www.dalpersl.com

France

MECA - T.P.
Z.A. Le Glatay
F-73410 La Biolle
Tel. +33 479 54 79 00
Fax +33 479 54 72 12
meca-tp@wanadoo.fr

Hungary

Menzi Muck Magyarorszag BT
Pinceu.32
HU-8315 Gyenesdias
Tel./Fax +36 83 317 049
Mobil + 36 0630 2408 575
hengla@enternet.hu

India

Shapoor Izadfar
Sales Manager Asia-Devison
Postfach 273
CH-3000 Bern 13
Tel. +41 31 318 09 09
Mobil +41 76 318 09 09
Fax +41 31 318 09 08
si1@gmx.ch

Iran

Haffar Machine Co.
Suite 5, 3rd floor
No. 15 Second Alley
Pakistan Str.
Dr. Beheshti Ave.
Tehran/Iran
Tel. +98 21 887 507 27
Fax +98 912 885 16 332
www.haffarmachine.com
info@haffarmachine.com

Island

Impex ehf
Askalind 4
IS-201 Kopavogur
Tel. +354 534 53 00
Fax +354 534 53 03
Mobil +354 661 30 30
impex@impex.is
www.impex.is

Italia (Sondrio)

S.M. Macchine Operatrici
Agricole Industriali
Via Spinedi 12
I-23010 Postalesio (So)
Tel. & Fax +39 0342493 463
infosm2002@libero.it

Italia (Trentino, Verona, Belluno)

Dall'Alda Francesco & C snc
Commercio Macchine - gricole
Località S. Marco 29
I-38065 Mori
Tel./Fax +39 0464 910142

Italia (Alto Adige)

Menzi Muck GmbH
Mathias-Föger-Weg 1
A-6424 Silz
Tel. +43 (0)5263 20244
Fax +43 (0)5263 20233
info-at@menzimuck.com

Kasachstan / Kirgisistan

Mountec Cooperation Sarl
Zhukeeva-Pudovkina 43a/3
720035 Bishkek
Republic Kirgisistan
Tel. +96 312 936 479
Mobil +96 772 545 610
mountec@bk.ru
www.mountec.webou.net

Netherlands

Martens J. Transporte
Hoolstraat 77
NL-6191 TW Beek
Tel. +31 46 437 1432
Fax +31 46 437 8092

New Zealand

Rock Engineering (Aust) Pty
Ltd.
Unit 2, 16 Maiella Street
Stapylton, QLD 4207
Tel. +61 7 33 82 6380
Fax +61 7 33 82 63 81
johnnglisson@rockeng.com.au
www.rockengineering.com.au

New Caledonia

Supercal Equipment
190, rue J.Iekawé - PK4
BP 836 - 98845 Nouméa cedex
Nouvelle-Calédonie
Tel. +687 43 77 00
Fax +687 43 77 04
supercal@hgj.nc

Österreich

Menzi Muck GmbH
Bagoltenweg 20
A-6845 Hohenems
Tel. +43 (0)5576 78540
Fax +43 (0)5576 785404
info-at@menzimuck.com

Österreich (Service)

Menzi Muck GmbH
Mathias-Föger-Weg 1
A-6424 Silz
Tel. +43 (0)5263 20244
Fax +43 (0)5263 20233
info-at@menzimuck.com

Philippines

TKC Heavy Industries Corp.
17 Bulacao Pardo
Cebu City
Tel. +63 32 254 6119
Fax +63 32 254 0008
tkc@skyinet.net
www.tkc-hic.com

Peru

Sr. Juan Alfonso Pereyra S.
Calle 7, 131
Departamento 202 (101)
Urbanización los Jasmines
Surso
Lima 33
Tel. +51 9816 - 0016
japereyra@terra.com.pe

Portugal

Menzi Muck Espana S.L.
C/Naranja de Bulnes 16
Bajo Dcha.
E- 33211 - Gijón
Asturias
Tel. +34 985 99 10 24
Fax +34 985 99 10 25
jjaamenzimuck@yahoo.es

Romania

BPI Consult SRL
Mihai Viteazu 436
RO-507085 Harman / Jud
Brasov
Tel. +40 268 367 721
Fax +40 722 208 254
baierbpi@xnet.ro

Russia

Kapitalist LLC
Capital and construction
Equipment
Krasnoarmeyskaya str. 92a
Yekaterinburg 620026
Tel. +7 343 216 16 86
Fax +7 343 350 94 33
info@capital-st.ru
www.capital-st.ru

Sweden

Entreprenad Maskin
pecialisten
Bergkällavägen 25
S-192 79 Sollentuna
Tel. +46 8 754 91 00
Fax +46 8 626 75 10
soderberg@emssthl.com
www.emssthl.com

Slowakia

Moneda a.s.
Robotnicka 819/38
SL-039 01 Turcianske Teplice
Tel. +421 43 492 2512
Fax +421 43 492 2511
machine@moneda.sk
www.moneda.sk

Slowenien

MAG Intertrade d.o.o.
Brcniceva 13
1000 Ljubljana
Tel. +386 1 568 06 40
Fax +386 1 561 16 82
trontelj@mag-intertrade.si
www.mag-intertrade.si

South America

Moneda a.s.
Robotnicka 819/38
SL-039 01 Turcianske Teplice
Tel. +421 43 492 2512
Fax +421 43 492 2511
machine@moneda.sk
www.moneda.sk

Tschechy

STAVOPLAST KL spol.s.r.o.
CZ-38473 Stachy 266
Tel. +42 0388 428 363
Fax +42 0388 404 102
stavoplast@mbox.vol.cz
www.menzimuckcz.cz

Turkey

Serena A.S.
Yapi Kredi Plaza C Blok Kat 18
34330 Levent- Istanbul
Tel. +90 212 282 50 05
Fax +90 212 282 50 08
m.oguz@serenainvest.com
www.serenainvest.com

USA

Menzi USA Sales Inc.
1850 Fairbanks Street
Lakeland, FL 33805
Tel. +1 863 603 7979
Fax +1 863 603 7987
sales@menziusa.com
www.menziusa.com

Uruguay

Maquinas y materiales S.A.
Sr. Robert M. Perez Silva
Rancagua 3335
Montevideo
Tel. +598 2 215 0553
Fax +598 2 215 1992
mymsa@adinet.com.uy

Vereinigte arab. Emirate

Shapoor Izadfar
Sales Manager Asia-Devison
Postfach 273
CH-3000 Bern 13
Tel. +41 31 318 09 09
Mobil +41 76 318 09 09
Fax +41 31 318 09 08
si1@gmx.ch

Venezuela

Inversiones Resansil, C.A.
Mag. Manfred Baumgartner
4ta tranv. de Montecristo
Edif. Bancaracas
Piso 2, Oficina 2
Caracas 1071
Tel. +58 212 237 7726
Fax +58 212 237 9515
resansil@cantv.net

Safety instruction

1 SAFETY INSTRUCTION

1.1 OBLIGATIONS AND LIABILITY

The basic requirement for the safe handling and fault-free operation of this machine is the knowledge of the basic safety instructions and the safety regulations.

This operating manual, particularly the safety instructions, are to be observed by everyone that works with the machine. Additionally, the accident-prevention rules and regulations applicable to the particular installation location are to be observed.

The machine is built to according to state-of-the-art technology and the generally accepted safety rules regarding such technology. Nevertheless, dangers to the user's body and life, and that of third parties, as well as damage to the machine or other assets can arise during use. The machine may only be used:

- for its intended uses as prescribed by the manufacturer
- with its safety equipment in perfect operating condition

Faults that can endanger safety must be corrected immediately.

Our basic principles are our „General conditions of sale and delivery.“ Warranty or liability claims lapse for injury to persons and damage to articles if they result from one or more of the following:

- Non-intended use of the machine
- Improper assembly, commissioning, operation or maintenance of the machine
- Use of the machine when safety equipment is defective or improperly installed or if safety or protective devices are not in proper functioning condition.
- Non-compliance with the operating instructions regarding transportation, storage, assembly, installation, commissioning, use, maintenance and equipping of the machine
- Unauthorised modifications to the construction of the machine
- Unauthorised modifications to the machine (for example hydraulic pressure and volume flow)
- Insufficient monitoring of machine parts that are subject to wear and tear
- Improperly performed repairs
- Catastrophic damage caused by the influence of foreign objects or force majeure

1.2 WARNINGS AND USE INSTRUCTIONS

Be sure to understand the following warning and use notes:



Warning: Danger or unsafe action, which may result in serious injury or death.



Warning: Danger or unsafe action, which can result in only mild injury, but can cause serious property damage, financial losses or environmental harm.



Note: Information intended to provide the user with use the product in an efficient and technically correct manner, or to understand product characteristics.

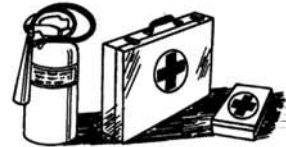
1.3 SAFE HANDLING OF FUEL

Exercise care in handling fuel: it is highly flammable. Never smoke while fuelling the machine and make sure that no open flame or sources of sparks are nearby. Shut down the motor while fuelling the machine. Only fuel outdoors. Prevent fires by making sure the machine is kept free of dirt and greasy residue. Always clean up spilled fuel.



1.4 EMERGENCY PREPAREDNESS

Be prepared for potential fires. Keep a first aid kit and fire extinguisher within reach at all times. Keep the emergency numbers for doctors, ambulance, hospital, and fire department available at the telephone at all times.



1.5 SAFE HANDLING OF STARTER FLUIDS

Starter fluids are highly flammable. When using starter fluid, keep away from sparks and flames. Keep starter fluid away from batteries and cables. To prevent accidental discharge during storage of pressurised containers, do not touch the seal cap and store the container in a cool, safe place. Do not burn or puncture starter fluid containers.



1.6 WEARING PROTECTIVE CLOTHING

Wear close-fitting clothes and the necessary safety gear for the task at hand. Safe operation of the equipment requires the complete attention of the operating personnel. While operating the machine, do not wear headphones for listening to music or the radio.



1.7 NOISE PROTECTION

A long-lasting, high noise level can result in hearing damage or deafness. When exposed to loud noises, wear proper hearing protection (for example, earmuffs or earplugs).



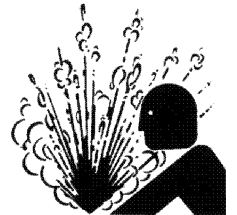
1.8 SAFETY DURING MAINTENANCE TASKS

Maintenance tasks require that those performing them are familiar with the procedures involved. Keep the work area clean and dry. Only perform tasks such as lubrication, maintenance and adjustments when the machine is at a standstill. Make sure that hands, feet and clothing do not come within reach of moving parts. Switch off all drive systems and release pressure using the controls. Lower the equipment to the ground. Shut off the engine. Remove the key. Allow the machine to cool off. Build an accident-proof support under machine parts that must be raised for maintenance. Always check all parts for good condition and proper installation. Fix damage immediately. Replace worn-out or damaged parts. Remove accumulations of lubricating grease, oil or dirt.



1.9 SAFE MAINTENANCE OF THE COOLING SYSTEM

Severe burns can be caused by explosion-like fluid leaks from the pressurised cooling system. Shut off the engine. Do not remove the radiator cap until it has cooled down enough to touch it with bare hands. First turn the cap to the first stop to release the pressure; then, only after the pressure has been released, remove it completely.



1.10 GOOD WORKPLACE VENTILATION

Exhaust gases can cause severe injury or death. If an engine must be operated in a closed room, guide the exhaust gases out of the room using an exhaust extension. If no exhaust extension is available, open the doors to allow outside air to enter.



1.11 PRECAUTIONS FOR HIGH-PRESSURE LIQUIDS

Escaping high-pressure liquids can cause severe injury. Therefore, de-pressurise the machine before disconnecting lines. Tighten all line connections before re-pressurising the machine. To search for leaks, use a piece of cardboard. Protect hands and body from high-pressure liquids. In case of injury, seek a doctor's assistance immediately. If a liquid has penetrated the skin, a doctor must be consulted.



1.12 AVOIDING HEAT BUILD-UP AROUND PRESSURISED LINES

Severe burns can be caused by flammable mist resulting from heat build-up around pressurised lines. Do not cause any heat build-up around pressurised lines conductors or other flammable materials by welding, soldering or use of a welding torch. Pressurised lines can be accidentally separated if heat develops beyond the immediate flame area.

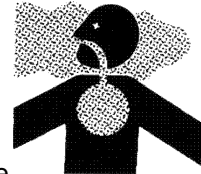


1.13 REMOVING PAINT BEFORE WELDING OR HEATING

Avoid the formation of poisonous vapours and dust. Dangerous vapours can form if paint is heated by welding or soldering, or when it is heated with a welding torch.

Remove paint before heating:

- Remove a minimum of 70mm of paint from the area to be heated
- When removing the paint by sandblasting or sanding, do not inhale the dust this generates. Wear appropriate breathing protection equipment.
- When using a solvent, the solvent must be removed with soap and water before welding. Remove containers of paint thinner and other flammable materials from the work area. Wait at least 15 minutes before welding or heating, so that the vapours dissipate.



can

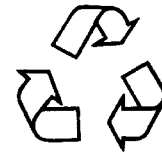
Do not use any chlorinated solvents in areas where welding is performed.

Perform all work in a well-ventilated area, from which poisonous vapours and dust are ventilated.

Dispose of paint and solvents according to regulations.

1.14 COMPLIANT DISPOSAL OF WASTE

If disposal does not take place according to regulations, the environment and ecological systems can be harmed. Drain fluids into leak-proof and sealed containers. Do not use food or beverage containers from which someone could mistakenly drink. Never pour waste on the floor, down the drain or into a body of water. Information about the correct recycling or disposal method is available from the locally responsible environmental protection office or from the dealer.



1.15 USERS AND THEIR RESPONSIBILITIES

1.15.1 User roles

The demands on the user vary according to the tasks that he/she wants to perform. Therefore, we distinguish between the following user roles:

Owner: The „owner“ is the contracting party with the manufacturer, or that party's representatives. The „owner“ is entitled to sign legally binding contracts. He/she procures the machine and has it used for its intended application.

Operator: The „operator“ is an employee trained in use of the device / machine. The „operator“ operates and looks after the machine.

Operating mechanic: The „operating mechanic“ is a professional with mechanical and / or electrical vocational training. The „operating mechanic“ installs the device / machine, connects it and commissions it. He/she also performs service, maintenance and small repairs when necessary.



For installation and commissioning, we recommend bringing in specialists from the manufacturer. To do so, contact the manufacturer or their representatives.



1.15.2 Operating modes

We distinguish between the following operation modes:

Off: In the „Off“ operating mode, the device / machine is without power and the hydraulic / engine power supply is turned off or disconnected.

Normal operation: In „normal operation,“ the device / machine is ready for use and is used for its intended application.

Special operation: „Special operation“ includes all work which deviates from normal operation, and which is necessary to prepare the device / machine for its intended application.

2 DIRECTIONS OF SAFE OPERATION

2.1 OPERATORS

MENZI MUCK excavators may only be operated or serviced by these people who:

- a) are physically and mentally capable
- b) have been instructed in the operation and servicing of the machine, and who have proved their capability and from whom one may expect that they
- c) are reliable enough to carry out the responsibilities assigned to them.
- d) They should have a permit from the owner to operate or service the machine.

2.2 OPERATING

The machine should only be operated from the operator's seat. Ensure that all hand rails and foot steps (i.e. those parts used for entering the machine) are kept in a perfect condition.

2.3 OPERATING INSTRUCTIONS

For servicing, maintenance, repair and transport work please follow the manufacturer's instruction manual. The contractor is responsible for adapting safety instructions to local laws and conditions, where necessary. Operating instructions and written directions should be displayed visibly in the operator's cab or at the site of operation.

2.4 ROAD DRIVING

Menzi Muck may only be driven on public roads when a permit has been obtained.

2.5 DANGER ZONE

No one is allowed within the machine's danger zone. The danger zone is that area around the machine where people could come to harm through operational movements (of the machine it's hydraulic arm or accessories) or through falling debris or collapsing machine parts. The operator may only operate the machine when no one is within the danger zone. The operator must warn those people of approaching the danger zone. If they do not leave the danger zone, the operator must stop work. Compliance with these instructions will ensure that those accidents that are typical for excavator operations, e.g. when transferring loads or during spotting etc. are avoided.

2.6 SAFETY DISTANCE

To avoid danger of crushing, a safety gap of minimum 0,5 m / 1,5 ft should be left between the machine and solid constructions such as buildings, working faces, scaffolding and other machines. If for some reason the safety gap cannot be maintained, then the gap should be barricaded.

2.7 STABILITY

The machine may only be operated as long as it's stability is assured. Factors which can impair the machine's stability are: overloading, unstable subsoil, sudden acceleration or working on very steep slopes. Important also is that the operator adapts his style of work to the environmental conditions, and that loads should be moved as near the ground as possible (to lower the center of gravity).

2.8 WORKING IN THE REGION OF UNDERGROUND CABLES

Before commencing excavation work, the contractor should clarify whether, within the planned working area, there are any underground cables or pipes which represent a potential danger to persons working there. If this is the case, then with the cooperation of the cable's or pipe's owner or operating body, the cable's or pipe's pathway should be exactly plotted and relevant safety precautions should be taken.

2.9 WORKING IN THE REGION OF OVERHEAD WIRES

When working with the MENZI MUCK in the region of overhead wires, it is imperative to maintain a safety distance between the wires and the MENZI MUCK and its accessories, the safety distance to be directly proportional to the rated voltage in order to avoid grounding. This safety distance is valid also for attachments and loads.

The following safety distances are to be observed:

Rated voltage	Safety distance
	up to 1000 V 1.0 m / 3,28 ft
from 1 kV	to 110 kV 3.0 m / 9,84 ft
from 110 kV	to 220 kV 4.0 m / 13,12 ft
from 220 kV	to 380 kV 5.0 m / 16,4 ft
when unknown	5.0 m / 16,4 ft

In case of sparking, the operator should remove the machine from the danger area, by raising or lowering the hydraulic boom, or by driving or swivelling the boom away. If none of these are possible, the operator should:

1. not leave the cab
2. warn those nearby not to approach nor to touch the machine
3. demand that the electricity be turned off.

2.10 WORKING UNDERGROUND OR IN ENCLOSED AREAS

Menzi Muck with diesel engine may only be used in enclosed areas galleries or tunnels when these are well ventilated.

2.11 WORKING INTERRUPTIONS

Before breaks and at the end of the day, the operator must ensure that the excavator boom is either resting on the ground or is secure enough that it cannot move. Under no circumstances is the operator to leave the machine until the excavator boom has been lowered or secured.

2.12 LIFTING OPERATIONS

Under the term “lifting operations” is understood the lifting, transporting and lowering of secured loads, whereby assistance is required for fastening and loosening the load. Included is also the extraction and lowering of pipes, shaft collars etc. It must be ensured that no one stands underneath the load or operating attachment. The operator is not to swing the load over nearby persons. Loads must be fastened that they cannot slip or fall off. Assistants must always stay within the operator’s vision. The operator should move loads as near the ground as possible and avoid swinging the load. When using the excavator for lifting and pipe-laying operations, the pipe laying operator should approach the boom only from the side and only with the operator’s permission to be given only when the machine and boom are no longer in motion.

2.13 SERVICING, MAINTENANCE

Before all servicing and maintenance operations, and when refuelling, engine is to be switched off. When working on the electrical system or when conducting welding operations, the battery should be disconnected in order not to damage the alternator and to avoid accidental start of operation. On MENZI MUCK with electric motor, all electrical devices and all connections should be switched off and protected against accidental and non-authorized operation. Exceptions to these rules are those servicing and maintenance operations which require a running motor.

2.14 PROTECTIVE GUARDS

Protective guards on moving parts may only be opened or removed when the motor is switched off and protected against accidental and non-authorized operation. After completing assembly, servicing or maintenance work, replace all protective guards.

2.15 ARTICULATED STEERING LOCK



On machines with articulated steering, the steering mechanism must be positively locked for repair and maintenance work with the safety bar (A).

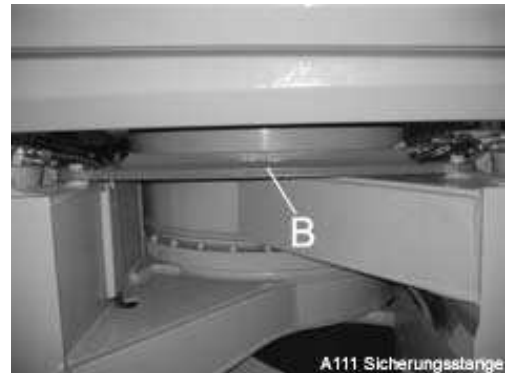
The steering mechanism must also be positively locked with the safety bar (A) to prevent movement when the machine is loaded or transported using hoists.

The red safety bar (A) is located at the back of the vehicle, immediately above the fuel chassis tank.

To mount the safety bar, the MENZI MUCK must be positioned in line (not bent).

First detach the swing pins and the safety bar, then fasten to the chassis (B) on the right side of the vehicle.

The safety bar must be secured using the swing pins (C).



2.16 VALVES, HYDRAULIC HOSES

The rated pressures on the MENZI MUCK safety and control valves may not be adjusted without the manufacturer's permission. As soon as damage or leakage of the hydraulic hoses has been diagnosed, they are to be replaced. Only hydraulic hoses recommended by the manufacturer are to be used.

2.17 STARTING OPERATION

Before operating the machine, check the oil levels, diesel engine and cooling water, hydraulic oil, swing transmission. For the mobile version check wheel hub transmission. Check also cooling water of diesel engine.



Before starting the Menzi Muck ensure persons are clear.

1. Insert ignition key and turn to Position 1. Now display unit must be initialised.
2. Turn ignition key to Position 3 and start engine. Release ignition key as soon as engine starts up. Attempt starting continuously for a maximum of 10 seconds. Wait for approximately 1-2 minutes between each starting attempt to enable the battery to recover.
3. The warning indicators may not appear when the engine is running. Refer to the operating manual of the engine manufacturer in case of faults and when starting in winter. The engine is equipped with a flame glow plug. During cold starting, preheat with the ignition key in Position 2 for approx. 15 seconds. Operation can be monitored with the indicator on the display. Then start as described in point 2.
4. The engine is equipped with a flame glow plug. At low temperatures, this is activated automatically by the engine's ECU. Its function can be checked on the indicator on the display.

2.18 SHUT-OFF OPERATION

When not in use operator must lower boom and chassis. Furthermore, in winter, the hydraulic hoses on the chassis and the piston rods must be cleaned so that dirt does not freeze on to them.

- Set back speed adjusting lever so that the engine is made to idle. Do not switch off engine from full load but let it idle for three minutes to equalize the temperature. Shutting down from full load can lead to turbo damage.
- Turn ignition key to position 0, engine shuts off. The engine can also be shut off with the **Emergency** switch but must be unlocked before starting by turning, otherwise the engine can not be started.



Caution: During work breaks or when work ends, remove ignition key and make it inaccessible to unauthorized persons.

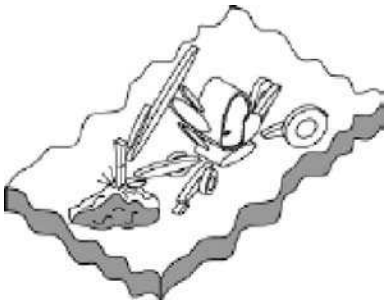
2.19 EXCAVATOR OPERATION

- As soon as the diesel engine has reached its operating temperature and is running at a speed between 50 and 75% of the max. speed, start the operating or driving movements so that not only the hydraulic tank but the whole hydraulic system is uniformly heated. In this way the machine will quickly reach its full working performance. For excavating operation the diesel engine should run at least 65% of the max. speed. According to the operating activity, the speed must be changed via the speed adjusting lever.
- Slowing down the upper structure by reversing, i.e. switching on the opposite direction of rotation, is not permissible.
- Never knock off slopes with the boom or dipper or fill in ditches from the side.
- Grade in boom direction only.
- In winter, the machine must be shut down on dry subsoil to prevent it freezing up.
- The excavator is designed for operating in terrain up to 100% in the line of dip and 70% diagonally to the line of dip without terrain preparation.
- Only persons which are trained adequately and are authorized may operate the machine.
- The contractor is responsible for adapting safety instructions to local laws and conditions, where necessary.
- Before starting excavator operation the operator checks effectiveness of operating and safety elements. During operation he monitors the correct function of the machine.
- Observed defects must be reported to the foreman or to the succeeding operator.
- In the event of trouble which endanger safety of machine operation must be stopped immediately.

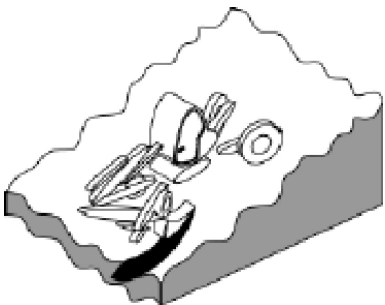
2.20 TIPS FOR THE OPERATOR



Do not cover the sides of the machine or leave it on an incline.



Do not use the shovel to perform a hammer function.



Do not dig under the excavator on a slope. Place the shovel in front of the excavator when advancing.



Advancing the shovel: do not raise the brackets too high from the ground. The boom must remain between the brackets when performing steering functions with the chassis.

Caution: Reverse slowly and carefully and do not make any abrupt movements.



The shovel must be used as a support on the drop side when advancing across a slope.

Technical Data

3 TECHNICAL DATA

3.1 WEIGHT

Tare weight A111 without bucket 11'500 kg

3.2 ENGINE

Model John Deere 4-cylinder diesel engine
Type..... 4045HF285
Emissions..... 97/68 stage 3a / CARB TIER 3
Piston capacity..... 4500 cm³ / 275 cuinch
Power setting according to ISO/TR 3046 99 kW (133 PS) bei 2000 rpm
Battery 2 x 12V / 815CCA
Operating voltage 24 volts
Alternator..... 45 A / 100 A
Starter..... 7.2 kW
Upper structure diesel tank approx. 130 l
Chassis diesel tank approx. 200 l
Engine oil approx. 15 l

3.3 HYDRAULICS

Pumps	3 x swash plate axial pistons (1x option)
Working pump	220 l/min
Working pressure.....	280 bars
Drive pump.....	160 l/min
Operating pressure	400 bars
Working hydraulics system.....	LUDV Load - Sensing
Hydraulic oil cooler	Series with thermostat
Hydraulic tank (system filling).....	approx. 180 l
Hydraulic oil filter	return filter, 10 Micron
Rotation	360° endless
Swing torque	46000 Nm gross
Swing speed	up to 10 rpm
Stop brake swivelling	Spring brake in the hydraulic engine
Auxiliary connection lines	5 (3 x double-action, 1 x return)
Control circuit 1 (proportional)	max. 160 l/min
Control circuit 2 (digital).....	max. 80 l/min
Control circuit 3 (digital, Option).....	max. 40 l/min
Control circuit 4 (Option hydr. quick changer)	max. 60 bars
Powerline (Option)	max. 170 l/min / 350 bar
Winch connection chassis (Option)	max. 100 l/min

3.4 DRIVE

Drive speed A111 4x4 *	up to 10 km/h
Climbing ability*	up to 55 % on reinforced roads
Operating brake	hydrostatic
Stop brake.....	spring brake in the drive gear

* abhängig von der Raddimension

3.5 SET OF TYRES

Wheel dimension	Diameter / Width in mm	Air pressure in bar
600/55-26.5/16Ply	1350 / 600	4.5
600/50-22.5/16Ply	1100 / 600	4.5

3.6 NOISE EMISSIONS

Plausibility declaration in accordance with EU Standard 2000/14/EG, Appendix VI

Sound power level (LWA) 101 dB
 Sound pressure level (LPA) 77 dB

➔ No changes which may lead to an increase in sound emissions may be made to the vehicle.

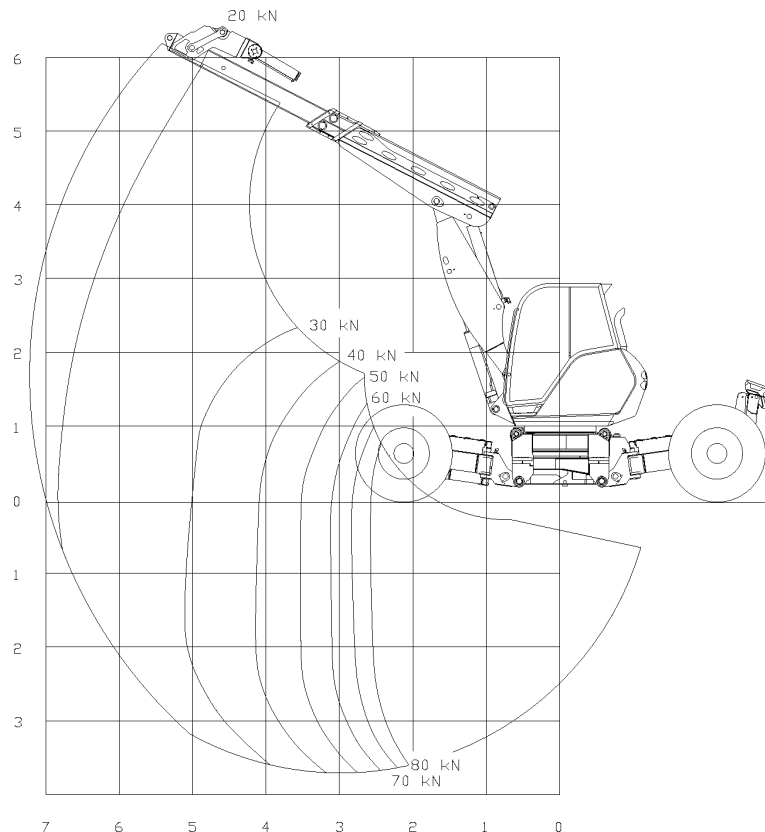
3.7 FORCES (ISO 6015)

	Boom 1.8 m	Boom 2 m
Ripping Force.....	69784 N / 15688 lbf	76762 N / 17256 lbf
Breakout Force.....	73600 N / 16556 lbf	73600 N / 16556 lbf
Lifting Force	see table	see table

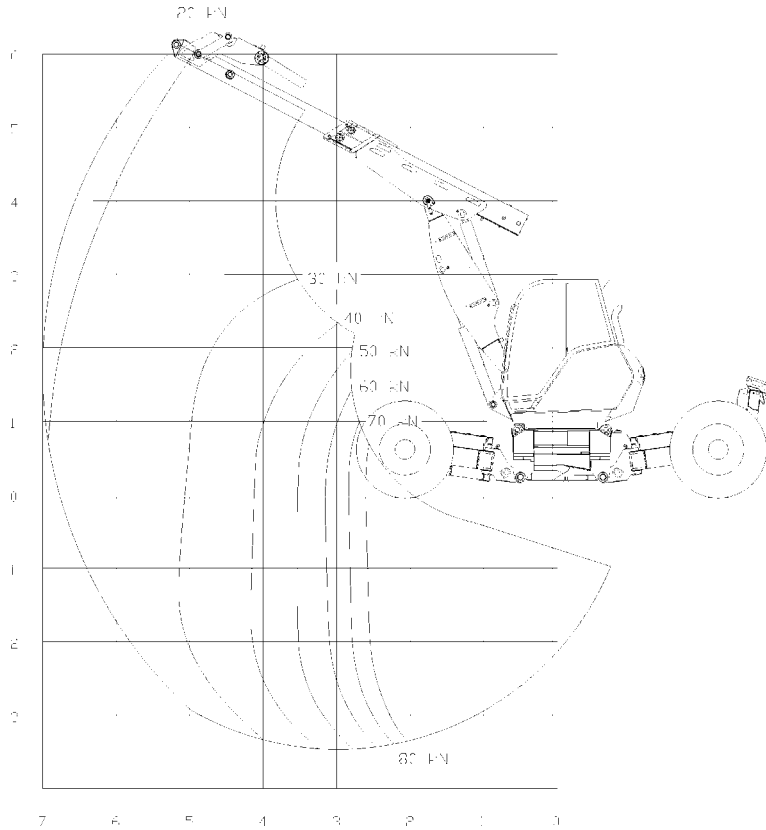
3.8 LIFTING FORCE DIAGRAM

- The stresses in the diagram are maximum values which exceed 75% of the tip load. These values may not be exceeded when using lifting gear (crane operation).
- Stoppers, auxiliary lifting devices and shovels must be subtracted from the rated load in order to determine the net lifting power .
- Deviations of +/- 10% are possible.

Lifting force diagram Menzi Muck A111 T1.8



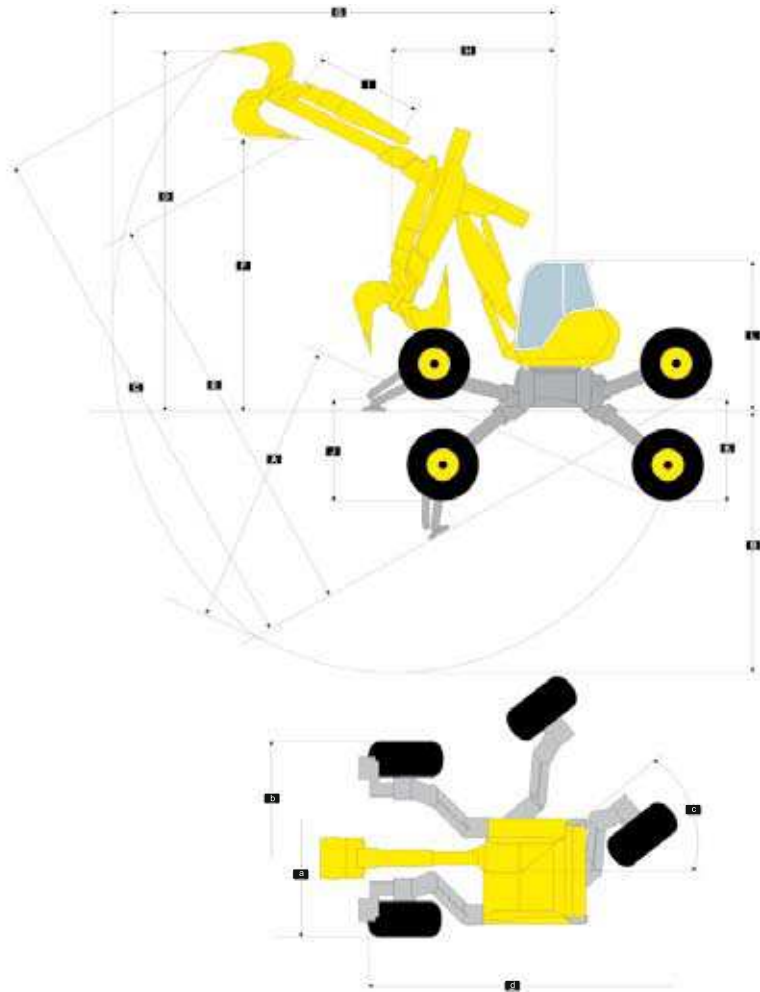
Lifting force diagram Menzi Muck A111 T2



3.9 BUCKETS

Width in mm	Type	Capacity (ISO/DIN 7451)		Weight	
		litres	galones	kg	lb
400	Standard bucket	162	42.9	211	465.2
600	Standard bucket	278	73.6	271	597.5
800	Standard bucket	400	105.9	330	727.5
1000	Standard bucket	525	139.0	390	859.8
1250	Grading bucket rigid	450	118.9	340	749.6
1500	Grading bucket rigid	578	152.7	430	947.9
1350	Grading bucket with swivelling cylindre	673	177.8	647	1426.4
	Powertilt PTA9			345	760.6
	The swivel head Powertilt may be used with all the above mentioned buckets.				

3.10 DIMENSIONS A111



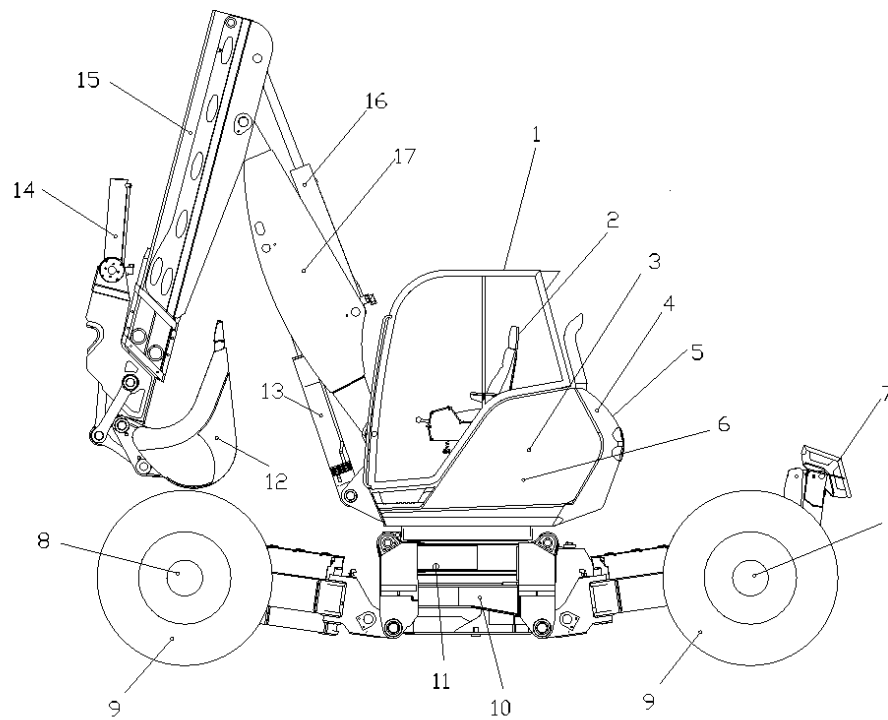
MENZI MUCK A111			T2	T1.8
A	Max. Excavation depth (with adjusted chassis)	mm/inch	5690 / 18'8"	5930 / 19'5"
B	Max. Excavation depth (chassis horizontally)	mm/inch	5250 / 17'3"	5490 / 18'
C	Max. Excavation height (with adjusted chassis)	mm/inch	10120 / 33'2"	10280 / 33'9"
D	Max. Excavation height (chassis horizontally)	mm/inch	7050 / 23'2"	7080 / 23'3"
E	Max. Discharge height (with adjusted chassis)	mm/inch	7570 / 24'10"	7710 / 25'4"
F	Max. Discharge height (chassis horizontally)	mm/inch	5010 / 16'5"	5040 / 16'6"
G	Max. Jib Range	mm/inch	8570 / 28'1"	8790 / 28'10"
H	Smallest svivelling radius	mm/inch	2990 / 9'10"	2980 / 9'9"
I	Dipper length	mm/inch	1960 / 6'5"	1800 / 5'11"
J	Positioning range stabilizers	mm/inch	1860 / 6'1"	1860 / 6'1"
K	Positioning range hub drive	mm/inch	1860 / 6'1"	1860 / 6'1"
L	Transport height	mm/inch	2760 / 9'1"	2760 / 9'1"
a	Minimum width (transport width)	mm/inch	2450 / 8'	2450 / 8'
b	Max. positioning width	mm/inch	4800 / 15'9"	4800 / 15'9"
c	Steering angle	degrees	40	40
d	Chassis length	mm/inch	5610 / 18'5"	5610 / 18'5"
<i>Measurements depend on type of tyre and accessories.</i>				

Operation

4 BASIC FUNCTIONS

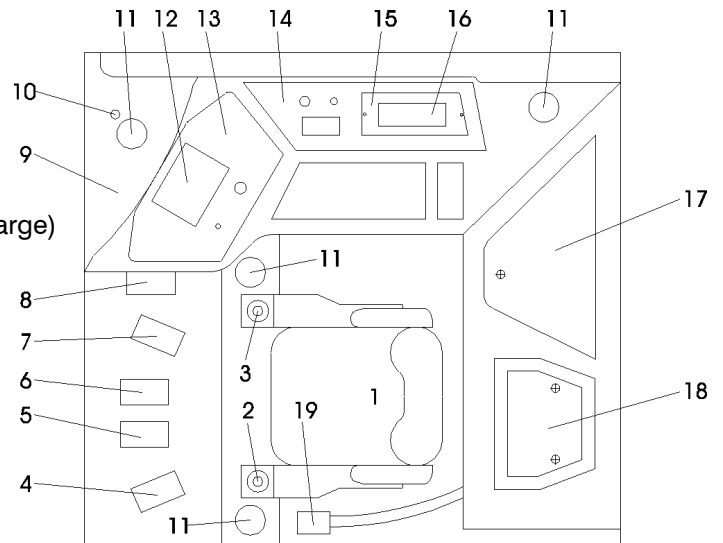
4.1 MACHINE OVERVIEW

- 1 Cab
- 2 Operators seat
- 3 Casing - left
- 4 Midsection
- 5 Casing - rear
- 6 Casing - right
- 7 Mountain pad
- 8 Drive
- 9 Drive wheel
- 10 Chassisbox lower part
- 11 Chassisbox upper part
- 12 Bucket
- 13 Boom cylinder
- 14 Bucket cylinder
- 15 Dipper rod
- 16 Jib cylinder
- 17 Boom



4.2 OVERVIEW - OPERATOR'S CAB

- 1 Operator's seat
- 2 Multi-function joystick - left
- 3 Multi-function joystick - right
- 4 Foot pedal for telescope
- 5 Foot pedal for winch
- 6 Foot pedal for driving
- 7 Foot pedal for auxiliary connection line (large)
- 8 Ashtray
- 9 Console (right)
- 10 Warning buzzer
- 11 Heating nozzles
- 12 Display
- 13 Instrument panel
- 14 Instrument panel (right)
- 15 Fuse box cover
- 16 Fuse box
- 17 Document compartment
- 18 Storage compartment
- 19 Cab security lock

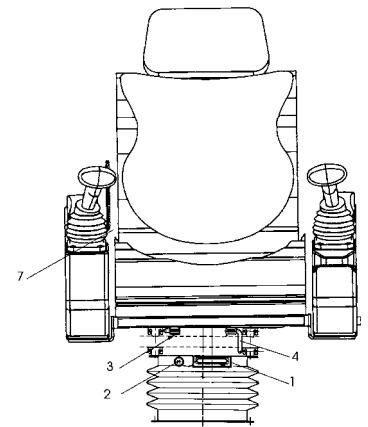


4.3 OPERATOR'S SEAT

The comfortable operator's seat makes possible a fatigue-free operation of the machine. Several adjustment possibilities ensures an optimal adaptation to the operator. For superior ergonomics the control levers are integrated into the seat. The left control lever can be folded back in order to make boarding and disembarking from cabin easier.

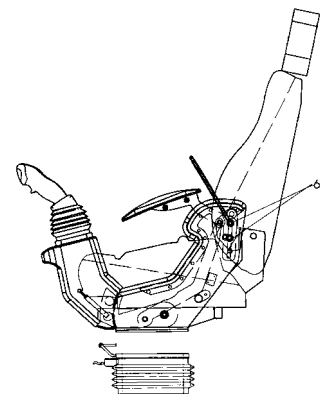


By folding back the left control lever the hydraulic system of the hydraulic control circuit is switched off automatically. As a result, unintentional movements of the machine are prevented.



4.3.1 Operator's seat Klepp

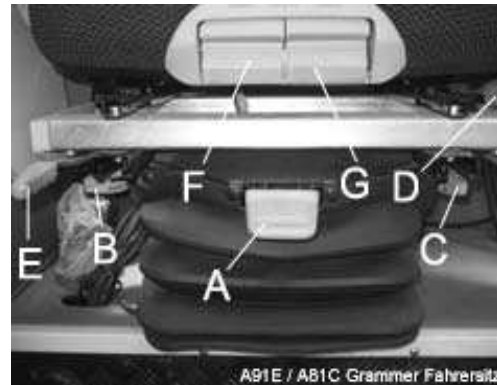
- 1 Adjusting weight to driver. Adjustment range 50 - 120 kg
- 2 Handwheel for height adjustment.
- 3 Longitudinal adjustment of upper seat section
- 4 Longitudinal adjustment of lower seat section
- 6 Tilt and height adjustment of armrest
- 7 Tilt adjustment of backrest



4.3.2 Operator's seat Grammer (optional)

A Grammer driver seat can also be fitted on request.

- A Adjusting weight to driver
- B Height adjustment
- C Longitudinal resilience
- D Adjusting armrest to seat
- E Adjustment seat complete with armrest
- F Longitudinal adjustment of seat cushion
- G Tilt adjustment of seat cushion
- H Tilt adjustment of backrest



- I Heated seat



- J Lower and upper adjustment of backrest



4.3.3 Safety belt

The seat is equipped with a safety belt.



Before starting the engine, always fasten the safety belt.



4.4 FOOT PEDAL ADJUSTMENT

For increased comfort, the foot pedals can be set individually for each driver. Tilt can be set separately for each foot pedal using the rocker (A). Loosen the screws (B) to adjust the height and inclination of the entire attachment within its adjustment range to meet the requirements of the driver.



➔ Once the setting has been adjusted, the screws (B) must be tightened in order to prevent the attachment being adjusted inadvertently.

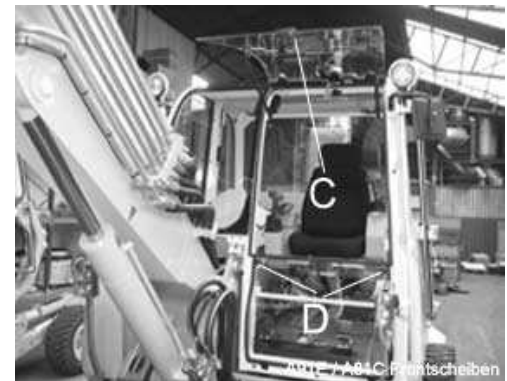


4.5 WINDSCREEN AND DOOR

4.5.1 Opening front window

For more effective cleaning of the driver's cab, the lower left-hand windscreen can be removed without tools. To do this, loosen and remove the fastening screws (C). The windscreen can then be lifted up and out of its frame.

➔ Once the windscreen has been refitted, the screws must be tightened in order to avoid the glass coming loose inadvertently.



The windscreen can be detached by turning up the fastening lever (D) and then folded upwards.

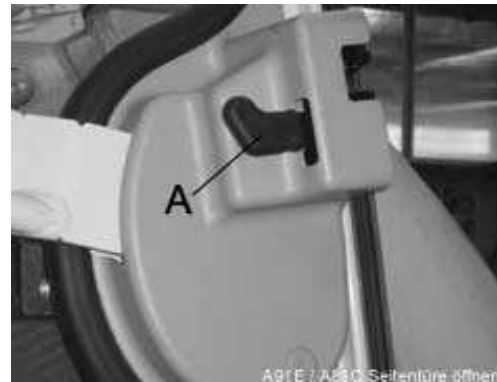
4.5.2 Opening the side window

The side window can be opened by actuating the fastening lever (E) and then fastened.

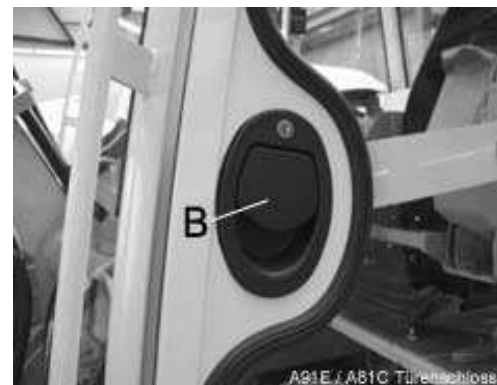


4.5.3 Opening the door

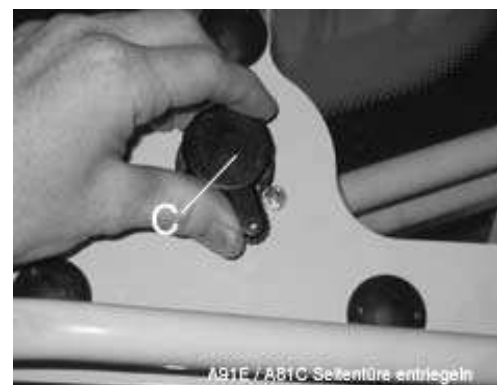
The door can be opened from the inside and from the outside using actuating levers (A) and (B) respectively.



The door must be fully opened for fastening.



The door can be locked using the ignition key.
The door is locked by turning the knob (C).

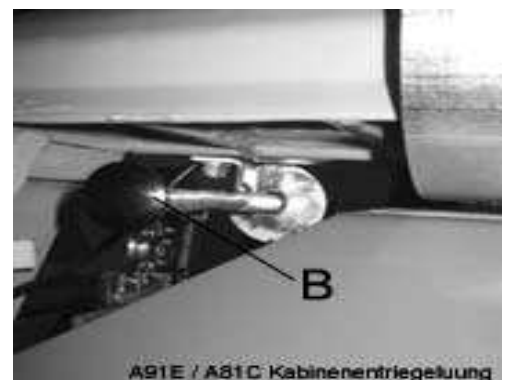


4.6 TILTING CAB

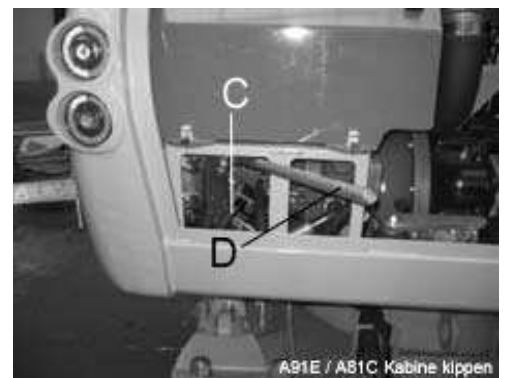
The boom must be extended and lowered to the ground
The cab must be released before it can be tilted. Pull forward the cab release lever (A) located below the driver seat. This releases the locking pins.



Open the rear cover (see Opening rear cover 1.7.1). Open the lock with the latch (B). Keep the latch pressed until the cab is raised out of its location.



Tilt the cab using the hydraulic pump. Ensure that the valve actuation valve (C) is switched to the right so that the hydraulic oil is routed into the tilting cylinder. Keep hand lever (D) pressed until the cab is fully tilted (fully extend cylinder).



When the cab is in the tilted position, the cab fastening mechanism (E) must be positioned.



Never carry out service or inspection work without the cab being secured.

Lower and lock the cab after completing work.



4.7 OPENING AND CLOSING THE COVERS

4.7.1 Opening and closing the rear cover

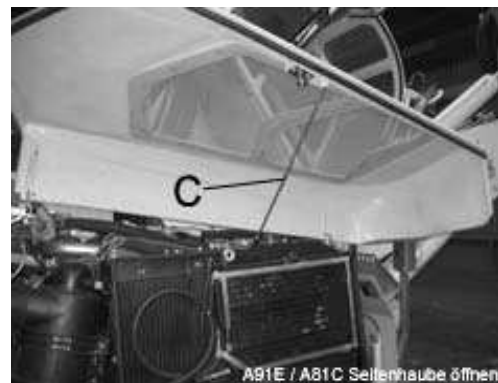
The rear cover can be opened with lock (A) and is held in position by gas pressure springs.

To close the rear cover: fold the rear cover downwards and push until it engages in the lock. The rear cover can be locked using the ignition key.



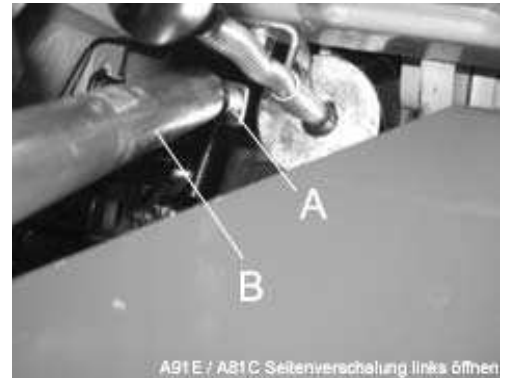
4.7.2 Opening and closing the right rear cover

- 1 The lockable rear cover must be opened before the side cover can be opened.
- 2 Located on the right side is an actuating knob (B), which releases the side cover when pulled.
- 3 Lift the side cover and secure with support (C).
- 4 To close the side cover: remove the support, leave the cover in contact with the centre section and push until it engages in the lock.



4.7.3 Opening and closing the left rear cover

- 1 The lockable rear cover must be opened before the side cover can be opened.
- 2 Located on the left side above the hydraulic oil tank is a lock (A), which can be used to open the side cover. The lock can be released by pushing hand lever (B) (tilt cab).
- 3 Release side cover fastening mechanism (V) and lift away the cover.
- 4 Close the side cover: insert the side cover into the guide slots, leave the cover in contact with the centre section and push until it engages in the lock.



4.8 REFUELLING SYSTEM

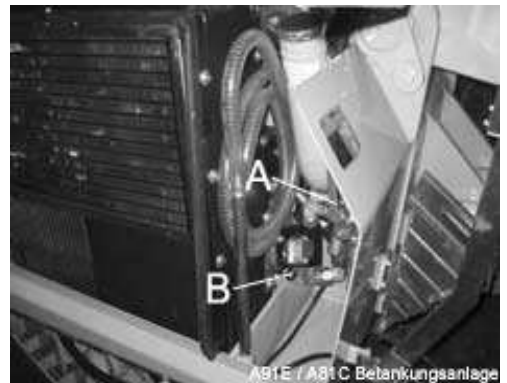
4.8.1 General information

The standard refuelling system used to fill the diesel tank in the upper vehicle section and the reserve tank located in the chassis. The system can be reached and operated easily by the operator by opening the rear engine cover.

4.8.2 Filling upper diesel tank

In the basic position the suction hose is stored rolled-up on the diesel tank and sealed off against the penetration of dirt at one end with an end piece.

1. Pull suction hose off end piece, unroll and guide into empty container
2. Set switchover cock (A) to vertical position
3. Switch on electric filling pump with switch (B) on left
4. Monitor fill level of diesel tank with attached oil level eye (C)



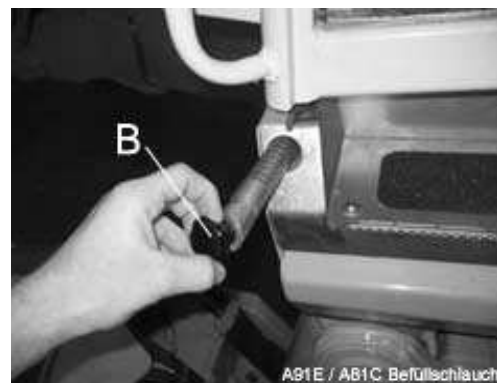
4.8.3 Filling chassis tank

- 1 Pull out filling hose (B) from the running board
- 2 Remove plugs and attach filling hose to the chassis tank
- 3 Set switchover cock (A) to horizontal position 2
Refuel as described above
- 4 Monitor visually



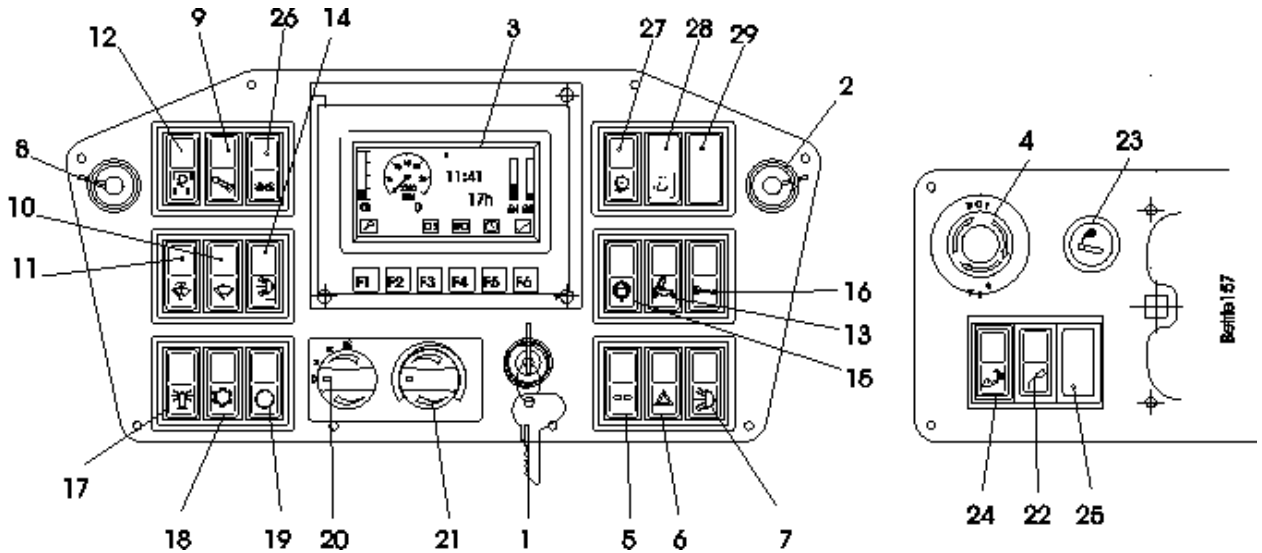
4.8.4 Transferring fuel to chassis tank

1. Position upper vehicle section so that chassis tank (C) can be reached with suction hose
2. Insert suction hose in chassis tank
3. Set switchover cock (A) to vertical position 1
4. Refuel as described above



5 DISPLAY AND COMAND ELEMENTS

5.1 CONTROL PANEL



- | | | | |
|----|---|----|---------------------------------------|
| 1 | Ignition lock | 15 | reserve |
| 2 | Potentiometer for engine speed adjustment | 16 | Traction winch |
| 3 | Display unit | 17 | Turning light |
| 4 | Emergency shut-down switch | 18 | Switch air conditioning |
| 5 | Indicator left - right | 19 | Switch air circulation |
| 6 | Warning beacon | 20 | Level switch ventilation |
| 7 | Street lighting | 21 | Regulation heating valva |
| 8 | Potentiometer for drive | 22 | Central lubrication, manual actuation |
| 9 | Steering | 23 | Cigarette lighter 24 Volt |
| 10 | Windscreen wipers | 24 | Hydr. quick changer |
| 11 | Windscreen washer | 25 | Differential lock |
| 12 | Finemode | 26 | Working spotlamp, side lamp ring |
| 13 | Drive level | 27 | Main switch Powerline |
| 14 | Working lights | 28 | reserve |
| | | 29 | reserve |

5.2 DISPLAY INDICATOR

5.2.1 Design

The display is separated into two areas. There is the user area and the secure service area. The latter is only accessible to service technicians of MENZI MUCK AG. The following menus are accessible to the user and inform the driver of the operating status of the machine:

- Main menu
- Menu for setting the clock
- Menu for setting brightness and contrast
- Menu for setting Powerline
- Detail menu
- Service menu

Additional menus are available to MENZI MUCK assembly personnel after entering the password. This area will not be discussed further in this manual.

5.2.2 Keyword index

DIGSY	Display + control
DIGSY Compact DCE	Control (built into the midsection, to the rear, lower right)
CGM	Display (built into the console)
ECU	Engine electronics of the John Deere engine
RC4-4/20	electronic maximum load control (GLR)
ICN-V	control integrated into chassis
CR2011	auxiliary module

5.2.3 Safety and operation instructions

When the machine is turned off using the ignition key, the display remains on for approx. 10 seconds, then shuts down by itself.



If the contrast and brightness are adjusted so extremely that the display is no longer visible, restore the default settings by turning the engine off, then on again (after turning the ignition key back from „off,“ wait approx. 15 seconds).



If the battery is disconnected or the main switch switched off (for example, during welding), the clock and date stand still. Afterwards, the date and time must be corrected.



When operating the display unit, never turn the main battery switch to „off,“ as that may result in software errors.



Under no circumstances may the machine be jump started using the quick charger.

5.2.4 Commissioning

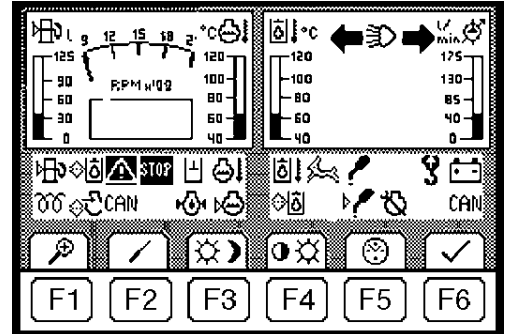
The DIGSY control unit and display starts up in the „ignition on“ position. After a short time, the start-up screen appears. Afterwards, the control automatically loads the main menu.



2.2.5 Main menu design

In this screen, all important data are presented in overview form:

- 1 Tank display
- 2 Speed display (rpm)
- 3 Clock
- 4 Operating hours
- 5 Operating displays (see 5.2.8)
- 6 Cooling water temperature
- 7 Hydraulic oil temperature
- 8 Status displays
- 9 Powerline setting
- 10 Buttons and Corresponding menu fields

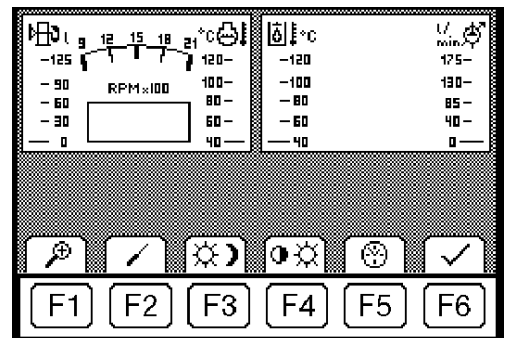


5.2.6 User controls

A set of keys is located beneath the display (F1 - F6). Above these keys, symbols indicate which menu or command is activated by pressing the key.

Example main menu:

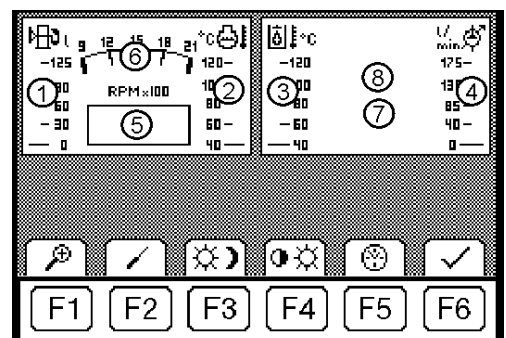
- F1 Detail menu
- F2 Powerline setting
- F3 Day/night switch. The screen colours are inverted and the keys are lit up.
- F4 Brightness / contrast setting
- F5 Date / time setting
- F6 Confirmations of the message windows and other messages



5.2.7 Main displays

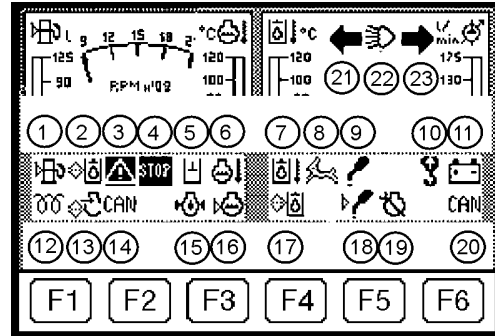
Using bar graphs and a graphical speed display, the driver is continuously informed of the most important operating status details, all at once.

- 1 Tank display
- 2 Cooling water temperature
- 3 Hydraulic oil temperature
- 4 Powerline setting
- 5 Numerical display of rpm
- 6 Graphical display of rpm
- 7 Operating hours
- 8 Clock



5.2.8 Operating and status displays

- 1 Fuel reserve indicator (30 litre)
- 2 Supply pressure filter clogged
- 3 Engine warning lamp
- 4 Engine stop lamp
- 5 Maximum load control (GLR) fault lamp
- 6 Water temperature
- 7 Hydraulic oil temperature
- 8 Drive level
- 9 Central lubrication unit operating display
- 10 Overload warning lamp
- 11 Battery tension
- 12 Automatic pre-heating Diesel engine
- 13 Diesel engine air intake filter
- 14 CAN bus faulty (connection between ECU-engine and GLR/RC4-4/20)
- 15 Engine oil pressure
- 16 Cooling water level
- 17 Hydraulic return filter dirty
- 18 Central lubrication level
- 19 Service needed
- 20 CAN bus faulty (connection between joystick and chassis command)
- 21 Left warning lamp
- 22 Working headlamps indicator lamp
- 23 Right warning lamp

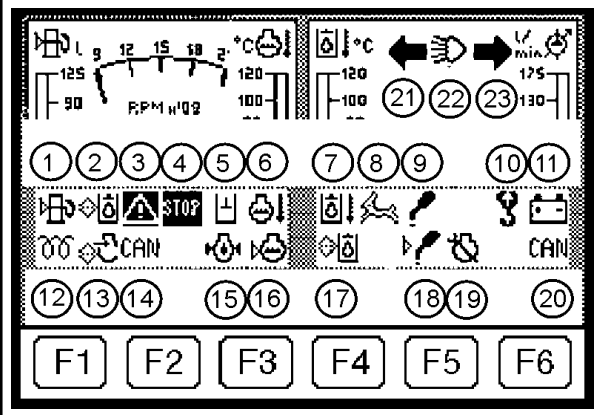













The operation and status display symbols only appear when they are active.



Note for machines with central lubrication: after filling the grease container, this must be confirmed using the central lubrication control. To do so, please read the operating manual for the central lubrication control.

5.2.9 Fault table of the status displays and message windows

		Limit	Symbol blinks	Timed buzzer	Permanent buzzer	Can be acknowledged	Repeats after ...
	1 Diesel tank is at reserve Warning on Warning off	< 30 l > 40 l	x	x		x	NS*
	2 Supply pressure filter Supply pressure filter dirty		x		x	x	60s
	3 Warning lamp engine		x		x	x	60s
	4 Engine stop Attention: Stop engine immediatly!		x		x	x	60s
	5 Fault lamp GLR		x		x	x	60s
	6 Water temperature Warning on Warning off	> 103°C < 100°C	x		x	x	60s
	7 Hydraulic oil temperature Warning on Warning off	> 85°C < 80°C	x		x	x	30s
	8 Drive level 2. Level activ		x				
	9 Central lubrication Central lubrication activ		x				
	10 Over load warning System activ and overloading condition		x	x			
	11 Battery voltage Alarm: Voltage is out of toleranced range	<23V o . >31V	x		x		60s

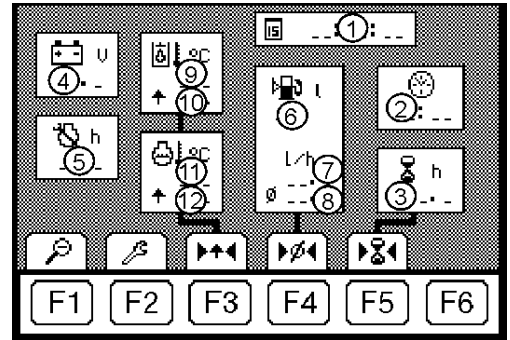
		Limit	Symbol blinks	Timed buzzer	Permanent buzzer	Can be acknowledged	Repeats after ...
	12 Pre-heating Diesel engine		x				
	13 Diesel engine air intake filter Alarm: Filtre dirty		x		x	x	60s
	14 CAN Bus faulty No connection between ECU-Engine / GLR/RC4-4/20		x				
	15 Engine oil pressure Alarm: Pressure too low		x		x	x	60s
	16 Coolant level too low Alarm: Level too low		x		x	x	60s
	17 Hydraulic return filter Alarm: Filtre dirty		x		x	x	60s
	18 Central lubrication level Alarm: Level too low		x				
	19 Maintenance due Deletion only with maintenance code !		x				
	20 CAN Bus faulty No connection between joystick / chassis command ICN-V		x		x	x	60s
	23 Left-turn signal Signal on		x				
	22 Working headlights Headlights on		x				
	23 Right-turn signal Signal on		x				

* Restart

5.2.10 Detail menu

The detail menu can be reached from the main menu by pressing the F1 key. Find in this menu detailed information about value of the machine. There are also saved information about condition of the machine.

- 1 Date
- 2 Time
- 3 Hours meter per day (reset by F5)
- 4 Current battery load
- 5 Maintenance is overdue in X hours
- 6 Tank capacity in litre
- 7 Current consumption per hour
- 8 Consumption on the average per hour (reset by F4)
- 9 Current hydraulic oil temperature
- 10 Maximum measured hydraulic oil temperature (reset by F3)
- 11 Current temperature of cooling water
- 12 Maximum measured temperature of cooling water (reset by F3)



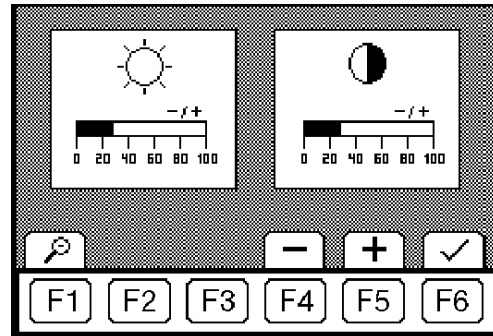
Return to the main menu by F1

- ➔ Tank capacity is correct when the chassis is horizontal. If it isn't, there may be a difference to the display.
- ➔ By F4 the maximum of cooling water and hydraulic oil temperature can be reseted together. So you will loose both values.

5.2.11 Brightness / contrast

This menu is reached by pressing the F4 key in the main menu.

1. Adjusting the display brightness: F4 reduces and F5 increases the brightness level. The contrast setting screen is reached by F6 in the main menu.
2. Adjusting the display contrast: F4 reduces and F5 increases the contrast level. The brightness setting can be reached F6.



The main menu can be reached again by pressing the F1 key.

➔ If the contrast and brightness are adjusted so extremely that the display is no longer visible, restore the default settings by turning the engine off, then on again (after turning the ignition key back from „off,“ wait approx. 15 seconds).

➔ Holding down the F4 or F5 key adjusts the contrast or brightness more quickly than pressing the key repeatedly.

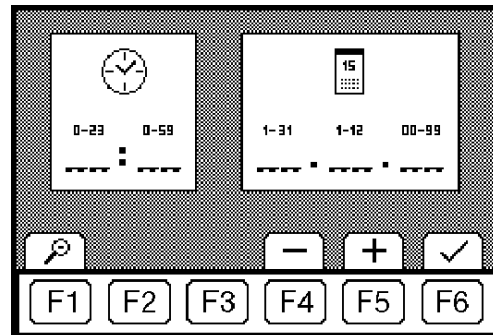
5.2.12 Date and time

This menu is reached by pressing the F5 key in the main menu or detail menu.

1. Setting the clock
 - F4 sets the hour back
 - F5 sets advances the hour
 - F6 minute setting
 - F4 sets the minute display back
 - F5 advances the minutes

The date setting is reached by pressing the F6 key.

2. Setting the date
 - F4 sets the day back.
 - F5 advances the day.
 - F6 month setting
 - F4 sets the month back.
 - F5 advances the month.
 - F6 year setting
 - F4 sets the year back.
 - F5 advances the year.



The clock setting can be reached again by pressing the F6 key in the main menu. The main menu or detail menu can be reached again by pressing the F1 key.

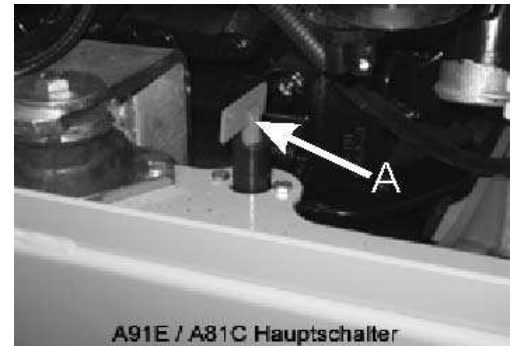
➔ If the battery is removed or the main switch switched off, the clock and date stand still.

➔ Afterwards, the date and time must be corrected. Holding down the F4 or F5 key adjusts the date or time more quickly than pressing the key repeatedly.

6 CONTROLS

6.1 MAIN SWITCH

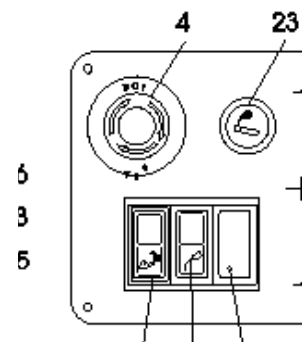
The main switch (A) is located at the rear to the right of the engine support. If the machine is not to be used for a prolonged period, switch it off so that the batteries are disconnected from all consumers. The diagram shows the main switch in the OFF position. To switch it on, it has to be turned 90° clockwise. If the machine is not to be used for a prolonged period, switch it off so that the batteries are disconnected from all consumers.



6.2 EMERGENCY SHUT DOWN SWITCH

The Emergency shut down switch (4) shuts the machine down immediately in an emergency situation. The Emergency shut down switch must be reset before the machine can be restarted. Do this by turning it clockwise.

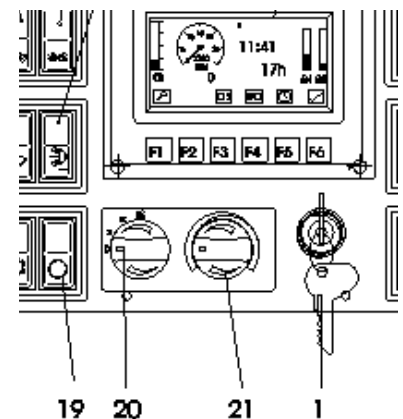
➔ Before resetting the Emergency shut down switch, ensure that restarting the machine will not pose any risk.



6.3 IGNITION LOCK

The diagram shows the ignition lock (1) in the idle marked position. Turning the ignition key clockwise to the first setting switches on the ignition. The next setting is the glow plug preheat position, which is not required on this machine since preheating is automatic on demand. To start the machine, the ignition key must be turned again until it stops. Keep the ignition key turned until the diesel engine starts. Release the key immediately and leave in this position. When you want to switch the engine off, return the ignition key to its original position.

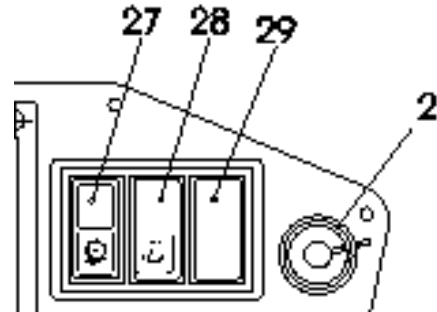
➔ The engine cannot be started if the ignition key was originally turned to the glow plug preheat position and then allowed to return to the ignition position. Switch off the ignition and turn the key again to the engine start position.



6.4 SPEED ADJUSTMENT

The DYGSY, together with the engine's ECU, is responsible for adjusting the engine speed, and thus the control of the injection device, ensuring economical and efficient operation. For heavy loads, the ECU equalises the pressure of the diesel engine, making possible a higher capacity.

While the engine is running, the engine speed can be set variably between upper and lower idle speeds by turning the potentiometer (2) on the instrument panel clockwise or counter-clockwise. The speed can be read on the display. The maximum permissible speeds are limited electronically.

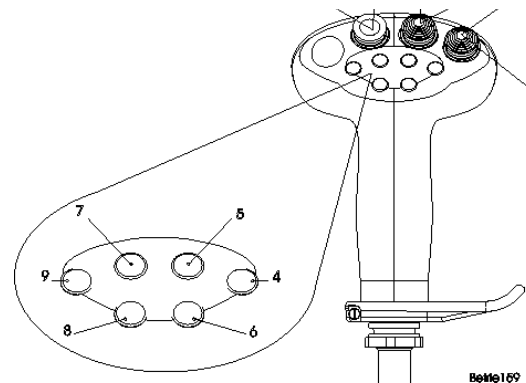


6.4.1 Speed reset

If you press the button (6) on the right joystick, the diesel engine slows down to the lower idle speed. Press the button repeatedly to raise the engine speed to the setting on the potentiometer.



If the diesel engine is shut off when the reset is activated, and the potentiometer is not returned to its default setting, when restarting the engine, the potentiometer must be returned to its default setting (turn counter-clockwise as far as possible) before the speed can be increased. This prevents running up at the highest speed. The reset button is automatically restored to its original position.



6.4.2 Engine speed governor at low temperatures

To prevent damage to the engine or the hydraulics, the GLR limits the engine speed to 1450 rpm when the cooling water temperature is under 40° or the hydraulic oil temperature is under 10°C.

If both values exceed these limits, the GLR increases the engine speed to the speed set on the potentiometer. If during operation, the water temperature or the hydraulic temperature falls 5° below the respective threshold value, the governor switches on again.

6.4.3 Emergency speed

Failure of the CANBUS between the GLR and ECU means the injection pump has no mechanical devices that can enable an emergency gas function. If a malfunction occurs and the speed set on the potentiometer is no longer transferred electronically, the engine will automatically run on in „Emergency gas“ mode. If the malfunction cannot be remedied by restarting the control (wait approx. 15 s after turning back the ignition key) and the machine has to be moved despite the malfunction, avoid starting and stopping the engine repeatedly! The emergency gas plug (A) is located below the rear cover near the right engine support.



➔ The emergency gas plug must remain in place. Do not remove.

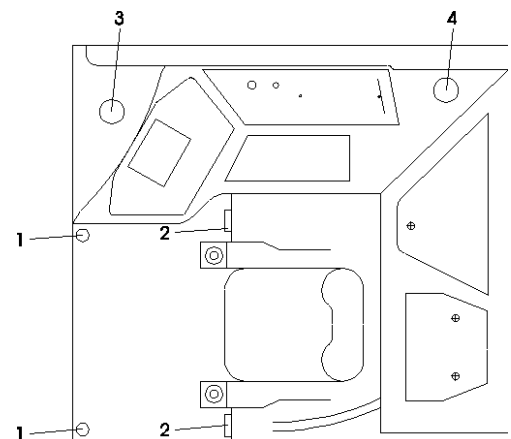
6.5 HEATING/AIR CONDITIONING

The Menzi Muck mobile allterrain excavator is fitted with a manual heater and can be supplied with an air conditioning system as an option. The system is controlled via the switches and pushbuttons on the instrument panel. The built-in system is a combined heating and air conditioning system. In order to optimise climate conditions inside the driver's cab, heating or cooling can be selected on the basis of the ambient temperature. In order that the system is always able to reach the required temperature, the following maintenance operations must be carried out. The suggested maintenance intervals are heavily dependent on the working environment. We can therefore only provide suggestions for a machine working under average load conditions and the system components to be maintained.

6.5.1 Air vents

The air circulating in the driver's cab can be controlled using the built-in air vents. The air flowing out of the heating/air conditioning system can be directed as required by turning or opening/closing the individual vents.

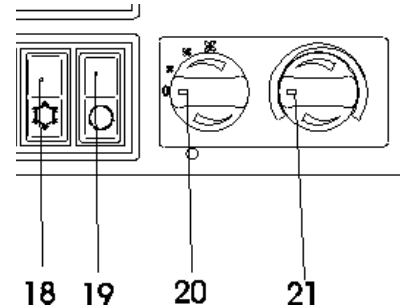
- 1 Front air vent for demisting/defrosting the windscreen
- 2 Footwell air vent
- 3 Right-hand air vent
- 4 Rear air vent



6.5.2 Control

The controls for the heating and air conditioning system are installed on the instrument panel. Press the controls numbered in the diagram to adapt the settings of the heating and air conditioning system to meet your requirements.

- 18 Air conditioning on/off switch
- 19 Ventilation on/off switch
- 20 Step switch for ventilation
- 21 Heating valve control



6.5.3 Heating

In heating mode, the knob (21) must be turned to the right to set the required temperature. Turning the knob clockwise increases the heating output. Turn the rotary switch (20) to change the blower speed. Turning the switch clockwise increases the speed. This increases the air renewal rate inside the driver's cab. Changing over the switch (19) in addition closes the recirculated air flap. When the system is in recirculating air mode, the LED on the switch lights up. As a consequence, the system ceases to draw in fresh air from outside and simply recirculates the air inside the driver's cab. This function helps to heat up the cab when the vehicle is first started up in order to achieve a comfortable ambient temperature more quickly.

6.5.4 Cooling

To activate the cooling function, the switch (18) must be set to the ice crystal symbol. When the system is in cooling mode, the LED on the switch lights up. When the cooling function is first activated, the rotary switch (21) must be turned fully to the left (as far as the stop) in order to maximise the cooling power of the system. The knob (21) can be used to fine-tune the settings for the air blown out. Turning the knob (21) to the right increases the temperature. Changing over the switch (19) in addition closes the recirculated air flap. When the system is in recirculating air mode, the LED on the switch lights up. As a consequence, the system ceases to draw in fresh air from outside and simply recirculates the air inside the driver's cab. This function helps to heat up the cab when the vehicle is first started up in order to achieve a comfortable ambient temperature more quickly.

6.6 WINDSCREEN WASHER SYSTEM

The windscreen is equipped with a windscreen washer system in the field of vision. This is operated with a switch (11) on the instrument panel.

6.6.1 Windshield cleaner reservoir

The cleaner tank for the windshield washing device is located in the rear underneath the boot lid. Make sure that it is filled with appropriate cleaning fluid containing sufficient antifreeze.



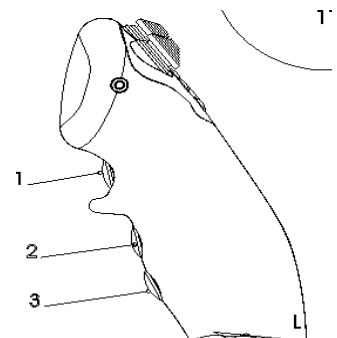
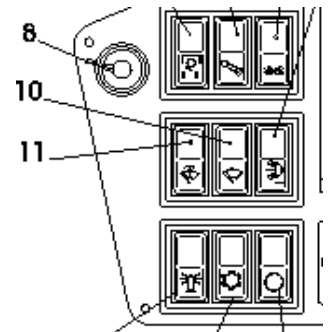
Cab with forestry model:

The front windshield is of polycarbonate. Clean only with water and a soft rag. Do not use any scouring pads or scouring cleansers. Use caution with chemicals.



6.6.2 Windscreen wiper

The windscreen wiper is switched on using the switch (10). The first setting is for intermittent wiping, the second for normal wiper operation. The button (2) on the left joystick can be used to operate the windscreen wiper at random intervals. When the button is pressed, the wiper wipes once. After approx. 4 seconds, the button can be pressed again to repeat the wiping operation.

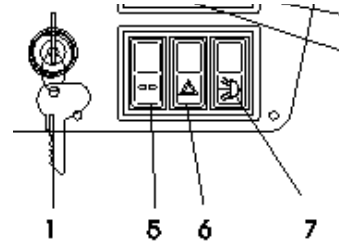


6.7 LIGHTS

The MENZI MUCK is equipped with a warning indicator unit, a direction indicator unit and rear headlamps.

6.7.1 Warning indicator unit

The warning indicator unit is switched on by pressing the switch (6) on the instrument panel. When the warning indicator unit is switched on, all four lights will flash - two at the front, left and right (only if the street lighting option is fitted), two at the rear, left and right.



6.7.2 Direction indicator unit

The direction indicator is switched on using the switch (5) on the instrument panel. Moving the switch up indicates a change of direction to the right. Moving it down indicates a change of direction to the left. The direction is indicated in the display. The direction indicator must be returned to the original position once the machine has changed direction.

6.7.3 Panorama indicator lamp (optional)

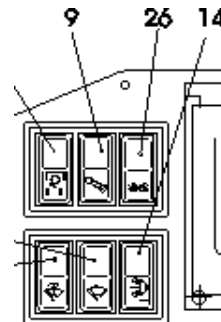
The panorama indicator unit is switched on by pressing the switch (17) on the instrument panel.

6.7.4 Street lighting MFK (optional)

The street lighting option must be fitted if the machine is to be driven on public roads. Street lighting is activated by pressing the switch (7) on the instrument panel.

3.7.5 Working headlamps

The working headlamps are switched on using the dual setting switch (14) on the instrument panel. The first setting switches on the front working headlamps only, the second setting switches on the front and the rear working headlamps.



It must be ensured that the headlamps are not intentionally switched on when driving on roads. Risk to other road users.

6.7.6 Side working headlamps light cluster (optional)

The side working headlamps light cluster is turned on using the switch (26).



It must be ensured that the headlamps are not unintentionally switched on when driving on roads. Risk to other road users.

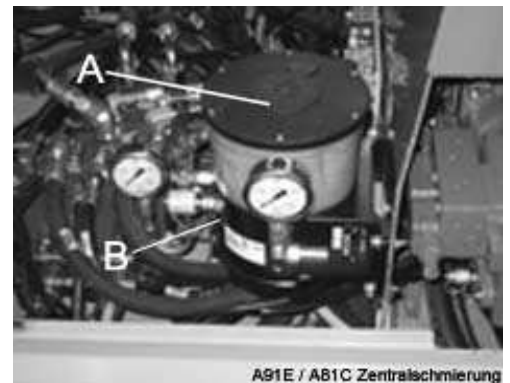
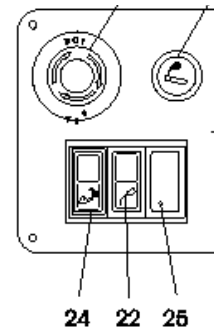
6.8 CENTRAL LUBRICATION (OPTIONAL)

The lubrication cycle is actuated by the central lubrication itself. Central lubrication may, if necessary, be actuated using the switch (22). (If, for example, using water)

Regular checking of lubrication tank (A) fill level. If the tank runs dry, the entire system must be bled after being filled.

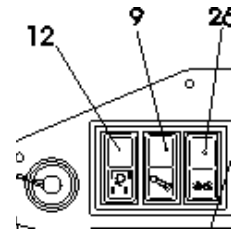


The display and input unit (B) of the central lubrication is fastened to the lubrication tank. The lubrication unit is monitored and controlled from here. See the Central Lubrication Operating Manual for details.



6.9 FINE MODE

The maximum load control can be made to work more accurately by limiting the flow rate of the overall hydraulic system. The working pressure is not reduced. This makes it easier to plan levelling work etc. The mode is activated by pressing the switch (12). It remains active until the switch is turned off.



7 OPERATING THE UPPER STRUCTURE IN WORKING MODE

7.1 GENERAL

7.1.1 Working regulations for hoisting operation in the EC.

Lifting and moving loads with a hook up device, eg rope or chain is called hoisting operation. Dislocation of pieces, pipes or machines can be such a hoisting operation.

7.1.2 Safety conditions

- Loads may only be moved with activated overload warning device
- Adjustment of overload warning device corresponds to the highest possible stability of the machine, ie telescoping jacks and wheels must be brought to their widest position and the jacks must be half extended
- The chassis should be placed as low as possible
- The excavator must be placed on an even and paved ground
- Otherwise, the operator must taken adequate precautions

7.1.3 Working steps

If a load should be moved within the adjusted sector range the overload warning device is switched ON. If an acoustic or visual signal is triggered when lifting a load or when extending the boom then the load must be lowered to the bottom immediately (danger of tilting).

Attention: The manufacturer refuses to accept any liability for damage resulting form non-observance of operating instructions or if the customer carries out changes to the overload warning device.

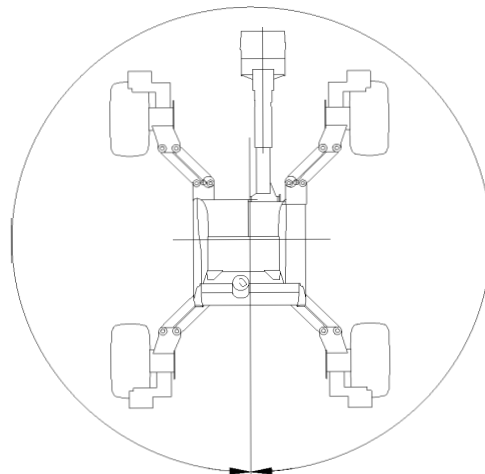
7.1.4 Sector range of hoisting operation



See technical data for lifting forces

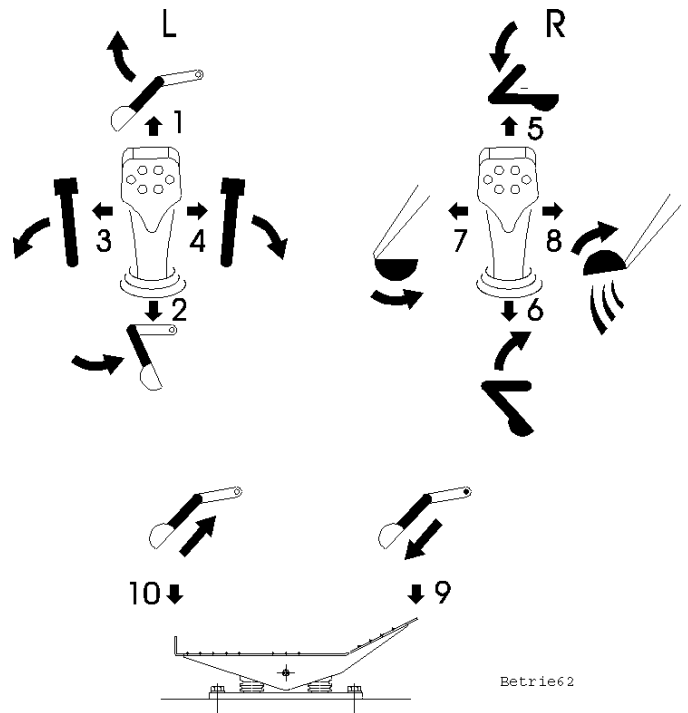


Stability in the sector range at ISO 10567

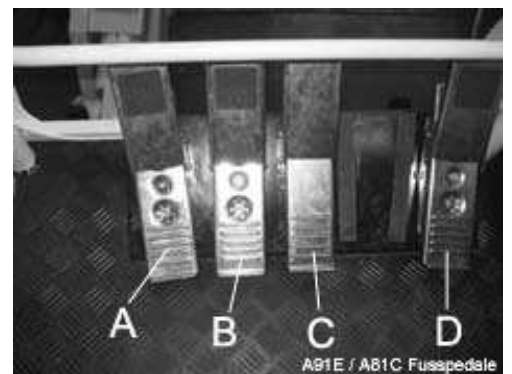


7.2 OPERATING THE ARM, SHAFT, BUCKET, TELESCOPE AND SWIVEL DEVICE

- 1 Jib out
- 2 Jib in
- 3 Swing left
- 4 Swing right
- 5 Extension arm down
- 6 Extension arm up
- 7 Bucket closed
- 8 Bucket open
- 9 Telescoping rod out
- 10 Telescoping rod in



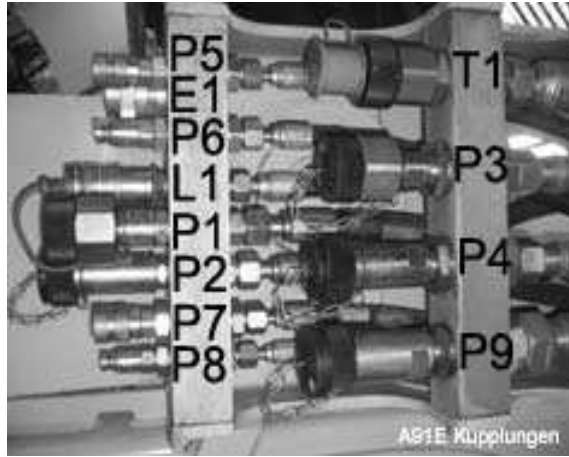
Foot pedal for telescope (A)



7.3 OPERATING THE HYDRAULIC AUXILIARY CONNECTIONS

The MENZI MUCK mobile allterrain excavator is equipped with one electric and 11 hydraulic auxiliary connections for operating attached devices. Joystick operation is described on the pages to follow.

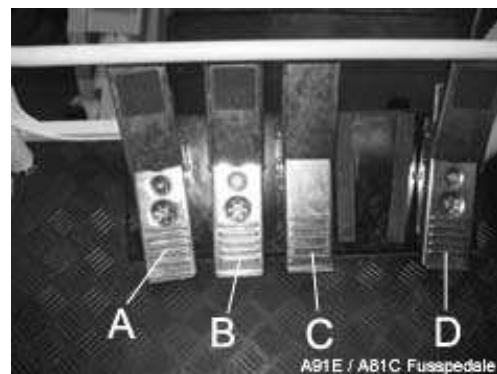
- P1 Small hydraulic auxiliary connection 80 l/min, Reflex 1/2" connection
- P2 Small hydraulic auxiliary connection 80 l/min, Reflex 1/2" connection, control via pushbutton on the joystick (digital)
- P3 Large hydraulic auxiliary connection 160 l/min, Reflex 1/2" connection
- P4 Large hydraulic auxiliary connection 160 l/min, Reflex 1/2" connection. Control via proportional foot pedal
- P5 Hydraulic quick-hitch connection, Flat - Face 1/4" connection
- P6 Hydraulic quick-hitch connection, Flat - Face 1/4" connection. Control via pushbutton on the joystick (digital)
- P7 3rd control circuit 40 l/min, Flat -Face 1/4" connection
- P8 3rd control circuit 40 l/min, Flat - Face 1/4" connection. Control via pushbutton on the joystick (digital)
- P9 Powerline 170l/min, Reflex 3/4" connection, control via switch on the instrument panel and push button on the joystick (see 4.5.2)
- T1 Hammer return line
- L1 Leak oil connection, 1/2" connector plug
- E1 Electrical socket connection (198753). Control via pushbutton on the joystick, rocker switch on the instrument panel (see Operating auxiliary equipment)



When installing auxiliary equipment, the instructions provided by the equipment manufacturer must be observed (pressure and litre quantities). For detailed information on installation, contact our service department or the equipment manufacturer.

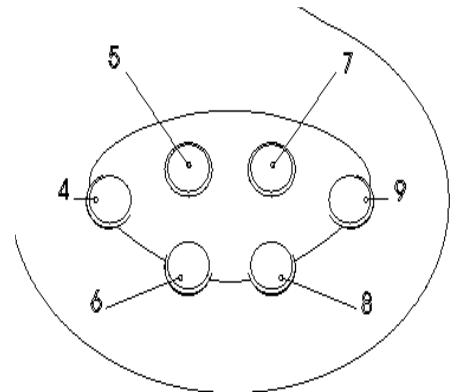
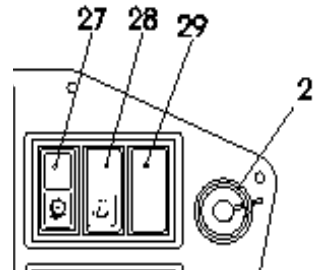
7.3.1 Hydraulic auxiliary connection (large)

The large auxiliary connection is operated using the foot pedal (D).



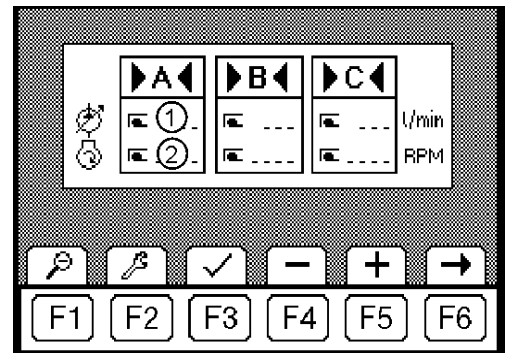
7.3.2 Powerline

The auxiliary pump (Powerline) is activated using the switch (27) on the instrument panel and the button (5) on the left joystick. The switch must be switched on first. As soon as the desired oil quantity is reached, the pump can be switched on using the button. The speed and the litre quantity can be set via the display.



Setting the speed and litre quantity

The required speed and litre quantity for three devices can be entered and saved using the display and input function. The pressure is fixed. In the basic menu, F2 opens the Powerline menu. Speed and litre quantity can be adjusted and saved separately. Use F6 to move from one input field to the next. F4 and F5 are used to adjust the entered value and F3 confirms the input.

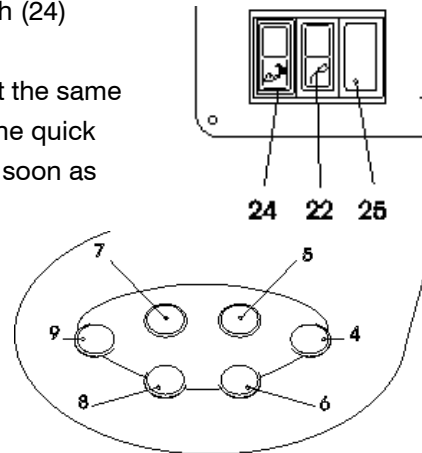


➔ The programmed speed takes priority. This means that the programmed speed cannot be overwritten by the potentiometer and idling mixture provision setting. To be able to adjust the speed using the potentiometer or the idling mixture provision, the Powerline must be deactivated.

7.3.3 Hydraulic quick changer

The hydraulic quick coupler is secured by the switch (24). The switch (24) must be released before the quick-hitch system can be activated.

This is done by pushing the safety bar on the switch and toggling at the same time. An audible sound signals that the switch has been released. The quick coupler can be opened using the button (8) on the right joystick. As soon as the button is released, the quick coupler will reclose. The switch (24) must be reset.

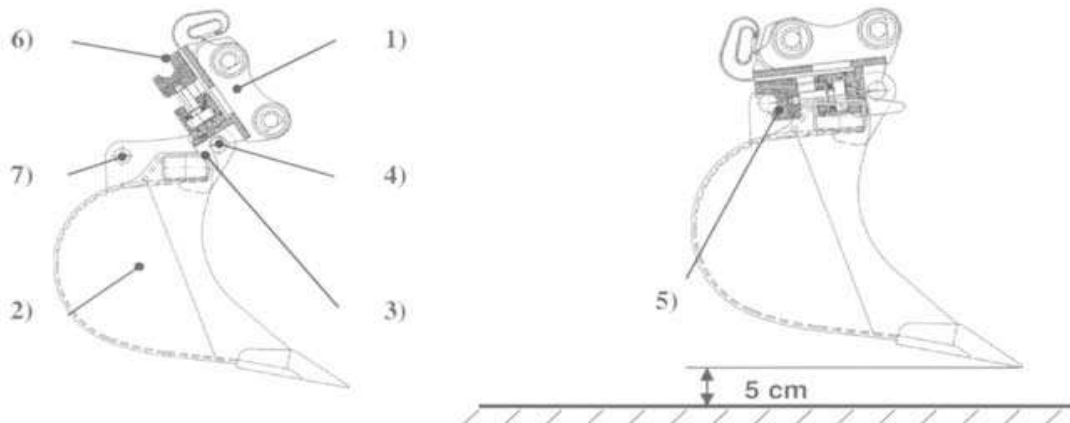


Coupling

- 1 Guide quick coupler plate (1) parallel over excavator bucket (2) and set down diagonally until the locking hook (3) can grip the bucket pins.
- 2 Insert quick coupler plate (1) into the bucket pins (4).
- 3 Lower quick coupler plate (1) in rotating motion until the pin surface (6) is in contact with the bucket pin (7).
- 4 Actuate the hydraulic locking mechanism so that the lock (5) can hook into the bucket pin (7) and be constantly pressurised by the safety sealing valve.
- 5 Carry out a visual check
- 6 Swivel buckets can be rotated through 180° and used as high buckets. No responsibility is accepted for any damage caused due to the quick coupler plate being used without a working attachment. (Risk of damage).

Uncoupling

- 1 Guide the excavator bucket (2) over a flat surface and set down. Raise approx. 5cm as shown in the drawing under point 10.
- 2 Suspend the hydraulic hoses of the swivel bucket from the excavator's hydraulic system.
- 3 Release the hydraulic locking mechanism by pressing the switch (24) on the instrument panel and the button on the joystick. The safety sealing valve will open and the lock (5) will move out of the bucket pin (7). The excavator bucket (2) then drops down.



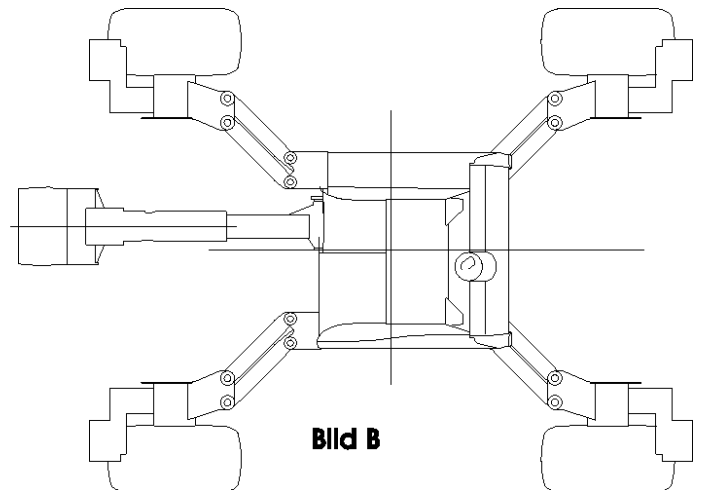
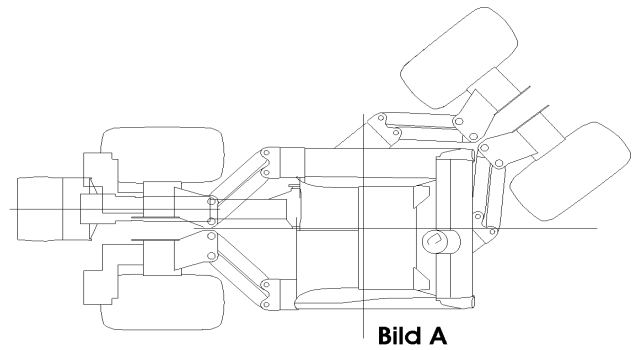
8 OPERATING CHASSIS

Chassis operation is described using the joystick arrangement. Various functions can be executed simultaneously and separately using the mini joystick.

8.1 CAUTION WHEN ARTICULATING THE CHASSIS

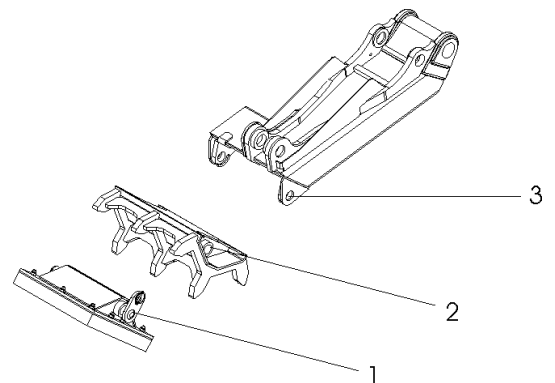


When using the machine off-road, caution must be exercised to ensure the widest possible support (Fig. B). Running the support feet together (Fig. A) poses the risk of the tipping when the chassis is articulated. This risk can be reduced by moving the feet outwards (Fig. B).



8.2 SPRAG CLAWS

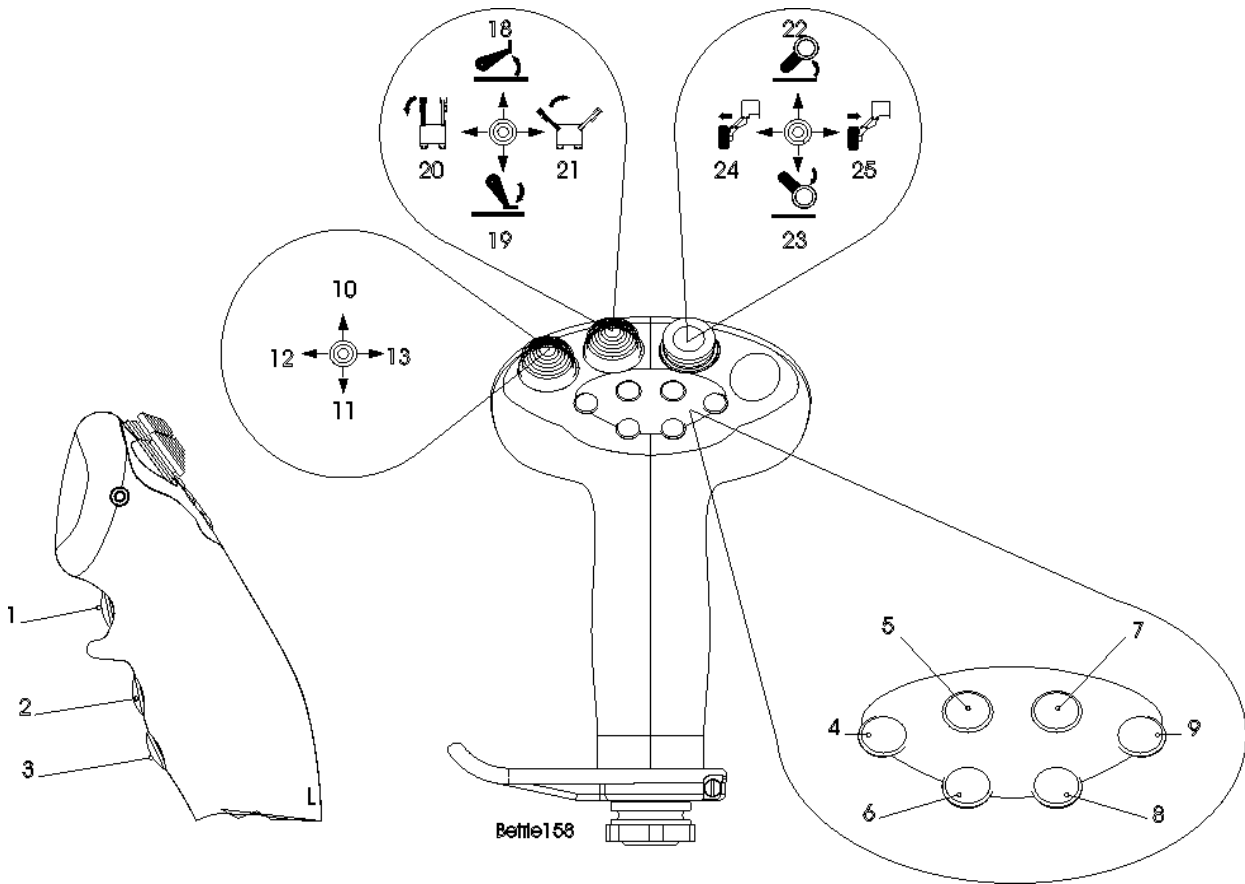
The sprags can be equipped with steel claws and rubber claws. The claw hole (2) must line up with the support hole in the sprag (3) so that the claw can be mounted using the bolt (1).



8.3 JOYSTICK LEFT

For special joystick assignments, see Operating auxiliary equipment.

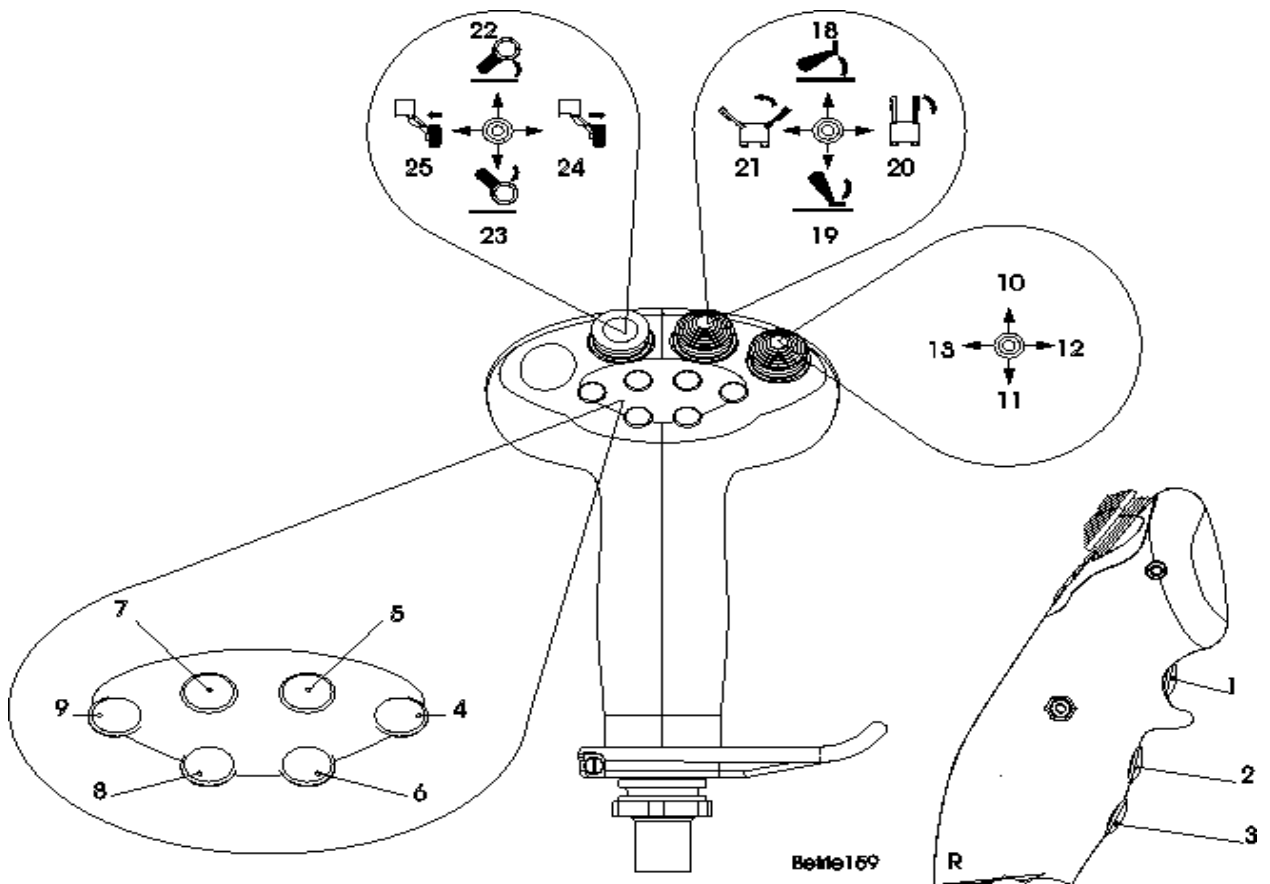
- | | | | |
|----|---|----|-------------------------------|
| 1 | reserve | 12 | Mountain pads 2 up (option) |
| 2 | Windscreen wiper interval | 13 | Mountain pads 2 down (option) |
| 3 | reserve | 18 | Feet left in front up |
| 4 | Horn | 19 | Feet left in front down |
| 5 | Powerline | 20 | Feet left in front out |
| 6 | Electric winch | 21 | Feet left in front in |
| 7 | Auxiliary hydraulic connection 80 L/min | 22 | Wheel left rear up |
| 8 | Electric winch | 23 | Wheel left rear down |
| 9 | Auxiliary hydraulic connection 80 L/min | 24 | Wheel left rear out |
| 10 | Mountain pads up | 25 | Wheel left rear in |
| 11 | Mountain pads down | | |



8.4 JOYSTICK RIGHT

For special joystick assignments, see Operating auxiliary equipment.

- | | | | |
|----|--------------------------------|----|-------------------------------|
| 1 | Change on bucket / steering | 12 | Mountain pads 2 up (option) |
| 2 | Hydraulic freewheel (optional) | 13 | Mountain pads 2 down (option) |
| 3 | reserve | 18 | Feet right in front up |
| 4 | reserve | 19 | Feet right in front down |
| 5 | reserve | 20 | Feet right in front out |
| 6 | Idling mixture provision | 21 | Feet right in front in |
| 7 | 3. Control circuit 40 l/min | 22 | Wheel right rear up |
| 8 | Hydraulic quick changer | 23 | Wheel right rear down |
| 9 | 3. Control circuit 40 l/min | 24 | Wheel right rear out |
| 10 | Mountain pads up | 25 | Wheel right rear in |
| 11 | Mountain pads down | | |

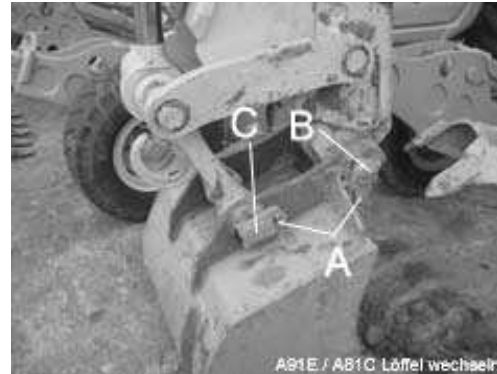


9 OPERATING AUXILIARY EQUIPMENT

9.1 CHANGING THE BUCKET

- 1 Set bucket down on flat surface.
- 2 Remove locking pins (A).
- 3 Rotate the bucket to relieve the pin (C).
- 4 Remove the pin (C).
- 5 Lower the bucket onto the floor.
- 6 Move the boom to relieve pin the (B).
- 7 Remove the pin (C).

Fit the bucket in the reverse sequence.

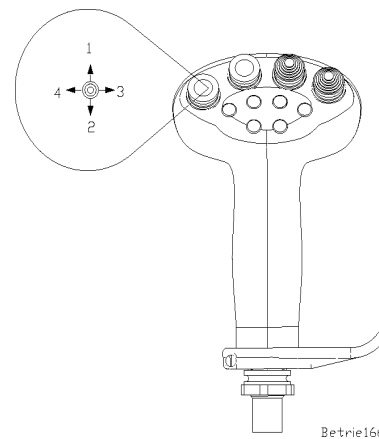


9.2 TILT ROTATOR

The description covers only joystick operation. Details and further information appear in the Operating Manual for the tilt rotator.

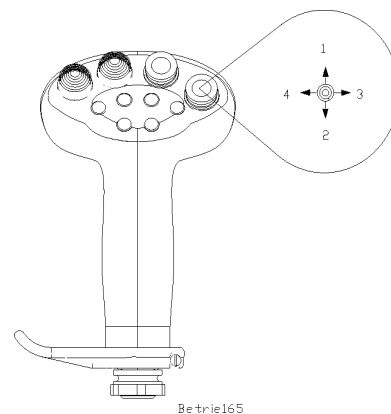
9.2.1 Operating the right joystick

- 1 Open the auxiliary gripper tilt rotator
- 2 Close the auxiliary gripper tilt rotator
- 3 Turn tilt rotator to left
- 4 Turn tilt rotator to right



9.2.2 Operating the left joystick

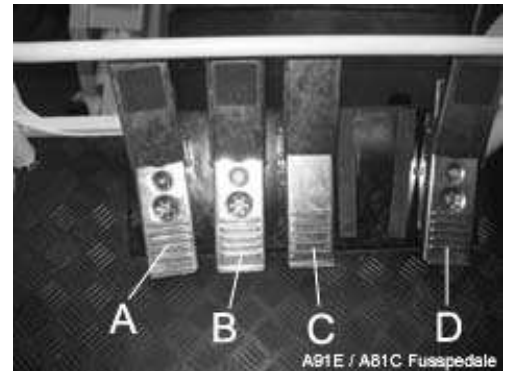
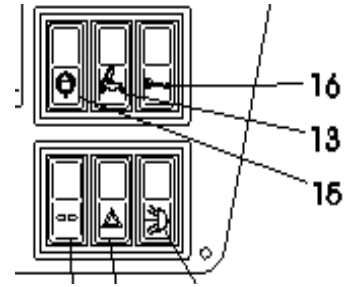
- 1 Open the auxiliary gripper tilt rotator
- 2 Close the auxiliary gripper tilt rotator
- 3 Turn tilt rotator to right
- 4 Turn tilt rotator to left



9.3 TRACTION WINCH

- 1 Press toggle switch 16 to activate the winch control.
- 2 The cable winch can be run out and wound in using the accelerator pedal (B)

➔ Please refer to the cable winch operating instructions and observe the safety regulations.



Make sure that the leak oil line coupler is correctly fitted. This prevents damage to the winch motor!

- (E) Pressure connections
- (F) Leak oil connection



9.4 FORESTRY MODEL - WOODY 50 HARVESTER HEAD

The instructions appearing here should be regarded as an addition to the Woody Harvester Operating Manual. The instructions describe only those functions required for the MENZI MUCK harvester operation. Further instructions are contained in the Woody Harvester Operating Manual. Before using the machine for the first time, the operator must familiarise himself with its equipment to enable reliable, economical and above all safe use of the extensive range of machine functions.

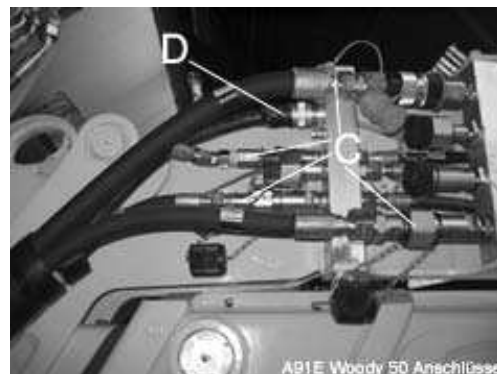
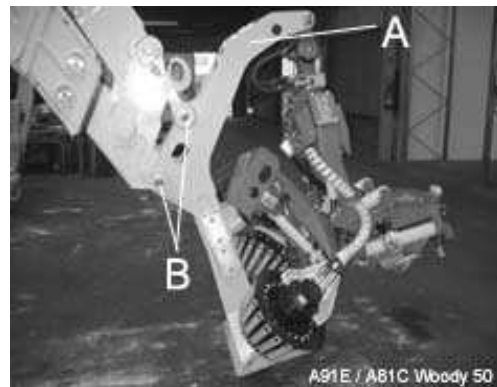
The Woody is used as the harvester head. This multipurpose harvester module can be used to fell, lug, cut and stack tree trunks. A more precise description of the functions required for effective use of the harvester are contained in its Operating Manual.

9.4.1 Assembling the Woody 50

The Woody is designed with the specially developed walking foot for mounting onto the excavator's bucket attachment.

The following sequence must be followed:

- Shut down the control and switch off the engine.
- Mount the walking foot (A) using the pins (B) provided and then lock these pins.
- Attach the hydraulic (C) and the electric (D) lines at the connectors provided.
- Start the engine and switch on the control
- Start-up in accordance with the Operating Manual „Woody Harvester“.

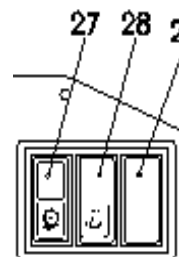


9.4.2 Disassembling the Woody 50

- Place the harvester head on a solid, adequately stable surface.
- Shut down the control and switch off the engine.
- Hook the electric and hydraulic lines from the connections on the arm.
- Remove the pins.

9.4.3 Operation

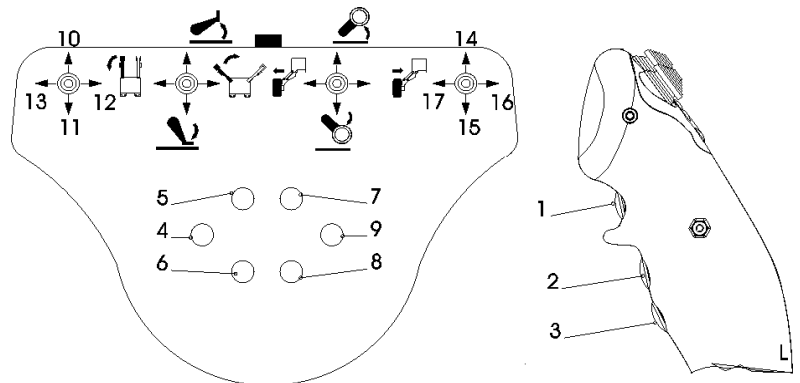
The harvester head functions have been integrated into the machine's overall control and positioned on the joystick for ease of operation. Operation is therefore different to that described in Chapter 5. Please consult the Operating Manual for the Harvester Head for more detailed information on the individual functions. The forestry equipment is activated by the switch (27). The first setting switches on the Powerline, the second forestry control.



9.4.4 Operating the Woody 50 left joystick

Special joystick assignment for forestry equipment with the Woody 50 harvester head.

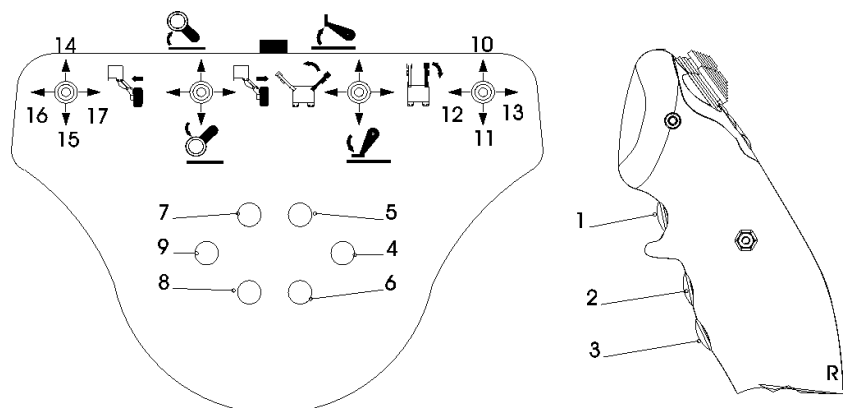
- 1 reserve
- 2 windscreen wiper interval
- 3 3. Control circuit 40L/min / electric winch (optional)
- 4 hydraulic auxiliary connections 80L/min
- 5 Powerline (Option)
- 6 Hydraulic quick changer (optional)
- 7 Feed unit up / down
- 8 Position head / floating position
- 9 Automatic drop position
- 10 Mountain pads up (option)
- 11 Mountain pads down (option)
- 12 Mountain pads 2 up (option)
- 13 Mountain pads 2 down (option)
- 14 Feed slow
- 15 Roller open / closed
- 16 Close grab
- 17 Open grab



9.4.5 Operating the Woody 50 right joystick

Special joystick assignment for forestry equipment with the Woody 50 harvester head.

- 1 Bucket / steering switchover
- 2 Horn / hydraulic override
- 3 3. Control circuit 40L/min / electric winch (optional)
- 4 Hydraulic auxiliary connection 80L/min
- 5 Gripper pressure reducer
- 6 Idling reset
- 7 Saw
- 8 Fix head / floating position
- 9 Auto on / off
- 10 Mountain pads up (option)
- 11 Mountain pads down (option)
- 12 Mountain pads up
- 13 Mountain pads down
- 14 Roller feed forward
- 15 Roller feed back
- 16 Turn rotator to left



9.4.6 Auxiliary keypad

The auxiliary keypad on the right joystick controls the various length or range functions. Please refer to the Operating Manual for the Woody Harvester for a precise description of the functions and how they operate.

- | | | | |
|---|----------|---|------------------------------|
| 1 | Length 1 | 2 | Length 2 |
| 3 | Length 3 | 4 | Length 4 |
| 5 | Length 5 | 6 | Length 6 |
| 7 | Length 7 | 8 | Individual branch collection |



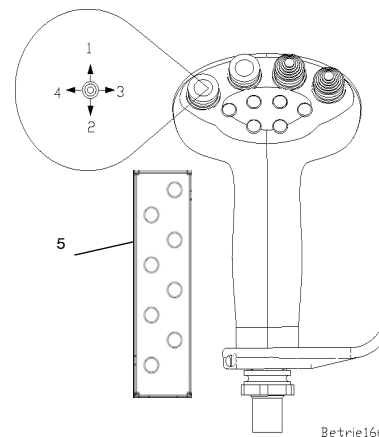
9.5 NAARVA GRIP FELLER HEAD

The description covers only joystick operation. Details and further information appear in the Naarva Grip Feller Head Operating Manual.

The Naarva grip feller head is activated by switching on the Powerline (see Powerline Operation). The Powerline is set to 180 bar and 140 l/min. As soon as the function is switched, the pump conveys the required oil quantity. Leave the Powerline switched on during the operation so that a constant pressure is maintained.

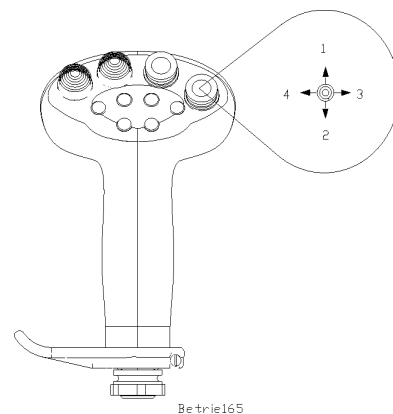
9.5.1 Operating the right joystick

- 1 Tilt attachment up
- 2 Tilt attachment down
- 3 Loading gripper closed
- 4 Loading gripper open
- 5 Guillotine cutter



9.5.2 Operating the left joystick

- 1 Guillotine gripper closed
- 2 Retaining gripper open
- 3 Rotator to right
- 4 Rotator to left

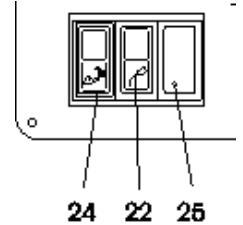


10 OPERATION TRACTION DRIVE

10.1 GENERAL

10.1.1 Traction drive

The machine is driven via all wheels (4x4) using four hydrostatic wheel hub drives with hydraulic differential locks.. The transverse differential lock can be enabled at the switch (25).



➔ Disable the lock when driving on roads or if the chassis is set wide.

The wheel hub drives are equipped with an automatic parking brake. The spring pressure disk brake is a safety brake that is always closed by compression springs. It is opened by the supply of pressurised oil. The brake does not need to be adjusted, and thus is also maintenance-free.

10.1.2 Driving

Please read following rules, if the machine isn't in drive position.

Directions

Should the upperstructure be positioned in excess of 90° from the driving position, driving controls will be in reverse order. To check the function of driving controls operate foot pedal with caution. If the operator isn't sure in which direction the machine's moving, he has to tip softly on the foot pedal before start driving.

Driving preparation

Prior to driving warm engine 2 - 3 minutes. Raise chassis and stabilizers off the ground. Parallel steering stabilizers. Engage steering switch 19 to lock in steering. Place boom assembly between driving wheels. Steering by the Joy Stick (change into steering mode)

10.1.3 Driving up steep roads




Steep roads must be navigated with the following engine setting:

1. With one speed: Maximum revolutions (2000 rpm), control the speed using the foot pedal.
2. With 2 speeds: Maximum revolutions (2000 rpm.), drive in first gear and control the speed using the foot pedal.

➔ In this setting, the diesel engine has adequate braking force and cannot therefore be over-revved.

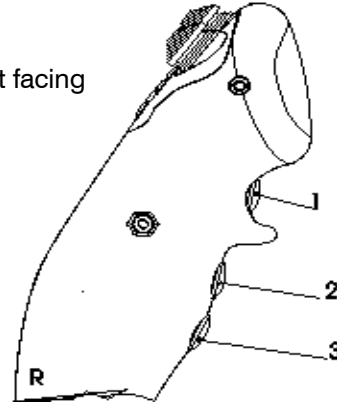
10.2 DRIVING MODE / STEERING MODE

The switch (9) can be used to select normal or automatic driving mode. When the switch is deactivated, steering is not permitted. Moving the switch to the first or second setting or pressing the button (1) on the right joystick activates the steering. The machine is steered by moving the joystick to the left and to the right.

 Steering movements that are initiated when the upper structure is not facing the direction of travel are counteracted.

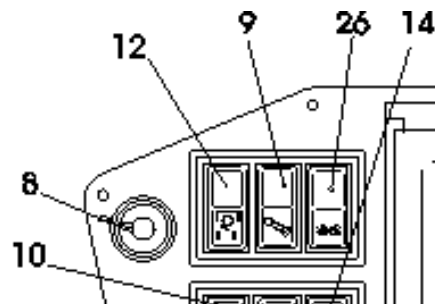
10.2.1 Conventional driving mode


Moving the switch (9) to the first setting interrupts the bucket function and activates the steering. Pressing button (1) on the right joystick achieves the same result. The speed can be controlled using the accelerator pedal and the engine revs.



10.2.2 Automatic driving operation

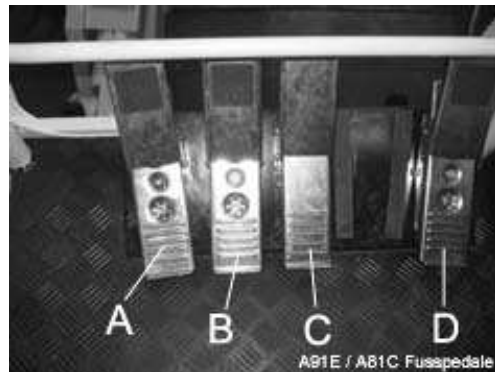
Moving the switch (9) to the second setting switches off all boom functions apart from the steering function. Engine revs and drive pump are synchronised via the accelerator pedal. This achieves an automatic-like characteristic; the revs increase on acceleration and decrease on deceleration. The potentiometer limits the top speed and releases the accelerator more sensitively.



 Use only automatic mode when driving on public roads.

10.2.3 Controlling the traction drive speed

The switch (13) can be used to toggle between first and second gear. The potentiometer (8) on the instrument panel enables continuous limiting of the top speed.



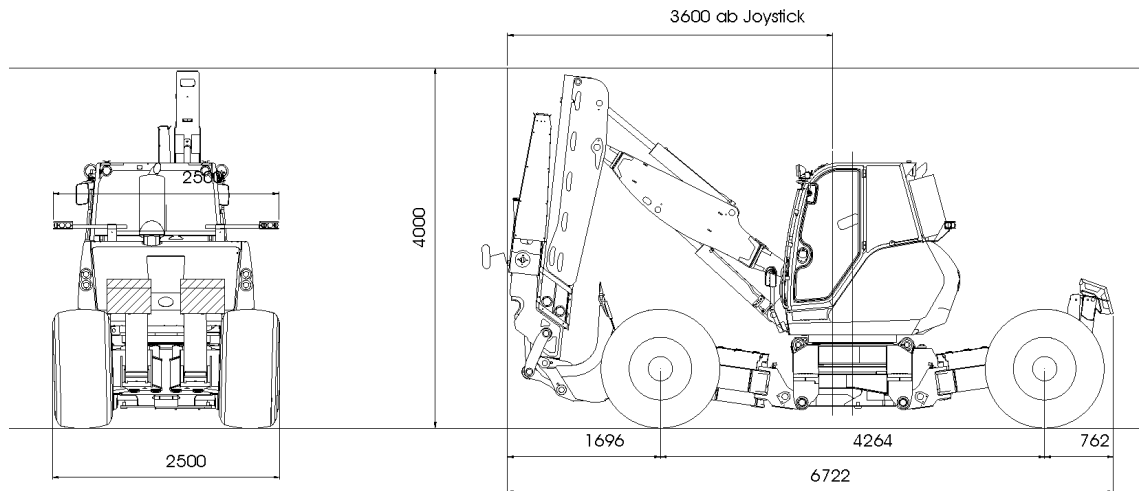
10.2.4 Braking

If the MENZI MUCK is to be brought to a standstill, allow the accelerator pedal to return to its centre position. If this deceleration is inadequate, locknuts can be used to shorten the brake path (by controlling the pedal in the opposite direction).

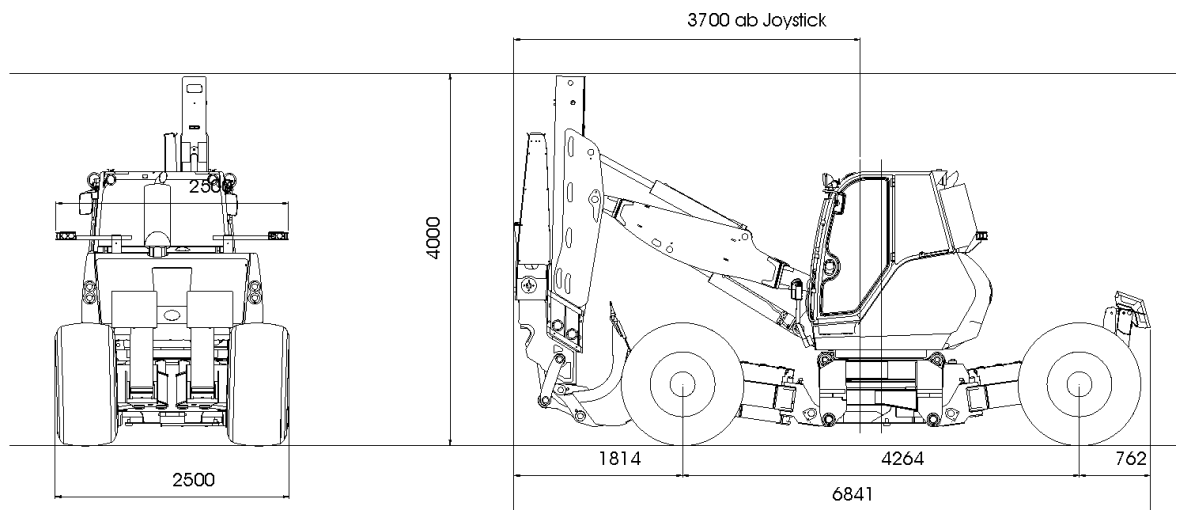


10.3 DRIVING POSITIONS

10.3.1 Menzi Muck A111 T1.8



10.3.2 Menzi Muck A111 T2



11 TRANSPORT

11.1 TRANSPORT INSTRUCTIONS

Use transport vehicles only if they are in proper functioning condition and are licensed for road travel.

If loading the vehicle using loading ramps:

- Never exceed a drive pitch of 15°.
- The width of the ramps must be no less than 1 to 2-times the width of the wheels.
- Clean the ramps and vehicle wheels of dirt, mud, ice and snow.
- Always take into account the variance in wheel track width between the front and rear wheels.
- Anchor the drive-up ramps on the transport vehicle to prevent them from slipping.
- To ensure safety, provide additional support in the middle of the ramps.
- When loading, engage the parking break on the transport vehicle and put blocks under the wheels.

After loading

- Lower the machine and the excavator arm onto the bed of the transport vehicle. Shut off the engine. Locking the hydraulics.
- The hydraulic brake valves on the drive are activated when the drive and control lever are activated. Lock the cab and remove the ignition key.
- After loading the excavator, place blocks under its wheels and secure (lash) the blocks onto the bed of the transport vehicle so that they cannot slip, tip or otherwise move from their positions.
- The machine can be lashed down only at suitable points. Watch for hydraulic lines and moveable protective panelling.
- Check the total height and make any necessary adjustments.

11.2 LOADING EXAMPLE

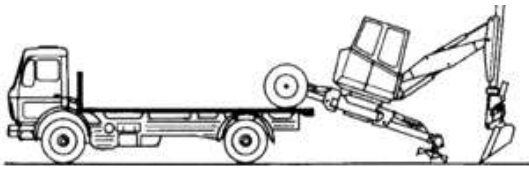
This example illustrates how a standard-model MENZI MUCK walking excavator is loaded without the use of ramps. This loading method may only be carried out by trained drivers and then, only at the driver's own liability.



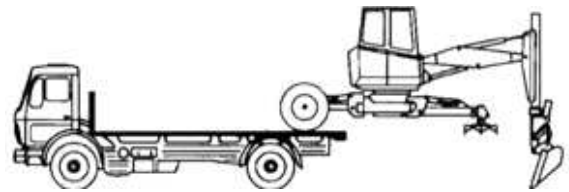
Lower bucket to loading area of truck.



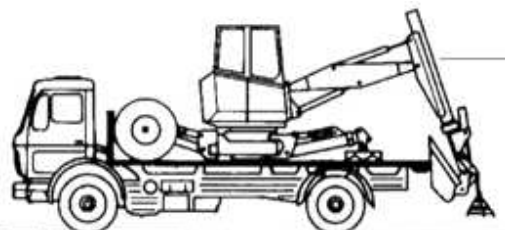
Raise wheels up to the height of loading area and move back truck (bucket slides over the loading area)



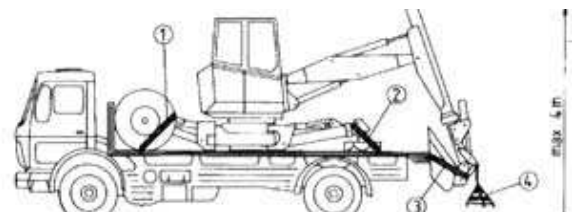
Lower wheels. Swing upperstructure.
(Pull boom and dipper when swinging)



Lift stabilizers and push excavator onto truck.



Lower chassis to loading area.



Observe loading height (4 metres) and secure excavator.

- 1+2. Place protective devices to front and rear.
3. Secure bucket.
4. Attach markings.

The procedure for unloading is the reverse of that of loading.

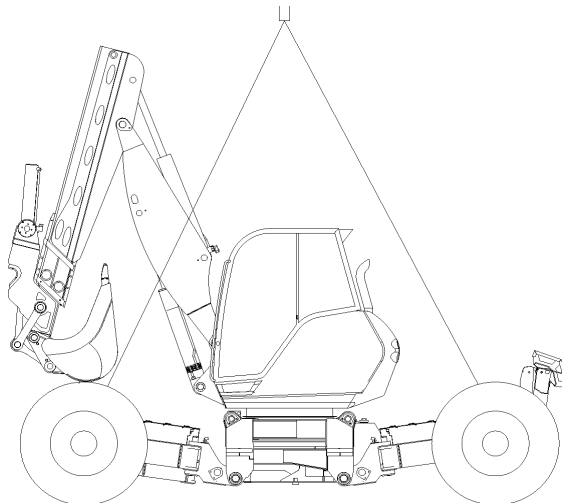
11.3 TRANSPORT BY HELICOPTER, CRANE OR SKYLINE CRANE

If it is to be transported by helicopter, crane or skyline crane, secure the machine as shown in Figure (1). Do not attach the lifting tackle to the cab. The company that undertakes transportation of the machine is responsible for ensuring that the requisite lifting gear and lifting tackle is of suitable design and adequate load-bearing strength for safe transportation. See page 9 of this instruction manual for details of the weights.

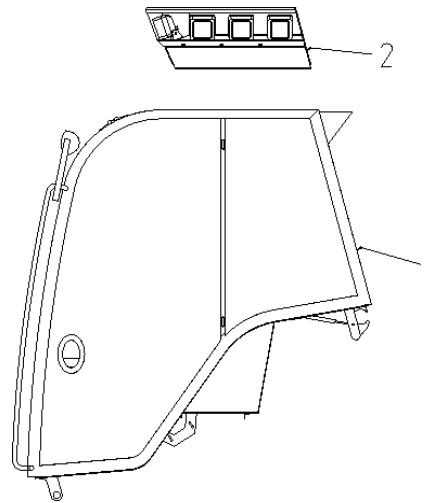
The machine can be disassembled if the available lifting gear and lifting tackle is not of sufficient load-bearing strength to lift the machine as a complete unit. In this case it is essential to take all necessary precautions to ensure safe disassembly and reassembly. It is particularly important to ensure strict compliance with all applicable water-quality management regulations and stipulations. Fluids and lubricants must be collected in suitable containers and correctly disposed of if necessary. The weights of the individual components are listed below.



MENZI MUCK AG expressly refuses to accept liability for damage caused by incorrect disassembly and assembly of components and the use of contaminated fluids and lubricants.

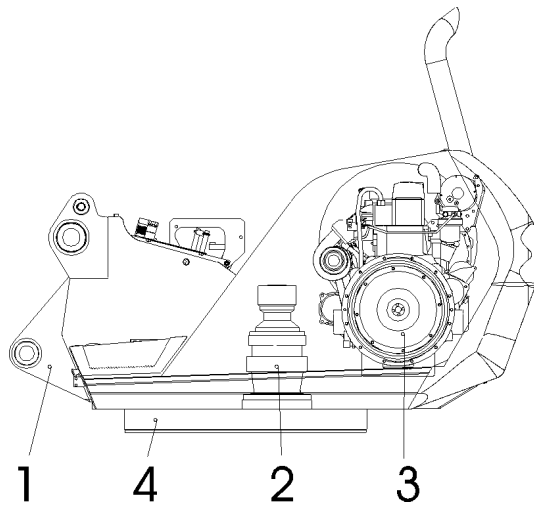


11.4 COMPONENT MASS



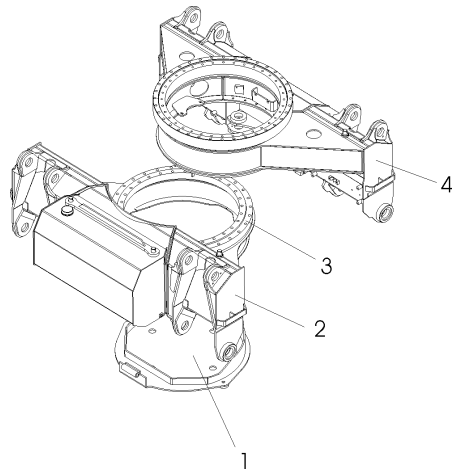
11.4.1 Cab

1 + 2	Cab assembly, complete with lights bar	575 kg
1	Cab of construction machine complete with seat, fittings, etc. cab of forestry machine complete with seat, fittings, etc.	470 kg 490 kg
2	Lights bar including headlights	85 kg



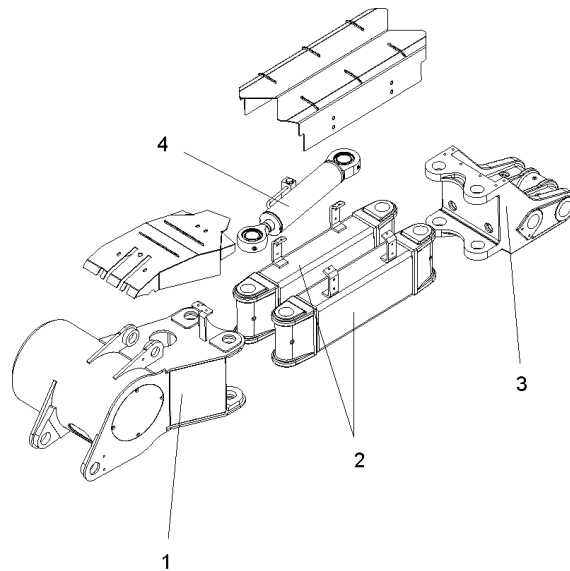
11.4.2 Center section

1-4	Center section, complete without hydraulic fluid and diesel oil, radiator incl. engine, radiator, diesel tank, valves and engine housing	2000 kg
1	Center section including slewing ring and transmission	1075 kg
2	Slewing gear with motor	100 kg
3	Diesel engine, 4-cylinder complete with hydraulic pumps (incl Powerline) and distributor gear	810 kg
4	Ball slewing ring	100 kg
	Side panels, engine cowl and diesel tank	140 kg
	Hydraulic fluid depending on fluid level approx.	200 kg



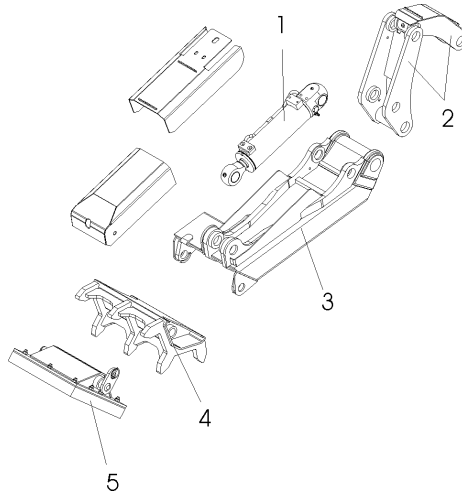
11.4.3 Chassis

1-4	Chassis complete including turning distributor	1800 kg
1	Chassis cover	90 kg
2	Lower chassisbox	650 kg
3	Lower ball race slewing ring	105 kg
4	Upper chassisbox	600 kg



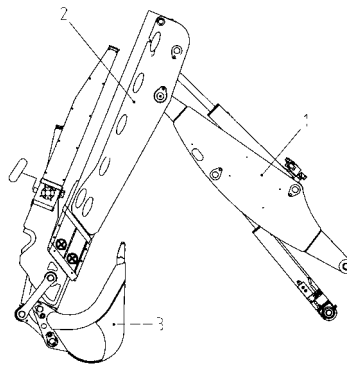
11.4.4 Stabilizers

1 - 4	Stabilizers, 4 of	2200 kg
1	Axle shaft, 4 of	650 kg
2	Wheel support, 8 of	580 kg
3	Rotary head, 4 of	650 kg
4	Cylindre, 4 of	180 kg
	Drive, 4 of	380 kg
	Wheel cpl., 4 of (600/55-26.5)	1150 kg
	Wheel cpl., 4 of (600/50-22.5)	870 kg



11.4.5 Mountain stabilizer

1 - 5	Mountain stabilizer cpl, 2 of	750 kg
1	Cylindre, 2 of	80 kg
2	Deflection mechanism, 2 of	95 kg
3	Support mountain stabilizer, 2 of	220 kg
4	Steel pad, 2 of	100 kg
5	Rubber pad, 2 of	100 kg



11.4.6 Boom

1 + 2	Boom assembly without bucket	2000 kg
1	Rear bucket with boom and jib cylinders	660 kg
	Boom cylinder	140 kg
	Jib cylinder	140 kg
2	Telescopic arm assembly with telescope, and bucket cylinders, shears and thrust rod	1320 kg
3	Bucket	


Maintenance and repairs

12 TIPS AND HINTS

Regular and proper servicing and inspection are essential for the faultless operation and long service life of your excavator. Preventative Maintenance is the simplest and cheapest method of servicing.

12.1 MAINTENANCE

- The engine must be stopped before all service and repair work. Protective devices for moving machine parts must only be opened or removed when the machine is shut down. At the same time it must be ensured that the engine cannot be put into operation by unauthorized persons. Only tilt cab with the cabin door closed. The cabin must be mechanically secured in the tilted state (danger of accident).
- Defective parts must be promptly replaced to avoid greater damage.
- After using the excavator on an extensive scale, it must be thoroughly cleaned.
- To prevent corrosion damage, regularly grease all exposed parts.
- After completion of maintenance and repair work, put all protective devices properly back again.
- See to the tightness of all bolt connection as well as to leaks in the hydraulic system.
- Pay special attention to correctly tighten nut and bolts. Check and retighten wheel-nuts regularly.
- If there is any visible loss of oil, determine the cause and remedy the fault.
- Retighten hydraulic connections in the event of leaks.
- Replace damaged pipes and hoses immediately with new ones.
- Check machine for cracks and reweld, if necessary.
- Pay attention to the lubrication schedule and to the maintenance work of the Perkins engine.
- Thoroughly clean grease fittings before greasing.
- Change oil only when machine is operationally warm, as warm oil runs off better.
- All filters are carefully adapted to the machine. Trouble-free operation and long service life of the engine and the hydraulic parts can only be achieved if original parts are used.
- Use only original parts. This ensures a trouble-free operation and a long lifetime. Menzi Muck AG only gives warranty for original parts.
- Do not mix different brands of lubricants with one another, as the quality is possibly influenced by this. Lubricate according to the maintenance schedule indicated in the lubricating instructions. Environmental protection provisions must be observed when removing operation materials (i.e., oil, grease, fuel) etc. from oily components, such as filters.
- 500 hour service only by authorized workshops.

- 
- Shut down engine and activate ignition. The hydraulic system has to be at zero-pressure by activating the control lever and opening the hydraulic tank screw-cap (hydraulic tank is pretensioned).
 - Shut down engine. Exceptions are only allowed for maintenance and repair works which cannot be carried out without running engine.
 - If in the absence of an assembly pit, the excavator has to be hoisted by the boom, legs or wheels, work should begin on the chassis only when the raised side of the excavator has been stabilised. (e.g. timber underlay)
 - Disconnect battery when carry out welding jobs.
 - After completing servicing, assembly maintenance operations, replace all safety devices.
 - Use only original spare parts to ensure correct function and warranty conditions.
 - Carry out adjustments on engine or hydraulic system according to manufacturer's specifications. In no case, change original adjustments without consulting with the manufacturer.
 - Ensure that all important parts of the excavator, such as hand rails and foot steps (i.e. those parts used for entering the vehicle) are kept in perfect condition.
 - All observed defects should be reported to the responsible foreman or to the succeeding operator.
 - If you know there is a malfunction, a part that needs adjustment, stop the machine immediately.
 - After conclusion of repair works check effectiveness of operating elements and safety devices.
 - The pump housing must be filled before the pump is started following any work on the hydraulic pump.

It is worth reading this lubricating schedule attentively and carefully observing the individual points. In this way you will help to avoid failure and to give it a longer service life. You will save time, money and annoyance.

12.2 THE MAIN POINTS IN BRIEF

1. Please observe the lubricating schedule, the operating instructions of MENZI MUCK and those of the engine manufacturer.
2. Before putting into operation, check the oil level (see section 5).
3. Observe Oil change in the engine, swivel transmission and hydraulic tank.
4. Change fuel filter as required (no later than 500 hours).
5. When changing the oil, the greatest possible cleanliness must be observed.
6. Before mixing different grades and brands of lubricants, check your lubricant supplier.
7. In extreme dusty and humid conditions check air filter on a frequent basis.

12.3 LUBRICANT TABLE

Part	Type	Filling quantity in litre
Engine*	Diesel engine oil** SAE 15W-40 / -15°C - + 50°C SAE 10W-40 / -20°C - + 50°C	15
Hydraulics	Hydraulic oil ISO VG46 factory-filled with Panolin HLP46 oder Synth46	180
Fuel*	Diesel***	Upperstructure: 130 Chassis: 200
Engine cooling*	Coolant (Water and Collant)	24
Transmission	Transmission oil SAE 90 API-GL-4	2.5
Swing gear	Transmission oil SAE 90 API-GL-4	2.5
Distributor gear	Transmission oil SAE 90 API-GL-4	2.8
Lubricant	Lithium-based grease EP-2 NLGI Nr.2	apply as necessary

* For more details, refer to the operating manual provided by the manufacturer of the engine

** If a particle filter system is fitted, a Low SAPS engine oil must be used. We recommend Panolin Diesel Synth EU-4 10W/40

*** Cetane number 45 or higher. A cetane number of over 50 is preferred, especially at temperatures of below -20°C or elevations of over 1500 m above sea level. Filtering capability limit (CFPP) below the anticipated minimum temperature OR turbidity point at least 5°C below the anticipated minimum temperature.

The maximum permissible biodiesel concentration is a 5% mixture (also known as B5) with crude oil diesel fuel.



Raw-pressed vegetable oils, regardless of the concentration, may be used in the fuel in John Deere engines.

12.4 MAINTENANCE SCHEDULE

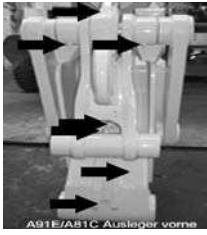
		Maintenance intervals				Actions required	Notes		
		8	50	100	500			1000	2000
daily	8	weekly				annually	as re-quired	See also Maintenance and Repair Operating Manual	Correct fill quantity must be guaranteed by checking using dipstick, inspection opening or similar
								Engine	
*								Check engine oil level	Park the machine horizontally, do not fill above maximum
					*			Replace engine oil and oil filter	Oil quantity: 15 litres Oil type: Diesel motor oil SAE 15W-40 / -15°C - + 50°C SAE 10W-40 / -20°C - + 50°C
								Check and adjust valve play	Inlet valve: 0.31 - 0.38 mm Outlet valve: 0.41 - 0.48 mm when engine is cold
					*			Clean crankcase bleed pipe	Dismantle and wash out bleed pipe
					*		*	Drain off condensation at the fuel filter	If engine performance drops, more often
					*		*	Replace fuel filter inserts	If engine performance drops, more often
					*			Check belt tensioner and belt wear	Visual check, refer to John Deere Operating Manual
*								Check coolant level and top up if required	Coolant level: Top up to approx. halfway on expansion tank when engine is cold.
							*	Change coolant	Coolant quantity: approx. 24 litres Coolant type: See John Deere Operating Manual Frost protection: minimum -35°C
							*	Clean water, charge air, oil and climatic cooler	Blow-off with compressed air Check cooling lamella, align if necessary

		Maintenance intervals				Actions required	Notes
		50 weekly	100	500	1000 annually		
8	daily					See also Maintenance and Repair Operating Manual	Correct fill quantity must be guaranteed by checking using dipsick, inspection opening or similar
						Engine	
						Clean filter insert	Maintenance as required or when an error message appears in the display. Cleaning with compressed air - max. 5 bar, then check for damage
				*		Replace filter insert	Check for cleanliness
					*	Replace main cartridge filter insert	Change only if external air filter is defective
			*			Check air and water hoses for leaks	Hoses may not exhibit cracks, tighten straps
*				*		Check entire engine for leaks	Daily visual check
							Run engine up to operating temperature
						Gear box	
*				*		Check wheel gear oil	Check for leaks daily, if leak-proof, check level every 500h
				*		Change wheel gear oil	Oil quantity: approx. 2.5 litres Oil type: gearbox oil SAE 90 API-GL-4
				*		Check swivel gear oil	Check for leaks daily, if leak-proof, check level every 500h
				*		Change swivel gear oil	Oil quantity: approx. 2.5 litres Oil type: gearbox oil SAE 90 API-GL-4
*				*		Check distributor gear oil	Check for leaks daily, if leak-proof, check level every 500h
				*		Change distributor gear oil	Oil quantity: approx. 2.8 litres Oil type: gearbox oil SAE 90 API-GL-4

Maintenance intervals		Actions required				Notes		
		50	100	500	1000		2000	as re- quired
8	daily							Correct fill quantity must be guaranteed by checking using dipsick, inspection opening or similar
*								Hydraulics Place machine in a horizontal position, lower to floor, extend boom Top up same brand of oil with same viscosity Oil quantity: approx. 180 litres Oil type: Panolin HLP46 or Synth46 Change after 1000 h or when a warning signal appears in the display. Check for leaks Check for leaks Check earlier if performance drops Check earlier if performance drops Prestress 0.5bar Check hoses for wear, avoid chafe marks Daily visual check, run machine up to operating temperature
								See also Maintenance and Repair Operating Manual
								Check hydraulic oil
						*		Change hydraulic oil
					*	*		Replace return filter
					*	*		Replace feed pump pressure filter
				*				Replace partial flow filter (optional)
				*				Check working pressure
				*				Check driving hydraulics pressure
				*				Check hydraulic tank lid function
				*				Check hydraulic pipes for position and fastenings
*				*				Check entire hydraulic system for leak-tightness

Maintenance intervals		Actions required				Notes		
		8	50	100	500		1000	2000
daily	weekly						as re- quired	Correct fill quantity must be guaranteed by checking using dipsick, inspection opening or similar
								Electrical System
			*					Battery Maintenance-free battery, check battery polarity, check contacts and lubricate if necessary
			*					Check battery and all earth cables for damage
			*					Switch off main switch, Error messages will appear in the display.
								General Setup
*			*				*	Daily visual check, torque see table, check connections every 500h
			*					Check screwed connections, especially on engine, gears, wheels, hydraulics and cover for correct fit or leaks, tighten if necessary. Tighten hydraulic connections only if leaking.
			*					Check excavator for cracks
			*				*	Check tyre air pressure, adjust if necessary
*	*							Lithium-based grease EP - 2NLGI No. 2
								Remove inspection lid and carry out visual check
			*					Check wheel bearings, re-lubricate as necessary
			*				*	Set telescoping arm play
							*	Clean bleed filter in the suction channel
*			*				*	Carry out trial runs, check all functions, check leak-tightness and plant safety

12.5 BOOM LUBRICATION SCHEDULE: 8H OR DAILY



Front boom



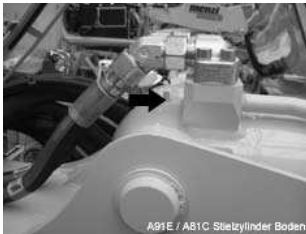
Bucket cylinder



Shaft cylinder



Hose guide, boom



Shaft cylinder, floor



Boom cylinder



Boom cylinder, floor

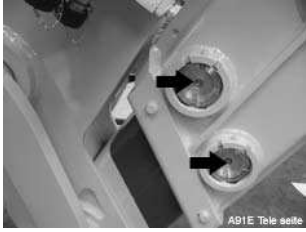


Arm boom

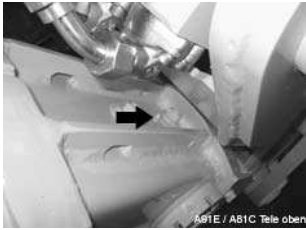


Centre part boom

12.6 TELESCOPING BOOM LUBRICATION SCHEDULE: 8H OR DAILY



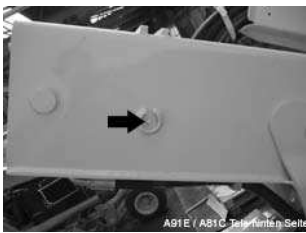
Front side telescope



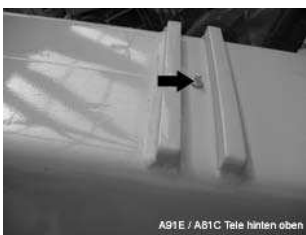
Front top telescope



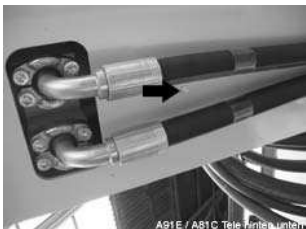
Front bottom telescope



Rear side telescope

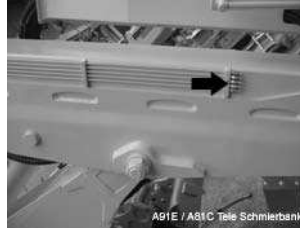


Rear top telescope



Rear bottom telescope

Boom options



Telescoping lubrication bank

12.7 LUBRICATION SCHEDULE CHASSIS: 50 H OR DAILY



Outside swivel foot



Inside swivel foot



Ground support cylinder



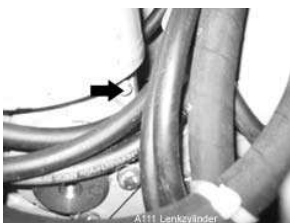
Bar support cylinder



Ball race slewing ring



Bar articulated cylinder

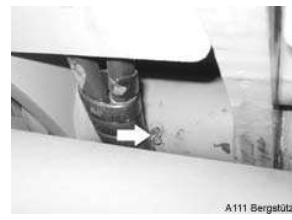


Ground articulated cylinder

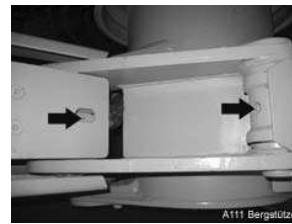
Option sprang



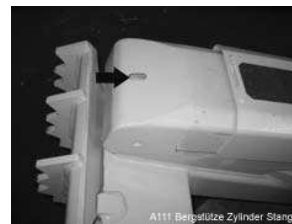
Sprag option
Sprag, main bolt



Sprag, deflection mechanism

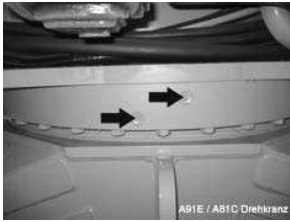


Sprag, deflection mechanism



Sprag, front cylinder

12.8 LUBRICATION SCHEDULE CHASSIS: 50H OR WEEKLY

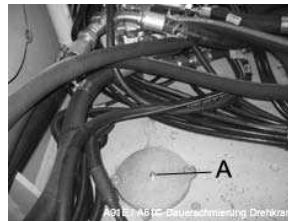


Rotating assembly,
engine side

Lubrication interval 1000h or annually



Rotating assembly,
boom side



Service lid for
permanent lubricant fill
of the rotating assembly
internal gearing and the
gear pinion



Lubricate rotating assembly in 3 to 4 positions every 50 h or weekly.

Lubricate daily when using water



12.9 CENTRAL LUBRICATION (OPTIONAL): 8H OR DAILY



Central lubrication
Regular checking of



lubrication tank fill level. If the tank runs dry, the entire system must be bled after being filled.

Please refer to the Central Lubrication Operating Manual for detailed information.

13 ENGINE AND AIR-CONDITIONING UNIT

13.1 GENERAL

This Operating Manual contains no detailed information on servicing, starting or maintaining the diesel motor. It provides only auxiliary, important and machine-related data. Please refer to the engine manufacturer's Operating Manual for detailed information.

13.1.1 Welding work



If welding work is carried out on the machine, the following precautions must be taken to protect the electronic components.

- 1 Disconnect the earth cable from battery to machine.
- 2 Remove all connectors to ECU and injection pump.
- 3 Clamp earth gripper of welding unit to the part to be welded. Not over a long distance, since earth can be restored by cable or similar. This could result in damage.

13.2 INSPECTION COOLING WATER

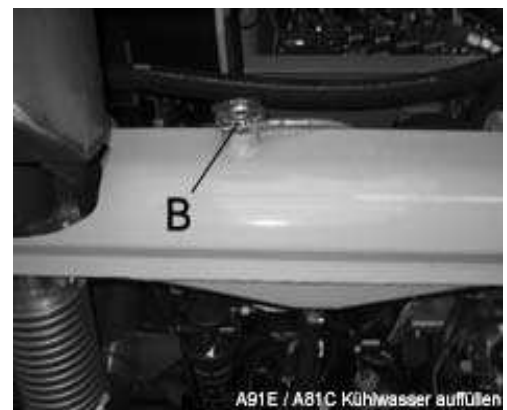
The coolant level must be checked every day prior to beginning work. This is easily done by opening the right casing (see chapter opening side casing). The level in the cooling unit must completely fill the gauge (A). Additionally, the level in the expansion cylinder is continually monitored and displayed on the display (see „Status displays“). If the display lights up during operation, the coolant is low and must be replenished immediately. This is achieved by tipping the cab (see chapter tilting cab). The coolant cover (B) is located toward the rear under the cover.



When the engine is warm, the coolant circuit is under pressure. Be carefully when opening the radiator cap not to be burned by spraying steam.



The cab cannot be tilted completely, as otherwise the heater would be above the level of the radiator, resulting in the potential formation of air bubbles in the system.



13.3 COOLING WATER QUALITY

The cooling water quality you used has a significant influence on the efficiency and life span of the cooling system. Basically, a mix of maximum 40- 60% anti-freeze should be used. Use clean and soft water for the cooling system (see the operating manual provided by the engine manufacturer).

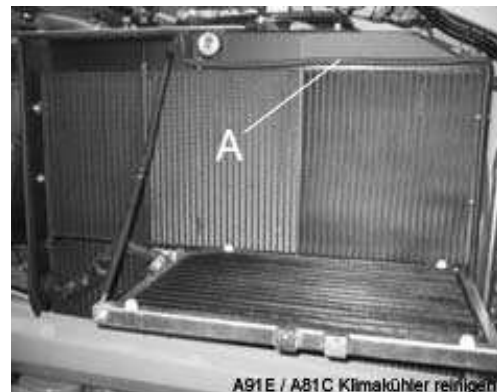
13.4 CLEANING RADIATOR

The engine, hydraulic, charge and air conditioning coolers must be cleaned periodically and any dirt removed. Regular maintenance is especially essential when working in extremely dusty environments and damp weather. The radiators are mounted in a maintenance-friendly location on the right-hand side and can be easily accessed by opening the engine cover.

The air-conditioner radiator can be pushed forward by loosening the screw (A) and can then be folded downward, providing easy access to the radiators located behind it.



The radiators must not be damaged by excessive water pressure.



13.5 SERVICING THE AIR FILTER

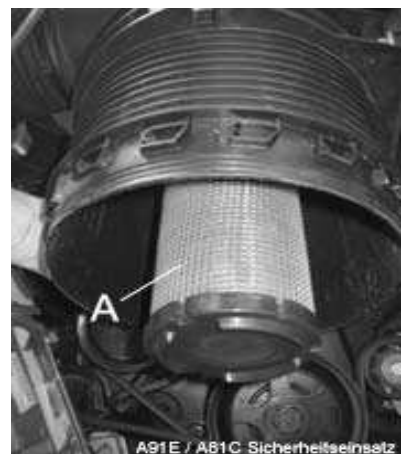
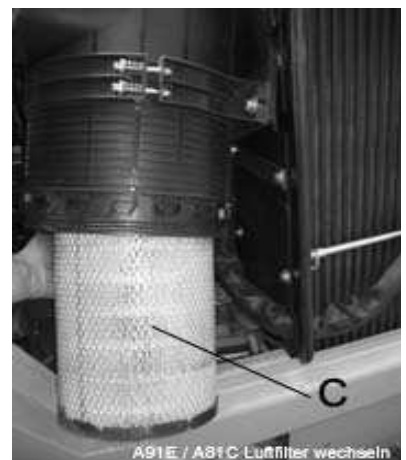
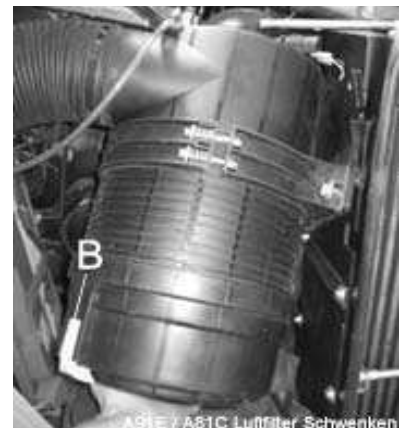
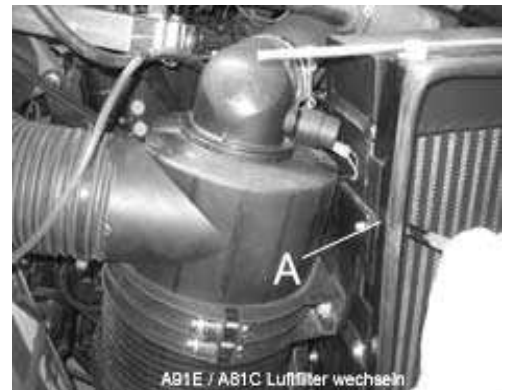
The interval for servicing the air filter unit depends on the dust concentration in the air and on the speed of the engine. Ideally the filter cartridges are only cleaned or replaced when the service switch is activated (no later than the ordered hours). However, every time on starting up the engine it should be briefly brought up to its maximum speed, and then it should be observed whether the lamp lights up, and thus the functioning of the monitoring system is checked. If the monitoring system does not respond it has to be assumed that the engine can be put into operation for the whole day without any faults within the filter system occurring.

- 1 Remove the fixing screw (A).
- 2 Swivel the air filter forwards.
- 3 Unlock the dust collector / dust cap (B) of the air filter, rotate to the left and remove.
- 4 Carefully move the filter end (C) back and fro to break the seal.
- 5 Pull the filter (C) from the outlet pipe and out of the housing.
- 6 Thoroughly clean inside the filter housing and the outlet bore.
- 7 To replace the main filter insert (A), carefully pull out the filter insert. Replace the main filter insert immediately with a new insert to prevent dust penetrating the air intake system.
- 8 Fit the new or the cleaned preliminary filter insert. Place the hand at the outer filter edge and apply pressure.
- 9 Refit the dust collector / dust cap of the air filter, turn to the right and lock.



Remove the main filter insert (safety insert) (A) ONLY if you want to replace it. Do NOT attempt to clean, wash or reuse the main filter insert. Under normal circumstances, the main filter insert ONLY needs to be replaced if there is a hole in the preliminary filter insert.

Please refer to the engine manufacturer's Operating Manual for detailed information on replacing the air filter cartridge.



13.6 ENGINE OIL AND FILTER CHANGE

Dismantle the engine plate (A) before changing the engine oil and filter. Undo the screws at the back of the engine plate and remove it. The Menzi Muck must be in a horizontal position to enable the engine oil to flow away cleanly. Before starting, place a suitable vessel below the drain.



- 1 Run the engine for 5 minutes to warm up the engine oil. Switch off the engine.
- 2 Remove the oil sump drain plugs (B).
- 3 Drain the engine oil only when warm.



- 4 Rotate the filter insert (C) using a suitable filter button and remove. Dispose of the oil filter insert.



The oil must be correctly filtered to ensure efficient lubrication. Replace the filter at regular intervals.

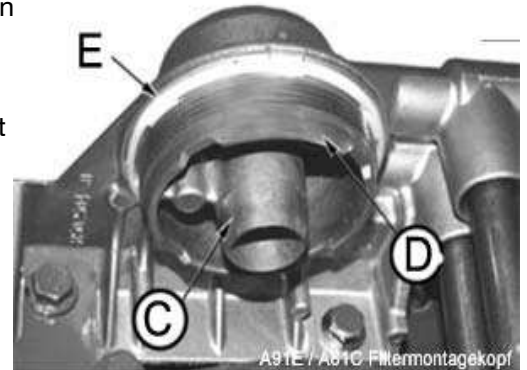
The used filter must conform to the John Deere specifications.

- 5 Apply clean engine oil to the new filter at the internal (A) and external (B) seals and apply to the filter thread.
- 6 Wipe both sealing surfaces of the filter head (C, D) using a clean cloth. Make sure that the grooves in the dust seal (E) are correctly located in the slots in the housing. Replace the dust seal if damaged.



Once the filter insert has been fitted, **TIGHTEN** only **BY HAND**. A filter key may be used **ONLY** for **REMOVAL**. Make sure that the grooves in the dust seal (F) are correctly located in slots in the housing.

- 7 Screw the oil filter on by hand until it is flush with the dust seal (F). Do not, as is normal practice with standard filters, tighten the filter by an additional 3/4 to 1 1/4 rotation once the filter is in contact with the seal.
- 8 Tighten the drain seal to the specified torque. (Drain seal with copper washer 70 Nm, drain seal with O-ring 50 Nm)
- 9 Fill the engine crankshaft housing with the specified motor oil through the oil fill seal (F) on the engine side. The correct quantity is stated in the Specifications Section.



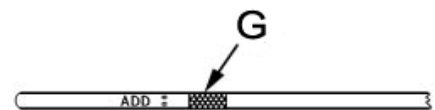
Immediately after an oil change, rotate the engine for 30 seconds without allowing it to start. This ensures the engine components are adequately lubricated before the engine starts.



The fill quantity can vary slightly. Always top up the crankcase until the oil level is within the hatched area. Do not overfill.



- 10 Switch on the engine and allow to run so that it can be checked for leaks.
- 11 Switch off the engine, wait for 10 minutes and then check the oil level (G). The oil level should be within the hatched area (G) on the dipstick.



A91E / A81C Motorenölmesstab

13.7 FUEL FILTER REPLACEMENT

- 1 Clean around the fuel filter thoroughly.
- 2 Remove the wire from the water sensor (A).
- 3 Loosen the drain seals (B) and drain the fuel into a suitable container.

➔ Raising the securing ring as it is being turned makes it easier to rotate over the catch.

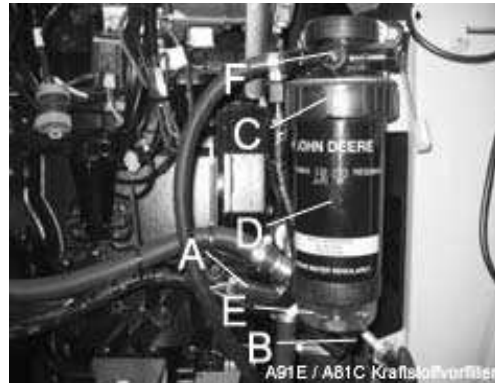
- 4 Hold the securing ring firmly and turn 1/4 rotation clockwise (as viewed from the top). Remove the ring and the filter insert (D).
- 5 Check whether the filter base is clean. Clean as required.

➔ To ensure correct installation, the guide pin on the fuel filter housing must line up with the slots in the mounting base.

- 6 Attach the new filter inserts (D) to the mounting bases. Make sure that the inserts line up and are firmly seated on the bases. The filter may have to be rotated so that it lines up correctly. Remove the filter insert from the water collector (E). Empty and clean the collector. Dry with compressed air. Attach the pot to the new insert. Tighten.
- 7 Line up the shim on the filter insert with the slots in the filter base.
- 8 Attach the securing ring to the mounting base, ensuring that the filter base is fitted with the dust seal. Tighten the securing ring anticlockwise by hand (approx. 1/3 of a rotation) until a clicking noise is heard indicating that it has engaged. Do NOT over-tighten the securing ring.

➔ Correct installation is signalled by a clicking noise and when the securing ring is felt to be loose. The new insert is supplied with a stopper for plugging the used insert.

- 9 Reconnect the water sensor wiring.
- 10 Bleed the fuel system. (See Bleeding the fuel system Section). Tighten the bleed screw (F).



13.7.1 Bleeding the fuel system



Prevent fuel contamination. Do not open fuel lines to bleed the fuel system.

- 1 Manually undo the bleed screw (A) at the fuel filter base by two full rotations.
- 2 Actuate the fuel pump preliminary lever (B) on the fuel filter base until fuel escapes from the bleed screw.
- 3 Tighten the bleed screw. Continue to actuate the preliminary pump until there is no noticeable pump effect.
- 4 Switch on engine and check for leaks. If the engine will not start, repeat steps 1-4.



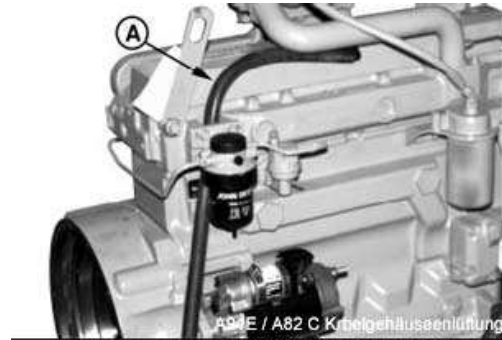
13.7.2 Drain off condensation at the fuel filter

Condensate water can be drained from both the preliminary fuel filter and the fuel filter. This is normally done during a service and filter change. If engine performance starts to drop, check to make sure there is no water in the filters. Provide a suitable vessel. The bleed valve (C)



13.8 CLEANING THE CRANKCASE BLEED PIPE

- 1 Remove the crankcase bleed pipe (A) and clean.
- 2 Fit the bleed pipe. Make sure that the O-ring is correctly seated in the rocker cover of the elbow adapter. Tighten the hose clamp.

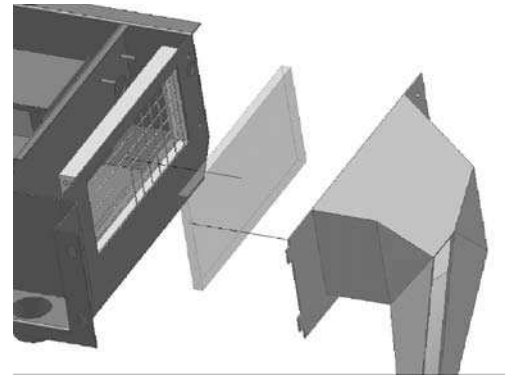


13.9 CHECKING AND ADJUSTING VALVE PLAY

The valve play must be adjusted and re-adjusted after 2000 operating hours. Lower machine in a horizontal position onto the chassis. The rear, side and engine covers must be removed to enable work to be carried out unhindered. Please refer to the John Deere Operating Manual for further details.

13.10 HEATING/AIR CONDITIONING SYSTEM MAINTENANCE

With few exceptions, the heating and air conditioning system does not require any maintenance. To ensure the fault-free operation and maximum performance of the system, depending on dust concentration levels, the intake air must be flushed out of the air channel in the intake port at least every 150 operating hours. The intake air flow will be reduced dramatically if the filter elements are excessively dirty, considerably affecting heating and cooling performance. The filter element is easy to maintain and can be accessed from the left-hand side of the machine by removing the intake port.



13.10.1 Coolant

The air conditioning system coolant circuit contains approx. 750 g of coolant. The manufacturer designation of the coolant used, which is a tetra-fluoro-ethane compound, is R134a. Unlike the compounds used in the past, like R12, which were composed of fluorine, chlorine, carbon and hydrogen, this coolant meets the conditions and requirements of a modern environmentally-friendly coolant. However, guidelines governing the use of such coolants, which are designed to protect health and the environment, must be observed.

13.10.2 Filling

The system is filled before leaving the factory. Special equipment and expert knowledge are required to fill the system correctly. We recommend that the fill level is checked every 2 years by a specialist operator or a Menzi Muck Service Centre or service engineer.

13.10.3 Cooling oil

In this case too, the system is filled to the correct level before leaving the factory. Do not open any couplings on the compressor to avoid the risk of coolant leaking. The correct fill level or residual amount of compressor oil is checked by Menzi Muck engineers during servicing. However, should you need to top up the compressor oil, you should only use PAG diester oils. The oil used must be able to combine with the coolant in order that even system components which are separate from the compressor, in particular the expansion valve and binary pressure switch, can be lubricated.

13.10.4 Repairs to the coolant circuit

Should repairs need to be made to the coolant circuit, please contact one of our Service Centres or a specialist operator in your area. You should never make modifications to or carry out repairs on the coolant circuit. If the coolant heats up, as is the case during soldering and welding, it decomposes and produces extremely poisonous gases and vapours. Decomposition products are also very aggressive.

14 ELECTRICAL EQUIPMENT

14.1 GENERAL

The electrical equipment operates at an operating voltage of 24 Volts. The batteries are dry batteries with 815 A current start. The diesel engine is equipped with a 7.2 kW starter motor.

A windscreen wiper, horn, hour meter, fuel level indicator and two working headlights in front and on the back are also part of the equipment.

Before commencing work on the electrical system or welding work on the machine, the battery should be disconnected (first the negative, then the positive terminal) to prevent short circuits. To reconnect attach first the positive then the negative terminal.



Terminals should be firmly connected and not just lightly laid in. Terminals which are not secure can cause damage to the electronics and the alternator control unit. Never disconnect terminals while the engine is running.



Difficult starting of the engine can frequently be attributed to loose or corroded battery terminals. These overload the life of these components.



Battery power is reduced at lower temperature.



Pause for approximately two minutes each starting procedure so that the battery is able to recover.



Proceed as follows to protect electronic devices during welding work:

1. Ignition switch to „OFF“
2. Disconnect starter battery. Battery main switch must be off.
3. Connecting the earth terminal to electronic welding devices: The earth terminal must be connected to the part to be welded. The earth terminal must never be connected via revolving connections. Undefined welding currents must be avoided.
4. Welding cables must not be laid parallel to electrical lines.
5. Electronic component housings and electrical lines must not come into contact with the welding electrode.



If one of the stated actions cannot be carried out, the connector must be detached from the electronic devices prior to welding.



In the case of plasma welding, the connectors must be detached from the CGM, the DIGSY Compact and other electronic devices prior to welding.

Procedure for fast battery charging

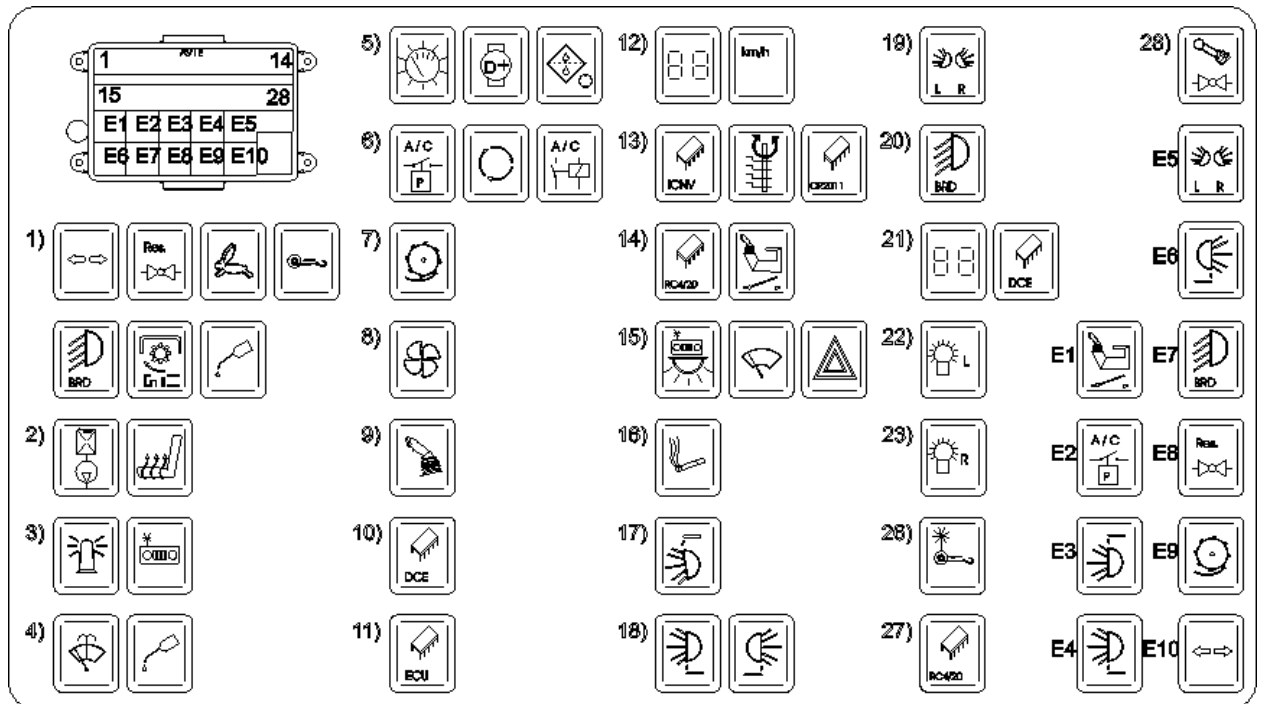
Fast battery charging for powering the control and control components requires the battery to be disconnected.

Procedure for jump starting combustion engines

Combustion engines may only be jump started with the starter battery disconnected.

14.2 FUSES

The main fuse for protecting the electrical components is located below the rear cover to the left on the hydraulic oil tank mounting.



No.	Ampère	Function
1	15 A	Warning lights, High speed gear, Reserve valves, winch, Finemode
2	20 A	Diesel filling pump, operator's seat
3	15 A	Turning light, Radio
4	15 A	Intervall wiper system, central lubrication system
5	7.5 A	Instrument lighting
6	15 A	A / C compressor coupling, circulating air cover
	30 A	Air-conditioning unit USA
7	15 A	Harvester control, options
8	10 A	Heater fan gages 1 - 3
9	1 A	Joystick supply left / right
10	10 A	DIGSY Compact
11	10 A	ECU
12	2 A	Display, driving foot pedal
13	15 A	ICN-V-modul, auxiliary moduls CR2011
14	2 A	Armrest switch, GLR
15	15 A	Inner lights, Wiper engine forest verion, warning lights
16	20 A	Cigarette lighter
17	20 A	Front working headlights below, forest version
18	15 A	Front and rear working headlights above
	25 A	Front and rear working headlights above, forest version
19	20 A	Side working headlights, forest version
20	20 A	Headlight low beam
21	3 A	Connection 30 on display (CGM) and DIGSY Compact
22	5 A	Parking light left

23	5 A	Right parking light
24		reserve
25		reserve
26	15 A	Radio control winch
27	15 A	Maximum load limit control GLR
28	10 A	Steering switchover

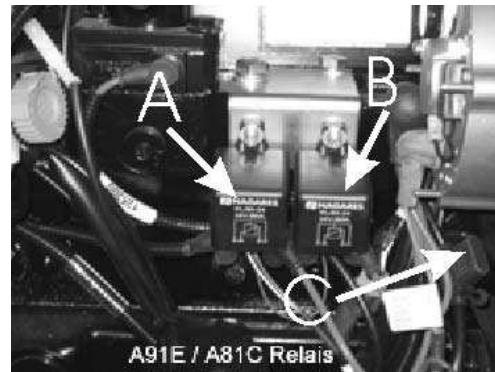
14.2.1 Main fuse (70 A)

The main fuse for protecting the electrical components is located below the rear cover to the left on the hydraulic oil tank mounting.



14.2.2 ECU fuse (3 A)

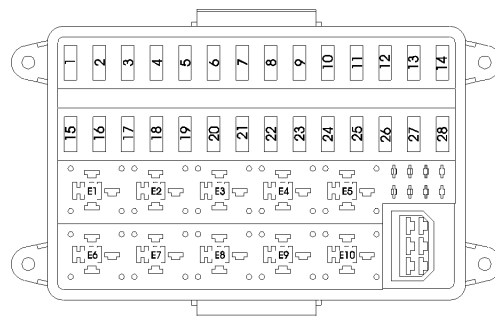
The engine manufacturer equips the Engine Control Unit (ECU) with an uninterrupted power supply. This supply is guaranteed by a fuse (C) below the alternator.



14.3 RELAYS

The relays are in the cab under the panel to the right of the operator.

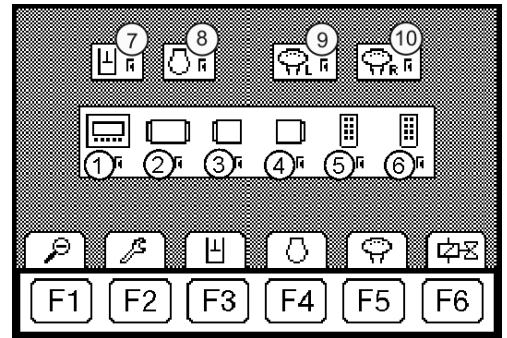
No.	Function
A	Starter relay
B	Pre-glow relay
E1	Armrest switch
E2	A / C compressor coupling
E3	Front working headlights below
E4	Front working headlights above
E5	Side working headlights forest version
E6	Rear working headlights
E7	Road approval, Germany
E8	Reserve
E9	Harvester supply
E10	Flasher



14.4 CONTROL MODULE MENU

F1 in the basic menu opens the detail menu. F2 in the detail menu opens the control module menu. The active control modules can be checked in this view, hence enabling a more accurate diagnostics runs. This view is also the basis for the status menu described below. If a control module is actively connected to the CANBUS, the module is ticked. If the module is inactive or not fitted, an exclamation mark appears!

- 1 Display unit CGM
- 2 Digsy Compact DCE
- 3 ICN-V, left board control
- 4 ICN-V, right board control
- 5 Auxiliary module 1 (tilt rotator application)
- 6 Auxiliary module 2 (harvester application)
- 7 RC4-4/20, GLR
- 8 ECU control, John Deere engine electronics
- 9 Left joystick
- 10 Right joystick



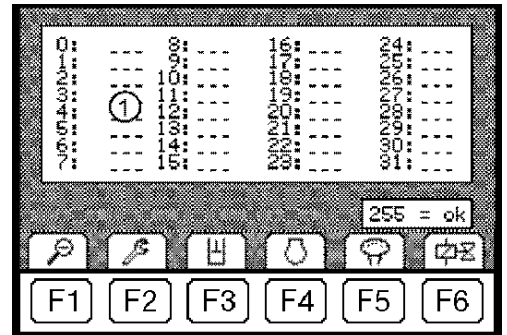
F1 returns to the control module menu and pressing F1 repeatedly to the basic menu.

14.5 STATUS MENU OF THE RC4-4/20

Starting from the control module menu, F3 opens the status menu.

- 1 Memory index organises the errors according to the affected component.

➔ If errors are displayed in the status menu, they must be read off and noted down so that they are available for the trouble shooting operation at a later time. Restarting the machine (ignition on/off) restarts the program and an error that has occurred once may disappear.



The error list will clear when after a restart!

F1 returns the user to the control module menu and pressing F1 repeatedly to the basic menu.

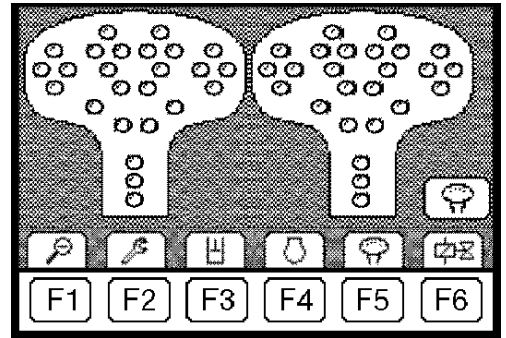
Memory index	Error code (255 = no error))	Error code (255 = no error)	Working hydraulics	Driving active	Trouble shooting
0	130	Accelerator	j	n	Accelerator depressed at switch-on
0	12	Accelerator	n	n n n	Accelerator potentiometer defective Potentiometer short circuit to earth or +24V Neutral switch defective
1		Limiter potentiometer V max			No diagnosis possible
2		Speed potentiometer V max			No diagnosis possible
7	8	Diesel speed sensor			Sensor short circuit or interrupt
10	4	Battery voltage			Voltage < 20V
10	3	Battery voltage			Voltage > 30V
11	4	Supply voltage to sensors + Potentiometer	j	n	Voltage < 7.5V Short circuit to earth
	3	Supply voltage to sensors + Potentiometer	j	n	Voltage > 8.5V short circuit to +24V
12	12	Brake solenoid	n	n	On: short circuit to earth or interrupt Off: short circuit to +24V
13	12	Operating pump solenoid			Short circuit / interrupt
14	12	Drive solenoid forwards	n	n	Short circuit / interrupt
16	12	Release valve	n	n	On: short circuit to earth or interrupt Off: short circuit to +24V
17	12	Drive solenoid back	n	n	Short circuit / interrupt
18	12	High pressure gear (Powermode)			Short circuit to +24V when On Interrupt when Off
24	13	EEPROM	j	n	Incorrect version number
25	13	CAN Bus			CAN line defective / DCE or ECU Off
29	8	Idling gas reset button	j	j	Press > 10 seconds
30	12	Fine mode solenoid	j	j	Short circuit / interrupt
31	8	Power Mode button	j	j	Press > 10 seconds



If when driving in „normal“ mode the safety controller is active and „driving“ is switched off, the vehicle will brake over a ramp to prevent it from stopping too quickly.

14.6 JOYSTICK DIAGNOSTIC MENU

Starting from the control module menu, F5 opens the joystick diagnostic menu. This menu allows the user to check whether each individual switch on the joystick transmits the signal to the machine control Canbus. The cause of any error occurring is then easy to detect. The joystick and mounted switches are shown symbolically by circles. If a switch is active, the circle is black inside.

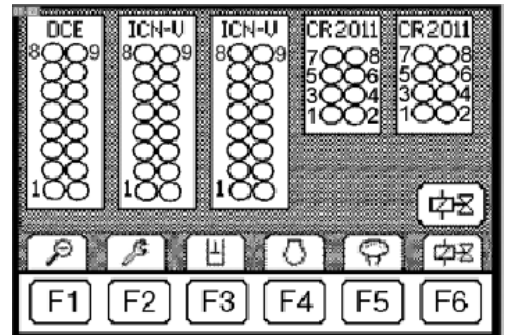


➔ When this menu is used, the engine must be off, the ignition turned to on and the armrest moved to the working position!

F1 returns the user to the control module menu and pressing F1 repeatedly to the basic menu.

14.7 OUTPUT MODULE DIAGNOSTICS MENU

Starting from the control module menu, F6 opens the output module diagnostic menu. This menu allows the user to check whether each individual output is switched to the Digsy Compact, ICN-V and RC2011. The cause of any error occurring is then easy to detect.



➔ When this menu is used, the engine must be off, the ignition turned to on and the armrest moved to the working position!

F1 returns the user to the control module menu and pressing F1 repeatedly to the basic menu.

DCE

- 1 Alarm bleeper
- 2 Electric winch
- 3
- 4 Reserve Joystick button R3
- 5 Bucket - steering switchover valve
- 6
- 7 Reserve Joystick button R4
- 8 Electric winch
- 9 Solenoid valve LS support
- 10 Windscreen wiper interval
- 11 Horn
- 12 Martin quick coupler
- 13 Auxiliary hydraulic connection 80 l/min
- 14 Auxiliary hydraulic connection 80 l/min
- 15 3.Control circuit 40 l/min
- 16 3.Control circuit 40 l/min

ICN-V Support, left side

- 1 Foot, front left inwards
- 2 Foot, front left outwards
- 3 Mountain stabilizer 2 front left up
- 4 Mountain stabilizer 2 front left down
- 5
- 6
- 7 Block
- 8
- 9 Mountain stabilizer , left up
- 10 Mountain stabilizer , left down
- 11 Foot, front left down
- 12 Foot, front left up
- 13 Wheel, rear left down
- 14 Wheel, rear left up
- 15 Wheel, rear left outwards
- 16 Wheel, rear left inwards

ICN-V Support, right side

- 1 Foot, front right on
- 2 Foot, front right off
- 3 Mountain stabilizer 2 front right up
- 4 Mountain stabilizer 2 front right down
- 5
- 6
- 7
- 8 2.Gear
- 9 Mountain stabilizer right up
- 10 Mountain stabilizer right down
- 11 Foot, front right down
- 12 Foot, front right up
- 13 Wheel, rear right down
- 14 Wheel, rear right up
- 15 Wheel, rear right outwards
- 16 Wheel, rear right inwards

CR2011 Option module ID4

	Rototilt	Harvester Woody 50	Naarva Grip Feller
1	Grab open	Roller feed slow	Guillotine Grab closed
2	Close Grab	Roller open / closed	Rotator left
3	Tilt left	Close Grab	Tilt up
4	Tilt right	Open Grab	Loading Grab closed
5	Open auxiliary Grab	Roller feed forward	Loading Grab open
6	Close auxiliary Grab	Roller feed forwards	Tilt down
7	Turn totator to left	Turn rotator to left	Rotator to right
8	Turn rotator to right	Turn rotator to right	Retaining Grab open

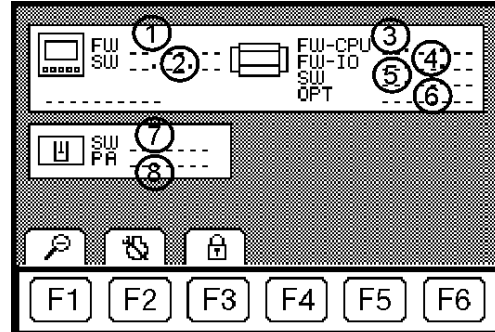
CR2011 Optional module ID5

1	
2	Forestry feed unit up / down
3	Position forestry head / floating position
4	Forestry automatic felling position
5	Forestry gripper pressure reducer
6	Forestry saw
7	Fix forestry head / floating position
8	Forestry automatic mode on / off

14.8 SERVICE MENU

F1 in the basic menu opens the detail menu. From the detail menu, pressing F2 twice opens this menu. Here, the firmware and software version of the individual control components can be read off.

- 1 Firmware version of the display (CGM)
- 2 Software version of the display (CGM)
- 3 Firmware version of DIGSY Compact (CPU side)
- 4 Firmware version of DIGSY Compact (I/O side)
- 5 Software version of DIGSY Compact
- 6 Option code
- 7 Software version of GLR (RC4/4-20)
- 8 Parameter block of GLR (RC4/4-20)

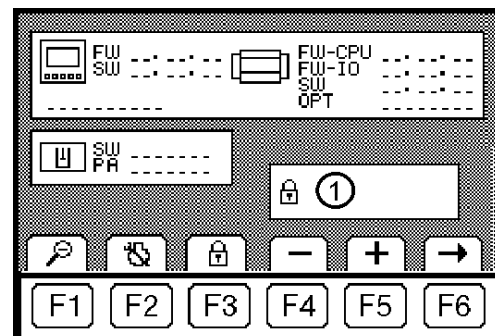


➔ The firmware and software versions are helpful with questions on the display and when contacting the service department.

14.9 SERVICE CODE

The service symbol appears in the display when a service is due. To clear the symbol, F2 must be pressed again in the service menu so that the input field (1) for the service code appears. Pressing F3 opens an identical input field, although the service code below is not accepted.

- 1 Service code 518300 input field. Pressing F4 or F5 increases and decreases the number respectively. Once the first digit has been entered, pressing F6 moves the cursor to the next digit. This process is repeated until all the code's digits have been entered. During the process, the digit with a black background flashes. If the input range of 1-9 is over or underrun, an „E“ appears. In this case, input must occur in the opposite direction. If the correct code is confirmed, „OK“ will appear and the service symbol in the main screen is cleared. In the detail menu, the user can now control how many more hours can be worked and when the next service will fall due. When the code is entered, the service interval increases to the next service and the service symbol is cleared.



The code can be entered repeatedly until a maximum of 999 hours is exceeded in the display, the code will then no longer be accepted. The number dictates the factory-set service interval!

Correction: Check after every entry in the detail menu!

➔ Once the code has been correctly entered, pressing F2 again clears the service code input field. F1 in the basic menu re-opens the basic menu.

15 HYDRAULIC SYSTEM

15.1 HYDRAULIC OIL TANK

In the hydraulic oil tank, a return filter with a filter element is built in. Before the return flow of the hydraulic oil gets to the hydraulic oil tank, it is passed through the hydraulic oil cooler and the return filter. Here the hydraulic oil in circulation is cooled and cleaned. Fill only fresh hydraulic oil. For carrying out maintenance, the return filter element can be reached after unscrewing the filter cover on the hydraulic oil tank. Upstream of the return filter, a bypass valve (overflow valve) is installed. In the event of an overpressure in the return circuit, the bypass valve opens and lets the hydraulic oil flow into the hydraulic oil tank. The level of the hydraulic oil can be checked on the hydraulic oil gauge which is mounted in front of the tank.

15.2 OIL TYPES

When changing the oil, we recommend using the type of oil first used at the factory (Panolin). Do not mix different hydraulic oils together, as this may result in lower quality. If, for technical or operational reasons, a different oil type is required, be sure to select an oil that meets the specifications.

For the working hydraulics, the hydraulic oil used must meet the specified quality. At the plant, we first filled the machine with hydraulic oil having the following viscosity properties:

- max. 1000 mm²/s (cSt) at minus 15° C (or lower)
- min. 10 mm²/s (cSt) at plus 90° C (or higher)

If using biodegradable hydraulic fluids, the following must be observed:

Never mix biodegradable hydraulic oil with synthetic oil. (consequential damage)

If you use oils other than those approved by MENZI MUCK AG (Panolin HLP Synth), the manufacturer shall not be held liable for any damages that result.

15.3 CHECK HYDRAULIC OIL LEVEL

Check level of hydraulic oil daily or before starting operation.

15.3.1 Machine setting

The machine must be in the horizontal so that the oil level can be correctly read off.

Fully lower the machine and position the support straight (push the drive wheels together and set the claws to the driving position).

The boom is extended and lowered to the ground (A).



15.3.2 Oil level indicator

The oil level must be between the two marks on the oil level eye (B). Top up hydraulic oil as necessary.



15.4 REPLACING HYDRAULIC OIL FILTER

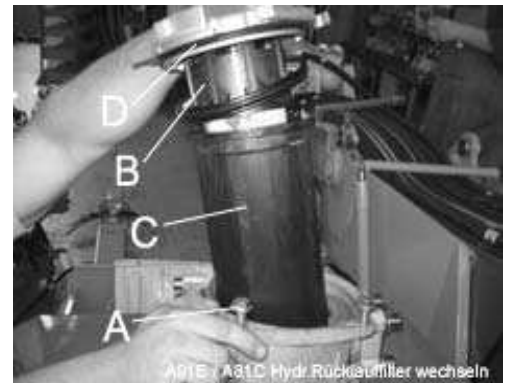
15.4.1 Replacing the return filter

After 50 - 100 hours of operation, replace the filter during the first service. Then replace the hydraulic oil filter element after every 1000 hours of operation, annually or when the filter control light comes on. The filter must also be replaced every time the hydraulic oil is changed. If the filter element is not replaced, the filter insert becomes clogged and the bypass valve will allow the hydraulic oil to flow back into the container unfiltered.



After being prompted to replace the filter, first clean around the filter cover so that no dirt can penetrate the hydraulic oil tank.

- 1 Undo the screws (A) and lift off the filter cover. The cover has a locating groove for the O-ring. The O-ring creates the seal between the hydraulic oil container and the filter cover.
- 2 To replace the filter element, lift off the filter cover as described above.
- 3 Dismantle the filter element (B) and the dirt trap tray (C) together.
- 4 Remove the filter element and dispose of it. 5 Clean the dirt trap and re-use with the new filter element.



Reassemble in the reverse sequence.

- 6 Insert the new filter element into the dirt trap tray.
- 7 Mount the dirt trap tray, including filter element.
- 8 Lubricate the O-ring (D) and insert into the locating groove in the filter cover. Check for damage.
- 9 Mount the filter cover.
- 10 Fasten the filter cover with screws.

15.4.2 Changing the supply pressure filter

After 50 - 100 hours of operation, replace the filter during the first service. Then after every 1000 hours of operation, annually or when the filter control light comes on. The filter must also be replaced every time the hydraulic oil is changed. If the filter element is not replaced, the filter insert becomes clogged, which can cause damage to the hydraulic components.

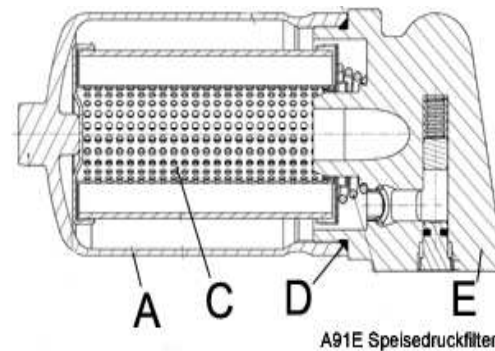


After being prompted to replace the filter, first clean around the filter cover so that no dirt can penetrate the hydraulic oil tank.

- 1 Mount the key (B) onto the filter housing (A).
- 2 Unscrew the filter housing anticlockwise to loosen it.
- 3 Remove the filter element (C) and dispose of it.
- 4 Clean the filter housing.

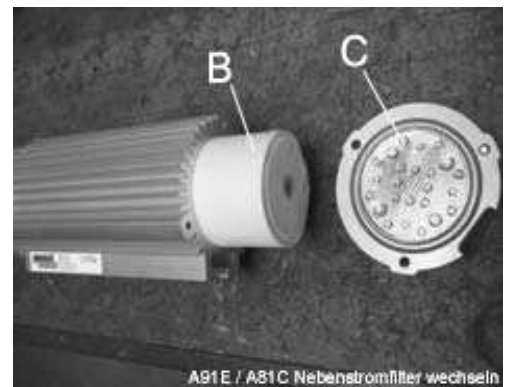
Reassemble in the reverse sequence.

- 5 Mount the filter element into the filter housing.
- 6 Lubricate the sealing ring (D) and insert into the locating groove provided. Check for damage.
- 7 Screw filter housing onto the filter head (E) and tighten. (45Nm)



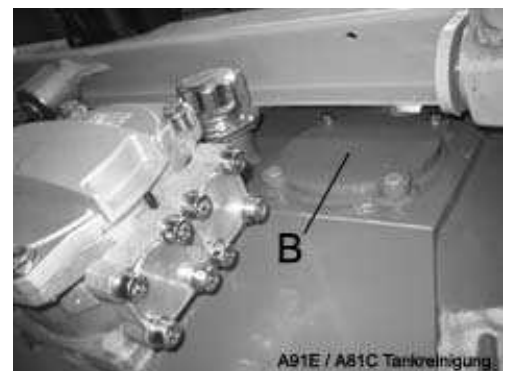
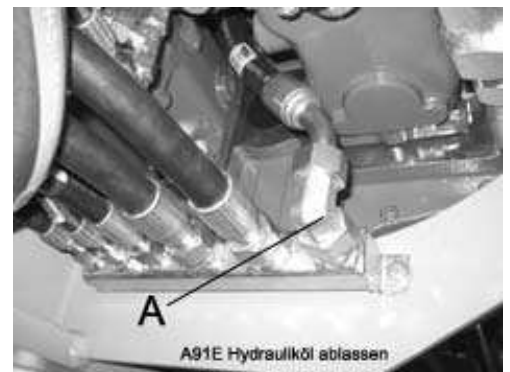
15.4.3 Replacing the partial flow filter (optional)

The partial flow filter must be replaced after every 500 hours of operation. The filter is located on the hydraulic tank next to the filling nozzle. Remove the three screws (A) from the filter cover and detach the cover carefully. Remove the filter element (B) and dispose of it. Clean the filter housing and the filter cover. Slide the new filter element into the clean filter housing. Before mounting the filter cover, check that the sealing ring (C) is correctly seated in the groove. Mount cover and tighten screws.



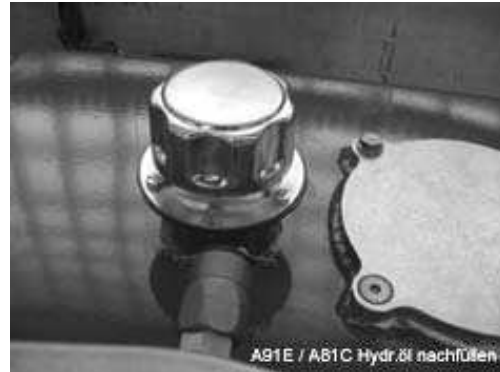
15.5 CHANGING THE HYDRAULIC OIL

Change the hydraulic oil after every 2000 hours of operation or after 12 months, whichever is the earlier. The intervals may be extended if the checks are carried out by the oil supplier. An oil change is also recommended following major damage to the hydraulic system. The hydraulic oil present in the system must also be completely drained when the oil type is changed. Before draining the oil, run in all cylinders so that the hydraulic oil can flow back into the hydraulic tank. Where possible, the excavator should be positioned at an angle so that the hydraulic oil tank is higher than the drain outlet. Place an empty container below the drain outlet, detach the hose (A) and completely drain the used oil. Clean the hydraulic oil tank before replenishing with fresh oil. (Open cleaning cover (B)) Never run the engine with an empty oil tank as this will damage the pumps.



15.6 OIL FILLING PROCEDURE

The cab must be tilted before the hydraulic oil can be replenished. (See Tilting cab Section) Ensure the greatest possible cleanliness when replenishing the oil. Use only filtered hydraulic oil. This also applies to hydraulic oil from a barrel or a tank. After filling, the hydraulic oil pump must be vented. Then allow the engine to idle for approx. 5 mins and check the pump fill level again. If the hydraulic oil is filled with a hand pump from a barrel, the oil must not be sucked up from the bottom of the barrel. Retract and extend the hydraulic cylinders several times and check the oil level in the sight glass on the hydraulic tank.

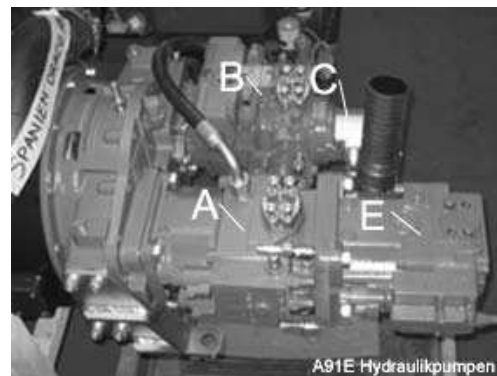


Check the hydraulic oil tank cover

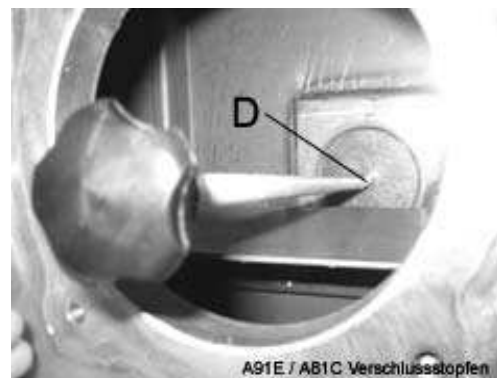
The hydraulic oil tank is pressurised to approx. 0.5 bar. The pressure is controlled by the tank cover. The pressure increases when the machine has been operating for a certain time. Switch off the machine and detach the tank cover. You should hear a hissing noise.

15.7 HYDRAULIC PUMPS

The latest generation of LIFD pumps (load-independent flow division) works with a variable displacement axial piston pump, working pressure 280 bar. The control is highly sensitive. The LIFD eliminates all the drawbacks of the old load sensing control. The total output is 586 litres/min. Working hydraulics 220 l/min. (A), drive hydraulics 160 l/min. (B). The traction drive is actuated by a separate variable displacement axial piston pump. The working pressure is 400 bar. The hydraulic fan (C) is driven by a separate gearwheel pump (36 l/min). The optional Powerline pumpe (E) outputs 170 l/min at a max. of 350 bar.



The feed to the working, driving and fan pumps can be sealed off during repair work. First open the cleaning cover (see Section 4.5). The suction opening can then be sealed using the MENZI MUCK auxiliary tool (D) (sealing plug).



Never start the engine with the connection opening sealed!

15.8 BLEEDING THE HYDRAULIC PUMPS



Before start-up or after repairs to a hydraulic pump, the pump housing must be bled at the connection (T). The hydraulic pumps must never be operated with the cock closed.

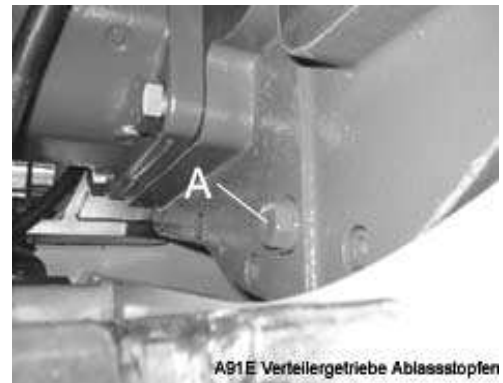


15.9 DISTRIBUTOR GEAR

The first oil change must be after approx. 50 to 100 hours of operation and then after every 1000 hours or 12 months, whichever is the earlier.

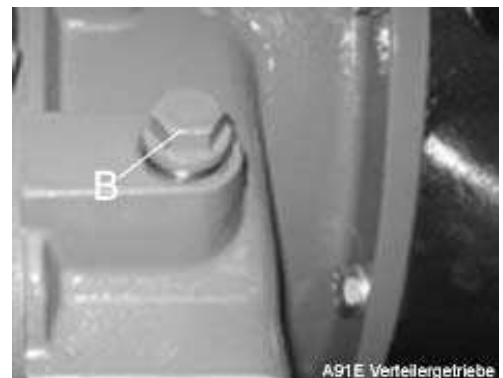
15.9.1 Draining the oil

Where possible, the lubricant should be drained off when warm so that all the used lubricant is effectively replaced. Place a suitable container below the drain screw, undo the drain screw (A) and drain the oil. Recommendation: if the oil is heavily contaminated, flush the gear with new lubricant.



15.9.2 Replenishing the oil

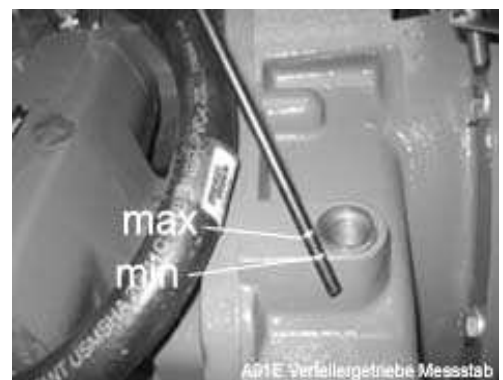
For oil quantity and quality, see the Lubricants Section. Undo the screw (B) and check the oil level with the dipstick. The marks (max, min) on the dipstick apply when the screw is undone.



Do not overfill. This may cause oil to leak from the gear vent.



Oil level check: Check for leaks daily and after 500 hours of operation.



15.10 INSTALLATION INSTRUCTIONS FOR PIPE AND HOSE LINES

The individual components of Hydraulic units are connected together by pipes and moving components by hoses. It is imperative that the following steps be carried out prior to disconnecting hose couplings and fittings or before replacing hoses and pipes:

1. The boom assembly is to be placed on the ground.
2. The machine (chassis) is to be placed on level ground.
3. Shut down engine and activate ignition. The hydraulic system has to be made zero-pressure by activating the control lever and opening the hydraulic tank screw-cap (hydraulic tank is pretensioned).
4. Suitable containers must be positioned to collect the oil

Possible causes for faulty seals on fittings are:

1. Fitting is loose.
2. Fitting is deformed.
3. Fitting or line is damaged.
4. Sealing element (seal, edge, seal edge ring, O-ring) is damaged.
5. Connecting seal surface (flange fitting) not working freely.

Each time the compression nut is undone it must be retightened without using excessive force.

With correctly jointed and mounted lines and fittings, retighten the compression nut by 1/2 turn if there is a leak. If the leak persists, the fitting must be opened and examined to see if it is deformed, cracked, or if the pipes are misaligned or show signs of grooving. If the seal can not be achieved after the apparent fault has been remedied the fitting must be replaced.

16 SWING

16.1 SWING GEAR

A hydromotor and a multiple disc brake are mounted on the swing gear. The hydromotor powers the swing gear which has the function of reducing the hydromotor speed to attain the necessary swing torque to allow the upper structure to rotate. The upper structure will be braked from the swinging motion over the swing gear and the hydromotor and held by the automatically braking multiple-plate brake. The swing gear has two planetary gear stages.

16.1.1 Maintenance

Before the first commissioning, clean oil in accordance with the lubrication recommendations, (see lubrication chart).

The oil is drained and replenished at the connection (A).

Quantity: 2,5 litres / 0.65 gal

The base plate (B) below the cooler must be dismantled before the oil is drained.

The oil level is filled up to the upper marking on the dipstick (C).

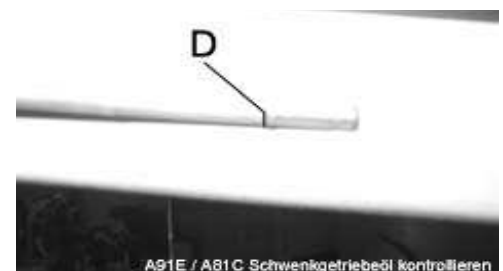
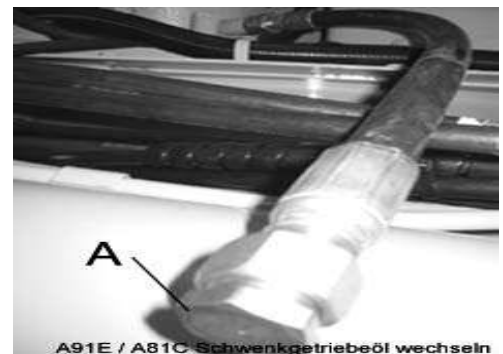
After a short period of operating time the oil level (D) should be rechecked, as the oil is distributed throughout the gearbox during operation.

Weekly : Check oil levels and inspect for leaks

Monthly: Check all external pin connections

Oil change: First oil change after 50 - 100 operating hours.

Further oil changes see lubrication plan.



16.2 ROTATING BALL BEARING JOINT

The upperstructure and chassis are joined by a roller bearing. Every 100-120 operating hours, lubricate the ball bearings by lubricating fittings in 3 to 4 positions with a grease gun. Shorter lubrication intervals: In the tropics, in high relative humidity, in high dust and dirt concentrations, in high temperature fluctuations and continual swing movements. Before and after long intervals, the swing bearing should be well lubricated. Revolve swing bearing during lubrication. Check that a thin coat of grease exists.

16.2.1 Internal gearing through a permanent bath

The internal gears on the swing bearing and the pinion of the swing gear run through a permanent bath. After 500 operating hours remove the lid and check condition of the gears and of the pinion, and check that a thin coat of grease exists. The teeth of the swing gear and pinion are sufficiently lubricated when all teeth flanks are coated with a thin film of grease.

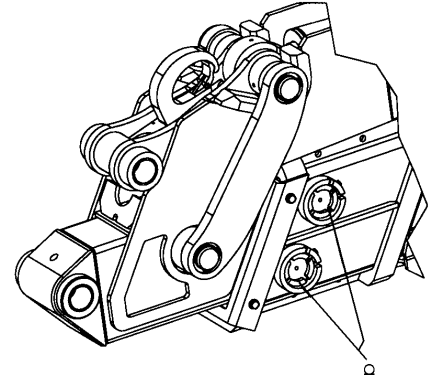


The maximum wading ability is limited with the lower edge of the slewing ring. Never go further into the water!

17 TELESCOPE

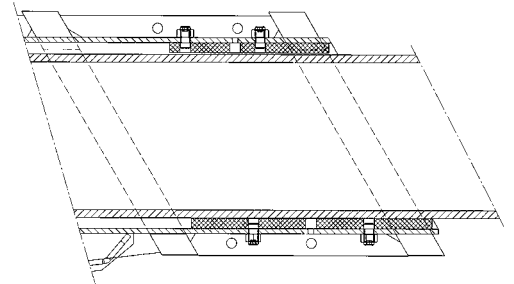
17.1 READJUSTING AT FRONT SIDE

The adjustment screws (a) can be readjusted by releasing the locking screws. One turn clockwise reduces the play, and one turn anti-clockwise increases the play. It must be ensured that the adjustment screws are not tightened too much and the inner tube is not adjusted too much off-centre, as this can result in excessive wear. The selected adjustment must be checked by retracting and extending the telescope.

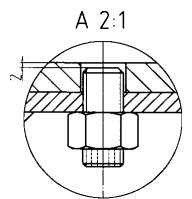


17.2 READJUSTING AT FRONT TOP AND BOTTOM

The screws protruding at the top and bottom are used to secure the wearing plates and not to adjust the telescope. For adjustment, adjustment plates with different thicknesses are required. These are pushed under the wearing plates.

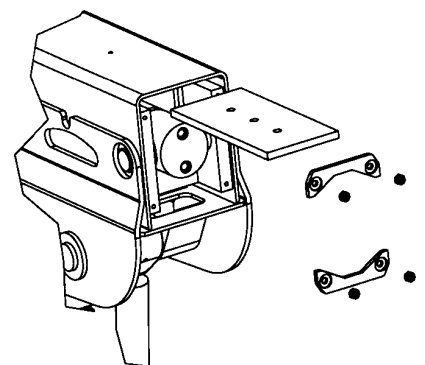


When adjusting the telescope with shims, it must be ensured that the wearing plate extends 2 mm relative to the securing screw. Readjust the screws if necessary.



17.3 READJUSTMENT AT REAR

The telescope can be readjusted at the top and bottom in the rear. The selected version does not permit a correction of the lateral play. For readjustment the telescope must be extended approx. 100 mm and set down on the ground, the inner tube at the top rear is relieved. Then the rear cover plate must be removed. By unscrewing the nuts, the retaining plate can be removed and the adjustment plates can be pushed in until the correct play is achieved. Assembly is carried out in reverse order. If the lower play is to be adjusted, do not lower the shovel handles to the ground and also remove hydraulic hoses.



The inner telescope tube must be secured with suitable measures. The residual pressure on the connections must be released

18 DRIVE MECHANISM

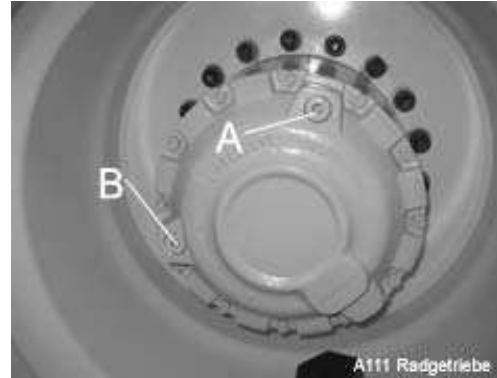
18.1 MAINTENANCE

The rear wheels are driven all four hydrostatic wheel-hub drives filled with gear oil. The wheel-hub drives are equipped with an automatic parking brake that also runs in an oil bath. The brake is adjustment and maintenance-free.

Checking oil level: Check daily for leaks or after 500 hours

Procedure

1. Raise wheel
2. Adjust wheel so that sealing plug (A) is positioned horizontally
3. Open sealing plug and check oil level
4. Top up if necessary
5. Close sealing plug



Oil change interval: 1,000 hours or annually

Procedure

1. Raise wheel
2. Provide suitable catch container (capacity at least 3 litres)
3. Position the wheel so that lock screw (B) is down and lock screw (A) is horizontal.
4. Open sealing plugs and drain oil into suitable container
5. Mount lock screw (B) as soon as all the oil has drained.
6. Pour in suitable gear oil (see lubricant table) until oil runs out at horizontal opening
7. Close sealing plug (A).



New oil must not be poured in too quickly so that no air bubbles are formed that produce incorrect measuring results.

19 FAULTS AND FAULT RECTIFICATION

19.1 TROUBLE SHOOTING ON THE ENGINE

Fault	Cause	Remedy
Engine turns over, but will not start.	No fuel.	Check fuel in tank.
	Exhaust blocked.	Clear exhaust clogging.
	Fuel filter clogged or full of water.	Replace fuel filter or
	Fuel not reaching the injection pump or air in the fuel system.	drain off water from the filter.
	Injection pump or nozzles damaged.	Check fuel flow at feed pump or bleed fuel system.
Engine difficult to start or will not start.	No fuel.	Have repair or replacement carried out by approved workshop.
	Hydraulic system runs up	Check fuel.
	Block.	Switch off hydraulic consumers.
	Air in fuel line.	Vent fuel line.
	Cold starter defective.	Check pre-glow relay and coil.
	Low starter motor speed.	See „Starter motor is slow to turn over“.
	Incorrect viscosity of engine oil used.	Use the correct viscosity of oil.
	Incorrect fuel type.	Contact fuel supplier, use correct fuel type for operating conditions.
	Water, dirt or air in the fuel system.	Drain, flush, fill and bleed system.
	Fuel filter clogged.	Replace filter insert.
	Electronic fuel injection nozzles clogged or damaged.	Have injection nozzles checked by approved workshop or engine dealer.
	Problems with electronic fuel system.	Contact the John Deere dealer or approved workshop.
	Motor knocks.	Engine oil level below minimum.
Low coolant temperature.		Remove thermostat and check.
Engine overheated.		See „Engine overheats“.
Engine cold.		Incorrect or defective thermostat. Remove thermostat and check.
Engine runs erratically or stalls frequently.	Low coolant temperature.	Remove thermostat and check.
	Fuel filter clogged.	Replace fuel filter insert.
	Water, dirt or air in the fuel system.	Drain, flush, fill and bleed system.
	Injection nozzles clogged or damaged.	Have injection nozzles checked by approved workshop or engine dealer.
	Problems with electronic fuel system.	Contact the John Deere dealer or approved workshop.

Engine temperature below normal.	Thermostat defective.	Remove thermostat and check.
	Temperature display or sensor defector.	Check display, sensor and connections.
Impaired performance.	Engine overload.	Reduce load.
	Air intake clogged.	Repair air filter.
	Fuel filter clogged.	Replace filter inserts.
	Incorrect fuel type.	Use the correct fuel type.
	Engine overheated.	See "engine overheated"
	Engine temperature below normal.	Remove thermostat and check.
	Incorrect valve play.	Contact approved workshop or engine dealer
	Injection nozzles clogged or damaged.	Contact approved workshop or engine dealer
	Incorrect injection pump setting.	Contact approved workshop or engine dealer
	Problems with electronic fuel system.	Contact approved workshop or engine dealer
	Turbocharger inoperable.	Contact approved workshop or engine dealer
	Exhaust manifold seal not right.	Contact approved workshop or engine dealer
	Fuel hose blocked.	Clean or replace fuel hose
Top running speed too low.	Engine cold.	Run engine to normal operating temperature.
	Emergency gas active.	Deactivate emergency gas.
Oil pressure low.	Oil level low.	Top up oil.
	Incorrect engine oil.	Drain crankcase and fill with the correct viscosity and quality of oil.
High oil consumption.	Incorrect viscosity of engine oil used.	Use the correct viscosity of oil.
	Oil leak present.	Check for leaks in the lines, seals and drain plugs.
	Crankcase vent pipe clogged.	Clean vent pipe.
	Turbocharger defective.	Contact approved workshop or engine dealer
Engine emits white smoke.	Incorrect fuel type.	Use the correct fuel
	Engine temperature low.	Run engine to normal operating temperature.
	Thermostat defective.	Remove thermostat and check.
	Electronic fuel injection nozzles defective.	Contact approved workshop or engine dealer
	Water in the fuel.	Drain filter and replace.
	Cylinder head seal defective.	Replace cylinder head seal.
Motor emits black or grey smoke.	Incorrect fuel type.	Use the correct fuel
	Air filter clogged or dirty.	Repair air filter.
	Engine overload.	Reduce load.
	Electronic fuel injection nozzles defective.	Contact approved workshop or engine dealer
	Problems with electronic fuel system.	Contact approved workshop or engine dealer
	Turbocharger inoperable.	Contact approved workshop or engine dealer

Engine overheats.	Engine overload.	Reduce load.
	Coolant level below minimum.	Fill radiator to correct level, check radiator and hoses for loose connections and leaks.
	Radiator clogged.	Clean radiator.
	Radiator fan turns too slow	Check speed and if too low disconnect electric cable from the fan control (full speed).
	Ribbed V-belt stretched, torn or belt tensioner defective.	Check automatic belt tensioner and examine stretched belt. Replace if necessary .
	Engine oil level below minimum.	Check oil level. Top up oil as required.
	Cooling system needs flushing.	Flush cooling system.
	Thermostat defective.	Remove thermostat and check.
	Temperature display or sensor defector.	Check coolant temperature with thermometer and replace as necessary.
	Incorrect quality fuel.	Use suitable fuel.
Excess fuel consumption.	Incorrect fuel type.	Use the correct fuel type.
	Air filter clogged or dirty.	Repair air filter.
	Engine overload.	Reduce load.
	Incorrect valve play.	Contact approved workshop or engine dealer
	Electronic fuel injection nozzles dirty.	Contact approved workshop or engine dealer
	Problem with electronic fuel system.	Contact approved workshop or engine dealer
	Turbocharger defective.	Contact approved workshop or engine dealer
	Engine temperature low.	Check thermostat.
Electrical system inadequately charged.	Excessive electrical consumption by accessories.	Remove accessory or fit a higher output generator.
	Excess idling.	Increase engine speed to compensate for any excessive electrical load.
	Bad electrical connections at battery, earth cable, starter or generator.	Check and clean as required.
	Battery defective.	Check battery, replace as required.
	Rotary current generator defective.	Check rotary current generator, replace as required.
Batteries will not charge.	Loose or corroded battery connections.	Clean battery connections and tighten.
	Batteries worn.	Contact approved workshop or engine dealer
	Ribbed V-belt stretched or belt tensioner defective.	Adjust belt setting or replace belt.
	Rotary current generator defective.	Check rotary current generator, replace as required.
Starter motor will not turn over.	Loose or corroded battery connections.	Clean loose connections and tighten.
	Battery power low.	Contact approved workshop or engine dealer
	Starter motor current relay defective.	Contact approved workshop or engine dealer
	Main system fuse burned out.	Replace fuse.
	Starter motor defective .	Check starter motor, replace as required.
Starter motor turns over too slowly	Battery power low.	Contact approved workshop or engine dealer
	Incorrect viscosity of engine oil used.	Use the correct viscosity of oil.
	Loose or corroded battery connections.	Clean loose connections and tighten.

Entire electrical system inoperable.	Main switch turned off.	Turn on main switch.
	Damaged battery connection	Clean battery connections and tighten.
	Worn batteries.	Contact approved workshop or engine dealer
	Main fuse burned out.	Replace fuse.
	Worn batteries.	Contact approved workshop or engine dealer
	Main fuse burned out.	Replace fuse.

19.1 GENERAL TROUBLE SHOOTING ON THE MACHINE

Fault	Cause	Remedy
Entire machine will not move.	Diesel engine will not run.	Start diesel engine. In the event of a fault, see „Trouble Shooting Engine“.
	Armrest not closed.	Close armrest.
	Armrest switch inoperable.	Check armrest switch, replace as required.
	Main fuse / fuses burned out.	Check fuses and replace.
	No or insufficient hydraulic oil in the system.	Top up hydraulic oil. Vent pumps.
	No pilot pressure.	Clean supply pressure filter.
	Diesel engine speed too low	Increase speed. When machine is cold or in emergency gas mode, max. speed is 1450 rpm.
	No LS pressure.	Measure LS pressure. Check LS pressure lost.
	Traction drive inoperable	Fully retract traction drive fine control.
Fuse burned out.		Replace fuse.
Control inoperable.		Read off fault from display; check connections, replace any defective parts.
Leak in system.		Fix leak.
Brakes do not disengage.		Inadequate brake pressure, check BR solenoid valve and power supply to the support block.
Wheel gear uncoupled.		Couple wheel gear.
Traction drive pump does not swivel out.		Check release solenoid at traction drive pump.
Actuating the traction drive increases the engine speed.	Automatic drive activated.	Deactivate automatic drive. (Set bucket steering switch to first position.)
Support will not move.	Fuse burned out.	Replace fuse.
	CAN bus inoperable.	Read off fault from display; check connections, replace any defective parts.
	LS solenoid valve on support block will not switch.	Check solenoid valve and power supply.
	Certain solenoid valves on support block will not switch.	Check solenoid valve and power supply.
	No LS pressure.	Measure LS pressure. Rectify LS pressure lost.
Bucket will not move.	Steering switch to steering.	Set steering switch to bucket position. (Switch off)
	Changeover valve piston jams (clogged).	Remove changeover valve, strip down and clean.
	Changeover valve corroded.	Replace changeover valve.
Steering inoperable.	Steering switch off	Turn on steering switch.
	Changeover valve will not switch.	See „Changeover valve will not switch“.
	Fuse burned out.	Replace fuse.
Boom will not move.	Steering switch turned on.	Turn off steering switch.
	Shut-down valve will not switch	Check shut-down valve.
	No pilot pressure.	Clean supply pressure filter.
Changeover valve will not switch.	Electric solenoid valve will not switch.	Check electric solenoid valve and ensure power supply
	Valve piston jams (clogged).	Remove changeover valve, strip down and clean.
	Valve corroded.	Replace valve.

Working pressure too low.	Leak in system.	Fix leak.
	Working pump oil level too low.	Ensure oil supply.
	Working pump sucks in air.	Check intake line for leaks.
	No LS signal	Measure LS pressure. Rectify LS pressure lost.
	Working pump does not swivel out.	Check power supply at working pump; disconnect cable from pump control (pure hydraulic control).
	Pressure limiting valve will not close.	Remove pressure limiting valve, replace if necessary.
Machine slow to move.	Pilot pressure too low.	Clean supply pressure filter.
	No LS signal	Measure LS pressure. Rectify LS pressure lost.
Hydraulic oil temperature gets too warm.	Radiator clogged.	Clean radiator.
	Hydraulic oil too low.	Top up hydraulic oil.
	Radiator fan turns too slow	Check speed and if too low disconnect electric cable from the fan control (full speed).
	Excessive consumption, possibly from additional equipment.	Reduce consumption.
	Incorrect operation.	Adapt operation.
	Temperature sensor or cable defective.	Check temperature sensor cable and replace temperature sensor.
Machine performance drops.	Machine overheats.	Reduce load, clean radiator and check cooling liquids.
	Engine output too low.	See Trouble Shooting, Engine „Impaired performance“.
	Machine not serviced.	Carry out maintenance.
	Incorrect settings.	Have settings checked and adjusted by a specialist dealer.
	Certain components worn.	Replace worn components.
No message in display.	Power supply interrupted.	Replace fuse, check connection.
Charge indicator lamp illuminated.	Cable not connected to rotary current generator.	Check cable connection
	Cable to rotary current generator charge indicator lamp has shorted or cable broken.	Rectify short circuit on line.
	Rotary current generator defective.	Check rotary current generator and repair or replace as necessary.
General faults on the electrical equipment.	No contact between connection pins and battery terminals.	Clean oxidation from pins and terminals, tighten terminal screws; coat pins and terminals with anti-corrosion lubricant.
Flashing / warning lamp unit inoperable.	Glow plug defective.	Replace glow plug.
	Power supply interrupted.	Check fuse and power supply.
	Flasher unit failed.	Replace flasher unit.
Light unit inoperable.	Glow plug defective.	Replace glow plug.
	Power supply interrupted.	Check fuse and power supply.
Horn inoperable.	Power supply interrupted.	Check fuse and power supply.
	Horn failed.	Replace horn.

Windscreen wiper unit inoperable.	Power supply interrupted.	Check fuse and power supply.
	Windscreen wiper motor failed.	Replace windscreen wiper motor.
	Windscreen washer pump failed.	Replace windscreen wash water pump.
	No windscreen wash water.	Top up windscreen wash water.
	Windscreen wash water line interrupted.	Replace windscreen wash water line.
Heating output inadequate.	Heating water valve partially closed.	Open heating water valve.
	Vent filter clogged.	Clean and/or replace vent filter.
Heater blower does not work.	Fresh air blower not switched on.	Switch on blower.
	Power supply to heater blower interrupted	Check fuse / power supply.
	Heater blower failed or blocked.	Remove foreign bodies or replace blower.
Air-conditioning system does not work.	Fresh air blower not switched on.	Switch on blower.
	Power supply to blower interrupted.	Check fuse / power supply.
	Air-conditioning compressor does not work.	Fuse / power supply for
	Ribbed V-belt inadequately tensioned or torn.	Check ribbed V-belt, tighten if necessary.
	Coolant level too low	Top up coolant.
Inadequate cooling effect of air-conditioning system.	Air-conditioning fan clogged.	Blow off air-conditioning fan.
	Radiator fan turns too slow	Check speed and if too low disconnect electric cable from the fan control (full speed).
	Heating valve fully opened.	Set heating valve to cold
	Intake air too warm.	Switch to circulating air mode
	Vent filter clogged.	Clean and/or replace vent filter.
	Vaporiser iced up.	Have cause rectified.
	Coolant level too low.	Top up coolant.
Windows steam up.	Condensation outlet clogged.	Clean drain lines.
Pneumatic spring does not adjust.	Compressed air compressor does not work.	Check fuse / power supply, eventually replace compressed air compressor.

20 TIGHTENING TORQUE TABLE

Torque	Condition	Strength class		
		8.8	10.9	12.9
		Torque in Nm		
M5	Oiled, lubricated	4.6	6.8	7.9
	dry, glued	5.5	8.1	9.5
M6	Oiled, lubricated	8.0	11.7	13.7
	dry, glued	9.5	14.0	16.4
M8	Oiled, lubricated	19.3	28.3	33.4
	dry, glued	23	34	40
M10	Oiled, lubricated	39	57	66
	dry, glued	46	68	80
M10x1.25	Oiled, lubricated	41	60	70
	dry, glued	49	72	84
M12	Oiled, lubricated	66	97	114
	dry, glued	80	117	137
M12x1.5	Oiled, lubricated	69	101	117
	dry, glued	84	123	144
M14	Oiled, lubricated	105	154	181
	dry, glued	127	186	218
M16	Oiled, lubricated	160	234	274
	dry, glued	194	285	333
M18	Oiled, lubricated	220	325	375
	dry, glued	265	390	460
M20	Oiled, lubricated	325	460	540
	dry, glued	390	560	650
M22	Oiled, lubricated	440	620	730
	dry, glued	530	750	880
M24	Oiled, lubricated	555	790	925
	dry, glued	675	960	1120
M27	Oiled, lubricated	830	1160	1370
	dry, glued	1000	1400	1650
M30	Oiled, lubricated	1120	1575	1865
	dry, glued	1350	1900	2250



Oiled, lubricated: Threads and contact surface of the screw head must be oiled or lubricated.



21 PROOF OF SERVICE AS PER SERVICE SCHEDULE

Operating hours	Remarks / Deviations	Date, Signature of mechanician

Operating hours	Remarks / Deviations	Date, Signature of mechanician
<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>
<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>
<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>
<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>
<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>
<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>
<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>

22 WARRANTY PROVISIONS

MENZI MUCK AG provides a warranty on all MENZI products within the framework of the guarantee agreement. If defects covered by the warranty are found to exist, the purchaser must inform the vendor without delay, either in writing or by telephone.

The vendor's warranty obligation is confined to the repair or replacement of the defective part which is found to fall under the warranty and is acknowledged as a warranty claim after examination by MENZI MUCK AG.

Parts will be repaired or replaced during the warranty period in the vendor's workshops or at service centres specifically authorised by MENZI MUCK AG.

The user undertakes to arrange for the regular maintenance work stated hereinafter in the operating manual (operating instructions) to be performed by the contractual workshop or by a service centre authorised by MENZI MUCK AG. The maintenance and service schedule as specified by MENZI MUCK AG must be observed without exception.

This maintenance work is regarded as normal servicing and will be performed at the expense of the purchaser and under the purchaser's responsibility.

Exclusion of warranty claims:

- a) The warranty shall become void in the event of incorrect use, negligence, conversion of the machine, accident or failure to perform regular maintenance work, and in the event of the use of equipment or attachments which have not been approved by MENZI MUCK AG. The warranty shall also become void if service or repair work is performed by anyone that has not expressly been authorised by MENZI MUCK AG.
- b) The following parts are not covered by the warranty provisions:
 - Parts subject to normal wear and tear, e.g. oils and lubricants, filters, injection components, fuel pumps, lines, hydraulic hoses, bolts and bushings, V-belts, electrical components and electrical units of the engine, fans.
 - Parts which come into contact with the ground.- Parts which are damaged by external influences, e.g. gasket sets, lines, hoses, electrical cable harnesses and connections; damage by chemical products, falling branches, soil, stones etc. Screws, nuts or couplings which work loose because of vibration or are damaged by excessive tightening.
- c) Problems which may be caused in the fuel circuit by the presence of water and other impurities in the injection pump, nozzles and feed pump.
- d) Compensation for down times suffered by the purchaser as a result of breakdowns or loss of use.
- e) Incurred transport and salvage costs in the event of breakdowns are not covered by the warranty.
- f) Problems in the engine cooling system and engine air intake caused by dirty radiators and filters and their consequential damage are not covered by the warranty.

Our warranty extends only to the replacement of parts recognized by us to be defective and does not cover dispatch and packaging costs, which shall be charged to the purchaser in all cases.

The warranty liability shall not be accepted until the defective parts have been inspected by MENZI MUCK AG or by an expert seconded by MENZI MUCK AG.

Every warranty claim which proves to be deliberately false shall automatically cause all further warranty claims to lapse.

These terms of warranty apply between the dealer, the customer and MENZI MUCK AG. Any other verbal or written agreement provided by the dealer to a customer is hereby declared null and void. In special cases, the written agreement of MENZI MUCK AG shall be required.

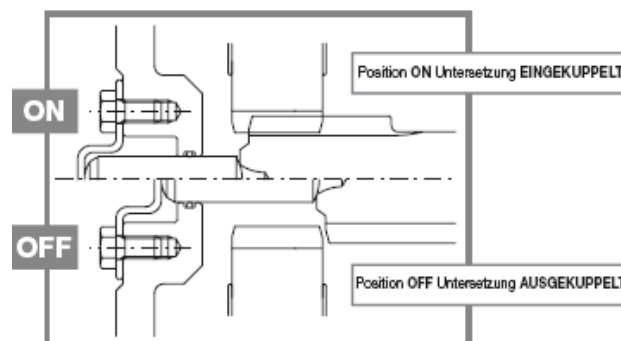
APPENDIX

Appendix 1: New Drive Mechanism

18 DRIVE MECHANISM REGGIANA

The rear wheels are driven by two (four) hydrostatic wheel-hub drives filled with gear oil. The wheel-hub drives are equipped with an automatic parking brake that also runs in an oil bath. The brake is adjustment and maintenance-free.

Das Getriebe kann ausgekuppelt werden. In der nebenstehenden Abbildung kann entnommen werden, wie ein- bzw. ausgekuppelt wird. In der Mitte des Radgetriebes ist ein Deckel mit einer Vertiefung aufgeschraubt, der einen Schaltstift bedient. Im eingekuppelten Zustand ist der Deckel mit der Vertiefung nach aussen montiert, im ausgekuppelten Zustand nach innen.



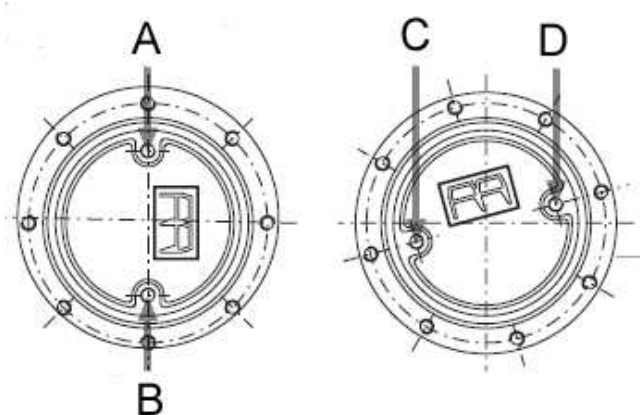
Der Schaltstift muss eingreifen, eventuell Rad leicht drehen.

Oilstandkontrolle: Tägliche Kontrolle der Dichtheit und nach 500 Stunden.

Oil change interval: 1,000 hours or annually

Vorgehensweise:

- Das Rad wie auf Abbildung links ausrichten.
- Den Einfülldeckel **(A)** und den Ablassdeckel **(B)** aufschrauben und abnehmen, damit das Öl besser abläuft.
- Das Rad wie auf Abbildung rechts ausrichten.
- Öl bis zur Kontrollöffnung **(C)** an der Einfüllöffnung **(D)** einfüllen.
- Die Deckel schließen. Bei jedem Ölwechsel die Dichtungen vom Deckel auswechseln.



New oil must not be poured in too quickly so that no air bubbles are formed that produce incorrect measuring results.