

Combine

CEREA 7274

CEREA 7278

+ Auto Level

+ Rotary Separator

Operator's Manual

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1. General Information

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1. General Information

1. General Information

1.1 Appropriate Use



Appropriate use:

This self-propelled combine harvester is manufactured exclusively for usual agricultural purposes (appropriate use).

Any other use is considered as being contrary to the appropriate use. AGCO declines all liability in cases of physical damage or injuries resulting from non-appropriate use. The risk lies exclusively with the user.

The conformity and strict adherence to the operating, maintenance and repair requirements specified by AGCO are also essential factors for appropriate use.

This self-propelled combine harvester may be used, serviced and repaired only by personnel having full knowledge of its specific features and who are aware of the danger involved and the applicable safety rules (prevention of accidents).

It is the responsibility of the owner/user to ensure that prescribed safety precautions and other general technical, health and safety and road-safety rules are observed.

AGCO disclaims all liability to any claim resulting from the fitting of non-approved parts or accessories or unauthorised modification or alteration.

Customers are strongly recommended to contact an AGCO dealer in the event of after-sale problems and for any adjustments that may be necessary.

In accordance with the Company's policy of continuous improvements to its products, alterations in the specifications may be made at any time without notice.

The Company accepts no responsibility for any discrepancies which may occur between the specifications of its machines and the descriptions thereof contained in its publications.

This machine has been designed and produced in conformity with the machine directive 98/37/EF. An EU declaration of conformity is supplied with the machine.

This machine has been tested according to the
EEC directive 77/311/EEC and ISO 5131-1982

Noise level: MF 7274 RS = 78 dB (A)

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1. General Information

1.2 Preface

This Manual

The purpose of this manual is to enable the owner/operator to handle and maintain the combine efficiently. Time spent in becoming familiar with the Operator's Manual now will save time in the field.

Wide variations in operation conditions make it impossible for the Company to make comprehensive or definite statements in its publications concerning performance and the use of its machines, or to accept liability for any damage which may result from errors or omissions.

The specifications and illustrations contained in this manual pertain to combines manufactured for specific countries. Due to differing laws and requirements in various countries, some apparent discrepancies may result between any particular combine and those depicted in this manual. Some accessories and optional equipment appearing in this manual are not necessarily available in all territories.

AGCO service

During the warranty period, all maintenance and repair work must be carried out by the AGCO dealer who will carefully carry out detailed checks of the progress and performance of the new combine.

To obtain best results from an AGCO combine, it is important to continue regular servicing and periodical inspection after the warranty has expired. All major overhaul work on the combine must be carried out by a local AGCO dealer; an experienced technician will detect any problems which may arise between two overhauls.

Mechanical staff regularly follow training courses to update their knowledge of the product, maintenance and repair techniques and the use of special modern tools and equipment for troubleshooting. They receive regular Service Bulletins and have access to all the workshop manuals and technical publications required to carry out repairs or maintenance meeting the quality standards required by AGCO.

Warning concerning spare parts

Parts other than original AGCO parts are likely to be of lower quality. AGCO disclaims all liability in the event of loss or damage arising as a result of such parts being fitted. The manufacturer's warranty may also become void, if such parts are fitted during the normal warranty period.

Warranty, pre-delivery check and installation

The Company, when selling new goods to its Distributors, gives a warranty which, subject to certain conditions, guarantees that the goods are free from defects in material and workmanship. The Company's Distributors and Dealers are required to give the benefit of a similar warranty to the first retail purchaser of all new goods supplied by the Company, and users should inquire of the Distributor or Dealer from whom they purchase as to the terms of the warranty made available to them.

Before delivering a new combine to the Customer's premises, it is the responsibility of the Distributor to conduct a pre-delivery check of the machine. This consists of a series of detailed inspections, adjustments and functional checks, which should ensure that when received by the Customer the combine is ready to start work immediately.

Upon delivery the Distributor is required to instruct the Customer in the basic principles and operating procedures of the combine. This is termed Combine Installation, which should include instruction on controls and instruments, field settings, maintenance requirements, safety precautions and winter storage, and should preferably be undertaken in the presence of all who will be concerned with the operation and maintenance of the machine.

This manual is published for World wide distribution, and the availability of equipment shown either as basic or accessory varies according to the territory in which the combine is to be used. Details of equipment available in your area can be obtained from your AGCO Distributor/Dealer.

1. General Information

1.3 Product Identification

Always quote combine model and serial number in any communication to your Distributor/Dealer.

Keep this manual safely for convenient reference.

Combine model: MF _____

Serial number: _____

Table serial number: _____

Engine type: _____

Serial number: _____

Owner's name: _____

Address: _____

Installation date: _____

Dealer's name: _____

Address: _____



Fig. 1

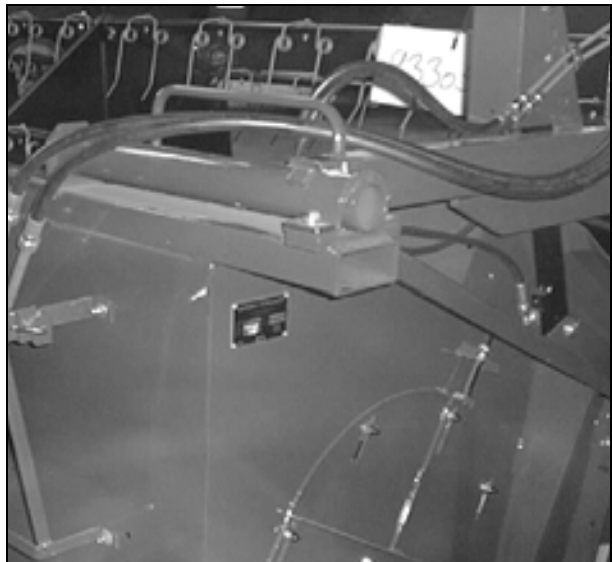


Fig. 2

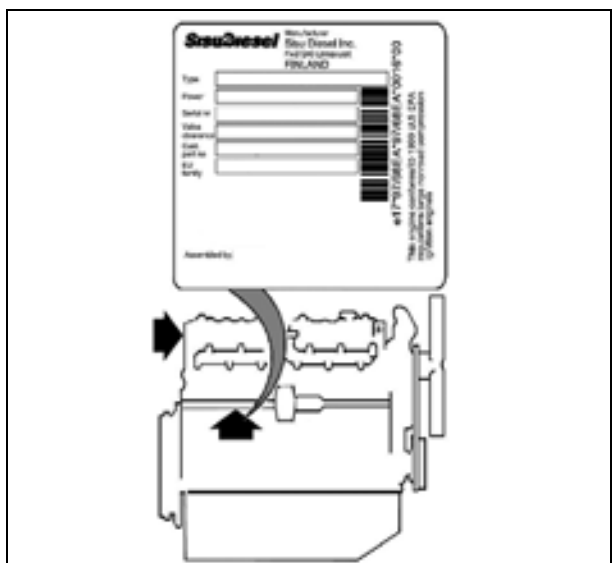


Fig. 3

1. General Information

1.4 Sectional Drawing and Parts Identification

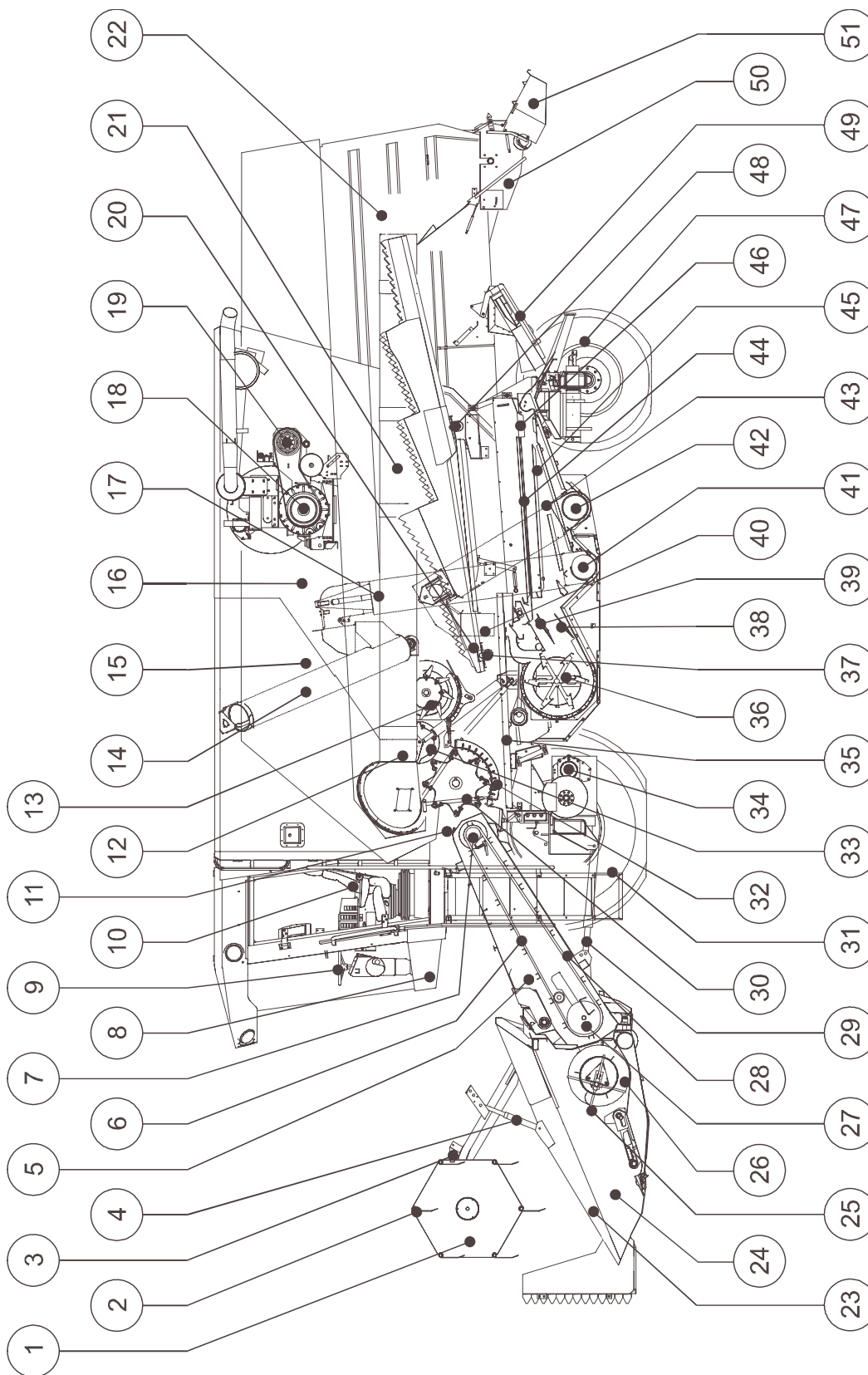


Fig. 4

1. General Information

Combine parts		
1. Reel	18. Engine	35. Main grain pan
2. Reel tine bars	19. Hydrostatic pump (transmission)	36. Fanning mill
3. Hydraulic ram for reel fore/aft	20. Straw walkers	37. Straw walker front crank
4. Hydraulic ram for reel up/down	21. Unloading tube	38. Bottom fan deflector
5. Main crop elevator	22. Straw hood	39. Top fan deflector
6. Crop elevator chain	23. Straw divider	40. Returns thresher
7. Elevator chain top shaft	24. Table	41. Good grain auger
8. Operator cab	25. Feathering fingers	42. Returns auger
9. Steering wheel	26. Table auger	43. Shaker shoe
10. Operator seat	27. Elevator chain front shaft	44. Top sieve
11. Cylinder access door	28. Elevator chain slats	45. Bottom sieve
12. Unloading auger/tube	29. Hydraulic table lift ram	46. Sieve extension
13. Rotary separator	30. Threshing cylinder	47. Rear wheels
14. Tank filling auger	31. Traction wheels	48. Straw walker rear crank
15. Grain tank	32. Concave	49. Chaff spreader
16. Rear beater curtain	33. Rear beater	50. Straw chopper
17. Tank filling elevator	34. Hydrostatic motor (transmission)	51. Spreader hood

Fig. 5

1. General Information

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2. Safety

2.1 General Safety Precautions



Every effort has been made to ensure that Massey Ferguson combines provide maximum protection against personal injury through accidents. The effectiveness of guards and other safety devices is only as comprehensive as the operator allows in practising caution whenever the machine is running. Reading the simple rules below is only part of your responsibility. Memorise them and practise them until you are continually safety conscious. In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with the safety shield removed. However, a machine should never be operated in this condition. Keep all shields in place. If a shield removal becomes necessary for repairs, replace the shield prior to machine operation.

Operators should familiarise themselves with the provisions of the Road Traffic Acts and of the regulations made thereunder in order to ensure that, when taking the combine and the attachments upon the road, they comply with the relevant statutory requirements. Always remember to observe the restrictions on the use of vehicles carrying projection loads or appliances.

The machine is delivered from the factory with guards and safety equipment as required by the authorities.

2.2 Attention - Warning Symbols

Read Operator's Manual and safety precautions thoroughly before starting! (Note decals on the machine!)

All persons using or involved with service or maintenance of this combine should familiarise themselves with the safety precautions!

Provisions Concerning Safety and Prevention of Accidents

Before starting check the combine with a view to road safety and reliability.

Note this symbol in this operator's manual, it's for your own safety:



2. Safety

2.3 Safety Precautions



Attention! Become alert! Your safety is involved

Safety precautions are for your safety

1. In addition to the instructions stated in this operator's manual it is the responsibility of the user to observe general safety provisions and regulations for the prevention of accidents.
2. Warnings and instructions on the machine give important information as to safe use. They are for your own safety and must be closely observed.
3. In road transport it is the responsibility of the user to observe the current provisions concerning forward speed, total weight, axle load, transport dimensions, safety equipment, safety guards, warnings and lights.
4. Before starting the operator should familiarise himself thoroughly with the machine functions and their operation, not least for his own safety. It may be too late once the machine is at work!
5. Keep a safe distance from rotating parts. Never wear loose clothes during combining.
6. Keep the machine clean to avoid fire hazard.
7. Check the immediate surroundings before starting (children!). Be sure to have a clear view. Never start the machine until persons near the machine are aware of your intentions to start.
8. Never allow any passengers on the machine when driving.
9. Before starting the engine make sure the machine is in neutral and that all safety guards are fitted and secured.
10. Start the engine only from the operator seat. Never start by short-circuiting the electronic connections at the starter, as the machine may then start moving instantly.
11. Never let the engine run in a closed room.
12. Handle fuel with caution. Fire hazard. Smoking and open fire should be avoided when refuelling.
13. Always stop the engine and remove the ignition key before refuelling. Never refuel in a closed building. Remove spilled fuel immediately.
14. Handle brake fluid and battery acid with caution (noxious and caustic).
15. Never leave the operator platform on the move.
16. The forward speed must always be adapted to ground conditions. Avoid abrupt turns when driving up- or down-hill or across steep slopes.
17. The combine may be transported on roads only with an empty, closed grain tank.
18. Never leave the combine without securing it against rolling (hand brake/sprags under the wheels). Stop the engine, remove ignition key and main switch handle and lock the cab.
19. Never leave the combine unattended when the engine is running.
20. Before leaving the combine lower the table completely.
21. Never work on or under the table in raised position without securing it with all safety stops.
22. Be particularly cautious when mounting/dismounting the table and when attaching the table trailer.
23. As the function of table, maize header, table auger, elevator chain, knives, reel, etc. does not permit complete shielding, be sure to keep safe distance from these parts during test and work.
24. Make sure that the P.T.O. shaft is always properly fitted when the table is attached.
25. The straw chopper rotor will keep moving for some time after the chopper has been disengaged. Therefore keep safe distance until the chopper has stopped completely.
26. As the function of the grain tank augers does not permit complete shielding, always use suitable tools (rod or the like) to remove accumulated material in the grain tank.
27. Never enter the grain tank without stopping the engine and removing the ignition key from the switch, to prevent that the machine is started unintentionally.
28. Before any repair, maintenance, cleaning or correction of functional faults is carried out, stop the engine and disengage the threshing unit. **Remove the ignition key from the switch.**
29. Fluid under high pressure (fuel, hydraulic oil, etc.) spraying out may penetrate your skin and cause severe injury. In that case, see a doctor immediately. Risk of infection!
30. Before carrying out any service or repair on the hydraulic system, make sure the particular function is lowered/relieved (without pressure).
31. Repair of the hydraulic system to be carried out only by a specialist workshop.
32. Before carrying out any work on the electrical system, remove ignition key and main switch handle.
33. Before carrying out any electric welding on machine or table, dismantle the alternator cables and remove the main switch handle.
34. Always remove the radiator cap with greatest caution when the engine is warm. The radiator is under pressure and scalding hot water may splash out.
35. Dispose of oil, fuel and filters in a safe way.
36. Check braking before each start.
37. Check the brake system regularly and thoroughly.
38. Adjustment and repair of the brake system to be carried out only by specialist workshops or authorised brake specialists.
39. Fitting of tyres may be carried out only by specialists with special tools and sufficient knowledge of tyre fitting.

40. When working on tyres and wheels make sure that the machine stands firmly on the ground and is secured against rolling (sprags under the wheels).
41. Repair of tyres and wheels to be carried out only by specialists.
42. Check tyre pressure regularly. Observe prescribed tyre pressure.
43. Check bolts and nuts regularly and retighten if required.
44. Keep safe distance from low-hanging mains (be aware of the aerial, if any).
45. Repair and maintenance of the air-conditioning system to be carried out only by specialist workshops. Avoid smoking during repair and maintenance.
46. To avoid health/respiratory hazard to the operator it is recommended that accumulated debris is removed by vacuuming and supplemented use of effective respiratory protective equipment (UK: EN149:FFP2S or better).
47. In situations where cleaning by use of vacuuming is impossible and pressurised air or water is used alternatively, the operator should protect himself by using effective respiratory protective equipment in accordance with national regulations (UK: COSHH 1994).
48. Dismounted, defective combine parts, used oil and other fluids must be disposed of in accordance with current environmental regulations. When replacing machine components during the warranty period, observe the Massey Ferguson Warranty conditions.

2. Safety

2.4 Road Transport

It is the responsibility of the owner/user that the machine is fitted with the equipment required in the country and driven according to the regulations in force for road transport.

1. Safety guards, traffic lights, rotating beacon, reflectors, warning triangle must be fitted and in transport position.
2. Brake, steering gear, and other safety equipment must comply with the relevant statutory requirements.
3. Rules governing maximum width, length, height and total weight must be observed.
4. Rules governing driver's licence and insurance must be observed.
5. Table and table trailer must be attached and secured according to regulations.
6. In transport the forward speed of the machine must not exceed the speed limit prescribed by law, irrespective of the conditions.

Note: *To avoid accidents, all persons engaged in operation, maintenance, repair and testing of this machine should familiarise themselves with the recommendations and warnings in this operator's manual. The sections, **Safety Precautions** and **Before Start**, are particularly important.*

Please also note:

If the combine is equipped with maize header or other special header, the rules in force on the use and transport of such headers must be observed.

The use of spare parts, accessories and additional implements which are not genuine and not tested and approved by the manufacturer may cause changes in machine function and thus affect work and road safety (safety guards).

The manufacturer accepts no liability for any loss or damage which may result from the use of non-original parts, accessories or implements.

Technical specifications, dimensions and weights are without any obligation.

Right to change technical specifications and equipment reserved.

Front, rear, RH and LH are always seen in the travelling direction.

2.5 CE Marking and Type Plate on the Combine

See drawings at the end of this chapter.

IMPORTANT: Renew decals that have been damaged, lost, painted out or otherwise have become illegible. If components that originally held decals, are replaced make sure that new decals are mounted on the new components.

Note: New decals can be ordered from your dealer.

Type Plate 1, [\(Fig. 1\)](#)
Frame No./CE Marking

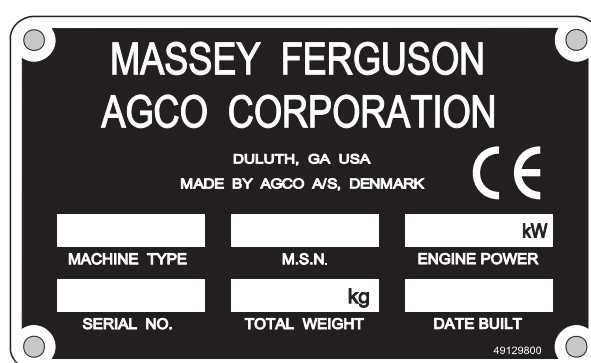


Fig. 1

Decal 2, [\(Fig. 2\)](#)

Carefully read the operator's manual before putting the combine into use. Observe instructions and safety precautions during work.

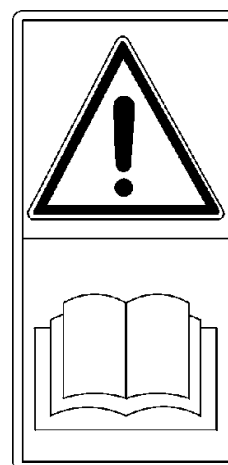


Fig. 2

2. Safety

Decal 3, (Fig. 3)

Shut off engine and remove ignition key before performing maintenance or repair work.

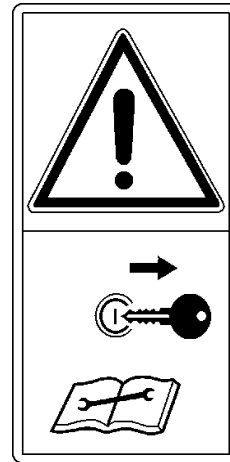


Fig. 3

Decal 4, (Fig. 4)

Sound the horn twice before starting the engine.

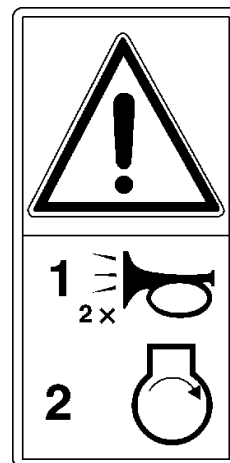


Fig. 4

Decal 5, (Fig. 5)

Do not ride on platform or ladder.



Fig. 5

2. Safety

Decal 6, (Fig. 6)

Avoid fluid escaping under pressure. Consult technical manuals for service procedures.

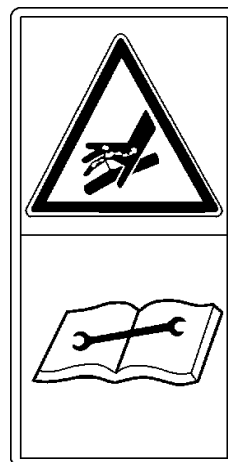


Fig. 6

Decal 7, (Fig. 7)

Never reach nor climb into grain tank while engine is running.



Fig. 7

Decal 8, (Fig. 8)

Do not open or remove safety shields while engine is running.

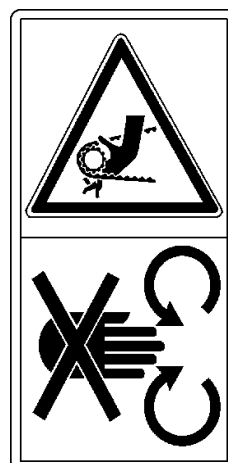


Fig. 8

2. Safety

Decal 9, (Fig. 9)

Danger - stay clear of rotating machine parts.

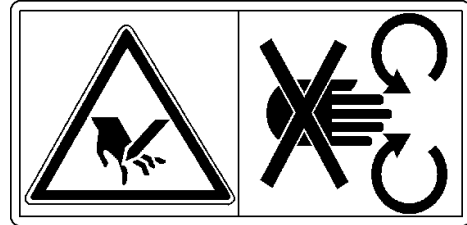


Fig. 9

Decal 10, (Fig. 10)

Stay clear of danger area between front attachment and engine.



Fig. 10

Decal 11, (Fig. 11)

Do not open or remove safety shields while engine is running.

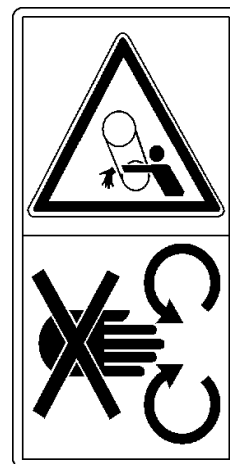


Fig. 11

2. Safety

Decal 12, (Fig. 12)

Danger - stay clear of rotating machine parts.

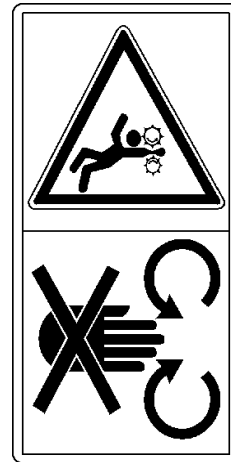


Fig. 12

Decal 13, (Fig. 13)

Secure the lifting rams with locking devices before getting in the dangerous area beneath table, main crop elevator or reel.



Fig. 13

Decal 14, (Fig. 14)

Never reach into rotating auger.

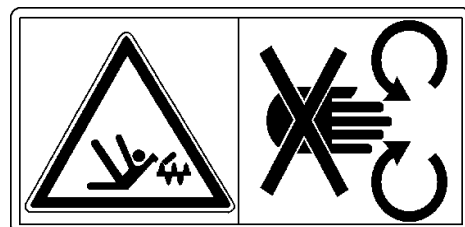


Fig. 14

2. Safety

Decal 15, (Fig. 15)

Wait until all machine components have stopped completely before touching them.

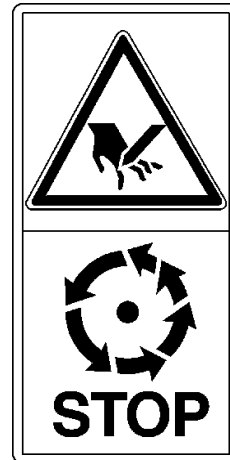


Fig. 15

Decal 16, (Fig. 16)

Stay clear of straw chopper while engine is running



Fig. 16

Decal 17, (Fig. 17)

Do not reach into straw walkers while engine is running.

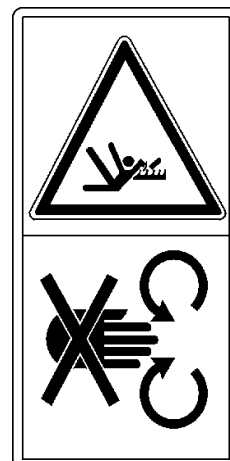


Fig. 17

2. Safety

Decal 18, (Fig. 18)

Do not open or remove safety shields while engine is running.

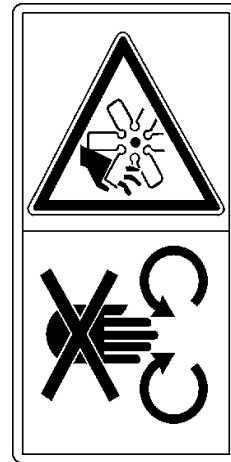


Fig. 18

Decal 19, (Fig. 19)

Stay clear of raised unsecured loads.



Fig. 19

Decal 20, (Fig. 20)

Stay clear of hot surfaces.



Fig. 20

2. Safety

Decal 21, (Fig. 21)

In transport the spreader hood must be in working position.

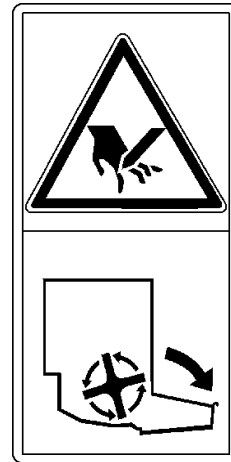


Fig. 21

Decal 22, (Fig. 22)

Never reach into the shaker shoe area as long as engine is running.

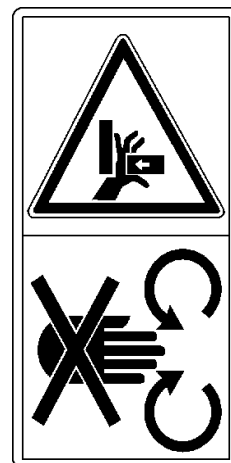


Fig. 22

Decal 23, (Fig. 23)

Danger - stay clear of rotating auger.



Fig. 23

2. Safety

Decal 24, (Fig. 24)

Stay clear of knife area as long as engine is running with P.T.O. connected.



Fig. 24

Decal 25, (Fig. 25)

Never reach into the crushing danger area as long as parts may move.



Fig. 25

Decal 26, (Fig. 26)

Use sprags before machine is uncoupled or parked.



Fig. 26

2. Safety

Type Plate 27, [\(Fig. 27\)](#)

Frame No. - Chaff spreader/straw chopper



Fig. 27

WARNING, [\(Fig. 28\)](#)

Positions 28, 29 and 30, [\(Fig. 47\)](#) and [\(Fig. 48\)](#)



WARNING: High table sides (28) and back plates (29) must be fitted when the table is working.



WARNING: In transport, the table must be secured to the trailer with the pins (30).

Fig. 28

Decal 31, [\(Fig. 29\)](#)

Keep a safe distance from overhead power lines.

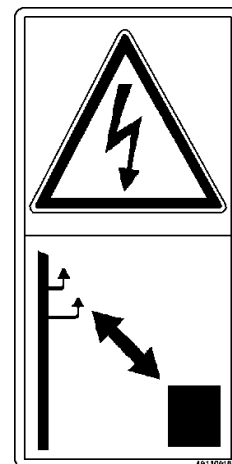


Fig. 29

2. Safety

Decal 32, (Fig. 30)

Read the operator's manual for details on the straw chopper.

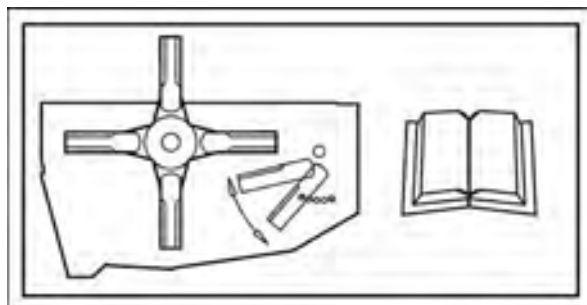


Fig. 30

Decal 33, (Fig. 31)

Exercise caution in connection with maintenance and repair. Explosion hazard.



Fig. 31

2. Safety

2.6 Warning/Instruction decals

On left-hand side of table



Fig. 32

On left-hand side of table



Fig. 33

2. Safety

On control panel

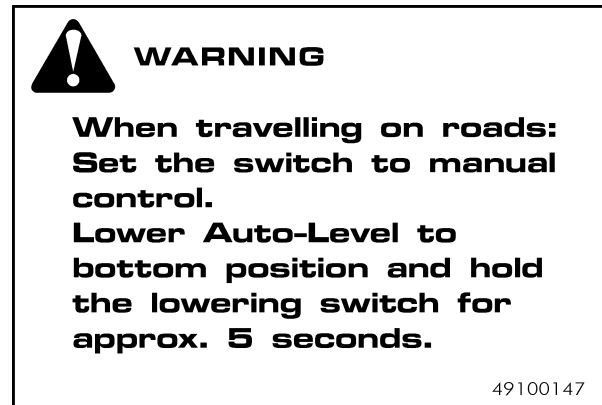


Fig. 34

On cab pillar

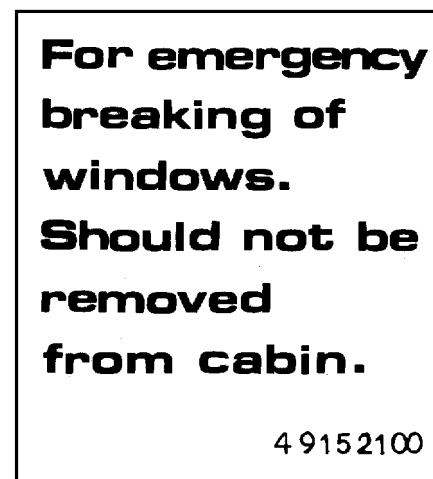


Fig. 35

On control panel

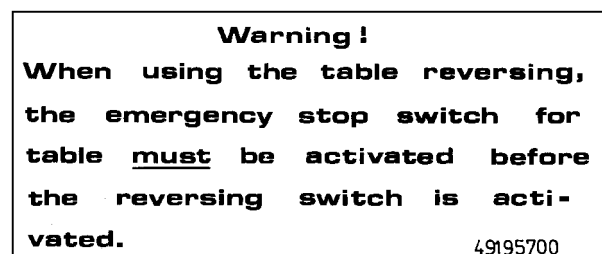


Fig. 36

2. Safety

On platform at cab ladder

**DISCONNECT THE ALTERNATOR
CABLES BEFORE ELECTRIC
WELDING.**

**LEITUNGEN VOM GENERATOR
VOR ELEKTRISCHEM SCHWEIS-
SEN ABMONTIEREN.**

**AVANT SOUDAGE ÉLECTRIQUE :
DEMONTÉ LES FILS DE LA
GÉNÉRATRICE.**

4 915 3700

Fig. 37

On all wheels

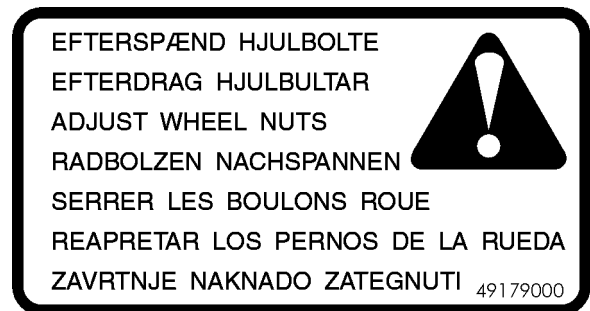


Fig. 38

At the battery

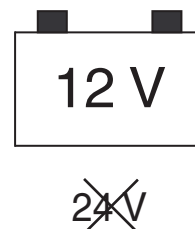


Fig. 39

2. Safety

At the lever for straw chopper flap

Straw chopper clutch must only be operated when the threshing mechanism is disengaged.

Häckslerkupplung nur bedienen, wenn das Dreschwerk ausgeschaltet ist.

L'embrayage du broyeur de paille est à actionner seulement avec les organes de battage débrayés.

49193300

Fig. 40

On hydraulic oil tank

**HYDRAULIC OIL
HYDRAULIKÖL
HUILE HYDRAULIQUE
ACEITE HIDRÁULICO**

49152500

Fig. 41

On ladder to service platform

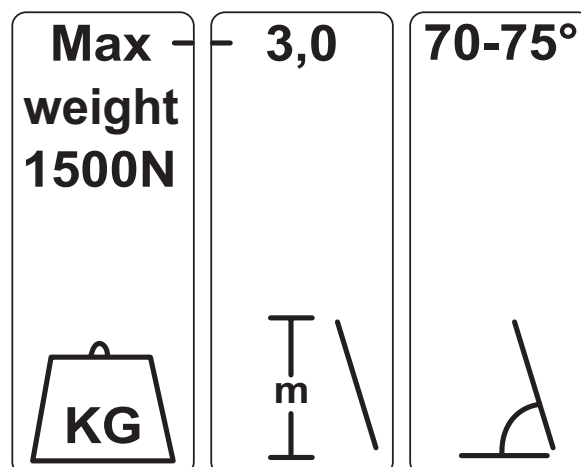


Fig. 42

2. Safety

2.7 Position of CE Markings and Type Plate

Front:

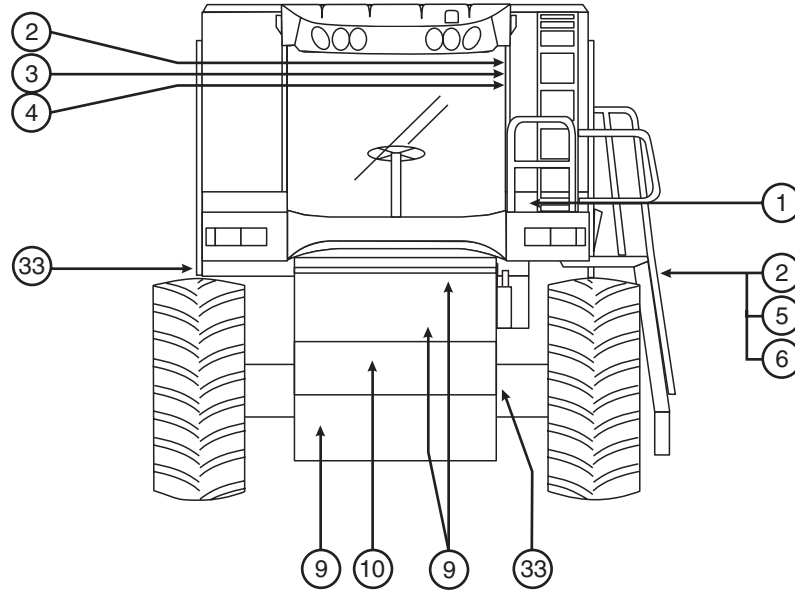


Fig. 43

Left-hand side:

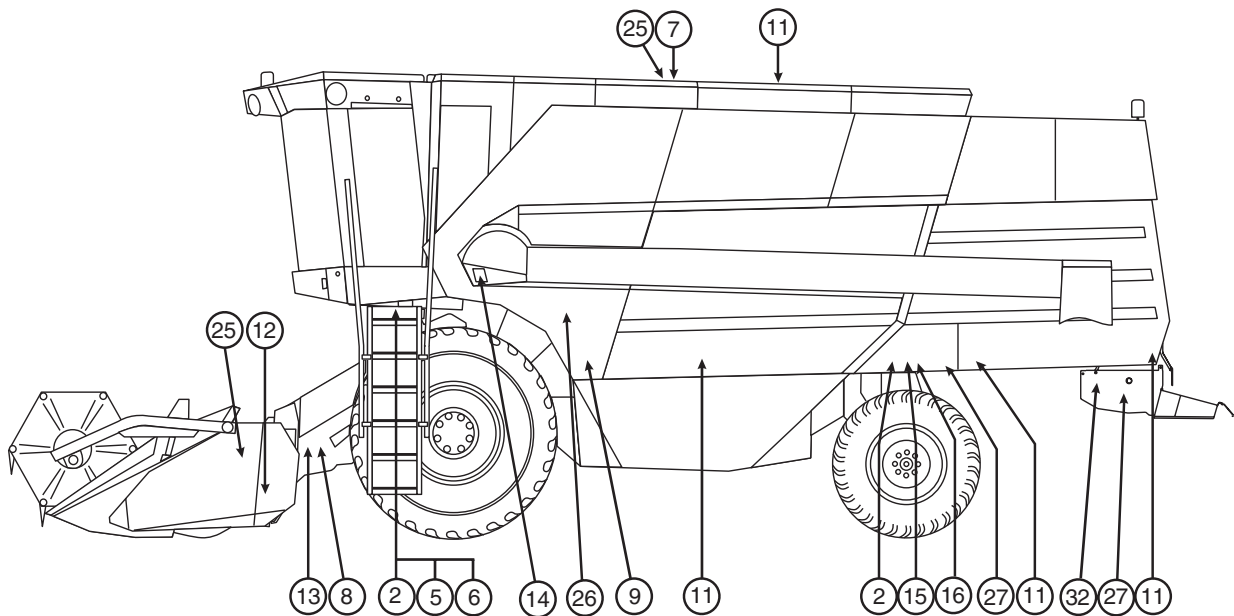


Fig. 44

Right-hand side:

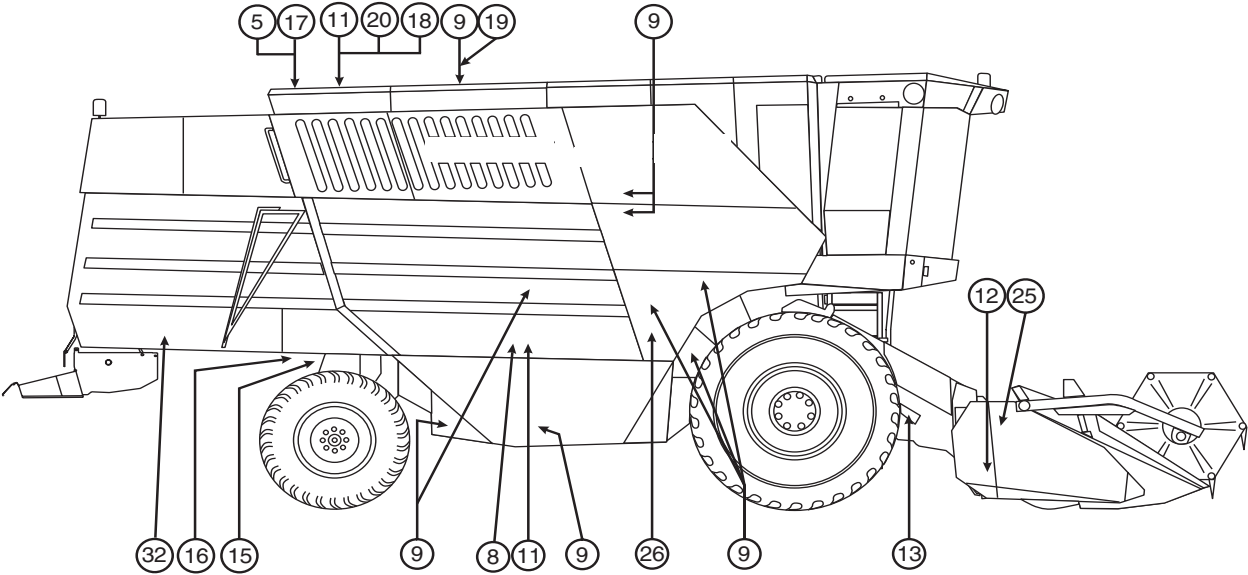


Fig. 45

Rear:

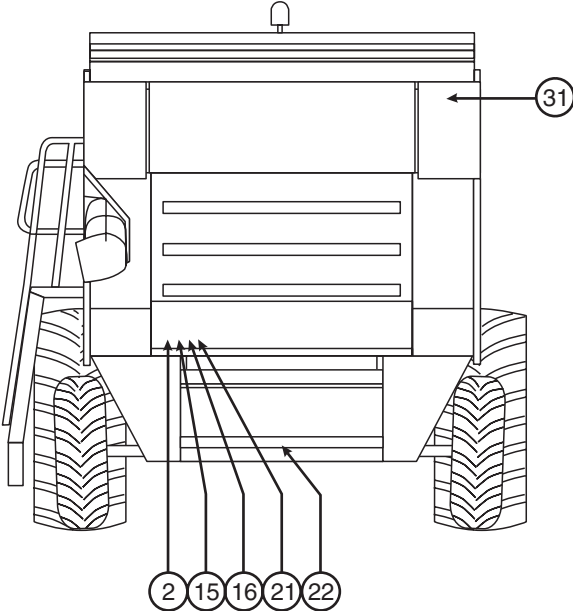


Fig. 46

2. Safety

Table and vertical knife:

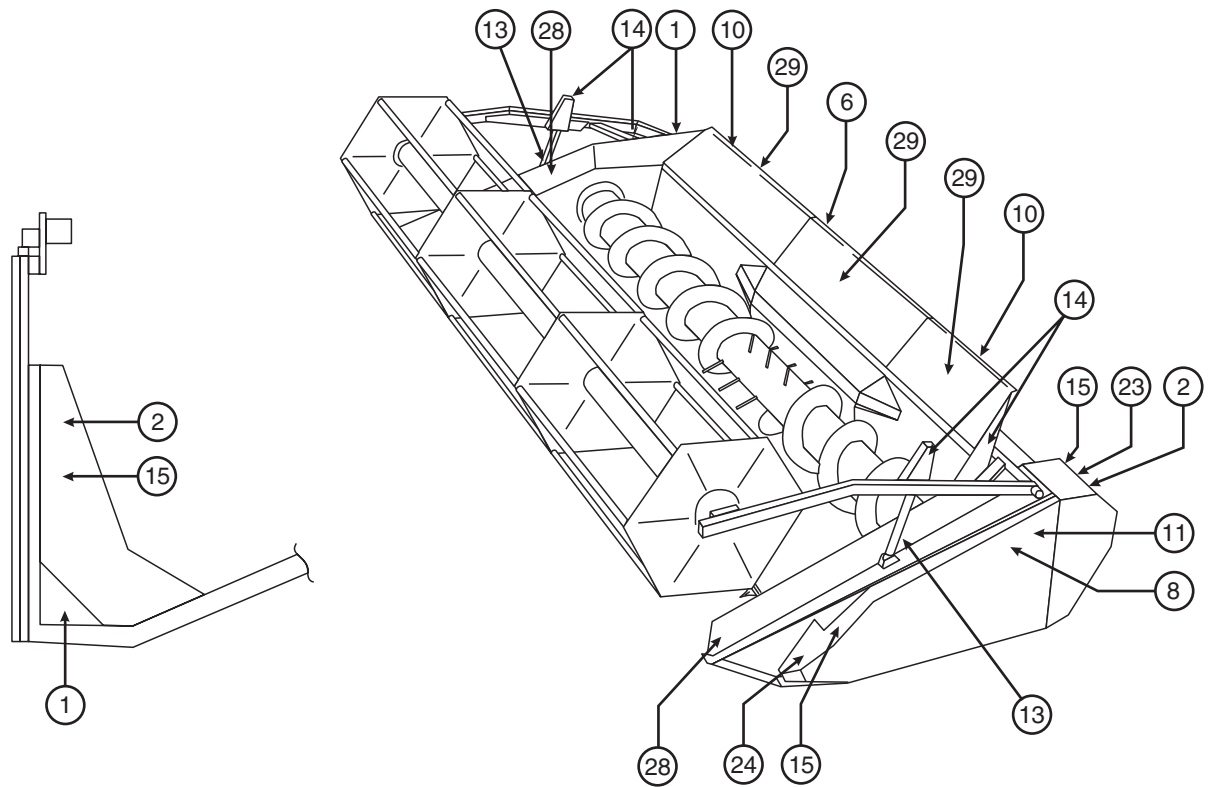


Fig. 47

Table trailer

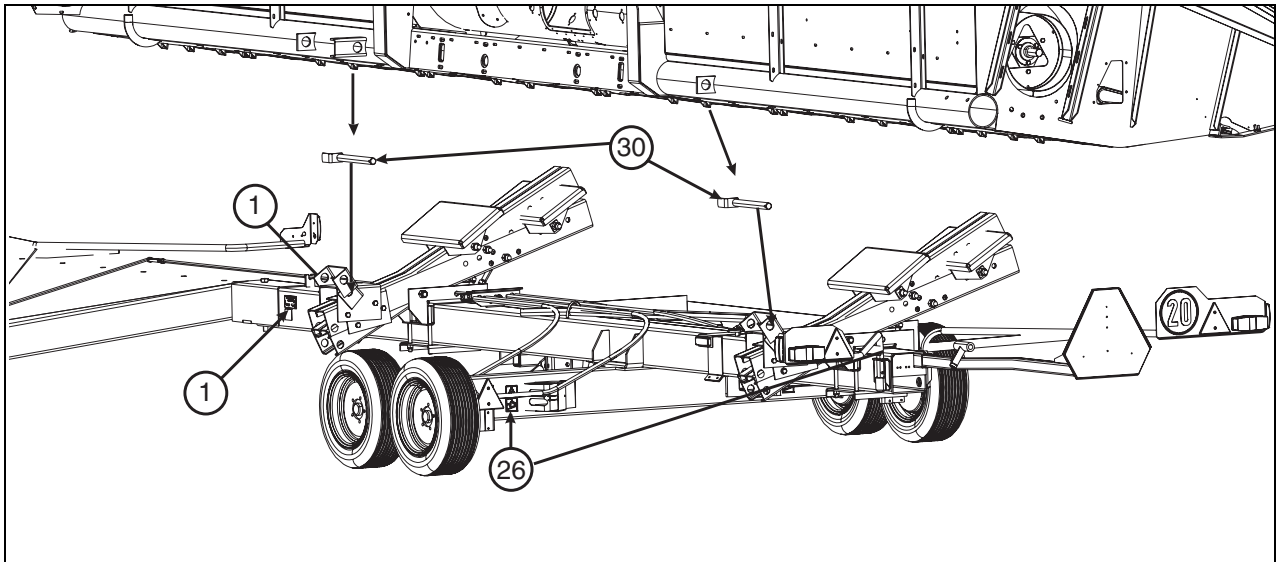


Fig. 48

3. Operation, Controls and Cab

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3. Operation, Controls and Cab

3. Operation, Controls and Cab

3.1 Before Start



Always check before start

1. Engine oil quality and level. See section 6.6 'Engine Oil/Change' on page 177. Please also see section 11.5 'Lubricants and Operating Fluids' on page 283.
2. Cooling water level (radiator). See section 6.4 'Cooling System' on page 173.
3. Hydraulic oil level. If the hydraulic oil is cold, let the engine run idle for about 5 minutes to prevent damage of the hydraulic system. See section 10.2 'Hydraulic System, Standard Combine' on page 260.
4. That the air cleaner is clean and correctly positioned. See section 6.3 'Air-Intake' on page 172.
5. Battery (acid level and concentration).
6. Fuel level (bleeding of the fuel system). See section 6.5 'Fuel System' on page 175.
7. Oil level in gearbox. See section 11.7 'Gear Oil Change' on page 286.
8. Oil level in final drives. See section 11.7 'Gear Oil Change' on page 286.
9. Braking and brake-fluid level before each start. Apply only approved brake fluid and renew it according to instructions. Please see 'Brakes,' under section 3.5 'Drive Controls' on page 52.
10. Tightening of wheel nuts and bolts plus tyre pressure. See section 11.2 'Undercarriage' on page 275. Please also see section 11.3 'Tyre Pressure' on page 276.
11. Retighten wheel nuts and bolts after the first 10 hours of operation. Then check tightening every 50 hours of operation. When fitting the wheels use only lifting gears with a permissible carrying capacity corresponding to the total weight of the machine.
12. Belts and chains. See section 9.2 'Adjustment of Transmissions' on page 242.
13. Function of alarm switch for blockage in straw hood. See section 8.10 'Straw hood' on page 231.
19. Transport on roads may take place only with empty and closed grain tank.
20. Before starting the engine make sure the multi-function lever is in neutral and that all safety guards are fitted and secured.
21. Never let the engine run in a closed building - risk of poisoning!
22. Start the engine only from the operator seat.
23. Always stop the engine and remove the ignition key before refuelling. Never refuel in a closed building. Remove spilled fuel immediately.
24. In transport on roads the ladder must be in transport position and the rear light bars must be turned out.
25. Never leave the combine unattended when the engine is running.
26. Before starting, adjust the mirrors to full rear-view.
27. Check brake effect before starting.
28. The brake pedals must be coupled together in road transport.
29. When the engine is stopped, or in case of failure in the hydraulic system, considerably more strength is required for steering.
30. In case of steering and brake failure, stop the machine immediately and repair the fault.
31. Before travelling downhill always change into a lower gear. Use always 1st gear on very steep slopes. Always gear down before starting downhill.
32. Never adjust the operator seat on the move.
33. Never adjust the steering column on the move.
34. Never leave the operator cab on the move.
35. Make sure the table trailer is properly attached.
36. When driving with trailer attached to the machine, the brake pedals must be coupled together.
37. Use only the appropriate devices for attaching the trailer. Be particularly cautious when attaching the trailer. Observe maximum permissible load of trailer hitch.
38. Observe permissible axle load and total weight.
39. During road transport the switch for multi-function lever and cutting height control must be switched off, to avoid unintentional lowering of crop elevator and table. Before leaving the machine, lower the table, stop the engine and remove the ignition key from the switch.
40. During road transport the table must be in transport position.
41. When not used, the table must be placed firmly on the ground.
42. Never allow any persons between combine and table, without the combine being secured against rolling by applying the parking brake or inserting sprags under the wheels.
43. Be cautious when attaching the table to the combine - risk of injury.
44. Never engage the P.T.O. shaft until the safety guards are properly fitted.



General safety regulations before start

14. Handle brake fluid with caution. It is noxious and caustic.
15. Be careful not to spill any brake fluid.
16. Dispose of brake fluid in a safe way.
17. To prevent fire hazard thoroughly clean engine compartment, exhaust, the area under engine main transmission and exhaust, brakes, gearboxes, hydrostatic transmission, etc. In very dry crop and under very dusty harvesting conditions these parts should be checked for dirt and dust regularly and cleaned if necessary.
18. Check tightening of all bolts and retighten if necessary (particularly all nuts in undercarriage and steering gear).

3. Operation, Controls and Cab

45. Before start, check that no loose effects are left in table, grain tank and shaker shoe.
46. Lubricate the combine according to the lubrication chart. See section 11.4 'Lubrication Points' on page 278.
47. Before the start of each new season check the various machine functions.
48. Check that concave/rotary separator are correctly adjusted and cleaned. See section 4.10 'Settings' on page 117. Please also see section 8.9 'Rotary Separator' on page 230.
49. Check tension and condition of V-belts and chains. See section 9.2 'Adjustment of Transmissions' on page 242.
50. Check tension of new V-belts and spring-loaded tension pulleys after the first 2-3 hours of operation and retighten if necessary.
51. Be particularly cautious when driving downhill with full grain tank. Never change to higher than 2nd gear.
Never change into neutral. Stop the machine slowly.
52. Engage and check the air-conditioning system.
53. The air-conditioning system may be fitted, repaired and maintained only by specialists. Smoking and open fire should be avoided in connection with servicing due to the risk of refrigerant leaking out which if set to fire, may evolve gases injurious to health.
54. The combine must always carry a fire extinguisher. Check once a year or at least every second year that the fire extinguisher is ready for use.
55. When first starting up check machine revolutions. Please see 'Shaft Speeds' under section 4.5 'Monitoring' on page 81.

3. Operation, Controls and Cab

3. Operation, Controls and Cab

3.2 Operator Cab, Arrangement and Controls

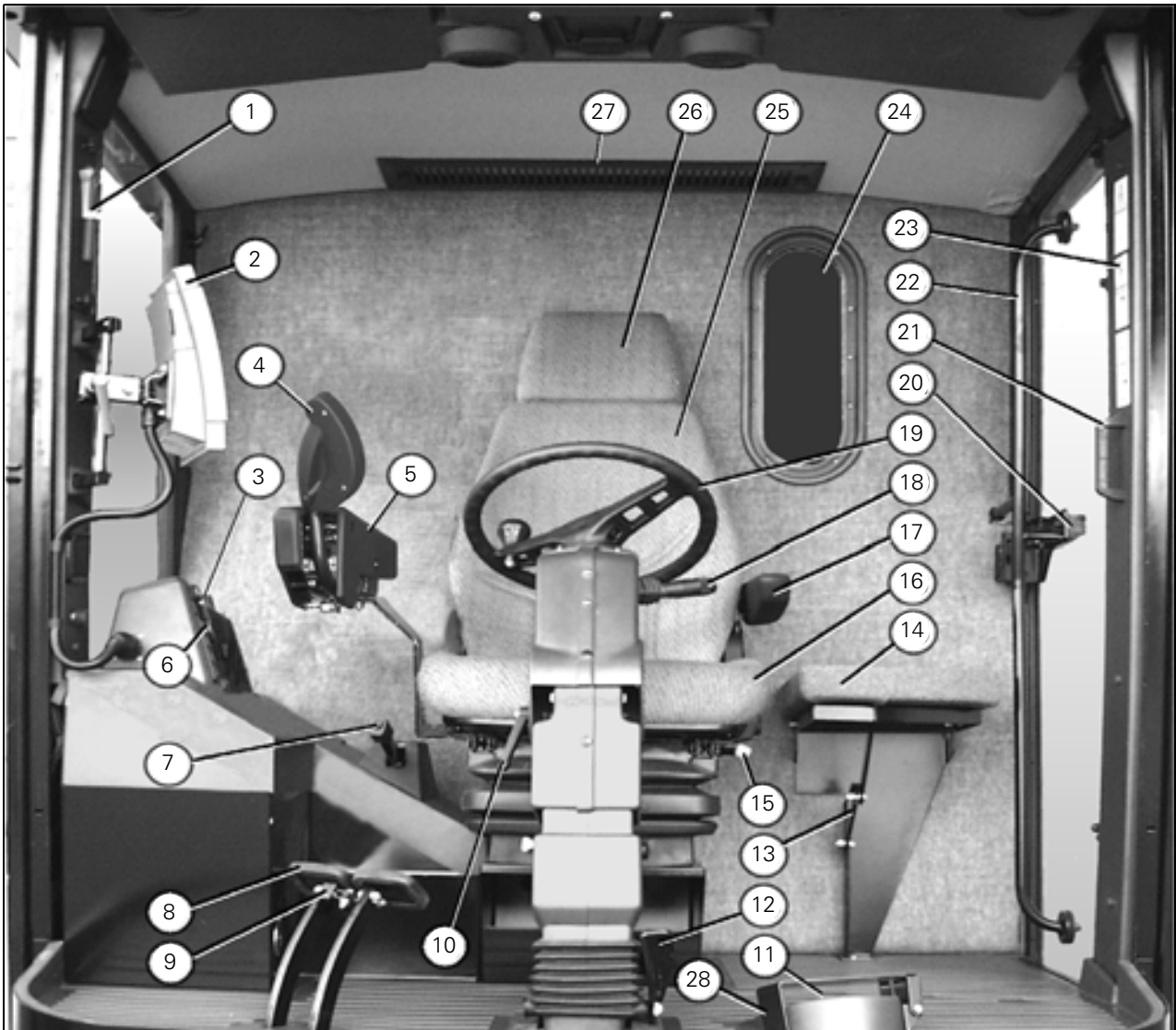


Fig. 1

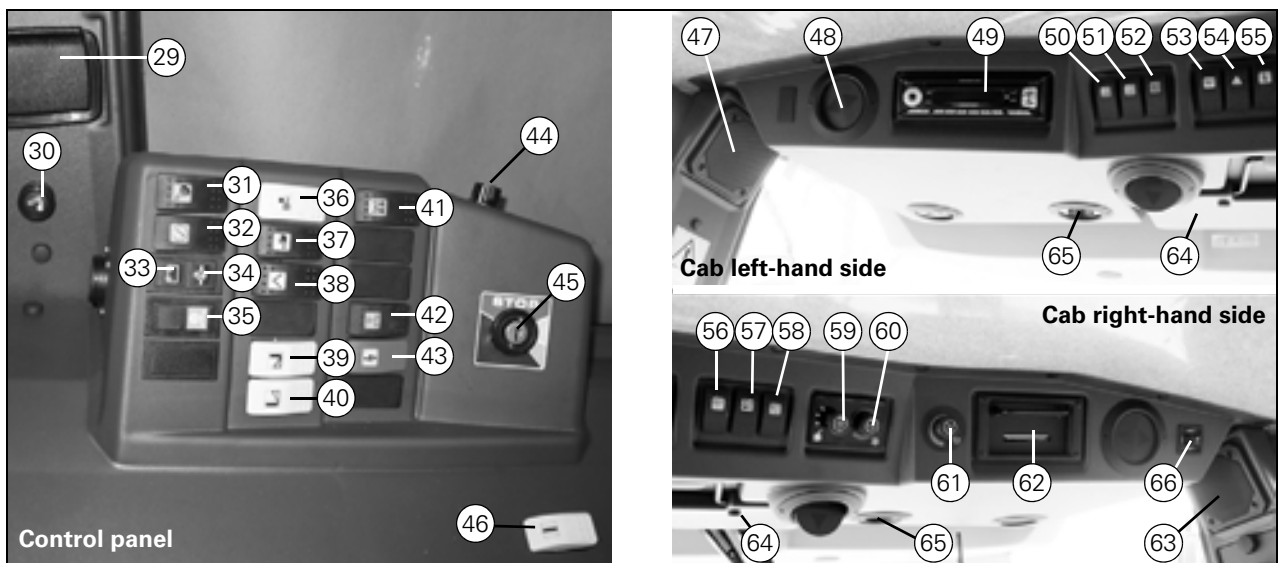


Fig. 2

3. Operation, Controls and Cab

Position Description

1. Emergency hammer
2. DATAVISION terminal
3. Throttle control
4. Multi-function lever
5. Adjustable ergonomic armrest
6. Control panel
7. Parking brake
8. Brake pedals
9. Latch for brake pedals
10. Lever for adjustment of steering column angle
11. Pedal for engagement of unloading auger
12. Pedal for adjustment of steering wheel height and reach
13. Latch for passenger seat
14. Passenger seat
15. Lever for adjustment of operator seat forward/backward
16. Adjustable operator seat
17. Armrest
18. Switch lever for direction flashers and horn
19. Steering wheel with quick-acting twist grip
20. Door lock and handle
21. Safety handle
22. Safety bar
23. Safety precautions
24. Inspection window for grain tank
25. Adjustable backrest
26. Adjustable headrest
27. Ventilation grating
28. Cover for unloading pedal
29. Ashtray
30. Lighter
31. Switch for multi-function lever engagement
32. Engine diagnosis
33. Pilot lamp for charging
34. Oil-pressure pilot lamp
35. Preheater pilot lamp
36. Switch for engagement of threshing unit
37. Switch for reversing
38. Switch for unloading auger shield (grain tank bottom cover)
39. Electrical vertical knife I
40. Electrical vertical knife II
41. Switch for manual control of Auto Level table
42. Switch for engagement of four-wheel drive (4-WD)
43. Red main switch (machines for Sweden only)
44. Throttle switch
45. Ignition key
46. Switch for overriding tilt sensor
47. Loudspeaker LH
48. Fresh-air nozzles
49. Stereo radio with CD player
50. Switch for work light I
51. Switch for work light II, side light
52. Main light switch
53. Switch for windscreen wiper
54. Hazard light
55. Switch for extra connectors
56. Switch for grain tank light
57. Switch for rotating yellow beacon/full warning
58. Switch for cab light
59. Switch for fan
60. Switch for thermostatic control of air-conditioning
61. Knob for temperature control
62. Printer for DATAVISION
63. Loudspeaker RH
64. Sun visor
65. Cab spotlights
66. Switch for adjustment of rearview mirrors (optional)

3. Operation, Controls and Cab

- 67. Pilot lamp for direction flashers, table trailer
- 68. Pilot lamp for direction flashers, combine
- 69. Pilot lamp for main light high beam

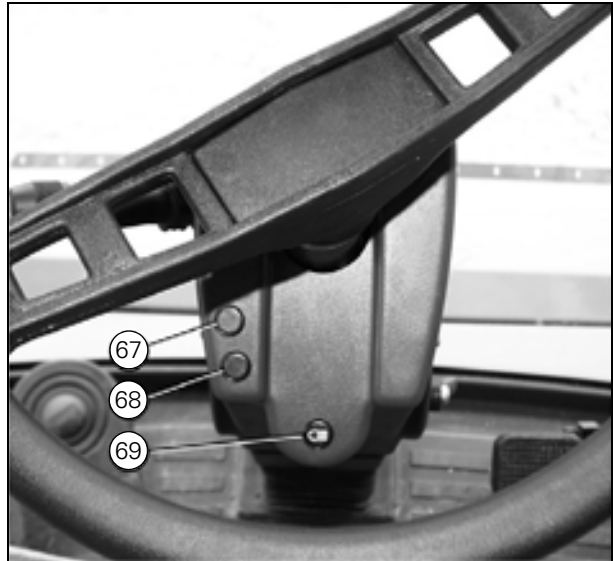


Fig. 3

Optional Extra

If the machine is equipped with electrically controlled optional extras, the respective switches will be fitted in panel (1) or (2).



Fig. 4

- 1. (For future use)
- 2. Electrical vertical knife I
- 3. Electrical vertical knife II
- 4. Four-wheel drive (4-WD)
- 5. (For future use)
- 6. (For future use)

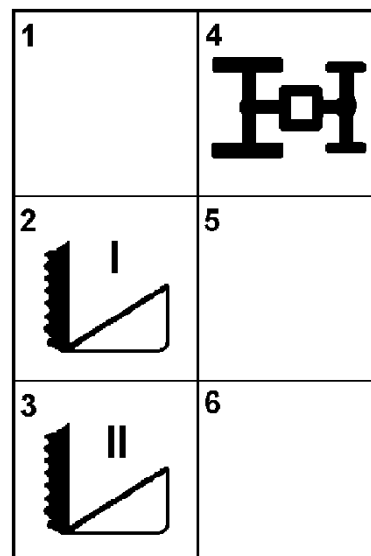


Fig. 5

3. Operation, Controls and Cab

3.3 Safety Precautions



Never start the machine until persons near the machine are aware of your intentions to start. Check the immediate surroundings before starting. - Children!



Never start the machine until all safety guards are fitted and secured.



During road transport the switch for multi-function lever and cutting height control must be switched off, to avoid unintentional lowering of crop elevator and table.



Never adjust the steering column on the move.



Never adjust the operator seat on the move.



During transport, the ladder must be turned in front of the operator cab.



Be particularly cautious when driving downhill with full grain tank. Never change to higher than 2nd gear. Never change into neutral. Stop the machine slowly.



Never travel downhill in neutral gear, always change into low gear (engine braking effect!) Always gear down before starting downhill.



Repairs of the cooling system to be carried out only by cooling system specialists.



Avoid any contact with liquid refrigerant.



See a doctor immediately in case of sprays in the eyes.



Never leave the combine unattended without stopping the engine, setting the multi-function lever into neutral and applying the parking brake. Lower table and crop elevator completely, remove ignition key and main switch handle from the switches.



On slopes secure the combine against rolling by applying the parking brake and/or inserting sprags under the wheels.



The unloading auger must always be turned completely in during road transport.

3. Operation, Controls and Cab

3.4 Starting and Stopping the Engine

Starting the engine

(Fig. 6) and (Fig. 7)

Before starting the engine insert the main switch handle (1) and switch on the main switch. (On machines for Sweden also activate the red main switch (9) on the control panel).

The multi-function lever (2) must be in neutral position "N".

Set the throttle switch (3) at minimum speed.

Threshing unit and cutting table must be disengaged. Turn the ignition key (4) into position YELLOW to close the circuit for the electrical system and the DATAVISION engine monitoring system. The pilot lamp for charging (5) and the oil-pressure pilot lamp (6) will turn on. The pilot lamp in the diagnosis switch (7) must be on constantly. A failure message from the engine will cause the lamp to flash on and off, please see section 6.8 'Electronic Engine Management' on page 178.

Preheating

When the ignition key is turned into position YELLOW, the preheating will start automatically if the temperature is below 0°C, please see table below. The preheater pilot lamp (8) will be on during preheating. Once the preheater pilot lamp is out, turn the key into position GREEN to start the engine. Then let go of the key. At temperatures below 15°C a postheating will follow to provide smoother engine operation and cleaner combustion immediately after start.

Set the engine revolutions to ¼ speed and let it run until warm. Too high revolutions when starting a cold engine may damage the engine.

The pilot lamps for charging (5) and oil pressure (6) must turn off as soon as the engine starts. Otherwise, stop the engine, find and correct the fault before starting the engine again.



Fig. 6

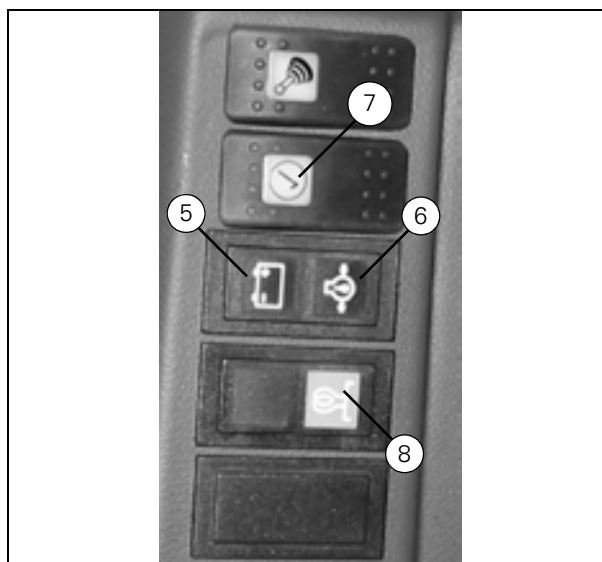


Fig. 7

Temperature °C	Preheating sec.	Postheating sec.
÷ 25	20	60
÷ 15	20	60
÷ 5	10	60
0	5	60
+ 5	0	50
+ 15	0	30
> 15	0	0



WARNING: If extra batteries are used for starting the engine, the electrical system must not be exposed to voltages higher than 12V, or the combine computer system will be damaged.

3. Operation, Controls and Cab

If the engine has not been started for a long time, for instance after off-season storage, a lubrication oil pressure must be built up before the engine is started.

Dismount the fuse for engine stop, (11) (DVS 06). Turn the ignition key (4), and let the engine run until the oil-pressure pilot lamp (6) turns off. Insert the fuse (11) and start the engine.

Stopping the engine

([Fig. 6](#)) and ([Fig. 8](#))

Before stopping the engine set the throttle switch (3) to lowest speed and then disengage cutting table and threshing unit.

Let the engine run at lowest speed for 2 or 4 minutes. Then turn the ignition key (4) into position RED STOP to stop the engine. If the engine is stopped too quickly after full load, the bearings (10) in the turbo-charger may be damaged by the heat from the exhaust side.

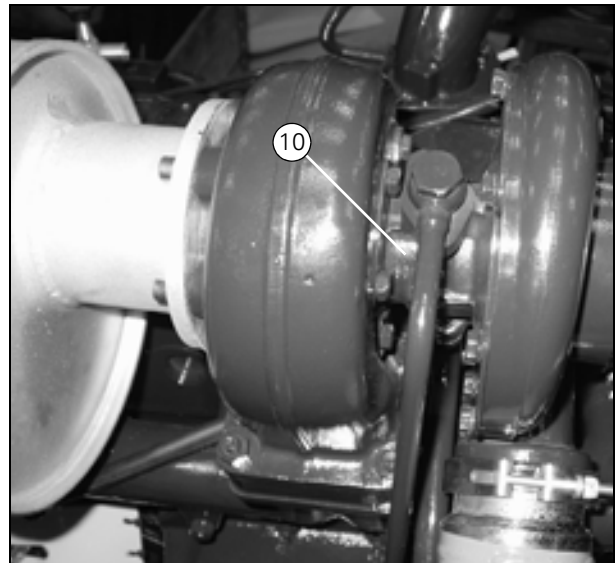


Fig. 8

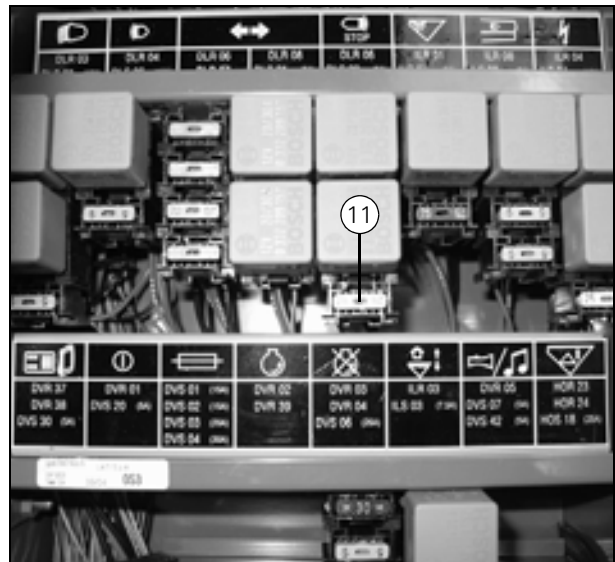


Fig. 9

3. Operation, Controls and Cab

3.5 Drive Controls

Multi-Function Lever

(Fig. 10)

The multi-function lever (1) controls many functions. Pushing the lever forward moves the machine forward. Pulling it back brakes the machine. When the lever is pulled back past position "N", the machine reverses.

When the lever is in position "N", the machine is hydraulically braked. The parking brake must always be applied when the machine is parked.

Note: The multi-function lever must always be in position "N" at gear change.

Controls

(Fig. 11)

The multi-function lever operates all table functions and the remote control of the terminal.

The following functions can be operated:

A Automatic table control

1. Table on/off
2. Table up
3. Table down
4. Reel up
5. Reel down
6. Reel forward
7. Reel backward
8. Reel speed up
9. Reel speed down
10. Unloading auger out
11. Unloading auger in
12. Remote control terminal, ENTER
13. Remote control terminal, SHIFT

Automatic Table Control

The functions cutting height presetting, field pressure control and cutting height control are operated by the function automatic table control all at once.

The automatic table control is activated with the automatic button (A).

Note: If one or more electric connections to the speed potentiometer of the multi-function lever are cut off or short-circuited, an information alarm will appear on the terminal. At the same time a safety function will automatically brake the machine. The braking is comparatively slow and when driving on roads the operator will have time enough to bring the machine to the roadside.



Fig. 10

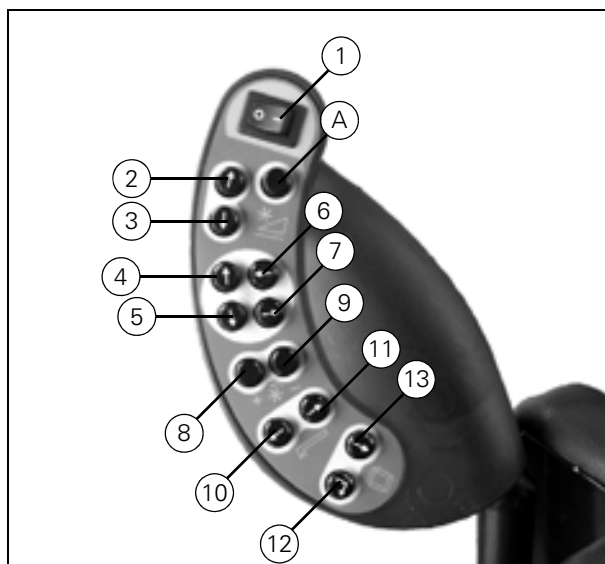


Fig. 11

3. Operation, Controls and Cab

Adjustable Armrest,

(Fig. 12)

The right-hand armrest is multi-adjustable to enable the operator to adjust it in an ergonomically correct position.

1. Loosen the screw (1) to angle the armrest up and down.
2. Loosen the nuts (2) on the underside to adjust the armrest sideways.
3. The armrest is adjustable forward and backward in three positions (3). To do so, dismount the nuts (2), lift the armrest and move it forward or backward.

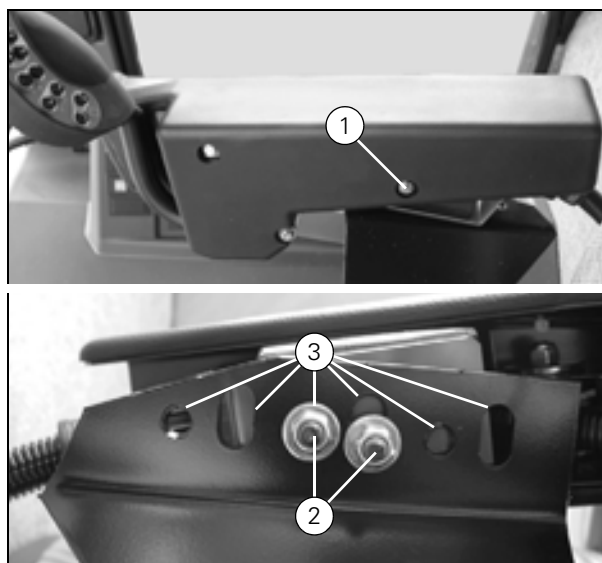


Fig. 12

Changing Gears,

(Fig. 13) and (Fig. 14)

Gearshift is operated from the terminal. The gear menu is called up by pressing the key "Gear" from the Transport menu (Fig. 13) or from "Machine settings". Gearshift is also possible directly from the Harvest menu (Fig. 14) if "Gear" is selected as a function.

Speeds	Forward km/h	Reverse km/h
1. Low field range	0-6	0-3*
2. High field range	0-12	0-6
3. Low transport range	0-20	0-10
4. High transport range	0-25**	0-12
5. Neutral		

*Reverse speed ranges up to 6 km/h when the threshing unit is engaged.

** Applies to all countries except Germany where max. speed is 20 km/h.

The key of the current gear is highlighted. When a new gear range is selected, the key of the selected gear will flash until the gear change is completed.

If gearshift follows from the "Gear" menu, the screen will change to the previously displayed menu once the gear has been changed.

If the gear change does not occur within 5 seconds, the driver will have to move the machine slightly forward and backward using the multi-function lever. Then, if the gear change does not occur within 15 seconds, the gear must be reselected and the driver should move the machine slightly forward and backward using the multi-function lever.

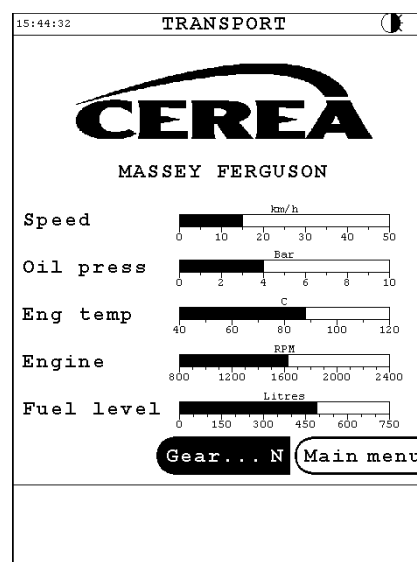


Fig. 13

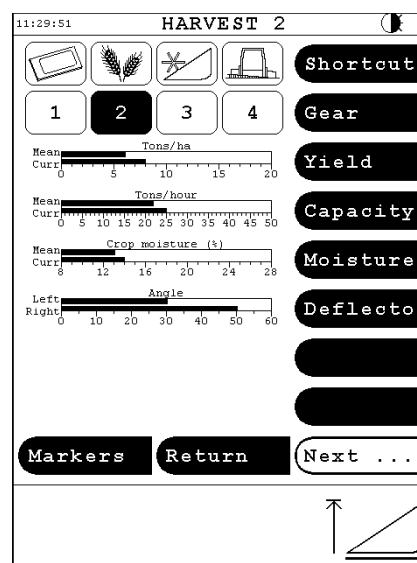


Fig. 14

3. Operation, Controls and Cab

At gear change the multi-function lever must be position "N" and the machine must be stationary. On the terminal the speed indicator must be 0. Apply the foot brake at gear change uphill to avoid loading of the gear wheels.

Note: In transport on gravel road/field with grain in the tank the forward speed must not exceed 10 km/h. Transport range (3rd and 4th gear) may be used only for transport on firm road without grain in the tank.



WARNING: In transport the forward speed of the machine must not exceed the speed limit prescribed by law, irrespective of the conditions.

When driving on inclinations of 8% or more, use only 1st and 2nd gears.

Always change into a lower gear before starting up- or downhill.

Reduced Engine Revolutions in Road Transport (Speed Matching System)

The gearing in 4th gear is high enough for the maximum permissible road transport speed to be reached at engine revolutions just above idle speed.

This saves fuel and reduces the noise level in cab and environment.

At 1100-1200 engine rpm a forward speed of 20 km/h can be attained.

At 1400-1500 engine rpm a forward speed of 25* km/h can be attained.

* Applies to all countries except Germany where max. speed is 20 km/h.

When the machine is started at such low revolutions it is important that the multi-function lever is moved **slowly** forward as starting too fast may "choke" the engine.

Alternatively, the operator may start at higher revolutions and subsequently reduce the revolutions when the machine has gained speed. In this situation a confirmation is required on the terminal before the speed is automatically increased by the hydrostatic pump, please see [\(Fig. 15\)](#). This applies only when the multi-function lever is pushed completely forward.

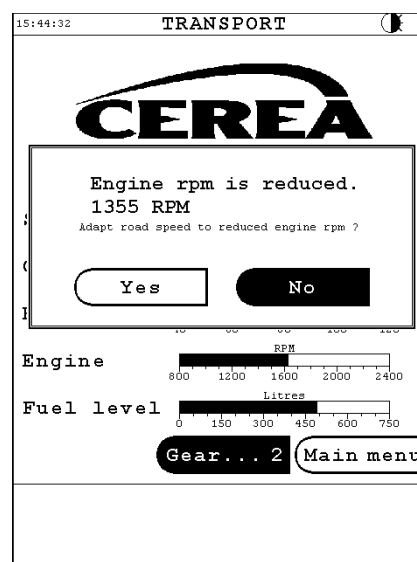


Fig. 15

3. Operation, Controls and Cab

Steering column

Steering Wheel and Steering Column (Fig. 16)

To allow the operator to tailor the perfect working position, steering wheel and column are adjustable as follows:

Fore/aft: Push the pedal (1) to tilt steering wheel and column 4 steps forward or backward by approx. 25 cm.

Up/down: Push the pedal (1) to adjust the steering wheel height by approx. 8 cm.

Angle: Loosen the handle (2) to infinitely tilt the top part of the steering column and the steering wheel by approx. 25 degrees.

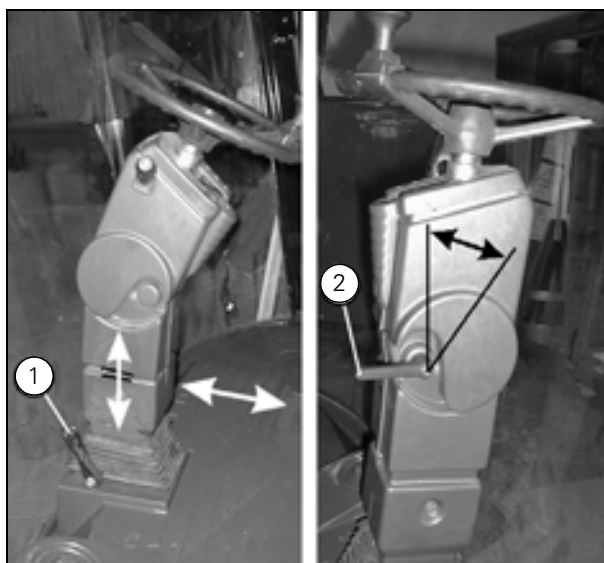


Fig. 16

Direction Flashers and Horn Switch (Fig. 17)

When the lever (3) is tilted forward, the right-hand direction indicator flashes and when tilted backward the left-hand direction indicator flashes. If the lever is pushed down, the main lights flash. Pressing the knob (4) activates the horn.

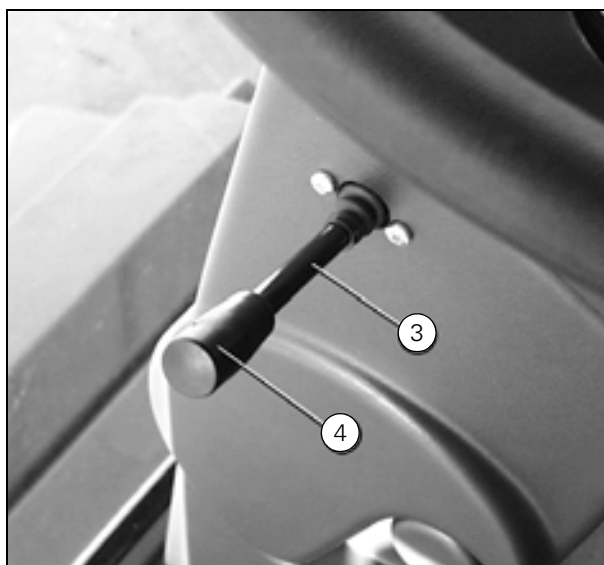


Fig. 17

Brakes, (Fig. 18)

The machine is fitted with hydraulically activated independent brakes (1) and mechanically activated parking brake (2).

Always latch the brake pedals with the locking pawl (3) during transport.

The brake-fluid tank (4) is fitted on the left hand side of the operator seat support.

DATAVISION gives an alarm, if the operator starts driving with the parking brake applied.

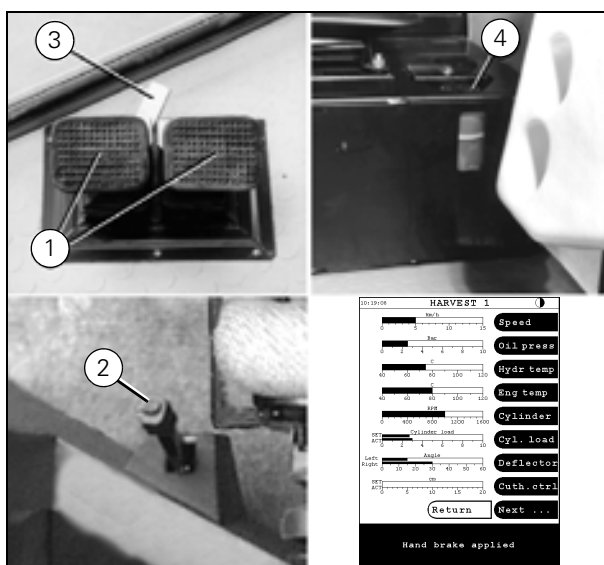


Fig. 18

3. Operation, Controls and Cab

Adjustment of Operator Seat

Seat height and weight adjustment must be adapted individually to suit the operator. The seat height is adjusted by raising the seat. There are three adjustment possibilities, and having been raised completely the seat drops back down into lowest position.

The armrests (6) can be tilted up to give easy access to the seat.

Seat Adjustment Possibilities

(Fig. 19)

1. Weight adjustment
2. Weight indicator
3. Seat height (three steps)
4. Seat fore/aft
5. Backrest inclination
6. Armrest up/down
7. Lumbar support out/in
8. Headrest up/down

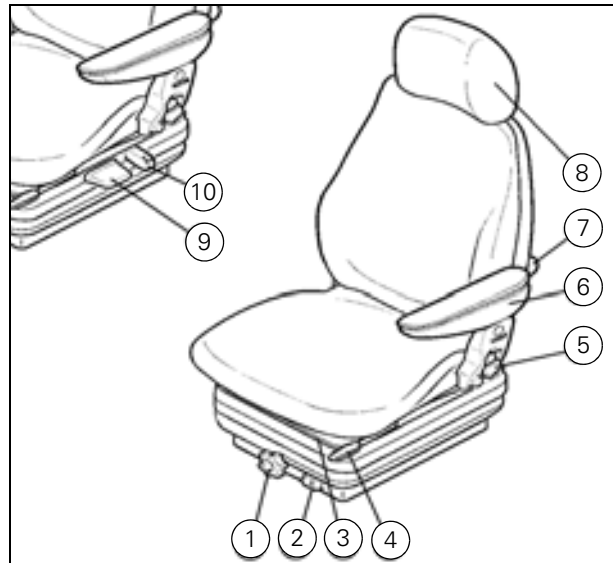


Fig. 19

Note: Never adjust the operator seat on the move.

Adjustment of Air-Suspended Seat

The air suspension and seat height must be adapted individually to suit the operator. When sitting in the seat push the handle (9) down until the seat is completely in bottom position. Then push the handle up until the compressor has raised the seat enough for the green indicator to become visible on the pressure gauge (10). From this position the seat can be raised further by up to 80 mm to reach a suitable height.

Note: Never adjust the operator seat on the move.

3. Operation, Controls and Cab

Ladder

(Fig. 20)

In transport or in situations requiring minimum width of the machine, the ladder (1) can be turned in front of the operator platform when the lever (2) is pushed down.



WARNING: Never try to enter the machine when driving.

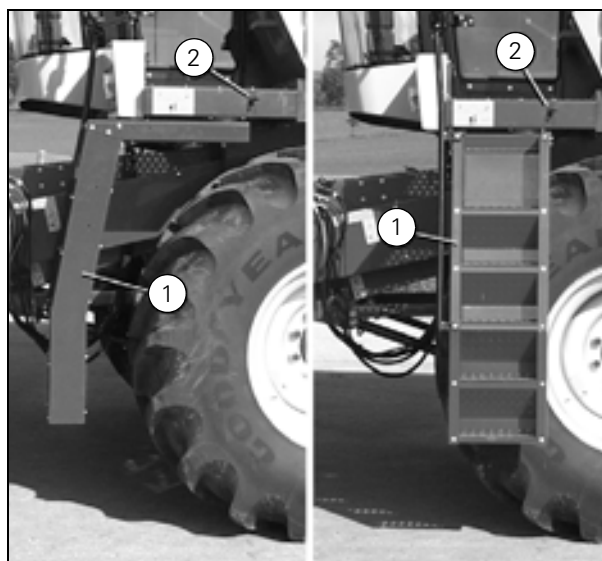


Fig. 20

Removable Ladder

(Fig. 21)

An access ladder for the service platform is provided on the right-hand side of the machine. It can be lifted off and used for instance when cleaning the machine.



WARNING: The access ladder for the service platform may be used as a loose ladder only when the combine is parked on level and firm ground and under observation of the warning signs on the ladder, please see section 2. 'Safety' on page 17.

The ladder serves as an access ladder, the fifth step (1) being secured in the bottom brackets. On the move, the second step from the bottom (2) must be secured in the bottom ladder brackets.



WARNING: Make sure that the fifth step of the ladder rests securely in the bottom brackets before climbing onto the ladder.



Fig. 21

The ladder is moved up or down by first lifting it off the slot in the bottom brackets. Then pull it off the bottom brackets and push it into position, the second or fifth step, respectively, resting securely on the bottom brackets.

3. Operation, Controls and Cab

Lights

[\(Fig. 22\)](#)

The operator cab is fitted with work lights (1), side lights (2) for unloading auger and cut, and rotating yellow beacon (3) for transport and grain tank warning.

The lamps can be pulled out from the front to change bulbs (1).

The cab roof (5) can be opened to change the lamps (2).



Fig. 22

Main Light and Work Light,

[\(Fig. 23\)](#) and [\(Fig. 24\)](#)

The main light (1), low/high beam, is placed to the right and left of the operator cab.

The main light is turned on with the toggle switch (2) in the cab panel.

First step is parking light, second step is main light. There is a pilot lamp for high beam in the steering column.

The side light for unloading auger and crop is turned on with the switch (3).

The work light is turned on with the switch (4), and then the main light turns off automatically.

The windscreen wiper (5) [\(Fig. 24\)](#) is switched on with the switch (6) [\(Fig. 23\)](#).

The hazard warning light is turned on with the switch (7).

The grain tank light is turned on with the switch (8).

The three-stage switch (9) turns on the rotary beacon (10) for transport and grain tank warning to alert the grain wagon.

The toggle switch (11) turns on the cab light (12). Position I for the right-hand side. Position II for both right- and left-hand sides.

The switch (13) closes the circuit for the 4 external connectors for work lamps.

The fuses for all functions in the cab panel are placed in the installation cabinet to the right (14).

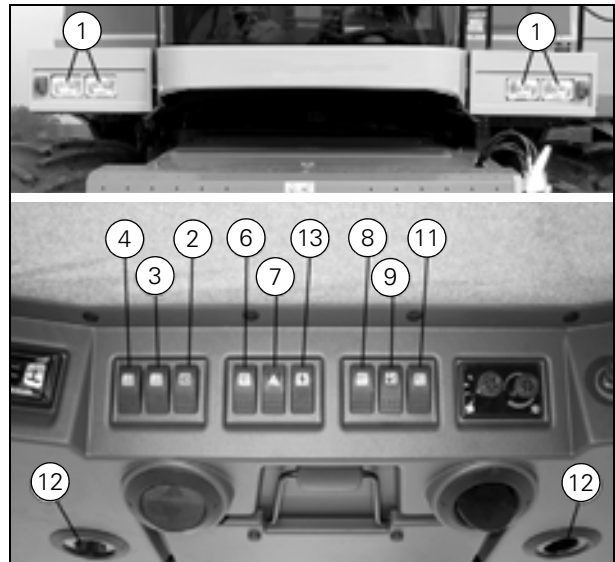


Fig. 23

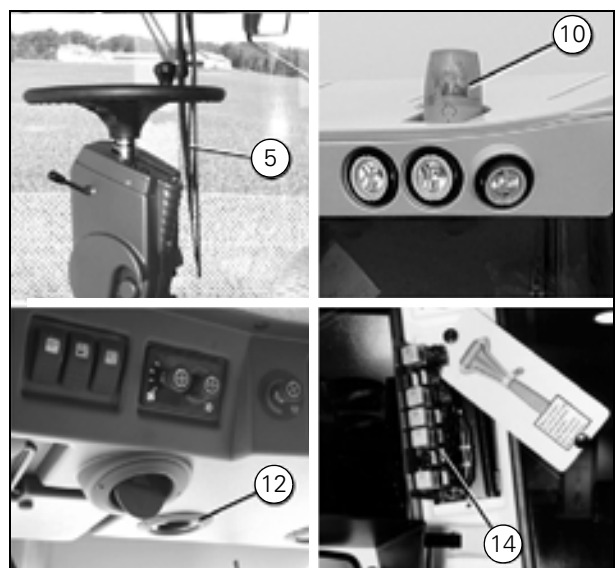


Fig. 24

3. Operation, Controls and Cab

3.6 Operator Cab, Ventilation,

(Fig. 25)

The cab roof is fitted with fresh-air blower, filter and air-conditioning. Heating is available as optional extra. The air is taken in through the grating (1) on both sides of the filter (2).

To clean the filter, remove the cover (3) on the left-hand side of the cab roof by loosening the catches. Open the rubber straps (4) and take out the filter (2). Replace the cover after cleaning.

7. Switch for three-speed blower
8. Thermostat for air-conditioning. The air-conditioning can only be engaged when the blower is switched on.
9. Heat adjustment, if heating is fitted. Both heating valves on the engine are closed on delivery of the machine.

Air-Conditioning

(Fig. 26)

1. Cooling element/heating (if fitted)
2. Expansion valve
3. Condenser
4. Pressostat for high and low pressure
5. Filter and sight glass
6. Compressor
7. Magnetic clutch
8. Fanning mill
9. Adjustable in-take for recirculation of the air in the cab
10. Adjustable defroster opening

Using the Air-Conditioning

(Fig. 27)

When the air-conditioning is on, the air in the cab should be recirculated for better utilisation of the system.

The cab door should be kept shut and the opening (9) for recirculation completely open.

Note: Do not cool the air in the cab too much, as too low temperature will dry the air which may cause illness.

Note: It is not advisable to smoke in the cab while the air-conditioning system is recirculating. Smoke particles will stick to the evaporator of the air-conditioning system which may then give off obnoxious smells when the air-conditioning is running.



WARNING: Smoking and open fire should be avoided in connection with servicing due to the risk of refrigerant leaking out which if set on fire, will evolve gases injurious to health.

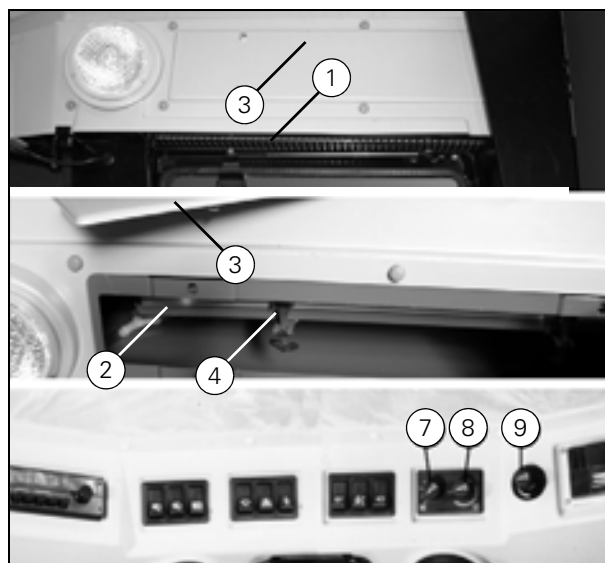


Fig. 25

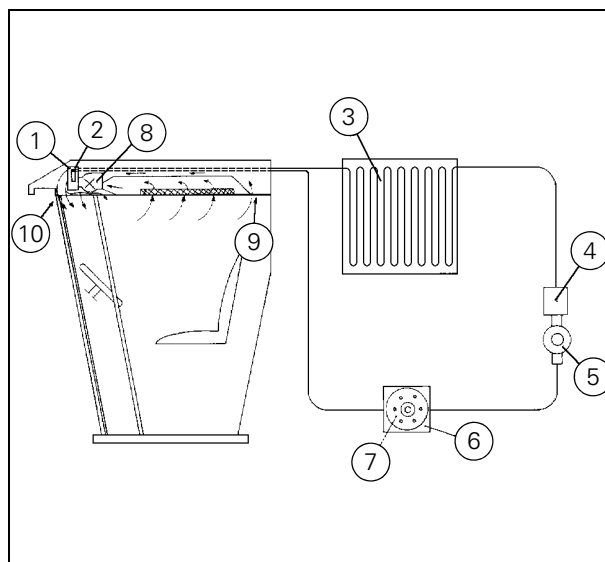


Fig. 26

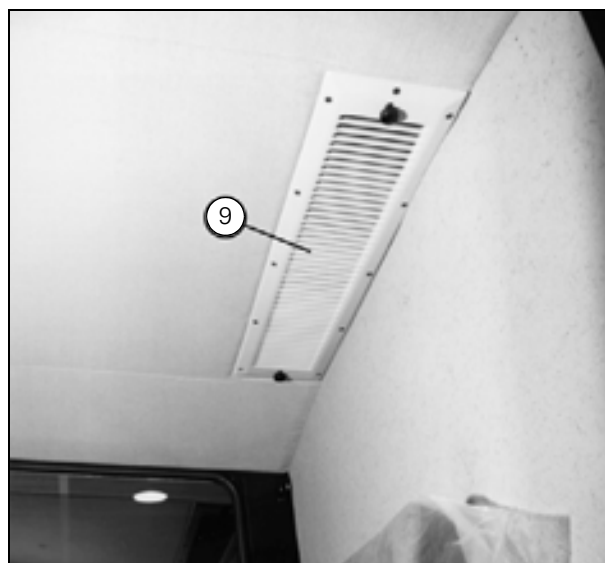


Fig. 27

3. Operation, Controls and Cab

3.7 Printer

Exchanging Paper and Ribbon in Printer

(Fig. 28), (Fig. 29) and (Fig. 30)

Pull out the printer holder from the control panel with the lever (1).

Push out the printer unit from the holder through the hole (2).

Remove the ribbon by pushing lightly on the holder in the direction of the arrow at (3).

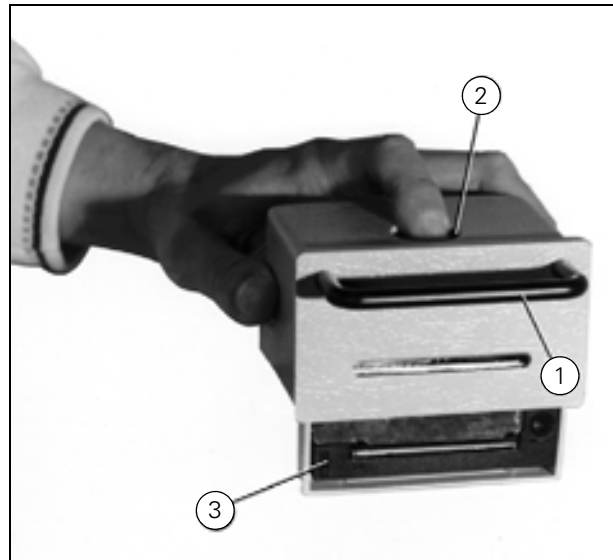


Fig. 28

Inserting the Paper Roll,

(Fig. 29)

Pull out the pin (1) and fit new paper roll as illustrated.

Push the paper into the printer as illustrated and turn the feed roller (2) anticlockwise with the thumb wheel (3) until the paper appears in the slot (4).

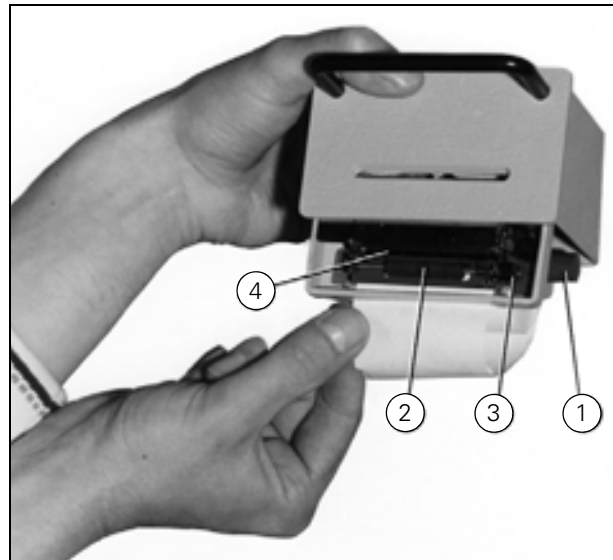


Fig. 29

Fitting the Ribbon,

(Fig. 30)

Refit the ribbon by pushing lightly in the direction of the arrow until the cassette locks in the printer unit.

Check that the ribbon is positioned correctly in the slot (1) on top of the paper. Tighten the ribbon by turning the button (2) clockwise.

Push the printer unit back into its holder. Refit the printer holder in the control panel.

Be careful when fitting not to jam the paper.

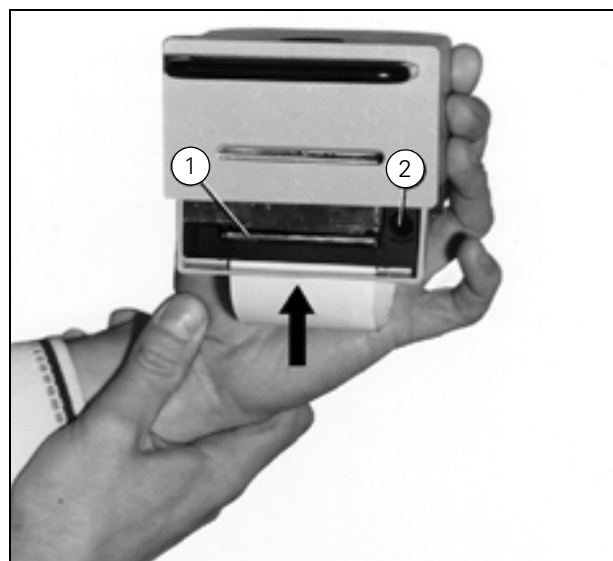


Fig. 30

3. Operation, Controls and Cab

3.8 Four-Wheel Drive

Four-wheel drive is used where difficult ground conditions or inclination may cause problems for machines without drive on all four wheels. At the same time, drive on all four wheels improves the manoeuvrability of the machine at turns, as the rear wheels are pulling in the direction the wheels are turned.

The four-wheel drive is a hydrostatic system with an oil motor built into the hub of both rear wheels. The system is connected to the existing traction system so that the oil from the pump is distributed between rear wheels and traction wheels. When the four-wheel drive is not engaged for instance during transport, the connection to the rear wheels is cut off. The oil motors are in neutral position and no oil is circulating in the four-wheel drive system.

When the four-wheel drive is not engaged the machine functions during harvest and transport as a machine with drive only on the traction wheels.

Activating Four-Wheel Drive,

[\(Fig. 31\)](#) and [\(Fig. 32\)](#)

When required by the harvesting conditions, the four-wheel drive is engaged with the switch (1) which activates the magnetic valve (2).

The magnetic valve establishes the connection between the hydrostatic pump and the two oil motors in the rear wheels.

Engagement of four-wheel drive can take place both stationary and on the move.

Note: *Engagement/disengagement of four-wheel drive on the move may take place only when forward speed is below 10 km/h.*

When engagement takes place on the move the forward speed of the machine is quickly reduced

as the oil flow from the pump is now distributed between 3 oil motors instead of flowing to one.

Forward Speed

When four-wheel drive is engaged the maximum forward speed is reduced in all four gear ranges:

Speeds km/h		
1st gear	from 6 km/h	to 5 km/h
2nd gear	from 12 km/h	to 8 km/h
3rd gear	from 20 km/h	to 10 km/h
4th gear	from 25* km/h	to 11 km/h

* Applies to all countries except Germany where max. speed is 20 km/h.



Fig. 31



Fig. 32

3. Operation, Controls and Cab

Operation of Four-Wheel Drive

It is important when using four-wheel drive that the tractive power is distributed on all wheels to ensure that none of the wheels tend to spin.

If one of the traction wheels spins, the rear wheels will lose tractive power as the pressure in the traction system is reduced.

To avoid this you normally change to a higher gear than the one you would use without four-wheel drive being engaged.

When you change to a higher gear, for instance from first to second gear, the rear wheels will pull harder due to higher pressure in the traction system.

The pressure in the traction system increases because more power is required before a traction wheel spins in a higher gear.

If a rear wheel starts spinning, the flow control in the magnetic valve (1) will automatically stop the flow to the wheel.

Under certain circumstances both rear wheels may start spinning at the same time.

In that case it may be necessary to change to a lower gear to lower the pressure in the traction system.

Four-wheel drive is an advantage whether conditions require it or not.

When four-wheel drive is engaged the strain on traction system and transmission is reduced.

Service

Grease the grease nipples (2) and (3) for the pivot of the wheel motors every 100 hours on both sides.

Change hydraulic oil and filter according to lubrication chart as it is done on machines without four-wheel drive.

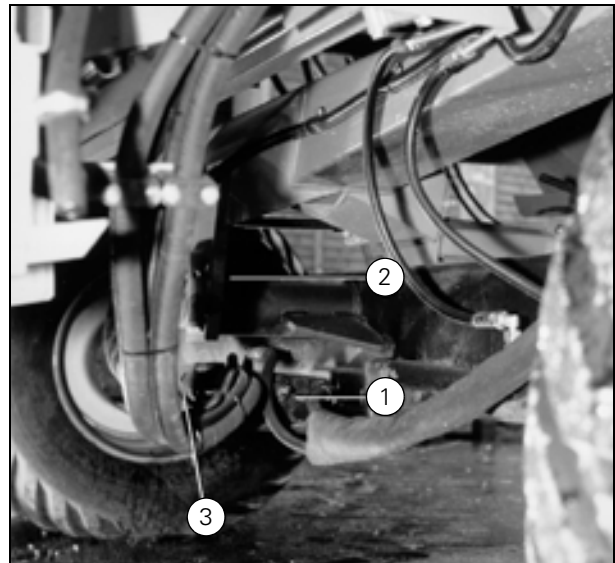


Fig. 33

3. Operation, Controls and Cab

3.9 Other Optional Extra

Reversing Camera

[\(Fig. 34\)](#)

A rearview camera can be mounted to improve safety on and around the combine. The camera is also useful when reversing the combine to the table trailer.

When harvesting after dark the camera can be used for checking that the chopped straw is not blown into the uncut crop.

The camera is mounted on the straw hood to ensure it covers the dead angle right behind the combine. The monitor is mounted in the cab roof to the right of the operator.

An additional camera can be mounted right above the shaker shoe enabling the operator to spot a beginning accumulation of crop in the shaker shoe in time.



Fig. 34

Electrically Adjustable Rearview Mirrors,

[\(Fig. 35\)](#)

The mirror (1) is adjusted using the joystick (2).

Select the relevant mirror by turning the joystick (2) to the right and left, respectively. Adjust the mirror (1) into the desired position using "Up/Down/Left/Right" on the joystick (2).

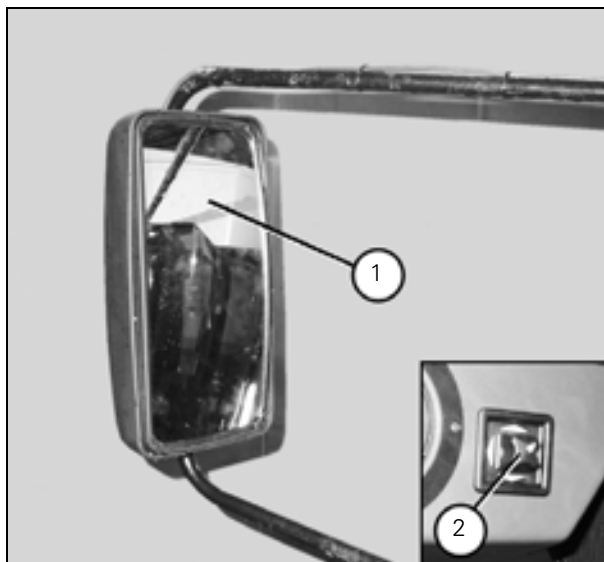


Fig. 35

3. Operation, Controls and Cab

4. Operation, DATAVISION

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4. Operation, DATAVISION

4.1 Safety Precautions



Before any service or cleaning is carried out, stop the engine, remove the ignition key and switch off the main switch.



Never carry out any electric welding on the machine until the engine is stopped, the ignition key is removed and the main switch is switched off.

Disconnect the alternator cables to protect the alternator.

Disconnect all connectors for:

- Terminal and job computers in the electric box*
- Comunit or GPS*
- EEM engine control computer*



Never allow persons near the machine and never reach into the elevator to check the returns.

Dismounting and mounting of elevator doors must not take place before the diesel engine has been stopped and the main switch has been switched off.

4. Operation, DATAVISION

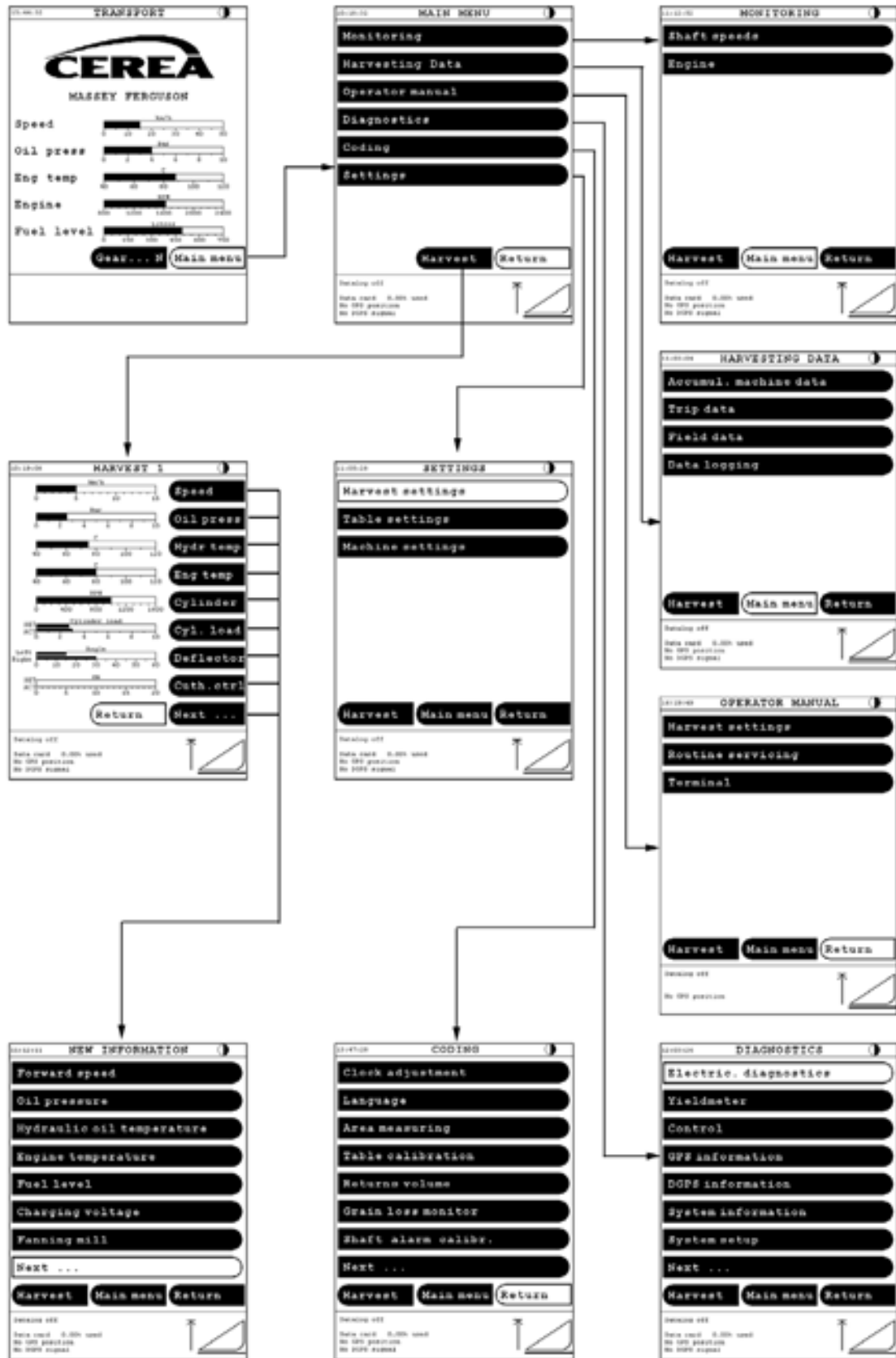


Fig. 1

4. Operation, DATAVISION

4.2 DATAVISION

DATAVISION is an information, registration, and control, regulation and monitoring system consisting of job computers and a terminal. DATAVISION is operated either via the touch screen on the terminal or from the remote control in the multi-function lever (Fig. 2).

Menu Structure and Operation

The menu picture is divided into three sections: A top bar, a menu section and an information area (Fig. 3).

The top bar contains hour, menu title and a symbol indicating that the contrast of the screen can be adjusted on this bar (contrast adjustment will be described later).

The menu section contains specific information on the individual menus.

The information area shows general information such as a table icon indicating whether the table is raised or lowered, information alarms when occurring plus GPS information and logging information if such functions are available in the DATAVISION system.

When conditions for harvest are present (forward speed higher than 0.5 km/h, table height less than 50 cm, threshing unit and table engaged), the text "Harvesting" appears above the table icon at the bottom of the screen.



Fig. 2

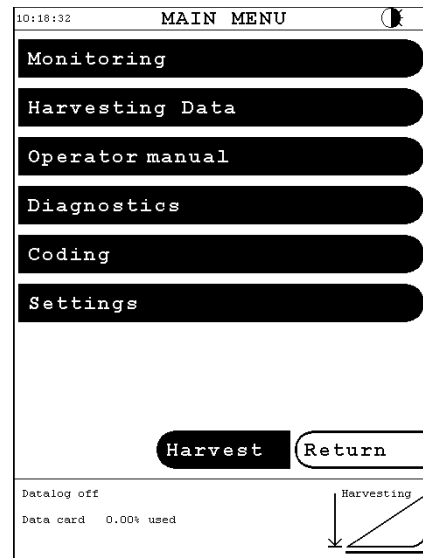


Fig. 3

4. Operation, DATAVISION

Operating DATAVISION on Terminal

(Fig. 4)

All menu keys are tongue-shaped with a text describing their function.

Softkey

The menu keys are activated by a light touch of the finger in the area covered by the key.

When a menu key is activated the relevant menu/screen picture will be shown, or the action specified on the menu key will be taken.

Active Key

The active key is easily identified as it is highlighted as shown below:

Cursor softkey

When a menu key is activated, the cursor moves to that key. The active key is also named the cursor softkey.

Continuous Function

Keys with continuous function are easily identified by two straight lines shown on the key as long as you keep pressing it, see below.

Continuous softkey

This indicates that the specific activity is continued as long as the key is held. This function is often available in for instance "+/-" keys where it will cause the relevant bar to rise or fall as long as the "+/-" key is held.

Adjustment Directly on the Bar

In certain menus it is possible to make adjustments by directly pressing the bar at the desired adjustment value. You may use a finger nail to make the selection more accurate.

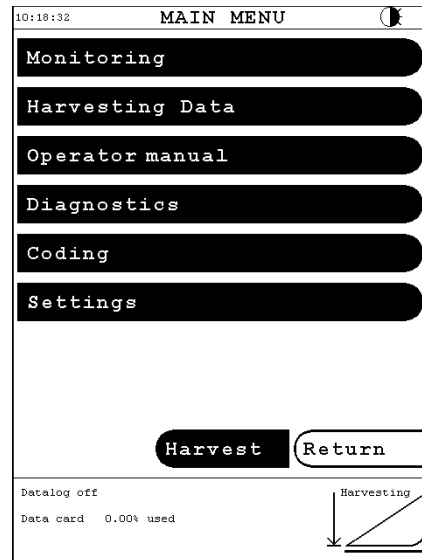
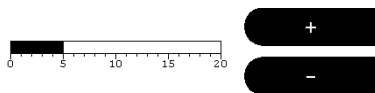


Fig. 4

4. Operation, DATAVISION

Operating the Terminal by Remote Control in the Multi-Function Lever

(Fig. 5)

The menu keys on the terminal can be selected and activated by the remote control buttons (1 & 2) in the multi-function lever, (Fig. 5).

1. Remote control terminal, ENTER
2. Remote control terminal, SHIFT

ENTER Button:

The "Enter" button activates the function or menu highlighted by a white cursor on the terminal. Usually "Yes" or "OK" will be selected in dialogue boxes. Pressing the "Enter" button confirms the selection. Furthermore, alarms can be confirmed by pressing the "Enter" button, except for engine safety alarms.

SHIFT button:

The "Shift" button has two different positions: Normal or Cursor shift.

1. **Normal**

In normal position the "Shift" button is used for changing between the three settings menus "Harvest settings", "Table settings", "Machine settings" and where relevant also the menu "Data logging". If the "Shift" button is pressed for 5 seconds, its position changes to Cursor shift.

2. **Cursor shift**

(Emergency operation) Pressing the "Shift" button once in this position will move the menu cursor down or to the left to the next menu key. If you keep pressing the "Shift" button the cursor will move between the keys on the terminal. It is only possible to return to normal function by switching ignition off and on.

The remote control can be used on the move for menu selection and operation from the menus, with the exception of a few functions.



Fig. 5

4. Operation, DATAVISION

Contrast and Brightness Control

[\(Fig. 6\)](#)

The contrast is normally adjusted automatically to optimum readability, but if required, the contrast can be adjusted manually by pressing the top bar on the screen. The contrast gets darker from left to right.

The brightness is also adjustable, which is indicated by "sunbeams" on the contrast symbol.

To adjust the brightness press the top bar in the right-hand corner and then move your finger to the left. The brightness is adjustable in four steps.

Cleaning the Terminal

The terminal should be wiped clean with a soft cloth damped in a 1:1 solution of isopropyl alcohol and water.



Fig. 6

4. Operation, DATAVISION

Data Cards

The data cards used as job cards for logging information from DATAVISION.

Do handle these cards with care, i.e.

1. Do not bend or expose to shocks.
2. Store dry.
3. Keep connectors at the end of the card clean.
4. Do not expose to extreme temperatures or direct sunlight.

DATAVISION Menu Structure

DATAVISION is divided into Transport Menu, Harvest Menus and a Main Menu from which the user can call up information on the screen.

From some of the screen pictures, for instance "Machine settings", "Field data" and "Routine servicing", information can be printed out on paper, others can be coded or changed as required.

When the ignition key is turned into position YELLOW and during transport on roads, the Transport menu is displayed, from which the user can return to the Main menu, and from there to sub-menus or the Harvest menus.

When the threshing unit is engaged, the picture changes first to "Shaft speeds" and then to Harvest menu, irrespective of where you are in the menu system. The Harvest menu is normally on the screen when the machine is at work.

The Harvest menu can be called up from nearly anywhere in the menu system by pressing the "Harvest" key.

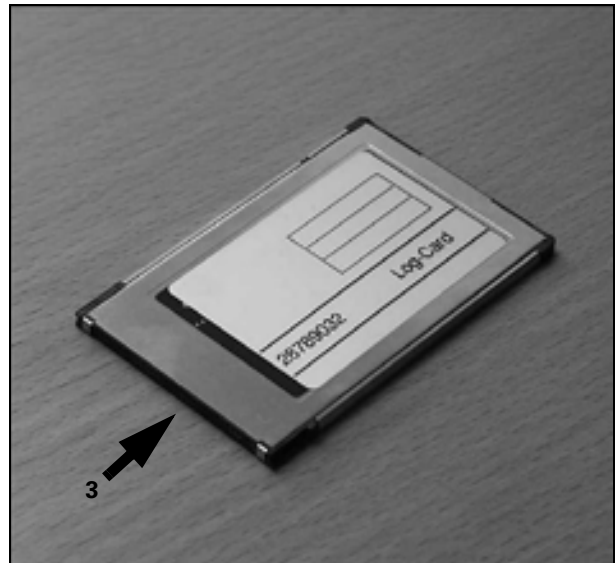


Fig. 7

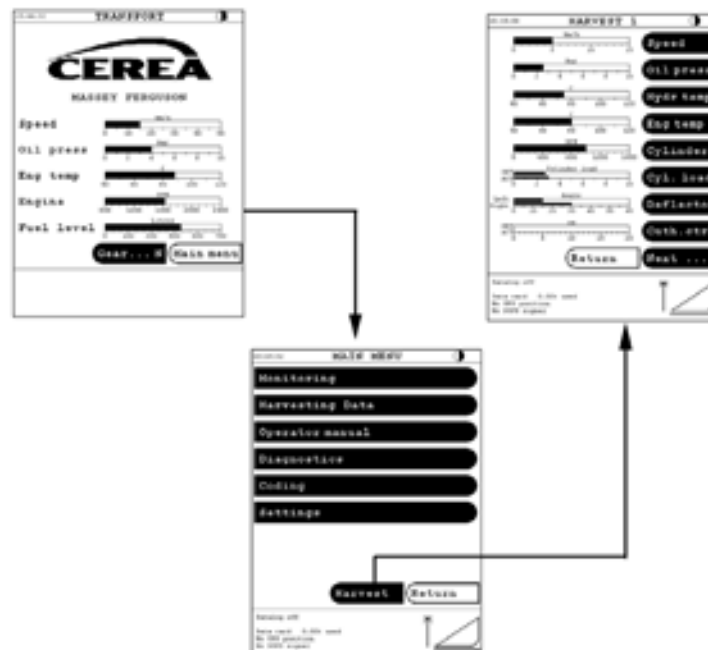


Fig. 8

4. Operation, DATAVISION

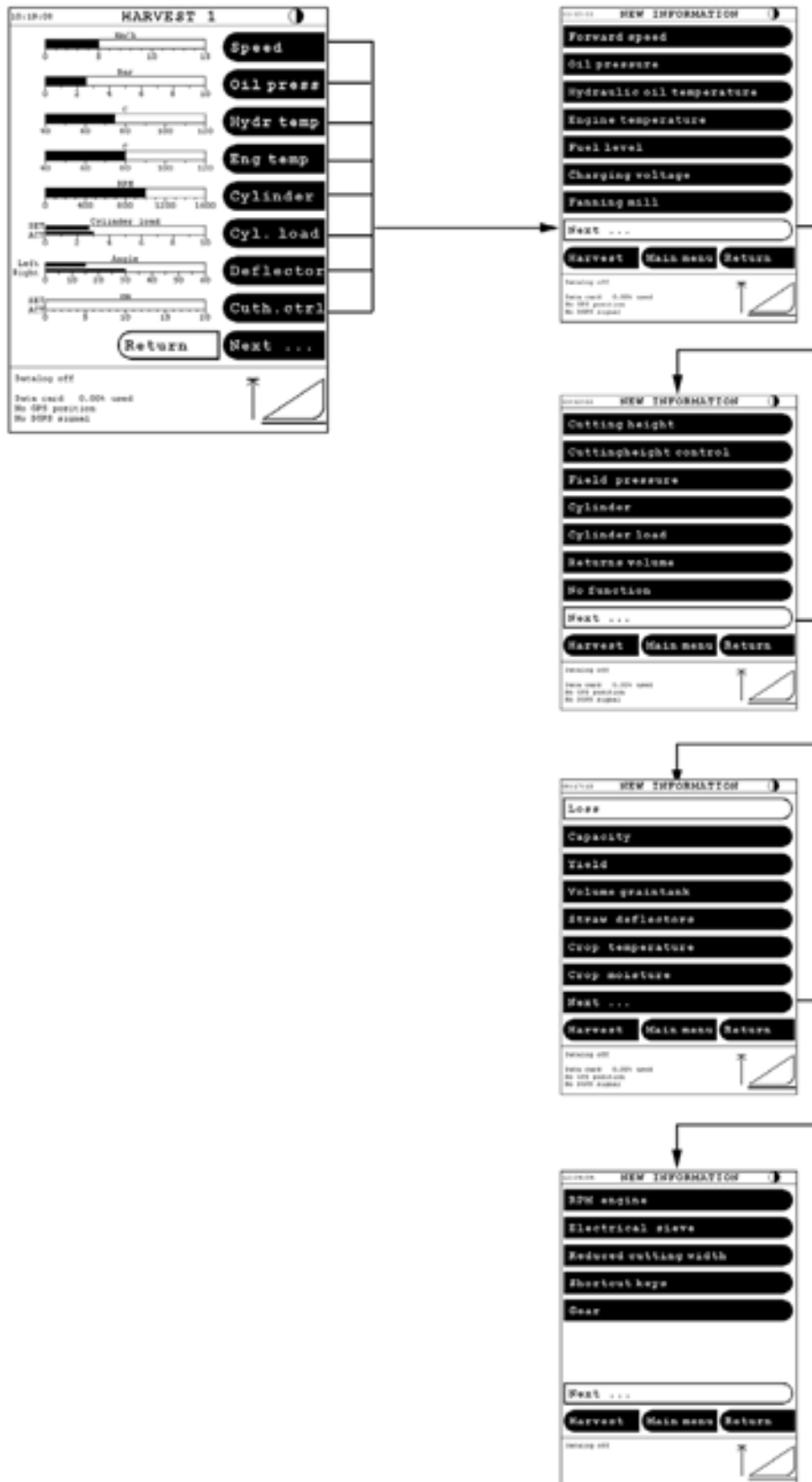


Fig. 9

4.3 Harvest Menu

When the threshing unit is engaged the Harvest menu automatically appears on the screen.

The Harvest menu actually consists of 2 pages, "Harvest 1" and "Harvest 2".

You can choose between them using the key "Next...".

Each Harvest page includes up to 8 functions, shown as 8 bars, figures or symbols.

The function indications on "Harvest 1" and "Harvest 2" are interchangeable and can be combined so that when changing between 1 and 2 you have a total of 16 functions.

"New Information" Menu

[\(Fig. 9\)](#)

If the required function is not displayed on the screen, press the key at the function to be replaced.

If the required function is not displayed on the first "New information" picture, press the key "Next...", until the function appears.

When the key of the required function is pressed the screen picture returns to the Harvest menu, and the marked function has now been replaced by the selected function. If "No function" is selected, a blank key will replace the marked function. In this way you are able to simplify your Harvest menu.

4. Operation, DATAVISION

Digital Reading (Fig. 10)

It is possible to change between bar reading and digital reading of the functions in the Harvest menu. To change the reading of a function, press the screen immediately to the left of the specific function.



Note: When digital reading is selected, "Direct adjustment" is possible by pressing as if there was a bar behind the digital figures. The function "Shortcuts" can still be used.



Direct adjustment (Fig. 11)

The following functions can be adjusted by directly pressing the bar at the desired adjustment value. You may use a finger nail to make the selection more accurate.

- Cutting height
- Cutting height control
- Field pressure
- Cylinder Load
- Cutting width

Shortcuts (Fig. 12)

By pressing the bar of the following functions you can move directly to the settings menu of the functions:

- Returns Volume
- Loss
- Fann mill
- Sieve*
- Cylinder speed

* for electrically adjustable sieve, only.

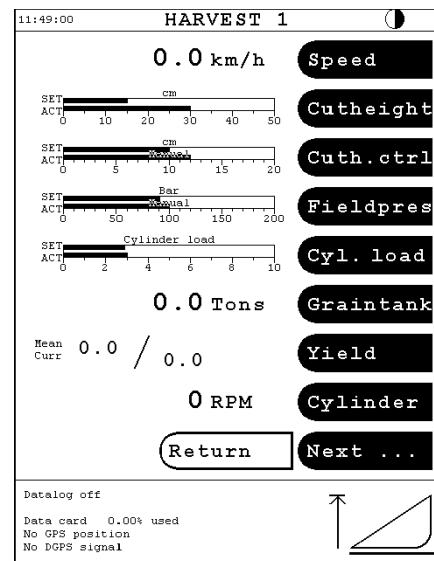


Fig. 10

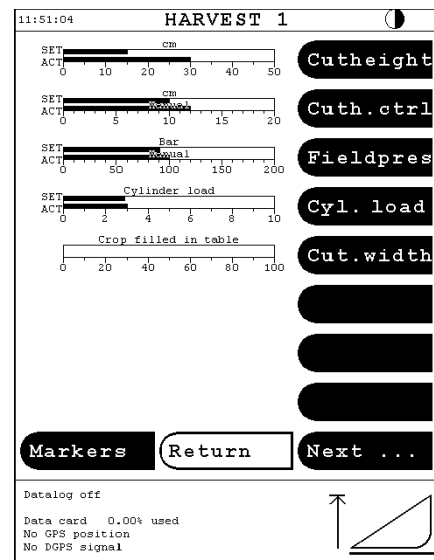


Fig. 11

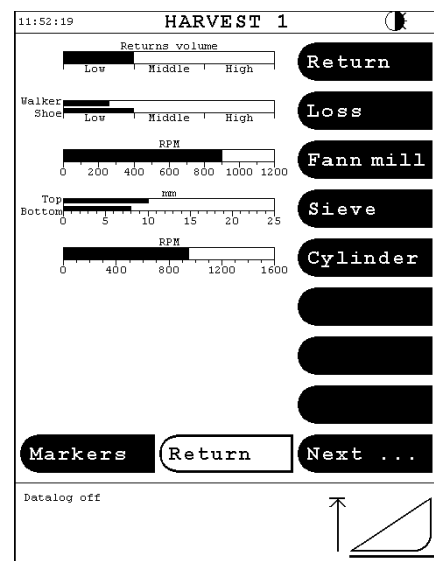


Fig. 12





4. Operation, DATAVISION

Short-cut keys

(Fig. 13) and (Fig. 14)

From the Harvest menu it is possible to select the display of shortcut keys. Select a function from the harvest menu and replace it by "Shortcut keys".

Overview of shortcut keys:

-  Data logging
-  Harvest Settings,
-  Table Settings
-  Machine Settings,

Special Functions

(Fig. 13) and (Fig. 14)

From the Harvest menu you have access to the following special functions:

- Gearshift
Once the function "Gear" has been called up on the Harvest menu, the various gear keys will be displayed (Fig. 13) and (Fig. 14). When a new gear range is selected, the key of the selected gear will flash until the gear change has taken place. Once the machine is in gear, the key of the selected gear will be highlighted.
- Medium values of yield, capacity and crop moisture (for machines with yield meter and moisture meter, only).
Medium and current values of yield, capacity and crop moisture can be read directly from the Harvest menu.

Note: The reading on the bar "Mean" is based on the field data recorded since the last zeroing. Zeroing of field data is described in section 4.6 'Harvesting Data' on page 85.

- Interruption of yield data logging (for machines with yield meter, only)
The yield data logging can be interrupted directly from the Harvest menu by pressing the bar at "Yield". Pressing the bar again will resume the logging.
- Straw deflectors (for machines with electrically adjustable straw deflectors, only)
A touch of the straw deflector bar in the Harvest menu will turn the two sets of deflectors to the opposite sides.
- Markers (for machines with data logging with GPS, only) (Fig. 14)
Markers of various observations can be logged directly from the Harvest menu. A touch of the key "Markers" (Fig. 13) in the Harvest menu will call up the keys of the selected markers (Fig. 14), please see "Marker Setup" in section 4.6.3 'Data Logging Setup' on page 96 and section 4.6.4 'Using Markers' on page 99.

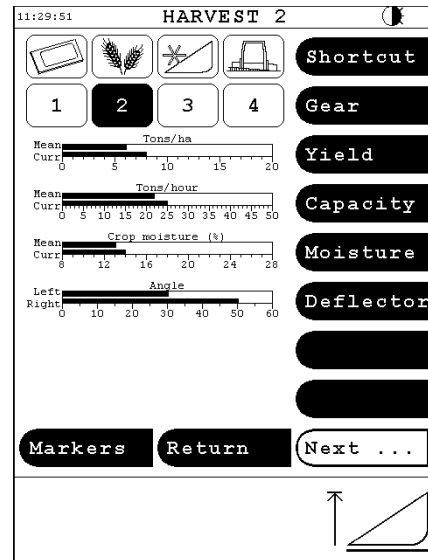


Fig. 13

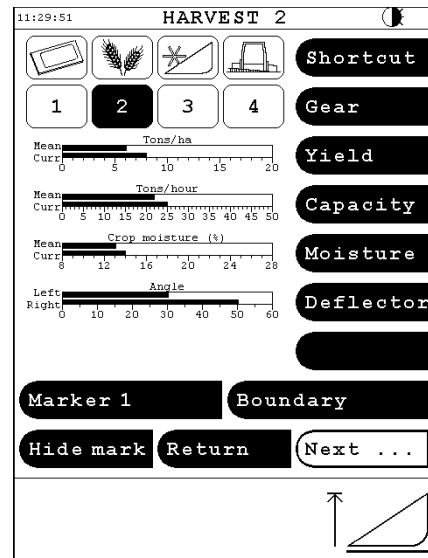


Fig. 14

4. Operation, DATAVISION

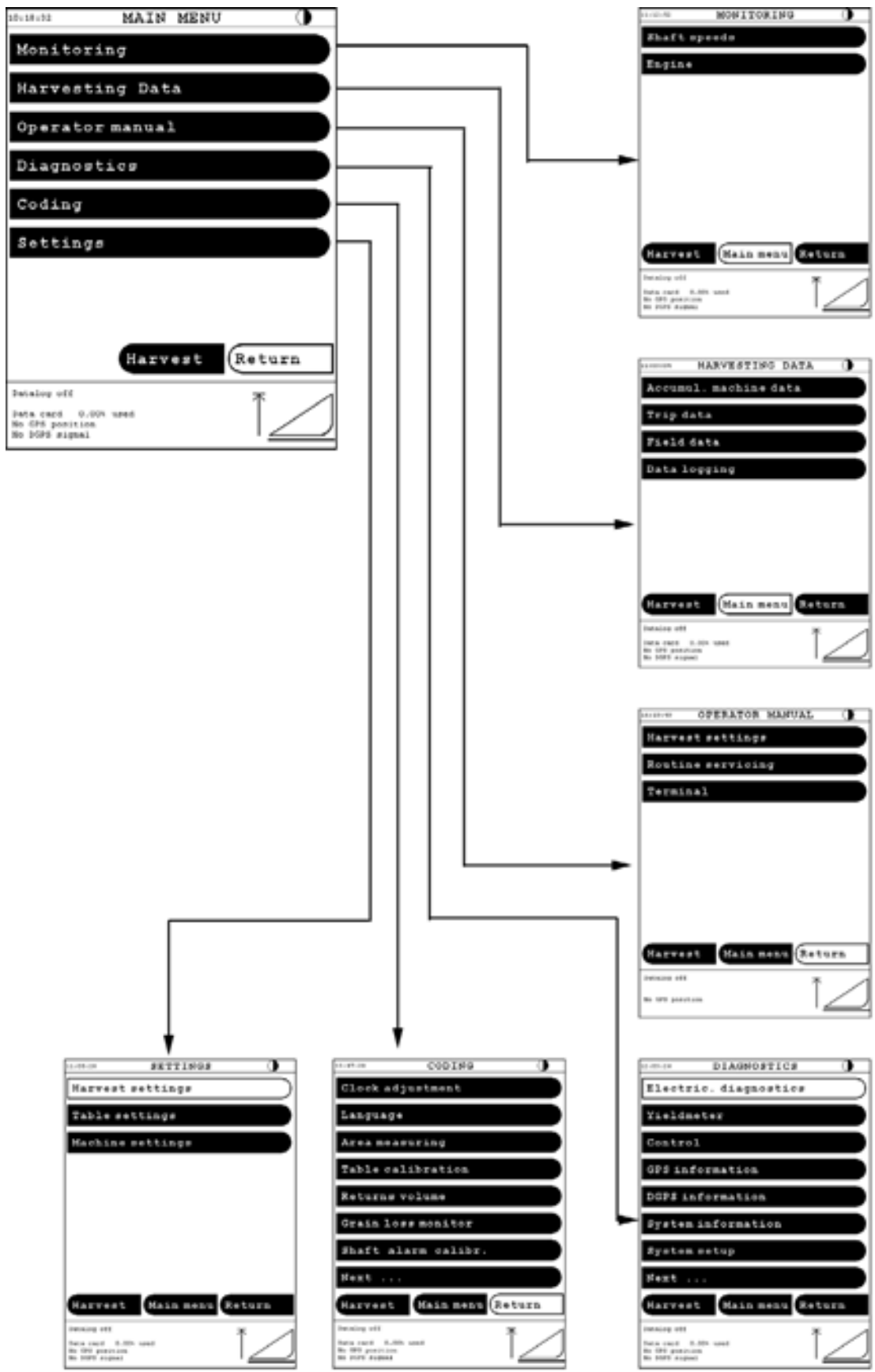


Fig. 15

4. Operation, DATAVISION

4.4 Main Menu

If you require information in addition to that of the Harvest menu, press "Return".

The screen picture now changes to Main menu which is divided into the following groups:

1. Monitoring
2. Harvesting data
3. Operator's Manual
4. Diagnostics
5. Coding
6. Settings

Press the key of the desired group. The screen changes to the menu of the selected group, from which a subject can be selected.

The Harvest menu can be called up from nearly all menus by pressing the "Harvest" key.

Monitoring

This group is used for displaying shaft and engine data and is not used in normal operation. If DATAVISION detects a fault condition of this data, the screen will automatically change to the relevant monitoring menu.

Harvesting data

This group is used for recording data, for instance engine hours, trip data and yield/data logging. The menus of this group have no influence on the machine and the harvesting process but only record information for display or print out as documentation.

Operator's Manual

This group includes a number of menus with text information, for instance guiding lubrication charts and suggestions for the adjustment of the machine for different crops. The menus of this group do not affect the machine nor the harvesting process.

Diagnostics

This group is normally used only by technicians for troubleshooting and basic adjustment of the DATAVISION system.

Coding

This group contains basic user adjustments and calibrations of the DATAVISION system. The menus of this group must be checked each year before the start of the harvest season. In addition, some adjustments and calibrations must be repeated for instance after repairs and mechanical adjustments which may affect the DATAVISION system.

Settings

This group is used frequently in operation and contains the following 3 sub-groups:

- **Harvest Settings**
From this menu it is possible to select current crop, adjust concave, cylinder and fanning mill revolutions, etc.
- **Table Settings**
From this menu you have the possibility to select and

adjust cutting height control, field pressure control and preset cutting height. Furthermore, reel speed control can be engaged and disengaged from this menu.

- **Machine Settings,**

This menu gives access to operating grain tank covers and gearshift. In addition, optional equipment, for instance Auto Level combine, Constant Flow and electrically adjustable straw deflectors can be adjusted from this menu.

4. Operation, DATAVISION

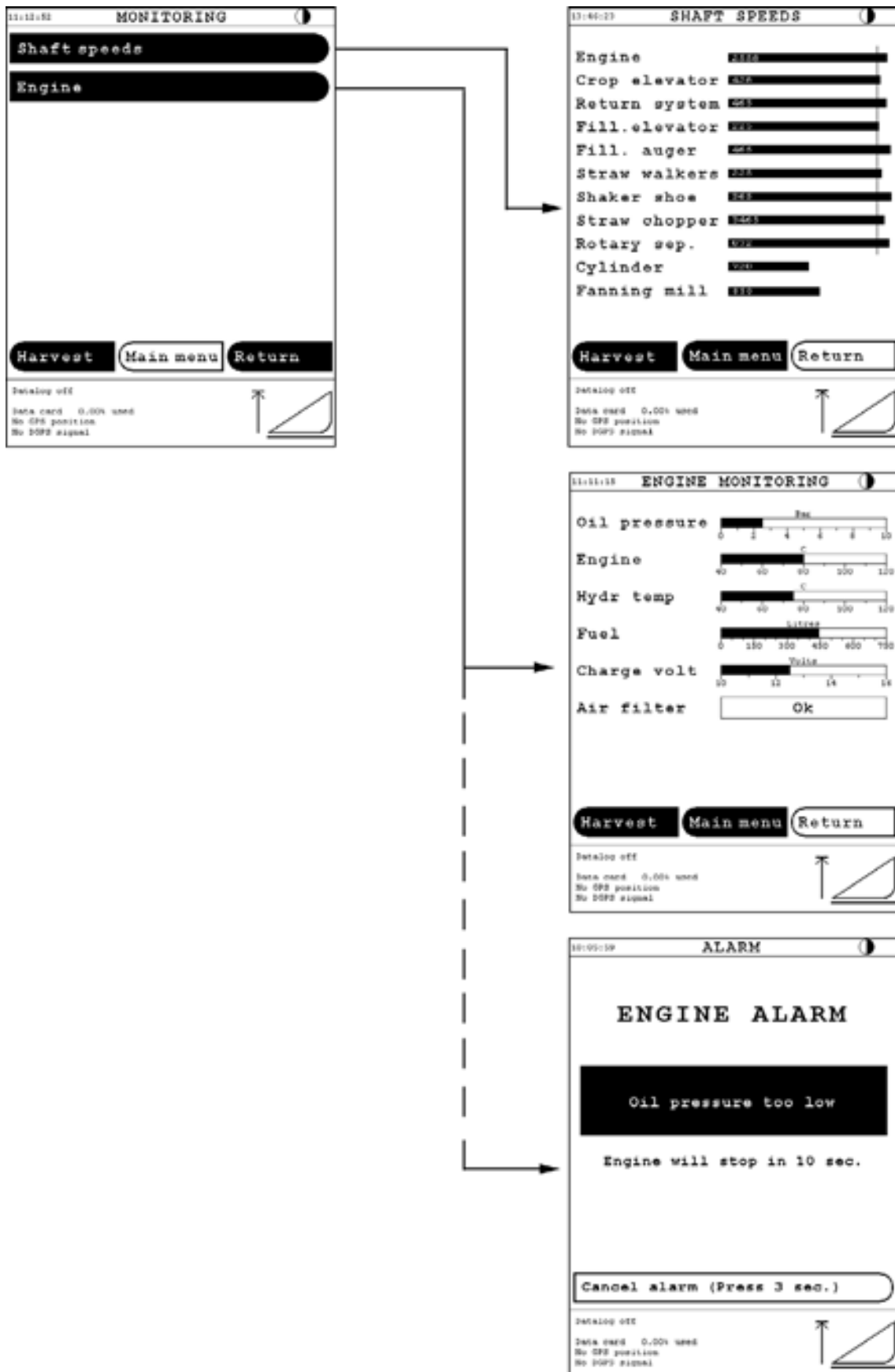


Fig. 16

4. Operation, DATAVISION

4.5 Monitoring

The monitoring system is divided into three groups: Shaft speeds, Engine monitoring and Information.

When the engine is started, engine and hydraulic system are monitored. Engagement of the threshing unit activates monitoring of all shafts except threshing cylinder and rotary screen.

Shaft Speeds

[\(Fig. 16\)](#)

If the revolutions of a shaft are reduced by more than 10% compared to normal at full engine speed, the screen picture changes to "Shaft speeds". An acoustic alarm starts and the name of the affected shaft flashes in the information area.

The alarm is acknowledged by pressing "Return". The alarm will not become active again until the shaft speed has exceeded the alarm limit (i.e. when the fault has been corrected), or the system has been switched off.

Note: *Shaft alarm calibration to be carried out as described in section 4.13 'Shaft Alarm Calibration' on page 126.*

Engine Monitoring/Alarm

[\(Fig. 16\)](#)

In case of alarm from engine or hydraulics the screen changes to "Engine monitoring" where an alarm text is shown on the bars. The alarm is acknowledged by pressing "Return".

Engine Monitoring includes:

1. Cooling water temperature above 95°C
2. Hydraulic oil temperature above 95°C
3. Fuel level below 10% of tank capacity
4. Charging voltage below 12 V/above 15.5 V
5. Air filter blocked
6. Oil pressure

4. Operation, DATAVISION

Engine Safety Alarm

(Fig. 17)

If the screen changes to engine alarm the engine will stop in about 10 seconds.

Engine alarm includes:

1. Oil pressure below 1.5 bar
2. Cooling water temperature above 100°C
3. Hydraulic oil temperature above 105°C
4. Cooling water level too low
5. Hydraulic oil level too low

The alarm cannot be cancelled. In an extreme situation - for instance on a railway crossing - engine stop can be avoided by pressing "Cancel alarm" for 3 seconds.

When the danger is averted, stop the engine instantly, find and correct the fault before starting the engine again.

Information

(Fig. 18)

Information will be shown in the information area at the bottom of the screen and includes:

1. ERROR: Speed potentiometer
2. ERROR: Threshing switch is on
3. Straw hood blocked*
4. Chopper vibrating
5. Unloading auger overloaded
6. Note: Unloading auger in
7. Hand brake applied
8. Unloading auger on
9. Stone trap open
10. Grain tank full
11. Engine rpm too low
12. Excessive returns volume
13. Unloading auger out
14. Chopper vibr sensor error
15. Data card full
16. Data card almost full
17. Moisture sensor error

*Important! See section 8.10 'Straw hood' on page 231.

An acoustic signal is given at the same time as the information appears.

The information cannot be cancelled like the alarm, it remains on the screen until the fault has been corrected.

After 10 seconds without operation of the terminal the information will be reduced to a small black box in the bottom left-hand corner of the screen. At a brief touch of the information area, at a menu change or if a new information of higher priority appears, the reduced information will be displayed full size for 10 seconds.

Note: When you keep pressing the information area at the bottom of the screen you leaf through all received information and finally arrive at the normal information underneath, (Fig. 19).

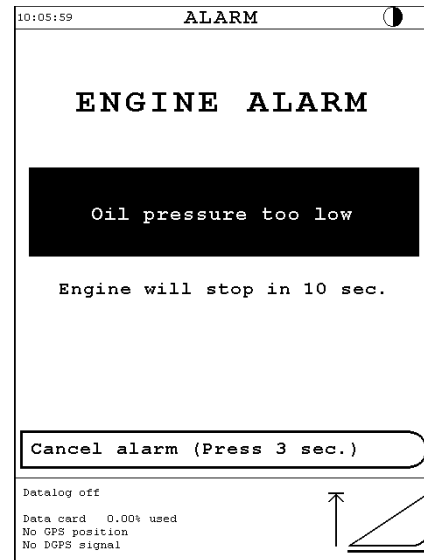


Fig. 17

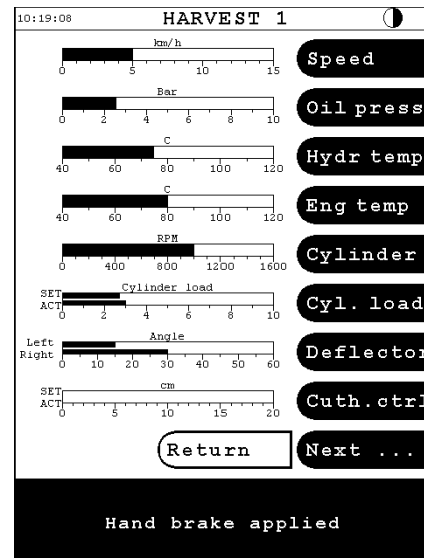


Fig. 18

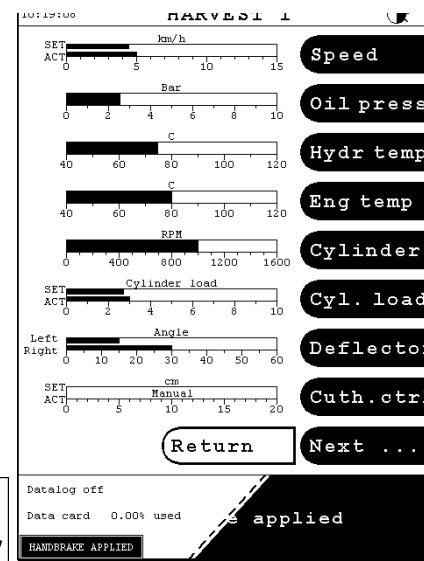


Fig. 19

4. Operation, DATAVISION

Shaft Speeds

(Fig. 20)

Nominal revolutions at the delivery from the factory:

Shaft Speeds		
Shaft	Nominal rpm	Alarm limit rpm -10%
Engine	2080	x
Main Crop Elevator	390	x
Returns System	435	x
Tank filling elevator	490	x
Tank filling auger	490	x
Straw walkers	224 (200) ¹⁾	x
Shaker shoe	300	x
Straw chopper (4-row)	3710 (1540) ²⁾	x
Straw chopper (8-row)	3460 (1430) ²⁾	x
Rotary separator	950 (475) ²⁾	x
Fanning mill	460-1150	< 300

1) With reduction kit

2) With reduced revs.

Please also see section 4.13 'Shaft Alarm Calibration' on page 126.

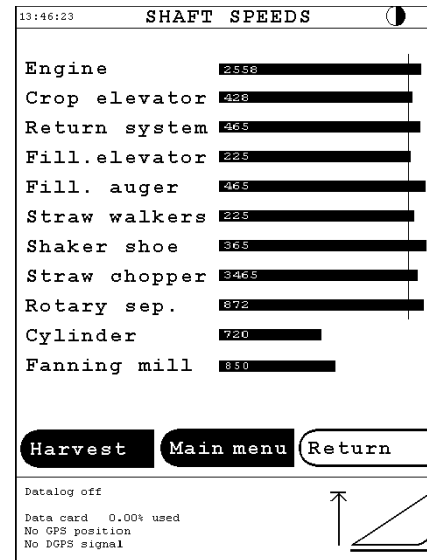


Fig. 20

4. Operation, DATAVISION

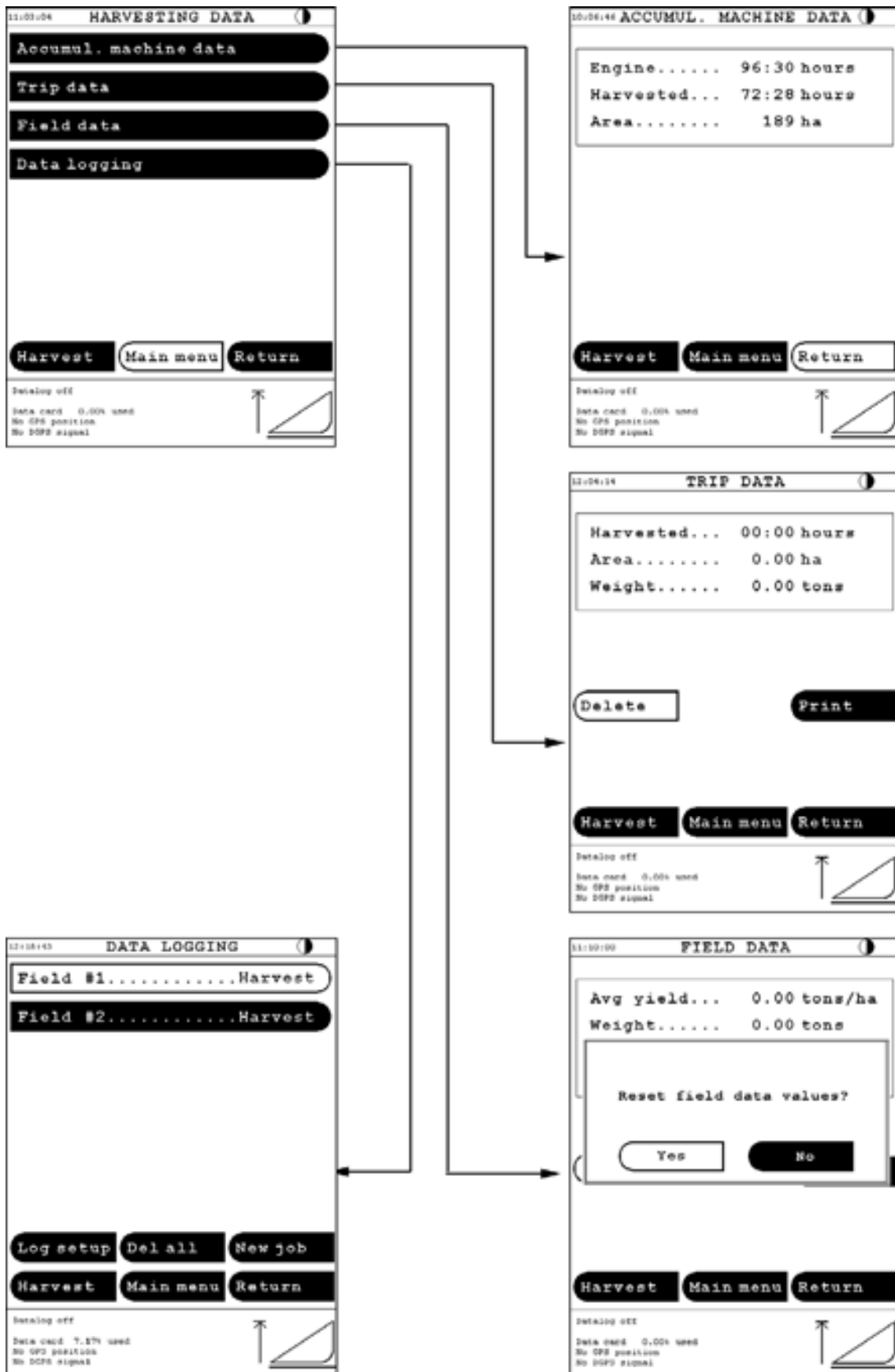


Fig. 21

4.6 Harvesting Data

Accumulated Machine Data,

[\(Fig. 21\)](#)

"Accumul. machine data" registers total engine hours, hours harvested, area, and cannot be zeroed.

Trip Data and Field Data,

[\(Fig. 21\)](#)

These functions register hours harvested, area and weight, and give an overview of the individual fields or part fields.

"Trip data" and "Field data" can be printed out before they are deleted by pressing "Print".

Trip data and Field data can both be zeroed by pressing "Delete", for instance when a field is completed.

Zeroing must be confirmed by pressing "Yes". If the "No" key is pressed, the data will not be zeroed.

4. Operation, DATAVISION

4.6.1 Data Logging in General, (Fig. 22)

If the machine is equipped with the function "Data logging", this will appear from the screen picture "Harvesting data". Using this function it is possible to create and handle harvest jobs from the terminal.

If data is logged without GPS, the function serves as an advanced version of the function "Field data".

If the machine is equipped with GPS and Fieldstar Office Software version 4 or higher is used, it is possible to record a number of data and draw **yield maps** and other maps with different types of machine data or user defined markers.

The following conditions must be fulfilled to be able to log data:

1. "Data logging" must be activated in the machine setup, see (Fig. 22).
2. A data card must be inserted in the terminal.
3. The data card must be formatted using Fieldstar Office Software version 4 or higher.

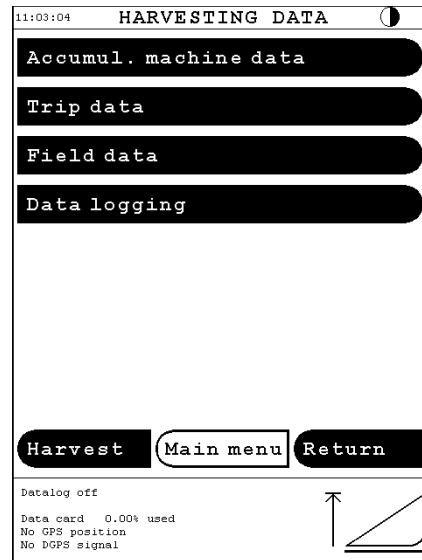


Fig. 22

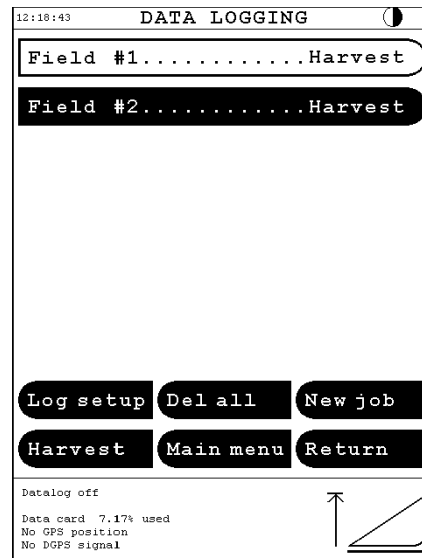


Fig. 23

4. Operation, DATAVISION

Job Data without Yield Meter and Moisture Meter (Fig. 24)

Up to 14 different jobs can be handled on each data card and the following data can be recorded for each job: Field name, Operation (Harvest), Job No., Job start, Hours, Area.



Fig. 24

Job Data with Yield Meter and Moisture Meter (Fig. 25)

If the machine is equipped with yield meter and moisture meter, the following additional data can be recorded: Grain, Yield, Average moisture, Dry grain, Dry yield, Crop type.

The recorded data can be printed out if the machine is equipped with a printer.

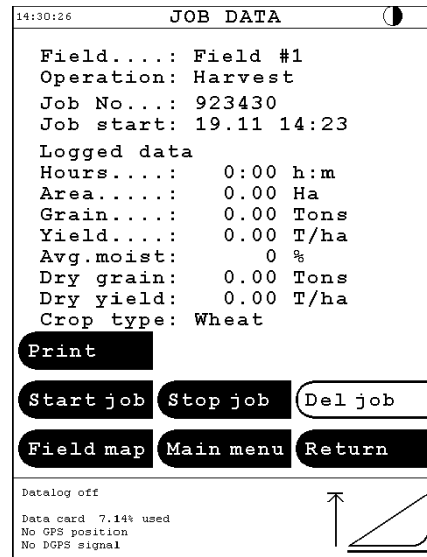


Fig. 25

4. Operation, DATAVISION

4.6.2 Using Data Logging

Creating a New Field Job

To create a new field job, insert the data card in the terminal while the machine is running. The screen automatically changes to the data logging menu. The screen picture "Data logging" can also be called up by selecting the menu "Harvesting data | Data logging". The data card must be formatted using Fieldstar Office Software version 4.0 or higher.

New Job

[\(Fig. 26\)](#)

Press the key "New job" to call up a list of field names.

Selecting Field Name

[\(Fig. 27\)](#)

Select a field name from the list showing the field names transferred to the data card when it was formatted in Fieldstar Office. Press the keys "Page up", "Page down", "Up", "Down" and "Enter" to select the relevant field name.

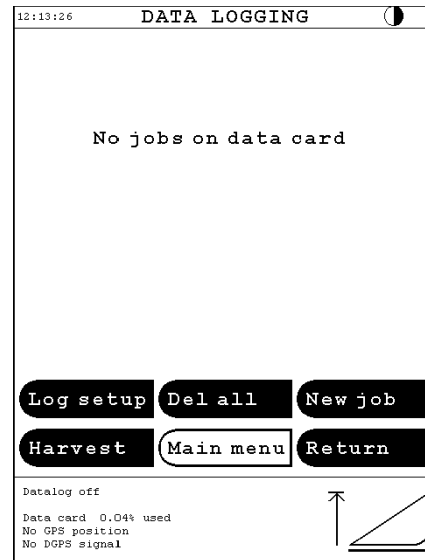


Fig. 26

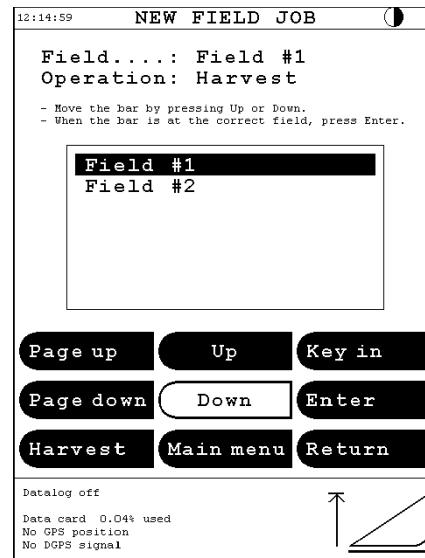


Fig. 27

4. Operation, DATAVISION

Entering New Field Name

(Fig. 28)

If the specific field name is not on the list of field names, a new field name can be keyed in by pressing "Key in". Now, a keypad appears from which the field name can be keyed in. Having keyed in the name, press "OK".

Note: If new field names have been added to the database on the office PC the data card must be formatted from the office PC to be able to update the terminal on the combine with these new field names.

New Field Job

(Fig. 29)

When a field name has been selected, a screen picture appears from which an operation other than harvest can be selected. By pressing the key "Operation" you may for instance select the operation "PosLog." to perform a position logging job (requires GPS) if you want only to record a field boundary or a few markers without actually harvesting.

Press "Create" to create the new job. Alternatively you may press "Create and start new job" to start the new job right away.

Note: It is possible to create up to 14 jobs on the data card. After the eighth job has been created, the key "New job" will be replaced by the key "Next...", and the key "New job" will appear from page 2 on the left-hand side.

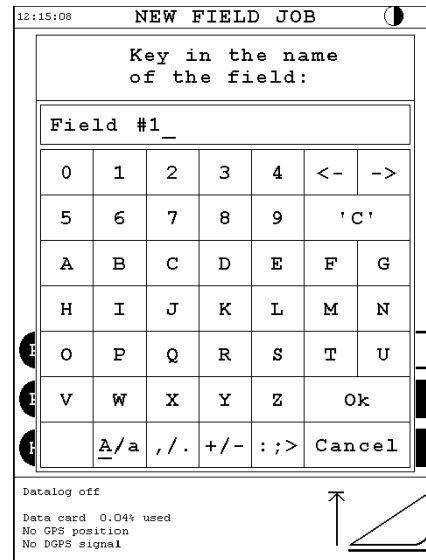


Fig. 28

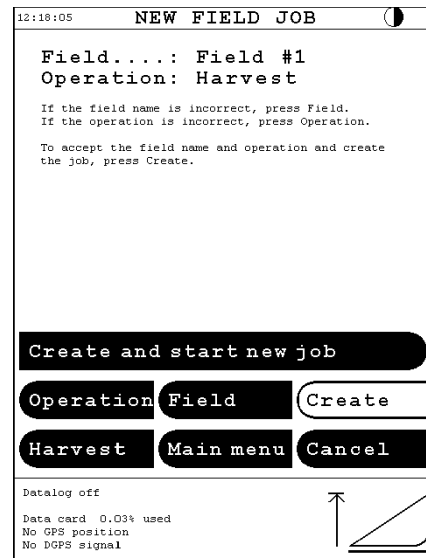


Fig. 29

4. Operation, DATAVISION

Starting a Job

Selecting a New Job

(Fig. 30)

Before a job can be started, the data card must be inserted in the terminal and the machine must be started.

A new job can be started by pressing the key of the relevant field name and operation from the menu "Harvesting data | Data logging".

Starting/Stopping a Job

(Fig. 31)

When a job has been selected the screen picture "Job data" will appear. Press the key "Start job" to start a job.

Once the job is running, the field name and the operation text will flash in the "Job data" menu. In addition, field name and operation will be displayed in the second line of the status area at the bottom of the screen.

Information on job number, job start and logged data on hours, area, grain, yield, average moisture, dry grain, dry yield and crop type can be read from the screen picture "Job data".

Note: This menu is also used for stopping a job. A running job must be stopped using the key "Stop job" before another job can be started.

Restarting a Job

(Fig. 32)

If for one reason or other a job is stopped, it is always possible to restart it and then continue logging data as long as there is free space on the data card. Such a situation may arise if the operator changes to another field before the first one is completed.

A running job must be stopped using the key "Stop job" before another job can be started. It is always possible to see whether a job is started as the key with the field name will be flashing.

If it is necessary to complete the data logging for a job on a second data card, the data from both data cards can be combined using the Fieldstar Office Software.

Note: Always stop a running job and wait 15 seconds while the remaining data is written to the card. Then remove the data card from the terminal.

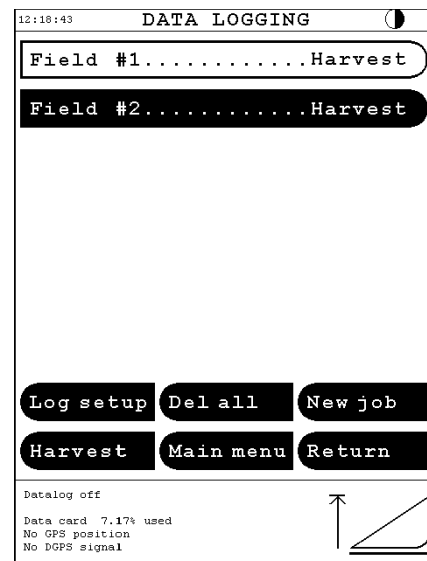


Fig. 30

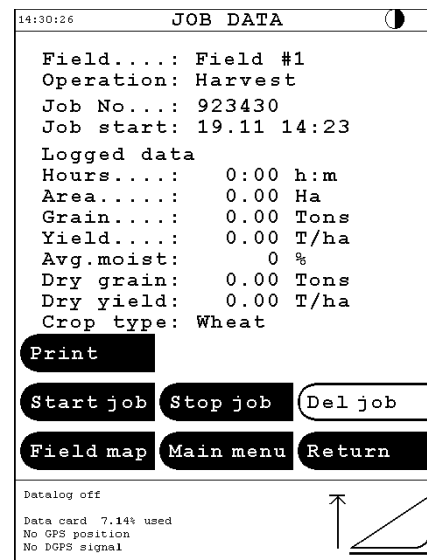


Fig. 31



Fig. 32

4. Operation, DATAVISION

Deleting a Job

(Fig. 33) and (Fig. 34)

Jobs can be deleted from the menu "Job data" by pressing the key "Del job". A dialogue box will appear from which the deletion must be confirmed by pressing "Yes". The deletion can be interrupted by pressing "No".

From the menu "Harvesting data | Data logging" it is possible to delete all jobs using the key "Del all", or select specific jobs for deletion. From the appearing dialogue box the deletion of each individual job must be confirmed by pressing "Yes" or interrupted by pressing "No".

Note: Once a job has been deleted it cannot be restored.



Fig. 33

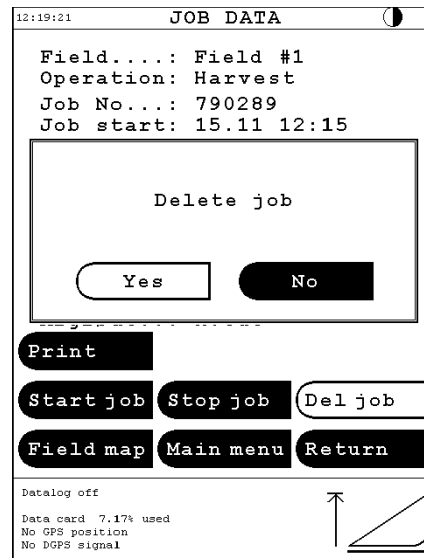


Fig. 34

4. Operation, DATAVISION

Note: This section is only relevant if Fieldstar data logging with GPS and Fieldstar Office Software is used. The Fieldstar Office Software must be version 4 or higher.

Field Map for a Job

Field map (Fig. 35)

If a job has been planned using the Fieldstar Office programme and a field boundary has been drawn, a field map may be attached to the job.

Apart from the field boundary, the field map for a harvest job displays a field name, a job operation and an area for comments.

In the Fieldstar Office programme it is possible to mark specific areas for instance with crop of poor quality which should not be harvested.

The cross shows the current GPS position of the combine in relation to the field.

Field Map with Visible Work Trail (Fig. 36)

During harvest spot markers will be added to the field map showing where the combine has been harvesting. This is called a work trail.

The work trail is updated every 10 seconds. Each spot corresponds to a GPS position recorded on the data card.

If you wish to create a field map without work trail you need only press the key "Hide trail"

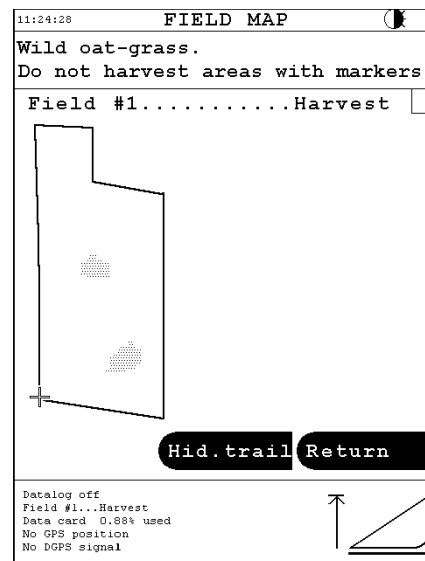


Fig. 35

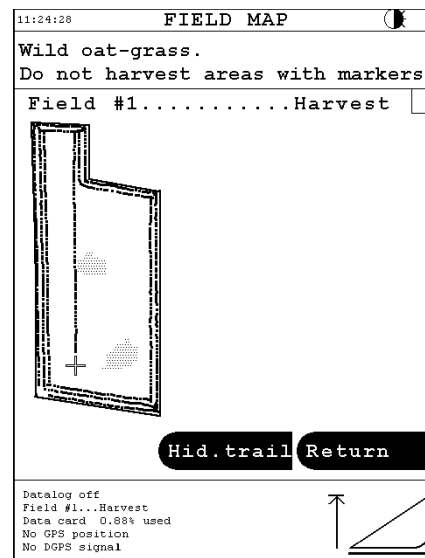


Fig. 36

4. Operation, DATAVISION

Field Map with Hidden Work Trail (Fig. 37)

Even if the work trail is hidden, it is still recorded and logged on the data card. Therefore, the work trail can always be called up by pressing "Show trail".

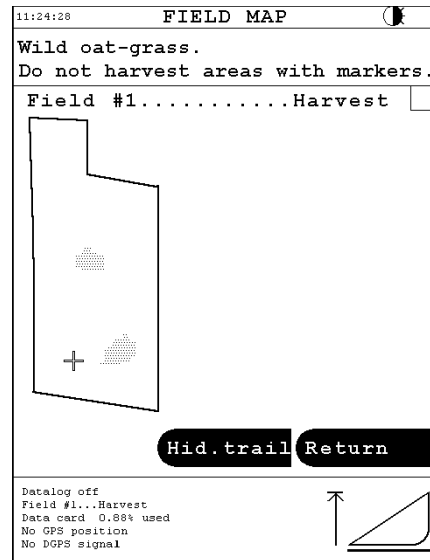


Fig. 37

Distance from Touch Point (Fig. 38)

If the screen is touched within the map area, the terminal will calculate the current distance from the combine (the cross) to the point touched.

This function may for instance be used for calculating the distance from the headland which may be useful when deciding whether it is possible to do another round before the grain tank is full.

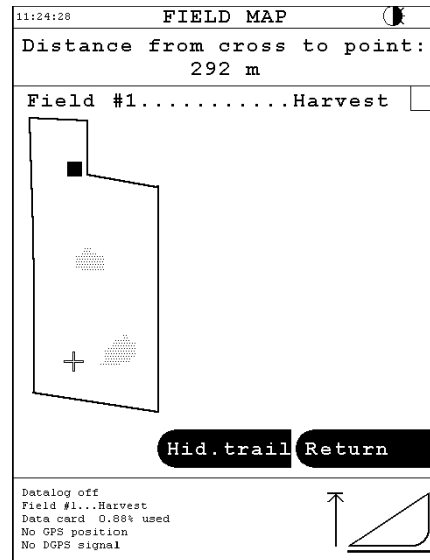


Fig. 38

4. Operation, DATAVISION

Data Logging Messages

This section describes the various error messages and status information that may appear from the data logging menu in connection with data logging.

- **Card error! No card inserted:**
This error message appears in the data logging menu if no data card is inserted.
- **Card error! This is not a data card:**
This error message appears in the data logging menu if the inserted data card has not been formatted using Fieldstar Office Software.
- **Card error! Card is write protected:**
This error message is shown in the data logging menu if the inserted data card is write protected.
- **Card error! There are no farm data on card:**
This error message appears in the data logging menu if the card is formatted using an older version of Fieldstar Office Software.
- **No jobs on data card:**
This message appears if the inserted card has been formatted correctly but no field jobs have been created yet.

Error messages in dialogue box:

- **Card error: Cannot write to data card:**
When the system is started or when a Fieldstar data card is inserted, the terminal performs a test writing to the data card. If the test writing is unsuccessful, the above error message will appear in a dialogue box. The first thing to do is to remove the data card and reinsert it, as there may be a bad switch connection or the card simply may not have been inserted correctly. If the error message does not disappear it will not be possible to start data logging. In that case the data card must be replaced as it is defective or incompatible with the terminal.
- **No card inserted:**
This message appears if the data card is removed while a job is running or a field job related menu or function is activated. Note: Always stop a running job before removing the data card or job data will be lost.
- **Job not started:**
This message appears if the machine starts harvesting without a job being started on the terminal. It also appears if a job related function is activated without a job being started.
- **This is not a data card:**
This message appears if a wrong type of data card is inserted during the execution of a job.

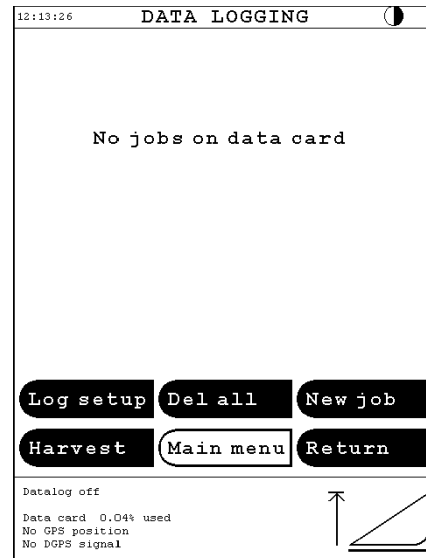


Fig. 39



Fig. 40

4. Operation, DATAVISION

- Job stopped: Wrong data card inserted:**
 This message appears if another Fieldstar formatted data card is inserted during the execution of a job.
- Job stopped: Data card full:**
 This message appears when the Fieldstar system stops a running job because the data card is more than 99.5% used.
- No field map for this job:**
 This message appears if the key "Field map" is pressed on the terminal when no field map is attached to the job.
- Job is running:**
 This message appears if the keys "Start job" or "Del job" are pressed when a job is already running.
- Another job is running:**
 This message appears if you try to start a new job by pressing the key "Start job" when a job is already running.
- Job is running: Not allowed to change data logging:**
 This message appears if you try to change data logging related settings while a job is being executed.

Alarm in information area:

- Data card almost full:**
 This message appears when the data card is 95% used. Then, there will be time enough to find an empty data card.
- Data card full:**
 This message appears if there is no more space on the data card to create a new job.

Information in the information area:

- No GPS position:**
 This message appears if the GPS information gets weak while data is being logged. The message appears only once for each started cut. The data logging continues but the data will be marked invalid for a yield map.
- No DGPS signal:**
 The information appears if the differential correction information gets weak while data is being logged and differential corrections are set up to be required (DGPS requiredON). The message appears only once for each started cut. The data logging continues but the data will be marked less accurate on the yield map.



Fig. 41

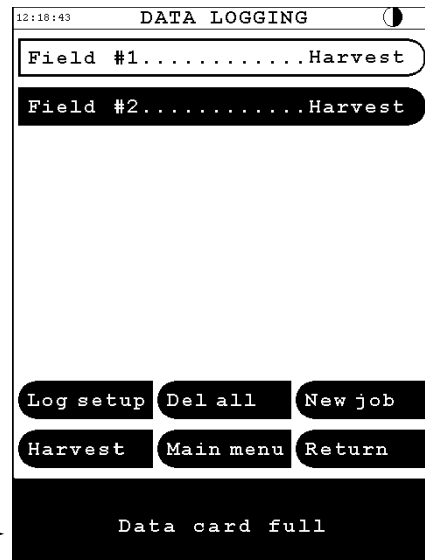


Fig. 42

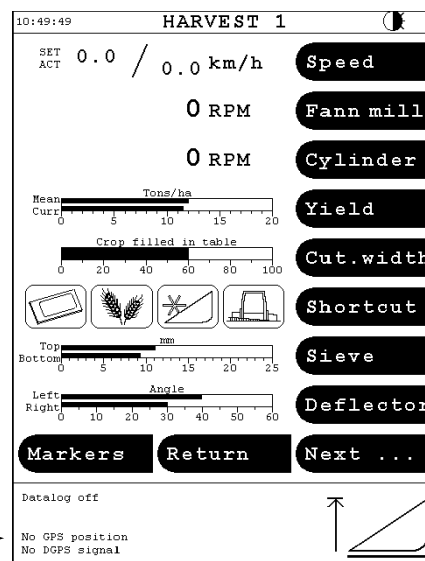


Fig. 43

4. Operation, DATAVISION

4.6.3 Data Logging Setup

Note: This section is relevant only when data logging with GPS is used.

Setting up Data Logging (Fig. 44)

From the menu "Data logging | Log setup" you have access to the following setups:

- **"Marker setup"**
Setup of markers to be used in the Harvest menu.
- **"Position data"**
Selection of data to be logged together with the GPS positions.
- **"Position logging rate"**
From this menu you can select rate and type of rate determining how often data is to be logged on the data card. Should be set at "OFF" if the machine is not equipped with GPS.
- **"Other data"**
Same as "Position data" only without GPS positions (for future purposes - not in use).
- **"Other logging rate"**
Same as "Position logging rate" (for future purposes - not in use). Should be set at "OFF" if the machine is not equipped with GPS.
- **"Event data"**
Intended for other applications (for future purposes - not in use). Tank unloadings are event data which always will be recorded.

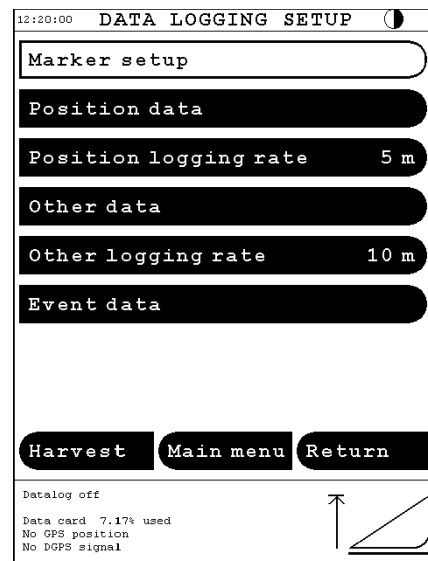


Fig. 44

4. Operation, DATAVISION

Marker Setup

Setting up the Number of Markers

(Fig. 45)

From the menu "Data logging | Marker setup" you have the possibility to set up how many keys with markers you want to display.

Press the key "Markers on work menu" to set up the number of markers to be displayed in the Harvest menu. You have the choice of none, 2, 4, 6, and 8.

Selecting Markers from Fieldstar Farm Data

(Fig. 46)

Press one of the keys set up as described above. The screen changes to a list of markers transferred to the data card from the Fieldstar Office Software. Select a marker from the list and press "Enter" to display the selected marker in the Harvest menu. The name of the marker can be changed by pressing "Key in" to call up a keypad from which a new name can be keyed in.

Basic Markers

(Fig. 47)

A list of basic markers will be displayed when the key "Next..." is pressed. This list comes from the combine software and contains the most common markers. If a specific marker is not on the list, press "Key in" to enter a new name.

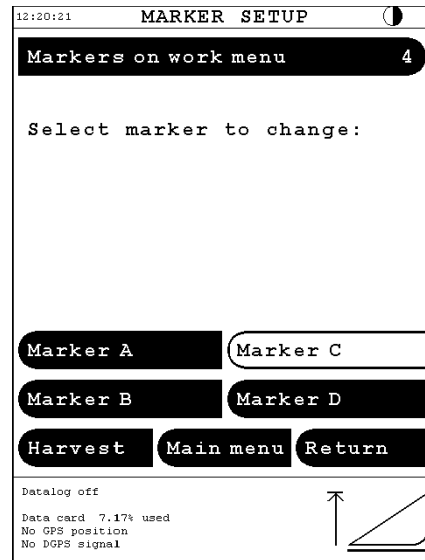


Fig. 45

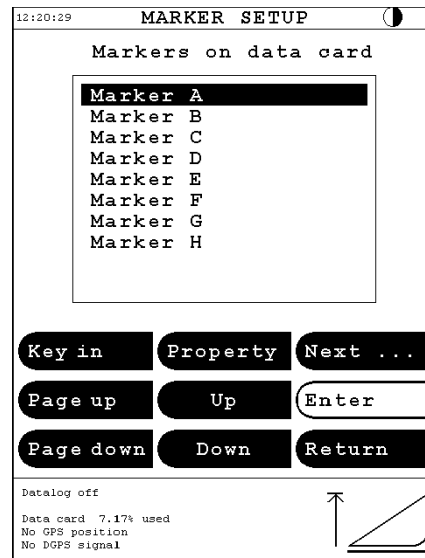


Fig. 46



Fig. 47

4. Operation, DATAVISION

Property of Markers

(Fig. 48)

Select the key "Property" to attach one of four possible properties to the current marker.

- "Marker without value"**
 The current position will be logged together with the marker text.
- "Marker with sequential No."**
 The current position will be logged together with the marker text and a sequential number. The number will be increased by one each time the relevant marker key is pressed.
- "Marker with whole number"**
 The current position will be logged together with the marker text and a number keyed in by the operator.
- "Marker with decimal value"**
 The current position will be logged together with the marker text and a decimal value keyed in by the operator.

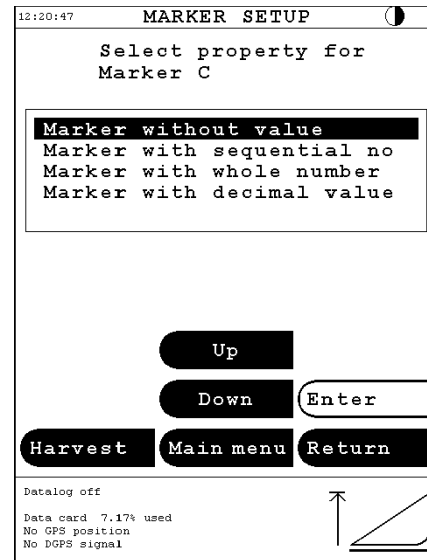


Fig. 48

Selecting Position Data

Position Data

(Fig. 49)

The data that can be logged together with the GPS positions can be selected from the menu "Data logging | Position data". Yield and other essential data cannot be selected as they are logged regularly.

All data is logged simultaneously according to the selected time or distance rate. The logged data can be presented on separate maps in the Fieldstar Office Software.

Setup of Logging Rate

Position Logging Rate

(Fig. 50)

The rate at which yield data and other "Position data" are recorded on the data card, can be adjusted to different conditions. Data can be recorded at time intervals, according to a distance or the working width of the cutting table. Recording of data at short intervals gives a high accuracy but will quickly fill up the data card. A specific logging rate can be selected using the keys "Page up" and "Page down" until the relevant page is displayed. Select the type of rate by using the "Up" and "Down" keys or by pressing directly on the specific type of rate. Then press "Enter" to save the new logging rate.

As a rule-of-thumb set the position logging rate at "5 m" and "Other logging rate" at "OFF".

Note: If the position logging rate is set at "OFF", no data will be recorded which means that no yield map can be generated.

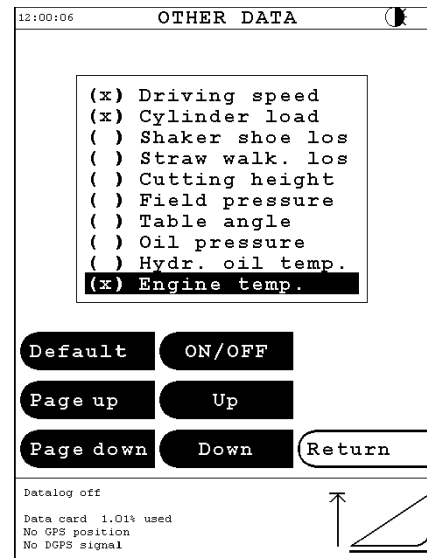


Fig. 49

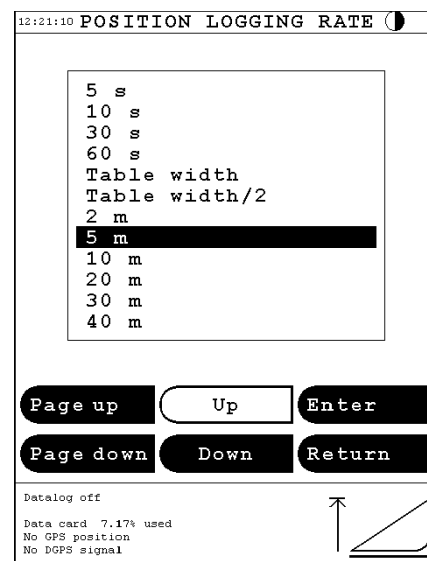


Fig. 50

4. Operation, DATAVISION

4.6.4 Using Markers

During the execution of a job the marker keys can be used for recording various observations in the field. When a marker key is pressed (ex. (Fig. 51)) machine position is logged together with a text/value selected for the marker.

If the marker has the property "Marker without value", it can be used for marking an area in the field. When you hold the marker key for about 2 seconds, the logging starts, and a single touch of the marker key will stop the logging of the specific area. The marker text at the bottom of the screen will flash in the period between the two touches.

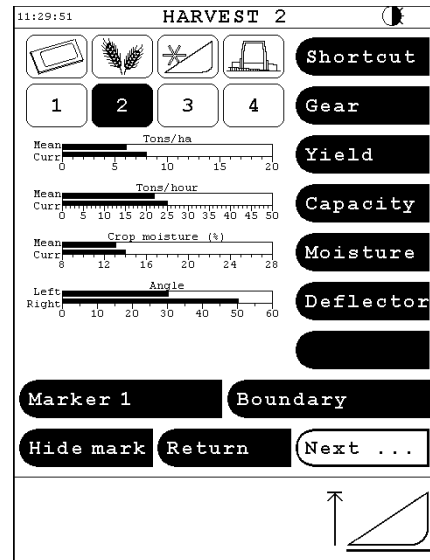


Fig. 51

4. Operation, DATAVISION

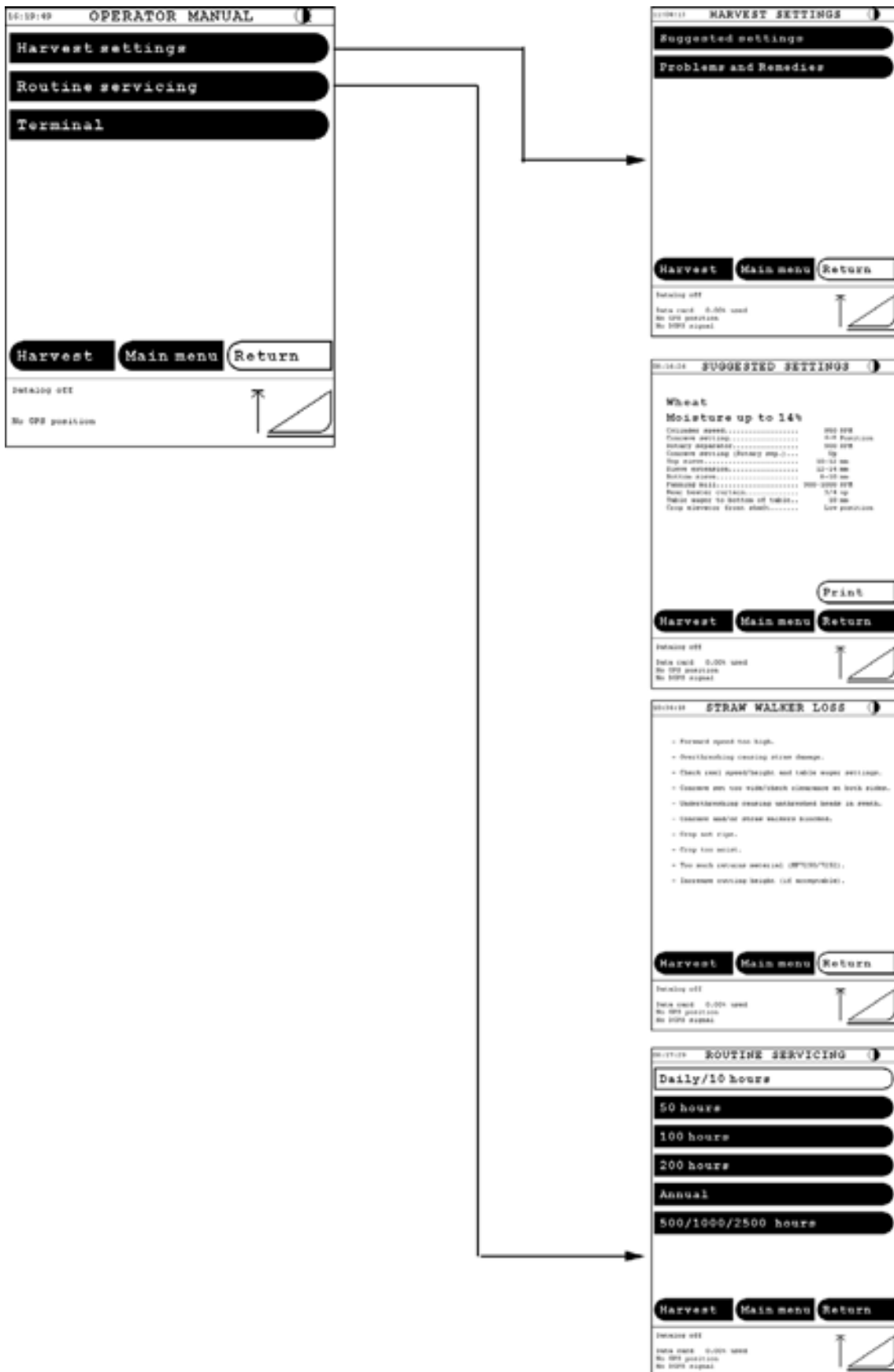


Fig. 52

4.7 Operator Manual

Harvest Settings

Initial Settings

[\(Fig. 52\)](#)

From the menu "Harvest settings" you can call up "Suggested settings" which gives a choice of various crops. If the relevant crop is not on the screen, press "Next...".

When the crop has been chosen the screen changes to choice of moisture and then to "Suggested settings" which can be printed out by pressing "Print".

Problems and Remedies

[\(Fig. 52\)](#)

If "Suggested settings" do not give a satisfactory result, ideas and suggestions useful for finding faults and making adjustments can be obtained from "Problems and Remedies". The example shows suggestions in case of "Straw walker loss".

Routine Servicing

[\(Fig. 52\)](#)

The menu "Routine Servicing" provides a number of service intervals intended for guidance. However, the instructions contained in the Operator's Manual for the machine are always to be observed. See section 11. 'Maintenance' on page 271.

DATAVISION

The basic principles for operating the DATAVISION terminal are described here. Subjects described:

- Contrast adjustment
- Emergency alarms
- Process emergency alarms
- Information alarms
- New Information

4. Operation, DATAVISION

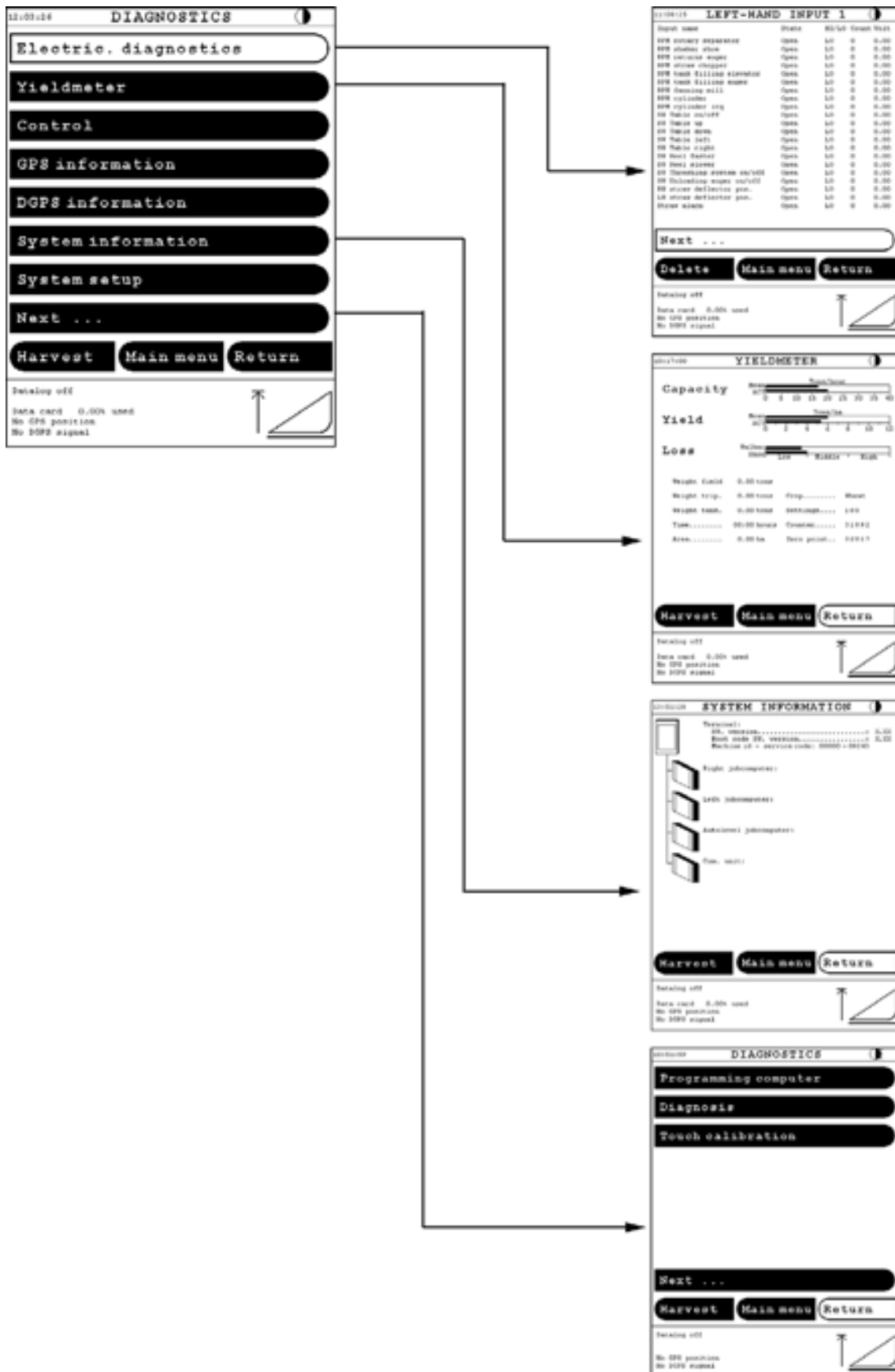


Fig. 53

4. Operation, DATAVISION

4.8 Diagnostics

These functions consisting of several pictures are used by technicians, only, to detect faults in DATAVISION.

Electric. Diagnostics,

[\(Fig. 53\)](#)

The menu "Left-hand Input 1" is divided into sub-menus for each job computer.

The sub-menus indicate whether a given sensor is connected or not, whether the signal of the sensor is defined as high or low, and the voltage value of the sensor.

The menus also indicate whether the individual outputs are high "HI" or low "LO", and whether the output is defective.

In that case, the defective sensor will be marked disconnected or shortcircuited.

Yield Meter

[\(Fig. 53\)](#)

This screen picture is used for checking yield meter adjustment and function.

The menu will be described in detail in section 4.15 'Yield Meter' on page 128.

System Information,

[\(Fig. 53\)](#)

In this menu all active computers are displayed with indication of software version.

If the "picture" of one of the computers is flashing and the text "Computer is not connected or inactive" is displayed, there is an error in the system and a technician should be consulted.

System Setup

The function "System setup" is used only when optional extras are fitted and therefore requires a special access code.

For fitting optional extras always contact your dealer for assistance.

Programming Computer,

[\(Fig. 53\)](#)

Programming the computer will be described in detail later in this chapter.

Control,

[\(Fig. 54\)](#) and [\(Fig. 55\)](#)

From the screen picture "Control" you can select a function from which to call up further information.

The individual menus will be described in detail under the respective control functions.

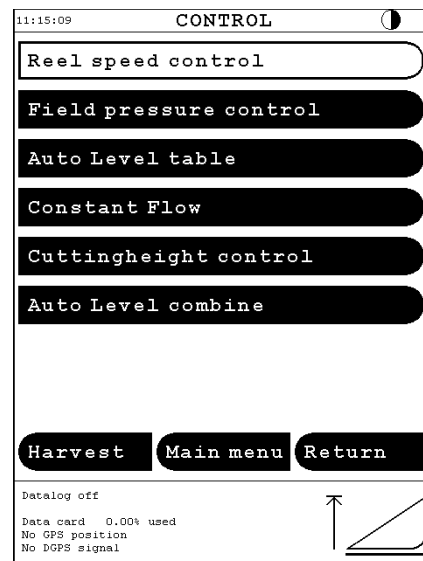


Fig. 54

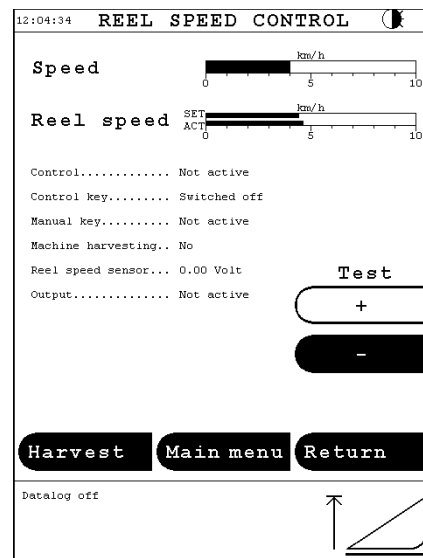


Fig. 55

4. Operation, DATAVISION

GPS Information,

(Fig. 56)

This screen picture is used for checking the GPS receiver.

From this picture, current position, date and receiver mode can be checked.

Dependent on the type of GPS receiver, part of the detailed information described below may not always be available.

A few minutes after the system has been switched on the GPS receiver should have found satellites enough to determine the combine position. "Receiver mode" will then read "Doing position fixes", and "Longitude", "Latitude", "Altitude" and "UTC time" will be valid.

"PDOP", "HDOP" and "VDOP" are precision factors for positioning.

"Visible satellites" indicates how many satellites the GPS receiver is able to see.

"Tracked satellites" indicates how many satellites the GPS receiver is able to reach.

"Number of healthy satellites" indicates number of functioning satellites.

"Used satellites" indicates which satellites the GPS receiver uses for positioning.

"DGPS mode" indicates whether signals from the reference station are received or not.

"PRN" indicates satellite number of the used satellites.

"DGPS status" indicates the status for reception of differential signals for the particular satellite (the signal from the reference station).

"DGPS status" may show following values:

- 0: Good correction data
- 1: Good delta correction data
- 2: Station health bad (5 or 7)
- 3: Data too old (older than 60 sec.)
- 4: UDRE too high (> 4)
- 5: IODE mismatch with ephemeris
- 6: Satellite not in current Type 1 message

This status must be 0 to get correct reception of the signal.

"SNR" indicates the signal/noise conditions for the signal from each satellite.

If the GPS receiver is defective, a descriptive text will be displayed at the bottom of the menu.

Replace Com-Unit if the following is displayed:

- "Battery backup failed"
- "Signal processor error"
- "Alignment error channel or chip 1"
- "Alignment error channel or chip 2"
- "Excessive ref freq error"

Check the antenna cable if "Antenna feed line fault" is displayed.

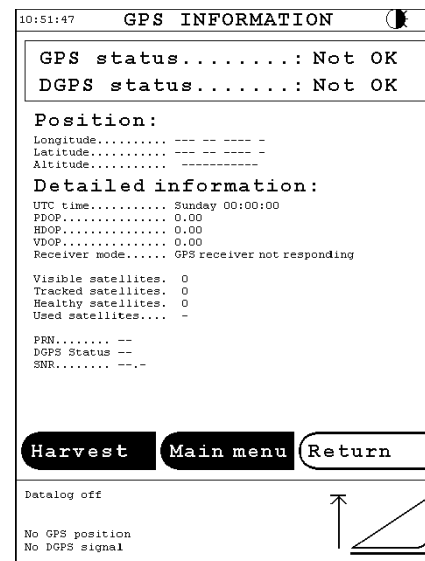


Fig. 56

4. Operation, DATAVISION

DGPS Information,

(Fig. 57), (Fig. 58) and (Fig. 59)

The following screen pictures are displayed only when a Com-Unit with built-in GPS receiver and Racal Landstar correction receiver is used.

This screen picture (Fig. 57) is used for checking and setting up DGPS receiver.

It may take up to 20 minutes from the system is switched on until subscription is received. Thereafter information on User code, Satellite, Reference station and Signal strength will be shown. If no subscription has been taken out or if the subscription has expired, it will be indicated on the screen.

Note: If an AGCO DGPS Comunit has been updated and subsequently reprogrammed at new frequencies via a satellite, it may take up to 24 hours before it has received all data from the satellite. This situation may also arise if vital satellites break down.

Technical information can be viewed from the menus "Satellite", "Station" and "Info", and it is possible to decide whether satellite and reference station are to be selected automatically or manually, (Fig. 58).

Software version of the specific modules, signal information and service information can be viewed in the menu "DGPS technical info", (Fig. 59).

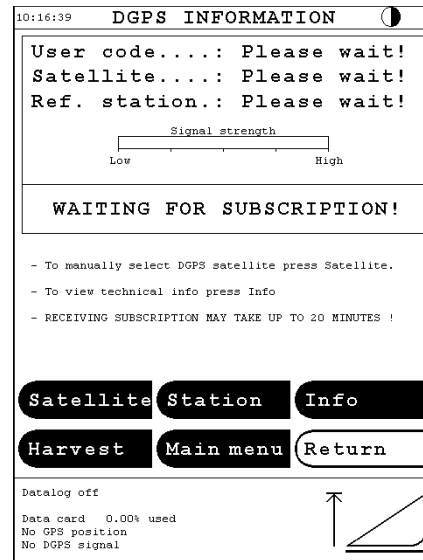


Fig. 57

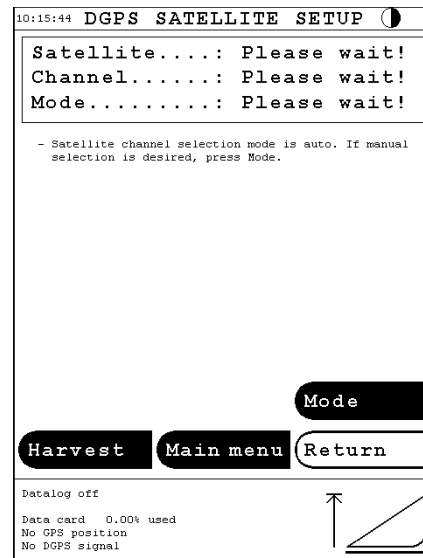


Fig. 58

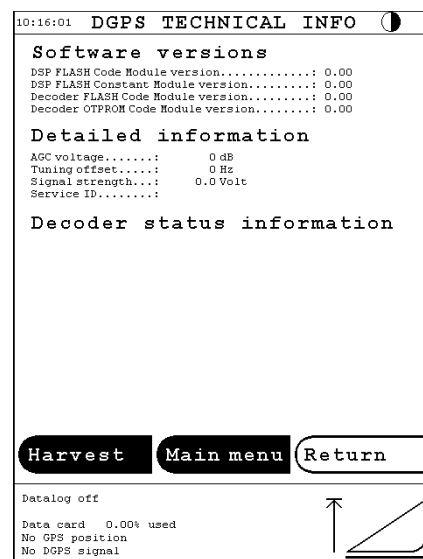


Fig. 59

4. Operation, DATAVISION

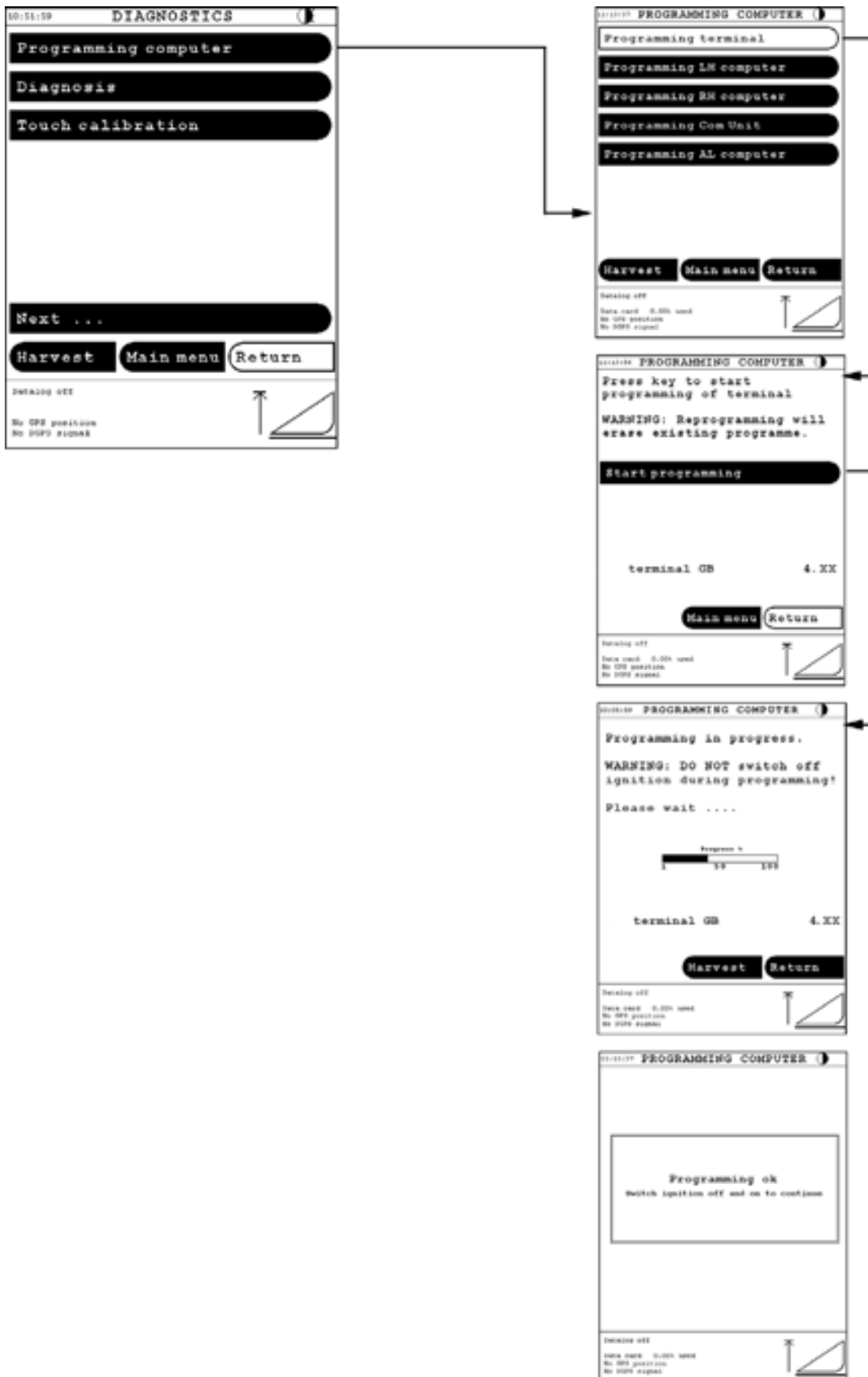


Fig. 60

4. Operation, DATAVISION

Programming

Press "Programming computer" from the menu "Diagnostics" to call up a menu from which it is possible to select the module you wish to programme.

The programming menu is automatically called up when a programming card is inserted in the terminal.

Note: Always write protect a programming card by pushing the mini switch towards the corner of the card.

Programming computer

(Fig. 60)

Having selected "Programming computer" or having inserted a programming card, select the module to be programmed from the menu shown.

Once the module is selected and the programming card with the up-dating software has been inserted, the programming can be started by pressing "Start programming".

During the programming a bar is showing the progress, i.e. the percentage of the programme being transferred to job computer or terminal.



WARNING: Do NOT switch off ignition during programming as this will erase the programme in the computer.

Note: Having completed the programming switch ignition off and on after which the computer is ready for use.

Diagnosis

Press "Diagnosis" to view the CAN communication.

Note: "Diagnosis" should be used only by service technicians.

Screen Calibration (Touch Calibration)

The touch sensitive areas on the screen may move slightly in the course of time. The screen can be calibrated by following the instructions on the screen. When the calibration is completed the screen automatically changes to the Main menu.

Note: The calibration can be interrupted only by switching off ignition, as normal operation is inactivated.

4. Operation, DATAVISION

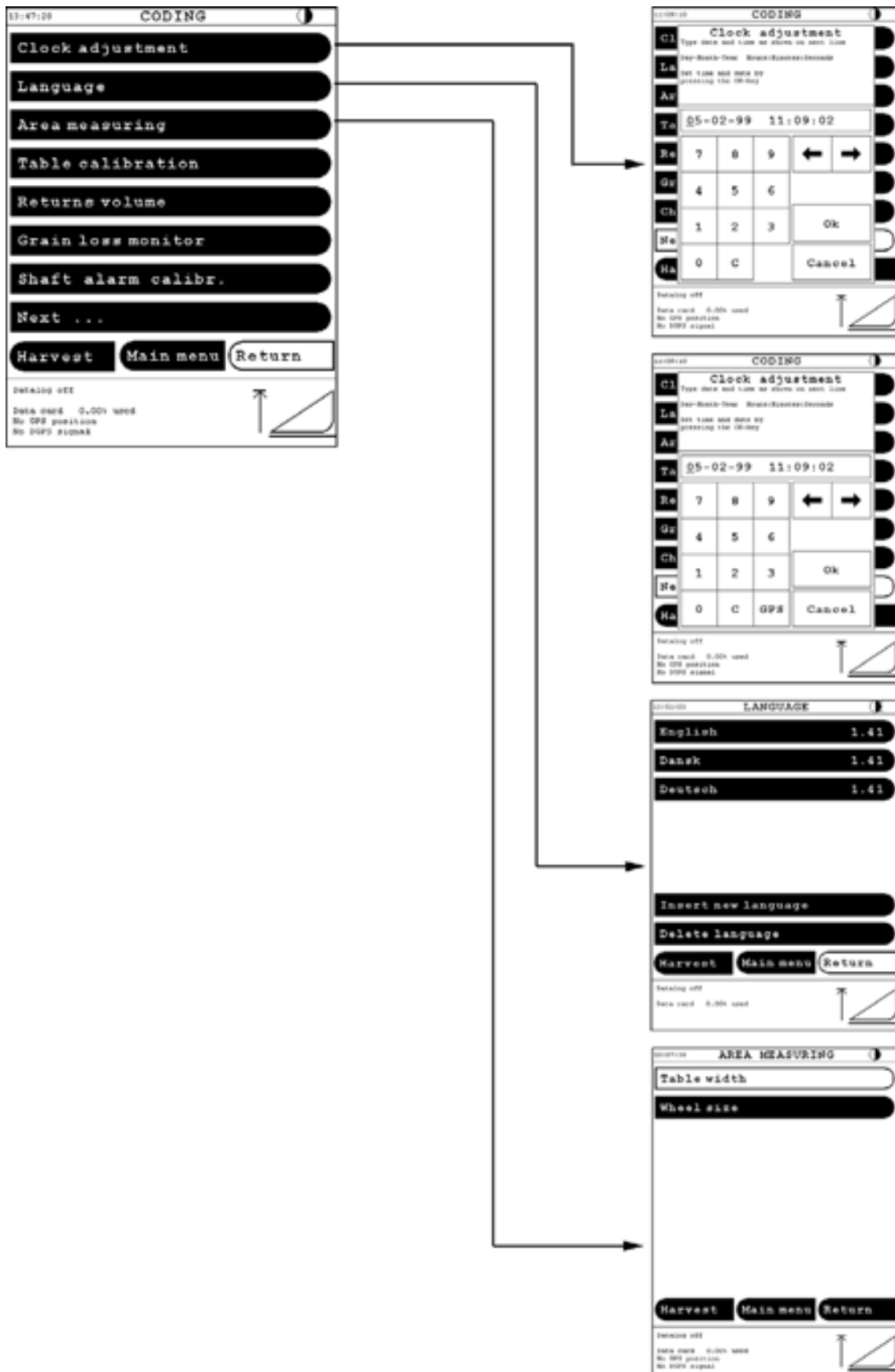


Fig. 61

4.9 Coding,

Having selected "Coding" from the Main menu the functions requiring adjustment, zeroing or calibration for correct setting, can be called up.

Before a new machine is put into operation for the first time, all codings should be checked. Further checks or coding are normally only required after repairs in connection with one of these functions.

If the required function is not on the screen, press "Next...".

Clock Adjustment,

[\(Fig. 61\)](#)

Select "Coding | Clock adjustment" to call up a calculator menu from which date and hour can be entered.

If the combine is equipped with GPS, the clock can be adjusted according to GPS time by pressing the "GPS" key, shown in "Clock adjustment" picture 2, [\(Fig. 61\)](#), and then pressing OK. If GPS time is not to be used, press "C" or "Cancel".

Language,

[\(Fig. 61\)](#)

Call up the menu "Coding | Language". When the key of the desired language is pressed, the texts on the screen change accordingly.

Note: *The following setup requires a programming card. Therefore, the deletion of a language should be considered carefully.*

Additional languages can be inserted on the terminal which gives you a choice of a total of three. The languages can be upgraded to a later version independent of the other software. The version number appears on the language key in the above menu. Deletion of languages is possible only when a programming card is inserted or when the deletion is confirmed by entering the machine ID number. The last remaining language cannot be deleted.

4. Operation, DATAVISION

Area Measuring

To ensure accurate area measuring, table width and wheel circumference can be set with an interval of 1 cm, [\(Fig. 62\)](#).

If the crop type maize or sunflower is selected, the working width must be keyed in as number of rows and row spacing, [\(Fig. 63\)](#) and [\(Fig. 64\)](#).

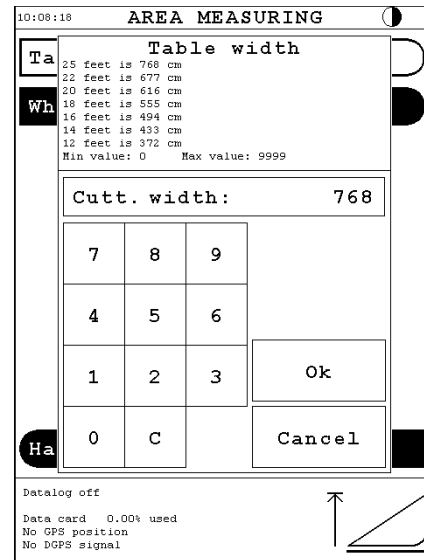


Fig. 62

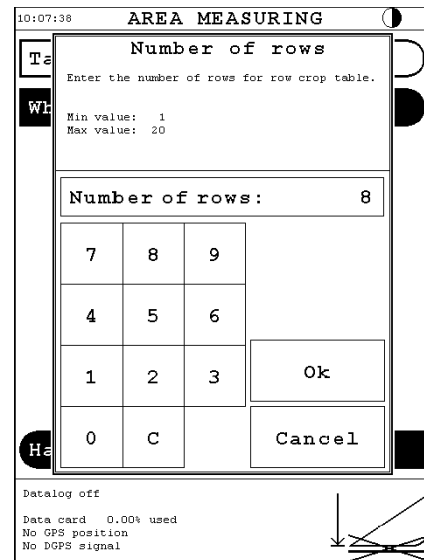


Fig. 63

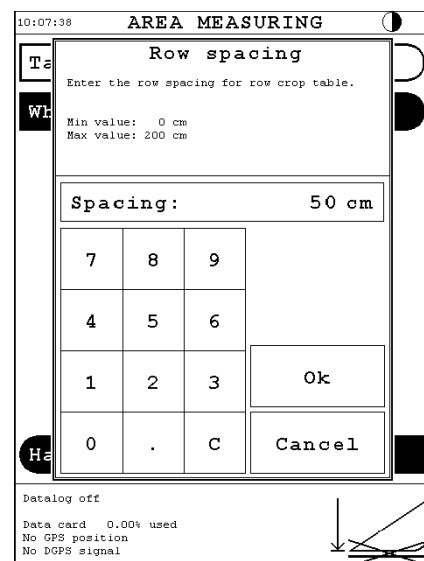


Fig. 64

4. Operation, DATAVISION

Table Calibration

Zero Cutting Height

(Fig. 65), (Fig. 66) and (Fig. 67)

To ensure accurate cutting height indication under all harvesting conditions and to ensure that preset cutting height is functioning correctly, the cutting height indication can be zeroed.

Call up the menu "Coding | Table calibration | Zero cutting height". Lower the table until just touching the ground, then press "Zero".

Now the cutting height bar will be at zero and the indication will correspond with the actual cutting height. If the sensor voltage is not within the range indicated on the bar above the sensor bar, the initial setting of the sensor must be adjusted before zeroing is possible.

Note: Zero cutting height only when the table is attached to the machine.

Note: It is important that Auto Level machines are brought into normal harvesting height before zeroing is carried out. This can be done for instance from the menu "Diagnostics | Control | Auto Level combine".

Returns Volume

See section 4.11 'Returns Volume Monitor' on page 124.

Grain loss monitor

Please see section 4.12 'Grain Loss Monitoring' on page 125.

Please see section 4.13 'Shaft Alarm Calibration' on page 126.



Fig. 65

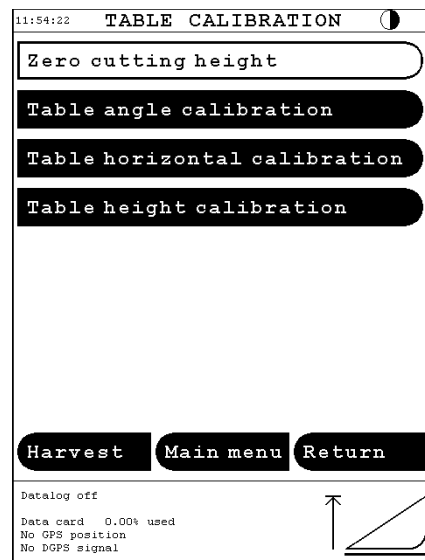


Fig. 66

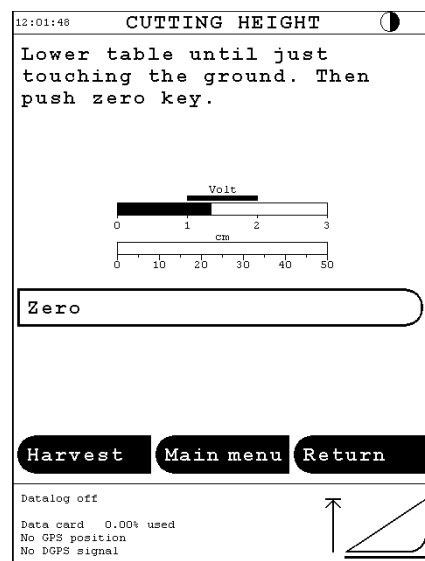


Fig. 67

4. Operation, DATAVISION

Concave Calibration

To be able to adjust the concave correctly it is necessary to calibrate the electric actuator. This has been done when the machine is delivered from the factory, but if the concave has been disassembled for repair or cleaning, it must be calibrated again.

Calibration is carried out automatically by calling up the menu "Coding | Concave calibration", after which a menu appears from which the calibration of the concave can be started.

The actuator must be calibrated while the concave adjustment arm is dismantled from the actuator. Use the supplied calibration rod to prevent the actuator piston rod from rotating. The piston rod must not be turned after calibration has been carried out. Remount the actuator on the adjustment arm.



WARNING: To avoid damage of concave and cylinder, calibration must always be carried out when the actuator is dismantled as described above.

Note: To obtain the best result calibration must always be carried out when the actuator is dismantled. Otherwise dirt, etc. may prevent correct calibration.

Check after calibration that the concave is free to move through its full working range.

Please also see section 'Initial Settings, (Fig. 13)' on page 213

Constant Flow

See section 4.23 'Constant Flow' on page 146.

Wheel Track and Auto Level Combine

See section 5.5 'Calibration of Auto Level Combine' on page 159.

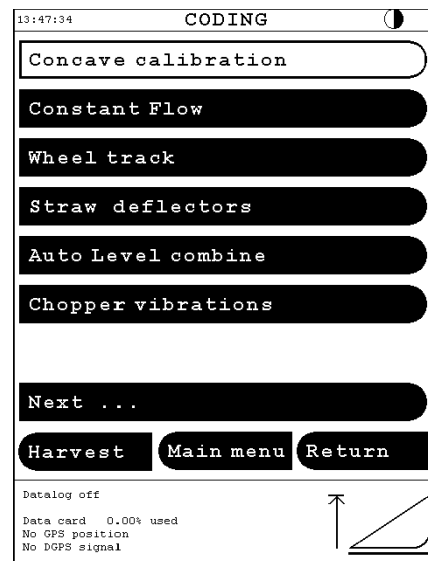


Fig. 68

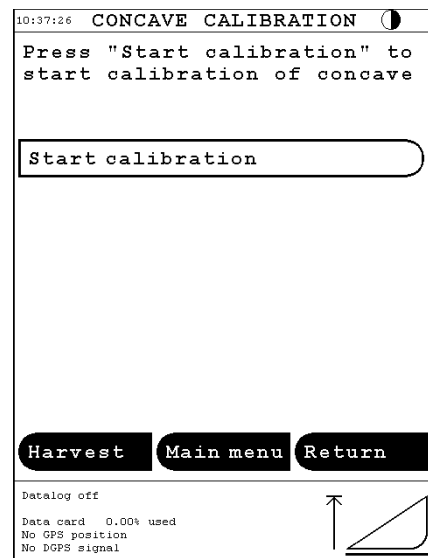


Fig. 69

4. Operation, DATAVISION

Coding of Electrical Straw Deflectors

Calibration

(Fig. 70) and (Fig. 71)

The straw deflectors must be calibrated to ensure they can be accurately adjusted. This has already been done when the machine is delivered from the factory, but if the straw deflectors have been disassembled for repair or cleaning, they must be calibrated again.

Calibration is carried out automatically by calling up the menu "Coding | Straw deflectors".

Then, select "LH straw deflector" and "RH straw deflector", respectively.

When calibration is completed the message "Calibration ok!" will appear for each of the calibrated deflectors.

If the calibration menu is left before calibration is completed, the latest calibration will still be valid.

Check before starting calibration that the straw deflectors are free to move through the full working range, as they will be moved between their extreme points during calibration.

Adjustment of Actuator Potentiometer

(Fig. 72)

Having retrofitted the electrically adjustable deflectors, check that the actuators are accurately adjusted. When mounted, the actuators must be extended completely. Select "Diagnostics | Electric. diagnostics | Diagnostics LH | Diagnostics input" from the terminal and check that the voltage from the potentiometer is 0.5V ±0.1V.

If the voltage is too low, turn the actuator cylinder anti-clockwise gradually until the correct voltage is shown on the screen.

If, on the other hand, the voltage is too high, retract the actuator completely. Then turn the cylinder gradually clockwise. Extend the actuator again and check the voltage. Repeat this procedure until the voltage is correct.

Straw chopper vibrations

See section 4.14 'Straw Chopper Vibrations' on page 127.

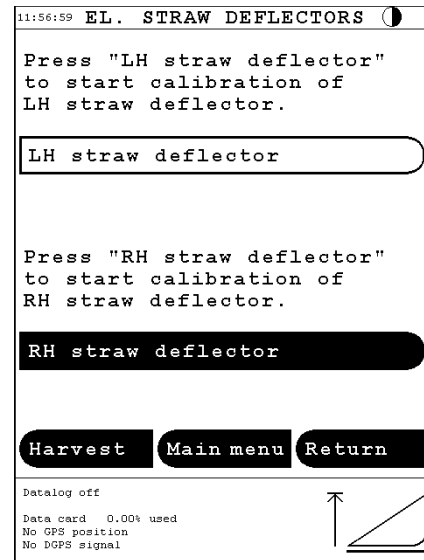


Fig. 70

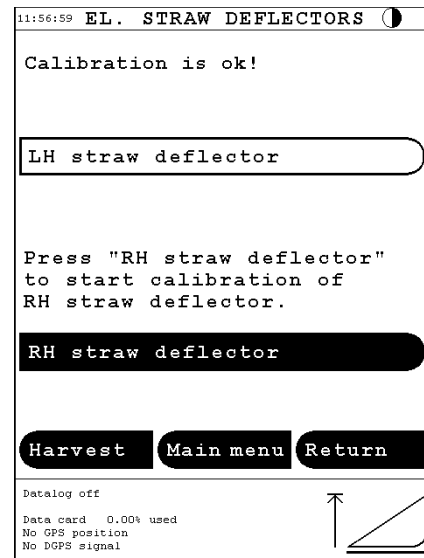


Fig. 71



Fig. 72

4. Operation, DATAVISION

Lead Time and Lag Time

Lead and lag times are data used by the yieldmapping programme in the farm office to decide which of the logged data should be included on the yield map when the combine enters and leaves the crop.

The logging starts when the table is lowered to enter the uncut crop and stops a few seconds after the table has been raised when leaving the crop.

Lead time

(Fig. 74)

Lead time is the time from when the crop enters the combine until a constant capacity is measured by the yield sensor.

Lag time

(Fig. 75)

Lag time is the time from when no more crop enters the combine until the capacity measured by the yield sensor starts to drop.

Note: Lead and lag times are only important when data is logged on a yield map. The times are preset and should only be changed if they result in errors on the yield maps.

When the combine is moving into or out of the crop, some yield measurements will be lower than the actual yield. This is caused by:

- Delay and smoothing of the crop flow through the machine before it is measured by the yield meter.
- Delay from moving into/out of the crop till table lift/lowering is recorded.
- Crop and driving pattern.

Note: It is not an error if the raw data plot in the yieldmapping programme seems to lack data from the first 10-15 metres at the headland. This is caused by erroneously low measurements at the headland not being shown.

Adjustment of Lead Time by Field Tests

Call up the function "Yield" on the Harvest menu and set it to bar reading. Press the Table down button before entering the uncut crop. Start counting seconds as soon as the status "Harvesting" appears in the information area at the bottom of the screen. Once you have entered the crop keep an eye on the yield bar. When the current yield has exceeded approx. 90% of the average yield or has become constant, the counted number of seconds represents the lead time. The lead time should be calculated as an average of a number of tests.

Adjustment of Lag Time by Field Tests

When leaving the crop, start counting seconds when the table is raised and the status "Harvesting" is no longer displayed in the information area at the bottom of the screen. Then observe the yield bar. As soon as the current yield starts dropping, the counted number of seconds represents the lag time. The lag time should be calculated as an average of a number of tests.

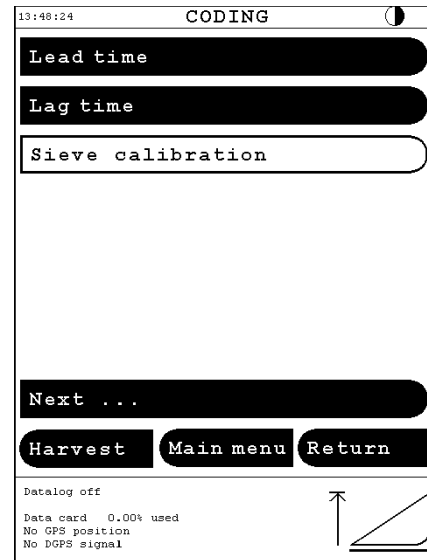


Fig. 73

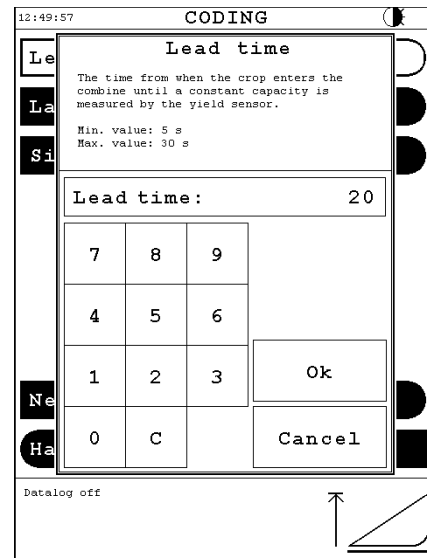


Fig. 74

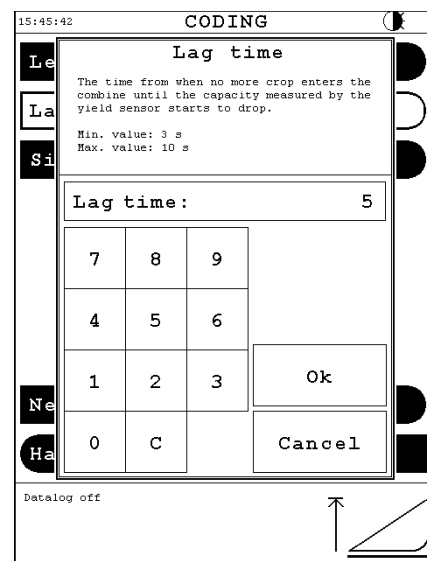


Fig. 75

4. Operation, DATAVISION

Calibration of Actuator for Electrical Sieves

To be able to adjust the sieves correctly it is necessary to calibrate the electric actuators. Calibration is carried out by the factory prior to delivery of the machine, but if an actuator has been replaced, a new calibration is required.

Calibration is carried out automatically by selecting the menu "Coding | Sieve calibration".

Now, the actuator(s) to be calibrated can be selected from the displayed menu. See [\(Fig. 77\)](#).

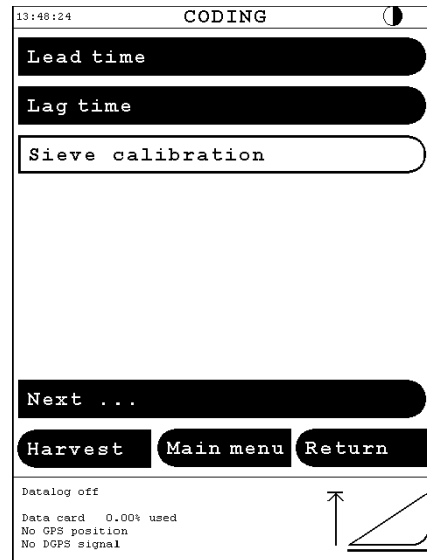


Fig. 76



Fig. 77

When a sieve is selected, a menu is displayed from which the calibration can be started.

Note: Prior to calibration the actuator must be disconnected at the piston rod end so that the piston rod is free to move over the full length of stroke.

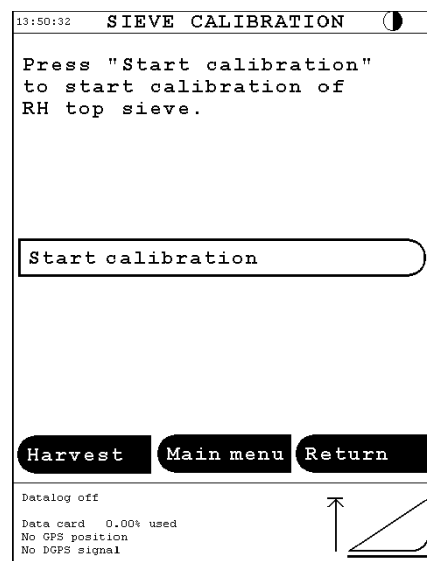


Fig. 78

4. Operation, DATAVISION

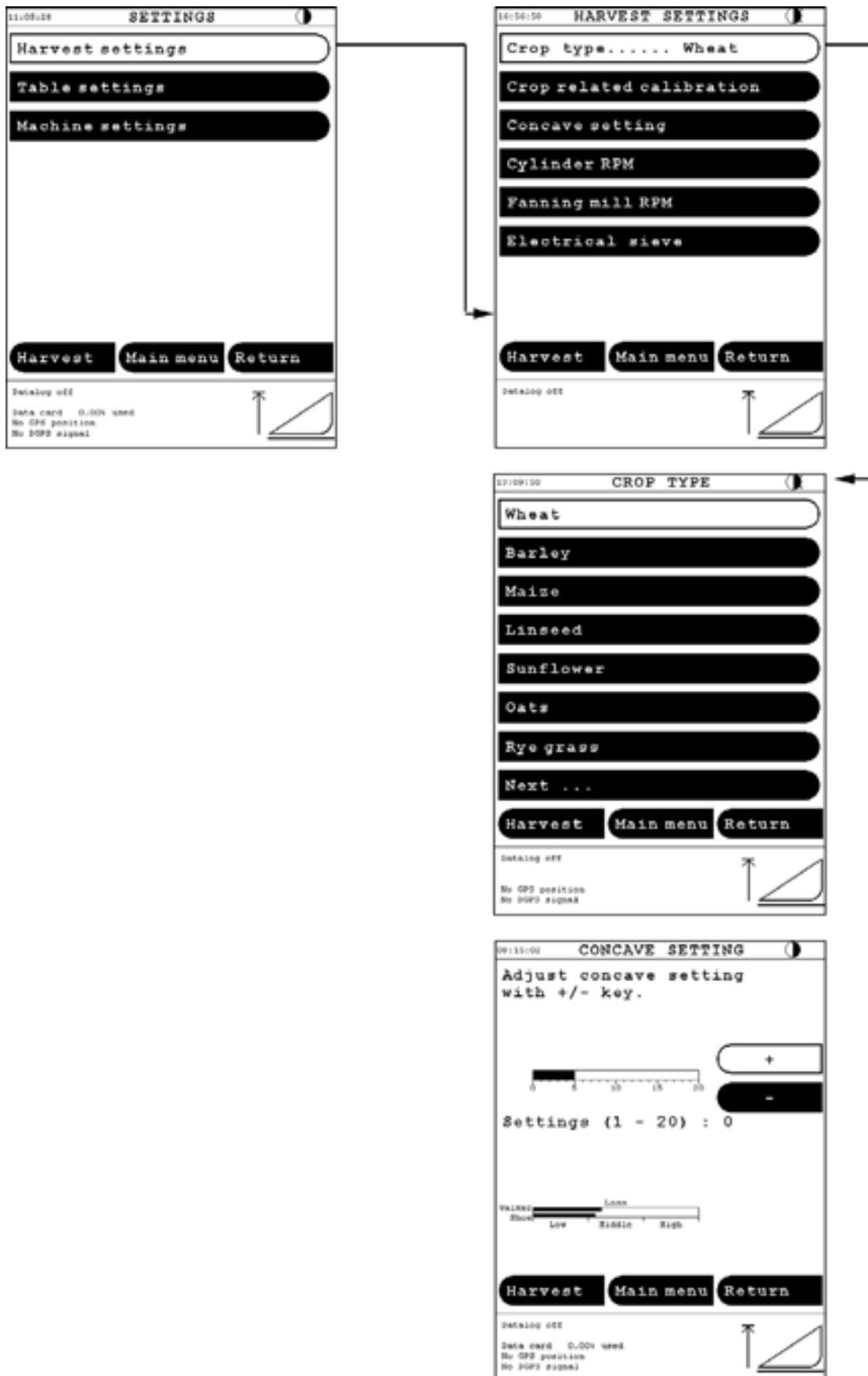


Fig. 79

4.10 Settings

Harvest Settings,

[\(Fig. 79\)](#)

The menu can also be called up from the Harvest menu by pressing the relevant shortcut key for Harvest settings.

Operation of the individual functions is described in the sections below.

Crop Type

[\(Fig. 79\)](#)

From this menu you can select crop type.

If the machine is equipped with yield meter or moisture meter, select a crop type to call up a menu from which you can calibrate yield meter and moisture meter. Crop type and calibration figure will appear from this menu, and the calibration figure can be changed by pressing "Calibrate yield meter" or "Calibrate moisture meter".

Function and operation are described in section 4.15 'Yield Meter' on page 128 and section 4.16 'Moisture Meter' on page 133.

Adjustment of Concave

[\(Fig. 79\)](#)

When "Harvest settings | Concave setting" or "Harvest settings | Cylinder RPM" is selected it is possible to adjust the concave setting in relation to the threshing cylinder in 19 steps. The concave setting can be changed when the threshing unit is engaged. The grain loss indicator is shown in the menu allowing the operator to check how the concave setting affects the loss. Too large concave clearance will result in unthreshed ears.

Note: *There will be a time lag from when the concave is adjusted until a change of the loss is registered on the grain loss indicator. Therefore it is recommended to change the concave setting only one step at the time and check the loss for a few minutes for each step.*

4. Operation, DATAVISION

Adjustment of Cylinder Revolutions

Call up the menu "Harvest settings | Cylinder RPM" to adjust the cylinder revolutions ([Fig. 80](#)).

The grain loss indicator is shown in the menu allowing the operator to check how the cylinder revolutions affect the loss.

Note: There will be a time lag from when the cylinder revolutions are adjusted until a change of the loss is registered on the grain loss indicator. Therefore it is recommended to change the cylinder speed gradually and check the loss for a few minutes for each change.

Adjustment of Fanning Mill Revolutions

Call up the menu "Harvest settings | Fanning mill RPM" to adjust the fanning mill revolutions ([Fig. 81](#)).

The grain loss indicator is shown in the menu allowing the operator to check how the fanning mill revolutions affect the loss.

Note: There will be a time lag from when the fanning mill revolutions are adjusted until a change of the loss is registered on the grain loss indicator. Therefore it is recommended to change the fanning mill speed gradually and check the loss for a few minutes for each change.

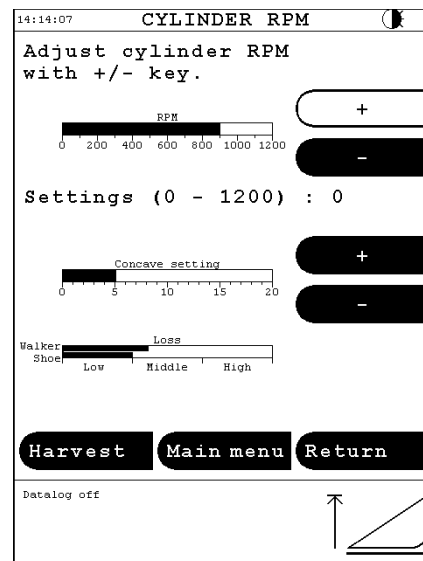


Fig. 80

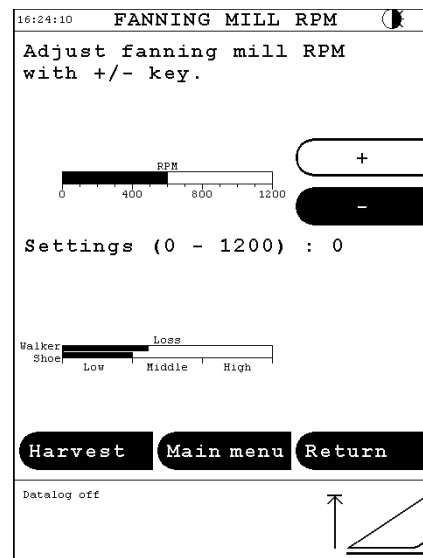


Fig. 81

4. Operation, DATAVISION

Adjustment of Electrical Sieves

Call up the menu "Harvest settings | Electrical sieve" to adjust the sieve opening. The sieve opening is adjusted by mm using the "+/-" keys for both top and bottom sieves. The sieves are divided into two parts - a right-hand and a left-hand sieve. See [\(Fig. 82\)](#). The bar shows at the top the selected sieve opening, and at the bottom the current opening. The sieve opening can be changed when the threshing unit is engaged.

Note: Being closed, the sieve will first move into a position 3 mm below the selected position. This is to ensure that the sieve is always adjusted from below.

The grain loss indicator is shown in the menu allowing the operator to check how the sieve adjustment affects the loss (shaker shoe loss only).

The key "Select" is used for selecting which sieve to adjust with the "+/-" key. This is indicated by a ">" mark in front of the selected sieve(s). When the menu is called up again, both sieves will always be selected.

Note: A difference of sieve opening between the right-hand and left-hand sieves is maintained until it is changed/removed manually or the sieves are completely closed or opened.

Adjustment of Sieve Extension

[\(Fig. 83\)](#)

Adjustment of the sieve extension is carried out manually using the lever (1) and cannot be read on the terminal. The sieve extension will follow the adjustment of the top sieve, even if there is a difference of opening between the sieve extension and the top sieve. However, the difference will be removed if the sieve extension reaches its end stop.

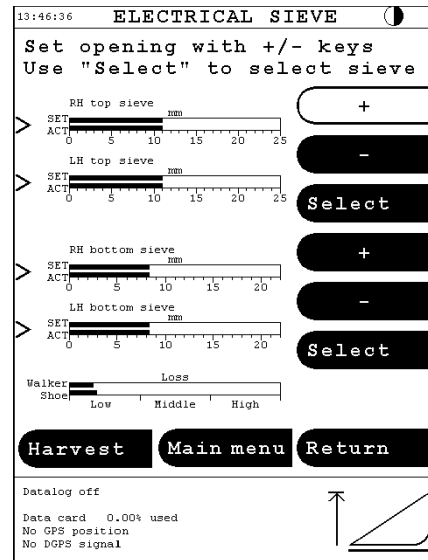


Fig. 82

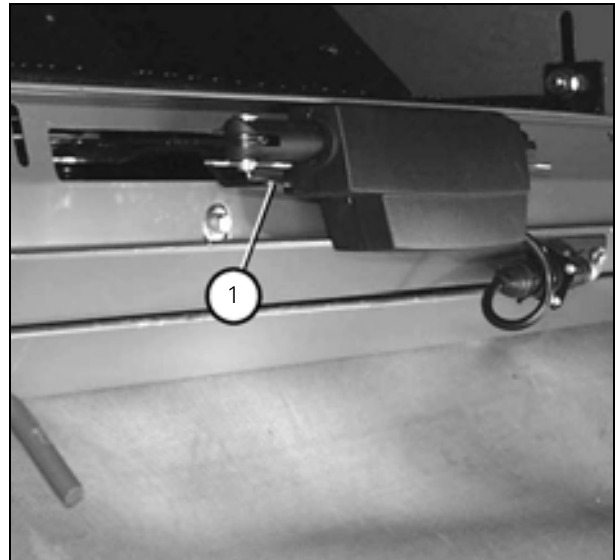


Fig. 83

4. Operation, DATAVISION

Table Settings

(Fig. 84)

From this menu the various controls of the table can be switched on and off or adjusted.

The menu can also be called up from the Harvest menu by pressing the relevant shortcut key for Table settings.

Cutting height control

(Fig. 85)

A touch of the key "Cutting height control" gives access to adjusting cutting height and cutting height control sensitivity, please also see section 4.17 'Cutting Height Control' on page 137..

Field pressure control

(Fig. 85)

A touch of the key "Field pressure control" gives access to adjusting field pressure and field pressure control sensitivity, please also see section 4.18 'Field Pressure Control' on page 139.

Preset Cutting Height

(Fig. 85) and (Fig. 86)

This function enables the operator to set the height, to which the table is to be lowered fast. Adjust preset cutting height with the "+" or "-" key until the SET bar has reached the desired cutting height. Once preset cutting height is coded, it remains coded even though the ignition is switched off.

Preset cutting height is activated by pressing the automatic button in the multi-function lever.

Always use the automatic function at turns. Raise the table by double-clicking the automatic button when leaving the crop. The double-click raises the table to a height of 70 cm above the ground. Lower the table by pressing the automatic button when entering the uncut crop.

To ensure correct function, preset cutting height must be calibrated correctly, please see 'Table Calibration' under section 4.9 'Coding,' on page 109.

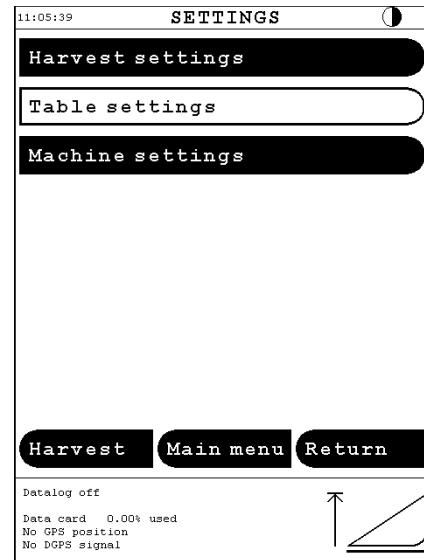


Fig. 84

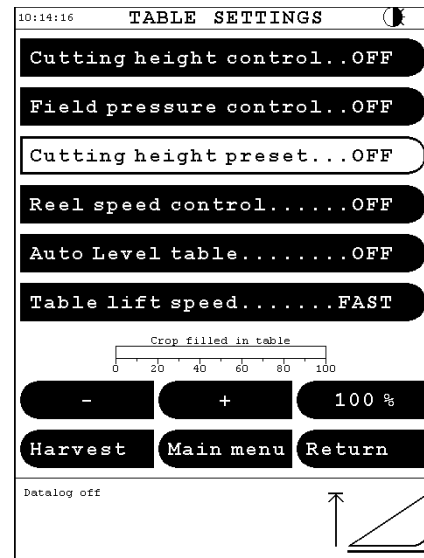


Fig. 85

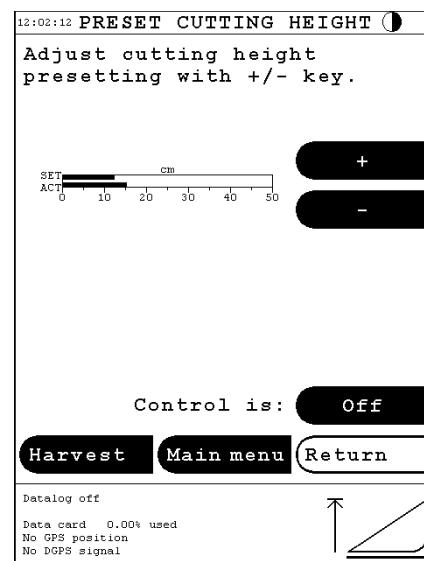


Fig. 86

4. Operation, DATAVISION

Reel Speed Control (Fig. 87) and (Fig. 88)

The reel speed control automatically adapts the reel speed to the forward speed and ensures even feed in all crops.

Reel speed control is engaged and disengaged from the menu "Settings | Table settings", (Fig. 87).

When reel speed control is engaged, the reel revolutions are automatically adjusted relative to the forward speed from 2 km/h up to 10 km/h. At forward speeds below 2 km/h or above 10 km/h there is no adjustment of the reel revolutions.

When the reel is set with the button in the multi-function lever at a speed corresponding to e.g. 10% above the forward speed, this ratio will be retained if the forward speed is changed.

If the reel speed is changed during work, reel speed control will calculate the new ratio between reel speed and forward speed in a few seconds, and retain this ratio until a further change is made.

This can be checked in the menu "Diagnostics | Control | Reel speed control", (Fig. 88).

Auto Level table (Fig. 87)

Auto Level table is engaged and disengaged by pressing the key "Auto Level table", please also see section 4.19 'Auto Level Table' on page 141.

Table up/down (Fig. 87)

The table lift and lowering speed is adjustable with the key "Table lift speed". You can choose between "Fast" and "Slow".

Crop Filled in Table (Fig. 87)

From the menu "Settings | Table settings" it is possible to adjust the degree of filling of the table to ensure the data recording corresponds to the real situation. To achieve accurate yieldmapping, it is important to adjust the degree of filling of the table so that the logged yield data gets as correct as possible. The function can also be inserted in the Harvest menu.

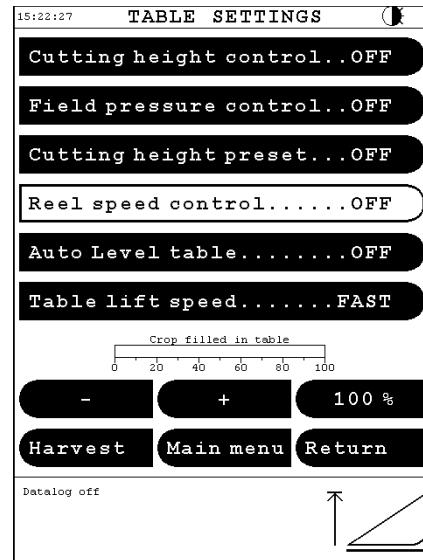


Fig. 87

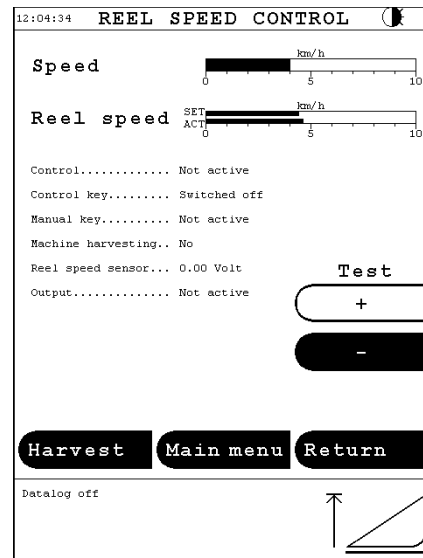


Fig. 88

4. Operation, DATAVISION

Machine Settings,

(Fig. 89)

From this menu the various machine functions can be operated and controls can be switched on and off or adjusted.

The menu can also be called up from the Harvest menu by pressing the relevant shortcut key for Machine settings.

Function and operation of the controls "Auto Level control" and "Constant Flow" are described in section 5.3 'Auto Level Combine' on page 156 and section 4.23 'Constant Flow' on page 146.

Adjustment of Electrical Straw Deflectors

(Fig. 90) and (Fig. 91)

Select "Straw deflectors" from the menu "Machine settings" to call up a menu in which the right-hand and left-hand straw deflectors, respectively, can be adjusted using the "+/-" keys.

If the "+/-" keys are held, the repeat function will make the indication on the bar rise or fall until the desired adjustment has been reached. The adjustment of each deflector appears from the bars at the "+/-" keys.

Adjustment can also be carried out by pressing directly on the bar at the desired value. You may use a finger nail to make the selection more accurate.

The straw deflectors can be turned to the opposite side merely by a single touch of the key "Turn deflect. to opposite side" or by pressing the straw deflector bar from the Harvest menu.

The menu can also be called up from the Harvest menu by pressing the shortcut key for machine settings and then selecting "Straw deflectors".

Reversing light

The reversing light can be used as rear work light. Reversing light/rear work light is switched on and off by pressing the key "Reversing light" on the terminal, (Fig. 90).

Note: The reversing light must be switched off during road transport.

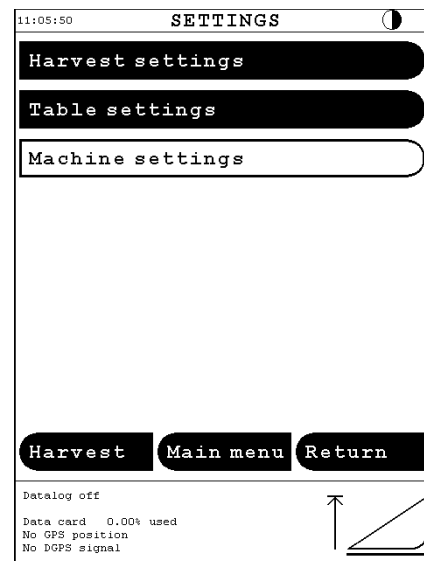


Fig. 89

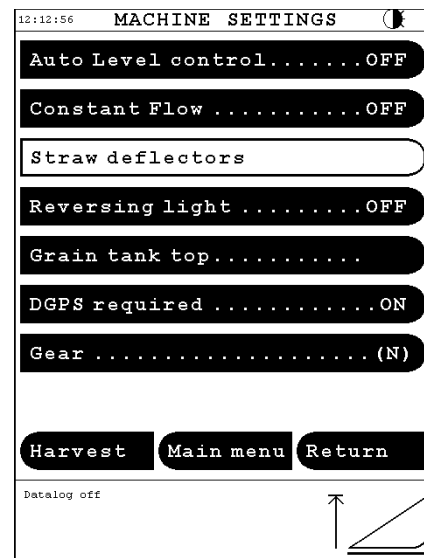


Fig. 90

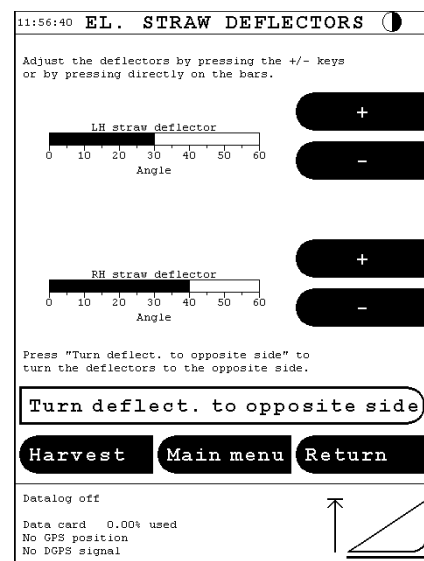


Fig. 91

4. Operation, DATAVISION

Grain Tank Covers, Electrical Opening [\(Fig. 92\)](#)

The grain tank covers are opened by a single touch of the key "Grain tank top" from the menu "Machine settings". The grain tank covers will then open into maximum opening position.

The grain tank covers are closed again by a single touch of the key "Grain tank top".

While opening or closing, the movement of the covers can be reversed by a single touch of the key "Grain tank top".

Alarms [\(Fig. 93\)](#)

- **REMEMBER! Check grain tank covers:**
Immediately after you have closed the grain tank covers, a dialogue box appears on the screen asking you to confirm that the grain tank has actually been closed.
- **REMEMBER! Grain tank covers open:**
If the engine is started or the threshing unit is stopped while the grain tank is open, an alarm will appear warning the operator that the grain tank covers are open. This alarm also appears if the machine is travelling at a speed of more than 15 km/h with open grain tank.
- **ERROR: Check grain tank cover actuator:**
The opening/closing mechanism is equipped with an overload cutout which will automatically stop the movement of the grain tank covers in case of unusually large resistance. In such situation an alarm will appear on the screen after approx. 45 seconds.

 **WARNING! Never allow other persons near the grain tank covers when opening or closing them.**

DGPS dependency [\(Fig. 94\)](#)

If the accuracy of the position data is satisfactory without DGPS signals, the dependency of DGPS signals can be switched off ("DGPS required" "OFF") from the menu "Settings | Machine settings".

If "DGPS required" is "OFF" and the DGPS signal is still available, it is used for correction of the GPS signal. If the DGPS signal disappears, the GPS signal will be used non-corrected and the data logging will continue.

If "DGPS required" is "ON" and the DGPS signal disappears, data will still be logged and a message will appear warning the operator of reduced accuracy.

Gearshift [\(Fig. 94\)](#)

The gear menu is called up by pressing the key "Gear". The selected gear is identified by the key being highlighted. When a new gear range is selected, the key of the selected gear will flash until the gear change is completed.

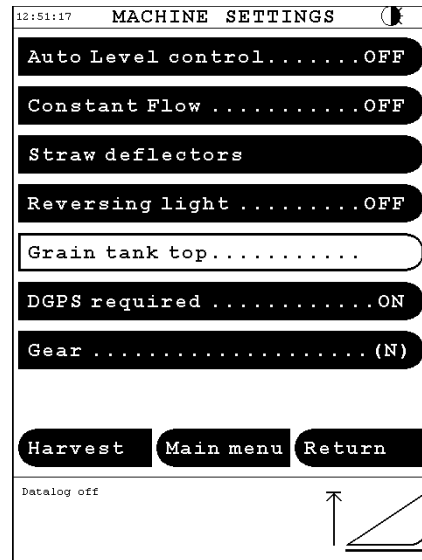


Fig. 92

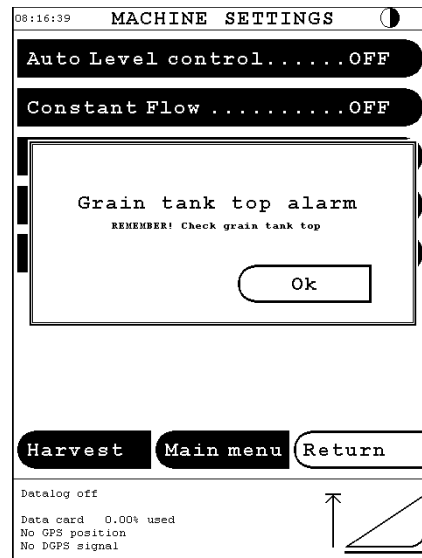


Fig. 93

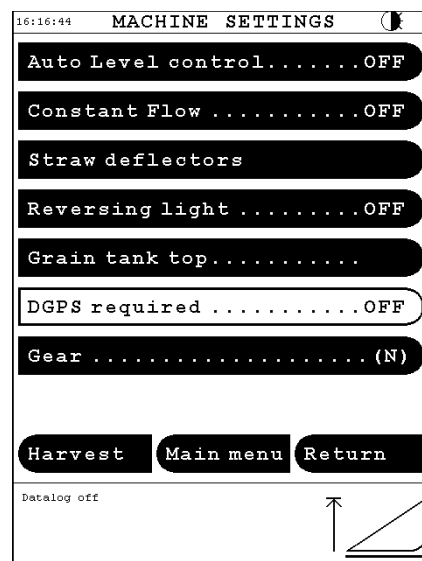


Fig. 94

4. Operation, DATAVISION

4.11 Returns Volume Monitor

The returns volume is monitored by a sensor in the returns elevator. The number of impulses from the sensor is converted electronically into an indication which can be called up on the Harvest Picture, (Fig. 95).

To ensure accurate indication and alarm, the machine must be adjusted at each crop change, and the returns volume sensor must be coded at the current returns volume.

The returns volume must always be as small as possible and contain fewest possible grains.

Note: *Dirt on the sensors will cause inaccurate indication.*

Coding,

(Fig. 96)

The returns volume sensor is coded from the menu "Coding | Return volume" using the "+/-" keys, at medium indication on the bar while the machine is harvesting with normal returns volume.



WARNING: *Never allow persons near the machine and never reach into the elevator to check the returns.*



WARNING: *Dismounting and mounting of elevator shutters must not take place before the diesel engine has been stopped and the main switch has been switched off.*

Alarm

If the returns volume increases on account of wet material or for other reasons, the system will give alarm and information as shown in (Fig. 97).

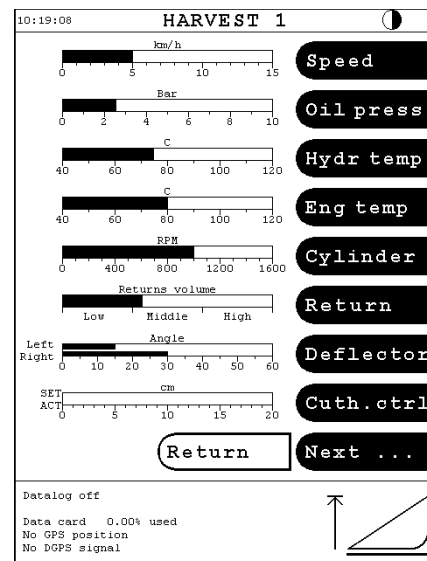


Fig. 95

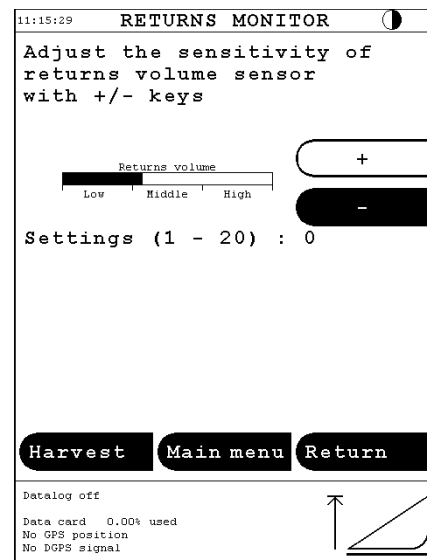


Fig. 96

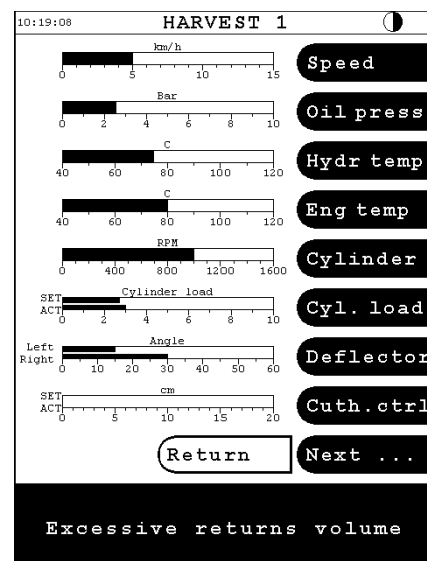


Fig. 97

4. Operation, DATAVISION

4.12 Grain Loss Monitoring

Sensors

(Fig. 98)

The grain loss monitor in DATAVISION consists of a tubular sensor (2) at the shaker shoe and a plate sensor (1) in two of the straw walkers.

The indication can be inserted in the Harvest menu as one of the optional functions. The bar on the screen is divided into two, one for the straw walkers and one for the shaker shoe.

If the machine is equipped with yield meter, the grain loss monitor is dependent on capacity. Without yield meter, it is dependent on forward speed.

Check regularly that the sensors are clean, particularly under wet harvesting conditions.

Adjustment of Grain Loss Sensors,

(Fig. 98), (Fig. 99) and (Fig. 100)

Prior to the adjustment of the grain loss monitor indication on the screen, the plate sensors (1) in the straw walkers and the tubular sensor (2) must be adjusted to the current crop. This is done with the switches (3) and (4), (Fig. 98), providing adjustment possibilities for small, normal and large grains, respectively.

- Small grains (oilseed rape, mustard, herbage seed)
- Normal grains (all cereals)
- Large grains (peas, maize)

Then adjust the machine at an adequate capacity and an acceptable loss in the field. Adjust the bars for straw walkers and shaker shoe separately whilst working with the known loss.

The screen picture for adjustment of grain loss monitor can be called up from the menu "Coding | Grain loss monitor | Straw walkers" and the bar for straw walkers, (Fig. 99) can be adjusted into the medium range using the "+" or "-" key. This adjustment does not change the sensitivity of the loss sensors, but only the indication on the bar.

The same procedure can be used when adjusting the shaker shoe bar, (Fig. 100).

Check the adjustment when changing field and crop. The plate sensors must be adjusted when the bar on the screen cannot be accurately adjusted.

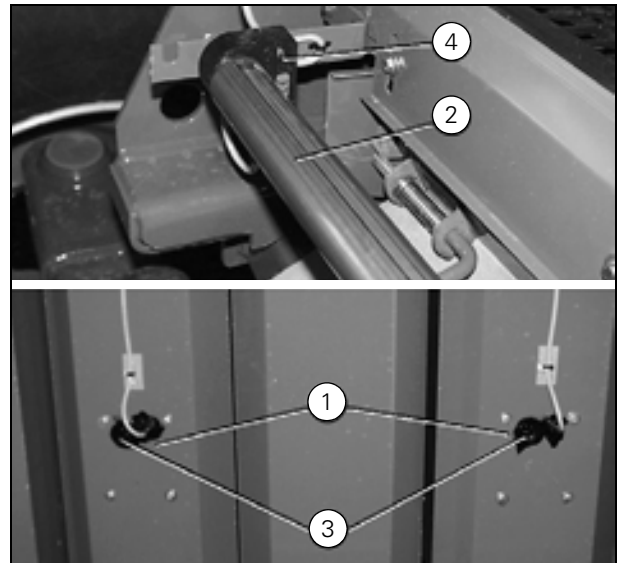


Fig. 98

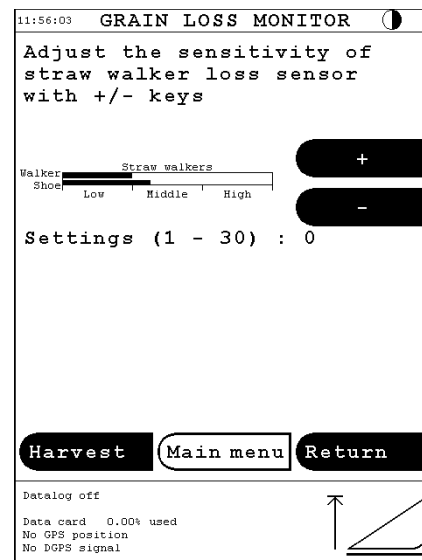


Fig. 99

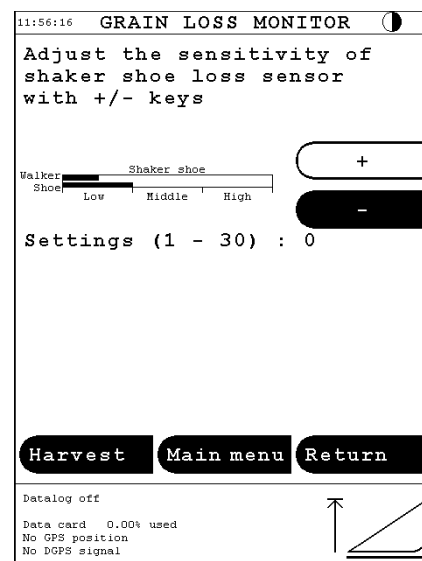


Fig. 100

4. Operation, DATAVISION

4.13 Shaft Alarm Calibration

If changes are made on the shaft system, the monitoring system must "learn" the new shaft speeds in order for the shaft monitoring to function correctly.

The procedure appears from the menu "Coding | Shaft alarm calibr."

Follow the instructions on the screen, [\(Fig. 101\)](#).

When calibrating the alarm limits for shaft speeds, threshing unit, table, unloading auger and straw chopper (if mounted) must be engaged to ensure that all combine shafts are calibrated. Furthermore, the engine must normally run at max. revolutions, and the machine must be stationary.



WARNING: Always leave at least one door open for ventilation if the diesel engine is started in a workshop/machine shed without air suction ventilator.



WARNING: Never start the machine until all safety guards are fitted and secured.



WARNING: Table and chopper knives are moving violently during calibration. Never allow people near the front or back of the machine while calibration is carried out.

Calibration of shaft alarm limits for fanning mill and cylinder variator is not required. The previous alarm limits are still used.

The current and latest calibrated shaft speeds can be read from the menu "Coding | Shaft alarm calibr. | Current", [\(Fig. 102\)](#).

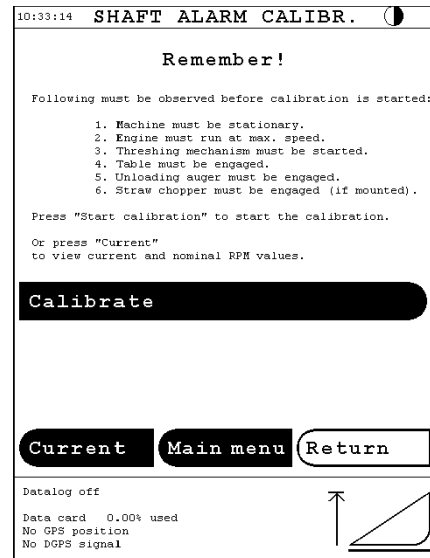


Fig. 101

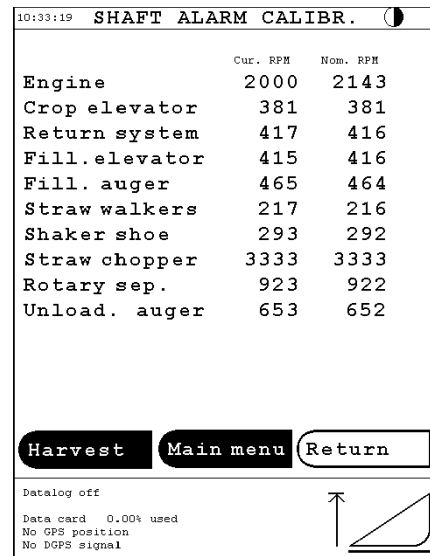


Fig. 102

4. Operation, DATAVISION

4.14 Straw Chopper Vibrations

Vibrations in the straw chopper are monitored by a sensor fitted in the chopper hood.

Threshing and chopping of the material will always cause some vibration.

However, if the straw chopper is damaged on the move by stones or the like, the vibrations will increase and eventually ruin the straw chopper. The vibration sensor will detect increased vibrations and give alarm.

Coding

[\(Fig. 103\)](#)

Coding of the vibration sensor is carried out on the move when the machine is normally loaded. Call up "Coding | Chopper vibrations" and use the "+/-" keys to code at medium. Check before coding that all knives are undamaged and free to move.

Alarm

[\(Fig. 104\)](#)

Any unbalance in the straw chopper will be registered instantly by the sensor.

If for instance a rotor knife breaks, the system will give alarm and information as shown in [\(Fig. 104\)](#).

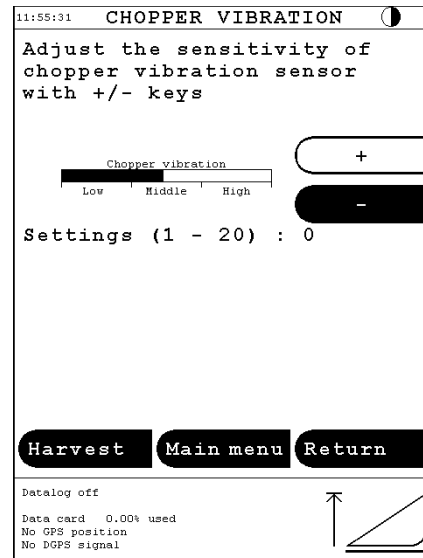


Fig. 103

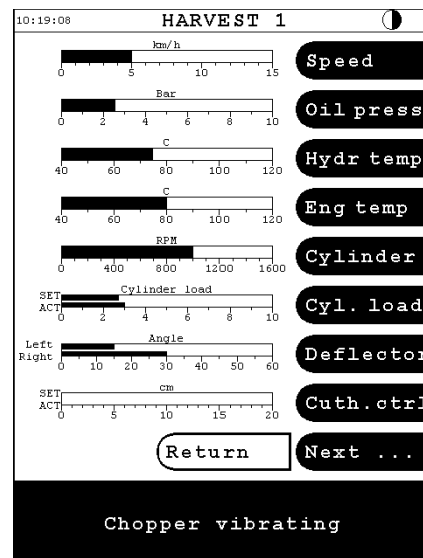


Fig. 104

4. Operation, DATAVISION

4.15 Yield Meter

4.15.1 Yield meter (Isotopic)

Measuring Principle

The measuring of the crop flow takes place when the crop passes through the measuring gap between tank filling elevator and filling auger. The crop interrupts the signals between the transmitter and the detector, and the weakened signal strength is converted into electric impulses which are counted.

The weakening of the impulses combined with the rate of the crop determines the mass of the crop that has passed the measuring gap in the tank filling elevator.

Before the machine is started in the field, the yield meter requires 5 minutes for zeroing without the threshing unit being engaged. The ignition key must be in position YELLOW, and the engine must not be started or stopped during zeroing. Normally the transport time into the field will suffice for zeroing and normally the operator does not have to pay any attention to this.

Mass Flow Measuring

The mass flow measuring units are fitted in the top of the elevator (1). The signal transmitter (2) fitted under the top part, transmits the signals through a very limited area to the signal detector (3).

When the elevator is empty and clean, the signal detector (3) receives the maximum number of impulses supplied by the transmitter. This figure is reached during zeroing and is called zero point.

Zero point and counter can be read from the "Yield meter" picture. The counter is the current counting of the impulses.

When the machine is empty the counter will change slightly up and down around zero.

When the crop passes through the machine, the counter will get lower. The more crop, the lower, and it is the difference between these two figures that is converted into the weight of the crop.

Note: The signal transmitter must not be exposed to blows or impacts, and may be removed by authorised personnel, only.

In case of damage or fire the dealer must be informed immediately.

Note: The detector must not be exposed to blows or impacts during cleaning.

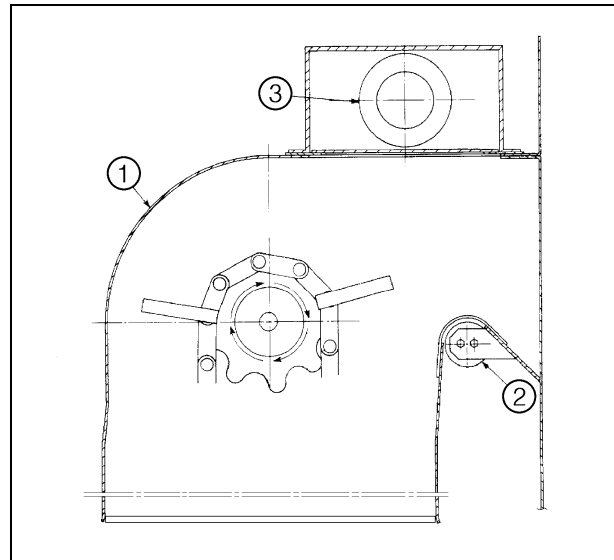


Fig. 105

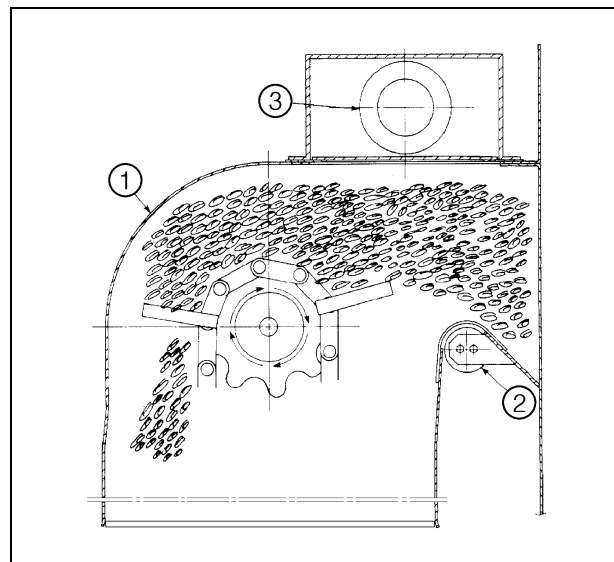


Fig. 106

4. Operation, DATAVISION

Yield Meter Status

(Fig. 107)

The screen picture "Yield meter" is called up by selecting "Diagnostics | Yield meter".

The bottom part of the picture shows yield meter status when the machine is empty.

Zero point in this example is 32017. The value should always be between 23000 and 50000.

The counter value is a little lower (31892) and will change slightly up and down.

When material passes through the machine, the counter value (31892) will be lower and the three bars will show capacity, yield and loss (top part of the picture).

The chosen crop is wheat, and the yield meter is calibrated with 100. The calibration figure can be changed from the menu "Settings | Harvest settings | Crop type" to ensure accurate measuring.

When a new machine is delivered the yield meter is calibrated with 100.



Fig. 107

Failure Alarms:

- Detector missing:**
Counter is below 1000. Detector not fitted or defective.
- Clean detector area:**
Counter is below 15000. Measuring gab blocked or the zero point is not correct.
- Zero point error:**
Counter is higher than zero point which means that a negative flow is measured. This may occur if zeroing has taken place with deposits in the elevator which then disappear while the machine is harvesting.

Using the Yield Meter

To ensure accurate measuring the yield meter requires sufficient time to find the correct zero point.

The yield meter finds the zero point when the DATAVISION system is on and the threshing unit is disengaged. It makes no difference whether the engine is running or not, but it must not be started or stopped whilst the yield meter is finding zero point. After about 5 minutes a new zero value is entered and can be read on the "Yieldmeter" screen picture.

Normally it will take about 5 minutes from the time the engine is started till the machine is ready to harvest to allow the yield meter to reach the correct zero point. It is not necessary to check the zero point during work as the yield meter will find the correct zero point automatically.

The yield meter remembers the zero point even if the ignition key is turned into position "STOP". If the elevator cover with the detector has been removed for service or cleaning, the yield meter requires 5 minutes to find a new zero point.

The operator should keep an eye on the capacity bar and check regularly that it reads zero when the machine is empty (during turns and stationary unloading).

This means that the zero point is still correct. Particularly under difficult harvesting conditions when deposits may settle in the measuring gap, this simple checking is very important. Deposits in the measuring gap are included as harvested material and the yield meter may show capacities of e.g. 1, 2 or 3 tons an hour instead of 0 to 0.5 tons an hour.

Calibration of Yield Meter

See section 4.15.3 'Yield Meter Calibration' on page 131.

4. Operation, DATAVISION

4.15.2 Micro-Trak Yield Meter

Measuring Principle

The measuring of the crop flow takes place when the crop passes through the measuring gap between tank filling elevator and filling auger. Here, the crop flow passes a couple of "fingers" whose influence is converted into electric impulses.

The electric impulses are entered in DATAVISION and displayed as a counter value. The counter value appears from the menu "Diagnostics | Yield meter". The counter value must be between 400 and 800. If it is below 100 the failure alarm "Detector missing" will appear in the bar for Capacity.

DATAVISION computes a mass flow from the difference between the counter value and a zero point. The zero point must be equal to the counter value when the machine is empty. When the machine is harvesting the counter value will be 10-100 above the zero point.

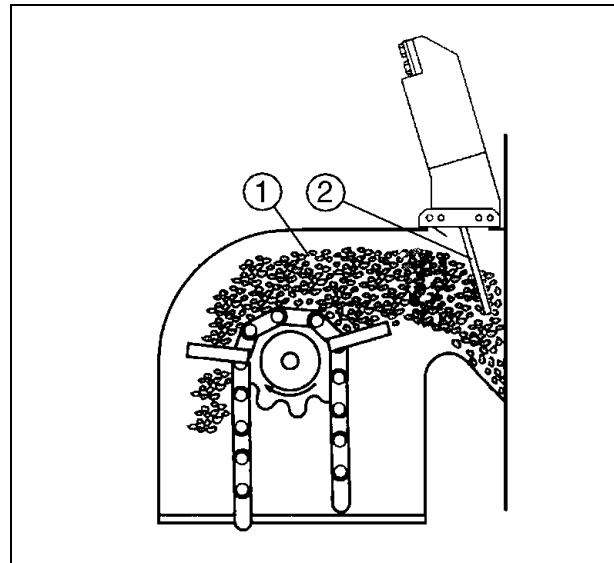


Fig. 108

Zero Point for Micro-Trak Yield Meter

To ensure optimum measuring of the mass flow it is essential that the zero point is correct. Therefore, check regularly that the difference between zero point and counter is below 2-3 when the machine is empty.

If the zero point is too low, a capacity can be read even if there is no crop in the machine. If, however, it is too high, the failure alarm "Zero point error" will appear in the Capacity bar.

The zero point is updated as follows:

1. Park the machine on level ground
2. Pull the handbrake, i.e. stationary machine
3. Start threshing unit and table
4. Rev up the engine to max.
5. Lower the table below 50 cm above the ground
6. Wait for at least one minute or until counter and zero point are equal. This can be checked from the menu "Diagnostics | Yield meter"

Now DATAVISION has updated zero point. The zero point is preserved even if ignition is switched off.

Calibration of Micro-Trak Yield Meter

Once the zero point is correct, the yield meter must be calibrated on the move for the current crop. This is done as described in section 4.15.3 'Yield Meter Calibration' on page 131.

Slope Compensation for Micro-Trak Yield Meter

As the accuracy of the Micro-Trak yield meter is reduced when harvesting on strongly undulating ground, a slope compensation unit for Micro-Trak is available on option. This unit makes corrections of the electric impulses before they are recorded in DATAVISION. Therefore, the yield meter is used as described above, only the accuracy is improved by the slope compensation.

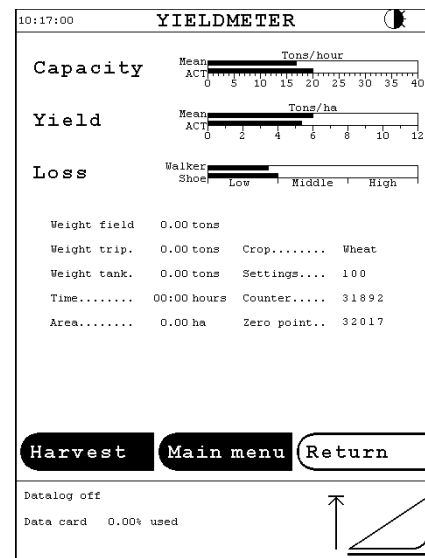


Fig. 109

4. Operation, DATAVISION

4.15.3 Yield Meter Calibration

Before checking the calibration, the trip counters on the "Yield meter" picture must be zeroed. This is done from the menus "Harvesting data | Trip data / Field data". Check the calibration by weighing minimum one grain tank load on a weighbridge and comparing it with the yield meter measuring result.

If there is a difference between the two weighings, a new calibration is calculated as follows:

Calculating the Calibration Figure:
$Weightbridge / Yield\ meter\ measuring \times Present\ calibration$
Example:
Yield meter measuring 6800 kg
Weightbridge 6450 kg
Present calibration 100
Calculation of calibration figure: $6450\ kg / 6800\ kg \times 100 = 94.9$

Change of Calibration Figure

From the menu "Settings | Harvest settings" (Fig. 110) go on to the calibration menu either by selecting a new crop from the menu "Crop type" or by pressing the key "Crop related calibration", (Fig. 111).

Select "Harvested grain" from the calibration menu, use the key pad (Fig. 112) for keying in the volume (6800 kg) measured by the combine yield meter and press "OK".

Then press the key "Weighbridge" calling up another key pad (Fig. 113).

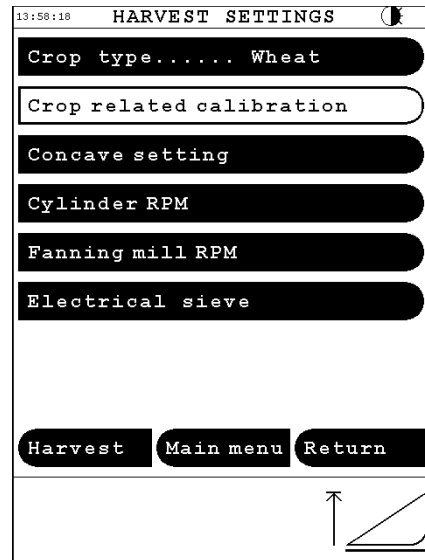


Fig. 110

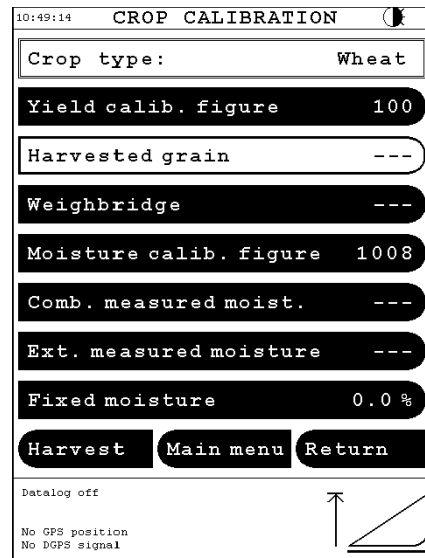


Fig. 111

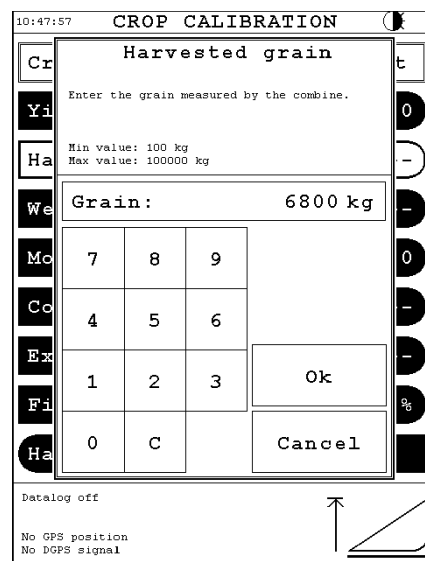


Fig. 112

4. Operation, DATAVISION

Key in the weighed volume (6450 kg) and press "OK".

Check from the dialog box (Fig. 114) that the calibration figure has been changed and press "Yes" to store the change. Now, the screen returns to "Crop calibration" for wheat (Fig. 111) from which it appears that the calibration figure has been changed from 100 to 95.

The yield calibration figure in the example for wheat will remain 95 until a new calibration is carried out.

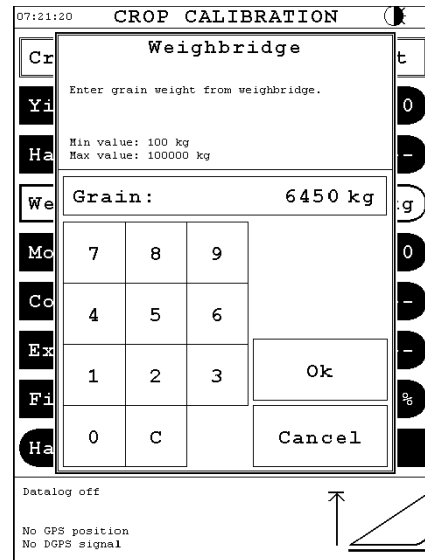


Fig. 113

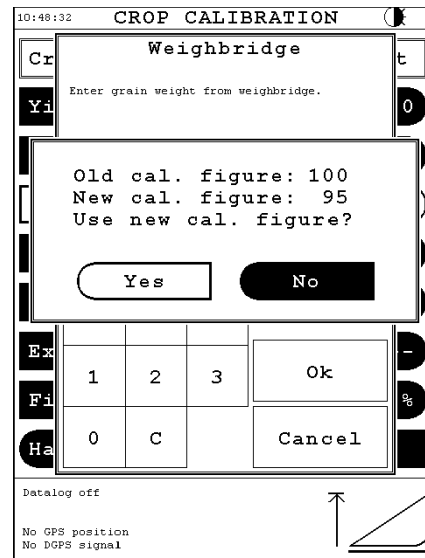


Fig. 114

4. Operation, DATAVISION

4.16 Moisture Meter

The moisture meter is designed for working in traditional cereals like wheat, barley and rye. It should not be used when harvesting maize, oilseed rape, peas and beans as these crops may leave residues on print boards or emptying system, preventing optimum measuring and emptying. When harvesting maize, oilseed rape, peas and beans, dismount the moisture meter and replace it by the supplied cover plates. For information on removal of the moisture meter please see section 'Cleaning the Moisture Meter' on page 134.

Continuous Moisture Measuring

The moisture meter is mounted on the side of the tank filling elevator.

The continuous measuring of the moisture content in the crop takes place as the moisture meter continuously fills with samples of the crop passing through the tank filling elevator. The intervals between the continuous moisture measurements may vary from 10 to 30 seconds depending on the crop. When the measuring is completed, the sample is emptied into the tank filling elevator.

Measuring Principle

The determination of the water content in the crop is based on electric measurements.

Water is highly capable of conducting lines of force in an electric field whereas organic total solids are not. Therefore, the water percentage can be determined by measuring the influence of the crop on the lines of force created in the measuring chamber of the moisture meter.

Moisture measuring range: 8 to 28%

Temperature measuring range: -20 to +80 °C

Using the Moisture Meter

At start-up, the moisture meter is emptied of any crop residue to be ready for the first measuring.

The measuring takes place only when the combine is harvesting.

When the moisture meter is full, the water content is measured and the moisture meter is emptied to be ready for the next measuring.

When the threshing unit is stopped, the moisture meter is emptied automatically and is then ready for the next measuring.

Crop moisture and temperature can be read from the bars in the Harvest menu, see [\(Fig. 115\)](#).

Note: The moisture meter must be filled and emptied 10 times before the reading is of any use. Measuring takes place only while the machine is harvesting.

Selecting Crop Type

The various crop types react electrically quite differently to moisture and temperature.

The computer allows for this and corrects the signal so that the right moisture percentage can be calculated.

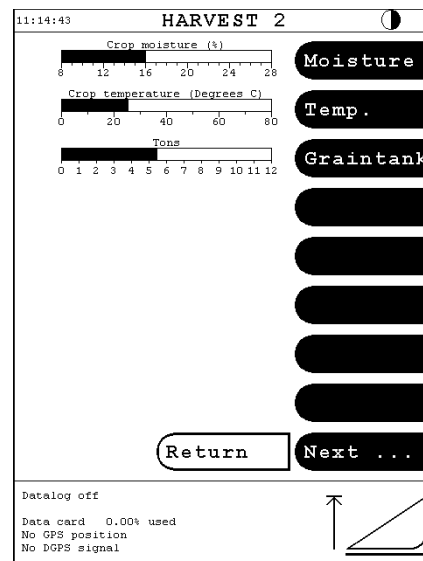


Fig. 115

4. Operation, DATAVISION

To permit such correction, the right crop must be selected before the harvest job is started.

If no specific correction curves are available for the selected crop, the computer will use a standard correction curve. Correction curves are available for instance for wheat, barley, oats and rye.

Cleaning the Moisture Meter

[\(Fig. 116\)](#)

To achieve optimum recording of the crop moisture, the measuring chamber of the moisture meter must be clean.

Check the moisture meter daily through the cover (1) for deposits inside on level sensor (2), print board (3) and the sides of the measuring chamber.

Loosen the 5 nuts (4) to dismount the moisture meter for cleaning. Remove the print board (3) from the moisture meter housing by loosening the three screws (5). Clean the print board with a damp cloth and use a brush and compressed air for cleaning the measuring chamber.

When assembling and mounting the moisture meter be careful to mount the seals between moisture meter and tank filling elevator correctly.

Note: The print board (3) contains sensitive electronics and must be handled with care. Do not wash or submerge in water.

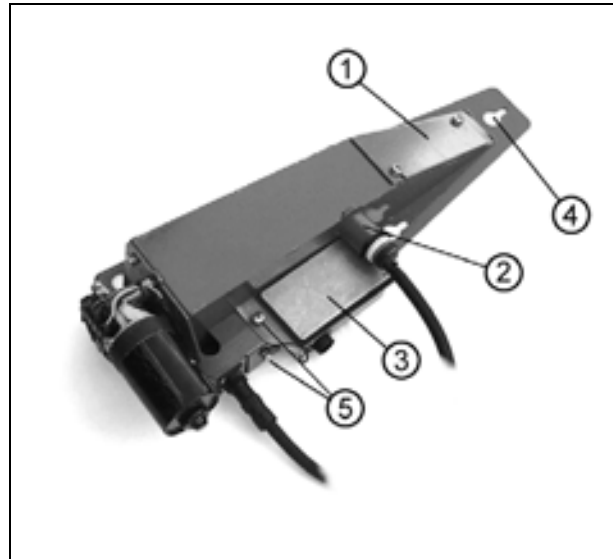


Fig. 116

4. Operation, DATAVISION

Calibration of Moisture Meter

(Fig. 117), (Fig. 118), (Fig. 119) and (Fig. 120)

If the moisture measuring is too high or too low for a specific crop, it can be corrected by calibrating the moisture meter.

Calculating the Calibration Figure:

Example:

The moisture meter shows a moisture percentage of 14.8%, but a test measuring with ordinary equipment shows a moisture percentage of 16.0%.

New calibration figure:

$$(16 - 14.8) \times 10 + 1008 \text{ (previous calibration figure)} = 1020.$$

Change of Calibration Figure

Press the key "Comb. measured moist." from the menu "Harvest settings | Crop calibration" (Fig. 117). Use the key pad (Fig. 118) to key in the moisture percentage (14.8) measured by the combine and press "OK".

Then press the key "Ext. measured moisture" calling up another key pad (Fig. 119). Key in the actual moisture percentage (16.0) and press "OK".

Check from the dialog box (Fig. 120) that the calibration figure has been changed and press "Yes" to store the change.

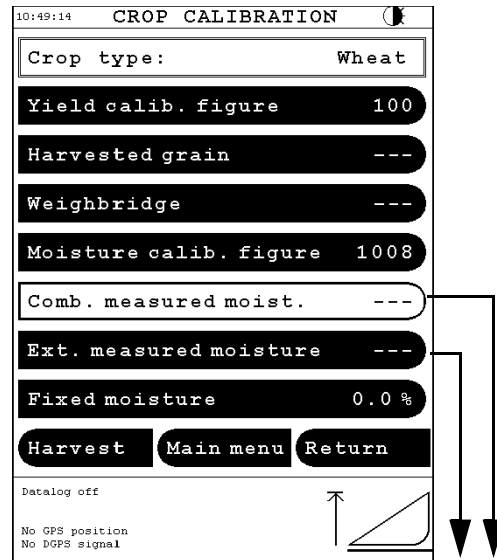


Fig. 117

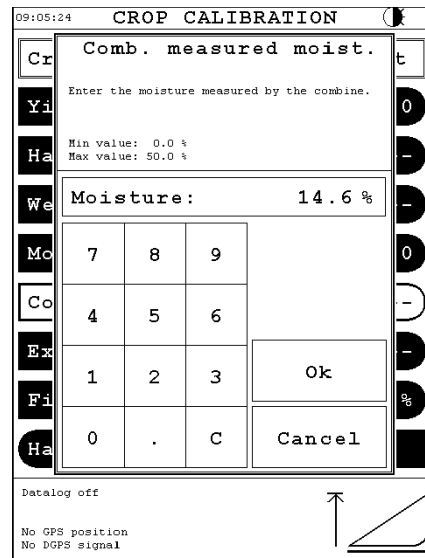


Fig. 118

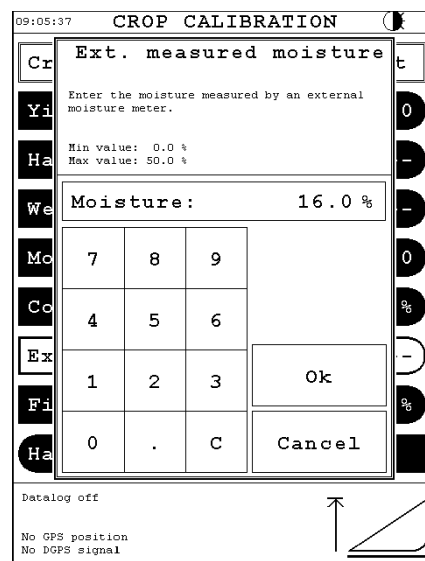


Fig. 119

4. Operation, DATAVISION

Now, the screen returns to "Crop calibration" for wheat ([Fig. 117](#)) from which it appears that the calibration figure has been changed from 1008 to 1020.

The moisture meter calibration figure for wheat will remain 1020 until a new calibration is carried out.

The calibration figure can also be keyed in directly from the menu "Moisture calib. figure" ([Fig. 117](#)).

Failure Alarms:

- **Moisture sensor missing:**
No signal from the moisture meter. Cable or moisture meter defective.
- **Sample too wet:**
The crop sample is too wet for the moisture meter to determine the water content.
- **Moisture sensor error:**
The level sensor of the moisture meter indicating by a constant light that the moisture meter is full although it ought to be empty. This may be caused by too much material in the moisture meter which cannot be emptied, or the level sensor being dirty or defective. Dismount and clean the moisture meter as previously described.

If the failure alarm "Moisture sensor error" appears when the combine is started, the cause may also be water or dew having penetrated into the moisture meter while the combine was parked.

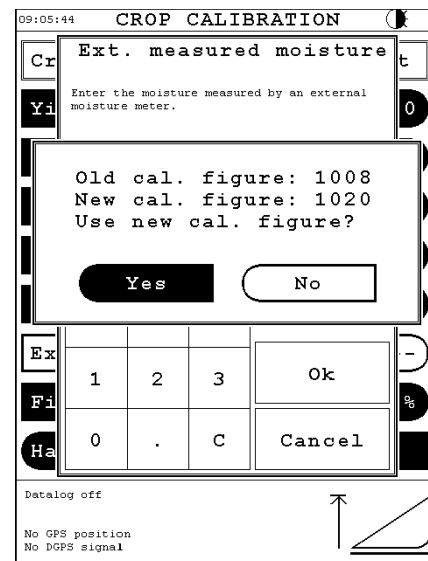


Fig. 120

4. Operation, DATAVISION

4.17 Cutting Height Control

Cutting Height Control Setting and Operation

Cutting height control is suitable for harvesting standing crops. When engaged, cutting height control will take over control of the table allowing it to follow the ground at the preset height. The clearance between table and ground is measured by the ground sensors (1) (Fig. 121).

Cutting height control is suitable under all ground conditions and particularly well suited on undulating ground.

Adjustment of Cutting Height Control (Fig. 123)

The desired cutting height can be set in cm using the "+/-" keys at the top of the screen picture. Alternatively you may press the bar directly at the desired height. This can also be done from the Harvest menu by pressing the bar for cutting height control.

Note: The indication in cm is an approximate indication of the table bottom above the ground, i.e. the cut off stubble will be about 5 cm taller.

Cutting height control is engaged and disengaged from the menu "Settings | Table settings | Cutting height control" using the "On/Off" key.

The reactivity of cutting height control is set by adjusting the sensitivity for table lifting and lowering. In this way the system can be adapted to the individual requirements and the current combination of machine and table.

A suggested setting for table lifting and lowering dependent on table size appears from (Fig. 123). (Auto Level combine has a stronger hydraulic system and therefore must be set 1-2 steps lower than the standard combine).

Exact adjustment of the lifting and lowering sensitivities is carried out during harvest using the "+/-" keys when the combine has become warm from operation. The best result is achieved when 1 interval on the scale lifts/lowers the table by 1-2 cm measured at the knife. That adjustment will give a uniform and even stubble across the whole field.

Operating Cutting Height Control

Cutting height control is activated by pressing the automatic button in the multi-function lever allowing the table to float over the ground at the preset height. Cutting height control is active only when the machine is harvesting.

The preset height can be changed on the move, for instance by pressing the bar for cutting height control in the Harvest menu. This may be an advantage over trying to operate the table manually if the operator wants to temporarily change the cutting height.

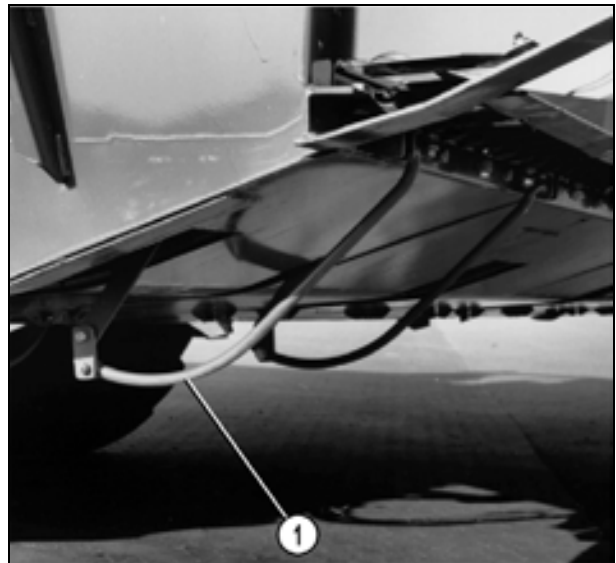


Fig. 121

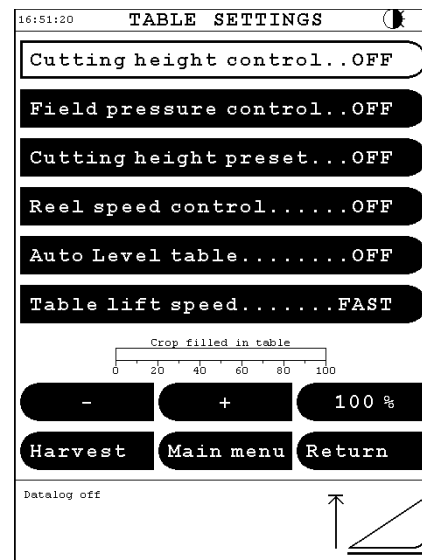


Fig. 122

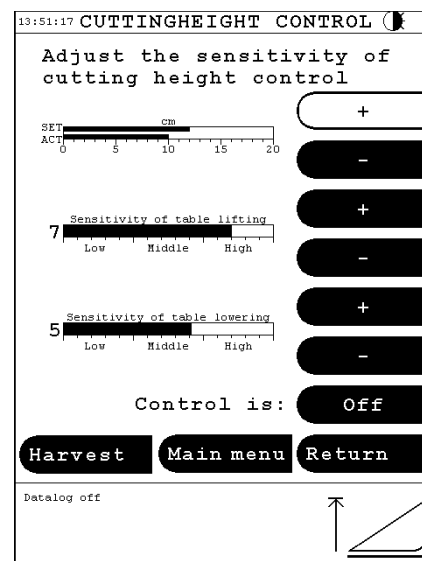


Fig. 123

4. Operation, DATAVISION

The table can be manually lifted over obstacles the field pressure control cannot cope with, using the button in the multi-function lever (indicated by the text "Manual" on the function bar in the Harvest menu (Fig. 124)). This will temporarily inactivate the cutting height control until it is activated again by pressing the automatic button.

If the table enters an area in which the operator wants to lower the table below the preset height, the table can be lowered by pressing the Table down button in the multi-function lever. This can be done in 3 stages:

1. The first brief touch of the Table down button lowers the table at approx. half the original height and the cutting height control remains active.
2. The second brief touch of the Table down button reduces the height temporarily to 2 cm and the cutting height control remains active.
3. The third time the Table down button is pressed or if it is held for more than half a second, the cutting height control will be disengaged.

Note: If the cutting height is below 2 cm the cutting height control will be disengaged already after one touch of the Table down button.

The table will resume its original height and the cutting height control will be reactivated by pressing the automatic button.

Note: A large "X" over the table symbol in the information area indicates that the cutting height control is inactivated as the table is raised/lowered manually. In this situation the cutting height control can be reactivated using the automatic button, please see (Fig. 124).

Coding of Table

When the table is attached to the machine for the first time, the top and bottom positions of the ground sensors must be entered into DATAVISION.

Place the machine on level ground and lower the table completely. Call up "Table height calibration" from the menu "Coding | Table calibration". Lower the table and press "Calibrate".

Then raise the table completely and press "Calibrate".

In case calibration is not accepted by DATAVISION, check sensors and mechanical connections.

Note: When the table is calibrated the automatic function for Auto Level table must be disengaged from the menu "Settings | Table settings". This is to prevent that any insufficient or wrong calibration causes the automatic function to turn the table during calibration.

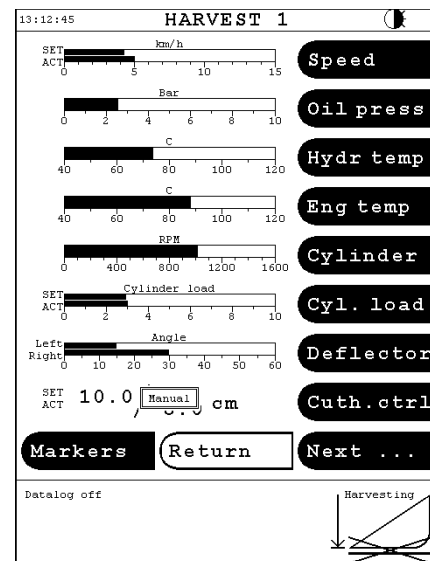


Fig. 124

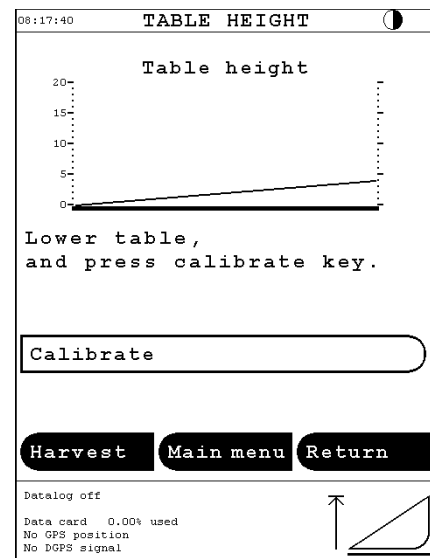


Fig. 125

4. Operation, DATAVISION

4.18 Field Pressure Control

Field Pressure Control Setting and Operation

Field pressure control is used if the lowest possible cutting height is required, for instance in laid crops.

The field pressure control allows the table to float on the ground at a constant specified pressure.

On very undulating ground the table may be raised above the surface downhill and on the contrary be floating along the ground at a too high field pressure uphill. This is caused by the geometry of the combine and makes field pressure control less suitable on very undulating ground.

Field pressure control has a built-in safety function protecting the table against damage and incorrect operation. The safety function will always raise the table where necessary. Therefore, it is advisable always to switch "On" field pressure control as the safety function also protects against damage when the table is manually operated.

Field pressure indication can be inserted in the Harvest menu.

Adjustment of Field Pressure Control [\(Fig. 128\)](#)

Field pressure control is engaged and disengaged from the menu "Settings | Table settings | Field pressure control" using the "On"/"Off" key.

To adjust the working range of the field pressure control set the top bar (SET) 4-8 bar lower than the bottom bar (ACT) using the "+/-" keys. When the adjustment is carried out the table must be hanging immediately above the ground.

Exact adjustments are carried out when harvesting. The pressure on the ground is increased by pressing the "-" key and reduced by pressing the "+" key.

The field pressure control sensitivity is adjusted according to ground conditions. Set the sensitivity at middle/high in irregular fields, and at low if the field is level. It is recommended to set the sensitivity as low as possible to reduce the load on the hydraulic system.

With the optimum setting of the field pressure the table will leave a smooth and even trail across the field.

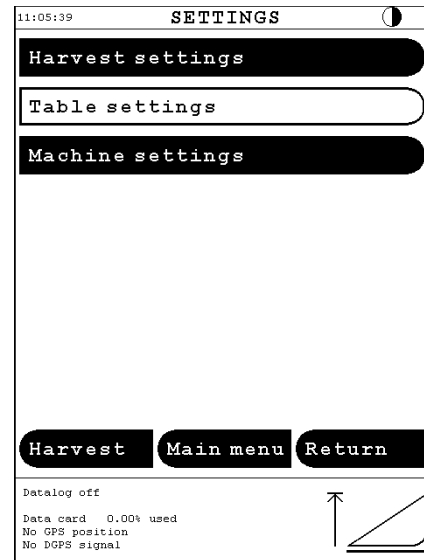


Fig. 126

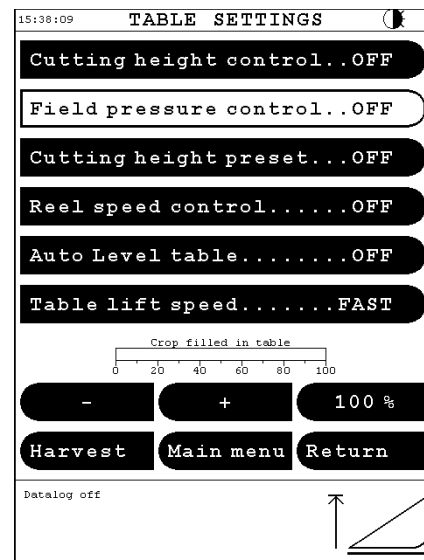


Fig. 127

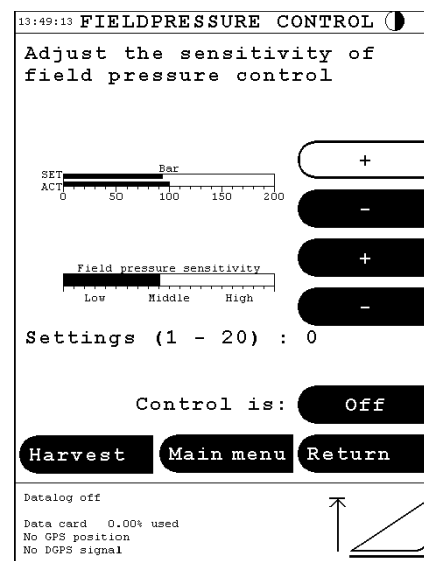


Fig. 128

4. Operation, DATAVISION

Operation of Field Pressure Control

The field pressure control is activated using the automatic button in the multi-function lever allowing the table to float smoothly over the ground at a constant pressure. Field pressure control is active only when the machine is harvesting.

If the table is operated manually with the buttons in the multi-function lever (indicated by the text "Manual" on the function bar in the Harvest menu), the field pressure control is temporarily inactivated until the automatic button is pressed. However, the safety function is still active as long as "Field pressure control" is "ON" in the menu "Table settings".

Note: A large "X" over the table symbol in the information area indicates that the field pressure control is inactivated as the table is raised/lowered manually. In this situation field pressure control can be reactivated using the automatic button.

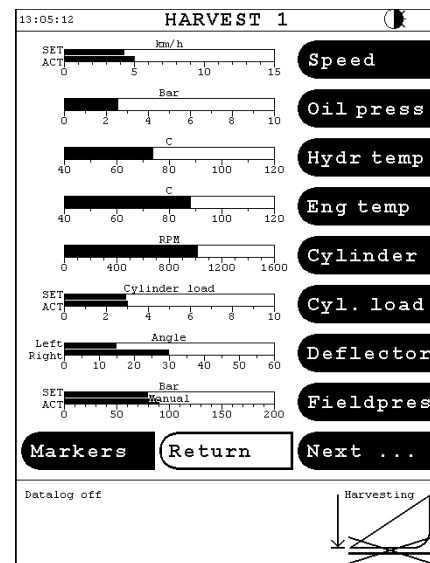


Fig. 129

4. Operation, DATAVISION

4.19 Auto Level Table

The Auto Level table system controls and adjusts the position of the table in relation to machine movements and ground contours.

The position of the table relative to the ground is monitored by the sensors (1) under the table. The impulses from the sensors are processed in DATAVISION which calculates the difference between the right-hand and left-hand set of sensors. When the difference exceeds the preset value, the double-acting hydraulic ram in which the table is suspended, is activated.

Note: Before the table is attached for the first time the double-acting hydraulic ram (main crop elevator) must be moved completely into both extreme positions to ensure that the system is completely bled.

Bleeding

Start the diesel engine, move the main crop elevator completely to the right and then completely to the left using the switch (2), (Fig. 131).

Then move the main crop elevator back until the adapter (3) is level.

Normally, this should be done only once, when the machine is new, or if the hydraulic system has been disassembled for repair, to ensure that the system is completely bled.

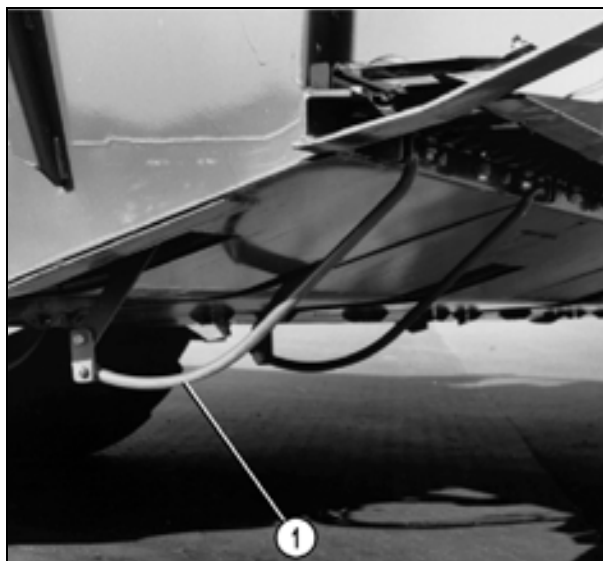


Fig. 130



Fig. 131



Fig. 132

4. Operation, DATAVISION

Coding of Auto Level Table

When the table is attached to the machine for the first time, the top and bottom positions of the ground sensors must be entered into DATAVISION.

Place the machine on level ground and lower the table completely. Make sure that the table is completely lowered on both sides. If the table does not rest on the ground on both sides, adjust it using the button for manual control of Auto Level table. Call up "Table height calibration" from the menu "Coding | Table calibration". Lower the table and press "Calibrate".

Then raise the table completely and press "Calibrate".

In case calibration is not accepted by DATAVISION, check sensors and mechanical connections.

Note: When the table is calibrated the automatic function for Auto Level table must be disengaged from the menu "Settings" | Table settings". This is to prevent that any insufficient or wrong calibration causes the automatic function to turn the table during calibration.

Calibration of Table Angle

Call up the menu "Coding | Table calibration | Table angle calibration", (Fig. 134). Raise the table, lower it to the right and left, respectively, with the manual switch in the control panel, and press "Calibrate" when the table is in its extreme positions.

Normally this zeroing is necessary only the first time the table is attached, or after repair of the system.

Finally, the table can be calibrated in horizontal position. This is done by moving the table into horizontal position and pressing "Calibrate" in the menu "Coding | Table calibration | Table horizontal calibration", (Fig. 135).

This calibration should be carried out only if the adjustment into horizontal is inaccurate in relation to the main crop elevator.

If the cutting height is not equal on the right- and left-hand sides during work on a level field, it is necessary to repeat the calibration of the ground sensors according to section 'Coding of Auto Level Table' on page 142.

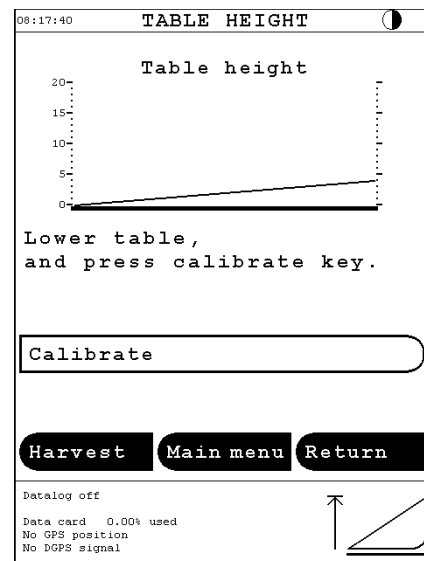


Fig. 133

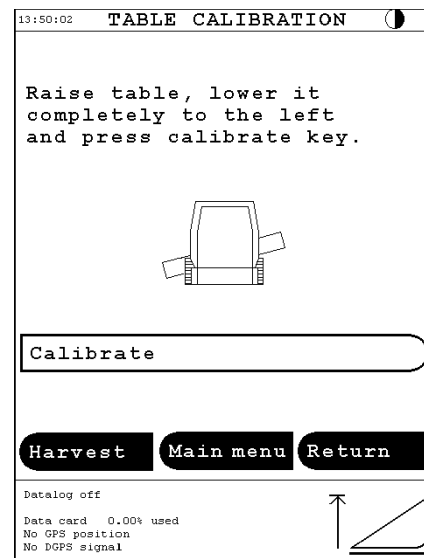


Fig. 134

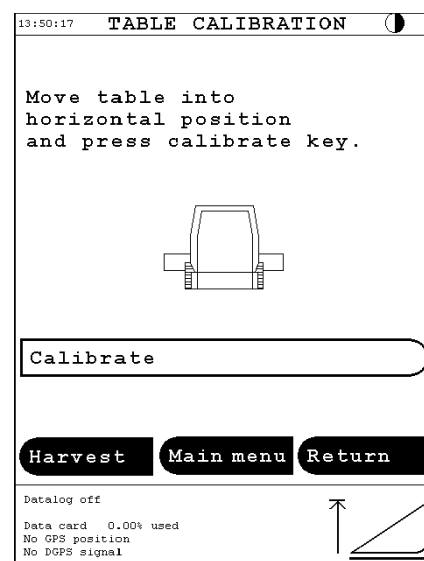


Fig. 135

4. Operation, DATAVISION

4.20 Operation of Auto Level Table

Auto Level table is engaged and disengaged from the menu "Settings | Table settings", (Fig. 136) and (Fig. 137), and is functioning independently of the other table control functions.

Manual Control

Under very difficult harvesting conditions Auto Level table can be manually controlled with the switch (1), (Fig. 138).

If Auto Level table is disengaged, it can be controlled manually. Manual control is possible when the automatic function is engaged. The automatic function will take over control as soon as the switch is released.

Levelling at Turns

When the table is raised at headland turns, the sensor on the crop elevator ensures that the table is levelled into a position parallel with the crop elevator, if tipped to one side by the Auto Level system.

The levelling takes place a few seconds after the ground sensors are clear of the ground.

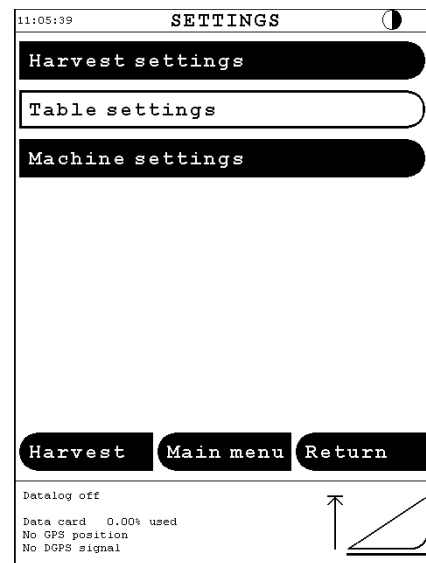


Fig. 136

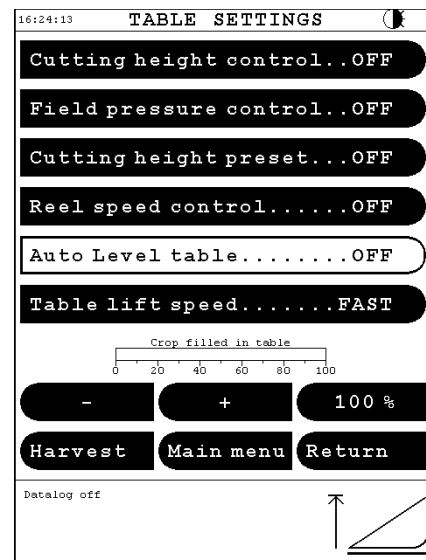


Fig. 137



Fig. 138

4. Operation, DATAVISION

4.21 Interaction Between Table Controls

The table controls consist of:

- **Preset cutting height:** Preset cutting height is used for fast lowering of the table based on the position of the main crop elevator. The function is useful when entering the uncut crop, the table having been raised manually.
- **Field pressure control:** Field pressure control ensures that the table is floating on the ground at a constant pressure. The function also protects the table against damage.
- **Cutting height control:** Cutting height control ensures that the table maintains a specific height irrespective of ground irregularities. The function is based on the measurements of the ground sensors under the table bottom.
- **Auto Level table:** Auto Level table ensures that the table maintains a position parallel with the ground surface irrespective of ground undulations. The function is based on the measurements of the ground sensors under the table bottom.

Preset cutting height, field pressure control and cutting height control all activate the hydraulics for raising and lowering the table. The functions are interdependent as described below. Auto Level table activates the double-acting hydraulic ram which levels the table. Auto Level table is operating independent of the three other functions.

The interaction between the table controls, preset cutting height, field pressure control and cutting height control is illustrated below, **"x" indicating that the function is engaged and "-" indicating that the function is disengaged.**

Function, when the automatic button is pressed at different combinations.			
A	B	C	A: Preset cutting height B: Field pressure control C: Cutting height control
-	-	-	No function, the table must be operated manually.
x	-	-	The table is lowered fast to the height preset from the menu "Preset cutting height". No further automatic function follows, the table must be operated manually.
-	x	-	The table must be lowered manually to a height below 50 cm. A touch of the automatic button will lower the table very slowly to the ground, after which the desired pressure in the lifting rams will be maintained.
x	x	-	The table is lowered fast to the height preset from the menu "Preset cutting height". Then, field pressure control is activated and the desired pressure in the lifting rams will be maintained.
-	-	x	The table must be lowered manually to a height below 50 cm. At a touch of the automatic button the table will resume the height preset from the menu "Cutting height control", after which this height will be maintained by the control function.
x	-	x	The table is lowered fast to the height preset from the menu "Preset cutting height". Cutting height control will be activated, move the table to the height preset from the menu "Cutting height control" and maintain this height.
-	x	x	The table must be lowered manually to a height below 50 cm. At a touch of the automatic button the table will resume the height preset from the menu "Cutting height control", after which this height will be maintained. If the table meets an obstacle which is not registered by the ground sensors, the field pressure control will serve as a safety function raising the table slightly.
x	x	x	The table is lowered fast to the height preset from the menu "Preset cutting height". Cutting height control will be activated, move the table to the height preset from the menu "Cutting height control" and maintain this height. If the table meets an obstacle which is not registered by the ground sensors, the field pressure control will serve as a safety function raising the table slightly.

It is advisable always to engage the available automatic table height functions. When harvesting herbage seed or laid crop, you just set the cutting height control at a height of 0-2 cm.

If the table is operated manually using the buttons in the multi-function lever, the control functions are temporarily inactivated until the automatic button is pressed. The field pressure control will, however, still protect the table against damage.

4. Operation, DATAVISION

4.22 Checking and Adjusting the Ground Sensors

PowerFlow Table 18' - 25'
(Fig. 140)

Raise the table sufficiently for the ground sensors (1) to get clear of the ground. Check that all ground sensors are right down in bottom position.

Call up "Main menu | Diagnostics | Control | Cutting height control" (Fig. 139) and check that the right- and left-hand sensors show approx. 2 V.

General
(Fig. 140) and (Fig. 141)

If the indication is not correct check all mechanical connections between ground sensor (1) and potentiometer (2) for damage.

Check that the connecting rod (3) is adjusted at a length of 168 mm.

Having checked that all mechanical connections are in order, loosen the potentiometer (2) and turn it to the right/left until the indication on the screen is approx. 2 V. (Fig. 139).

An Ohmmeter used at the adjustment must show 500 +/- 50 Ohm.

Tighten the potentiometer (2) in this position and carry out a new zeroing of the table height from the menu "Main menu | Coding | Table calibration | Table height calibration".

To ensure correct function of Auto Level table and cutting height control, the ground sensors (1) must be free to move up and down. If one set of sensors is jammed due to dirt or damage, the table will be unable to follow the ground contours.

If a set of sensors is damaged or jammed, the Auto Level system may try continuously to change the position of the table. This may cause overheating of the hydraulic system.

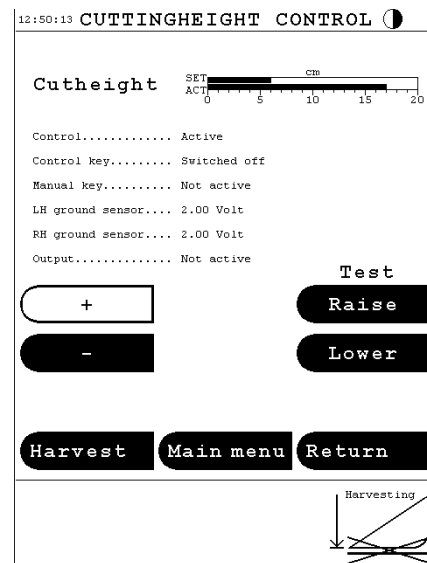


Fig. 139

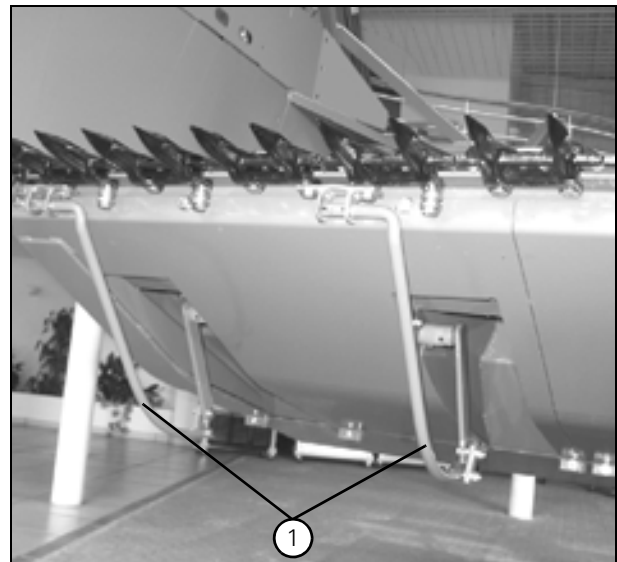


Fig. 140

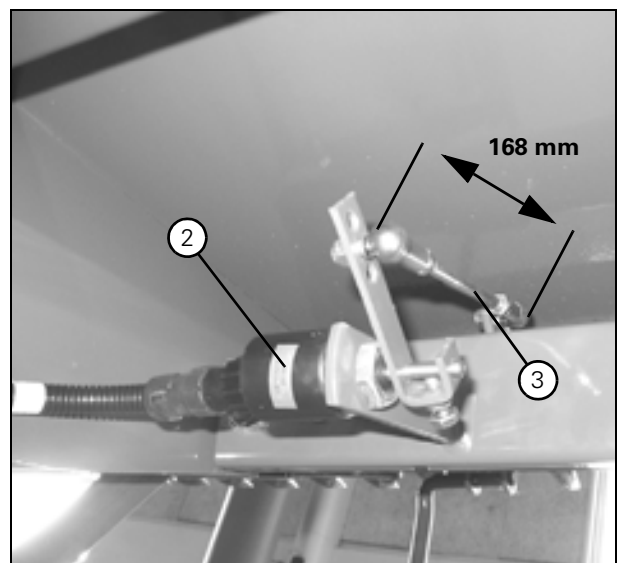


Fig. 141

4. Operation, DATAVISION

4.23 Constant Flow

The Constant Flow function ensures optimum utilisation of combine capacity. This takes place by automatically varying the forward speed and in this way keeping the machine evenly loaded. Constant Flow adjusts forward speed according to cylinder load, up to a maximum speed corresponding to the current position of the multi-function lever. Having found the optimum setting of the combine and inserted cylinder load in the Harvest menu, the operator can read the current cylinder load from the screen.

Note: Constant Flow uses the belt slip in the cylinder transmission for calculating and reading the cylinder load. Therefore, a new zeroing of the cylinder load is required if repairs have been carried out or the belts have been tightened.

Zero Cylinder Load

The function "Cylinder load" must be zeroed to ensure accurate reading. Call up "Coding | Constant Flow | Zero cylinder load" and press the key "Zero" (Fig. 143).

Note: To zero cylinder load the machine must be stationary, threshing unit being engaged. The engine must run at full speed and the threshing cylinder speed must be min. 1000 rpm.

Normally, zeroing should take place only once, when the machine is new or if variator belts or belt pulleys have been tightened/replaced.

Start-up and Adjustment of Constant Flow

Constant Flow is designed for standing, uniform grain crops, which means that optimum function is achieved in such crops. Before using Constant Flow it is necessary to ensure that the electronic functions controlling Constant Flow are accurately adjusted and that the machine is in 2nd gear.

Examine the condition of the straw before adjusting Constant Flow. Soft, green straw puts up stronger resistance in the cylinder than dry and stiff straw. The condition of the straw of certain grain crops may vary considerably from one variety to the other. Therefore, sensitivity and response must always be adjusted to the specific crop to achieve optimum utilisation of the Constant Flow system. "Cylinder load", "Sensitivity" and "Constant Flow response" must be preset before you start threshing. Call up the menu "Settings | Machine settings | Constant Flow" and set "Cylinder load - SET" at 4-4.5, "Sensitivity" at 12 and "Constant Flow response" at 5, using the "+/-" keys.

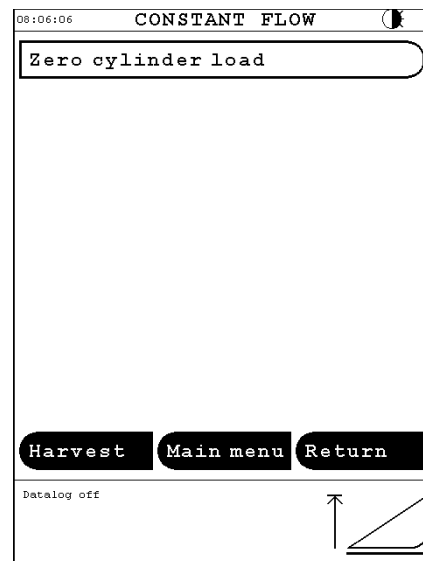


Fig. 142

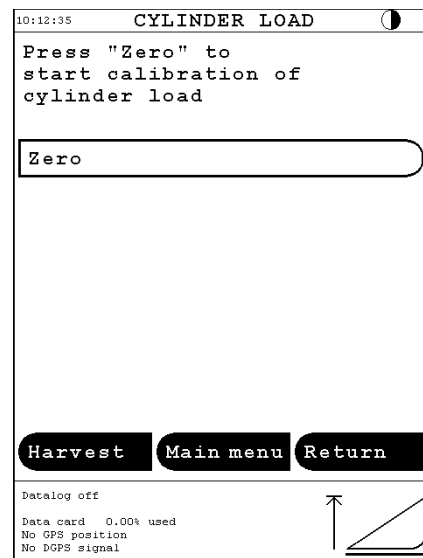


Fig. 143

4. Operation, DATAVISION

Adjustment of sensitivity (Fig. 144)

Start threshing the crop while Constant Flow is disengaged and continue working until you have achieved optimum load and adjustment of the machine. Change to the menu "Machine settings | Constant Flow" while the machine is cutting and read the bar for "ACT" load. If the "ACT" load bar is below 4, the sensitivity must be increased until the bar reads 4-4.5 at normal load. Constant Flow is designed for standing, uniform grain crops, which means that optimum function is achieved in such crops. At normal load the sensitivity bar should read a value between 8 and 15. If the value is below 8, a new zeroing of the "Cylinder load" should be carried out.

Note: When the sensitivity is adjusted up/down the bars for "SET" and "ACT" loads are adjusted accordingly. Adjust the "SET" bar at the previously set value of 4-4.5 after an adjustment of the sensitivity. The sensitivity does not affect the speed control, only the reading of the set "SET" and current "ACT" loads. Higher sensitivity gives increased indication on the bar.

Adjustment of response (Fig. 145)

The response (reaction time) is adjusted from the menu "Constant Flow" using the "+/-" keys.

Adjust "response" using the "+/-" keys so that Constant Flow varies the forward speed steadily up/down according to crop variations. If you choose a short response (high reading), the system will react too quickly to small variations in the crop causing very unsteady machine operation. A longer response (low reading) will cause the system to react only to wider spread crop variations. Under normal conditions the response bar should read between 5 and 10.

Note: The above settings of sensitivity and response are guidelines for a normal ripe crop. The condition of the straw and impurities in the crop may cause large deviations from the specified values. If for instance the straw is green with a high water content, the sensitivity usually must be adjusted quite a lot.

Adjustment of cylinder load

Having adjusted the machine and reached the optimum speed for the current crop, set the top bar "SET" at the same load as the bottom bar "ACT" which is the optimum cylinder load in the specific crop.

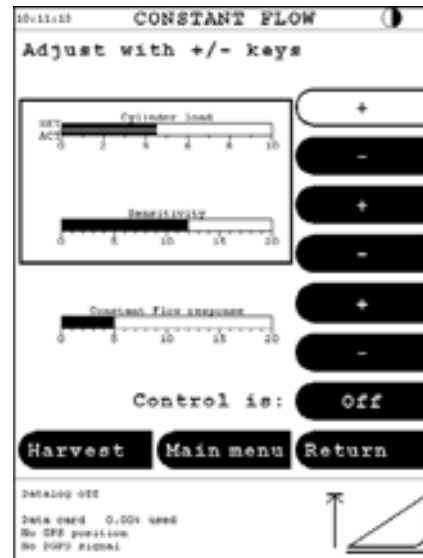


Fig. 144

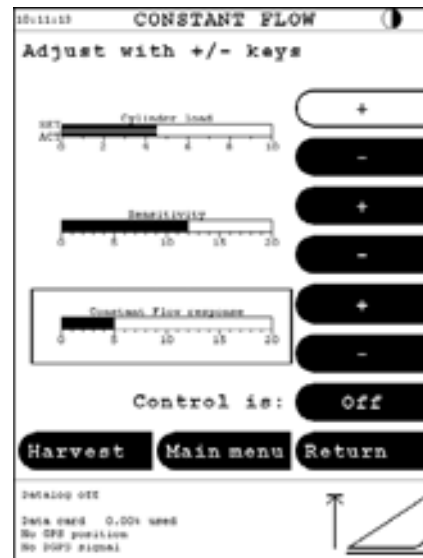


Fig. 145

4. Operation, DATAVISION

Constant Flow Engagement

Now Constant Flow can be engaged to automatically adjust the forward speed in relation to the cylinder load. This is done by pressing the "On/Off" key from the menu "Machine settings | Constant Flow".

When Constant Flow is "On" the speed bar in the Harvest menu will be shown as a double bar. The top value is the desired speed calculated by Constant Flow on the basis of the given conditions. The bottom value is the current speed, please see (Fig. 147).

Having engaged Constant Flow push the multi-function lever slightly forward to allow the system to increase speed if the crop volume/load is reduced. Push the lever so far forward that Constant Flow is able to increase the speed by approx. 2 km/h. If harvest conditions permit a higher speed, the lever may be pushed further forward.

Then the automatic function will control the forward speed keeping the bars for "SET" and "ACT" loads equal, please see (Fig. 147).

The control range of Constant Flow is approx. 4 km/h. This is indicated by an "x" and an "X" on the speed bar. For instance, there may be an "x" at 3 km/h and an "X" at 7 km/h, the small "x" indicating the minimum speed for Constant Flow control, whereas the large "X" indicates the maximum speed for Constant Flow which will always follow the position of the multi-function lever.

By pushing the multi-function lever forward it is possible to "force" the machine to run faster than the speed calculated by Constant Flow. This is useful, for instance when the grain tank is unloaded on the move and the grain wagon is travelling a little too fast. Besides, it is always possible to reduce the speed by pulling the multi-function lever towards neutral.

When Constant Flow is engaged, the text "LIMIT" will appear on the screen if the maximum speed permitted by the position of the multi-function lever is reached, please see (Fig. 148).

The position of the multi-function lever will always set the upper limit to how much Constant Flow can increase the speed to keep the preset cylinder load. The operator is always able to intervene and reduce forward speed using the multi-function lever without disengaging Constant Flow.

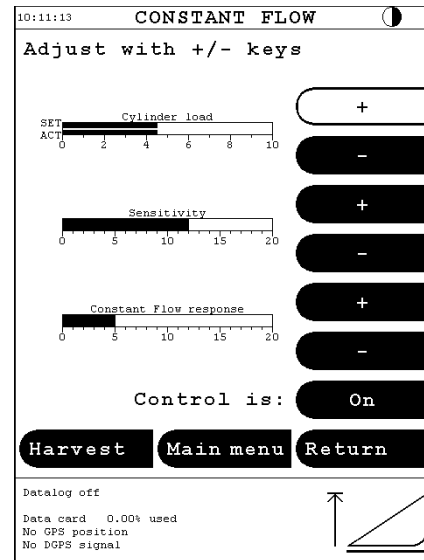


Fig. 146

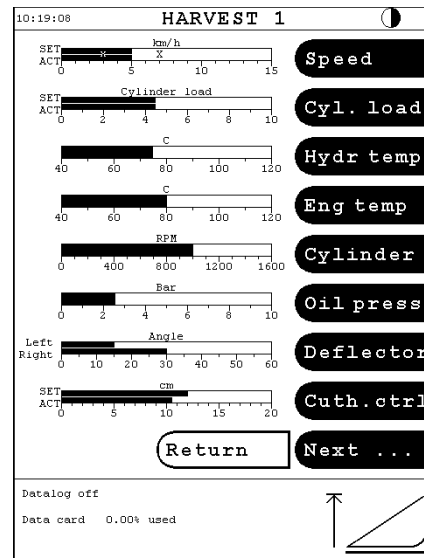


Fig. 147

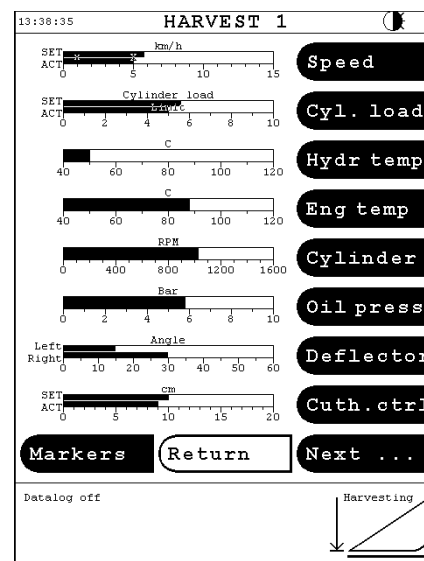


Fig. 148

4. Operation, DATAVISION

At turns and other stops, e.g. tank unloading or stops in the table, forward speed can be controlled with the multi-function lever as usual without disengaging Constant Flow. When entering the cut again, "hold" the machine with the multi-function lever until the crop volume in the machine is large enough for Constant Flow to take over control, which is when the "ACT" bar is on a level with the "SET" bar.

Then push the lever forward until Constant Flow takes over control of the load and the text "LIMIT" disappears from the screen.

As long as the load is lower than the preset value, the text "LIMIT" will be present on the screen indicating that the current position of the multi-function lever is determining the speed/load of the machine. In that case Constant Flow cannot increase the forward speed any further.

Note: *If, due to harvest conditions, the crop volume varies so much that Constant Flow is unable to control forward speed, it may be necessary to help the system without disengaging it. This is done by pulling the multi-function lever so far backward that the load gets below the preset value. If the load is lower than the preset value, the operator is the one determining the speed/load of the machine and the text "LIMIT" will appear on the screen.*

When Constant Flow is disengaged, the bar for cylinder load being available in the Harvest menu, the text "Manual" can be read on the screen indicating that Constant Flow is not engaged.

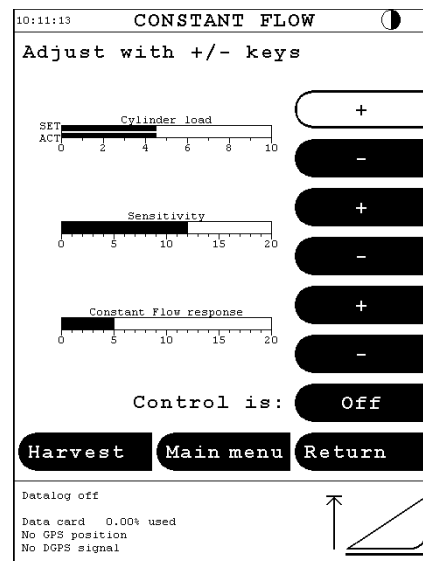


Fig. 149

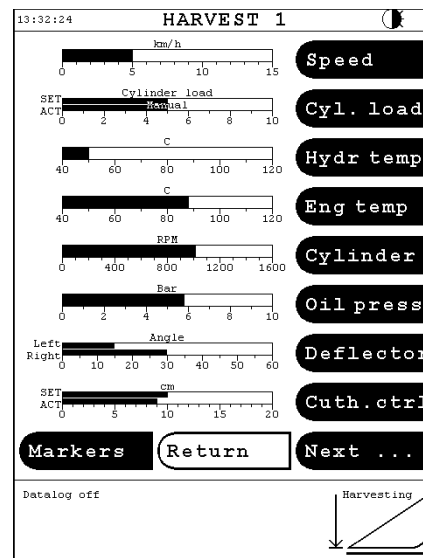


Fig. 150

4. Operation, DATAVISION

5. Operation, Auto Level Combine

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5. Operation, Auto Level Combine

5. Operation, Auto Level Combine

5.1 Safety Precautions



WARNING: Beware of overhead lines, etc. if the machine is raised during transport to clear an obstacle.



WARNING: Beware of overhead lines, etc. when the machine is raised into harvesting position (height 4.1 m) or raised completely (height 4.3 m)



WARNING: If a hose breaks during work on side slopes disengage the Auto Level system immediately. Having disengaged Auto Level park the machine on level ground and do not operate it again until the fault has been corrected.

5. Operation, Auto Level Combine

The position of the Auto Level combine is controlled by DATAVISION by means of two double-acting hydraulic rams.

Fitted as standard to the Auto Level combine is Auto Level table, cutting height control, field pressure control, reel speed control and cylinder load indication. Coding and adjustment of the table functions are not included in this chapter but described under DATAVISION, section 4. 'Operation, DATAVISION' on page 65.

With the Auto Level system the whole combine body is levelled and at the same time the table remains parallel with the ground, when working on side slopes with inclinations of up to approx. 12%.

Safety System

The machine has been tested whilst working on side slopes of approx. 30%. If, due to ground conditions or for other reasons, the inclination of the machine exceeds 26% a tilt sensor is activated. DATAVISION gives alarm and provides information to the driver of what to do to bring the machine into a safe position. With Auto Level fully utilised such situations will arise only on slopes of approx. 38%.

5. Operation, Auto Level Combine

5.2 Combinations

Auto Level combine and table can be controlled automatically by DATAVISION or manually, depending on the combination selected in the menus "Table settings" and "Machine settings" on the terminal.

- 1. Auto Level combine: Engaged
Auto Level table: Engaged**
Machine and table levelling automatically, independently of each other, in relation to the ground.
- 2. Auto Level combine: Engaged
Auto Level table: Disengaged**
Machine levelling automatically, table levelling automatically to a position parallel with the traction wheels.
- 3. Auto Level combine: Disengaged
Auto Level table: Engaged**
The machine can be levelled manually while the table automatically remains parallel with the ground.
- 4. Auto Level combine: Disengaged
Auto Level table: Disengaged**
Machine and table can be levelled manually.

Note: *Cutting height presetting, cutting height control and field pressure control can be used irrespective of the combination employed.*

With these combination possibilities machine and table can cope with any harvesting and ground conditions.

Selecting Combination

The functions "Table settings" and "Machine settings" can be called up from the menu "Settings".

These functions can be called up directly on the terminal or by using the shortcut switches in the control panel. Thereafter, the combinations can be selected either by a touch directly on the terminal or by using the remote control buttons in the multi-function lever.

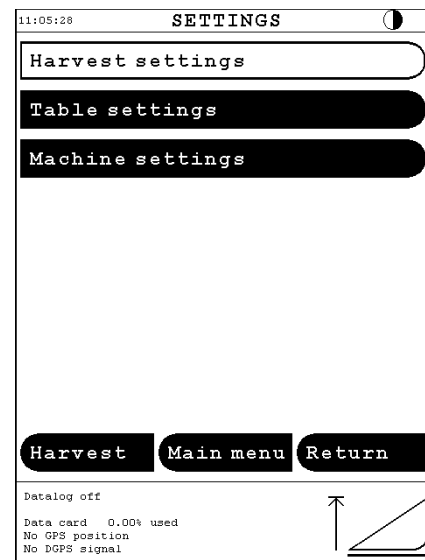


Fig. 1

5. Operation, Auto Level Combine

5.3 Auto Level Combine

When Auto Level combine is engaged on the terminal, text and colour of the menu key change, indicating that engagement has been registered.

At a forward speed of more than 1 km/h, the machine is automatically raised into harvesting position.

Note: Automatic raising of the machine into harvesting position takes place only when forward speed is over 1 km/h.



WARNING: Beware of overhead lines, etc. when the machine is raised into harvesting position (height 4.1 m) or raised completely (height 4.3 m)

If text and colour of the menu key do not change when Auto Level is engaged, the system cannot be used until a calibration has been carried out.

Manual Control of Auto Level Combine

Auto Level combine can be controlled manually using the keys in the menu "Auto Level Combine" which is called up from "Settings | Machine settings". The machine is raised and lowered with the keys "Up" and "Down", respectively, and angled sideways with the keys "Right" and "Left". The machine is lowered into transport position using the key "Lower combine". The control is automatically disengaged when the manual keys are activated, which means that "On"/"Off" must be pressed to reactivate the control.

When the ignition key is turned into position "STOP" the Auto Level system is automatically disengaged in DATA-VISION. To activate the Auto Level system, engagement must be repeated with the "On"/"Off" key in the "Auto Level combine" menu each time the engine is started.

Note: When threshing, the machine must always be in harvesting position irrespective of the Auto Level functions being engaged or disengaged.

If the machine is not raised into harvesting position, the table will not be at the correct angle with the ground.

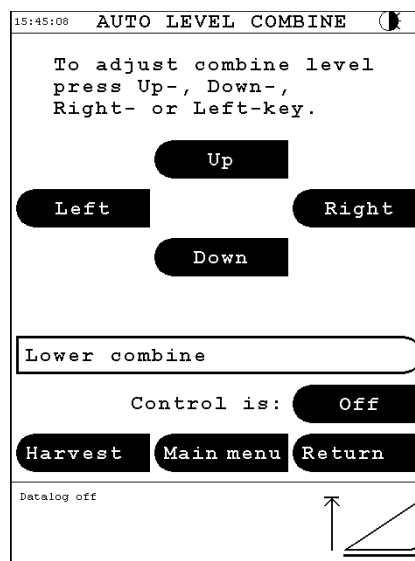


Fig. 2

5. Operation, Auto Level Combine

5.4 Auto Level Combine/Table

Combine

(Fig. 3)

The position of the combine is changed by turning the final drives (1) by means of two double-acting hydraulic rams (2).

In working position the rams are halfway between their two extreme positions and the machine height is 4.1 m.

In transport the machine must be lowered into bottom position in which the machine height is 4 m.

Raised into top position the machine reaches a height of 4.3 m.

Both rams are fitted with valves which block up the rams in case of a breach on a hose or the like.

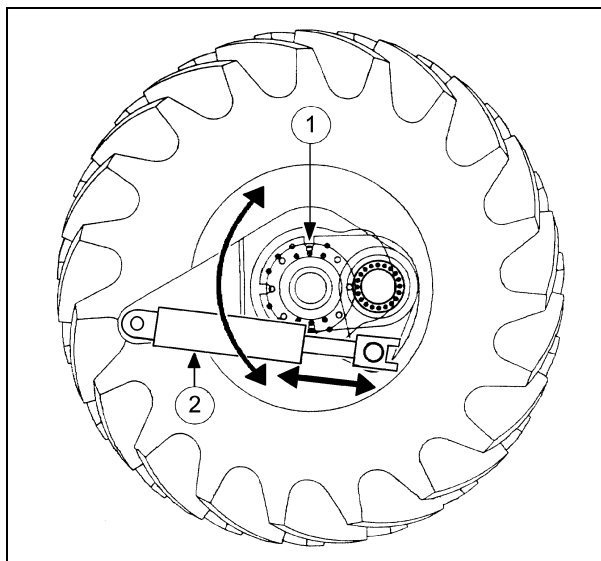


Fig. 3

Transport,

(Fig. 4)

Prior to transport on roads, Auto Level must be disengaged and the machine completely lowered. The machine is lowered into transport position using the "Lower combine" key from the "Auto Level Combine" menu which is called up from "Settings | Machine settings | Auto Level control".

If the machine is transported in a position higher than transport position, DATAVISION will give an alarm. When the forward speed exceeds 15 km/h the alarm "Transport error" will appear. The alarm can be confirmed by pressing "Cancel" in which case Auto Level remains active, or by pressing the key "Lower" which will lower the machine into transport position and disengage Auto Level.



WARNING: Beware of overhead lines, etc. if the machine is raised during transport to clear an obstacle.

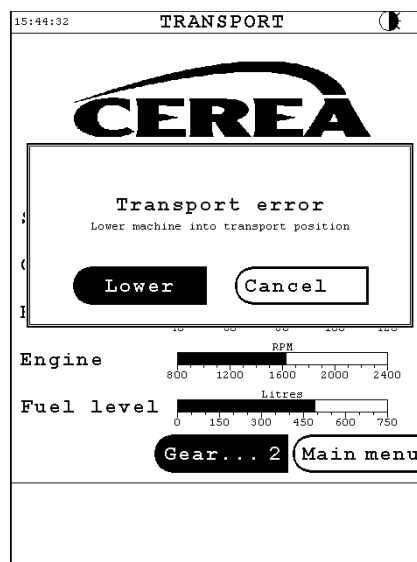


Fig. 4

5. Operation, Auto Level Combine

Auto Level table

The position of the table is changed by turning the adapter (1) on the crop elevator by means of a double-acting hydraulic ram.

The pivot can be turned manually with the switch for manual control of Auto Level table in the control panel.



Fig. 5

5. Operation, Auto Level Combine

5.5 Calibration of Auto Level Combine

A calibration is required before the DATAVISION Auto Level system can be put into operation, and also after replacement of sensors or DATAVISION job computers. For calibration run the combine onto level ground. It is essential that the ground is as level as possible. This can be checked while the machine is in transport position, on the level tube fitted to the right of the operator seat. If the level tube is in mid position, the combine is level.

Before calibration is started, the correct wheel track (see chart) and combine type must be entered into DATAVISION, (Fig. 7).

To calibrate call up "Coding | Auto Level combine". Start calibration by pressing the "Calibrate" key and holding it until calibration is completed (Fig. 8).

While the key is pressed DATAVISION shows on the screen what is going on.

Calibration progress:

- Lowering combine into bottom position.
- Raising combine into top position
- Lowering combine into working position
- Tilting combine to the left and table to the right
- Tilting combine to the right and table to the left
- Levelling combine into mid position
- Lowering combine into bottom position.
- Levelling table.

Then "Calibration routine is ended! Please release key!" appears on the DATAVISION screen.

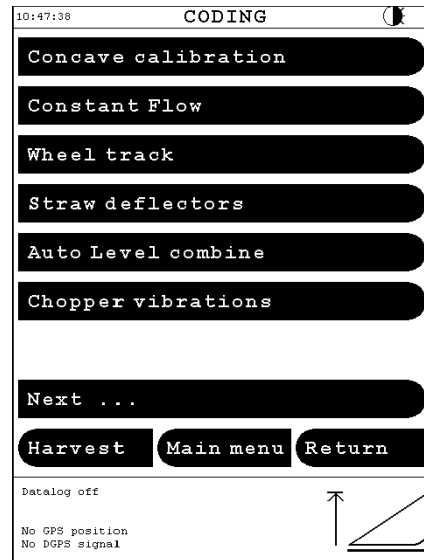


Fig. 6

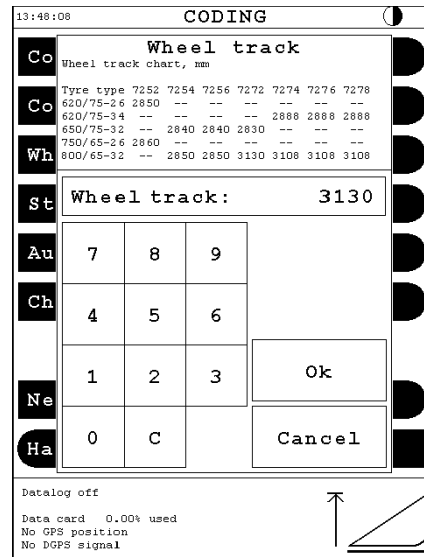


Fig. 7

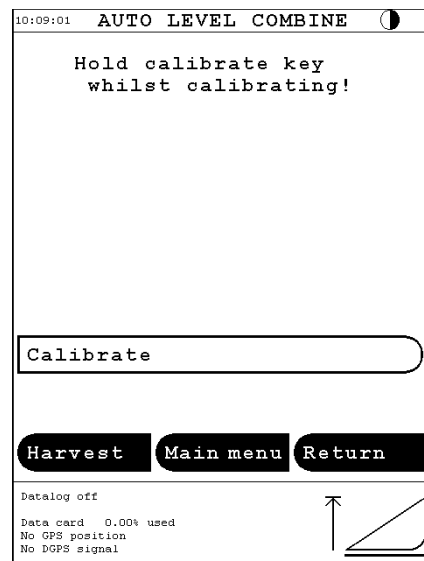


Fig. 8

5. Operation, Auto Level Combine

Errors during Calibration

If the key is released too early or if DATAVISION registers an error, calibration will not be completed and must be repeated. DATAVISION will alert the operator by the alarm "Calibration error".

If Auto Level combine is calibrated on non-level ground, the electronics will understand this as if calibration had been carried out on level ground. The calibration will then involve a certain inaccuracy to the right or left. In case such an error is observed, a new calibration must be carried out.

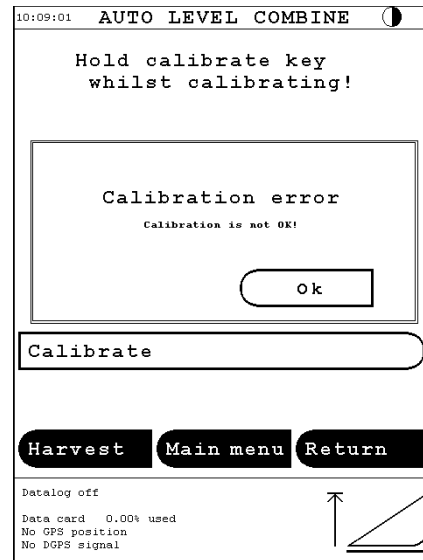


Fig. 9

5.6 Coding of Auto Level Table

When the table is attached to the machine for the first time, the top and bottom positions of the ground sensors must be entered into DATAVISION.

Place the machine on level ground and lower the table completely. Make sure that the table is completely lowered on both sides. If the table does not rest on the ground on both sides, adjust it using the switch for manual control of Auto Level table. Call up "Table height calibration" from the menu "Coding | Table calibration". Lower the table and press "Calibrate".

Then raise the table completely and press "Calibrate".

In case calibration is not accepted by DATAVISION, check sensors and mechanical connections.

Zero Cutting Height

For adjustment of cutting height presetting Auto Level combine must be brought into working position before zeroing is carried out. The machine is put into working position by driving forward while the Auto Level system is engaged.

If the cutting height presetting is adjusted when "Auto Level combine" is in transport position the main crop elevator will change position in relation to the ground when working position is reached which means that the table will be positioned higher than intended.

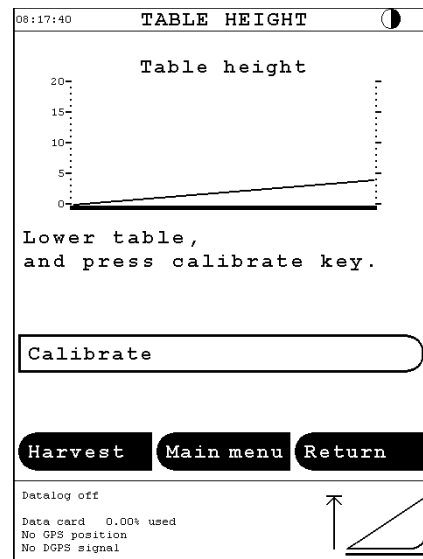


Fig. 10

5. Operation, Auto Level Combine

5.7 Attachment/Removal of Table

(Fig. 11) and (Fig. 12)

The machine must be raised into harvesting position before the table can be attached.

The machine automatically rises into harvesting position when Auto Level is engaged in the menu "Auto Level combine" under "Settings | Machine settings | Auto Level control", and when forward speed is over 1 km/h.

If Auto Level combine is engaged after the table trailer has been detached, the machine rises into harvesting position while it is turned round for attachment of table.

If the table is attached while Auto Level is engaged, the adapter (1) on the crop elevator will be positioned parallel with the traction wheels.

If the adapter is not parallel with the table, disengage Auto Level in the menu "Auto Level combine" and adjust the adaptor into the position of the table with the switch (2).

Engagement of table, mechanically, electrically and hydraulically, please see section 7. 'Cutting Tables' on page 181.

Note: When the ignition key is turned into position "STOP" the Auto Level combine system is disengaged. Auto Level table will remain engaged when the engine is started if the function is activated in the menu "Settings | Table settings". To activate Auto Level combine repeat engagement in the menu "Auto Level combine" when the engine is started.



WARNING: Beware of overhead lines, etc. if the machine is raised during transport to clear an obstacle.

Note: After attachment of table the machine must remain in harvesting position irrespective of the Auto Level combination employed. The machine not being in harvesting position, which is mid position, but completely raised/lowered, will cause functional problems.



Fig. 11



Fig. 12

5. Operation, Auto Level Combine

5.8 Operation of Auto Level Combine/Auto Level Table

With the Auto Level combine and Auto Level table systems the machine can cope with all ground and harvesting conditions.

Combinations

Auto Level combine engaged and Auto Level table engaged

This combination is used on side slopes where the table should remain parallel with the ground, not with the traction wheels.

When lowered into harvesting position the table will follow the ground dependent on the function activated in the menu "Settings | Table settings", i.e. "Cutting height control" or "Field pressure control".

When Auto Level combine is engaged, the position of the machine relative to horizontal is monitored by a sensor built into the DATAVISION system.

The position of the table when lowered into harvesting position is monitored by the sensors under the table.

When raised at turns the table automatically remains parallel with the traction wheels.

Note: At a cutting height of more than approx. 25 cm (ground sensors (1) clear of the ground), the control of the table is taken over by the sensor on the crop elevator (Fig. 15), until the cutting height is again less than 25 cm.

The table is positioned as at turns, parallel with the traction wheels.

At turns the position of machine and table is automatically adjusted to the inclination of the ground. If turned very fast, the machine may not have time enough to adjust to the new inclination, but when lowered the table will be positioned parallel with the ground.

Note: The ground sensors (1) must be free to move up and down. If a sensor is jammed, the table will be unable to follow the ground contours and will tilt to one side when raised at turns.

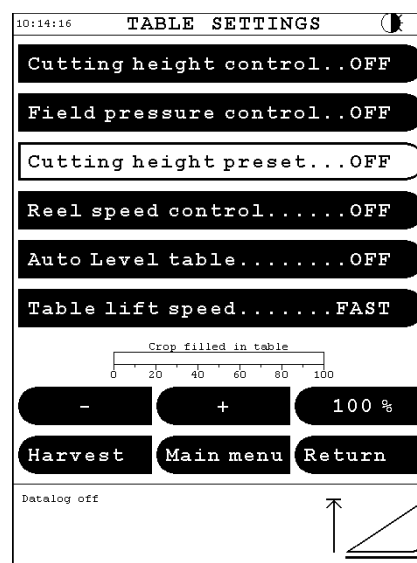


Fig. 13

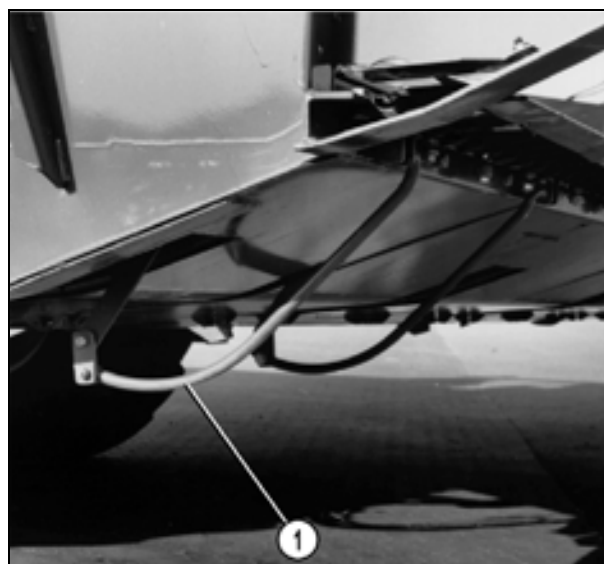


Fig. 14

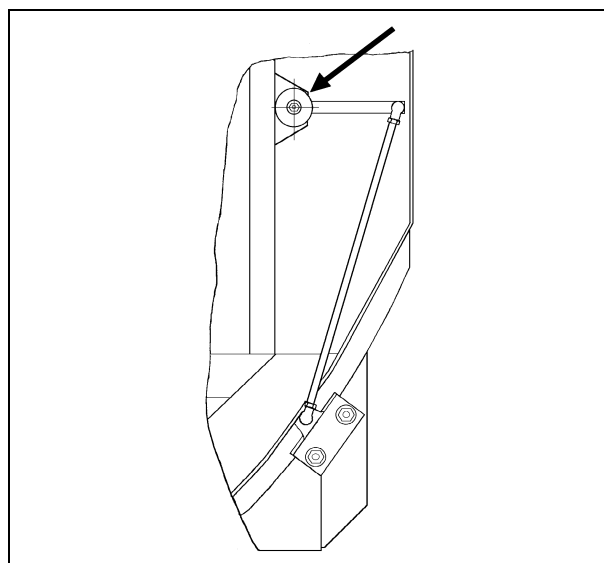


Fig. 15

5. Operation, Auto Level Combine

Auto Level combine engaged and Auto Level table disengaged

This combination is applied when the combine is working with a cutting height of more than 20 cm, for instance when direct cutting rape, sunflowers, etc.

The same combination is applied when the machine is fitted with a special header without ground sensors, for instance maize or sunflower headers.

The position of the machine when threshing is controlled by the sensor in the DATAVISION system.

The position of the table parallel with the traction wheels is monitored and adjusted by DATAVISION by means of the sensor on the crop elevator.

Auto Level combine disengaged and Auto Level table engaged

This combination is used where the ground does not require engagement of Auto Level combine. The table will follow the ground dependent on the function activated in the menu "Table settings".

Auto Level combine disengaged and Auto Level table disengaged

With this combination Auto Level combine and Auto Level table can be levelled manually through DATAVISION.

Note: The machine must be raised into harvesting position before entering the uncut crop irrespective of the combination chosen.

Note: Auto Level combine must be disengaged during unloading on the move. If not, the unloading auger may get damaged if the Auto Level system tilts the machine to the left (see [\(Fig. 17\)](#)).

Priority of Hydraulic Functions

The electric/hydraulic functions are given priorities to permit the Auto Level functions, unloading auger out/in and reel fore/aft to be activated at the same time. The Auto Level functions cannot be activated as long as a function of higher priority is active.

At turns while Auto Level is active, "Table down" (1) and "Automatic table control" (2) can be activated with the buttons in the multi-function lever, [\(Fig. 18\)](#), at the same time as the machine changes position relative to the ground.

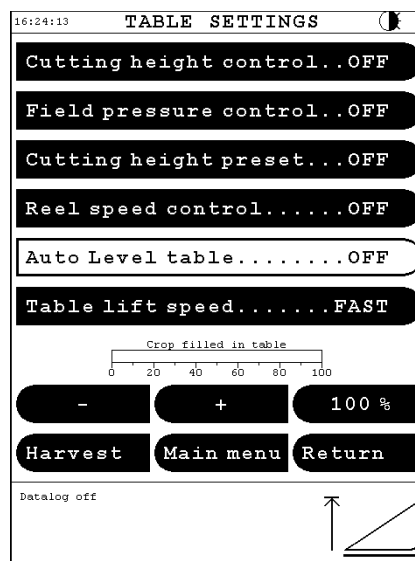


Fig. 16



Fig. 17



Fig. 18

5. Operation, Auto Level Combine

5.9 Safety System, Auto Level

Auto Level combine is fitted with a mechanical tilt sensor which is independent of DATAVISION. The tilt sensor cuts off the hydraulic functions for Auto Level and parallel functions if the inclination of the machine exceeds 26% and DATAVISION gives alarm.

An alarm appears on the terminal with information to the driver as to what to do.

If due to ground conditions, faulty operation, failures in Auto Level or electrical systems the tilt sensor is activated, then the hydraulic functions can be activated only when the switch (1) (Fig. 19) is activated at the same time.

The tilt sensor may be activated at turns on account of centrifugal force if the inclination of the machine gets close to 26%.

The DATAVISION alarm is cut off automatically when the inclination of the machine gets below 26%. At the same time the hydraulic functions will be reactivated.

Automatic Control of the Tilt Sensor Function

The tilt sensor is functioning independently of the electronic system and therefore provides additional security of the DATAVISION functions. DATAVISION continuously monitors the tilt sensor as to damage and function. In case the tilt sensor becomes defective the alarm shown in (Fig. 20) will appear, after which the tilt sensor must be replaced before harvesting on side slope is continued.



Fig. 19

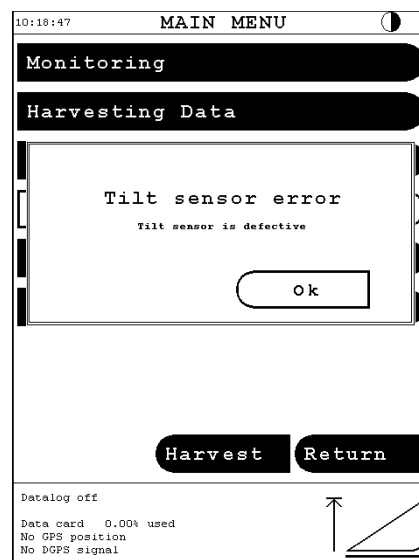


Fig. 20

Safety System

If the control of Auto Level combine is defective or for some other reason the machine is tilting more than 26.7% (15°), a tilt sensor is activated.

The tilt sensor switches off the Auto Level hydraulics and hydraulic functions of parallel or lower priority. The electronics provides the operator with an explanation on the DATAVISION screen, (Fig. 21).

Then the operator must deliberately switch off the tilt sensor function by holding down the "tilt sensor switch" to be able to activate the relevant hydraulic functions.

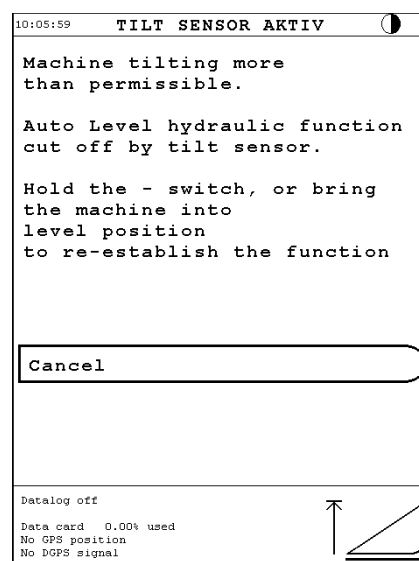


Fig. 21

5. Operation, Auto Level Combine

Hose Breach Protection for Auto Level Hydraulics

Both hydraulic rams for Auto Level combine are equipped with hose breach valves (1). In case of a breach on a hose, the valve fitted in the screwed connection of the ram will cut off the oil flow.



WARNING: *If a hose breaks during work on side slopes disengage the Auto Level system immediately. Having disengaged Auto Level park the machine on level ground and do not operate it again until the fault has been corrected.*

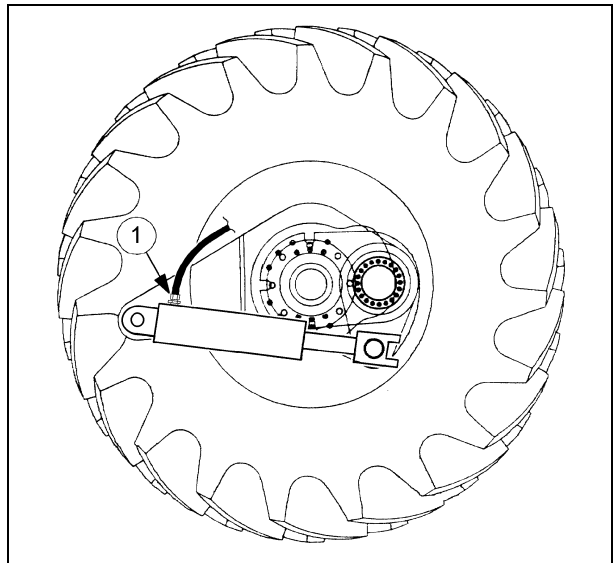


Fig. 22

5. Operation, Auto Level Combine

5.10 Troubleshooting

Malfunction of Auto Level combine or table may be caused by a calibration error or defective sensors, mechanical connections or job computers.

Carry through calibration whilst the machine is stationary on level ground, Auto Level combine and Auto Level table must be disengaged.

If during calibration the alarm "Calibration error" appears on the terminal, check sensor adjustments and mechanical connections.

Mechanical Connections

(Fig. 24)

Check that the sensors (1) for right-hand and left-hand wheels and table are properly tightened.

Check that the arm (2) is tightened to all sensors.

Check that the connecting rods (3) are properly tightened and straight.

Length at RH and LH traction wheels: 153 mm

Length at main crop elevator: 430 mm

Check that the supports (4) are properly tightened.

Checking Sensor Adjustment and Inclinometer

Place the machine on level ground and lower it completely with the key "Down" on the terminal.

Call up "Diagnostics | Control | Auto Level combine".

Check that the Inclinometer shows $2.5 \pm 0.2V$ and that the indication in the cab corresponds with that of the terminal.

Check that potentiometers mounted at the wheels on the right- and left-hand sides show $2.0 \pm 0.4V$ when the machine is completely lowered.

Check that the potentiometer mounted on the main crop elevator shows $2.7 \pm 0.2V$ when the table is parallel with the crop elevator.

Check that the volt values vary steadily up and down without sudden movements when the machine is raised/ lowered or when the table is tilted manually.

From the menu "Auto Level Combine" under "Diagnostics | Control" status of all inputs and outputs plus state of control and computed machine and table inclination can be read.

In addition, the inclination is graphically displayed, and Auto Level combine can be operated manually with the keys "Up", "Down", "Left", "Right".

When Auto Level combine is manually activated the control will be disengaged. The control can be engaged from the menu "Settings | Machine settings | Auto Level control | Auto Level combine".

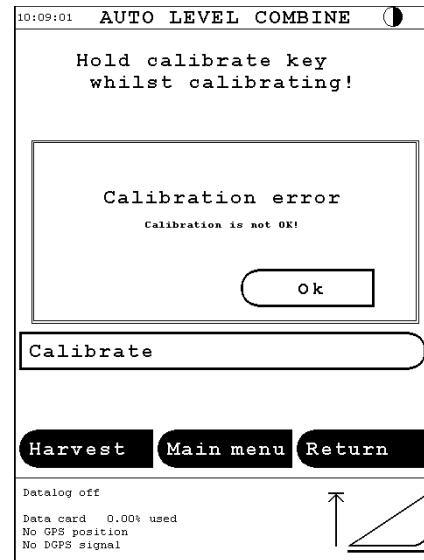


Fig. 23

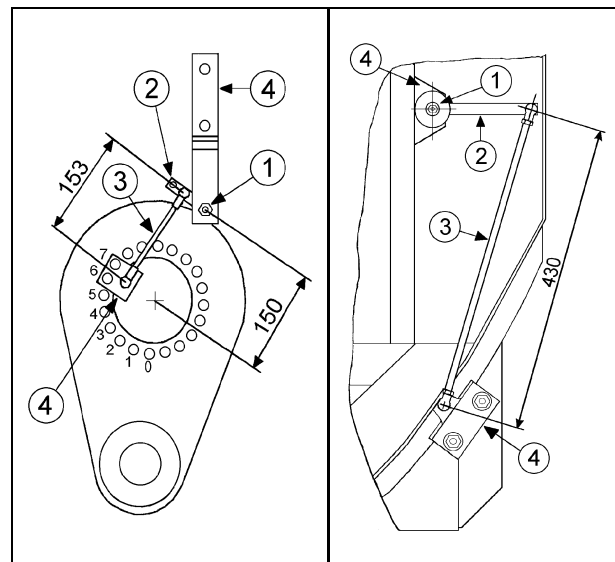


Fig. 24

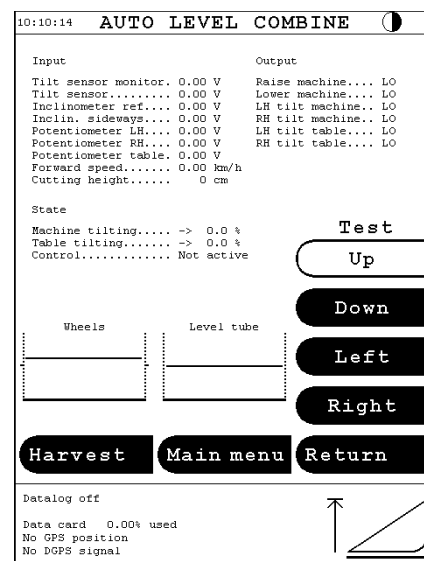


Fig. 25

5. Operation, Auto Level Combine

Machine Not Levelling Correctly	
<i>Machine Not Level</i>	<p>Possible cause:</p> <ol style="list-style-type: none"> 1. Auto Level not engaged. - Engage it. 2. Inclination more than 12% - See "Diagnostics Control Auto Level combine". Inclination 12% \pm0.4% - Auto Level engages automatically when the inclination gets below 12%. 3. Wrong signal from potentiometer or AL computer. Carry through calibration on level ground. Check inclinometer and RH/LH potentiometer adjustment (section 5.5 'Calibration of Auto Level Combine' on page 159). 4. Wrong signal from forward speed sensor. Shows less than 1 km/h, which means that Auto Level is not active.
<i>Table Not Parallel with Traction Wheels - Auto Level Table Not Engaged.</i>	<p>Possible cause:</p> <ol style="list-style-type: none"> 1. Track width or machine type wrongly entered. Check coding. 2. Wrong signal from potentiometer. Check potentiometer on main crop elevator. Carry through calibration of Auto Level combine and table on level ground (section 5.5 'Calibration of Auto Level Combine' on page 159).
<i>Table Not Parallel with the Ground - Auto Level Table Engaged.</i>	<p>Possible cause:</p> <ol style="list-style-type: none"> 1. Ground sensors unable to work freely. Check ground sensors. 2. Wrong adjustment/calibration of Auto Level table. Check adjustment of potentiometer under "Diagnostics Control Auto Level Table". Zero Auto Level table under "Coding Table calibration Zero cutting height" (section 5.6 'Coding of Auto Level Table' on page 160/ section 4.9 'Coding,' on page 109). 3. Potentiometer defective. Check adjustment of potentiometer under "Diagnostics Control Auto Level Table". Check that the bar on the screen is level when the table is raised/lowered. 4. Connecting rods defective - Check. 5. Wiring harness defective - Check.
<i>Table Following the Ground Very Irregularly - Auto Level Combine and Auto Level Table Engaged and Active</i>	<p>Possible cause:</p> <ol style="list-style-type: none"> 1. Wrong signal from ground sensors. 2. Fault in throttling to Auto Level combine. 3. Fault in throttling to Auto Level table. <p>Check:</p> <ol style="list-style-type: none"> 1. See above. 2. Place the machine on level ground with empty grain tank, table being attached. Check how long time it takes to: Tilt the machine completely from left to right. Must take 7 \pm1 seconds. Tilt the machine completely from right to left. Must take 7 \pm1 seconds. 3. Place the machine on level ground, table being attached. Check how long time it takes to: Tilt the table completely from left to right. Must take 8 \pm1 seconds. Tilt the table completely from right to left. Must take 8 \pm1 seconds. 4. See above. 5. Check throttling according to hydraulics diagram.

5. Operation, Auto Level Combine

5.11 Servicing and User Tips

Retrofit of New DATAVISION Auto Level Job Computer and Sensors

After the mounting of a new Auto Level combine job computer the data of the system is not consistent and the control may not give alarm, or an inclination alarm may appear 10 seconds after start-up for no obvious reason.

Therefore, a calibration must always be carried out when the Auto Level job computer has been replaced, and when sensors have been exchanged.

Unintentional Use of Manual Keys in Automatic Mode

If the manual "Up", "Down", "Right" or "Left" keys are pressed unintentionally on the move while Auto Level control is on, the electronics will change to manual instantly. The change will be shown on the DATAVISION screen.

In that case, press "On"/"Off" in the "Auto Level combine" menu from "Settings | Machine settings | Auto Level control" to engage the automatic control.

Diagnostics - Auto Level Combine Functions and Sensors

From the menu "Auto Level Combine" under "Diagnostics | Control" status of all inputs and outputs plus state of control and computed machine and table inclination can be read.

In addition, the inclination is graphically displayed, and Auto Level combine can be operated manually with the keys "Up", "Down", "Left", "Right".

When Auto Level combine is manually activated the control will be disengaged. The control can be engaged from the menu "Settings | Machine settings | Auto Level control | Auto Level combine".

Inputs

The voltage level of all inputs is shown in volts, except forward speed and table height which are shown in km/h and cm, respectively.

Outputs

The voltage level of all outputs is shown as high or low (HI/LO).

State

Machine and table inclinations are shown as arrows indicating to which side, according to DATAVISION, machine and table are inclining, plus a percentage figure of inclination.

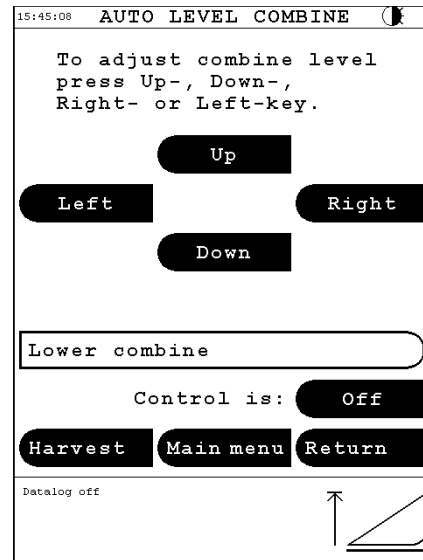


Fig. 26

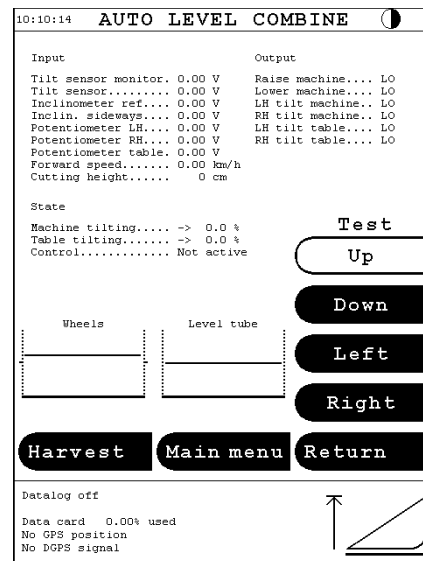


Fig. 27

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6. Engine

6.1 Safety Precautions



Before any service or cleaning is carried out, stop the engine, remove the ignition key, and switch off the main switch.



Never start the machine until all safety guards are fitted and secured.



Clear engine and engine compartment regularly of dust, chaff, fuel and oil.



Never try to find a leak in fuel or hydraulic systems by hand. A jet of oil of high pressure may damage your skin.



Never check engine oil and coolant levels until the engine has stopped and cooled down (risk of injury).



Never refuel until the engine has stopped. Do not smoke while refuelling.



Never climb onto the combine to carry out any service until the engine has stopped and the ignition key has been removed from the switch.



Be careful when draining hot oil. Risk of injury.



Always leave at least one door open for ventilation if the diesel engine is started in a workshop/machine shed without air suction ventilator.



Before stepping onto the access ladder for the service platform make sure the fifth step of the ladder rests securely on the bottom brackets.



Before stepping onto the engine service platform make sure there are no live overhead power lines above the machine.

6. Engine

6.2 Engine Types

Model	Engine type
MF 7274	SisuDiesel Citius 84 CTA-4V
MF 7278	SisuDiesel Citius 84 CTA-4V

6.3 Air-Intake

Filter System

(Fig. 1) and (Fig. 2)

The engine air-intake is equipped with prefilter, exhaust aspirated air cleaner and safety filter.

The prefilter on top of the straw hood is cleaned by opening the perforated panels (1) and (2) and sweeping or blowing dust and chaff out through the panel (2). The material can be removed through the panel (3) onto the straw walkers.

Dust and chaff is removed automatically from the exhaust aspirated air cleaner system (4) through the hose (5) and the ejector (6).

To clean the air cleaner element (7) release the spring locks on the cover (8) and remove the cover. Clean the air cleaner element (7) from the inside with compressed air, max. compression 7 kg cm², min. distance from spray pistol to element, 25 mm. DATAVISION will give alarm if the air cleaner is clogged.

Do not clean the safety filter (9), but exchange it if clogged. Check filter and seal regularly for damage.

Note: When harvesting very dusty crops or under conditions with adverse winds, it may be necessary to clean the prefilter several times a day.

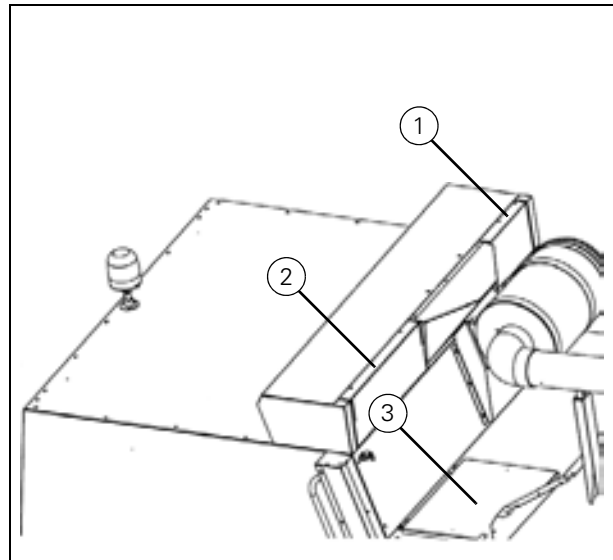


Fig. 1

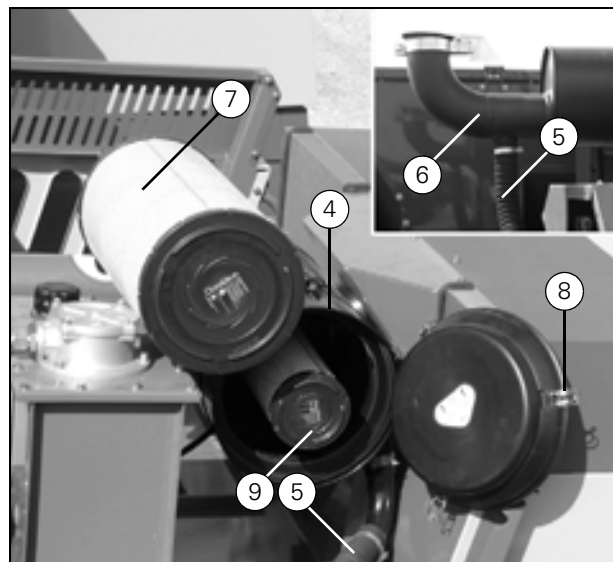


Fig. 2

6.4 Cooling System

Rotary Screen and Dust Aspirator

[\(Fig. 3\)](#)

The cooling system is equipped with a rotary screen (1), and a dust aspirator which removes dust and chaff from the screen.

The distance from the dust aspirator nozzle to the rotary screen must be 5-8 mm, and the blanking plate inside the screen must be opposite the nozzle.

If the distance is too narrow the chaff will be broken into pieces and may pass through the rotary screen and stick to the radiator.

Note that small twigs and leaves may get stuck in the dust aspirator nozzle where they are difficult to see.

When the locking pawl (2) is tipped up, rotary screen and condenser can be turned out with the lever (3) and secured with the chain (4).

Coolers

[\(Fig. 4\)](#) and [\(Fig. 5\)](#)

Turning the rotary screen out gives free access for cleaning the condenser (5) and the oil cooler (6).

When the oil cooler (6) is turned out, there is free access to water cooler (7) and intercooler (8).

The water cooler can be accessed for cleaning from the side facing the engine compartment. To carry out particularly thorough cleaning, the top right-hand ventilator cover (9) can be removed by loosening the screws (10).

If the engine gets overheated, DATAVISION will give warning. If the fluid level drops, the system will give alarm and stop the engine in 10 seconds.

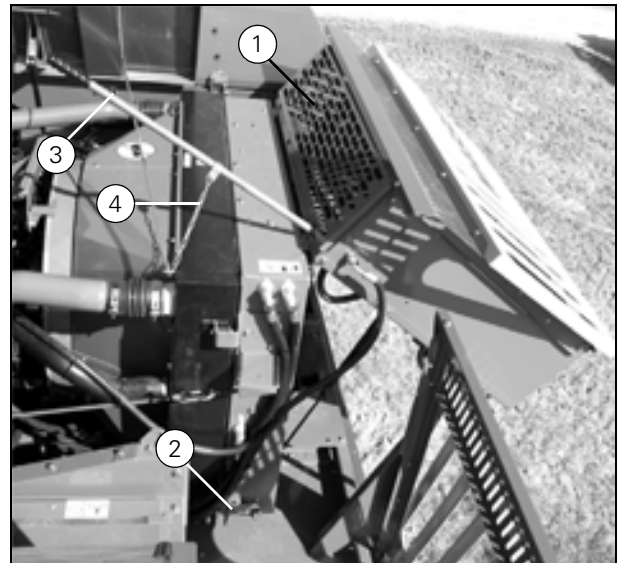


Fig. 3

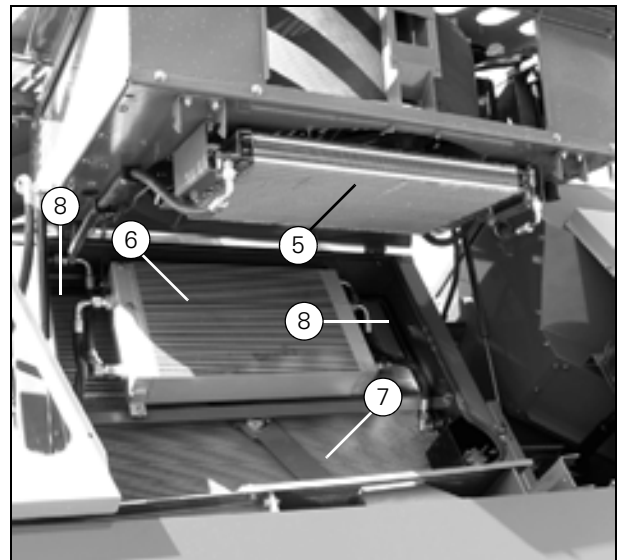


Fig. 4

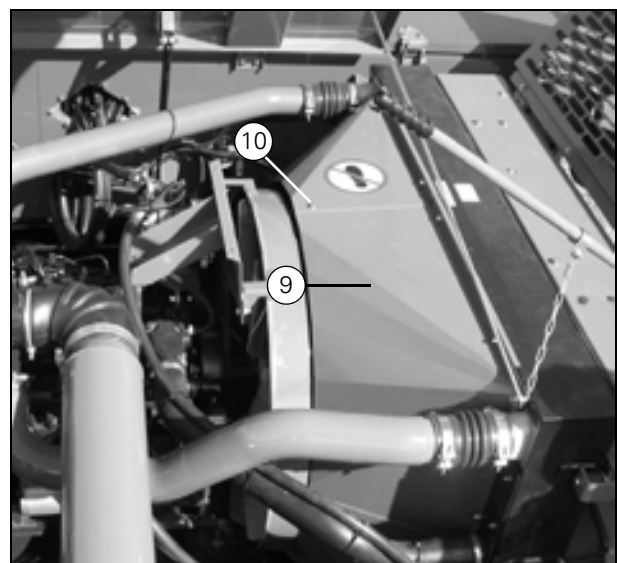


Fig. 5

6. Engine

Coolant

(Fig. 6)

The cooling system contains:

Total approx. 60 litres (50% anti-freeze + 50% water)

On delivery the cooling system has been filled with anti-freeze and corrosion inhibiting solution to protect the cooling system down to approx. -35°C corresponding to a mixture ratio of 1:1. Check coolant level in the cooler (1) daily. The sight glass must be filled when the machine is parked on level ground. Refill if required. Change coolant every second year as its corrosion and frost protecting effect decreases with use.

Note: Note that the mixture ratio of 1:1 **MUST** be observed when refilling and changing coolant. Apply only pure, preferably soft water and anti-freeze/corrosion-inhibiting solution which meets the requirements of ASTM D 3306 or BS 6580:1992 standards.



WARNING: Never remove the cap from a hot engine. Allow radiator and engine to cool down before relieving the pressure.

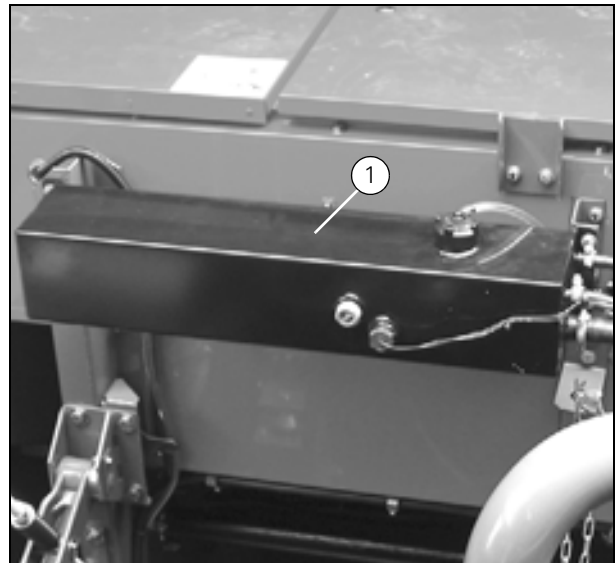


Fig. 6

Checking the Fan Belt Tension

(Fig. 7)

The engine is equipped with a spring-loaded tensioner, and the belt is a Poly-V type. The belt is automatically tensioned during operation.

Visually check the belt. Replace a worn, oily or damaged belt.

Note: Clean the alternators regularly outside/inside with compressed air.

Dust on and inside the alternators may cause damage.

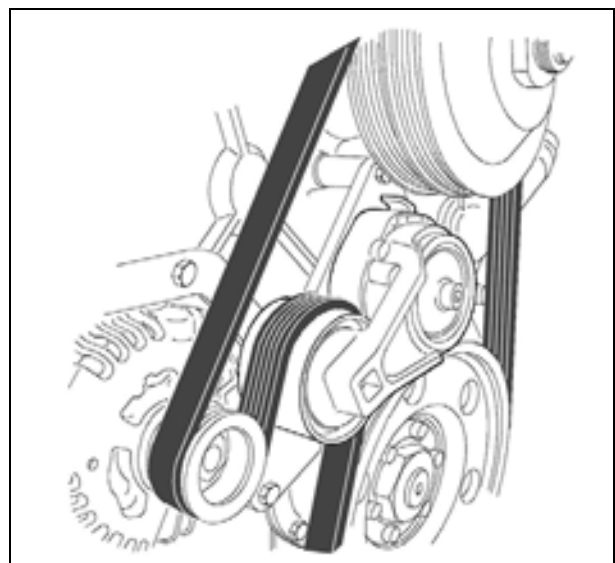


Fig. 7

6.5 Fuel System

(Fig. 8) and (Fig. 9)

The fuel tank has a capacity of 750 litres. Use only diesel oil which meets the requirements of the EU standard EN 590 in the SisuDiesel engine. Please see supplied Sisu Instruction Manual for further details on quality requirements of engine fuel.

The fuel level in the tank can be checked on DATAVISION which gives warning when there is approx. 10% fuel left in the tank.

The filler (1) is equipped with a strainer (2) which should always be fitted and only be removed for cleaning.

Check the prefilter (3) regularly and drain condensate at the plug (4). If required, remove sediments and dirt.

Top up the prefilter with fuel by bleeding at the screw (5) to prevent air in the system.

Some machines are equipped with a different type of prefilter/water separator with higher retention efficiency (Fig. 9). Check the cup regularly and drain water and sediments as described below.

This prefilter must be drained when the cup contains water or sediments. Stop the engine before draining the prefilter. Turn off the tap (6) from the tank and open the bleed screw (7). Wait for ½ to 1 minute to allow water and sediments to settle. Then, open the drain valve (8). Drain the cup completely of water and sediments. Open the tap (6) from the tank and let approx. ½ a liter diesel oil wash through the prefilter. Turn off the tap (6) from the tank. Shut the drain valve (8) and open the tap (6) from the tank. Top up the prefilter with fuel by bleeding at the screw (7) to prevent air in the system.

The prefilter must be replaced if the washing cannot remove water and sediments. In any case, the prefilter must be replaced at least once a year.

Stop the engine before replacing the prefilter. Turn off the tap (6) on the hose from the tank and open the bleed screw (7). Open the drain valve (8) and drain the prefilter completely of diesel oil. Dismount the top cover (9). Remove the spring bracket (10) and replace the prefilter. Refit the spring bracket (10). Check that the seal in the top cover is correctly fitted and attach the top cover (9). Shut the drain valve (8). Open the tap (6) from the tank. Top up the prefilter with fuel by bleeding at the screw (7) to prevent air in the system.

Reduced engine power may indicate that the prefilter requires replacement. If there are many impurities in the fuel, it may be necessary to clean the prefilter more often.

Drain water and dirt from the tank at the drain plug regularly.

Alternative Fuel Types

The only alternative fuel permitted for the SisuDiesel engine is Biodiesel which meets the requirements of the EU standard EN 14214 or the US standard ASTM D6751. Do not, however, use a mixture ratio of more than 5% Biodiesel (B5).

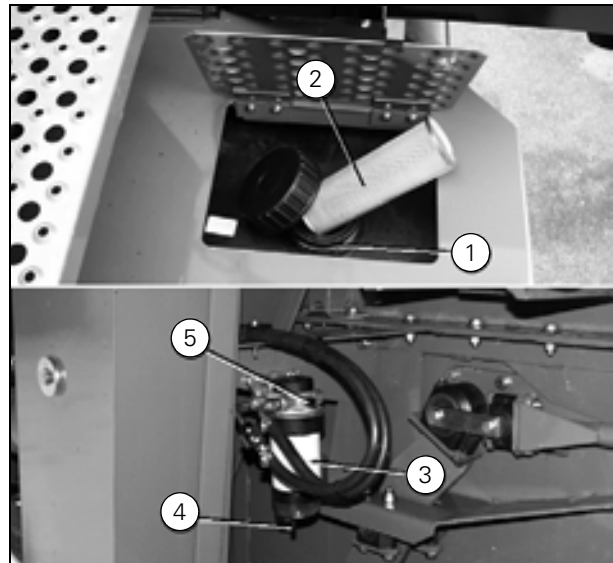


Fig. 8

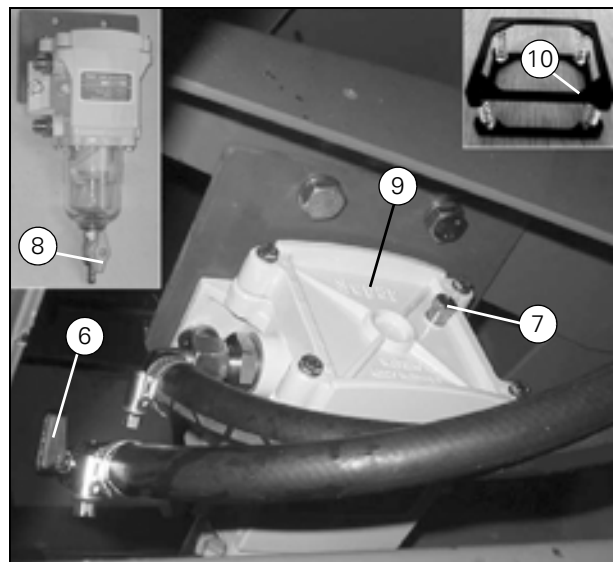


Fig. 9

6. Engine

A mixture ratio of up to 5% Biodiesel does not affect the normal intervals for changing engine oil, oil filter and fuel filter elements. Still, it is advisable to inspect, empty and clean the prefilter (3) more often than when using a conventional diesel oil.

Note: *Raw vegetable oils, cold pressed oils, etc., for instance non-esterified vegetable oils must not be used in the SisuDiesel engine. Other alternative fuel types like ethanol, methanol, etc. must not be used either.*

Filter change

[\(Fig. 10\)](#)

Clean filter and filter support. Dismount filter element (1). Clean filter support and mount new filter.

After filter change the fuel system is bled automatically when ignition is switched on. Keep ignition on for 1/2 to 1 minute before starting the engine to permit the electric fuel lift pump (2) to fill the system with fuel.

It is not necessary to bleed the system after filter change since this is done by the electric fuel lift pump. If the engine cannot start after filter change, call a service technician.

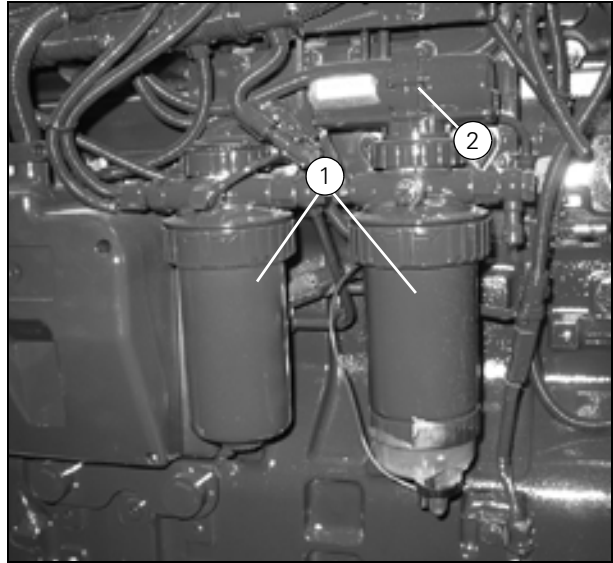


Fig. 10

6.6 Engine Oil/Change

(Fig. 11)

The engine oil level is checked with the dipstick (1). The oil level must reach between the max. and min. marks on the dipstick. Refilling is not necessary until the oil level has dropped to the min. mark.

Refill oil at the cap (2), only up to the max. mark on the dipstick.

Oil and Filter Change

The engine has a capacity of 27 litres engine oil.

Allow the engine to get warm before draining the oil at the plug (3) on the left-hand side of the machine.

Engine oil filter

- Clean filter and filter support before removing the filter (4).
- Clean the filter support and oil the seal with clean oil before refitting. Tighten the filter by hand.

Changing the Rotor of the Centrifugal Oil Cleaner

- Before removing the filter housing, clean the surroundings. Remove the filter housing. Dismount the rotor from the centrifugal oil cleaner shaft. Mount a new rotor and ensure it is free to rotate. Mount the filter housing using a new seal ring.

Start the engine and check for leaks.

If the engine oil pressure drops to the minimum limit, DATAVISION will give alarm and stop the engine in 10 seconds.

6.7 Cleaning the Engine Compartment

Clean engine and engine compartment regularly of dust, chaff, fuel and oil. Accumulation of dust and chaff increases the risk of fire considerably.

Before any service or cleaning is carried out, stop the engine, remove the ignition key, and switch off the main switch.

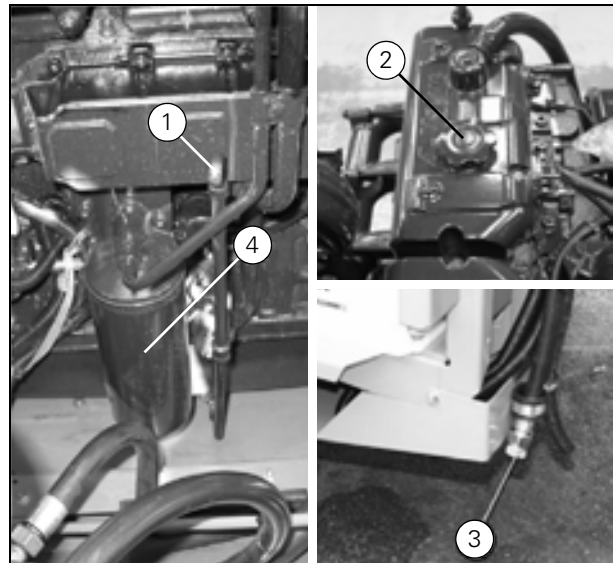


Fig. 11

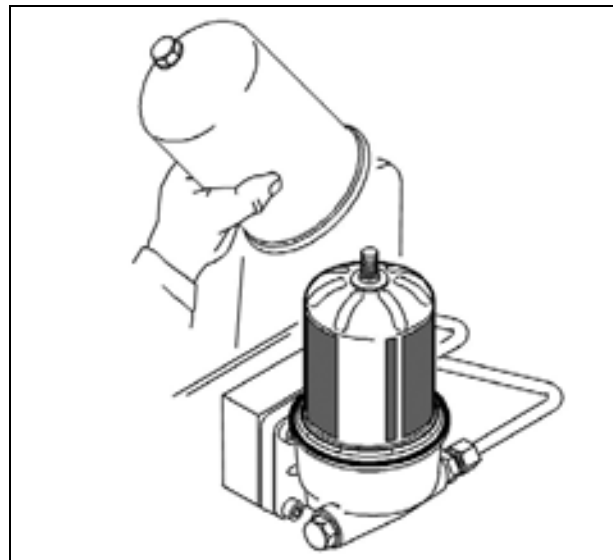


Fig. 12

6. Engine

6.8 Electronic Engine Management

The pilot lamp in the diagnosis switch (1) is on permanently when engine status is OK. A failure message from the engine will cause the lamp to flash on and off.

In most cases the failure is not critical and it will always be possible to continue harvesting. In the event of a critical failure the engine monitoring system will reduce engine output or revolutions, or stop the engine completely.

Check the following items if the diagnosis pilot lamp is flashing. If a fault is found and subsequently corrected, the diagnosis pilot lamp will be on permanently again.

1. Radiator, coolant
2. Engine oil level
3. Fuses
4. Battery, power supply
5. Air filter
6. Fuel filter

If the fault cannot be found and corrected following above procedure or the instructions in section 6.9 'Engine Trouble Shooting' on page 178, call the service staff who will be able to detect the fault directly through a CAN bus connector in the electric box.

The DATAVISION monitoring system will always give alarm and, where necessary, stop the engine if a critical failure occurs in connection with the engine. See section 'Engine Monitoring/Alarm' on page 81.



Fig. 13

6.9 Engine Trouble Shooting

EEM3 Electronic Engine Management - Failure Codes (Self-Diagnosis)

The EEM3 self-diagnosis monitors different engine functions providing a failure report in case of breakdown. Additionally, in certain cases the system will reduce engine power, performing a so-called delayed stopping or a so-called forced stopping of the engine. The code in the display will specify the cause as described on the following pages.

Note: *If the engine stops for no reason or the power is reduced without any code appearing in the display, the cause may be a failure outside the control of the management system, momentary overload or a mechanical damage, see below.*

If the self-diagnosis has stopped the engine, it can be started again after a brief cut-out of the power. If the cause of the stopping has not been eliminated, the self-diagnosis will stop the engine again or prevent it from starting.

Reading the Active Failure Reports

As the engine is running the active failure reports will make the signal lamp flash every four seconds. The lamp will be on for about 0.5 seconds.

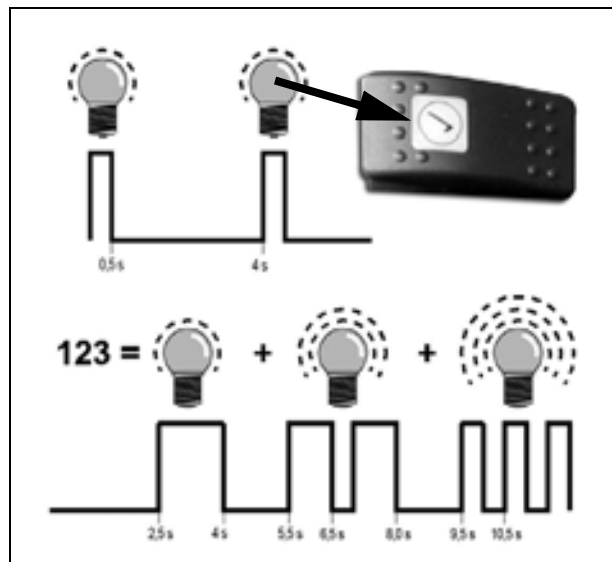


Fig. 14

The signal lamp flashes every four seconds, also when ignition is switched on and the system has recorded a failure code.

Reading Failure Codes

1. Turn the ignition key into position 1.
Do not start the engine!
2. Press the diagnosis switch three times within four seconds.
3. After a short pause the last failure code can be read from the signal lamp. This code is repeated until the diagnosis switch is pressed once again.
The failure code can be read as follows: A long flash (1.5 sec) shows the hundreds, a medium flash (1.0 sec) the tens and a short flash (0.5 sec) the ones. The number of flashes separated by intervals of 0.5 seconds specifies the number of hundreds, tens and ones. There is a pause of 1.5 seconds between the individual series of flashes and a pause of 2.5 seconds when the code is repeated from the start. As an example, see [\(Fig. 14\)](#) showing failure code No. 123.

Note: If the code is an even hundred, e.g. 100, only a 1.5 seconds flash is shown followed by a 2.5 seconds pause. See example of failure codes in [\(Fig. 16\)](#).

4. Press the diagnosis switch once.
5. The signal lamp starts flashing the next failure code in the queue. If there are no further failure codes in the queue, the signal lamp starts flashing at intervals of 1 second indicating that there are no more failure codes.
6. Press the diagnosis switch three times to reset the failure log and end the diagnosis. The diagnosis lamp switches off.
The check must be carried out with the engine off.

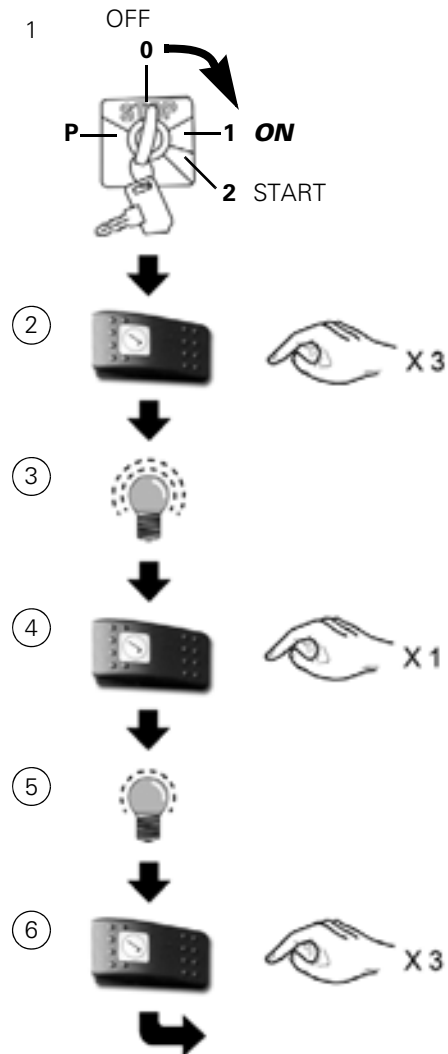


Fig. 15

6. Engine

EMM3 codes (please see explanation of abbreviations at the end of the table)

Sisu FC	Fault Description	Fuel/ Speed Reduction
Engine Sensors		
110	Coolant temperature sensor defect LOW	FL1
111	Coolant temperature sensor defect HIGH	FL1
112	Coolant temperature HIGH	FLm
113	Coolant temperature HIGH, ALARM SDd	FLm
114	Intake manifold temperature sensor defect LOW	FL1
115	Intake manifold temperature sensor defect HIGH	FL1
116	Intake manifold temperature ABOVE NORMAL	FL1
96	Oil pressure sensor defect LOW	FL1
97	Oil pressure sensor defect HIGH	FL1
98	Oil pressure LOW	
99	Oil pressure LOW, ALARM SDd	
95	Oil pressure sensor defect	FL1
100	Boost pressure sensor defect LOW	FL1
101	Boost pressure sensor defect HIGH	FL1
102	Boost pressure LOW	FL1/SL1
94	Engine speed signal ABOVE NORMAL	FC
284	No cam speed signal found	FL1/SL1
121	Water in fuel	FL1/SL1
122	Fuel filter pressure LOW (with old switch)	FL1/SL1
ECU Diagnostic		
22	ECU temperature sensor defect HIGH	
20	ECU temperature ABOVE NORMAL	
23	ECU temperature NO SIGNAL	
211	5Vdc Supply 1 defect LOW	
212	5Vdc Supply 1 defect HIGH	
141	Vehicle CAN off	A
143	ID module CAN off (ECU to ID)	
10	EEPROM Checksum defect	FL2/SL2
ECU Monitoring Functions		
82	Throttle 2 sensor defect LOW (IDLE)	IDLE
83	Throttle 2 sensor defect HIGH (IDLE)	IDLE
146	Requested speed out of range LOW (<500 rpm)	A
147	Requested speed out of range HIGH (>3000 rpm)	A
446	Fuel filter pressure BELOVE NORMAL	FL1/SL1
ID Module		
452	Engine serial number mismatch	FLf/SLf

Sisu FC: SisuDiesel Failure Code

Explanations for the Abbreviations			
FL1	Fuel limit 1, 75 % from rated power	SL1	Speed limit 1, 1800 rpm
FL2	Fuel limit 2, 50 % from rated power	SL2	Speed limit 2, 1500 rpm
FLm	Fuel limit by parameter (map)	SLf	Speed limit fixed, 1500 rpm
FLf	Fuel limit fixed, 50 mg	A	Analog speed request is active
FC	Fuel cutting to zero	SDd	Shut down delayed

Fig. 16

7. Cutting Tables

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7. Cutting Tables

7. Cutting Tables

7.1 Safety Precautions



Do not carry out any service or cleaning until the engine has stopped, and the ignition key has been removed.



Never start the machine until all safety guards are fitted and secured.



As the function of table, maize header, table auger, elevator chain, knives, reel, etc. does not permit complete shielding, be sure to keep safe distance from these parts during test and work.



During attachment of table to combine be aware of the risk of personal injury.



Never work under the table in raised position without assuring that it is secured with all safety stops.



Make sure that there are no persons between machine and table when attaching the table.



Always make sure that all safety guards are fitted and properly secured before engaging the table.



During transport, the table must be secured to the trailer with locking pins.



Always wear gloves when exchanging knives.



Be particularly cautious when dismantling the knives if they are jammed due to damage or the like.



The vertical knives must be dismantled for road transport.



Make sure that the high back plates and table sides are fitted and undamaged before the machine is put into operation.



Ensure that all covers are correctly fitted and functional.

7. Cutting Tables

7.2 Attachment of Table, Standard and Auto Level

Mounting

(Fig. 1), (Fig. 2) and (Fig. 3)

Note: Check that the hooks (7) are pulled back into the main crop elevator before moving the machine forward. If the hooks are not retracted they may get damaged when the machine is moved towards the table.

- Lower the main crop elevator so that the hook-up catch plate (1) is positioned below the edge (2) on the table.
- Aim between the brackets (3) on each side and move forward until the machine touches the table.
- Raise the main crop elevator.
- The pins (4) on the main crop elevator must engage in the holes (5) on the table.
- Remove the locking pins securing the table to the trailer and lift the table from the trailer.
- Lower the table halfway to the ground and stop the engine.
- Turn the locking arm (6) using the supplied wrench (15) to fasten the table with the hooks (7).
- Take out the connector from the support on the back of the table and connect it to the connector (8).
- Connect the multi-coupler to the coupling part on the main crop elevator and couple up the two parts using the handle (9).
- Mount the transmission shaft for table on the power-take-off (10). This is done by loosening the thumb-screw on the protective housing at the power-take-off and removing the front cover. Then turn the housing aside and push the transmission shaft slightly into the power-take-off. Press down the pawl (11) and push the transmission shaft further into the power-take-off until the pawl jumps up again. Turn back the housing and check that it is correctly fitted and undamaged.

Note: If required, the shaft can be turned using the supplied hook wrench (16).

Note: The front cover removed from the power-take-off housing can be stored on the side of the housing using the thumbscrew in the threaded hole.



WARNING: Check that the covers (12), (13) and the housing (14) are correctly fitted and undamaged.

Note: Clean couplings and electric connectors before connecting. Dirt in the hydraulic oil will cause wear and malfunction of the hydraulic system.

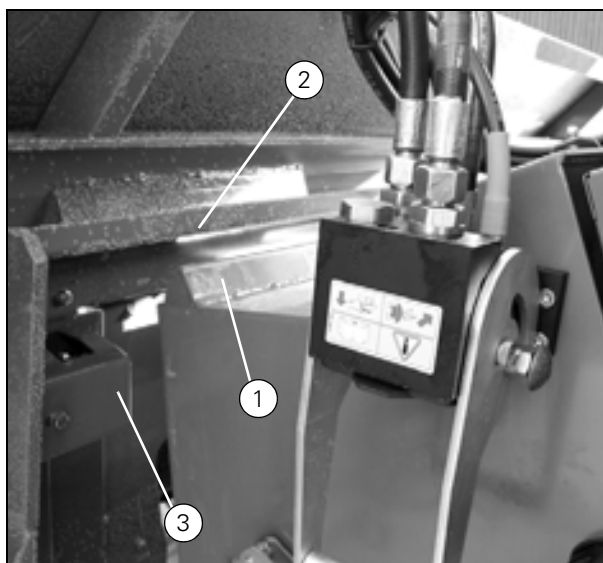


Fig. 1

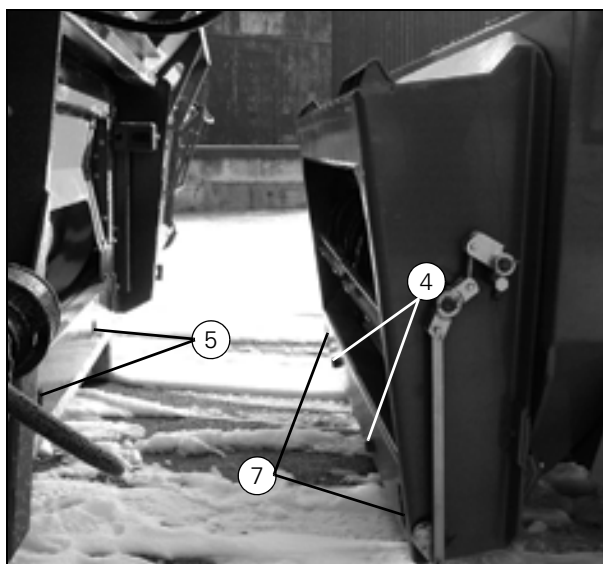


Fig. 2

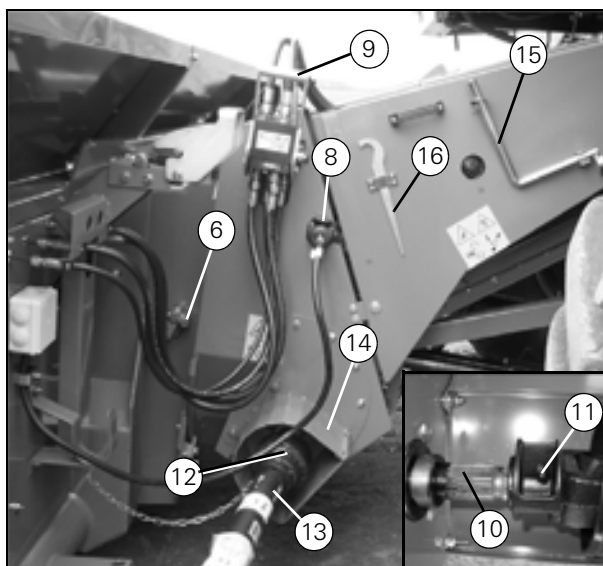


Fig. 3

7. Cutting Tables

Alignment of Table

(Fig. 4)

Before checking and aligning, place the combine on level ground and check traction wheel tyre pressure.

Lower the table at normal cutting height and check at the outermost fingers whether the table is level.

If the table is not parallel with the ground, adjust it by altering the length of the connecting rod (2).

Dismount the door (1) at the bottom of the main crop elevator back side.

Adjust the length of the connecting rod with the nut (3) until the table is parallel with the ground and tighten the counter-nut (4).

Mount the door (1) after adjustment.

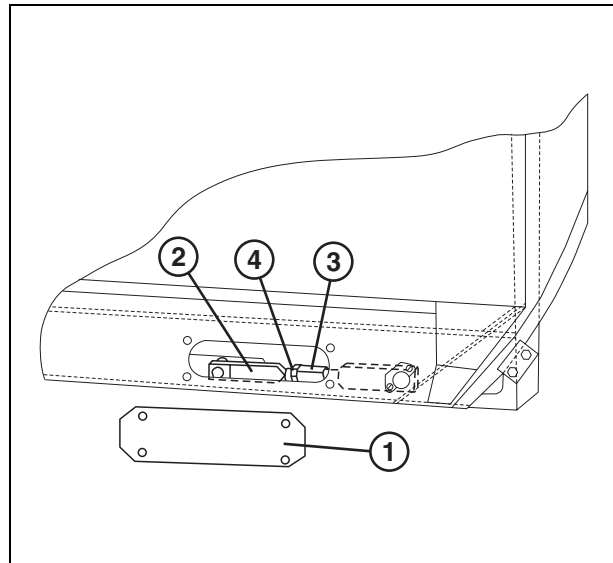


Fig. 4

7. Cutting Tables

7.3 Removal of Table

(Fig. 5)

- Lower the reel completely.
- Move the reel backwards in the table (smoothly against stop).
- Stop the engine.
- Disconnect the transmission shaft (1) and mount the front cover on the guard to cover the power-take-off. Please see section 7.2 'Attachment of Table, Standard and Auto Level' on page 184.



WARNING: Ensure that all covers are correctly fitted and functional.

- Disconnect the multi-coupler from the main crop elevator and place it in the coupler support on the table. Press the coupling parts completely together using the handle (2).
- Position the connector in the support on the back of the table.
- Pull back the hooks into the main crop elevator by turning the locking arm (3) using the supplied wrench.

Table Trailer

(Fig. 6) and (Fig. 7)

- Lower the table onto the trailer. When the hook-up catch plate (4) on the main crop elevator is clear of the edge (5) on the table, the machine can be reversed from the table.
- During transport the table must be secured to the trailer with the locking pins (7).

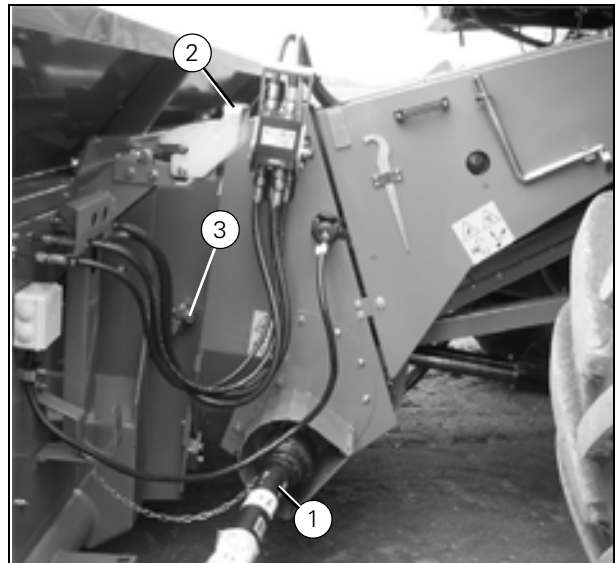


Fig. 5

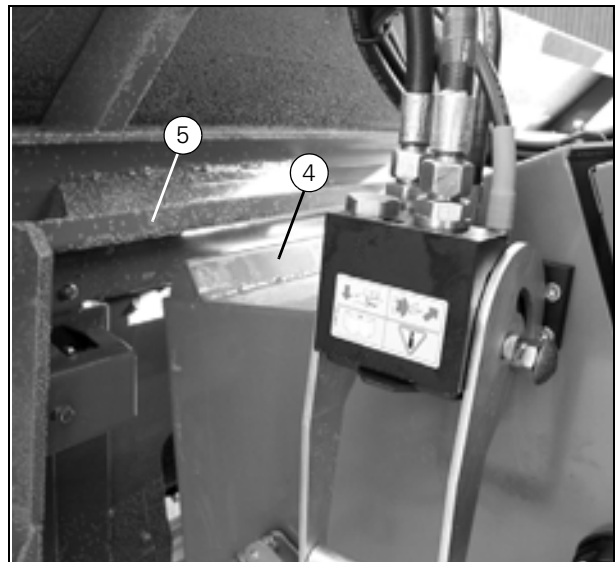


Fig. 6

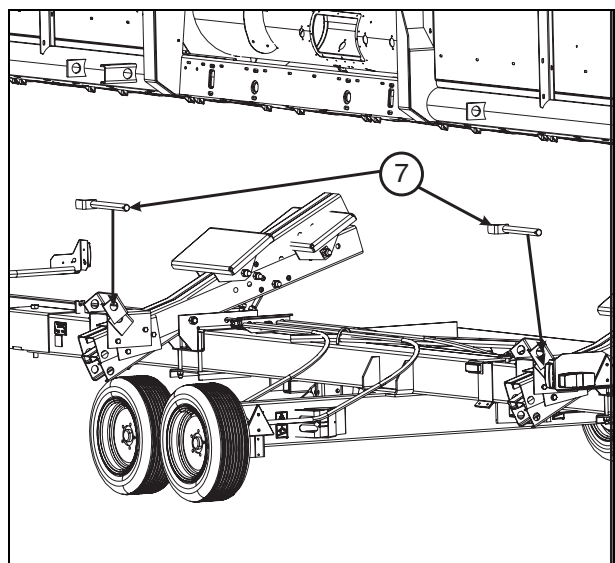


Fig. 7

7. Cutting Tables

Attachment of Combine and Trailer

(Fig. 8)

1. Reverse the combine towards the trailer at an angle as illustrated, (Fig. 8).
2. Adjust the drawbar in height and turn the trailer until it is just opposite the hitch on the combine.
3. Reverse the combine to the trailer, insert the pin and the connector, and raise the jockey wheel.



WARNING: The table trailer may be hitched only to a combine.

Supports

(Fig. 9)

The supports make it possible to detach the table directly onto the ground and attach it again from the ground.

1. Raise the table at a suitable height and proceed as follows:
Remove the split pin (1) and turn down the support (2). Insert the split pin again.
2. Lower the table and detach it as described above.

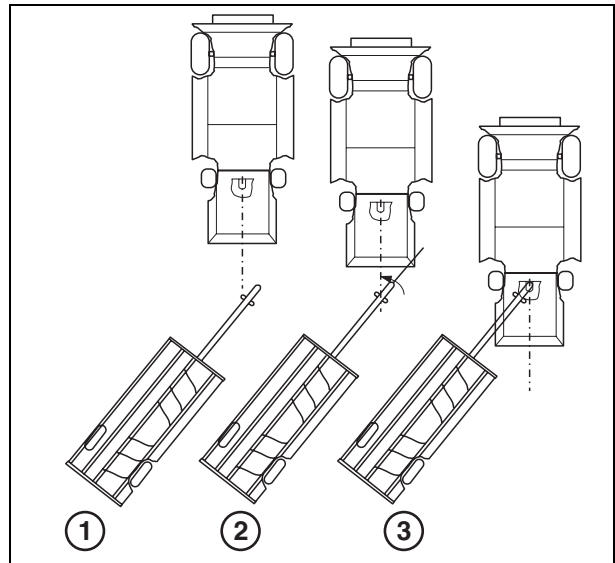


Fig. 8

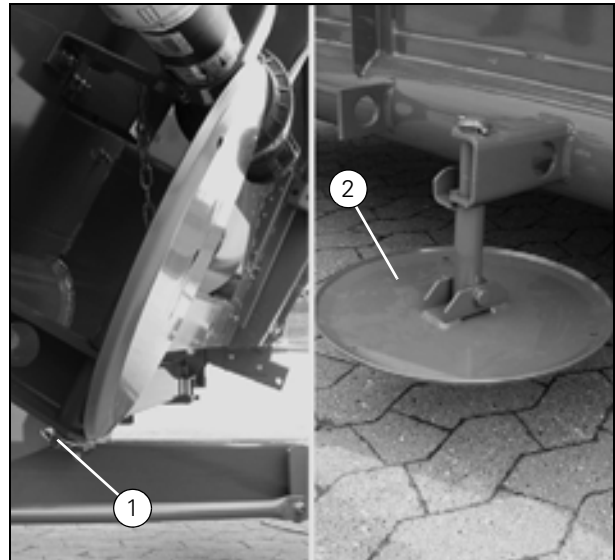


Fig. 9

7. Cutting Tables

7.4 Reel

Reel Adjustment Up/Down, Fore/Aft

Reel bottom position and alignment parallel with the fingers is adjusted with the threaded rod (2) (Fig. 10) at the lifting rams (1) on the right- and left-hand sides. The distance to the fingers must not exceed 27 ± 7 mm.

Reel position up/down is adjustable with a toggle switch in the multi-function lever.

Reel position fore/aft is adjustable with a toggle switch in the multi-function lever.

For direct cutting of oilseed rape and similar high crops, the reel lift rams can be moved in the hole (1) (Fig. 11) to give larger clearance under the reel.

Note: Repeated attachment and detachment of the table may cause accumulation of air in the rams for reel adjustment up/down or fore/aft.

Air in the rams may change the position of the reel in the table, and in that case bleeding of the rams is necessary.

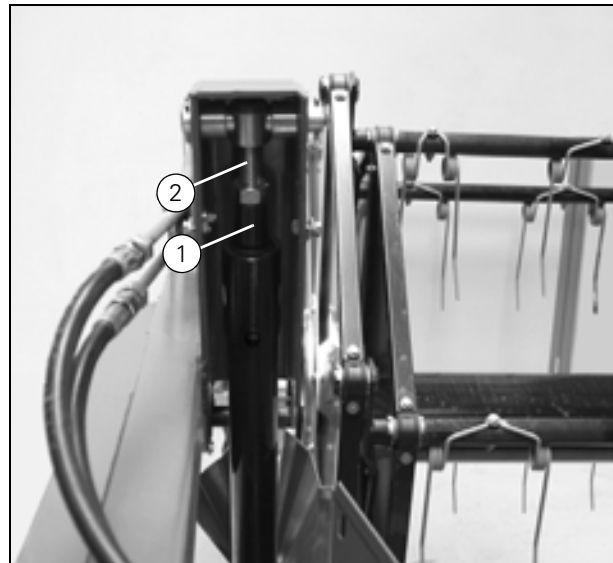


Fig. 10



Fig. 11

Bleeding

(Fig. 12)

Reel Fore/Aft

Adjust the reel completely back and hold the button for 5-10 seconds. Move the reel completely forward and hold the button a few seconds. Repeat this procedure 4-5 times.

Reel Up/Down

Lift/lower the reel completely 2-3 times. Then lift the reel 2-3 cm and slacken the plug (1) 1 to 1½ turns. When clean oil escapes at the plug (1), retighten it. If there is still air in the oil, repeat the procedure.

When the reel has been in top position in the rams, it must be lowered completely before being adjusted to working height to make sure the reel is parallel with the fingers.

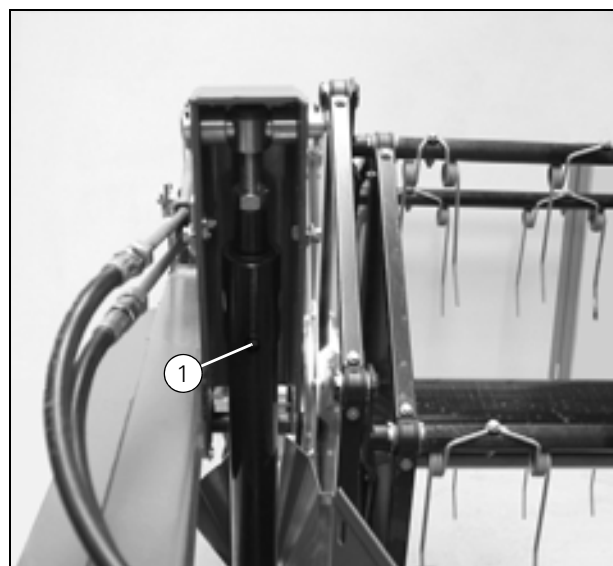


Fig. 12

7. Cutting Tables

Reel Rotation

(Fig. 13) and (Fig. 14)

The reel is driven by the oil motor (1) through a chain drive.

The speed is variable from 0 to 50 rpm.

To adjust the chain, slacken the screws (2) and tighten the chain with the adjustment screw (3).

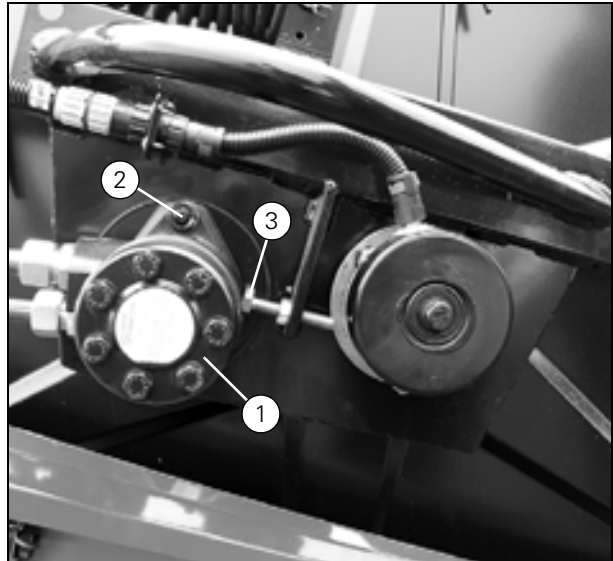


Fig. 13

Reel Tine Bars

(Fig. 14)

The position of the reel tine bars is adjusted with the lever (1).

Loosen the locking pin with the lever (2) and remove it from the notched plate.

Moving the lever forward angles the spring tines against the knife, and the material will be lifted further.

Moving the lever backward angles the spring tines forward, and they will let go of the material at an earlier stage.

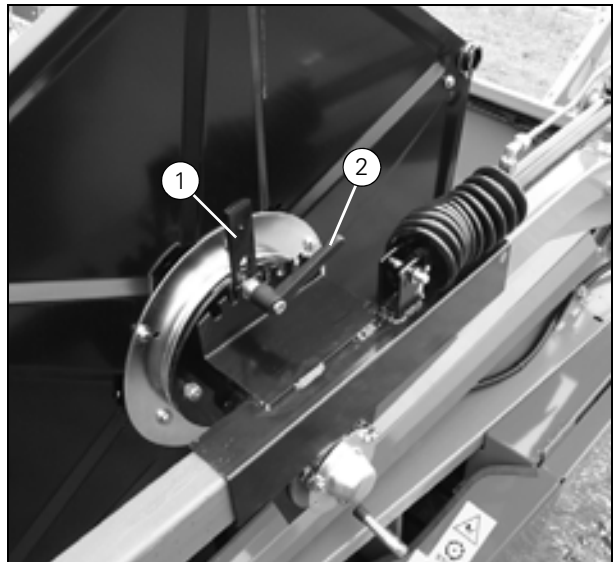


Fig. 14

Adjustment of Reel in the Table

(Fig. 15)

The reel speed must be slightly faster than the forward speed to provide even feed.

Too high reel speed is likely to cause table loss. Ears may break off and grains fall to the ground.

In standing crops the reel should run just below the ears and be adjusted suitably backwards to provide even feed.

In partially or completely laid crops the reel tine bars should be angled slightly backward. Under these conditions it is advisable to adjust the reel forwards and downwards so that the spring tines lift the crop onto the knife.

In laid crops the reel must not keep the crop down, cutting off the ears.

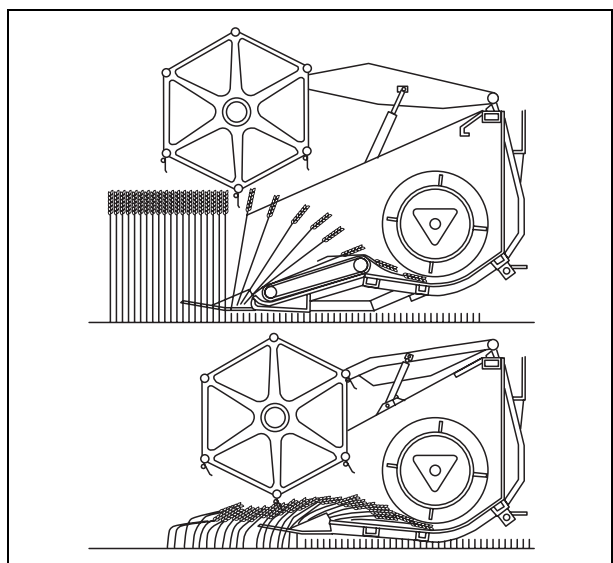


Fig. 15

7. Cutting Tables

7.5 Knife

Knife and Knife Drive

[\(Fig. 16\)](#)

Inspect knife and fingers daily.

Replace damaged knife sections and fingers. Dismount the screws (1) to remove or replace the knife. If the spare knife is not fitted with the flange (3), dismount it from the replaced knife.

The spare knife (2) is stowed in the support on the back of the table. The support is located at the bottom on the back of the PowerFlow table.

When fitting the knife, make sure that the flange guide (3) fits properly into the groove of the knife arm (4) before tightening the screws (1). Always keep the spare knife in good working order to ensure quick replacement, if necessary.

Adjustment of Knife Up/Down

The height of the knife is adjusted by slackening the screw (5) and moving the knife arm (4) up or down on the shaft end.

When adjusting, make sure that there is space over and under the knife section of the first finger.

Checking the Knife Clearance

[\(Fig. 16\)](#) and [\(Fig. 17\)](#)

When the knife arm (4) is in its outermost or innermost position, there must be a clearance between the rear edge of the knife and the finger. Check both positions.

The knife sections are kept close to the fingers by the clip (6). In case of excessive play, tap with a hammer in the direction of the arrow.

The clip must not press the knife against the fingers. The knife must slide easily back and forth.

Fingers

[\(Fig. 18\)](#)

Check the cutting edge of the fingers regularly. If worn round, grind the cutting edges to the previous angle.

If fingers and knife are not in order, the knife drive may get overloaded.

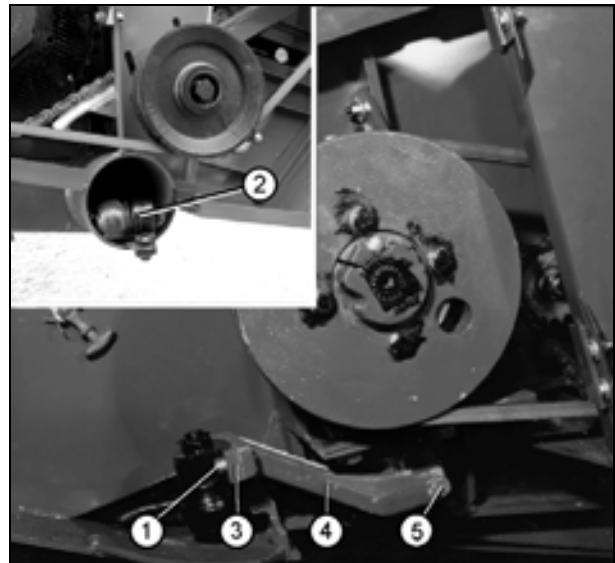


Fig. 16

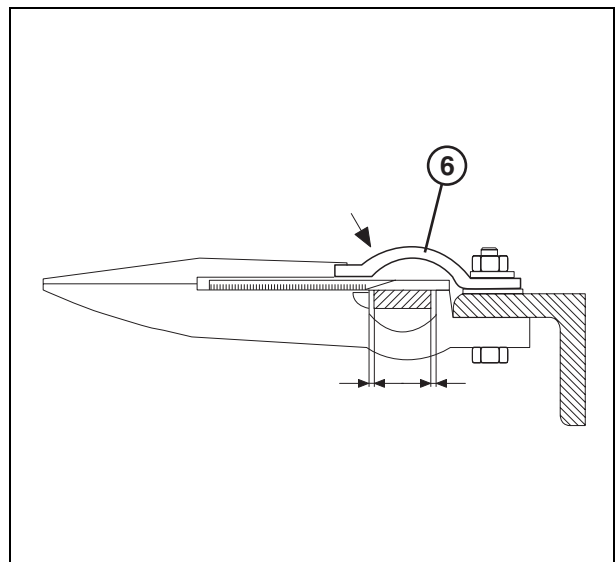


Fig. 17



Fig. 18

7. Cutting Tables

7.6 Main Crop Elevator

Table Auger

[\(Fig. 19\)](#)

To provide even feed in all crops, the table auger can be moved up and down in the slotted holes (1).

When the four nuts (2) are slackened, the table auger can be raised or lowered with the adjustment screw (3). From the factory the auger is adjusted at a distance of 10 ± 2 mm above the table bottom (8).

In cereal and grass seed crops the distance from table bottom to table auger must be 10 mm. In oilseed rape, mustard, beans and similar crops 15-20 mm.

Re-adjust chain drive and guide rail. The guide rail not being adjusted against the chain may cause vibrations in table and machine.

When the nuts (6) are slackened the feathering fingers of the table auger are adjustable with the arm (5). If the crop tends to wrap, the fingers must be positioned to retract at an earlier stage.

The distance from the feathering fingers (7) to the table bottom (8) is adjusted from the factory as follows:

PowerFlow: 23 mm +2-3

Cut-Off Strip

[\(Fig. 20\)](#)

When the table auger is raised or lowered, the cut-off strip must be adjusted.

To prevent wrapping the cut-off strip must be as close as possible to the auger flights without touching.

Adjust by slackening the screws (1) and moving the cut-off strip forward or backward in the slotted holes.

The crop tending to wrap may be due to the fixed cut-off strip (2) under the table auger being clogged by dirt.

Replacement of Feathering Fingers

[\(Fig. 20\)](#)

Remove the cover plate in the middle of the table auger. Pull the spring lock (3) out of the bearing (4). Replace the damaged finger. Before remounting the spring lock (3), make sure that the finger is pushed completely into the bearing (4). The distance from the feathering fingers to the table bottom is adjusted from the factory as indicated above.

Auger Flight Extensions, 20-22-25' Tables

[\(Fig. 21\)](#)

The tables are equipped with auger flight extensions (1) complete with cut-off strips (2). Under by far the most harvest conditions the machine will have the highest capacity when the extension parts pos. 1 and 2 are mounted. The extension parts Pos. 1 and 2 should only be dismantled in case of excessive loss in the middle compared to the sides of the machine when harvesting on level ground.

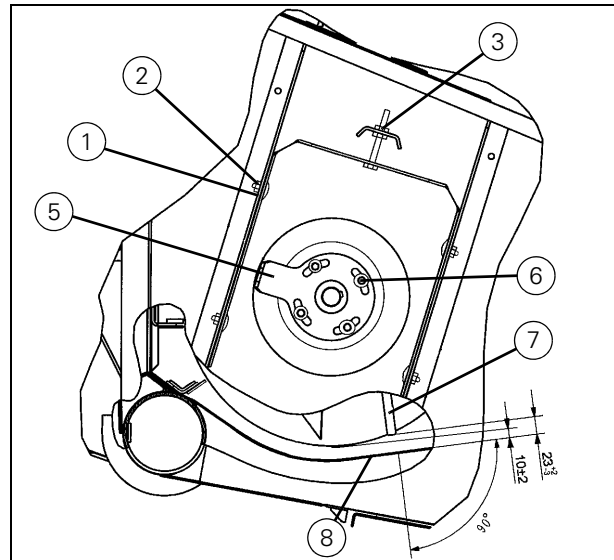


Fig. 19

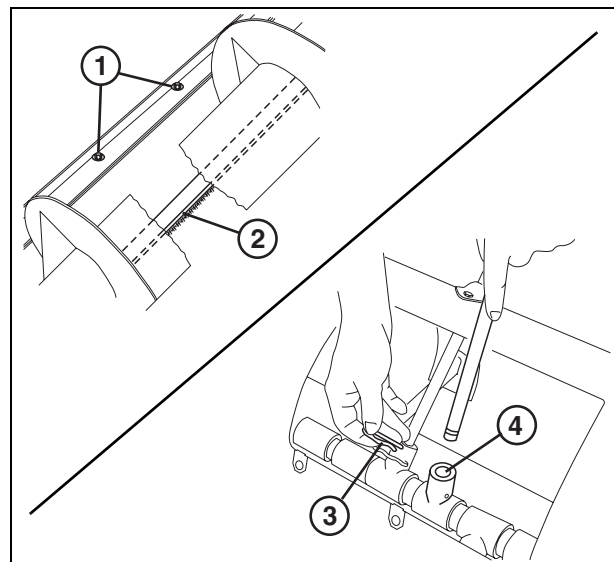


Fig. 20

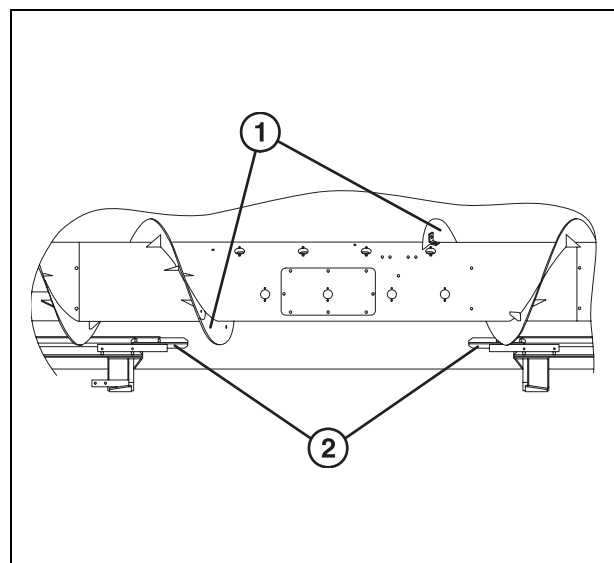


Fig. 21

7. Cutting Tables

Reversing

(Fig. 22)

The table and feed reversing mechanism is engaged with the toggle switch (1) and automatically disengaged when the switch is released. The reversing mechanism can be engaged only when the table is disengaged with the switch (2), and must not be engaged until table and feeding have stopped completely.

Note: *If the reversing does not start instantly when the switch (1) is activated, release the switch and activate it again.*

If the material is jammed very tightly in the table/crop elevator, it may be necessary to engage and disengage the reversing mechanism several times.

Reversing to clear a blockage of table or crop elevator must take place at full engine revolutions.

Note: *Never operate the reversing mechanism when there is no material in the machine.*

Testing of the reversing mechanism when the machine is empty should be carried out only at low engine revolutions.

Testing at too high engine revolutions may damage the transmissions.



WARNING: *Never try to help the reversing mechanism manually. If the material needs to be removed by hand, stop the engine and remove the ignition key from the switch.*



Fig. 22

7. Cutting Tables

7.7 Transmission

PowerFlow Table, Knife Drive and Table Auger

(Fig. 23)

The table is driven from the transmission shaft between main crop elevator and table by the belt (14) which is tensioned by the tension pulley (13).

The knife is driven by the V-belt (1) which is tightened with the tension pulley (2). The table auger and the PowerFlow belts are driven by the chain (3). The chain tension is adjusted with the tension pulley (4). From the table auger sprocket (5) the PowerFlow belts are driven by the chain (6).

The chain tension is adjusted with the tension pulley (7). The sprocket (5) has a built-in safety clutch which protects the table auger against stone damage.

Auger Speed Reduction

To reduce the speed of belts and auger for harvesting, e.g. oilseed rape, peas, etc. dismantle the two shims (9). Move the sprocket (10) to the right against the flange (11), mount the two shims (9) on the outside of the flange (11) and place the chain on the sprocket (12). Re-adjust chain drive and guide rail. The guide rail (8) not being adjusted against the chain may cause vibrations in table and machine.

Slip Clutch for Table Auger

(Fig. 24)

The slip clutch springs (1) must be compressed at a length of 28.5 ± 0.2 mm measured from the disc (2) to the clutch hub (3).

The measure 28.5 ± 0.2 mm is adjustable with the shims (4).

When threshing at reduced speed, e.g. in oilseed rape, change the adjustment of the clutch to 26 ± 0.2 mm.

When changing back to high revolutions **be sure to** change the adjustment of the clutch back to 28.5 ± 0.2 mm.

The clutch should be disassembled, cleaned and adjusted before the beginning of each new season.

Do not grease the sliding surface (5).

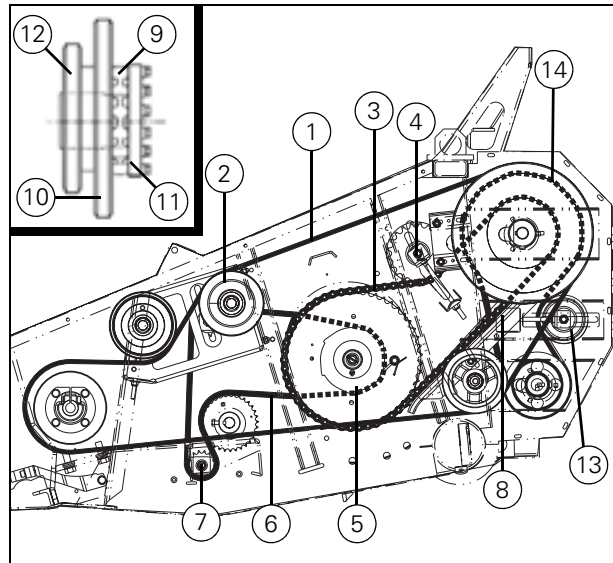


Fig. 23

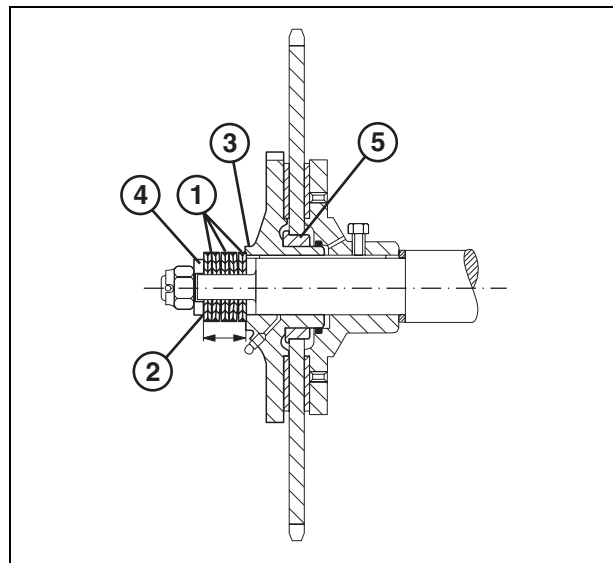


Fig. 24

7. Cutting Tables

7.8 PowerFlow Table

The PowerFlow table is fitted with belts which feed the crop evenly into the table both in laid crop and tall standing stiff crop. The PowerFlow belts (1) are driven from the table auger through the rear belt rollers.

Inspection and Start-Up of PowerFlow Belts

(Fig. 26)

Check with the measuring gauge (1) that the front and rear belt rollers are parallel within 1 mm. If the difference exceeds 1 mm, slacken the belt on the side where the difference is largest. Tighten the bearing housings (2) on both sides and tighten the adjustment screws (3). Let the belts run slowly. Check that the belts do not pull to one side but keep the same distance from the lateral guides (4). If one of the belts pulls to one side, tighten on that side until it runs straight. Let the belts run at max. speed for 10 to 15 minutes without the cover plates (5) being fitted. Check that the belts run straight and that the carriers (6) do not tilt.

Adjustment of Belts

(Fig. 27)

The belts must be adjusted to run straight as they will otherwise be damaged. When the belts are adjusted or checked, the table must be fastened to the crop elevator and be clear of the ground. Adjust the belts one by one by slackening the screws (7) and moving the front belt roller (2) with the adjustment screw (6).

Belt adjustment is checked by lifting the belt (1) at the point (a) between the two belt rollers (2) and (3) using a force of 14-18 kg.

The belts are properly tightened when the distance from the upper edge of the lateral guide (4) to the upper edge of the belts is 34 ± 2 mm. Place the measuring block (5) on the lateral guide (4) as illustrated. The belts are properly tightened when the upper edge of the belts is level with the corner of the block (5).

Note: Do not tighten the PowerFlow belts more than prescribed.

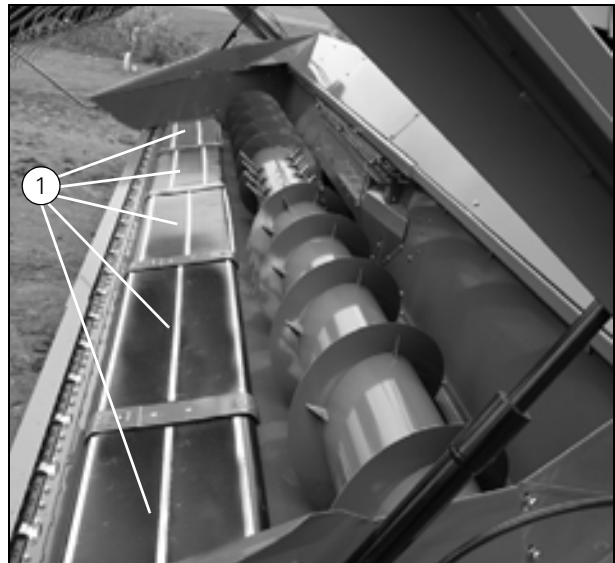


Fig. 25

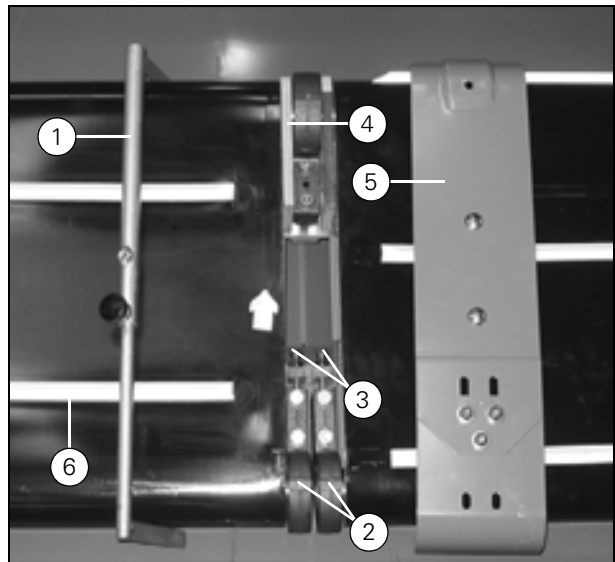


Fig. 26

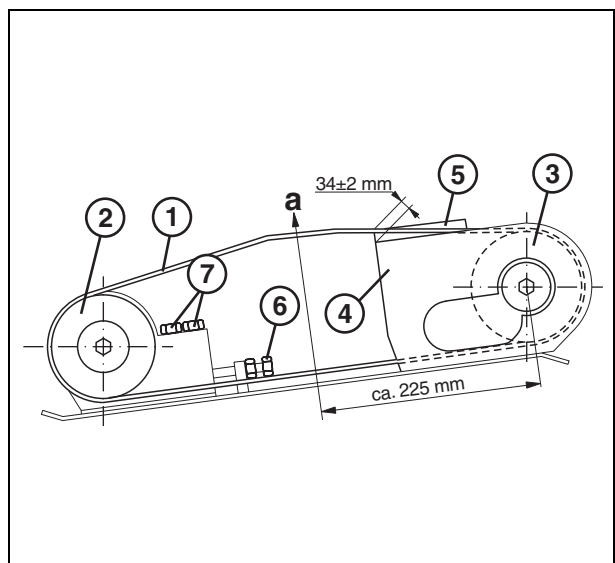


Fig. 27

7. Cutting Tables

Front Scrapers

(Fig. 28)

The belt rollers are fitted with scrapers to prevent accumulation of dirt. If dirt sticks to the rollers, the belt will tighten and pull to one side causing damage of belt and bearings.

The front belt roller is fitted with scrapers (1) at both ends, and (2) in full width. The scraper (2) has outlets at both ends so that the scraped off dirt does not stay on the belt.

The scrapers must be adjusted so that the distance to the belt roller is 0.4 ± 0.2 mm (use a feeler gauge).

Adjust the scraper (2) at a distance of 0.6 ± 0.2 mm.

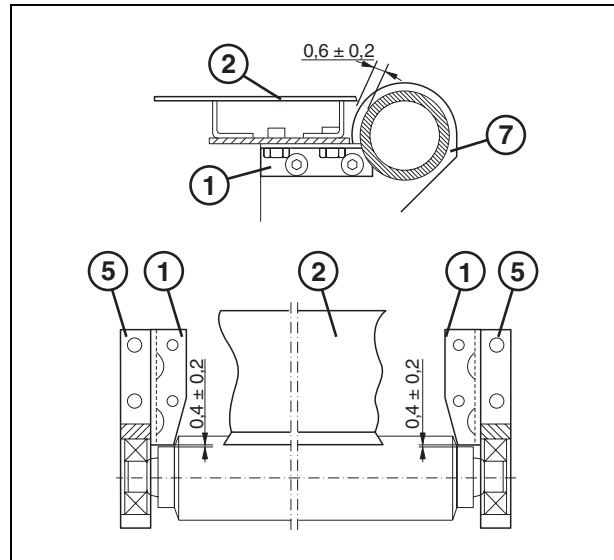


Fig. 28

Rear Scrapers and Adjustment of Bearing Housings

(Fig. 29)

The rear belt rollers are fitted with scrapers (1) at both ends. The clearance between the scraper and the belt roller must be 0.4 ± 0.2 mm. The bearing housings (5) and (6) are adjusted with the shims (3) by using a stretched wire (4). If the bearing housings are dismounted, make sure that the right shims are remounted under the right bearing housings. If the shims get mixed up, the bearing housings must be re-adjusted by using a stretched wire (4). The bearing housings (5) are locked fore/aft with a pin through the hole (8). The rollers must be parallel within ± 1 mm.

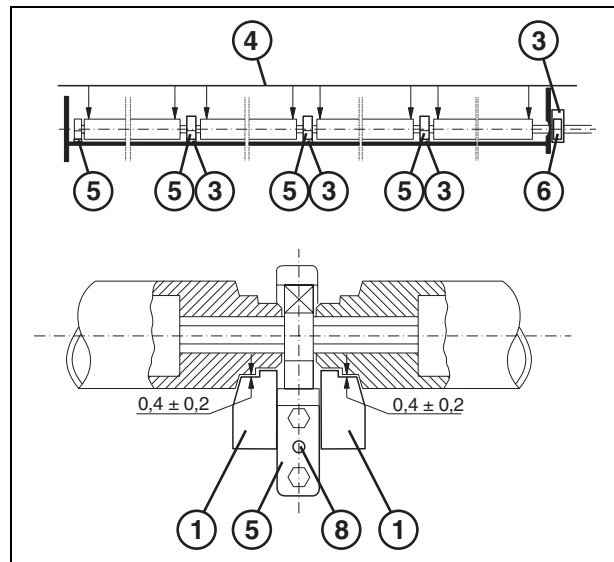


Fig. 29

Table Bottom

(Fig. 30)

The PowerFlow table is equipped with full-width steel skids.

There are holes (1) under the joints between the PowerFlow belts allowing dirt from the scrapers to fall out.

The holes are fitted with labyrinth plates (2) to prevent soil and straw from entering the table from underneath.

Check daily that dirt does not accumulate in the holes and block them.



Fig. 30

7. Cutting Tables

Cleaning

(Fig. 31)

Check regularly that dirt does not accumulate between the belts. Dismount the cover plates and clean scrapers and labyrinth plates, if necessary.

Clean the table thoroughly after harvest. Material which is not removed from the belts (1) and scrapers (2) and from under the belts (3) will stick to and damage the belts when the combine is started again.

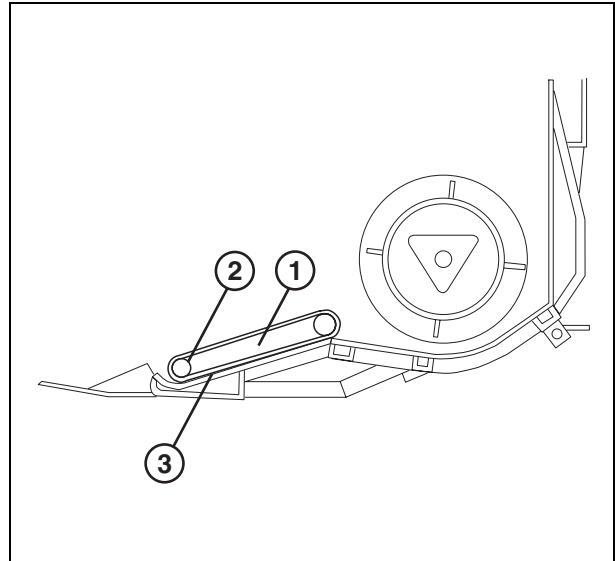


Fig. 31

7.9 Crop Lifters

Using Crop Lifters

(Fig. 32)

The crop lifters are applied in partially or completely laid and in swathed crops.

Normally one crop lifter is fitted per foot cutting width (on every 4th finger). In certain cases it may be necessary to fit one crop lifter on every 2nd finger to avoid cutting off ears.

Always keep the two outermost fingers on both sides free of crop lifters.

Mounting

Push the fork home into the groove (1), lift the crop lifter (2) over the finger (3) and secure it with the spring (4) in the middle hole.

Adjust the cutting height so that the crop lifter touches the ground. If the cutting height is too low, the crop lifter will run over the crop. Type B has an extra skid (6) which when touching the ground, keeps the tip under the crop.

If type B is used, the table must be raised before the combine is reversed. Otherwise the skid may dig into the ground and pull the crop lifter off the finger.

Removal

Lift the crop lifter (2) and pull off the springs (4).

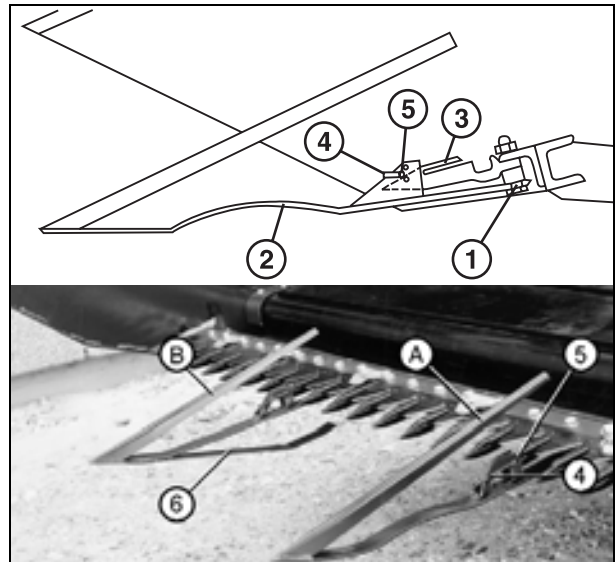


Fig. 32

7. Cutting Tables

7.10 Vertical Knives and Straw Dividers

Vertical Knife

(Fig. 33)

For direct cutting rape, for mustard, beans, and similar crops the table can be fitted with a vertical knife on the left- or right-hand side as required.

The vertical knife is engaged/disengaged with a toggle switch in the control panel.

The knife clips (1) must be adjusted with shims to leave a distance of 1 to 3 mm between the knife sections. If the distance is less than 1 mm or more than 3 mm, it may not be possible to obtain a clean cut.

Note: Check adjustment of knife clips after every 10-15 hours of operation.



WARNING: The vertical knives must be dismounted for road transport.

Mounting of Vertical Knife

(Fig. 34)

Fit the support (1) of the vertical knife under the bracket (2), as described under 'Mounting of Straw Dividers'. Fasten the knife bar to the cutting table using the bolts (3).

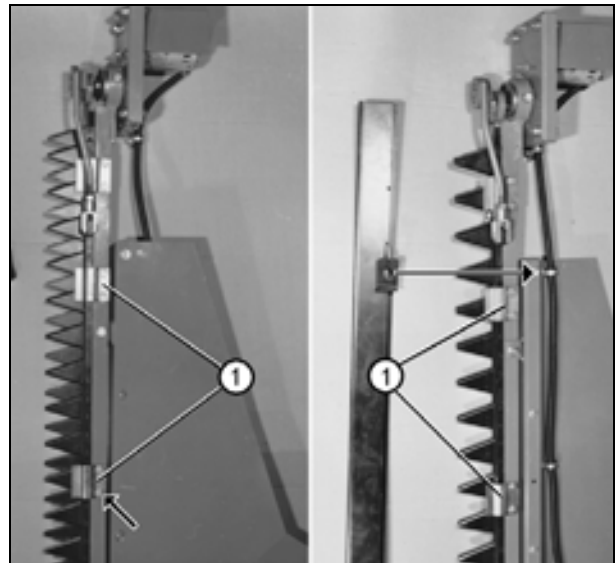


Fig. 33

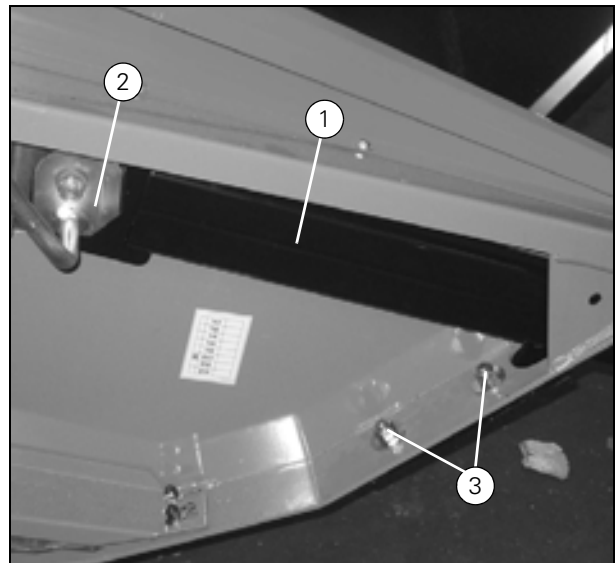


Fig. 34

7. Cutting Tables

Torpedo Divider and Straw Divider Bow

[\(Fig. 35\)](#)

The cutting table can be equipped with torpedo dividers (1) or bow dividers (2) to suit all harvesting conditions. The torpedo dividers (1) are used in standing crops and laid crops, and the bow dividers (2) in long, tangled crops.

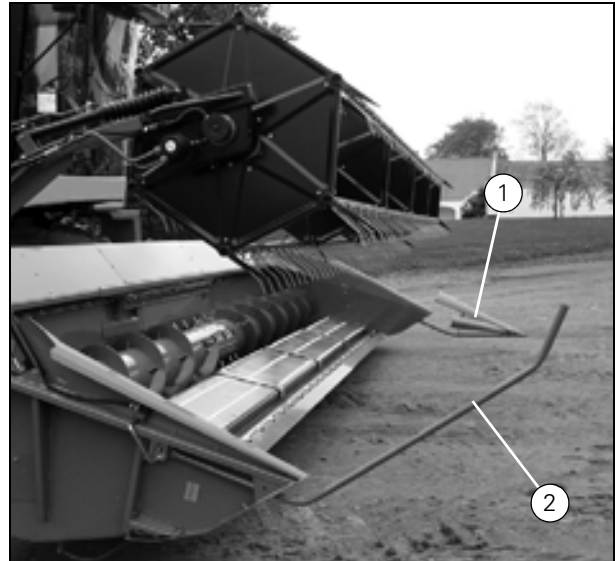


Fig. 35

Mounting of Straw Dividers

[\(Fig. 36\)](#)

Fit the support (1) of the torpedo dividers or the straw divider bow under the bracket (2). The pin underneath the bracket (2) must secure the support (1) of the straw divider.

When fitting the straw dividers for the first time, tighten the bracket (2) slightly with the nut (4).

Subsequent mounting/dismounting can be done by turning the bracket (2) with the lever (3) without adjusting the nut (4).

The lever (3) in full-drawn line shows locked position. The lever (3) in broken line is opened position.

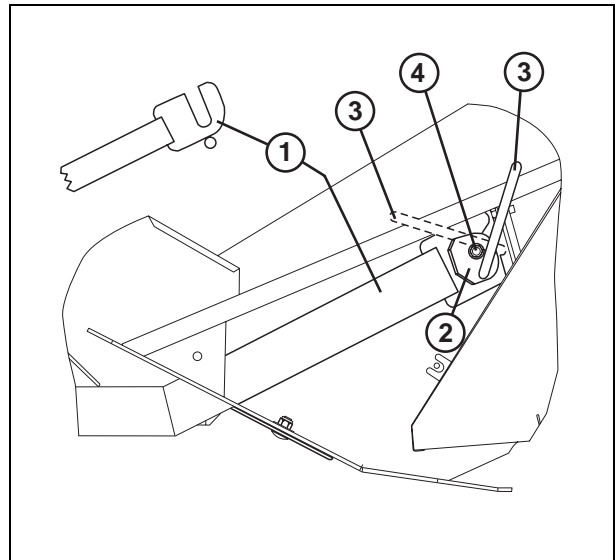


Fig. 36

Adjustment of Torpedo Divider

[\(Fig. 37\)](#)

Adjust the torpedo divider (1) in relation to the reel using the bracket (2).

The extension wing (3) is adjusted out/in by moving the lever (4) and up/down by turning the toothed disk (5).

The height of the torpedo divider above the ground is adjusted with the bracket (6).

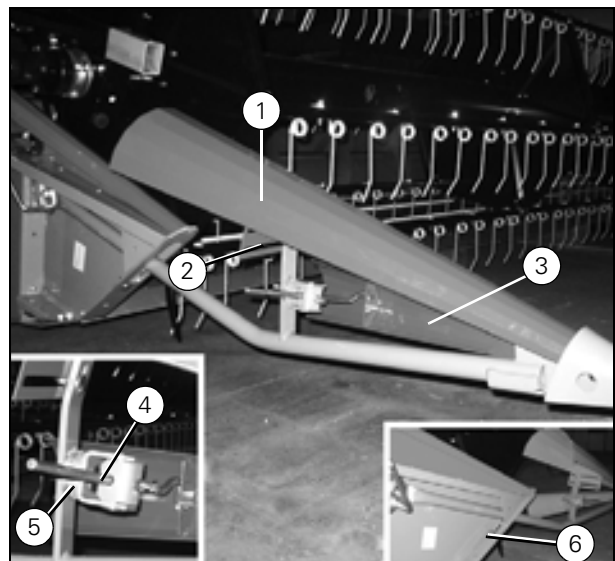


Fig. 37

7. Cutting Tables

7.11 Fixed Table Auger Fingers

(Fig. 38)

The fixed table auger fingers (1) are used when the crop cannot be evenly distributed over the full width of the machine.

The material not being evenly distributed may cause loss at straw walkers or shaker shoe.

The table auger fingers are fitted by means of mounting plates (2) inside the table auger.

Fit the mounting plates with two screws in the holes (3) and fit the fixed finger (1) with three screws in the holes (4). When not using the fixed fingers, leave all the screws tightened in the holes.

Using Fixed Table Auger Fingers

(Fig. 38) and (Fig. 39)

If the crop volume in the middle of the table gets too large, caused by very dry or stiff material moving in front of the table auger, the fixed fingers must be fitted in pos. 1 and 2.

If material accumulates in front of the middle of the table auger, fit the fixed fingers in pos. 2 and 3.

In swathed crop which is moving in front of the table auger, the fitting of fixed fingers in pos. 1 and 2 may improve the distribution of the crop over the full width of the machine.

High Table Sides

(Fig. 40)



WARNING: Make sure that the high back plates and table sides pos. (1) and (2) are fitted and undamaged before the machine is taken into operation.

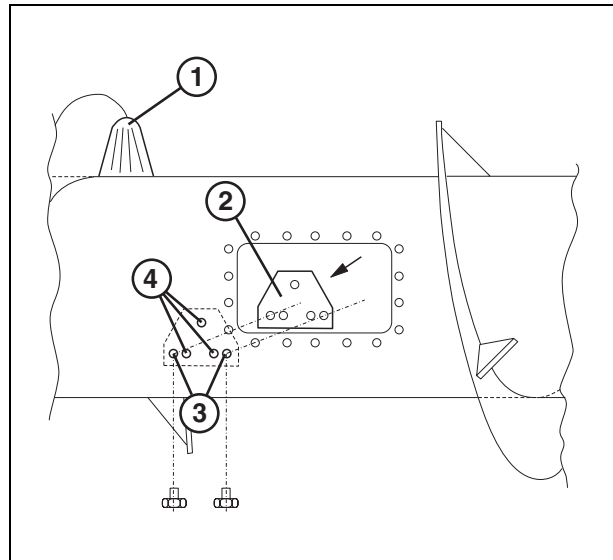


Fig. 38

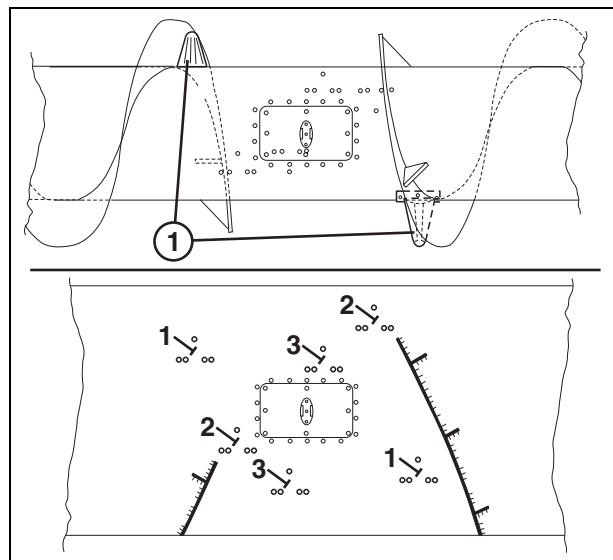


Fig. 39

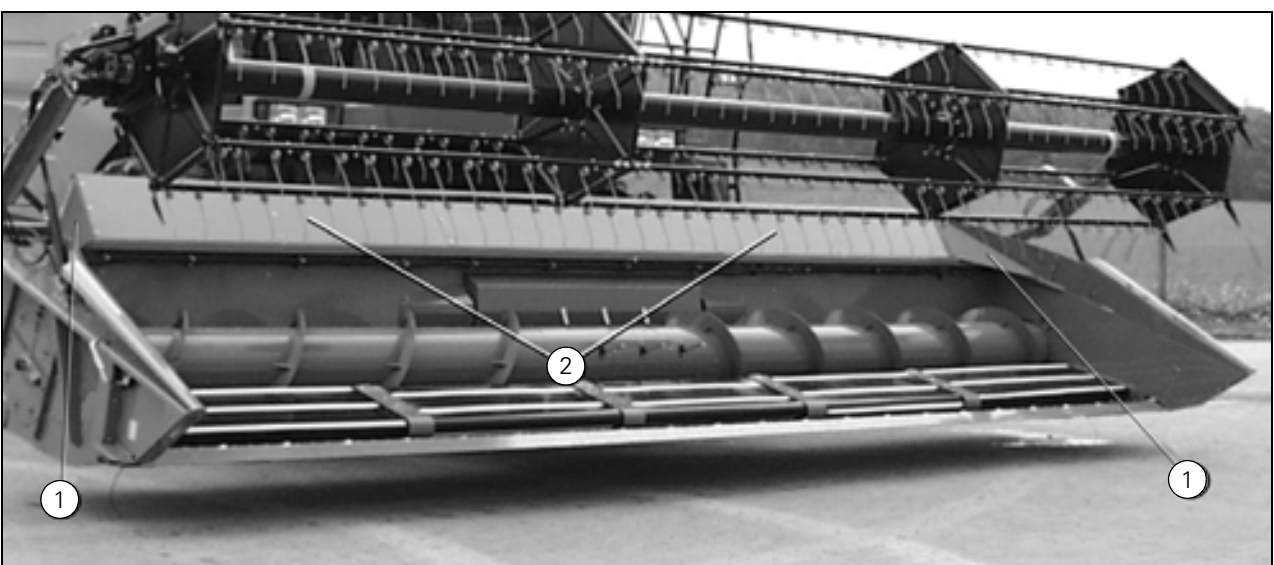


Fig. 40

7. Cutting Tables

7.12 Main crop elevator

Crop Elevator Chain

[\(Fig. 41\)](#)

The elevator chain is tightened with the spring (1) which must be adjusted to a length of 75 mm. Please note that the spring effect is blocked by a spacer when this dimension reaches 74 mm.

Adjust the chains equally on both sides and check that the support (2) moves forward/backward when the chains are pushed down.

The chain length is accurate when the support is visible in the hole (3) and not in the hole (4).

If the support is not visible in the hole (3), the chain is too long.

If it is visible in the hole (4), the chain is too short.

Insert/remove chain links to adjust the chain length.

The elevator chain is kept down and its movements are damped by the spring (5) which must be adjusted at a length of 124 mm.

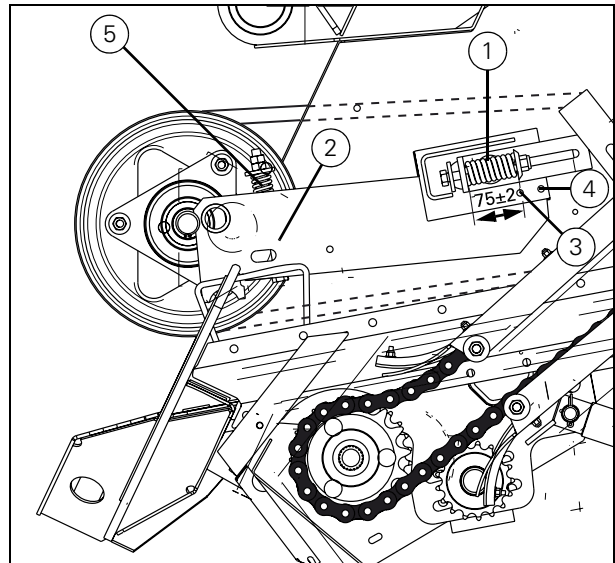


Fig. 41

Transmission for Table

[\(Fig. 42\)](#)

The table chain drive is adjusted with the chain guide (1).

When the chain is properly tightened, adjust the chain guide (2) upwards until it supports the chain without pressing it.

Fit the guard after adjustment.

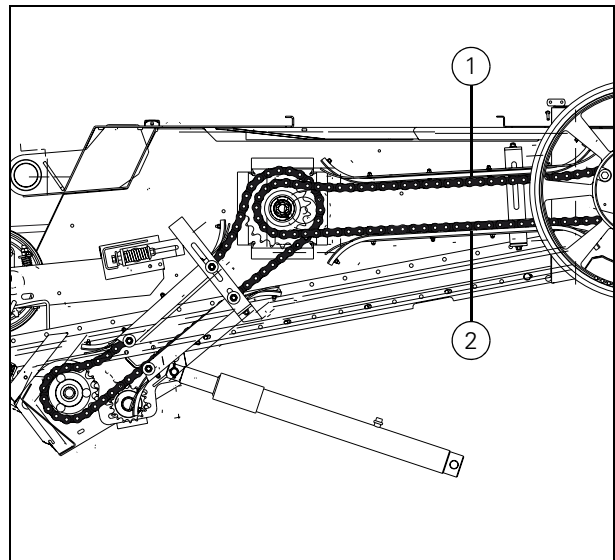


Fig. 42

Stone Trap

[\(Fig. 43\)](#)

The stone trap (1) is fitted at the end of the crop elevator in front of the threshing cylinder.

To empty the stone trap remove the split pin (2), pull the lever (3) backward and upward, and then release it.

To close the stone trap pull the lever (3) completely back until it can be pushed down and locked. Insert the split pin.

Make sure that the stone trap is completely empty before closing it again.

When open, the stone trap is visible under the crop elevator.

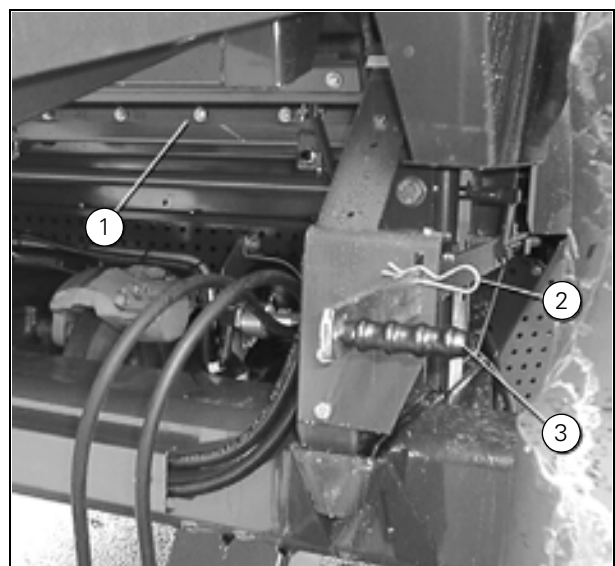


Fig. 43

7. Cutting Tables

Initial Adjustment of Cutting Height Indication

(Fig. 44)

Raise the crop elevator until the measure A between the lifting ram (1) and the centre of the shaft end (2) is:

Standard machines: 225 mm

Auto Level machines: 175 mm

Call up "Right-hand input 2" from the menu "Diagnostics | Electric. diagnostics | Diagnostics RH".

Slacken the nut (3) and turn the sensor (4) until the screen picture shows 1.5-1.6V at "Cutting height preset.sensor", and tighten the sensor.

Repeat zeroing of cutting height as described under section 5.6 'Coding of Auto Level Table' on page 160.

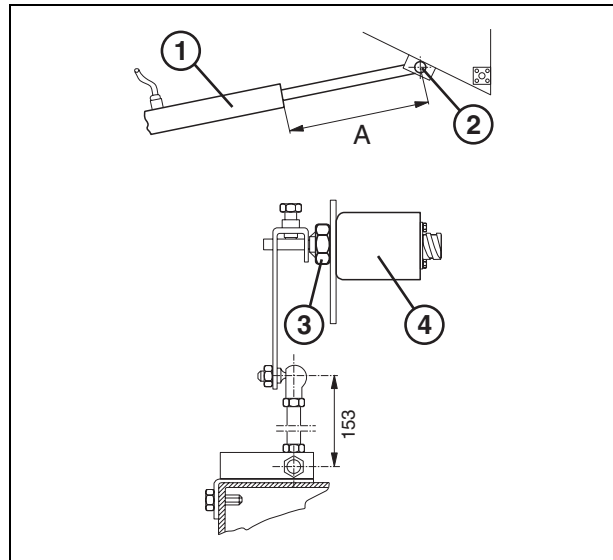


Fig. 44



WARNING: Before working under or on the raised table and crop elevator, secure them against lowering. (Fig. 45): This is done by lowering both ram stops (1) over the rods (2) on the table lifting rams.



Fig. 45

7. Cutting Tables

8. Operation of Machine and Cutting Table

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8. Operation of Machine and Cutting Table

8.1 Safety Precautions



Before any service or cleaning is carried out, stop the engine, remove the ignition key, and switch off the main switch.



Never start the machine until all safety guards are fitted and secured.



During road transport the switch for multi-function lever and cutting height control must be switched off, to avoid unintentional lowering of crop elevator and table.



Before leaving the machine, lower the table, stop the engine, remove the ignition key, and switch off the main switch.



Never work on or under the table until the table is disengaged, the engine is stopped, the ignition key is removed, and the main switch is switched off.



The spring-loaded variator pulleys may be disassembled only by specialists who are familiar with the pulleys.

Disassembly in wrong order may cause personal injury.



Be particularly cautious when touching the augers. It involves a risk of personal injury as the edges are very sharp.



Never enter the grain tank without stopping the engine and removing the ignition key from the switch, to prevent that the machine is started unintentionally.



When the unloading auger tube is turned out/in, no persons are allowed within its reach. The unloading auger must always be turned completely in during transport.



Never remove the cleaning shutter for auger and drive shaft until the unloading auger clutch is disengaged, the engine stopped, and the ignition key removed from the switch.



As the function of the grain tank augers does not permit complete shielding, always use

suitable tools (rod or the like) to remove accumulated material in the grain tank.



Do not open the shutter until the unloading auger has stopped completely. Be particularly cautious when touching the unloading auger. It involves a risk of personal injury as the edges are very sharp.



Always wear gloves when repairing and servicing the straw chopper knives.



Always remember to switch off the shaker shoe light when not in use. Fire hazard.



Before stepping onto the access ladder for the service platform make sure the fifth step of the ladder rests securely on the bottom brackets.



Before stepping onto the engine hood make sure there are no live overhead power lines above the machine.



Having used the cylinder wrench always remove it from the cylinder shaft before starting the machine.

8. Operation of Machine and Cutting Table

8.2 Operation of Table

Table Height and Table Automatic Control

The table is operated with the buttons in the multi-function lever (Fig. 1).

The following functions can be operated:

A Automatic table control

1. Table on/off
2. Table up
3. Table down
4. Reel up
5. Reel down
6. Reel forward
7. Reel backward
8. Reel speed up
9. Reel speed down
10. Unloading auger out
11. Unloading auger in
12. Remote control terminal, ENTER
13. Remote control terminal, SHIFT

The table is raised and lowered manually with the buttons "Table up" and "Table down", respectively, in the multi-function lever. The speed is adjustable in 2 steps, fast and slow, using the key "Table lift speed" from the menu "Settings | Table settings".

In addition, different automatic table height controls are available, please see below. The controls are engaged with the automatic button (A), and disengaged when the table is raised or lowered manually.

It is advisable to use the automatic control at headland turns. Raise the table by double-clicking the automatic button when leaving the crop. The double-click raises the table to a height of 70 cm above the ground. Lower the table by pressing the automatic button when entering the uncut crop.

The automatic table height control consists of 3 separate functions that can be engaged/disengaged and adjusted from the menu "Settings | Table settings" and be combined as required, please see section 4.21 'Interaction Between Table Controls' on page 144.

The functions are:

1. Cutting height control
2. Field pressure control
3. Preset cutting height

Note: Please note the difference between cutting height control and preset cutting height.

When the automatic button is pressed, the first function to be activated is preset cutting height. The table will be lowered fast to the preset height after which field pressure control and/or cutting height control takes over, providing a more accurate control of the table height.

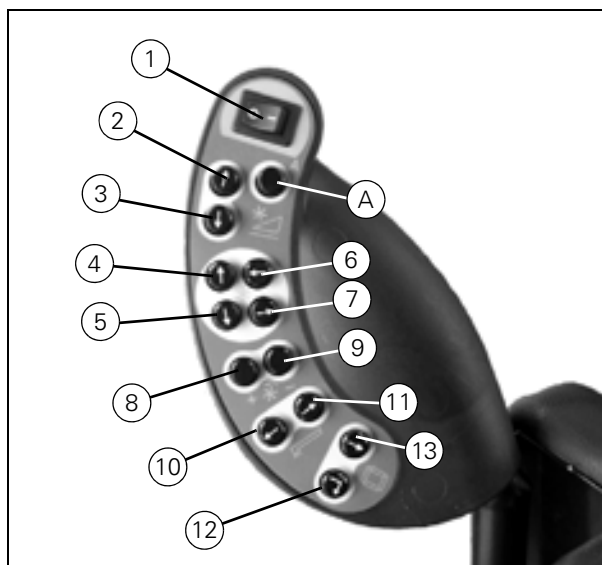


Fig. 1

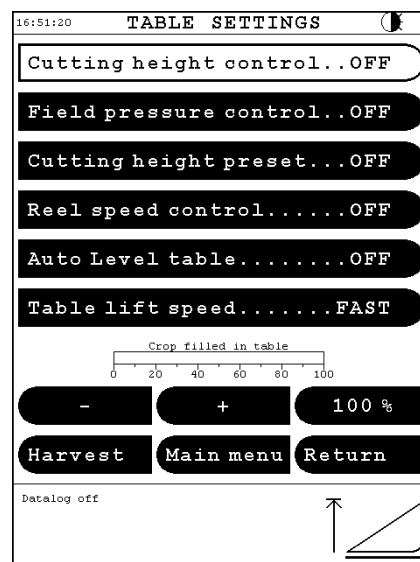


Fig. 2

8. Operation of Machine and Cutting Table

Cutting Height Control

(Fig. 3) and (Fig. 5)

(Optional on certain models)

Cutting height control is engaged with the key "ON/OFF" and is suitable for harvesting standing crops. When engaged, cutting height control will take over control of the table allowing it to follow the ground at the preset height. The clearance between table and ground is measured by the ground sensors. Cutting height control is suitable under all ground conditions and particularly well suited on undulating ground.

The cutting height is adjustable on the move, for instance by directly pressing the cutting height control bar in the Harvest menu.

Please also see section 4.17 'Cutting Height Control' on page 137.

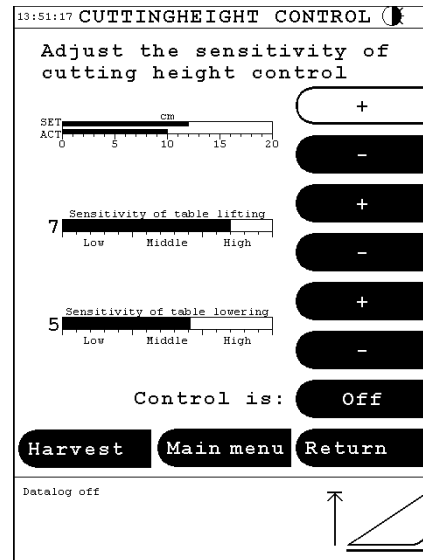


Fig. 3

Field Pressure Control

(Fig. 4) and (Fig. 5)

(Optional on certain models)

Field pressure control is engaged with the key "ON/OFF" and is used if the lowest possible cutting height is required, for instance in laid crops.

The field pressure control allows the table to float on the ground at a constant specified pressure.

Field pressure control has a built-in safety function protecting the table against damage and incorrect operation. The safety function will always raise the table where necessary. Therefore, it is advisable always to work with the field pressure control "ON".

The field pressure can be read and adjusted on the move, for instance by directly pressing the field pressure control bar in the Harvest menu.

Please also see section 4.18 'Field Pressure Control' on page 139.

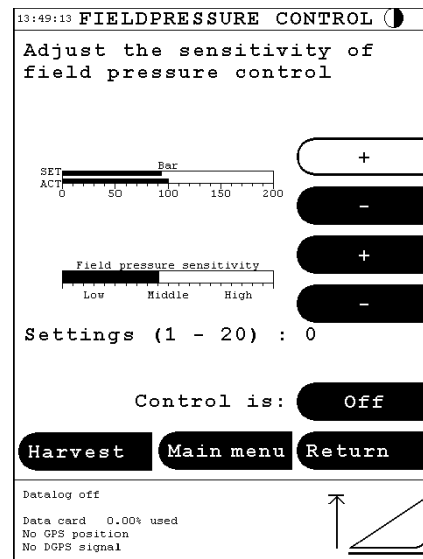


Fig. 4

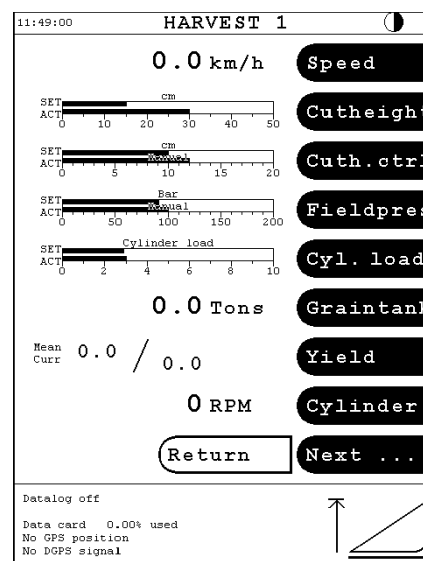


Fig. 5

8. Operation of Machine and Cutting Table

Preset Cutting Height

(Fig. 6) and (Fig. 7)

Preset cutting height is engaged with the "ON/OFF" key.

This function enables the operator to set the height, to which the table is to be lowered fast. Adjust preset cutting height with the "+" or "-" key until the SET bar has reached the desired cutting height. Once preset cutting height is coded, it remains coded even though the ignition is switched off.

Preset cutting height can be activated with the automatic button in the multi-function lever when threshing unit and table are running and the table is raised more than 15 cm above the desired height.

To ensure correct function, preset cutting height must be calibrated correctly, please see Table Calibration in section 4.9 'Coding,' on page 109.

Cutting height indication can be inserted in the Harvest menu where both current and preset cutting height can be read, please see (Fig. 7).

Auto Level Table

If the machine is equipped with the function "Auto Level table", the table can be angled to either side using the switch in the control panel.

Automatic control of Auto Level table can be switched on and off from the menu "Settings | Table settings".

Auto Level table control becomes active as soon as a deflection of the ground sensors is recorded, even if the machine is stationary. DATAVISION compares the deflections of the ground sensors and alters the angle of the table if there is a difference between them. Consequently, the table will always follow ground contours.

Note: The function is independent of the automatic table height functions although it uses the same ground sensors as the cutting height control.

Please also see section 4.19 'Auto Level Table' on page 141 and section 4.20 'Operation of Auto Level Table' on page 143 for a detailed description of Auto Level table calibration and function.

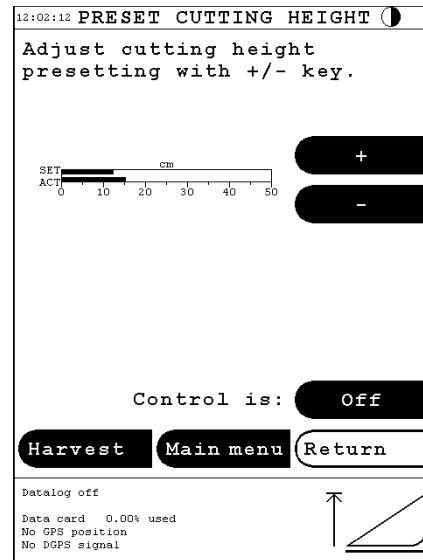


Fig. 6

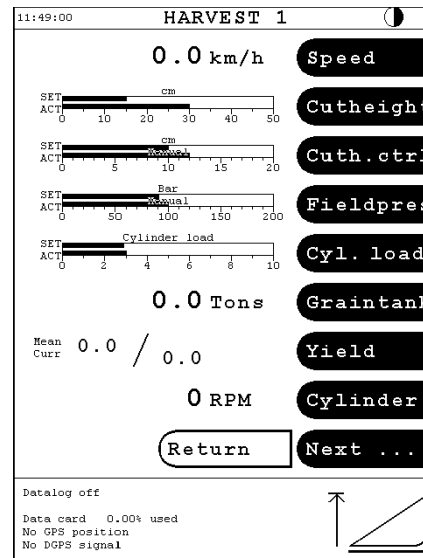


Fig. 7

8. Operation of Machine and Cutting Table

Table Engagement - Emergency Stop

(Fig. 8)

Engagement and disengagement of table takes place with the toggle switch in the multi-function lever, activating the magnetic clutch (1). The switch serves as an emergency stop if stones or the like enter the table.

In case of power failure the clutch can be blocked with the two ½"-13 UNC bolts in the holes (8).



WARNING: If the clutch is mechanically blocked with the screws, the table will start when the threshing unit is engaged.

Slip Clutch

The belt pulley (2) has a built-in slip clutch (3) protecting the elevator chain from being overloaded.

The springs (4) of the slip clutch must be compressed to a length of 44 ± 0.5 mm. The clutch should be removed, stripped and cleaned at the beginning of each season.

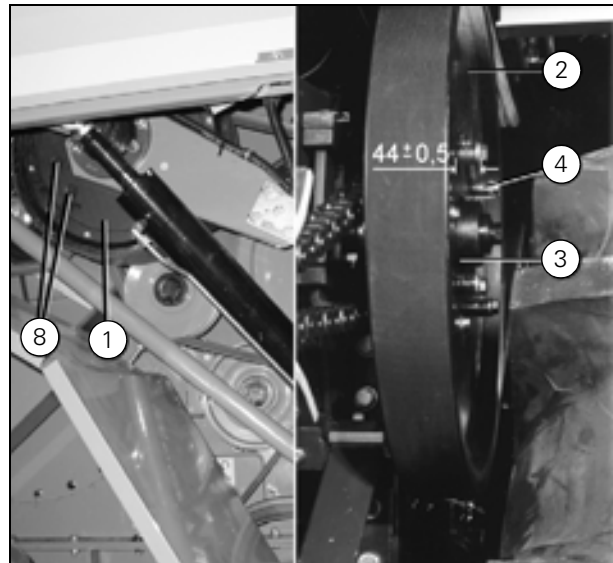


Fig. 8

8. Operation of Machine and Cutting Table

8.3 Threshing Unit Transmission

Threshing Unit Engagement

(Fig. 9)

The threshing unit is engaged and disengaged with the toggle switch (1) in the right-hand panel, activating the electric cylinder (2). The circuit is automatically broken when the threshing unit is completely engaged or disengaged.

Note: To avoid engine stop, the engine revolutions are automatically increased by approx. 300 rpm from 1000 to approx. 1300 rpm when the threshing unit is engaged with a cold engine.

Out of consideration for the belt transmissions the threshing unit can be engaged only when the engine speed is below 1500 rpm and the forward speed is below 15 km/h. If you attempt to engage the threshing unit when these conditions are not present, an alarm will appear in the information area on the terminal, and the threshing unit must be disengaged immediately.

Note: The alarm may also appear if the switch for engagement of the threshing unit is activated too quickly after the engine has started. In that case tilt the switch once off and on again.

The guard (3) must be adjusted at a distance of 6 ± 1 mm from the belt pulley when the threshing unit is engaged.

The guard (4) must be adjusted at a distance of 8 ± 1 mm from the belt pulley when the threshing unit is engaged.

Cylinder Variator

(Fig. 10)

The threshing cylinder is driven from the rear beater shaft through the hydraulic variator pulley (1) and the spring-loaded variator pulley (2).

The peripheral speed of the threshing cylinder is variable from 12.8 to 35.5 m/sec. on the terminal from the menu "Cylinder RPM". From the variator pulley (2) the cylinder is driven by a belt drive which is tightened with the spring-loaded tension pulley (4). Do not let the cylinder run at maximum speed when the machine is cold.

Allow the machine to reach normal working temperature before running the cylinder at max. speed. Otherwise, the pressure in the variator pulleys may rise and damage the seals.

For the harvest of special crops like maize and the like, the threshing cylinder can be geared down to 10 m/sec. by exchanging the belts and the belt pulley (5) on the cylinder shaft.

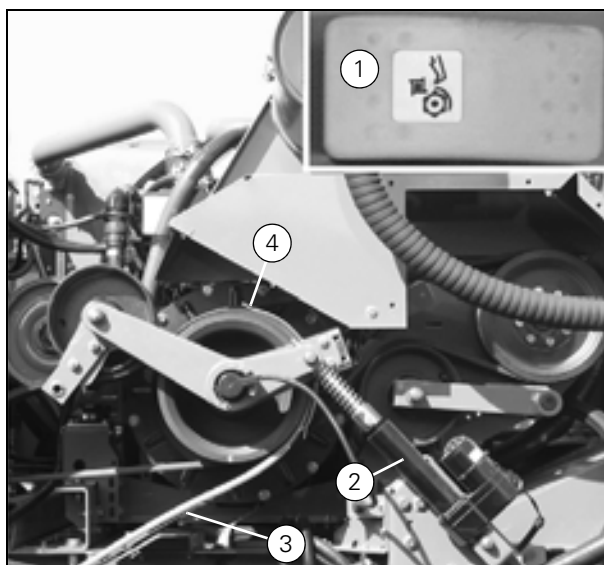


Fig. 9

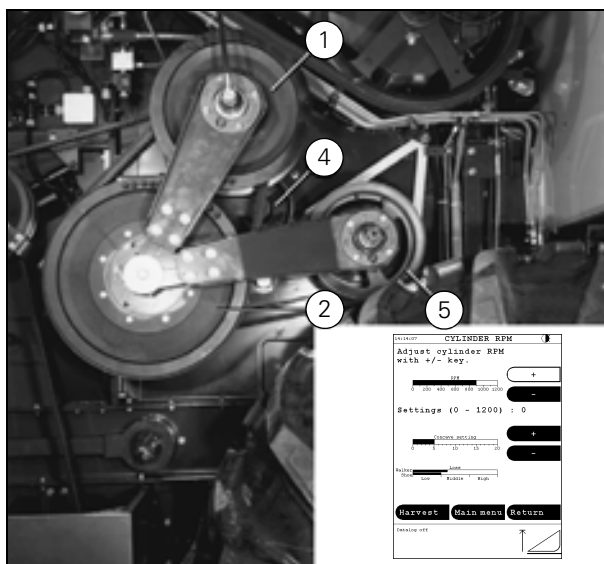


Fig. 10



WARNING: The variator pulleys may be disassembled only by experts who are acquainted with the pulleys, as disassembly in wrong order may cause personal injury. The spring pressure is 400 kg.

8. Operation of Machine and Cutting Table

Turning Tool for Cylinder

[\(Fig. 11\)](#)

The turning tool positioned in a support on the side of the elevator, can be used for turning the cylinder at adjustments, repairs, cylinder stop, etc.



WARNING: *Having used the cylinder wrench always remove it from the cylinder shaft before starting the machine.*

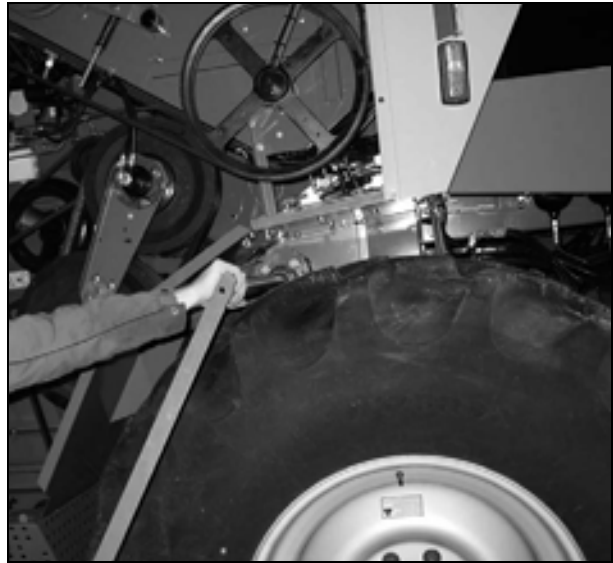


Fig. 11

8. Operation of Machine and Cutting Table

8.4 Concave Setting, Electrically Adjustable

Check regularly that the concave is clean. If the concave is choked by dirt, the straw walkers will be overloaded and cause loss.

Operation of Concave

(Fig. 12)

The concave setting is adjusted on the DATAVISION terminal from the menu "Settings | Harvest settings | Concave setting". Adjustment is possible in 19 steps.

When the concave setting in DATAVISION is at step 5 "Normal", the clearance between concave and cylinder is:

Front: 8 mm

Rear: 5 mm

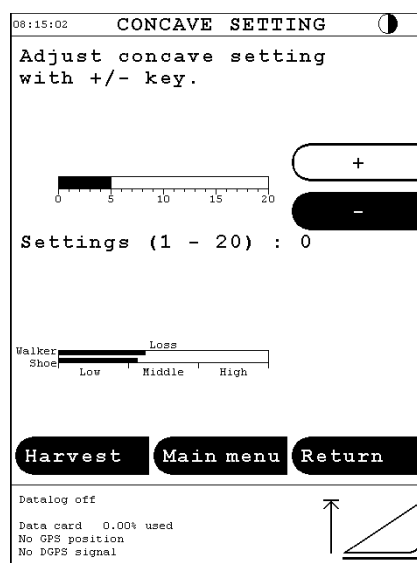


Fig. 12

Concave Setting

If the crop is difficult to thresh, the concave should be moved upwards, and in case of too much crop damage, it should be moved downwards.

The table on the right shows concave setting front and rear in mm at the various adjustment steps. The concave setting is measured through the inspection openings at the 2nd rub bar from the front and the 3rd rub bar from the rear of the concave.

See section 8.13 'Suggested Harvest Settings' on page 237.

Reading Terminal	Clearance, mm front	Clearance, mm rear
1	4	1
2	5	2
3	6	3
4	7	4
N5	8	5
6	9	6
7	10	7
8	11	8
9	12	9
10	13	10
11	14	11
12	15	12
13	17	14
14	18	15
15	19	17
16	20	18
17	21	20
18	22	21
19	24	23

8. Operation of Machine and Cutting Table

Initial Settings, (Fig. 13)

The actuator (1) must be calibrated while the concave adjustment arm (2) is dismantled from the actuator. Please see the menu "Coding | Concave calibration". Use the supplied calibration rod to prevent the actuator piston rod from rotating. The piston rod must not be turned after calibration has been carried out. Remount the actuator on the adjustment lever (2).

Set the concave at step 5 in DATAVISION from the menu "Settings | Harvest settings | Concave setting".

Note: To obtain the best result calibration must always be carried out when the actuator is dismantled. Otherwise dirt, etc. may prevent correct calibration.



WARNING: To avoid damage of concave and cylinder, calibration must always be carried out when the actuator is dismantled as described above.

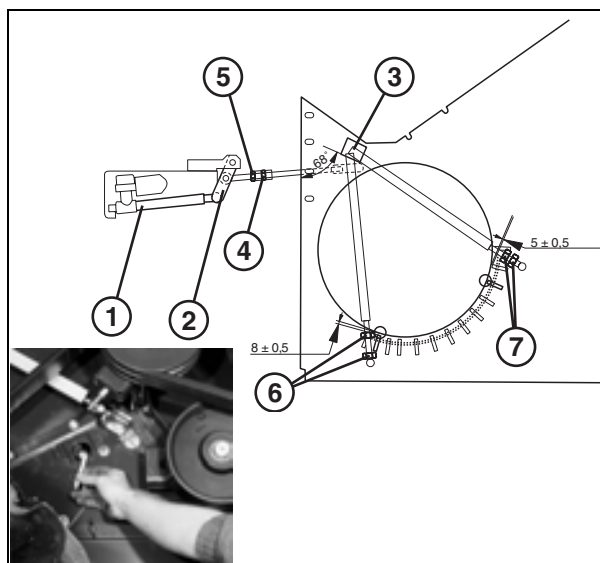


Fig. 13

Adjust the arm (3) on the right-hand side using the nut (4) as shown in (Fig. 13). The angle of the arm (3) with the machine side must be 68° . Counter-tighten the nut (5) after adjustment.

The cylinder rasp bar closest to the concave is marked with three centre marks on the right- and left-hand sides. Adjust the clearance between concave and cylinder at the 2nd rasp bar from the front edge and 3rd rasp bar from the rear edge of the concave using the nuts (6) and (7).

Front: 8 mm

Rear: 5 mm

Use the marked rasp bar and the supplied gauge when adjusting.

8. Operation of Machine and Cutting Table

8.5 Threshing

Concave Filler Plates

[\(Fig. 14\)](#)

The concave filler plates (1) can be inserted between the concave wires (2) and the frame (3). To mount the concave filler plates, remove the side panel (4) and raise the concave completely.

The filler plates are used for clover seed and similar crops requiring aggressive de-awning. Close the concave completely with filler plates when harvesting clover seed.

For harvesting grain crops which require de-awning or are difficult to thresh, two filler plates in the front space of the concave may be necessary.

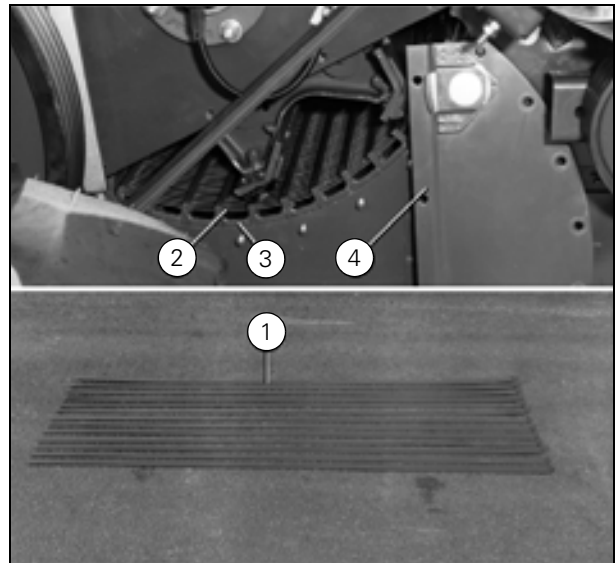


Fig. 14

Straw Walkers

[\(Fig. 15\)](#)

Before starting to thresh, check that the threshing unit is running at full speed.

The straw walker speed must be 224-227 rpm. Check daily that the straw walkers are clean. To remove the straw walker bottom to get access for cleaning, slacken the six bolts and push the straw walker bottom slightly to allow the washers to get out of the round hole.

For threshing special crops like maize and the like, the straw walkers can be geared down to 200 rpm using a special reduction kit.



Fig. 15

8. Operation of Machine and Cutting Table

Rear Beater Curtain

(Fig. 16)

The rear beater curtain (1) must prevent the grains from being thrown too far back in the machine. Its height above the straw walkers must be adapted to the crop volume.

The curtain must not obstruct the free passage of the crop through the machine. Check during adjustment that the curtain is free to move in the machine.

Basic Setting

(Fig. 16) and (Fig. 17)

The basic setting of the rear beater curtain is either high or low. Low basic setting is used for harvesting maize and the high basic setting for all other crops.

The high basic setting of the rear beater curtain (1) is reached by placing the adjustment lever (2) on the left-hand side of the machine in the top hole (3).

The rear beater curtain must be lifted $\frac{3}{4}$ up with the chain (4). - **This is standard setting.**

For maize harvest the rear beater curtain is lowered into low basic setting by placing the adjustment lever in the bottom hole (5) and adjusting the length of the chain (4) until the rear beater curtain is half-way up.

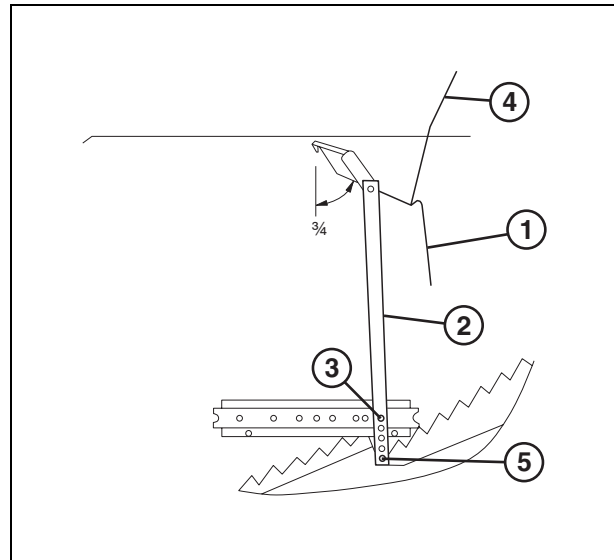


Fig. 16

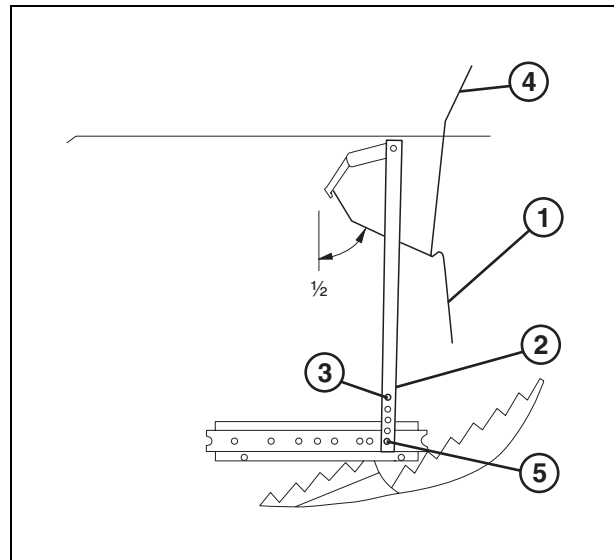


Fig. 17

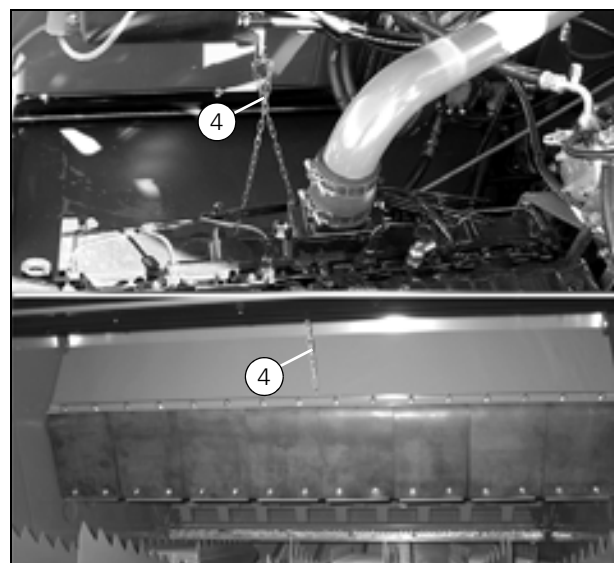


Fig. 18

8. Operation of Machine and Cutting Table

8.6 Straw Chopper and Spreader Hood

Straw chopper

(Fig. 19) and (Fig. 20)

The straw chopper is engaged in steps as follows:

1. Disengage the threshing unit
2. Loosen the screw and remove the plate covering the chopper clutch.
3. Pull the rear clutch disk outward so that it engages with the belt pulley (1) as shown in (Fig. 19).
4. Pull the lever (2) back to open the flap in the straw hood allowing the straw to fall into the straw chopper
5. Refit the cover plate for the chopper clutch.

The straw chopper is disengaged in steps as follows:

1. Disengage the threshing unit
2. Loosen the screw and remove the plate covering the chopper clutch.
3. Push the rear clutch disk out of mesh with the belt pulley (1).
4. Check that the belt pulley is free to turn.
5. Pull the lever (2) forward to close the flap in the straw hood allowing the straw to fall onto the ground.
6. Refit the cover plate for the chopper clutch.



WARNING: Do NOT engage and disengage the straw chopper when the threshing unit is rotating. The belt pulley (1) is rotating even when the straw chopper is not engaged. Never reach into the straw chopper and never walk round the back of the machine when the straw chopper is rotating.

Ensure that the locking handle for the left-hand deflector is positioned so that the straw chopper lever (2) is free to move.

Note: Ensure that the lever (2) is always in the right position. If the flap is closed when the chopper is engaged, the straw will accumulate in the straw hood and release an alarm.

The sensor (3) engages the monitoring of the straw chopper revolutions.

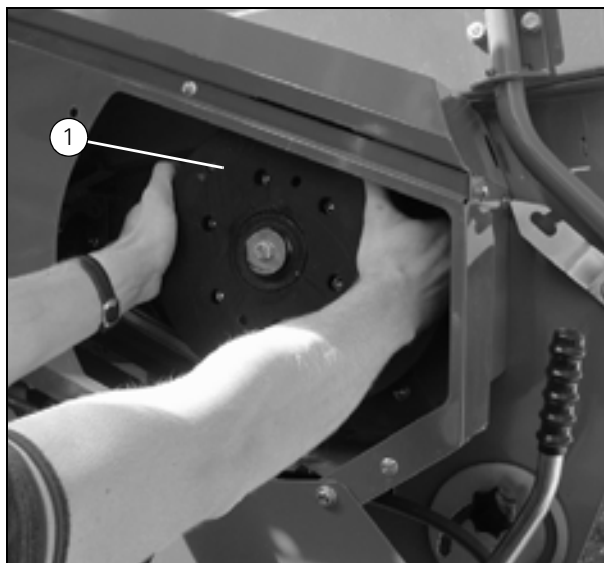


Fig. 19

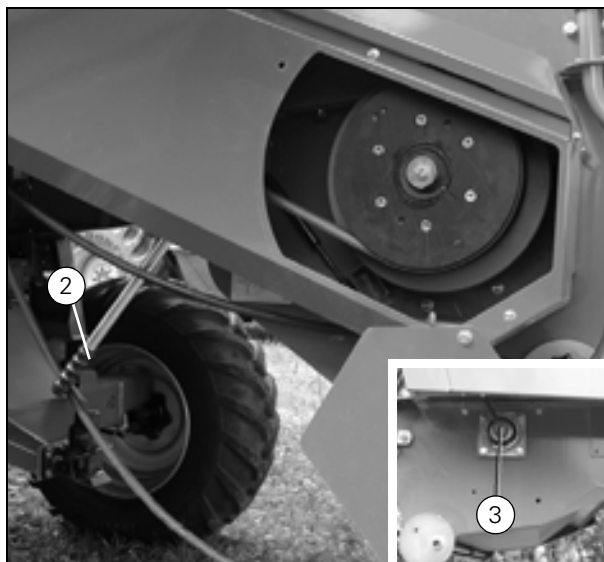


Fig. 20

8. Operation of Machine and Cutting Table

Adjustment of Spreader Hood

(Fig. 21)

To ensure optimum spreading of the straw, both spreader hood and deflectors are infinitely adjustable. To achieve the best result, raise the spreader hood into the upper adjustment range and then adjust the deflectors to direct the material as required.

When the thumb screw (1) is slackened the spreader hood can be adjusted up/down with the lever (2). When the locking pin (7) is pulled out the spreader hood can be raised completely and secured in the attachment (3).

To change the distribution of the material, the deflectors (4) in the spreader hood can be adjusted with the lever (5) when the thumb screw (6) is slackened. Spreader hood and deflectors can be adjusted to prevent the material from being blown into the uncut crop by crosswinds.

Electrically adjustable deflectors are available as optional extra. The deflectors are separately adjustable from the DATAVISION terminal in the cab. See section 4.10 'Settings' on page 117.

Note: *During transport on roads with table trailer attached, the spreader hood must be raised completely and firmly secured.*

If the trailer is not attached to the machine, the spreader hood must be lowered in working position during transport.

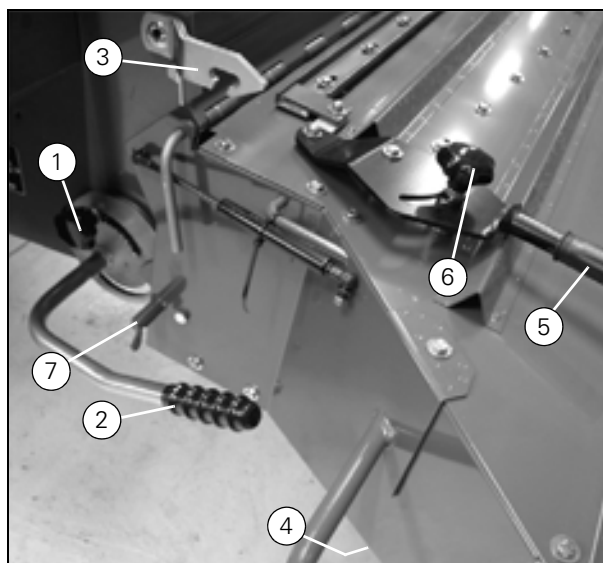


Fig. 21

8. Operation of Machine and Cutting Table

Counter Knives and Cross Bar

(Fig. 22) and (Fig. 23)

The straw chopper is developed for chopping everything from maize and sunflower to ordinary straw crops. The cross bar (1) and the counter knives (2) must be adjusted into different positions dependent upon crop and required chopping effect. The adjustment of the chopper is decisive for the length of the chopped straw and for how much power the chopper requires. The cross bar (1) and the counter knife bar (2) are adjustable without tools by moving the locking pins (3) into different positions. Below are a few guidelines for the adjustment of the chopper for different crops.

There are two adjustment possibilities for the cross bar:

A and B

and five for the counter knives:

I – II – III – IV – V

Straw Crops

Wheat, rye, barley and oats. The cross bar (1) must be in position A and the counter knife bar (2) in position I, II or III depending on required chop length and water content in the crop. Position I consumes the most power, and in wet crops the straw may settle on the counter knives resulting in even higher power consumption. If the straw starts settling on the counter knives, they must be angled one or two positions down. When the counter-knives (2) are turned down, the material will slide on the knives and will be easily chopped, (Fig. 23). It is advisable to use the cross bar instead of turning the counter knives one position up. Using the cross bar requires less power and improves the chopping effect more, than turning the counter knives one position up, from position II into position I. Improving the chopping effect will take up more power, which may affect combine capacity. It is important that the chopper is correctly adjusted considering both chopping effect and combine capacity.

Oilseed Rape

Usually the cross bar (1) should be in position B. If the crop is thin, the cross bar may be turned into position A which gives a wider spread pattern. The counter knives (2) must be in position III or IV. The further down the counter knives are angled, the easier the material gets into the chopper. The angle of the counter knives to the rotary knives is increased and so is the clearance between the rotary knives and the bottom plate.

Maize and Sunflower

Adjust the cross bar (1) into position B. The counter knife bar (2) MUST be in position V, and the counter knives must be covered by a plate. Alternatively, the counter knives may be dismantled. The straw chopper revolutions must be reduced by fitting a reduction kit consisting of belts. To prevent maize marrow from being thrown up into the bottom of the straw walkers, a cover plate must be mounted over the rear half of the chopper rotor.

Note: In case of blocking problems in the straw hood, it may help to turn the counter knives further down.

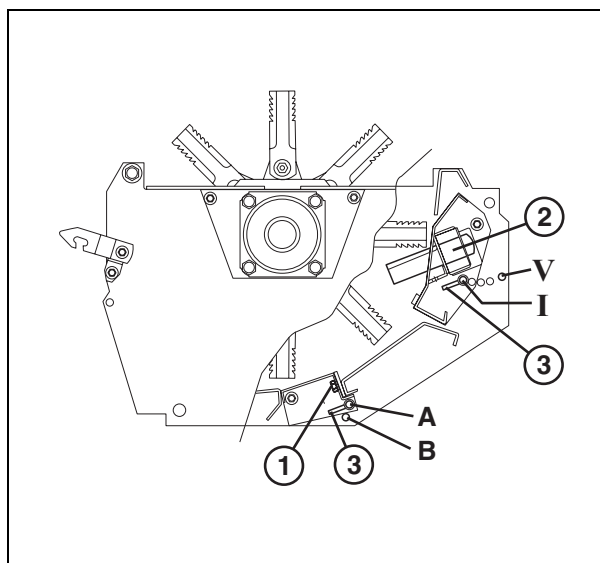


Fig. 22

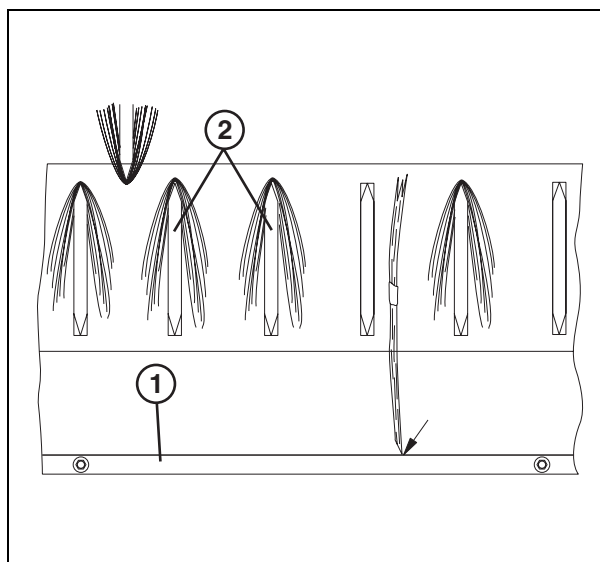


Fig. 23

8. Operation of Machine and Cutting Table

Replacement of Knives

(Fig. 24)

Rotary Knives

To replace or turn the rotary knife (1) dismount the screw (2) and the bushings (3). When replacing single knives pay attention to the weight difference of the knives. Too great difference will cause vibrations. When replacing worn knives, replace them two by two opposite each other to avoid vibrations.

Check and lubricate the knives daily. Damaged or half knives will quickly ruin the straw chopper.

Counter Knives

When the screws (4) and the profile (5) are dismounted, the knives (6) can be replaced by pulling them out of the attachment (7).

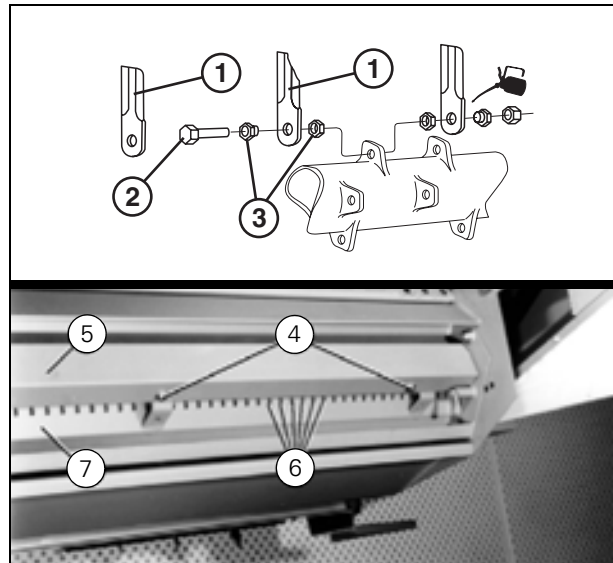


Fig. 24

8. Operation of Machine and Cutting Table

8.7 Fanning Mill and Sieves

Fanning Mill

(Fig. 25)

The fanning mill is driven by the rear beater shaft through the variator pulley (1). The fanning mill speed is variable from 460 to 1150 rpm on the terminal from the menu "Fanning mill RPM" (2). This activates the electric cylinder (3).

The fanning mill has air-intakes in the middle and on both sides. The air-intakes and the air deflectors in the fanning mill housing distribute the air under the sieves providing equal pressure and air supply under the full sieve area.

Check the fanning mill housing regularly through the openings (4) on right- and left-hand sides for accumulation of dust and chaff. Accumulated material must be removed either with compressed air or by scraping it out through the openings. If accumulated material is not removed it may cause damage to grain pan and fanning mill housing.

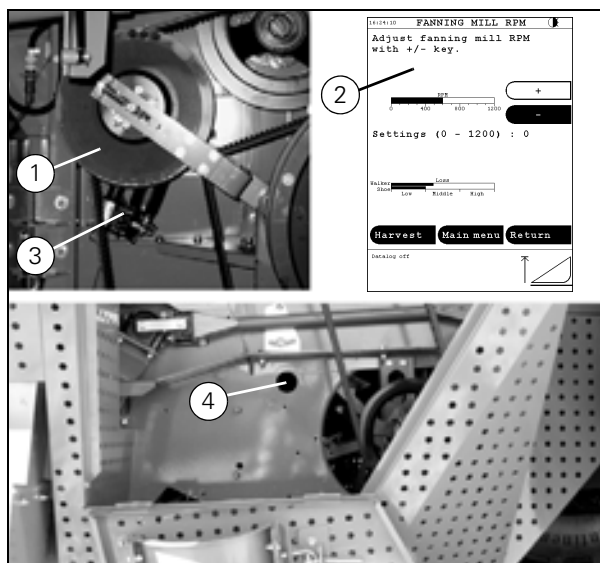


Fig. 25

Note: In very light seed crops the fanning mill revolutions can be lowered further by fitting a reduction kit consisting of a larger belt pulley and a belt.

Shaker Shoe

(Fig. 26)

The shaker shoe is equipped with adjustable top sieve, bottom sieve and sieve extension.

The opposed action of the top and bottom sieves distributes the material on the sieves and prevents fragments of straw from sticking to the sieves. The sieves are divided into sections each fitted with an adjustment lever. The top sieves are adjusted with the levers (1), the bottom sieves with the levers (2), and the sieve extension with the levers (3). The sieve extension can be adjusted up and down in the slotted holes (6). Normally the sieve extension must be in line with the top sieve.

Open the cover (4) with the levers (5) to give access to the adjustment levers for top and bottom sieves. Apply a gauge as measuring tool to ensure equal adjustment of the individual sieve sections.

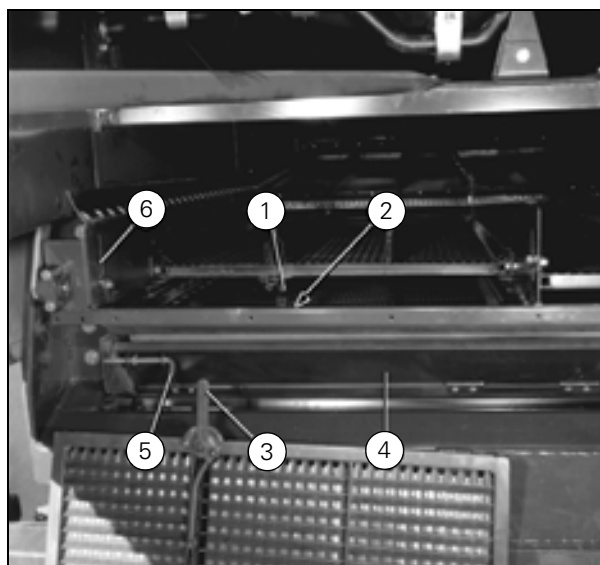


Fig. 26

8. Operation of Machine and Cutting Table

Shaker Shoe with Electrical Sieves

(Fig. 27)

The shaker shoe is equipped with adjustable top sieve, bottom sieve and sieve extension.

The opposed action of the top and bottom sieves distributes the material on the sieves and prevents fragments of straw from sticking to the sieves. The sieves are divided into sections, each section being adjustable from DATAVISION. Top and bottom sieves are electrically adjustable, and the sieve extension is adjusted with the levers (1). Moving the lever one notch corresponds to a 1 mm opening/closing compared to the rest of the top sieve.

Normally the sieve extension must be in line with the top sieve.

Apply a gauge as measuring tool to ensure equal adjustment of the individual sieve sections.

Note: Before the sieves are closed, make sure that they are cleared of foreign matter.

Foreign matter, for instance stubs, stones, rape straw, ears, etc. sticking to the sieves, may damage the lamellas when the sieves are closed.

Even a slight closing of the sieve of e.g. 1 mm may cause damage as the sieves automatically close 3 mm more than the adjusted value, subsequently opening up to the adjusted value.

However, you run the greatest risk when changing from a large to a small opening, e.g. from wheat to oilseed rape.

Manual Adjustment of Sieves

If an actuator is not working the sieve can be manually adjusted by dismantling the actuator and tightening the nut under the lever so that the sieve is kept in the desired position. The other sieves can still be electrically adjusted.

Note: When the actuator is remounted, the nut must be slackened.

Note: When a new actuator is mounted, it must be calibrated and the pull rod under the sieve may need adjustment. Mounting of a new actuator must be carried out by an authorised dealer.

Mounting of Standard Sieve

If contrary to expectation problems should arise with the electrically adjustable sieves, it is possible to mount a standard sieve. It is also possible to mount maize top sieves. In that case, the supports carrying the top sieves must be dismantled.

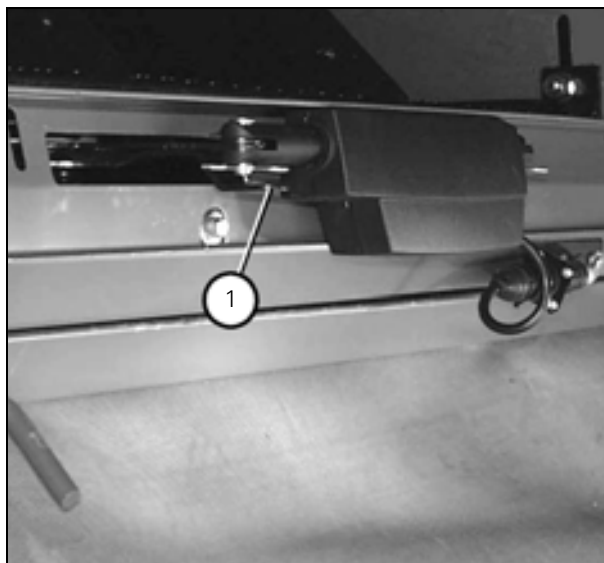


Fig. 27

8. Operation of Machine and Cutting Table

Cleaning of Sieves and Main Grain Pan

(Fig. 28)

Check sieves and main grain pan daily for deposits.

Each sieve section can be pulled out for cleaning when the screw (1) is slackened.

The main grain pan is divided lengthwise into two sections. The stepped sections can be pulled out separately from the rear for cleaning when the attachments (2) are loosened.

Note: For the harvest of crops like peas and maize in which it is difficult to keep the grain pan clean, it is advisable to mount extensions on the front grain pan. Otherwise, grains entering into the fanning mill may cause problems.

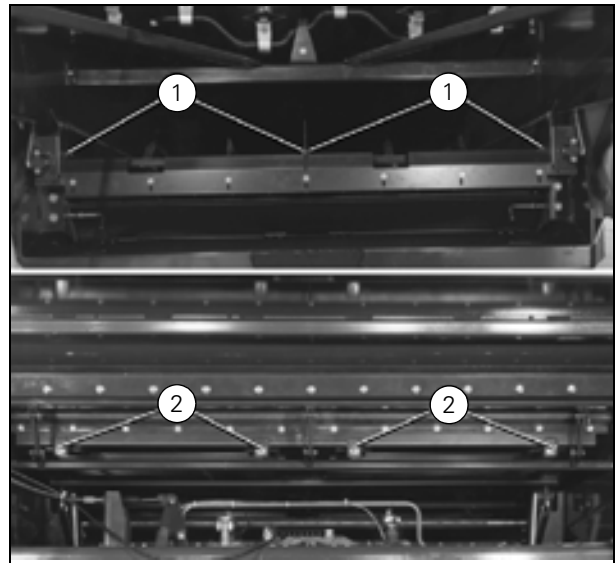


Fig. 28

Cleaning the Sieves

(Fig. 29) and (Fig. 30)

If the sieves need to be removed for cleaning, the chaff spreader, if mounted, must be turned up into service position.

To do so, turn up the two pivotal retainers (1) on the right- and left-hand sides of the straw hood into vertical position, as shown in (Fig. 29), top.

Then fold up the chaff spreader into service position. Make sure always to stand behind the chaff spreader using the lever (2) to fold the chaff spreader into service position, (Fig. 30).

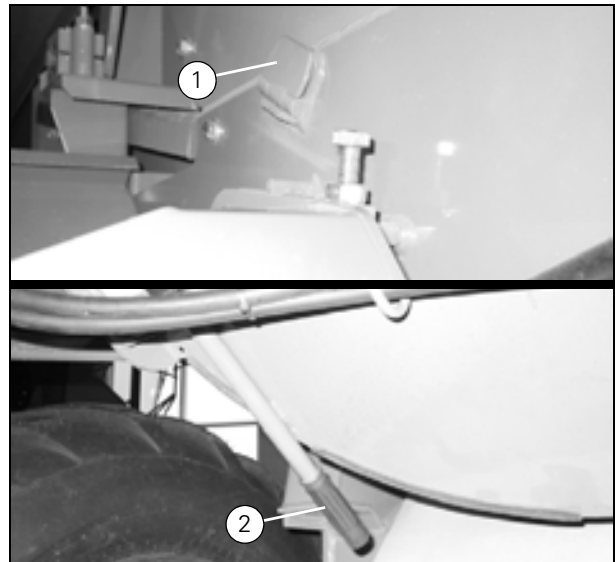


Fig. 29

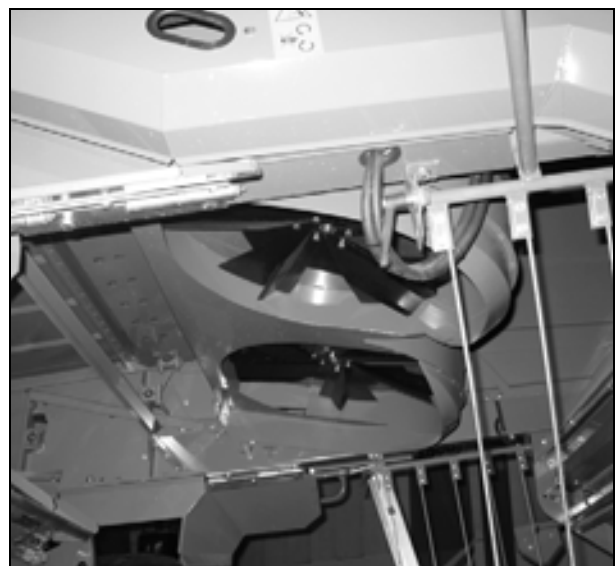


Fig. 30

8. Operation of Machine and Cutting Table

Dismounting Actuators and Sieves

([Fig. 31](#)) and ([Fig. 32](#))

To dismount the actuators (5) on the top sieve, remove the connectors (6) and the screws (7) holding the guard (8). Now the guard can be tilted and the split pins (9) can be pulled out, after which the actuators (5) can be removed.

Dismount the guard (8), the clamping bracket (10) and the screws (11), and pull out the top sieve (12).

The bottom sieves are dismounted as described above for top sieves.

Note: Never lift or tug at the actuators.

Note: From the factory, the sieves and actuators have been adjusted to each other and to the location of connectors on the combine, and it is therefore important that sieves and actuators are remounted in pairs in the same place as before. You may mark out sieves, actuators and connectors before removal.

Remount the sieves in reverse order.

Note: At the back the top sieve must be mounted only in the bottom holes (13).

Note: Check that the support has been mounted before mounting the top sieves.

Note: It is important that sieves and actuators are remounted in pairs in the same place as before.

Shaker Shoe Light

([Fig. 33](#))

The work lamp for the shaker shoe is switched on/off with the switch on the left-hand side of the machine. The lamp can be used only when the machine is stationary, multi-function lever being in position "N".

Note: Always switch off the lamp when not in use. If the lamp is not switched off, it will turn on/off every time the multi-function lever passes position "N".

The work lamp for shaker shoe will automatically be turned off in case it gets too hot. If automatically turned off, the lamp must be switched off by the switch to be able to turn on again.

When automatically turned off the lamp must cool off for a while before it can be turned on again.



WARNING: Always remember to switch off the shaker shoe light when not in use. Fire hazard.

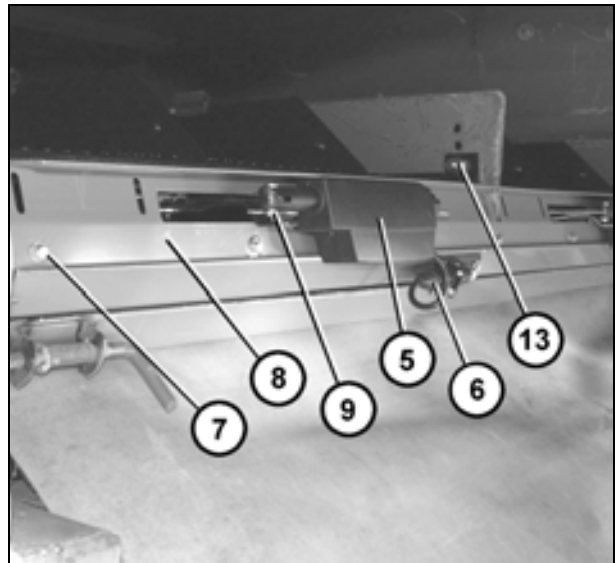


Fig. 31

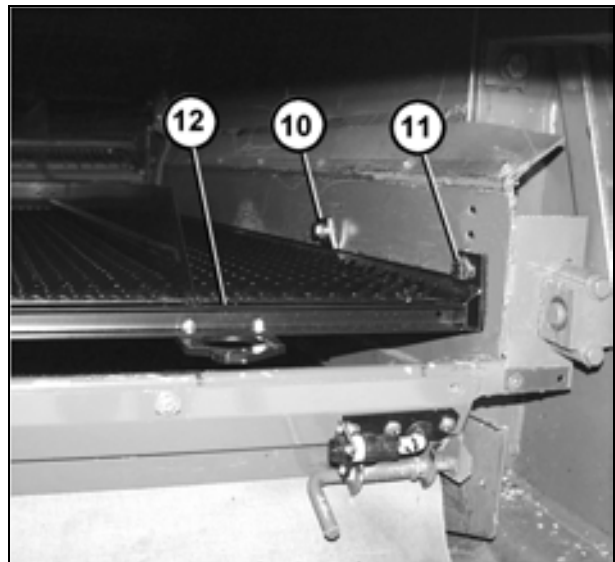


Fig. 32



Fig. 33

8. Operation of Machine and Cutting Table

Special Sieves

(Fig. 34)

For threshing special crops the standard sieves, (1) top sieve, and (2) bottom sieve can be replaced by:

- Bottom sieve with 2.5 and 5 mm round holes.
- Adjustable top sieve for maize with 40 mm clearance between the lamellas.
- Frogmouth maize sieve.

Sieve Extension

For harvesting on side slopes the sieve extension can be replaced by a sectioned sieve extension (3). The sieve is standard on AL machines.

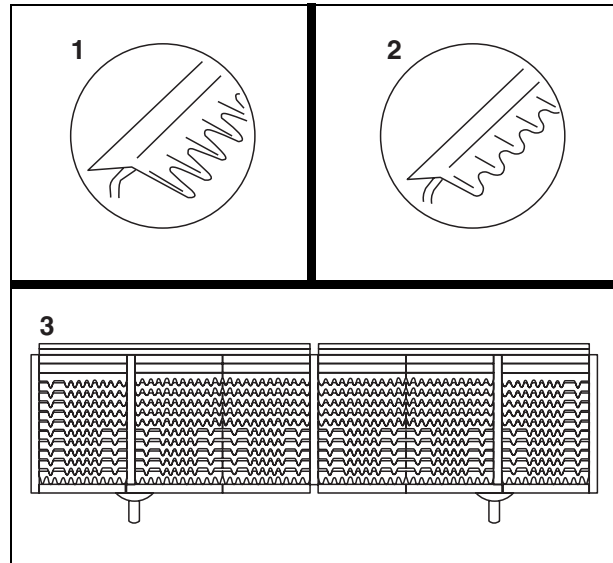


Fig. 34

8. Operation of Machine and Cutting Table

8.8 Internal Grain Transport

Auger Housing/Elevators

[\(Fig. 35\)](#)

The bottom returns auger (1) and the bottom filling auger (2) direct the material into tank filling elevator (3) and returns elevator (4), respectively. The lower part of the auger housing under both augers and the top and bottom parts of the elevators can be opened for cleaning. The elevator chains are tightened with the nuts (5) and (6). Do not overtighten the chains. It must be possible to move them in the lower elevator sprocket (7) by hand. Tighten equally on both sides. Check external belt and chain drive after tightening.

Note: *Disassemble, clean and adjust the slip clutch for elevators before the start of each new season.*

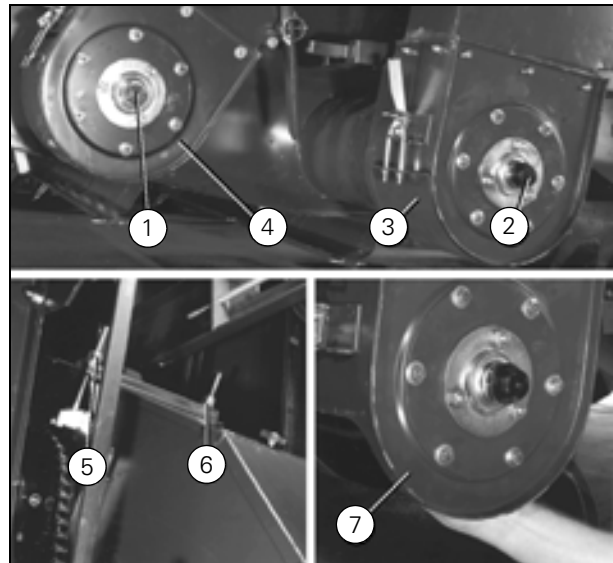


Fig. 35

Returns Thresher

[\(Fig. 36\)](#)

The returns are threshed in the returns thresher (1) which distributes the material over the grain pan. The returns thresher can be opened for inspection and cleaning when the lever (2) is tilted down and the pin (4) is pulled out. For threshing crops that are easily damaged, e.g. oilseed rape, peas, beans, maize, sunflower, the shield (3) can be replaced by a plain shield (5) when the pin (6) is pulled out.

If the material is very wet, the plain shield (5) can be fitted to prevent clogging.

Note: *Check/clean elevator top part, chute and returns thresher regularly for deposits which may cause clogging of the returns elevator.*

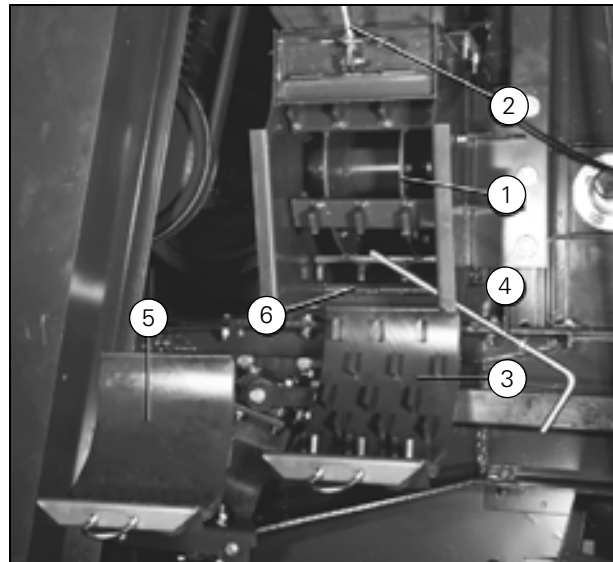


Fig. 36

Throw-Out Blades

[\(Fig. 37\)](#)

In addition, three throw-out blades (1) can be mounted on the three-peg de-awners (2) in the returns thresher (1) to improve the distribution of the material on the sieves.

Note: *When using throw-out blades replace the shield by a plain shield (3).*

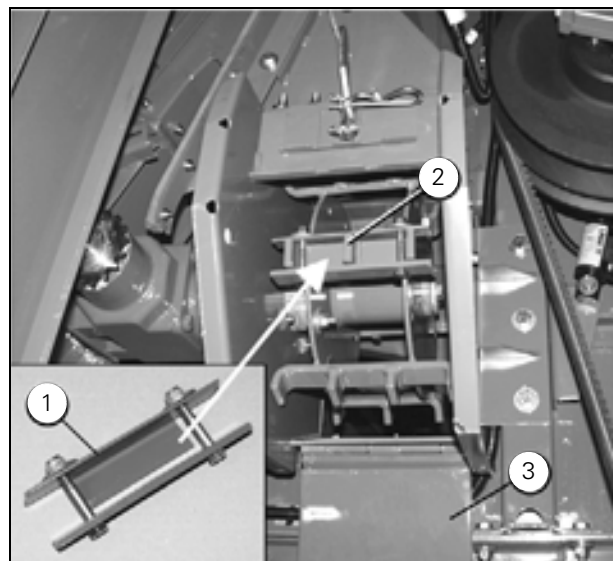


Fig. 37

8. Operation of Machine and Cutting Table

Tank Filling Auger

(Fig. 38)

The material from the tank filling elevator is delivered into the grain tank by the tank filling auger (1). For cleaning of auger and auger tube, the auger (1) can be pulled out of the top of the auger tube (2) when the screws (3) are dismounted. When remounting turn the auger (1) to ensure it meshes with the carrier pin at the bottom, and fit the screws. Before remounting the auger clean the auger tube at the bottom through the door (4). Any water in the tube can be drained through the cleaning door (5). When changing crop it is possible to clean the tank filling auger through the cleaning door (5).

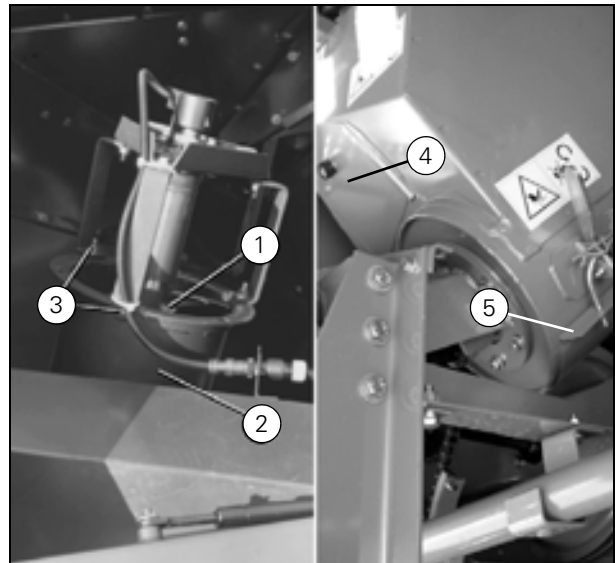


Fig. 38

8. Operation of Machine and Cutting Table

Grain Tank

(Fig. 39)

The grain tank is equipped with adjustable full warnings at the sensors (1), and light.

The full warnings are engaged with the toggle switch (2). The time for activation of the rotating yellow beacon (3) and the alarm in DATAVISION can be adjusted by moving the sensors (1).

The full warning will remain on the screen picture until the tank has been unloaded.

The grain tank light is switched on with the toggle switch (4) for work light.

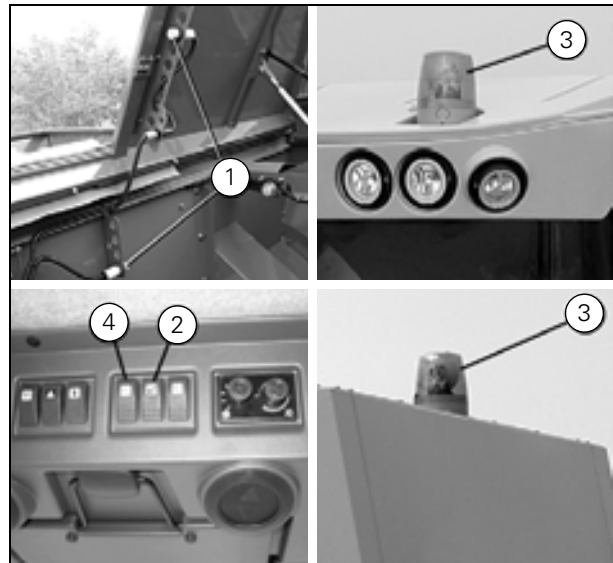


Fig. 39

Access to Grain Tank, (Fig. 40) and (Fig. 41)

An access ladder for the service platform is provided on the right-hand side of the machine. Lift the ladder off the slot and pull it out of the bottom brackets. Push the ladder back in position, the fifth step resting on the bottom brackets, please see (Fig. 40).



WARNING: Before stepping onto the access ladder for the service platform make sure the fifth step of the ladder rests securely on the bottom brackets.

The grain tank may be accessed only through the service door while the grain tank covers are closed, please see (Fig. 41). The service door is reached from the engine hood (1) stepping only on the permitted thread areas.

The service door is opened by turning the lock (2) and folding the door aside. When leaving the grain tank close the service door and make sure a sharp click is heard when it locks.



WARNING: Never enter the grain tank without stopping the engine, removing the ignition key and switching off the main switch, to prevent other persons from starting the bottom auger unintentionally.



WARNING: Before stepping onto the engine hood make sure there are no live overhead power lines above the machine.



Fig. 40

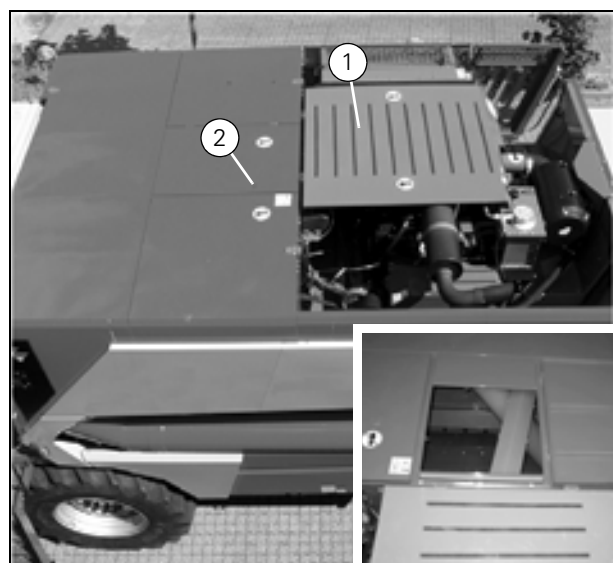


Fig. 41

8. Operation of Machine and Cutting Table

Unloading Auger

(Fig. 42)

The cover plate (1) over the bottom auger is raised and lowered with the toggle switch (2).

Set the shield in bottom position to start with. Raise the shield slightly in dry grain and herbage seed. In herbage seed it may be necessary to raise the shield more while unloading if the seed tends to bridge but remember to lower it into the original position after unloading.

In rape, mustard, clover seed, etc. the cover plate must normally be in bottom position.

Note: Always lower the cover plate completely before starting in a new crop.

If the grain tank is equipped with an optional seed auger (closer flights) it may be advantageous to dismount the shield when harvesting herbage seed to avoid bridging in connection with unloading.

Note: Power Boost ensures additional capacity during unloading. Through a signal from the unloading system the engine output is increased by 30 HP / 22 kW during unloading.

Unloading Auger Clutch

(Fig. 43) and (Fig. 44)

The unloading auger is engaged with the foot switch (2) in the cab floor, activating the magnetic clutch. To avoid unintended engagement of the unloading auger, the cover (3) can be tipped down over the foot switch (2).

When the foot switch is activated, DATAVISION will ask whether the unloading switch should be locked. If you answer "Yes", the unloading auger will keep on running when the foot switch is released. The unloading auger is stopped by pressing the foot switch again.

If the foot switch is activated by mistake when the unloading auger is turned in, the following message will appear in the information area at the bottom of the screen: "Note: Unloading auger in".

The unloading auger can be activated without the threshing unit being engaged.

To dismount the auger for cleaning remove the screws (4) and (5), turn the unloading tube completely out and pull the transmission shafts apart. Turn down the unloading tube completely and pull out the auger.

Note: Before pulling out the auger, mark the transmission shaft on both halves. Remount the transmission shaft in the same slot so that the auger flights form a consecutive flight.

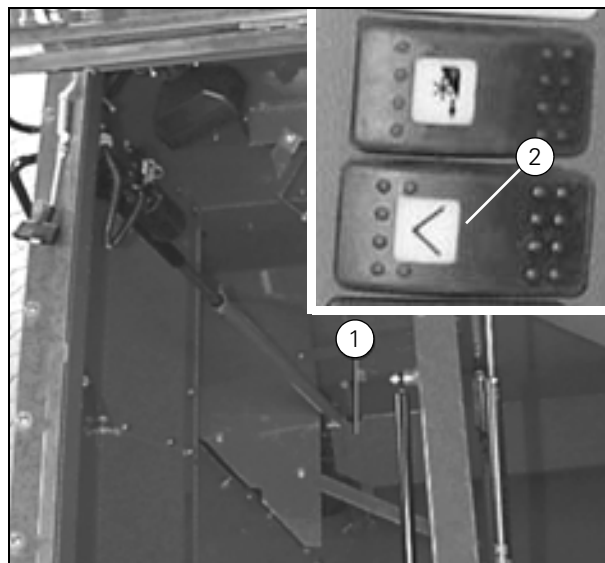


Fig. 42

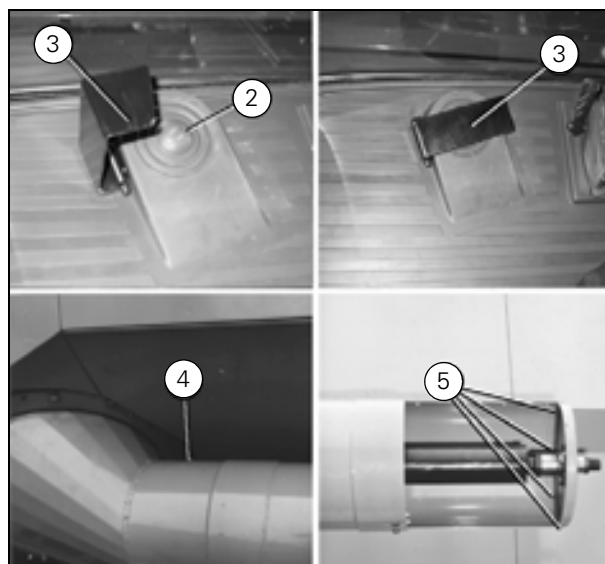


Fig. 43

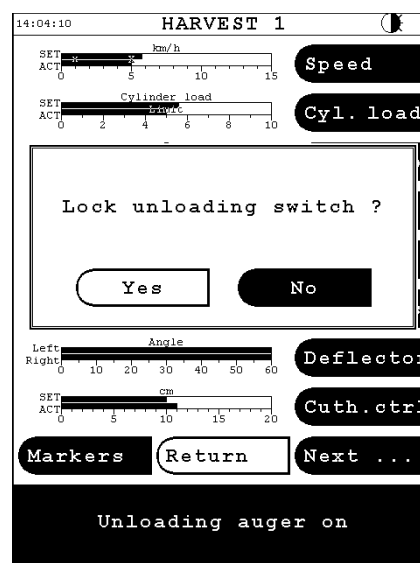


Fig. 44

8. Operation of Machine and Cutting Table

Unloading Tube

[\(Fig. 45\)](#)

The unloading tube is turned out and in with the buttons (10) and (11) in the multi-function lever.

If the unloading auger is not turned in completely, the following message will appear on the DATAVISION screen: "Unloading auger out". This message will also appear when the unloading auger is stopped. Double-clicking the "unloading auger in" button in the multi-function lever will move in the unloading auger automatically. When the unloading auger has been turned in completely it activates a sensor after which the hydraulics stop and the message disappears.

The unloading auger can be engaged and unload the grain tank in any position.

Note: Do not turn down the unloading tube until the auger is empty.

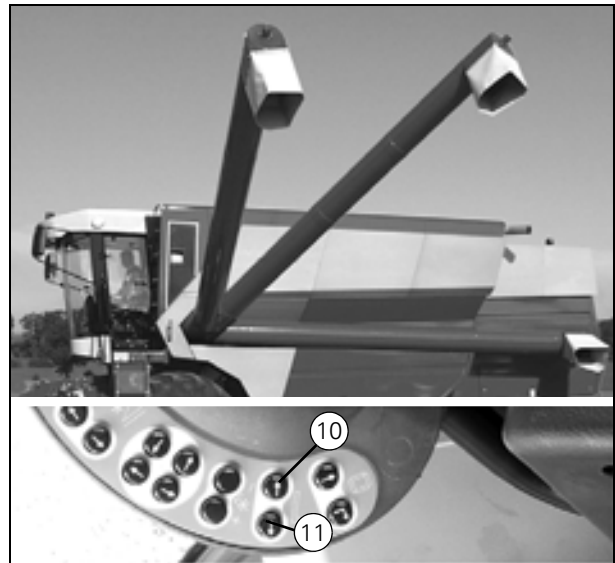


Fig. 45

8. Operation of Machine and Cutting Table

8.9 Rotary Separator

On delivery, rotary separator and concave are adjusted for the harvest of the most common crops like barley, wheat, oats, rye, oilseed rape, etc. - i.e. concave raised 35 mm and rotor speed 900 rpm.

The revolutions of the rotary separator and the concave position are adjustable to suit all crops and harvesting conditions.

Rotor revolutions: Max. 900 rpm, min. 480.

Concave setting: Raised 35 - 38 - 41 - 44 mm.

Lowered = MAX

Low revolutions and lowered concave are always required for harvesting maize and beans. In very dry, swathed crops and in other conditions giving large shaker shoe load, the concave must be partly raised (38, 41 or 44).

Change of Rotor Revolutions

(Fig. 46)

The speed of the rotary separator is changed by moving the belts (1) into the other two grooves of both belt pulleys.

Concave Setting

(Fig. 47)

The concave can be raised and lowered using the lever (1) on the left-hand machine side. Pull down the locking pawl (2) to release the lever.

Lever down - concave completely raised - 35

Secure the lever with the locking pawl (2) in the front hole.

Lever up - concave lowered - "MAX"

Secure the lever with the locking pawl (2) in the rear hole.

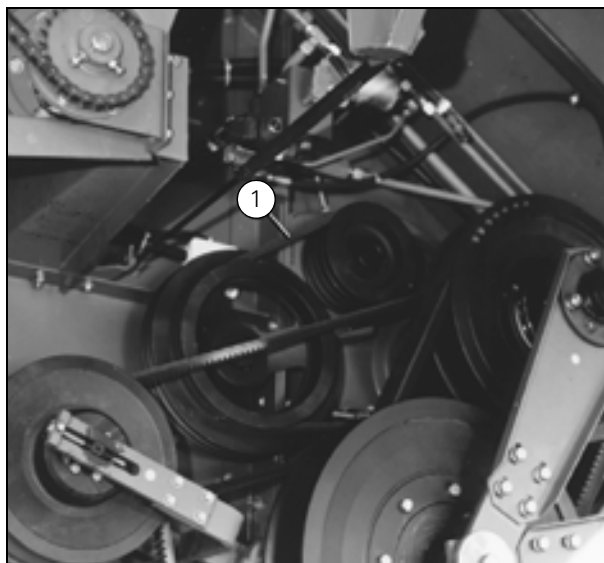


Fig. 46

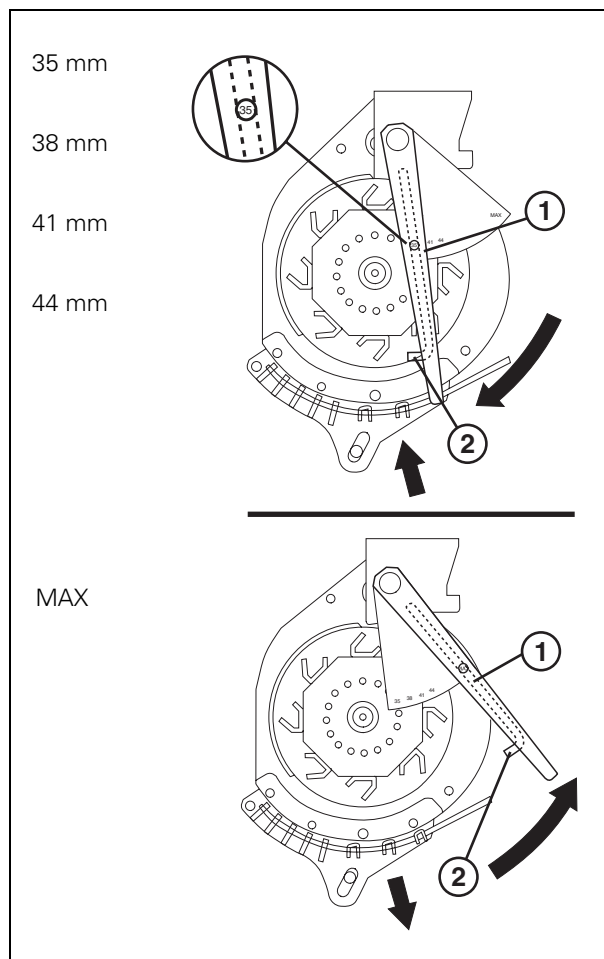


Fig. 47

8. Operation of Machine and Cutting Table

8.10 Straw hood

(Fig. 48) and (Fig. 49)

Alarm switch for straw hood blocked

The alarm switch (1) positioned in the straw hood activates a sound signal on the terminal if the straw hood is blocked by straw.

Check before start-up that the alarm switch for blockage in straw hood is functioning. An actuation of the flap (1) will switch on the sound signal.

Note: The sound signal can only be activated when the ignition is switched on.



WARNING: The engine must not be running and nobody is allowed in the cab who might start the machine or parts of it unintentionally.

Blockage in straw hood

If the sound signal comes on and the information "Straw hood blocked" appears on the terminal, stop the machine immediately and remove the blockage as straw build-up may cause damage to the machine.



WARNING: Before removing a blockage in the straw hood ensure that the engine and all drives have come to a complete stop, remove the ignition key and switch off the main switch.



Fig. 48

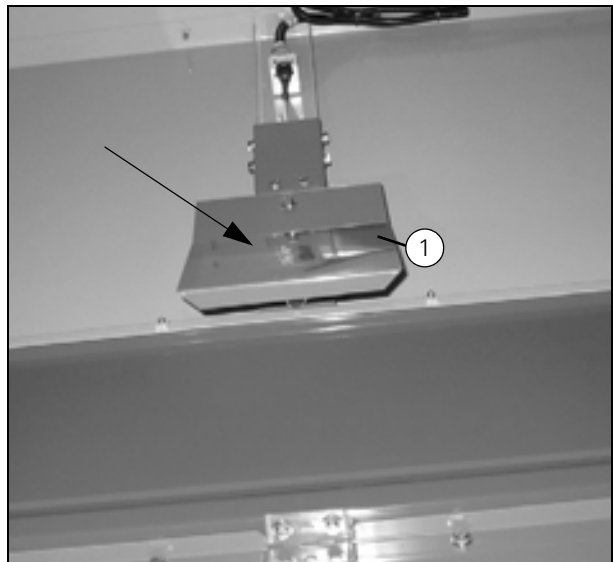


Fig. 49

8. Operation of Machine and Cutting Table

8.11 Chaff Spreader

(Fig. 50), (Fig. 51) and (Fig. 52)

The machine can be equipped with chaff spreader (1) to ensure distribution of the chaff over a wider range than the shaker shoe width.

The chaff spreader which is equipped with two hydraulically operated deflectors, is engaged and disengaged by connecting and disconnecting the quick-attach couplings (2) of the hydraulic hoses. Engagement and disengagement must take place when the threshing unit is disengaged.

Note: If the hydraulic hoses of the chaff spreader are disconnected, the quick-attach couplings must always be cleaned immediately and then reconnected. If not, the oil will have to pass through the pressure relief valve, which will result in heating of the oil.

If the chaff spreader is not used for a longer period, the belt for the hydraulic pump on the left-hand machine side must be removed (transmission No. 13).

Setting

When in use the chaff spreader must be in position I (Fig. 50). The setting of the chaff spreader in position I is adjusted with the nuts (3) so that the distance (A) from the grain loss sensor to the top edge of the chaff spreader is 350 ± 15 mm when the shaker shoe is in rearmost position, please see (Fig. 50). If the grain loss sensor is moved, the distance (A) must be checked.

When not in use, the chaff spreader must be in position II (Fig. 51). This position also gives access for adjustment/cleaning of sieves. The position of the chaff spreader in position II is determined by the two pivotal retainers (4) which when turned down, act as stops for the chaff spreader.

Position III (Fig. 52) gives access for replacement of sieves or other service purposes. To be able to fold up the chaff spreader into position III, turn the two pivotal retainers into vertical position. The position of the chaff spreader in position III is determined by the two gas struts (5) in the straw hood.

To ensure optimum distribution of the chaff the deflectors (6) can be adjusted up/down when the screw (7) is loosened.



WARNING: Do not carry out any service or inspection until the engine has stopped, and the ignition key has been removed from the switch.

IMPORTANT: If the machine is equipped with both chaff spreader and straw chopper, do not harvest with both of them disengaged (e.g. grass seed). If both chaff spreader and straw chopper are disengaged, the passage in the straw hood will be too narrow and the straw will accumulate in the straw hood or between the chaff spreader and the bottom of the straw walkers. Therefore, the chaff spreader must be dismantled when not used.

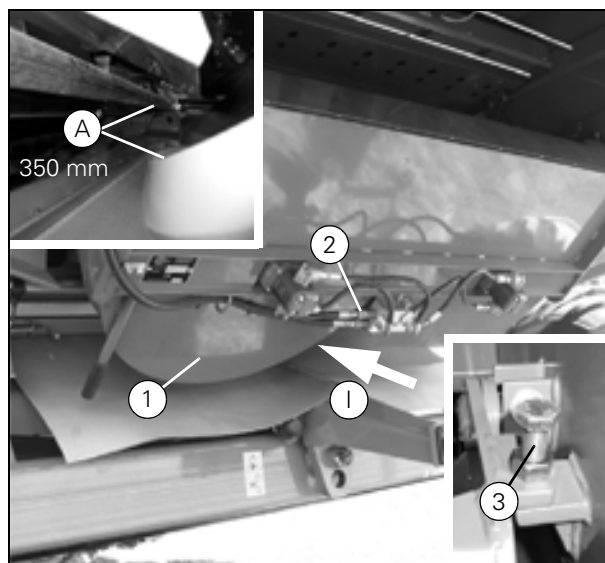


Fig. 50

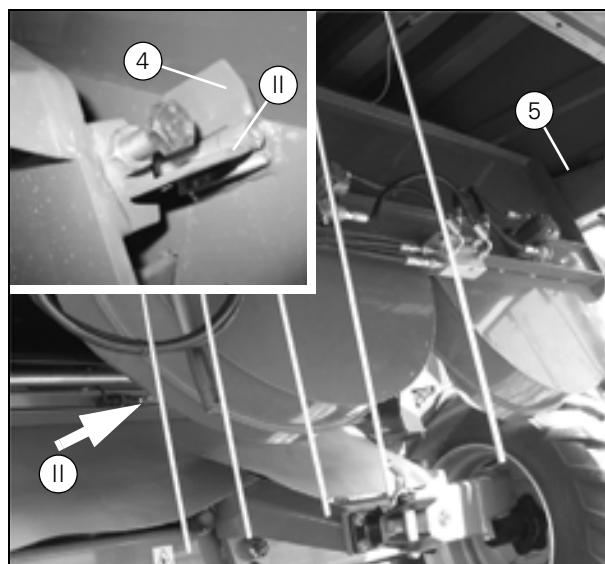


Fig. 51

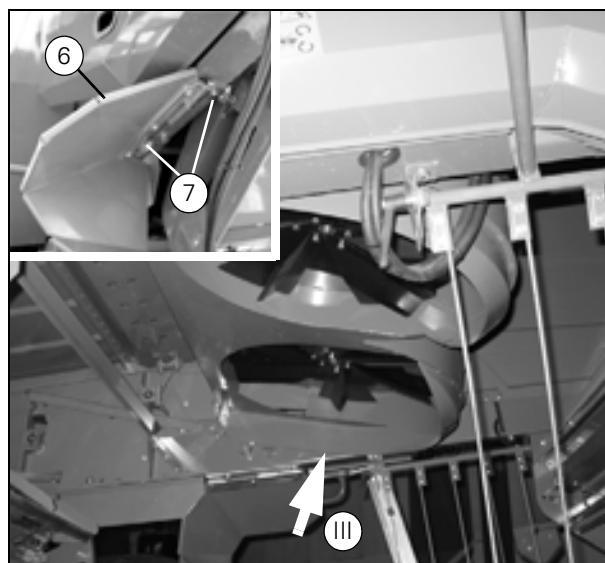


Fig. 52

8. Operation of Machine and Cutting Table

8.12 Maize Threshing

For maize threshing, transmissions, crop elevator, concave, cylinder, shaker shoe, straw chopper, straw walkers, rotary separator and cover plates must be adjusted to this crop.

Note: Maize should be harvested only with maize table to avoid damage of the straw walker grid.

Attachment of Maize Header

(Fig. 53)

When the machine is fitted with a maize header, the transmissions of the maize header must be adjusted to the revolutions of the drive shaft (1) in the crop elevator.

Speed 610 rpm.

The drive shaft (1) is fitted with shaft ends for engagement on both sides.

5- and 6-row maize headers with stalk chopper must have drives on both sides.

Note: The drive chains (2) must be oiled daily due to the large power consumption when harvesting maize.

Area measuring

(Fig. 54)

Check after attaching maize, sunflower or other special header that the cutting height can be zeroed under "Coding | Table calibration | Zero cutting height".

If the bar is not within the indicated field when the header is below normal cutting height, turn the potentiometer (1) or move the connecting rod (2) into hole I in the arm (3).

Note: If the connecting rod (2) is moved into hole I, the main crop elevator cannot lower completely when the header is dismantled.

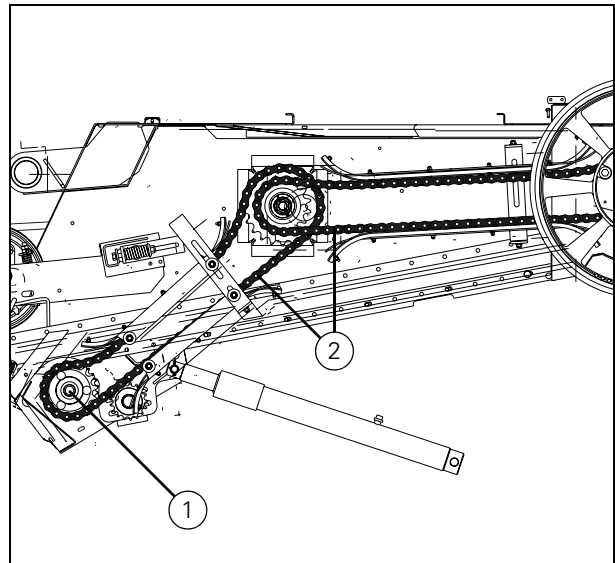


Fig. 53

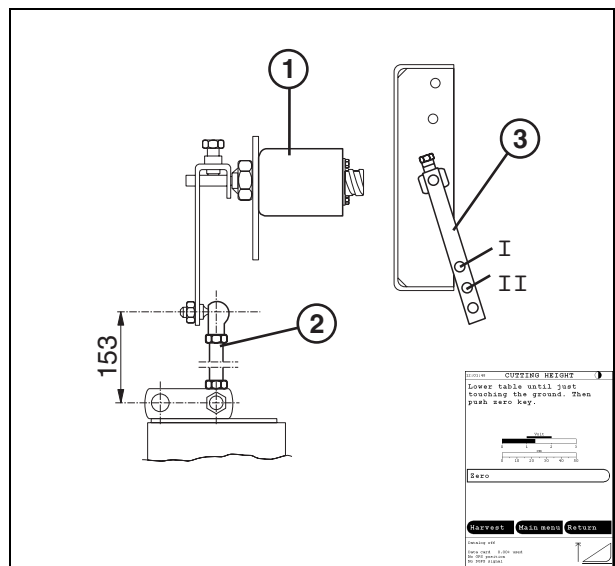


Fig. 54

8. Operation of Machine and Cutting Table

Main crop elevator

(Fig. 55)

For threshing maize the crop elevator chain (1) must be raised by 25 mm with the shim (2) fitted between the suspension arm (3) and rubber plate (4).

Fasten the shim (2) with a bolt through the holes (5) and fit the nut (6) so that the bolt protrudes 2-3 mm from the nut.

Concave/Cylinder/Stone Trap

For threshing large areas of maize replace the concave by a maize concave.

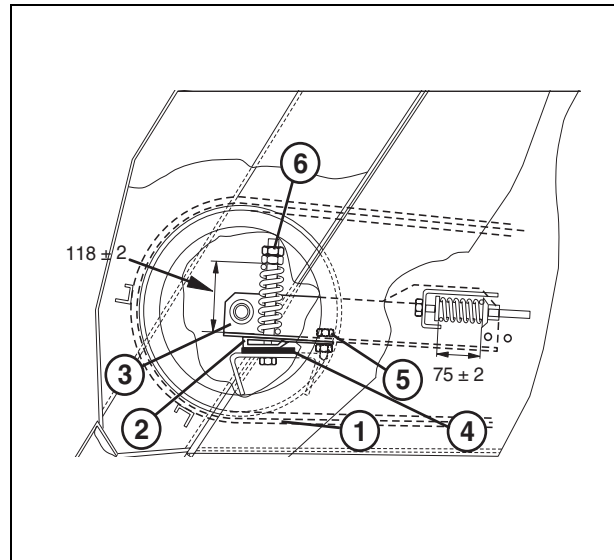


Fig. 55

Concave/Initial Settings

(Fig. 56)

Initial settings for maize harvest

Electrically Adjustable Concave:

Set the concave at step 5 from DATAVISION.

Find and mark up the rasp bar closest to the concave. Adjust the clearance between concave and cylinder at the 2nd rub bar from the front edge and 3rd rub bar from the rear edge of the concave using the nuts (6) and (7).

Front: 32 mm

Rear: 21 mm

Use the marked rasp bar and the supplied gauge when adjusting.

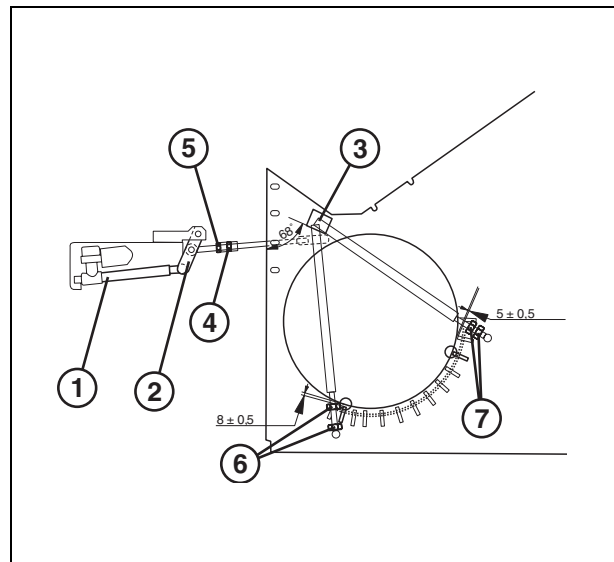


Fig. 56

Threshing cylinder

(Fig. 57)

Blank off the cylinder (1) with the plates (2) to prevent half cobs from entering the machine without being threshed.

Cover the stone trap with the plate (3) to ensure even feed.

Small areas of maize can be threshed without replacing the concave, but the stone trap and the cylinder must be blanked off.

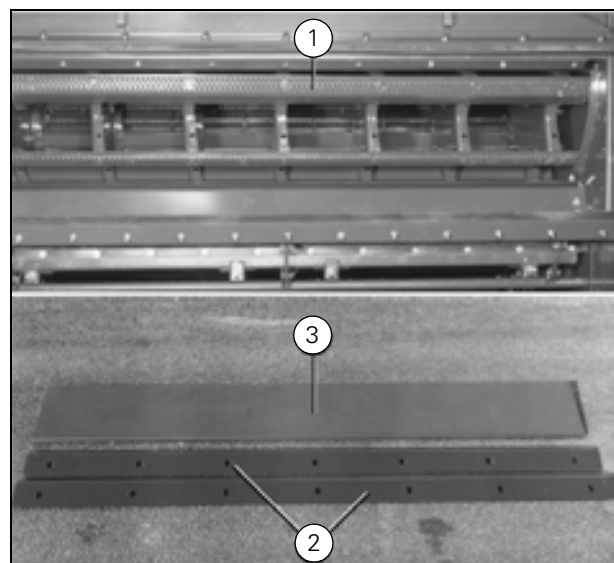


Fig. 57

8. Operation of Machine and Cutting Table

Rotary separator

Lower the concave into bottom position. Change the speed of the rotor to 480 rpm.

Note: For maize threshing the rotary separator concave setting and the rotary separator revolutions must be changed as specified above. If not, the rotary separator may get damaged.

Shaker Shoe

(Fig. 58)

For threshing maize, top sieve and sieve extension can be replaced by adjustable sieves with larger lamella clearance, or by fixed top sieve.

In case of clogging problems in wet crops, the returns opening inside the shaker shoe can be covered with the plate (1) so that the material from the sieve extension is conveyed directly into the good grain auger.

For harvesting on side slopes use the sieve extension for side slopes to make sure the grains moving on the side of the shaker shoe stay in the machine.

Note: For the harvest of crops like peas and maize in which it is difficult to keep the grain pan clean, it is advisable to mount extensions on the front grain pan. Otherwise, grains entering into the fanning mill may cause problems.

Note: Under wet harvesting conditions the grain pan can be fitted with a rake extension which conveys leaves, hair and cob remnants further back, thus keeping the sieves clean.

Clean the grain pan daily of sticking dirt/deposits.

Machine with Electrical Sieves

(Fig. 59)

Before mounting the cover plate (1) remove the high back plate (2).

Straw walkers

The straw walker revolutions must be reduced to 200 rpm by fitting a reduction kit consisting of a belt pulley.

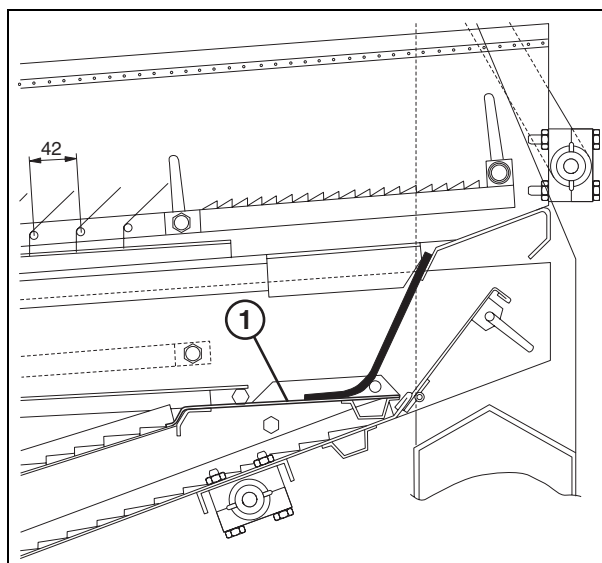


Fig. 58

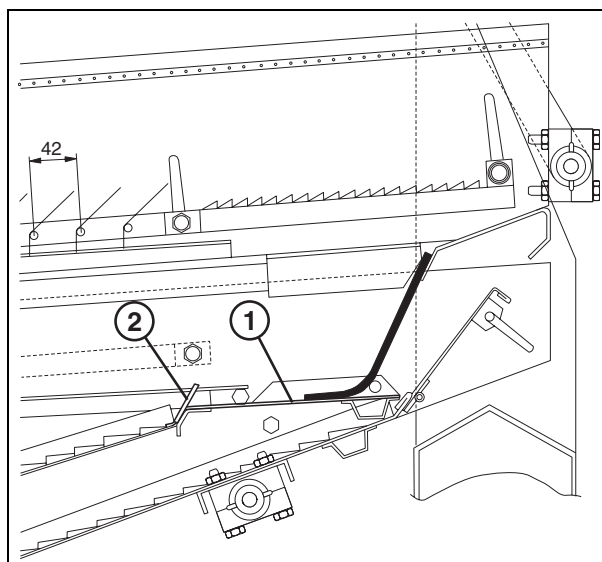


Fig. 59

8. Operation of Machine and Cutting Table

Bottom Auger Cover Plate

(Fig. 60)

The bottom augers in the shaker shoe can be protected with guards (1) and (2). Under tough harvesting conditions the machine may sink into the ground causing damage to shaker shoe housing and augers by the stubble.

Scrapers

The machine can be fitted with scrapers at both traction wheels. The scrapers remove sticky clay which would otherwise be carried by the wheels and fall into the fanning mill air-intakes.

Fit the scrapers at a distance of minimum 10-15 mm from the inside of the traction wheels.

Check the distance on the whole wheel circumference.



Fig. 60

Rear Beater Curtain

(Fig. 61)

For maize harvest the rear beater curtain (1) is lowered into low basic setting by placing the adjustment lever (2) in the bottom hole (5), and adjusting the length of the chain (4) until the rear beater curtain is half-way up.

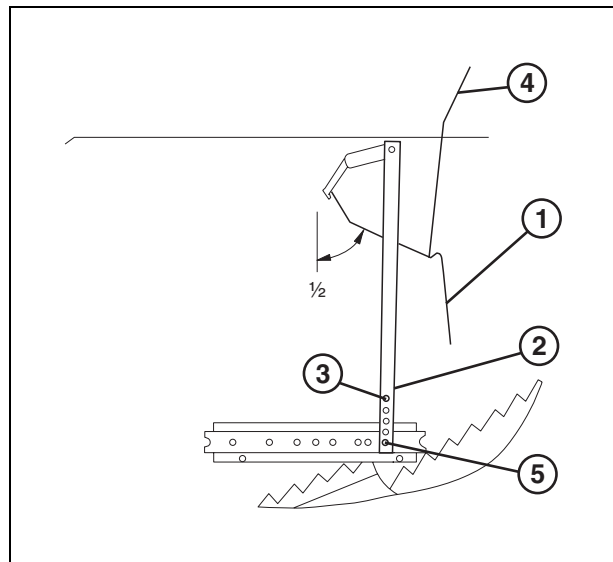


Fig. 61

Straw chopper

(Fig. 62)

Counter Knives and Cross Bar

Maize and sunflower: Adjust the cross bar (1) into position B. The counter knife bar (2) MUST be in position V, and the counter knives must be covered by a plate. Alternatively, the counter knives may be dismantled. The straw chopper revolutions must be reduced by fitting a reduction kit consisting of belts. To prevent maize marrow from being thrown up into the bottom of the straw walkers, a cover plate must be mounted over the rear half of the chopper rotor.

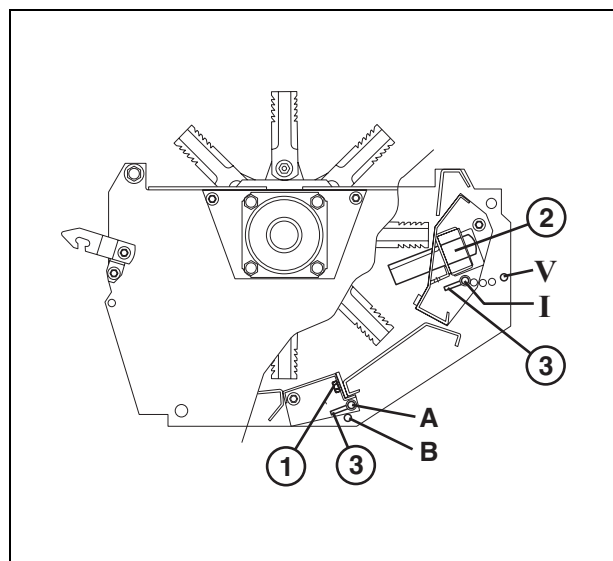


Fig. 62

8. Operation of Machine and Cutting Table

8.13 Suggested Harvest Settings

Crops	Cereal ¹⁾		Oilseed Rape ²⁾		Herbage Seed ³⁾		Peas and Lupines ⁶⁾		Maize ^{4) 5)}	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
<i>Cylinder speed, section 8.3</i>	950	1100	600	750		1000	500	650	400	600
<i>Concave setting, section 8.4</i>										
In steps (front)	4	8	10	13	4	6	11	14	5	8
In mm (front/rear)	7/4	11/8	13/10	17/14	7/4	9/6	14/11	18/15	32/21	34/26
<i>Rotary separator, section 8.9</i>										
Revolutions	900		480	900	900		480	900	480	
Concave setting	Raised (35)								Lowered (max.)	
<i>Sieve adjustment, section 8.7</i>										
Top sieve, mm	10	12	8	10	10	14	12	15	12	15
Sieve extension, mm	12	14	8	10	12	14	12	15	12	15
Bottom sieve, mm	8	10	2	4	10		8	12	12	14
<i>Fanning mill revolutions, section 8.7</i>	800	1000	600	800	Min.		850	1100	850	1100
<i>Rear beater curtain raised, section 8.5</i>	3/4								Completely lowered	
<i>Returns thresher, section 8.8, fitted with:</i>	Normal shield		(Plain shield and throw-out blades)							

Above suggested settings should be adjusted to suit harvesting conditions.

Note: For more specified adjustments call up the relevant crop in DATAVISION.

IMPORTANT: If the machine is equipped with both chaff spreader and straw chopper, do not harvest with both of them disengaged (e.g. grass seed). If both chaff spreader and straw chopper are disengaged, the passage in the straw hood will be too narrow and the straw will accumulate in the straw hood or between the chaff spreader and the bottom of the straw walkers. Therefore, the chaff spreader must be dismounted when not used.

1. In certain barley, wheat and triticale varieties it may be difficult to get a clean sample. In that case, the problem may usually be solved by inserting 1, 2 or 3 concave filler plates in the front concave gap.
2. For direct threshing oilseed rape the table can be equipped with an electrically driven vertical knife, and a rape auger for tall oilseed rape. The shaker shoe can be equipped with a bottom sieve with 5 mm round holes. It may be necessary in very dry and brittle crops to reduce the speed of the rotary separator and lower the concave into special position to avoid overloading of the shaker shoe.
3. For threshing very light seeds the fanning mill revolutions can be further reduced by fitting a reduction kit (310-790 rpm).

If harvesting conditions require rethreshing in meadow grass the rear plate of the shaker shoe can be turned half a turn. The material requiring rethreshing will then fall through the opening between the sieve and the rear plate and be threshed in the returns thresher. The rear plate cannot be turned on machines with electrically adjustable sieves. A turnable rear plate is available as optional extra.

4. If a concave clearance of 20 mm is required, it can be adjusted at the concave journals. Top and bottom sieves can be exchanged by frogmouth type top sieve, bottom sieve with 20 mm round holes or adjustable sieves for maize. It may be necessary in very dry and brittle crops to reduce the speed of the rotary separator and lower the concave into special position to avoid overloading of the shaker shoe.
5. Before starting in maize, prepare the machine in the following way: See section 8.12 'Maize Threshing' on page 233.
6. When threshing peas under not completely dry conditions, an extension should be mounted on the main grain pan.

8. Operation of Machine and Cutting Table

8.14 Threshing

To fully utilize combine capacity when direct cutting or threshing swathed crops, an even feed is vital.

Uneven feed causes uneven loading of the threshing unit, which cannot be compensated for by adjusting the machine.

Uneven feed is caused by wrong use or adjustment of reel, feathering fingers, table auger, cut-off strips or elevator chain.

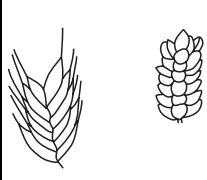
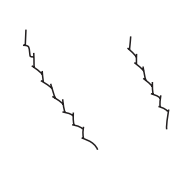
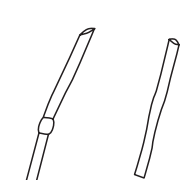
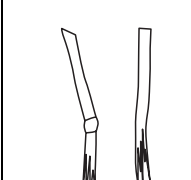
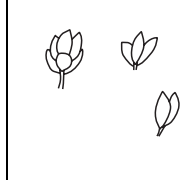

Adjust the machine in accordance with the chart "Initial Settings" for the crop to be threshed.

Do not thresh the material too aggressively, which will crush the straw and make it difficult to separate the grains from the straw. The shaker shoe will be loaded with material, which will make cleaning difficult and reduce capacity.

If threshing is too weak, grains will stick to the straw and the finished sample will contain unthreshed ears.

In certain barley and wheat crops it may be necessary to fit 1 or 2 concave filler plates in the front part of the concave. The filler plates prevent half ears and unthreshed grains from passing through the concave at a too early stage.

If the sieves are blanked-off to avoid this, capacity may be reduced and the returns volume increased.

Examples of Impurities in the Finished Sample					
					
Half ears	Straw to which grains have stuck	Straw cut twice	Straw cut and torn apart	Grains sticking together	Loose wheat husks

Causes of Impurities in the Finished Sample
<p>There is a number of different causes of impurities in the finished sample.</p> <p>Unthreshed ears Sieves opened too much, concave clearance too large.</p> <p>Short straw/ears Too many ears in the returns system, insufficient air supply from fanning mill.</p> <p>Straw cut twice Table inclined, the stubble is cut in the left-hand side of the table.</p> <p>Straw torn apart Too aggressive threshing.</p> <p>Grains sticking together Sieves opened too much, threshing too weak, loose grains and ears falling unthreshed through the concave.</p> <p>Chaff and husks Insufficient air supply from fanning mill, too aggressive threshing (all husks are threshed from the straw in wheat).</p> <p>Long straw Rear beater curtain set too low, the material cannot easily pass onto the straw walkers. Straw walker belt too slack.</p>

9. Transmissions

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9. Transmissions

9.1 Safety Precautions



Never carry out any service/repair of belt and chain drives until the engine has stopped, the ignition key has been removed and the main switch switched off.



Never carry out any service/repair of the engine until the engine is cold, the ignition key has been removed and the main switch switched off.



Never start the machine until all safety guards are fitted and secured.



Never wear loose clothes when working on the machine.

9. Transmissions

9.2 Adjustment of Transmissions

General

(Fig. 1)

Belt and chain tension is maintained with fixed or spring-loaded tension pulleys.

Fixed tension pulleys are adjusted by slackening the nut (1) and tightening the belt with the nut (2).

Spring-loaded tension pulleys are adjusted by slackening the nut (3) and compressing the spring (4) to measure, with the nut (5). Apply the gauge (6) where the spring length must be max. 105 and min. 100 mm

Threshing Unit Clutch

(Fig. 2)

Belt Drive No. 2

Adjust the clutch belt (1) by moving the electric cylinder (2). Slacken the nut (4) when the spring (3) has reached a length of 105 mm.

Pull the electric cylinder (2) up with the nut (5) until the length of the spring (3) is 100 mm, and retighten the nut (4).

Adjust the belt when the threshing unit is engaged.

The belt guide (6) must be adjusted at a distance of 6 ± 1 mm, and belt guide (7) at a distance of 8 ± 1 mm from the belt pulley.

The belt lifters (8) must be adjusted at $90^\circ \pm 1$ as illustrated, (Fig. 2).

Note: Adjustment of the belt must take place while the threshing unit is engaged and the engine is stopped. This can be done only by entering a code on the terminal which makes it possible to extend the threshing unit actuator while the alarm "ERROR: Threshing switch is on" is displayed on the terminal.

Proceed as follows:

1. Switch on ignition, but do not start the engine.
2. Engage threshing unit using the threshing unit switch so that the alarm "ERROR: Threshing switch is on" appears.
3. Call up the menu "Diagnostics | System setup".
4. Enter the code "1221" and press OK.

Now the actuator will extend and the belt tension can be checked. For safety reasons the stop magnet (engine stop) will be activated simultaneously. The engine cannot be restarted until ignition has been switched off.

Hydrostatic Transmission

(Fig. 3)

Belt Drive No. 4

The belt (2) needs tightening when the measure A is 118 mm, or when the tension pulley moves 5 mm down if the belt is pressed down.

Slacken the nut (3) and tighten the belt with the nut (4) until the measure A is 108 mm. Counter-tighten the nut (3).

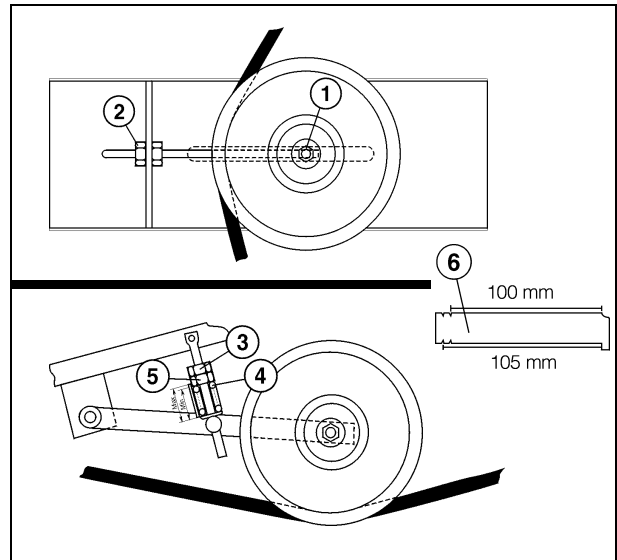


Fig. 1

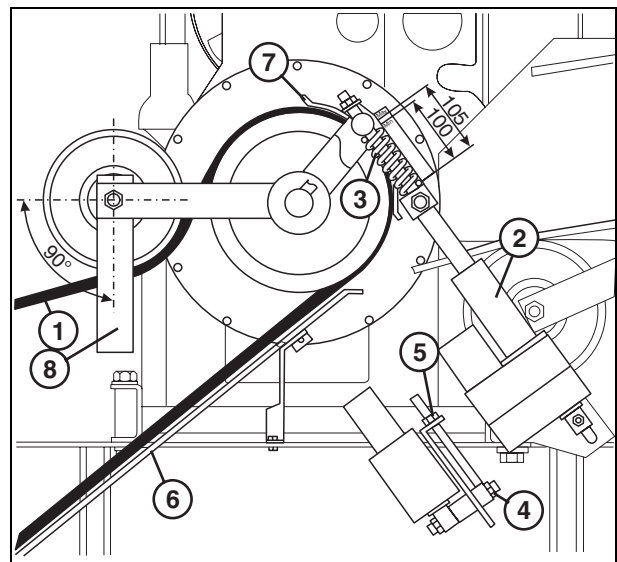


Fig. 2

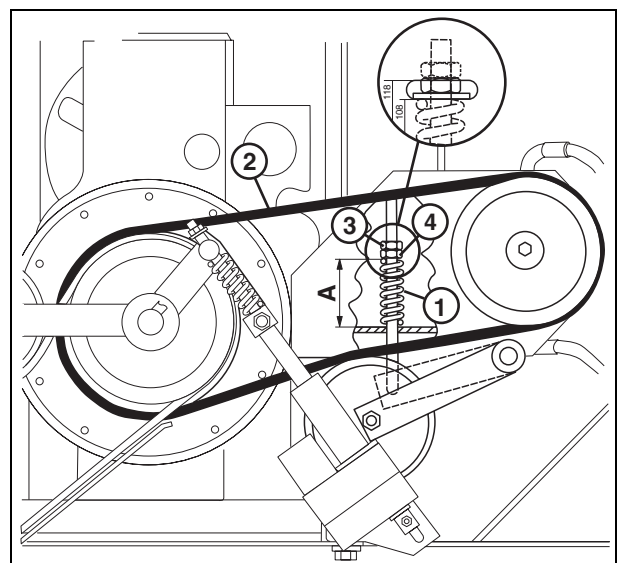


Fig. 3

9.3 Transmissions

Rear Beater

(Fig. 4)

Belt Drive No. 1

From the countershaft (5) the rear beater is driven by the belt (2).

The belt (2) needs tightening when the length of the spring (1) is 105 mm. Slacken the nut (3) and compress the spring (1) to a length of 100 mm with the nut (4).

Counter-tighten the nut (3) after adjustment.

Apply the gauge marked min. 100 mm and max. 105 mm when checking and adjusting.

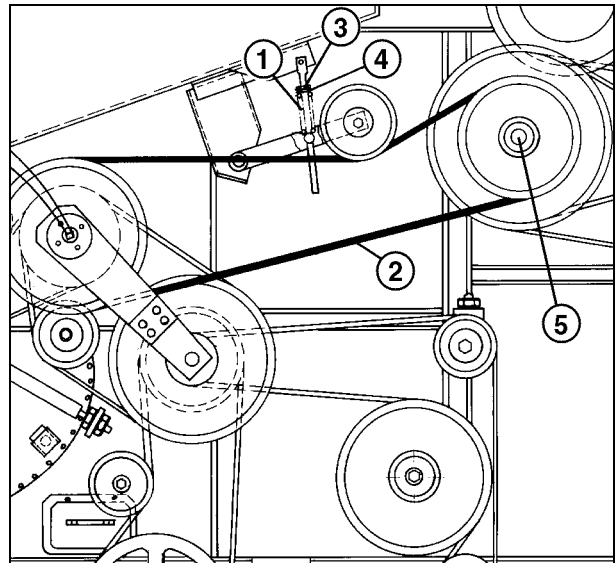


Fig. 4

Main Crop Elevator and Table

(Fig. 5)

Belt Drive No. 8 and 9

The belt needs tightening when the length of the spring (1) is 105 mm.

Slacken the counter nut (3) and adjust the spring length by turning the threaded pin (4) anticlockwise until the spring is 100 mm. Tighten the counter-nut (3) after adjustment.

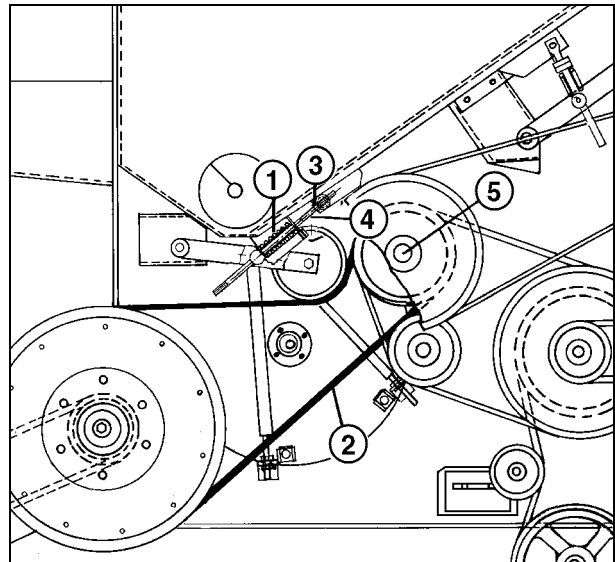


Fig. 5

Straw chopper

(Fig. 6)

Belt Drive No. 5 and 6

From the countershaft (5) the straw chopper is driven by the belt (2) through the counter drive (6).

The straw chopper clutch is built into the belt pulley (7) on the straw chopper.

The belt (2) needs tightening when the length of the spring (1) is 105 mm. Slacken the nut (3) and compress the spring (1) to a length of 100 mm with the nut (4).

Counter-tighten the nut (3) after adjustment.

Apply the gauge marked min. 100 mm and max. 105 mm when checking and adjusting.

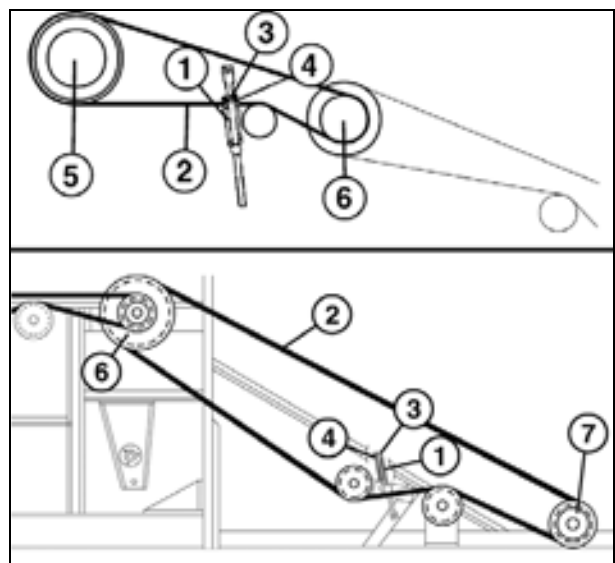


Fig. 6

9. Transmissions

Threshing cylinder

(Fig. 7)

Belt Drive No. 33

The cylinder (1) is driven from the variator pulley (2) by the belt (3) which is tightened with the spring-loaded tension pulley (7).

The belt needs tightening when the length of the spring (4) is 105 mm. Slacken the nut (5) and compress the spring (4) to 100 mm with the nut (6). Counter-tighten the nut (5) after adjustment.

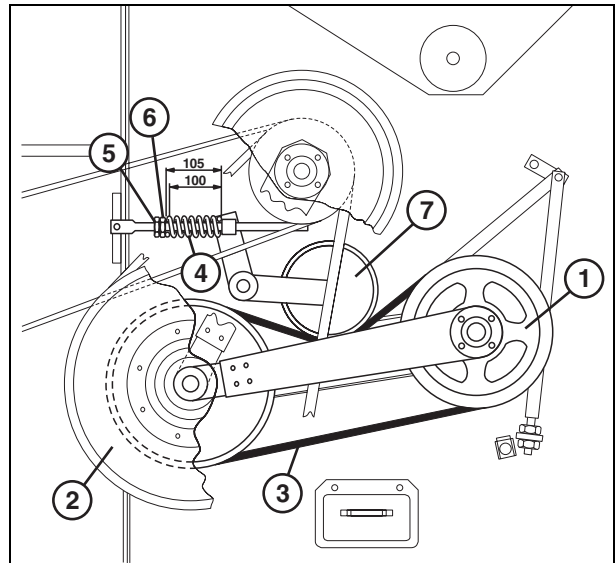


Fig. 7

Unloading Auger

(Fig. 8)

Belt Drive No. 3 and 27

From the engine belt pulley (3) the unloading auger (5) is driven by the belts (2) and (6) through the clutch/counter-shaft (4) from the left-hand side.

The belts (2) and (6) are tightened with the spring-loaded tension pulleys (1).

If the belts (2) and (6) need tightening, loosen the spring-loaded tension pulleys (1) and tighten the belts with the nuts (7).

IMPORTANT: ONLY 2 shear bolts (quality 4.6) (8) may be mounted even though there is room for more. If more than 2 shear bolts are mounted, auger and clutch may be damaged

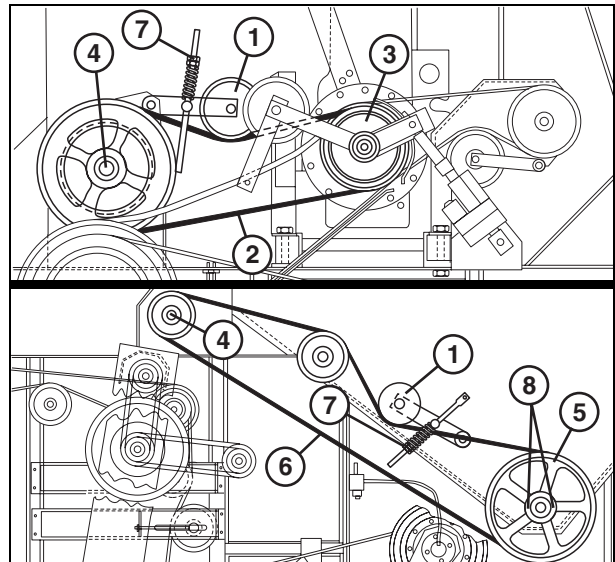


Fig. 8

9. Transmissions

Shaker Shoe and Chaff Spreader Counter Drive, and Straw Walker Drive

(Fig. 9) and (Fig. 10)

Belt Drive No. 10, 11, 12 and 13

Shaker shoe, straw walkers and chaff spreader are driven by the counter drive pulley (1) which is driven from the rear beater shaft (2) by the belt (3).

The belt for the counter drive (3) is adjusted with the tension pulley (4).

The belt for the shaker shoe drive (5) is adjusted with the tension pulley (6).

The belt for the straw walker drive (7) is adjusted with the tension pulleys (8) and (11). The spring (12) is adjusted with the nut (13) at a length of approx. 106 mm. If the clearance between the belts (14) gets below 61 mm, the tension pulley (11) must be adjusted downward using the nut (15) to restore the measure 61-65 mm at (14). If the clearance exceeds 65 mm, the tension pulley (11) must be adjusted upward using the nut (15) until the measure 61-65 mm at (14) is restored. Adjust the spring length (12) at 104-108 mm using the nut (13) and tighten the counternut (16). Tighten the bolt (17) and the counternut (18).

Note: It is important that the straw walker drive is correctly adjusted as the belts apart from driving the straw walkers, function as slip clutch. Too tight belts may cause damage to the straw walkers in case of blocking.

To adjust the belt for the chaff spreader hydraulic pump (9) move the hydraulic pump (10) up or down.

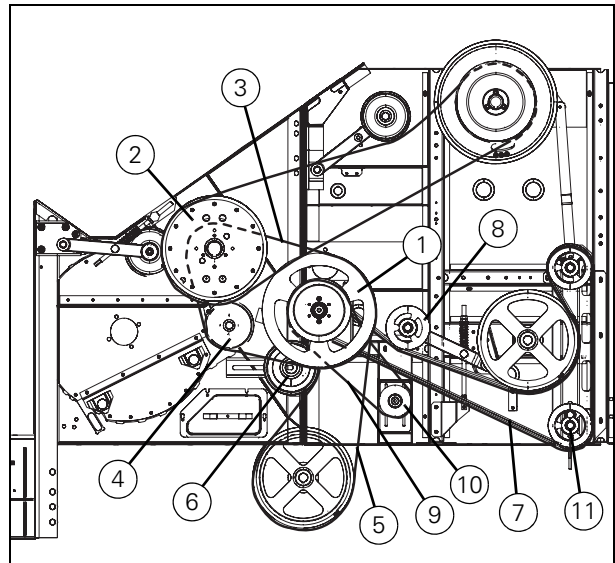


Fig. 9

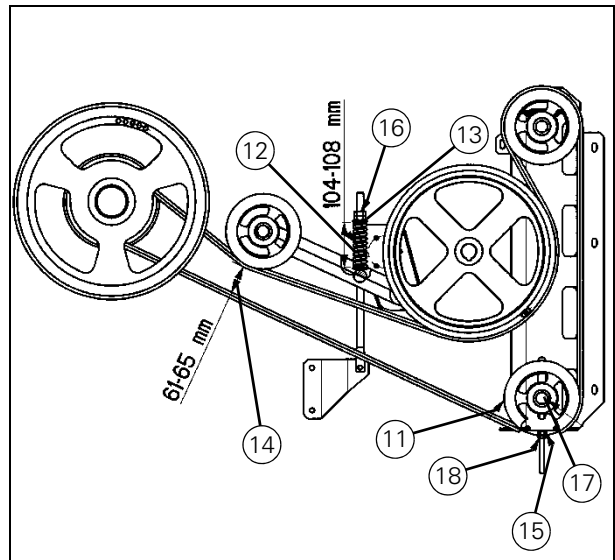


Fig. 10

9. Transmissions

Filling and Returns System Countershaft, (Fig. 11)

Belt Drive No. 25

Returns elevator (1), returns thresher (2), tank filling elevator (3) and tank filling auger (4) are all driven from the countershaft (5). The countershaft (5) is driven from the slip clutch (6) on the end of the countershaft (7), by the belt (8).

The belt (8) is tightened with the tension pulley (9).

Note: Disassemble and clean the slip clutch (6) before the start of each new season. If the clutch is blocked by dirt, the returns and filling systems may get damaged.

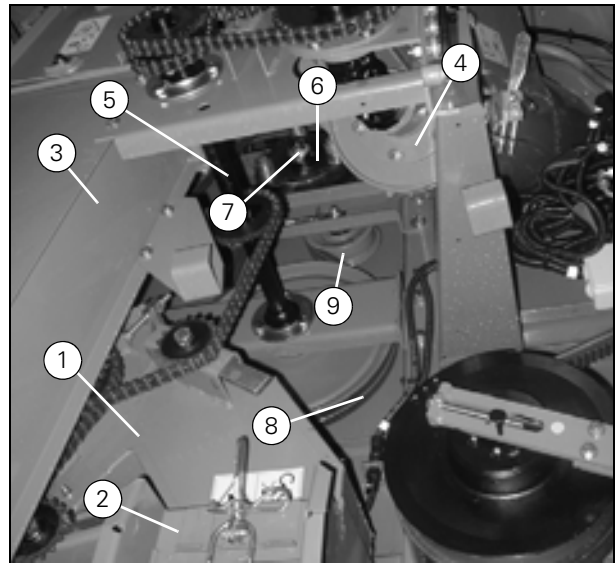


Fig. 11

Returns Elevator and Returns Thresher (Fig. 12)

Belt Drive No. 28

The returns elevator (1) is driven from the countershaft (2) by the chain (3). The returns thresher (4) is driven from the double sprocket (5) on the returns elevator top shaft (1) and the right angle gear (6), by the chain (7).

Slacken the chain (7) before adjusting the elevator chain. Having adjusted the elevator chain, adjust the chain (7) with the sprocket (8).

Having adjusted the elevator chain, adjust the chain (3) with the sprocket (9).

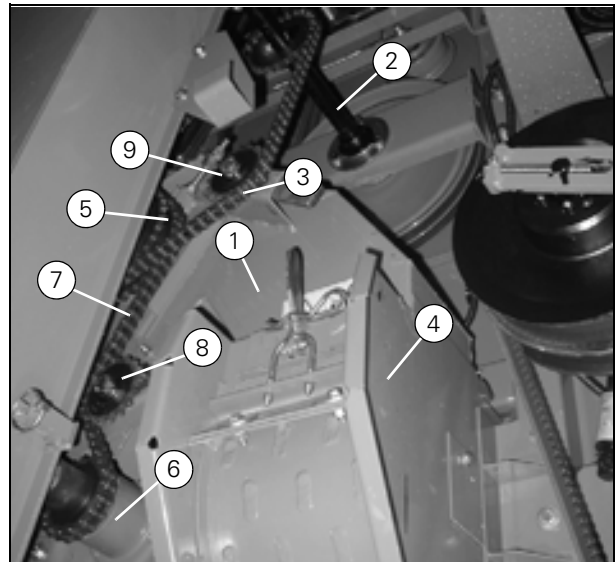


Fig. 12

9. Transmissions

Tank Filling Elevator and Tank Filling Auger

(Fig. 13)

Belt Drive No. 24 and 26

The tank filling elevator (1) is driven from the countershaft (2) by the chain (3). The chain (3) is adjusted with the sprocket (5).

The filling auger is driven from the countershaft (2) by the chain (8), which is adjusted with the sprocket (10).

The elevator chain is adjusted with the tension device (11).

Slacken the chain (3) before adjusting the elevator chain. Having adjusted the elevator chain, adjust the chain (3) with the sprocket (5).

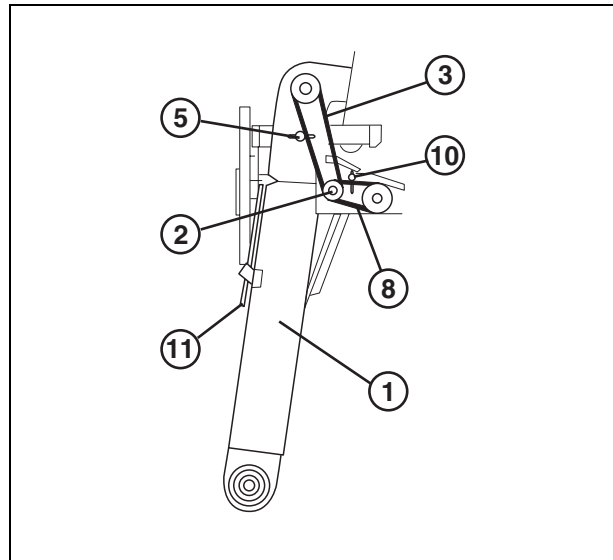


Fig. 13

Dust aspirator

(Fig. 14)

Belt Drive No. 22

The dust aspirator (1) is driven from the unloading auger countershaft (2) by the belt (3). The belt is tightened with the tension pulley (4).

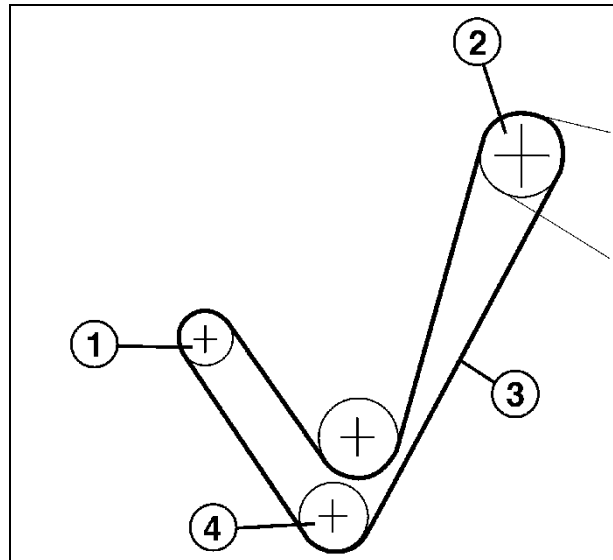


Fig. 14

9. Transmissions

Rotary screen

[\(Fig. 15\)](#), [\(Fig. 16\)](#) and [\(Fig. 17\)](#)

Belt Drive No. 21 and 23

The rotary screen (1) is driven from the clutches (2) and (3) which are engaged when the rotary screen is closed, and from the unloading auger countershaft (4) by the belts (5) and (6).

The belt (5) is tightened with the spring-loaded tension pulley (7) which does not require any adjustment.

The belt (6) is tightened with the spring-loaded tension pulley (8) which does not require any adjustment.

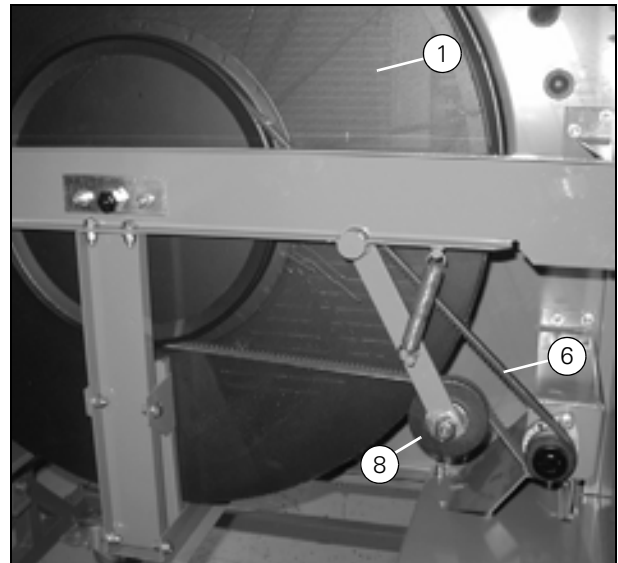


Fig. 15

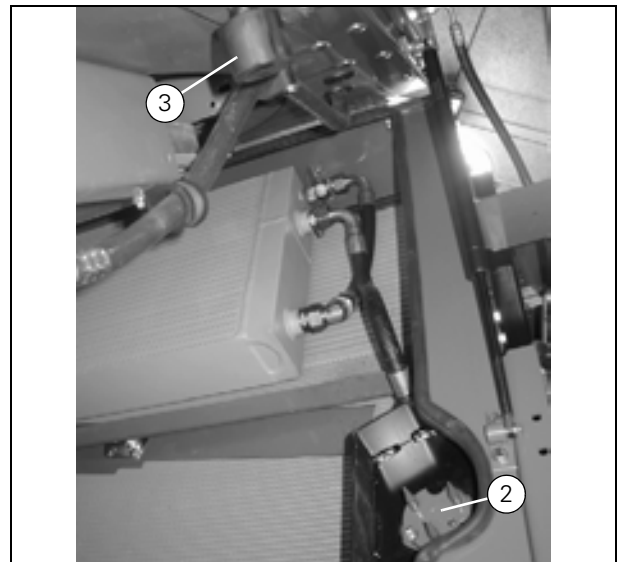


Fig. 16

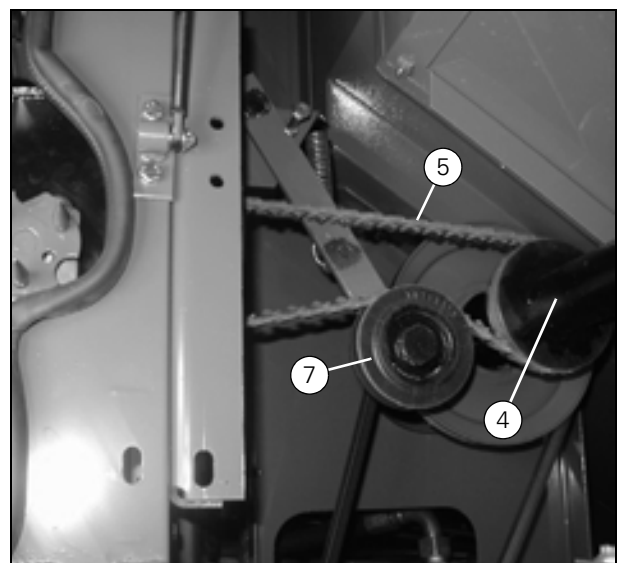


Fig. 17

9. Transmissions

Fanning Mill

[\(Fig. 18\)](#)

Belt Drive No. 30 and 31

The fanning mill is driven by the belts (3) and (4) from the rear beater (1) through the variator pulley (2). When the screw (5) is slackened, the belts can be tightened with the nut (6).

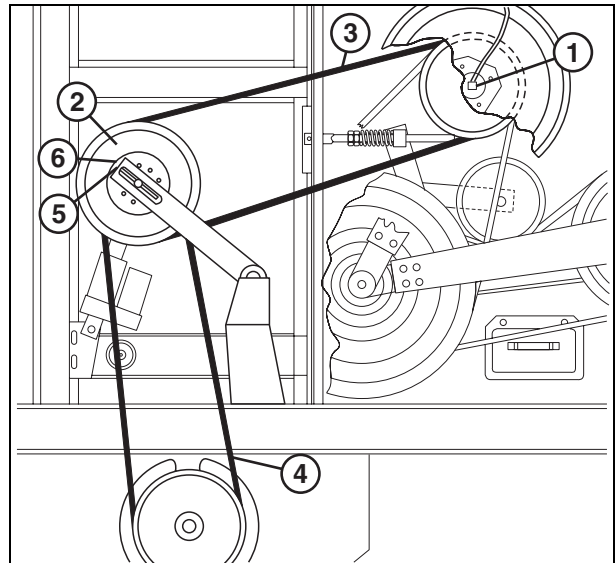


Fig. 18

Rotary Separator

[\(Fig. 19\)](#)

Belt Drive No. 29

The rotary separator (1) is driven from the rear beater (2) by the belts (3) which are tightened with the tension pulley (4).

To change revolutions slacken the tension pulley and move the belts into the vacant grooves and retighten.

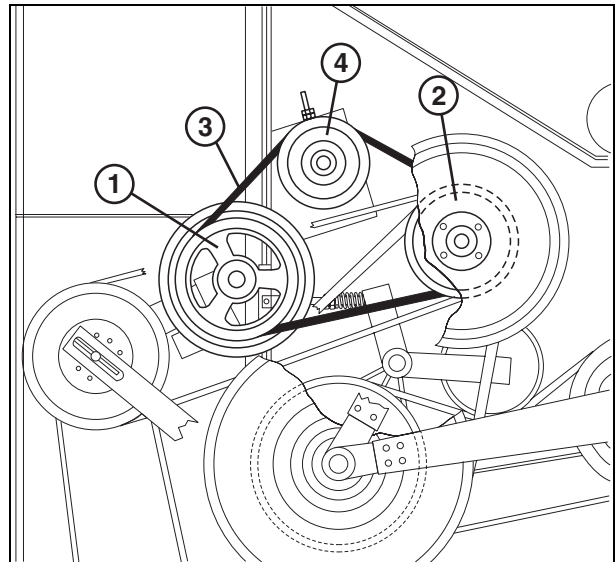


Fig. 19

Alternator and Fan,

[\(Fig. 20\)](#)

Belt Drive No. 20

The engine is equipped with a spring-loaded tensioner, and the belt is a Poly-V type. The belt is automatically tensioned during operation.

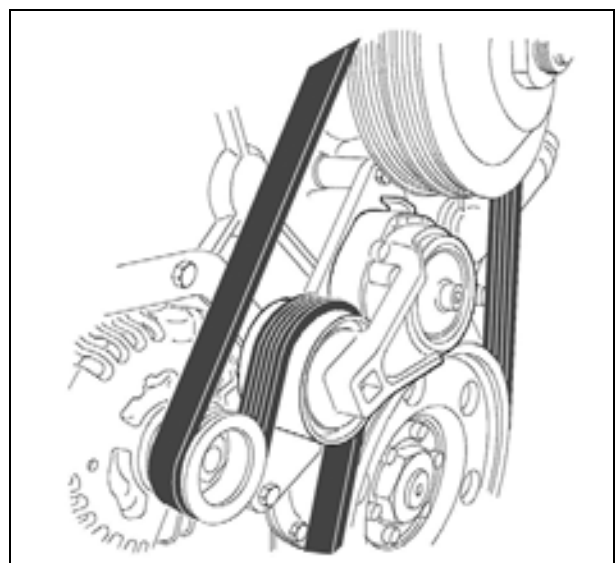


Fig. 20

9. Transmissions

Air-conditioning

[\(Fig. 21\)](#)

Belt Drive No. 19

The air-conditioning compressor (1) is driven from the fan belt pulley (2) by the belt (3).

To tighten the belt (3), adjust the air-conditioning compressor (1) in the bracket.

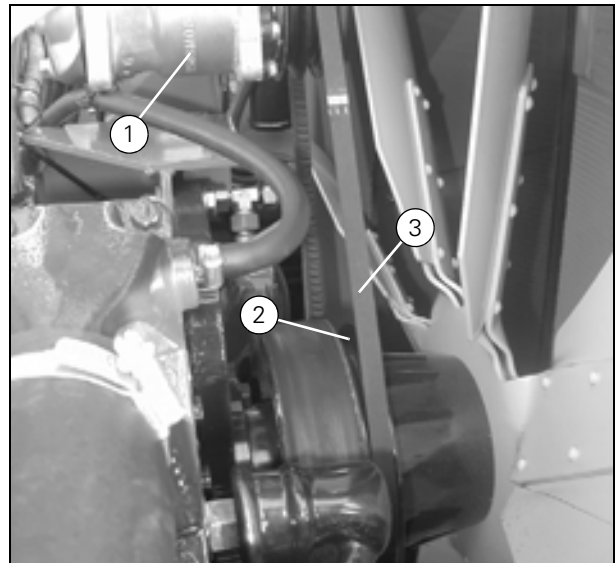


Fig. 21

9. Transmissions

9. Transmissions

9.4 Transmission Diagram, Left-Hand Side

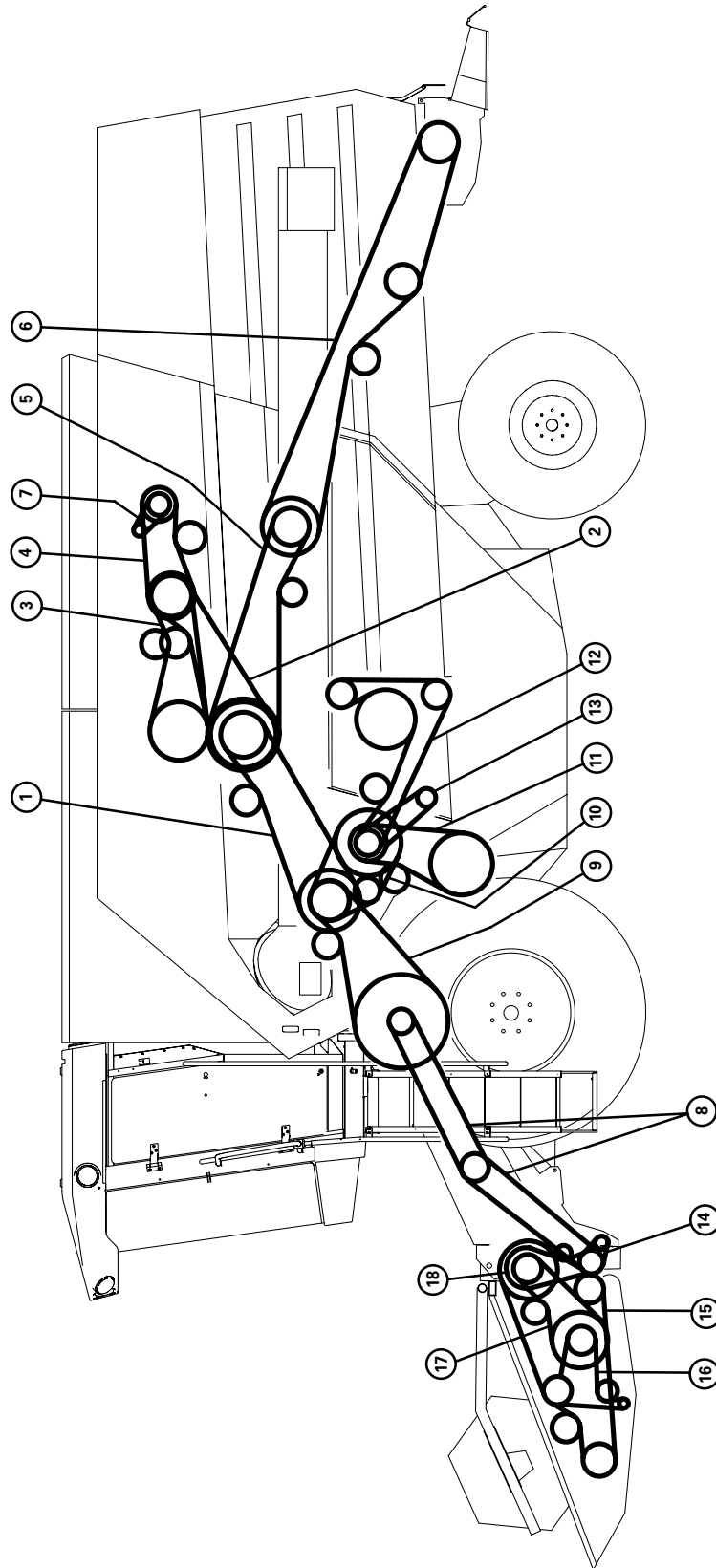


Fig. 22

9. Transmissions

Belt Drive/Chain Drive for:	Notes:	Tension Pulley:
1. Rear beater	Counter drive for table, shaker shoe and straw walkers	Spring-loaded, spring length 100 mm
2. Threshing unit clutch	Electrically operated	Spring-loaded, spring length 100 mm
3. Unloading auger	Magnetic clutch Unloading can take place without threshing unit being engaged.	Fixed
4. Hydrostatic pump		Spring-loaded
5. Straw chopper		Spring-loaded, spring length 100 mm
6. Straw chopper	Mechanical clutch built into straw chopper belt pulley.	Spring-loaded, spring length 100 mm
7. Alternator for vertical knife 2		Alternator
8. Table	2 chains	Fixed/chain guide
9. Main crop elevator	Electro-magnetic clutch/slip clutch	Spring-loaded, spring length 100 mm
10. Counter Drive	Straw walkers/shaker shoe	Fixed
11. Shaker shoe	From counter drive	Fixed
12. Straw Walkers	From counter drive	Spring-loaded
13. Chaff spreader	From tension pulley/straw walker drive	Oil pump to be displaced
14. Hydraulic reversing		
15. Knife drive		Fixed
16. PowerFlow belts	Two-speed	Fixed
17. Table auger	Two-speed/slip clutch	Fixed
18. Table countershaft		Fixed

Fig. 23

9. Transmissions

9.5 Transmission Diagram, Right-Hand Side

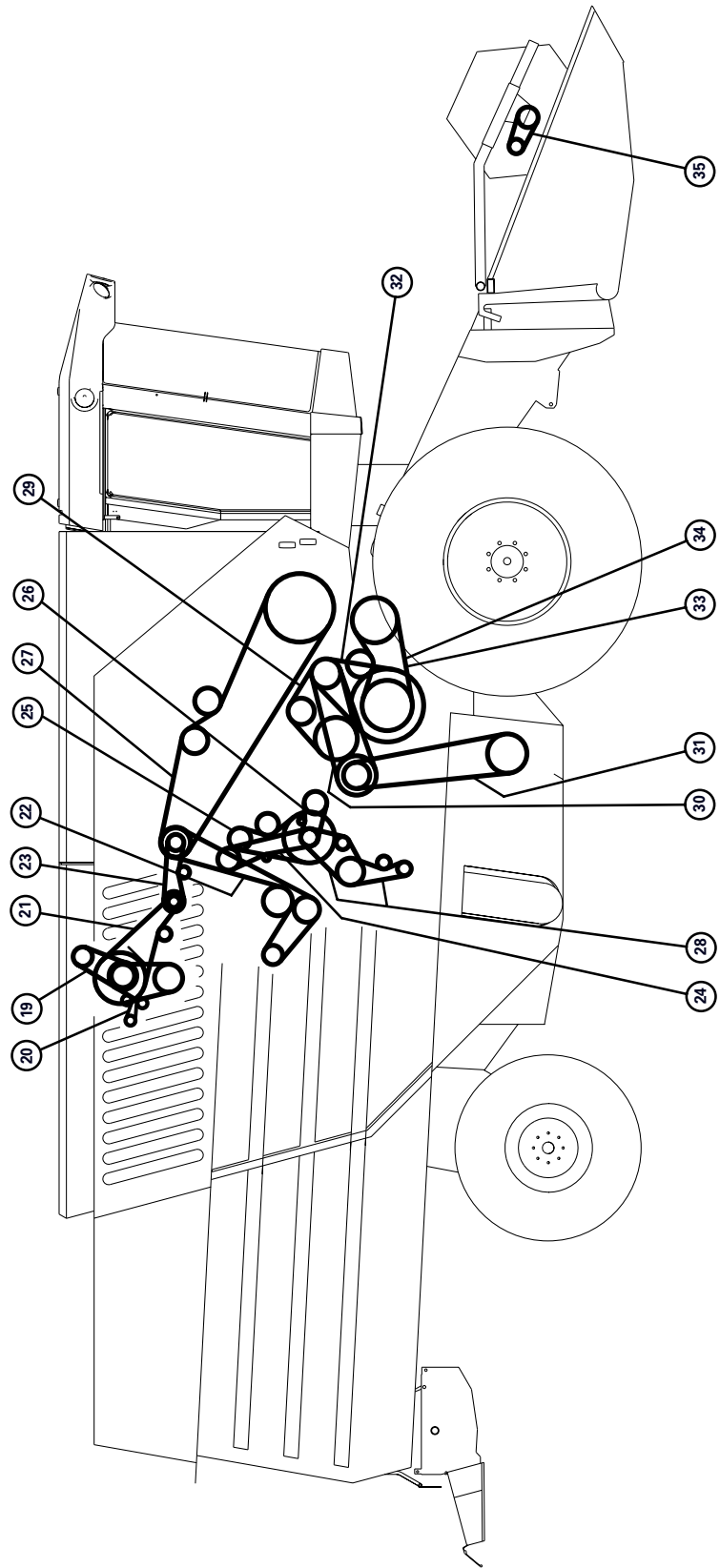


Fig. 24

Belt Drive/Chain Drive for:	Notes:	Tension Pulley:
19. Air-conditioning compressor	Alternator	Alternator
20. Alternator/fan blade		Alternator
21. Rotary screen	From counter drive	Spring-loaded
22. Dust aspirator	From countershaft	Fixed
23. Rotary screen	From countershaft	Spring-loaded
24. Chain drive/filling elevator	From counter drive	Fixed
25. Filling and returns system	From countershaft Driving belt pulley has built-in slip clutch.	Fixed
26. Tank filling auger	From counter drive	Fixed
27. Unloading auger		Fixed
28. Chain drive returns elevator/thresher	From counter drive	Fixed
29. Rotary separator	From rear beater shaft	Fixed
30. Fanning mill	From rear beater shaft	Variator pulley
31. Fanning mill	From variator pulley	Variator pulley
32. Variator belt for threshing cylinder		The belt pulley spring keeps the belt tight
33. Threshing cylinder		Spring-loaded, spring length 100 mm
34. Threshing cylinder	Geared down/large pulley	Spring-loaded, spring length 100 mm
35. Chain drive/reel		Oil motor to be displaced.

Fig. 25

9. Transmissions

10. Hydraulics

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10. Hydraulics

10.1 Safety Precautions



Before any service or cleaning is carried out, stop the engine, remove the ignition key, and switch off the main switch.



Never carry out any work on the hydraulic system until the engine is stopped and the ignition key and main switch handle have been removed from the switches. The machine must be secured against rolling by applying the parking brake/inserting sprags under the wheels.



Be particularly cautious when draining warm oil - fire hazard. Drained oil must be disposed of in a safe way.



Before carrying out any service or repair on the hydraulic system, make sure that the particular function is relieved (without pressure) and secured against lowering.



Never try to find a leak in the hydraulic system by hand. A jet of oil of high pressure may damage your skin.



Dirt is damaging to the hydraulics system.



Keep oil cans, etc. clean and free of other liquids. Only a few drops of another liquid/oil may spoil the additives in the hydraulic oil.

10. Hydraulics

10.2 Hydraulic System, Standard Combine

Hydrostatic Transmission

HPV 135-02 / HMF 105-02

- A. Hydraulic oil tank
- B. Hydraulic pump
- C. Hydrostatic motor
- D. Hydraulic oil cooler
- E. High-pressure pipes
- F. Oil cooling pipe
- G. Oil cooling pipe
- H. Vent pipe

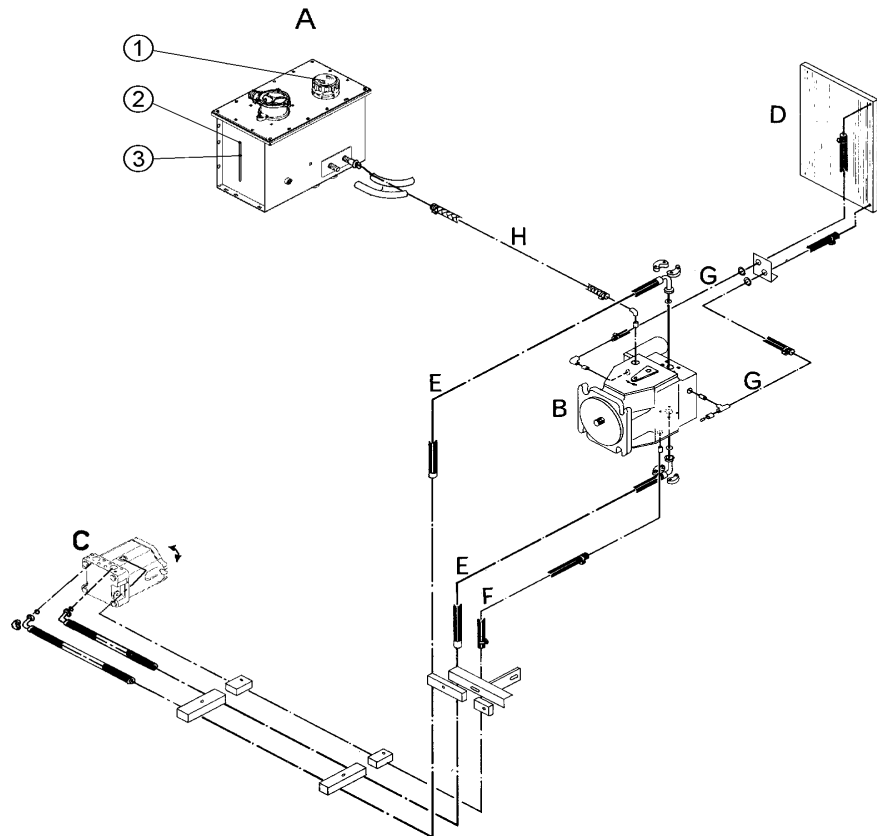


Fig. 1

The hydrostatic transmissions and the hydraulic system have a common oil tank (A). The system contains approx. 55 litres hydraulic oil. The tank contains additionally approx. 34 litres.

The filler (1) is fitted with a strainer. Check that the strainer is undamaged as it is vital to prevent dirt from entering the hydraulic system.

The oil level glass (2) must be filled to the maximum mark. If the oil level drops to the minimum mark (3), refill oil.

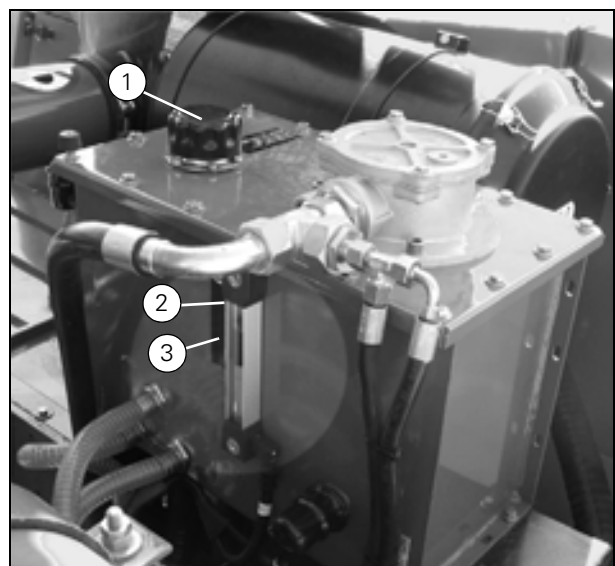


Fig. 2

10.3 Hydraulic System, Four-Wheel Drive

Hydrostatic Transmission

HPV 135-02 / HMF 105-02

- A. Hydraulic oil tank
- B. Hydraulic pump
- C. Hydrostatic motor
- D. Hydraulic oil cooler
- E. High-pressure pipes
- F. Oil cooling pipe
- G. Oil cooling pipe
- H. Vent pipe

Four-wheel drive

- I. Hydrostatic motor, LH
- J. Hydrostatic motor, RH

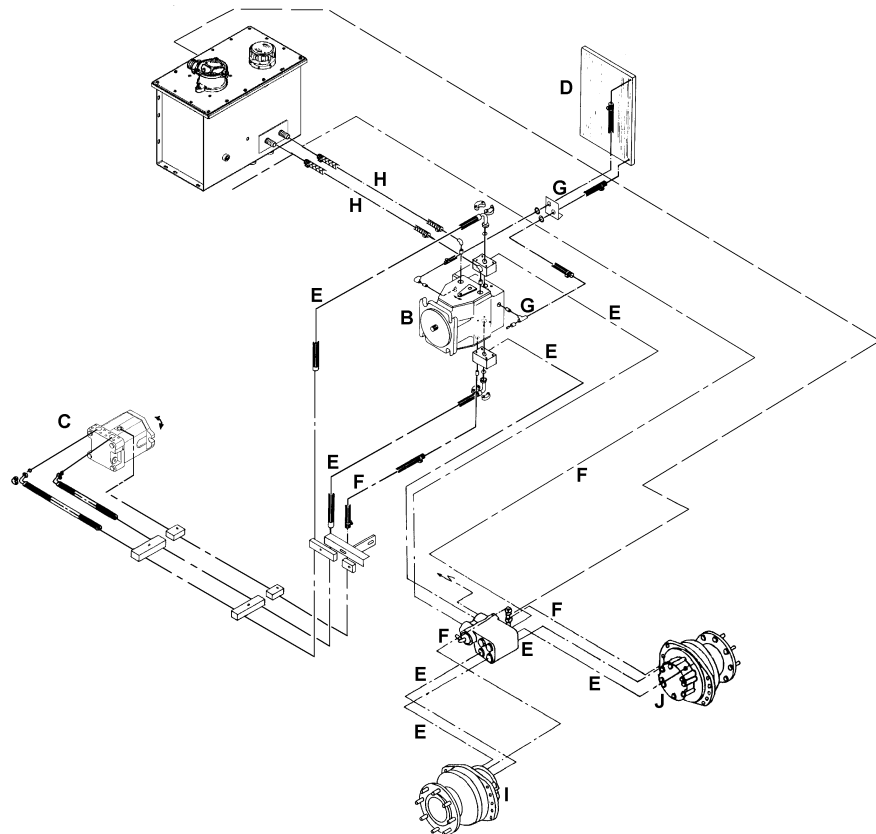


Fig. 3

10. Hydraulics

10.4 Oil Change

Change hydraulic oil first time at the end of the first season. Then change every 1000 hours or every third season, whichever is soonest. Change oil only in the tank, pump and motor housings, return pipe and vent pipe, but not in the high pressure pipes and cooling system.

Draining Oil

(Fig. 4) and (Fig. 5)

Draining oil is easiest when the system is warm.

1. Open the drain cock (1) at the bottom of the oil tank and drain the oil through the hose (2).
2. Dismount the return pipe (3) on the oil motor to drain oil from oil tank, pump and motor housings, and return pipe from the oil motor.

Refilling Oil

1. Check before refilling that the return pipe in the hydrostatic motor and the plug at the bottom of the oil tank are fitted and tightened.
2. Fill the tank slowly with oil to allow air from the hydrostatic pump housing to escape as the housing fills with oil. Top up the tank completely.
3. Dismount the plug (4) and let the coupler housing fill with oil. Remount the plug (4) and top up the tank to the max. mark.
4. Throw the machine into neutral gear and apply the brakes.
5. Start the diesel engine and run it at lowest speed (idle).
6. Push the multi-function lever forward between 2/3rds and max. speed for 15 to 20 seconds. Then return it into position "N" and stop the engine. Repeat points 5 and 6 until there are no more air bubbles in the hoses between pump and tank.
7. Top up the oil tank to the max. mark.
8. Start the diesel engine and run it at lowest speed for 10 minutes. Bleed the oil motor at the plug (4), (Fig. 5).
9. Top up the oil tank to the max. mark.

If the oil has been drained from the high pressure system, due to replacement of hydrostatic pump, motor, high-pressure pipes, etc. the following point 5a must be carried out between points 5 and 6.

5a Slacken the screw (4) (Fig. 5), and drain about two litres oil.

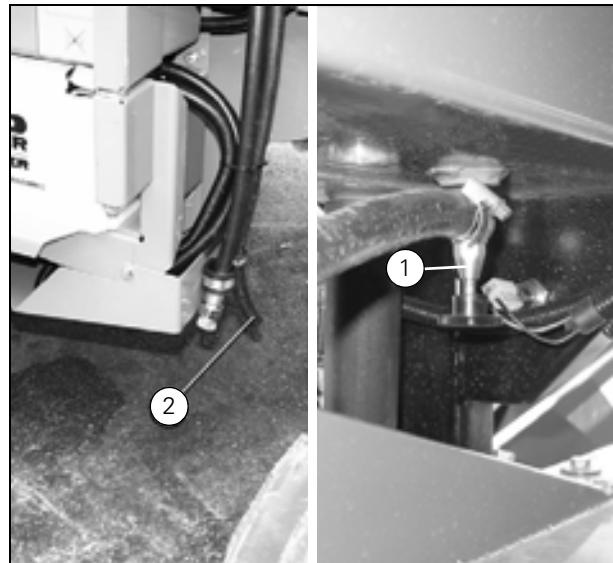


Fig. 4

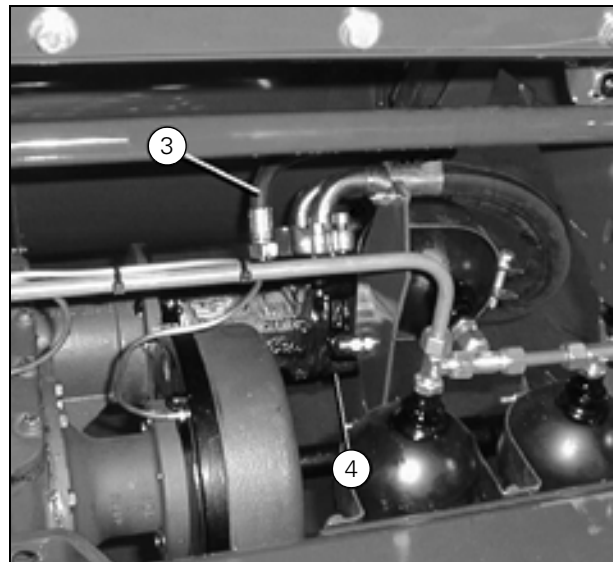


Fig. 5

10.5 Filter Change

[\(Fig. 6\)](#)

Replace the filter (1) on the hydrostatic pump every 500 hours or before each new season, whichever is soonest. Before fitting the new filter, oil the seals. Fit the filter and tighten with 2.5 kpm with a torque wrench.



Fig. 6

Return Oil Filter

[\(Fig. 7\)](#)

The return oil filter element can be replaced when the cover (1) is removed. Change filter element every 500 hours of operation or before each new season, whichever is soonest.

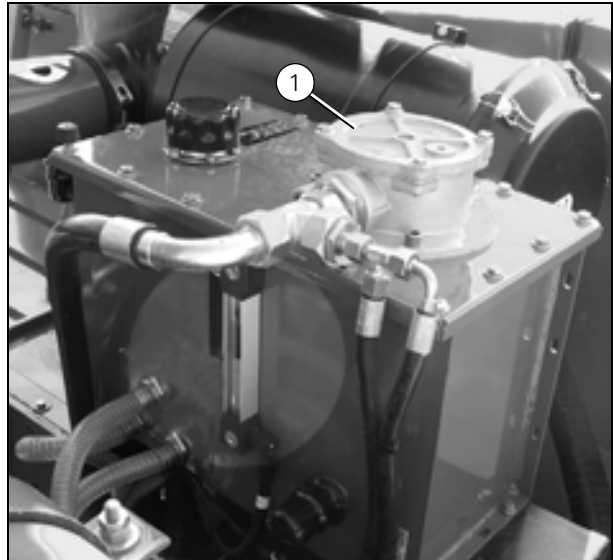


Fig. 7

Storage of Hydraulic System

[\(Fig. 8\)](#)

At the end of each season, drain the hydraulic oil tank of any condensate and dirt through the drain cock (1).

Lower the crop elevator completely and top up the hydraulic oil tank with oil to avoid condensate in the tank. Remove the battery and store it in a dry, warm room.

Drain the oil through the cock (1) and the hose (2) to normal oil level before starting the new season.

Note: *Be careful when replacing filter and oil, as any dirt in the system may cause serious damage.*

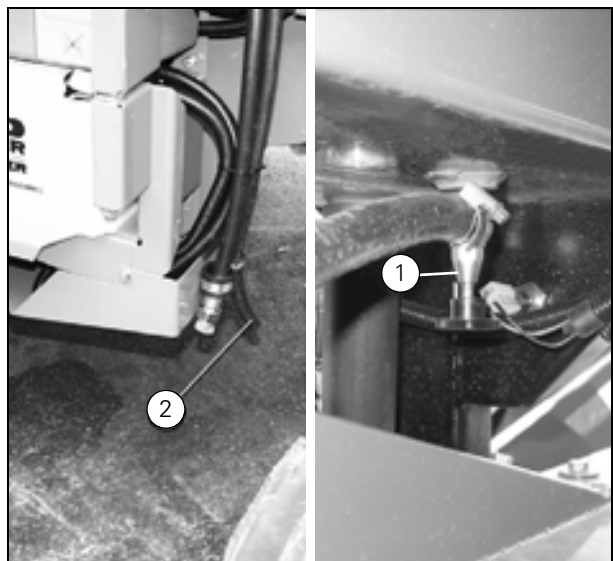


Fig. 8

10. Hydraulics

10.6 Auxiliary Hydraulics

The system consists of 3 different systems: Reel drive, auxiliary hydraulics and steering system.

The reel system consists of the middle pump part B, flow divider C and oil motor E for reel drive.

The auxiliary hydraulics system consists of the front pump part and main valve P, the magnetic valves: F1, F2, F3, F4, F5, F6, F7, the cylinders: K1, K2, J1, J2, T, L, and the variator S. Please see diagrams on the following pages.

The system is a one-wire system operated by magnetic valves.

The steering system consists of the rear pump part B, orbitrol steering valve G and the steering cylinders M.

Functions and Auxiliary Hydraulics

When a pressure requiring function is operated, the main valve P will close and the valve of the operated function will open.

When a non-pressure requiring function is operated, e.g. to lower the table, the valve of the operated function will open and the oil will return through the main valve P without pressure into the tank.

Reel Adjustment Fore/Aft - Up/down

Reel adjustments up/down and fore/aft are master-slave systems.

Master-slave system means that the return oil from cylinder 1 is used to activate cylinder 2.

If the pipe between cylinders K1 and K2 for reel lift has been disassembled, it is necessary to bleed cylinder K2 at the bleed screw (1).

If there is air in cylinder K2 the reel will hang down on one side.

If the reel hangs down on one side, move the reel completely back and hold it there while the switch is activated.

Any air in the system will escape at the relief valve.

Note: Repeated attachment and detachment of the table may cause accumulation of air in the cylinders for reel adjustment up/down or fore/aft.

Air in the cylinders may change the position of the reel in the table, and in that case bleeding of the cylinders is necessary.

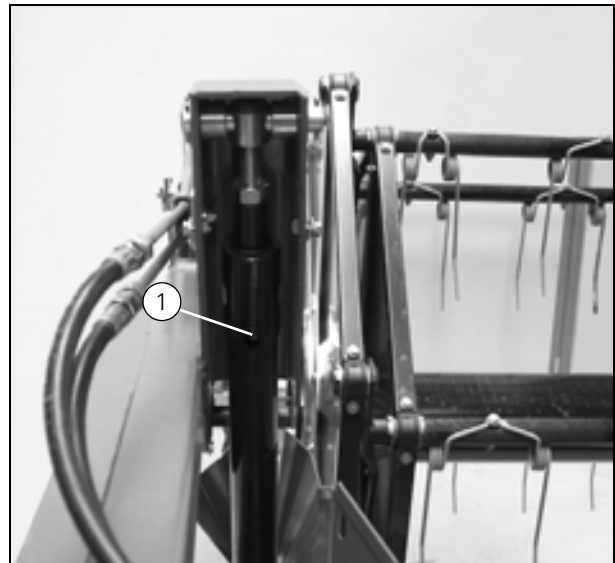


Fig. 9

10. Hydraulics

10.7 Hydraulics Diagram, Standard Combine

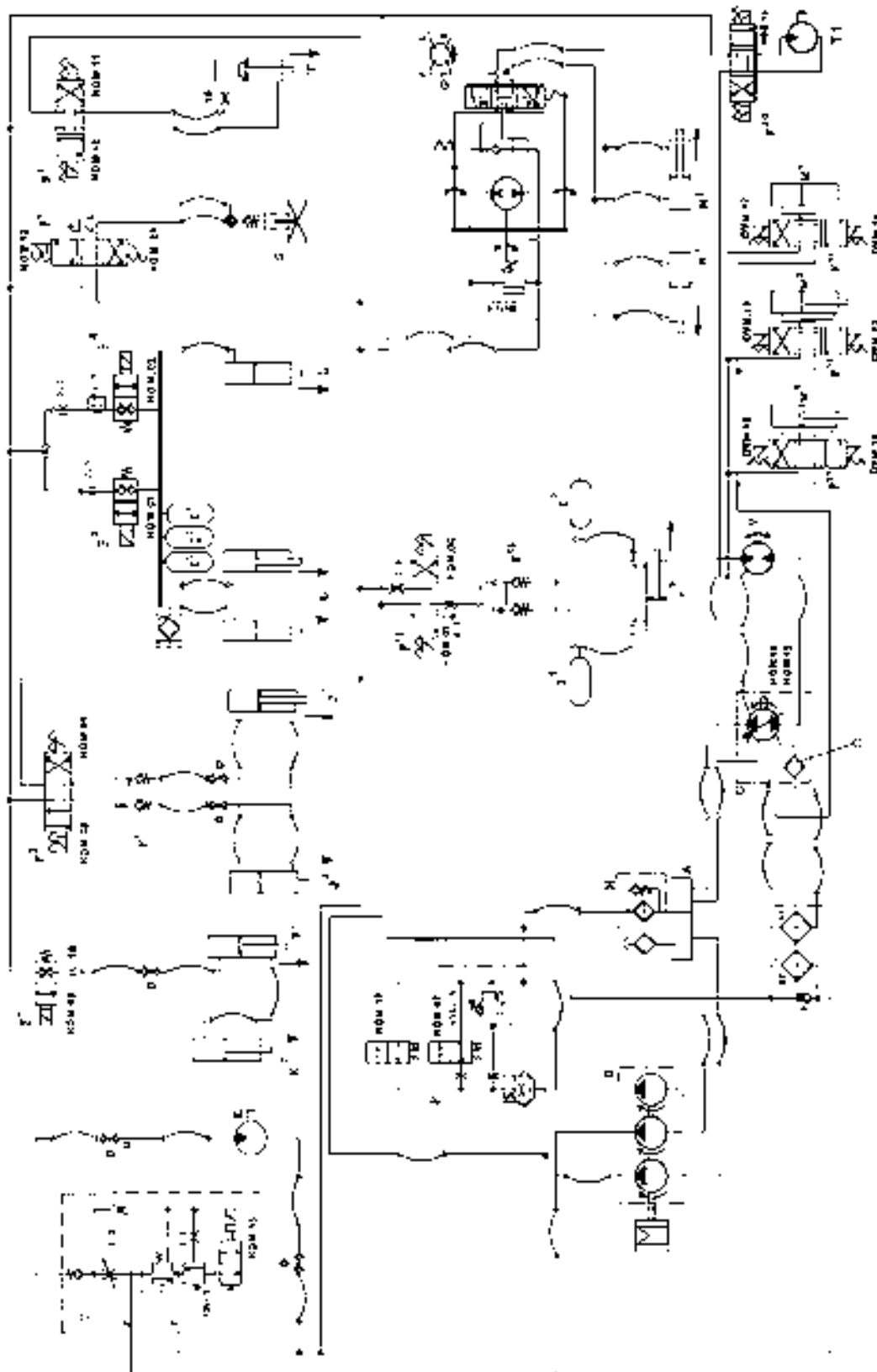


Fig. 10

10. Hydraulics

Key to Hydraulics Diagram, Standard Combine			
A	Hydraulic oil tank	I4	Hydraulic accumulator for table levelling
B	Hydraulic pump	I5	Hydraulic accumulator for table levelling
C	Flowdivider	J1	Master cylinder for reel fore/aft
D	Quick-attach coupling	J2	Slave cylinder for reel fore/aft
E	Hydraulic oil motor for reel	K1	Master cylinder for reel up/down
F1	Magnetic valve for reel up/down	K2	Slave cylinder for reel up/down
F2	Magnetic valve for reel fore/aft	L	Cylinder for table up/down
F3	Magnetic valve for table up/down	M1-2	Steering cylinder
F4	Magnetic valve for table up/down	N	Hydraulic oil filter
F5	Magnetic valve for cylinder variator	O	Hydraulic oil filter
F6	Magnetic valve for unloading auger	P	Relief/by-pass valve
F7	Non-return valve	S	Cylinder variator
F11	Valve for Auto Level table	T	Cylinder for unloading auger
F16	Non-return valve	T1	Oil motor for reversing
F17	Magnetic valve for gearshift	U	Hydrostatic pump
F18	Magnetic valve for gearshift	V	Hydrostatic motor
F19	Magnetic valve for gearshift	X1	Oil cooler, transmission
F20	Solenoid valve for reversing	X2	Oil cooler, auxiliary hydraulics
G	Orbitrol steering valve	W1	Cylinder for gearshift
H3	Cylinder for Auto Level table	W2	Cylinder for gearshift
I	Hydraulic accumulator for table up/down	W3	Cylinder for gearshift

<i>MF7274-78 Max. 2080 rpm</i>	<i>Auxiliary Hydraulics System Pump Part I</i>	<i>Reel System Pump Part II</i>	<i>Steering System Pump Part III</i>
Oil flow	68 l/min.	28 l/min.	21 l/min.
Pressure	175 ±5 bar	125 ±5 bar	160 ±10 bar

10. Hydraulics

10.8 Hydraulics Diagram, Auto Level Combine

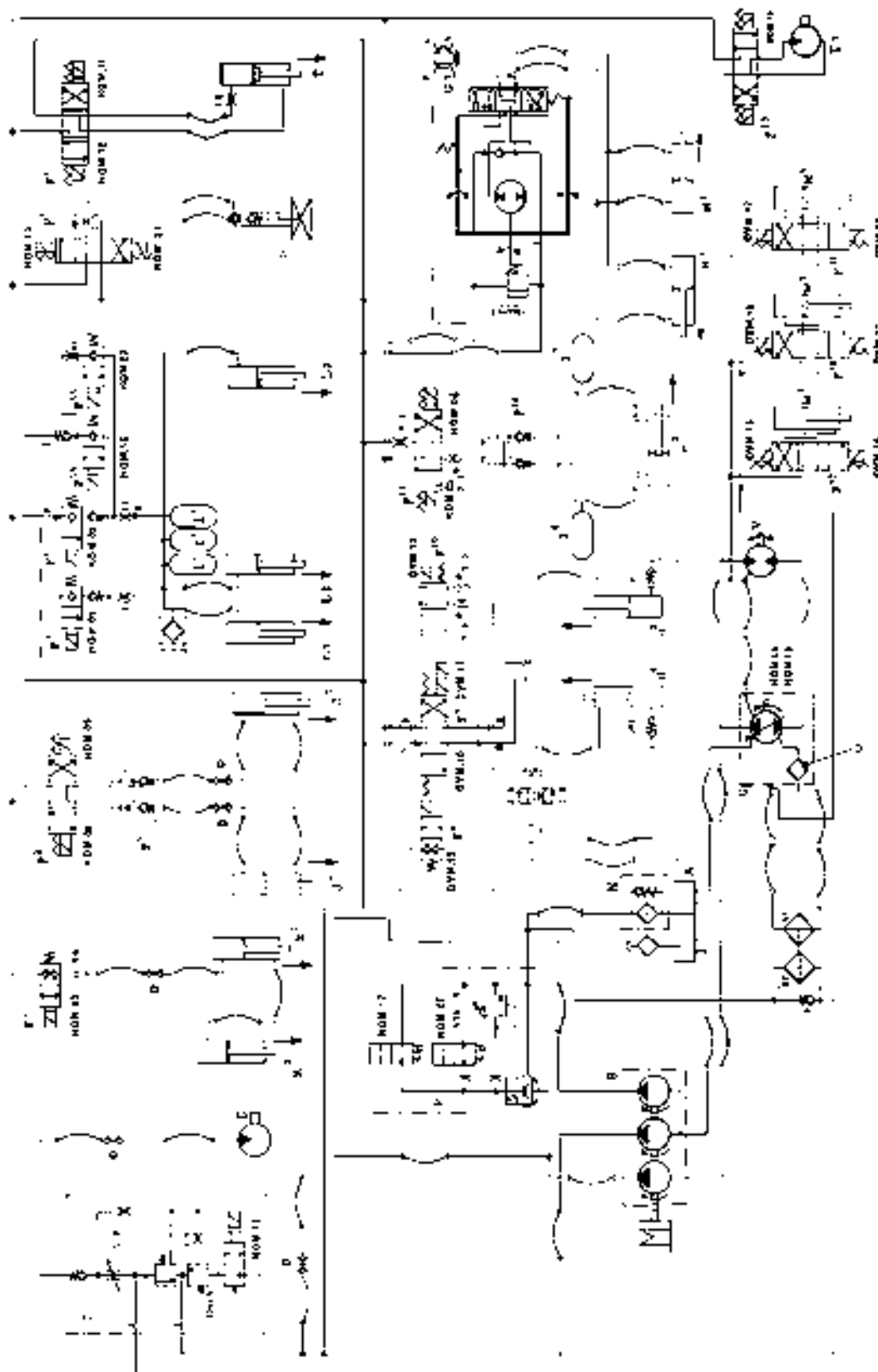


Fig. 11

10. Hydraulics

Key to Hydraulics Diagram, Auto Level Combine / Auto Level Table			
A	Hydraulic oil tank	H3	Cylinder for Auto Level table
B	Hydraulic pump	I1	Hydraulic accumulator for table up/down
C	Flowdivider	I2	Hydraulic accumulator for table up/down
D	Quick-attach coupling	I3	Hydraulic accumulator for table up/down
E	Hydraulic oil motor for reel	I4	Hydraulic accumulator for table levelling
F1	Magnetic valve for reel up/down	I5	Hydraulic accumulator for table levelling
F2	Magnetic valve for reel fore/aft	J1	Master cylinder for reel fore/aft
F3	Solenoid valve for table up	J2	Slave cylinder for reel fore/aft
F4	Solenoid valve for table up	K1	Master cylinder for reel up/down
F5	Magnetic valve for cylinder variator	K2	Slave cylinder for reel up/down
F6	Magnetic valve for unloading auger	L1-2-3	Cylinder for table up/down
F7	Non-return valve	M1-2	Steering cylinder
F8	Valve for machine up/down	N	Hydraulic oil filter
F9	Valve for Auto Level RH and LH	O	Hydraulic oil filter
F10	Valve for machine up/down	P	Relief/by-pass valve
F11	Valve for Auto Level table	S	Cylinder variator
F14	Magnetic valve for table down	T	Cylinder for unloading auger
F15	Magnetic valve for table down	T1	Oil motor for reversing
F16	Non-return valve	U	Hydrostatic pump
F17	Gearshift valve	V	Hydrostatic motor
F18	Gearshift valve	X1	Oil cooler, transmission
F19	Gearshift valve	X2	Oil cooler, auxiliary hydraulics
F20	Solenoid valve for reversing	W1	Cylinder for gearshift
G	Orbitrol steering valve	W2	Cylinder for gearshift
H1	Hydraulics for Auto Level combine	W3	Cylinder for gearshift
H2	Hydraulics for Auto Level combine		

<i>MF7274-78 AL Max. 2080 rpm</i>	<i>Auxiliary Hydraulics System Pump Part I</i>	<i>Reel System Pump Part II</i>	<i>Steering System Pump Part III</i>
Oil flow	68 l/min.	28 l/min.	21 l/min.
Pressure	175 ±5 bar	125 ±5 bar	160 ±10 bar

10. Hydraulics

10.9 Hydraulics Diagram for Chaff Spreader

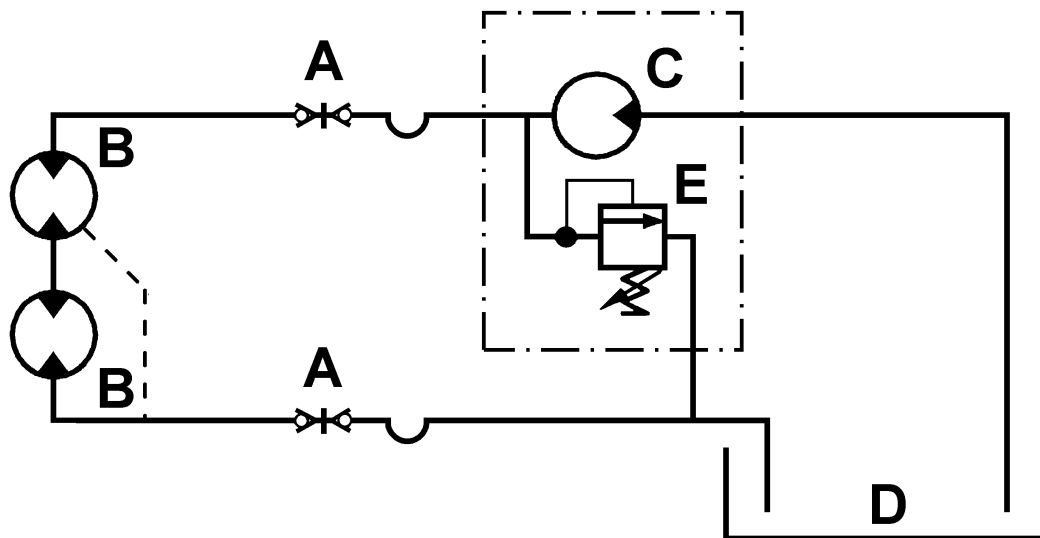


Fig. 1

- A. Quick-attach coupling
- B. Engine
- C. Pump
- D. Hydraulic oil tank
- E. Safety valve

11. Maintenance

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11. Maintenance

11. Maintenance

11.1 Safety Precautions



Before any service or cleaning is carried out, stop the engine, remove the ignition key, and switch off the main switch.

Never start the machine until all safety guards are fitted and secured.



Store lubricants and fuel in suitable containers, and make sure they are disposed of in a safe way.

Be cautious when draining warm oil - fire hazard.



Check the brake system regularly and thoroughly. Maintenance and repair of the brake system may be carried out only by expert workshops or authorised brake specialists.

During road transport it must not be possible to apply the brake pedals individually (Always latch the brake pedals during road transport).

Check brake fluid level regularly. Use approved brake fluid only.

Be particularly cautious when handling brake fluid, it is noxious and caustic.



Avoid any contact with liquid refrigerant. See a doctor immediately in case of sprays in the eyes.

Maintenance and repair of the cooling system to be carried out by specialists only.



Drain refrigerant before any repair of the air-conditioning system. Be careful not to let toxic fumes escape. Smoking should be avoided in connection with repair, due to the risk of refrigerant leaking out which, if set on fire, may produce gases injurious to health.

Fitting, repair and maintenance of the air-conditioning system to be carried out by specialists only.



Repair of tyres to be carried out by specialists with special tools only.

Always observe prescribed tyre pressure, as the tyre may burst if the pressure gets too high.

Never allow any persons near when pumping up the tyre.

Check tyre pressure regularly.

When working on tyres and wheels make sure the machine stands firmly on the ground and is secured against rolling by inserting sprags under the wheels.



Never allow any persons on the machine when working under it.

Always make sure the lifting device has sufficient lifting capacity.



When diesel engine, exhaust, radiator and hydraulic system are hot, service must be carried out with greatest caution.

When the diesel engine is hot, be particularly cautious when changing oil and checking coolant level.



Before carrying out any service or repair of the hydraulic system, make sure the particular function is relieved (without pressure) and secured against lowering.

Never try to find a leak in the hydraulic system by hand. A jet of oil of high pressure may damage your skin.

In case of accident see a doctor immediately, to avoid severe infection.

Repair of the hydraulic system to be carried out by specialists only.



Before carrying out any work on the electrical system, disconnect the cable from the negative pole (-) of the battery.

Make sure the cables are connected in correct order - first positive pole (+), then negative pole (-).

Be cautious with battery gases - highly explosive.

Smoking and open fire should be avoided near the battery.

Be cautious with battery acid, it is noxious and caustic.



Disconnect cables from alternator and battery before carrying out any electric welding

11. Maintenance

on machine and table.

In addition, disconnect all connectors for:

- Terminal and job computers in the electric box*
- Comunit or GPS*
- EEM engine management computer*

Always refit the safety guards whenever service has been carried out.

Check the safety guards regularly and replace worn guards.



Before stepping onto the access ladder for the service platform make sure the fifth step of the ladder rests securely on the bottom brackets.



Before stepping onto the engine hood make sure there are no live overhead power lines above the machine.

11. Maintenance

11.2 Undercarriage

1. Traction wheels
2. Rear wheels
3. Table trailer jockey wheel
4. Table trailer wheels

Retighten the traction wheels before first using the machine. Check the torques frequently, and retighten regularly.

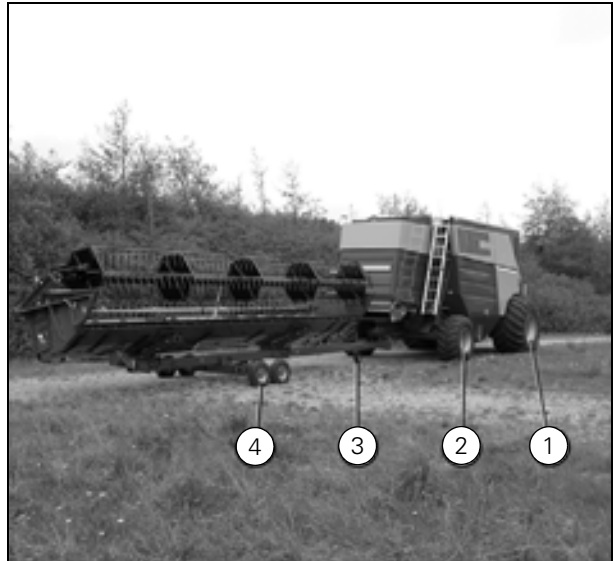


Fig. 1

Wheel Nut Torques

[\(Fig. 2\)](#)

MF 7274 (dry threads)	
Traction wheels	70 kpm/700 Nm

MF 7274-78 (dry threads)	
Rear wheels	35 kpm/350 Nm

MF 7274-78 (oiled threads)	
Traction wheels	80 kpm/800 Nm

Table trailer wheels	15 kpm/150 Nm
----------------------	---------------

Check air pressure in tyres before first using the machine, and then check regularly.



Fig. 2

11. Maintenance

11.3 Tyre Pressure

Model	Tyre size	Make	Rim	Pressure, bar
Traction wheels				
MF 7274	620/75 R34	GOODYEAR	DW20Ax34	3,6
	650/75 R32	CONTINENTAL	DW21Ax32	4,1
	800/65 R32	GOODYEAR	DW27Ax32	2,0
	900/55 R32	GOODYEAR	DW27Ax32	1,9
	1050/50 R32	MICHELIN	DW36Ax32	1,9
MF 7278	650/75 R32	CONTINENTAL	DW21Ax32	4,1
	800/65 R32	GOODYEAR	DW27Ax32	2,0
	900/55 R32	GOODYEAR	DW27Ax32	1,9
	1050/50 R32	MICHELIN	DW36Ax32	1,9
MF 7274 AL	620/75 R34	GOODYEAR	DW20Ax34	4,0
	800/65 R32	GOODYEAR	DW27Ax32	3,0
	900/55 R32	GOODYEAR	DW27Ax32	1,9
MF 7278 AL	800/65 R32	GOODYEAR	DW27Ax32	3,0
	900/55 R32	GOODYEAR	DW27Ax32	1,9
Rear wheels				
MF 7274	600/55-26,5	TRELLEBORG	20.0x26.5	1,5
	15.5/80-24	GOODYEAR	15.5/80-24	2,0
	500/60-26,5	TRELLEBORG	16.0x26.5	2,0
MF 7278	600/55-26,5	TRELLEBORG	20.0x26.5	1,5
	15.5/80-24	GOODYEAR	15.5/80-24	2,0
	500/60-26,5	TRELLEBORG	16.0x26.5	2,0
Rear wheels, four-wheel drive				
MF 7274	600/55-26,5	TRELLEBORG	20.0x26.5	1,5
	15.5/80-24	GOODYEAR	15.5/80-24	2,0
	500/60-26,5	TRELLEBORG	16.0x26.5	2,0
MF 7278	600/55-26,5	TRELLEBORG	20.0x26.5	1,5
	15.5/80-24	GOODYEAR	15.5/80-24	2,0
	500/60-26,5	TRELLEBORG	16.0x26.5	2,0
Wheels, table trailer				
MF 7274	10.0/75-15,3		9.00x15.3	4,7
	11.5/80-15,3		9.00x15.3	3,5
MF 7278	10.0/75-15,3		9.00x15.3	4,7
	11.5/80-15,3		9.00x15.3	3,5

11. Maintenance

11.4 Lubrication Points

Daily/10 Hours (Red)

Side	No.	Description	Number	Grease	Oil
LH	1	Feathering fingers	19		X
LH	2	Knife and knife clips (*6)	X		X
LH	13	Swivel bearing, unloading auger	4	X	
LH	29	Straw chopper, rotary knives (*6)	X		X

50 hours (blue)

Side	No.	Description	Number	Grease	Oil
LH	4	Chain drive, table auger and PowerFlow belts	2		X
LH	5	Bearing for PowerFlow belt roller	1	X	
LH	8	Slide, transmission shaft, table	1	X	
LH	8	Transmission shaft for table	4	X	
LH	9	Crop elevator chain (*2)	4		X
LH	10	Transmission chain for table (*1)	2		X
LH	11	Crop elevator pivot	1	X	
LH	12	Universal joint, unloading auger (*7)	2	X	
LH	16	Splined bushings, lateral shafts	3	X	
LH	19	Bearing for eccentric shaft	1	X	
LH	20	Tension pulley for threshing unit clutch	1	X	
LH	23	Spring actuating rod, threshing unit clutch	1		X
LH	27	Straw chopper clutch (*5)	1	X	
RH	33	Chain drive for elevator and filling auger (*1)	2		X
RH	33	Chain drive for elevator and returns thresher (*1)	2		X
RH	34	Slip clutch, elevators	1	X	
RH	37	Universal joint, filling auger (*1)	2	X	
LH	44	Swivel bearing for ladder	1	X	
RH	45	Bearing for eccentric shaft	1	X	
RH	46	Splined bushings, lateral shafts	3	X	
RH	49	Crop elevator pivot	1	X	
LH	50	Chain drive, reversing	1		X
RH+ LH	57	Ball joint for Auto Level hydraulic ram	1+1	X	
RH+ LH	58	Bearing for swivel traction wheel suspension (*4)	2+2	X	
RH+ LH	60	Bearing for final drive shaft	1+1	X	
RH	61	Chain drive for rape auger	1		X

100 hours (yellow)

Side	No.	Description	Number	Grease	Oil
LH	3	Table auger clutch	1	X	
LH	7	Bearings for reel suspension	1	X	
LH	14	Slip clutch, elevator chain top shaft	1	X	
LH	17	Bearing for cylinder shaft	1	X	
LH	18	Bearings for rear beater	2	X	
LH	21	Bearing for rotary separator	1	X	
LH	22	Bearing for countershaft	1	X	
LH	25	King pins and tie rods (four-wheel drive)	5	X	

11. Maintenance

Side	No.	Description	Number	Grease	Oil
LH	26	Rear axle pivot (four-wheel drive)	1	X	
RH	31	King pins and tie rods (four-wheel drive)	5	X	
RH	35	Bearing for countershaft	1	X	
RH	38	Bearing for rotary separator	1	X	
RH	39	Fanning mill variator	1	X	
RH	40	Top cylinder variator pulley (*3)	1	X	
RH	41	Bearings for rear beater	2	X	
RH	42	Bottom cylinder variator pulley (*3)	1	X	
RH	43	Bearings for cylinder shaft	2	X	
RH	48	Bearing for unloading auger	1	X	
RH	52	Bearings for reel suspension	1	X	
RH	53	Ball joint, pivot for Auto Level table	1	X	
RH	55	Reel chain drive	1		X
RH+ LH	56	Sliding surface, AL main crop elevator	1+1	X	
LH	62	Tension pulley for hydrostatic pump	1	X	
RH	67	Elevator chain, filling elevator (*2)	1		X
RH	68	Elevator chain, returns elevator (*2)	1		X
		Various linkages (*8)	-		X

200 hours (white)

Side	No.	Description	Number	Grease	Oil
LH	24	Hubs, rear wheels	1	X	
LH	25	King pins	1	X	
LH	26	Rear axle pivot	2	X	
RH	31	King pins	1	X	
RH	32	Hubs, rear wheels	1	X	
RH	59	Ball joint for levelling ram, Auto Level	1	X	
RH	64	Tension pulley for alternator	1	X	
		Spindle for jockey wheel, cutting table trailer	1	X	
RH+ LH		Wheel bogie for table trailer	1+1	X	

In addition to the above, lubricate linkages, etc. as required, e.g. brake cables, concave adjustment bearings, etc.

*1 Lubricate daily in maize.

*2 Elevator chains and table transmission chain must be slackened when lubricated to make sure the oil penetrates the chain links.

*3 Lubrication of cylinder variator pulley must take place when the hydraulically operated (upper) variator pulley is completely closed (lubricate until grease appears in the overflow aperture). To ensure that the grease is distributed evenly to all moving parts in the variator pulleys, start the machine after greasing, engage the threshing unit and then vary the cylinder speed over its full range.

*4 Apply lithium grease only.

*5 The straw chopper clutch may be lubricated only when disengaged.

*6 Number depending on model.

*7 After cleaning/washing for off-season storage, oil the splined shaft for the unloading auger and move the unloading auger completely out/in twice.

*8 After cleaning/washing for off-season storage, oil the linkage at the flowdivider. Start the engine and vary the spindle completely out/in five times.

11. Maintenance

11.4.1 Lubrication Chart

Left-hand side

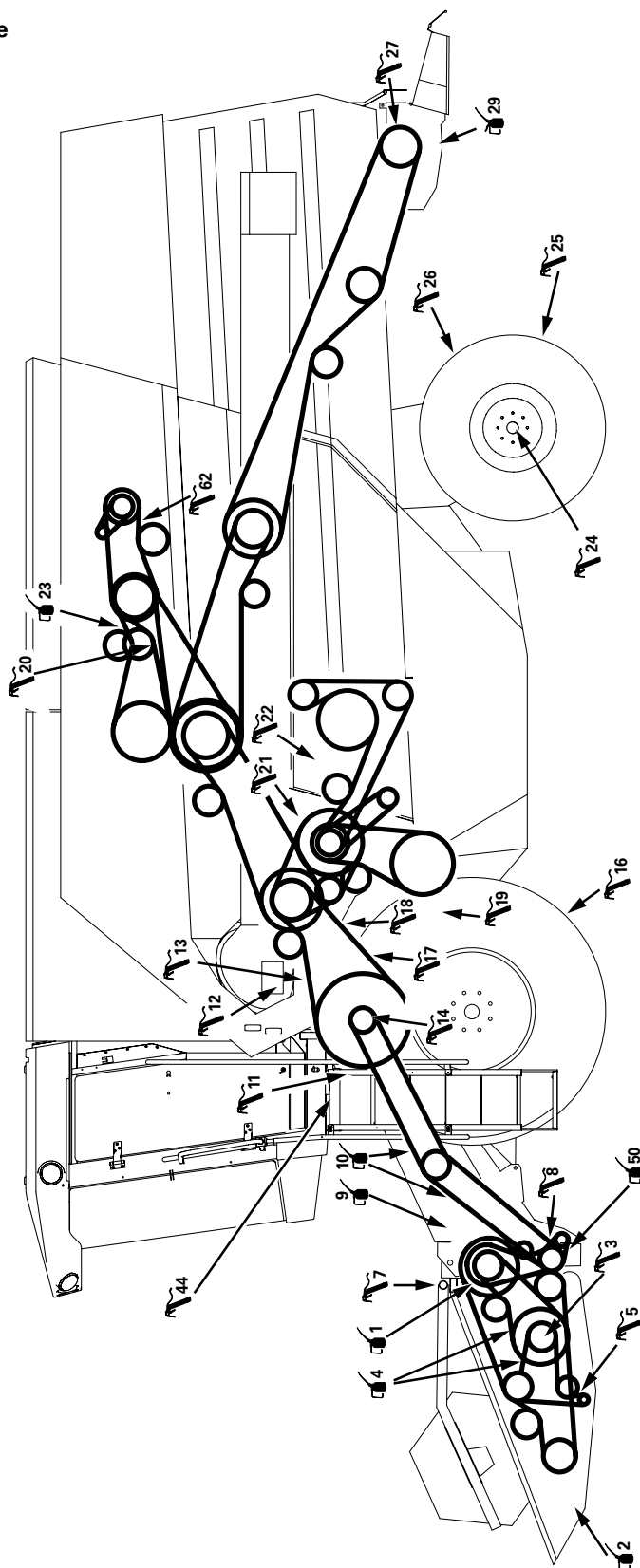


Fig. 3

Right-hand side

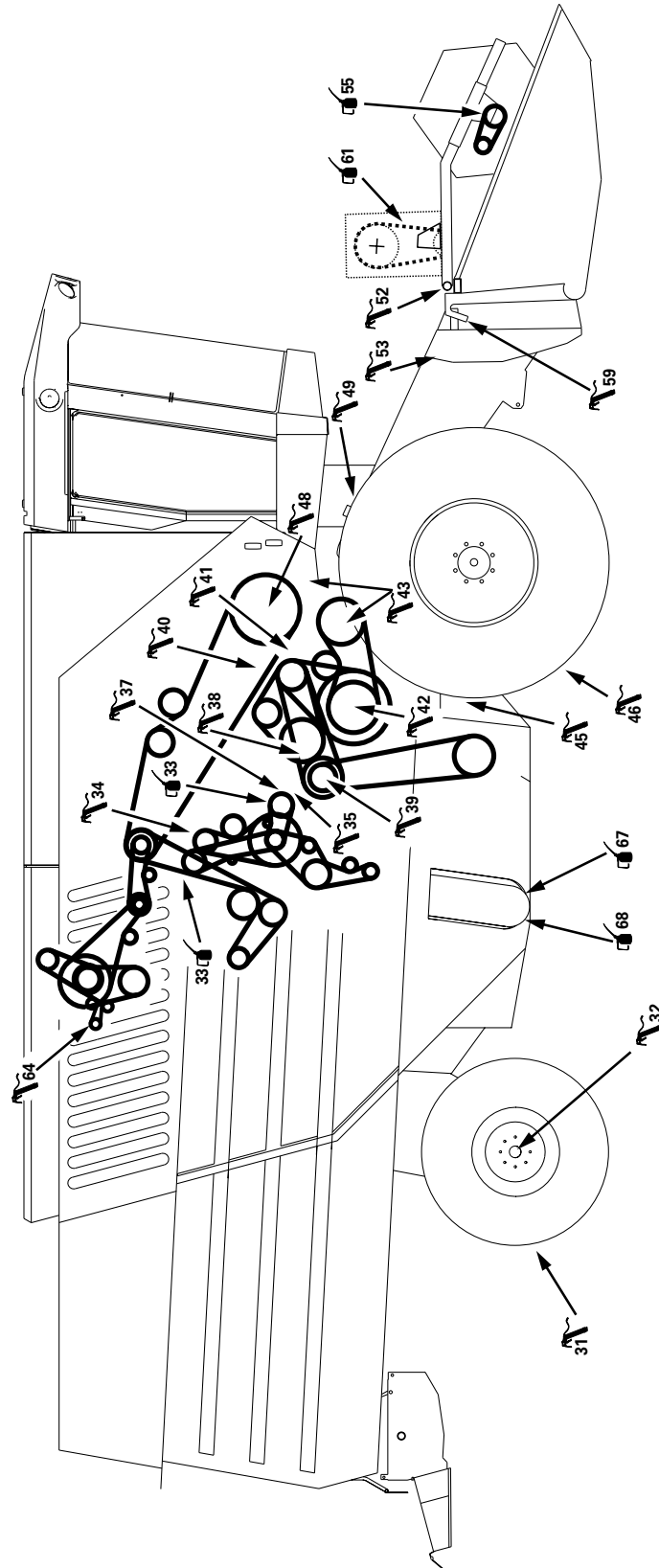


Fig. 4

11. Maintenance

11.4.2 Lubrication Points, Auto Level Combine

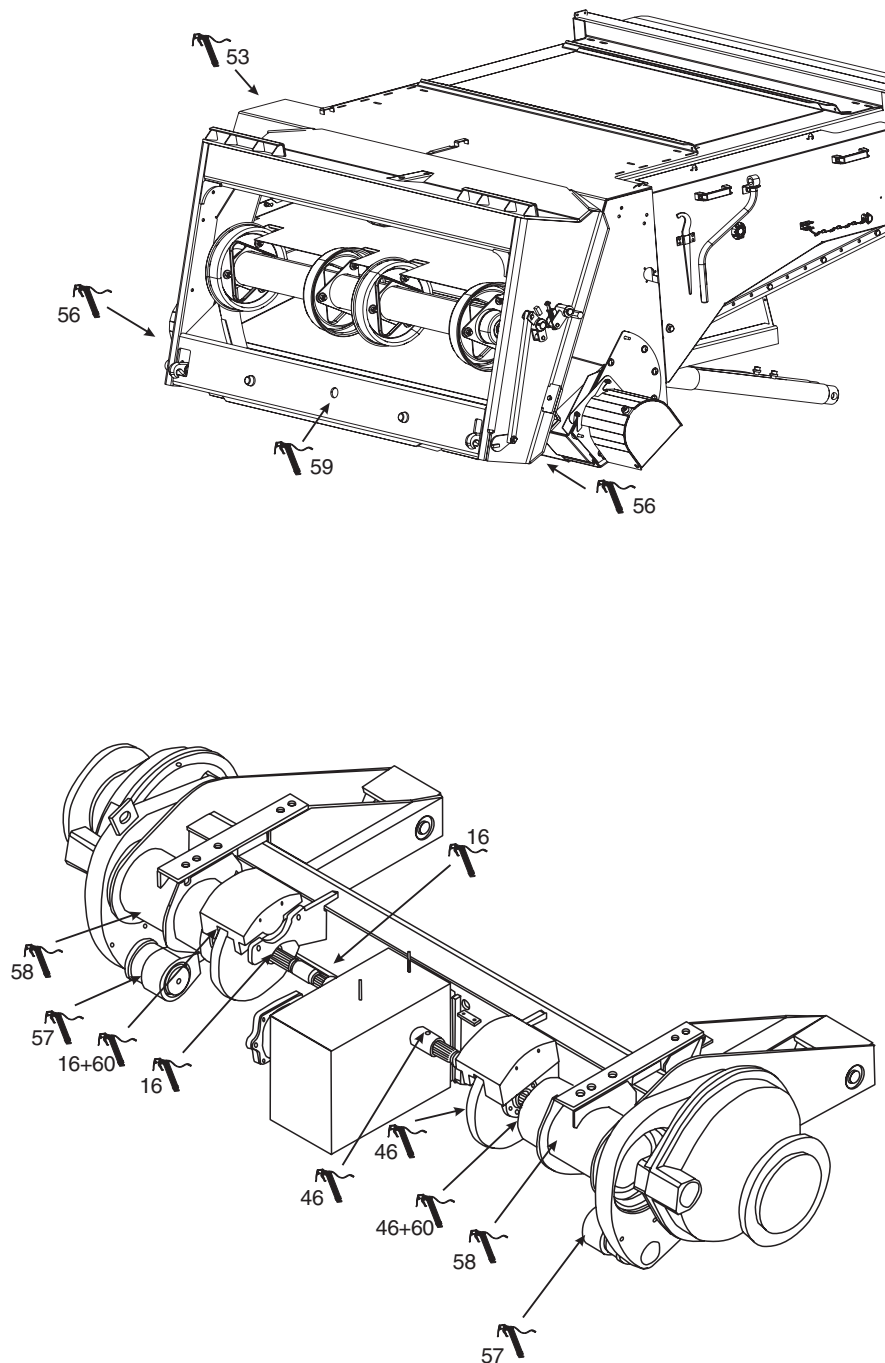


Fig. 5

11. Maintenance

11.5 Lubricants and Operating Fluids

	Quantity	Recommended Product	Specification
Engine (*1) (incl. filter change)	27 litres	MF Premium Engine Oil 10W-40	API CI-4
Gearbox	9.5 litres	MF Gear Trans Plus 80W-90	API GL-5
Coupler housing for oil motor	1.5 litres	MF Gear Trans Plus 80W-90	API GL-5
Final drives	6,0	MF Gear Trans Plus 80W-90	API GL-5
Wobble box for knife drive	0.75 litres	SAE gear oil	
Hydraulic tank (system) (*2)	34 (90) litres	MF Agri Hyd 46	DIN 51 524 part 3
Grease		MF Grease EP	NLGI 2
Brake fluid system	Approx. 0.5 litres	BP DOT 4 BRAKE FLUID	SAE J 1703
Coolant	Approx. 60 litres	Mixture ratio 1:1	ASTM D 3306 or BS 6580:1992
Refrigerant	2.0 litres	R134a	
Compressor oil	0.27 litres	Ester oil	
Fuel tank	750 litres	Diesel	EN 590 (*3)

*1 Viscosity, engine oil:

Please see specification in the supplied SisuDiesel Instruction Manual for the engine.

*2 Viscosity, hydraulic oil:

Over +27°C: 100 c St/40°C = 7.9 E°/50°C

From +1 to +27°C: 68 c St/40°C = 5.5 E° / 50°C

*3 Please see supplied SisuDiesel Instruction Manual for further details on quality requirements of engine fuel.

Similar lubricants of other makes can be used provided they satisfy the minimum quality requirements.

Right-Angle Gear

The right-angle gear (1) contains 0.5 litres of special grease that must not be changed, only topped up if necessary.

Special grease type STATOIL Fibreway EP0.



Fig. 6

11. Maintenance

11.6 Maintenance Required

Note: In addition to the maintenance carried out by the customer at regular 10 hours intervals, there are a number of checks, adjustments and fluid changes that should be done by the dealer. These actions are described in section 11.4 'Lubrication Points' on page 278 and in section 11.6 'Maintenance Required' on page 284. If for any reason the services of the dealer are not used, the customer must refer to the Service Record Book and ensure that a competent person carries out these tasks.

JOB Daily/10 Hours	Check	Retighten	Clean	Refill (as required)	Change
Engine oil level	X			X	
engine compartment			X		
Fuel tank, filler cap breather			X		
Fuel tank, sediment bowl	X		X		
Prefilter / water separator			X		
Cooling water level	X			X	
Hydraulic oil level	X			X	
Air cleaner and prefilter			X		
Rotary screen	X		X		
Air filter, operator cab			X		
Knife and fingers	X		X		
Stone trap	X		X		
Sieves	X		X		
Straw Walkers	X		X		
Concave and augers	X		X		
Main grain pan	X		X		
Threshing cylinder	X		X		
Belts and chains	X				
Chopper knives and counter knife	X				

JOB 50 Hours	Check	Retighten	Clean	Refill (as required)	Change
Battery fluid level	X			X	
Tyre pressure - traction wheels and rear wheels	X			X	
Chains	X	X			
Concave setting	X				
Belts and chains	X	X			
Engine oil, engine oil filter (*5)					X

JOB 100 Hours	Check	Retighten	Clean	Refill (as required)	Change
Wobble box for knife drive	X			X	
Gearbox, oil level	X			X	
Final drives, oil level	X			X	
Right-angle gear, oil level	X			X	
Brake fluid level (*2)	X			X	

JOB 250 Hours/Yearly	Check	Retighten	Clean	Refill (as required)	Change
Engine oil, engine oil filter					X

11. Maintenance

JOB 250 Hours/Yearly	<i>Check</i>	<i>Retighten</i>	<i>Clean</i>	<i>Refill (as required)</i>	<i>Change</i>
Rotor in centrifugal oil cleaner					X
Coolant, anti-freeze (*2)	X				

JOB Yearly/Before Each New Season	<i>Check</i>	<i>Relieve</i>	<i>Clean</i>	<i>Refill (as required)</i>	<i>Change</i>
Slip clutch for elevator chain (*1)		X	X		
Slip clutch for table auger (*1)		X	X		
Slip clutch for elevators (*1)		X	X		
Chopper clutch, clutch lining	X				
Bolts in safety clutch for unloading auger (*3)	X				X

JOB 500 Hours	<i>Check</i>	<i>Retighten</i>	<i>Clean</i>	<i>Refill (as required)</i>	<i>Change</i>
Fuel filter					X
Fuel prefilter					X
Water separator, if fitted (*1)					X
Filter, hydraulic oil tank (*1)					X
Filter, hydrostatic pump (*1)					X
Oil, gearbox and final drives (*2)					X
Oil, gearbox and knife drive (*2)					X
Air filter (*1)					X
Safety filter (*1)					X

JOB 1000 Hours	<i>Check</i>	<i>Retighten</i>	<i>Clean</i>	<i>Refill (as required)</i>	<i>Change</i>
Hydraulic oil (*2)					X

JOB 1200 Hours	<i>Check</i>	<i>Retighten</i>	<i>Clean</i>	<i>Refill (as required)</i>	<i>Change</i>
Valve adjustment in engine (*4)	X				

JOB 2500 Hours	<i>Check</i>	<i>Retighten</i>	<i>Clean</i>	<i>Refill (as required)</i>	<i>Change</i>
Starter motor	X				
Alternator	X				
Injection nozzle	X				

*1 At least before the start of each new season.

*2 Change before every third season.

*3 Note: Special bolts (quality 4.6). Only 2 special bolts (quality 4.6) may be mounted on auger and clutch may be damaged.

*4 First time at 50 hours service inspection.

*5 First time at 50 hours service inspection and then at 250 hours/yearly.

Note: Jobs listed under 250 hours service inspection must be carried out annually, even though the machine has not worked for 250 hours!

11. Maintenance

11.7 Gear Oil Change

Gearbox

(Fig. 7)

The gearbox contains:

9.5 litres of gear oil plus 1.5 litres of gear oil in the coupler housing for the oil motor.

Change the oil for the first time after 25 hours of operation, then at the end of the first season, and then every other year.

1. Oil filling/oil level indicator
2. Oil draining max./min.
3. Oil draining/oil filling, coupler housing for oil motor

Final Drives

(Fig. 8)

The final drives contain:

6.0 litres gear oil

Change the oil every other year.

Change the oil by removing the plug in the drain hole (3) and draining the old oil off. Plug the drain hole (3), open the filler cap (1) and fill with new oil until the oil reaches the oil level indicator (2).

Note: Oil level check in final drives on AL combines: Raise the machine from transport position until the two mounting bolts (4) closest to the oil level indicator (2) are directly over each other. Use a spirit level if necessary.

Wobble Box for Knife Drive

(Fig. 9)

The knife drive contains 0.75 litres of SAE gear oil.

2. Oil filling
3. Oil level indicator
4. Oil draining

Remove the plug (3) for checking the oil level through the hole (5) in the belt pulley (1).

Check the oil level every 100 hours of operation.

When the oil level is checked, the table must be lowered at 0-5 cm above the ground.

Change the oil for the first time at the 50-hours service and then every 500 hours.

Note: If the plug (3) for checking the oil level is located above the casting on the outside of the housing, there are 0.75 litres left.

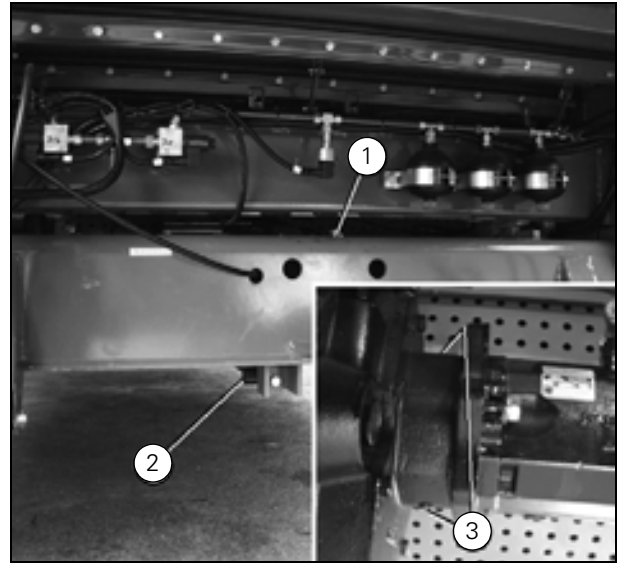


Fig. 7

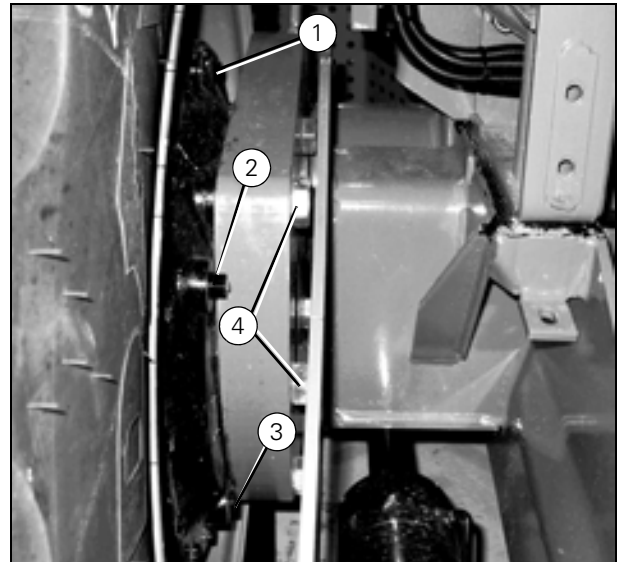


Fig. 8

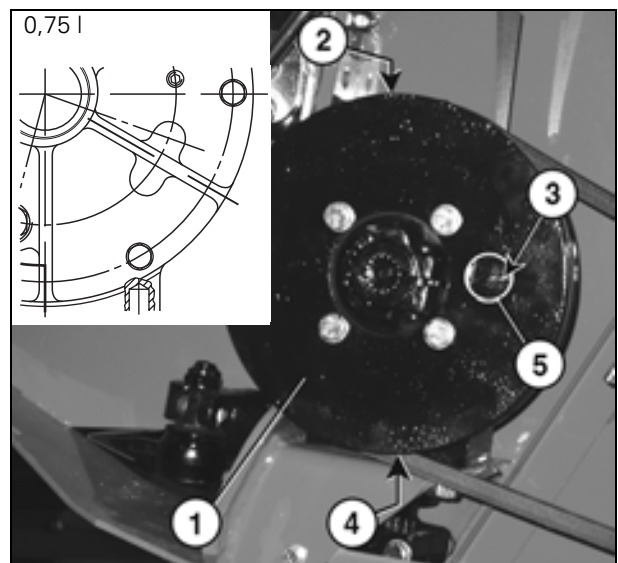


Fig. 9

11.8 Air-Conditioning

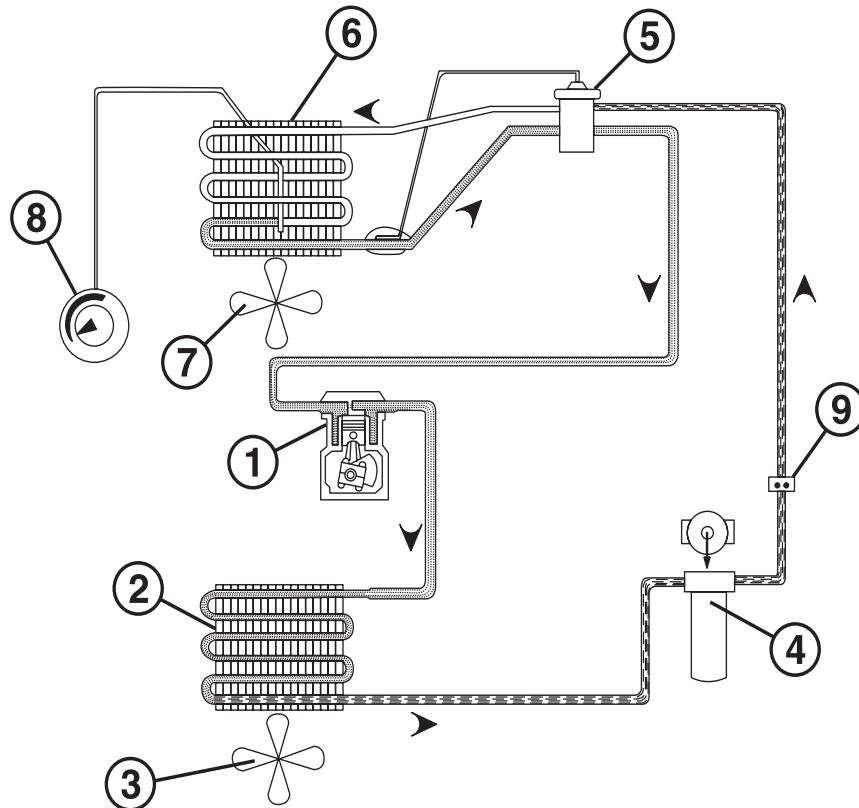


Fig. 10

Diagram for air-conditioning

1. Compressor
2. Condenser
3. Fan blade on diesel engine
4. Filter and sight glass
5. Expansion valve
6. Cooling element in cab
7. Blower in cab
8. Thermostatic control
9. High/low pressostat

Maintenance

Daily

Check V-belt for compressor (1).

Weekly

Clean condenser (2).

Check sight glass in filter (4):

- A. If the glass is white when the compressor is running, the air-conditioning lacks refrigerant
- B. Only change filter if the air-conditioning has been opened or drained of refrigerant.

Yearly

Consult distributor for air-conditioning overhaul.



WARNING: Smoking and naked flames should be avoided during servicing owing to the risk of refrigerant leaks

which, if set on fire, may produce gases injurious to health.

11. Maintenance

11.9 Cleaning and Off-Season Storage

Cleaning

[\(Fig. 11\)](#)

If harvesting conditions are wet, the crop unripe and weed-infested, dirt will build up in the machine.

Remove deposits frequently to avoid damage and corrosion.

Clean the machine with compressed air, brushes and cloths. If this is not sufficient to clean the machine, we recommend washing, steam cleaning or hot-water cleaning.

Before steam or hot-water cleaning, lubricate the machine thoroughly.

Do not direct steam/water jet at bearings, air-cleaner and electric installations where penetration of water may cause damage.

Lubricate the machine thoroughly after cleaning to remove water that may have entered into bearings and chains.

Start the machine and let it run with all panels open until it gets warm and dry.

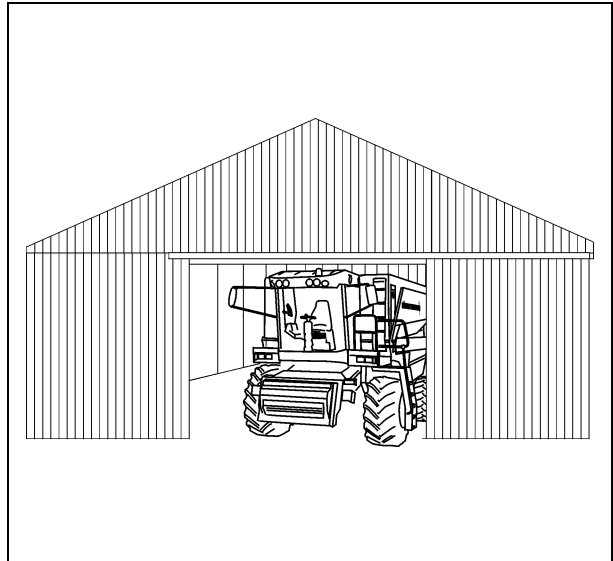


Fig. 11

11. Maintenance

Off-season storage

([Fig. 12](#)) and ([Fig. 13](#))

Dismount the terminal and keep it dry.

Remove all covers in machine hood, elevators and straw walkers. Remove sieves, grain pan and tank filling auger.

Remove all drive chains, elevator chains and main crop elevator chains and put them in an oil bath. Place elevator chains and main crop elevator chains in a U-profile so that the rubber slats do not get into the oil.

Clean the machine thoroughly and lubricate all worn surfaces, augers, auger tubes, elevator housings, knives and fingers with anti-corrosive oil.

Lubricate all bearings and linkages, start the machine and vary cylinder and fanning mill speed through the whole range.

To avoid damaging the cylinder variator belt, the machine must be stored with relieved belt.

This is done by:

- adjusting the cylinder speed right between highest and lowest revolutions before disengaging the threshing unit.
- lowering the main crop elevator to bottom position.

Clean and lubricate threaded spindle and shaft on flowdiver for reel speed control at (1) and (2), please see ([Fig. 13](#)). Start the diesel engine and move the threaded spindle completely out/in minimum 5 times.

Leave the machine in a dry place with all covers dismounted/opened to avoid condensation in the machine.

During off-season storage, etc. the ignition key must be turned in position 0, the main switch must be switched off and the main switch handle must be removed. If the electrical system is switched on for a long time under wet conditions it may corrode. Detach the terminals from the starter battery. It is advisable to store the battery in a frost-free room and keep it charged.

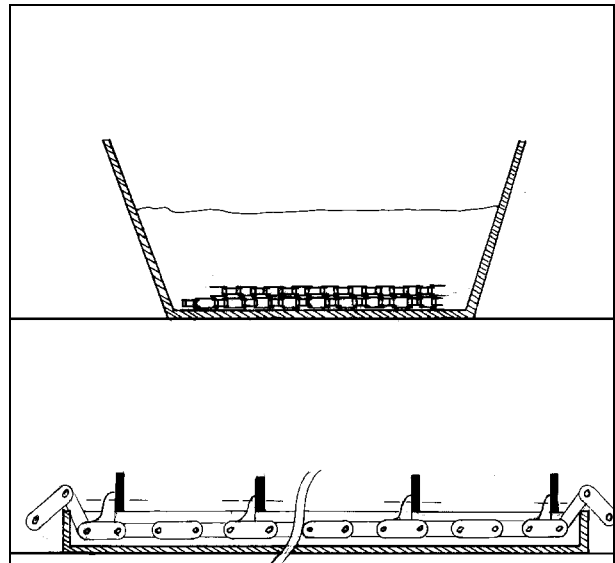


Fig. 12

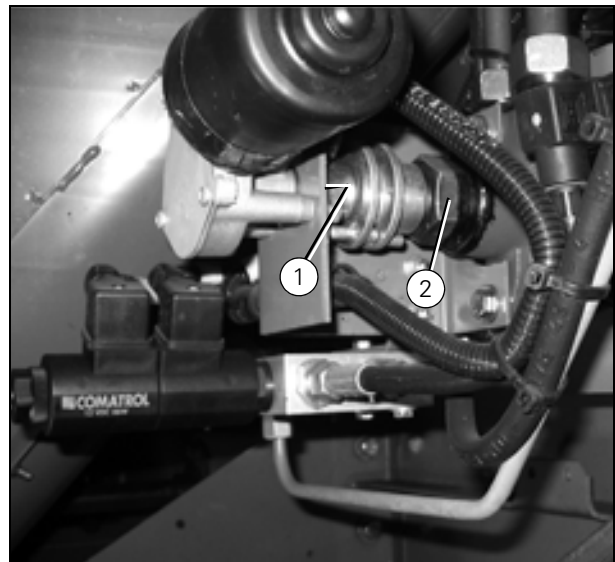


Fig. 13

11. Maintenance

Storage of Engine, Fuel System and Hydraulic System

(Fig. 14)

Change engine oil and filter. Change the fuel filter and clean/change filter element.

Drain the fuel tank of water, sediments and fuel and top up with winter fuel.

Check that the coolant is protected against frost down to the required -°C.

If the coolant has to be changed or the mixture proportion altered, drain it through the hose (1) by opening the drain cock (2). The cubic capacity is indicated at the bottom of the radiator.

For refilling and change use an ethylene glycol based coolant in the mixture proportion prescribed by the manufacturer.

The coolant must meet the following standards:
ASTM D 3306 or BS 6580:1992.

Start the engine and let it run until the diesel oil in pipes, filters and pump is exchanged and refilled coolant mixed with the coolant in engine and radiator.

Drain condensate from the hydraulic oil tank by opening the tap (2) as shown in (Fig. 14), and then top up the tank.

Periodical Start-Up

Start the machine every three or four weeks and let it run for 15 to 20 minutes. Raise the crop elevator completely to prevent hydraulic oil from running over the top of the tank when it expands.

Running the machine regularly will prevent the belts from bedding down in the pulleys.

Increase the temperature in the cab so that the air-conditioning can be engaged.

If the air-conditioning is left disengaged for a long time, the refrigerant may leak out at the shaft seal in the compressor. Lower the crop elevator when the oil has cooled down.



WARNING: Leave at least one gate in the machine shed open for ventilation while the engine is running.

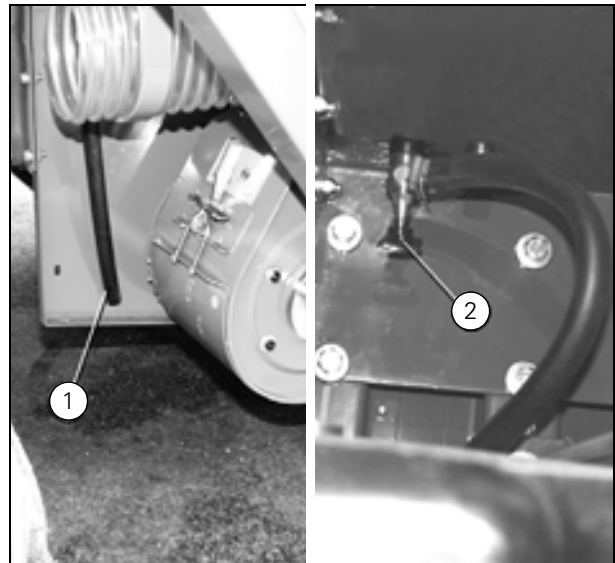


Fig. 14

11. Maintenance

Removal of Main Crop Elevator

[\(Fig. 15\)](#)

The crop elevator can be removed to give access for cleaning of threshing unit and cylinder.

Lower the table completely and secure the crop elevator with a jack close to the stone trap.

Remove the belt on the left-hand side of the table and the locking pins (1) on both sides.

Remove the lifting rams and the connecting rod (2) of the cutting height presetter.

Now, the machine can be reversed carefully from the crop elevator.

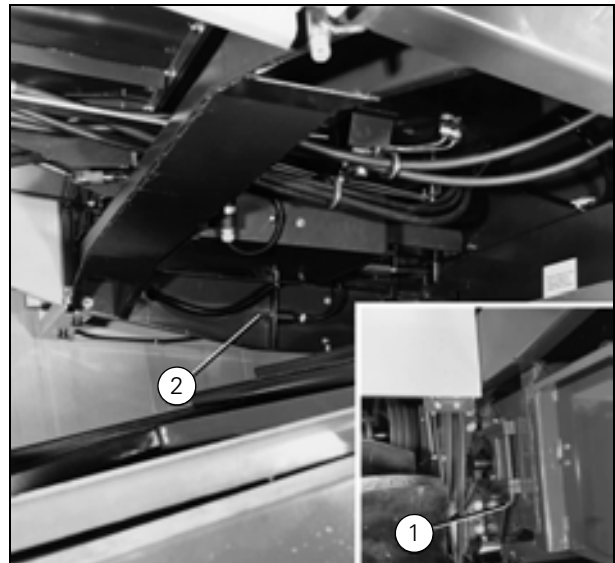


Fig. 15

Removal of Elevator Chains

[\(Fig. 16\)](#)

Remove the drive chains for elevators.

Turn the elevator chain (4) until the joint link appears at the bottom sprocket, and disassemble it. Tie a thin rope (3) to one part of the chain and pull the chain out from the opposite side. Hold back the rope to prevent the chain from falling down and jamming the elevator housing.

After Off-Season Storage

Before the combine is put into operation after off-season storage, it must be overhauled according to the recommendations in this Operator's Manual.

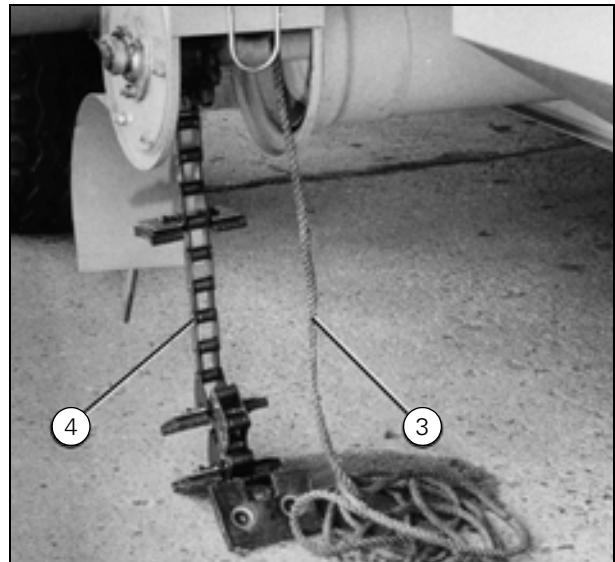


Fig. 16

11. Maintenance

11.10 Adjustment of Brakes

Adjustment of Foot Brakes, Disc Brakes

(Fig. 17)

The footbrakes (1) are self-adjusting and require only inspection of the condition of the brake blocks.

The brake blocks (2) need replacement when worn so much that the indicator groove is 0.5-1 mm.

When the brake pedals are released, the measure x which is adjusted with the adjustment screw under the operator cab, must be 170-180 mm. When adjusting make sure that the pistons in the main cylinders do not run against stop. The holes in the pistons must run 0.5 mm past the holes in the brake pedals when the pistons are pulled completely out.

If due to disassembly the brakes need bleeding, slacken/tighten the bleed screws (3) one by one as usually when bleeding hydraulic brakes.

Adjustment of Parking Brake, Drum Brake

(Fig. 17) and (Fig. 18)

The parking brake needs adjustment when the brake lever (4) can be pulled 8 clicks up.

Hold the brake lever in the bottom notch. Tighten the cable (5) with the nut (6) until it is only just taut. Slacken the nut (6) five turns and counter-tighten the nut (7).

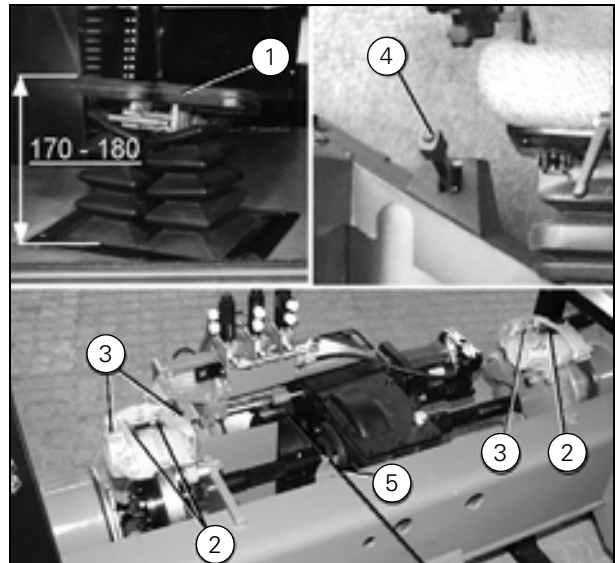


Fig. 17

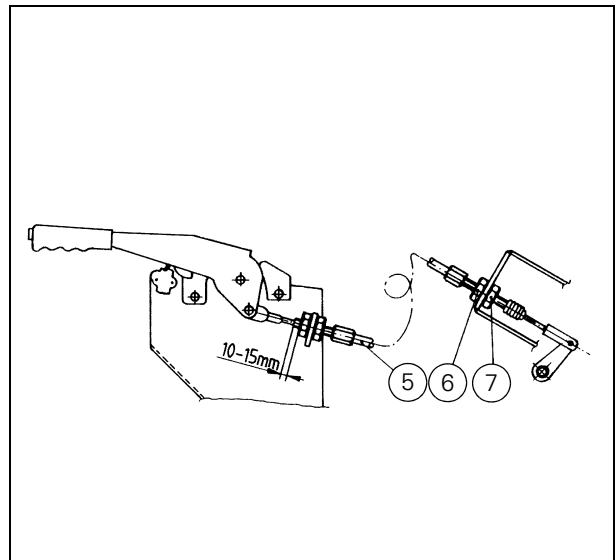


Fig. 18

11.11 Dealer Servicing Schedule for CEREAL Combine Range.

Item	50 Hours	250 Hours	500 Hours	1000 Hours	End of Season 1	End of Season 2	End of Season 3	End of Season 4
Table								
Change knife drive gearbox oil (wobble box)	X		X	X	X	X	X	X
Check knife drive gearbox oil (wobble box)		X						
Check knives and fingers					X	X	X	X
Check alignment of PowerFlow belts		X	X	X	X	X	X	X
Check auger, auger fingers and flights					X	X	X	X
Check auger slip clutch					X	X	X	X
Check all drive belts and chains	X				X	X	X	X
Check reel tine bars, spiders and bearings					X	X	X	X
Check ground sensors on Auto Level table					X	X	X	X
Check function of Auto Level table					X	X	X	X
Calibrate Auto Level combine and Auto Level table (if fitted)					X	X	X	X
Check table up/down speed (2 speed options)					X	X	X	X
Crop elevator								
Fit any table stabilising devices and detach cutting table from the rump of the combine					X	X	X	X
Check condition of elevator slats and conveyor chains					X	X	X	X
Check condition of the front feeder rollers. Check that they are free to move.					X	X	X	X
Inspect and reset slip clutch					X	X	X	X
Check condition and tensioning of elevator and table drive chain		X	X	X	X	X	X	X
Check condition of elevator top shaft					X	X	X	X
Check condition of anti-wrap guards					X	X	X	X
Check operation of stone trap and condition of seals					X	X	X	X
Check operation and condition of the table reverse mechanism (at low engine speed)					X	X	X	X
Threshing Cylinder and Concave								
Check condition of the drive and speed variator mechanism to cylinder					X	X	X	X
Check condition of the cylinder and rasp bars for wear / damage					X	X	X	X
Inspect condition of concave(s) rub bars and wires					X	X	X	X
Ensure concave(s) are free to move, can be fully adjusted and the clearance is correct					X	X	X	X

Item	50 Hours	250 Hours	500 Hours	1000 Hours	End of Season 1	End of Season 2	End of Season 3	End of Season 4
Check condition of the drive to the rotary separator					X	X	X	X
Check condition and clearance of the rotary separator and also for wear / damage					X	X	X	X
Check re-thresher gearbox / mechanism					X	X	X	X
Check condition of cylinder door and seals					X	X	X	X
Inspect rear beater for damage / wear and condition of its drive					X	X	X	X
Check rear beater and concave curtain condition					X	X	X	X
Check all drive belts and chains	X			X	X	X	X	X
Check condition of straw walkers and sieves					X	X	X	X
Check sealing strips for grain pan and shaker shoe					X	X	X	X
Straw walkers								
Check condition of the drive mechanism					X	X	X	X
Inspect for wear the straw walker crankshafts and bearings / blocks					X	X	X	X
Check condition and adjustment of the straw walker curtain(s)					X	X	X	X
Check condition of the straw walkers and risers if fitted					X	X	X	X
Check condition of sealing rubbers					X	X	X	X
Check security and position of grain loss sensors if fitted					X	X	X	X
Check condition of returns pan					X	X	X	X
Check the condition of all drives and mounting bushes / bearings	X			X	X	X	X	X
Cleaning Unit								
Check sieves will operate through their full range of adjustments					X	X	X	X
Remove sieves and grain pan and check for damage. Protect from rusting					X	X	X	X
Inspect condition of shaker shoe and grain pan frame for cracks or damage					X	X	X	X
Inspect mounting bushes / bearings for wear	X			X	X	X	X	X
Inspect belt, pulley and pitman drives to sieves	X			X	X	X	X	X
Check adjustments and timing of shaker shoe drives					X	X	X	X
Inspect condition of all sealing strips					X	X	X	X
Check condition and operation of fanning mill, including drive belt					X	X	X	X
Check condition and adjustment of air deflectors, fan blades and sealing strips					X	X	X	X
Inspect condition of cross augers					X	X	X	X
Elevators, Augers and Tank								
Check condition of yield monitoring system and take a wipe test						X		X
Check yield meter cover for wear				X	X	X	X	X
Check condition of yield monitoring system (wipe test every 2 years)					X		X	

Item	50 Hours	250 Hours	500 Hours	1000 Hours	End of Season 1	End of Season 2	End of Season 3	End of Season 4
Check condition of drives to grain elevators		X	X	X	X	X	X	X
Inspect condition of conveying chains and paddles		X	X	X	X	X	X	X
Check elevator top and bottom for wear					X	X	X	X
Check condition and function of bubble up auger					X	X	X	X
Check condition of grain tank unloading system					X	X	X	X
Check condition and function of unloading spout, lubricate and ensure shaft is free to slide	X	X	X	X	X	X	X	X
Check grain tank and unloading auger for leaks					X	X	X	X
Inspect general condition of grain tank, including "full" sensors					X	X	X	X
Inspect and adjust the elevator slip clutch and check condition of the shear bolts for the unloading auger.					X	X	X	X
Chaff Spreader and Straw Chopper								
Check security and positioning of chaff spreader in / out of operation					X	X	X	X
Check chaff spreader rotors for damage					X	X	X	X
Inspect condition of chaff spreader drive and hydraulics					X	X	X	X
Check condition of the straw chopper rotor and condition of all knives		X	X	X	X	X	X	X
Check function and condition of straw deflectors					X	X	X	X
Inspect straw chopper drive and engagement clutch for wear and adjustment					X	X	X	X
Transmission and Brakes								
Change the oil in the main transmission gearbox	X		X	X	X	X	X	X
Check gearbox for leaks and correct oil level		X						
Inspect final drives for oil leaks and correct oil level	X	X						
Change the oil in the final drives			X	X	X	X	X	X
Ensure gear selection and external adjustment is correct					X	X	X	X
Ensure hydrostatic transmission operates correctly					X	X	X	X
Look for signs of leakage or damage to hydrostatic pump, motor, hoses and oil cooler if fitted	X	X	X	X	X	X	X	X
Change hydrostatic pump filter			X	X	X	X	X	X
Inspect condition of drive shaft couplers to final drive housings				X	X	X	X	X
Check parking brake system for operation and adjustment	X			X	X	X	X	X
Check independent brakes for operation and balance	X			X	X	X	X	X
Check brake fluid level	X	X	X	X	X		X	
Change brake fluid and bleed brakes						X		X
Assess condition of brake shoes / pads for wear				X	X	X	X	X

Item	50 Hours	250 Hours	500 Hours	1000 Hours	End of Season 1	End of Season 2	End of Season 3	End of Season 4
Check brake lines / hoses for deterioration				X	X	X	X	X
Hydraulic system								
Check oil level in hydraulic system reservoir(s)	X	X	X		X		X	
Change hydraulic oil				X		X		X
Change hydraulic oil tank filter			X	X	X	X	X	X
Inspect main supply and return hoses for leakage	X	X	X	X	X	X	X	X
Operate all hydraulic systems through their normal working range and note any restrictions in either speed or travel					X	X	X	X
Inspect all hydraulic cylinders, hoses and connections for damage or leaks	X				X	X	X	X
Check function of the Auto Level combine					X	X	X	X
Report any unusual noise or characteristics of the hydraulic pump(s)	X	X	X	X	X	X	X	X
Check function of all work / inspection lights (grain tanks, sieves, etc.)					X	X	X	X
Check battery electrolyte level and cable connections				X	X	X	X	X
Check charge level of back-up battery for DATAVISION					X	X	X	X
Inspect general condition of the fuse box for missing or damaged fuses, diodes and relays					X	X	X	X
Check tightness of all external cable harness connections and common earth points					X	X	X	X
Inspect cable condition for cracks and chafing					X	X	X	X
Check function of the main switch and condition of the main battery and its leads					X	X	X	X
Examine all actuating motors for correct function and signs of damage					X	X	X	X
Chains, Sprockets, Belts and Pulleys								
Visually inspect all belts for signs of wear and damage					X	X	X	X
Check the tension of all belts and note any belt drives that have limited adjustment left on them				X	X	X	X	X
Check tension of all belts and inspect for any signs of damage	X							
Inspect all pulleys for signs of wear or damage, any misalignment or mounting problems				X	X	X	X	X
Ensure split sheave pulleys travel freely and that the belt does not bottom out. Inspect any safety devices built into belt drives, e.g. friction linings, etc.					X	X	X	X
Check the condition and tension of all chain drives	X			X	X	X	X	X
Report any chain wear / damage or sprocket wear / damage					X	X	X	X
Lubricate and protect all roller chains	X			X	X	X	X	X
Inspect all chain idlers, tensioners and guide blocks for wear / damage				X	X	X	X	X

Item	50 Hours	250 Hours	500 Hours	1000 Hours	End of Season 1	End of Season 2	End of Season 3	End of Season 4
Wheels and Steering								
Operate the steering to full lock in each direction, check for smooth operation and function of stops					X	X	X	X
Inspect the steering column for correct function and adjustment					X	X	X	X
Inspect the steering linkage, hoses, ball joints and steering cylinders				X	X	X	X	X
Check rear wheel bearings and stub axles for wear				X	X	X	X	X
Check tightness and presence of all wheel nuts / studs	X			X	X	X	X	X
Inspect general condition and pressure of all tyres				X	X	X	X	X
Engine								
Check the safety (inner) and clean the outer air cleaner elements	X	X						
Change both the safety (inner) and outer air cleaner elements			X	X	X	X	X	X
Inspect the air intake system for damage and leaks				X	X	X	X	X
Change engine oil and oil filter(s)	X	X	X	X	X	X	X	X
Check valve tip clearances (replace rocker cover gaskets)				X	X		X	
Check level of cooling system and inspect radiator for cleanliness and leaks	X	X	X	X	X		X	
Change antifreeze in the cooling system plus additive (if supplied)						X		X
Check cooling system hoses and connections are tight					X	X	X	X
Replace fuel filter element(s) and clean the prefilter water trap	X							
Replace fuel filters and prefilter and clean the prefilter water trap			X	X	X	X	X	X
Check the rotary air intake and dust extractor					X	X	X	X
Check for leaks in oil, fuel and coolant systems	X	X	X	X	X	X	X	X
Check engine speed range and min. / max. settings					X	X	X	X
Inspect and tension fan, alternator and compressor drive belts					X	X	X	X
Check general condition of fuel tank					X	X	X	X
Ensure hoses, pipes or wiring are not fouling exhaust system and pulleys, belts, etc.					X	X	X	X
General Machine								
Lubricate all grease points	X	X	X	X	X	X	X	X
Ensure all table attachment connections operate correctly and safely (mechanical, hydraulic and electrical)					X	X	X	X
Start engine, check engagement of table and threshing mechanisms					X	X	X	X
Visually examine combine chassis for any signs of damage					X	X	X	X
Check for loose bolts (particularly the undercarriage)	X				X	X	X	X
Ensure that all safety guards and safety decals are in place					X	X	X	X

11. Maintenance

Item	50 Hours	250 Hours	500 Hours	1000 Hours	End of Season 1	End of Season 2	End of Season 3	End of Season 4
Advise customer of winter storage procedure, regular starting, etc. and vermin protection					X	X	X	X
Check all belts and chains that have not already been inspected				X	X	X	X	X
Check all mechanical/electrical clutches					X	X	X	X
Check operation of optional equipment, electrical sieves/vertical knife/chaff spreader/straw chopper/electrical straw deflectors/chopper vibration sensor and returns volume sensor (if fitted)					X	X	X	X
Operator Environment								
Check function of the start, stop and throttle controls					X	X	X	X
Change cab air filter			X	X	X	X	X	X
Check cab air filter		X						
Check all instruments and warning systems for correct operation					X	X	X	X
Check operation of electronic/automatic functions	X				X	X	X	X
Inspect general condition of cab interior, including seat, radio, etc.					X	X	X	X
Report any problems with cab glass, door, locks, ladder, etc.					X	X	X	X
Check correct operation of DATAVISION					X	X	X	X
Check operation of any monitoring systems, including DATAVISION					X	X	X	X
Check condition of in-cab control switches for operation of all general systems such as lights, blowers, windscreen wipers, etc.					X	X	X	X
Top up windscreen washer reservoir					X	X	X	X
Check function of all driving and directional signal lights.					X	X	X	X
Check function of all systems controlled by switches and/or DATAVISION					X	X	X	X
Check function of airconditioning system					X	X	X	X
Replace the receiver dryer.					X	X	X	X

12. Electrical System

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12. Electrical System

12. Electrical System

12.1 Safety Precautions



Before any service or cleaning is carried out, stop the engine, remove the ignition key, and switch off the main switch.



Before carrying out any electric welding on the machine, stop the engine and remove ignition key and main switch handle from the switches.

To protect the alternators, disconnect the cables.

Disconnect all connectors for:

- Terminal and job computers in the electric box*
- Comunit or GPS*
- EEM engine control computer*

Note: *Never place any metal objects on the battery - self-discharge - FIRE HAZARD!*

12. Electrical System

12.2 Electrical System

Charging System

(Fig. 1)

The electrical system is equipped with an alternator of 150 amp., 12 volts and negative of earth.

Electric Boxes and Main Switch

(Fig. 2)

Each function of the electrical system has its own relays and fuses, and all external wires are sheathed.

The relays and fuses for the cab are fitted in the right-hand cab post.

The relays and fuses of all other functions are fitted centrally in the electric box (1) on the left-hand side of the machine next to the job computers (2) for DATAVISION.

All relays and fuses are marked on the rail (3) to help identify the function of the relay and the rating of the fuse.

All wires are marked with a number on both ends, and are grouped according to colour.

The circuit between battery and electrical system is switched on and off with the main switch (4) located under the electric box.

Remove the main switch handle when leaving the machine.

During off-season storage, etc. the ignition key must be turned in position 0, the main switch must be switched off and the main switch handle (4) must be removed. If the electrical system is switched on for a long time under wet conditions it may corrode. Detach the terminals from the starter battery. It is advisable to store the battery in a frost-free room and keep it charged.

The box on the left (5) is suitable for storage. Do not store fluids, wet or heavy items (max. 15 kg) in the box.



WARNING: Always remove ignition key and main switch handle before carrying out any delivery check and service on the machine.

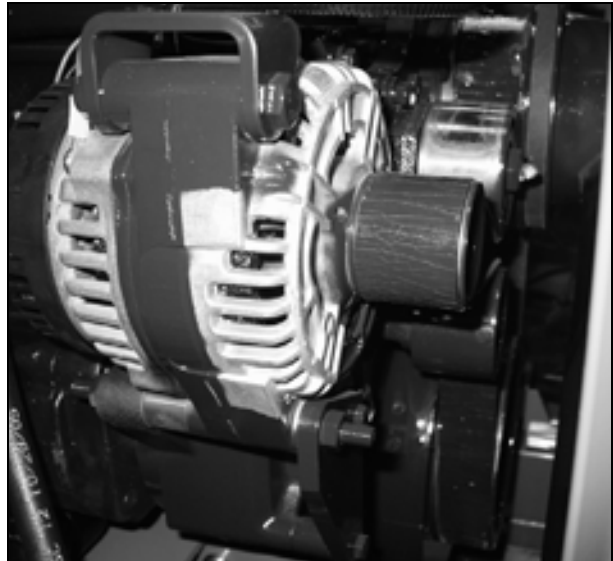


Fig. 1

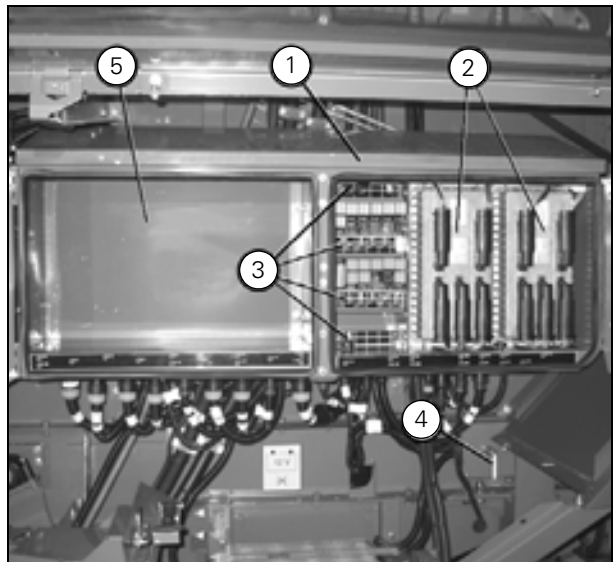


Fig. 2

12. Electrical System

12.3 External 12V connectors

[\(Fig. 3\)](#), [\(Fig. 4\)](#), [\(Fig. 5\)](#), [\(Fig. 6\)](#) and [\(Fig. 7\)](#)

4 external 12V connectors are available on the machine which can be used for connecting a work lamp. The switch for these connectors is located in the cab [\(Fig. 3\)](#).

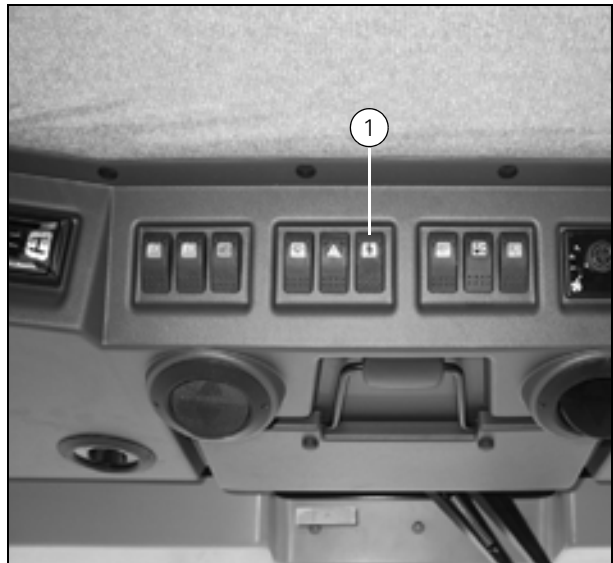


Fig. 3

The external 12V connectors are located:

- In the right-hand lamp body (2) [\(Fig. 4\)](#)

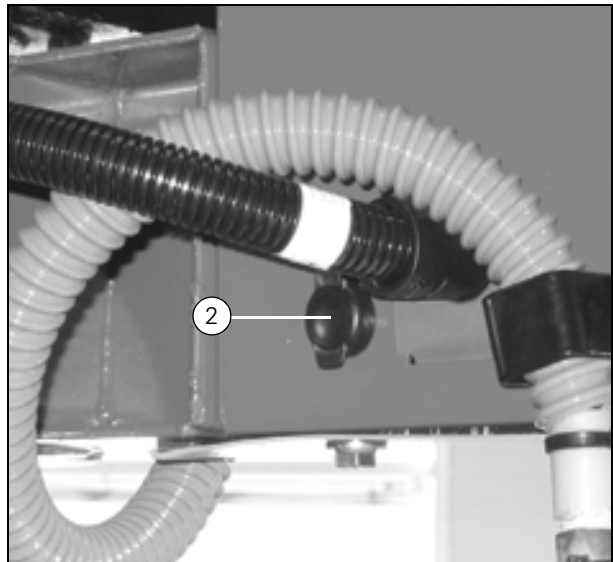


Fig. 4

- In the left-hand lamp body (3) [\(Fig. 5\)](#)

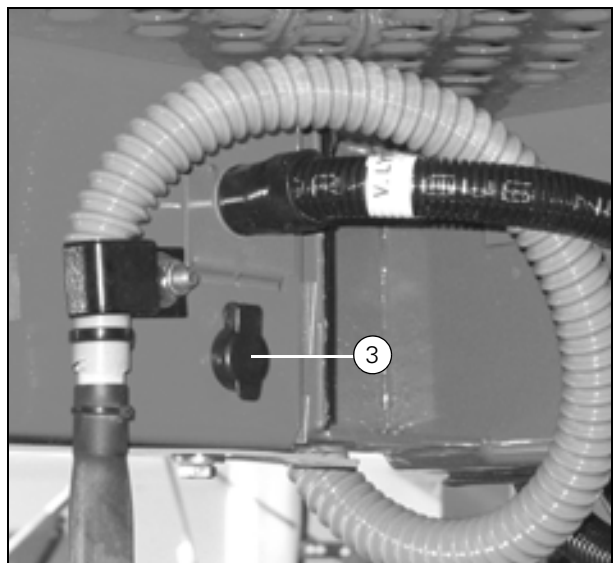


Fig. 5

12. Electrical System

- In the engine compartment (4) ([Fig. 6](#))

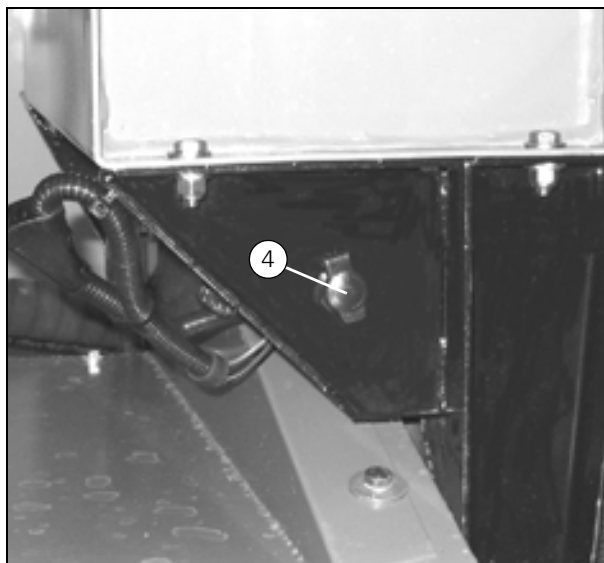


Fig. 6

- On the electric box (5) ([Fig. 7](#))

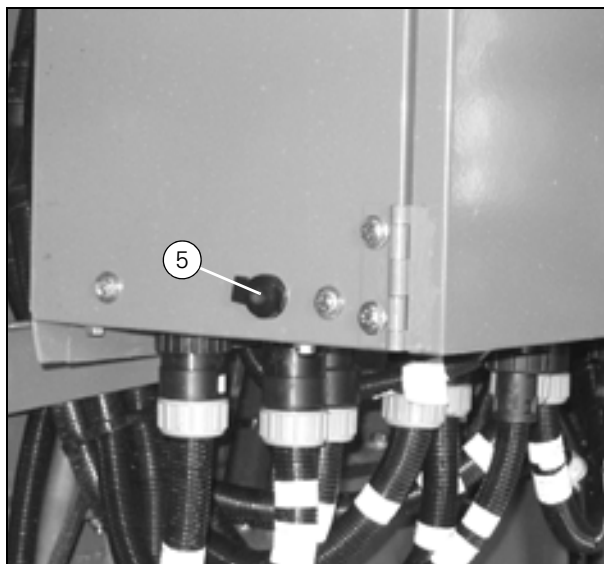


Fig. 7

12. Electrical System

12.4 Electro-Hydraulic System

The electro-hydraulic functions are divided according to an order of priority. A function of a high priority breaks the current to all functions of a lower priority.

Hydraulic safety

Hydraulic safety is software operated and completely controlled by the computer system. The hydraulic functions can be operated only when engine revolutions or an engine oil pressure is registered.

Priority of the hydraulic functions:

Standard combine	Auto Level combine
1. Reel up/down	1. Reel up/down
2. Table up/down	2. Table up/down ¹⁾
3. Cylinder variator	3. Cylinder variator
4. Auto Level table levelling ¹⁾	4. Auto Level combine up/down
5. Reel fore/aft ¹⁾	5. Auto Level combine levelling ²⁾
6. Unloading auger out/in ²⁾	6. Auto Level table levelling ²⁾
7. Hydraulic reversing	7. Reel fore/aft ²⁾
*1 <i>Can be used at the same time.</i> *2 <i>Unloading auger out/in can be activated concurrently with the other functions except Reel down and Table down.</i>	8. Unloading auger out/in ³⁾
	9. Hydraulic reversing
	*1 <i>Table down can be activated concurrently with the other functions.</i> *2 <i>Can be used at the same time.</i> *3 <i>Unloading auger out/in can be activated concurrently with the other functions except Reel down and Auto Level combine down.</i>

12. Electrical System

12.5 Key to Signatures for Wiring Harness

Wire Codes

The figures following the letter code indicate the wire number corresponding to the number reference in the diagrams and the wiring overview. The wire number is printed on each end of the wire.

Wire codes
<i>Wire Colours</i> Red = Battery, positive Brown = Battery, negative Blue and black = Signal wires
<i>CAN bus cable, twisted red/green pair</i> Red = CAN bus + Green = CAN bus -
<i>Other colours = Other equipment</i> Note: <i>Other colours are used in multi-function lever, radio, table trailer, yield meter, grain loss sensors, air-conditioning, electric actuators, magnetic clutches, DGPS.</i>

Component Codes

The component code consists of three letters and two figures, the first two letters indicating the function group of the component, the third letter indicating type of component, and the two figures indicating component number.

Component codes	
A	Battery
C	Connector
D	Diode
F	Sensor/reed switch
H	Switch
G	Alternator
K	Actuator/clutch
L	Bulb
M	Magnetic valve / electromotors
P	Horn
R	Relay
S	Fuse
W	Connecting point

12. Electrical System

12.6 Position of Connectors in Electric Box

Left-hand electric box

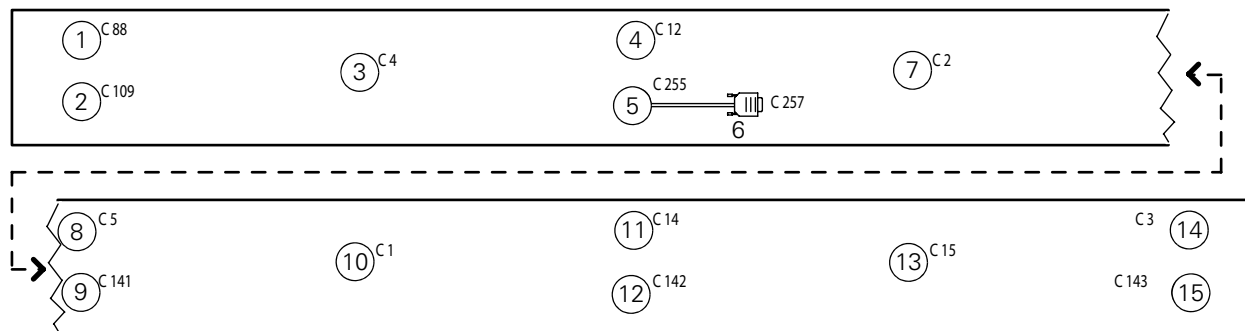


Fig. 8

Right-hand electric box

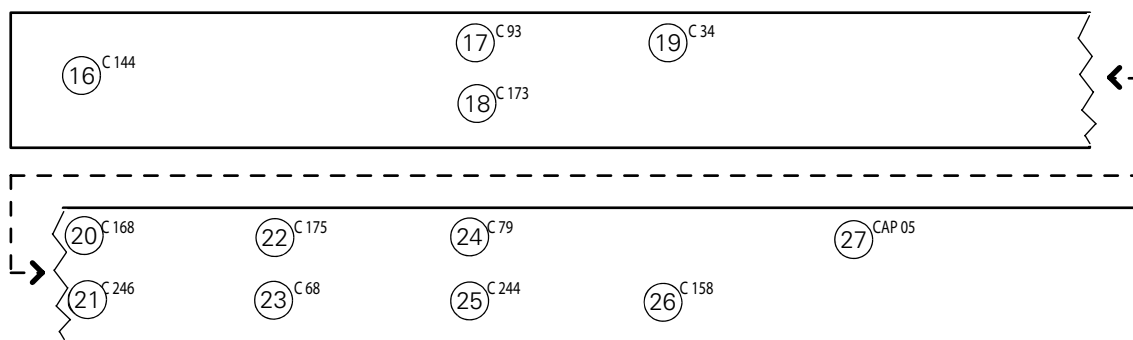





Fig. 9

1. Cab (CAN bus connection), C88	15. Monitoring, C143
2. Concave lead-in plate, C109	16. Yield meter/grain loss monitor, C144
3. Light front, C4	17. Vertical knife, C93
4. Harvest functions front, C12	18. Work light rear, C173
5. Engine EEM, C255	19. Four-wheel drive, C34
6. Engine EEM diagnosis, C257	20. Grain tank covers, C168
7. Cab 2, C2	21. Electrical concave adjustment, C247
8. Wiring harness RH, C5	22. Moisture meter, C175
9. Reel/field pressure control, C141	23. Engine, C68
10. Cab 1, C1	24. Yield meter, C79
11. Engine, C14	25. Electric gearshift, C244
12. Forward speed control, C142	26. Electrical straw deflectors, C158
13. Wiring harness LH, C15	27. Electrical sieves / AL computer, CAP 05
14. Wiring harness rear, C3	










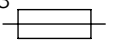




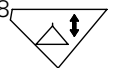
12. Electrical System

12.7 Fuses and Relays, Electric Box and Cab






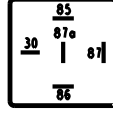
Top Decals

1 		2 		3 
DLR 02		DLR 01		DVD 21









Middle Decals

4 	5 	6 	7 	8 	9 	10 	
DLR 03 DLS 03 (15A) DLS 04 (15A) DLS 05 (15A)	DLR 04 DLS 06 (15A) DLS 07 (5A) DLS 08 (5A)	DLR 06 DLR 07 DLS 11 (5A)	DLR 08 DLS 01 (5A) DLS 02 (20A)	DLR 05 DLS 09 (5A) DLS 10 (5A)	ILR 01 ILS 07 (5A)	ILR 08 ILS 08 (5A)	ILR 04 ILS 04 (10A)
11 	12 	13 	14 	15 	16 	17 	18 
DVR 37 DVR 38 DVS 30 (5A)	DVR 01 DVS 20 (5A)	DVS 01 (15A) DVS 02 (15A) DVS 03 (20A) DVS 04 (30A)	DVR 02 DVR 39	DVR 03 DVR 04 DVS 06 (25A)	ILR 03 ILS 03 (7.5A)	DVR 05 DVS 07 (5A) DVS 42 (5A)	HOR 23 HOR 24 HOS 18 (25A)

Bottom Decals

19 	20 	21 	EEM 22 	EEM 23 		24 
DVR 07 DVS 17 (30A)	DVR 14 DVS 18 (30A)	DVR 09 DVS 13 (5A)	DVR 22 DVS 43 (30A) DVS 45 (5A)	DVR 46 DVS 46 (10A)		

Decals in Cab

25 	ILR 07	ILD 01
	ILS 01	ILS 02
26 	ILR 05	ILS 06
27 	DLR 12	
28 	ILR 06	ILS 05
29 	DVS 09	DVS 12
30 	DVS 11	
31 		
32 	DVR 08	DVS 10








 HOR = Relay
 HOS = Fuse
 DLB = Relay
 DLS = Fuse
 DVS = Fuse
 ILB = Relay
 ILS = Fuse

Fig. 10

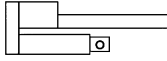

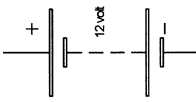
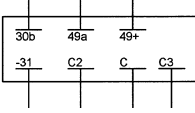
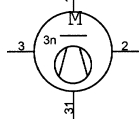
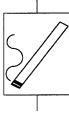
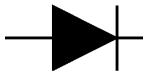
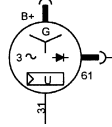



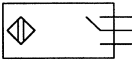
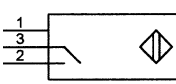
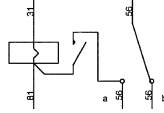
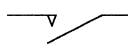
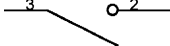
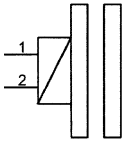
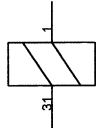
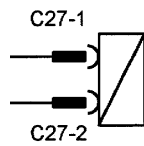
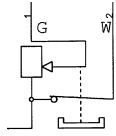
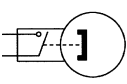
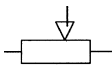


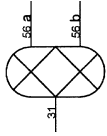
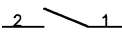
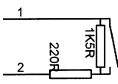
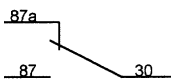
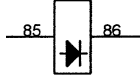
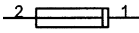
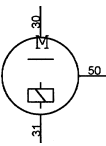

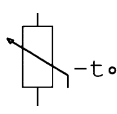
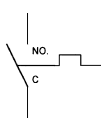
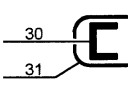
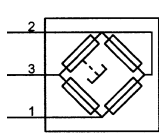
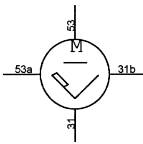
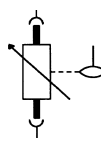
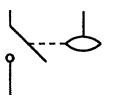
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12. Electrical System

Description of Fuses and Relays	
1. Tilt relay (main light flash)	17. Horn, DVR 05
2. Flasher relay, DLR 01	18. Unloading auger, HOR 23, HOR 24
3. Charging diode for battery, DVD 21	19. Vertical knife RH, DVR 07 Vertical knife LH, DVR 14
4. Main light flash, DLR 03	20. Four-wheel drive DVM 07, DVR 09
5. Parking light, DLR 04	21. AL tilt sensor, DVR 22
6. Direction flashers RH/LH, DLR 06 / DLR 07 12V relay for flasher relay, DLR 08	22. EEM engine control EEM 12 Volt, DVS 43 EEM 12 Volt ignition, DVS 45
7. Stop light, DLR 05	23. EEM fuel pump, DVR 46, DVS 46
8. Grain tank light, ILR 01	24. Connectors
9. Light in straw hood, ILR 08	25. Work light RH/LH
10. External connectors, ILR 04	26. Rotating yellow beacon, cab
11. ACC 2 (battery 2), DVR 37 Terminal and computers, DVR 38	27. Buzzer for flashers
12. Relay for DVS 01 / DVS 02 / DVS 03, DVR 01	28. Work light, cab
13. DVS 01, W1, electric box DVS 02, W2, cab control panel DVS 03, W11, cab roof DVS 04, DVD 21 charging diode	29. Windscreen wiper
14. Engine start/safety relay, DVR 02 / DVR 39	30. Radio and cab light
15. Engine stop/hydraulic safety, DVR 03 / DVR 04	31. Lighter
16. Rotating yellow beacon/straw hood, ILR 03	32. Blower, air-conditioning
<i>() Figures in brackets are fuse ratings</i>	

12. Electrical System

12.8 Key to Symbols

<p>Actuator</p> 	<p>Antenna</p> 	<p>Battery 12 volt</p> 	<p>Flasher relay</p> 	<p>Blower motor</p> 
<p>Lighter</p> 	<p>Diode</p> 	<p>Alternator</p> 	<p>Horn</p> 	<p>Main switch</p> 
<p>Loudspeaker</p> 	<p>Inductive sensor</p> 	<p>Capacitive sensor</p> 	<p>Tilt relay (main light flash)</p> 	<p>Switch with return spring</p> 
<p>Switch without return spring</p> 	<p>Magnetic clutch</p> 	<p>Solenoid with two coils</p> 	<p>Solenoid valve</p> 	<p>Engine oil pressure sensor</p> 
<p>Revolution sensor</p> 	<p>Potentiometer</p> 	<p>Pressostat</p> 	<p>Bulb</p> 	<p>Bulb with two filaments</p> 
<p>Reed tube</p> 	<p>Reed tube with resistors</p> 	<p>Relay coil</p> 	<p>Relay coil with diode</p> 	<p>Fuse</p> 
<p>Starter motor</p> 	<p>Connector</p> 	<p>Temperature sensor</p> 	<p>Thermostat</p> 	<p>2-pole connector</p> 
<p>Pressure sensor</p> 	<p>Wiper motor</p> 	<p>Fluid level sensor</p> 	<p>Fluid level switch</p> 	

12. Electrical System

12.9 Fuses, Alphabetical

Function	Fuse	Rating	Colour	Diagram
Blower, air-conditioning	DVS 10	20.0 A	Yellow	220
Bottom auger cover	HOS 18	25.0 A	White	330
Chaff spreader	DVS 16	5.0 A	Light brown	410
Direction flashers, auxiliary relay, control current	DLS 01	5.0 A	Light brown	130
Direction flashers, auxiliary relay, hazard light	DLS 11	5.0 A	Light brown	130
Direction flashers, main current	DLS 02	20.0 A	Yellow	130
DVD 21 charging diode	DVS 04	30.0 A	Light green	40
EEM 12V	DVS 43	25.0 A	Light blue	25
EEM fuel pump	DVS 46	10.0 A	Red	25
EEM ignition	DVS 45	5.0 A	Light brown	25
Engine, stop magnet	DVS 06	25.0 A	Light blue	20, 25
External 12V connectors	ILS 04	7.5 A	Brown	200
Four-wheel drive	DVS 13	5.0 A	Light brown	430
Fuse for DVR 38	DVS 30	5.0 A	Light brown	10, 4
Horn	DVS 07	5.0 A	Light brown	260
Ignition lock	DVS 20	5.0 A	Light brown	10
Ignition terminal W1, electric box	DVS 01	15.0 A	Light blue	10
Ignition terminal W11, cab roof	DVS 03	20.0 A	Yellow	10
Ignition terminal W2, cab panel	DVS 02	15.0 A	Light blue	10
Light in grain tank	ILS 07	5.0 A	Light brown	120
Light in straw hood	ILS 08	5.0 A	Light brown	120
Lighter	DVS 12	15.0 A	Light blue	240
Main light, high beam LH	DLS 06	15.0 A	Light blue	80
Main light, high beam RH	DLS 05	15.0 A	Light blue	80
Main light, low beam LH	DLS 04	15.0 A	Light blue	80
Main light, low beam RH	DLS 03	15.0 A	Light blue	80
Maize header	DVS 19	30.0 A	Light green	595
Parking light LH	DLS 07	5.0 A	Light brown	90
Parking light RH	DLS 08	5.0 A	Light brown	90
Power fuse for radio	DVS 42	5.0 A	Light brown	250
Pull magnet, starter motor	DVS 05	30.0 A	Light green	20
Radio and cab light	DVS 11	5.0 A	Light brown	170, 250
Rotating yellow beacon, cab	ILS 06	7.5 A	Brown	300
Rotating yellow beacon, straw hood	ILS 03	7.5 A	Brown	300
Stoplight, LH	DLS 10	5.0 A	Light brown	110
Stoplight, RH	DLS 09	5.0 A	Light brown	110
Vertical knife	DVS 17	30.0 A	Light green	400
Vertical knife	DVS 18	30.0 A	Light green	400
Windscreen wiper	DVS 09	15.0 A	Light blue	230
Work light, cab	ILS 05	10.0 A	Red	160
Work light, left-hand side	ILS 01	20.0 A	Yellow	150
Work light, right-hand side	ILS 02	20.0 A	Yellow	150

12. Electrical System

12.10 Fuse Ratings

Fuse	Rating	Colour	Function	Diagram
DLS				
DLS 01	5.0 A	Light brown	Direction flashers, auxiliary relay, control current	130
DLS 02	20.0 A	Yellow	Direction flashers, main current	130
DLS 03	15.0 A	Light blue	Main light, low beam RH	80
DLS 04	15.0 A	Light blue	Main light, low beam LH	80
DLS 05	15.0 A	Light blue	Main light, high beam RH	80
DLS 06	15.0 A	Light blue	Main light, high beam LH	80
DLS 07	5.0 A	Light brown	Parking light LH	90
DLS 08	5.0 A	Light brown	Parking light RH	90
DLS 09	5.0 A	Light brown	Stoplight, RH	110
DLS 10	5.0 A	Light brown	Stoplight, LH	110
DLS 11	5.0 A	Light brown	Direction flashers, auxiliary relay, hazard light	130
DVS				
DVS 01	15.0 A	Light blue	Ignition terminal W1, electric box	10
DVS 02	15.0 A	Light blue	Ignition terminal W2, cab panel	10
DVS 03	20.0 A	Yellow	Ignition terminal W11, cab roof	10
DVS 04	30.0 A	Light green	DVD 21 charging diode	40
DVS 05	30.0 A	Light green	Pull magnet, starter motor	20
DVS 06	25.0 A	Light blue	Engine, stop magnet	20, 25
DVS 07	5.0 A	Light brown	Horn	260
DVS 09	15.0 A	Light blue	Windscreen wiper	230
DVS 10	20.0 A	Yellow	Blower, air-conditioning	220
DVS 11	5.0 A	Light brown	Radio and cab light	170, 250
DVS 12	15.0 A	Light blue	Lighter	240
DVS 13	5.0 A	Light brown	Four-wheel drive	430
DVS 16	5.0 A	Light brown	Chaff spreader	410
DVS 17	30.0 A	Light green	Vertical knife	400
DVS 18	30.0 A	Light green	Vertical knife	400
DVS 19	30.0 A	Light green	Maize header	595
DVS 20	5.0 A	Light brown	Ignition lock	10
DVS 30	5.0 A	Light brown	Fuse for DVR 38	10, 40
DVS 42	5.0 A	Light brown	Power fuse for radio	250
DVS 43	25 A	Light blue	EEM injection pump 12V	25
DVS 45	5 A	Light brown	EEM ignition	25
DVS 46	10 A	Red	EEM fuel pump	25
HOS				
HOS 18	25.0 A	White	Bottom auger cover	330
ILS				
ILS 01	20.0 A	Yellow	Work light, left-hand side	150
ILS 02	20.0 A	Yellow	Work light, right-hand side	150
ILS 03	7.5 A	Brown	Rotating yellow beacon, straw hood	300
ILS 04	7.5 A	Brown	External 12V connectors	200
ILS 05	10.0 A	Red	Work light, cab	160
ILS 06	7.5 A	Brown	Rotating yellow beacon, cab	300
ILS 07	5.0 A	Light brown	Light in grain tank	120
ILS 08	5.0 A	Light brown	Light in straw hood	120

12. Electrical System

12.11 W-Connecting Points

Type	Position
W - 1	12V ignition, electric box
W - 2	12V ignition, cab panel
W - 3	Frame, electric box
W - 4	Frame, cab roof
W - 5	Frame, cab panel
W - 6	Frame, left-hand machine side, rear
W - 7	Frame, right-hand machine side
W - 10	12V battery, plus, electric box
W - 11	12V ignition, cab roof
W - 12	12V battery, plus, cab
W - 16	12V for external connectors
W - 20	Direction flasher, LH, connecting box, light bar
W - 21	Stoplight, LH, connecting box, light bar
W - 22	Tail light, number plate light, LH, connecting box, light bar
W - 23	Tail light, number plate light, RH, connecting box, light bar
W - 24	Stoplight, RH, connecting box, light bar
W - 25	Direction flasher, RH, connecting box, light bar
W - 26	Frame, connecting box, light bar
W - 28	DATAVISION backup battery, plus, in electric box
W - 29	DATAVISION backup battery, plus, in electric box
W - 30	Cab roof, connecting point for switch light
W - 31	Control panel to the right of the operator seat, 12V

12. Electrical System

12.12 Diagrams survey

Description	Input Comp.	Diagram	Output Comp.	Diagram
ACC 1	Battery 1	20		
ACC 2	Battery 2	40		
Air-conditioning	DVF 01	220	DVK 01	220
Alternator 1	DVG 01	20	DVG 01	20
Alternator 2	DVG 02	400	DVG 02	400
Auto Level machine			DVM 10, 11, 12, 13	560
Auto Level power			CAP01	40
Auto Level table	HOH 10 / DNP 06/07	550	HOM 04/05	550
Auto Level table	HOH 10	550	HOM 04/05	550
Auto Level wheel potentiometer	DNP 09/10	560		
Blower motor, air-conditioning	DVH 03	220	DVM 01	220
Bottom auger cover	HOH 15	330	HOK 01	330
Bottom auger cover up/down	HOH 15	330	HOK 01	330
CAN connection	-	50	-	
Comunit/DGPS	-	70	-	
Concave setting (electric)	DVK10	60	HOK 09	270
Countershaft revolutions/forward speed control	DNF 31	30 - 510	-	
Cutting height sensor, potentiometer	DNP 15	350	DVK10	60
Cylinder variator revolutions up/down	DVK10	60	HOM 10 / HOM 21	360
Cylinder, revolution sensor	DNF 10	510	-	
Direction flashers	DLH 01	130	DLL 1/2/3 - DLL 4/5/6 - DLL 07/08	130
Electrical gearbox	Control panel DVK 10	280	DNF 38 + DVM 15, 16, 17, 18, 19, 20	280
Engine, air cleaner indicator	DNF 16	530	-	
Engine, cooling water level	DNF 19	530	-	
Engine, cooling water temperature	DNF 20	530	-	
Engine, EEM		25	DVH 32 / DVL 14	25
Engine, main power Sweden	Bat 01/HOH 18	900	HOR 40	900
Engine, oil pressure	DNF 21	20	-	
Engine, preheater	DVH 06	10	DVK 14 / DVK 15	10, 20
Engine, revolution sensor	DNF 01	510	-	
Engine, start/stop	DVM 02 / DVM 03	10, 20, 25, 40	DVM 02 / DVM 03 EEM	10, 20, 25
Engine, start/stop	DVH 06	10	DVM 02 / DVM 03	20
Engine, stop magnet	DVH 06	10	DVM 03	20
External connectors	ILH 06	200	ILC 01/2/4/5	200
Fanning mill revolutions up/down	HOH 11	360	HOK 03	360
Fanning mill, revolution sensor	DNF 09	510	-	
Field pressure sensor	DNF 33	350	HOM 01, 02, 16, 20	350
Filling auger, revolution sensor	DNF 05	510	-	
Filling elevator, revolution sensor	DNF 04	510	-	
Forward speed control	DNF 10, DNF 31	30-510	HOM 18	30
Forward speed limit			DVM 25	270
Forward speed potentiometer	DNP 16	30	HOM 18 / HOM 19	30
Forward speed, revolution sensor	DNF 12	510	-	
Four-wheel drive	DVH 09	430	DVM 07	430
Fuel level	DNF 22	530		
Full warning	ILF 01 / ILF 02	300	-	

12. Electrical System

Description	Input Comp.	Diagram	Output Comp.	Diagram
Gearbox	Control panel DNK 10	280	DNF 38 + DVM 15, 16, 17, 18, 19, 20	280
Grain loss monitor	DNF/23/24/30	380	DVK10	60
Grain tank covers	DVK10	60	HOK 016	330
Ground sensors, table	DNP 06/07	310-550	-	
Hazard light	DLH 02	130	DL001-DL006	130
Horn	DVH 04	260	DVP 02	260
Hydraulic oil level	DNF 17	530	-	
Hydraulic oil temperature	DNF 18	530	-	
Ignition	DVH 06	10		
Level sensor, main crop elevator	DNP 12	550	HOM 04 / HOM 05	550
Light, cab	DVH 05	170	DVL 01 / 02	170
Light, main light flash	DLH 04	80	DLL 09/10 - DLL 11/1 DVL 08	80
Light, parking light	DLH 03	80	DLL 14/17 - DLL 15/16 20/21	90
Light, work light grain tank	ILH 04	120	ILL 13	120
Light, work light roof 1	ILH 02	150	ILL 02 / ILL 07	150
Light, work light side 2	ILH 03	160	ILL 08 / ILL 09	160
Light, work light straw hood	ILH 05	120	ILL 12	120
Light, work light, rear/tail light	DVK10	60	ILL16 / ILL17	120
Lighter	-	240	-	
Main crop elevator, revolution sensor	DNF 02	510	-	
Main valve			HOM 07 / HOM 17	270
Maize header (optional extra)	HOH 16	360	HOK11	595
Moisture meter	DNP 17	380	DVK10	60
Multi-function lever on/off	HOH 01	360	-	
Operator seat, electrically adjustable			DVK 07	240
Parking brake	DNH 02	520	-	
Power, terminal/job computer	-	40	-	
Printer	DVK10	60	DVK 09	60
Radio	-	250	-	
Rear-view mirrors		250	DVM 21 / DVM 24	250
Reel Fore/Aft	HOH 04	370	HOM 08/09	370
Reel on/off	HOH 01	360	-	
Reel speed sensor	DNF 35	310	-	
Reel speed up/down	HOH 16	360	HOM 14	360
Reel up/down	HOH 03	370	HOM 03	370
Remote control - terminal	DVK10	60	-	
Returns elevator, revolution sensor	DNF 03	510	-	
Returns volume sensor	DNF 26	380	-	
Reversing	HOH 02	320	HOM 13	320
Reversing alarm			DVK 08	90
Rotary separator, revolution sensor	DNF 25	510	-	
Rotating yellow beacon	ILH 07	300	ILL 10 -ILL 11-ILL 15	300
Seat adjustment			DVK 07	240
Shaker shoe, revolution sensor	DNF 07	510	-	
Sieve adjustment	DVK10	60	HOK 12/13/14/15	410
Stone trap, reed tube	DNF 14	520	-	
Stop light	DLH 05	110	DLL 18/19	110
Straw alarm, blocked straw hood	DNH 03	520	-	
Straw chopper flap, reed tube	DNF 13	520	-	

12. Electrical System

Description	Input Comp.	Diagram	Output Comp.	Diagram
Straw chopper vibration sensor	DNF 27	420	-	
Straw chopper, revolution sensor	DNF 08	510	-	
Straw deflectors, electrically adjustable	DVK10	60	DVK 04/05	420
Straw walker, revolution sensor	DNF 06	510	-	
Table clutch/reversing	HOH 07 / HOH 02	320	HOK 07 / HOM 13	320
Table Trailer	-	210	-	210
Table up/down	HOH 09	350	HOM 01/02/16/20	350
Table up/down, fast/slow	DVK10	60	HOM 01/02/16/20	350
Table, ground sensors	DNP 06/07	550	-	
Table, multicoupler		310		310
Terminal	DVK 10	60	-	
Threshing unit engagement	HOH 17	270	HOK 02	270
Tilt sensor	Left - right	540	HOM 07 / HOM 17 HOM 10 / HOM 13	270, 540, 560
Unloading auger on/off	HOH 14	340	HOK 06	340
Unloading auger out/in	HOH 12	340	HOM 11/12	340
Unloading auger, position sensor	DNF 46	340	DVK10	60
Unloading auger, revolution sensor	DNF 11	510	-	
Vertical knives	DVH 13	400	DVM 08 / DVM 09	400
Windscreen wiper	DVH 01	230	DVM 04	230
Yield meter - isotopic	DNP 13	380	DVK10	60
Yield meter - Micro-Trak	DNP 11	380	DVK10	60

12. Electrical System

12.13 Diagrams

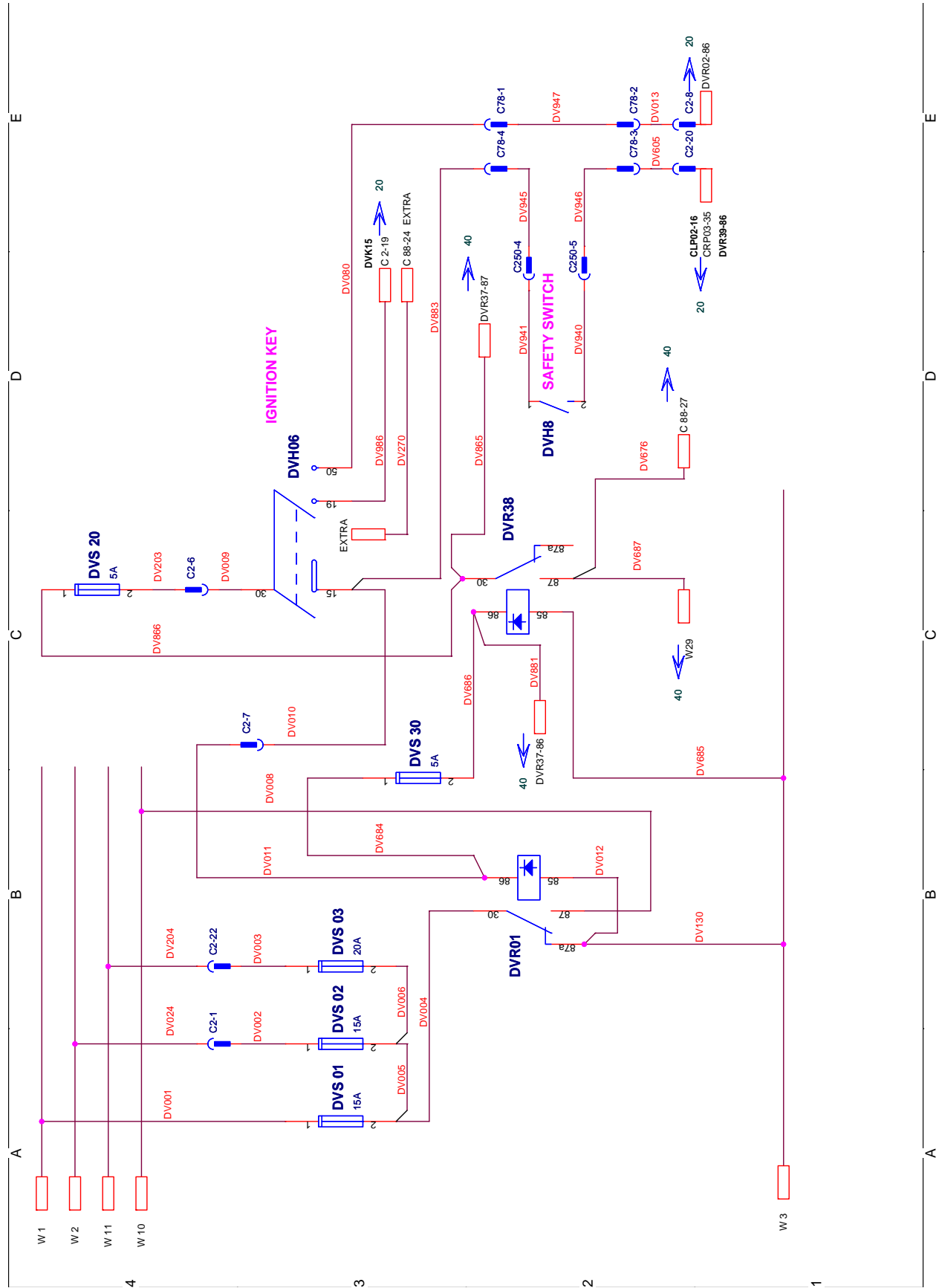


Fig. 11

12. Electrical System

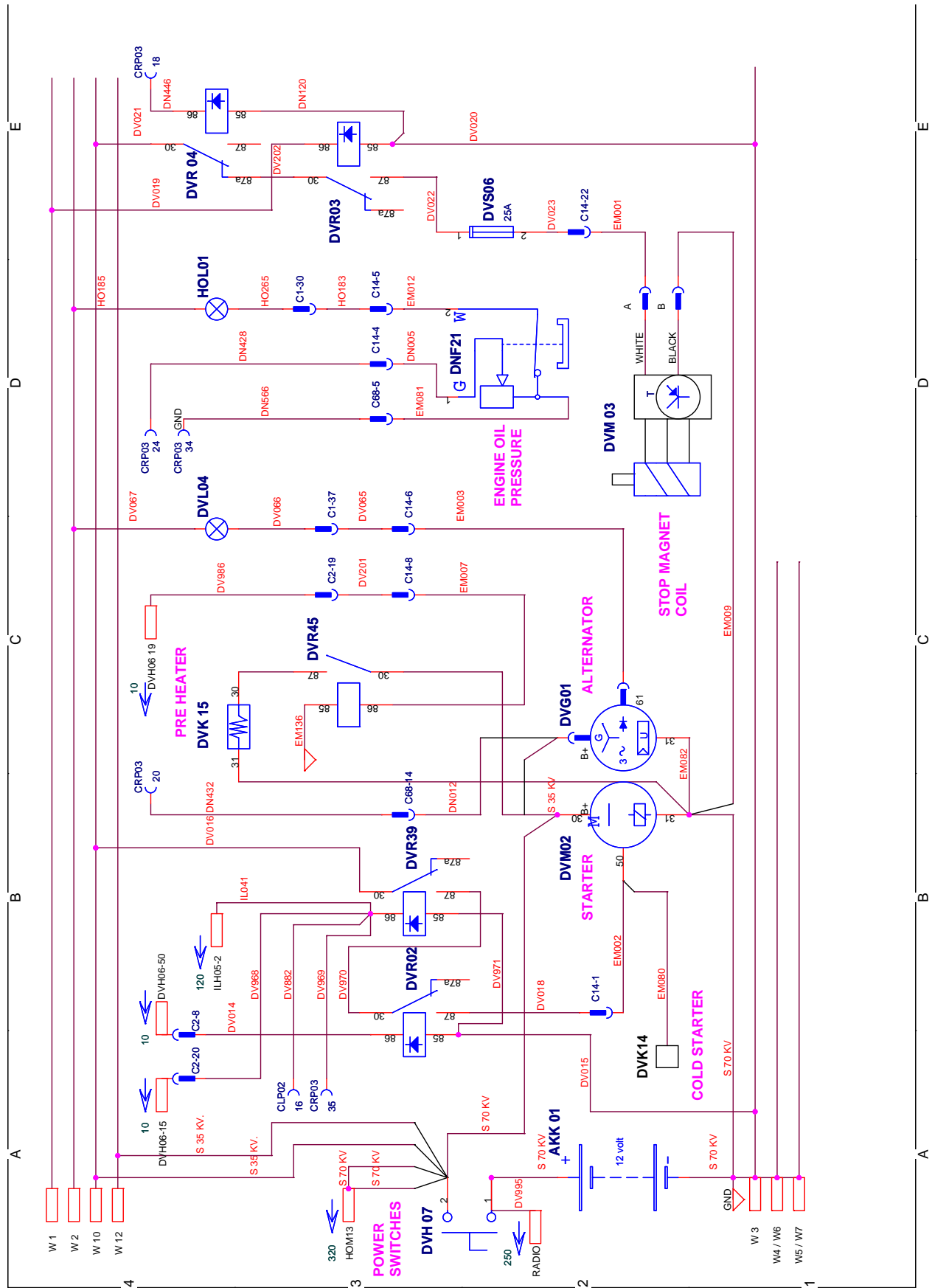


Fig. 12

20-0

12. Electrical System

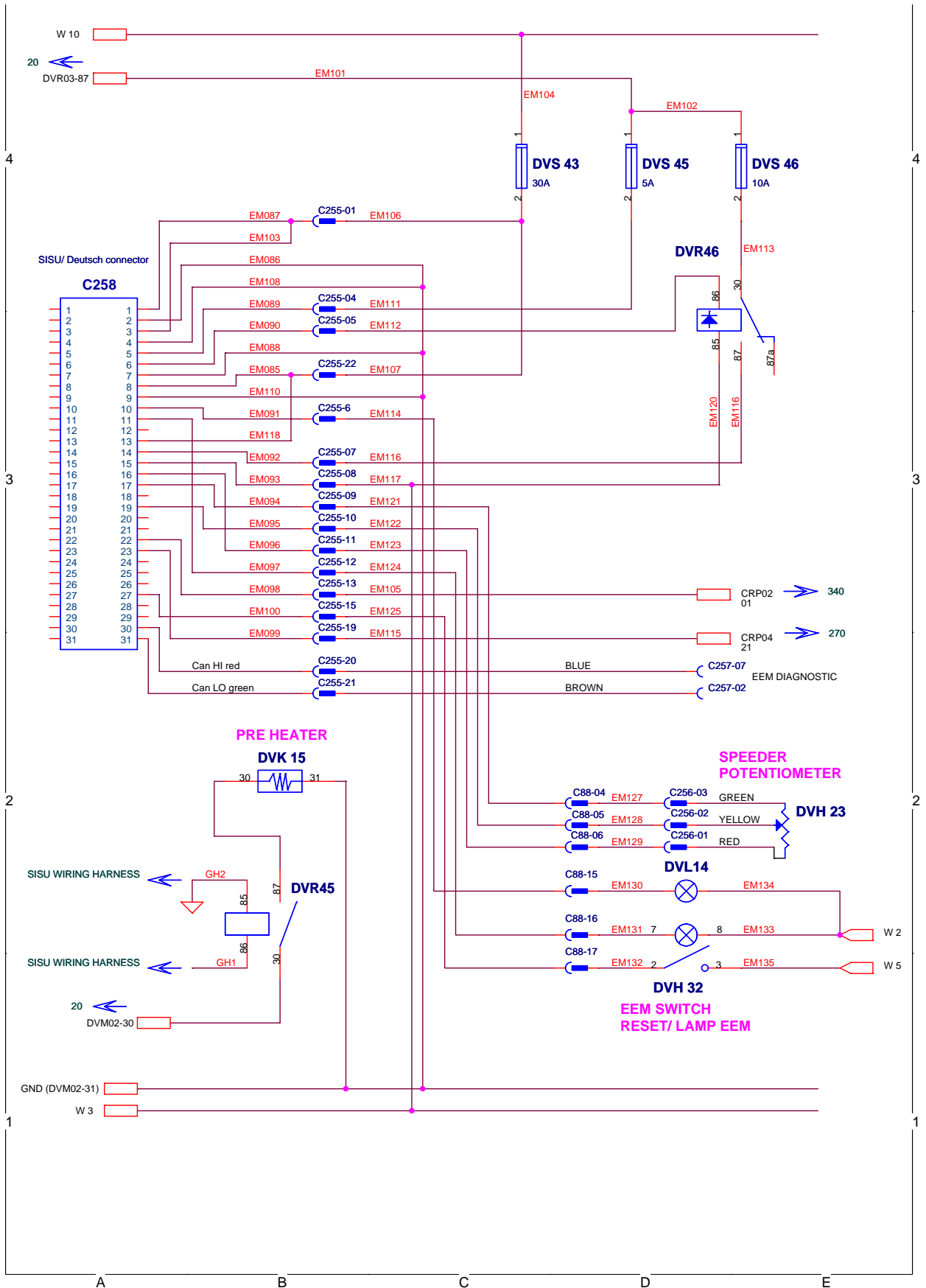


Fig. 13

25-2

12. Electrical System

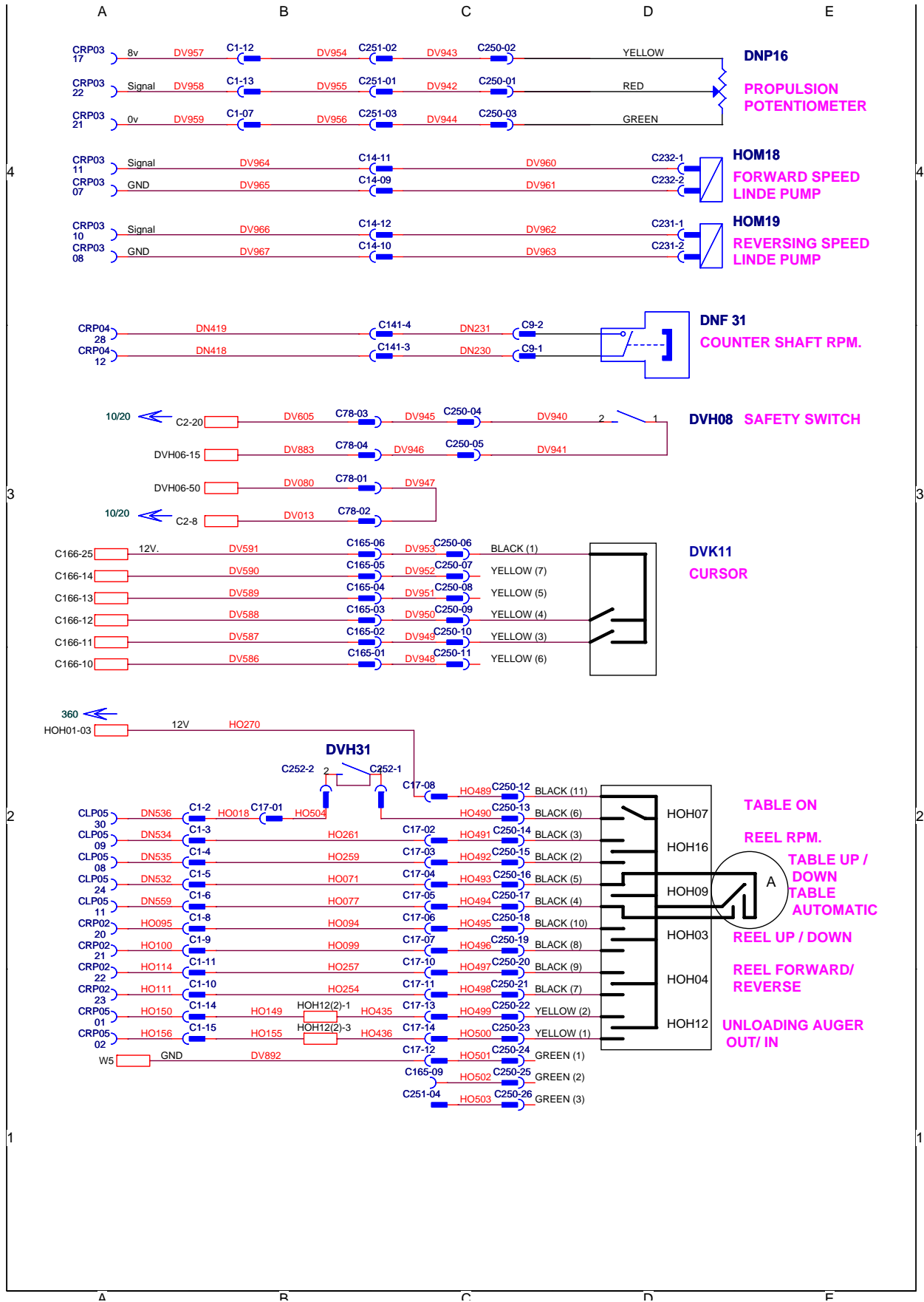


Fig. 14

12. Electrical System

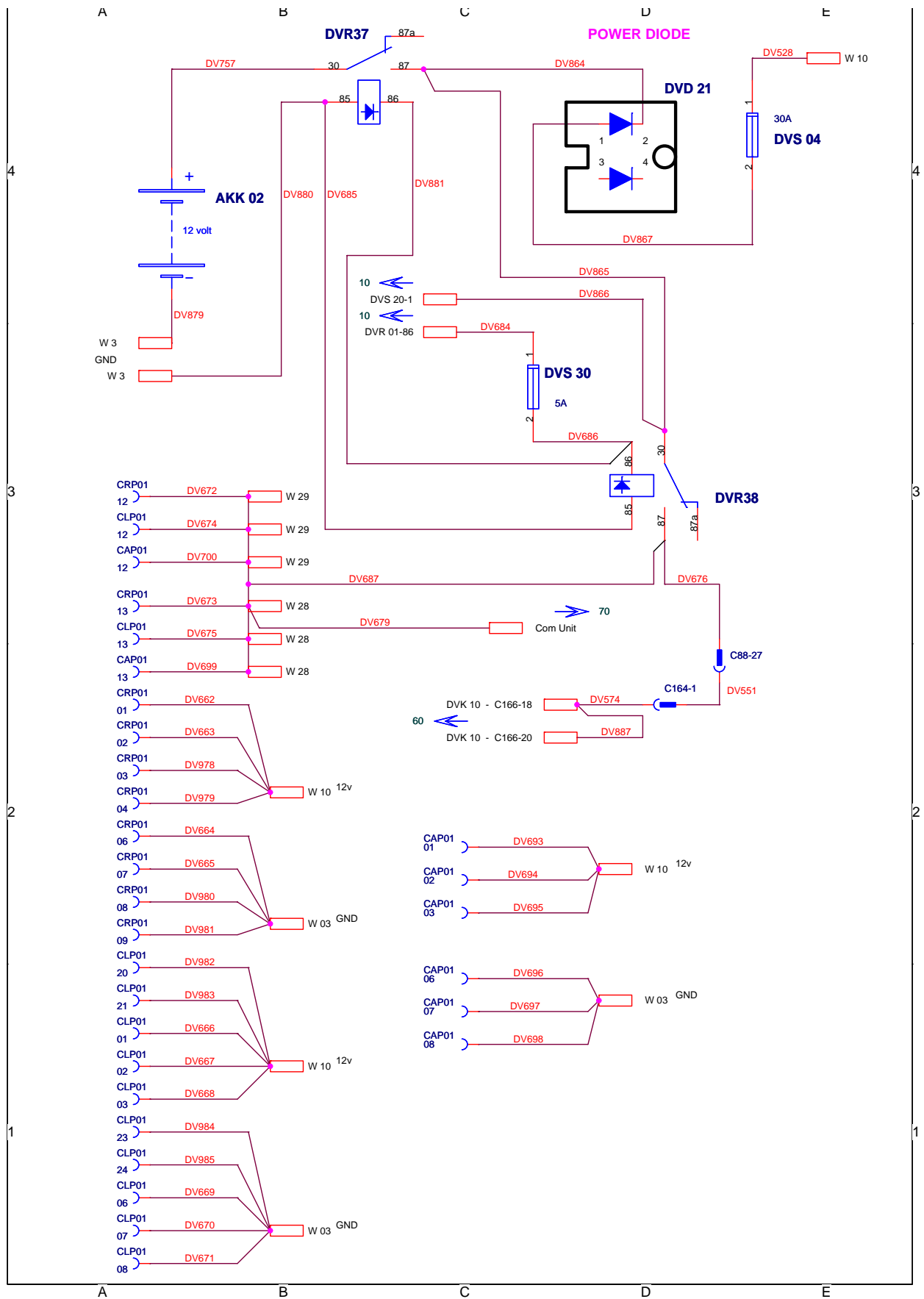


Fig. 15

40-0

12. Electrical System

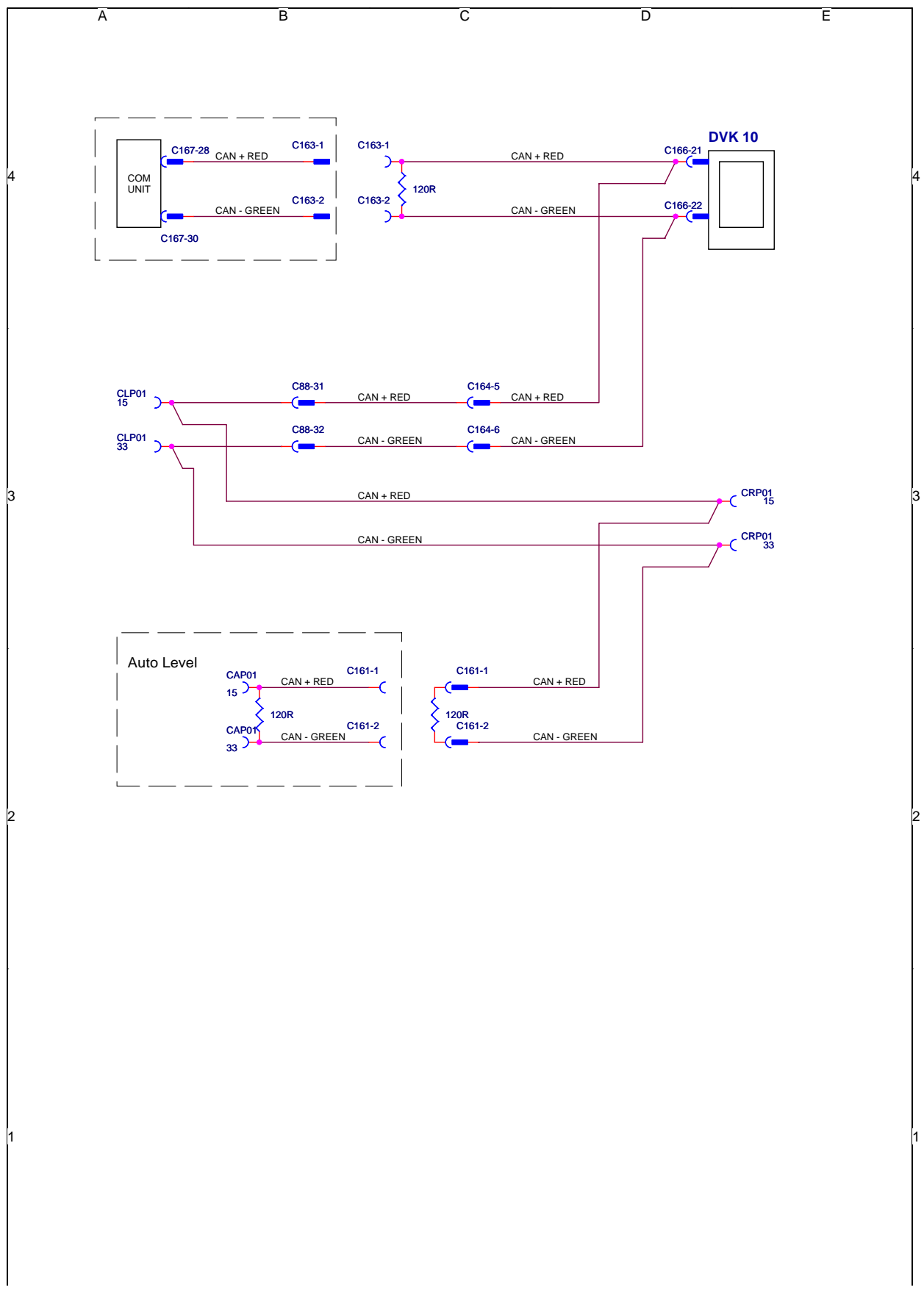


Fig. 16

12. Electrical System

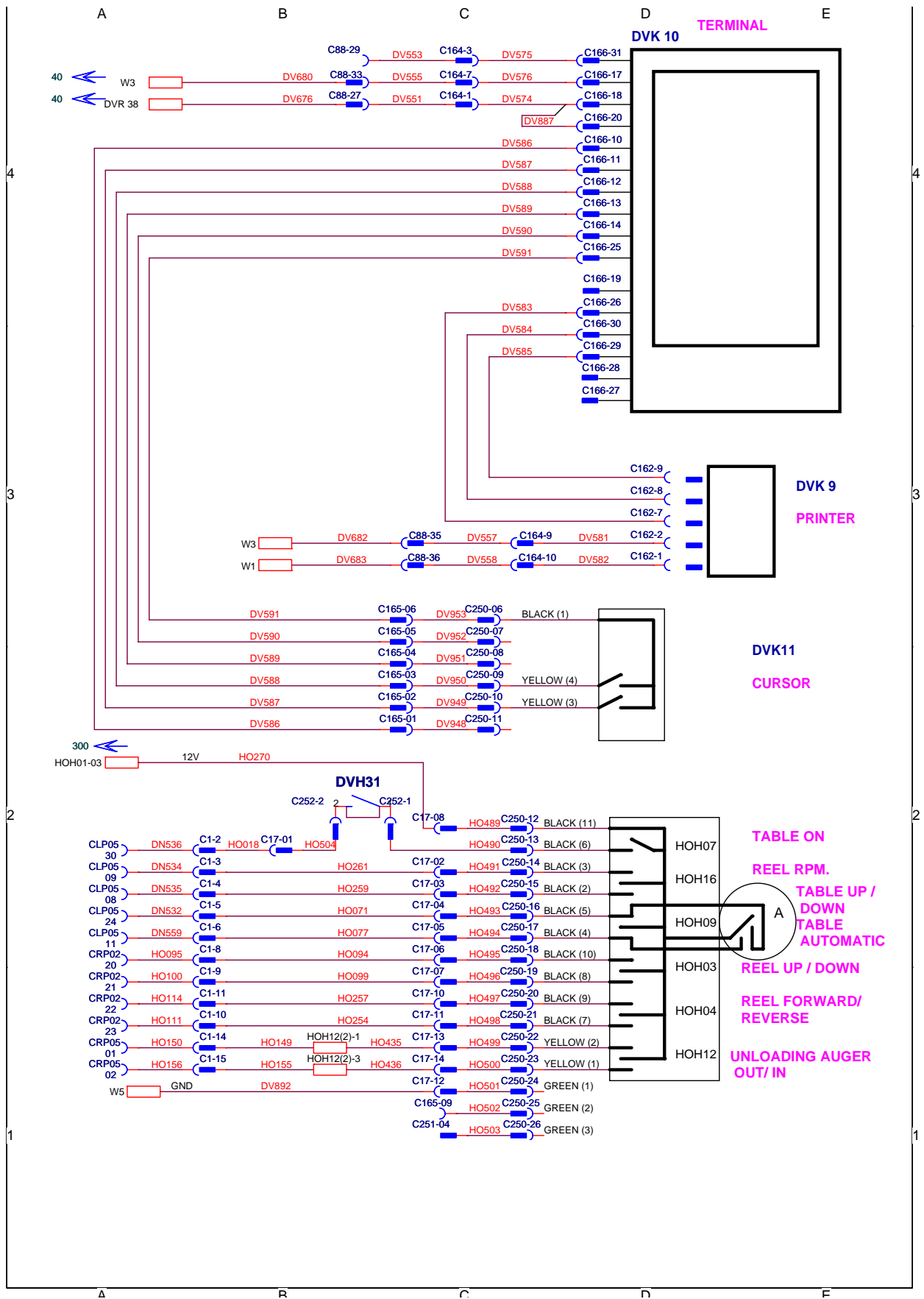


Fig. 17

60-3

12. Electrical System

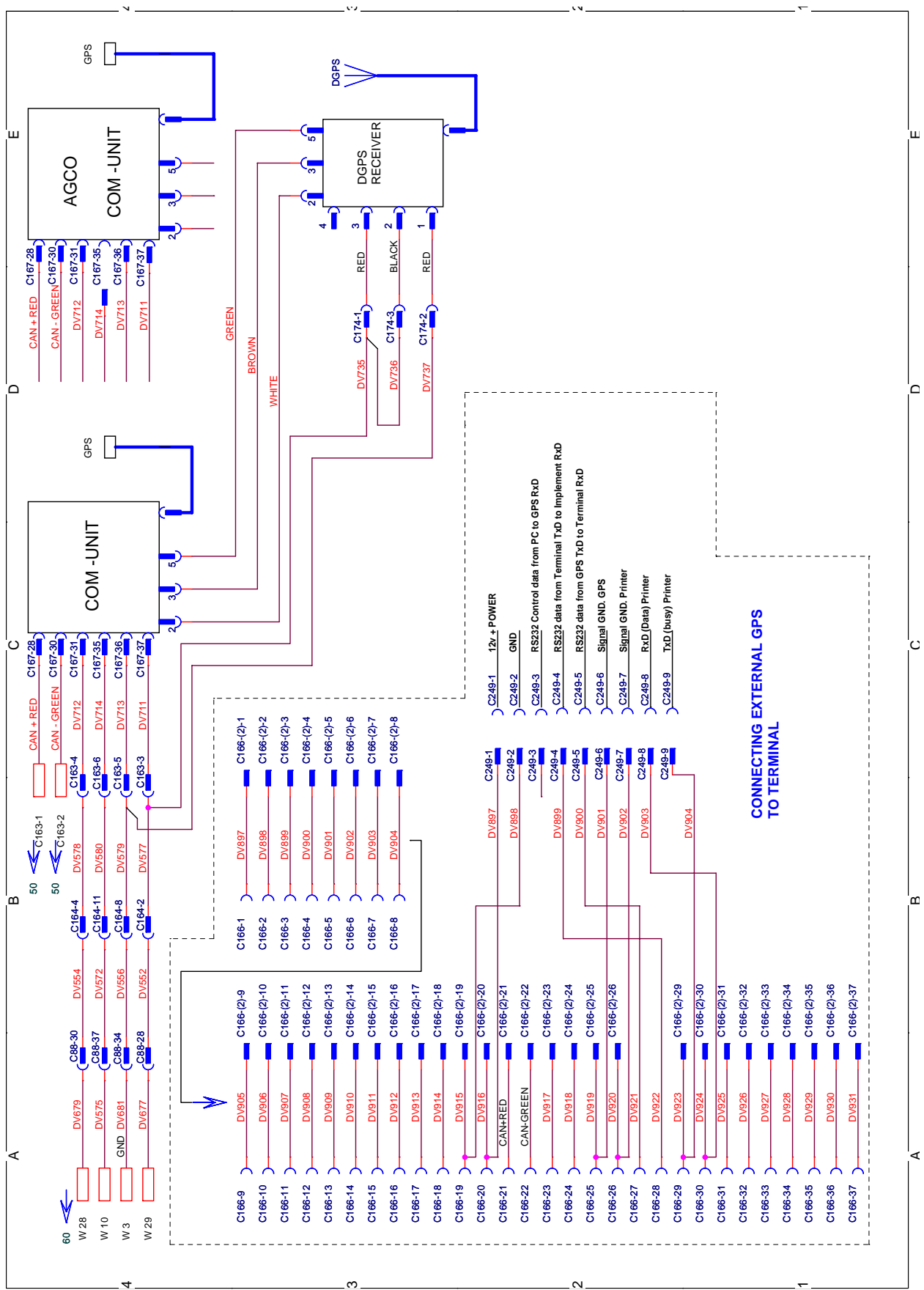


Fig. 18

70-2

12. Electrical System

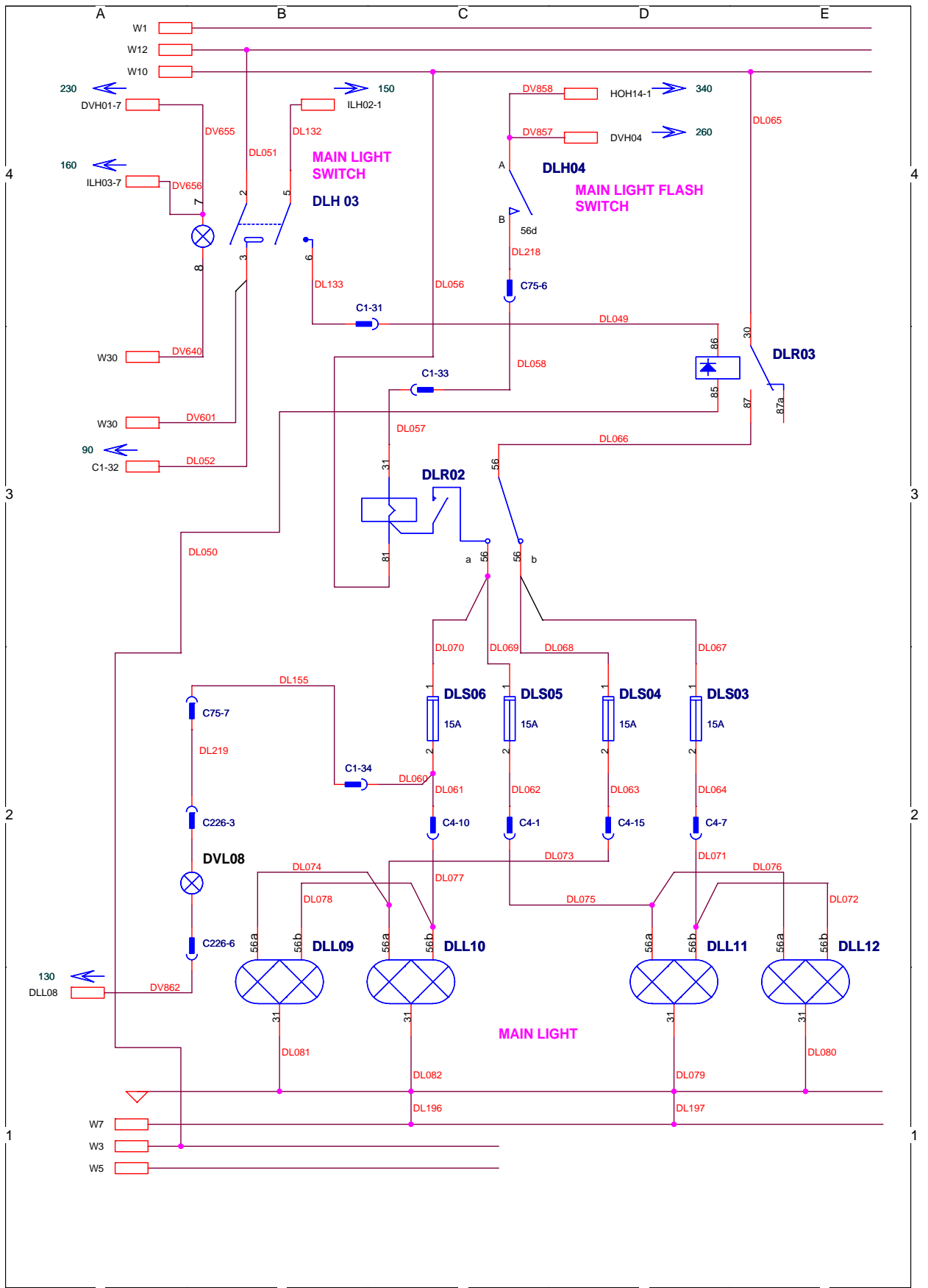


Fig. 19

80-0

12. Electrical System

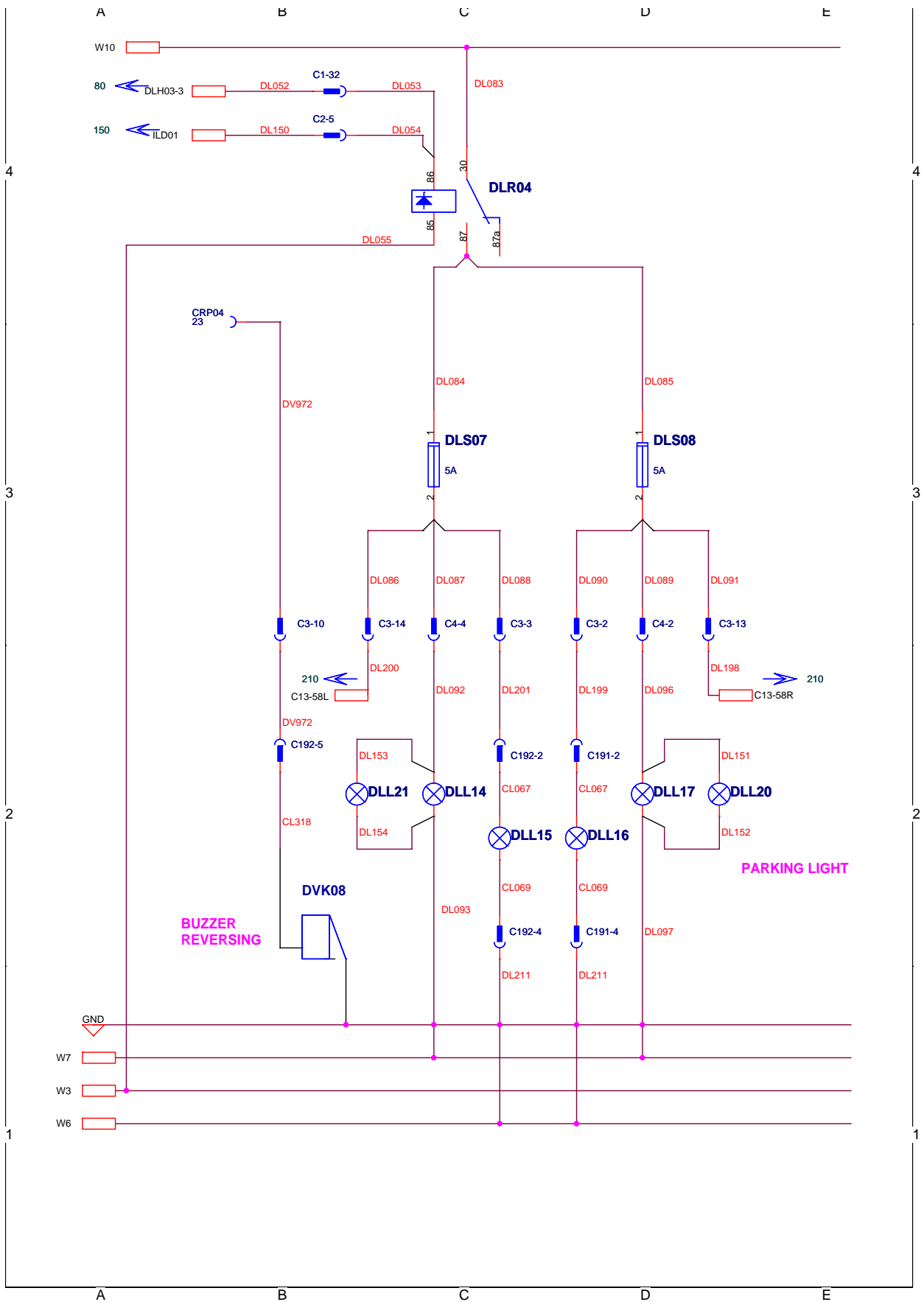


Fig. 20

90-0

12. Electrical System

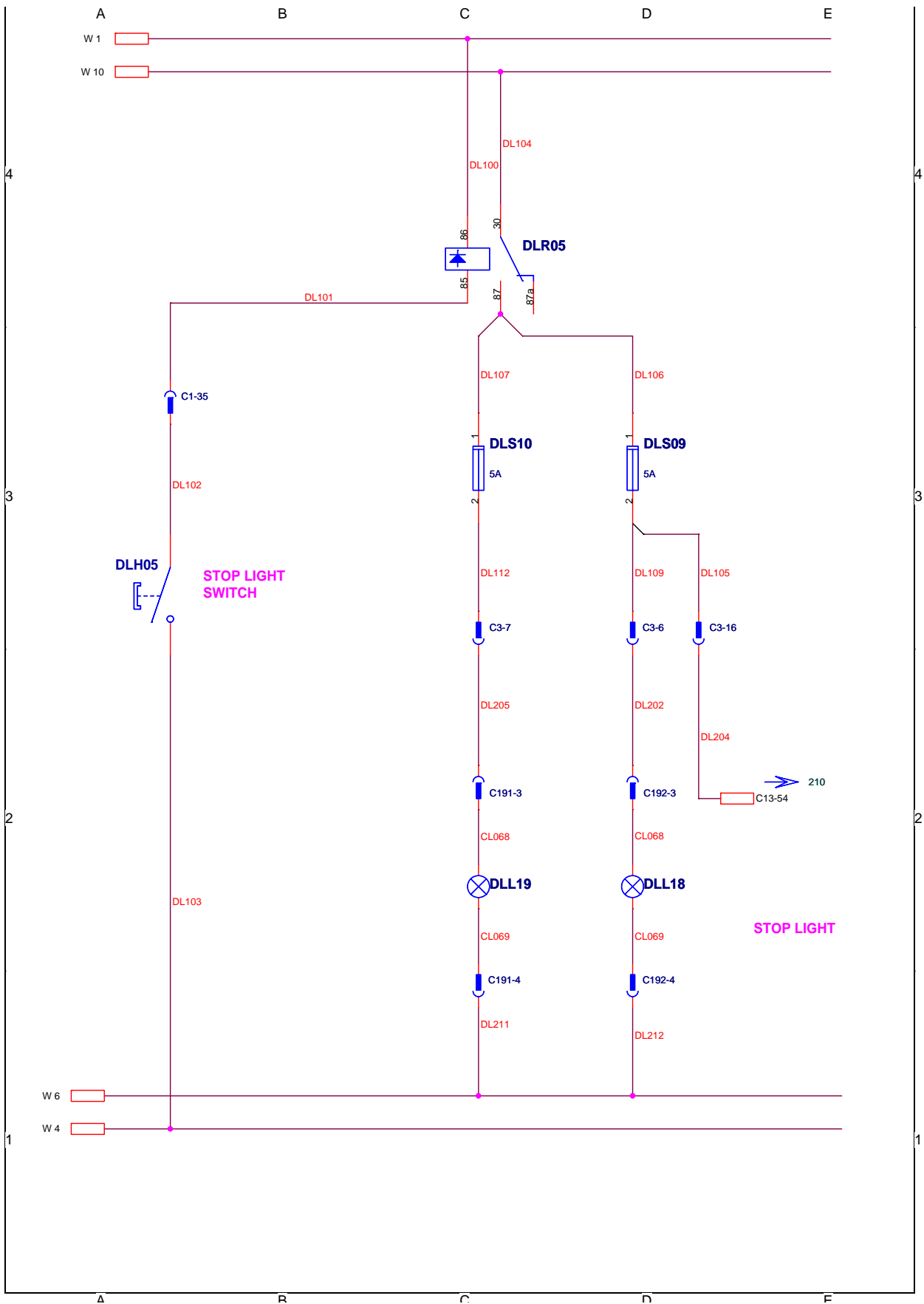


Fig. 21

110-0

12. Electrical System

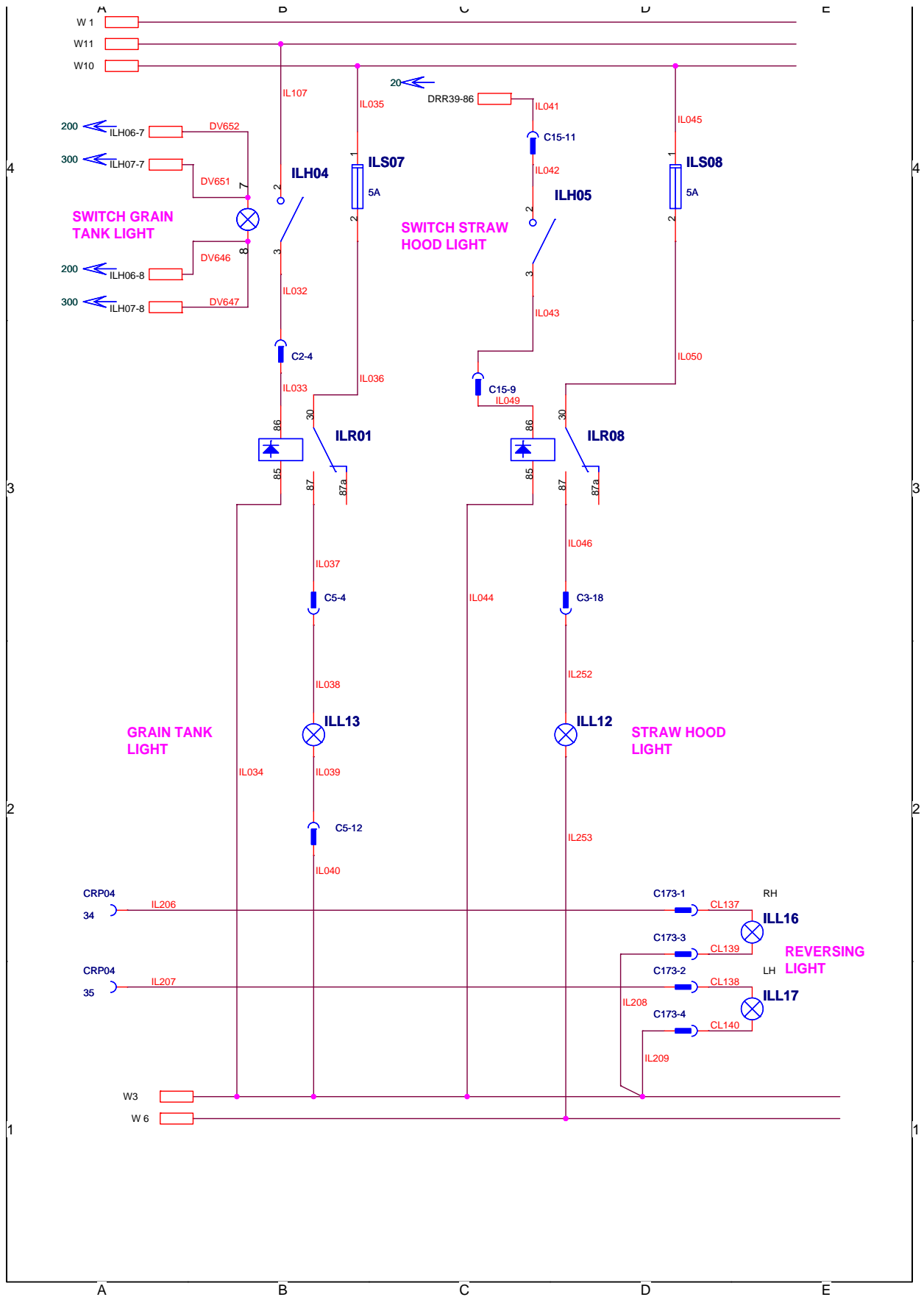


Fig. 22

120-0

12. Electrical System

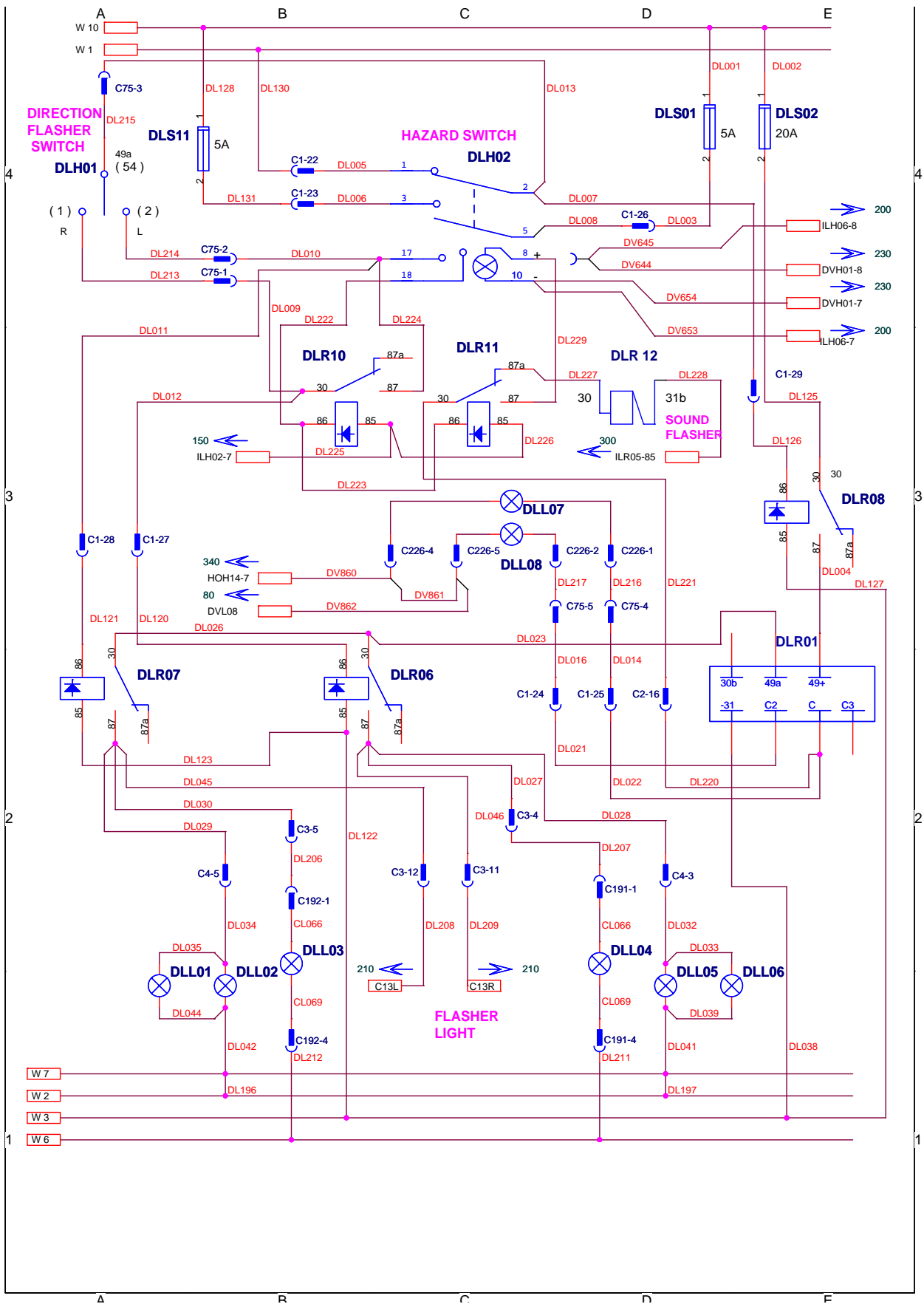


Fig. 23

130-1

12. Electrical System

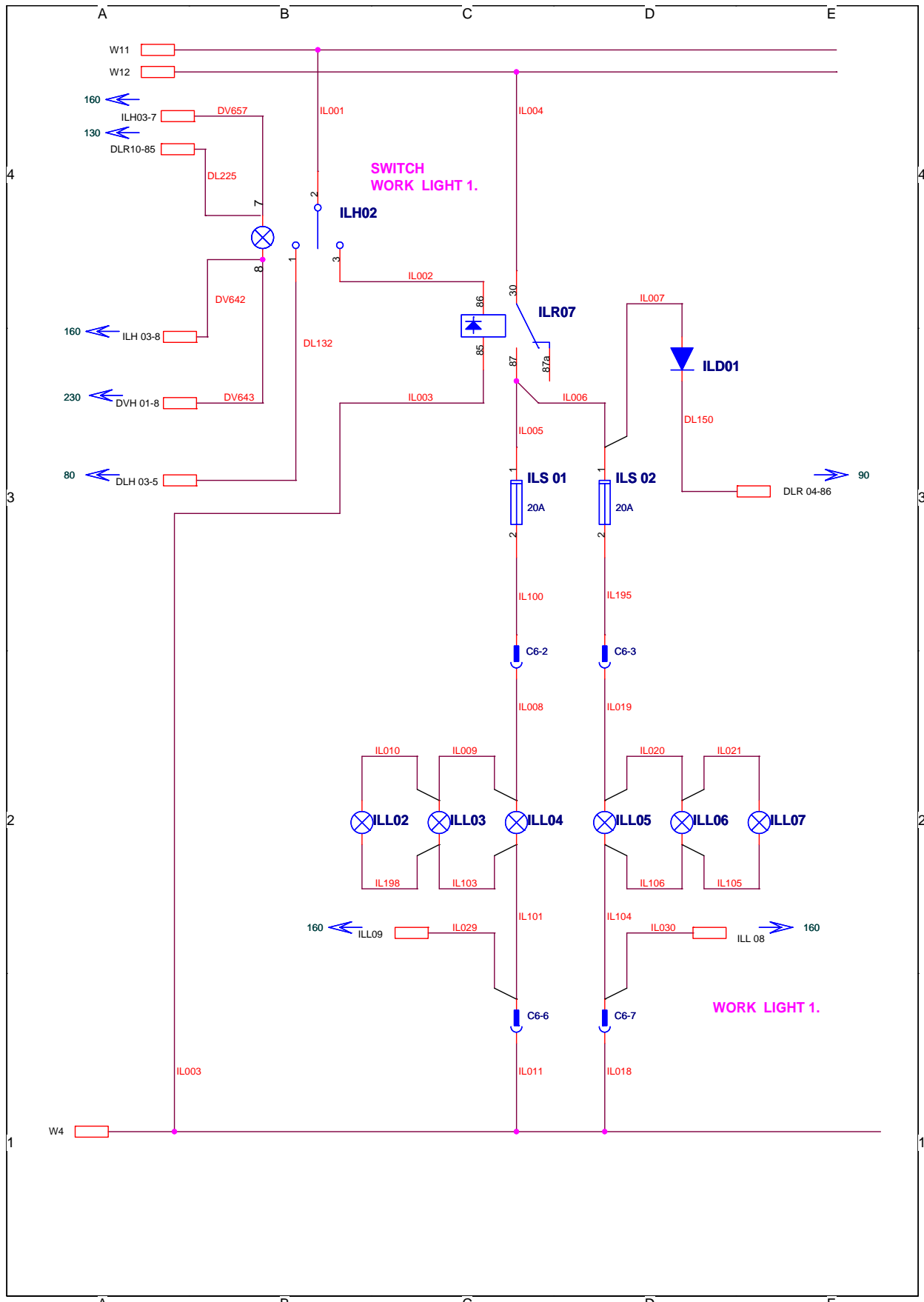


Fig. 24

150-0

12. Electrical System

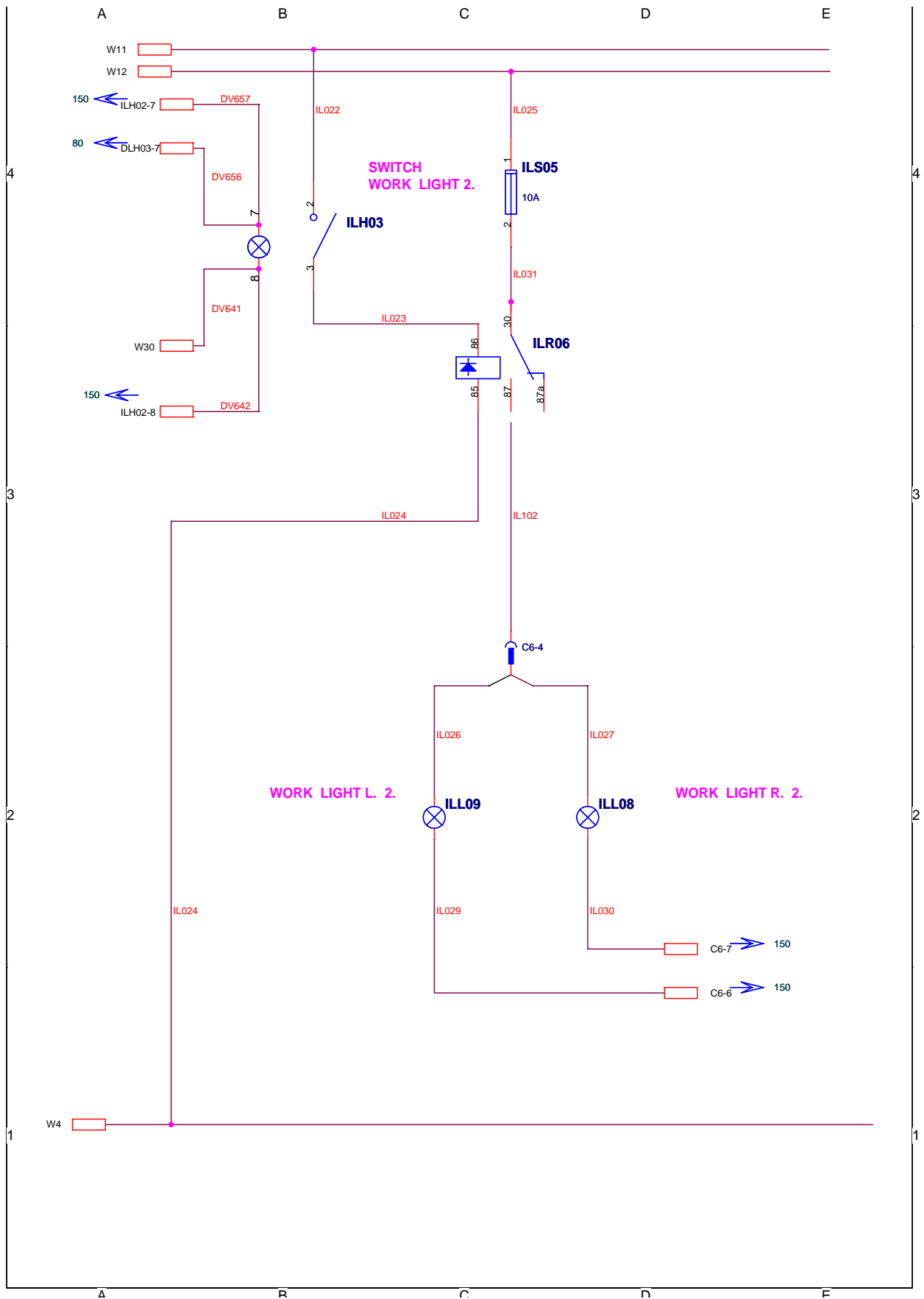


Fig. 25

160-0

12. Electrical System

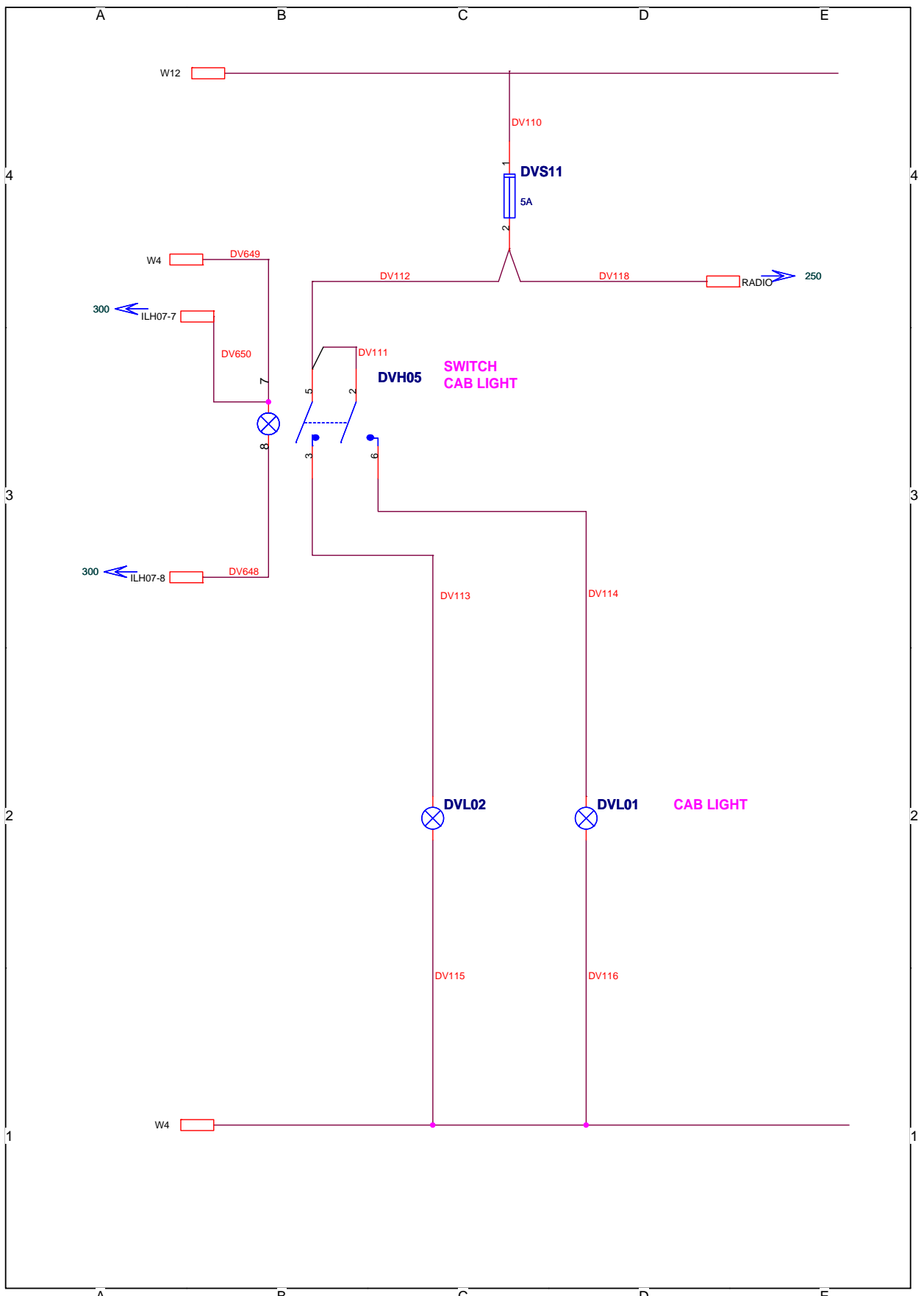


Fig. 26

170-0

12. Electrical System

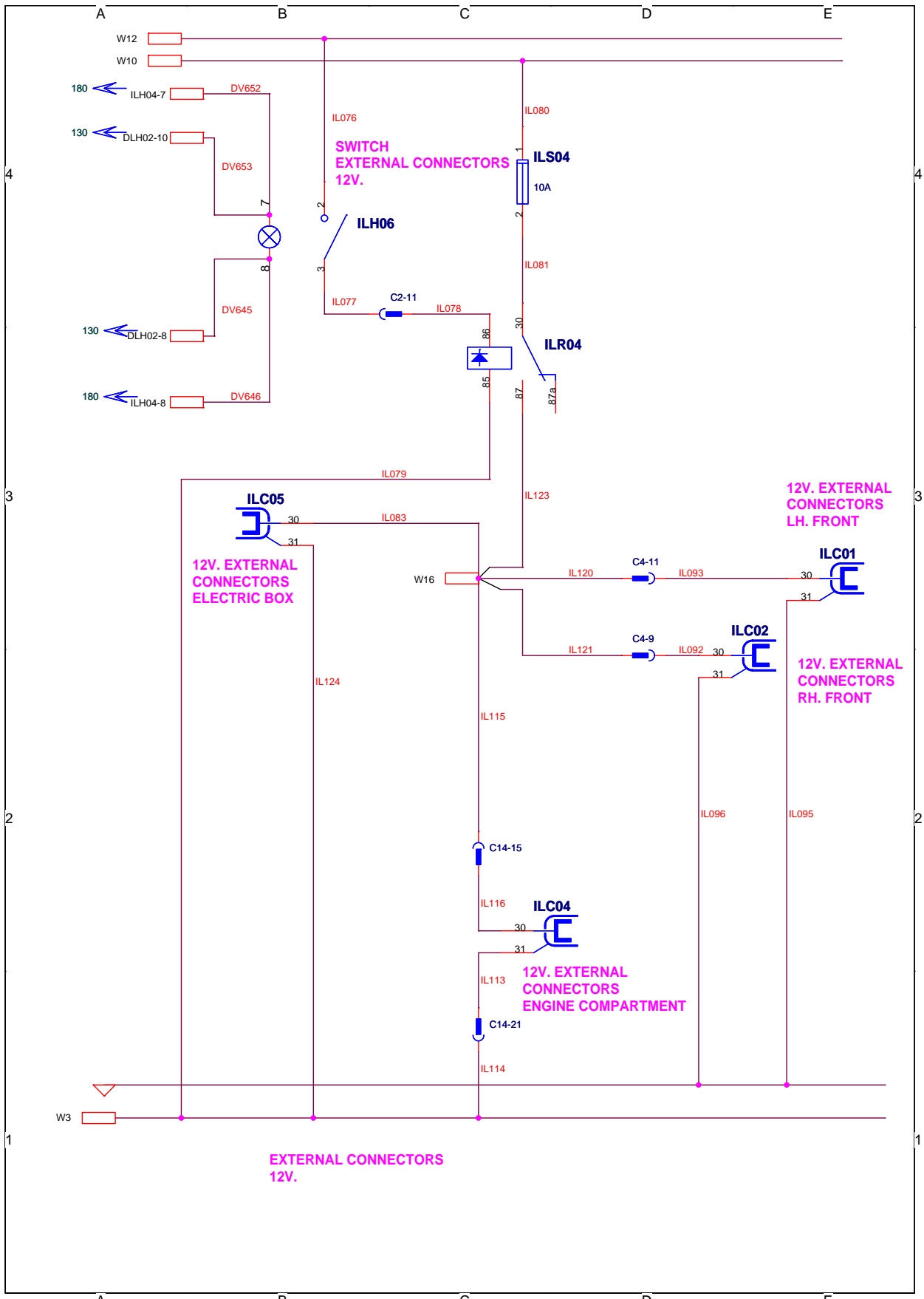


Fig. 27

200-0

12. Electrical System

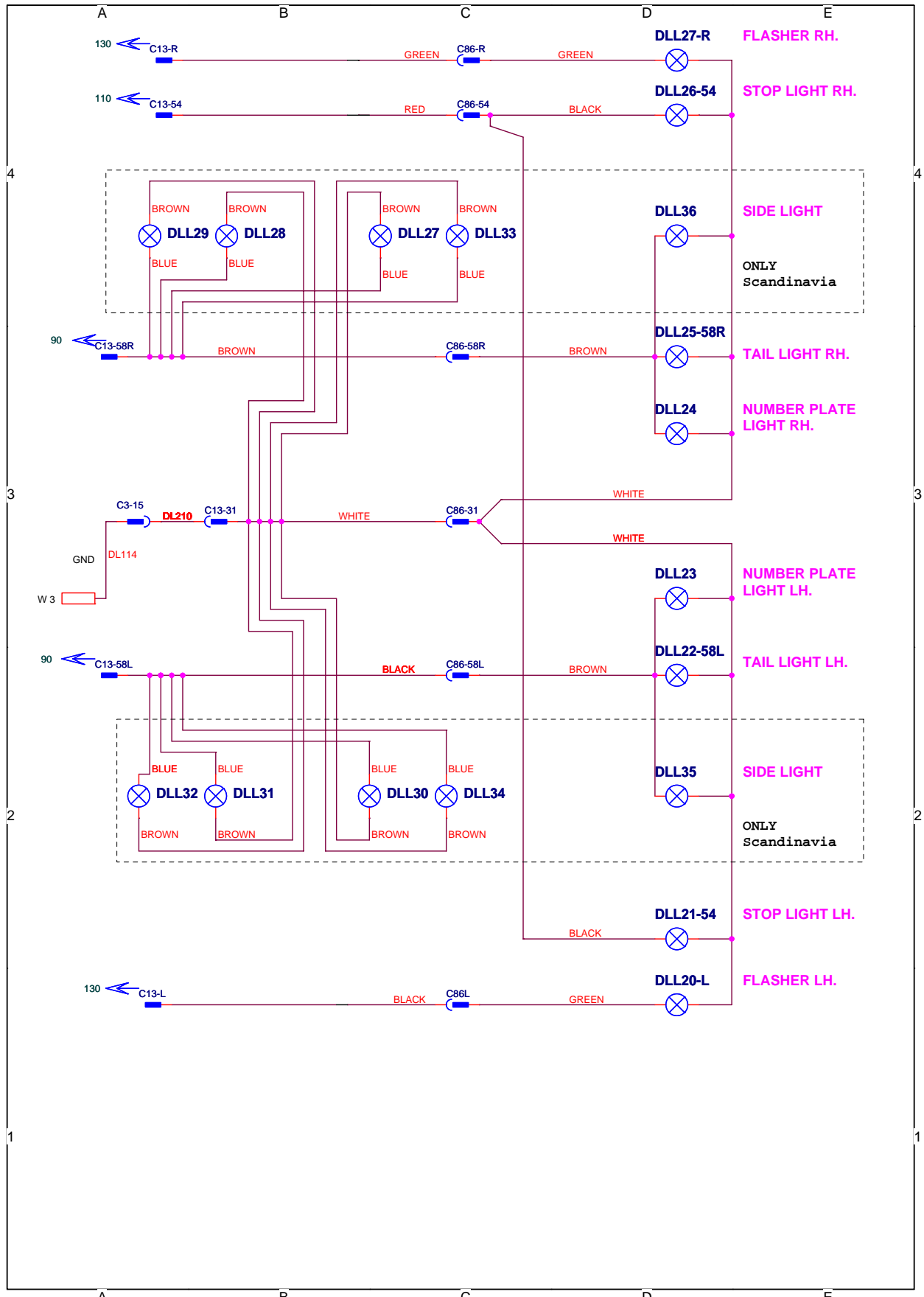


Fig. 28

210-1

12. Electrical System

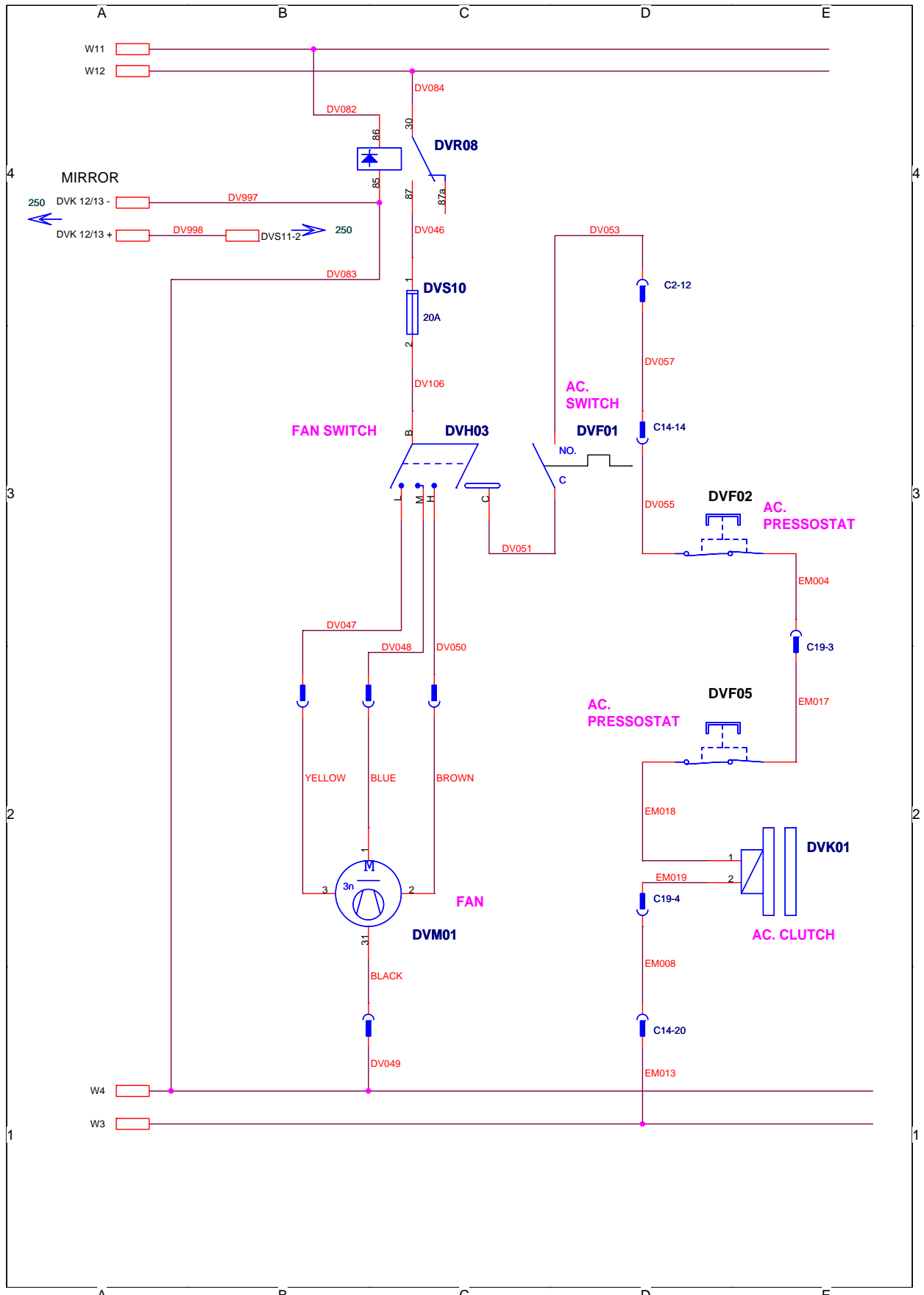


Fig. 29

220-0

12. Electrical System

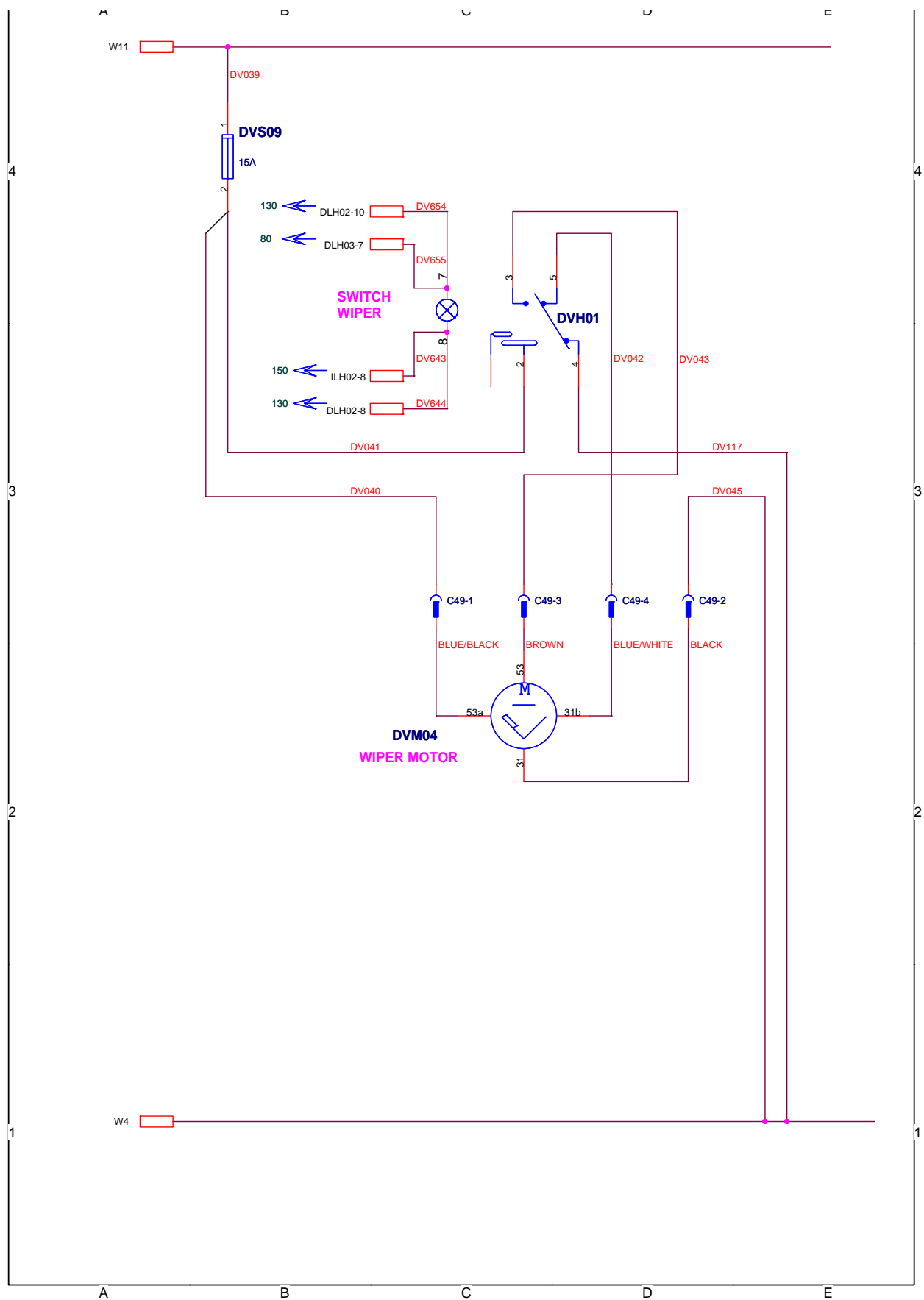


Fig. 30

230-0

12. Electrical System

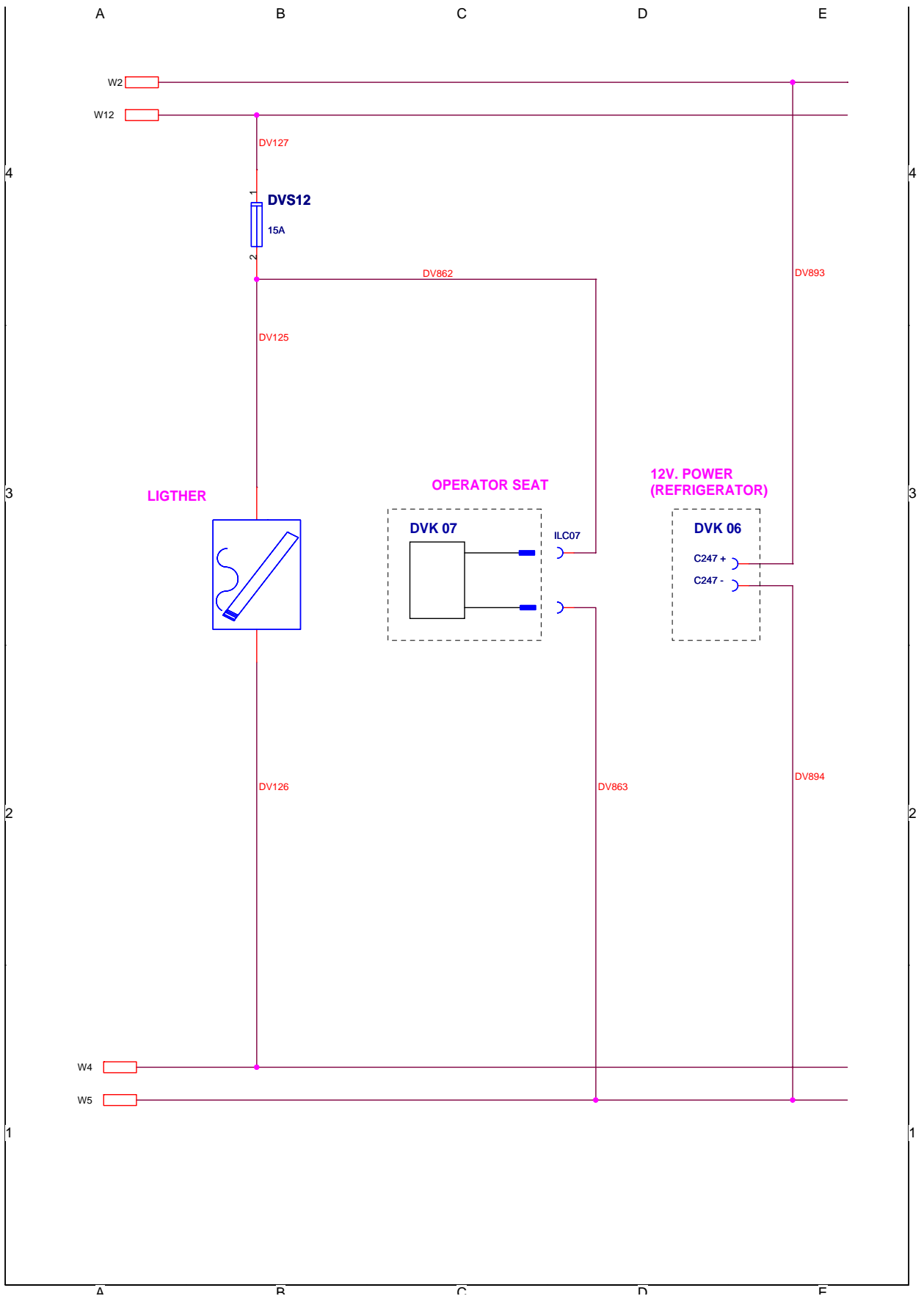


Fig. 31

240-0

12. Electrical System

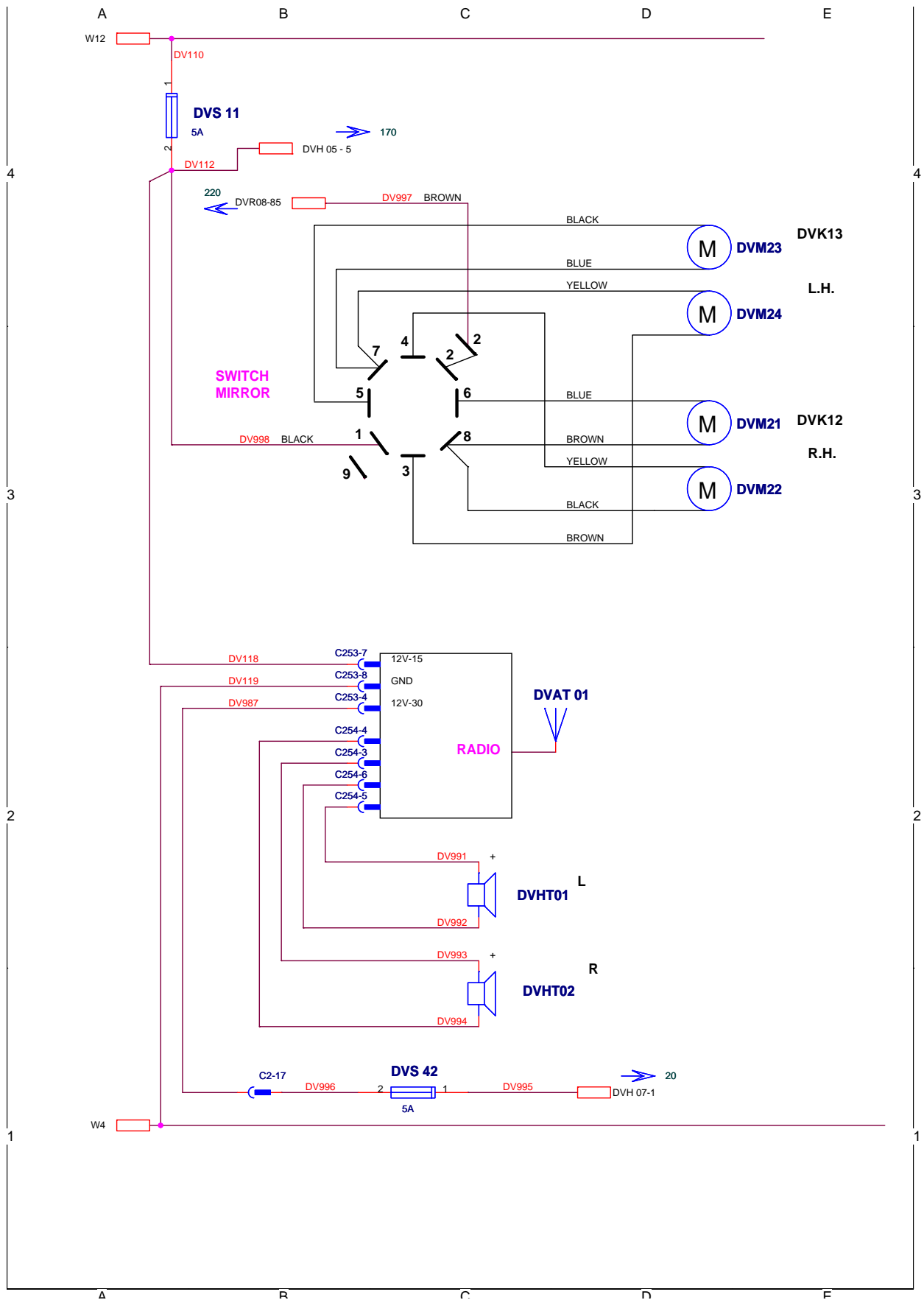


Fig. 32

250-2

12. Electrical System

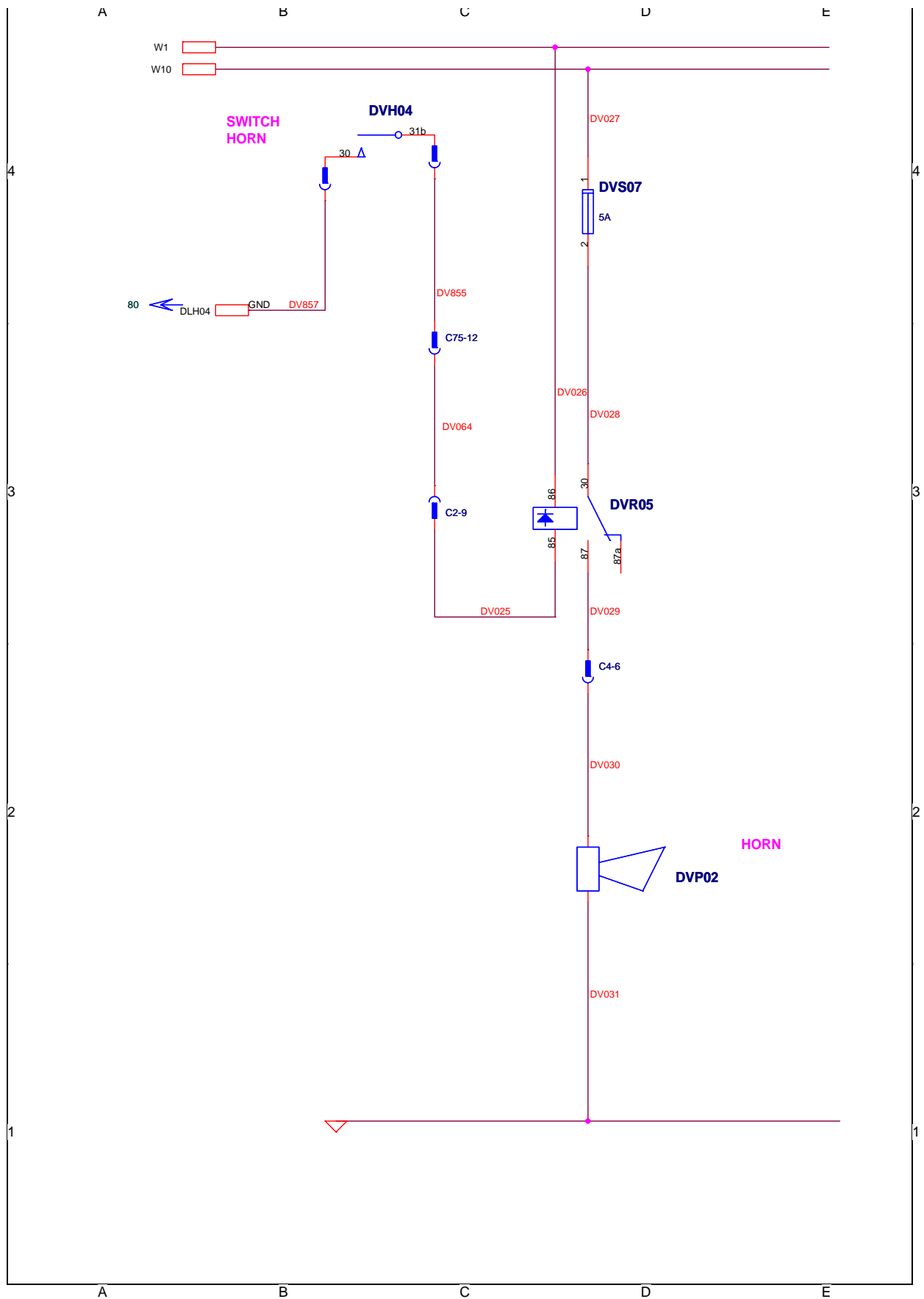


Fig. 33

260-0

12. Electrical System

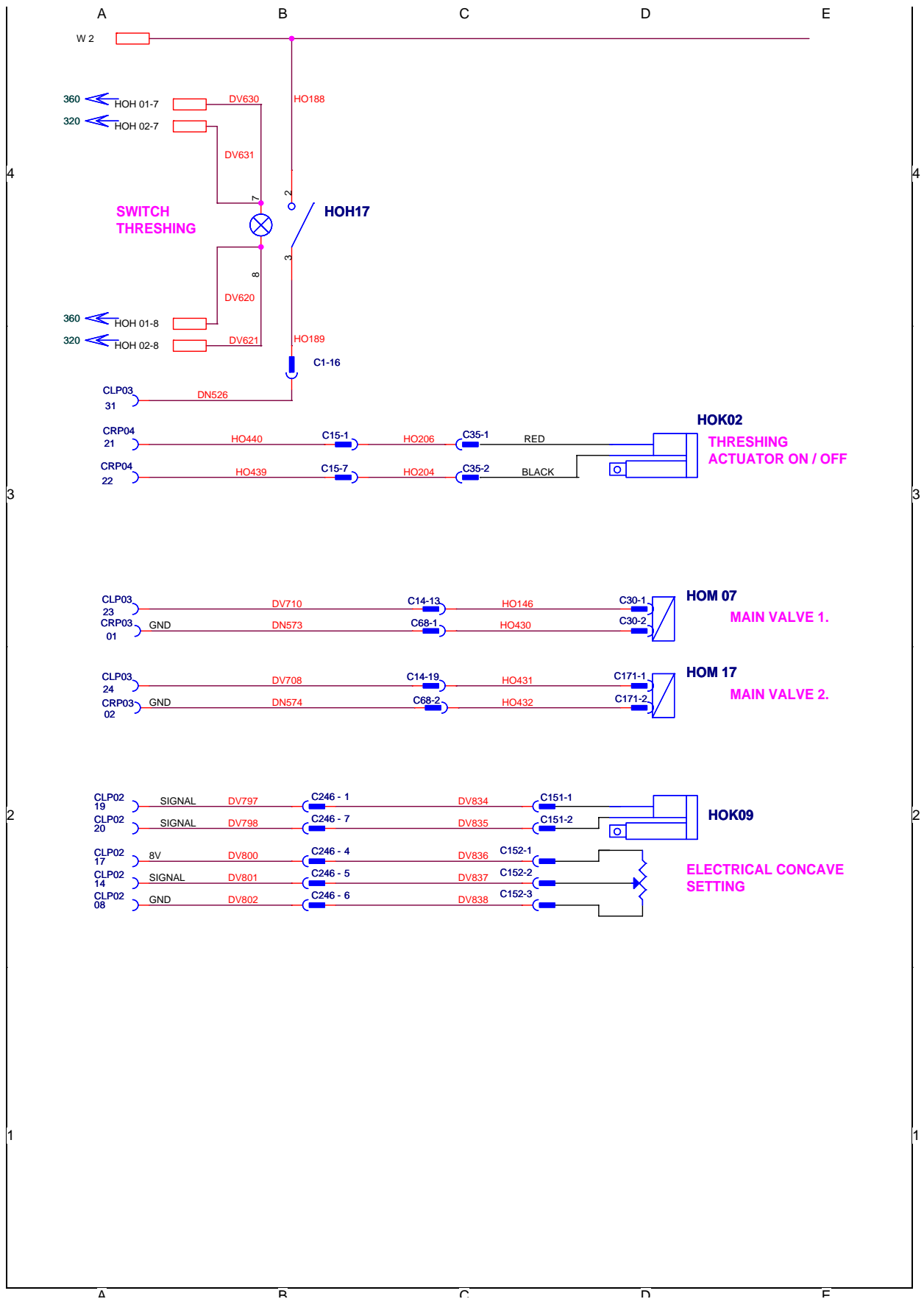


Fig. 34

270-1

12. Electrical System

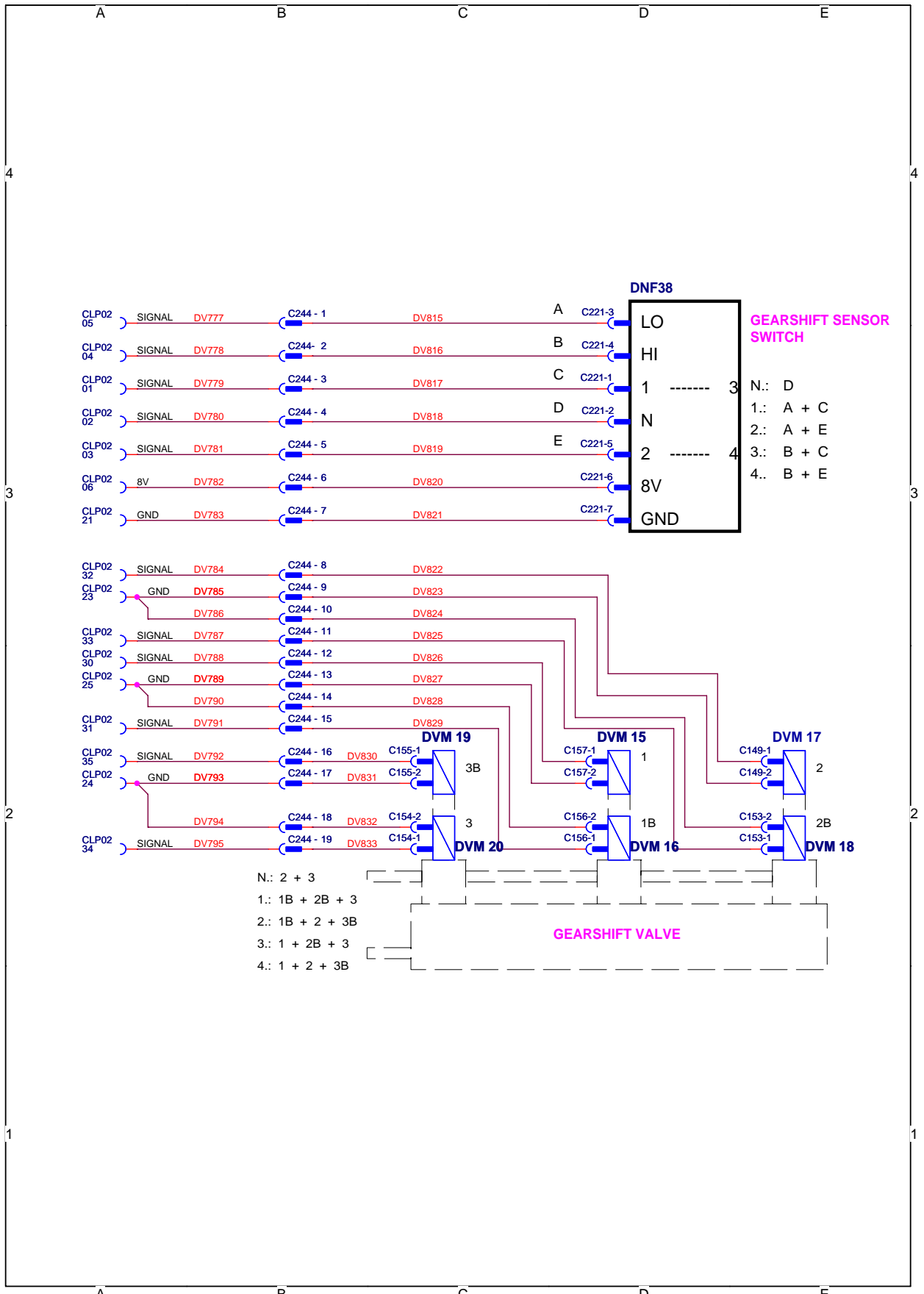


Fig. 35

280-3

12. Electrical System

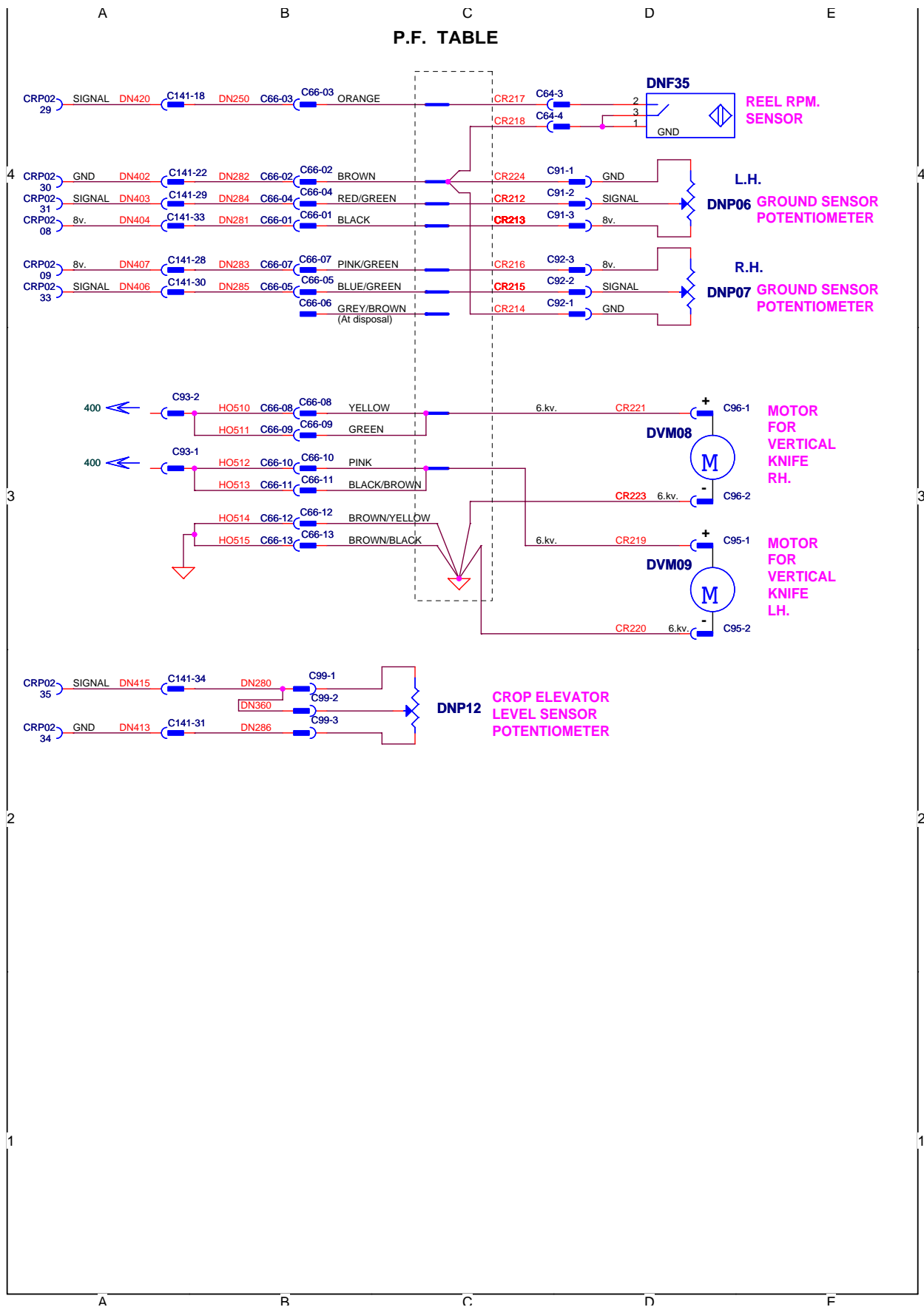


Fig. 37

310-2

12. Electrical System

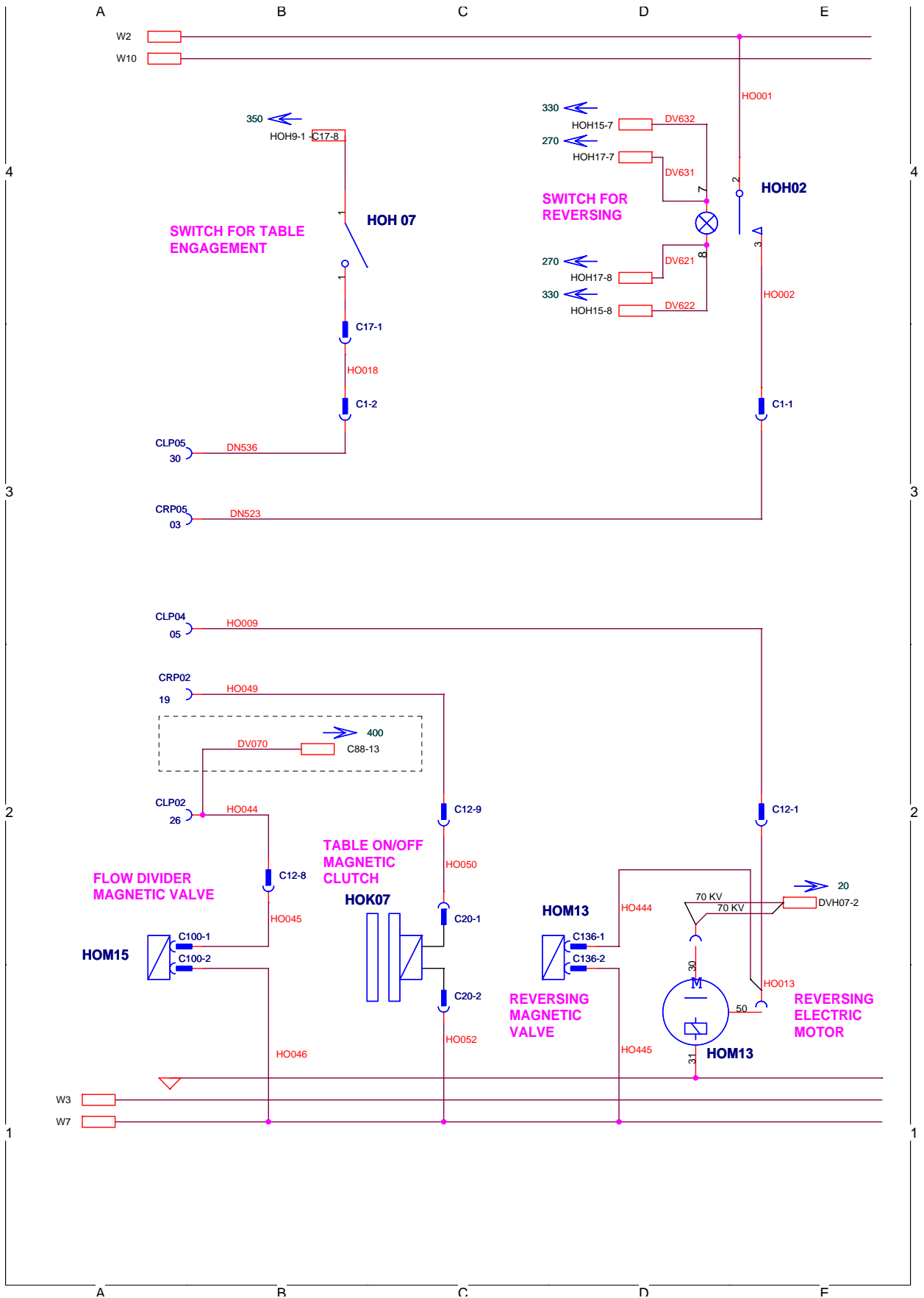


Fig. 38

320-0

12. Electrical System

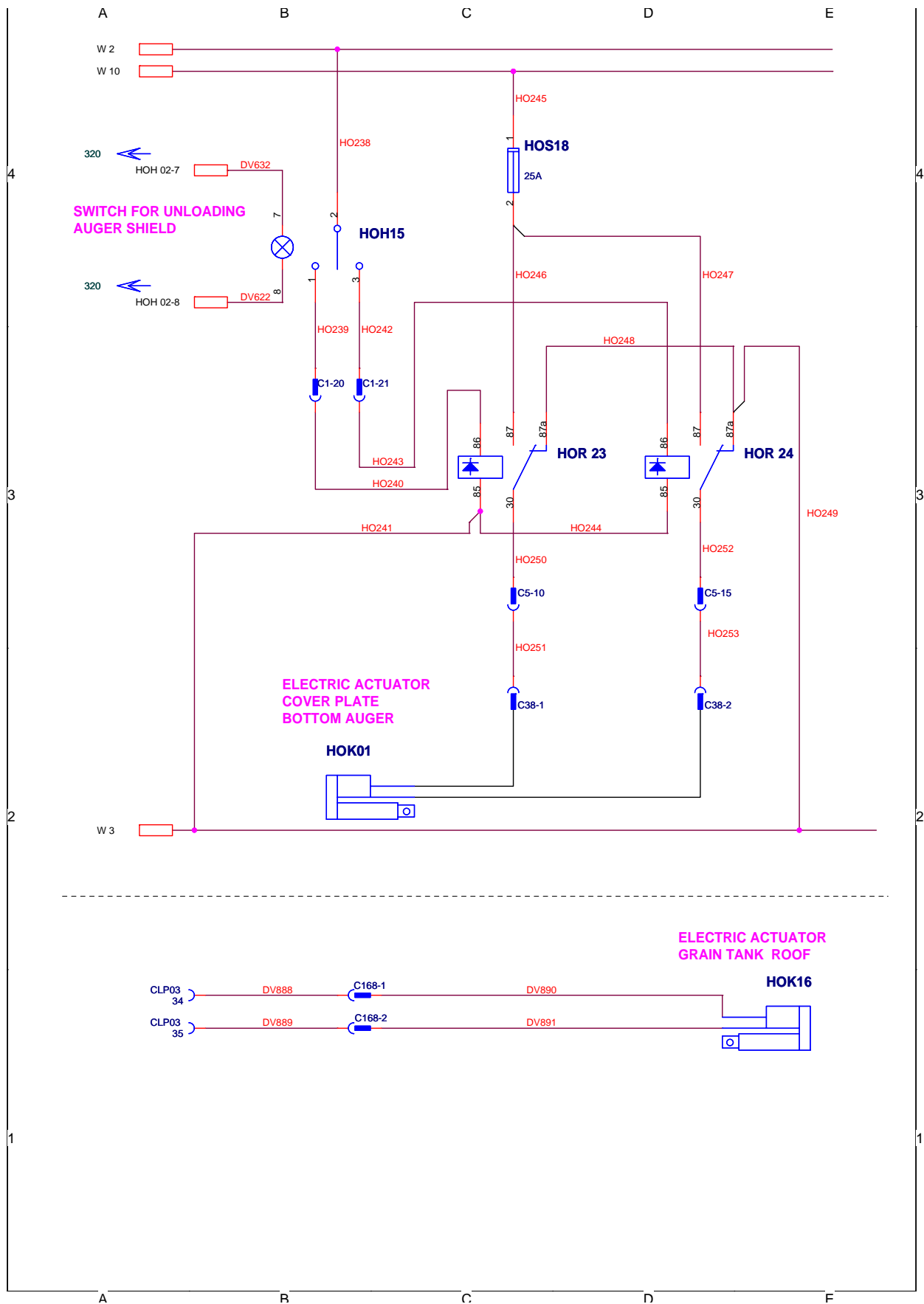


Fig. 39

330-0

12. Electrical System

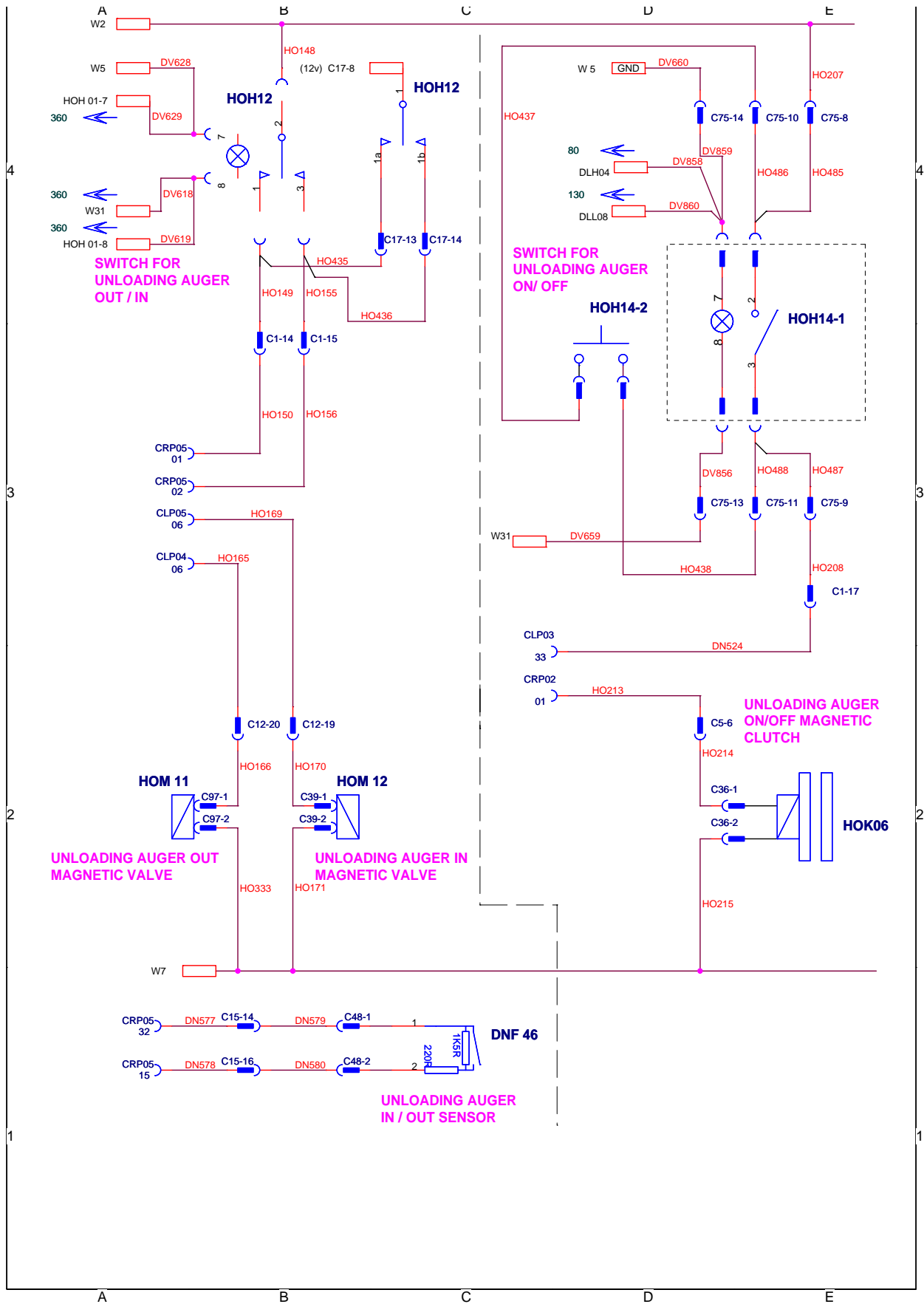


Fig. 40

340-0

12. Electrical System

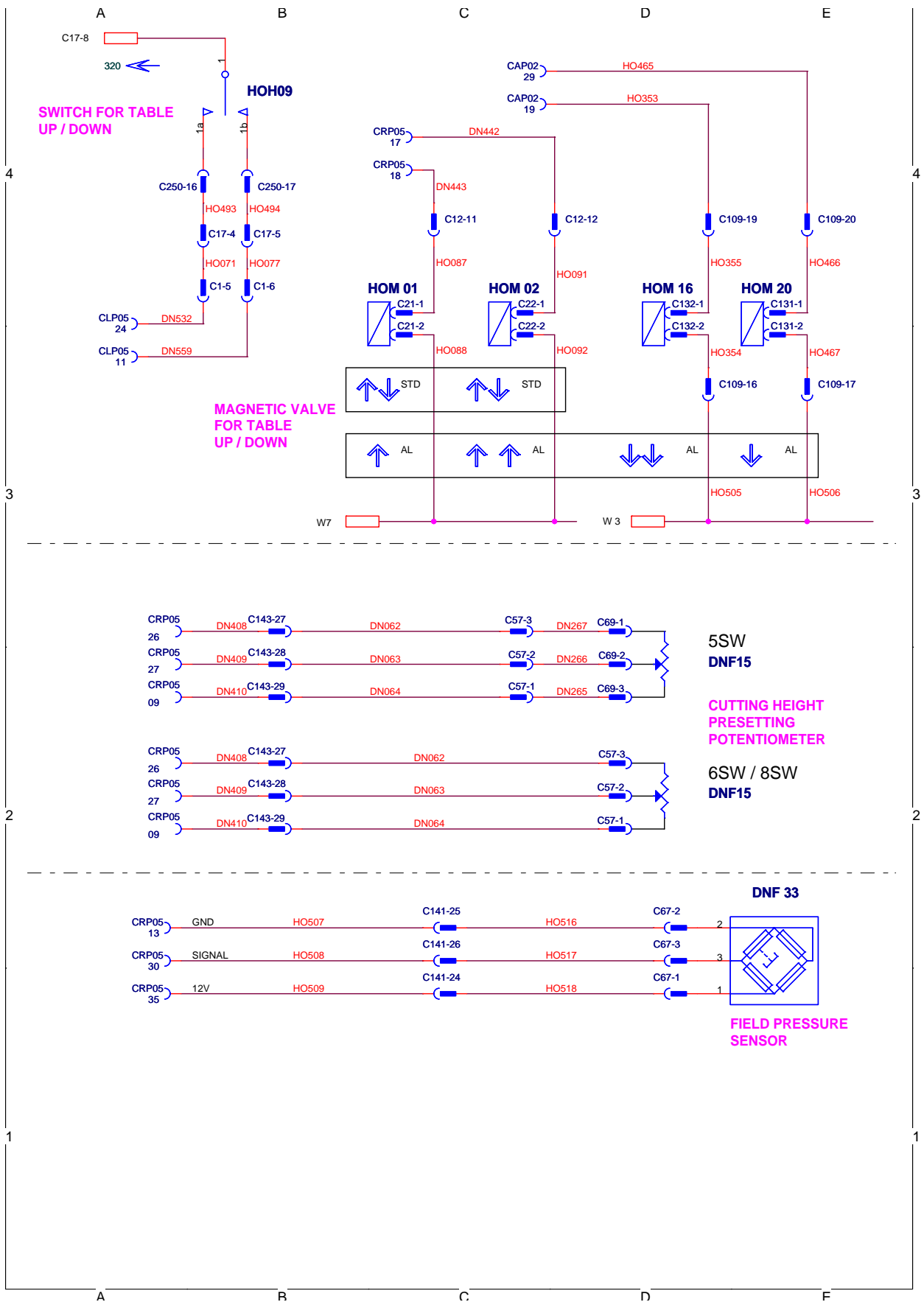


Fig. 41

350-3

12. Electrical System

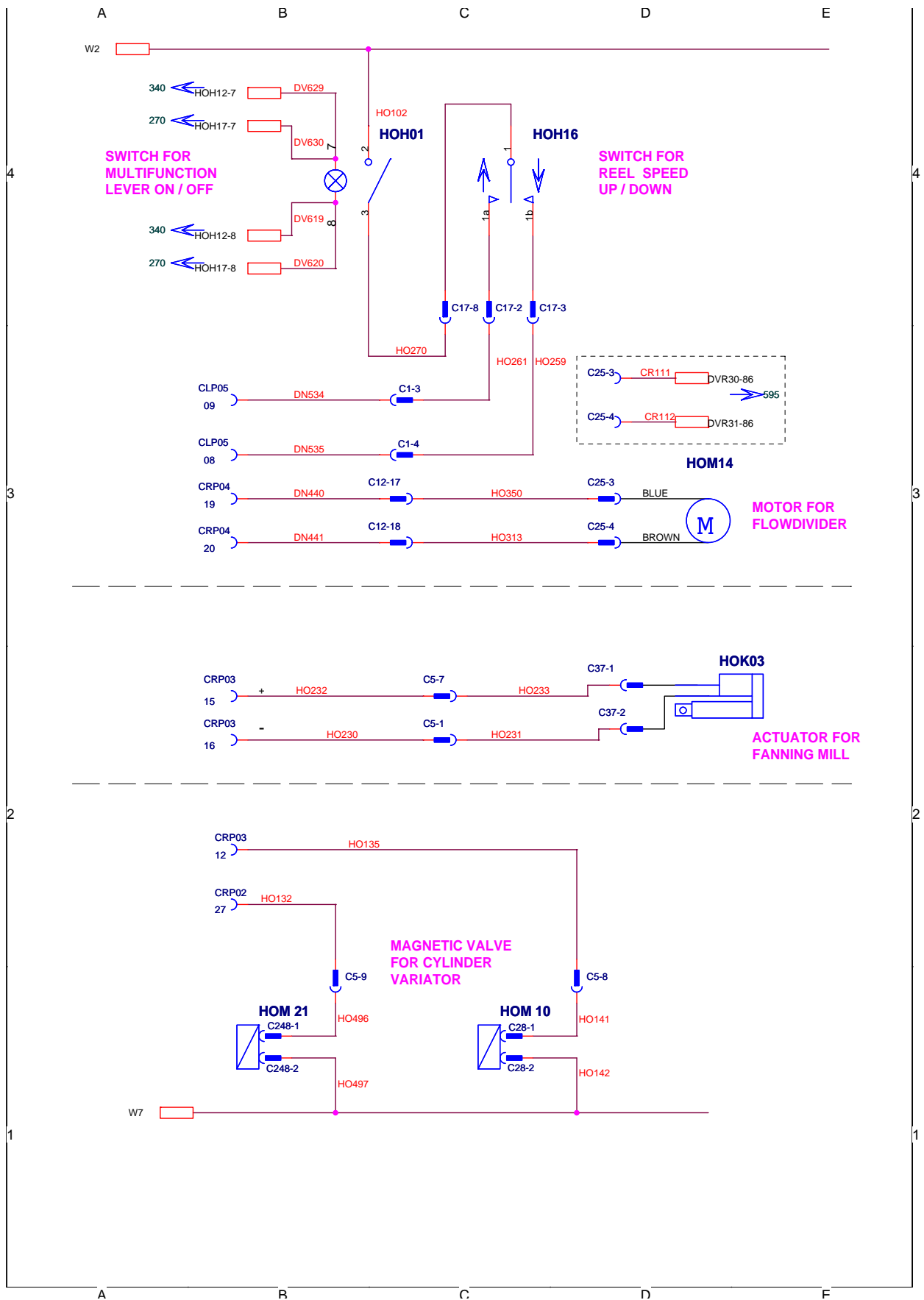


Fig. 42

360-0

12. Electrical System

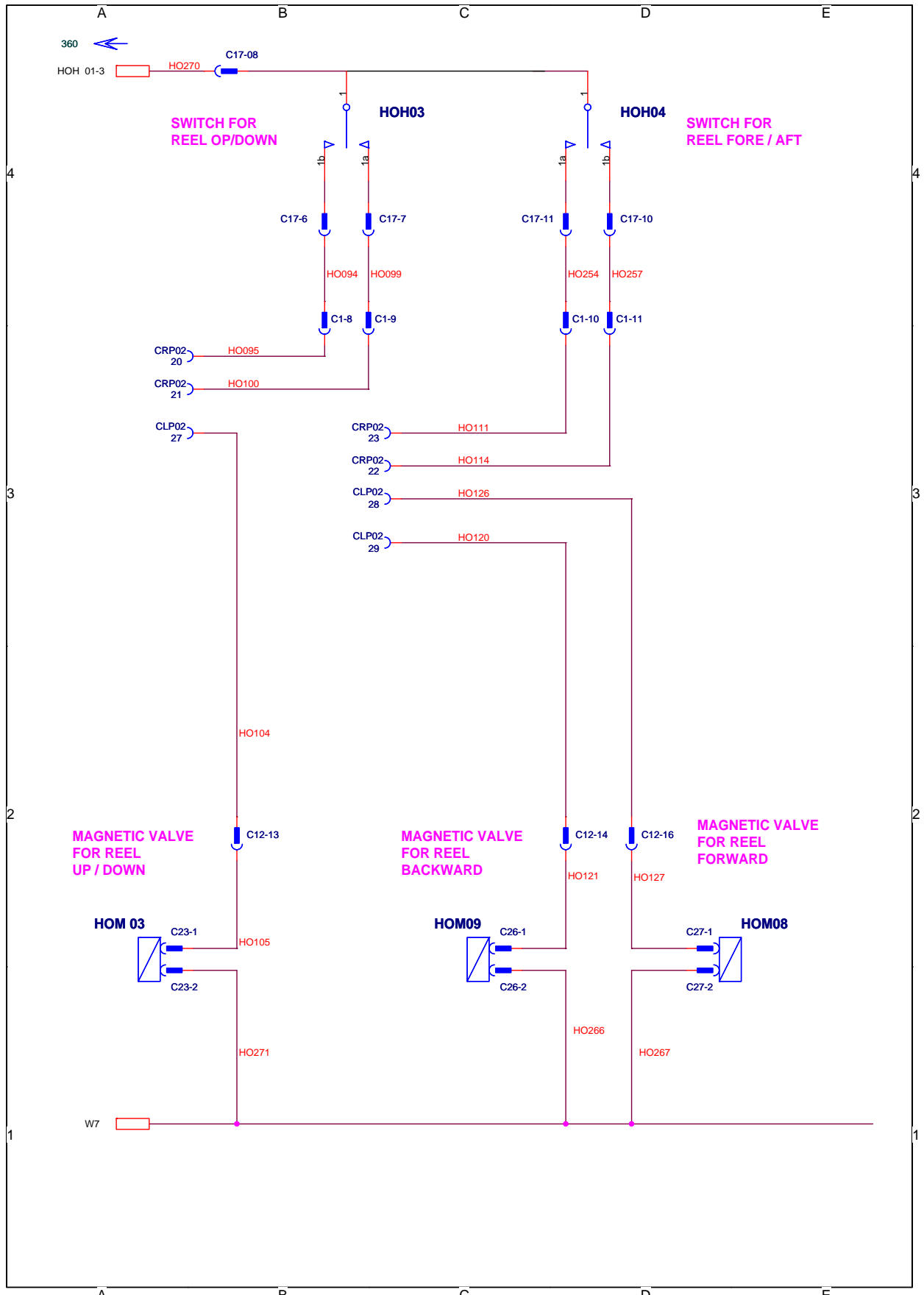


Fig. 43

370-0

12. Electrical System

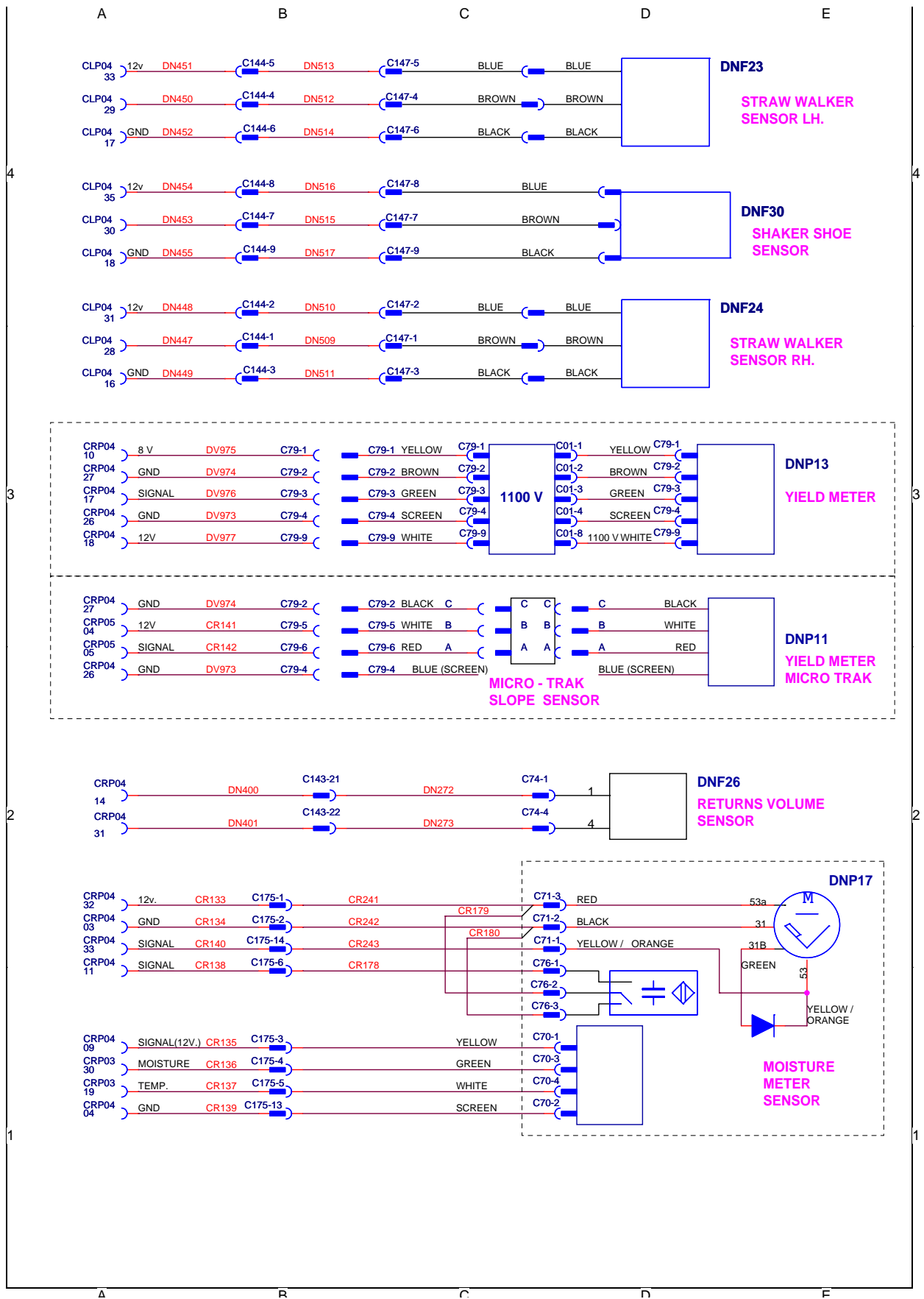


Fig. 44

380-2

12. Electrical System

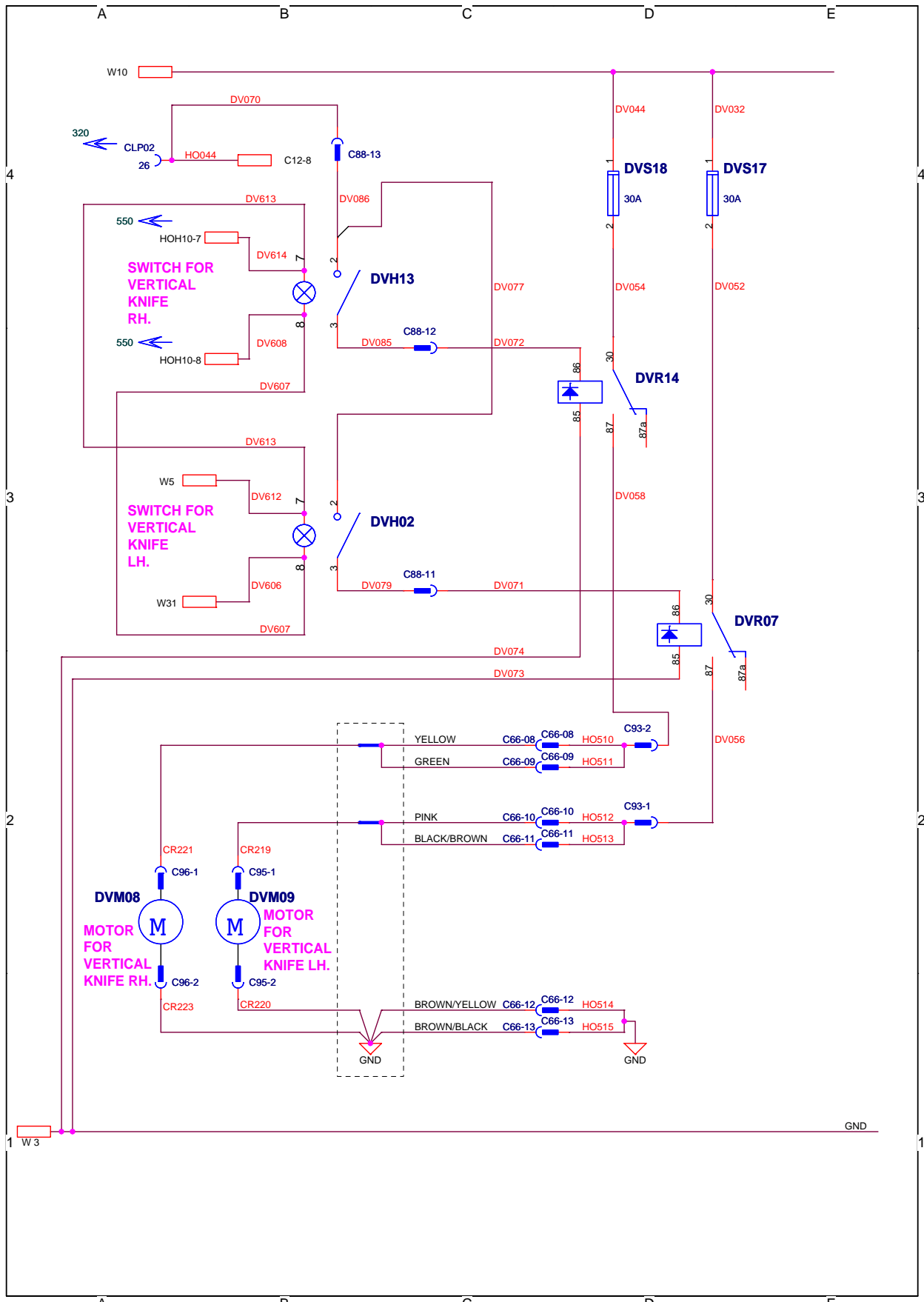


Fig. 45

400-1

12. Electrical System

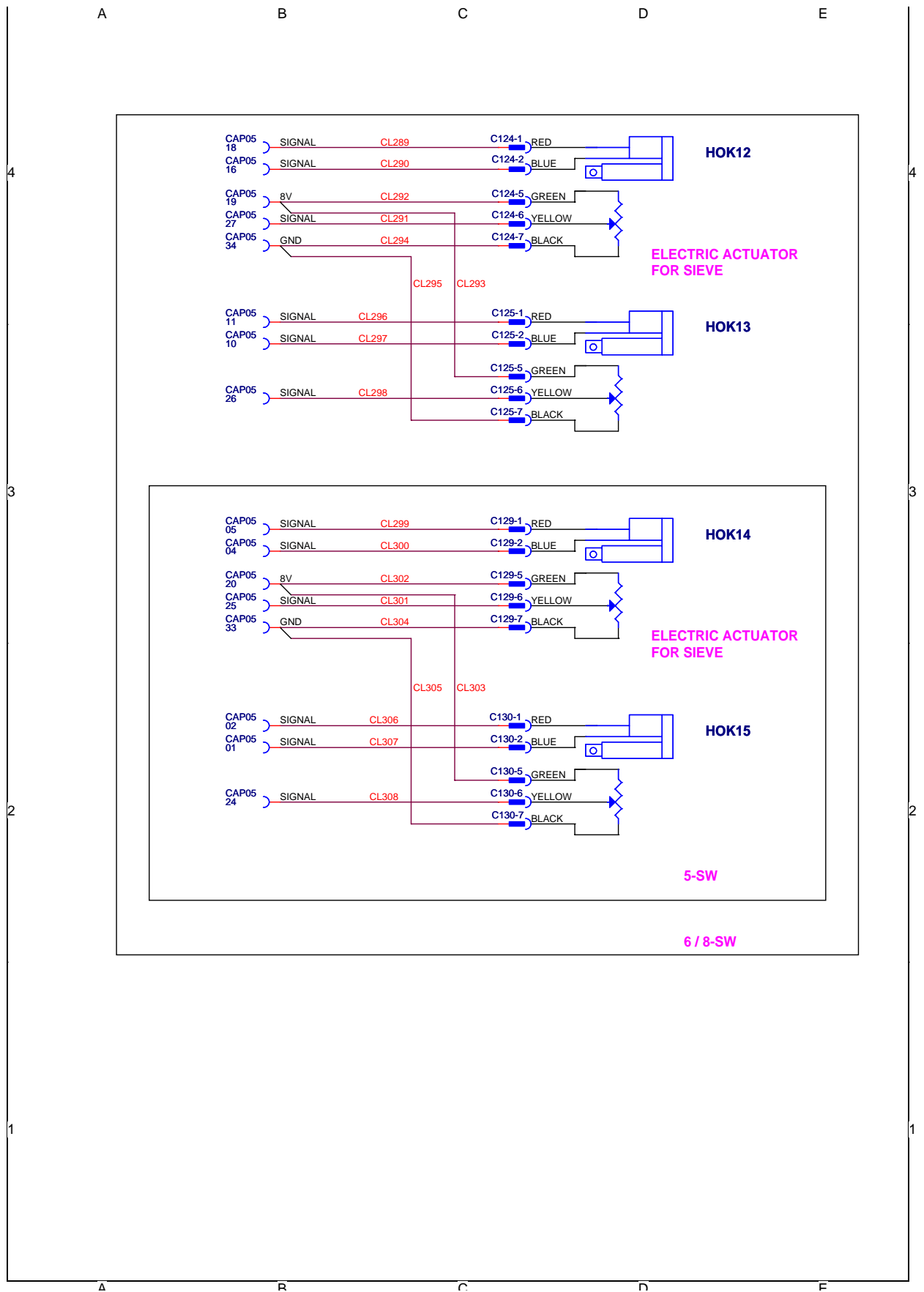


Fig. 46

410-0

12. Electrical System

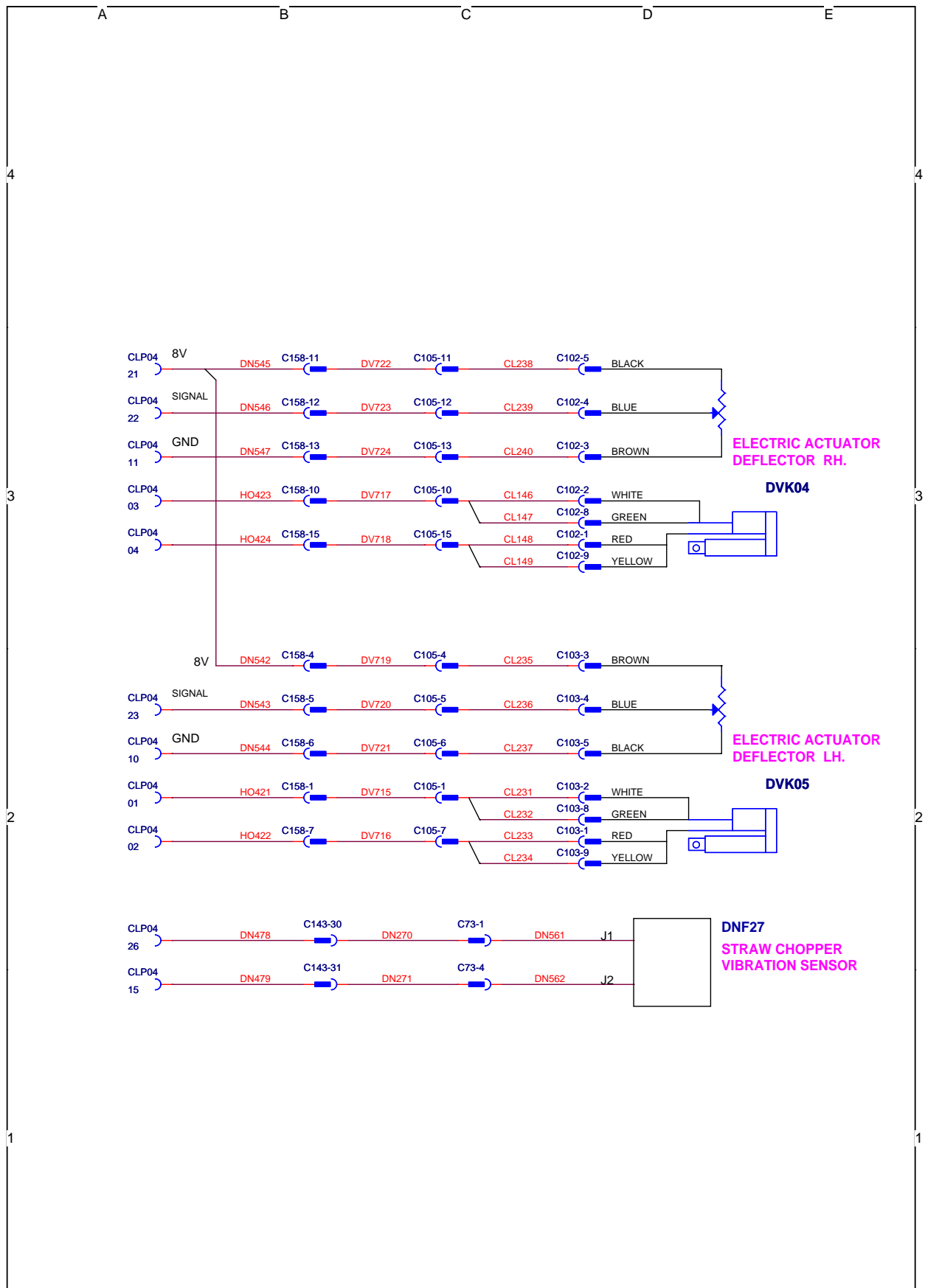


Fig. 47

420-0

12. Electrical System

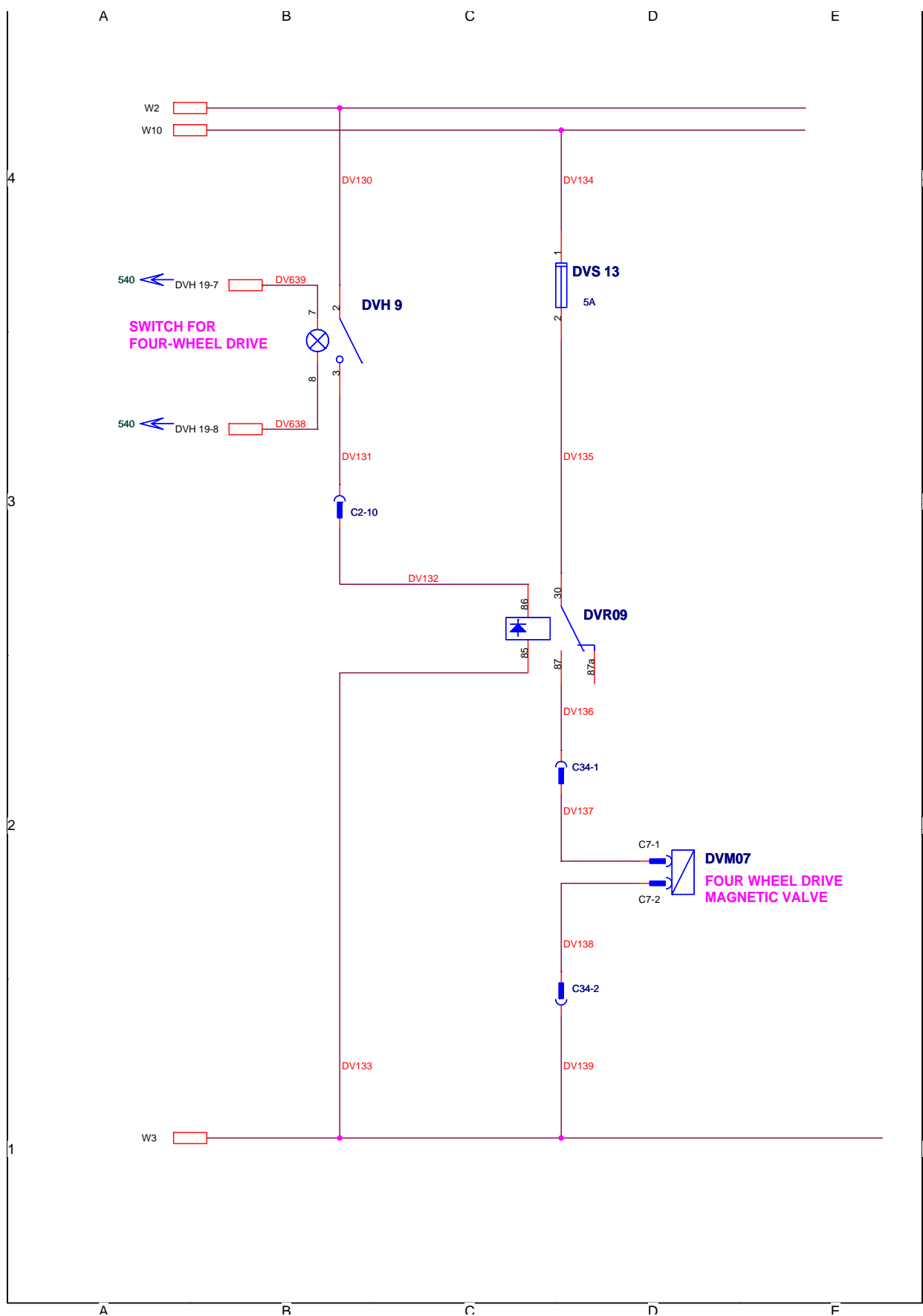


Fig. 48

430-0

12. Electrical System

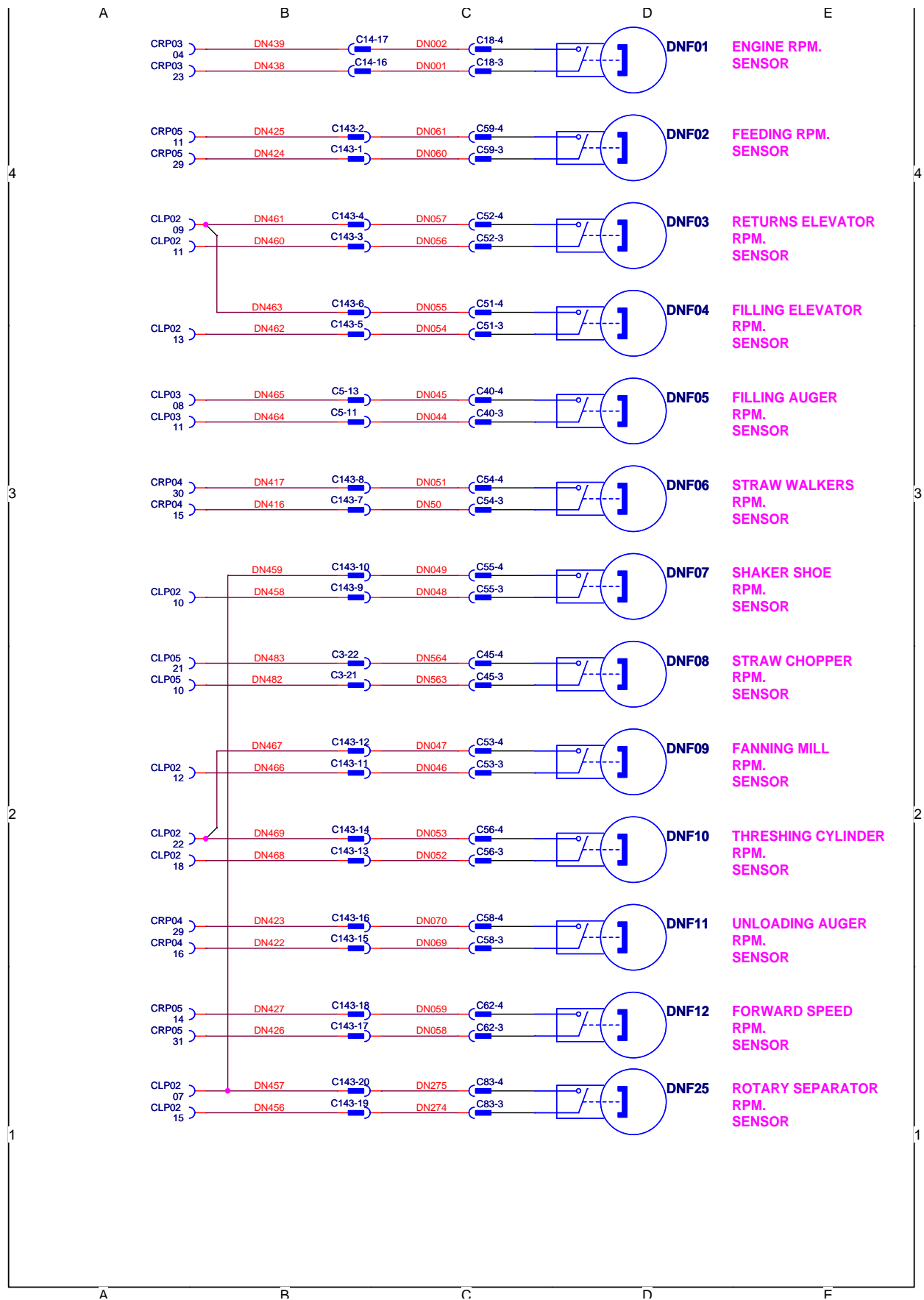


Fig. 49

510-1

12. Electrical System

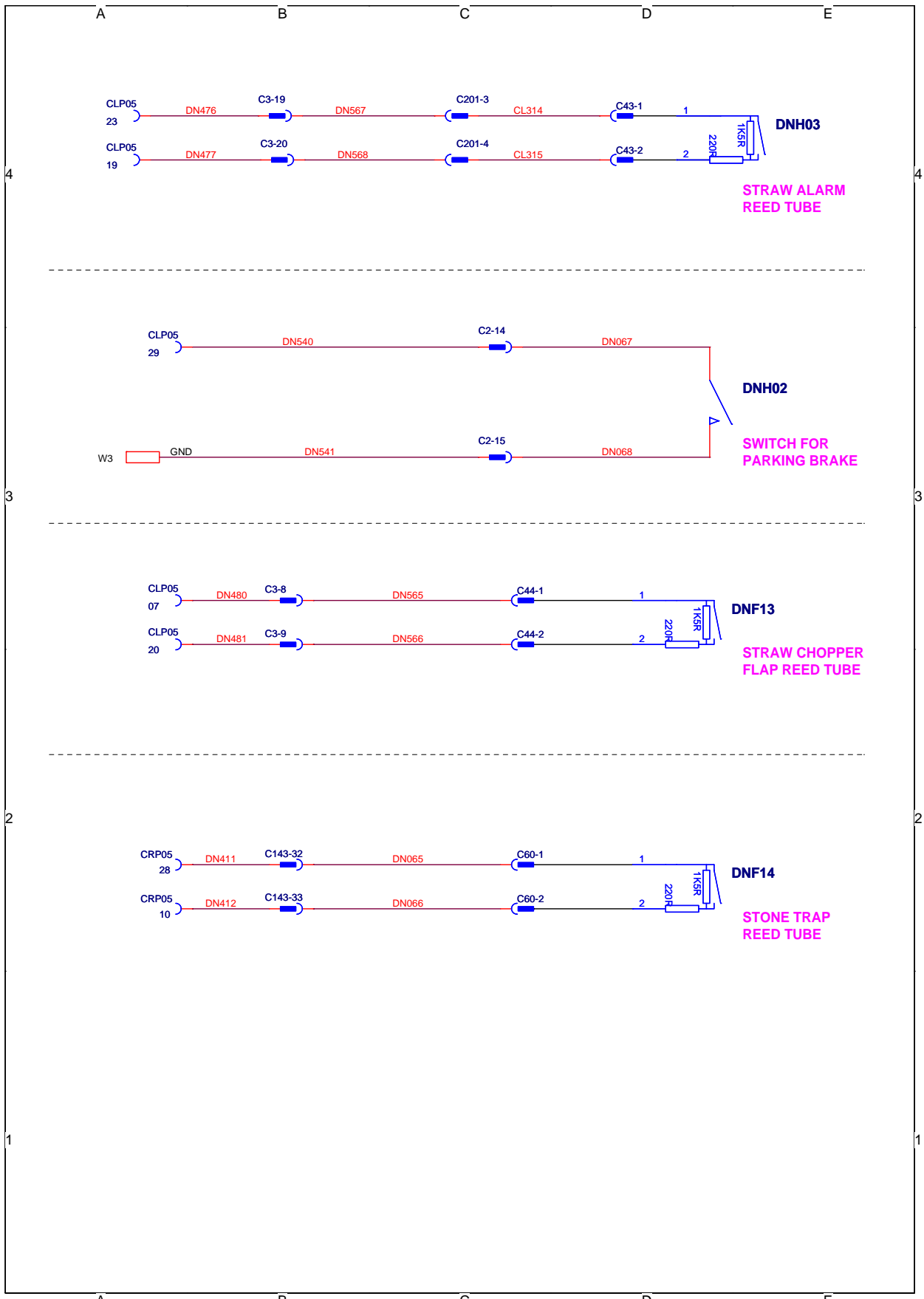


Fig. 50

520-0

12. Electrical System

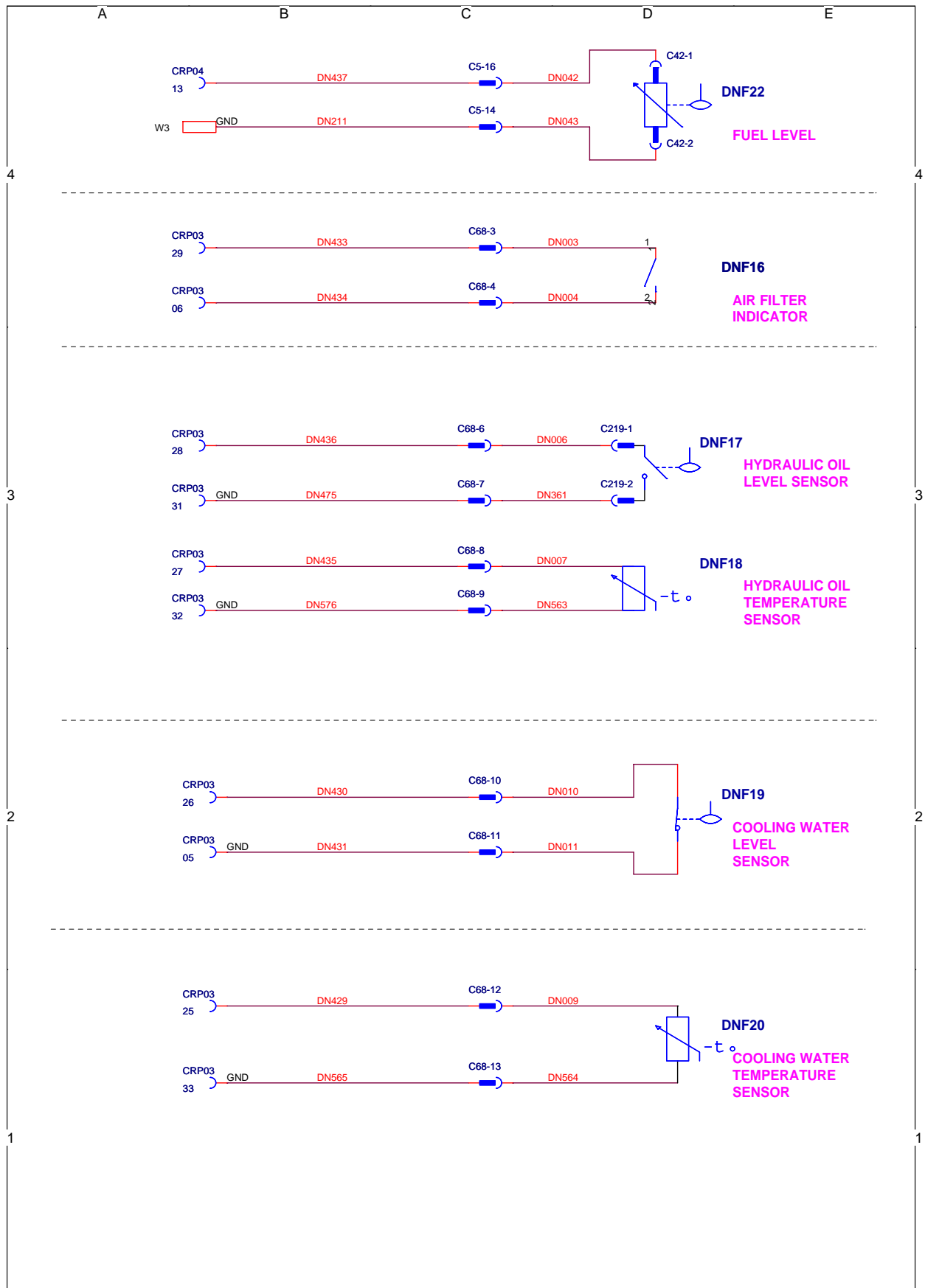


Fig. 51

530-2

12. Electrical System

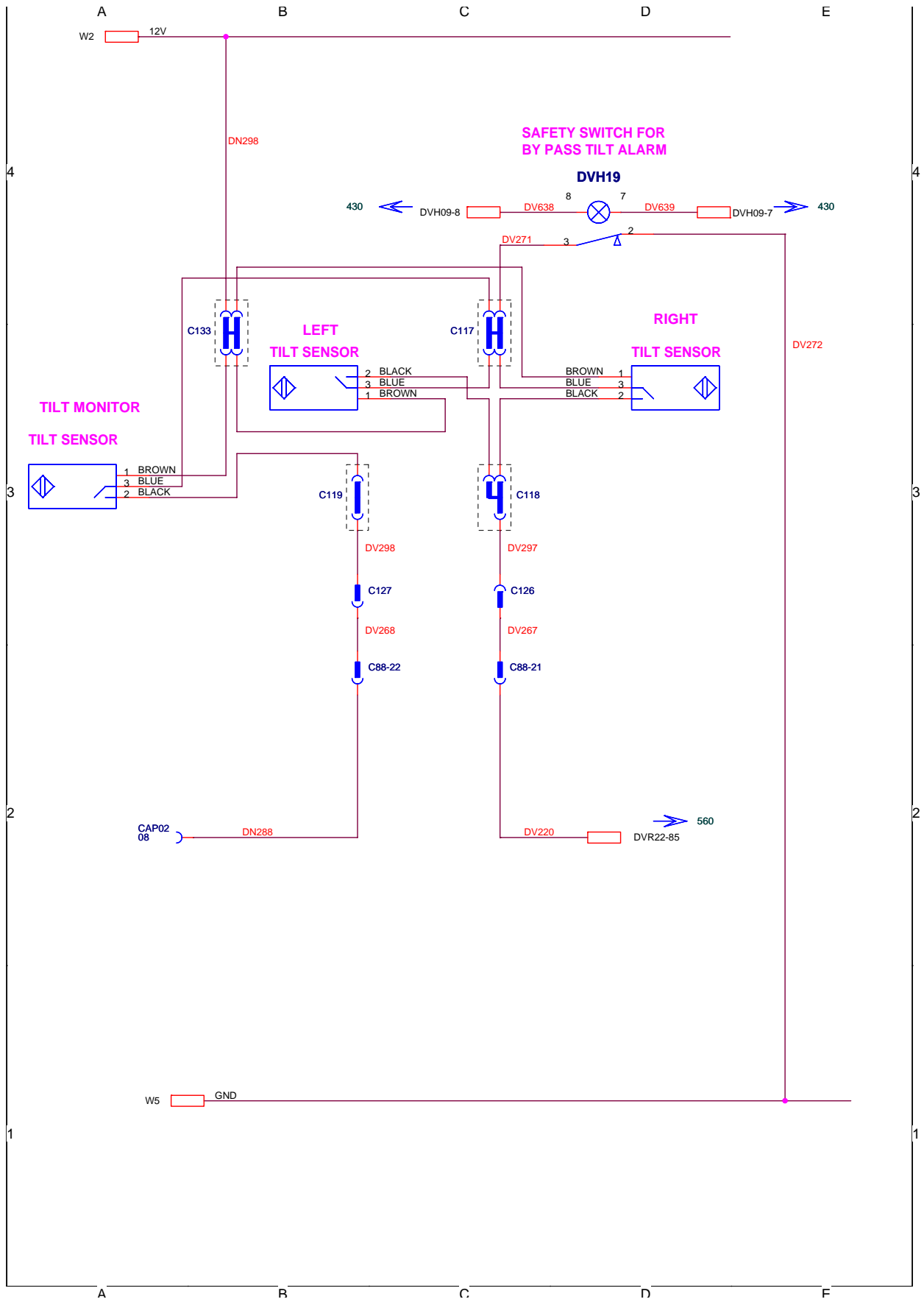


Fig. 52

540-0

12. Electrical System

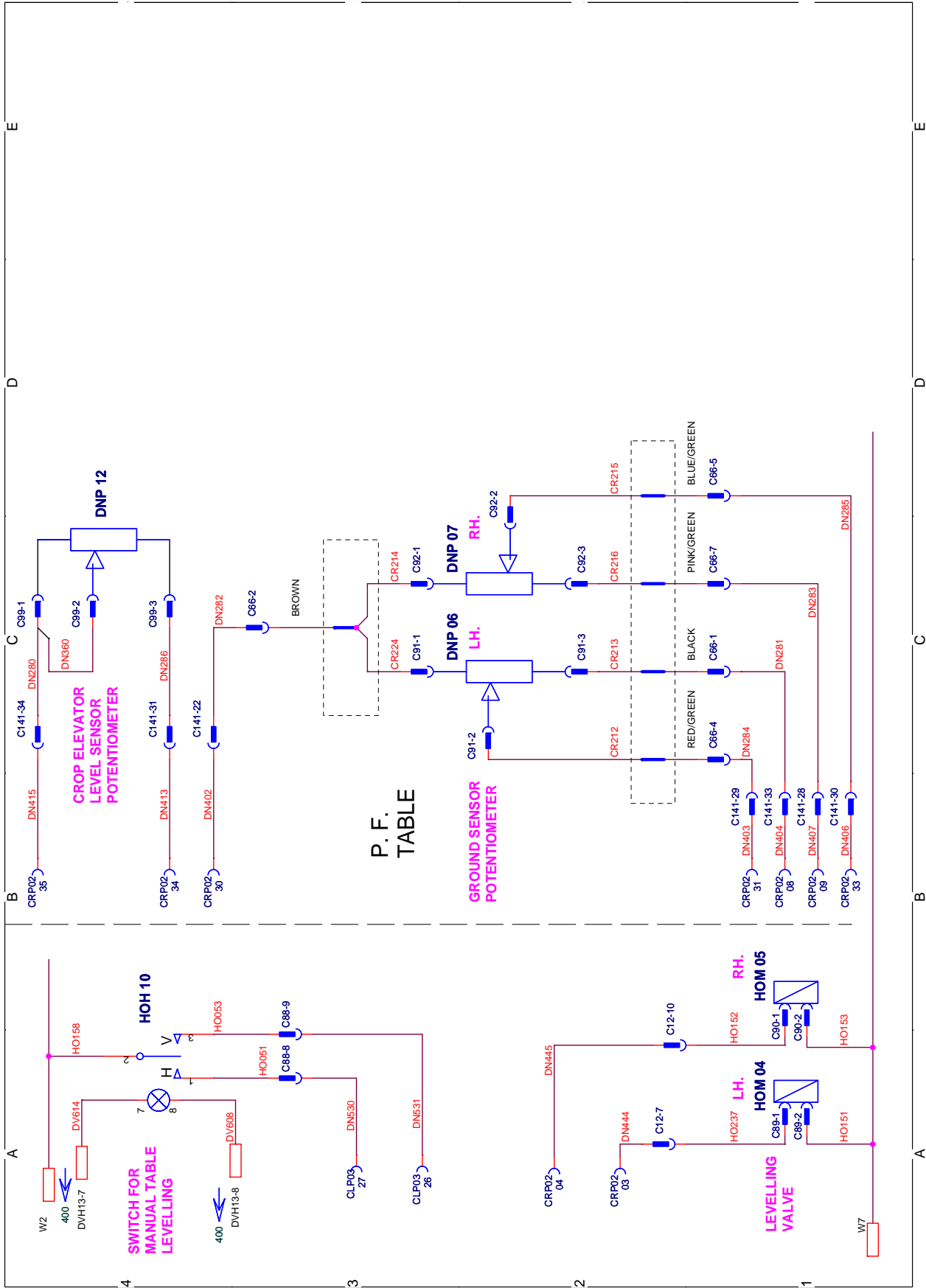


Fig. 53

550-1

12. Electrical System

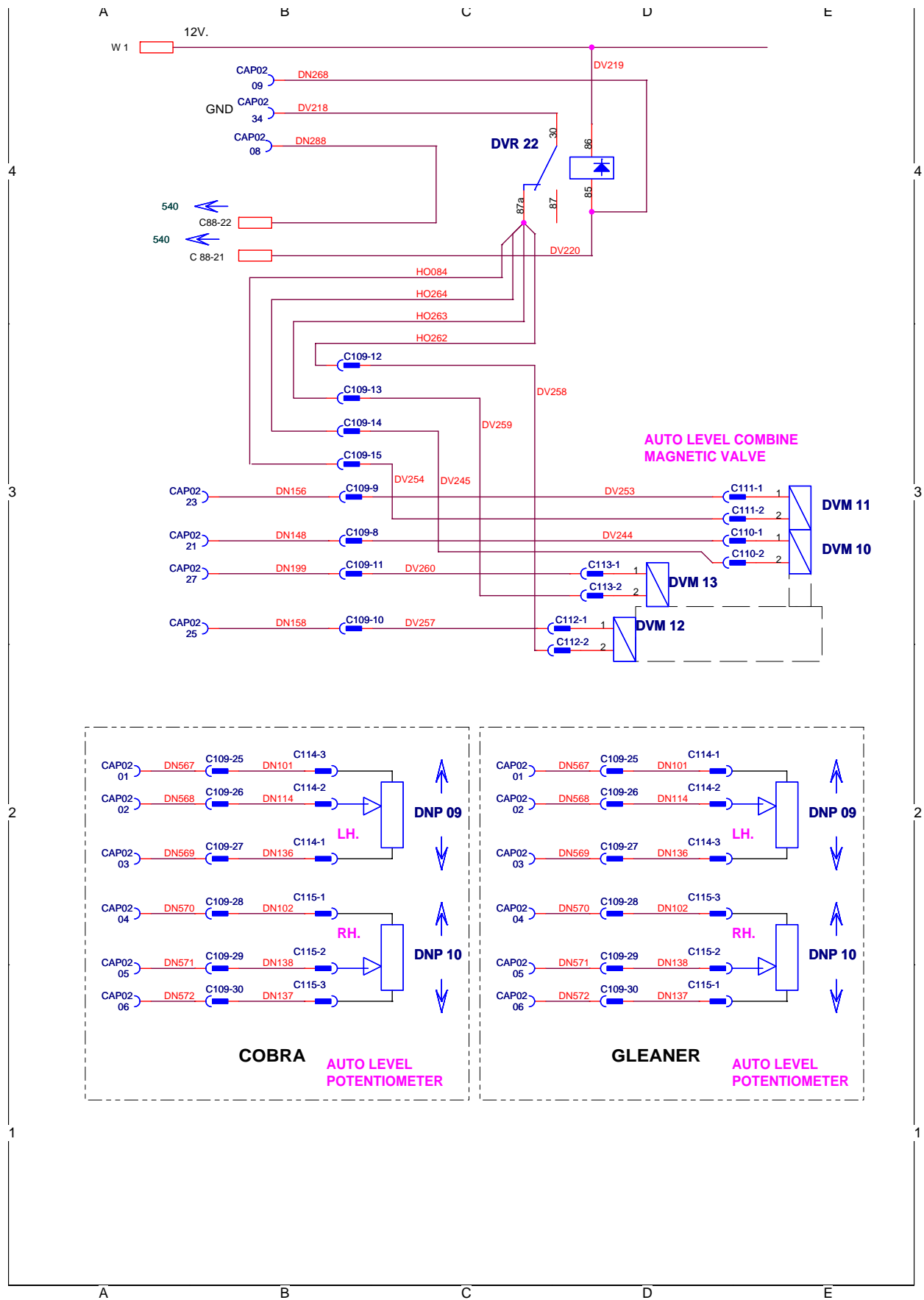


Fig. 54

560-0

12. Electrical System

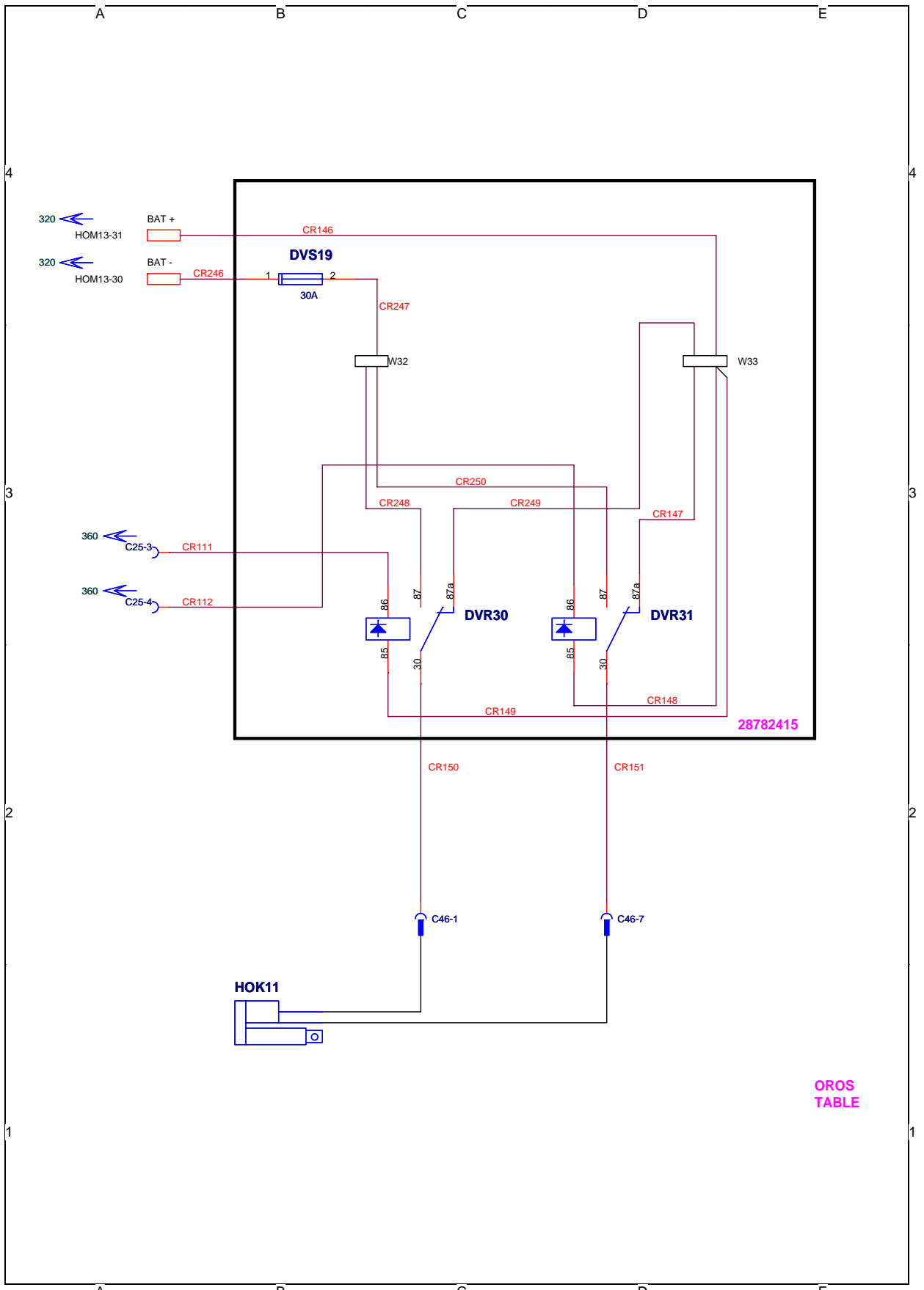


Fig. 55

595-0

12. Electrical System

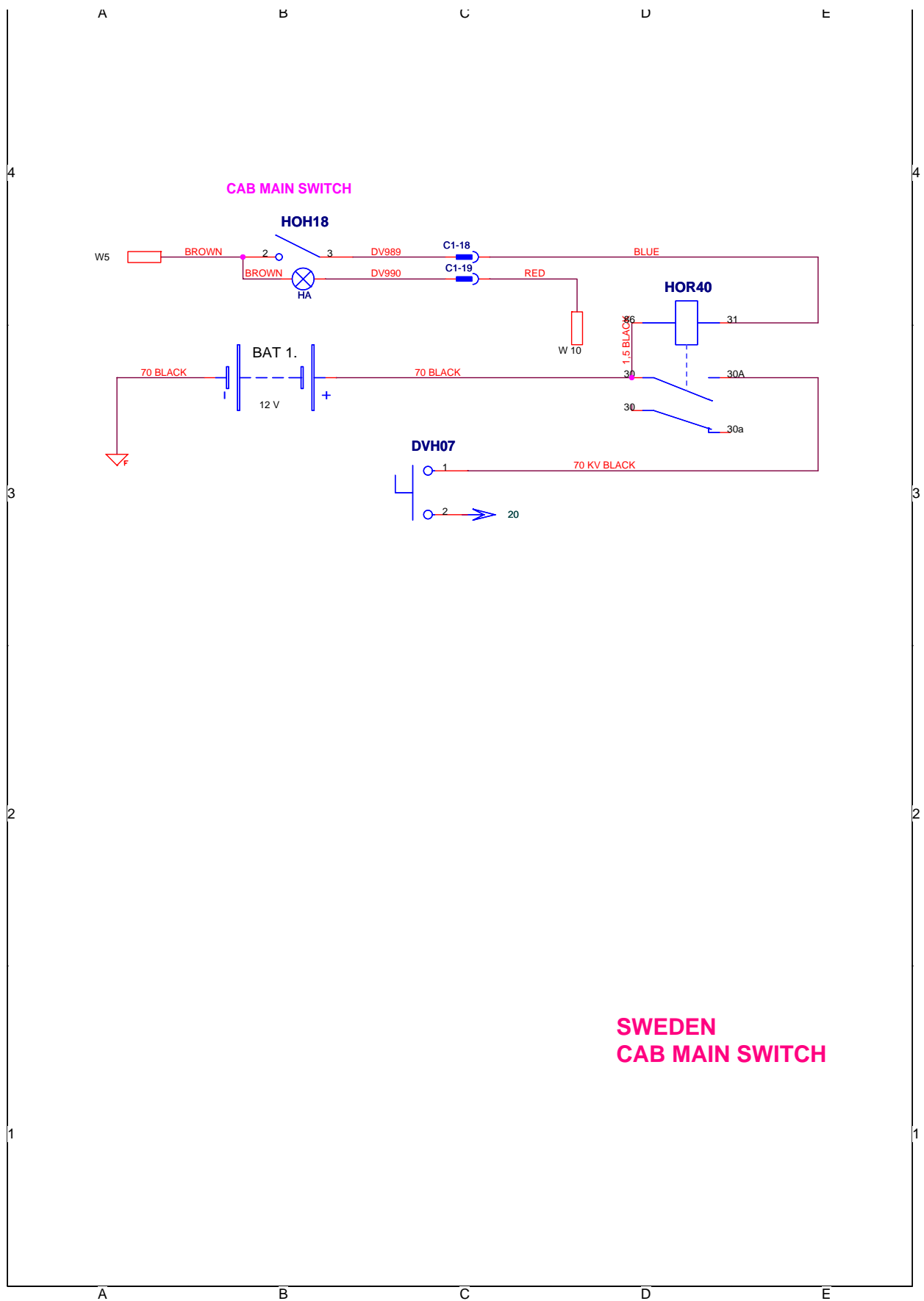


Fig. 56

900-0

13. Specifications

13.1 Dimensions and Specifications

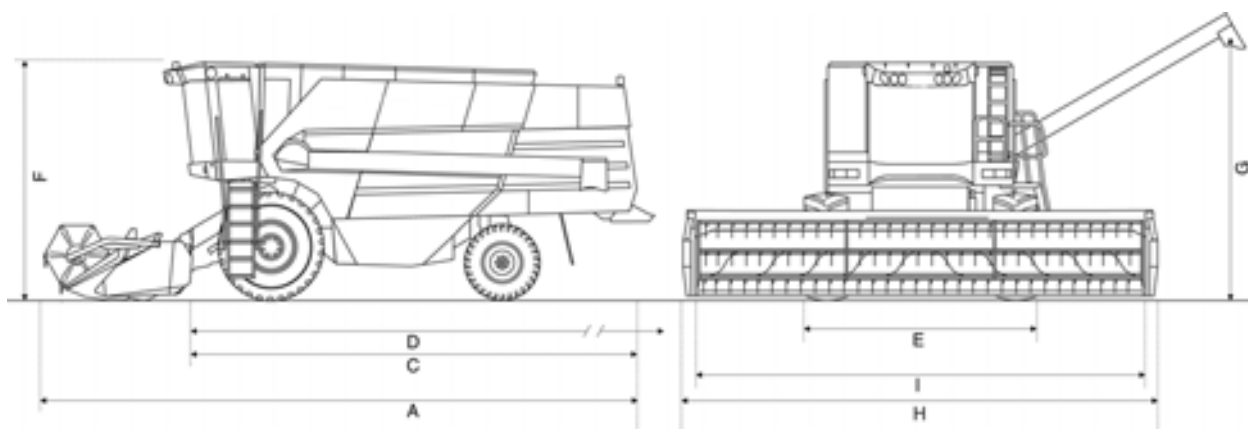


Fig. 1

Length	Unit	MF7274	MF7278
With PowerFlow table, without torpedo dividers (A)	mm	10203	10203
Machine w/o table and spreader hood (B)	mm	8266	8266
Machine with table on trailer, dependent on table width (C)	mm	max. 18000	max. 18000
Machine with spreader hood in working position	mm	+ 479	+ 479

Width (H/I)	Unit	MF7274	MF7278
Table outside / cut PF 18'	mm	6016/5551	6016/5551
Table outside / cut PF 20'	mm	6626/6161	6626/6161
Table outside / cut PF 22'	mm	7236/6771	7236/6771
Table outside / cut PF 25'	mm	8150/7684	8150/7684

Height	Unit	MF7274	MF7278
Total height (F)	mm	4000	4000

In transport without table, and ladder in front of traction wheel

Width with Tyres (E)	Unit	MF7274	MF7278
Traction wheels 620/75 R34 AL	mm	3480	3480
Traction wheels 650/75 R32	mm	3500	3500
Traction wheels 800/65 R32	mm	3800	3800
Traction wheels 800/65 R32 AL	mm	3882	3882
Traction wheels 900/55 R32	mm	4020	4020
Traction wheels 900/55 R32 AL	mm	4020	4020
Traction wheels 1050/50 R32	mm	4350	4350

Width with Tyres	Unit	MF7274	MF7278
Rear wheels 15.5/80-24	mm	3740	3740
Rear wheels 15.5/80-24, 4-WD	mm	3565	3565
Rear wheels 500/60-26.5	mm	3500	3500
Rear wheels 500/60-26.5, 4-WD	mm	3460	3460
Rear wheels 600/55-26.5	mm	3740	3740
Rear wheels 600/55-26.5, 4-WD	mm	3705	3705

13. Specifications

Turning diameter <i>With tyres</i>	Unit	MF7274	MF7278
650/75R32 - 15.5/80-24	m	16.35	16.35

Weight <i>(Without Auto Level, straw chopper, chaff spreader and four-wheel drive)</i>	Unit	MF7274	MF7278
Base machine	kg	13880	13880
With 22' PowerFlow table	kg	16430	16430
With 25' PowerFlow table	kg	16540	16540

Cutting table <i>Quick-attach type, can be attached and removed directly on the ground. Power take-off with transmission shaft</i>	Unit	MF7274	MF7278
Cutting height PowerFlow	cm	-40 to +148	-40 to +148
Knife speed	strokes/min.	1120	1120
Hydraulically balanced by pressure accumulators		yes	yes
Electro-hydraulic cutting height presetting		yes	yes

Reel	Unit	MF7274	MF7278
Electro-hydraulic reel drive	rpm	0-50	0-50
Peripheral speed	km/h	0-9.1	0-9.1
Electro-hydraulic reel control up/down and fore/aft		yes	yes

Threshing cylinder	Unit	MF7274	MF7278
Speed, normal	rpm	400-1120	400-1120
Speed, reduced	rpm	307-945	307-945
Width	cm	168	168
Number of rasp bars	units	8	8
Diameter	cm	60	60
Weight	kg	318	318
Electro-hydraulic speed adjustment		yes	yes
Peripheral speed	m/sec.	12.3-36.1	12.3-36.1
Peripheral speed, reduced	m/sec.	9.6-29.7	9.6-29.7

Concave	Unit	MF7274	MF7278
Concave area	cm ²	10600	10600
Number of rub bars	units	13	13
Concave wires, self-cleaning, spring steel	mm	Ø 3.5	Ø 3.5
Concave wrap	degrees	117	117
Concave adjustable from operator seat		yes	yes

Rear beater	Unit	MF7274	MF7278
Diameter	cm	37.5	37.5

Rotary separator	Unit	MF7274	MF7278
Speed, normal	rpm	950	950
Speed, reduced	rpm	475	475
Width	cm	168	168
Diameter	cm	50	50
Separation area	cm ²	10400	10400

13. Specifications

Straw walkers	Unit	MF7274	MF7278
Number	units	8	8
Area	cm ²	7400	7400
Area with rotary separator	cm ²	6680	6680
Length	cm	400	400
Number of steps	units	5	5
Shutters in straw hood for cleaning straw walkers		yes	yes

Main grain pan	MF7274	MF7278
Two-sectioned lengthwise	yes	yes
Stepped sections removable for cleaning	yes	yes
Crop channelling	yes	yes

Shaker shoe	Unit	MF7274	MF7278
Two-sectioned lengthwise		yes	yes
Adjustable sieves		yes	yes
Sieve area	cm ²	5300	5300
Opposite movement of sieves		yes	yes
Crop channelling		yes	yes
Work light		yes	yes

Fanning mill	Unit	MF7274	MF7278
Two-sectioned centrifugal blower		yes	yes
Electrical speed adjustment from operator seat or at shaker shoe (left-hand side)		yes	yes
Speed	rpm	460-1150	460-1150
Reduced speed	rpm	310-790	310-790

Grain tank	Unit	MF7274	MF7278
Capacity	litres	9500	10500 (AL 9500)
Inside light		yes	yes
Adjustable full warning		yes	yes
Outside steps and inside ladder for easy access		yes	yes
Sampling tray		yes	yes

Unloading auger	Unit	MF7274	MF7278
Enclosed system, electro-hydraulically pivotable		yes	yes
Unloading can also take place when partially turned in and without threshing unit being engaged		yes	yes
Unloading (depending on conditions)	sec.	110	121
Unloading height (G)	cm	417	417
Unloading auger diameter	cm	33	33

Engine	Unit	MF7274	MF7278
Type, SisuDiesel		Citius 84 CTA-4V	Citius 84 CTA-4V
Speed	rpm	2080	2080
Volume	litres	8.4	8.4
Number of cylinders	units	6	6
Gross power* (with Power Boost**)	HP	348 (378)	382 (413)
Gross power* (with Power Boost**)	kW	256 (278)	281 (304)
Engine oil, capacity	litres	27	27
Rotary screen	units	1	1
Exhaust-aspirated air cleaner on air intake		yes	yes

13. Specifications

Engine	Unit	MF7274	MF7278
Fuel tank, capacity	litres	750	750
Coolant	litres	60	60
<i>* Gross power according to ISO 14396</i>			
<i>** Power Boost ensures additional capacity during unloading. Through a signal from the unloading system the engine output is increased by 30 HP / 22 kW during unloading</i>			

Gear oil	Unit	MF7274	MF7278
Gearbox contains	litres	9.5	9.5
Coupler housing for oil motor	litres	1.5	1.5
Final drives contain	litres	6.0	6.0

Transmission	Unit	MF7274	MF7278		
Hydrostatic transmission		yes	yes		
4-speed, electrical gearshift		yes	yes		
Speed	1. gear	Forward	km/h	0-6	0-6
		Reverse	km/h	0-3*	0-3*
	2. gear	Forward	km/h	0-12	0-12
		Reverse	km/h	0-6	0-6
	3. gear	Forward	km/h	0-20	0-20
		Reverse	km/h	0-10	0-10
	4. gear	Forward	km/h	0-25**	0-25**
		Reverse	km/h	0-12	0-12
<i>*Reverse speed ranges up to 6 km/h when the threshing unit is engaged.</i>					
<i>** Applies to all countries except Germany where max. speed is 20 km/h.</i>					

Brakes	MF7274	MF7278
Hydraulically activated independent brakes	yes	yes
Mechanically activated parking brake	yes	yes

Operator cab	MF7274	MF7278
Integrated operator environment with rubber-suspended platform and cab	yes	yes
Electrical control of all functions	yes	yes
DATAVISION	yes	yes
"Sealed Beams" light system with 8 fixed lamps for cutting table, area in front of and to the right of the machine plus unloading auger	yes	yes
De-luxe seat	yes	yes

Hydraulic system	Unit	MF7274	MF7278
Decentralised, electrically controlled valve functions		yes	yes
Pump	units	3	3
Hydraulic orbitrol steering		yes	yes
Hydraulic system contains	litres	90	90
Hydraulic tank contains	litres	34	34

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