



HEPCO

Heavy Equipment Production . co

شرکت تولید تجهیزات سنگین

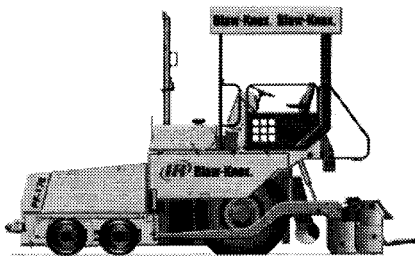
هپکو

Finisher HPF - 176

S.N : 132 - 231



Translation of the
Original
Operating Manual
and
Maintenance Manual
for
Wheeled Paver



PF-176

First Read Then Pave !



Valid commencing
Serial Number:

16447

Ordering No. / CPN Operating / Maintenance Manual 80704984
English language version

Table of Contents

I Introduction	VI
I 1.0 Information on the safe operation of the paver	VIII
I 2.0 Using the paver for the purpose it was designed for	IX
I 3.0 Sound Power Level	X
I 4.0 Effective Value of Acceleration	XI
I 5.0 Complete Machine Documentation	XI
I 6.0 How to use this manual (OM – MM)	XII
I 7.0 Carrying out maintenance work	XV
I 8.0 General view of the paver	XVI
I 9.0 List of chapters	XVII
II General Safety Instructions	XIX
II 1.0 Responsibilities of the user / contractor	XX
II 2.0 General safety instructions for operation and maintenance	XXI
II 3.0 Safety Symbols	XXI
II 4.0 Directives and Laws	XXI
II 5.0 Measures to persons and materials	XXII
II 6.0 Safety regulations for paver application	XXIV
II 7.0 Handling fuel	XXV
II 8.0 Speed, steering and braking	XXV
II 9.0 Leaving the paver	XXV
II 10.0 Moving parts	XXVI
II 11.0 Protective guards and covers	XXVI
II 12.0 Hot components	XXVI
II 13.0 Working safely on the hydraulic system	XXVII
II 14.0 Welding work on the paver	XXVII
II 15.0 After repair and maintenance work	XXVIII
II 16.0 Cleaning the paver	XXVIII
II 17.0 Environment protection	XXVIII
II 18.0 Protective clothing	XXIX
III Safe Operation of the Gas Heating System	XXXI
III 1.0 General regulations	XXXII
III 2.0 Mounting the gas bottles	XXXII
III 3.0 Connecting the gas bottles	XXXII
III 4.0 Operating the gas heating system	XXXIII
III 5.0 Gas leakages	XXXIV
III 6.0 Ventilation	XXXIV
III 7.0 Switching off the gas heating system	XXXIV
III 8.0 Transporting the gas bottles	XXXV
III 9.0 Fire risks	XXXV
III 10.0 Repair work	XXXV
III 11.0 Breakdown procedure	XXXVI
III 12.0 Checking the gas heating system	XXXVI
01 Superstructure	1
01.04 Side Doors and Engine Bonnet	6
01.05 Sound Insulation	11
01.06 Fuel Tank	12

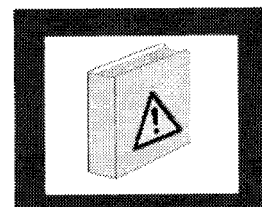
01.09 Seat Console	14
01.10 De Luxe Seat	15
01.26 Wheel Chock	16
Sun Roof	17
02 Frame	19
02.01 Frame	20
02.02 Oscillating Front Cross Beam	20
02.03 Direction Indicator	21
02.04 Screed Transport Lock	22
02.05 Towing Arms	23
03 Undercarriage	25
03.01 Portal Axle	26
03.03 Rear Wheel Complete	36
03.05 Road Scrapers	38
03.06 Wheel Chock	39
03.07 Front Wheels	39
04 Hopper	46
04.01 Hopper	47
04.03 Hopper Locking Bolts	47
05 Conveyors	48
05.01 Conveyors	49
05.02 Hopper Floor Plates	53
05.03 Conveyor Control Switches	53
06 Augers	54
Basic Auger (Centre Drive)	55
06.04 Auger Flights	58
06.05 Auger Extensions	58
07 Diesel Engine	64
07.01 Diesel Engine	65
07.02 Engine Air Supply	66
07.03 Air Intake	66
08 Control Panel	68
08.01 Control Panel	70
08.02 External Control Panels	104
09 Hydraulics	114
09.02 Hydraulic Oil Tank	115
09.07 Screed Lock	119
09.08 Hydraulic Components	120
10 Electrics	122
10.02 Working Lights	123
10.04 Ultrasonic Sensors, Augers	124

10.05 Additional Rear Working Lights (Option)	125
10.06 Diesel Transfer Pump	126
10.10 Battery Master Switch	127
10.10.02 Batteries	128
11 Levelling System	131
11.03 Outrigger for Grade Control	132
11.05 Support for the Slope Controller	134
A Operation and Maintenance	135
A 1.0 Commissioning the Paver	136
A 2.0 Taking the Paver out of Operation	137
A 3.0 Safety Instructions for Service and Maintenance Work	138
A 4.0 Daily check Before Starting	139
A 4.1 Greasing at the end of a day's work	139
A 4.2 Daily Cleaning	139
A 5.0 Weekly Check List	140
A 6.0 Preservation	140
A 6.1 Standstill Times up to 6 Months	140
A 6.2 Standstill Times from 6 to 12 Months	140
A 7.0 Oils and Lubricants	141
B Maintenance Charts and Transport	142
B 1.0 Fuel, Oils and Lubricants	143
B 2.0 Routine Maintenance	145
B 3.0 Inspection Intervals	146
B 4.0 Service Kits and Kits of Wearing Parts	147
B 5.0 Safety Instructions and Loading	148
B 6.0 Transport Weight	148
B 7.0 Transport per Low Bed Truck	149
B 8.0 Driving the Paver on Public Roads	150
B 9.0 Transport on Job-Sites	151
B 10 Loading the Paver by Crane	151
C Emergency Cases	153
C 1.0 Overheating the Diesel Engine	154
C 2.0 Faults in the Electrical System	155
C 3.0 Jump Starting the Diesel Engine	157
C 4.0 Towing the Paver	158
D Technical Data	163
D 1.0 Technical Date	164
D 2.0 Dimensions PF 176	165
H Layout of the Control Panels	167
Layout of the Main Control Panel	167
..... Layout of the External Control Panels	169

I Introduction

This chapter contains general information on your paver finisher.

It also contains hints on using this manual as well as the address and telephone number of your **INGERSOLL-RAND ABG** service partner.



Contents	Page
I - 1.0 Information on the safe operation of the paver	VIII
I - 2.0 Using the paver for the purpose it was designed for	IX
I - 3.0 Sound power level	X
I - 4.0 Effective value of acceleration	XI
I - 5.0 Complete machine documentation	XI
I - 6.0 How to use this manual (OM-MM)	XII
I - 6.1 Symbols	XIV
I - 7.0 Carrying out maintenance work	XV
I - 7.1 General maintenance instructions	XV
I - 7.2 Oil changes, oil checks and lubricating	XV
I - 8.0 General view of the paver	XVI
I - 9.0 List of chapters	XVII

Dear Customer,

We congratulate you on purchasing an  Blaw-Knox paver and assure you that you have made the right choice.

Thank you for placing your confidence in our quality product.

Carefully read the operating instructions for the paver, the screed and the options to fully acquaint yourself with your new machine.

Always observe our advice, instructions and recommendations contained in this technical documentation.

This will avoid danger to persons and equipment. It will also ensure a faultless operation and high performance of your paver.

We will be pleased to supply further **information** on paving special materials, special paver applications and other machine and technical matters to ensure a trouble-free operation on your paving project.

The daily paving output is determined by the mat thickness, paving speed and paving width. The output will vary according to the different conditions prevailing on your job-site. Please approach us and we will calculate the actual paving output for your particular paving contract.

We would like to point out, that your **INGERSOLL-RAND ABG Service Partner** is well acquainted with your paver and can carry out all work on the machine in a reliable and efficient manner.

A list of authorized **INGERSOLL-RAND ABG Service Partners** as well as further technical support can be obtained from:


INGERSOLL-RAND ABG
Technical Service Department
Kuhbrückenstr. 18

D - 31785 Hameln

Tel.: +49 (0) 51 51-209 188


Fax: +49 (0) 51 51-209 222

or on the internet under: **www.ir-abg.com**

We wish you and your paving crew every paving success with your new  Blaw-Knox... road paver.

Sincerely yours,
ABG ALLGEMEINE BAUMASCHINEN-GESELLSCHAFT mbH
Hameln, Germany

I - 1.0 Information on the safe operation of the paver

Your  **Blaw-Knox** paver should always meet your requirements in terms of a high paving output. For this reason, our engineers designed the machine using carefully selected and co-ordinated components.

Therefore, you should only use **Genuine INGERSOLL-RAND ABG Spare Parts** and accessories approved by **INGERSOLL-RAND ABG**. These parts have been specially designed and manufactured for your paver. By using them, you will obtain the highest degree of operating safety.

Please note that every technical alteration to your paver considerably influences the reliability, safety and the CE Conformity of the machine. This applies to the use of unsuitable spare parts, wearing parts and service parts as well as accessories which have not been approved by **INGERSOLL-RAND ABG**.

We cannot accept any liability whatsoever for cases where parts and accessories have been used or technical alterations have been made which were not approved by **INGERSOLL-RAND ABG**.

It is not possible for us to warranty the safety, reliability, suitability and quality of such parts.

Genuine INGERSOLL-RAND ABG spare parts and accessories can be obtained from INGERSOLL-RAND ABG or any authorized distributor.

Always keep the technical documentation close at hand on the paver. If you sell the paver to another user, please give him the machine documentation as well.

In the interest of product development, **INGERSOLL-RAND ABG** reserves the right to undertake technical modifications without prior notice or any other obligation.

No part of this operating manual may be reproduced, stored in electrical data systems, processed, copied or published in any way without prior approval of **INGERSOLL-RAND ABG**. All rights for copying, distribution and translation are reserved by **INGERSOLL-RAND ABG**.

Pavers may be illustrated in this manual equipped with accessories.

I - 2.0 Using the paver for the purpose it was designed for

The **IR Blaw-Knox** road paver has been designed for paving all kinds of asphalt materials, cement treated aggregates, graded aggregates, sand and gravel which are paved to generally recognized standards. Other materials should not be paved with the paver.

The paver has been designed for operating on dry and sturdy surfaces with sufficient bearing capacity and which have a slope of not more than $\leq 25\%$ to all sides. Additional safety measures may be necessary for special paver applications. The paver may only be operated on a specially prepared surface with sufficient bearing capacity to carry the weight of the machine.

It is not permitted to use the paver for other purposes such as carrying loads, towing or recovering other equipment, grading and levelling work, soil compaction or as a lifting device. It was not designed for these applications.

Using the paver for the purpose for which it was designed also includes carefully reading this manual and adhering to the specified **operating, servicing and maintenance instructions**.

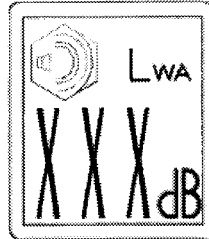
The specifications and especially the maximum angle of slope inclination specified in the section "Technical Data" must be strictly adhered to.

The safe operation of the **IR Blaw-Knox paver cannot be guaranteed if it is used for a purpose for which it was not designed.**

INGERSOLL-RAND ABG does not accept any liability whatsoever for personal injury or damage to property if the paver is used for purposes for which it was not designed.



I - 3.0 Sound power level



The value is specified in
the CE Declaration of
Conformity

The guaranteed sound power level is specified in the
CE Declaration of Conformity according to the EN 2000/14.

The sound power level is only guaranteed for the paver together with the screed as a complete unit as supplied from the factory. The validity of the CE Declaration of Conformity automatically expires if another screed is fitted to the paver.

On account of different paving materials and operating conditions, it is not possible to reproduce the actual sound power level reached during paving work.

According to 98/37/EC the sound power level is
 $L(PA) < 88 \text{ dB(A)}$ determined according to DIN ISO 11204

on the operator's platform with the Diesel engine running at a nominal speed and the vibration running at the following speeds:

Vibration speed $\geq 50\%$ of the nominal speed $\hat{=} 3500 / 2 [1/\text{min}]$

The sound power level was measured with the screed lowered and resting on a resilient base.*

* Due to the sound deadening effect of the paving material, the sound power level is generally lower during paving work.

On account of different paving materials and operating conditions, it is not possible to reproduce the actual sound power level reached during paving work.

I - 4.0 Effective value of acceleration

The weighted effective value of acceleration does not exceed $k = 2.5\text{m/s}^2$. The measuring method and the conditions under which the measurements were made are specified in the test certificate.

The measurements were made according to the Association of German Engineers Specification No. VDI 2057 Page 1 to Page 3 of May, 1987.

I - 5.0 Complete machine documentation

There is a separate machine documentation for the basic paver and the paving screed. For the sake of simplicity, the documentation for the paver and for the screed is divided into the following manuals:

⇒ Combined Operating and Maintenance Manual

⇒ Spare Parts List

The **INGERSOLL-RAND ABG** machine documentation contains a separate engine manufacturer's handbook consisting of the engine operating instructions and maintenance instructions as well as the engine spare parts list.

When ordering certain options such as for example the levelling system, the relevant documentation will be supplied upon delivery.

The standard range of supply for a new paver contains the machine documentation in duplicate. Further copies may be obtained from your nearest **INGERSOLL-RAND ABG** Service Partner. Each manual in the machine documentation can be ordered separately.

I - 6.0 How to use this manual (OM-MM)

This manual explains the various functions of your paver and how to operate them safely. It also includes instructions for carrying out all necessary maintenance work. Furthermore, it contains numerous hints and advice on the paver's operation.

I Introduction

This section contains basic service information as well as information on how to use this manual.

There is a table of contents at the beginning of each chapter to assist you in finding the particular information you require in that chapter. At the end of this introduction, there is an illustration of the paver showing the different assemblies. On the following page there is a list of chapters using the assembly numbers as reference.

II. General Safety Instructions

This section gives you valuable information on the safeguard of persons and property.

III. Safe operation of the gas heating system

This chapter contains important safety instructions for using the gas heating system.

Chapters:

Chapters 01 to 11 contain detailed descriptions of the various paver functions and operating procedures as well as assembly and installation work and required maintenance allocated to the individual assemblies.

Special safety instructions pertaining to the individual assemblies are also contained in these chapters.

If you are looking for spare parts, they can be found in the **Spare Parts List** also under the same chapter number.

I - 6.0 How to use this manual (OM MM) continued

Some chapters in the technical documentation are currently void.

This results from the requirement to compile a documentation with a uniform structure, this means that the same chapter number in this manual and the spare parts list cover the same assembly. This results in some chapters being intentionally left out of the documentation.

Some chapters do not contain any instructions or information; these chapters have only been included to give a complete reference to the spare parts list.

The headings to all chapters containing further information have been printed in **"bold"** print.

To give you a better understanding, we have added drawings and illustrations to the written text.

All reference to **„front“**, **„rear“**, **„right“ = RH** and **„left“ = LH**, is made facing the paver's forward direction of travel.

Appendix:

- A, covers paver operation and upkeep
- B, covers cleaning and preservation of the paver, the maintenance charts with service intervals and measures to be taken when transporting the paver.
- C, tells you what to do in emergency cases
- D, contains your paver's technical data
- G, contains an alphabetical index
- H, illustrates the layout of the control panels



I - 6.1 Symbols

Symbols have been added to the descriptions of the paver's assemblies and functions. The following symbols are used in this manual:

DANGER

**This symbol indicates serious danger.
Serious personal injury may occur if the relevant safety instructions are not observed.**



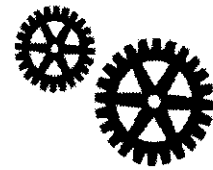
CAUTION

This symbol indicates danger to the paver, property and environment.



FUNCTION

This symbol refers you to an explanation of the function and application of the particular component.



ASSEMBLY

This symbol informs you of the steps to be taken if any assembly or installation work is required.



OPERATION

This symbol refers you to the paver's step by step operation.



ABG TIPS & ADVICE

This symbol gives you application advice on the particular topic.



MAINTENANCE

This symbol refers you to the maintenance work required.



I - 7.0 Carrying out maintenance work

I – 7.1 General maintenance instructions

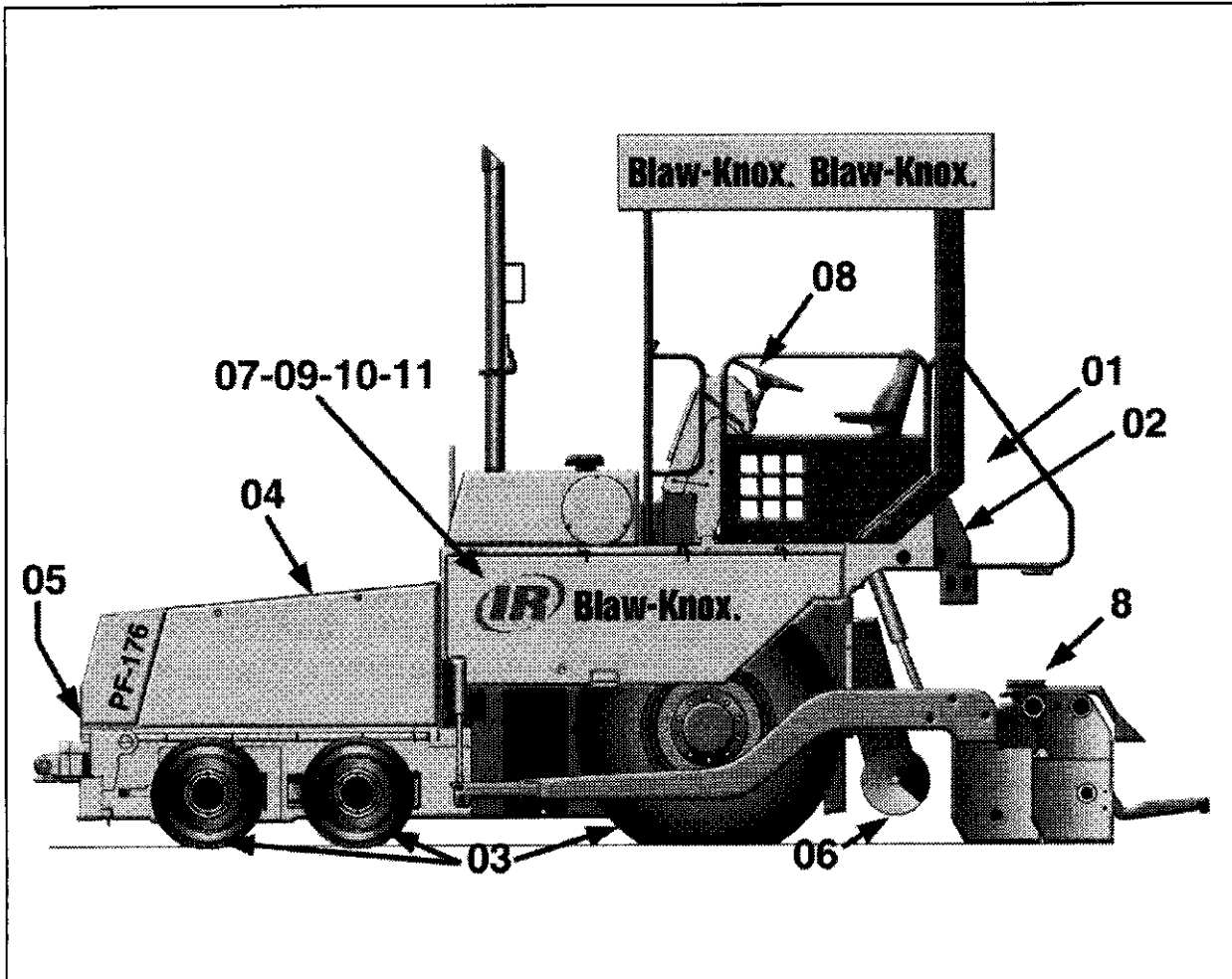
- ⇒ This manual describes the maintenance and upkeep of your paver. Maintenance and servicing instructions for the Diesel engine are contained in the engine manufacturer's handbook. Maintenance instructions for the screed are contained in the screed's documentation.
- ⇒ Correct and timely maintenance, immediate elimination of faults and using the paver for the purpose it was designed for will ensure a long service life and a reliable and efficient operation of your machine.

I – 7.2 Oil changes, oil checks and lubricating

- ⇒ Observe absolute cleanliness when changing or checking the oils and lubricating your paver.
- ⇒ Only carry out maintenance work on the paver when the machine is parked on level ground and the oils and lubricants are at operating temperature. ⚠ Beware of burns caused by hot oils and lubricants. The paver must be safely secured against rolling off.
- ⇒ Only use those oils and lubricants which are specified in the list of fuel, oils and lubricants.
- ⇒ All drain plugs must be fitted with new seals before being replaced.
- ⇒ Before applying the grease gun, thoroughly clean the dirt and residue from the grease nipple.
- ⇒ Remove the grease gun nozzle from the grease nipple by turning the gun clockwise at an angle of approx. 30°. This will make it easier to remove the grease gun and avoid braking off the nipple head.
- ⇒ Oil and grease all slip guides and spindles as and when required. It is essential to lubricate the paver after cleaning it with water or cleaning solvents to remove grease and bitumen.

I - 8.0 General view of the paver

The next page contains a list of chapters using the paver's assembly numbers as reference.



I - 9.0 List of chapters

	Number
Introduction	I
General Safety Instructions	II
Safe Operation of the Gas Heating	III
Superstructure	01
Frame	02
Undercarriage	03
Hopper	04
Conveyors	05
Augers	06
Diesel Engine	07
Control Panel	08
Hydraulics	09
Electrics	10
Levelling System	11
Operation and Maintenance	Appendix A
Maintenance Charts and Transport	Appendix B
Emergency Cases	Appendix C
Technical Data	Appendix D
Layout of the Control Panels	Appendix H

Notes

Number	Introduction
	General Safety Instructions
	Safe Operation of the Machine
	Specifications
	Frame
	Undercarriage
	Hopper
	Conveyors
	Engine
	Diesel Engine
	Control Panel
	Hydraulics
	Electrics
	Lighting System
	Operation and Maintenance
	Maintenance Charts and Troubleshooting
	Emergency Cases
	Technical Data
	Layout of the Control Panel

II General Safety Instructions

It is absolutely essential to observe these safety instructions.

This is a simple way to protect persons, property and our environment. Therefore, thoroughly read and understand these instructions.

Observing the safety instructions is also a simple way to save money.

Once again, it is essential that you read and fully understand this chapter.

Safety instructions for the individual assemblies are also contained in each chapter of this operating manual.



Contents	Page
II General Safety Instructions	XIX
II - 1.0 Responsibilities of the user / contractor	XX
II - 2.0 General safety instructions for operation & maintenance	XXI
II - 3.0 Safety symbols	XXI
II - 4.0 Directives and laws	XXI
II - 5.0 Measures to protect persons and materials	XXII
II - 6.0 Safety regulations for paver application	XXIV
II - 7.0 Handling fuel	XXV
Do not smoke when refuelling the paver	XXV
II - 8.0 Speed, steering and braking	XXV
II - 9.0 Leaving the paver	XXV
II - 10.0 Moving parts	XXVI
II - 11.0 Protective guards and covers	XXVI
II - 12.0 Hot components	XXVI
II - 13.0	Working safely on the hydraulic system XXVII
II - 14.0	Welding work on the paver XXVII
II - 15.0	After repair and maintenance work XXVIII
II - 16.0	Cleaning the paver XXVIII
II - 17.0	Environment protection XXVIII
II - 18.0	Protective clothing XXIX

General Safety Instructions

First read then pave !

II - 1.0 Responsibilities of the user / contractor

Carefully read our **safety instructions** before operating the paver for the first time.

The paver can only operate safely on the job-site if all necessary safety measures have been taken.

It is the responsibility of the user/contractor to plan all necessary safety measures and ensure they are strictly observed.

As the user/contractor please ensure that:

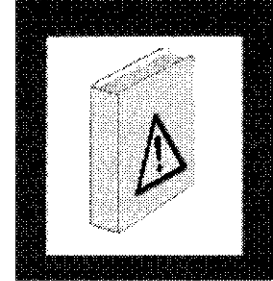
- the paver is only **used for the purpose it was designed for** (please refer to the relevant section in the chapter "Introduction"). Maintenance and inspection intervals are strictly adhered to.
- the paver is only used in a perfect functional and operating condition and that the **correct function** of the safety devices is regularly checked.
- the paving crew, maintenance and service personnel are equipped with **protective clothing** and that it is worn at all times.
- all necessary **safety precautions** have been taken on the **job-site**.
- the **Operating and Maintenance Manual** is complete and in a readable condition close at hand on the paver.
- only fully **qualified** and **authorized personnel** operate, maintain and repair the paver. All locally prevailing regulations must be complied with.
- your personnel receive regular training on all aspects of **industrial** and **working safety regulations** as well as **environment protection** laws and that they have read and fully understand the Operating Manual especially the safety instructions.
- all **safety** and **warning sign plates and decals** on the paver are readable and that they have not been removed.
- only carry out maintenance and repair work when the paver is parked on **level ground** with sufficient **bearing capacity** and all measures have been taken to prevent the machine rolling off and an unintentional lowering of any components such as the screed etc.
- Ensure there is **sufficient ventilation** if the Diesel engine and the fuel consuming screed heating systems are operated in confined areas and restricted spaces.



II - 2.0 General safety instructions for operation & maintenance

In this operating manual, safety instructions are given to draw your attention to the unavoidable residual risks when operating the paver and carrying out maintenance work. These residual risks are a danger to:

- **Persons**
- **Product and Paver**
- **Environment**



II - 3.0 Safety symbols

The symbols used in this operating manual are meant to draw your attention to the safety instructions.

DANGER

This symbol indicates serious danger.

Serious personal injury may occur if the relevant safety instructions are not observed.

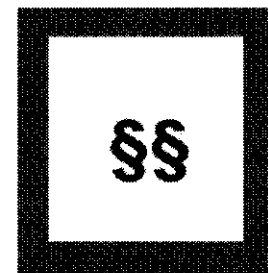


CAUTION

This symbol indicates danger to the paver, property and environment.

II - 4.0 Directives and laws

All locally **prevailing accident prevention regulations, directives and laws** must be strictly observed. These still apply although they are not specifically mentioned in this manual. The user is solely responsible for ensuring these regulations, guidelines and laws are strictly complied with. This also applies to the laws and regulations for **using public highways**.



II - 5.0 Measures to protect persons and materials

By not observing these instructions, there is a danger of serious personal injury, death or damage to property.

Ensure that only **trained, instructed, qualified and authorized** personnel work on the paver and that they have read and fully understand the operating and maintenance manual and can work according to these manuals.

Before starting the paver, check and ensure that:

- all **safety devices** have been checked and function correctly before paving work is commenced.
- the paver has been checked for visible damage before you start paving,
- the paver is only operated in a **perfect working condition**,
- **any faults and defects on the paver must be immediately repaired**,
- before starting work, remove all unnecessary items out of the paver's working area,
- only **authorized personnel** are within the paver's working area,
- nobody is injured when the **paver starts moving**.



Before carrying out any maintenance and repair work on the paver, check and ensure that:

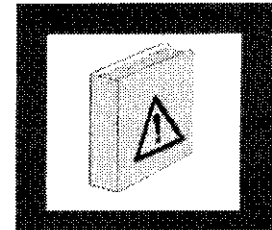
- the Diesel engine is **switched off** when maintenance and repair work is carried out,
- any **defects and faults** found on the paver must be **immediately repaired**,
- only **authorized persons** enter the paver's danger zone during maintenance and repair work,
- proper hoisting equipment with suitable slings and hooks is used when replacing heavy parts and components,
- no work is carried out underneath the screed which has been raised but not safely secured in the raised position,
- nobody is injured when the paver starts moving.

II - 5.0 Measures to protect persons and materials continued**The following instructions serve to safeguard your paver:**

- When cleaning the paver with high pressure cleaners, do not direct the jet of water onto the bearings and electrical components.
- Grease all bearings after washing the paver.
- Detailed maintenance instructions for the individual components are contained in the following chapters of this manual and in the engine manufacturer's handbook.
- Maintenance instructions for the screed are contained in the screed's documentation.



Fully acquaint yourself with all its operating controls and functions before starting the paver. This will protect you and others from injuries caused by operating errors.



Only start the Diesel engine when standing on the operator's platform. **Never short circuit** the Diesel engine because this may put the paver into motion.

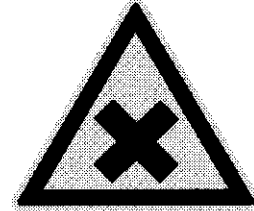


Never run the paver in a closed area or restricted space.
Danger ! Exhaust fumes are poisonous.

II - 6.0 Safety regulations for paver application

Paving in tunnels

- When paving in tunnels, ensure there is adequate ventilation and a sufficient amount of oxygen in the air. Also ensure that the maximum permissible concentration of pollutants in the air is not exceeded.
- Observe the dimensions of your paver.
- Ensure there is sufficient lighting in the tunnel.
- Ensure suitable fire-fighting precautions have been taken.



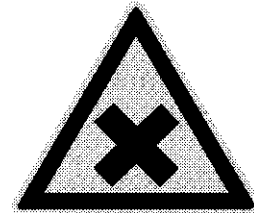
Paving in the vicinity of overhead electric cables

- Depending on the voltage, ensure there is an adequate safety distance between the paver including its components and the overhead cables to avoid an electric current conduction.
- Alternative safety measures may be taken such as switching off the current in the overhead supply lines.



Paving in contaminated areas

- Ensure the paving crew is not exposed to health risks when working in the vicinity or in contaminated areas such as waste disposal dumps etc.



Paving in the vicinity of railway lines

- Paving in the vicinity of railway lines with passing rail traffic is subject to increased danger which can lead to fatal accidents.
- Only start work after obtaining permission from the railway authorities and after all necessary safety measures have been taken.

Paving on slopes

- Special safety precautions must be taken, such as securing the paver with a winch cable, when working on slopes where there is a danger of the machine toppling over or sliding away.



Paving on bridges

- Ensure the weight bearing capacity of the bridge is sufficient to carry the weight of the paver and other machinery and equipment required for paving work.
- Observe the dimensions of your paver.
- Take the vibration effect of the screed into consideration when paving on bridges.

Observe all locally prevailing rules and regulations for all applications and ensure your paving crew has been instructed accordingly.

II - 7.0 Handling fuel

Be aware of the increased **fire risk** when handling fuel. Never refuel the paver near naked flames or sparks.

Do not smoke when refuelling the paver

Switch off the Diesel engine before refuelling the paver. Never refuel the paver in a closed or restricted area.

Immediately remove all combustible materials such as oil or Diesel soaked rags from your paver to avoid **fire risks**.



II - 8.0 Speed, steering and braking

Always adapt the paver's travelling speed to your locally prevailing conditions.

Bear in mind that the steering, driving and braking behaviour is influenced by the width and weight of the rear mounted screed. Ensure sufficient steering and braking properties and remember, the screed swings out when cornering.



Observe the maximum permissible weights.

II - 9.0 Leaving the paver

Before leaving the paver, secure it from any unintentional rolling off with the hand brake or wheel chock. (Wheeled pavers are equipped with a wheel chock as a standard feature).

Remove the ignition key and lock the cabin if fitted. Never leave the paver unattended as long as the ignition key is in the ignition lock.

Never leave the operator's platform while the paver is in motion.



Secure the screed against an unintentional lowering before leaving the paver.

II - 10.0 Moving parts

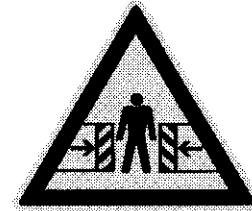
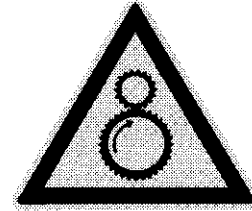
Moving parts such as drive shafts and V-belts are a danger to life and limb when moving.

Moving components such as the Variomatic screed, hopper wings, conveyors and augers are also a source of danger and can cause serious personal injury.

Only carry out any work on these components after the Diesel engine has been switched off and these parts have come to a standstill.

Flashing warning lights located on the external distributors indicate a **danger of crushing** when extending or retracting the Variomatic screed.

It is imperative that all protective guards and covers are properly mounted.



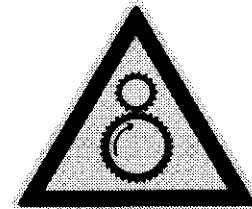
II - 11.0 Protective guards and covers

Only operate your paver with the factory supplied **protective guards and covers** correctly fitted.

The manufacturer does not accept any liability if the paver is operated without the protective guards and covers correctly fitted. The same applies to maintenance and repair work.

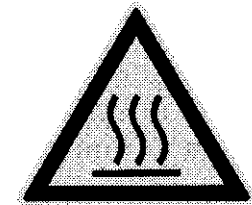
So please remember, there is an **increased risk** of injury and danger to life and limb if the paver is operated without all protective guards and covers properly fitted.

When installing auger and screed extensions, it is essential to fit the additional protective guards and covers provided.



II - 12.0 Hot components

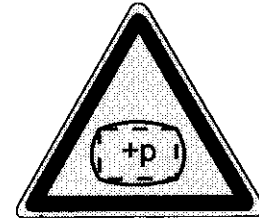
When the paver is operated, the screed, the Diesel engine and the hydraulic system become **very hot** and there is a danger of **serious injury** if these components are touched.



II - 13.0 Working safely on the hydraulic system

It is essential that you strictly observe the following instructions before starting work on the hydraulic system.

- Only fully trained and qualified personnel may carry out work on hydraulic systems.
- All hydraulic components must be relieved of pressure before commencing work.
- Regularly check the hydraulic system for leakages and the tight fitting of all threaded connections.
- As a preventive measure, all hydraulic hoses should be renewed every 6 years. (DIN 20066)
- Any previously loosened threaded connections must be checked for tightness before operating the paver.
- Ensure that all dismantled components are assembled before operating the paver again.



II - 14.0 Welding work on the paver

⇒ Welding work may only be carried out by fully trained, instructed, qualified and authorized personnel. All regulations and safety stipulations must be strictly adhered to as well as the generally recognized standards for welding work.

Before commencing any welding work on the paver, disconnect the following components in the sequence specified:

1. Levelling system
2. Batteries.

Ensure the clamp on the earth cable has a good contact directly near the joint to be welded. Ensure the welding current does not flow through any bearings.

On completion of welding work, the above components must be reconnected in the opposite sequence.

II - 15.0 After repair and maintenance work

Upon completion of any maintenance and repair work and before putting the paver back into operation, ensure that:

- all protective guards and covers have been replaced,
- all **safety devices** have been checked and function correctly,
- all tools, appliances and other equipment has been removed from the paver's working area,
- any liquids spilt or leaked must be properly disposed of.



II - 16.0 Cleaning the paver

Regularly clean your paver and screed. Always keep decks, steps and walkways clean and tidy. This will avoid accidents caused by people slipping on the paver.

When using cleaning solvents, ensure that appropriate breathing apparatus is worn.

Do not clean any parts of the electric heating system with water.



II - 17.0 Environment protection

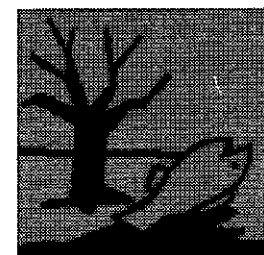
When paving or working on your machine, observe all statutory obligations for **avoiding waste**, its proper **utilization** and **disposal**.

Especially when cleaning, repairing, servicing and maintaining your paver, ensure that water detrimental substances such as:

- **oils and lubricants,**
- **hydraulic oil,**
- **engine coolant,**
- **and cleaning solvents**

do not seep into the ground or into sewage systems.

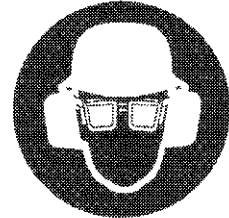
These substances must be collected, stored, transported and disposed of in suitable containers.



II - 18.0 Protective clothing

The user is responsible for ensuring that suitable protective clothing is available and that it is worn.

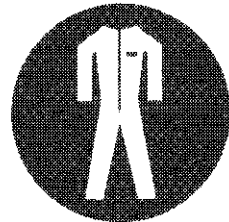
- Locally prevailing noise control regulations may specify the wearing of **ear defenders**.
- Wear **eye shields** if this is stipulated.
- Observe the regulations for wearing **protective helmets**.



- Wear **industrial safety shoes** to protect your feet.



- Wear **working overalls** that fit snug to your body.

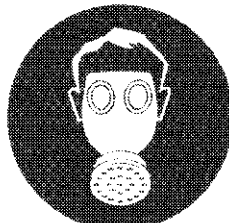


- Wear a luminous waistcoat to make sure you are seen by other road users.

- Wear **working gloves** to protect your hands.



- Wear **breathing apparatus** if the air is contaminated.



Notes

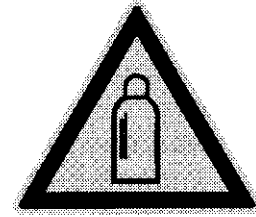
The user is responsible for ensuring that suitable protective clothing is available and that it is worn.

- Always providing proper wearing of ear defenders
- Wear eye shields if this is required
- Wear industrial safety shoes
- Wear working overalls that cover your body
- Wear a luminous waistcoat for night work
- Wear working gloves to protect your hands

III Safe operation of the gas heating system

This chapter contains important safety instructions for operating the gas heating system on the paver's screed.

Closely observe these safety instructions to protect persons, material and the environment.



Contents	Page
III Safe operation of the gas heating system	XXXI
III - 1.0 General regulations	XXXII
III - 2.0 Mounting the gas bottles	XXXII
III - 3.0 Connecting the gas bottles	XXXII
III - 3.1 Connecting the gas bottles to the hoses.....	XXXIII
III - 4.0 Operating the gas heating system	XXXIII
III - 5.0 Gas leakages	XXXIV
III - 6.0 Ventilation.....	XXXIV
III - 7.0 Switching off the gas heating system	XXXIV
III - 8.0 Transporting the gas bottles	XXXV
III - 9.0 Fire risks	XXXV
III - 10.0 Repair work	XXXV
III - 11.0 Breakdown procedure	XXXVI
III - 12.0 Checking the gas heating system.....	XXXVI

III - 1.0 General regulations

- ⇒ Ensure that the gas heating system is operated and maintained by fully qualified and authorized personnel who have been thoroughly instructed in the operation and maintenance of the system and from whom it is expected that they will carry out the work in a reliable manner.
- ⇒ When using gas, there is a danger of explosions. Strictly observe the safety instructions and your locally prevailing regulations when operating the gas heating system.



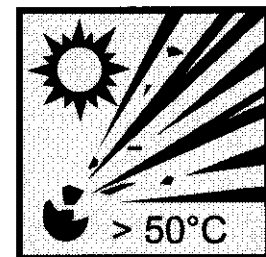
III - 2.0 Mounting the gas bottles

- ⇒ Safely mount the gas bottles on the paver using the supports and brackets provided. Secure them against turning and falling over in order to operate and service the gas heating system safely.
- ⇒ Cover the gas bottles with the canopies supplied with the paver to avoid them unduly warming up.
- ⇒ Maintain the minimum specified safety distance from sources of heat.
- ⇒ Keep a constant check on all safety devices, controls and operating elements to ensure that unauthorized persons do not have access to them.
- ⇒ Only withdraw gas from the bottles when they are in an upright position.



III - 3.0 Connecting the gas bottles

- ⇒ Before connecting the gas bottles, ensure the gas heating system is in a perfect working condition.
- ⇒ During operation, the gas bottles should not be allowed to become under-cooled as this may cause an interruption in the flow of gas.
- ⇒ Icing on the bottles caused by an exceptionally high withdrawal of gas must be allowed to thaw off by using warm air or warm water with a temperature not exceeding 50° C.
- ⇒ Never use a naked flame, red hot objects or convector heaters to thaw off the gas bottles. Icing must not be hammered off the gas bottles or removed mechanically in a similar manner.

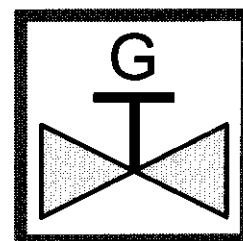
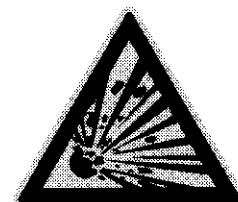
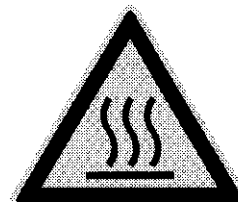


III - 3.1 Connecting the gas bottles to the hoses

- ⇒ Ensure there is a gas-tight connection when fitting the hoses to the gas bottles. Any gas released when fitting the hoses should be allowed to escape into the air without danger.
- ⇒ Never use damaged hoses.
- ⇒ When replacing hoses, ensure the new hoses and their connections are suitable for gas heating systems. When routing new hoses, ensure they are protected against chemical, thermal and mechanical damage.

III - 4.0 Operating the gas heating system

- ⇒ Caution ! Hot surfaces cause burns and personal injury.
- ⇒ The operator must thoroughly check and ensure the correct condition of the heating system before commencing paving work.
- ⇒ The gas heating system may only be operated using a pressure control valve with integrated leak tester and hose rupture safety control.
- ⇒ Only operate the gas heating system when it is in a perfect working condition and the flame ignition and the flame control function correctly.
- ⇒ Avoid an accumulation of unignited gas when operating the gas heating system.
- ⇒ It is essential to maintain a working pressure of 0.3 to 0.6 bar.
- ⇒ Any hand burners used for igniting the flame must be placed in a safe area after use.
- ⇒ Ensure that all operating controls on the gas heating system are easily accessible.
- ⇒ Ensure that no gas can escape from the gas bottles when disconnecting them from the gas heating system.



III - 5.0 Gas leakages

- ⇒ **All hoses must be connected tightly to the gas bottles.**
- ⇒ **Only use gas detectors and other approved methods of detecting gas leaks which will not ignite the gas.**
- ⇒ **Switch off the respective gas bottle if a leak occurs and eliminate all sources of a possible gas ignition until the escaped gas has evaporated.**
- ⇒ **Leaky gas bottles must be immediately removed from the danger zone and be appropriately marked if this is possible without submitting yourself to danger.**
- ⇒ **Never use pressure controllers with worn or damaged seals in the gas heating system. Worn or damaged seals must be renewed before use.**
- ⇒ **Ensure the threaded connections match when connecting pressure controllers to the gas bottles.**
- ⇒ **Only use the correct tools for connecting pressure controllers and other connections to the gas bottles.**

III - 6.0 Ventilation

- ⇒ **If the heating system is operated in enclosed areas or restricted spaces, there must be adequate ventilation to prevent dangerous explosions and health hazards caused by exhaust emission and the lack of oxygen in the air.**
- ⇒ **Never operate the gas heating without the ventilation system correctly installed and keep the ventilation intake and outlet apertures free from blockages to ensure an adequate natural ventilation.**

III - 7.0 Switching off the gas heating system

- ⇒ **Close the valves on the gas bottles before work breaks, at the end of a day's paving, after consuming the gas, before disconnecting the pressure controllers, before loosening the gas hoses, during breakdowns and potential danger.**
- ⇒ **The gas heating system must also be switched off during cleaning work.**

III - 8.0 Transporting the gas bottles

- ⇒ Only transport the gas bottles in a special transport rack and safely secure them against toppling over and sliding during transport.
- ⇒ Before transporting the gas bottles, close the valves, remove the connections and securely fit the protective caps.
- ⇒ Do not transport gas bottles together with hazardous goods such as easily combustible materials.

III - 9.0 Fire risks

- ⇒ Operate the heating system in such a way that all fire risks and consequently personal injury are avoided.
- ⇒ Fire and explosion precautions must be taken if the heating system is operated in buildings or areas where explosive gases can be reckoned with.
- ⇒ Keep all objects, materials and cleaning rags which can ignite away from hot areas and parts on the heating system.

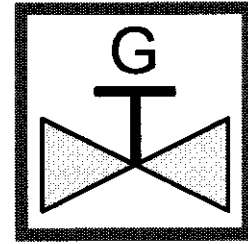


III - 10.0 Repair work

- ⇒ Repair work may only be carried out by fully qualified and authorized personnel.
- ⇒ Only use suitable spare parts and consumables for repair work.
- ⇒ Parts in the heating system which are subject to wear and deterioration must be renewed after 8 years at the latest. An exception to this rule is when an expert confirms their perfect working condition.

III - 11.0 Breakdown procedure

- ⇒ Immediately close the valves on the gas bottles if a breakdown occurs but do not subject yourself to danger.
- ⇒ Only put the paver back into operation again after the cause of the fault has been properly repaired and thoroughly tested.
- ⇒ In case of fire, remove the gas bottles to a safe area and keep them cool but do not subject yourself to danger.
- ⇒ If there is a danger that escaping gas cannot be brought under control or there is a danger of fire in the area of the heating system, immediately alarm the fire brigade and try to extinguish the fire yourself but do not subject yourself to danger. Disconnect the electrical system from a safe location.
- ⇒ Immediately clear the danger zone of all persons.



III - 12.0 Checking the gas heating system

Ensure the complete gas heating system is checked by a fully qualified and authorized person as follows:

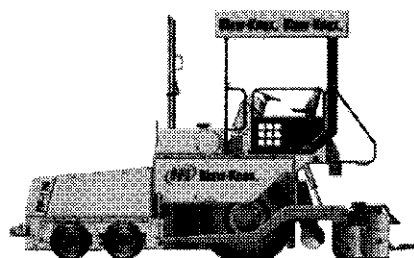
- ⇒ Before using the gas heating system for the first time to ensure that it is correctly installed and has no gas leaks.
- ⇒ After carrying out any maintenance or repair work.
- ⇒ After any alterations have been made which effect the operating safety.
- ⇒ Check the working condition, function, installation and gas leaks in the system if it has been out of operation for more than one year.

Your locally prevailing regulations for checking gas bottles still apply and are not effected by this chapter.

01 Superstructure

This chapter contains the operating and maintenance instructions for the superstructure.

Carefully read and closely observe these instructions when handling your paver.



Contents	Page
<u>01.01 Superstructure.....</u>	<u>1</u>
01.01.01 Radiator Cover / Storage Compartment.....	2
01.01.02 Air Intake Assembly	2
01.01.02 Air Intake Assembly continued	3
01.01.03 Ascent.....	4
01.01.04/05 Gas Bottle Support LH / RH.....	4
01 01.04 Gas Bottle Support continued	5
01.01.05 Sockets	5
01.01.06 Safety Chain	5
<u>01.04 Side Doors and Engine Bonnet.....</u>	<u>6</u>
01.04.01 Side Door LH.....	6
01.04.02 Side Door RH	7
01.04.03 Engine Bonnet	8
01.04.04 Deck Plate	9
01.04.05 Door, Storage Compartment	10
<u>01.05 Sound Insulation.....</u>	<u>11</u>
<u>01.06 Fuel Tank.....</u>	<u>12</u>
01.06 Fuel Tank continued	13
<u>01.09 Seat Consoles</u>	<u>14</u>
<u>01.10 De Luxe Seat</u>	<u>15</u>
<u>01.26 Wheel Chock</u>	<u>16</u>
<u>01.15 Sun Roof.....</u>	<u>17</u>

01.01 Superstructure

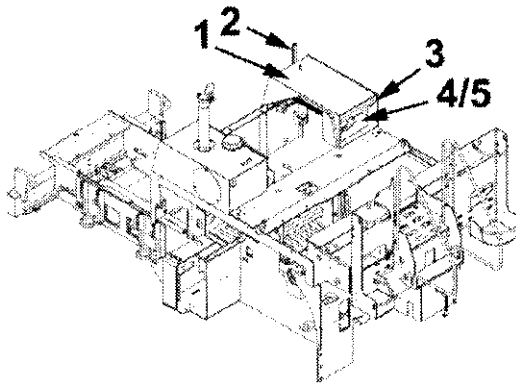
01.01.01 Radiator Cover / Storage Compartment



The radiator cover (1) is located on the RH side of the paver and consists of a through passage (2) for the mat thickness indicator rod, a socket (3) and a storage compartment (4).

The storage compartment (4) contains the terminals (5) for the paver's electrics (the wiring diagram is included in the spare parts list).

There is also sufficient space to store a first aid kit and warning triangle.



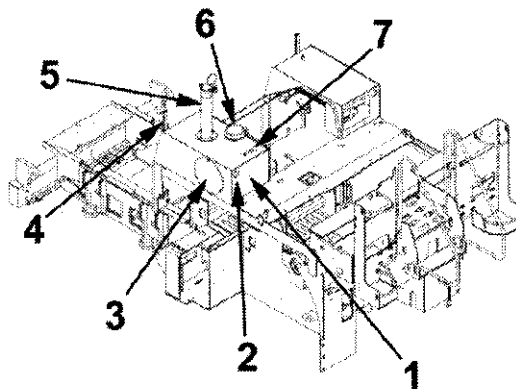
A first aid kit and warning triangle are not included in the paver's standard range of supply.

The radiator cover (1) is maintenance free.

01.01.02 Air Intake Assembly



The air intake assembly (1) located on the LH side of the paver contains a socket (2), an access plate (3) for the air filter, a through passage (4) for the mat thickness indicator rod, the exhaust pipe (5), the air intake (6) and the gate (7) for the gear lever.



The air intake assembly (1) is maintenance free.

01.01.02 Air Intake Assembly continued



There is a danger of burning yourself on the hot components of the exhaust system.

Remove the exhaust pipe before transporting the paver by truck.

Ensure the paver's exhaust system is always closed as a protection against dampness.



Loosen the screw (5a) on the rain cap clamp.

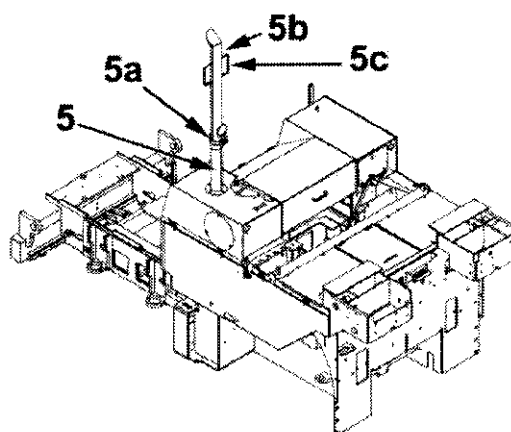
Use both hand grips (5c) to fit the exhaust pipe (5b) onto the lower section (5).

Ensure the offset end of the exhaust pipe (5b) points in the forward direction of travel.

Finally, tighten up the screw (5a) on the rain cap clamp.

Remove the exhaust pipe in the reverse sequence.

The exhaust pipes (5) and (5b) are maintenance free.



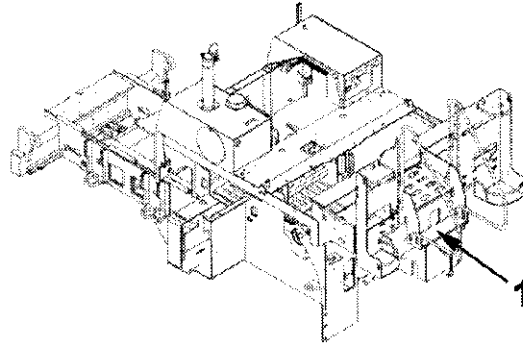
01.01.03 Ascent



Keep the steps clean to avoid accidents caused by slipping and falling.



The ascent (1) is located at the rear of the paver.
The ascent is maintenance free.



01.01.04/05 Gas Bottle Support LH / RH



Observe all relevant laws and regulations for operating the gas heating system and for transporting gas bottles (chapter III refers).

Secure the gas bottles against toppling over and turning.

Cover the gas bottles with the canvas covers to prevent them unduly warming up.

Some of the threaded connections on the gas heating system have left-hand threads. These can be identified by the groove in all six surfaces of the union nuts.



Mounting the Gas Bottles:

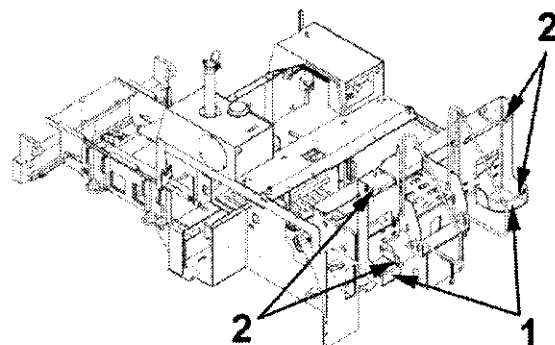
Place the gas bottles in the gas bottle supports (1).

Fit the canvas canopies on the bottles.

Secure the gas bottles with the securing device (2) provided.

Unscrew the protective caps from the gas bottles.

Connect the pressure controller to the cut-off valve on the gas bottle.



01 01.04 Gas Bottle Support continued

Removing the Gas Bottles

Remove the gas bottles in the reverse sequence.

Ensure the protective caps are screwed back onto the gas bottles.



Only use propane gas to ensure a stable operation of the heating system. Gases with a high butane content do not provide sufficient vaporising pressure for the gas burners to run in a stable manner. Further instructions for operating the gas heating system are contained in the Operating Manual for the screed

The gas bottle supports are maintenance free.

01.01.05 Sockets

(please refer to chapters 01.01.01 and 01.01.02)

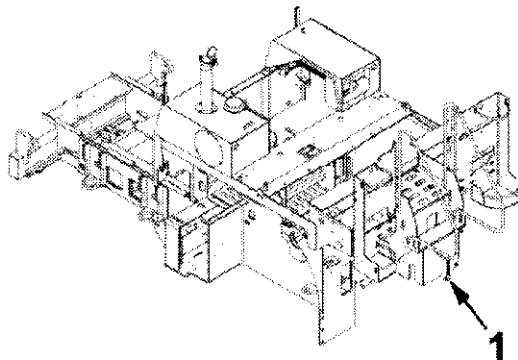
The sockets are maintenance free.

01.01.06 Safety Chain



The safety chain (1) for securing the cover on the basic screed in the open position is located on the LH side adjacent to the ascent.

The safety chain is maintenance free.



01.04 Side Doors and Engine Bonnet

01.04.01 Side Door LH



There is a danger of crushing and lacerations when opening and closing the LH side door (1).

Retract the seat console before opening the LH side door.



Opening the LH side door:

Release the clamp type door catch (3) by turning it to the left.

Use the hand grip (2) to swing the LH side door (1) upwards.

A retainer catch (4) automatically arrests the LH side door in the open position.

Closing the LH side door:

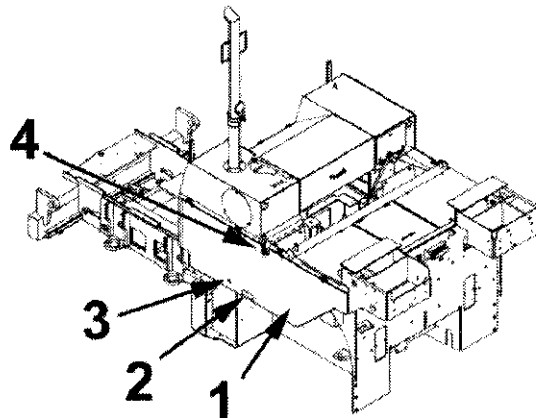
Slightly raise the LH side door (1).

Push the retainer catch (4) upwards.

Slowly lower the LH side door to the closed position.

Lock the clamp type door catch (3) by turning it to the right.

The LH side door (1) is maintenance free.



01.04.02 Side Door RH



There is a danger of crushing and lacerations when opening and closing the RH side door (1).

Retract the seat console before opening the LH side door.



Opening the RH side door:

Release the clamp type door catch by turning it to the left.

Use the hand grip to swing the RH side door (1) upwards.

The RH (1) side door will be automatically arrested in the open position by a gas loaded spring.

Closing the RH side door:

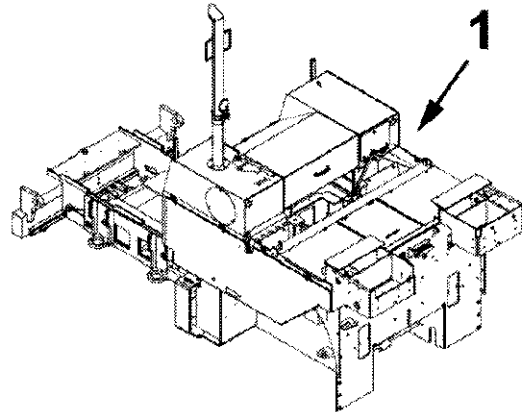
Slightly raise the RH side door (1).

Release the safety catch on the gas loaded spring.

Slowly lower the RH side door to the closed position.

Lock the clamp type door catch by turning it to the right.

The RH side door (1) is maintenance free.



01.04.03 Engine Bonnet



Ensure there are no objects laying on the engine bonnet (1) when opening it.
Do not tread on the chain type cable duct for the control panel.



Opening the engine bonnet:

Slide the control column to its outer LH or RH position.

Use the hand grip (2) to raise the engine bonnet (1) until the retainer catch safely locks into position.

The engine bonnet (1) is now secured against dropping downwards.

Closing the engine bonnet:

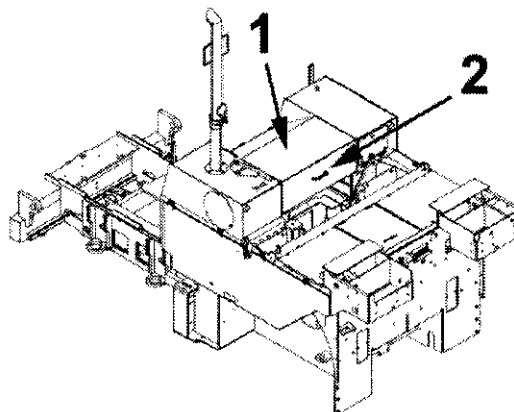
Before closing the engine bonnet, ensure all work has been completed and all tools and appliances have been removed from the engine compartment.

Use the hand grip (2) to slightly raise the engine bonnet (1) so that the retainer catch can be released.

Slowly lower the engine bonnet (1) to its closed position.

The engine bonnet is now closed.

The engine bonnet (1) is maintenance free.



01.04.04 Deck Plate



Ensure there are no loose objects left laying on the deck plate (1).



Opening the deck plate:

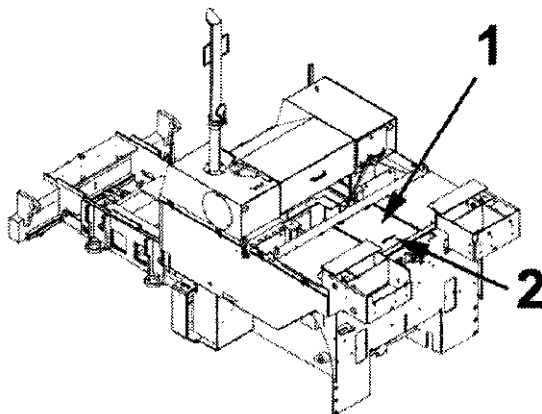
Slide the control column to its outer LH or RH position.

Use the hand grip (2) to raise the deck plate (1) and lean it against the engine bonnet.

Closing the deck plate:

Ensure all work has been completed and all tools and appliances have been removed from the space under the deck. Use the hand grip (2) to lower the deck plate (1) to its closed position. The deck plate is now closed.

The deck plate (1) is maintenance free.



01.04.05 Door, Storage Compartment



Ensure there are no objects in front of the door (1).



Opening the door:

Slide the control column to its outer LH position.

Release the clamp type door catch (2) by turning it to the left.

You can now swing open the compartment door (1).

Closing the door:

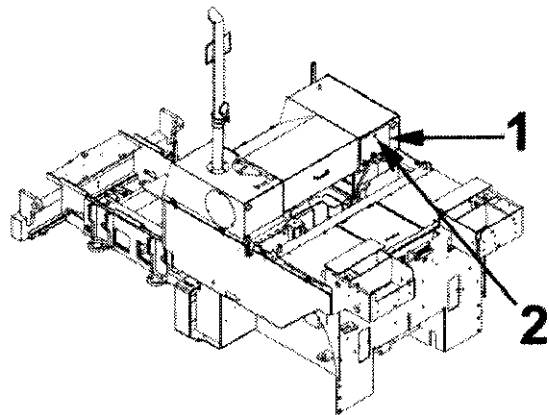
Before closing the door, ensure all work has been completed and all tools and appliances removed.

Raise and close the door (1).

Lock the clamp type door catch (2) by turning it to the right.

The door (1) is now closed and locked.

The door (1) for the storage compartment is maintenance free.





01.05 Sound Insulation



Ensure the insulating mats are always in a perfect condition.
Serious engine damage will occur if the insulating mats become loose in the area of the intake for the combustion air.

01.06 Fuel Tank



Unscrew and remove the filler cap slowly to avoid fuel spraying out causing irritations to the skin and eyes or even nausea.

Switch off the Diesel engine before refuelling the paver.

Sparks and naked flames must be absolutely avoided when refuelling.

Only use a quality of Diesel fuel which has been approved by the manufacturer to avoid damage to the engine.

Ensure the sieve (3) is in the filler neck (2) before refuelling.

Never spill any Diesel fuel.



Observe the instruction decal on the tank and only refuel with Diesel fuel.

Removing the filler cap:

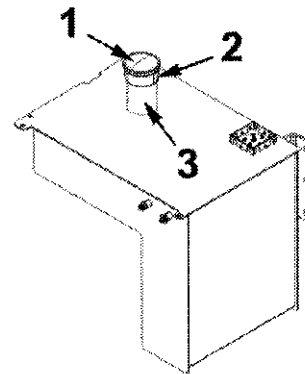
Unlock the filler cap (1) with the key supplied.

To remove the filler cap (1), turn it to the left and refuel with clean Diesel fuel.

Replacing the filler cap:

Replace the filler cap (1) and turn it to the right as far as the limit stop.

Lock the filler cap with the key supplied.



01.06 Fuel Tank continued



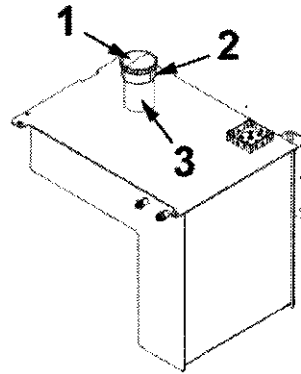
Wartung
Maintenance

If necessary, clean the sieve (3) in the filler neck after refuelling the paver.



Removing the sieve (3):

Unscrew and remove the filler cap (1).
Remove the sieve (3) from the filler neck (2).
Only use Diesel fuel to clean the sieve.



Replacing the sieve (3):

Replace the sieve in the reverse sequence.



New machines are supplied with the key fastened on the inside of the filler cap.

When your paver left our factory, the tank was filled with approx. 20 litres of Diesel fuel according to the specifications in the table of fuel, oils and lubricants.

01.09 Seat Consoles



Never remove the safety chains (2) and safety railings (3).

Keep decks and walkways clean.

There is a danger of crushing and lacerations when cross-sliding the seat consoles (1).



You can cross-slide the seat consoles (1) to the left or to the right.



Cross-sliding the seat consoles:

Pull the knob (4).

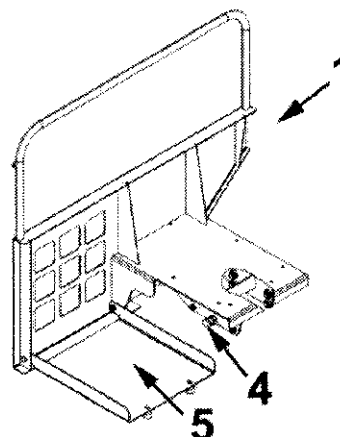
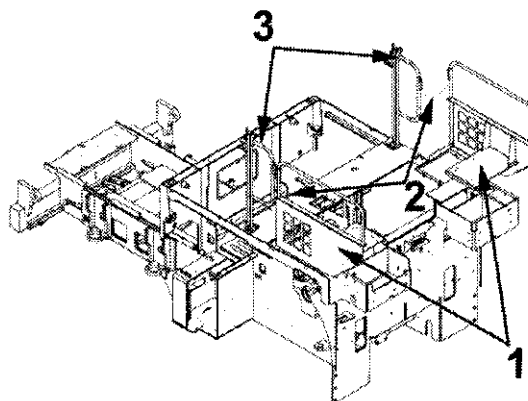
Push the seat console to the required position (inner or outer end position).

After the seat console has reached the end position, release the knob to lock the console in this position.



Always leave the foot plate (5) folded downwards whatever the position of the seat console (1). This will avoid accidents caused by falling and stumbling.

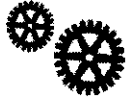
The seat consoles (1) are maintenance free.



01.10 De Luxe Seat



Only adjust the de luxe seat when the paver is at a standstill.



The de luxe seat can be adjusted to the required position using the knobs and levers illustrated.



Adjustment to weight:

Turn the knob (2) until the number appearing in the window is the same as the weight of the operator.

Horizontal adjustment:

Pull the lever (1) upwards to slide the seat to and fro to the required position. Release the lever to lock the seat in the position selected.

Height and slope adjustment:

Pull the two levers (5) on the LH side upwards and use the weight of your body to adjust the seat to the required position.

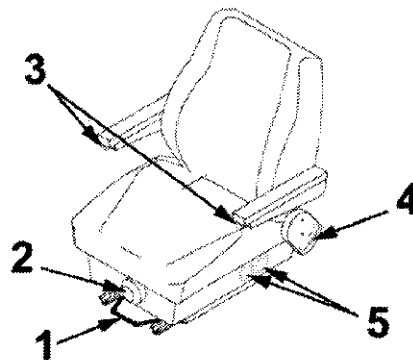
Backrest adjustment:

Pull the lever (4) on the LH side upwards and use the weight of your body to adjust the backrest to the required position.

Adjusting the LH & RH armrests:

Turn the knob (3) to set the armrests to the required position.

The de luxe seat is maintenance free.



01.26 Wheel Chock



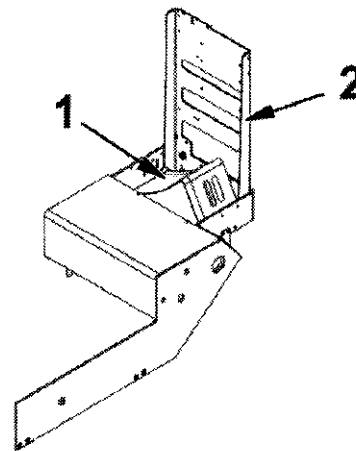
For safety reasons, always use the wheel chock (1) when taking the paver out of operation.



The wheel chock (1) prevents the parked paver from unintentionally rolling off.



The wheel chock (1) is located in front of the RH gas bottle support (2).



Using the wheel chock:

Release the locking device and remove the wheel chock (1) from its storage bracket.

Place the wheel chock (1) under the down slope side of one of the wheels to prevent the paver rolling off.

Removing the wheel chock:

Remove the wheel chock (1) from under the wheel and replace it in the storage bracket.

Secure the wheel chock in the storage bracket with the safety device.

The wheel chock (1) is maintenance free.

01.15 Sun Roof



Ensure the sun roof is securely locked in its raised or lowered position.

There is a danger of crushing and lacerations when raising or lowering the sun roof.

Slide the control column to the centre position before lowering the sun roof.

Before transporting the paver on a truck, the roof must be lowered, safely secured and the canopy removed. Otherwise the canopy may be torn or ripped.



Raising the sun roof:

Remove the two safety bolts from the rear LH & RH roof supports.

Raise the sun roof (1) whereby the gas loaded spring (4) will take some of the weight.

Secure the sun roof (1) with the toggle type fasteners (2).

Fit the roof canopy over the frame.

Secure the canopy with the leather straps and buckles.

Lowering the sun roof:

Slide the control column to the centre position.

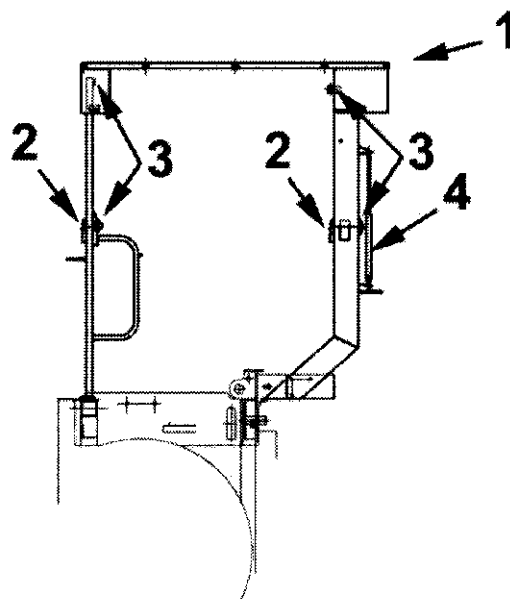
Remove the roof canopy.

Release the toggle type fasteners (2).

Lower the sun roof (1) downwards and to the rear.

Secure the sun roof with the toggle type fasteners (2).

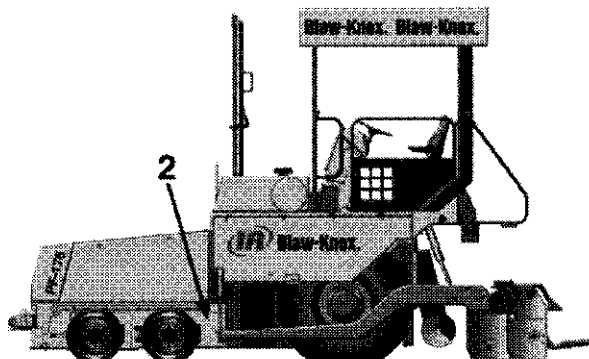
The sun roof (1) is maintenance free.



02 Frame

The paver's main frame is a continuous steel weldment. Apart from the guide rollers for the towing arms and the spacer shims, the paver's main frame is maintenance free.

This chapter provides information on the components mounted directly on the main frame.



Contents	Page
02.01 Frame	20
02.01.01 Identification Plate.....	20
02.02 Oscillating Front Cross Beam	20
02.03 Direction Indicator	21
02.04 Screed Transport Lock	22
02.05 Towing Arms	23
02.05.01 Spacer Shims.....	23

02.01 Frame

02.01.01 Identification Plate



The identification plate (2) and the paver's serial number (3) are located on the rear right-hand side of the frame above the towing arm.

The identification plate and serial number serve the purpose of identifying your paver.



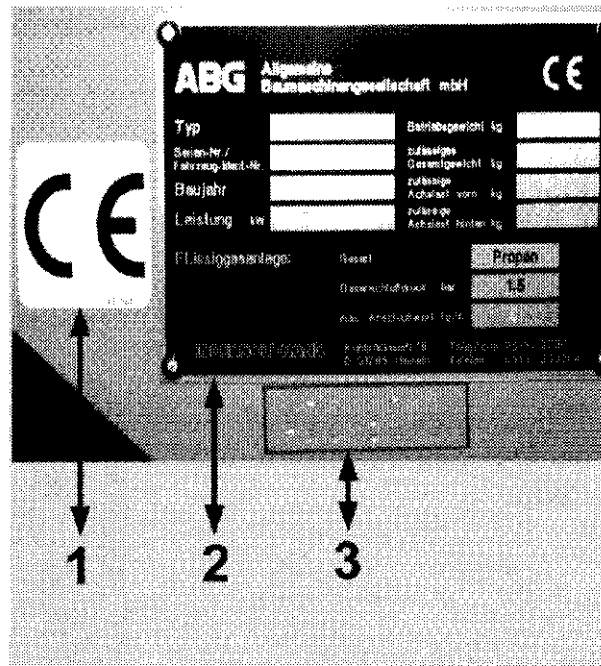
Please quote the complete serial number on all enquiries concerning your paver.

02.02 Oscillating Front Cross Beam



Wartung
Maintenance

Clean off any paving material from the truck buffer rollers as and when necessary.

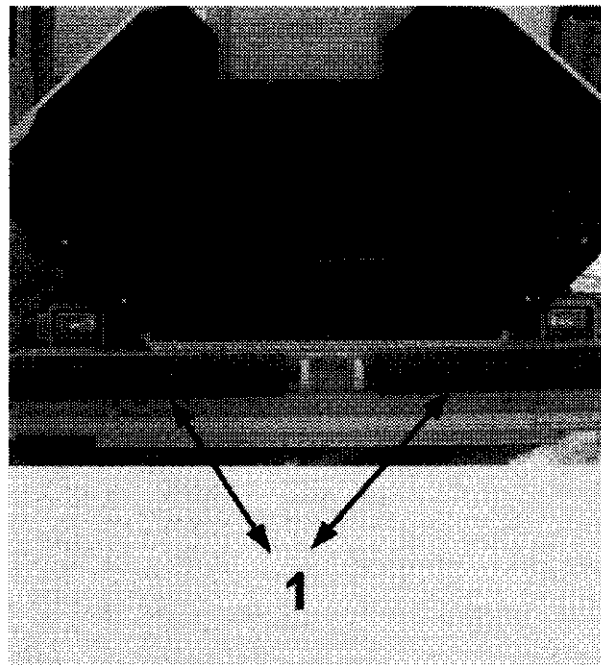


Paver identification

CE Label (1)

Identification plate (2)

Serial number stamped on the frame (3)



02.03 Direction Indicator



There is a danger of crushing and lacerations when mounting and adjusting the direction indicator.

Caution should be taken because the direction indicator protrudes beyond the basic width of the paver.



The paver can be accurately steered by guiding the direction indicator along a reference surface such as a tensioned wire.



Drive the paver into the paving position parallel to the reference wire.

Push the outrigger tube (3) into the take up tube (1).

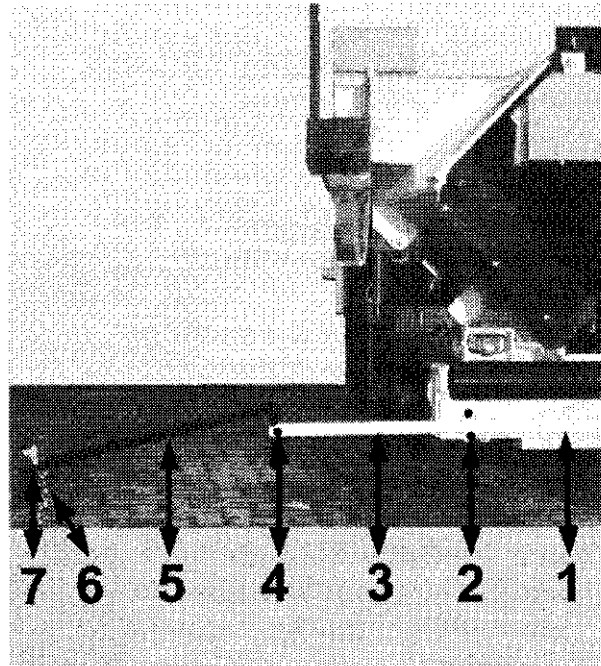
Connect the indicator arm (5) to the outrigger tube (3).

The angle between the indicator arm (5) and the outrigger tube (3) should be set at approx. 70°. The indicator arm (5) should protrude forwards.

Now tighten up the adjusting screws (2) and (4).

Finally, the indicator chain (6) is fitted to the indicator arm (5).

The direction indicator should be so adjusted that the indicator chain just touches the reference wire.



- Direction indicator
- Take up tube (1)
- Adjusting screw (2)
- Outrigger tube (3)
- Adjusting screw (4)
- Indicator arm (5)
- Indicator chain (6)
- Adjusting screw (7)

02.04 Screed Transport Lock



There is a danger of crushing and personal injury when operating the screed transport lock.

The paver must always be transported with the screed safely secured in the screed transport lock.

Before lowering the screed, ensure there are no persons or objects in the area of danger.

Never operate the tow point adjustment when the screed is in the transport lock.

This would damage the screed transport lock device.



The screed is safely secured in the transport lock during transport. The right and left-hand catch hooks are actuated with the locking lever.



Locking the screed for transport

Raise the screed.

Push the locking lever (3) to the lower position.

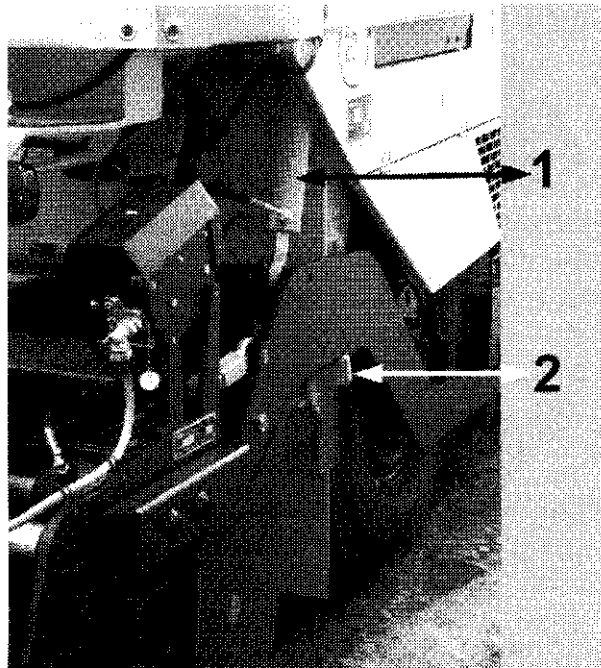
Lower the screed until the entire weight of the screed is resting in both catch hooks (2).

Releasing the screed

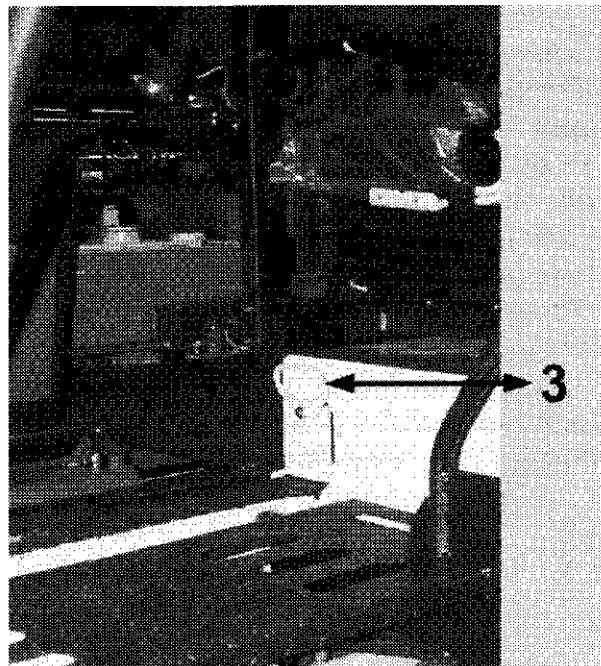
Raise the screed until it is completely free of the catch hooks (2).

Push the locking lever (3) to the upper position as illustrated.

Slowly lower the screed down to the ground.



Screed Transport Lock R.H. side
(1) Transport cylinder R.H. side
(2) Catch hook R.H. side



Screed Transport Lock
(3) Locking lever

02.05 Towing Arms



Lubricant:

Grease Shell Darina II

Quantity:

Guide rollers L. H. & R.H. Lubricate until grease emerges out of the cavities.

Slip guides as required.

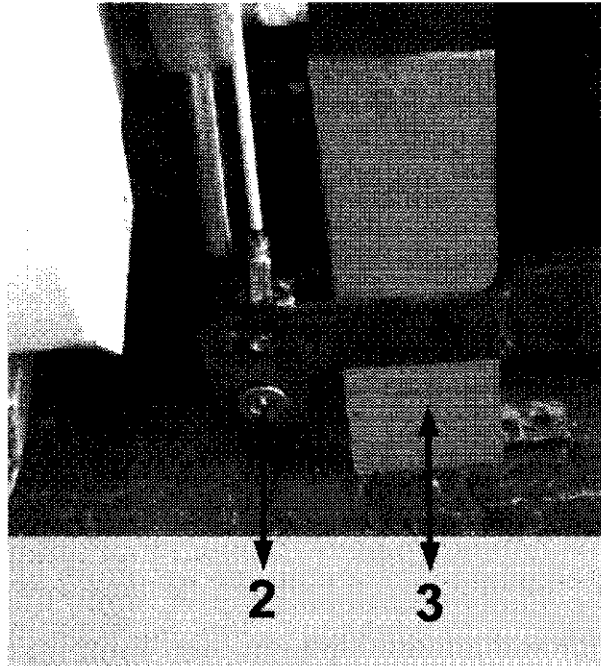
Intervals:

500 operating hours (or once every 6 months)

Lubricating points:

Grease nipple (2) on the guide rollers.

Clean and grease the slip guides (3).



Towing arms
Grease nipple on the guide roller (2)
Slip guide (3)

02.05.01 Spacer Shims



Maintenance

Lubricant:

Grease Shell Darina II

Quantity:

As required.

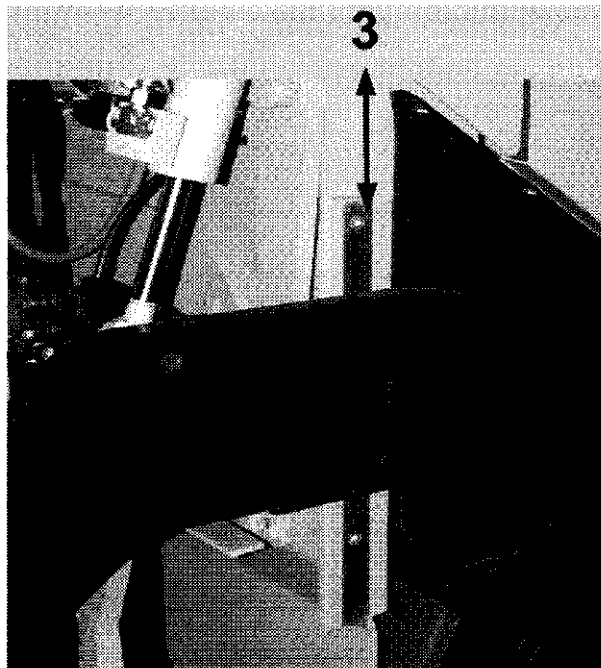
Intervals:

500 operating hours (or once every 6 months)

Lubricating point:

Apply a film of grease to the LH & RH spacer shims (3).

Clean the spacer shims before applying grease.

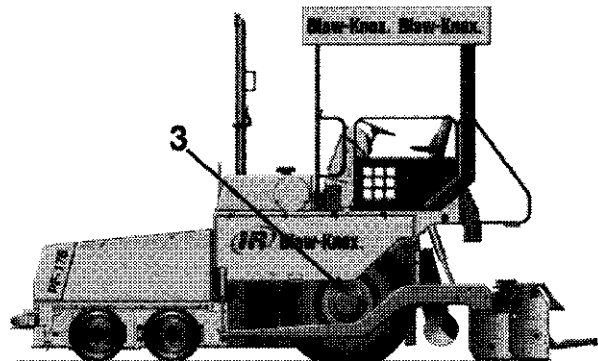


Spacer shim (3)

03 Undercarriage

This chapter contains instructions for operating and maintaining the portal axle, installing the road scrapers and using the wheel chock.

It also provides information on the fluid fillings, checking the tyre pressure and lubricating work on the rear drive wheels.



Contents	Page
03.01 Portal Axle.....	26
03.01.01 Service Brake.....	29
03.01.02 Parking Brake.....	34
03.02 Assembly parts for the portal axle are maintenance free.....	35
03.03 Rear Wheel Complete.....	36
03.04 Void.....	38
03.05 Road Scrapers.....	38
3.6 Wheel Chock.....	39
03.07 Front Wheels.....	39
03.07.01 Front Wheel Steering.....	40
03.07.02 Front Wheels without Power Drive.....	41
03.07.03 Equalization Cylinders.....	42

03.01 Portal Axle



- There are separate oil supplies for the portal axle and gear box.
- Park the paver on level ground to check the oil level.
- Check the oil level after the oil has settled.
- Place a suitable container under the drain plug before draining off the oil.
- Always fit a new seal on the drain plug before replacing it.



Wartung
Maintenance

Portal axle

Oil:

Shell Spirax MB 90, **CPN: 13923131**

Quantity:

24 litres

Check the oil level:

Every 100 hours (or once a month).

Oil change intervals:

First oil change at 100 hours.

Thereafter every 2000 hours (or once a year).

Draining the oil from the portal axle:

Open the drain plug on the oil drain connection (1) located on the outside of the paver's rear wall.

With the oil at operating temperature, remove the drain plugs from the oil drain connections (2) & (3) and drain off the oil.

Thereafter, replace and tighten the drain plugs (2) & (3).

Portal axle: Filling oil & checking the oil level:

Remove the nut from the oil drain connection (1).

Pull the hydraulic hose upwards and use a funnel to fill up with axle oil through the connection.

After the oil has settled, unscrew and remove the oil level plug (4) and check the oil level.

The oil level in the axle is correct if it runs out of the threaded hole for the oil level plug (4).

Replace and tighten the oil level plug (4).

Replace the drain plug on the oil drain connection (1) and then use the nut to fit the connection back onto the paver's rear wall.



Wartung
Maintenance

Gear box

Oil:

Shell Spirax MB 90, **CPN: 13923131**

Quantity:

5 litres

Check the oil level:

Every 100 hours (or once a month).

Oil change intervals:

First oil change at 100 hours.

Thereafter every 2000 hours (or once a year).

Draining the oil from the gear box:

Remove the drain plug and nut from the oil drain connection (5).

Pull the hydraulic hose downwards and through the paver's rear wall (6) and drain off the oil.

Thereafter, use the nut to fit the oil drain connection (5) back on to the paver's rear wall. The oil drain connection (5) is now used to check the oil level.

Gear box: Filling oil & checking the oil level:

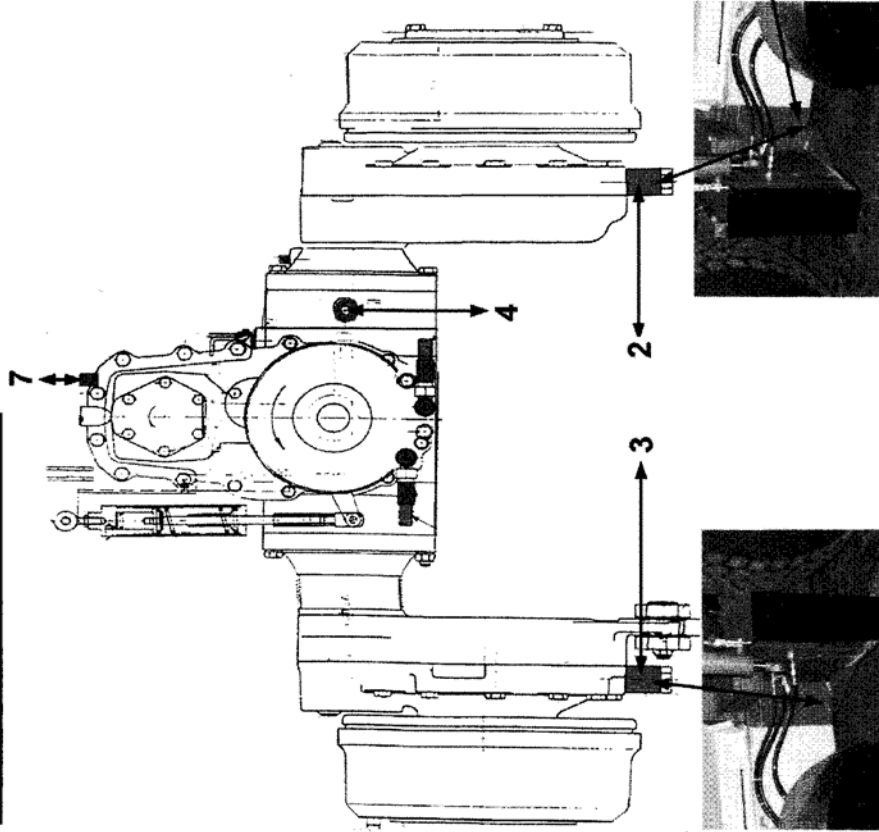
Remove the oil filling plug (7) and use a funnel to fill oil into the gear box.

The oil level is correct if it runs out of the oil drain connection (5).

Replace and tighten the oil filling plug (7).

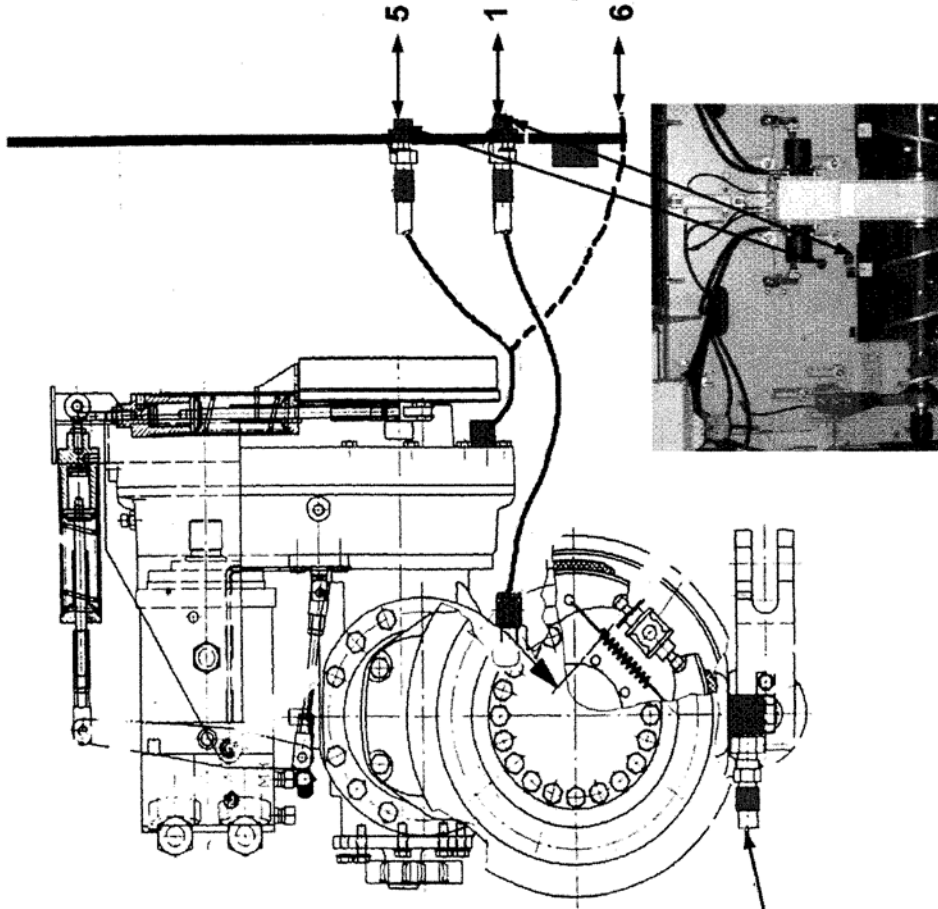
Replace and tighten the drain plug on the oil drain connection (5).

Overview of the Portal Axle



Changing the oil and checking the oil level on the axle

- 1 Oil drain connection on the paver's rear wall
- 2 Oil drain plug RH axle
- 3 Oil drain plug LH axle
- 4 Oil level plug (Allen screw)



Changing the oil and checking the oil level on the gear box

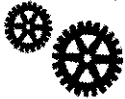
- 5 Oil drain connection on the paver's rear wall
- 6 Position of hose for draining off the oil
- 7 Oil filling plug

03.01.01 Service Brake



Before removing the rear drive wheels, safely secure the paver's front wheels to prevent the machine moving. This will ensure the paver remains at a standstill. Only use suitable hoisting devices to lift the paver.

Observe the heavy weight of the rear wheel during assembly work. Ensure the brake is correctly adjusted to maintain a correct function. The Diesel engine must be switched off during all dismantling, adjusting and assembly work.



The brake can be adjusted by turning the toothed adjusting wheel (2) to expand the brake shoes.

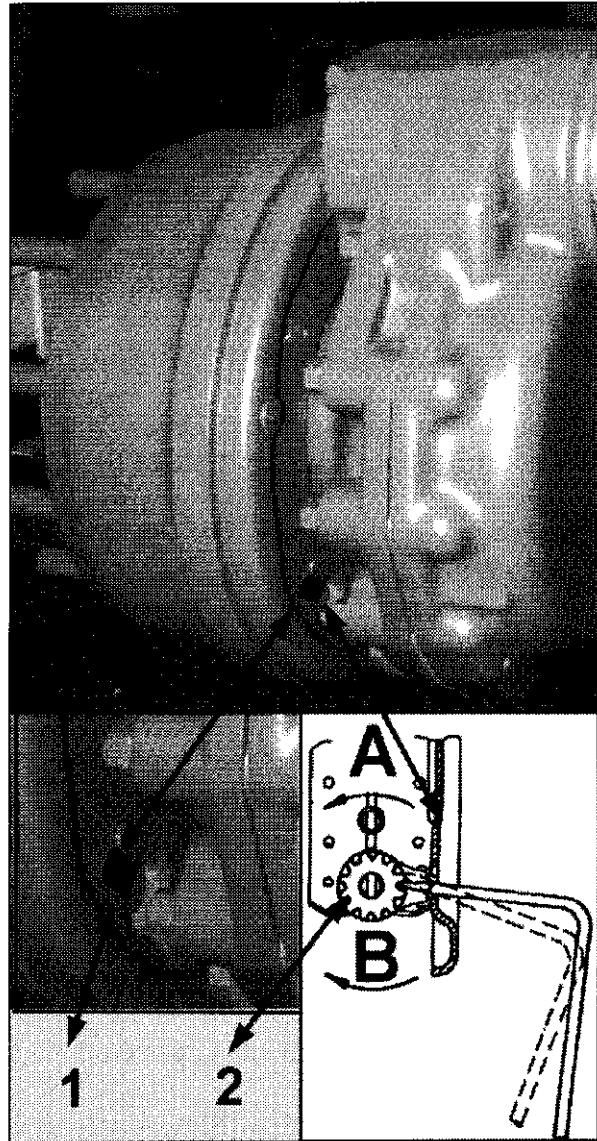
Access to the toothed adjusting wheel can be gained through the square opening (1) in the brake carrier plate.

A brake adjustment is necessary if the braking effect is not sufficient or not sufficient on one side and after fitting new brake linings.



Waiting
Maintenance

Check the adjustment of the service brake every 1000 operating hours and adjust it if necessary.



Portal Axle

- (1) Access opening
- (2) Toothed adjusting wheel

The procedure for adjusting the brake is described on the following pages. Closely observe the sequence of procedure described.



Disconnecting the front of the tow point

Remove the locking bolt (2) from the indicator rod (1).

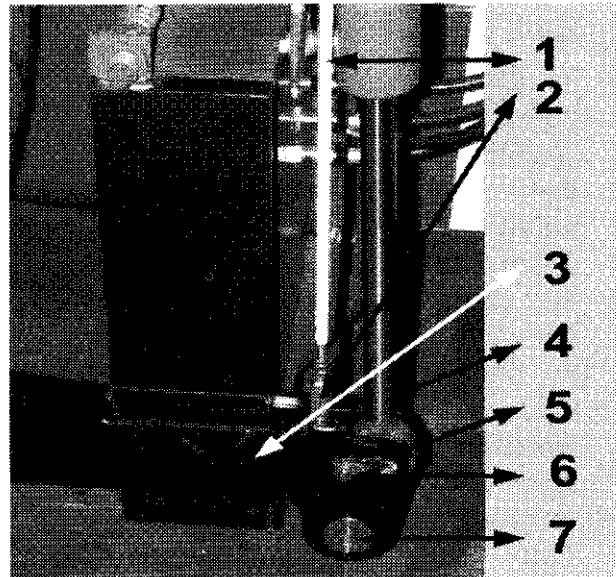
Slightly lift the towing arm (3) using a hydraulic jack.

Support the towing arm (3) in its height by placing suitable packing behind the guide roller.

Remove the lock screw (6) with the locking bolt (5) from the levelling cylinder (4).

Dismantle the guide roller (7) by loosening the screw (not illustrated) on the inside of the towing arm.

Use the same sequence of procedure to dismantle the towing arm on the left-hand side.



Tow Point Adjustment

- (1) Indicator rod
- (2) Locking bolt
- (3) Towing arm
- (4) Levelling cylinder
- (5) Locking bolt
- (6) Lock screw
- (7) Guide roller

Disconnecting the screed

Remove the cable plugs from the sockets (1) on the distributor.

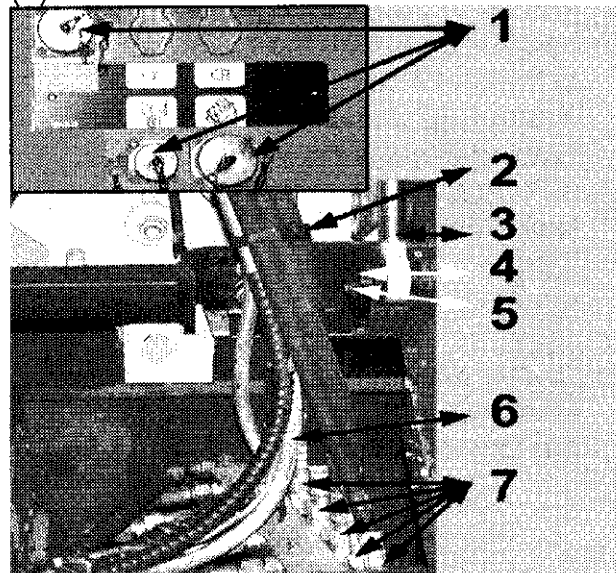
Remove the cable straps (2) from the hoses.

Remove the lock screw (5) and the locking bolt (4) from the screed transport cylinder (3).

Ensure that all connections between the paver and the screed have been disconnected.

Drive the paver approx. 4 metres forwards at a very slow speed.

Once again, ensure that all connections between the paver and the screed have been disconnected.



Paver's Rear Right-hand Side

- (1) Sockets on the rear wall distributor
- (2) Cable straps
- (3) Screed transport cylinder
- (4) Locking bolt on the transport cylinder
- (5) Lock screw on the transport cylinder
- (6) Electro cable and gas hose loom
- (7) Hydraulic connections

- Removing the rear wheels

Select a suitable point on the rear of the frame and raise the paver and support it in the raised position using suitable chocks. Remove the wheel nuts (2) and be careful of the heavy weight of the wheel. Remove the wheel (1) from the brake drum using a suitable lifting device.

Releasing the parking brake:

Please refer to the chapter for towing the paver.

Putting the gear box into the neutral position:

Please refer to the chapter for towing the paver.

Adjusting the LH & RH service brake:

Loosen the hex screw (2) by approx. 2 turns.

Hit the head of the hex screw (2) with a hammer to release the adjusting device. Remove the rubber plug (1) from the square opening.

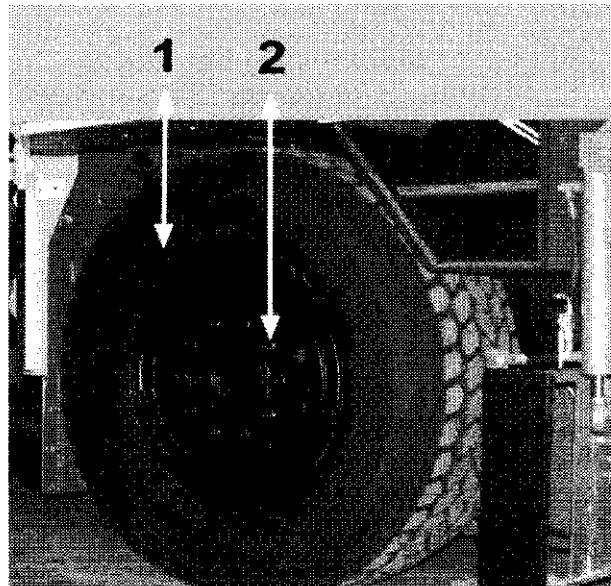
Use an angled tool to turn the toothed adjusting wheel (3) in the direction of the arrow **TIGHTEN** until the brake drum blocks.

Tighten up the hex screw (2).

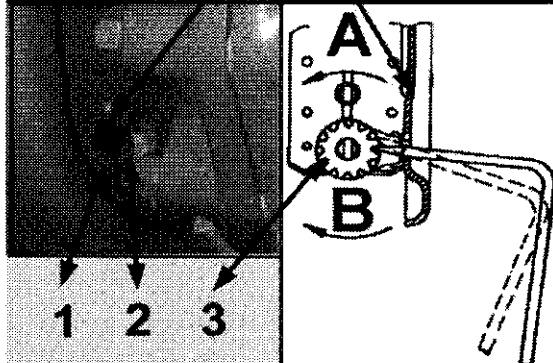
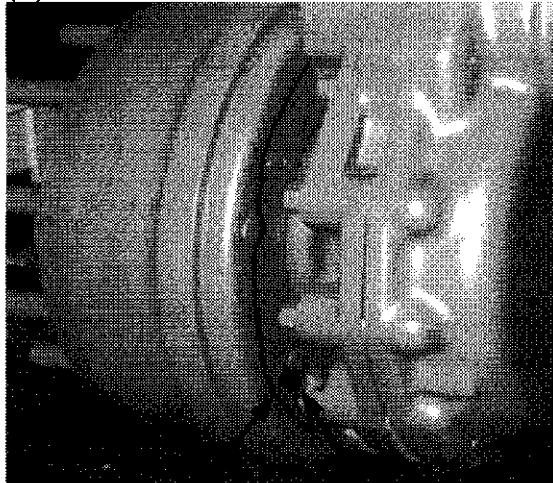
Use the angled tool again and turn the toothed adjusting wheel (3) by 2 clicks in the direction of the arrow **LOOSEN**.

Rotate the brake drum and ensure there is no friction between the brake shoes and the brake drum.

Ensure the service brakes are adjusted equally on both wheels.



Rear Drive Wheel
(1) Wheel complete
(2) Wheel nut



Axle with Brake Drum
(1) Rubber plug
(2) Hex screw
(3) Toothed adjusting wheel
(A) Direction of arrow to **TIGHTEN**
(B) Direction of arrow to **LOOSEN**

After correctly adjusting the service brakes, the paver can be returned to its original condition.

The sequence of work for returning the paver to its original condition is described on the following pages.

Replacing the rear wheels

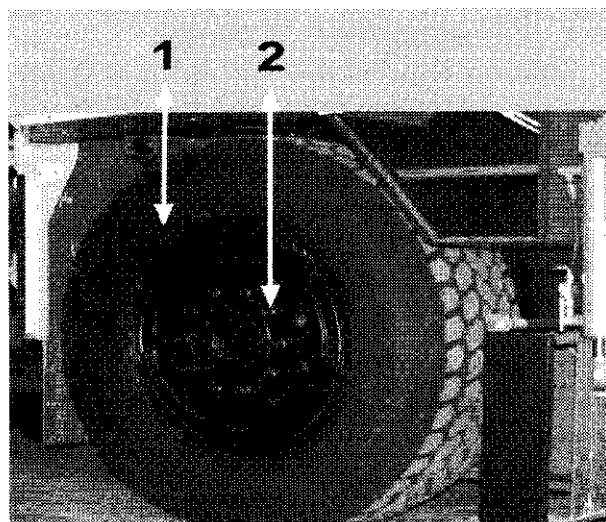
Use a suitable lifting device to fit the rear wheel (1) to the brake drum.

Screw on the wheel nuts (2) and tighten them to a torque of **550 Nm**.

Slightly lift the rear frame of the paver and remove the support chocks.

Lower the paver down to the ground.

The same procedure applies for replacing the left and right-hand drive wheels.



Rear Drive Wheel
(1) Wheel complete
(2) Wheel nut

Reconnecting the parking brake:

Please refer to the chapter for towing the paver.

Reconnecting the shifter rod:

Switch off the Diesel engine before you reconnect the shifter rod.

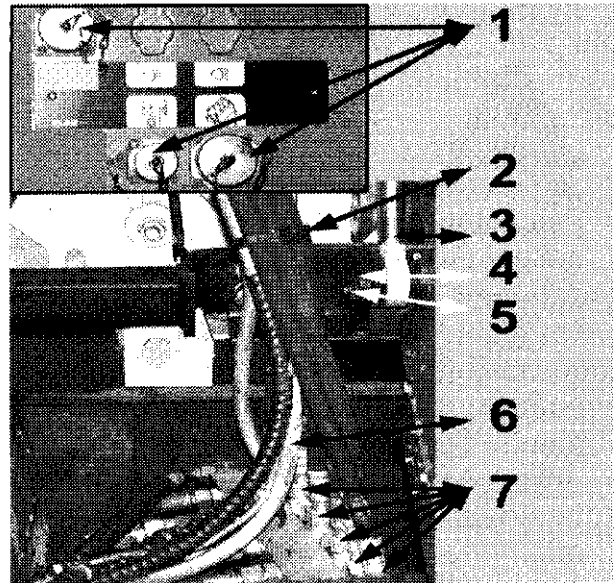
Please refer to the chapter for towing the paver.

Reconnecting the screed

Slowly reverse the paver until the towing arms are back in the guides.

Assemble the screed transport cylinders with the locking bolt (4) and the lock screw (5).

Reconnect the hoses and cables (6) (7) and secure them with the cable straps (2). The same procedure applies to the left and right-hand sides.



Paver's Rear Wall

- (1) Sockets on the rear wall distributor
- (2) Cable straps
- (3) Screed transport cylinder
- (4) Locking bolt on the transport cylinder
- (5) Lock screw on the transport cylinder
- (6) Electro cable and gas hose loom
- (7) Hydraulic connections

Reconnecting the towing arms

Assemble the levelling cylinder (4) using the locking bolt (5) and the lock screw (6). Slightly raise the towing arm (3) using a hydraulic jack and remove the supporting chocks.

Assemble the guide roller (7).

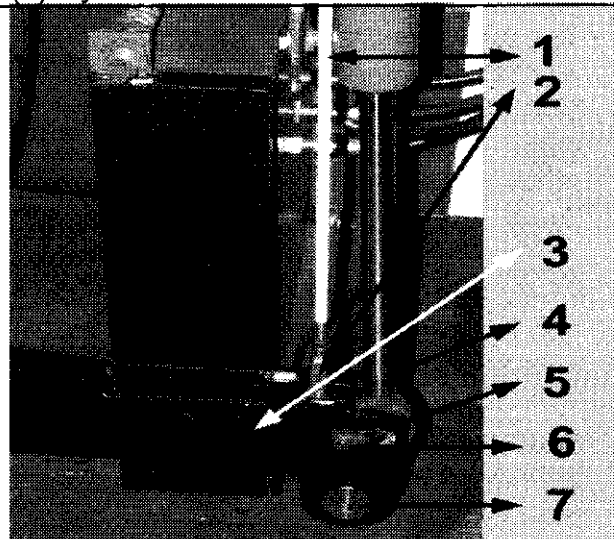
Fit the locking bolt (2) to the indicator rod (1).

The same procedure applies to the right and left-hand sides.



After completing all work, check and ensure that:

- all nut, bolts and screws have been tightened;
- there are no leaky hydraulic connections;
- the electrics have been correctly connected;
- you carry out a functional test.



Tow Point Adjustment R.H. Side

- (1) Indicator rod
- (2) Locking bolt
- (3) Towing arm
- (4) Levelling cylinder
- (5) Locking bolt
- (6) Lock screw
- (7) Guide roller

03.01.02 Parking Brake



Secure the front wheels of the paver with the wheel chock provided to ensure the machine remains at a standstill.

For safety reasons, never open the housing of the spring loaded cylinder because the unit is under pressure. Ensure the parking brake is correctly adjusted to maintain its correct function. Only use the parking brake for an emergency stop if the service brake has failed.



The parking brake (1) is actuated by the spring loaded cylinder.

If it is only used for the function it was designed for, the parking brake is almost maintenance free.

The following check of the brake adjustment is necessary if the parking brake has been used to do an emergency stop.



Check the parking brake adjustment every 1000 operating hours and readjust it if necessary.

Basic adjustment of the parking brake

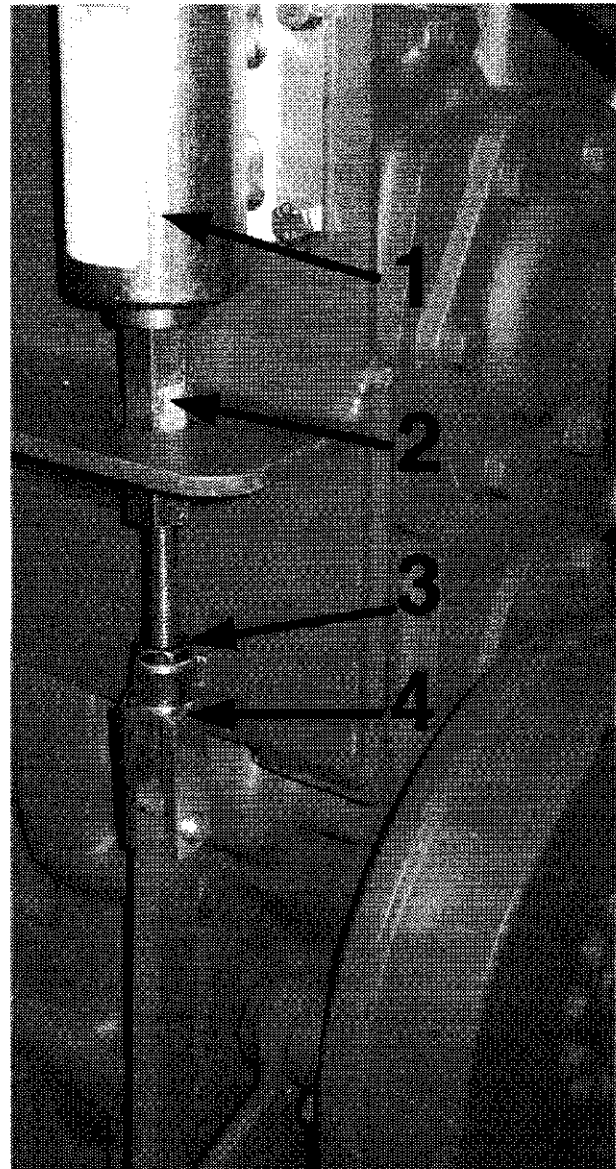
Switch off the Diesel engine and release the locking nut (3).

Turn the turnbuckle nut (2) clockwise towards the spring loaded cylinder (1) until the parking brake is released.

The safety pin (4) can now be easily removed and the parking brake is free.

Start the Diesel engine and actuate the toggle switch for the parking brake.

If the piston rod on the spring loaded cylinder (1) is extended, turn the turnbuckle nut (2) anti-clockwise until the



Emergency Release for the Parking Brake

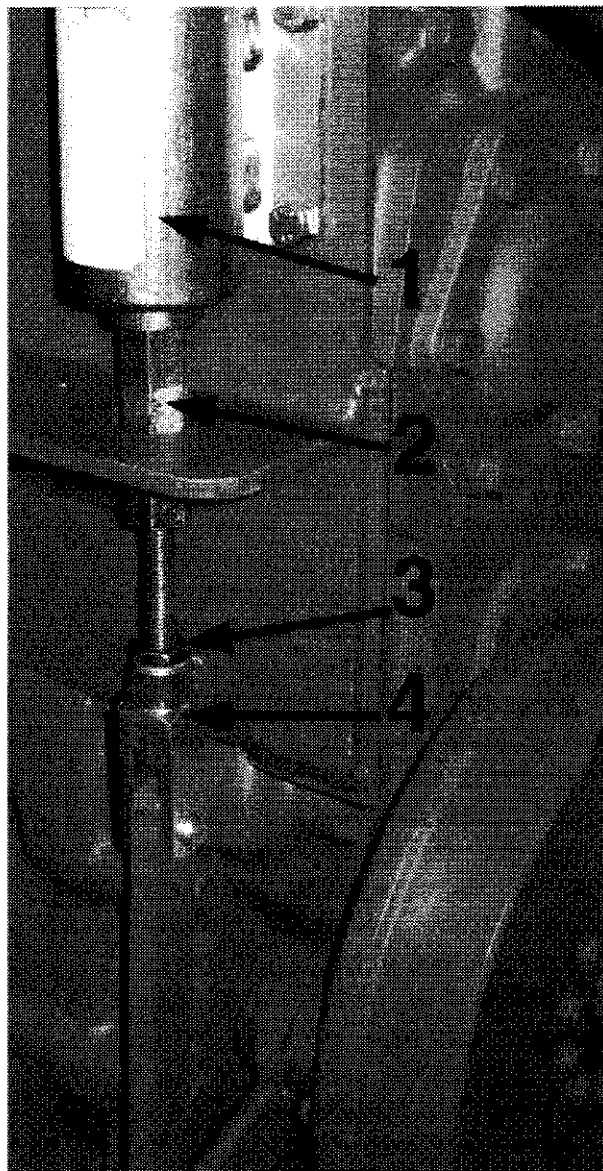
- (1) Spring loaded cylinder
- (2) Turnbuckle nut
- (3) Locking nut
- (4) Safety pin

holes through the fork head and the brake lever are in alignment. Secure the fork head against turning.

You can now replace and secure the safety pin (4).

Tighten up the locking nut.

03.02 Assembly parts for the portal axle are maintenance free



Emergency Release for the Parking Brake

- (1) Spring loaded cylinder
- (2) Turnbuckle nut
- (3) Locking nut
- (4) Safety pin

03.03 Rear Wheel Complete



Replace damaged tyres or wheels immediately because a burst tyre can cause serious personal injuries.

A tyre can burst when it is being inflated. Strictly observe the specified tyre inflation pressures.

Ensure no persons are in the danger zone in front of the wheel when inflating the tyre.

Never carry out any assembly work on the tyre or wheel. If not fitted correctly, the tyre may spring off the wheel and cause serious personal injury.

Arrange for all assembly work on the tyres and wheels to be carried out by a specialist workshop.

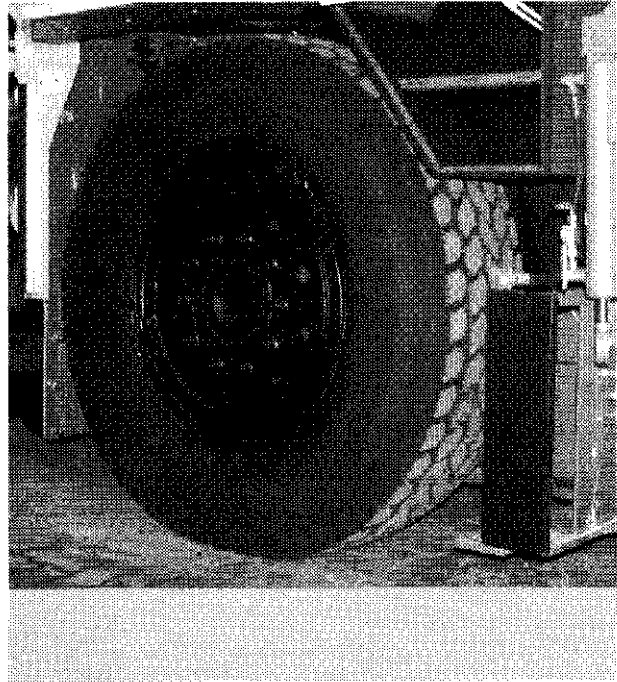
Extreme care must be taken when carrying out maintenance work on the tyres. Saline solution may emerge which is dangerous to the eyes and will leave stains and damage on clothing.

Always observe the correct tyre pressure to ensure good traction and to prevent the wheel slipping on the tyre.

To improve traction, the tyres are filled in our factory with a liquid tyre filling which is frost proof down to approx. - 20°C. An exception to this are pavers subject to regional axle load stipulations.

New pavers are supplied with the maximum tyre inflation pressure and it may be necessary to alter this pressure to match job-site conditions when commissioning the machine.

Check and ensure the wheel nuts are tightened up as per the maintenance chart.



Rear Right-hand Drive Wheel



Check the tyres and wheels:

Every 100 operating hours or once a month.

Tyre pressure:

A for transport max. 5.0 bar. The tyre is inflated to its maximum pressure but is only subject to a lower load. The full width of the tyre tread does not make contact with the ground.

B for paving minimum 2.5 bar. The tyre is inflated with a lower pressure. The full width of the tyre tread makes contact with the ground and achieves an improved traction.

Inflating and checking the tyre pressure on the rear wheels:

Ensure the tyre valve is in the upper position when using a standard tyre pressure gauge. This will avoid the anti-freeze solution emerging through the tyre valve.

Use a high pressure safety hose connected to lance with hand operated valve to inflate the tyres.

Remove the dust cap from the tyre valve (1).

Fit the valve connection on the hose to the tyre valve (1).

Stand away and to the side of the wheel and read the tyre pressure on the pressure gauge.

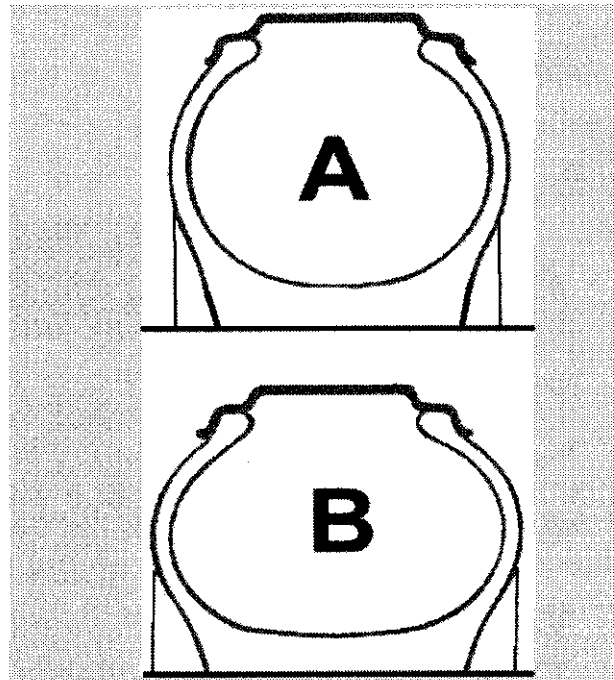
If necessary, inflate or deflate the tyre to the recommended air pressure.

Remove the connection from the tyre valve (1) and replace the dust cap.

Checking the wheel nuts

Check the wheel nuts for tightness every 100 operating hours as per the maintenance chart.

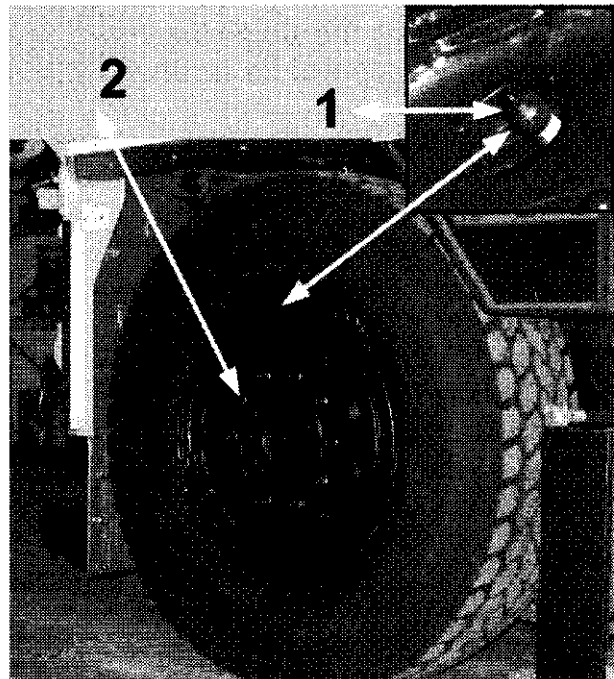
When fitting the rear drive wheels, the wheel nuts must be tightened to a torque of **550 NM**.



Rear drive wheel

A Tyre pressure for transport

B Tyre pressure for paving



Rear drive wheel

(1) Inflation valve

(2) Wheel nuts

03.04 Void

03.05 Road Scrapers



There is a danger of crushing and lacerations when working on the road scrapers. Ensure the paver cannot be put into motion when working on the road scrapers. . Ensure the rubber scraper is adjusted correctly to avoid excessive wear.



The method of assembly for both L.H. and R.H. scrapers is the same.

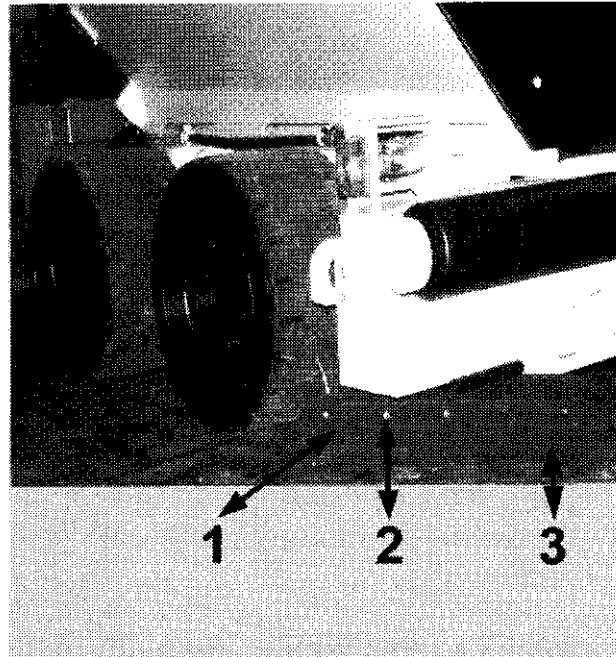
Place the scraper under the front cross member so that the tongue fits into the support strip (2).

The retaining bolt on the scraper must be guided through the lug on the underside of the support strip and be secured with the safety clip.



Check the road scrapers daily for wear and the correct adjustment to avoid damage.

Loosen the screws on the support strip (2) and adjust the rubber scraper (3) so there is distance of 10 mm between the lower edge of the rubber scraper and the road surface.



Road Scraper

- (1) Scraper
- (2) Support strip
- (3) Rubber scraper

3.6 Wheel Chock



When using the wheel chock, there is a danger of crushing and personal injury. Ensure the paver is not set into motion when using the wheel chock.



Release the safety catch (1) and remove the wheel chock (2) from its storage bracket.

Place the wheel chock (2) under one of the wheels to prevent the paver rolling away on uphill or downhill gradients

When replacing the wheel chock, secure it in the storage bracket with the safety catch.



Wheel chock
(1) Safety catch
(2) Wheel chock

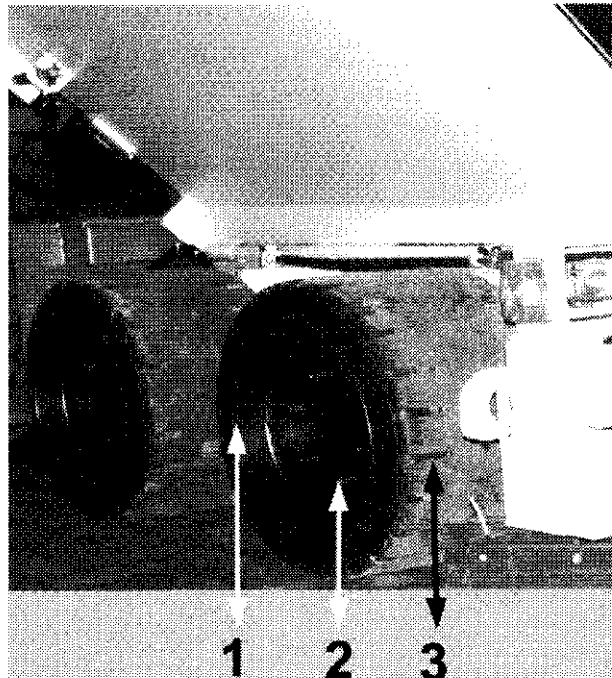
03.07 Front Wheels



Ensure that the wheel nuts (2) on the front wheels (1) are tightened to a torque of **290 NM** to obtain a correct fitting of the wheels.

Check the wheel nuts for tightness every 100 operating hours as per the maintenance schedule.

For reasons of safety, the front wheels should be replaced if the tyre is worn and the tread grooves (3) are no longer visible.



Front wheels
(1) Front wheel complete
(2) Wheel nuts
(3) Wearing groove

03.07.01 Front Wheel Steering



Ensure the paver cannot be put into motion when carrying out any maintenance work.

Remove the ignition key and secure the paver by placing the wheel chock provided under one of the rear drive wheels.



Lubricant:

Grease Shell Darina II

Quantity:

Lubricate until grease emerges from the cavities.

Intervals:

Every 1000 hours (or once a year).

Grease points:

Centre bearing on the steering arm:

1 grease point (2).

Joint bearing on the steering cylinder:

2 grease points on the ends of the steering cylinder (4) (5).

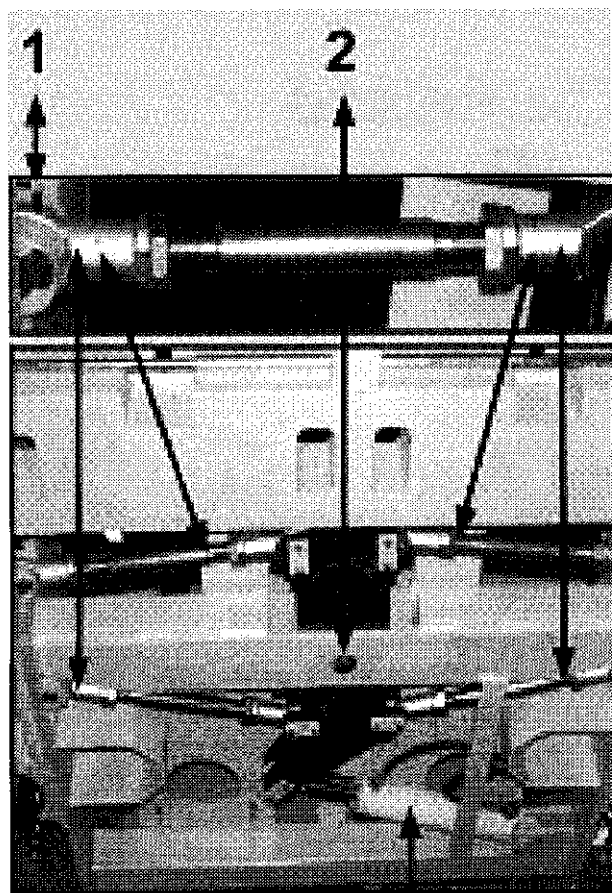
Track rod ends:

8 grease points on the track rod ends (1) (3).

Regularly check the bolts, screws and nuts on the track rods and steering arm for tight fitting.



Drive the paver over an inspection pit to obtain better access to the grease points.



Steering on the front wheels

- (1) Grease point, track rod end
- (2) Grease point, centre bearing of steering arm
- (3) Grease point, track rod end
- (4) Grease point, steering cylinder
- (5) Grease point, steering cylinder

03.07.02 Front Wheels without Power Drive



Wartung
Maintenance

Lubricant:

Grease Shell Darina II

Quantity:

The hollow space in the wheel hub must be filled with grease. The bearings must be greased.

Intervals:

Every 1000 hours (or once a year).



Raise the front of the paver placing the lifting tackle at a suitable point on the machine.

Remove the retainer ring from the groove in the wheel hub. Then remove the hub cap (1) from the wheel hub.

Remove the split pin from the wheel nut (2) and tighten the wheel nut by turning it clockwise.

Then loosen the wheel nut (2) by turning it anti-clockwise for about a quarter of a turn until the split pin can be replaced.

Replace and secure the split pin by bending the ends around the wheel nut.

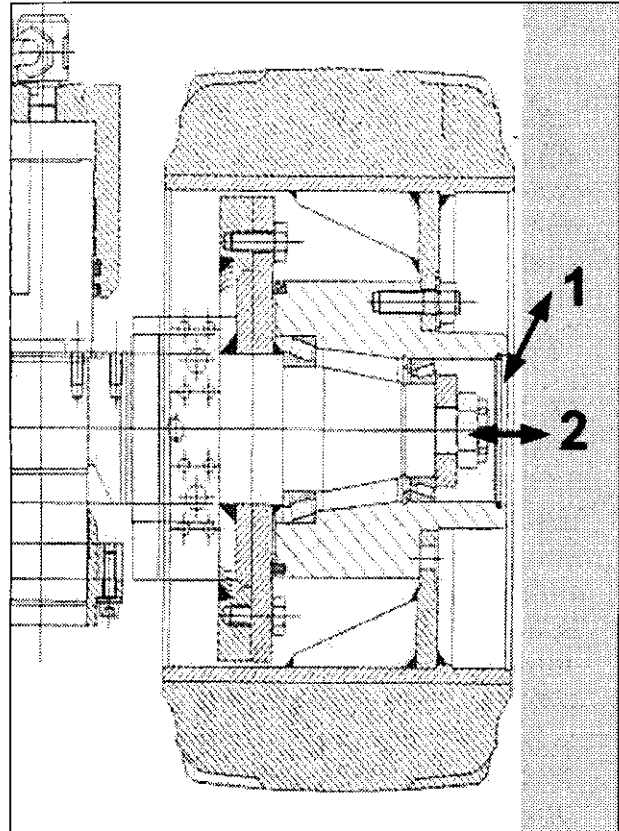
Check the wheel for free play. If tensioned correctly, the wheel should be stiff to rotate by hand.

Repeat the adjustment procedure if necessary.

Fill the hollow space in the wheel hub with grease and replace the hub cap (1) securing it with the retainer ring.

Lower the front of the paver down to the ground.

The same procedure applies to the right and left-hand side.



Front wheel without power drive

(1) Hub cap

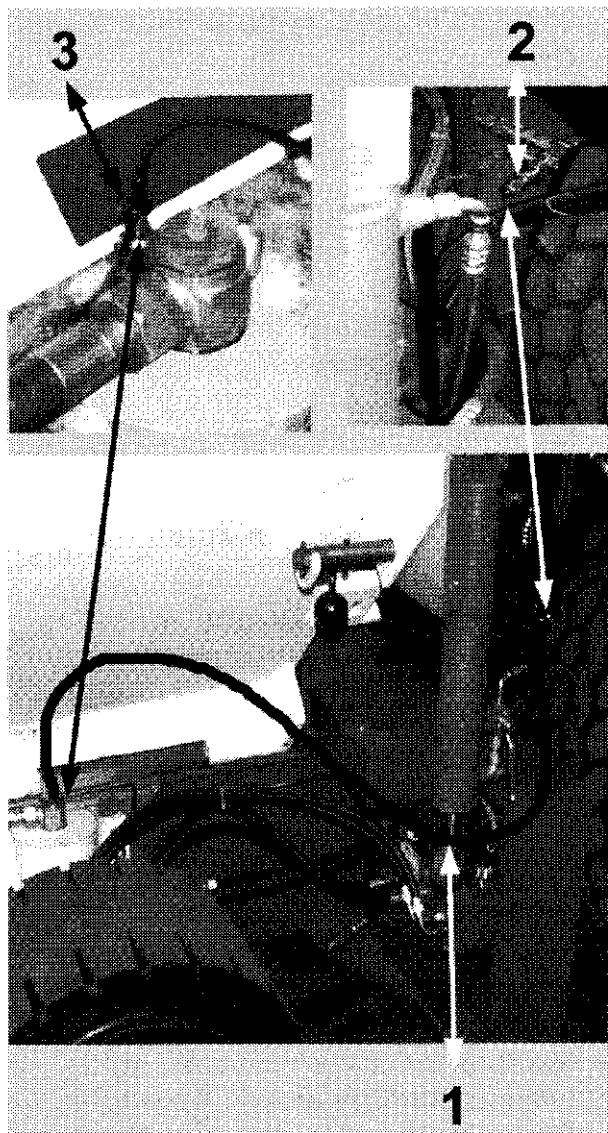
(2) Wheel nut

03.07.03 Equalization Cylinders



Ensure the paver cannot be put into motion when carrying out any maintenance work. There is a danger of crushing and skin lacerations when filling the equalization cylinders.

Observe absolute cleanliness when working on the hydraulic system. Ensure there is no air in the hydraulic system for the hydraulic ride levellers. If there is air in the hydraulic line (1) to the hopper weight sensor, the torque on the front drive wheels will not be controlled correctly. If there is a loss of oil in the system, the equalizing cylinders must be refilled according to these instructions. Drive the paver onto level ground to refill the equalization cylinders.



Filling the equalizing cylinder
(1) Hydraulic test hose
(2) Test connection for the feeding pressure on the drive pump
(3) Test connection on the equalization cylinder



Filling the Equalization Cylinders:

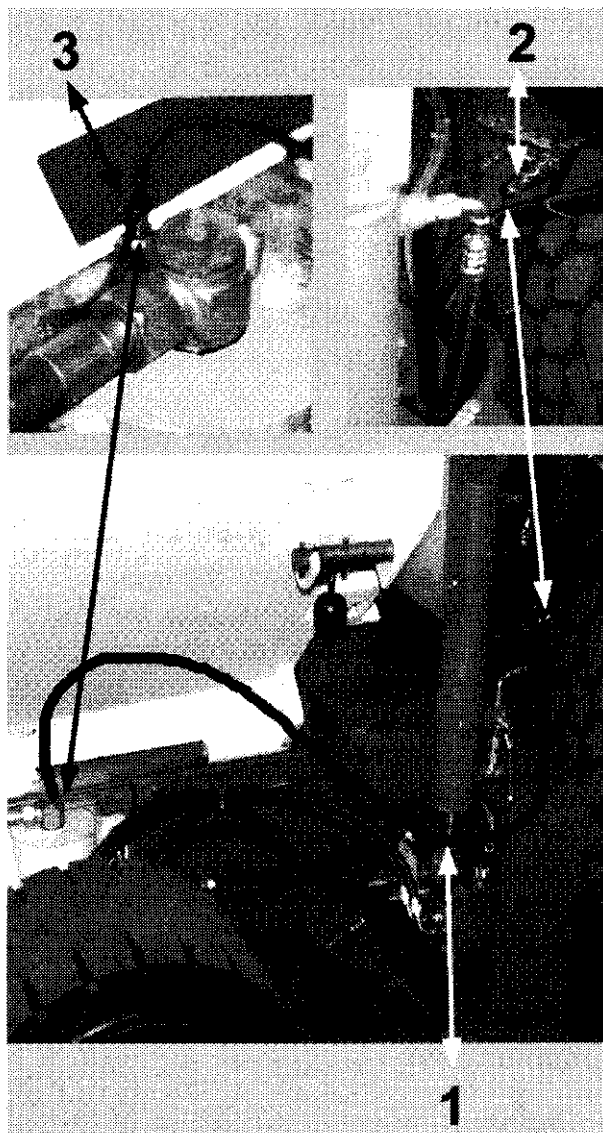
The screed must be raised and secured in the transport lock when filling or breathing air off the system.

Switch the Diesel engine off and connect the test hose (1) provided to the test connection on the drive pump pressure line (2) located on the left under the Diesel engine.

Ensure the test hose is filled with hydraulic oil to prevent air entering the system.

Connect the other end of the test hose to the test connection (3) on the rear left-hand equalization cylinder.

Start the Diesel engine to fill the equalization cylinders taking hydraulic oil from the pressure line for the drive pump. The filling process is completed when the equalization cylinders are fully extended. Now switch the Diesel engine off.



Filling the equalizing cylinder
(1) Hydraulic test hose
(2) Test connection for the feeding pressure on the drive pump
(3) Test connection on the equalization cylinder

Adjusting the height and breathing the air off the equalization cylinders:

Loosen the threaded plugs by approx. 6 turns on the front left-hand equalization cylinder (4) and on the rear right-hand equalization cylinder until hydraulic oil escapes through the hole.

Lower the paver on both sides until the distance (5) between the lower edge of the frame and the contact surface of the tyre is 120 mm.

Check the distance on both sides and if it has reached 120 mm, tighten up the threaded plugs on both equalization cylinders.

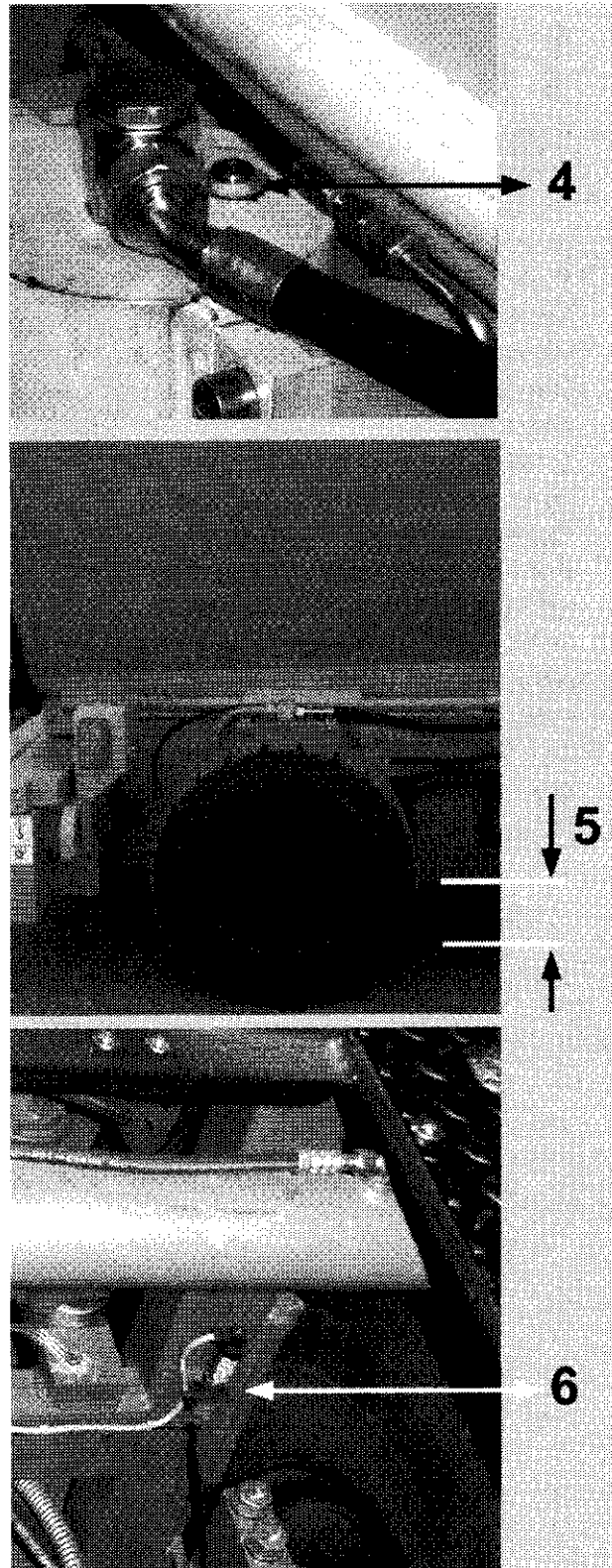
Loosen the test hose on the hopper weight sensor (6) and wait until clear hydraulic oil without air escapes. This will breath the air out of the system.

Once again, check the distance of 120 mm between the lower edge of the frame and the contact surface of the tyre and repeat the filling procedure if necessary. Thereafter, switch the Diesel engine off and disconnect the test hose from the equalization cylinder and then from the drive pump pressure line.

Fit the protective caps back onto all connections.



If problems occur with traction on the front wheels, ensure that the equalization system and mainly the test hose to the hopper weight sensor are free from air. If necessary, breath the air off the hopper weight sensor as previously described.

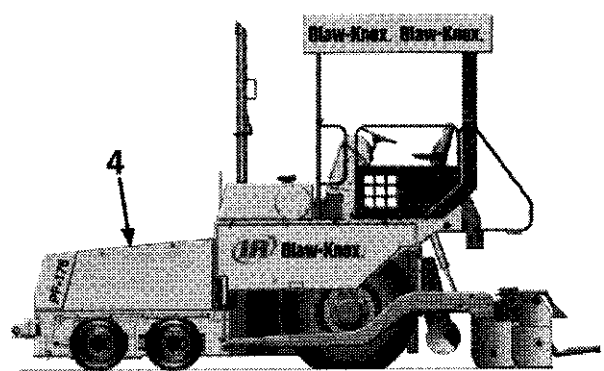


Front wheel drive
(4) Threaded plug
(5) Distance 120 mm
(6) Hopper weight sensor

04 Hopper

The hopper wings are fitted with locking bolts to secure them in the closed position. The hopper is maintenance free.

This chapter describes the purpose of the hopper locking bolts as well as their use. Clean the hopper every time you use the paver.



Contents	Page
04.01 Hopper	47
04.02 Void	47
04.03 Hopper Locking Bolts	47

04.01 Hopper



Before operating the hopper wings, ensure no persons or objects are in the danger zone.

Switch off the Diesel engine before entering the hopper's interior.

Always close and lock the hopper wings before carrying out any work in this area.

Always close and lock the hopper wings before transporting the paver.

04.02 Void

04.03 Hopper Locking Bolts



By applying the hopper locking bolts (1), the hopper wings are locked to the paver's frame.

There is a locking bolt fitted to both left and right-hand hopper wings.



Locking the hopper wings

Close the hopper wings.

Push the knob on the locking bolt (1) upwards.

Push the locking bolt (1) to the rear of the paver as far as it will go.

Secure the hopper wing by pushing the knob on the locking bolt downwards.

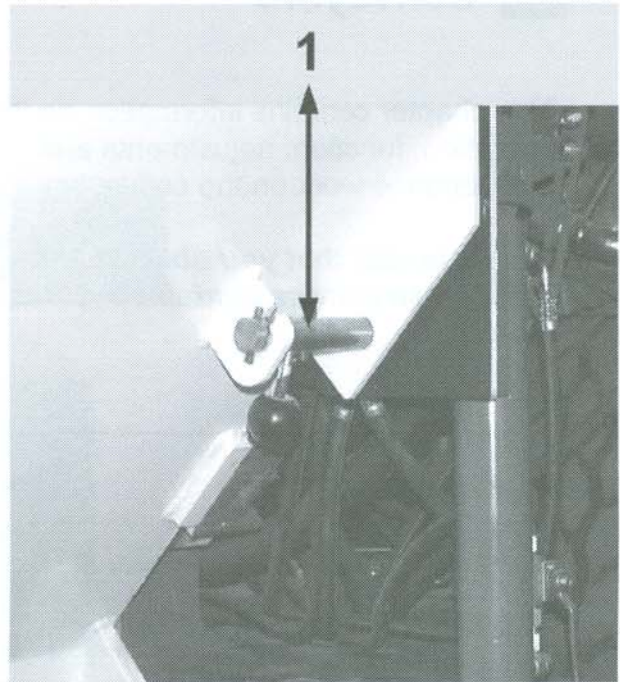
Check the hopper wing is securely locked.

Releasing the hopper wings

Push the knob on the locking bolt (1) upwards.

Pull the locking bolt (1) to the front of the paver as far as it will go.

The hopper wings can now be opened.

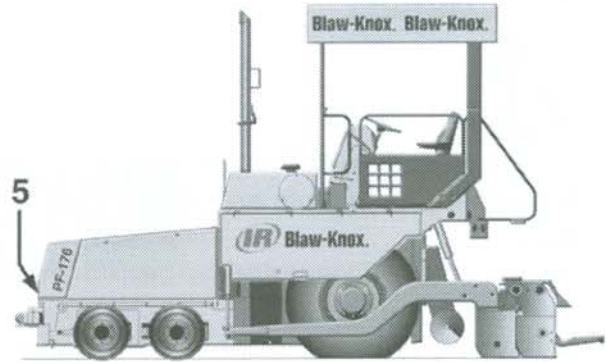


Hopper
(1) Hopper locking bolt,

05 Conveyors

This chapter contains information on the operation, function, adjustments and maintenance work on the conveyors.

It is essential that you observe the safety instructions contained in this chapter.



Contents	Page
05.01 Conveyors	49
05.01.01 Conveyor Chain Covers	52
05.02 Hopper Floor Plates.....	53
05.03 Conveyor Control Switches	53

05.01 Conveyors



Moving and rotating parts on the conveyors are a source of serious personal injury and a danger to life and limb.

Before carrying out any kind of work on the conveyors, ensure the Diesel engine is switched off and that it cannot be started.

The conveyor bearings and drives will wear out quicker if the conveyor chains are over tensioned.

Regularly clean the conveyors every time you use the paver.



Wartung
Maintenance

Lubricant:

Grease Shell DARINA II.

Quantity:

Lubricate until grease emerges out of the cavities.

Intervals:

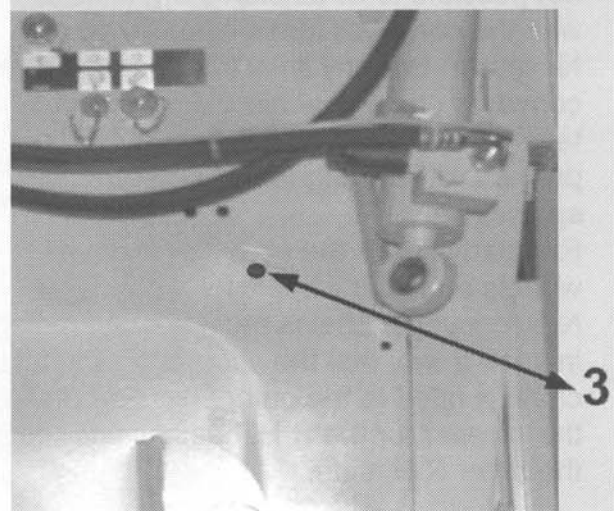
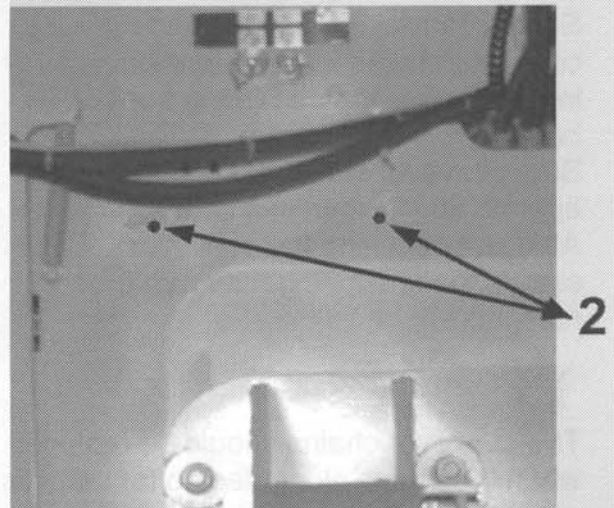
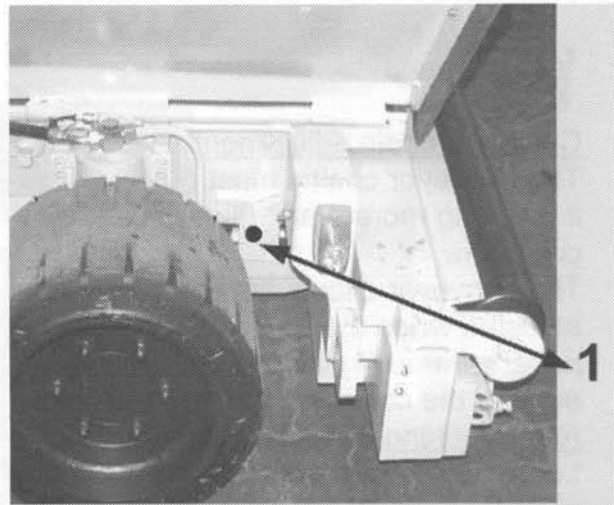
Every 10 hours (or daily).

Grease points:

1 grease nipple (1) on front RH idler wheel and 1 grease nipple on front LH idler wheel.

2 grease nipples (2) on the paver's LH rear wall for the LH and centre drive shaft.

1 grease nipple (3) on the paver's RH rear wall for the RH drive shaft.



Grease Points for the Conveyors

- (1) Grease nipple, front R.H. idler wheel
- (2) Grease nipple, L.H. and centre drive shaft
- (3) Grease nipple, R.H. drive shaft.



Conveyor chain adjustment

The conveyor chains must be re-tensioned if they sag more than 100 mm in a cold condition.

The conveyor chains are correctly adjusted when the lower edge of the paver's frame (4) is flush with the lower edge of the conveyor chain (3).

Re-tensioning the conveyor chains

Loosen the locking nuts (2 per conveyor chain).

Equally tension the left (1) and right (2) conveyor chains with the tensioning nuts located below the oscillating front cross beam.

Both conveyor chains should sag by approx. 50 - 70 mm in a cold condition.

After re-tensioning the conveyor chains, secure the tensioning nuts with the locking nuts.

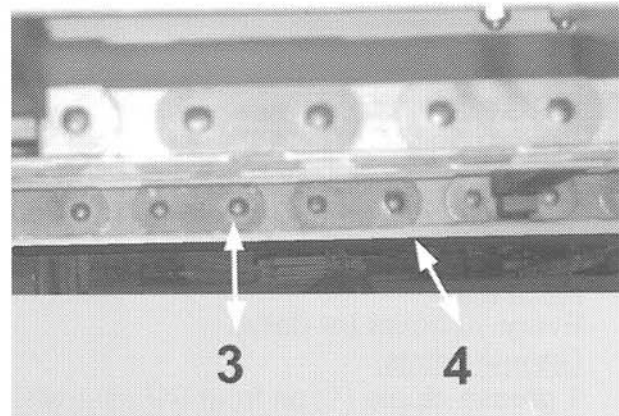
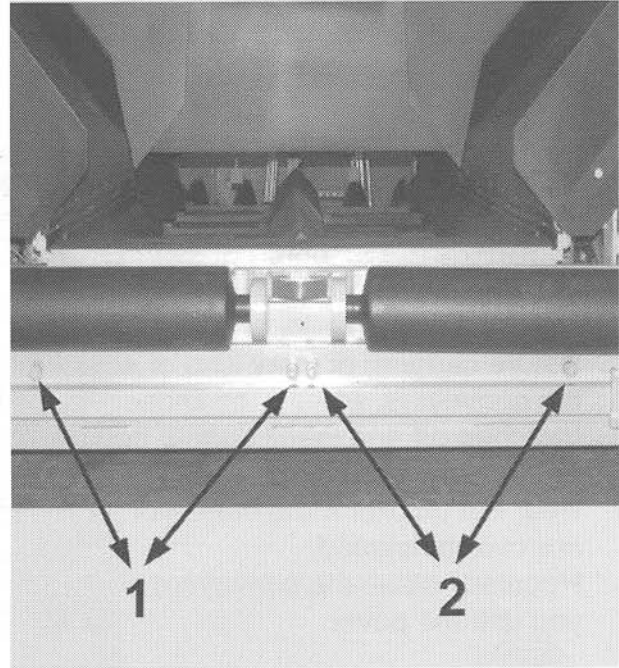


The conveyor chains should be replaced when they have elongated so far that it is not possible to re-tension them correctly with the conveyor tensioning device.

Never remove any links from an elongated conveyor chain to achieve the correct tension. The toothed drive wheels will be prematurely damaged by the wrong link spacing.

Regularly check the conveyors, drive wheels and idler wheels for wear.

New conveyor chains must be assembled in such a way that the scraper for the L.H. chain is fitted to the outer L.H. side and the scraper for the R.H. chain is fitted to the outer R.H. side.



Conveyor Tensioning Device

- (1) R.H. locking nuts and tensioning nuts
- (2) L.H. locking nuts and tensioning nuts
- (3) Lower edge of the conveyor chain
- (4) Lower edge of the paver's frame

Conveyor drive chain adjustment

The slackness on the drive chain should not exceed 10 mm. This is easy to check by pressing the middle of the long chain side with a screw driver.

The chain must be re-tensioned if it can be depressed by more than 10 mm.

Re-tensioning the conveyor drive chains:

Loosen the two screws (1) on the chain guard (2) on both sides of the paver. Only dismantle the hydraulic filter (7) on the right-hand side to obtain access to the tensioning device. To do this, remove the four screws on the filter support (3). The same tensioning procedure applies to the R.H. and L.H. sides.

- Release the tensioning screw (4) by loosening the locking nut (5).

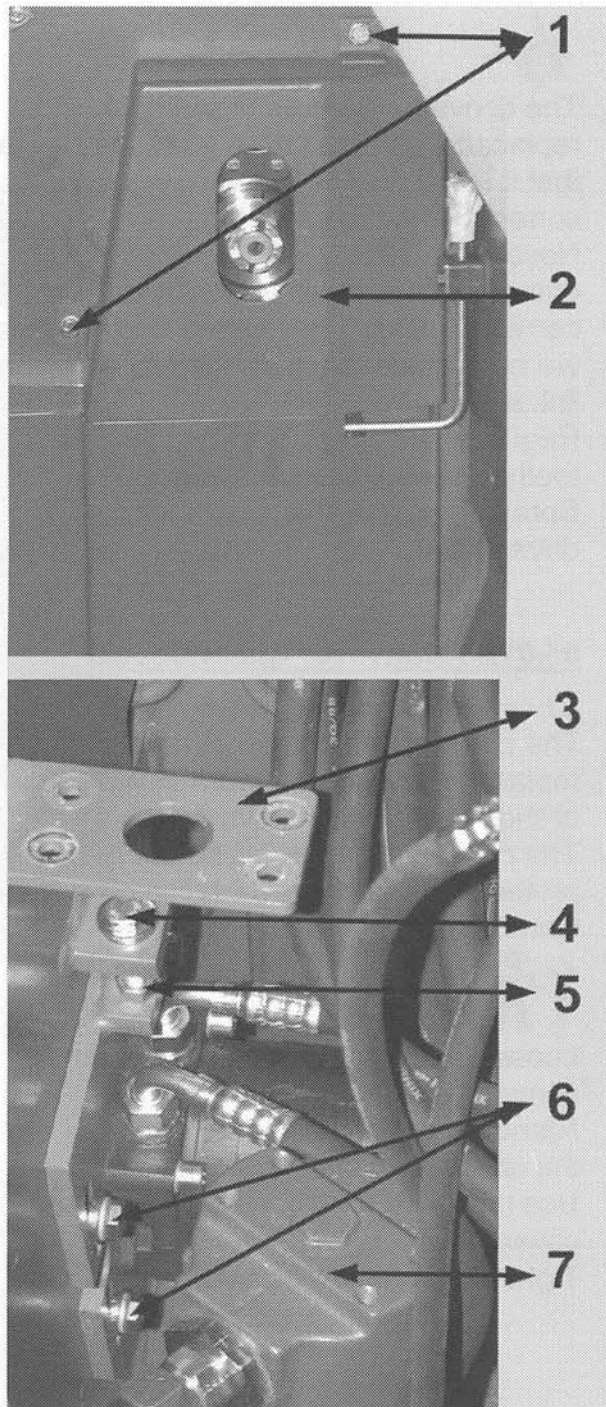
Loosen the four screws (6) which hold the hydraulic motor to the frame (two screws are located behind the hydraulic motor and are not visible).

Turn the tensioning screw (4) in a clockwise direction until the drive chain can be depressed by approx. 5 mm with a screw driver.

Lock the tensioning screw (4) by tightening the locking nut (5).

Tighten the four screws (6) which hold the hydraulic motor to the frame.

Fit the right-hand hydraulic filter (7) back onto the support (3) with the four screws. Finally, replace the chain guard (2) with the screws (1).



Tensioning Device for Conveyor Drive Chain

- (1) Screws
- (2) Chain guard
- (3) Support for the hydraulic filter
- (4) Tensioning screw
- (5) Locking nut
- (6) Screws holding the hydraulic motor
- (7) Hydraulic filter



The conveyor drive chains should be replaced when they have elongated so far that it is not possible to re-tension them correctly with the chain tensioning device. Never remove any links from an elongated conveyor drive chain to achieve the correct tension. The toothed drive wheels will be prematurely damaged by the wrong link spacing.

Regularly check the drive chains and toothed drive wheels for wear.

Spray a suitable chain lubricant on the drive chains.

05.01.01 Conveyor Chain Covers

Check the conveyor chain covers

The conveyor chain covers must be replaced if holes have worn through them or their lower edges have been worn. The conveyor chains will not be properly protected if the conveyor chain covers are worn.

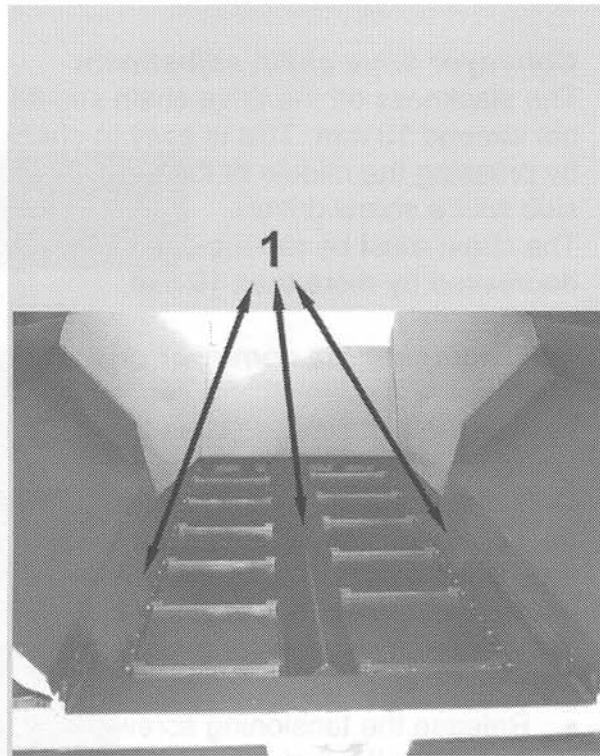


Loosen and remove the screws on the conveyor chain covers (1).

Remove the conveyor chain covers from the conveyor tunnel.

Use new screws to fit new conveyor chain covers.

Tighten up the new screws.



Conveyors
(1) Conveyor chain covers

05.02 Hopper Floor Plates



Check the hopper floor plates for wear. We recommend a replacement if the thickness of the floor plates has worn down to 2 mm.

Your **INGERSOLL RAND – ABG Service Partner** will be glad to assist you when replacing wearing parts.

05.03 Conveyor Control Switches



The conveyor control switches control the amount of material conveyed to the augers.



The lever arms (1) and (2) are spring loaded and it is not necessary to loosen any screws to adjust them. The speed of both conveyors can be set independently for each side.

Lowering the head of material:

Press the lever arm by hand towards the conveyor.

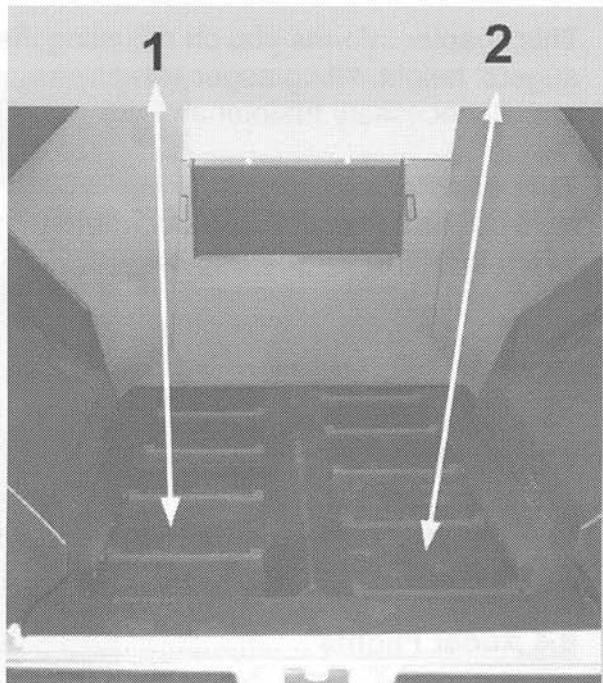
Increasing the head of material:

Pull the lever arm by hand upwards.

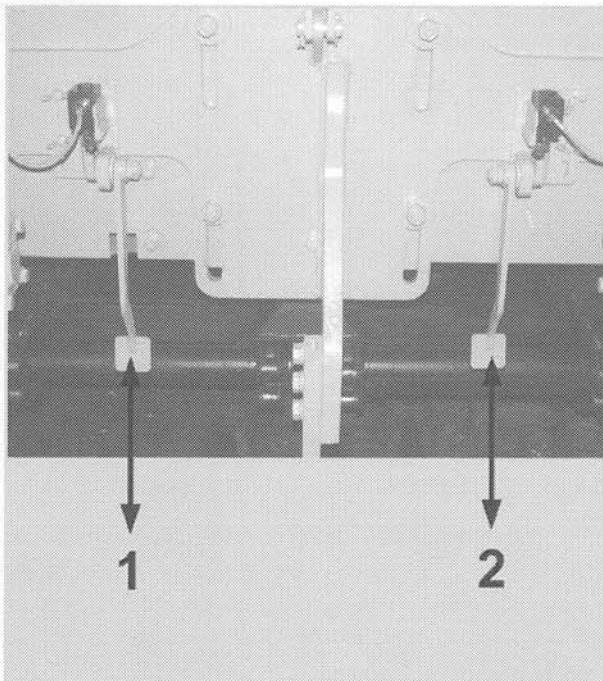


HINWEIS !

The lever arms are correctly adjusted when the augers are submerged by 2/3 in the paving material..



Conveyors
 (1) RH hopper floor plates
 (2) LH hopper floor plates

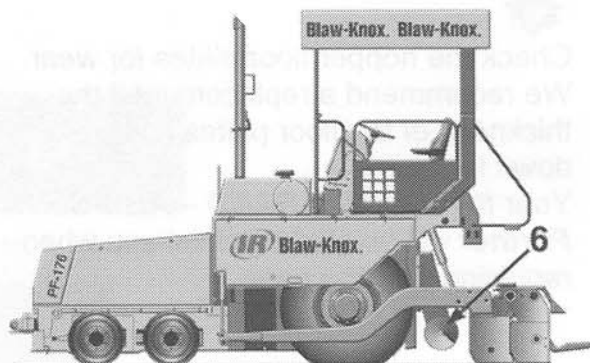


Conveyor control switches
 (1) LH lever arm
 (2) RH lever arm

06 Augers

This chapter informs you on adjusting the augers' height, fitting auger extensions and all necessary maintenance work.

This chapter also contains important instructions for avoiding accidents when working on the augers.



Contents	Page
06.01 Void	55
Basic Augers (Centre Drive)	55
6.4 Auger Flights	58
6.5 Auger Extensions	58
06.05.01 Auger Extensions (Option)	59

06.01 Void

Basic Augers (Centre Drive)



Before carrying out any work on the augers, ensure the Diesel engine is switched off and that it cannot be started. There will be premature wear if the auger drive chains are over tensioned. Regularly clean the augers every time you use the paver.



The augers evenly distribute the paving material in front of the screed.



Lubricant:

Grease Shell DARINA II

Quantity:

Lubricate until grease emerges out of the cavities.

Intervals:

Every 10 hours (or daily).

Grease points:

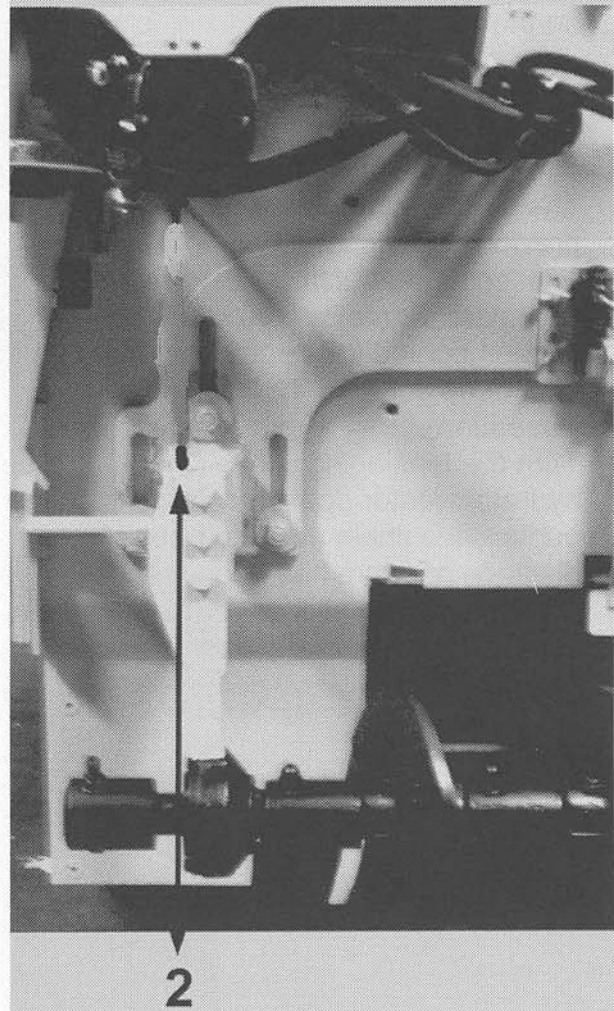
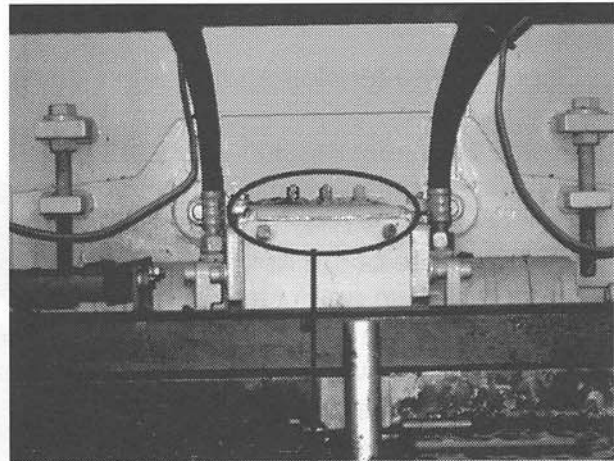
3 grease nipples (1) for the centre bearing and auger case seal.

1 grease nipple LH & RH (2) for the outer bearing on the basic paver.



After paving bituminous materials, immediately lubricate at operating temperature until clean grease emerges out of the bearings. The grease serves as a lubricant and also as a sealing compound.

Lubricate the grease points before washing down the paver to close the cavities in the bearings.



Auger centre drive

(1) Grease nipples on the auger centre drive

(2) Grease nipple for the outer bearing

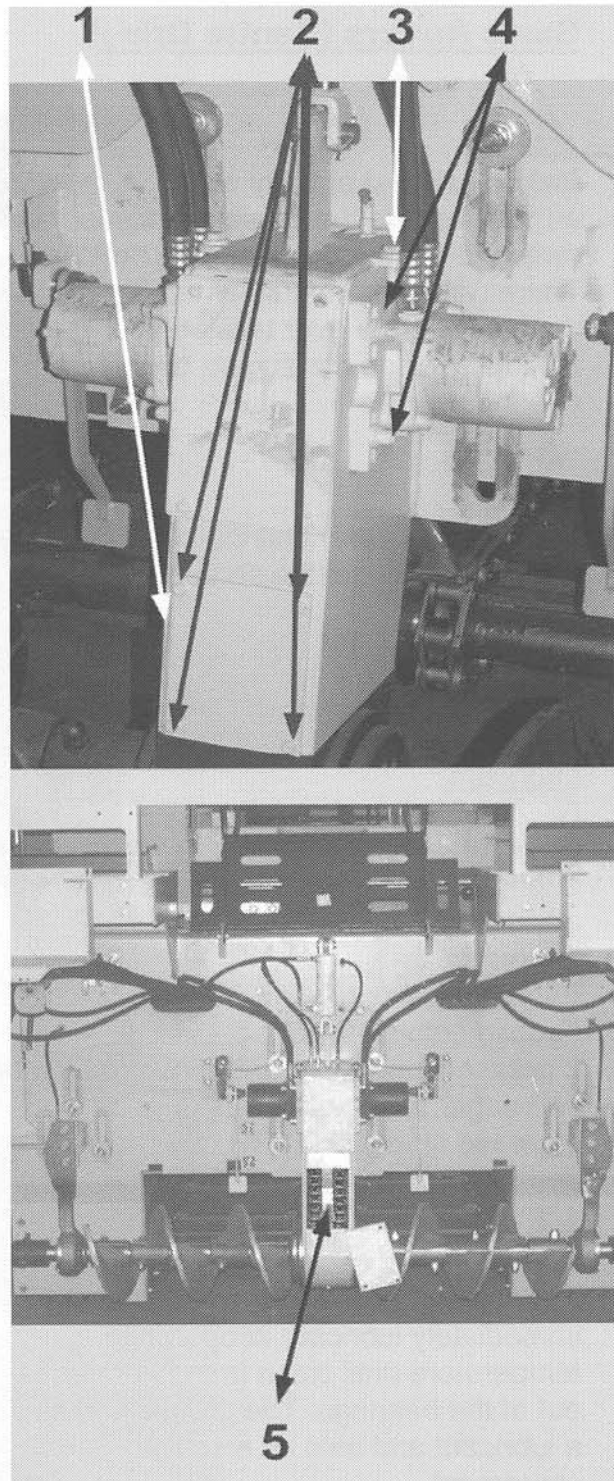


Checking the tension on the auger drive chain:

Check the chain tension every 100 operating hours or once a month. Loosen the four hex. screws (2). Then remove three of the hex screws and let the lid swing down as illustrated (5). Slightly turn the auger shaft to the left and right and observe the tension on the drive chain. The drive shaft on the hydraulic motor should not rotate when turning the auger shaft. The tension on the auger drive chain is correct if there is approx. 5 mm free play on the auger helical.

Tensioning the auger drive chain

The same procedure applies to the left and right-hand auger drive chain. The lid (1) must be opened (5) as previously described. Loosen the four screws (4) which mount the hydraulic motor (two screws are located behind the hydraulic motor and cannot be seen on the adjacent illustration). Turn the tensioning screw (3) to raise the hydraulic motor upwards and tension the auger drive chain until the free play distance of 5 mm has been reached. Then tighten up all four screws (4) again. Replace the lid (1) and tighten up the screws (2).



Auger centre drive

- (1) Lid in closed position
- (2) Hex screws for the lid
- (3) Tensioning screw
- (4) Screws for the hydraulic motor
- (5) Lid in the open position

Draining condense water out of the auger drive case:

When checking or tensioning the auger drive chains, you should also drain the condense water out of the drive case at the same time.

A threaded drain plug (1) is located at the lowest position on the auger drive case. Remove the drain plug to drain off the condense water.

Thereafter, replace and tighten the drain plug (1).

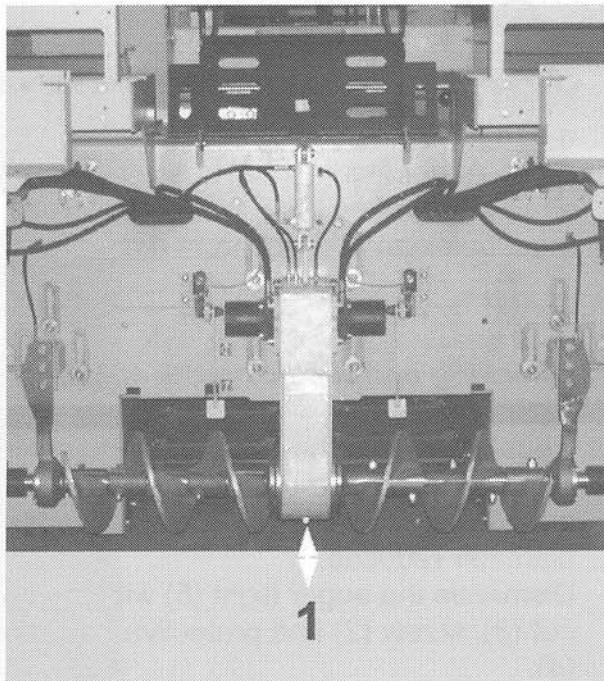


The auger drive chains should be replaced when they have elongated so far that it is not possible to tension them correctly with the chain tensioning device.

Never remove any links from an elongated auger drive chain to achieve the correct tension. The toothed drive wheels will be prematurely damaged by the wrong link spacing.

Regularly check the auger drive chains and toothed drive wheels for wear.

Spray a suitable chain lubricant on the drive chains.



Auger centre drive
(1) Threaded drain plug

6.4 Auger Flights



When changing the auger flights, there is a danger of injury caused by sharp edged parts. Auger flights must be fitted to the shaft without free play. All surface areas must be clean and free from dirt.



Checking and replacing the auger flights:

Regularly check the auger flights for wear. The auger flights must be replaced if the outer edge (5) becomes sharp and the diameter reduced.

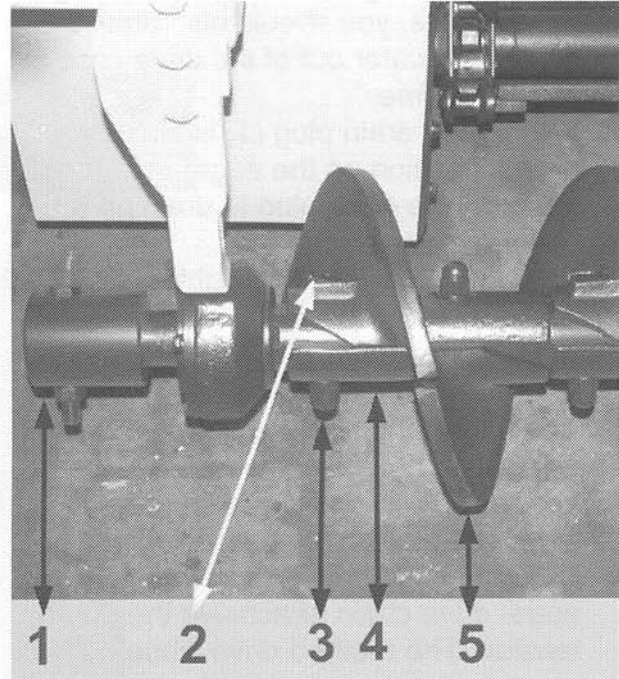
Dismantle the auger flight (5) with the cap nut (3), screw (2) and protective half shell (4).

Fit a new auger flight and if necessary, use a new cap nut, screw and protective half shell.



Never operate the augers without the protective end cap (1) fitted to the end of the auger shaft.

Immediately replace worn parts to avoid further damage.



- Auger shaft
- (1) Protective end cap
 - (2) Screw
 - (3) Cap nut
 - (4) Protective half shell
 - (5) Auger flight

6.5 Auger Extensions



Switch off the Diesel engine and ensure it cannot be started before carrying out any repair and maintenance work. Only carry out maintenance and repair work with the Diesel engine switched off.



**Wartung
Maintenance**

Lubricant:

Grease Shell DARINA II

Quantity:

Lubricate until grease emerges out of the cavities.

Intervals:

Every 10 hours (or daily).

Grease points:

1 grease nipple each on the LH and RH outer bearing (1).

06.05.01 Auger Extensions (Option)



When changing the auger flights, there is a danger of injury caused by sharp edged parts. Auger flights must be fitted to the shaft without free play. All surface areas must be clean and free from dirt. Take the width of the auger extensions into consideration when retracting the screed.



Checking and replacing the auger flights:

Regularly check the auger flights for wear. The auger flights must be replaced if the outer edge (4) becomes sharp and the diameter reduced.

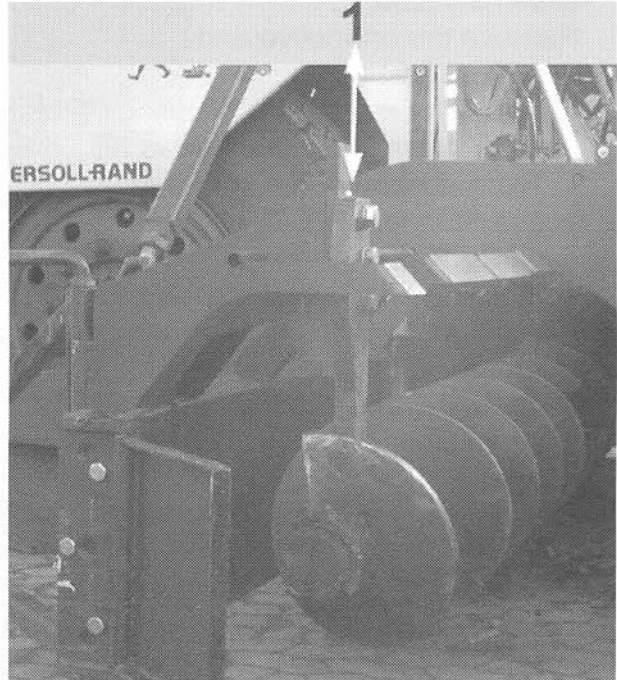
Dismantle the auger flight (4) with the cap nut (2), screw (5) and protective half shell (3).

Fit a new auger flight and if necessary, use a new cap nut, screw and protective half shell.

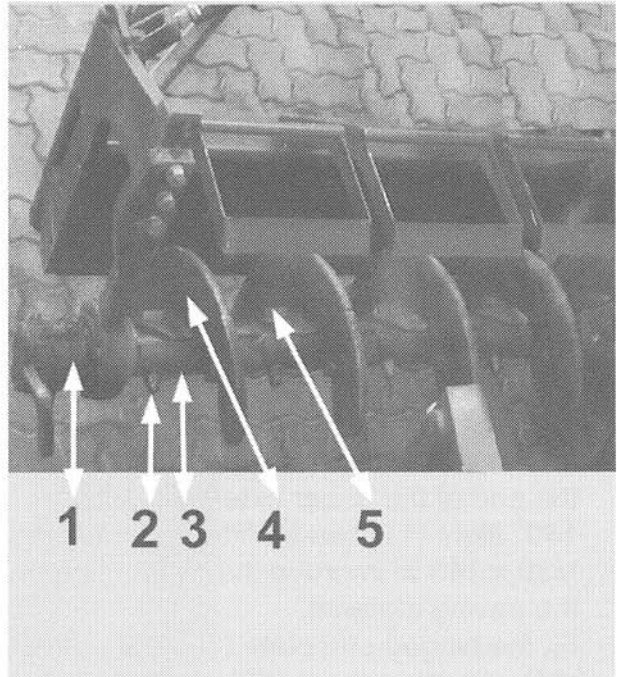


Never operate the augers without the protective end cap (1) fitted to the end of the auger shaft.

Immediately replace worn parts to avoid further damage.



(1) Grease nipple on the auger extension



Auger extension

(1) Protective end cap

(2) Cap nut

(3) Protective half shell



The arrangement of the screed extensions and protective guards for each particular paving width is contained in the screed assembly plan.

Remove the protective end cap and screw from the basic auger.

Connect the auger channel plate (4) to the paver's frame using the screws (2).

Use the horizontal brace (3) to connect the auger channel plate to the front connecting bolt (1). Use the front connecting bolt (1) with safety clip and the rear connecting bolt (5) to fit the horizontal brace. Adjust the turnbuckle on the horizontal brace to bring the auger channel plate in alignment with the paver's rear wall.

Use the vertical brace (8) with the bolts (7) & (9) and safety clips to connect the channel plate (4) to the lug on the paver. Adjust the turnbuckle on the vertical brace (8) so that the auger channel plate is at an angle of 90° to the paver's side wall. Push the auger extension (21) onto the basic auger. Ensure the pitch of both basic auger and auger extension is the same. Connect both coupling pieces (12) together with screw (11) and fit a 140° helical (10) if necessary. Fit the bearing arm (19) with the screws (20) to the support plate (18). The auger extension must be in the same height as the basic auger.

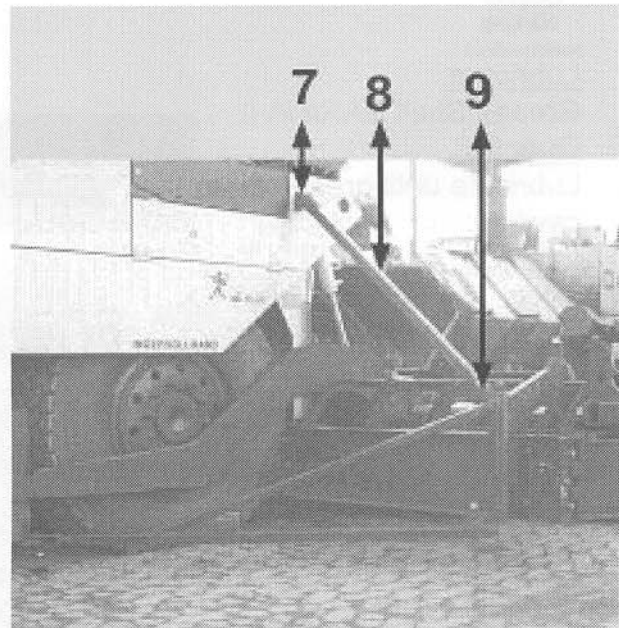
Chapter 06.04 describes the height adjustment of auger extensions fitted with auger outer bearings.

Fit the end cap with (16) with the screw to the end of the auger extension shaft. A 140° flight (17) can be fitted with a screw M20 x 140 to improve the distribution of the paving material.

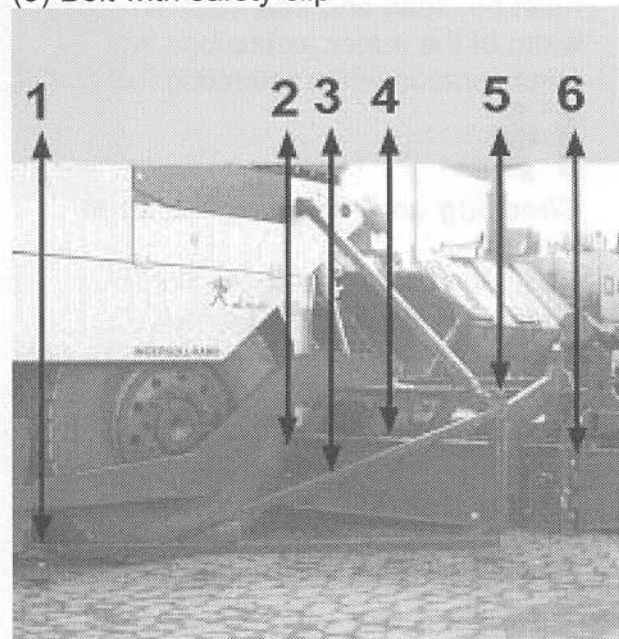
Fit the hinged end plate (15) to the bracket (14) with the screws (13) as illustrated.

Ensure the protective cover (22) is correctly fitted and that it is not damaged. Stretch a string across the entire width of the augers and check the horizontal and

- (4) Auger flight
- (5) Screw

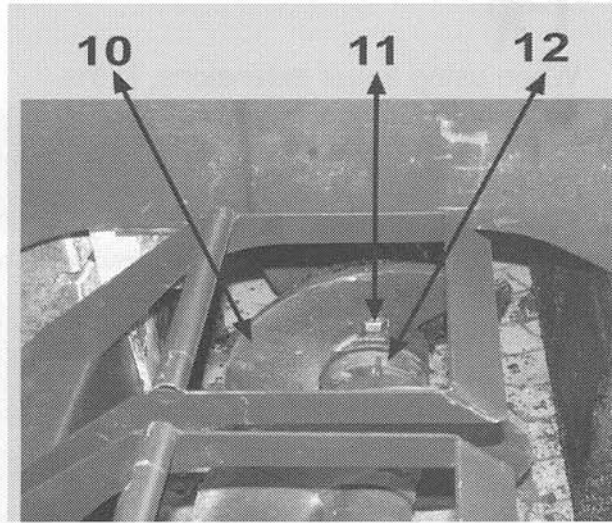


- Auger extension
- (7) Bolt with safety clip
- (8) Vertical brace
- (9) Bolt with safety clip

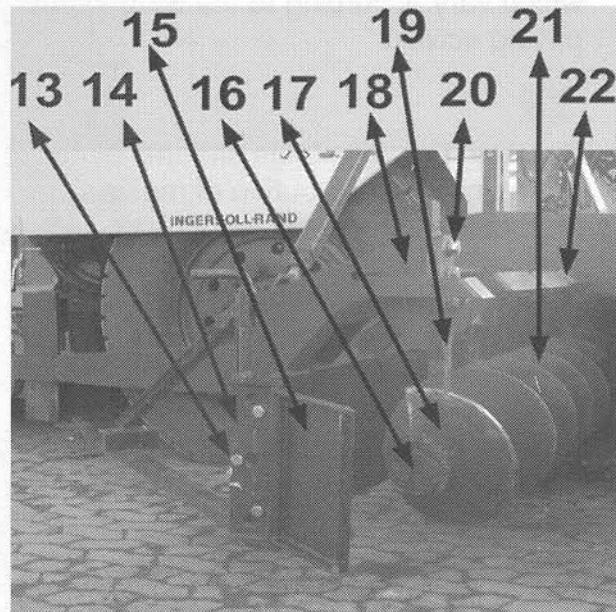


- Auger extension
- (1) Front bolt for horizontal brace
- (2) Screws for auger channel plate
- (3) Horizontal brace
- (4) Auger channel plate
- (5) Rear bolt for horizontal brace
- (6) Hinged end plate

vertical alignment of the basic auger with the auger extensions (21).
 With the exception of the auger's pitch, the assembly of the left and right-hand auger extensions is the same.



Auger extension
 (10) Auger flight 140°
 (11) Cap nut and screw
 (12) Coupling



Auger extension
 (13) Screws for hinged end plate
 (14) Bracket
 (15) Hinged end plate
 (16) End cap
 (17) Auger flight 140°
 (18) Support plate
 (19) Bearing arm
 (20) Screws for bearing arm
 (21) Auger extension
 (22) Protective cover

Adjustable channel plates:



When using auger extensions, fit the adjustable channel plates (20) according to the assembly plan in the operating manual.

Fit the adjustable channel plate (20) to the basic screed with the screws provided and adjust it in height.

By turning the hand crank (19) the lower plate on the adjustable channel plate (20) can be altered in height. The height adjustment depends upon the material being paved and the mat thickness.

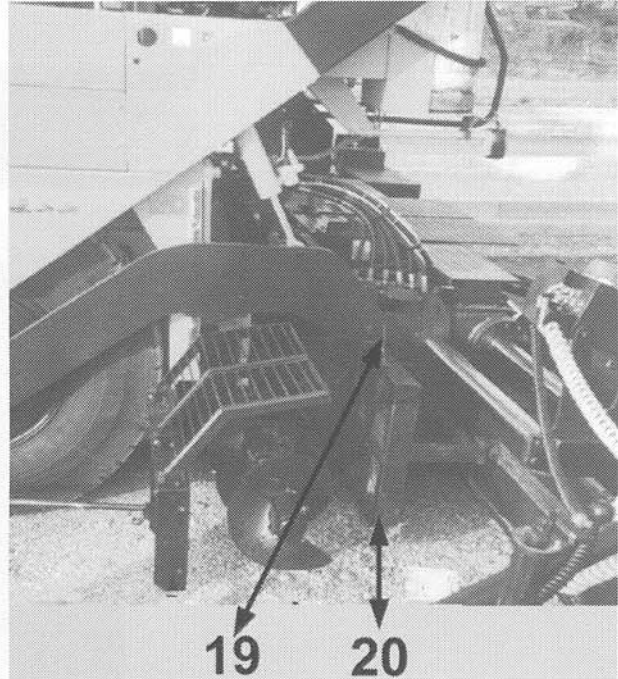
Assembly of the adjustable channel plates is the same for auger extensions with or without auger outer bearings. The only difference is the length of the adjustable channel plates and the auger extensions which vary according to the width of the paving screed.



By using the adjustable channel plates, a more uniform distribution of material in front of the screed will be achieved.

Normally, the pitch of the 140° flights should be the same as the pitch of the flights on the basic auger. If mix segregation occurs in the area of the auger outer bearing, this can be rectified by swapping the flights, i.e. by fitting the right-hand flight to the left-hand side and vice versa.

The same applies to the 140° flight at the end of the auger shaft.

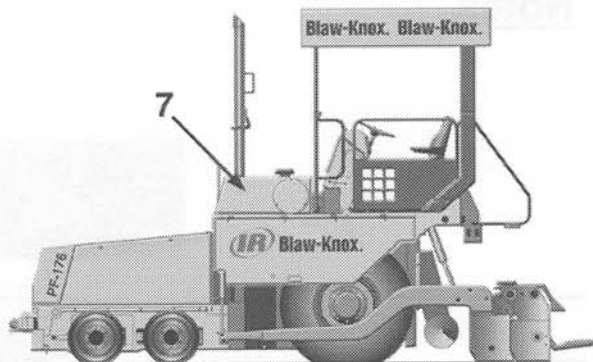


Auger extension
(19) Hand crank
(20) Adjustable channel plate

07 Diesel Engine

All instructions for a safe and correct engine operation are contained in the a separate engine manufacturer's handbook.

This chapter provides information on the protective cover and the cooling air intake for the Diesel engine.



Contents	Page
07.01 Diesel Engine	65
07.02 Engine Air Supply	66
07.03 Air Intake	66

07.01 Diesel Engine



Carefully observe the instructions contained in the engine manufacturer's handbook for all matters concerning the maintenance of the Diesel engine. Replace the protective cover upon completion of all maintenance work. If the Diesel engine is operated:

- ⇒ at temperatures of around 40°C
- ⇒ and at heights of around 1000m

special measures must be taken to reduce the engine output. Reducing the engine's output may only be done by the engine manufacturer.



Wartung
Maintenance

Information on the following maintenance topics is contained in the engine manufacturer's handbook supplied with the paver:

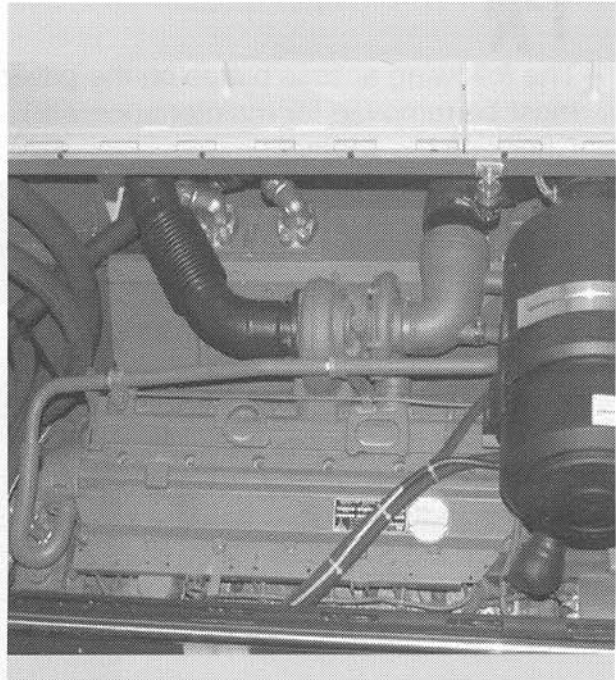
- Engine oil
- Engine oil filter
- Fuel system
- Air filter
- Cooling system
- V-belts
- Tappet clearance
- Alternator



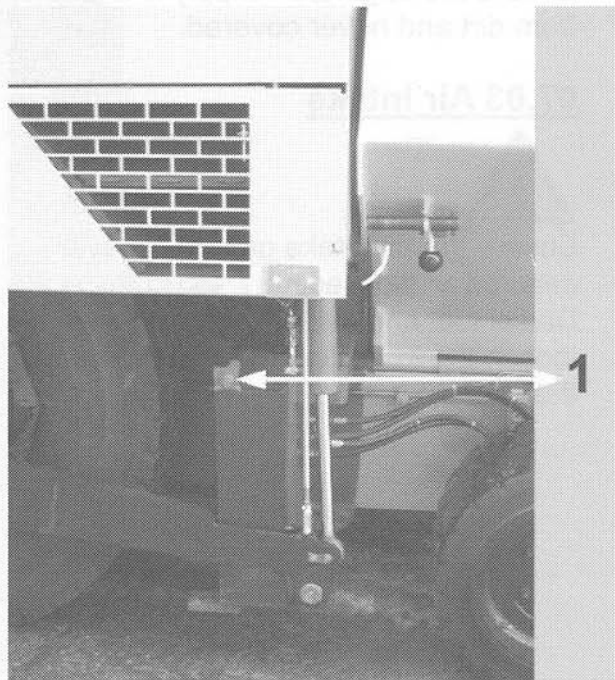
Fill the fuel filter with Diesel fuel before starting paving work.

Engine oil drain plug:

The drain plug (1) is located on the RH side of the paver. The procedure for changing the oil is in the handbook for the Diesel engine. Always use a new seal when replacing the drain plug. Tighten up the drain plug after changing the oil.



Diesel engine



Side view of the paver
(1) Engine oil drain plug



The following access plates on the paver must be removed for maintenance work:

Checking the coolant :

Loosen the 2 screws and remove the access plate (1) to check the engine coolant.

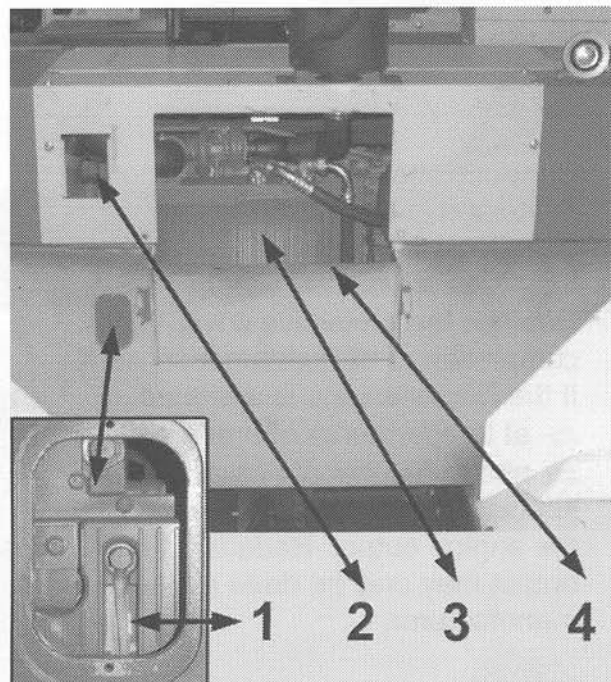
The actual check is done by the coolant control lamp on the control panel.

Filling up with coolant:

Turn the clamp type catches anticlockwise to remove the access plate (2) on the engine bonnet.

Engine radiator:

Remove the 6 screws (4) on the ventilator channel to gain access to the engine radiator.



Access plates

- (1) Coolant check
- (2) To top up with coolant
- (3) Engine radiator
- (4) Screw

07.02 Engine Air Supply



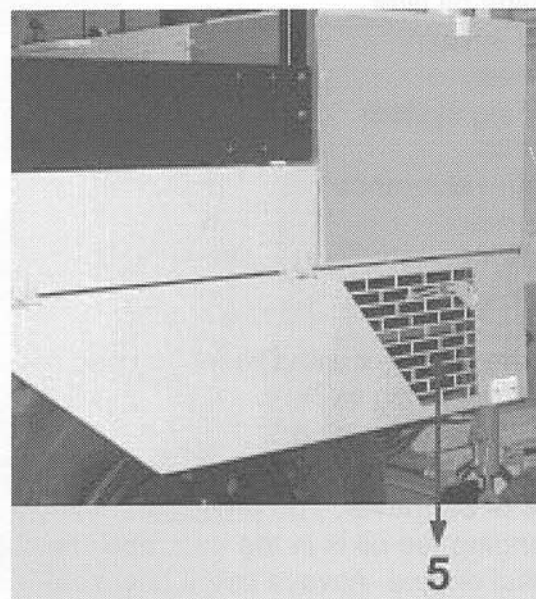
Ensure the engine air supply is kept free from dirt and never covered.

07.03 Air Intake



Ensure the air intake grill (5) is never covered or blocked.

Diesel fuel and cleaning solvents may loosen the insulating mats and constrict the air intake.



Side view of the paver

- (5) Air intake grill

• 08 • Control Panel & External Control Panels

For a safe and efficient operation of your paver, you must become fully acquainted with the various controls and instruments.

In this chapter we explain to you the individual functions which can be controlled and monitored on the control panels.

You can control and/or monitor the paver's functions at three stations:

- the main control panel on the paver
- the LH & RH external control panels.

Please note: Some of the operating elements are only located on the main control panel and some are only on the external control panels.



Contents	• Page
08.01 Control panel	70
08.01.01 Steering the Paver.....	71
08.01.02 Foot Brake	72
08.01.03 Throttle Lever	73
08.01.04 Emergency Stop Button S47 / Emergency Stop Release Button S49 .	74
08.01.05 Ignition Switch S1	75
08.01.06 Control Lamps.....	77
Control Lamp for Emergency Stop H10	79
08.01.07 Temperature Gauge for Engine Coolant P2.....	80
08.01.08 Fuel Level Indicator P1	80
08.01.09 Hour Meter P3.....	80
08.01.10 Speed Stage Selector Lever	81
08.01.11 Speed Potentiometer R15/R26	82
08.01.12 Parking Brake, Toggle Switch S23	83
08.01.13 Drive Lever S24	84
08.01.14 Warning Horn, Push Button S2.....	85

08.01.16 Direction Indicators, Toggle Switch S5.....	85
08.01.17 Road Lights, Toggle Switch S3.....	86
08.01.18 Central Lubrication, Luminous Push Button Switch S37 (Option)	86
08.01.20 Differential Lock Front Axle, Toggle Switch S28 (Option).....	87
08.01.21 Front Wheel Drive, Toggle Switch S27 / Torque Control for Front Wheel Drive, Rotary Switch A47	88
08.01.22 Floating Mode for the Screed Toggle Switch S58 (Operating Mode Switch)	89
08.01.23 Screed Raise / Lower, Toggle Switch S59	90
08.01.24 Working Lights Toggle Switch S86	91
08.01.25 Hopper Wings, Open / Close Toggle Switch S7	92
08.01.26 Conveyors Left and Right, Toggle Switch S13/S14.....	93
08.01.27 Auger Control, Left- and Right-hand Side Toggle Switch S15/S16 and S45/S46.....	94
08.01.28 Auger Reverse Rotation Toggle Switch S17.....	96
08.01.30 Tow Point Control, Toggle Switch S19/S20; Operating Mode for the Levelling System S18.....	97
08.01.31 Vibration, Toggle Switch S8.....	100
08.01.33 Emergency Control, Toggle Switch S70	101
08.01.34 Fuse Cabinet.....	102
08.01.35 Allocation of the Fuses:	103

08.01 Control panel



Lock the control panel into the required position before starting the paver. All operating controls must be easily accessible.

Never operate more than one control element at the same time which actuates a contrary function on the paver.



Cross-sliding the Control Panel:

To cross-slide the control panel, push the locking lever (1) to its upper position as illustrated.

Slide the control panel to the left or right-hand side as far as it will go, i.e. the side on which you want to operate the paver.

Locking the Control Panel:

Push the locking lever (1) to its lowest position.

Ensure the locking bolt has actually latched into the lowest position.

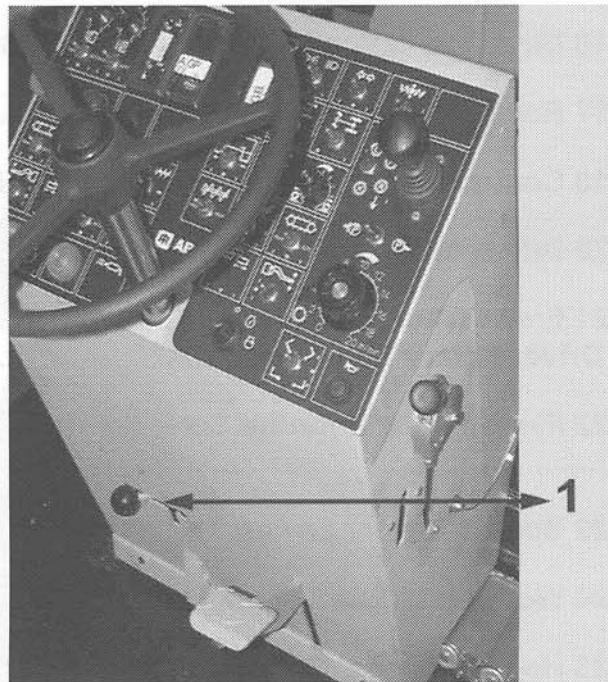
Opening the Control Panel Cover:

Use both hands on the hand grips (2) & (4) and slightly lift the cover (3) and at the same time, push it forwards.

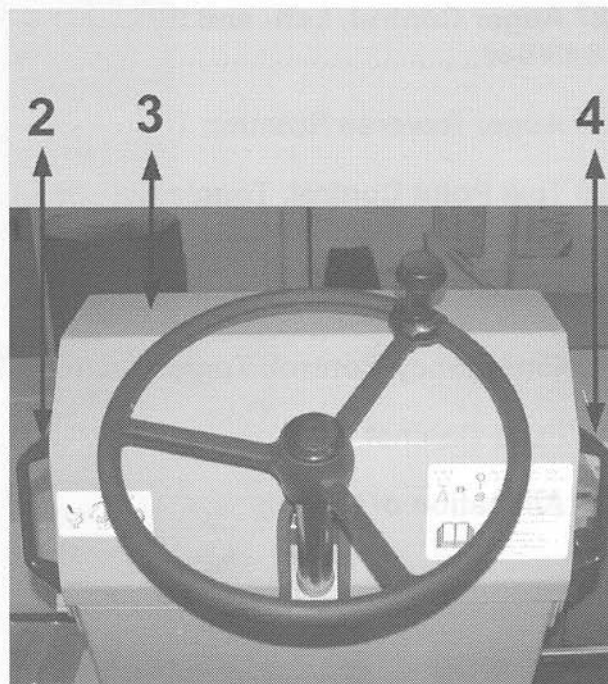
Closing the Control Panel Cover:

Use both hands on the hand grips (2) & (4) and pull it to the rear.

The control panel cover (3) can be locked with a padlock on the left-hand side as a protection against vandalism.



Locking lever (1)



Hand grip (2)
Control panel cover (3)
Hand grip (4)

08.01.01 Steering the Paver



The power assisted steering only functions when the Diesel engine is running. Considerably more muscle power is required to turn the steering wheel if the Diesel engine is switched off.

Do not move the paver if the steering system does not react to turns on the steering wheel.

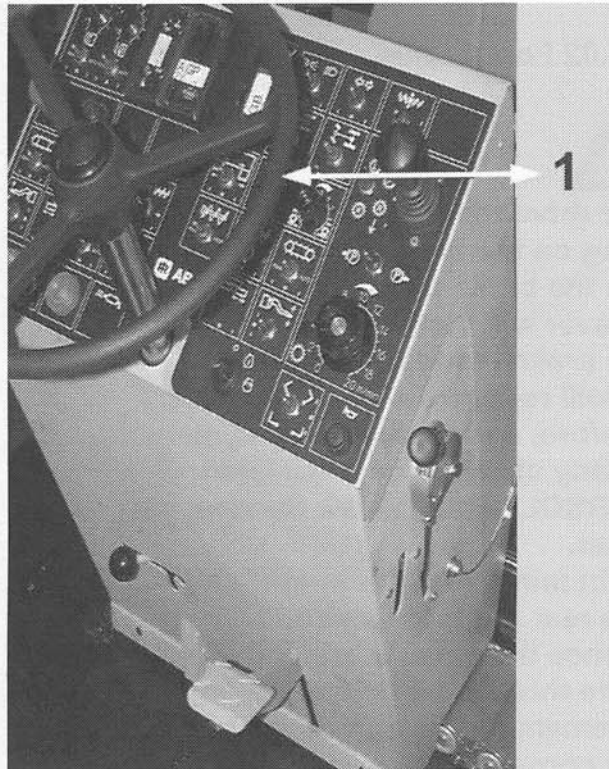
The steering ability of the front wheels will be negatively influenced by engaging the differential lock on the rear axle.

The front and the rear of the paver will swing out when cornering or steering around curves. Ensure there is sufficient safety distance between the paver and persons, buildings and other objects.



Steering:

By turning the steering wheel to the left or to the right, you will alter the paver's direction of travel.



Steering wheel (1)

08.01.02 Foot Brake



Never drive the paver with your foot resting on the brake pedal. If you press down the brake pedal when travelling, the paver will stop immediately.

Worn brake linings and aged brake fluid will reduce the braking effect. Therefore, ensure the brake system is regularly checked by a qualified INGERSOLL-RAND ABG Service Partner.

Bear in mind, that the weight and width of the rear mounted screed will influence the paver's braking effect. Ensure there is sufficient braking effect and remember the screed swings out when cornering.



Braking the Paver:

Push down the brake pedal (1) with your foot. The travel drive is automatically switched off and the paver stops immediately.

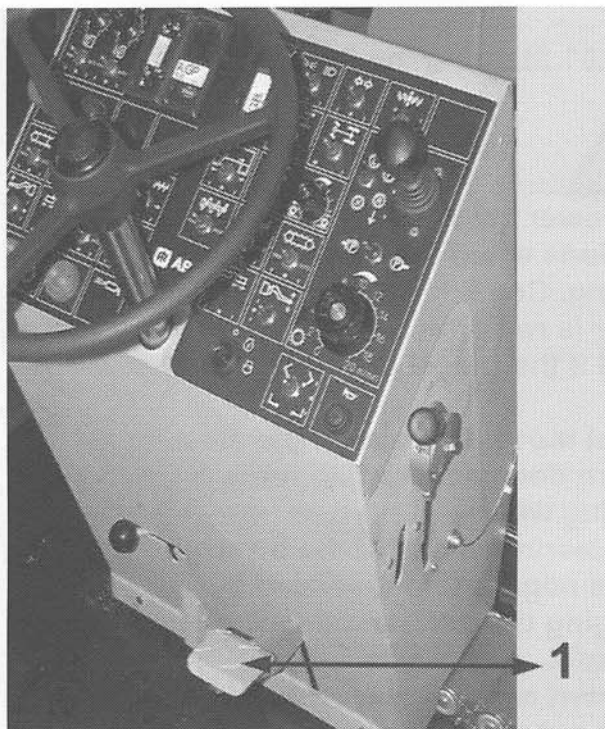
The brake control lamp H8 and the rear brake lights will light up.

To start the Paver again:

First of all, return the drive lever (S24) to the neutral position.

Take your foot off the brake pedal (1) and the brake control lamp and rear brake lights will extinguish.

Push the drive lever S24 to the required direction of travel.



Brake pedal (1)

08.01.03 Throttle Lever



Do not overstress the paver in a cold condition by running the Diesel engine at high speeds to warm it up. Otherwise undue damage may be caused to the Diesel engine and hydraulic system. If the ambient temperature is under 10° C, switch off the hydraulic circuits and let the Diesel engine run warm at a medium engine speed for about 5 to 10 minutes.



By actuating the throttle lever the engine speed will be altered.

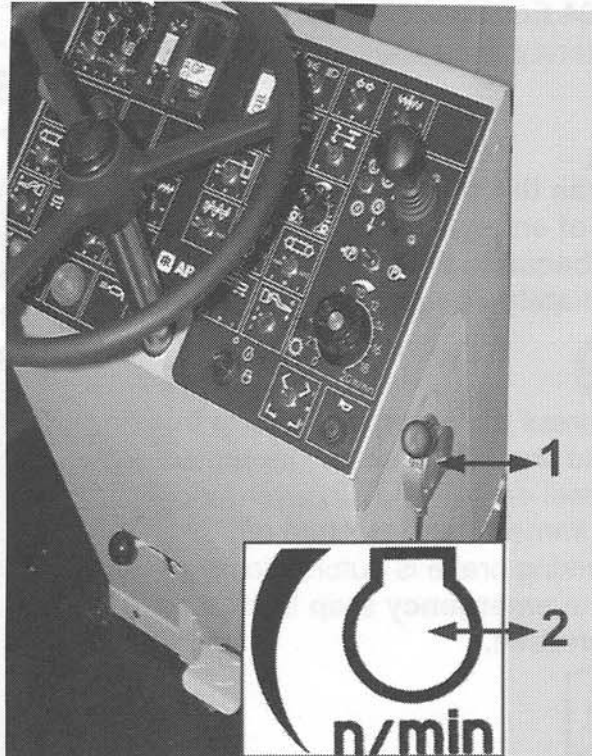


Increasing the engine speed:

Push the throttle lever (1) forwards.
To start the engine, push the throttle lever about ¼ of its distance forwards.

Decreasing the engine speed:

Pull the throttle lever (1) to the rear.



Throttle lever (1)

Sign plate (2)



Only operate your paver at full engine speed to protect the hydraulic system.

08.01.04 Emergency Stop Button S47 / Emergency Stop Release Button S49



Only use the emergency stop button in cases of emergency and not for normal stops because the paver will immediately come to a stand still.



If you press the **emergency stop button S47**, the flow of current is interrupted and the Diesel engine and all paver functions will be immediately switched off. The parking brake is automatically applied once the **emergency stop button** has been pressed.



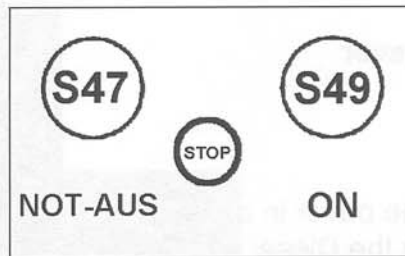
In cases of danger, **immediately** press the **emergency stop button S47**. The emergency stop control lamp will light up. Eliminate the cause for the emergency stop.

Before starting the paver again, return all switches and control elements to their neutral positions.

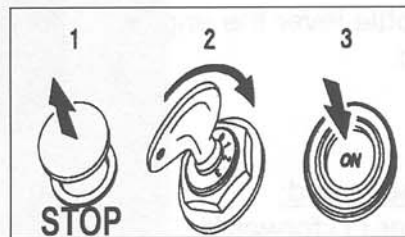
Then pull up the **emergency stop button S47**.

Start the Diesel engine.

Press the **emergency stop release button S49**. All functions on the paver can be operated again and the emergency stop control lamp will extinguish.



Push button S47 **Emergency Stop**
Push Button S49 **Releasing an
Emergency Stop**



Releasing the **Emergency Stop**



If the Diesel engine does not start, check and ensure that the correct sequence of procedure has been carried out for **releasing the emergency stop** and starting the paver again.

Observe the sign plate for **releasing an emergency stop** located on your paver's control panel.

Ensure the drive lever S24 is in the neutral position.

08.01.05 Ignition Switch S1



Before starting the paver, fully acquaint yourself with all its functions.

Check the correct function of all control lamps and instruments before starting.

Ensure there are no persons or other objects in the danger zone.

The toggle switches and levers for the following paver functions must be in the neutral or off position before starting the Diesel engine:

S8 Vibration

S13 Conveyor L.H. side

S14 Conveyor R.H. side

S15 Auger L.H. side

S16 Auger R.H. side

S18 Operating mode levelling system

S24 Drive lever for travel drive

S27 Front wheel drive.

Do not actuate the ignition switch for more than 20 seconds without a break, otherwise the starter motor will be damaged by overheating.

Please observe chapter 08.01.03 for starting the Diesel engine in low ambient temperatures.

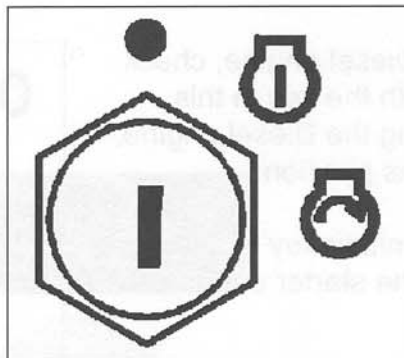


Use the ignition switch (S1) to start the paver's Diesel engine.

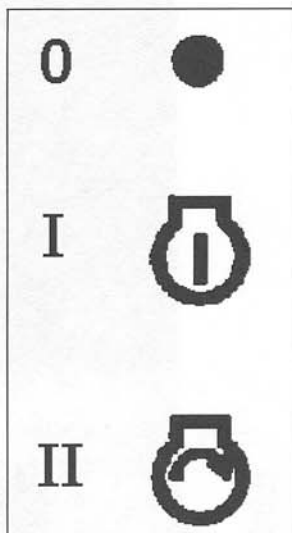
Position 0:

In this position all paver functions are without electric current and the ignition key can be removed.

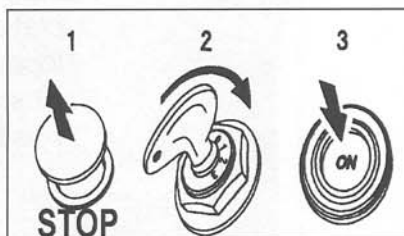
Turn the ignition key to this position to switch off the Diesel engine.



Ignition switch (S1)



Sign Plate: Ignition Switch Positions 0 / I / II



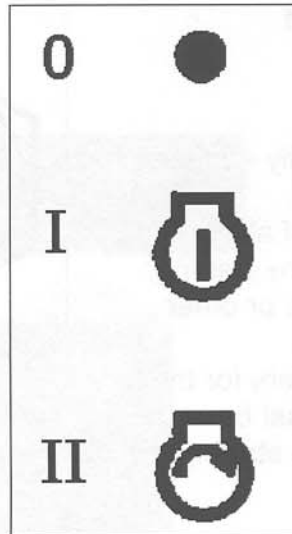
Sign Plate: Releasing the **Emergency Stop**

Position I:

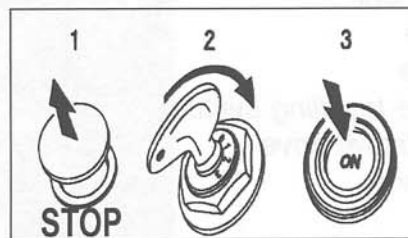
Before starting the Diesel engine, check the control lamps with the key in this position. After starting the Diesel engine, the key returns to this position.

Position II:

Turn and hold the ignition key in this position to actuate the starter and to start the Diesel engine.



Sign Plate: Ignition Switch Positions **0 / I / II**



Sign Plate: Releasing the **Emergency Stop**



If the Diesel engine does not start, check and ensure that the correct sequence of procedure has been carried out for **releasing the emergency stop** and starting the paver again. Observe the sign plate for **releasing an emergency stop** located on your paver's control panel. Ensure the drive lever S24 is in the neutral position.

08.01.06 Control Lamps



Observe the control lamps to prevent injury to the users and damage to the paver.

Alternator Control Lamp H1



If the alternator control lamp lights up, the batteries are no longer being loaded.



The red control lamp H1 lights up if a fault occurs on the alternator or in the electrical system.

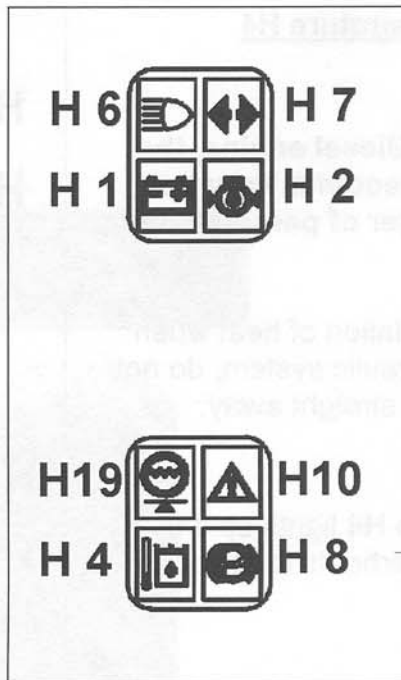
Engine Oil Pressure Control Lamp H2



Switch off the Diesel engine immediately the engine oil pressure control lamp lights up and the warning horn sounds. Regularly check the oil level to avoid damage to the Diesel engine.



If the engine oil pressure is too low, the red control lamp H2 lights up and 4 seconds later the warning horn S2 will sound. If this happens, contact your **INGERSOLL-RAND ABG** Service Partner for further assistance.



Control Lamps for:

- (H 1) Alternator control
- (H 2) Engine oil pressure
- (H 4) Hydraulic oil temperature
- (H 6) Road lights
- (H 7) Direction indicators
- (H 8) Brake control lamp
- (H10) **Emergency stop**
- (H19) Engine coolant



If the control lamp H1 lights up, stop the Diesel engine and check the V-belt drive. If the V-belt is not damaged, there is a fault in the electrical system. In this case, contact your **INGERSOLL-RAND ABG** Service Partner for further assistance.

Hydraulic Oil Temperature H4

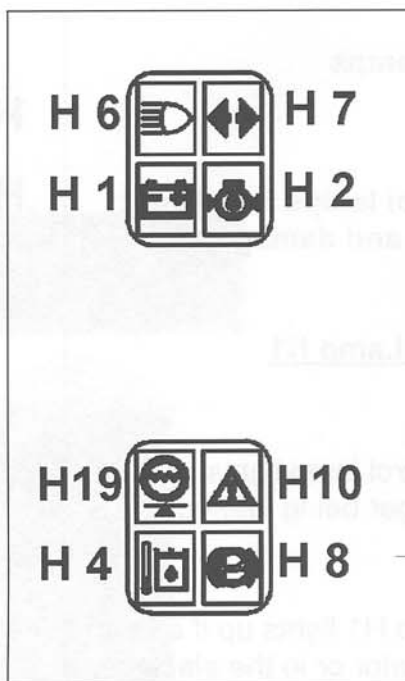


When running the Diesel engine, the hydraulic system becomes very hot and there is a danger of personal injury through burning.

To avoid an accumulation of heat when overheating the hydraulic system, do not switch off the Diesel straight away.



The red control lamp H4 lights up if the hydraulic system overheats (approx. 93°C).



Control Lamps for:

- (H 1) Alternator control
- (H 2) Engine oil pressure
- (H 4) Hydraulic oil temperature
- (H 6) Road lights
- (H 7) Direction indicators
- (H 8) Brake control lamp
- (H10) **Emergency stop**
- (H19) Engine coolant



If the temperature in the hydraulic system rises unduly:

Lower the paving speed and avoid a large head of material in the auger channel. If necessary, stop the paver and allow the Diesel engine to cool down at its operating speed to avoid an accumulation of heat. Use the time between changing dump trucks to cool down the hydraulic system with the Diesel engine running. Check the air vents for cleanliness and a free passage for the cooling air. Check the engine radiator for cleanliness. If necessary, clean the radiator and air vents.

Control Lamp for the Road Lights H6



If you switch the road lights on, the blue control lamp H6 lights up.

Control Lamp for Direction Indicators H7



If you actuate the direction indicators (flashers), the green control lamp H7 flashes.

Brake Control Lamp H8



The paver stops immediately the brake is applied.



The red control lamp H8 lights up if you apply the hand brake or depress the foot brake pedal.

Control Lamp for Emergency Stop H10



The red control lamp H10 lights up as soon as you press the **EMERGENCY STOP** button (Please refer to the chapter **Emergency Stop**).

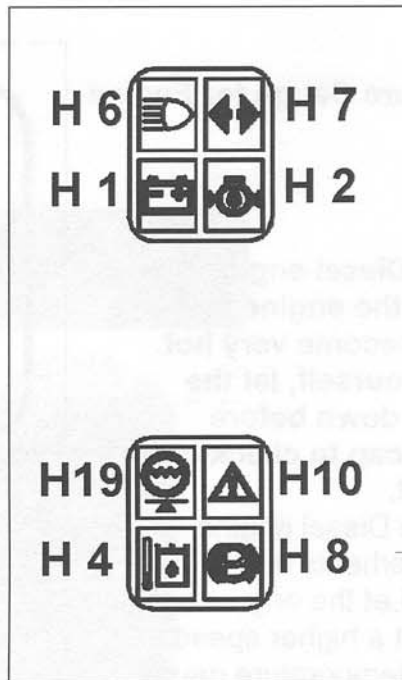
Control Lamp for the Coolant Level H19



When running the Diesel engine, numerous parts in the engine compartment will become very hot. To avoid burning yourself, let the Diesel engine cool down before removing the filler cap to check or to top up with coolant.



The control lamp H19 will light up if the coolant level is too low and at the same time the warning horn will sound. Only use genuine coolant as specified by the engine manufacturer.



Control Lamps for:

- (H 1) Alternator control
- (H 2) Engine oil pressure
- (H 4) Hydraulic oil temperature
- (H 6) Road lights
- (H 7) Direction indicators
- (H 8) Brake control lamp
- (H10) **Emergency stop**
- (H19) Engine coolant

08.01.07 Temperature Gauge for Engine Coolant P2



When running the Diesel engine, numerous parts in the engine compartment will become very hot. To avoid burning yourself, let the Diesel engine cool down before removing the filler cap to check or to top up with coolant.

Do not switch off the Diesel engine straight away if it overheats due to insufficient coolant. Let the engine cool down by running it at a higher speed and closely observe the temperature gauge P2.

Only put the Diesel engine under load at a coolant temperature above 60°C.



The temperature gauge P2 indicates the temperature of the engine coolant. Under normal operation, the needle on the temperature gauge P2 will be in the range up to 113°C.

08.01.08 Fuel Level Indicator P1



If the indicator points to the L.H. side:

The fuel tank is empty.

If the indicator points to the R.H. side:

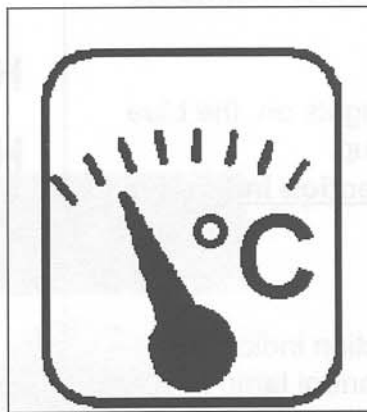
The fuel tank is full.

An exact indication of the fuel level is only possible when the paver is standing on level ground.

08.01.09 Hour Meter P3



The hour meter indicates the number of operating hours the paver has run.



Temperature Gauge for Engine Coolant P2



Fuel Level Indicator P1



Hour Meter P3

08.01.10 Speed Stage Selector Lever



Only actuate the speed stage selector lever when the paver is at a standstill.

Only change the speed stage when the paver is at a standstill. After changing the speed stage, ensure that the selected speed stage is engaged by starting the paver at a slow speed.

The paver must be secured against rolling off before changing the speed stage on slopes and gradients.



The speed stage is changed by using the lever (3).



The paver must be at a standstill before changing the speed stage.

The drive lever S24 must be in the neutral position.

The parking brake must be applied.

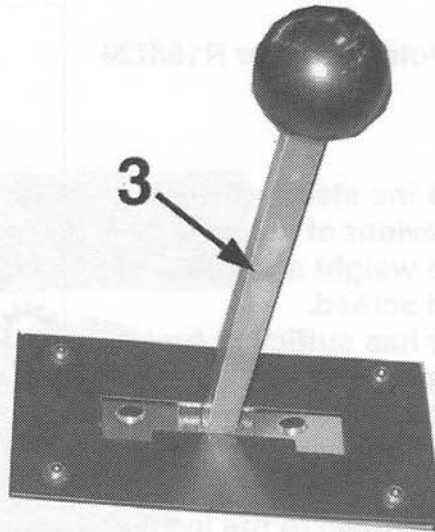
Observe the sign plate for changing the speed stage on the control panel of your paver.

Transport Speed:

Push the lever (3) to position **H**.

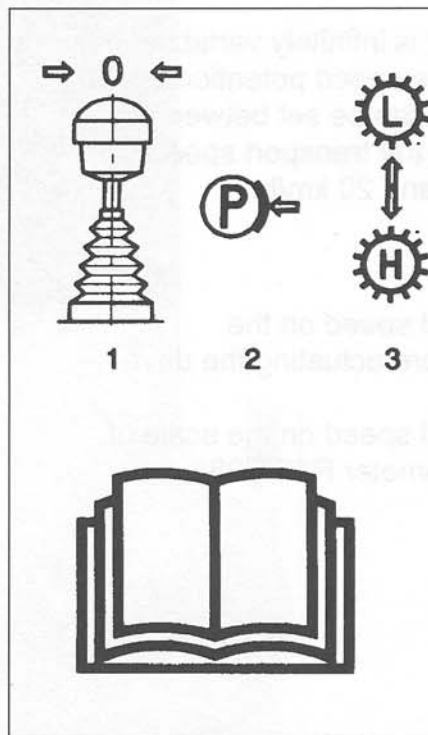
Paving Speed:

Push the lever (3) to position **L**.



Speed Stage Selector Lever (3)

H Transport speed **L** Paving speed



Sign Plate for selecting the speed stage.



Select the speed stage before driving the paver up or down slopes and gradients. Select the same speed stage for driving the paver down a slope or gradient that you would use for driving up it.

08.01.11 Speed Potentiometer R15/R26



Bear in mind that the steering, driving and braking behaviour of the paver is influenced by the weight and width of the rear mounted screed.

Ensure the paver has sufficient braking and steering properties.

Observe the width of the extended screed and remember it swings out when cornering.

Adapt the paver's speed to the locally prevailing conditions.

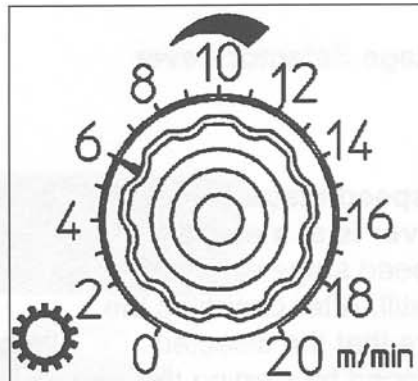


The paver's speed is infinitely variable and is set by turning the speed potentiometer. The paving speed can be set between 0 and 20 m/min and the transport speed can be set between 0 and 20 km/h.



Select the required speed on the potentiometer before actuating the drive lever S24.

Select the required speed on the scale of the speed potentiometer R15/R26.



Speed Potentiometer R15/R26
MIN/MAX



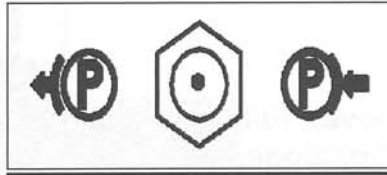
Altering the speed during paving operations will automatically alter the screed's compaction and the mat thickness. The speed to be selected for paving work depends upon the paving width, the mat thickness and the kind of material to be paved.

08.01.12 Parking Brake, Toggle Switch S23



No persons or objects should be in the danger zone when the parking brake is released because the paver can be immediately set into motion.

Ensure the danger zone is free from persons and objects before releasing the parking brake.



Toggle Switch S23 Parking brake **ON / OFF**

When taking the paver out of operation, engage the paving speed **L** with the speed stage selector switch before switching off the Diesel engine.



The brake serves as a parking brake. If you apply the parking brake when the paver is on the move, the hydrostatic travel drive is automatically cut out and the paver stops immediately.

When it is applied, the parking brake blocks the rear drive wheels. The parking brake is automatically applied when the Diesel engine is switched off.



Applying the Parking Brake

To stop the paver, switch the toggle switch S23 to the right.

The brake lights and the brake control lamp H8 light up.

Releasing the Parking Brake/Starting off

Return the drive lever S24 to the neutral position.

Release the parking brake by switching the toggle switch S23 to the left.

Select the direction of travel (forwards or reverse) with the drive lever S24.

The brake lights and the brake control lamp H8 will extinguish.

08.01.13 Drive Lever S24



Before starting the paver, fully acquaint yourself with all its functions.

Ensure there are no persons or other objects in the danger zone.

Only start the paver when the drive lever S24 is in the neutral position.

Never use force to operate the drive lever. After lifting the drive lever upwards to release it from its catch, it can be operated without force.



By pushing the drive lever S24 forwards or pulling backwards, you can select the direction of travel.

The drive lever is not for pre-selecting the travel speed but for switching the hydrostatic travel drive on and off.



Before selecting the direction of travel, the drive lever must be released from its catch. To do this, place two fingers underneath and on either side of the lever's knob and gently lift it upwards.

Neutral Position

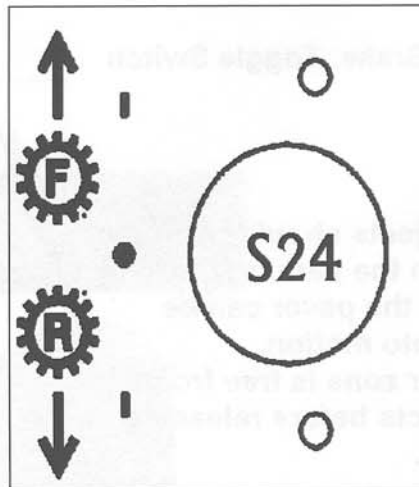
The drive lever S24 is locked in the centre neutral position.

Forward Travel Position **F**:

Gently press the drive lever S24 forwards as far as the limit stop.

Reverse Travel Position **R**:

Gently pull the drive lever S24 to the rear as far as the limit stop.



Drive Lever S24

F Forward travel

• Neutral

R Reverse travel

08.01.14 Warning Horn, Push Button S2

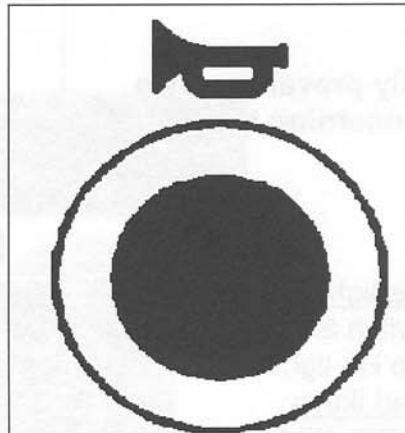


Push the warning horn button to warn persons in the danger zone of a possible danger.

Ensure the warning horn functions correctly before operating the paver. Observe your locally prevailing laws and regulations concerning the use of warning horns.



To sound the warning horn:
Press the push button S2.



Push Button S2 Warning Horn

08.01.16 Direction Indicators, Toggle Switch S5



Use the direction indicators every time you steer the paver in another direction.

Bear in mind that the steering behaviour is influenced by the width and weight of the screed.

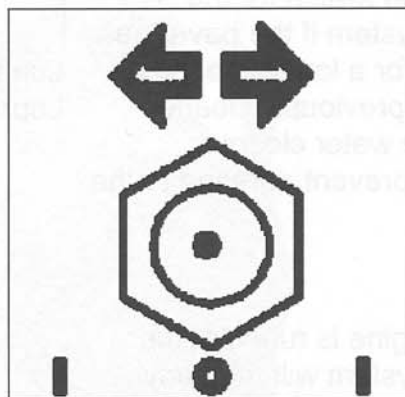
Observe the width of the extended screed and remember it swings out when cornering.



To switch on the L.H. direction indicator:
Switch the toggle switch S5 to the left and the green control lamp H7 lights up.

To switch on the R.H. direction indicator:
Switch the toggle switch to the right and the green control lamp H7 lights up.

To switch off the direction indicators:
Return the toggle switch S5 to the centre position.



Toggle Switch S5 Direction indicators
ON / OFF / ON

08.01.17 Road Lights, Toggle Switch S3



Observe your locally prevailing laws and regulations concerning the use of road lights.



To switch on the side lights:

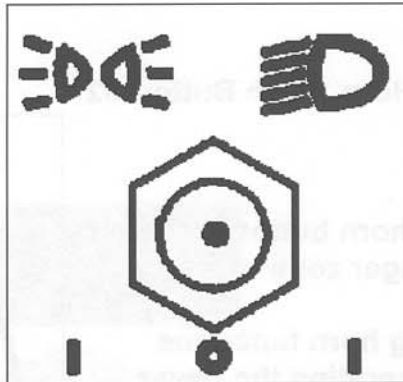
Switch the toggle switch S3 to the left and the blue control lamp H6 lights up.

To switch on the head lights:

Switch the toggle switch S3 to the right and the blue control lamp lights up.

To switch the lights off:

Return the toggle switch S3 to the centre position.



Toggle Switch S3 Road lights
ON / OFF / ON

08.01.18 Central Lubrication, Luminous Push Button Switch S37 (Option)



Before you start paving, press the luminous push button switch for the central lubrication system if the paver has been at a standstill for a longer period or the paver has been previously cleaned with a high pressure water cleaning appliance. This will prevent damage to the bearings.

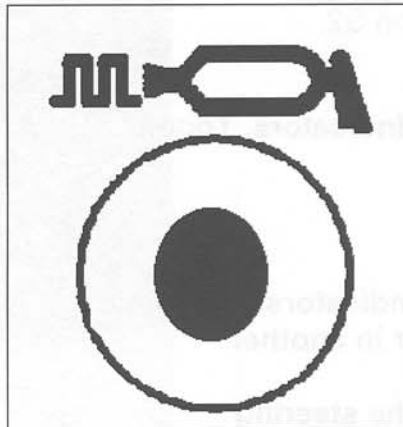


When the Diesel engine is running, the central lubrication system will regularly and automatically lubricate all users connected to it. The green control lamp lights up during the lubrication process. The lubrication process can be done manually by pushing the luminous push button switch. (Please refer to chapter 12).



To start the lubrication process:

Press the luminous push button S37.



Luminous Push Button Switch S37 Central
Lubrication System ON / OFF



Regularly check the grease container to ensure it contains sufficient lubricating grease..

08.01.20 Differential Lock Front Axle, Toggle Switch S28 (Option)



Only engaged the differential lock when wheel spin occurs.
The wheels must come to a complete standstill before engaging the differential lock.
Do not engage the differential lock when driving round tight corners.



If wheel spin occurs on one side of the paver's drive wheels, the traction can be improved by engaging the differential lock on the front axle.

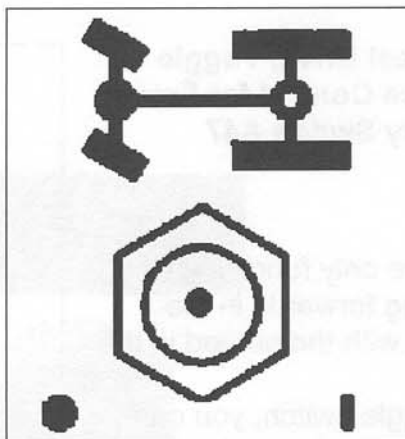


Engaging the differential lock on the front axle:

Switch the toggle switch S28 to the right.

Disengaging the differential lock on the front axle:

Switch the toggle switch S28 to the left.



Toggle switch S28 Differential lock front axle
AUS / EIN

08.01.21 Front Wheel Drive, Toggle Switch S27 / Torque Control for Front Wheel Drive, Rotary Switch A47



The front wheel drive only functions when the paver is travelling forwards in the paving speed stage with the screed in the floating mode.

By actuating the toggle switch, you can engage the front wheel drive and consequently increase the paver's traction.

By turning the rotary switch, you can adjust the torque and consequently adapt the traction of the front wheels to suit the ground conditions.

The traction of the front wheels will then be automatically governed by the amount of material in the hopper, i.e.:

empty hopper ⇒ *low torque*,
full hopper ⇒ *high torque*.



Engaging the front wheel drive:

Switch the toggle switch S27 to the right.

Disengaging the front wheel drive.

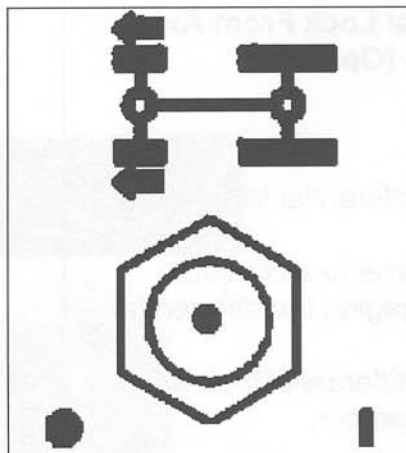
Switch the toggle switch S27 to the left.

Increasing the torque on the front wheel drive:

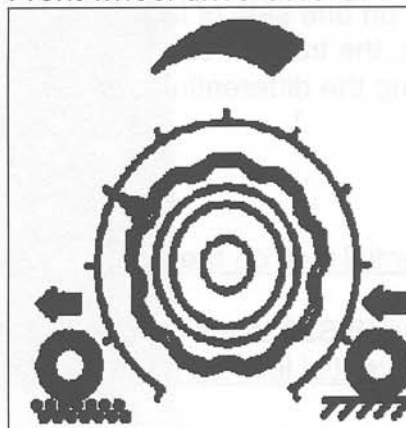
Turn the rotary switch A47 clockwise.

Lowering the torque on the front wheel drive:

Turn the rotary switch A47 anti-clockwise.



Toggle Switch S27
Front wheel drive **ON / OFF**



Rotary Switch A47 Torque control for front wheel drive **MIN / MAX**



When starting daily paving work, ensure there is not too much material in the auger channel in front of the screed. This will reduce the resistance of the material against the screed and improve the paver's traction properties.

Adjust the torque control when the hopper is empty. Once wheel spin no longer occurs on the front wheels, they will have the best traction when the hopper is full.

If there is any wheel spin on the front wheels when setting the torque, turn the rotary switch to **MIN**.

08.01.22 Floating Mode for the Screed Toggle Switch S58 (Operating Mode Switch)



Ensure there are no persons in the danger zone when raising or lowering the screed or during transport. Ensure there are no persons working under a screed which has been raised but not locked in the raised position. Always raise and safely secure the screed in the transport lock before carrying out any maintenance and repair work and before transporting the paver.

Lower the screed onto a sturdy base before switching to the floating mode (please refer to chapter 08.01.23).



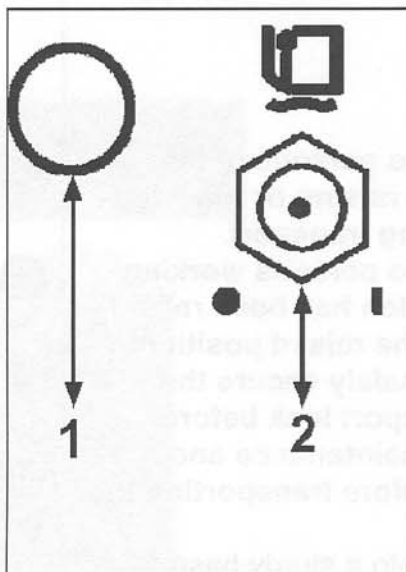
Floating Mode - Switch Position **ON**:

Switch the toggle switch S58 (2) to the right.

The yellow control lamp H29 (1) for the floating mode lights up.

Raising /Lowering the Screed - Switch Position **OFF**:

Switch the toggle switch S58 (2) to the left. The yellow control lamp H29 (1) extinguishes.



Floating Mode **OFF / ON**

- (1) Control lamp H29
- (2) Toggle switch S58



Switch the toggle switch S58 immediately to the floating mode after the screed has been lowered and before you start paving.

08.01.23 Screed Raise / Lower, Toggle Switch S59



Ensure there are no persons in the danger zone when raising or lowering the screed or during transport. Ensure there are no persons working under a screed which has been raised but not locked in the raised position. Always raise and safely secure the screed in the transport lock before carrying out any maintenance and repair work and before transporting the paver.

Lower the screed onto a sturdy base before switching to the floating mode.



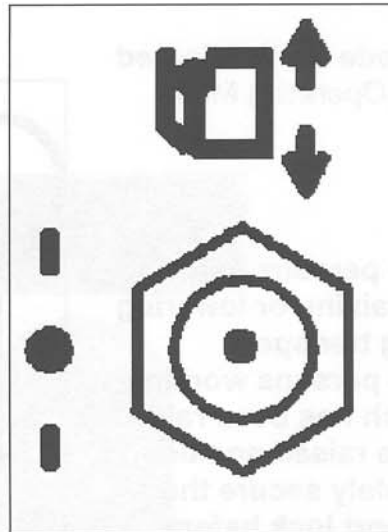
To raise or lower the screed, the toggle switch S58 (floating mode) must be in the left-hand **OFF** position.

To raise the screed:

Press the toggle switch S59 forwards in the direction of the arrow "**Raise**" to raise the screed into the required position.

To lower the screed:

Press the toggle switch S59 to the rear in the direction of the arrow "**Lower**" to lower the screed into the required position.



Toggle switch S59, Screed **Raise / 0 / Lower**



To start paving, lower the screed using the toggle switch S59 onto chocks of wood. The chocks of wood must have the same thickness as the mat to be paved. Take into consideration that there will be a degree of slump caused by rolling.

08.01.24 Working Lights Toggle Switch S86



Observe your locally prevailing laws and regulations for using working lights.

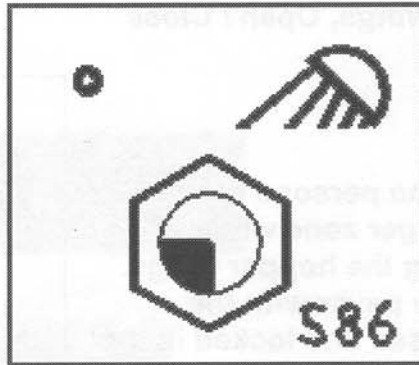


Switching on the working lights:

Push the toggle switch S86 to the right to switch the working lights on.

Switching off the working lights:

Push the toggle switch S86 to the left to switch the working lights off.



Working lights: **On / Off**
Toggle switch S86

08.01.25 Hopper Wings, Open / Close Toggle Switch S7



Ensure there are no persons or other objects in the danger zone when opening or closing the hopper wings. Only transport the paver with the hopper wings closed and locked in the closed position.

Release the hopper locking bolts before operating the hopper wings.

Never close the hopper wings if there is a dump truck with paving material reversed directly in front of the paver.

Ensure that the hopper wings are not damaged by the rear of the dump truck. This specially applies when cornering because the rear of the dump truck may collide with the hopper wings.



The hopper wings are opened and closed by actuating the toggle switch S7.

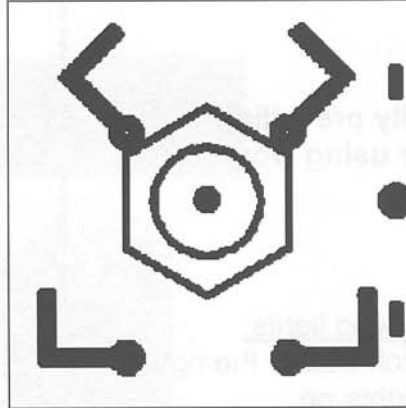


To open the hopper wings:

Press and retain the toggle switch S7 to the rear **OPEN** position.

To close the hopper wings:

Press and retain the toggle switch S7 to the front **CLOSE** position.



Toggle Switch S7 Hopper Wings
Open / O / Close

08.01.26 Conveyors Left and Right, Toggle Switch S13/S14



Keep away from moving and rotating parts when the conveyors are in operation.



The conveyors are switched on and off by using the toggle switches S13 L.H. and S14 R.H. In the manual mode, the flow of material is controlled by the operator and in the automatic mode it is controlled by the mix level control switches at the rear of the conveyor tunnel (chapter 05 refers).



The conveyors are switched off when: the toggle switches S13/S14 are in the **O** position.

To switch the L.H. conveyor to the manual mode:

Push the spring loaded toggle switch S13 to the left **MAN** position and hold it in this position until the required amount of paving material has been conveyed to the auger channel.

To switch the R.H. conveyor to the manual mode:

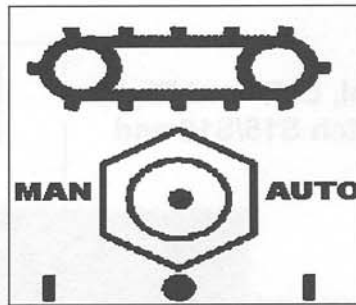
Push the spring loaded toggle switch S14 to the left **MAN** position and hold it in this position until the required amount of paving material has been conveyed to the auger channel.

To switch the L.H. conveyor to the automatic mode:

Push the toggle switch S13 to the right **AUTO** position.

To switch the R.H. conveyor to the automatic mode:

Push the toggle switch S14 to the right **AUTO** position.



Toggle Switch, Conveyor LH S13

MAN / O / AUTO

Toggle Switch, Conveyor RH S14

MAN / O / AUTO



To avoid an unintentional operation of the conveyors during transport, the fuse for the conveyors was removed before delivery. Please replace the fuse before operating the conveyors (chapter 08.01.34 refers).

The conveyors can only be operated in the **AUTO** mode if the external control panels on the screed are connected up.

Avoid having too much paving material in the auger channel. This will relieve some of the load on the conveyor system, reduce the resistance of the material on the screed and at the same time, increase the tractive power of the paver.

The lever arms on the mix level control switches should be adjusted so that the augers are submerged by 2/3 in the paving material (chapter 05 refers).

During paving work, push the toggle switches for the conveyors to the **AUTO** position. This will ensure a uniform head of material in front of the screed.

When starting paving work, push the toggle switches for the conveyors to the **MAN** position to fill the auger channel with paving material.

When conveying material in the **MAN** mode at the start of paving work, especially at large paving widths, do not over fill the auger channel because this will cause an excess load on the augers.

A too high head of material in front of the screed will cause problems when you start paving again after a short break.

08.01.27 Auger Control, Left- and Right-hand Side Toggle Switch S15/S16 and S45/S46



Keep away from moving and rotating parts when operating the augers. Worn and sharp edged auger flights are a source of danger and can cause injuries.



The left-hand and right-hand augers can be switched on and off independently using the toggle switches.

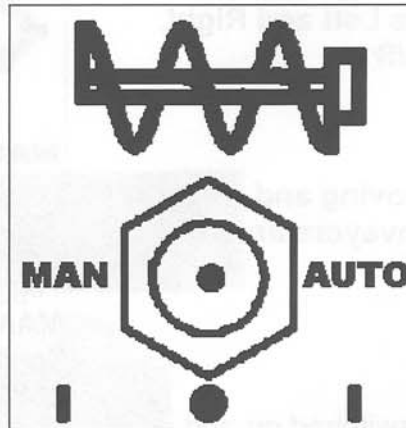
The augers can only be operated in the **AUTO / PROP** modes if the external control panels on the screed are connected up.

In the manual mode, the flow of material is controlled by the operator and in the automatic mode it is controlled by level switches located at both ends of the auger channel.

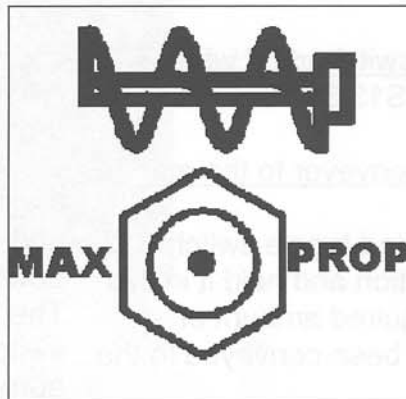


Switching Positions: MANUAL / MAXIMUM

The auger will continuously rotate at its maximum speed independent of the position of the drive lever and of the level control switches at the end of the screed. Switch the toggle switch S15/L:H: side and S16/R.H. side to the **MAN** position. Switch the operating mode switch S45/L.H. side and S46/R.H. side to the **MAX** position.



Toggle Switch S15
Auger L.H. side **MAN / 0 / AUTO**



Operating Mode Switch
S45 Auger L.H. side **MAX / PROP**



The above switch positions are only recommended for manually filling the auger channel at the beginning of daily paving.

MANUAL/PROPORTIONAL

The auger rotates continuously and is controlled by the level control switches at the end of the screed and independent of the position of the drive lever. Switch the toggle switch S15/L.H. side and S16/R.H. side to the **MAN** position. Switch the operating mode switch S45/L.H. side and S46/R.H. side to the **PROP** position

AUTOMATIC/MAXIMUM

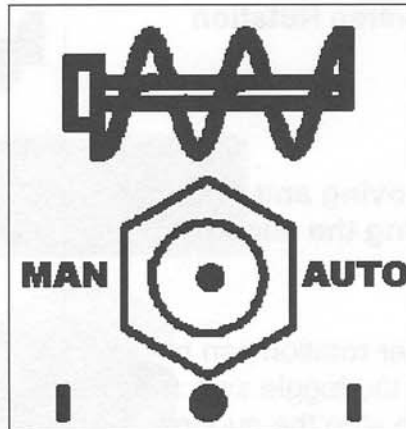
The auger rotates at maximum speed when the drive lever S24 is in the forward position. As soon as the maximum amount of material in the auger channel has been reached, the level control switch at the end of screed switches the auger off. Switch the toggle switch S15/L.H. side and S16/R.H. side to the **AUTO** position. Switch the operating mode switch S45/L.H. side and S46/R.H. side to the **MAX** position.

AUTOMATIC/PROPORTIONAL

The auger speed is proportionally controlled by the level control switches at the end of the screed when the drive lever S24 is in the forward position. The level control switches will reduce the auger speed if the head of material in the auger channel becomes too high.

Switch the toggle switch S15/L.H. side and S16/R.H. side to the **AUTO** position. Switch the operating mode switch S45/L.H. side and S46/R.H. side to the **PROP** position.

The level control switches at the ends of the screed will proportionally control the speed of the augers.



Toggle switch S16
Auger RH **MAN / 0 / AUTO**



Operating mode switch S46
Auger RH **MAX / PROP**



The switch positions **AUTOMATIC / PROPORTIONAL** are recommended for paving in order to maintain a uniform head of material in front of the screed.

TO SWITCH THE AUGERS OFF:

Auger left-hand side:

Switch the toggle switch S15 to the **0** position.

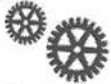
Auger right-hand side:

Switch the toggle switch S16 to the **0** position.

08.01.28 Auger Reverse Rotation Toggle Switch S17



Keep away from moving and rotating parts when operating the augers.



The direction of auger rotation can be altered by actuating the toggle switch S17. It is not necessary to stop the augers before changing their direction of rotation. By using the function **auger reverse**, you can simply change the direction of rotation from right to left or vice versa and direct the flow of material to the left or right-hand side.

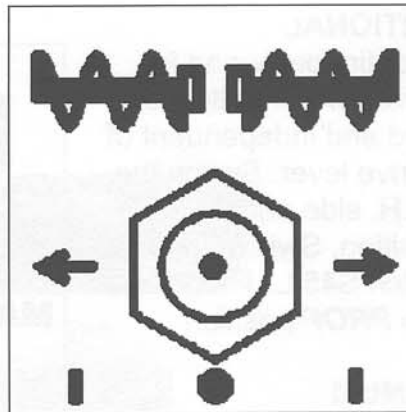


Directing the material to the left-hand side:
Switch the toggle switch S17 to the left and hold it in this position.

The right-hand auger will reverse its rotation and convey the material to the left. The material is then conveyed to the left-hand screed side by the left-hand auger which continues to rotate in its normal direction.

Directing the material to the right-hand side:

Switch the toggle switch S17 to the right and hold it in this position. The left-hand auger will reverse its rotation and convey the material to the right. The material is then conveyed to the right-hand screed side by the right-hand auger which continues to rotate in its normal direction.



Toggle Switch S17
Auger reverse rotation,
right / left
ON / O / ON



Reversing the augers is a handy function for distributing the paving material at the end of paving a mat thus significantly reducing shovelling work.

08.01.30 Tow Point Control, Toggle Switch S19/S20; Operating Mode for the Levelling System S18



There is a danger of crushing and personal injury when adjusting the tow points.

Ensure there are no persons or other objects in the danger zone.

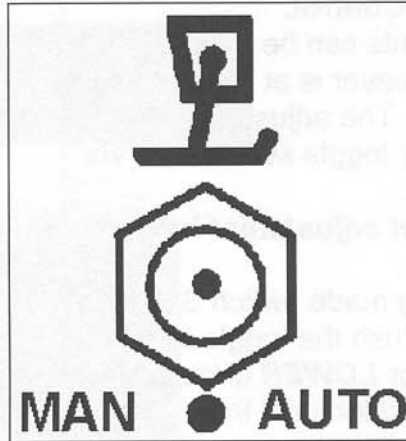
Ensure that the tow points are never adjusted to opposite end stops (one tow point adjusted to the top end stop and the other tow point adjusted to the lower end stop). This will cause undue torsion and twisting to the screed and the screws on the base plates may shear off.

The maximum difference in height between both tow points should not exceed 100 mm on the right and left-hand mat thickness scale.

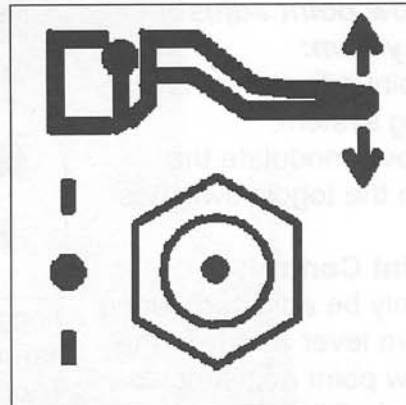
Do not adjust the tow points when the screed is raised and locked in the transport lock as this may lead to damage on the transport locking device.



By adjusting the tow points, the screed's angle of attack and consequently the mat thickness being paved will also be altered. The tow points can be independently adjusted by using the toggle switches. The tow points can be manually adjusted by the operator using the toggle switches or automatically by the levelling system mounted on the screed.



Toggle Switch S18 Operating mode of the levelling system **MAN / O / AUTO**



Toggle Switch S19 Tow point control left-hand side **RAISE / O / LOWER**

Toggle Switch S20 Tow point control right-hand side **RAISE / O / LOWER**



Switching Positions:

Manual Tow Point Control:

Tow point adjustments can be made manually when the paver is at a standstill or when it is paving. The adjustment is made by hand using toggle switches or via the levelling system.

Left-hand tow point adjustment by toggle switch:

Switch the operating mode switch S18 to the **MAN** position. Push the toggle switch S19 to the **RAISE** or **LOWER** direction and hold it in this position until the required tow point adjustment is reached.

Right-hand tow point adjustment by toggle switch:

Switch the operating mode switch S18 to the **MAN** position. Push the toggle switch S20 to the **RAISE** or **LOWER** direction and hold it in this position until the required tow point adjustment is reached.

Left & right-hand tow point adjustment with the levelling system:

An automatic tow point adjustment is made by the levelling system. It is still possible to overmodulate the levelling system with the toggle switches S19 & S20.

Automatic Tow Point Control:

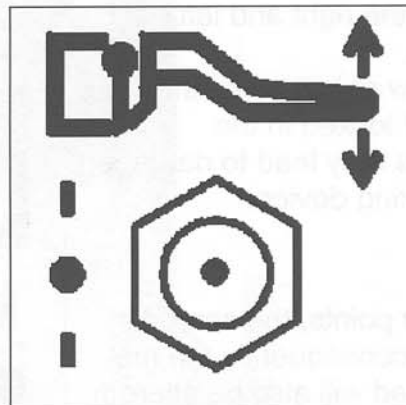
The tow point can only be adjusted during paving when the drive lever S24 is in the forward position. Tow point adjustments are automatically made by the levelling system which can, however, be manually overmodulated with the toggle switches.

Left-hand tow point adjustment by toggle switch:

Switch the operating mode switch S18 to the **AUTO** position. Push the toggle switch S19 to the **RAISE** or **LOWER** direction and hold it in this position until the required tow point adjustment is reached.



Toggle Switch S18 Operating mode of the levelling system **MAN / O / AUTO**



Toggle Switch S19 Tow point control left-hand side **RAISE / O / LOWER**

Toggle Switch S20 Tow point control right-hand side **RAISE / O / LOWER**

Right-hand tow point adjustment by toggle switch:

Switch the operating mode switch S18 to the **AUTO** position. Push the toggle switch S20 to the **RAISE** or **LOWER** direction and hold it in this position until the required tow point adjustment is reached.

Left and Right-hand tow point adjustment with the levelling system:

An automatic tow point adjustment is made by the levelling system. It is still possible to overmodulate the levelling system.



Recommended Switch Positions:

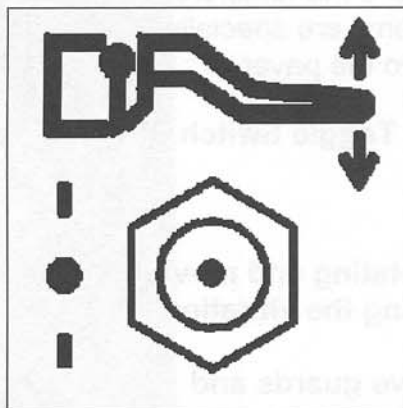
Only push the toggle switch S18 to the **MAN** position for fitting, setting up and adjusting the levelling system. Push the toggle switch S18 to the **AUTO** position for paving. This will ensure that there is no unintentional alteration to the tow point adjustment when the paver comes to a standstill. The switch position **AUTO** does not refer to the **levelling system** but to the automatic tow point control via the drive lever.

Position of the Levelling Cylinders:

When paving, never run the levelling cylinders and consequently the tow points up against their upper or lower end stops. The system does not function in this position and a levelling is not possible. The mat thickness scale (1) only indicates the approximate mat thickness and does not show the actual thickness being paved. Instructions for mechanically adjusting the screed's angle of attack as well as hints on adjusting the mat thickness are contained in the operating manual for the screed.

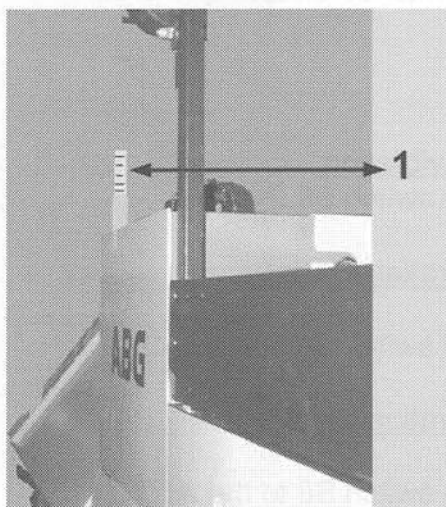


Toggle Switch S18 Operating mode of the levelling system **MAN / O / AUTO**



Toggle Switch S19 Tow point control left-hand side **RAISE / O / LOWER**

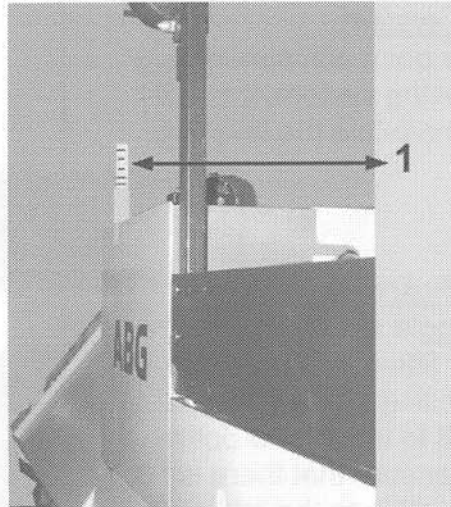
Toggle Switch S20 Tow point control right-hand side **RAISE / O / LOWER**



Side view L.H. side.
(1) Mat thickness scale

Application of the Automatic Levelling System:

When using an automatic levelling system, you will obtain the best possible surface evenness when paving sub-base, base and binder courses. Further information on the application of the optional automatic levelling system is contained in the separate operating manual. If the binder course has a good even surface, we recommend you to pave the wearing course without using the levelling system. Only use genuine levelling systems supplied by the paver's manufacturer because these systems are specially tuned and adapted to the paver.



Side view L.H. side.
(1) Mat thickness scale

08.01.31 Vibration, Toggle Switch S8



Keep away from rotating and moving parts when operating the vibration system.

Ensure all protective guards and covers are correctly fitted.



In the manual mode, the vibrators run continuously whereas in the automatic mode, they are switched on and off via the drive lever S24.



To switch off the vibration:

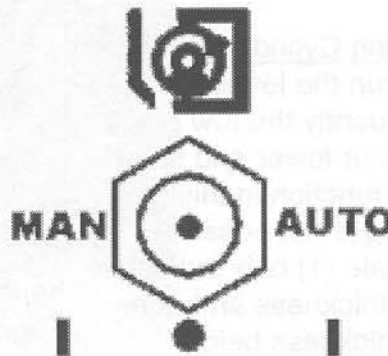
Switch the toggle switch S8 to the **0** position.

To switch the vibration to the manual mode:

Switch the toggle switch S8 to the **MAN** position.

To switch the vibration to the automatic on/off mode:

Switch the toggle switch S8 to the **AUTO** position.



Toggle switch S8 Vibration **MAN/ 0 /AUTO**

08.01.33 Emergency Control, Toggle Switch S70



Starting and stopping the paver with the drive lever will be done faster and more abruptly in the emergency control mode.

Therefore, you should use the speed potentiometer to alter the travelling speed when operating the paver in the emergency control mode.



If a fault occurs in the electronic drive control, you can still operate the paver at a lower paving speed.



To switch on the emergency control:
Open and secure the front cover (1) on the control column.

Switch the toggle switch S70 (2) to the **MAN** position.

Close the front cover again.

To drive the paver in the emergency control mode:

Turn the speed potentiometer to the **O** position.

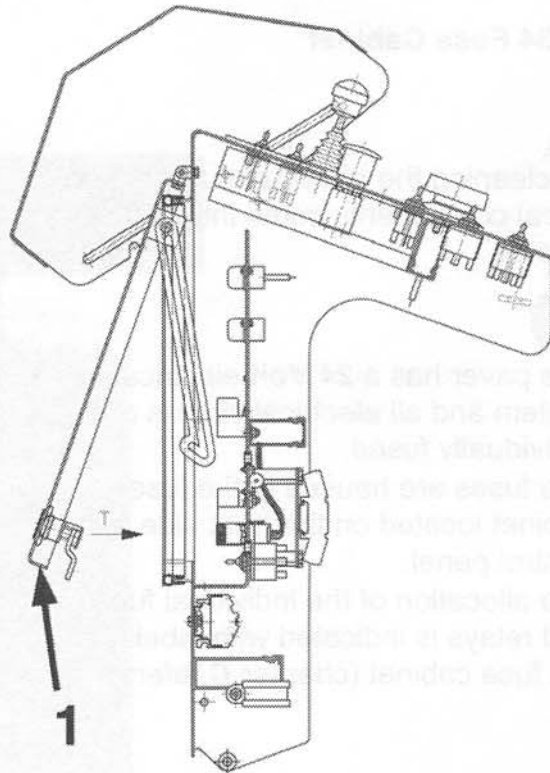
Select the direction of travel with the drive lever S24.

Turn the speed potentiometer clockwise until the required speed has been reached.

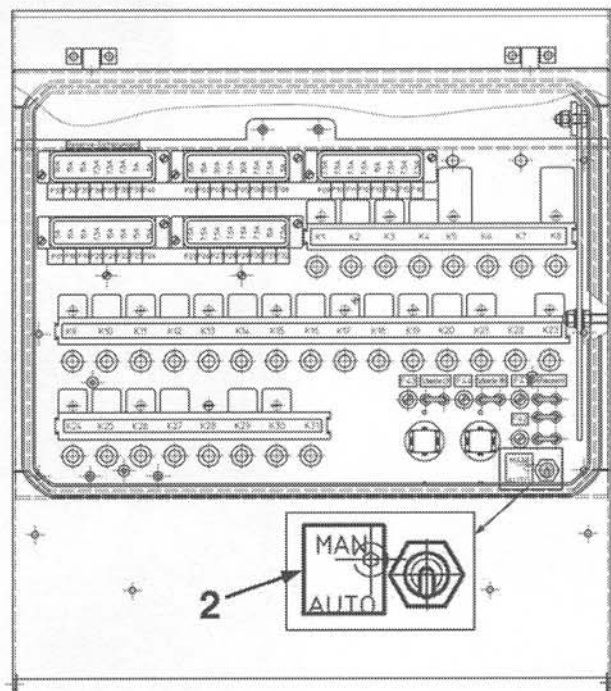
Turn the speed potentiometer anti-clockwise to brake and stop the paver.

To switch off the emergency control:

Switch the toggle switch S70 back to the **AUTO** position.



Control column
Front cover



Control column
Toggle switch S70 **MAN / AUTO**

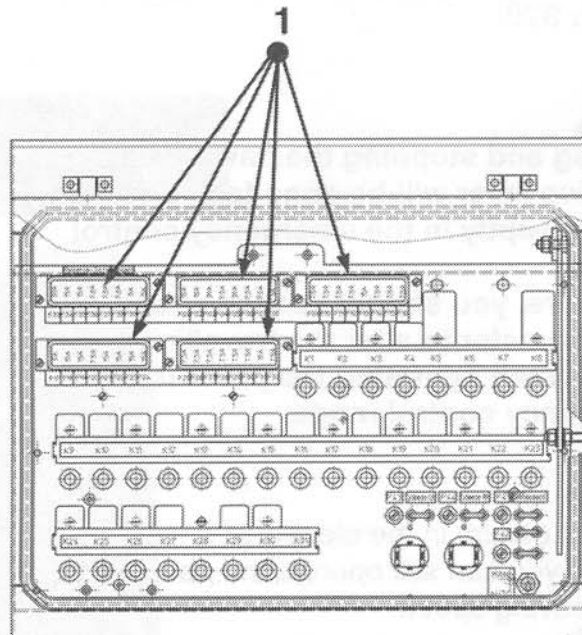
08.01.34 Fuse Cabinet



When cleaning the paver, ensure that no electrical components come into contact with water.



- The paver has a **24 Volt** electrical system and all electrical circuits are individually fused.
- The fuses are housed in the fuse cabinet located on the front side of the control panel.
- The allocation of the individual fuses and relays is indicated with labels in the fuse cabinet (chapter **C** refers).



Control column, front view
Fuse cabinet (1)

08.01.35 Allocation of the Fuses:

	No.	Opt.	Stromkreis	Electric circuit	Circuit électrique	Circuito eléctrico
15 Ampere	F 1		Zündschlüssel	Ignition key	Clef de contact	Llave de contacto
15 Ampere	F 2		Anlasser, Hupe	Starter, horn	Démarreur, Avertisseur	Arranque, Bocina
30 Ampere	F 3		Zündungsabhängige 24 V	24 V ignition depend	24 V allumage dependant	24 V dependiente de encendido
7,5 Ampere	F 4	X	Fahrtrichtungsanzeiger	Direction indicator	Indicateur de direction	Indicador de dirección
30 Ampere	F 5		Hauptsicherung Arbeitsbeleuchtung + Steckdosen hinten	Main fuse working floodlights + sockets rear side	Coupe-circuit principal projecteurs de travail + prise de courant derrière	Cortacircuitos principales luces de trabajo + enchufe detrás
7,5 Ampere	F 6	X	Zentralschmierung	Central lubrication	Système central de lubrification	Sistema de lubricación central
7,5 Ampere	F 7		Nivellierung	Levelling system	Nivellement	Nivelación
5 Ampere	F 8	X	Bremslicht	Stop light	Feu de stop	Luz de freno
7,5 Ampere	F 9	X	Beleuchtung links	Lighting LH	Phares G	Faros I
7,5 Ampere	F 10	X	Beleuchtung rechts	Lighting RH	Phares D	Faros D
7,5 Ampere	F 11	X	Abblendlicht links	Head light LH	Feux de croisement G	Luz corta izq.
7,5 Ampere	F 12	X	Abblendlicht rechts	Head light RH	Feux de croisement D	Luz corta der.
15 Ampere	F 13		Steckdose 24 V vorn	Socket 24 V front	24V prise devant	24V enchufe delante
15 Ampere	F 14					
7,5 Ampere	F 15		Kübel	Hopper	Benne repliable	Tolva
7,5 Ampere	F 16		Variomatik	Variomatic	Variomatic	Variomatic
5 Ampere	F 17		Nivellierautomatik	Automatic levelling system	Nivellement automatique	Nivelación automática
15 Ampere	F 18		Übersteuerung Schnecke links	Over-regulation auger LH	Dépassement la vis G	Sobre regulación sinfín I
15 Ampere	F 19		Übersteuerung Schnecke rechts	Over-regulation auger RH	Dépassement la vis D	Sobre regulación sinfín D
7,5 Ampere	F 20		Relais Arbeitsbeleuchtung	Relay working lights	Relais de éclairage de travail	Relé luz de trabajo
15 Ampere	F 21		Steckdose 24 V links	Socket 24 V LH	Prise de courant 24V derrière G	Enchufe 24 V detrás I
15 Ampere	F 22		Steckdose 24 V rechts	Socket 24 V RH	Prise de courant 24V derrière D	Enchufe 24 V detrás D
15 Ampere	F 23		Arbeitscheinwerfer links	Working floodlights LH	Phare de travail derrière G	Faro de trabajo detrás I
15 Ampere	F 24		Arbeitscheinwerfer rechts	Working floodlights RH	Phare de travail derrière D	Faro de trabajo detrás D
7,5 Ampere	F 25		Bohle heben / senken / Schwimmstellung / Arretierung	Screed raise / lower / floating mode / screed lock	Table soulever / baisser / flotteur de position / dispositif d'arrêt	Regla levantar / bajar / flotante posición / Bloqueo de la regla
7,5 Ampere	F 26		Förderband	Conveyor	Convoyeur	Cinta transportadora
7,5 Ampere	F 27		Ultraschall-Sensor	Ultrasonic sensor	Détecteur à ultra son	Sensor ultrasónico
7,5 Ampere	F 28		Vibration	Vibration	Vibration	Vibración
7,5 Ampere	F 29		Stampfer	Tamper	Tamper	Tamper
7,5 Ampere	F 30					
15 Ampere	F 31					
7,5 Ampere	F 32		Selbstverriegelnde Einbaufunktionen; Bremslicht; Parkbremse; Fahrhebel	Self locking paving functions; stop light; break lock; drive lever	Dispositif d'arrêtage; feu de stop; frein à main; manette d'accélérateur	Autobloqueo de las funciones de extensión luz de freno; freno de mano; acelerador
2,5 Ampere	F 41	X	Regler Vorderradantrieb	Front-wheel drive controller	Regulateur commande avant de roue	Regulador tracción rueda delantera
2,5 Ampere	F 42		Regler Hinterradantrieb	Rear-wheel drive controller	Regulateur commande de roue arrière	Regulador tracción rueda trasera
2,5 Ampere	F 43		Schnecke links	Auger LH	Vis de distribution à gauche	Sinfín I
2,5 Ampere	F 44		Schnecke rechts	Auger RH	Vis de distribution à droite	Sinfín D

80675630

08.02 External Control Panels



All operating elements must be free and easily accessible.
Never operate more than one control element at the same time which actuates a contrary function or has an opposite effect.

08.02.01 Tow Point Control, Push Button Switches S50/S51, S60/S61



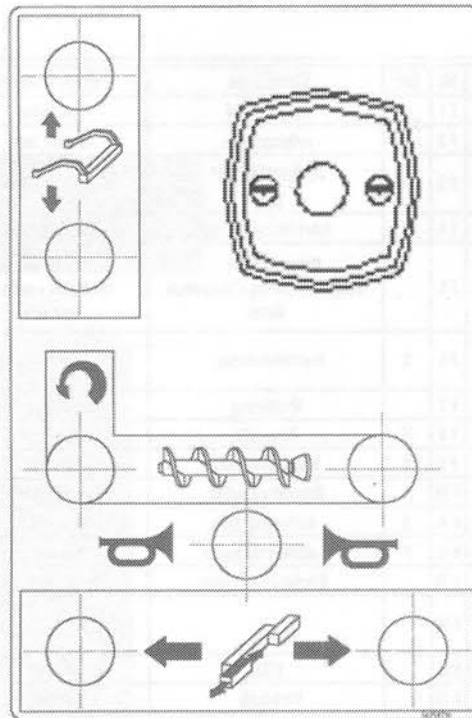
There is a danger of crushing and personal injury when adjusting the tow points.

Ensure there are no persons or other objects in the danger zone.

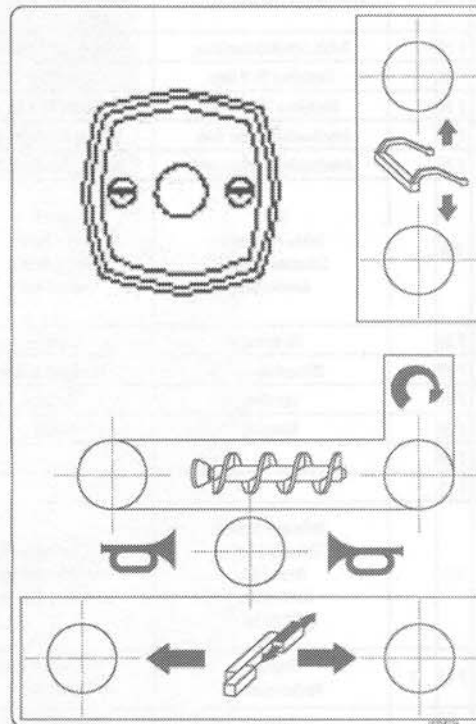
Ensure that the tow points are never adjusted to opposite end stops (one tow point adjusted to the top end stop and the other tow point adjusted to the lower end stop). This will cause undue torsion and twisting to the screed and the screws on the base plates may shear off.

The maximum difference in height between both tow points should not exceed 100 mm on the right and left-hand mat thickness scales.

Do not adjust the tow points when the screed is raised and locked in the transport lock device as this may lead to damage on the locking device.



LH External Control Panel



RH External Control Panel



By adjusting the tow points, the screed's angle of attack and consequently the mat thickness being paved will be altered.

The L.H. and R.H. tow points can be independently adjusted using the push button switches.

The tow points can be manually adjusted by the operator using the push button switches or automatically by the levelling system.



Manual Tow Point Adjustment:

Tow point adjustments can be made manually when the paver is at a standstill or when it is paving.

Adjustments are made by using the push button switches or via the levelling system. It is, however, still possible to overmodulate the levelling system by using the push button switches.

Switch the operating mode switch S18 on the control panel to the **MAN** position.

Left-hand External Control Panel:

Reducing the mat thickness:

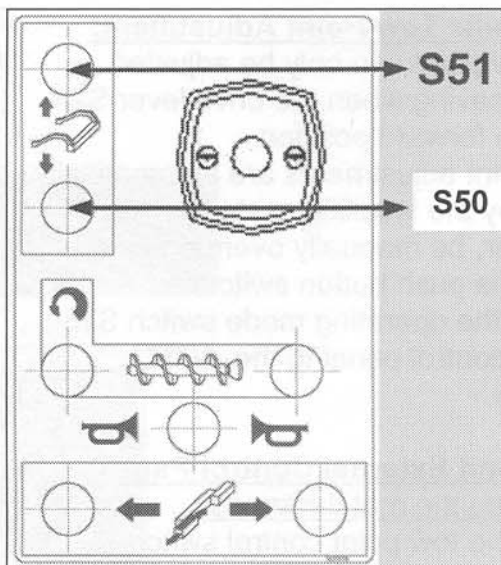
Press the tow point control switch S50 and keep it pressed until the required mat thickness is reached.

Increasing the mat thickness:

Press the tow point control switch S51 and keep it pressed until the required mat thickness is reached.

Right-hand External Control Panel:

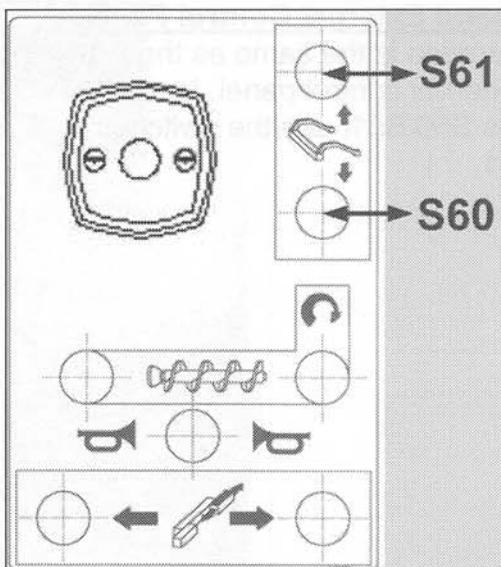
The operation is the same as the left-hand external control panel. Instead of push button switches S50/S51, use the switches S60/S61.



LH External Control Panel

Push button switch (S50) for reducing the mat thickness.

Push button switch (S51) for increasing the mat thickness.



RH External Control Panel

Push button switch (S60) for reducing the mat thickness.

Push button switch (S61) for increasing the mat thickness.

Automatic Tow Point Adjustment:

The tow point can only be adjusted during paving when the drive lever S24 is in the forward position.

Tow point adjustments are automatically made by the levelling system which can, however, be manually overmodulated by using the push button switches.

Switch the operating mode switch S18 on the control panel to the **AUTO** position.

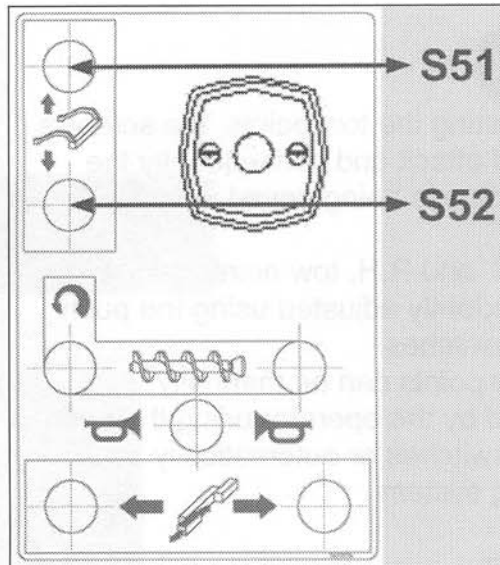
Left-hand External Control Panel:

Reducing the mat thickness:

Press the tow point control switch S50 and keep it pressed until the required mat thickness has been reached.

Increasing the mat thickness:

Press the tow point control switch S51 and keep it pressed until the required mat thickness has been reached.



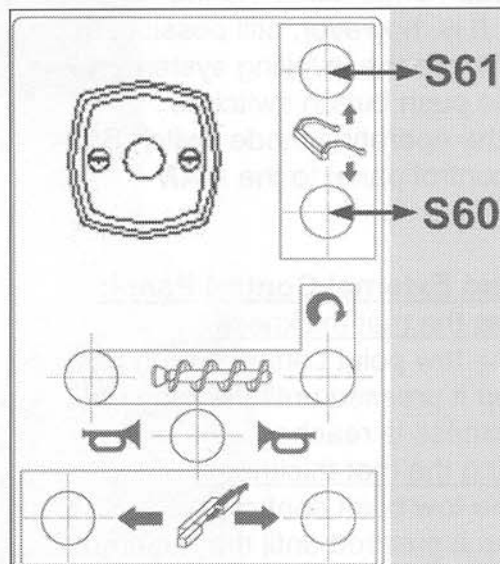
LH External Control Panel.

Push button switch (S50) for reducing the mat thickness.

Push button switch (S51) for increasing the mat thickness.

Right-hand External Control Panel:

The operation is the same as the left-hand external control panel. Instead of switches S50/S51, use the switches S60/S61.



RH External Control Panel.

Push button switch (S60) for reducing the mat thickness.

Push button switch (S61) for increasing the mat thickness.



Recommended Switch Positions:

Only push the toggle switch S18 to the **MAN** position for fitting, setting up and adjusting the levelling system.

Push the toggle switch S18 to the **AUTO** position for paving. This will ensure that there is no unintentional alteration to the tow point adjustment when the paver comes to a standstill.

The switch position **AUTO** does not refer to the **levelling system** but to the automatic tow point control via the drive lever.

Position of the Levelling Cylinders:

When paving, never run the levelling cylinders and consequently the tow points up against their upper or lower end stops. The system does not function in this position and a levelling is not possible.

The mat thickness scale (1) only indicates the approximate mat thickness and does not show the actual thickness being paved.

Instructions for mechanically adjusting the screed's angle of attack as well as hints on adjusting the mat thickness are contained in the operating manual for the screed.

Application of the Automatic Levelling System:

When using an automatic levelling system you will obtain the best possible surface evenness when paving sub-base, base and binder courses. Further information on the application of the optional automatic levelling system is contained in a separate operating manual. We do not recommend the application of the levelling system if the previous course has a good surface evenness.

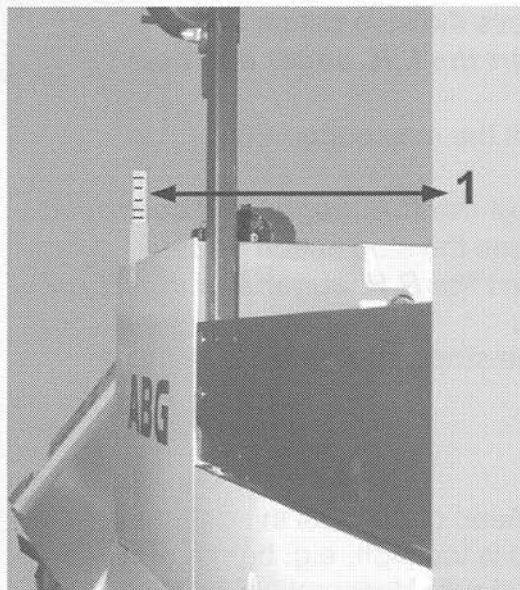
Only use genuine levelling systems supplied by the paver's manufacturer because these systems are specially tuned and adapted to the paver.



Operating mode of the levelling system

MAN / 0 / AUTO

Toggle Switch S18 (on the control panel)



(1) Mat thickness scale.



Immediately press the emergency STOP button if persons or other objects are in the danger zone of the conveyors and augers. The material flow stop button may also be used to immediately stop the conveyors and augers.



By pressing the emergency STOP buttons S53 and S63 the material flow by the augers and conveyors will be stopped.



To stop the L.H. auger and conveyor:

- Press the stop button S53.

To start the L.H. auger and conveyor again:

- Pull the stop button S53.

To stop the R.H. auger and conveyor:

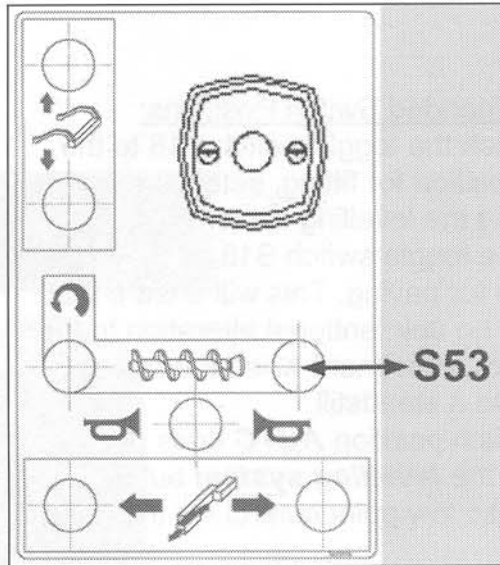
- Press the stop button S63.

To start the R.H. auger and conveyor again:

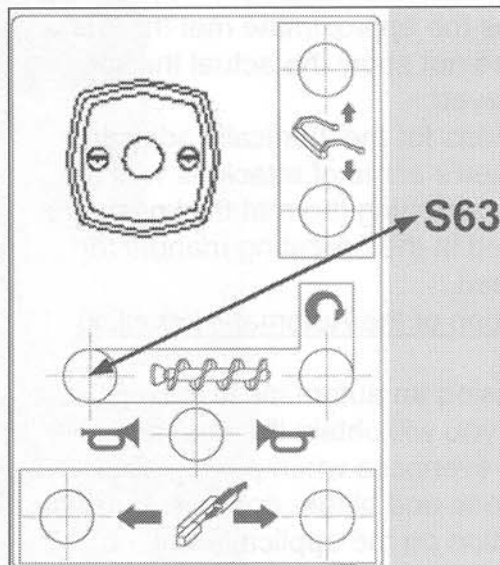
Pull the stop button S63.



If the head of material in front of the screed is too high, e.g. before retracting the hydraulic Variomatic screed extension, the function of stopping the material flow will help you to lower the amount of material in front of the screed.



LH External Control Panel
Emergency STOP button (S53).



RH External Control Panel
Emergency STOP button (S63).

08.02.03 Warning Horn Push Button S54/S64



Push the warning horn button to warn persons in the danger zone of a possible danger.

Ensure the warning horn functions correctly before operating the paver. Observe your locally prevailing laws and regulations concerning the use of warning horns.

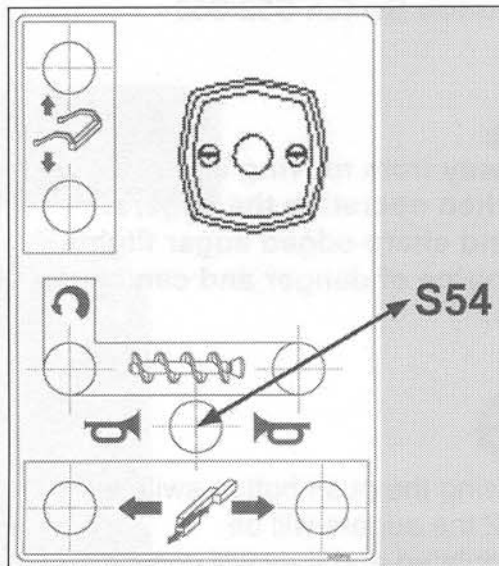


Use the warning horn to make other people aware of danger.

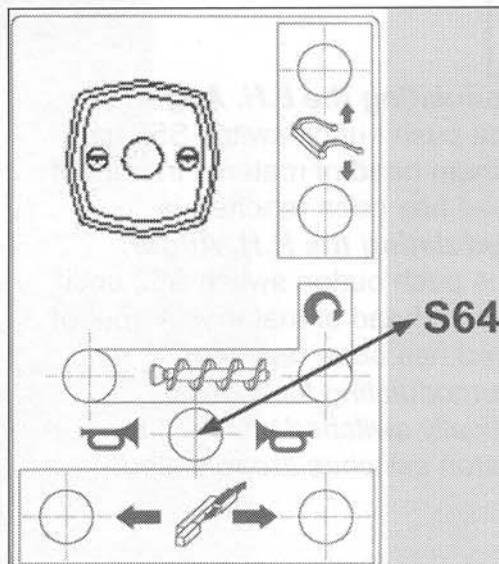


To sound the horn from the L.H. side:
Press the push button S54.

To sound the horn from the R.H. side:
Press the push button S64.



LH External Control Panel
(S54) Push button for the warning horn.

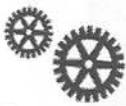


RH External Control Panel
(S64) Push button for the warning horn.

08.02.04 Overmodulating the Augers Push Button Switch S52/S53



Keep away from moving and rotating parts when operating the augers. Worn and sharp edged auger flights are a source of danger and can cause injuries.



By pressing the push button switches S52/S62 the augers will be overmodulated and they will convey paving material at maximum speed. The push button switches for overmodulating the augers only function when the **Stop Button S53 and S63** has been pulled.



Overmodulating the L.H. Auger:

Press the push button switch S52 until the optimum head of material in front of the screed has been reached.

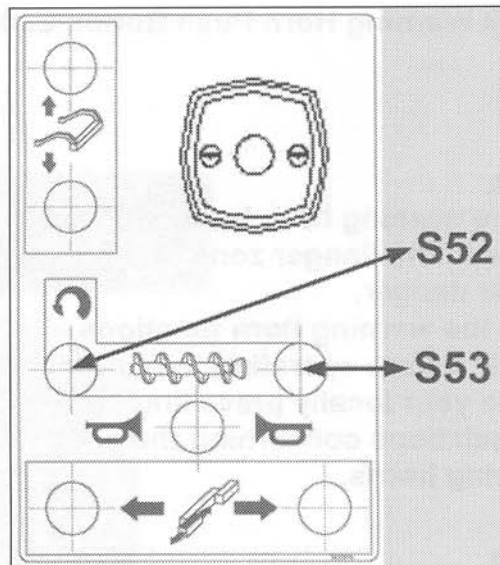
Overmodulating the R.H. Auger:

Press the push button switch S62 until the optimum head of material in front of the screed has been reached.

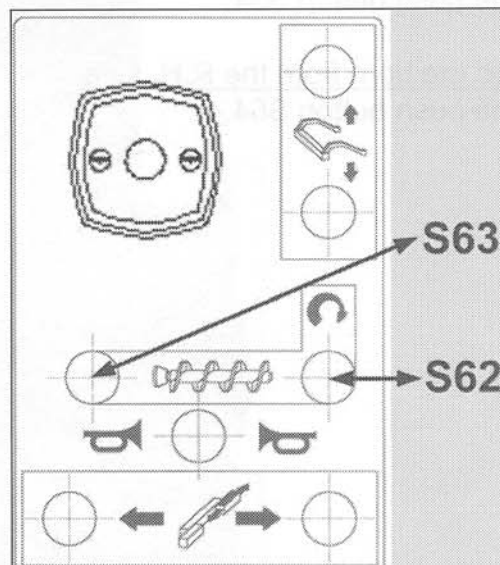
The overmodulating function is automatically switched off when the push button switches are released.



Overmodulating the augers will help you to obtain a higher head of material in front of the screed which may be required just before extending the Variomatic screed.



LH External Control Panel
Overmodulating the augers, switch S52
Emergency STOP button S53



RH External Control Panel
Overmodulating the augers, switch S62
Emergency STOP button S63

08.02.05 Altering the Paving Width Push Button Switches S55/S56, S65/S66



There is a danger of crushing and serious injury when altering the paving width.

Make absolutely sure that there are no persons or other objects in the danger zone of the screed when altering the paving width.



By using the push button switches, you can extend or retract the hydraulically operated Variomatic screed extensions to suite your particular paving width requirement.



Reducing the paving width on the L.H. side:

Press the push button switch S55 until the required paving width is reached.

Increasing the paving width on the L.H. side:

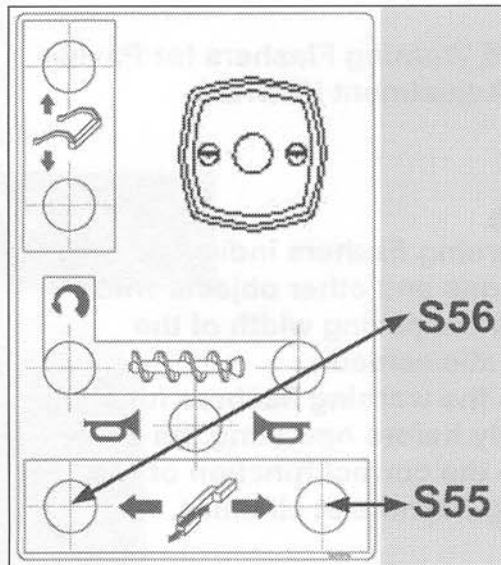
Press the push button switch S56 until the required paving width is reached.

Reducing the paving width on the R.H. side:

Press the push button switch S65 until the required paving width has been reached.

Increasing the paving width on the R.H. side:

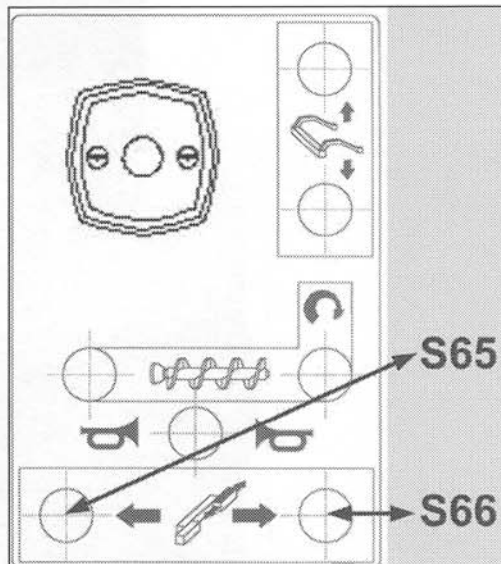
Press the push button switch S66 until the required paving width has been reached.



LH External Control Panel

(S55) Push button switch for reducing the paving width.

(S56) Push button switch for increasing the paving width.



RH External Control Panel

(S65) Push button switch for reducing the paving width.

(S66) Push button switch for increasing the paving width.

08.02.06 Warning Flashers for Paving Width Adjustment H25/H26

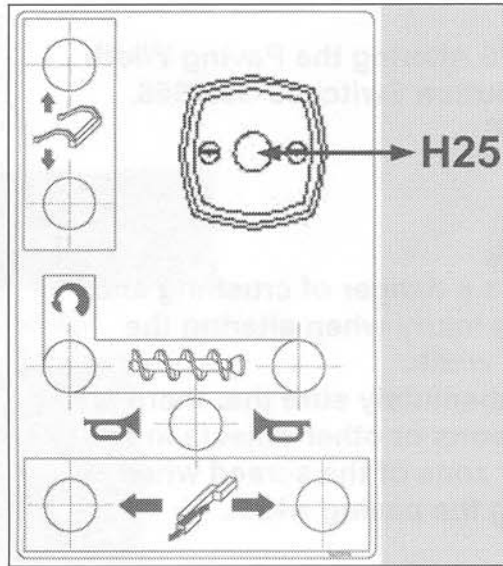


The warning flashers indicate danger to persons and other objects when altering the paving width of the Variomatic screed.

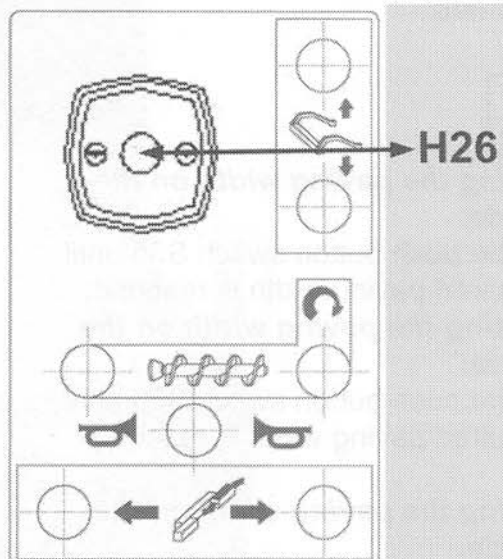
Ensure the warning flashers function correctly before operating the paver
Ensure the correct function of the warning flashers at all times.



The warning flashers H25/H26 automatically flash when the push button switches S55/56 and S65/66 are pressed to alter the screed's paving width.



LH External Control Panel.
(H25) Warning flasher for the paving width adjustment.



RH External Control Panel.
(H26) Warning flasher for the paving width adjustment.

08.02.07 Sockets on the External Control Panels



Always fit the protective caps to the sockets when they are not in use. This will prevent faults caused by dampness and dirt penetrating the sockets.



X18, 10 pin socket for the levelling system (grade control). The standard range of supply contains 1 socket on each external control panel and they are located on the front of the panel in the direction of travel.

X16, 17 pin socket for the control cables for the external control panels. The standard range of supply contains 1 socket on each external control panel and they are located on the rear side of the panel in the direction of travel.

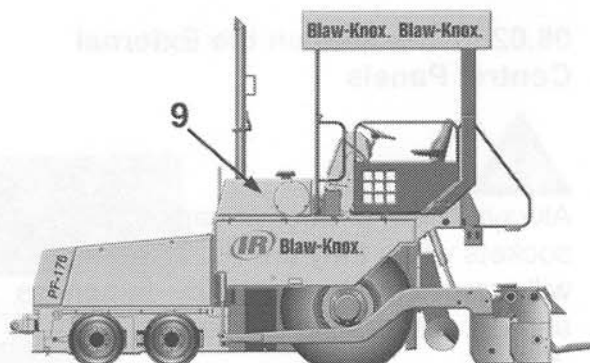
X30, 6 pin socket for the ultrasonic sensors for auger control. The standard range of supply contains 1 socket on each external control panel and they are located on the front side of the panel in the direction of travel.

Please refer to chapter H, External Control Panels.

09 Hydraulics

This chapter informs you about the maintenance work required on the paver's hydraulic system.

It also informs you about safety aspects when working on the individual hydraulic components.



Contents

Page

<u>09.02 Hydraulic Oil Tank</u>	<u>115</u>
09.02.01 Suction Line Filter Cartridge	115
09.02.02 Hydraulic Oil	116
09.02.03 Vent Valve	118
09.02.04 Return Line Filter	118
<u>09.07 Screed Lock (Option)</u>	<u>119</u>
<u>09.08 Hydraulic Components</u>	<u>120</u>
09.08.01 Screed Assist	120
09.10.01 Pressure Filter, Auger Circuit	121

09.02 Hydraulic Oil Tank



Before working on the hydraulic system, it must be completely relieved of all pressure.

Observe absolute cleanliness when working on the hydraulics. This will avoid functional failures and damage to the hydraulic components.

The purity of the hydraulic oil used must correspond to the purity classification specified in the table of fuel, oils and lubricants.

After changing the hydraulic oil or filters, the Diesel engine must be run at idling speed to allow the feeding pressure to build up.



The tank air vent (2) is also used for filling hydraulic oil into the tank. The vacuum gauge (3) must be in the green range when the paver is in operation. The suction line filter must be changed if the vacuum gauge moves into the red range.

09.02.01 Suction Line Filter Cartridge



Wartung

Maintenance

Hydraulic oil purity as per ISO 4406 with the classification 18/16/13.

Type of filter:

Suction line filter, variable displacement pump, rear axle drive

Quantity:

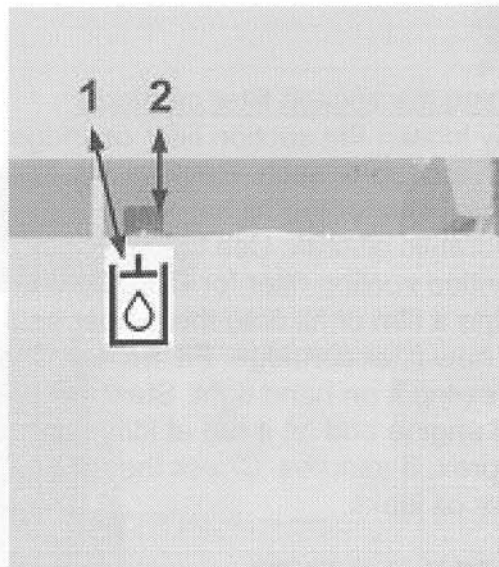
1 Suction line filter

Intervals:

First filter change at 100 hours.

Thereafter every 500 hours

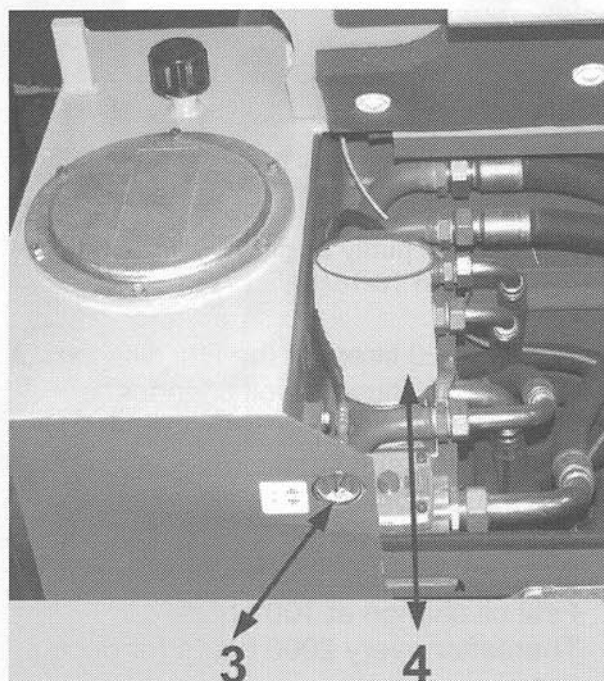
or when the indicator on the vacuum gauge (3) goes into the red range.



Side view of the hydraulic oil tank

(1) Decal

(2) Tank air vent



Hydraulic oil tank

(3) Vacuum gauge

(4) Suction line filter cartridge



Changing the suction filter cartridge:

Slightly loosen the suction filter cartridge (4) with a strap wrench. Remove the filter cartridge (4) after the oil has run back into the hydraulic oil tank. Use the cup of the dismantled suction filter for filling hydraulic oil. Wipe a film of oil onto the rubber seal of the new filter cartridge. Fit the new filter by screwing it on hand tight. Start the Diesel engine and let it run at idling speed for approx. 5 minutes. Check the suction filter for oil leaks.

09.02.02 Hydraulic Oil



If the paver is equipped with a Variomatic screed, the correct oil level can only be checked when the screed is completely retracted to its basic width.



Wartung
Maintenance

Hydraulic oil:

Shell Universal SAE 15W40

Hydraulic oil purity as per ISO 4406 with the classification 18/16/13.

Quantity:

Approx. 120 litres for the first filling.

Approx. 100 litres for oil changes.

Intervals for checking the oil level:

Daily on the sight glass (5).

A = Max. oil level.

B = Min. oil level.

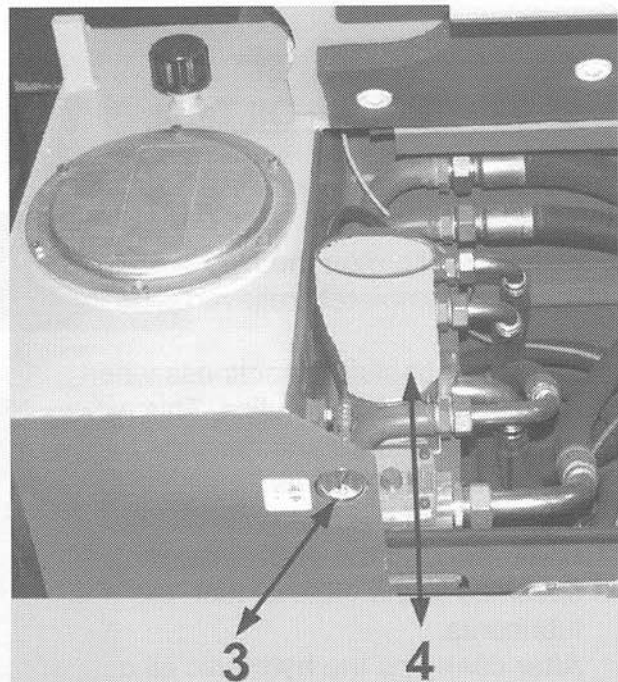
Intervals for changing the hydraulic oil:

First oil change at 100 hours.

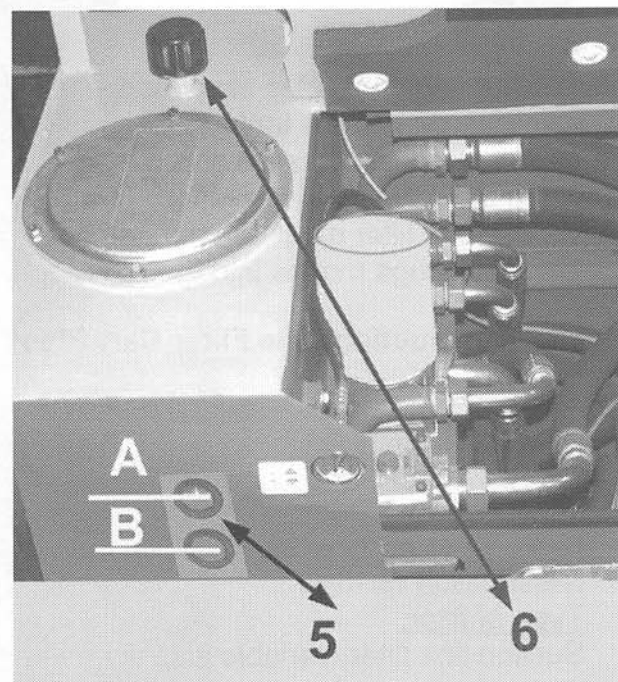
Thereafter every 2000 hours (or once a year).

Topping up with hydraulic oil:

Through the vent valve (6)



Hydraulic oil tank
(3) Vacuum gauge
(4) Suction filter cartridge



Hydraulic oil tank
(5) Oil level sight glass
(6) Vent valve
A = Max. oil level
B = Min. oil level



Wartung
Maintenance

Changing the hydraulic oil:

Loosen the three screws (3) and remove the guard plate (2).

Remove the protective cap from the connection (1) on the hydraulic oil tank. Fit the drain hose (4) supplied with the paver to the connection (1) on the hydraulic oil tank and then place the other end of the hose into a suitable container to catch the oil (an oil barrel with approx. 200 litres capacity).

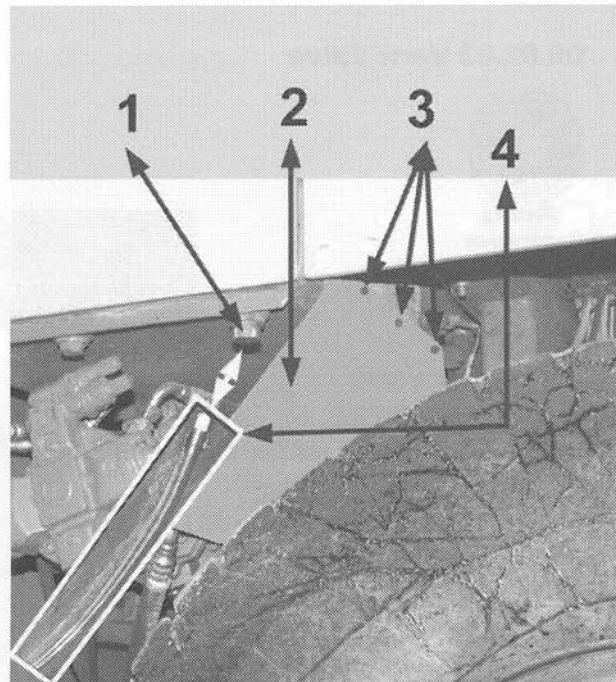
By screwing the union nut on the drain hose to the connection (1) on the oil tank, a valve in the drain connection will open and the hydraulic oil will run out.

After the tank has been completely emptied, remove the drain hose (4) and replace the protective cap on the connection (1)

Replace the guard plate (2) with the screws (3).

You can now fill up with hydraulic oil as per **INGERSOLL-RAND ABG** specifications. Fill the oil through the filter cup of the previously dismantled suction line filter.

After filling up with hydraulic oil, replace the suction line filter as previously described.



Lower view of the hydraulic oil tank

- (1) Connection with protective cap
- (2) Guard plate
- (3) Screws
- (4) Drain hose

09.02.03 Vent Valve



Wartung

Maintenance

Type of valve:

Breather valve

Quantity:

1 Breather valve

Cleaning intervals:

Every 2000 hours or once a year.

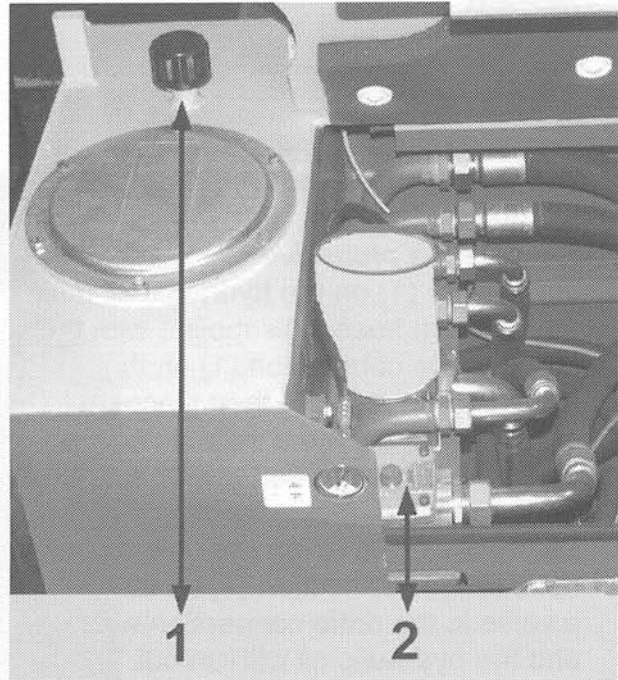
Cleaning the vent valve:

Dismantle the vent valve (1) by turning it anti-clockwise with a spanner.

Clean the vent valve (1) with a cleaning solvent. Thereafter, the vent valve must be blown through with compressed air.

Moisten the inside of the valve with clean hydraulic oil.

Replace the vent valve on the tank.



Hydraulic oil tank

(1) Vent valve

(2) Return line filter

09.02.04 Return Line Filter



Wartung

Maintenance

Type of filter:

Return line filter

Quantity:

1 filter insert

Cleaning intervals:

After the first 100 hours.

Thereafter every 1000 hours or once a year.

Cleaning the return line filter

Remove the lid from the return line filter (2) with the four socket head screws.

The lid is sealed with an O-ring and should be carefully removed using a screw driver.

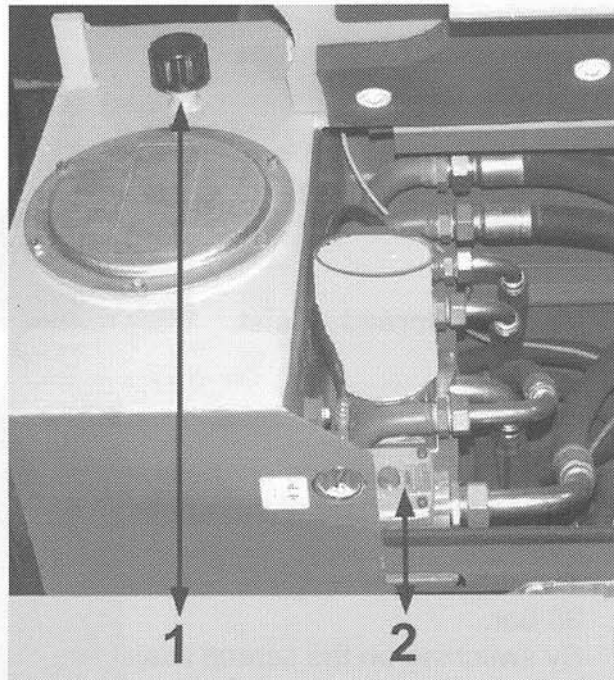
Remove the filter with the filter cup from the housing and clean both parts with a cleaning solvent.

After cleaning, the filter must be blown through with compressed air. All remnants of the cleansing solvent must be completely removed from the filter and filter cup before assembly.

Assemble the filter and filter cup back into the housing and ensure both parts fit correctly.

Replace the lid (2) with the four socket head screws onto the filter housing.

Vacuum gauge, maintenance free



Hydraulic oil tank
 (1) Vent valve
 (2) Return line filter

09.07 Screed Lock (Option)

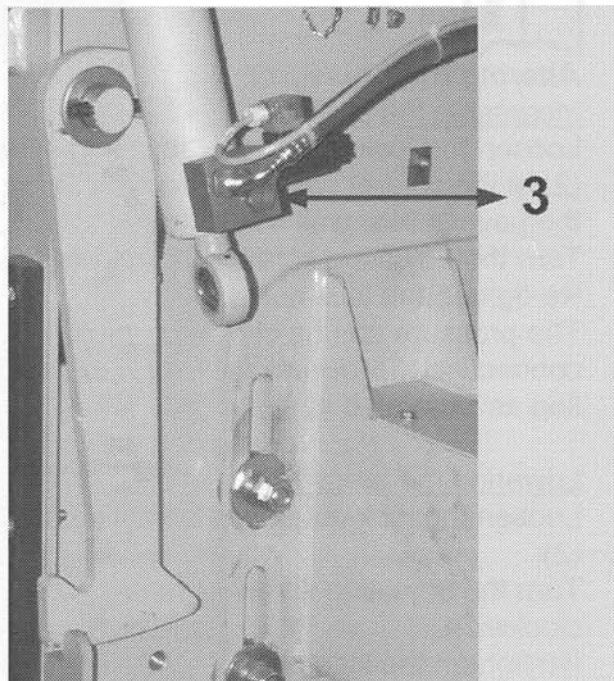


Wartung
 Maintenance

When the drive lever is in the neutral position, the screed lock prevents the screed from sinking downwards into the freshly paved mat during breaks in paving work.

At a paver standstill, the screed cannot sink down into paving material with a poor bearing capacity.

Levelling cylinders, maintenance free



Screed lock
 (3) Valve block

09.08 Hydraulic Components

09.08.01 Screed Assist



The pre-set pressure on the screed assist device takes some of the weight off the paving screed.

The adjustment range is between 0 and 30 bar.

By switching on the screed assist, you will improve the paver's traction by adding more weight to the rear axle.

Furthermore, relieving the screed of some of its weight will improve its floating behaviour when paving materials with a lower bearing capacity.



Altering the pressure:

Increasing the pressure:

Loosen the lock nut on the adjusting screw (2) of the control valve (1) (accessible on the paver's rear wall as illustrated at (2)).

Turn the adjusting screw (2) clockwise.

Re-tighten the lock nut.

The pressure can be checked on the test connection (3) (accessible below the deck flap as illustrated at (3)).

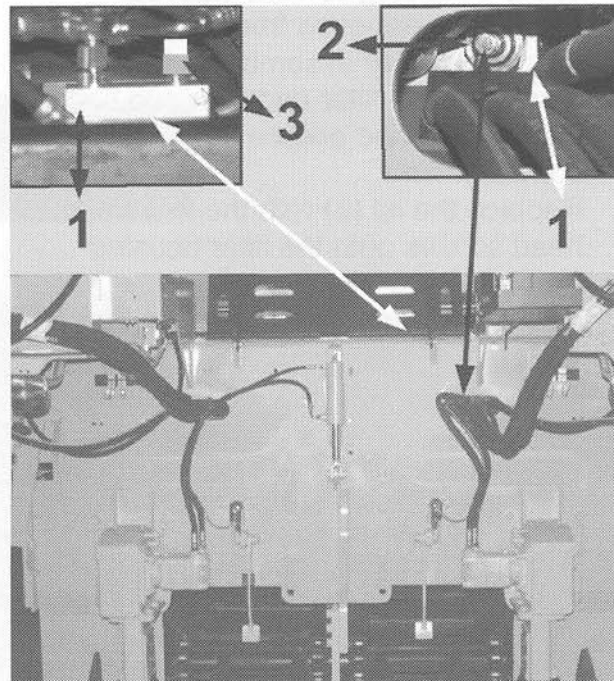
Lowering the pressure:

Loosen the lock nut on the adjusting screw (2).

Turn the adjusting screw (2) anti-clockwise.

Re-tighten the lock nut.

The pressure can be checked on the test connection (3).



Screed assist

- (1) Valve
- (2) Adjusting screw
- (3) Test connection

09.10.01 Pressure Filter, Auger Circuit



Only change the pressure filter element when the hydraulic system is in a cold condition.



Wartung
Maintenance

Type of filter:

Pressure filter, auger circuit.

Quantity:

1 Pressure filter element, 1 set of seals

Filter change intervals:

After the first 100 hours, thereafter every 500 hours or every 6 months.

Changing the pressure filter element:

Loosen the lower part of the filter housing (1) with a spanner.

Pull out the filter element from its seat in the filter top part (2).

Fit a new filter element by pushing it into the seat in the filter top part (2).

Renew the O-ring seal and the support ring in the filter lower part (1) if they are damaged.

Fit the support ring snugly into the groove so that it does not overlap. If it is necessary to renew the support ring, then it must be heated in boiling water and fitted when it is still hot.

Wipe a film of oil on the seal and then replace the filter lower part (1) and screw it on hand tight. Thereafter, loosen it by a quarter of a turn.

Start the Diesel engine and let it run for approx. 5 minutes at idling speed. Check the pressure filter for oil leaks.



Pressure valve in the auger circuit

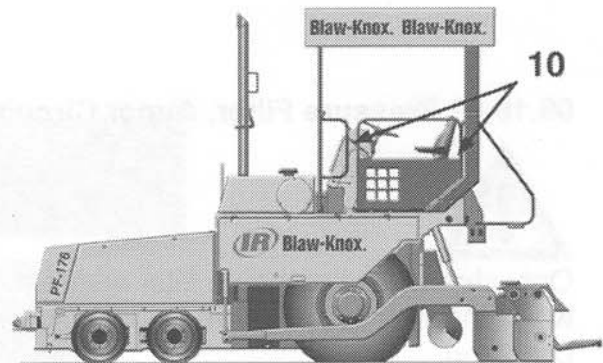
(1) Filter lower part

(2) Filter top part

10 Electrics

This chapter explains the electrical components on your paver.

It contains information on the configuration, the application and the safe operation as well as the maintenance of these electrical components.



Contents	Page
<u>10.01 Void.....</u>	<u>123</u>
<u>10.02 Working Lights</u>	<u>123</u>
<u>10.03 Void.....</u>	<u>123</u>
<u>10.04 Ultrasonic Sensors, Augers.....</u>	<u>124</u>
<u>10.05 Additional Rear Working Lights (Option)</u>	<u>125</u>
<u>10.06 Diesel Transfer Pump (Option)</u>	<u>126</u>
<u>10.07 Void.....</u>	<u>126</u>
<u>10.08 Void.....</u>	<u>126</u>
<u>10.09 Side Reflectors</u>	<u>126</u>
<u>10.10 Battery Master Switch</u>	<u>127</u>
<u>10.10.1 Sockets on the Paver's Rear Wall.....</u>	<u>127</u>
<u>10.10.2 Batteries</u>	<u>128</u>

10.01 Void

10.02 Working Lights



Your paver is equipped with 4 working lights as a standard feature. Using the working lights will help you to increase safety and paving quality during night work.



To switch on the lights:

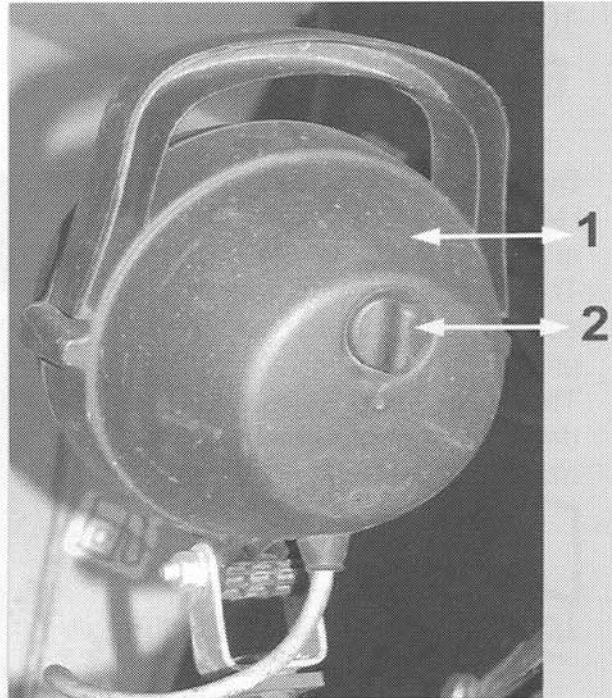
Connect the cable to the respective sockets **X22** – on the paver. The front sockets are shown at Fig. (3) and (4) and the rear sockets are illustrated in Chapter 10.11.

Turn the switch (2) clockwise until the light comes on.

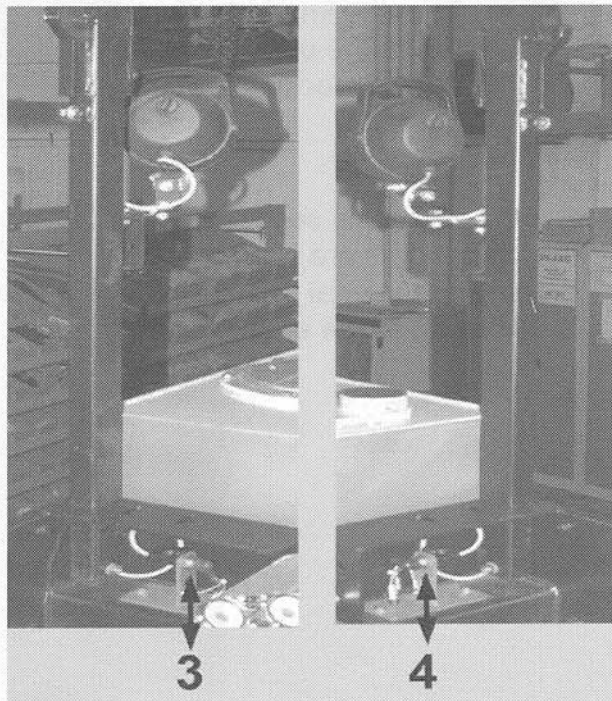
To switch off the lights:

Turn the switch (2) anti-clockwise until the light extinguishes.

10.03 Void

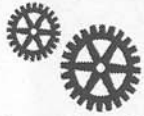


- (1) Working light
- (2) **ON / OFF** switch



- Sockets
- (3) Front LH socket
 - (4) Front RH socket

10.04 Ultrasonic Sensors, Augers



By using the ultrasonic sensors, you can regulate the head of material in front of the screed.

The material requirement in front of the screed is measured "contact free" by the ultrasonic sensors.

The auger speed is automatically adjusted depending on the height of the head of material selected.



To increase the head of material:



Turn the knurled adjusting wheel (2) on the ultrasonic sensor (1) in a clockwise direction.

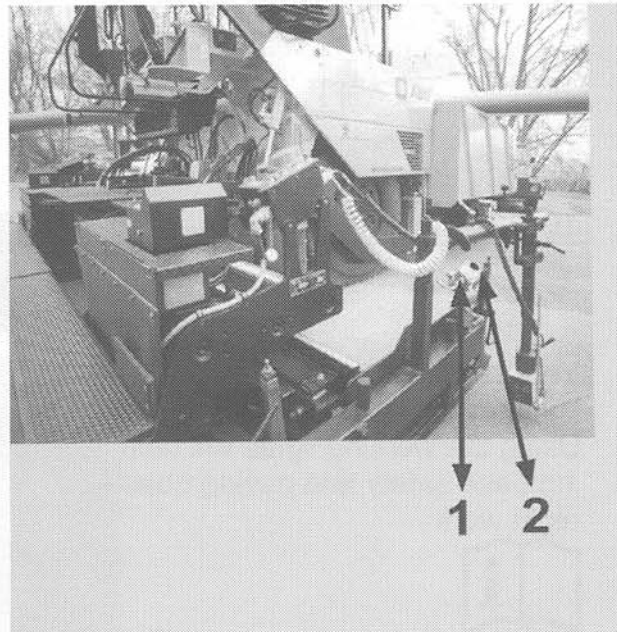
To lower the head of material:



Turn the knurled adjusting wheel (2) on the ultrasonic sensor (1) in an anti-clockwise direction.

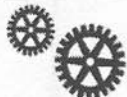


Set the ultrasonic sensors in such a way that the augers are submerged by 2/3 in the paving material and sufficient material is conveyed to the ends of the screed.



- (1) Ultrasonic sensor
- (2) Knurled adjusting wheel

10.05 Additional Rear Working Lights (Option)



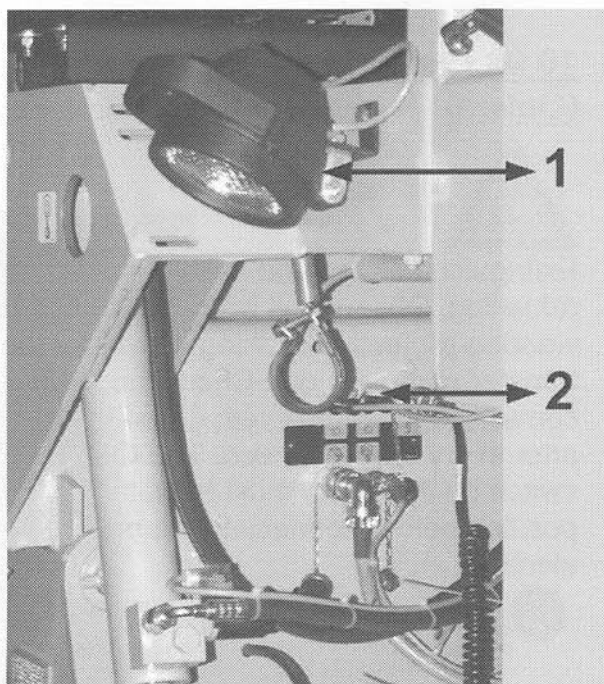
To light up the auger channel, you can equip your paver with 2 additional working lights for the L.H. side (1) and R.H. side (not illustrated) which are available as an option.

Using these 2 additional working lights will help you to increase safety and paving quality during night work.



Current is supplied to the additional rear working lights by the sockets **X22** (2) on the paver's rear wall.

Connecting the additional lights and switching them on and off is the same as for the standard working lights.

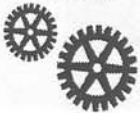


- (1) Additional rear working light LH side
- (2) Socket **X22** LH side

10.06 Diesel Transfer Pump (Option)



Extinguish all fires and naked lights before refuelling. Observe all instructions for wearing protective clothing. Never let the transfer pump run dry. Check the hose is correctly and tightly fitted. Clean the pump after every time it is used. The **ON / OFF** switch on the pump must be in the **OFF** position before connecting the pump to the electrics.



The Diesel transfer pump is used for filling the paver's fuel tank if no fuel bowser with its own pump is available.



Place the suction pipe of the pump (4) into the barrel.

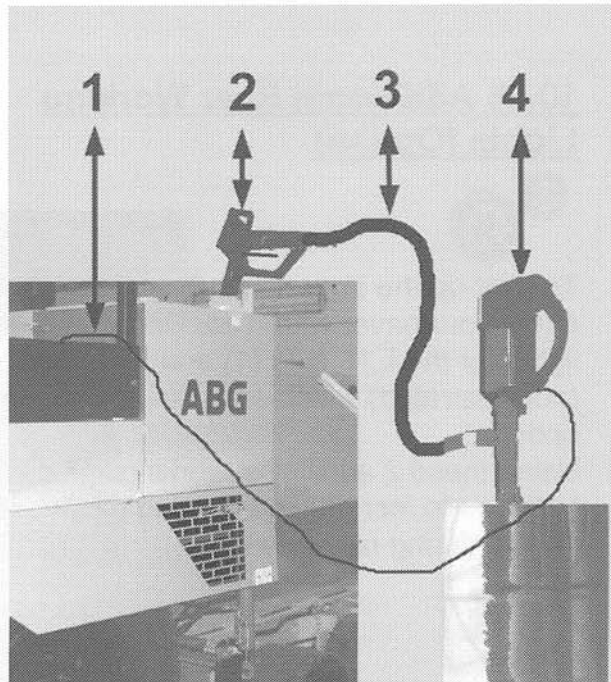
Secure the pump (4) with a barrel connection or clamp device.

Connect the cable (1) to the socket **X22** on the paver's rear wall.

Remove the filler cap from the paver's fuel tank.

Insert the filler nozzle (2) into the fuel tank.

Switch on the transfer pump (4).
Squeeze the lever on the filler nozzle (2) to refuel the paver.



Refuelling

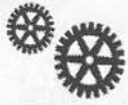
- (1) Electric cable
- (2) Filler nozzle
- (3) Hose
- (4) Diesel transfer pump

10.07 Void

10.08 Void

10.09 Side Reflectors

10.10 Battery Master Switch



With the battery master switch (1), you can disconnect the battery from the paver's electrical system.

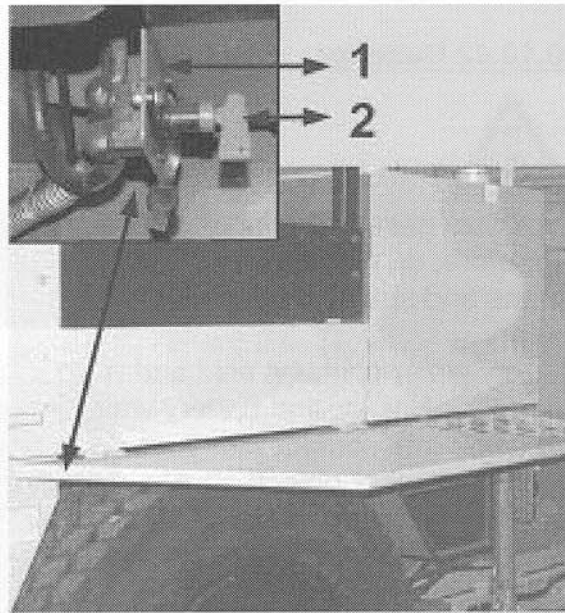


Switching on the master switch:

Turn the key (2) on the battery master switch (1) to point downwards as illustrated.

Switching off the master switch:

Turn the key (2) on the battery master switch (1) to point inwards.



(1) Battery master switch
(2) Switch key

10.10.1 Sockets on the Paver's Rear Wall, L.H. & R.H. Sides



Ensure the protective caps are fitted to the sockets when they are not in use. This will avoid breakdowns caused by dirt and moisture penetrating the sockets.

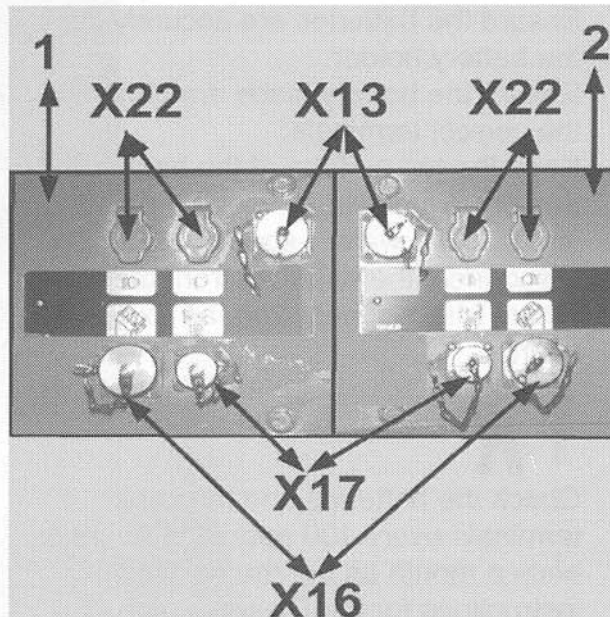


X13, 10 pin sockets for the levelling system / slope control.

X16, 17 pin sockets for the cables to the external control panels.

X17, 5 pin sockets for the blower burners on the basic screed.

X22, 2 pin sockets for the working lights.



Sockets on the Paver's Rear Wall

(1) Socket group L.H. side

(2) Socket group R.H. side

X13 Sockets for the levelling system

X16 Sockets for the external control panels

X17 Sockets for the blower burners

X22 Sockets for the working lights

10.10.02 Batteries



Explosive gases develop in the battery. Therefore, do not smoke and avoid naked flames and sparks when working on the battery.

Battery water contains acid and is corrosive. Ensure that battery water does not come into contact with your eyes, skin, clothing or other objects.

If battery water splashes into your eyes, wash them thoroughly and go immediately to a medical doctor.

If battery water splashes onto your skin, wash the effected area thoroughly and go to a medical doctor if necessary.

Ensure the batteries are securely fitted in the battery holder.

Ensure the battery leads are connected to the correct terminals.

Keep the top surface of the batteries clean and dry. Immediately wipe up any battery water with a water / soda solution.

Disconnect the batteries from the paver before loading them from an external source.



Check the batteries and the cable terminals every 100 operating hours or once a month as per the operating instructions for the Diesel engine.

To gain access to the batteries:

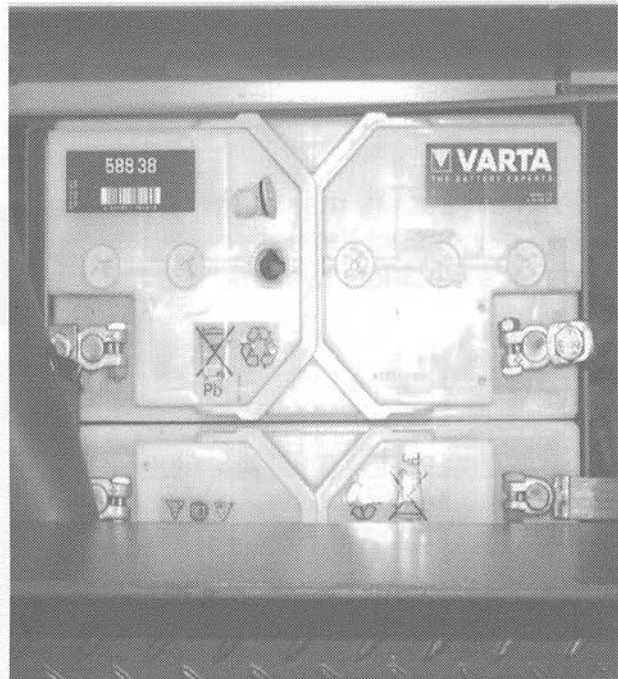
Extend the operator's platform to the outermost right-hand side.

Switch off the Diesel engine and remove the key from the battery master switch.

This will prevent an unauthorized starting of the Diesel engine.

Open the right-hand side door.

Remove the cover plate (1). To do this, unscrew and remove the three screws located underneath the cover plate. Two



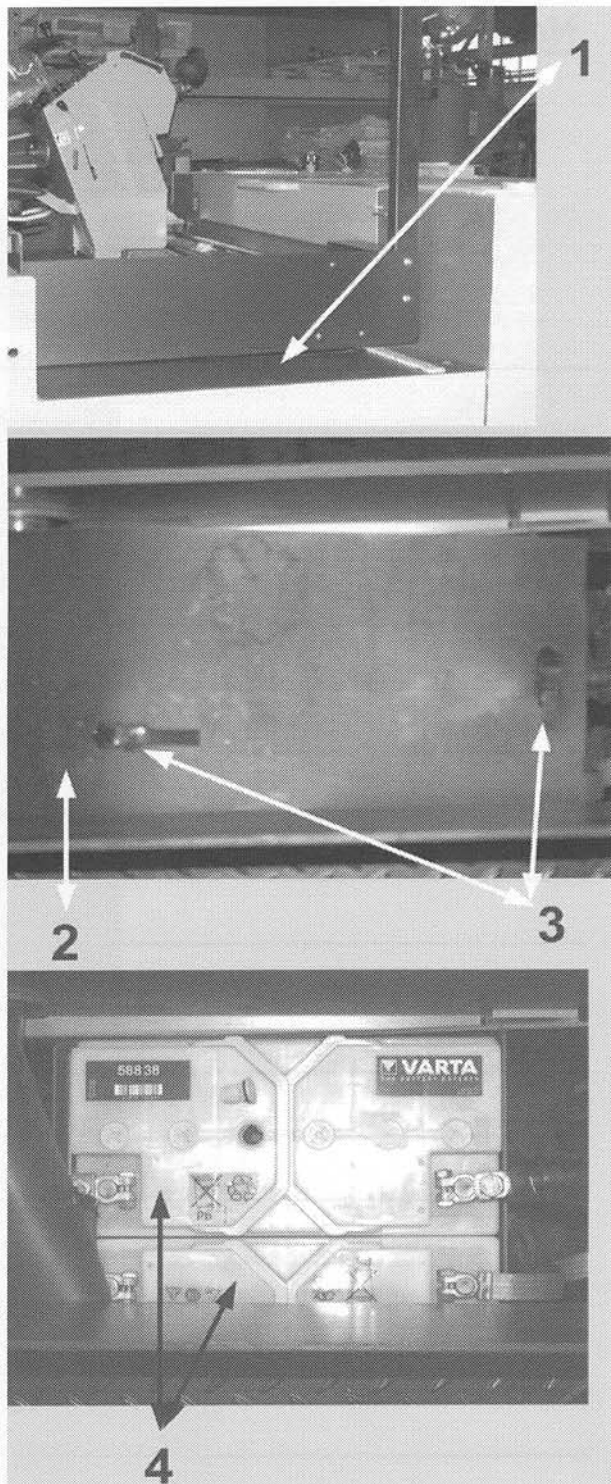
Batteries

screws are located at the front and one screw is located at the rear of the cover plate.

Remove the rubber cover (2) with the cable straps (3) to gain access to the batteries.

All maintenance work on the batteries is described in the operating instructions for the Diesel engine.

After completion of maintenance work on the batteries, replace the covers in the opposite sequence.



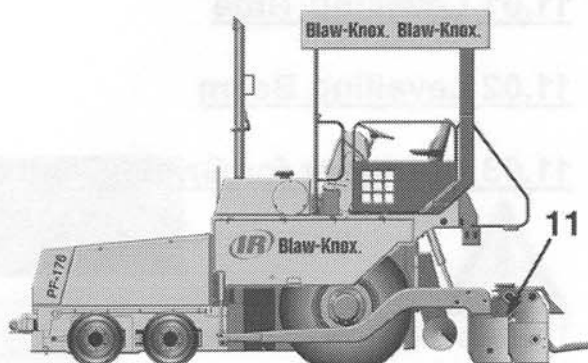
Location of the batteries

- (1) Cover plate
- (2) Rubber cover
- (3) Cable straps
- (4) Batteries

11 Levelling System

This chapter covers all components required for the paver's levelling system.

Please refer to the operating instructions supplied with the levelling system for further details.



Contents	Page
<u>11.01 Levelling Tube</u>	<u>132</u>
<u>11.02 Levelling Beam</u>	<u>132</u>
<u>11.03 Outrigger for Grade Control</u>	<u>132</u>
<u>11.04 Outrigger Extension</u>	<u>134</u>
<u>11.05 Support for the Slope Controller</u>	<u>134</u>

11.01 Levelling Tube

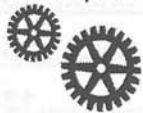
11.02 Levelling Beam

11.03 Outrigger for Grade Control



There is a danger of crushing and personal injury when assembling components for the grade control. Please ensure that the grade control is always switched off (**Standby**) during assembly work.

The grade control and the slope controller must never be operated on the same side of the paver.



The grade control governs the mat thickness taking reference from a curb stone, previously paved mat or a reference wire.



Assembling the Grade Control:

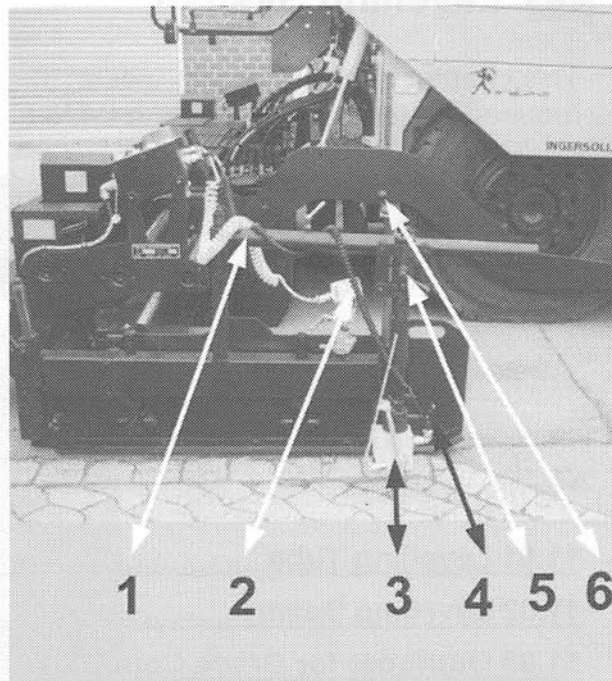
Switch the grade control (3) to the **standby** mode.

Loosen the adjusting screw (4) on the threaded spindle.

Guide the round centring pivot on the upper side of the grade control housing (3) from the bottom into the clamping tube.

Turn the grade control housing (3) so that the socket faces to the front.

Using the adjusting screw (4) tighten the centring pivot of the grade control (3) into the outrigger.



Outrigger with Grade Control

- (1) Outrigger Tube for Grade Control
- (2) Connecting cable
- (3) Grade control
- (4) Adjusting screw
- (5) Adjusting screw
- (6) Hand crank

Connecting the Cables to the External Control Panels:

Connect the 10 pin plugs on the cable (2) to the 10 pin sockets (X13) on the external control panel and then to the grade control (3).

The cable (2) must be connected to the paver's side on which the grade control is to be operated.



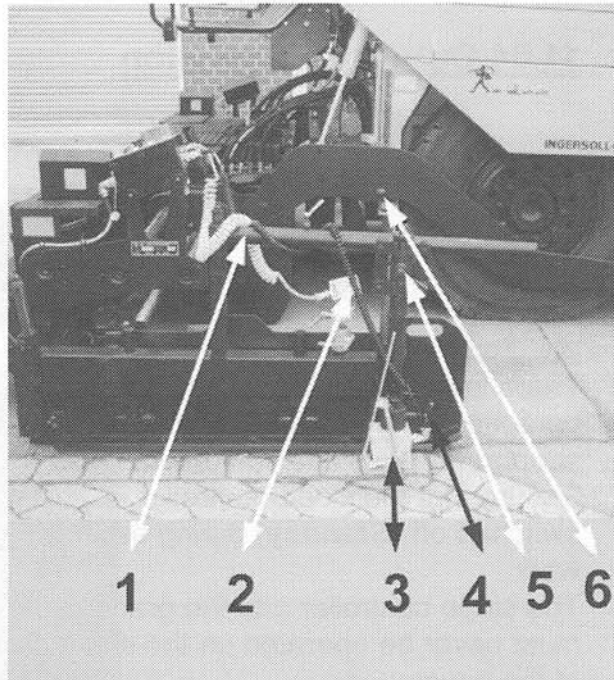
The lateral position of the grade control has a decisive influence over the correct levelling behaviour of the screed.

The grade control should be mounted parallel or just in front of the distributor augers in the direction of travel.

The height of the grade control can be pre-selected with the adjusting screw (5) on the spindle and by turning the hand crank (6).

The distance between the grade control and the reference surface depends upon the particular kind of mat being paved and the type of controller.

Please take all further instructions for assembling and operating the levelling system from the respective Operating Instructions.



Outrigger with Grade Control

- (1) Outrigger Tube for Grade Control
- (2) Connecting cable
- (3) Grade control
- (4) Adjusting screw
- (5) Adjusting screw
- (6) Hand crank

11.04 Outrigger Extension

11.05 Support for the Slope Controller



There is a danger of crushing and personal injury when assembling the support for the slope controller.

Ensure that the slope controller is always switched off (**Standby**) during assembly work.

The slope controller and the grade control must never be operated on the same side of the paver.



Assembling the Slope Controller:

Switch the slope controller (3) to the **Standby** mode.

The slope controller (3) is mounted with the adjusting screws (2) on the support (1) between the towing arms.

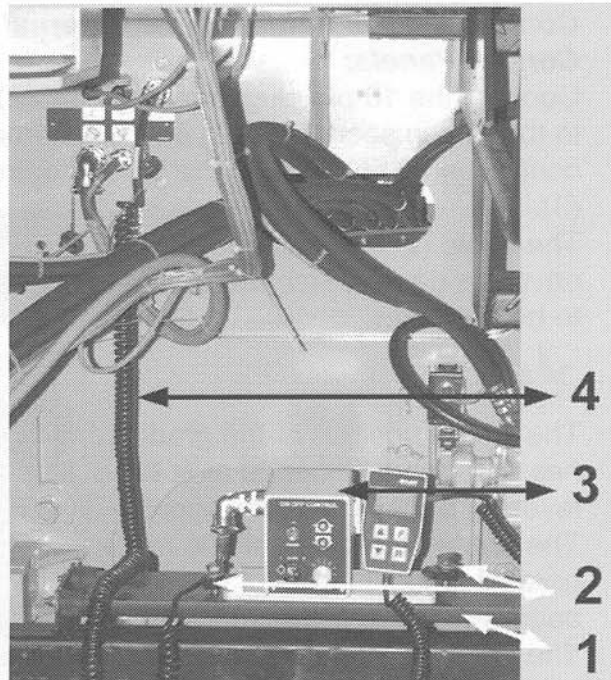
The slope controller must be mounted in such a way that the indicator lamps face to the rear and can be seen by the operator or, depending on the type of unit, the arrow must face to the front.

Connecting the Cable:

Connect the 10 pin plugs on the cable (4) to the 10 pin sockets (X13) on the paver's rear wall and to the slope controller.

The cable must be connected to the paver's side on which the slope controller is to be operated.

Please take all further instructions for assembling and operating the levelling system from the respective Operating Instructions.



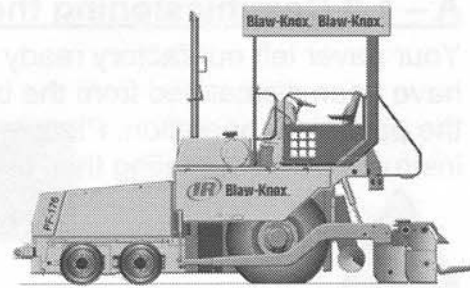
Support with Slope Controller

- (1) Support for slope controller
- (2) Adjusting screw
- (3) Slope controller
- (4) Connecting cable

A Operation and Maintenance

This chapter contains useful information on the operation and maintenance of your paver.

Careful maintenance does not only improve the appearance of your paver, it also extends its **working life** and increases its **reliability**.



Contents	Page
<u>A - 1.0 Commissioning the Paver</u>	136
<u>A - 2.0 Taking the Paver out of Operation</u>	137
<u>A - 3.0 Safety Instructions for Service & Maintenance</u>	138
<u>A - 4.0 Daily Check Before Starting</u>	139
<u>A - 4.1 Greasing at the end of a day's work.*</u>	139
<u>A - 4.2 Daily Cleaning</u>	139
<u>A - 5.0 Weekly Check List</u>	140
<u>A - 6.0 Preservation</u>	140
<u>A-6.1 Standstill times up to 6 months</u>	140
<u>A-6.2 Standstill times from 6 to 12 months</u>	140
<u>A-6.3 Putting the paver back into operation</u>	140
<u>A - 7.0 Oils and Lubricants</u>	141

A – 1.0 Commissioning the Paver

Your paver left our factory ready for operation. For transport reasons, the screed may have been dismantled from the basic paver and must be re-assembled before putting the paver into operation. Please refer to the screed's operating manual for assembly instructions on operating the screed for the first time.



Only put the paver into operation after you have become fully acquainted with operation and handling !

Before initial operation, check the paver for any transport damage to avoid consequential damage.

Avoid danger by strictly observing the safety instructions for operating the gas heating system contained in chapter III.




Check the following before starting the paver for the first time:

- ⇒ Proper working condition of the heating system.
- ⇒ Engine oil level.
- ⇒ Transmission oil level.
- ⇒ Hydraulic oil level.
- ⇒ Coolant level.
- ⇒ Remove any packing and other measures taken for transport.
- ⇒ Remove the wax if your paver has been waxed for ocean going shipment.
- ⇒ Check and ensure the paver's range of supply is complete.
- ⇒ Check the fuel level and top up if necessary.
- ⇒ Insert the fuse for the conveyors.
- ⇒ Return all levers, potentiometers and switches on the control panel and external control panels to the neutral or "O" position (chapter 08.01 refers).
- ⇒ Pull the **Emergency Stop** button.
- ⇒ Turn the steering wheel to the **straight ahead** position.
- ⇒ Start the engine (chapter 08.01 refers).
- ⇒ Press the **ON** switch.



If you are not fully acquainted with an  paver finisher, then you should request assistance from **INGERSOLL-RAND ABG** or from one of our authorized Service Partners and you will be fully instructed on the machine.

INGERSOLL-RAND ABG offers training courses on the operation, servicing, maintenance and repair of  paver finishers.

Details can be obtained from our department .

A - 2.0 Taking the Paver out of Operation



- At the end of paving work or during work breaks, park the paver on even ground with sufficient bearing capacity and secure it against rolling off.
- Park the paver where it does not present a hazard to other persons and road users.
- Only leave the paver after the screed has been lowered or raised and safely locked in the raised position.
- Before leaving the paver, switch off all operating controls and switch off the Diesel engine.
- Secure the paver against unauthorised use.
- To avoid danger, observe the instructions for operating the gas heating system in chapter III.
- Clean the paver. After transporting the paver, especially in winter, remove all remnants of salt and dirt.

Never switch off the Diesel engine when it is running under full load; let it run at operating speed for approximately 5 minutes to cool down.



- ⇒ Switch off the screed heating system and switch off the energy supply to the users.
- ⇒ Drive the paver to the parking area.
- ⇒ With the exception of the Diesel engine, return the drive lever and controls for all other functions to the neutral position.
- ⇒ Apply the parking brake.
- ⇒ Use the wheel chock to secure the paver from rolling off when parked on gradients.
- ⇒ Lower the screed until it rests on the ground.
- ⇒ Switch off the Diesel engine.
- ⇒ Thoroughly clean the paver.
- ⇒ Remove the ignition key.



A - 3.0 Safety Instructions for Service & Maintenance

Ensure that cleaning, lubricating and maintenance work is only carried out by fully qualified and authorized personnel!



All appropriate instructions and the accident prevention regulations must be strictly observed.

Maintenance work on the paver should only be carried out when the machine is at a standstill and switched off.

Serious personal injury, death or considerable damage may be caused if these instructions are not adhered to.

Observe absolute cleanliness when checking and filling grease and lubricant containers.



Detailed maintenance instructions for the individual components are contained in the Maintenance Manual and the engine manufacturer's hand book.

There is a danger of fire when cleaning the paver with inflammable cleaning solvents.
Wait until all hot components have cooled down before cleaning the paver.



When cleaning the paver with high pressure cleaners, do not direct the jet of water on the bearings and electrical components.



Grease the bearings after washing the paver.

Use suitable funnels or oil cans when filling up oil to avoid spillage and contamination of the ground.
Old oils and lubricants must be disposed of in a correct and environmentally friendly manner.



A - 4.0 Daily Check Before Starting

- Check the correct function of the heating system.
- Check the engine oil level and top up if necessary..
- Check the engine coolant level and top up if necessary.
- Check the cooling system for external cleanliness.
- Check the hydraulic oil level and top up if necessary.
- Check the hydraulic pumps, motors, gears, lines and hoses for damage and leaks.
- Check the fuel level and top up if necessary.
- Visually check the drive wheels and tyre pressure.
- Make a visual check of the paver for damage and missing parts before starting daily work.
- Check the flashing hazard lights, warning horn and the flashing warning lights on the Variomatic screed.



A - 4.1 Greasing at the end of a day's work.*

- Auger outer bearings.
- Auger centre bearing.
- Auger drive case seal
- Drive shafts for the conveyors
- Idler sprocket shafts for the conveyors

* Not necessary if the paver is equipped with the central lubrication system.



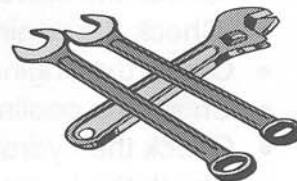
A - 4.2 Daily Cleaning

- Clean all parts and components daily which come into contact with paving material.
- After paving bituminous materials, use the emulsion spraying system or the heavy duty spray cleaning gun for cleaning the components which have been in contact bituminous asphalt.
- Lubricate all bearings before cleaning the paver and screed with water as per the instructions in this manual.
- Clean the paver with water after paving mineral aggregates, dry lean concrete or similar materials. Never direct the jet of water directly onto the bearings.
- Thereafter clean off any remnants of paving material.
- **Ensure the deck, walkways and steps are kept clean and tidy to prevent accidents caused by slipping.**
- Lubricate all bearings before cleaning the paver and screed as per the instructions in this manual.



A - 5.0 Weekly Check List

- Check the V-belt tension on the Diesel engine and re-tension if necessary.
- Check the tension of the drive chains for the conveyors and augers and re-tension if necessary.
- Check the tension of the conveyor chains and re-tension if necessary.
- Check the brake fluid level and top up if necessary.
- Check the air filter and clean it if necessary.



A - 6.0 Preservation

A- 6.1 Standstill times up to 6 months

- Lubricate all grease points.
- Change the oil in the Diesel engine.
- The air intake and air exit must be made airtight by closing them with plastic folio and adhesive tape.
- Close the exhaust pipe and make it airtight.
- Remove and charge the batteries. Store the batteries at room temperature. Recharge the batteries every second month to prevent then sulphating.
- Check the tyre pressure on the drive wheels every two months and correct it if necessary.

A- 6.2 Standstill times from 6 to 12 months

- Carry out the measures described under A – 6.1.
- After draining off the engine oil, fill the Diesel engine up with a special preservation oil according to the engine manufacturer's specifications.

A- 6.3 Putting the paver back into operation

- Remove the previous preservation measures taken and then proceed according to the instructions contained in the chapter for commissioning the contained in this manual.

A - 7.0 Oils and Lubricants

Only use fuel, oils and lubricants which are in the paver manufacturer's and engine manufacturer's list of approved materials.

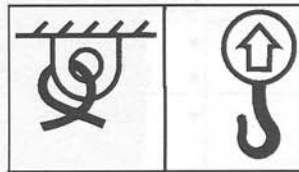
Insufficient or the wrong lubricants may lead to serious damage. Therefore, only use oils and lubricants which meet the specifications stipulated.

The engine manufacturer's operating instructions must also be observed for checking the Diesel engine.

B Maintenance Charts and Transport

This chapter contains a list of all maintenance and servicing work on the paver as well as instructions for transporting the machine.

Your nearest **INGERSOLL-RAND ABG** service partner will be pleased to assist you with any queries you may have concerning maintenance and service work.




Contents	Page
<u>B - 1.0 Fuel, Oils and Lubricants</u>	<u>144</u>
<u>B - 2.0 Routine Maintenance</u>	<u>145</u>
<u>B - 3.0 Inspection Intervals.....</u>	<u>146</u>
<u>B - 4.0 Service Kits and Kits of Wearing Parts</u>	<u>147</u>
<u>B - 5.0 Safety Instructions and Loading.....</u>	<u>148</u>
<u>B - 6.0 Transport Weight</u>	<u>148</u>
<u>B - 7.0 Transport per Low Bed Truck</u>	<u>149</u>
<u>B - 8.0 Driving the Paver on Public Roads.....</u>	<u>150</u>
<u>B - 9.0 Transport on Job-Sites</u>	<u>151</u>
<u>B - 10.0 Loading the Paver by Crane</u>	<u>151</u>

B - 1.0 Fuel, Oils and Lubricants

Only use fuel, oils and lubricants specified in the manufacturer's list of approved materials. Using the wrong or insufficient lubricants can lead to serious damage. Therefore, only use the fuel, oils and lubricants which meet the stipulated specifications.

- ***The engine manufacturer's operating instructions must also be observed for checking the Diesel engine.***
- ***Detailed descriptions for maintenance procedures for the paving screed are contained in the operating and maintenance manual for the screed.***

Application:	Quantity:	Description:
Engine oil	<ul style="list-style-type: none"> • 10.9 litres with filter • 9.5 litres without filter 	<ul style="list-style-type: none"> • Shell Rimula Super SAE 15W/40 CPN: 13942032
Diesel fuel	<ul style="list-style-type: none"> • 120 litres 	<ul style="list-style-type: none"> • CEN EN 590 • DIN 51601 • BS 2869: A1, A2 • ASTM D975-88: 1-D, 2-D • NATO Code: F-54, F-75
Hydraulic oil  <small>When using biodegradable oils, ensure the oil analysis is carried out by Messrs. Wear Check and that the results are immediately sent to IR-ABG's Service Department. This applies if deviations are made to the specified intervals. The first analysis must be made at 100 operating hours. Further intervals will be specified by the institute making the analysis.</small>	<ul style="list-style-type: none"> • approx. 120 litres for the first filling • approx. 100 litres for an oil change 	<ul style="list-style-type: none"> • Shell Universal SAE 15W/40 CPN: 14830921 Hydraulic purity as per ISO 4406 in the classification 18/16/13.
Transmission oil for: <ul style="list-style-type: none"> • Rear axle • Transmission gear • Pump distributor gear 	<ul style="list-style-type: none"> • 24 litres • 3.0 litres • 2.8 litres 	<ul style="list-style-type: none"> • Shell Spirax MB 90 CPN: 1392331
Lubricant for: <ul style="list-style-type: none"> • Vibrators • Auger bearings • Conveyor bearings 		<ul style="list-style-type: none"> • Grease Shell Darina II CPN: 13923115
Remaining grease points		<ul style="list-style-type: none"> • Grease Shell Darina II CPN: 13923115
Brake fluid for the brake system	<ul style="list-style-type: none"> • 1 litre 	<ul style="list-style-type: none"> • ATE – DOT 3 Type N CPN: 14482632
Coolant for the Diesel engine's cooling system	<ul style="list-style-type: none"> • approx. 17 litres 	<ul style="list-style-type: none"> • Engine coolant(already mixed) CPN: 56246853
Liquid tyre filling	<ul style="list-style-type: none"> • 91 Kg Magnesium chloride 47% MgCl₂ • 114 Kg Water (H₂O) 	<ul style="list-style-type: none"> • CPN: 13939194



B – 2.0 Routine Maintenance

⇒ Carry out the routine maintenance at 10 and 100 operating hours as indicated or as required according to the instructions in this chapter. If the paver does not reach the number of operating hours, then carry out the maintenance work at the time intervals specified.

⇒ All routine maintenance work must also be carried out with the service inspection intervals.

10 Op. hrs ⇒ 1 Day
 100 Op. hrs ⇒ 1 Month
 500 Op. hrs ⇒ 6 Months
 1000 Op. hrs ⇒ 1 Year

Chapter	Component	Maintenance Work	Interval
03 Undercarriage	Road scrapers	<ul style="list-style-type: none"> Clean, check the condition 	10
05 Conveyors	Idle wheel left and right*	<ul style="list-style-type: none"> Lubricate Check the condition 	10
05 Conveyors	Drive shaft left and right*	<ul style="list-style-type: none"> Lubricate Check the condition 	10
06 Augers	Auger drive case seal Basic augers Auger centre drive*	<ul style="list-style-type: none"> Lubricate Check the condition 	10
06 Augers	Auger centre bearings Basic augers Auger centre drive*	<ul style="list-style-type: none"> Lubricate Check the condition 	10
07 Diesel engine	Engine oil	<ul style="list-style-type: none"> Check the oil level 	10
07 Diesel engine	Fuel filter	<ul style="list-style-type: none"> Remove the condense water 	10
07 Diesel engine	V-belts	<ul style="list-style-type: none"> Check 	10
08 Control panel	Brake fluid	<ul style="list-style-type: none"> Check the brake fluid level 	10
08 Control panel	Warning devices (Horn, hazard lights, warning flashers on the external control panels on Vario screeds).	<ul style="list-style-type: none"> Functional test 	10
09 Hydraulics	Hydraulic oil	<ul style="list-style-type: none"> Check the oil level 	10
12 Central lubrication	Grease container	<ul style="list-style-type: none"> Check the grease level 	10

Chapter	Component	Maintenance work	Interval
03 Undercarriage	Complete undercarriage, tyres and wheels	<ul style="list-style-type: none"> Check the condition 	100
03 Undercarriage	Undercarriage, wheel nuts	<ul style="list-style-type: none"> Check the condition and tight fitting 	100
03 Undercarriage	Portal axle and transmission gear	<ul style="list-style-type: none"> Check the oil levels 	100
05 Conveyors	Conveyor drive chains	<ul style="list-style-type: none"> Lubricate Check the condition 	100
05 Conveyors	Conveyor chains	<ul style="list-style-type: none"> Check the condition 	100
06 Augers	Auger drive chains, auger centre drive	<ul style="list-style-type: none"> Check the condition Chain tension 	100
06 Augers	Auger drive case	<ul style="list-style-type: none"> Drain off the water 	100
08 Control panel	Throttle cable	<ul style="list-style-type: none"> Lubricate 	100
10 Electrics	Battery, terminals	<ul style="list-style-type: none"> Check the condition Tighten up 	100
07 Diesel engine	Air filter	<ul style="list-style-type: none"> Check the condition Clean 	When indicated
07 Diesel engine	Coolant level	<ul style="list-style-type: none"> Check the coolant level & concentration 	When indicated

Chapter	Component	Maintenance work	Interval
01 Superstructure	Fuel tank, sieve in filler neck	<ul style="list-style-type: none"> Clean 	As required
01 Superstructure	Emulsion spraying system, sieve in filler neck	<ul style="list-style-type: none"> Clean 	As required

* These grease points will be automatically lubricated if the paver is equipped with the optional central lubrication system.



B – 3.0 Inspection Intervals

Chapter	Component	Maintenance work	100	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	Further intervals
01 Superstructure	Cabinet door, grease nipple	• Lubricate			X		X		X		X		X	1000
02 Frame	Spacer shims, slip guides and guide rollers for the towing arms	• Lubricate		X	X	X	X		X		X	X	X	500
03 Undercarriage	Portal axle and transmission gear	• Oil change	X				X				X			2000
03 Undercarriage	Service brake	• Check, adjust	X		X		X		X		X		X	1000
03 Undercarriage	Parking brake	• Check, adjust	X		X		X		X		X		X	1000
03 Undercarriage	Brake fluid	• Change			X		X		X		X		X	2000
03 Undercarriage	Bolts, screws and nuts on the steering cylinder, the track rods and the steering arm bearings	• Lubricate • Check for wear and tight fitting			X		X		X		X		X	1000
03 Undercarriage	Wheel bearings (front wheels without power drive)	• Adjust		X	X		X		X		X		X	1000
07 Diesel engine	Engine oil (depending on paver application)	• Oil change	X	X	X	X	X	X	X	X	X	X	X	500
07 Diesel engine	Engine oil filter cartridge (depending on paver application)	• Change	X	X	X	X	X	X	X	X	X	X	X	500
07 Diesel engine	Fuel filter, filter cartridge / preliminary fuel filter	• Change		X	X	X	X	X	X	X	X	X	X	500
07 Diesel engine	Air filter cartridge	• Change												Change after the cartridge has been cleaned 3 times
07 Diesel engine	Safety cartridge	• Change												Change after the cartridge has been cleaned 5 time
07 Diesel engine	V-belts	• Check and tension if necessary		X	X	X	X	X	X	X	X	X	X	Change as required
07 Diesel engine	Engine coolant	• Change					X				X			2000
07 Diesel engine	Concentration of engine coolant	• Check		X	X	X	X	X	X	X	X	X	X	500
07 Diesel engine	Cooling system, clamps on the hose connections	• Check for leaks and tight fitting			X		X		X		X		X	1000
09 Hydraulics	Hydraulic oil	• Change	X		X		X		X		X		X	1000
09 Hydraulics	Suction filter for the travel drive pump	• Change	X	X	X	X	X	X	X	X	X	X	X	500
09 Hydraulics	High pressure filter	• Change	X	X	X	X	X	X	X	X	X	X	X	500
09 Hydraulics	Auger hydraulic circuit													
09 Hydraulics	Breather valve	• Clean			X		X		X		X		X	2000
11 Levelling system	Spindle for mounting the grade control	• Lubricate			X		X		X		X		X	1000
Various chapters	Connecting bolts on all hydraulic cylinders	• Check for wear and tight fitting			X		X		X		X		X	1000

B – 4.0 Service Kits and Kits of Wearing Parts

Chapter	Assembly	Wearing Parts Kit CPN
<u>05</u>	Conveyors Floor plates Chain covers Chains	<u>80706542</u>
<u>06</u>	Augers Auger flights Screws	<u>56261241</u>
		Service Kit CPN
		80689334

⇒ Always quote the model and serial number of your paver when ordering parts.

B -5.0 Safety Instructions and Loading

Strictly observe the following instructions to avoid personal injury and damage to the paver during transport and loading:

- Transport and loading work may only be carried out by qualified and authorized personnel.
- Plan the route and ensure its trafficability before transporting the paver.
- Transport routes must be made safe and appropriately marked to ensure that no unauthorized persons can enter the danger zone.
- Only load and transport the paver on ground with sufficient bearing capacity.
- Transport vehicles and loading ramps must have sufficient loading and bearing capacity. Vehicle beds and loading ramps must have a non-skid surface.
- Clean all mud, dirt and paving material from the paver's undercarriage before loading.
- Load the paver at a slow speed in the low speed range.
- Ensure there are no persons in the danger zone around the transport vehicle.
- Use reliable persons to guide you up the ramps and onto the bed of the transport vehicle and ensure they are outside the danger zone.
- Hoisting and lashing slings and chains must comply with all accident prevention and safety regulations.
- Only fix hoisting and lashing slings and chains to the hoisting and lashing points on the paver.
- Hoisting and lashing slings and chains must be strong enough to take the weight of the paver.
- Raise the augers to their highest position before transporting the paver.
- Observe all locally prevailing laws, regulations and the traffic code when driving the paver on public roads.
- Observe the instructions for transporting gas bottles contained in chapter III.



B - 6.0 Transport Weight

All weights refer to the paver with screed in the basic paving width and are approximate weights without options.

PF176 with VB-V 50 paving screed = 12.4 [t]

B - 7.0 Transport per Low Bed Truck

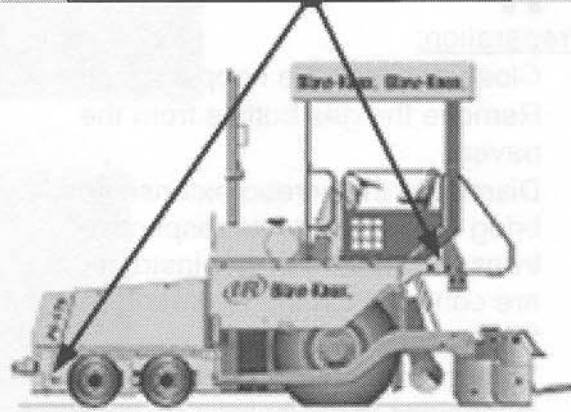
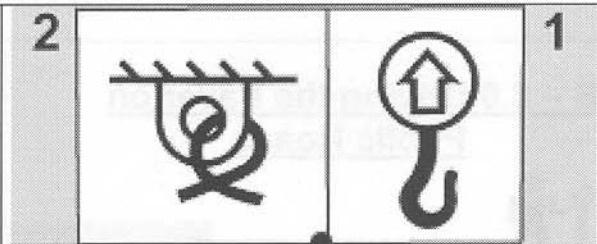


Preparation:

- Close and lock the hopper wings.
- Return the operator's platform to the centre position. Lock the control panel column in position.
- Remove the gas bottles from the paver.
- Dismantle the screed extensions to bring the screed to its respective transport width. (Further instructions are contained in the operating manual for the screed).
- Raise the screed to the transport position and lock it in the transport lock device.
- Ensure no fuel or oil may spill out of the paver when it is driven up ramps or inclines caused by overfilling the tanks.
- Remove all loose objects from the paver.

Loading the paver:

- Use a reliable person to help you position the paver on the low bed truck.
- Ensure the paver stands safe and square on the low bed. Secure the paver's front steering and rear drive wheels with wooden chocks.
- Lower the screed and switch off the engine.
- Lower and secure the all-weather roof for transport.
- Remove the roof canopy to avoid it being torn or ripped during transport.
- Remove the exhaust end pipe and close the hole on the silencer to protect it against rainwater and dirt.
- Use suitable chains or slings to lash the paver on the truck using the paver's lashing points as illustrated.
- Close the control panel cover.



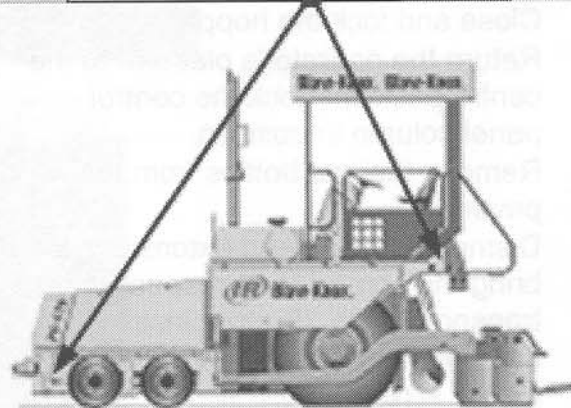
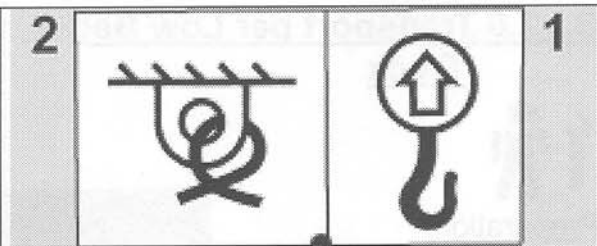
- (1) Hoisting points for loading by crane.
 (2) Lashing points for lashing down the paver

B – 8.0 Driving the Paver on Public Roads



Preparation:

- Close and lock the hopper wings.
- Remove the gas bottles from the paver.
- Dismantle the screed extensions to bring the screed to its respective transport width. Further instructions are contained in the operating manual for the screed).
- Transport the dismantled screed extensions in the hopper as ballast.
- Remove the fuse for the conveyors if you are transporting items in the hopper.
- Raise the screed to the transport position and safely secure it in the transport locking device.
- Remove all loose objects from the paver.
- Switch on the warning beacon if required by your locally prevailing traffic code.



- (1) Hoisting points for loading by crane.
- (2) Lashing points for lashing down the paver

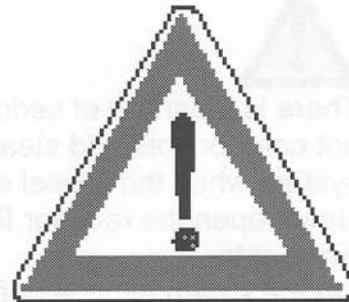
<p>B – 9.0 Transport on Job-Sites</p> <ul style="list-style-type: none"> • Observe the extended width of the screed when driving the paver around the job-site. • The steerability will be negatively influenced if the paver is driven with a mounted screed but without ballast in the hopper. • If necessary, ballast must be placed in the hopper to act as a counter weight to the screed. Ballasting the hopper is not necessary if the paver is driven at a very slow speed. • Raise the screed to the transport position and safely secure it in the transport locking device. • Fit the protective caps to the gas bottles before transporting the paver on the job-site. 	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">2</div> <div style="border: 1px solid black; padding: 5px; width: 100px; height: 100px; display: flex; justify-content: center; align-items: center;"> </div> <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">1</div> </div> <p>(1) Hoisting points for loading by crane. (2) Lashing points for lashing down the paver</p>
<p>B – 10.0 Loading the Paver by Crane</p> <ul style="list-style-type: none"> • Ensure all loose objects have been removed from the paver before loading it by crane. • Fasten the crane slings to the hoisting points provided on the paver as illustrated. • Use crane slings strong enough to take the weight of the paver. • The load suspension point must be vertical to the paver's centre of gravity. • The paver's centre of gravity depends upon the type of screed fitted to the machine. 	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">2</div> <div style="border: 1px solid black; padding: 5px; width: 100px; height: 100px; display: flex; justify-content: center; align-items: center;"> </div> <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">1</div> </div> <p>(1) Hoisting points for loading by crane. (2) Lashing points for lashing down the paver</p>

C Emergency Cases

Please carefully read and make yourself well acquainted with this chapter because an emergency can arise at any time.

This chapter tells you what to do if:

- the battery is flat
- the engine overheats
- the paver has to be towed.



There are also useful tips on rectifying faults in the electrical system.

Contents	Page
C - 1.0 Overheating the Diesel Engine	154
C - 2.0 Faults in the Electrical System	155
C - 3.0 Jump Starting the Diesel Engine	157
C - 4.0 Towing the Paver	158

C - 1.0 Overheating the Diesel Engine

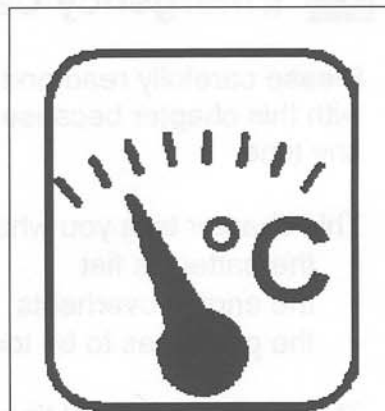


There is a danger of serious personal injury caused by hot components and steam escaping from the cooling system when the Diesel engine overheats.

Never open the radiator filler cap if the Diesel engine overheats.

Let the steam escape before opening the engine bonnet. Serious damage will be caused to the Diesel engine if it frequently overheats.

Only use an engine coolant liquid that has been approved by the engine manufacturer.



Coolant Temperature
Gauge P2



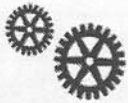
Procedure to be carried out if the Diesel engine overheats:

- 1. First of all, reduce the paver's speed if the temperature of the Diesel engine heats up and moves into the fringe range.***
- If the temperature does not cool down, stop the paver, switch off all of the functions and let the Diesel engine run at operating speed. Apply the parking brake.
- Check the temperature on the coolant temperature gauge *P2*.
- If the engine coolant temperature does not lower, switch off the Diesel engine and wait until it has cooled down.
- Check the following after the Diesel engine has cooled down:
the engine coolant level, the entire cooling system for leaks, the cooler radiator ribs for cleanliness, the V-belts for the cooling fan drive for correct tension, the air intake for blockages and restrictions, ensure that no cooling air is drawn in from the paver's engine compartment. (The side door with the cooling air intake grid must be properly closed).
- If you cannot find the fault which causes the engine to overheat, then contact your nearest **INGERSOLL-RAND ABG** Service Partner.
- When operating at high ambient temperatures, we recommend that the Diesel engine be run at operating speed during breaks in paving work.

C - 2.0 Faults in the Electrical System



Only replace faulty fuses with a fuse with the same amperage.
If fuses with a higher amperage are used, damage may be caused to the electrical system.
Never short circuit or short out the fuses.



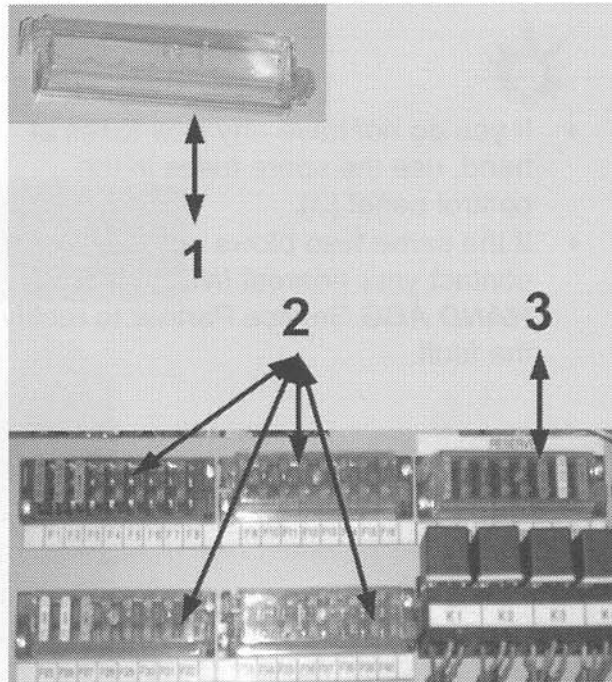
The control circuits in the electrical system are protected against overloads by fuses.



⇒ **Check the appropriate fuse if an operating control does not function correctly.**

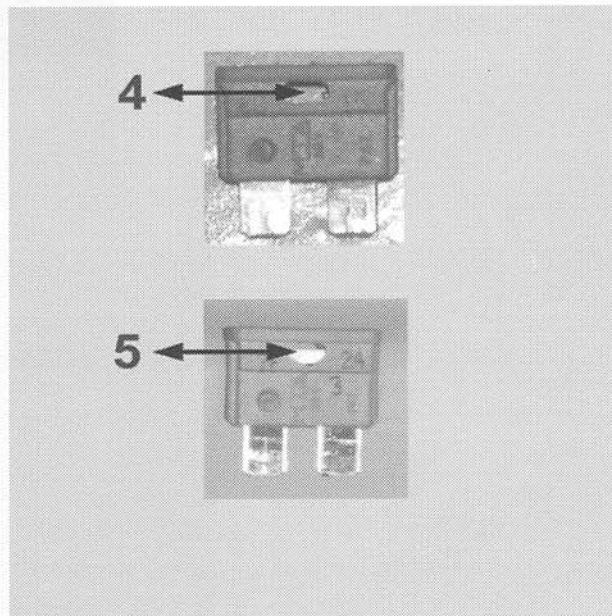
Procedure if there is a faulty function

1. Switch off all paver functions and switch off the ignition.
2. Open the front of the control panel and remove the fuse box cover (1).
3. Check the fuse numbers to determine which control circuit is effected.
4. Remove the fuse and check to see whether it has blown (4).
5. If the fuse has blown, replace it with a new fuse(5) according to the manufacturer's instructions (chapter 08.01 refers).



Front side of the control column

- (1) Fuse box cover
- (2) Fuses
- (3) Spare fuses

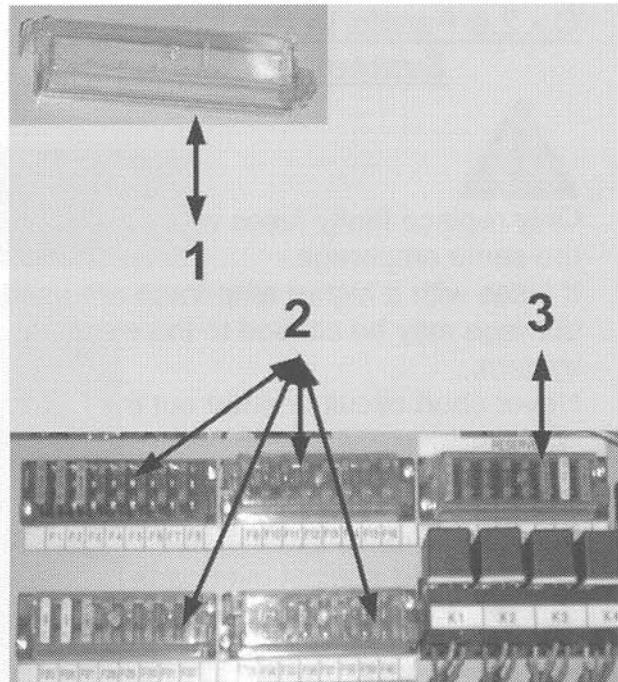


Fuses

- (4) This fuse has blow
- (5) This fuse is in order



- If you do not have any new fuses at hand, use the spare fuses in the control panel (3).
- If the same fuse blows or fuses again, contact your nearest **INGERSOLL-RAND ABG** Service Partner to rectify the fault.



Front side of the control column

(6) Fuse box cover

(7) Fuses

(1) Spare fuses

C - 3.0 Jump Starting the Diesel Engine



Never attempt to jump start the Diesel engine if the battery is frozen or the battery acid level is too low otherwise the battery may explode. Explosive gases form in the battery. Therefore, do not smoke and avoid naked flames and sparks when working on the battery. Wear protective clothing because the battery water is corrosive. Ensure the paver can not be put into motion when jump starting the Diesel engine. If you are not fully acquainted with the method of jump starting a Diesel engine, then obtain the help of a qualified person.. Switch off all paver functions before jump starting the Diesel engine. Disconnect all electrical components from the paver's electrical system. When jump starting, never connect the negative (-) cable to your paver's battery. This will avoid sparking. Do not connect the jumper cable to the paver near any moving parts. This will avoid damage.



disconnect the following electrical components from the paver's electrical system:

Levelling system, travel drive control by removing the fuses *F41* and *F42*.

All other electrical components (options).

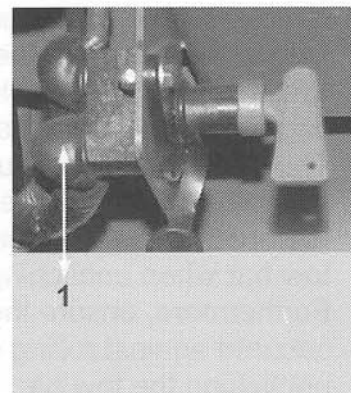
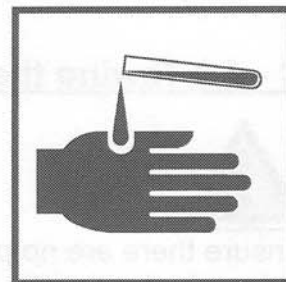
Procedure for jump starting:

1. Connect one end of the jumper cable to the lower terminal (1) on the battery master switch.
2. Connect the other end of the jumper cable to the positive (+) battery terminal on the vehicle supplying the current.
3. Connect one end of the second jumper cable to the negative (-) battery terminal on the vehicle supplying the current.
4. Connect the other end of the second jumper cable to a bare metal part on the paver's frame.
5. You can now start the paver.

Procedure for removing the jumper cable:

After jump starting the Diesel engine, remove the jumper cable in the opposite sequence as above.

Re-connect all electrical components previously disconnected for jump starting.

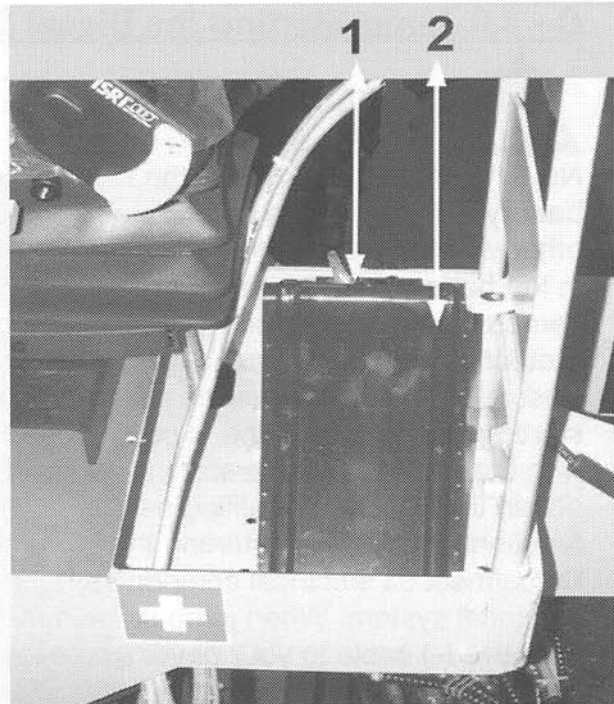


Battery Master Switch
(1) Terminal (live).

C - 4.0 Towing the Paver



Ensure there are no persons or other objects in the danger zone. Observe your locally prevailing laws, regulations and traffic code when towing the paver. Secure the paver against an unintentional rolling off. There is a danger of crushing and serious personal injury when preparing the paver for towing. Only use a tow bar for towing the paver. When towing the paver with the Diesel engine switched off, its steering properties as well as those of the towing vehicle will be negatively influenced. It is only permitted to tow the paver over short distances at a walking speed to remove it from a danger zone. Due to the design of the transmission system, it is not possible to start the Diesel engine by towing the paver. The parking brake is automatically applied when the Diesel engine is switched off. Ensure there is no force or tension on the tow bar when unhitching it. Furthermore, ensure the paver is safely secured against rolling off before unhitching the tow bar.



Wheel chock
(1) Spring lock
(2) Wheel chock



Towing the paver with the Diesel engine running and functional parking brake:

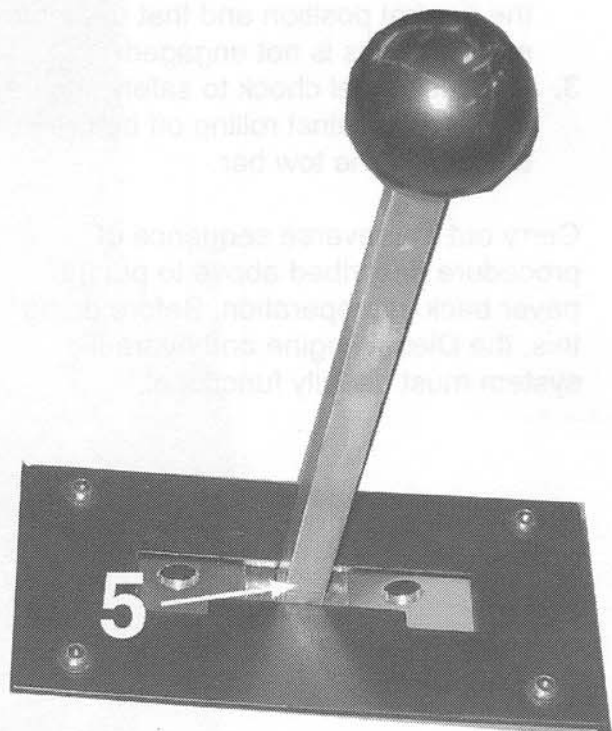
Switch off the Diesel engine and secure the paver against rolling off with the wheel chock. Connect the tow bar between the paver (4) and the towing vehicle.

⇒ Push the speed stage selector lever to the neutral position:

1. Push the speed stage selector lever to the neutral position (5) and hold it in this position during the towing process to ensure a speed stage is not engaged.
2. Start the Diesel engine, remove the wheel chock and release the parking brake.
3. You can now start towing the paver.
4. When towing the paver, ensure the speed stage selector lever remains in the neutral position and that one of the speed stages is not engaged.
5. Use the wheel chock to safely secure the paver against rolling off before unhitching the tow bar.



Towing lug(4)



Neutral position (5)

Towing the paver when the Diesel engine is not running (engine breakdown etc.):

Safely secure the paver against rolling off with the wheel chock. Connect the tow bar between the paver and the towing vehicle.

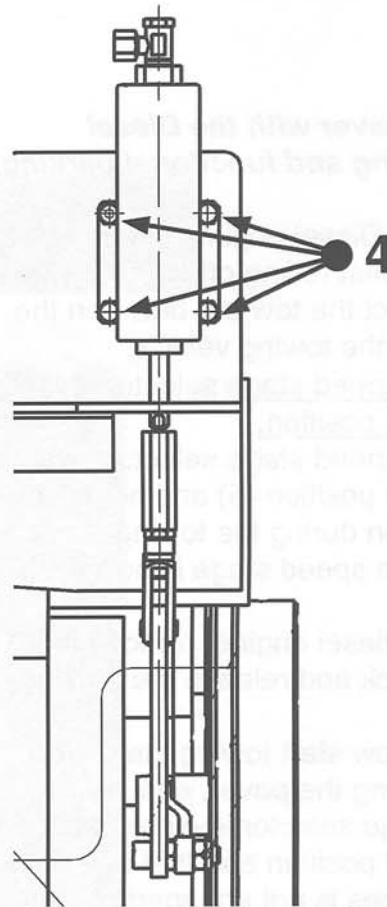
⇒ Manually release the parking brake:

1. Loosen the screws (4).
2. You can now easily remove the screws (4) with th4 cylinder and the parking brake is free.
3. The paver's service brake remains functional.

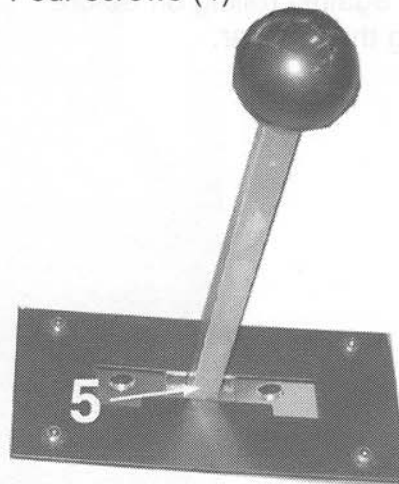
⇒ Push the speed stage selector lever to the neutral position:

1. Push the speed stage selector lever to the neutral position (5) and hold it in this position during the towing process to ensure a speed stage is not engaged.
2. When towing the paver, ensure the speed stage selector lever remains in the neutral position and that one of the speed stages is not engaged.
3. Use the wheel chock to safely secure the paver against rolling off before unhitching the tow bar.

Carry out the reverse sequence of procedure described above to put the paver back into operation. Before doing this, the Diesel engine and hydraulic system must be fully functional.



Emergency parking brake release
Four screws (4)

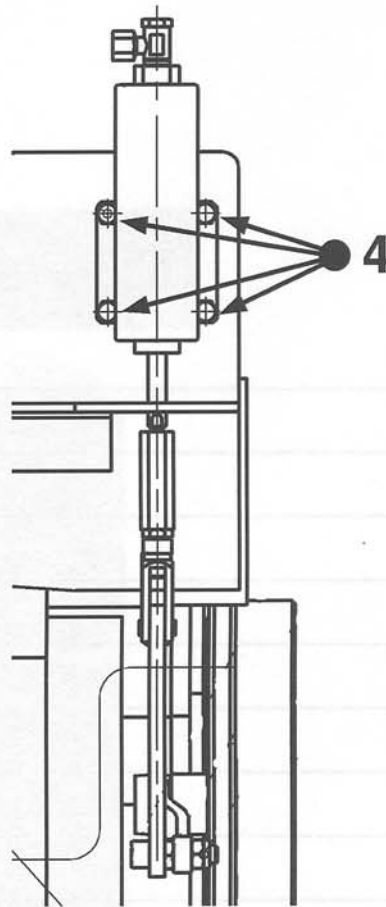


Neutral position (5)



⇒ Resetting the parking brake:

1. Start the Diesel engine and actuate the toggle switch to release the parking brake.
2. You can now easily insert and tighten the 4 screws (4).
3. The system is now functional again.

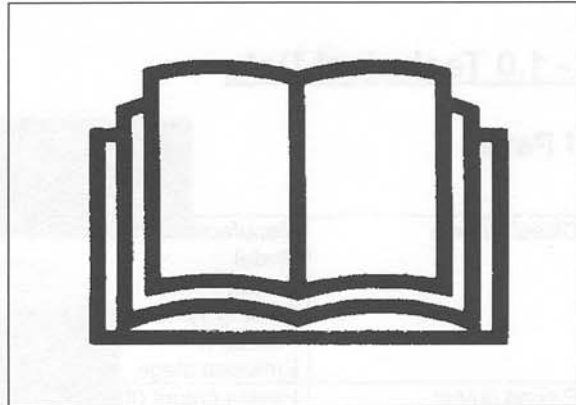


Emergency parking brake release
Four screws (4)

D Technical Data

This chapter contains your paver's technical data and its overall dimensions.

Contact your nearest **INGERSOLL-RAND ABG** Service Partner if you have any further technical queries concerning your paver.



Contents	Page
<u>D - 1.0 Technical Data.....</u>	<u>164</u>
<u>D - 2.0 Dimensions PF 176</u>	<u>165</u>

D - 1.0 Technical Data

2.1 Paver

Diesel Engine	Manufacturer Model Output Cooling system Fuel tank Emission stage	KW/HP Litres	Cummins 4 BT 4.5 – C99 74 / 99 @ 2200 1/min Liquid 108 COM II / EPA II
Paving output	Paving output (theor)* Mat thickness (max)	t/h mm	350 300
Speeds	Paving speed Transport speed	m/min km/h	18 18
Travel drive	Rear drive wheels Front drive wheels		2 2 (option)
Rear drive wheels Front steering wheels	2 steel belted tyres 2 elastic tyres	Ø / width Ø / width	1360 mm / 390 mm 580 mm / 340 mm
Mix conveyor system	Hopper capacity Conveyors Conveyor speed Augers Auger speed Auger diameter	t m/min 1/min mm	12 2 24 2 80 360
Paving widths	min. max.	m m	2.00 5.00
Electrics			24 volt system
Transport dimensions	Width Length Height	mm mm mm	2090 6222 2990
Weight **	Basic paver	kg	10500

* The actual paving output is determined by the mat thickness, paving speed and paving width. This output will vary according to the different job-site conditions. We will be pleased to assist you in calculating the output for your particular project.

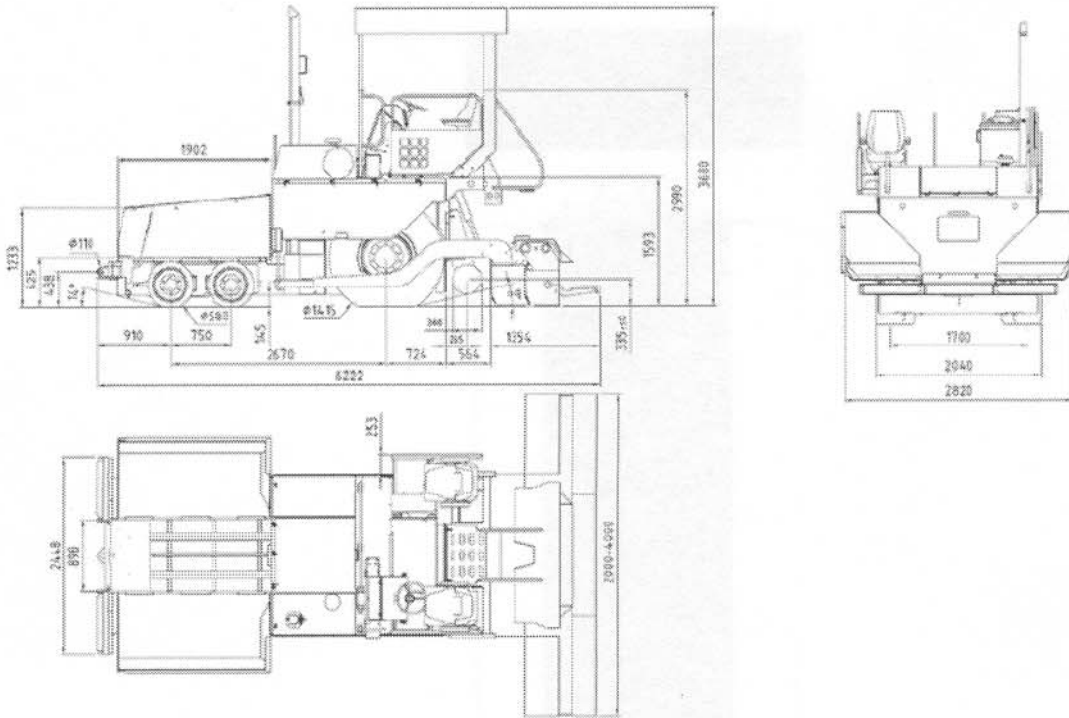
** All weights are quoted without options.

2.2 Screed

Paving screed	Paving width adjustment	Basic width resp adjusting range (m)	Operating weight *** (kg)	Max. paving width (m)	Operating weight *** (kg)
VB 50 GST	hydraulic	2.00 – 4.00	2400	5.00	2600

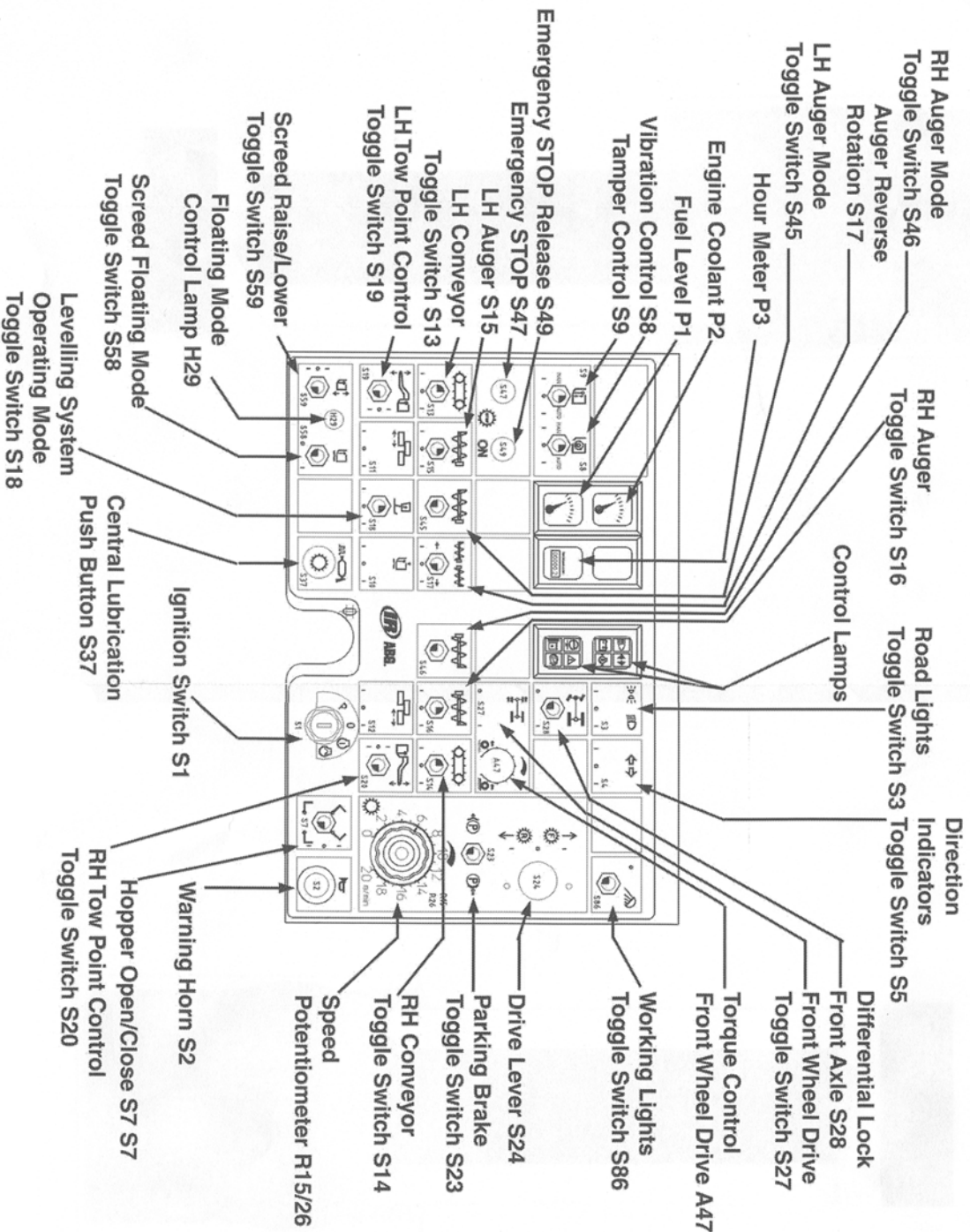
*** All weights are approx. weights without options.

D - 2.0 Dimensions PF 176



Chapter H: Layout of the Main Control Panel

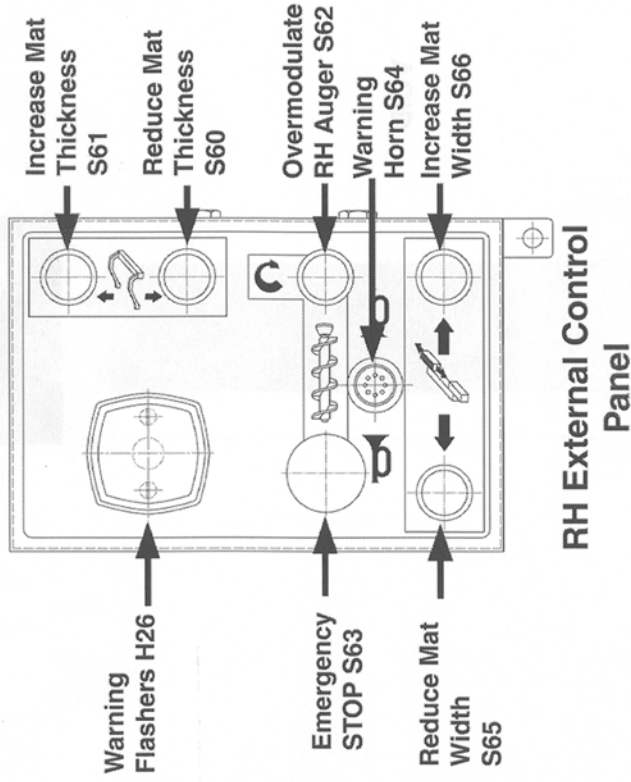
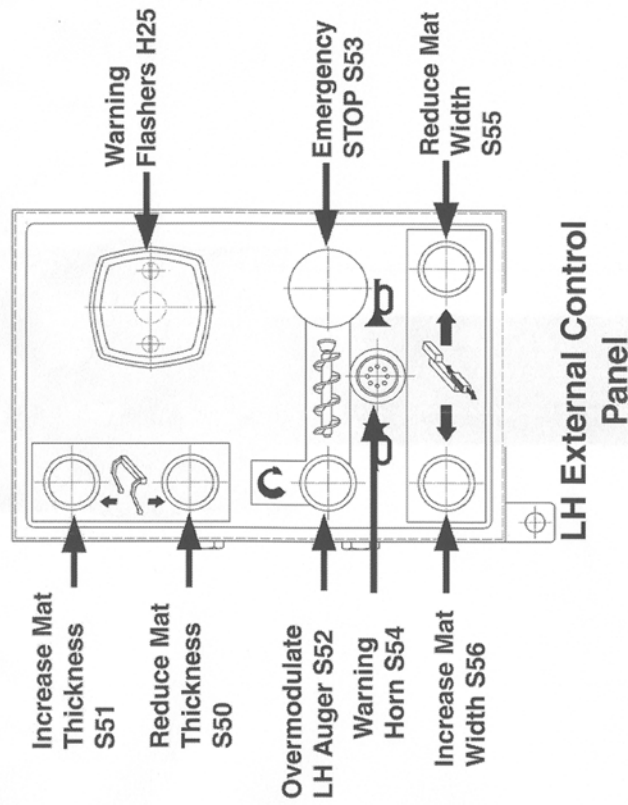
Layout of the controls and instruments located on the main control panel. The letters and numbers after the description of the function refer to the chapter in this manual in which the particular function is explained in more detail.



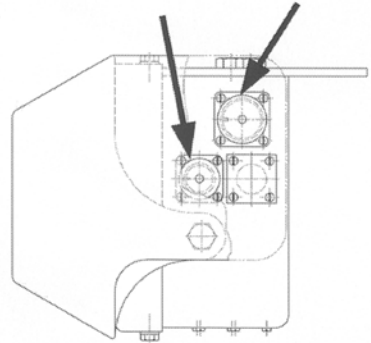


Chapter H: Layout of the External Control Panels

Layout of the controls and instruments located on the external control panels. The letters and numbers after the description of the function refer to the chapter in this manual in which the particular function is explained in more detail.

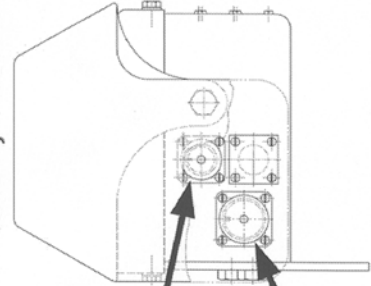


LH Panel, Front

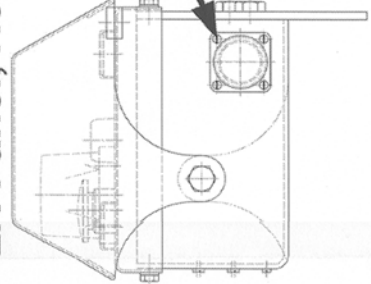


Ultrasound Sensor Socket X30
Levelling System Socket X18

RH Panel, Front

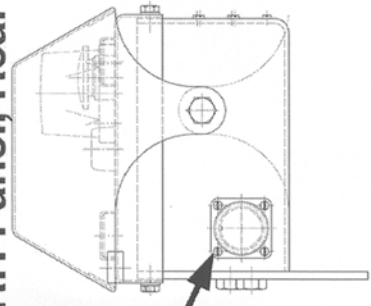


LH Panel, Rear



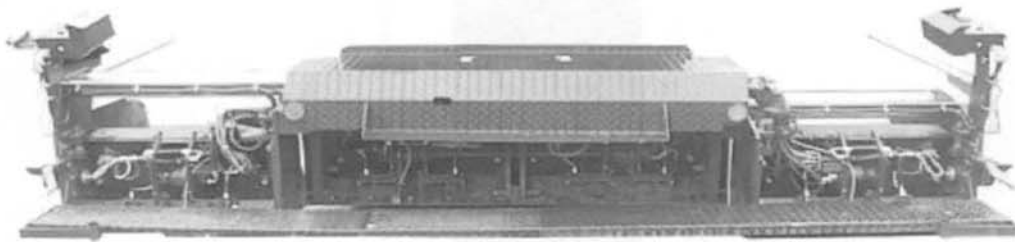
Control Cable Socket X16

RH Panel, Rear



Translation of the Original
***Operating and
Maintenance Manual***

Variomatic Screed



VBV 50

First Read then Pave !

CE

Valid commencing
Serial Number:

16552

CPN Number for the English version: 80692635

Chapter	Page
I Introduction	VII
I - 1.0 Information on the safe operation	IX
I - 2.0 Using the screed for the purpose it was designed for.....	X
I - 3.0 Noise Level.....	XI
I - 4.0 Effective Value of Acceleration	XII
I - 5.0 Complete Machine Documentation.....	XII
I - 6.0 How to use this manual	XIII
I - 7.0 View of the Variomatic Screed.....	XV
I - 8.0 List of Chapters	XVI
II General Safety Instructions	XVII
II - 1.0 Responsibilities of the User	XVIII
II - 2.0 General Safety Instructions for Machine Operation	XIX
II - 4.0 Directives and Laws	XIX
II - 5.0 Measures to Protect Persons and Materials	XX
II - 6.0 Safety Regulations for Machine Operation	XXI
II - 7.0 Handling Fuel	XXII
II - 8.0 Speed, Steering and Braking.....	XXII
II - 9.0 Leaving the Paver.....	XXII
II - 10.0 Moving Parts	XXIII
II - 11.0 Protective Guards	XXIII
II - 12.0 High Temperatures	XXIII
II - 13.0 Working Safely on the Hydraulic System	XXIV
II - 14.0 Welding Work on the Screed	XXIV
II - 15.0 Upon Completion of Maintenance and Repair Work	XXV
II - 16.0 Cleaning the Variomatic Screed.....	XXV
II - 17.0 Environment Protection.....	XXV
II - 18.0 Protective Clothing.....	XXVI
III Operating the Gas Heating	XXVII
III - 1.0 General regulations	XXVIII
III - 2.0 Mounting the gas bottles.....	XXVIII
III - 3.0 Connecting the gas bottles	XXVIII
III - 3.1 Connecting the gas bottles to the hoses.....	XXVIII
III - 4.0 Operating the gas heating	XXVIII
III - 5.0 Gas leakages.....	XXIX
III - 6.0 Ventilation.....	XXIX
III - 7.0 Switching off the gas heating	XXIX
III - 8.0 Transporting the gas bottles	XXX
III - 9.0 Fire risks	XXX
III - 10.0 Repair work.....	XXX

III - 11.0 Breakdown procedure.....	XXXI
III - 12.0 Checking the gas heating	XXXI
01 Basic Screed.....	1
01.01 Basic Screed	2
01.05 Walkway	33
01.07 Screed End Plates.....	37
01.09 Screed Covers.....	43
02 Screed Extensions	47
02.01 Screed Extension 370 / 650 LH.....	48
02.02 Screed Extension 370 / 650 RH	53
03 Screed Heating	55
03.01 Gas Heating.....	56
04 Towing Arms	65
04.01 Towing Arms.....	66
06 Auger Extensions.....	75
06.01 Auger Extension LH.....	76
06.02 Auger Extension RH	80
07 Adjustable Channel Plate	81
07.01 Adjustable Channel Plates.....	82
09 Hydraulics.....	89
09.01 Hydraulic Hoses	90
10 Electrics	97
10.03 Screed Electrics.....	98
11 Special Accessories	103
11.01 Edging Shoes 3 cm / 45° (Option)	104
11.02 Edging Shoes 5 cm / 45° (Option)	108
11.03 Edging Shoes 7 cm / 45° (Option)	109
11.04 Edging Shoes 12 cm / 45° (Option)	110
11.07 Basic Paving Width Reduction Kit (Option).....	111
13 Sign Plates VBV 50 Screed.....	115
13.01 Sign Plates	116
Paving Hints for the VB-50 Screed	117
Hints on Paving.....	118
A Operation and Maintenance	123
A-1.0 Initial Operation of the Screed	124
A-2.0 Taking the Screed Out of Operation	125
A-3.0 Safety Instructions for Service & Maintenance	126
A-4.0 Daily Check Before Starting Work	127
A-5.0 Screed Preservation.....	127

B Maintenance Charts	129
B-1.0 List of Oils and Lubricants	130
B-2.0 Routine Maintenance Points.....	131
C Technical Data	137
C-1.0 Technical Data Paving Screed VBV-50	138

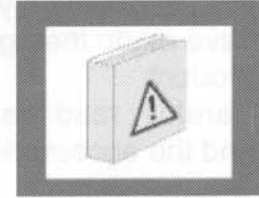
129 8 Maintenance Charts
130 8-1.0 List of Oils and Lubricants
131 8-2.0 Lubrication Points
132 9 Technical Data
133 9-1.0 Technical Data Paving Board VBV-50



I Introduction

This chapter contains general information about your Variomatic paving screed.

It also contains hints and advice on using this manual as well as the address and telephone number of your nearest **INGERSOLL-RAND ABG** partner.



Contents

Page

I Introduction	VII
I - 1.0 Information on the safe operation.....	IX
I - 2.0 Using the screed for the purpose it was designed for.....	X
I - 3.0 Noise Level.....	XI
I - 4.0 Effective Value of Acceleration.....	XII
I - 5.0 Complete Machine Documentation.....	XII
I - 6.0 How to use this manual.....	XIII
I - 7.0 View of the Variomatic Screed.....	XV
I - 8.0 List of Chapters.....	XVI

Dear Customer,

We congratulate you on purchasing a Variomatic screed and assure you that you have made the right choice. Thank you for placing your confidence in our quality product.

Carefully read the operating and maintenance instructions for the Variomatic screed and the accessories to fully acquaint yourself with your new machine.

Always observe our instructions and recommendations !

This will avoid danger to persons and property. It will also ensure a faultless operation and high performance of your Variomatic screed.

We will be pleased to supply further **information** on paving special materials, special paver applications and other relevant machine technical matters to ensure a trouble free operation on your paving project.

The daily paving output is determined by the mat thickness, paving speed and paving width. This paving output will vary according to the actual job-site conditions (material supply etc.). We will be pleased to assist you in determining the actual paving output for your particular paving project.

We would like to point out, that your authorized **INGERSOLL-RAND ABG Service Partner** is well acquainted with your Variomatic screed and can carry out all work on the screed in a reliable and efficient manner.

A list of authorized **INGERSOLL-RAND ABG Service Partners** as well as further technical support can be obtained from:

INGERSOLL-RAND ABG
Technical Service Department
Kuhbrückenstr. 18

D - 31785 Hameln

Tel.: +49 (0) 51 51-209 188

Fax: +49 (0) 51 51-209 222

or through internet : **www.ir-abg.com**

We wish you and your colleagues every paving success with your new Variomatic screed.

Sincerely yours

ABG ALLGEMEINE BAUMASCHINEN-GESELLSCHAFT mbH
Hameln, Germany

I - 1.0 Information on the safe operation

Your **INGERSOLL-RAND ABG** Variomatic screed should always meet your requirements in terms of a high quality paving output. For this reason, our Engineers designed the Variomatic screed using carefully selected and co-ordinated components.

Therefore, you should only use **Genuine INGERSOLL-RAND ABG Spare Parts** or **accessories** approved by **INGERSOLL-RAND ABG**. These parts have been specially designed and manufactured for your Variomatic screed and by using them you will obtain the highest degree of operating safety.

Please note that every technical alteration to your Variomatic screed considerably influences the reliability, safety and the CE conformity of the screed. This applies to unsuitable spare parts, wearing parts and service parts as well as accessories which have not been approved by **INGERSOLL-RAND ABG**.

We cannot accept any liability in cases where spare parts and accessories have been used or technical alterations have been made which have not been approved by **INGERSOLL-RAND ABG**.

It is not possible for us to warranty the reliability, safety, suitability and quality of such parts.

Genuine **INGERSOLL-RAND ABG** spare parts and accessories can be obtained from **INGERSOLL-RAND ABG** or any authorized distributor.

Always keep the operating manual close at hand on the machine. If you sell the Variomatic screed to another user, please give him the documentation as well.

In the interest of product development, **INGERSOLL-RAND ABG** reserves the right to undertake technical modifications without prior notice or any other obligation.

No part of this operating manual may be reproduced, stored in electrical data systems, processed, copied or published in any way whatsoever without prior approval of **INGERSOLL-RAND ABG**.

All rights for copying, distribution and translation are reserved by **INGERSOLL-RAND ABG**.

Machines may be illustrated in this manual equipped with accessories.

I - 2.0 Using the screed for the purpose it was designed for

The **Variomatic** screed has been designed for paving all kinds of asphalt materials, cement treated aggregates, graded aggregates, sand and gravel which are paved to generally recognized standards. Other materials should not be paved with your Variomatic screed.

The Variomatic screed has been designed for operating on dry and firm surfaces with sufficient bearing capacity and which have a slope of not more than $\leq 25\%$ to all sides. Additional safety measures may be necessary for special screed applications.

The screed may be only operated on a specially prepared base with sufficient bearing capacity to carry the machine.

It is not permitted to use the screed for uses such as carrying loads, grading and levelling work, soil compaction or as a lifting device. The screed was not designed for these applications.

Using the screed for the purpose it was designed for also includes observing the operating manual and adhering to the specified **operating, servicing and maintenance instructions**.

The specifications quoted in the chapter "Technical Data" especially the maximum angle of slope inclination, must be strictly adhered to.

We cannot warranty the safe operation of the machine if the Variomatic screed is used for purposes for which it was not designed.

INGERSOLL-RAND ABG does not accept any liability for personal injury or damage to property if the paver and screed are used for purposes for which they were not designed.



I - 3.0 Noise Level

XXX
ist gleichzusetzen mit
dem in der
Konformitätserklärung
angegebenen Wert!

The guaranteed sound power level according to EN 2000/14 is specified in the CE Declaration of Conformity.

The sound power level is only guaranteed for the paver PF 176 (commencing serial no. 16447) and the paving screed VBV 50 (commencing serial no. 16552) as a complete unit as supplied from the factory. The validity of the CE Declaration of Conformity automatically expires if another screed is fitted to the paver.

On account of different paving materials and operating conditions, it is not possible to reproduce the actual sound power level reached during paving operations.

According to 98/37/EC the sound level is
 $L(PA) < 85 \text{ dB(A)}$ determined according to EN 23741/23743

on the operator's station with the Diesel engine running at nominal speed and the vibrators running at the following speed:

Vibrator speed $\geq 50\%$ of the nominal speed $\triangleq 3600 / 2 [1/\text{min}]$

The measurements were made with the screed lowered and resting on a resilient base.*

*Due to the sound deadening effect of the paving material, the noise level is generally lower during paving work.

On account of the different paving materials and operating conditions, it is not possible to reproduce the actual noise level during paving work.

I - 4.0 Effective Value of Acceleration

The weighted effective value of acceleration does not exceed $k = 2,5 [m/s^2]$.

The measuring method and the conditions under which the measurements were made are specified in the test certificate.

The measurements were carried out according to the Association of German Engineers Specification No. VDI 2057 Page 1 to Page 3 of May 1987.

I - 5.0 Complete Machine Documentation

There is a separate machine documentation for the basic paver and for the Variomatic screed. For the sake of simplicity, the documentation for the paver and for the Variomatic screed is divided into the following:

⇒ Operating and Maintenance Manual

The chapters 01 through to 13 in the operating and maintenance manual are subdivided into:

- a.) = Description
- b.) = Operation
- c.) = Maintenance

⇒ Spare Parts Catalogue with circuit Diagrams

The **INGERSOLL-RAND ABG** machine documentation contains a separate engine manufacturer's book. This book consists of the engine operating and maintenance instructions as well as the engine's spare parts list.

When ordering certain options such as for example a levelling system, the relevant documentation will be supplied with the equipment.

The standard range of supply for a new paver contains the machine documentation in duplicate.

Further copies may be obtained through your nearest **INGERSOLL-RAND ABG** Service Partner. Each part of the above documentation is available individually.

I - 6.0 How to use this manual

This operating manual explains the various functions of your Variomatic screed and how to operate them safely. It also contains numerous tips and advice on the Variomatic screed's application.

I. Introduction:

This section contains basic service information as well as information on how to use these instructions. There is a table of contents at the beginning of each chapter to assist you in finding the particular information you require. The last page in this chapter is a **list of all chapters** contained in this manual using the assembly number as a reference.

II. General Safety Information

This section gives you valuable information on the safeguard of persons and property.

III. Gas Heating

This chapter contains information on the safe operation and handling of the gas heating system.

Chapters:

Chapters 01 to 13 contain detailed descriptions of the various paver functions and operating procedures as well as design and assembly work allocated to the individual sub-assemblies. **Special safety instructions** pertaining to the individual assemblies are also contained in these chapters.

If you are looking for spare parts, they can be found in the **Spare Parts List** also under the same chapter number.

Some of the chapters in this documentation are currently void.

This results from the requirement of having the same structure for the complete documentation, i.e. the components described will always be found in the same chapter. This leads to some chapters being intentionally omitted from this documentation.

Some chapters do not contain any instructions or information; these chapters have only been included in this manual to give a complete reference to the spare parts list. The headings to all chapters have been printed in **"bold"** print.

To give you a better understanding of the functions, we have added drawings and illustrations to the written text.

All reference to **"front"**, **"rear"**, **"right"** and **"left"** is made facing to the paver's forward direction of travel.

Appendix:

- A**, contains instructions for the operation and upkeep of your Variomatic screed
- B**, contains instructions for maintenance work on your Variomatic screed
- C**, contains the screed's technical specifications
- D**, contains an alphabetical glossary of terms (Index)

I - 6.1 Symbols

Symbols have been added to the description of the screed's individual assemblies and functions. These symbols are used in chapters **01 to 13** of this manual and are explained as follows:

DANGER

This symbol indicates danger !
Serious personal injury may occur if the relevant safety instructions are not observed.



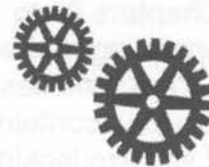
CAUTION

This symbol indicates danger to the machine, property and to the environment.



FUNCTION

This symbol refers you to an explanation of the function and application of the particular components.



ASSEMBLY

This symbol informs you of the steps to be taken if any assembly work is required.



OPERATION

This symbol refers you to the Variomatic screed's individual operating steps.



ABG ADVICE

This symbol indicate hints and advice on the particular topic.



MAINTENANCE

These two symbols inform you of all necessary maintenance work.



I - 7.0 View of the Variomatic Screed

The individual screed assemblies and their respective chapters are listed on the following page.

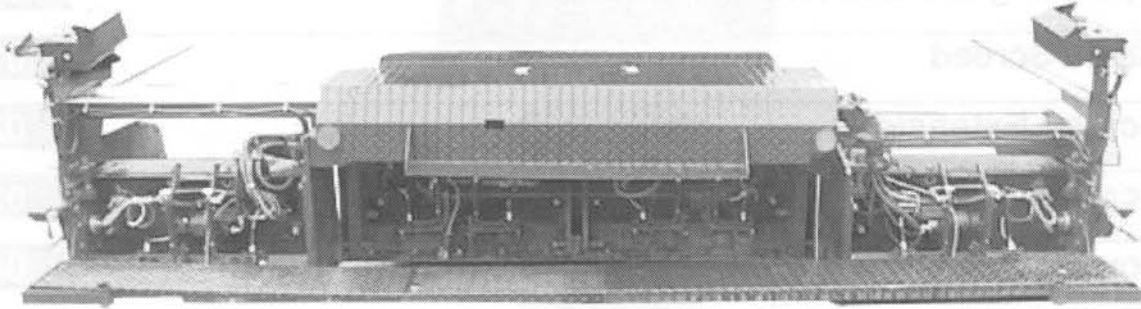


Photo: Variomatic Paving Screed VBV 50

I - 8.0	List of Chapters	Number
	Introduction	I
	General Safety Instructions	II
	Operating the Gas Heating System	III
	Basic Screed	01
	Screed Extensions	02
	Screed Heating	03
	Towing Arms	04
	Auger Extensions	06
	Adjustable Channel Plate	07
	Hydraulics	09
	Electrics	10
	Special Accessories	11
	Sign Plates	13
	Operation and Maintenance	<i>Appendix</i> A
	Maintenance Charts	<i>Appendix</i> B
	Technical Data	<i>Appendix</i> C
	Index	<i>Appendix</i> D

II General Safety Instructions

These safety instructions must be strictly observed !

This is a simple way to protect **persons, property** and our **environment**. Therefore, please thoroughly read and understand these safety instructions.

Observing the safety instructions is also a simple way to **save money**.

Once again, it is essential that you read and understand this chapter and strictly observe the safety instructions.

Safety instructions for the individual assemblies are contained in each chapter of this operating manual.



Contents	Page
II General Safety Instructions.....	XVII
II - 1.0 Responsibilities of the User	XVIII
II - 2.0 General Safety Instructions for Machine Operation	XIX
II - 4.0 Directives and Laws	XIX
II - 5.0 Measures to Protect Persons and Materials	XX
II - 6.0 Safety Regulations for Machine Operation	XXI
II - 7.0 Handling Fuel	XXII
II - 8.0 Speed, Steering and Braking.....	XXII
II - 9.0 Leaving the Paver.....	XXII
II - 10.0 Moving Parts	XXIII
II - 11.0 Protective Guards.....	XXIII
II - 12.0 High Temperatures	XXIII
II - 13.0 Working Safely on the Hydraulic System	XXIV
II - 14.0 Welding Work on the Screed	XXIV
II - 15.0 Upon Completion of Maintenance and Repair Work	XXV
II - 16.0 Cleaning the Variomatic Screed.....	XXV
II - 17.0 Environment Protection.....	XXV
II - 18.0 Protective Clothing.....	XXVI

General Safety Instructions

First read then pave !

II - 1.0 Responsibilities of the User

Carefully read our **safety instructions** before operating the Variomatic screed for the first time.

The screed can only operate safely on the job-site if all necessary safety measures have been taken.

It is the **responsibility** of the user to plan all necessary safety measures and to ensure they are strictly observed.

As the user please ensure that:

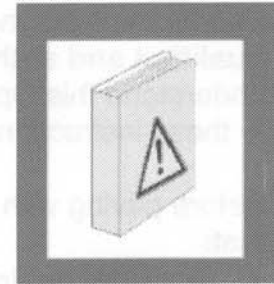
- the Variomatic screed is only used for the purpose it was designed for (please refer to the relevant section in the chapter "**Introduction**").
- the Variomatic screed is only used in a perfect functional and operating condition and that the **correct function** of the safety devices is regularly checked.
- the paving crew, maintenance and service personnel are equipped with **protective clothing** and that it is worn at all times.
- all necessary **safety precautions** have been taken on the **job-site**.
- the **Operating Manual** is complete and in a readable condition close at hand near the screed.
- only fully **qualified** and **authorized** personnel operate, maintain and repair the machine. All locally prevailing regulations must be complied with.
- your personnel receive regular instructions on all aspects of **industrial** and **working safety regulations** as well as **environment protection** laws and regulations; and that they have read and fully understand the Operating Manual especially the safety instructions.
- all **safety** and **warning sign plates** on the screed are readable and that they have not been removed.
- the **Diesel engine is switched off** before carrying out any service, maintenance and repair work.



II - 2.0 General Safety Instructions for Machine Operation

In the following operating instructions, safety instructions are given to draw your attention to the unavoidable residual risks when operating the machine. These residual risks are a danger to:

- **Persons**
- **Product and Machine**
- **Environment**



II - 3.0 Safety Symbols

The symbols used in this operating manual are meant to draw your attention to the safety instructions.

DANGER

**This symbol indicates danger !
Serious personal danger and injury may occur if the relevant safety instructions are not observed !**

CAUTION

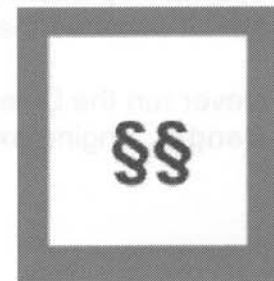
This symbol indicates danger to the machine, property and to the environment !



II - 4.0 Directives and Laws

All locally prevailing **accident prevention regulations, guidelines and laws** must be strictly observed. This still applies even though they are not explicitly mentioned in this manual. It is the sole responsibility of the user to ensure that all accident prevention regulations, guidelines and laws are strictly adhered to.

This also applies when driving and operating the paver on **public roads**.



II - 5.0 Measures to Protect Persons and Materials

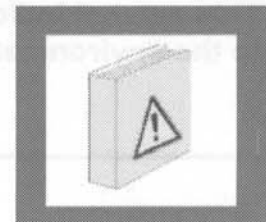
Ensure the Variomatic screed is only operated by **fully trained, qualified and authorized personnel** who have read and fully understand this Operating Manual and who can work according to these instructions.

Before paving with the Variomatic screed, check and ensure that:

- all **safety devices** have been checked and function correctly before paving work is commenced !
- the Variomatic screed is checked for visible damage before you start paving !
- the Variomatic screed is only operated in a **perfect working condition !**
- **all faults and defects on the Variomatic screed must be immediately repaired !**
- before starting work, remove all unnecessary items out of the working area of the Variomatic screed !
- only **authorized personnel** are within the Variomatic screed's working area !
- nobody is injured when the **Variomatic screed starts moving.**



Make sure you are fully acquainted with your **Variomatic** screed's operating controls and elements before starting work. This will protect you and others from injury caused by operating errors.



Only start the Diesel engine with the ignition switch on the operator's platform. **Never short circuit** the Diesel engine to start it because the paver may be put into motion.

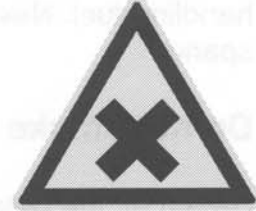
Never run the Diesel engine in a closed room.
Danger. Engine exhaust fumes are **poisonous.**



II - 6.0 Safety Regulations for Machine Operation

Paving in Tunnels

- When paving in tunnels, ensure there is adequate ventilation and a sufficient amount of oxygen in the air. Also ensure that the maximum permissible concentration of pollutants in the air is not exceeded.
- Observe the dimensions of the whole machine.
- Ensure there is sufficient lighting in the tunnel.
- Ensure suitable fire-fighting precautions have been taken!



Paving in the vicinity of overhead electric cables

- Depending on the nominal voltage of the electric cables, ensure there is an adequate safety distance between the paver including its components and the overhead cables and supply lines to avoid a conduction of electric current.
- Alternative safety measures may be taken such as switching off the current in the overhead supply lines.

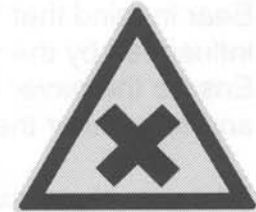


Paving in contaminated areas

- Ensure the paving crew is not exposed to health risks when working in the vicinity of or in contaminated areas such as waste disposal dumps etc.

Paving in the vicinity of railway lines

- Paving in the vicinity of railway lines with passing trains is subject to increased danger which may lead to fatal accidents.
- Only start work after obtaining permission from the appropriate railway authorities and after all necessary safety measures have been taken.



Paving on slopes

- Special safety precautions must be taken, such as securing the paver with a winch cable, when paving on slopes where there is a danger of the machine toppling over or sliding away.

Paving on bridges

- Ensure that the bearing capacity of the bridge is sufficient to carry the weight of the paver, screed and other machinery and equipment required for paving.
- Observe the dimensions of the whole machine.
- Take the vibration effect of vibrating compactors into consideration when compacting on bridges.



Observe all locally prevailing rules and regulations on all job-sites and ensure your paving crew has been instructed accordingly.

II - 7.0 Handling Fuel

Always be aware that there is an increased **fire risk** when handling fuel. Never fill the fuel tank near naked flames or sparks.



Do not smoke when refuelling the paver !

Switch off the Diesel engine before refuelling the paver.
Never refuel the paver in a closed room.



Immediately remove all combustible materials such as oil or Diesel soaked rags etc. from your paver and screed to **avoid fire risks**.

II - 8.0 Speed, Steering and Braking

Always adapt the paver's travelling speed to the locally prevailing conditions.

Bear in mind that the steering and braking behaviour may be influenced by the weight and width of the rear mounted screed. Ensure the paver has sufficient steering and braking properties and remember the screed swings out when cornering.



Observe the maximum permissible weights !

II - 9.0 Leaving the Paver

Before leaving the paver, secure it from any unintentional rolling off by applying the hand brake. Place the wheel chock under the wheel if the screed is fitted to a wheeled paver.

Remove the ignition key and lock the cabin if fitted.
Never leave the paver unattended as long as the ignition key is in the ignition switch.

Never leave the operator's platform while the paver is in motion !



Secure the Variomatic screed against an unintentional lowering before leaving the operator's platform.

II - 10.0 Moving Parts

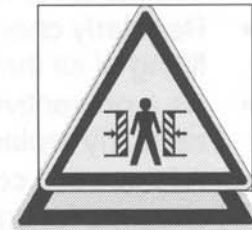
Caution ! Moving parts such as drive shafts and V-belts are a **danger to life and limb** when moving.

Moving components such as the Variomatic screed, hopper wings, conveyors and augers can cause injuries and are also a danger to life and limb.

Switch off the Diesel engine and let all moving parts and components come to a standstill before carrying out any repair and maintenance work.

Flashing warning lights located on the external control panels indicate a **danger of crushing** when extending or retracting the Variomatic screed.

It is imperative that all protective guards are properly mounted.



II - 11.0 Protective Guards

Only operate your **Variomatic screed** with the factory supplied **protective guards** and **assemblies** correctly fitted.

The manufacturer does not accept any liability if the screed is operated without the protective guards and assemblies. The same applies to maintenance and repair work.

So please remember once again, there is an **increased risk of injury** and **danger to life** if the Variomatic screed is operated without all protective guards and assemblies correctly fitted.

When assembling screed and auger extensions, it is absolutely essential to also fit the protective guards and covers supplied.



II - 12.0 High Temperatures

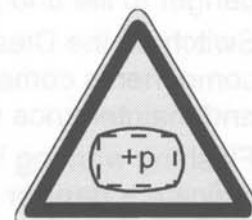
When the paver is operated, the screed, the Diesel engine and the hydraulic system become **very hot** and there is a danger of **serious injury** if these components are touched.



II - 13.0 Working Safely on the Hydraulic System

It is absolutely essential that you read and observe the following safety instructions before commencing work on the hydraulic system.

- Work on the hydraulic system may only be carried out by specially trained and qualified employees.
- All hydraulic components must be relieved of pressure before commencing work.
- Regularly check the hydraulic system for leaks and a tight fitting of all threaded connections.
- As a preventive measure, all hydraulic hoses should be regularly replaced.
- All threaded connections which have been loosened must be checked for tightness before operating the paver and screed again.
- Ensure that all components removed are correctly installed before operating the paver and screed again.



II - 14.0 Welding Work on the Screed

⇒ Welding work may only be carried out by trained, instructed, qualified and authorized persons. All regulations and safety stipulations must be strictly adhered to as well as the general rules and standards of engineering.

Before commencing any welding work please disconnect the following components in the sequence specified:

1. Levelling system,
2. Main control panel, transport control panel and the external control panels,
3. All plugs on the I/O modules,
4. All other electrical components if installed,
5. Batteries,
6. Alternator.

Ensure that the clamp on the earth cable has a good contact directly against the joint to be welded. Ensure the welding current does not go through any bearings.

On completion of welding work, the above components must be re-connected in the opposite sequence.

II - 15.0 Upon Completion of Maintenance and Repair Work

Upon completion of maintenance and repair work and before putting the paver back into operation, ensure that:

- all protective guards and covers have been correctly mounted on the machine,
- all **safety devices** are checked and function correctly,
- all tools, appliances and other equipment used for maintenance and repair work are removed from the machine's working area,
- any liquids spilt or leaked must be properly wiped up and disposed of.



II - 16.0 Cleaning the Variomatic Screed

Regularly clean your Variomatic screed and keep all steps, walkways and decks absolutely clean and tidy. This will avoid **accidents and injuries** caused by people slipping and stumbling on the machine.

When using cleaning solvents on your screed, ensure that appropriate breathing apparatus is worn.

Do not clean parts of the heating system with water.!



II - 17.0 Environment Protection

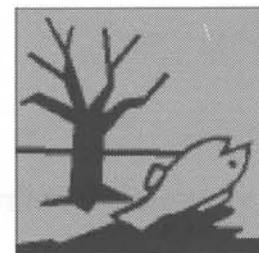
When paving or working on your machine, observe all statutory obligations for **avoiding waste**, its proper **utilization** and **disposal**.

Especially when cleaning, repairing, servicing and maintaining your machine, ensure that water detrimental substances such as:

- **Oils and lubricants**
- **Hydraulic oil**
- **Engine coolant**
- **Cleaning solvents**

do not seep into the ground and do not tip them into sewage systems.

These substances must be collected, stored, transported and disposed of in suitable containers.



II - 18.0 Protective Clothing

The user is responsible for ensuring that appropriate protective clothing is available and that it is worn.

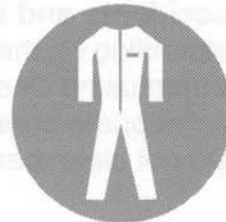
- Locally prevailing noise control regulations may specify the wearing of **ear defenders**.
- Observe the regulations concerning the wearing of **eye shields**.
- Observe the regulations concerning the wearing of **protective helmets**.



- Protect your feet by wearing industrial **safety shoes**.



- Always wear **working overalls** that fit snug to your body.
- Wear a luminous **waistcoat** to make sure you are seen by other road users.



- If necessary, wear **gloves** to protect your hands.



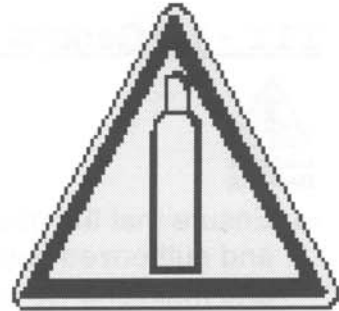
- Wear **breathing apparatus** if the air is contaminated.



III Operating the Gas Heating

This chapter contains important safety instructions for operating the gas heating system on the Variomatic screed.

Closely observe these safety instructions to protect persons, material and the environment.



Contents

Page

III Operating the Gas Heating.....	XXVII
III - 1.0 General regulations.....	XXVIII
III - 2.0 Mounting the gas bottles.....	XXVIII
III - 3.0 Connecting the gas bottles	XXVIII
III - 3.1 Connecting the gas bottles to the hoses	XXVIII
III - 4.0 Operating the gas heating	XXIX
III - 5.0 Gas leakages	XXIX
III - 6.0 Ventilation.....	XXIX
III - 7.0 Switching off the gas heating.....	XXX
III - 8.0 Transporting the gas bottles	XXX
III - 9.0 Fire risks	XXX
III - 10.0 Repair work.....	XXX
III - 11.0 Breakdown procedure	XXXI
III - 12.0 Checking the gas heating.....	XXXI

III - 1.0 General regulations



- ⇒ Ensure that the gas heating system is operated and maintained by fully qualified and authorized personnel who have been thoroughly instructed in the operation and maintenance of the system and from whom it is expected that they will carry out the work in a reliable manner.
- ⇒ When using gas, there is a danger of explosions. Strictly observe the safety instructions and your locally prevailing regulations when operating the gas heating system.

III - 2.0 Mounting the gas bottles

- ⇒ Safely mount the gas bottles on the paver using the supports and brackets provided. Secure them against turning and falling over in order to operate and service the gas heating system safely.
- ⇒ Cover the gas bottles with the canopies supplied with the paver to avoid them unduly warming up.
- ⇒ Maintain the minimum specified safety distance from sources of heat.
- ⇒ Keep a constant check on all safety devices, controls and operating elements to ensure that unauthorized persons do not have access to them.
- ⇒ Only withdraw gas from the bottles when they are in an upright position.

III - 3.0 Connecting the gas bottles

- ⇒ Before connecting the gas bottles, ensure the gas heating system is in a perfect working condition.
- ⇒ During operation, the gas bottles should not be allowed to become under-cooled as this may cause an interruption in the flow of gas.
- ⇒ Icing on the bottles caused by an exceptionally high withdrawal of gas must be allowed to thaw off by using warm air or warm water with a temperature not exceeding 50° C.
- ⇒ Never use a naked flame, red hot objects or convector heaters to thaw off the gas bottles. Icing must not be hammered off the gas bottles or removed mechanically in a similar manner.

III - 3.1 Connecting the gas bottles to the hoses

- ⇒ Ensure there is a gas-tight connection when fitting the hoses to the gas bottles. Any gas released when fitting the hoses should be allowed to escape into the air without danger.
- ⇒ Never use damaged hoses.
- ⇒ When replacing hoses, ensure the new hoses and their connections are suitable for gas heating systems. When routing new hoses, ensure they are protected against chemical, thermal and mechanical damage.

III - 4.0 Operating the gas heating

- ⇒ Caution ! Hot surfaces cause burns and personal injury.
- ⇒ The operator must thoroughly check and ensure the correct condition of the heating system before commencing paving work.
- ⇒ The gas heating system may only be operated using a pressure control valve with integrated leak tester and hose rupture safety control.
- ⇒ Only operate the gas heating system when it is in a perfect working condition and the flame ignition and the flame control function correctly.
- ⇒ Avoid an accumulation of unignited gas when operating the gas heating system.
- ⇒ It is essential to maintain a working pressure of 1.5 bar.
- ⇒ Any hand burners used for igniting the flame must be placed in a safe area after use.
- ⇒ Ensure that all operating controls on the gas heating system are easily accessible.
- ⇒ Ensure that no gas can escape from the gas bottles when disconnecting them from the gas heating system.

III - 5.0 Gas leakages

- ⇒ All hoses must be connected tightly to the gas bottles.
- ⇒ Only use gas detectors and other approved methods of detecting gas leaks which will not ignite the gas.
- ⇒ Switch off the respective gas bottle if a leak occurs and eliminate all sources of a possible gas ignition until the escaped gas has evaporated.
- ⇒ Leaky gas bottles must be immediately removed from the danger zone and be appropriately marked if this is possible without submitting yourself to danger.
- ⇒ Never use pressure controllers with worn or damaged seals in the gas heating system. Worn or damaged seals must be renewed before use.
- ⇒ Ensure the threaded connections match when connecting pressure controllers to the gas bottles.
- ⇒ Only use the correct tools for connecting pressure controllers and other connections to the gas bottles.
- ⇒

III - 6.0 Ventilation

- ⇒ If the heating system is operated in enclosed areas or restricted spaces, there must be adequate ventilation to prevent dangerous explosions and health hazards caused by exhaust emission and the lack of oxygen in the air.
- ⇒ Never operate the gas heating without the ventilation system correctly installed and keep the ventilation intake and outlet apertures free from blockages to ensure an adequate natural ventilation.

III - 7.0 Switching off the gas heating

- ⇒ Close the valves on the gas bottles before work breaks, at the end of a day's paving, after consuming the gas, before disconnecting the pressure controllers, before loosening the gas hoses, during breakdowns and potential danger.
- ⇒ The gas heating system must also be switched off during cleaning work.

III - 8.0 Transporting the gas bottles

- ⇒ Only transport the gas bottles in a special transport rack and safely secure them against toppling over and sliding during transport.
- ⇒ Before transporting the gas bottles, close the valves, remove the connections and securely fit the protective caps.
- ⇒ Do not transport gas bottles together with hazardous goods such as easily combustible materials.

III - 9.0 Fire risks

- ⇒ Operate the heating system in such a way that all fire risks and consequently personal injury are avoided.
- ⇒ Fire and explosion precautions must be taken if the heating system is operated in buildings or areas where explosive gases can be reckoned with.
- ⇒ Keep all objects, materials and cleaning rags which can ignite away from hot areas and parts on the heating system.



III - 10.0 Repair work

- ⇒ Repair work may only be carried out by fully qualified and authorized personnel.
- ⇒ Only use suitable spare parts and consumables for repair work.
- ⇒ Parts in the heating system which are subject to wear and deterioration must be renewed after 8 years at the latest. An exception to this rule is when a specialist confirms their perfect working condition.

III - 11.0 Breakdown procedure

- ⇒ Immediately close the valves on the gas bottles if a breakdown occurs but do not subject yourself to danger.
- ⇒ Only put the paver back into operation again after the cause of the fault has been properly repaired and thoroughly tested.
- ⇒ In case of fire, remove the gas bottles to a safe area and keep them cool but do not subject yourself to danger.
- ⇒ If there is a danger that escaping gas cannot be brought under control or there is a danger of fire in the area of the heating system, immediately alarm the fire brigade and try to extinguish the fire yourself but do not subject yourself to danger. Disconnect the electrical system from a safe location.
- ⇒ Immediately clear the danger zone of all persons.

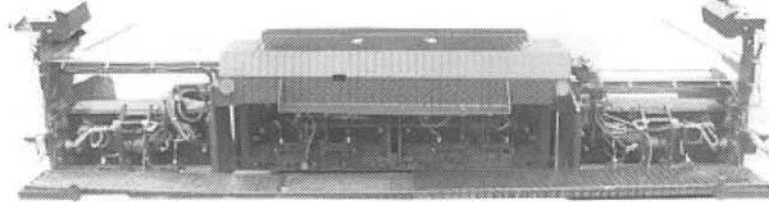
III - 12.0 Checking the gas heating

Ensure the complete gas heating system is checked by a fully qualified and authorized person as follows:

- ⇒ Before using the gas heating system for the first time to ensure that it is correctly installed and has no gas leaks.
- ⇒ After carrying out any maintenance or repair work.
- ⇒ After any alterations have been made which effect the operating safety.
- ⇒ Check the working condition, function, installation and gas leaks in the system if it has been out of operation for more than one year.

Your locally prevailing regulations for checking gas bottles still apply and are not effected by this chapter.

01 Basic Screed



This chapter contains information on the function, operation and maintenance of the basic screed.

Contents	Page
01 Basic Screed.....	1
01.01 Basic Screed	2
01.05 Walkway	33
01.07 Screed End Plates.....	37
01.09 Screed Covers.....	43

01.01 Basic Screed



The following instructions described the operation and maintenance of the VBV-50 Variomatic screed.

a.) General Description

The VBV –50 Variomatic screed was developed for application with the paver model PF 176.

The basic screed consists of:

2 basic screed sections (basic screed).

2 extendable screed sections.

The extendable screed sections are mounted behind the basic screed and are independently extended and retracted by hydraulic cylinders.

Basic paving width:

(basic screed only)

2.00 [m]

Maximum paving width:

(basic screed with extendable screed sections)

3.76 [m]

Overlap:

(is the distance by which the basic screed and the respective extendable screed section overlaps)

0.12 [m]

01.01 Basic Screed continued**b.) Increasing the Paving Width**

The paving width of the basic screed can be extended to suit your job-site requirements by fitting 2 different screed extensions.

The screed extensions have a width of **0.37 [m]** or **0.65 [m]**.

Basic paving width:

(incl. 2 extensions)

2.74 [m] or **3.30 [m]**.

Maximum paving width:

(incl. 2 extensions)

4.50 [m] or **5.00 [m]**.

**c.) Reducing the Paving Width
(Option)**

The basic paving width can be reduced to suit your job-site requirements by fitting two reduction shoes to the basic screed.

The width of one reduction shoe is **0.35 [m]**.

Basic (minimum) Paving Width:

(incl. 2 reductions)

1.30 [m]

01.01 Basic Screed continued

d.) Screed Components

mechanical crown control adjustment

Vibration

max. speed **3600 [1/min]**

infinitely variable

Front wall

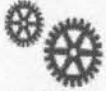
Covers

Screed end plate assemblies

Walkways

01.01.01 Basic Screed

a.) Description



**FUNKTION
FUNCTION**

An adjusting mechanism serves as a guide system between the basic screed (5) and the extendable screed section (4).

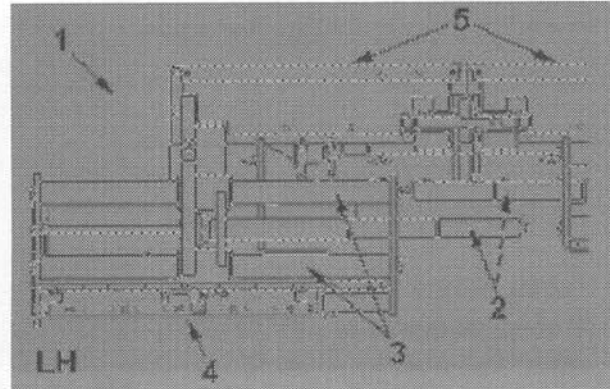
An adjusting mechanism is installed on both LH and RH side of the basic screed (1).

The adjusting mechanism consists of the hydraulic cylinder (2) and two guide rods (3).

The hydraulic cylinder (2) and the guide rods (3) also form the connection between the basic screed (5) and the extendable screed section (1).

The oil pressure in the hydraulic circuit is controlled by actuating electromagnetic valves.

These valves are actuated on the main control panel or on the external control panels.



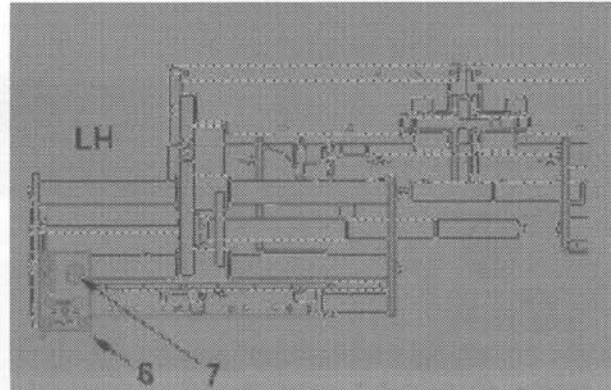
01.01.01 Description a.) continued

An orange-yellow warning lamp (7) on the respective LH or RH control panel (6) flashes when the LH or RH screed side is being extended or retracted.

The warning lamp (7) extinguishes as soon as the adjusting procedure is interrupted or stopped.

This visual warning signal informs the paving crew that the paving width is being adjusted and to use added caution.

Furthermore, the paving crew can ensure that no persons are in the danger zone when the paving width is being adjusted.



01.01.01 Basic Screed continued

b.) Operation



It is prohibited for persons to enter the danger zone when the screed is in operation.

There is a danger of serious injury caused by crushing !



The functions on the VBV-50 Variomatic screed can be operated on the paver's (PF 176) main control panel and on both LH and RH external control panels.

During paver operation:

The main control panel is installed on the operator's platform.

External control panels are installed on both sides of the screed.

Operating the control panels is described under chapter 08 (Control Panels) in the separate operating manual for the PF 176.

Carefully read chapter 08.01, main control panel and chapter 08.02, external control panels before using your paver and screed for the first time.

Strictly observe the instructions contained in these chapters.

01.01.01 Operation, b continued



At low ambient temperatures, $\leq 10^{\circ}$ [C], the paver's hydraulic system must be warmed up before commencing paving work by running the Diesel engine at a medium speed without load (i.e. all hydraulic circuits switched off) for approx. 5 to 15 [min].

The warming up phase serves the purpose of raising the temperature of the operating liquids such as the hydraulic oil. At the same time it avoids cavitation in the suction lines.

Carefully warming up the paver reduces wear and tear and increases the working life of rotating components through which oil flows.

Only after this warming up phase should you put the Diesel engine and hydraulic system under full load.

01.01.01 Operation, b continued

When operating the Variomatic screed, ensure there is a sufficient but not excessive head of material in front of the screed.

At a correct head of material in front of the screed, the auger flights are submerged by **approx. 2/3** in the paving material.

In this way, you will ensure a correct flow of paving material in front of the screed.

The head of material in front of the screed must not raise so high that it spills over the top of the screed and accumulates on the:

guide rods

and

cylinder rods.

Any paving material accumulated on these parts should be immediately removed.

If these parts are soiled by paving material, it will quickly lead to increased wear and oil leakages.

The polished surfaces on the guide rods and cylinder rods are best protected by completely retracting the extendable screed sections at the end of a day's paving work.

01.01.01 Basic Screed continued

c.) Maintenance



Water may collect in all screed sections caused by rain, condensation or by cleaning work.

All water and gas outlets must be regularly checked for dirt and blockages to ensure that any water and exhaust fumes can drain out or escape from the screed sections.

This will reduce damage caused by corrosion.

Damaged or faulty components in the heating system may allow explosive gases to form resulting in a danger to life and limb.



The paver must be switched off and properly earthed before carrying out any work on these components and appropriate protective clothing must be worn.

There is a danger to life and limb.



Wartung
Maintenance
Maintenance:

Clean the water and gas outlets **weekly** or **as required**.

01.01.01 Maintenance continued

Never clean the screed sections with a steam jet cleaner.

This will lead to damage to the components on the heating system.

There is a danger to life and limb.



We recommend cleaning the screed by hand.

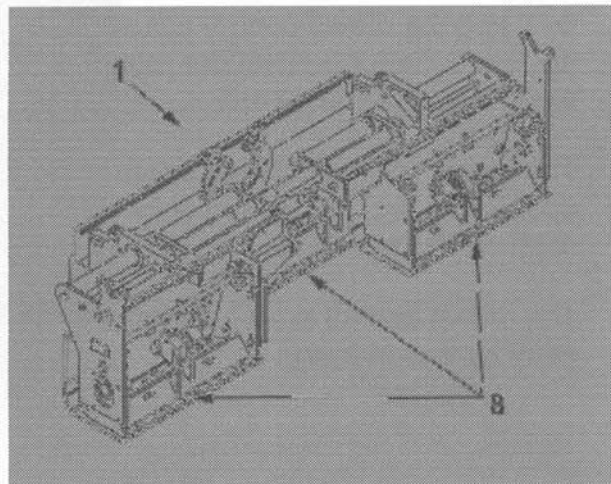


The heating up phase will take longer if water has penetrated the screed sections.

Water and gas outlets (8) are located on the sides and at the rear of the screed sections.

Closure plates and screed end plates on the ends of the screed must be removed to carry out cleaning work.

After carrying out any maintenance or cleaning work, replace the closure plates and screed end plates.



01.01.02 Crown Control Adjustment

a.) Description



FUNKTION FUNCTION

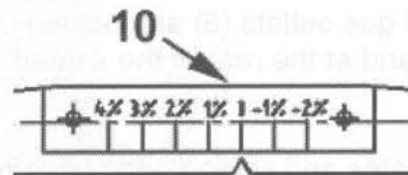
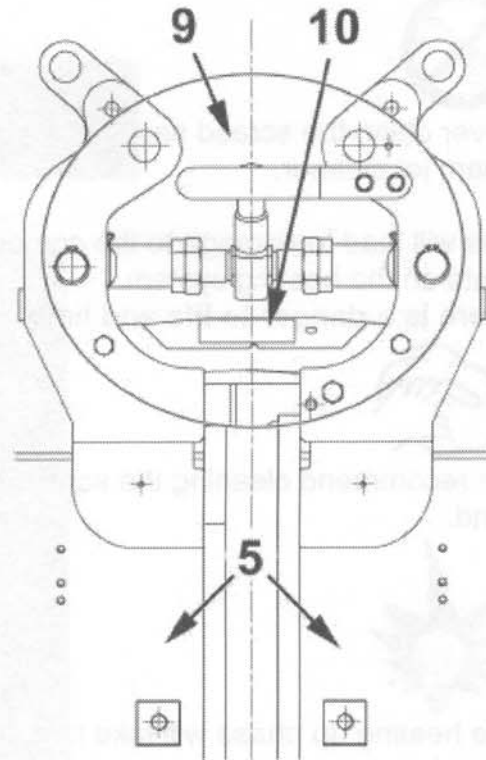
The crown control adjustment (9) is located between the two halves of the basic screed (5).

There is only one crown control adjustment (9) on the basic screed.

By using the crown control adjustment (9), the operator can set the required camber on the paved mat.

The crown control settings are from -2% up to $+4\%$ and the value set can be seen on the scale (10).

The crown control is adjusted **mechanically** by the operator.



01.01.02 Crown Control Adjustment

continued

b.) Operation



It is prohibited for persons to enter the danger zone when the screed is in operation.

There is a danger of serious injury caused by crushing !



To adjust the camber with the mechanical crown control, loosen the lock nuts (11) on the spindle.

Then switch the 2-way ratchet (12) to the required direction.

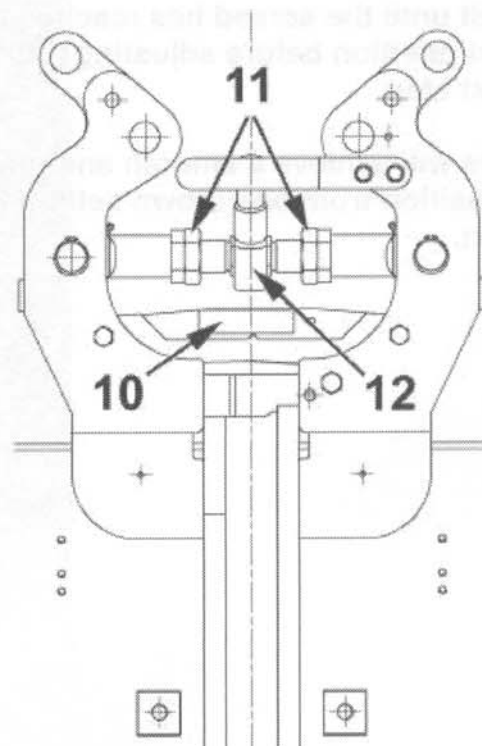
Finally swing the ratchet (12) in the direction selected.

Alter the setting step by step to obtain a gradual transition in the crown profile.

The crown profile setting can be seen on the scale (10).

After the required camber setting has been reached, tighten up the lock nuts (11).

This working process has now been completed.



01.01.02 Operation continued



Alter the setting step by step in small increments.

Wait until the screed has reached the first position before adjusting it to the next step.

This will achieve a smooth and gradual transition from one crown setting to the next.

01.01.02 Crown Control Adjustment
c.) Maintenance



When cleaning the crown control adjustment ensure that:

the paver is at a standstill,
the engine and ignition are switched off,
and nobody has unauthorized access to
the paver.

There is a danger of crushing and serious personal injury.



Wear suitable protective clothing when
cleaning the crown control adjustment.

There is a danger of squeezing and lacerating your fingers.



Wartung
Maintenance

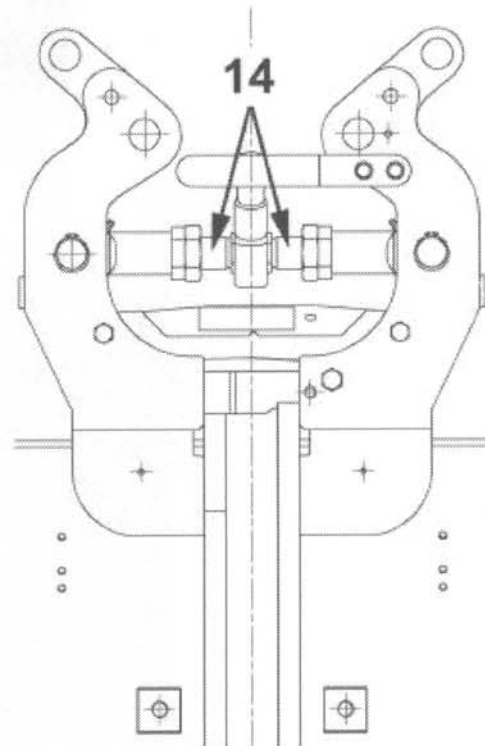
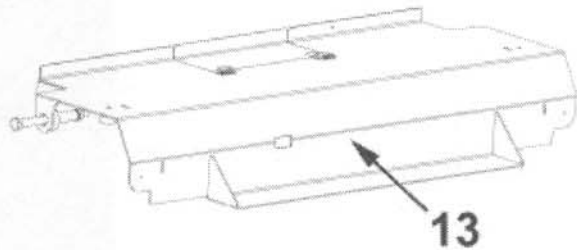
Maintenance:

The screed must be completely lowered
and resting on the ground.

Before commencing cleaning work, raise
and secure the cover (13) on the basic
screed.

Mech. crown control adjustment:

Clean, grease and oil the moving parts
on the spindle (14) **as required** and de-
pending on their degree of stiffness.



01.01.02 Maintenance c. continued



Carry out the functional test and cleaning work conscientiously.

After finishing all cleaning and maintenance work, close the cover and return the screed to its original condition.



01.01.03 Vibrators

a.) Description



**FUNKTION
FUNCTION**

Vibrators are installed on the basic screed and on the extendable screed sections.

Each vibrator consists of a hydraulic motor which drives and rotates a shaft.

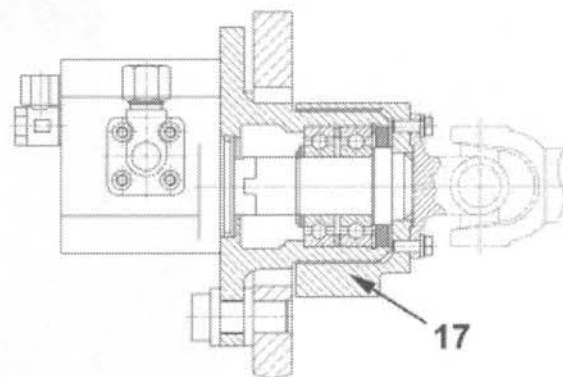
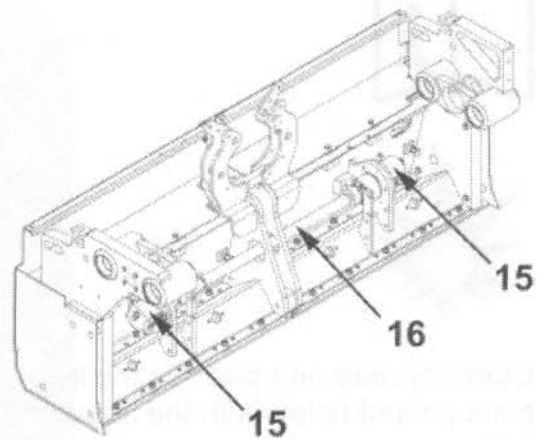
Each shaft is asymmetrically machined to form an eccentric mass.

The vibrator shafts are driven by two gear motors (15) on the basic screed and one each on the extendable screed sections.

The vibrator shafts on the basic screed run in phase and are connected by a universal joint shaft (16).

The eccentric masses (17) on the vibrator shafts run in phase so that they do not counteract their oscillating effect.

The vibration speed is infinitely variable from **0 to 3600 [1/min]** and is adjusted on the control panel.



01.01.03 Vibrators continued

b.) Operation



Carefully read and observe the instructions printed below with the above symbols in:

Chapter 01.01.01 - b.)

01.01.03 Vibrators continued

c.) Maintenance



When checking the vibrators, ensure that:

the paver is at a standstill,
the vibration is switched off,
the engine and ignition are switched off,
and nobody has unauthorized access to the paver.

There is a danger of crushing and serious injury.



Wear suitable protective clothing when checking the vibrators.

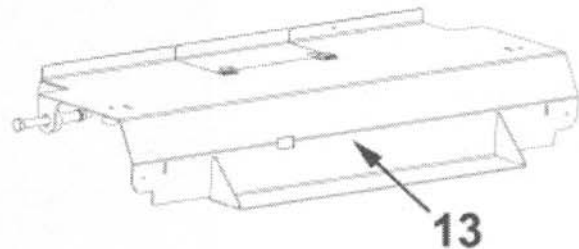
There is a danger of squeezing and lacerating your fingers.



**Wartung
Maintenance
Maintenance:**

The screed must be completely lowered and resting on the ground.

Before checking the vibrators, raise and secure the cover (13) on the basic screed and remove the covers from the extendable screed sections.



01.01.03 Maintenance continued**Check the vibrators daily (basic and extendable screed sections) for:**

Tight fitting (vibrators (15), mounting parts)

Leakages (hydr. drive, bearings)

Faulty universal joint shafts (16) (basic screed)

Functional test (electric & hydraulic)

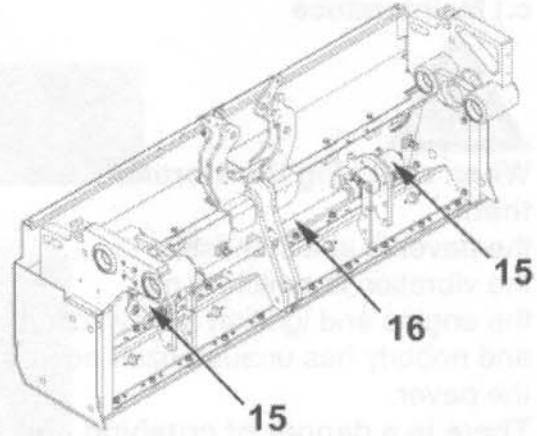
Clean as necessary.



Carry out the functional test and cleaning work conscientiously.

Repairs to the vibrators may only be carried out by an IR-ABG service technician.

After finishing all maintenance and cleaning work, replace the covers and return the screed to its original condition.



01.01.04 Extendable Screed Sections

a.) Description



**FUNKTION
FUNCTION**

Read the text printed below the above function symbol in:

Chapter 01.01.01 - a.)



01.01.04 Extendable Screed Sections

continued

b.) Operation



Read the text printed below the above function symbol in:

Chapter 01.01.01 - b.)

and carefully follow these instructions.



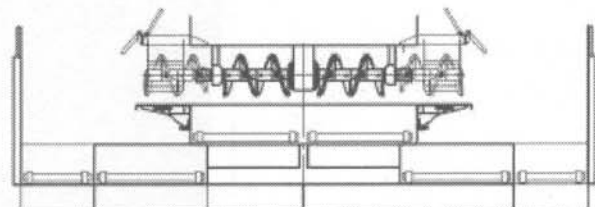
Additional Instructions:

Extending the screed to the required paving width:

The extendable screed sections can be extended simultaneously or independently.

The speed at which the screed sections will extend will be reduced if they are operated simultaneously.

The extendable screed sections should be extended symmetrically.



01.01.04 Operation continued

This will exert an equal load on the paver.

Otherwise, the paver's steering behaviour will be negatively influenced.

When paving over longer distances, the extendable screed sections should not be completely extended to the maximum paving width.

Bolt-on screed extensions should be used to reach the required paving width.

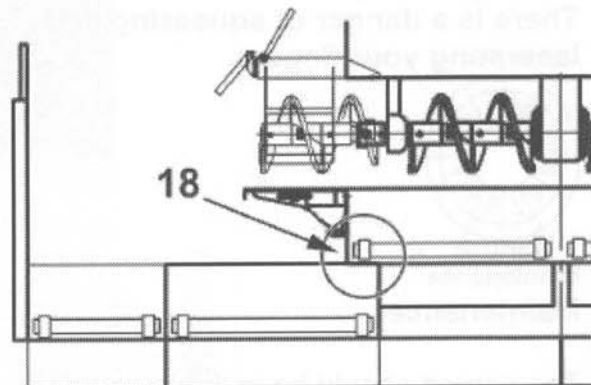
By using bolt-on screed extensions:

only a some of the entire paving width adjusting range will be required, the extendable screed section will overlap the basic screed (18) and exert less load on the paving width adjusting mechanism.

Furthermore:

wear and tear will be reduced and the working life will be increased **of all screed components subject to load.**

When transporting the paver with screed, observe the maximum permissible transport width and completely retract the extendable screed sections.



01.01.04 Extendable Screed Sections
continued

c.) Maintenance



When carrying out any maintenance work ensure that:

the paver is at a standstill,
the engine and ignition are switched off
and nobody has unauthorized access to
the paver.

There is a danger of crushing and serious personal injury.



Wear suitable protective clothing when
carrying out any maintenance work.

There is a danger of squeezing and lacerating your fingers.



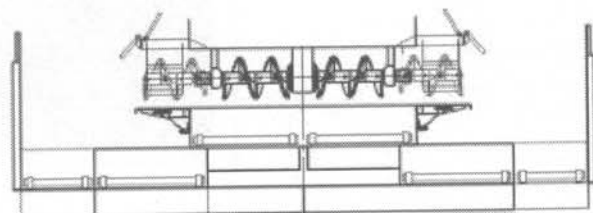
Wartung
Maintenance
Maintenance:

The screed should be in the lowered position and free of load.

Place two timber spacer blocks under the basic screed.

The extendable screed sections should not touch the ground.

Extend both extendable screed sections to the maximum paving width.



01.01.04 Maintenance continued

Before starting maintenance work, raise and secure the cover (13) on the basic screed and remove the covers from the extendable screed sections.

Check the extendable screed sections including the hydraulic width adjusting mechanism daily for:

Tight fitting (mounting parts)

Leakages (hydr. drive, adjusting cylinders (19)).

Cleanliness and damage to the guide rods (21) and the cylinder rods (20) on the hydraulic cylinders.

Functional test (electrics & hydraulics).

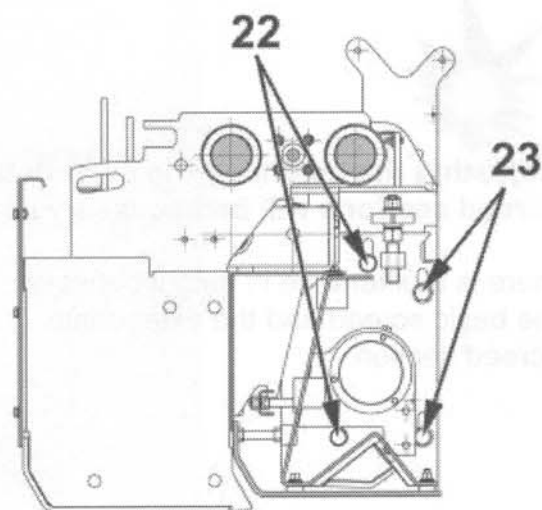
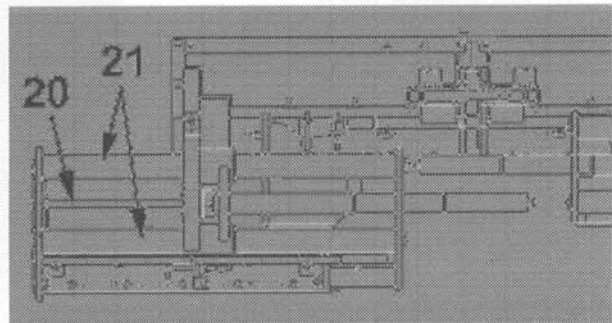
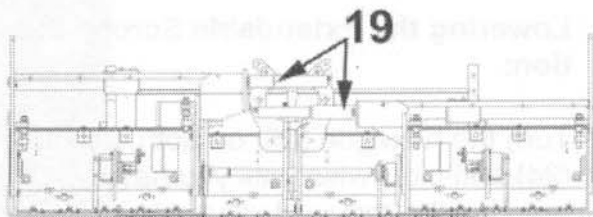
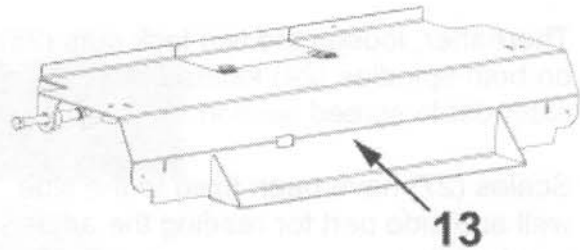
Clean (**daily** and **as necessary**)

Adjusting the Height of the Extendable Screed Sections:

Each extendable screed section is fixed with 8 screws to the side wall and side part.

The 4 front screws (22) are pre-tensioned with curved washers and need not be loosened for height adjustments.

The 4 rear screws (23) must be loosened to adjust the height of the extendable screed section.



01.01.04 Maintenance continued

Thereafter, loosen the two lock nuts (26) on both spindles (24) located on each extendable screed section.

Scales (27) have been fixed to the side wall and side part for reading the adjustment settings.

Lowering the Extendable Screed Section:

Turn the hexagon (25) on both spindles (24) anti-clockwise until you have reached the required value of correction on the scales (27).

Raising the Extendable Screed Section:

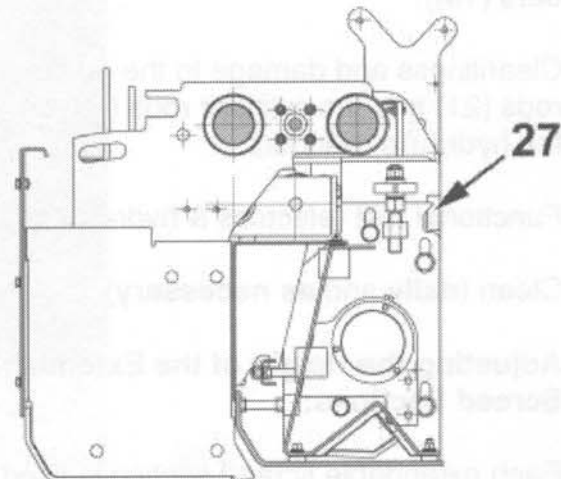
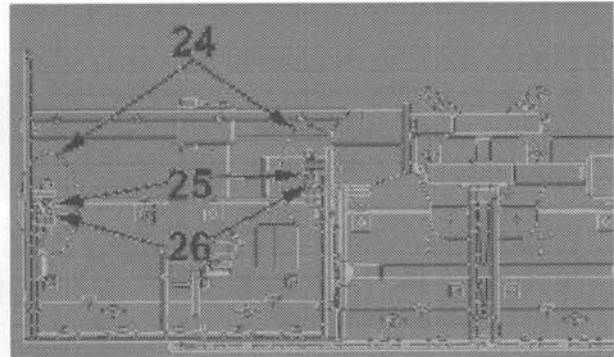
Turn the hexagon (25) on both spindles (24) clockwise until you have reached the required value of correction on the scales (27).

Finally, tighten up the lock nuts (26) on both spindles (24).



Adjusting the height on the extendable screed sections will be necessary if:

there is a difference in height between the basic screed and the extendable screed section.



01.01.04 Maintenance continued

A height adjustment must be made on the spindle which shows a deviation to the required profile on the cross section of the mat.

When adjusting the height, take into consideration that:

the spindles have a thread pitch of **1.5 mm per rotation,**

2/3 of a turn corresponds to an adjusting distance of approx. **1 mm,**

the scales on the side wall and side part are only for orientation.

Clean the guide rods and piston rods on the width adjusting mechanism:

immediately they have become dirty using a cloth soaked in a bitumen removing solvent (emulsion).

01.01.05 Front Walls

a.) Description



FUNKTION FUNCTION

Front walls are installed on the basic screed and on each extendable screed section.

Front walls:

protect the tamper drives and bearings from dirt,

guide the paving material to the screed's base plate,

guide the paving material (together with the augers) laterally to the ends of the screed,

are tensioned against the screed base plate to seal off the gap between the front wall and base plate,

together with the screed, the front wall functions as a straightedge to strike off the paving material.

01.01.05 Front Wall continued

b.) Operation



Read the text printed below the above illustrated symbols in :

Chapter 01.01.01 - b.)

and carefully follow these instructions.



Additional instructions:

Avoid having too much material in front of the screed. This will achieve perfect paving results.

Too much material in front of the screed will cause excessive frictional forces resulting in paving errors.

01.01.05 Front Wall continued

c.) Maintenance



When carrying out maintenance work, ensure that:

the paver is at a standstill,

the engine and ignition are switched off,

nobody has unauthorized access to the paver.

There is a danger of crushing and serious injury.



Wear suitable protective clothing during maintenance work.

There is a danger of squeezing and lacerating your fingers.



Wartung
Maintenance

Maintenance:

The screed should be in the lowered position and free of load.

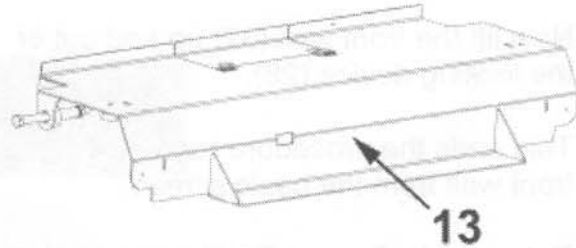
Place two timber spacer blocks under the basic screed.

The extendable screed sections should not touch the ground.

Extend both extendable screed sections to the maximum paving width.

01.01.05 Maintenance continued

Before starting maintenance work, raise and secure the cover (13) on the basic screed and remove the covers from the extendable screed sections.



Check the front walls daily for:

Tight fitting (mounting parts)

Cleanliness, damage, deformation and wear.

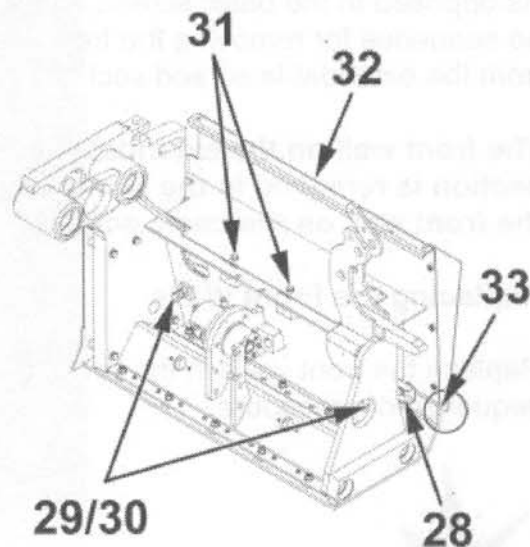
Functional test (locking device).

Clean (**daily** or when **necessary**).

Removing the Front Wall:

Observe the following instructions to avoid accidents.

For safety reasons, the front wall should be removed by two people.



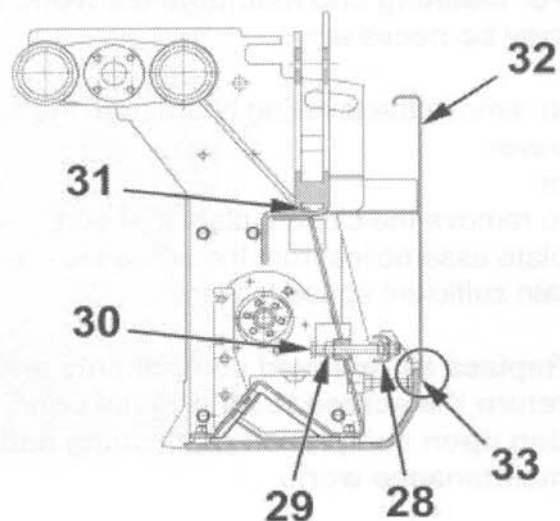
Basic Screed:

Due to the design of the screed, the following sequence must be observed.

First remove the LH and then the RH section of the front wall (32).

Loosen the lock nuts (29) and the adjusting screws (30) to relieve the force acting against the sealing strip (28) and in the transition area to the base plate (33).

Then unscrew and remove the screws (31) from the respective front wall (32).



01.01.05 Maintenance continued

Now lift the front wall (32) up and out of the locking device (28).

This ends the procedure for removing the front wall from the basic screed.

Extendable Screed Sections:

As opposed to the basic screed, there is no sequence for removing the front wall from the extendable screed sections.

The front wall on the extendable screed section is removed in the same way as the front wall on the basic screed.

Replacing the Front Walls

Replace the front walls in the reverse sequence of procedure.



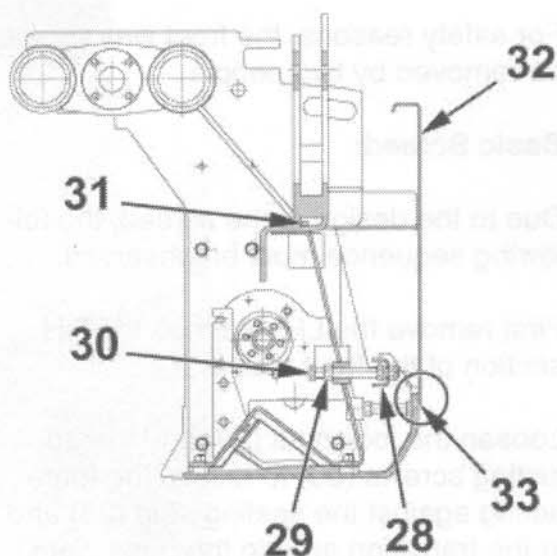
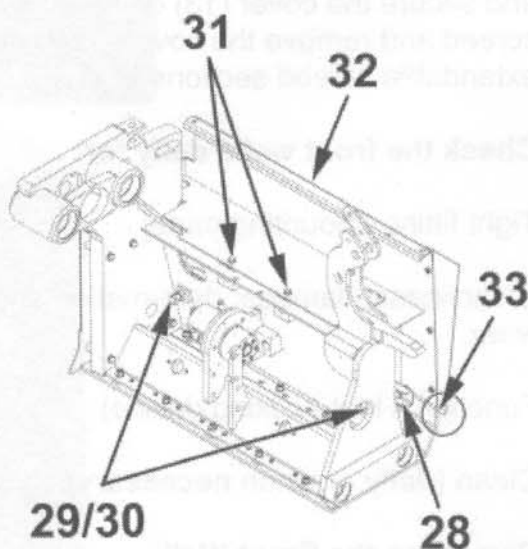
For cleaning and maintenance work, it may be necessary:

to remove the levelling beam from the paver;

or

to remove the closure plate and end plate assemblies from the screed to obtain sufficient space to work.

Replace all removed components and return the screed to its original condition upon completion of cleaning and maintenance work.



01.05 Walkway

a.) Description



**FUNKTION
FUNCTION**

The walkway:

consists of 3 telescopic plates (34), (35), (36);

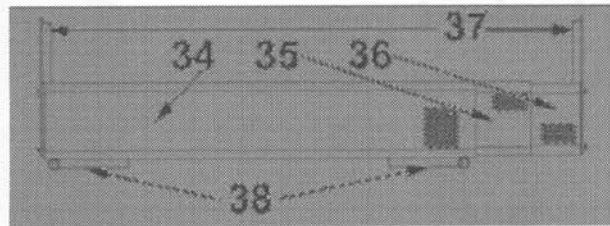
is fastened by brackets (37) on both sides to the extendable screed section;

forms a connecting gangway between the extendable screed sections;

is used by the paving crew for crossing the screed without stepping on the freshly paved mat;

extends and retracts with the Variomatic screed to the required paving width;

has brackets and tube stubs for storing shovels and brooms during paving work.



01.05 Walkway continued

b.) Operation



Read the text printed below the above illustrated symbols in :

Chapter 01.01.01 - b.)

and carefully observe these instructions.

01.05 Walkway continued

c.) Maintenance



When carrying out maintenance work, ensure that :

the paver is at a standstill,

the engine and ignition are switched off,

nobody has unauthorized access to the paver.

There is a danger of crushing and serious injury.



Wear suitable protective clothing during maintenance work.

There is a danger of squeezing and lacerating your fingers.



Wartung
Maintenance

Maintenance:

The screed should be in the lowered position and free of load.

Place two timber spacer blocks under the basic screed.

The extendable screed sections should not touch the ground.

Extend both extendable screed sections to the maximum paving width.

01.05 Maintenance continued

Check the walkway daily for:

Tight fitting (mounting parts)

Cleanliness, damage, deformation and wear

Functional test (extend and retract)

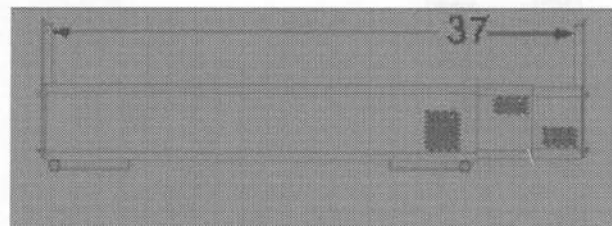
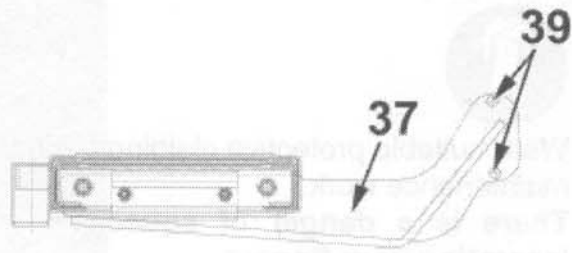
Clean as necessary depending on the degree of dirt

Grease and oil the moving parts **as required** depending upon their stiffness.

Dismantling the Walkway if required:

Unscrew and remove the 4 screws (39) which connect the walkway bracket (37) to the extendable screed section.

You can now remove the walkway with the brackets (37).



Clean paving material from the surfaces of the walkway:

immediately after paving work using a bitumen removing solvent (emulsion).

For safety reasons, obtain assistance when carrying out any dismantling and assembly work on the walkway.

01.07 Screed End Plates

a.) Description



FUNKTION FUNCTION

A screed end plate is mounted on the end of each extendable screed section.

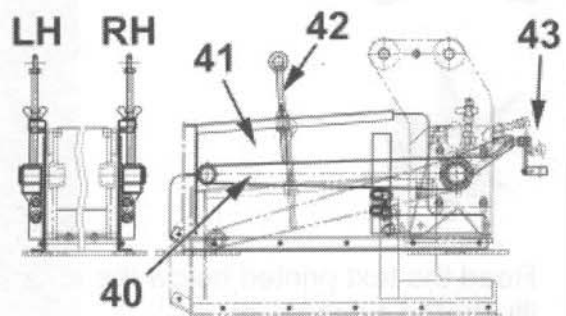
One screed end plate consists of:

Cantilever arm (40)

Side section (41)

Threaded eye bolt (42)

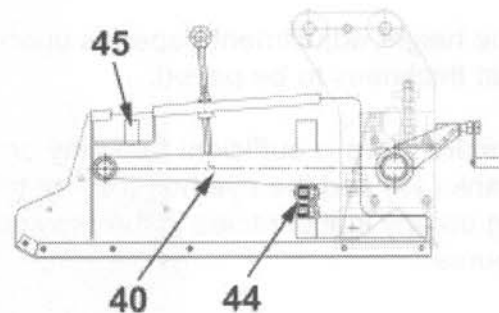
Hand crank (43)



By turning the crank (43) in coordination with the eye bolt (42), the height of the cantilever arm (40) and side section (41) can be altered to suit your paving requirements.

Two deep groove ball bearings (44) serve as a guide for the side section (41).

The deep groove ball bearings (44) are installed on the cantilever arm (40) and take up the forces exerted on the side section (41) by the paving material.



The journals (45) welded on the side sections (41) are for mounting the optional ultrasonic sensors.

01.07 Screed End Plates continued

b.) Operation



Read the text printed below the above illustrated symbols in:

Chapter 01.01.01 - b.)

and carefully follow these instructions.

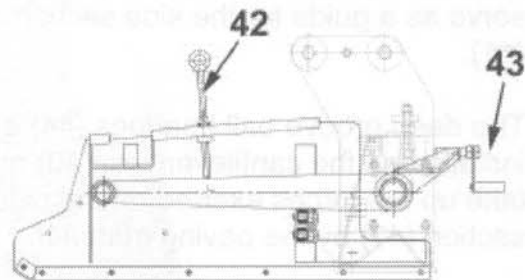
Adjusting the height:

The height adjustment depends upon the mat thickness to be paved.

Ensure there is sufficient free play on the crank (42) and the eye bolt (43) for taking up any inaccuracies in the previous course.

When transporting the paver, return the screed end plates to their end position, i.e. on the same level as the extendable screed sections.

Otherwise, the screed end plates may be damaged during transport.



01.07 **Screed End Plates** continued

c.) **Maintenance**



When carrying out maintenance work, ensure that:

the paver is at a standstill,

the engine and ignition are switched off,

nobody has unauthorized access to the paver.

There is a danger of crushing and serious injury.



Wear suitable protective clothing during maintenance work.

There is a danger of squeezing and lacerating your fingers.



Wartung
Maintenance

Maintenance:

The screed should be in the lowered position and free of load.

Place two timber spacer blocks under the basic screed.

The extendable screed sections should not touch the ground.

Extend both extendable screed sections to the maximum paving width.

01.07 Maintenance continued

Check the screed end plates daily for:

Tight fitting (mounting parts)

Cleanliness, damage, deformation and wear

Functional test (crank handle (43), eye bolt (42))

Clean as required

Grease and oil the moving parts as required depending on their stiffness.

Adjusting the Height of the Screed End Plates:

Cantilever arm:

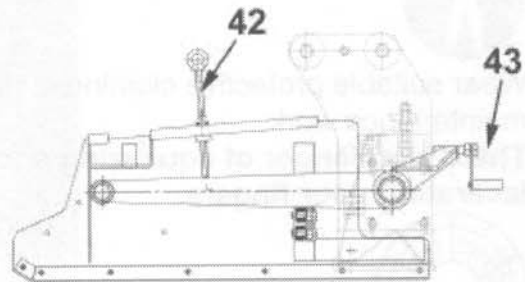
Turn the hand crank (43) clockwise to raise the cantilever arm.

Turn the hand crank (43) anti-clockwise to lower the cantilever arm.

Side section:

Turn the eye bolt (42) clockwise to raise the side section.

Turn the eye bolt (42) anti-clockwise to lower the side section.



01.07 Maintenance continued

Assembling the Screed End Plates:

Place the screed end plate parallel to the extendable screed section.

Position the cone (46) on the cantilever arm to match up with the hole on the extendable screed section.

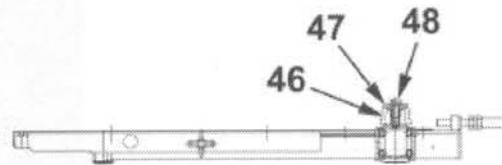
Fasten the end plate by placing the washer (47) on the bolt (48) and then guide the bolt into the cone (46) and secure it.

Dismantling the Screed End Plates:

Loosen the bolt (48) in the cone (46).

Remove the washer (47).

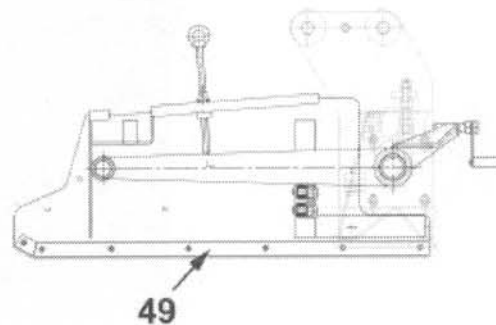
You can now remove the screed end plate.



Adjusting the height of the screed end plates is necessary so that:

the skids (51) on the end plate glide along the ground.

This will guide the paving material sideways when paving.



01.07 Maintenance continued

This will achieve a neat edge along the side of the paved mat.

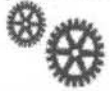
Clean all paving material from the screed end plates:

Immediately after paving work using a bitumen removing solvent (emulsion).

For safety reasons, obtain assistance when carrying out maintenance work on the screed end plates.

01.09 Screed Covers

a.) Description



FUNKTION FUNCTION

Covers are installed on the basic screed and extendable screed sections.

Cover on the Basic Screed (13):

cover all rotating parts when the screed is in operation (and the extendable screed sections when the screed is retracted),

are a protection against unauthorized access,

serve as steps for climbing up onto the operator's platform

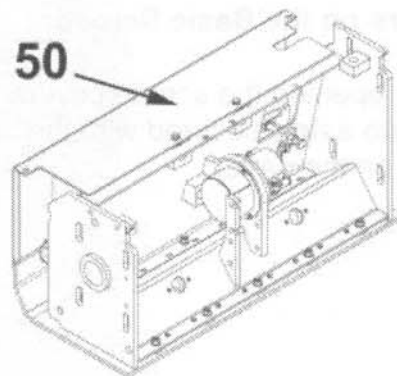
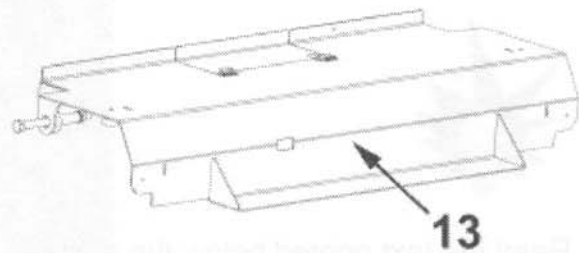
can be raised for cleaning and maintenance work

a safety chain is fixed to the ascent on the paver for securing the covers in the open position (please refer to the operating manual for the PF 176).

Covers on the Extendable Screed Sections:

The angled top edge of the front wall (50) serves as a cover.

These covers are not walkable, they only serve as a protection against dirt.



01.09 Screed Covers continued

b.) Operation



Read the text printed below the above illustrated symbols in:

Chapter 01.01.01 - b.)

and carefully follow these instructions.



Additional Instructions:

Covers on the Basic Screed:

When opening the screed covers, ensure they are safely secured with the safety chain on the paver.

01.09 Screed Covers continued

c.) Maintenance



When carry out maintenance work, ensure that:

the paver is at a standstill,

the engine and ignition are switched off,

nobody has unauthorized access to the paver.

There is a danger of crushing and serious injury.



Wear suitable protective clothing during maintenance work.

There is a danger of squeezing and lacerating your fingers.



**Wartung
Maintenance
Maintenance:**

The screed should be in the lowered position and free of load.

Place two timber spacer blocks under the basic screed.

The extendable screed sections should not touch the ground.

Extend both extendable screed sections to the maximum paving width.

01.09 Screed Covers continued

Before commencing maintenance work, open and secure the cover (13) on the basic screed and remove the covers (50) from the extendable screed sections if necessary.

Check the screed covers daily for:

Tight fitting (mounting parts)

Cleanliness, damage, deformation and wear

Clean as and when necessary



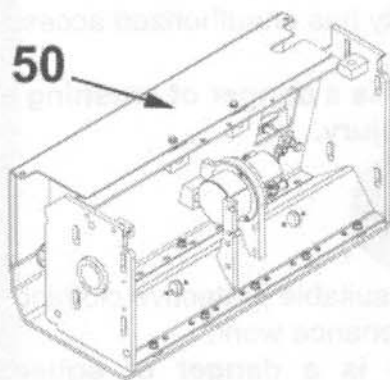
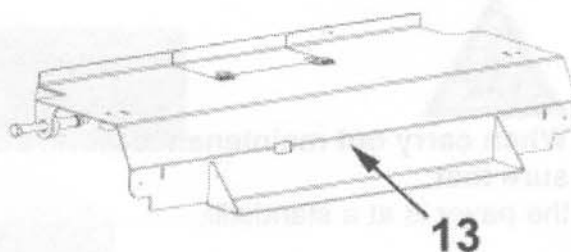
Ensure the screed covers are kept clean.

Dirty surfaces on the screed covers are a source of accidents.

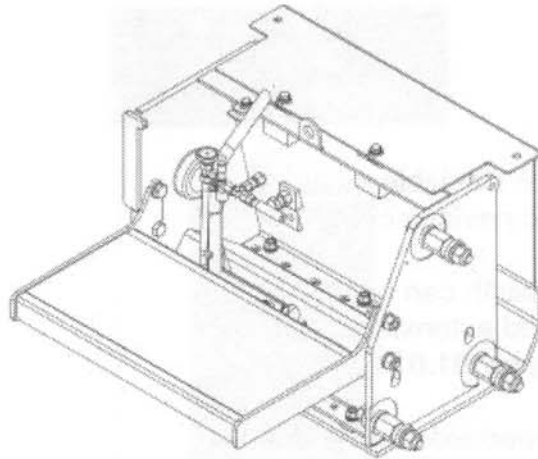
Clean the screed covers with a bitumen solvent (emulsion).

The covers on the extendable screed sections are bolted on and, depending on their degree of dirt accumulation, must be removed for cleaning.

Replace the screed covers and return the screed to its original condition after finishing all cleaning work.



02 Screed Extensions



This chapter contains details of the function, operation and maintenance of the screed extensions.

Contents	Page
02 Screed Extensions	47
02.01 Screed Extension 370 / 650 LH	48
02.02 Screed Extension 370 / 650 RH	53

02.01 Screed Extension 370 / 650 LH

a.) Description



FUNKTION FUNCTION

Screed extensions are available as an option for the Variomatic paving screed.

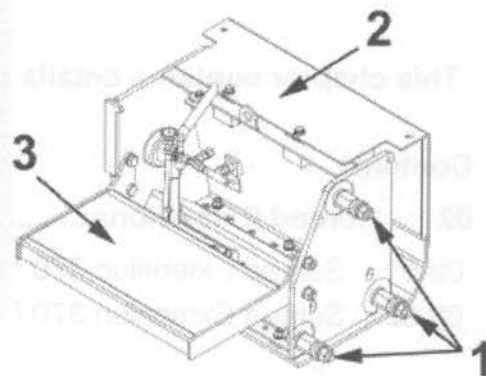
The screed's paving width can be extended by fitting screed extensions (**please refer to chapter 01.01 b.)**)

The design of the screed extensions does not include vibrators.

Each extension is fitted to the extendable screed section with **3 bolts (1)**.

Each extension is equipped with a front wall (**2**).

Walkways (**3**) are fitted to the screed extensions to bridge over the gap when paving at the maximum width.



02.01 Screed Extensions 370 / 650 LH continued

b.) Operation



Carefully read the text printed below the above illustrated symbols in:

Chapter 01.01.01 - b.)

and follow these instructions.



Additional Instructions:

Installing a Screed Extension:

Extend the extendable screed section on the basic screed.

Lower the screed onto a level piece of ground.

The base plate must be completely resting on the ground to install the screed extension.

Dismantle the screed end plate from the extendable screed section (**chapter 01.07 c.) refers**).

02.01 Operation continued

Place the extension adjacent to the extendable screed section.

Insert the bolts (1) through the elongated holes on the extendable screed section.

Tighten up the bolts (1).

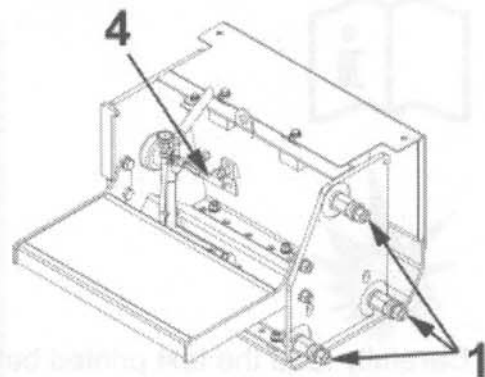
Check the parallel alignment of the extension to the extendable screed section.

Due to wear, it may be necessary to adjust the alignment.

Fit the screed end plate to the end of the screed extension (**chapter 01.07 c. refers**).

Connect the gas hose (4) on the extension with the gas hose on the extendable screed section.

Dismantle the screed extension in the opposite sequence of procedure.



02.01 Operation continued**Additional instructions:**

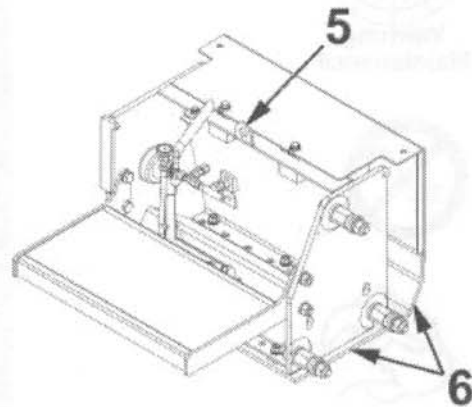
Use the hoisting lug (5) for lifting and transporting the screed extension during installation and dismantling work.

When installing the screed extension, ensure that:

the flange surfaces are clean,

the correct alignment of the screed base plate (6),

When paving with screed extensions, it is also necessary to install the auger extensions.



02.01 **Screed Extensions** continued
c.) **Maintenance**



Wartung
Maintenance



Carefully read the text printed below the above illustrated symbols in:

Chapter 01.01.01 - c.)

and follow these instructions.

02.01 Maintenance continued**Wartung**
Maintenance**Additional Instructions:****Check the screed extensions daily for:**

Tight fitting (connecting bolts on the extension).

Functional test (electrics & gas heating)

Clean weekly or as and when required.

02.02 Screed Extension 370 / 650 RH

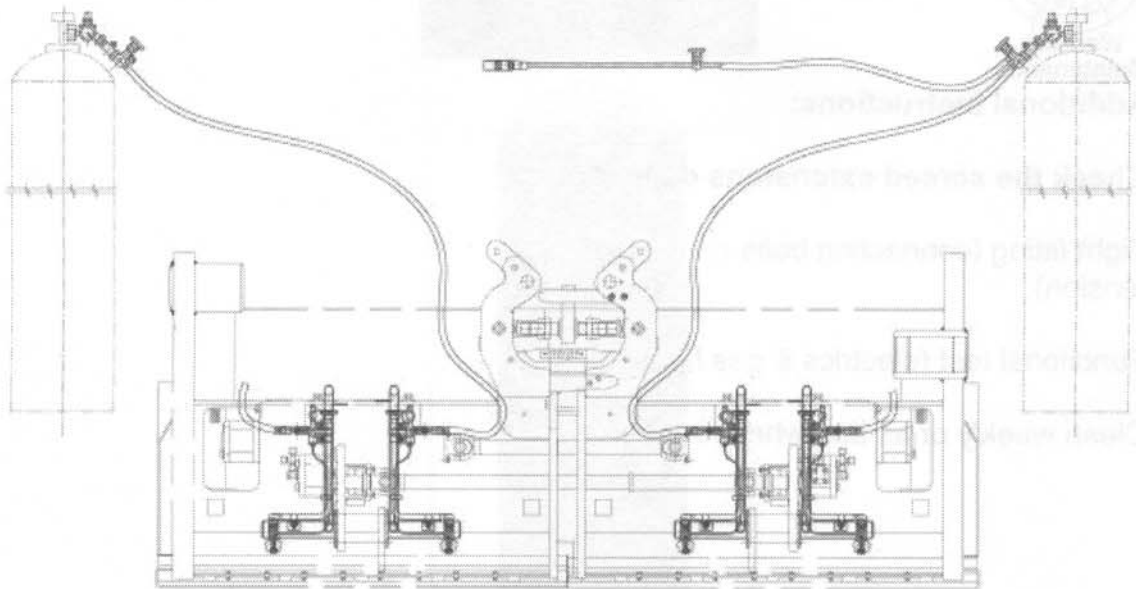
The RH screed extension is a mirrored version of the LH extension.

Therefore, follow the text and instructions for:

- a.) Description
- b.) Operation
- c.) Maintenance

contained in **chapter 02.01.**

03 Screed Heating



This chapter contains details on the function, operation and maintenance of the gas heating system.

Contents	Page
03 Screed Heating	55
03.01 Gas Heating.....	56

03.01 Gas Heating

a.) Description



FUNKTION FUNCTION

The VBV 50 paving screed is fitted with a gas heating system..

The screed heating consists of:

2 gas burners (1) with flame control per screed section.

Gas hoses (2), fittings (3), pilot burner (4) and connections (5), etc.

Small parts.

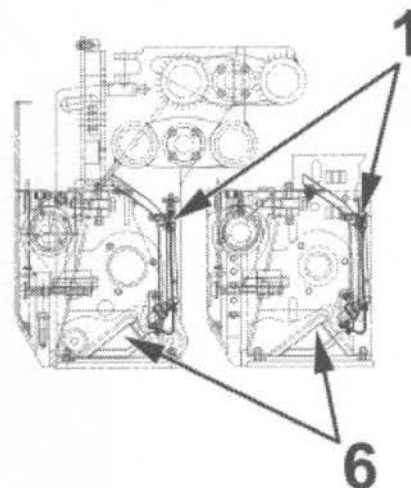
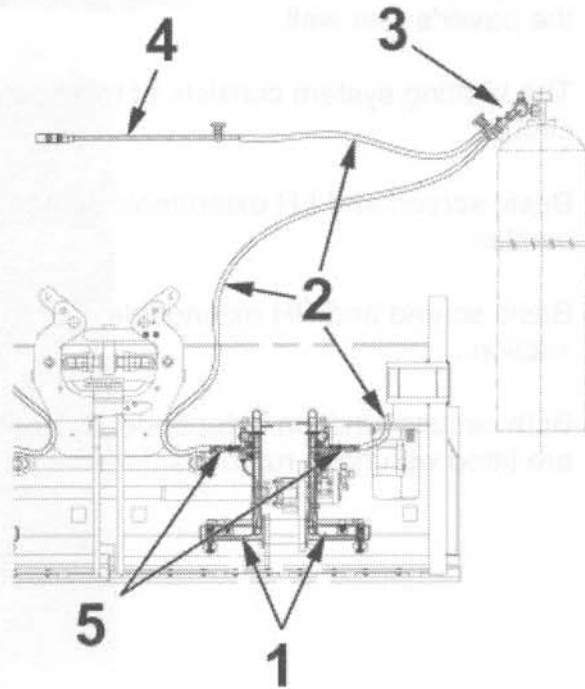
The gas burners (1) are mounted on the rear of the screed and connected by gas hoses.

When in operation, the gas burners send a flow of hot air into the screed sections.

The hot air is distributed in the screed sections by baffle plates (6) and warms the screed up to operating temperature.

The heating avoids asphalt paving material sticking to the screed.

This is a prerequisite for achieving good paving results (surface structure on the mat).



03.01 Gas Heating continued

The gas heating is manually controlled by the paving crew.

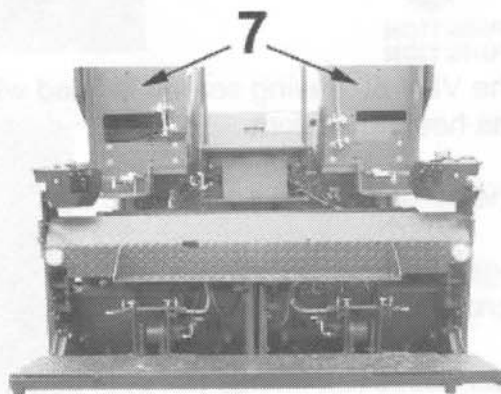
The gas bottle brackets (7) are located on the paver's rear wall.

The heating system consists of two heater circuits:

Basic screed and LH extendable screed section.

Basic screed and RH extendable screed section.

Both circuits function independently and are fitted with hose rupture safety devices.



03.01 **Gas Heating** continued

b.) **Operation**



Carefully read the text printed below the above illustrated symbols in:

chapter 01.01.01 - b.)

and follow these instructions.



Additional Instructions:

Closely observe your locally prevailing safety laws and regulations for gas heating systems and adhere to the intervals for checking the entire system.

03.01 **Gas Heating** continued

Lighting the gas heating:

Completely extend the screed.

Open the valves on the gas burners (8)

Open the valves on the gas bottles (9)

Check the gas pressure on the manometer (10) and set it to 1.5 bar with the pressure reducer (10).

Open the valve (11) for the gas hoses.

Slightly open the valve (12) on the pilot burner and ignite the escaping gas with a cigarette lighter.

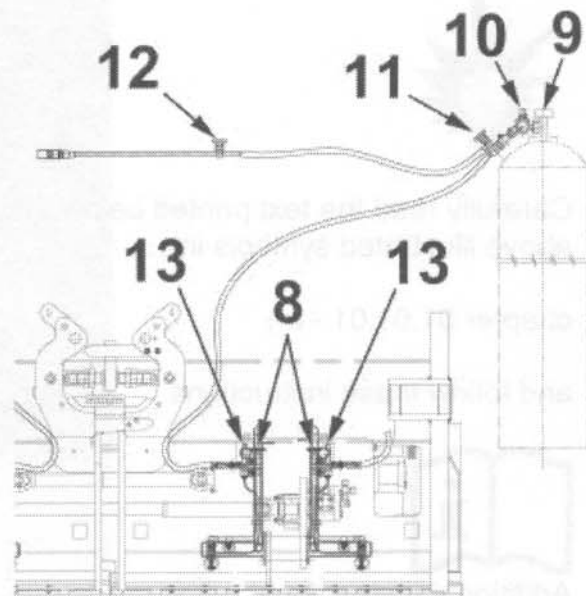
Increase the flame on the pilot burner to suit your local weather conditions.

Now light each gas burner (8) with the pilot burner whereby the flame control (13) must be pressed and kept pressed until the gas burner ignites and continues to burn.

Adjust the gas burner's flame to suit your local weather conditions.

After all burners have been ignited, close the valve (12) on the pilot burner.

The screed can now be warmed up to operating temperature.



03.01 Operation continued

Switching off the gas heating:

Close the valves on the gas burners (8).

Close the valves on the gas bottles (9).

Close the valve (11) for the gas hoses.

After all gas burners (8) have extinguished, open one valve on each burner circuit to let the remaining gas in the gas hoses escape.

Thereafter, close all valves on the gas burners.



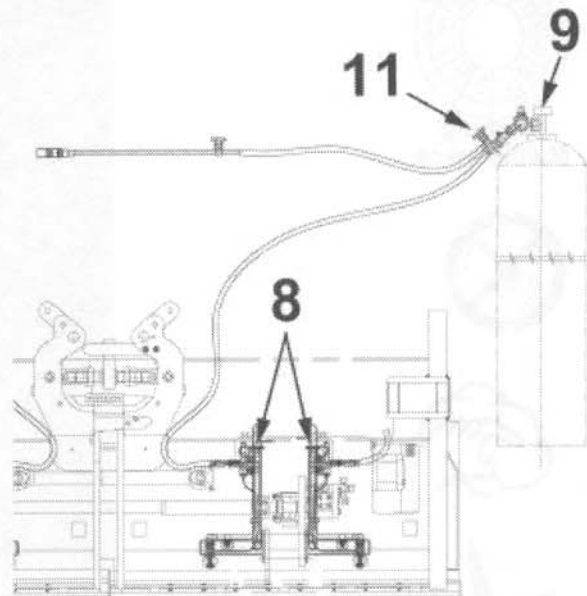
Additional instructions:

Please note:

The heating up time for the screed before paving is approximately 15 to 30 minutes.

The actual heating up time depends on your local weather conditions.

You must heat the screed up once again if bituminous paving material starts sticking to the screed sections during paving work.



03.01 **Gas Heating** continued

c.) **Maintenance**



Wartung
Maintenance



Carefully read the text printed below the above illustrated symbols in:

Chapter 01.01.01 - c.)

and follow these instructions.

03.01 Maintenance continued**Wartung**
Maintenance

Additional instructions:

Check the heating system daily for:

Tight fitting (fastenings and mounting parts)

Functional test (gas heating and safety devices)

Damage (isolation, gas hoses, threaded connections and valves)

Clean weekly or as and when required.



Additional advice:

Cleaning the gas heating:

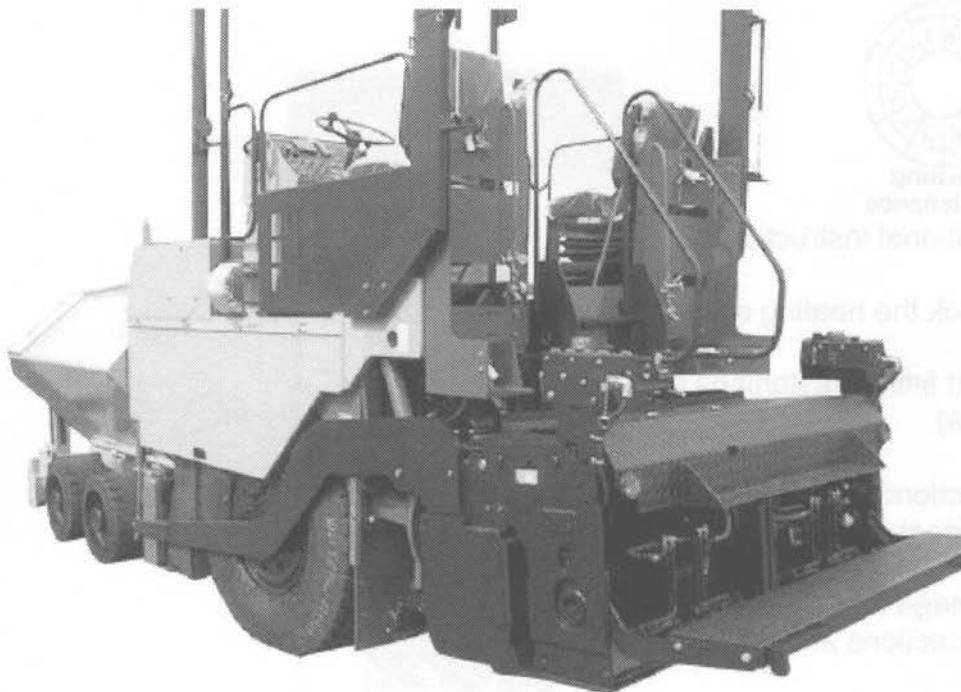
Remove any foreign matter and paving material which may have stuck to the gas hoses during operation.

Foreign matter may damage the insulation on the gas hoses and cause gas leaks.

Only use genuine IR-ABG spare parts for repairing the gas heating system.

Repair work may only be carried out by specially trained and qualified personnel.

04 Towing Arms



This chapter contains details of the function, operation and maintenance of the towing arms.

Contents	Page
04 Towing Arms	65
04.01 Towing Arms.....	66

04.01 Towing Arms

a.) Description



**FUNKTION
FUNCTION**

The VBV 50 paving screed is connected to the PF 176 by two towing arms (1).

The towing arms (1) tow the screed.

The hydraulic cylinders (2) connected to the towing arms (1) are used for:

raising the screed for transport purposes,

lowering the screed for paving work

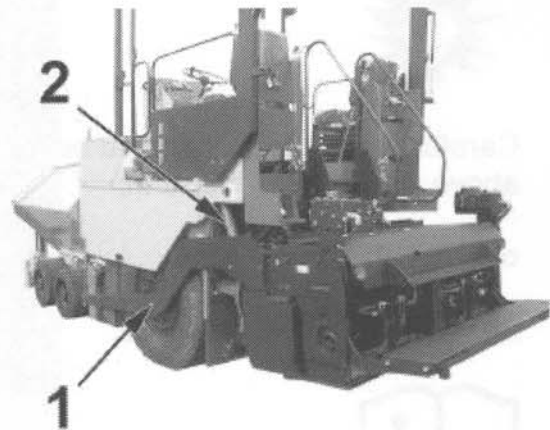
and the levelling system during paving work.

By blocking the valves on these hydraulic cylinders:

the screed anti-climbing lock

the screed assist

can be activated during paving work.



04.01 Towing Arms continued

b.) Operation



Carefully read the text printed below the above illustrated symbols in:

chapter 01.01.01 - b.)

and follow these instructions.



Additional Instructions:

Towing Arms:

Read the instructions contained in **chapter 02.05** in the operating manual for the PF 176.

This chapter describes the function and operation of the towing arms.

04.01 Operation b.) continued



The required mat thickness:

is adjusted at the tow points located at the front of the towing arms

and can be read on the indicator scales (4).

Pay attention to the screed's angle of attack which depends on:

the mat thickness and

the bearing capacity of the paving material.

Increasing or reducing the mat thickness is done by actuating the respective operating controls on:

the main control panel

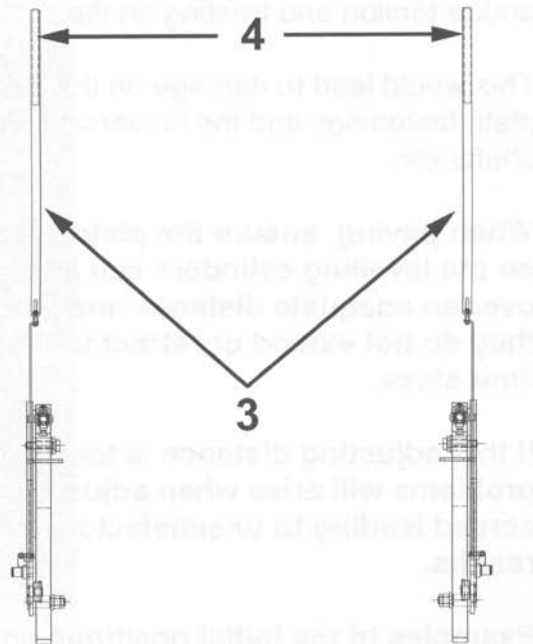
the external control panels.

Read the instructions contained in chapter 08 in the operating manual for the PF 176.

Up to mat thicknesses of approx. 10 cm, the screed's angle of attack is adjusted by the tow points.

When adjusting the tow points, ensure that::

The levelling cylinders are uniformly adjusted;



04.01 Operation b.) continued

The difference in height between the LH and RH indicator scales (4) does not exceed **10 cm**.

Larger differences in height would cause undue torsion and twisting on the screed.

This would lead to damage on the base plate fastenings and the universal joint shafts etc.

When paving, ensure the piston rods on the levelling cylinders can adjust over an adequate distance and that they do not extend or retract to their limit stops.

If this adjusting distance is too short, problems will arise when adjusting the screed leading to unsatisfactory paving results.

Examples of the initial positions on:

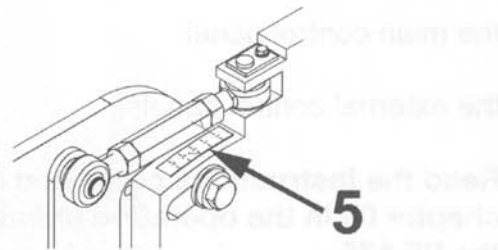
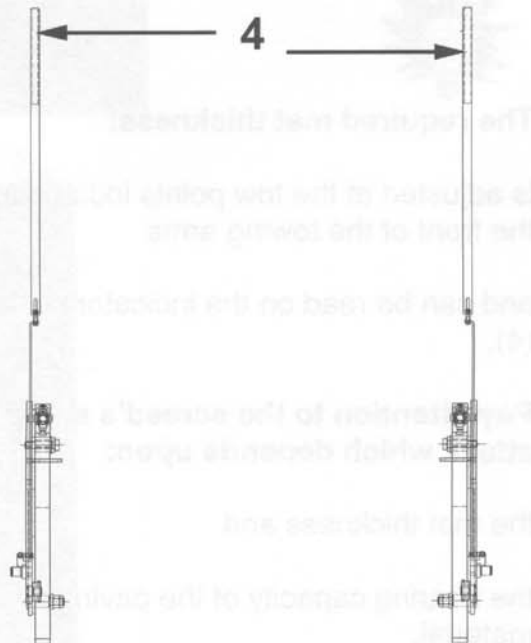
the basic screed
 (scale on the turnbuckles (5) = **0 cm**).

extendable screed sections
 (height adjustment scale = **0.5 cm**)

If the required mat thickness is 5 cm, the reading on the indicator scales (4) should be 7.5 cm.

These are empirical values and depend upon the bearing capacity of the paving material.

An average value of approx. 20% of the paved mat thickness should be taken as the degree of slump after final rolling.



04.01 Operation b.) continued

When the mat thickness to be paved increases (e.g. up to 20 or 30 cm), the screed's angle of attack must be increased accordingly.

Adjusting the turnbuckles (6):

Loosen the lock nuts (7) (LH & RH threads) and the lock screw (K).

Turn the barrel nut (6) until the required value has been reached on the scale (5).

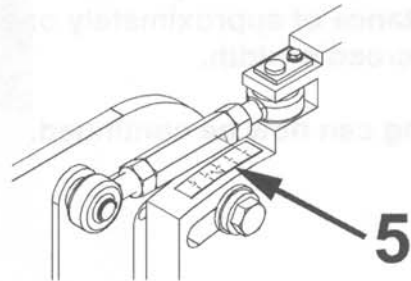
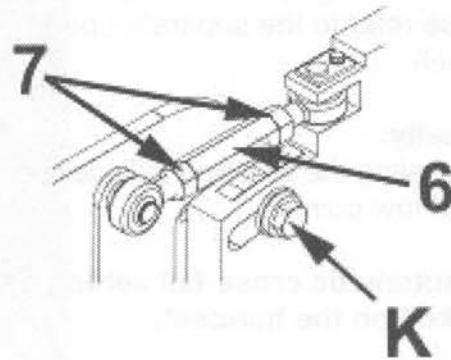
Ensure the turnbuckles on both sides of the basic screed are equally adjusted.

Now tighten up the lock nuts (7) and the lock screw (K).

Any free play on the turnbuckles will have a negative effect on the paving results.

Carefully read and follow the instructions for adjusting the crown control contained in chapter 01.01.02.

Furthermore, read and follow the instructions contained in chapter 08 of the operating manual for the PF 176.



04.01 Operation b.) continued

Adjustments to the screed's cross-fall (alteration of the mat thickness on one side) are made

automatically:

by the levelling system's slope controller (please refer to the separate operating manual)

manually:

by adjusting the levelling cylinders on the screed tow points.

The automatic cross-fall setting can be checked on the handset.

The screed transport cylinders must switch to the floating mode after paving a distance of approximately one half of the screed's width.

Paving can now be continued.

04.01 Towing Arms continued

c.) Maintenance



When carrying out maintenance work, ensure that:

the paver is at a standstill,

the engine and ignition are switched off,

nobody has unauthorized access to the paver.

There is a danger of crushing and serious injury.



Wear suitable protective clothing during maintenance work.

There is a danger of squeezing and lacerating your fingers.



**Wartung
Maintenance
Maintenance:**

The screed must be completely lowered to the ground.

04.01 Maintenance continued



Wartung
Maintenance

Additional Instructions:

Check the towing arms daily for:

Tight fitting (screws and mounting parts)

Functional test (levelling system and turnbuckles)

Damage and wear

Clean (**once a week, or as and when necessary**)

Grease and oil the turnbuckles **as and when necessary** (depending on their degree of stiffness).



Cleaning the Towing Arms:

Remove all dirt which has accumulated on the towing arms and their adjusting mechanisms.

Dirt may impede the function of the adjusting mechanisms leading to unsatisfactory paving results.

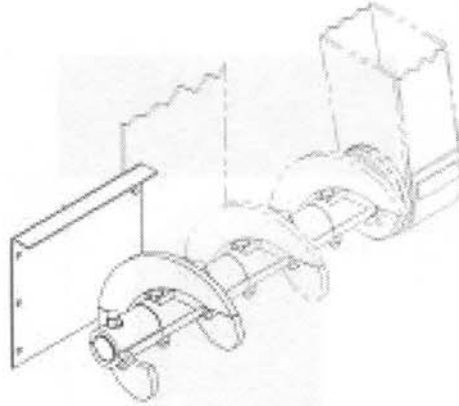
Only use genuine IR-ABG spare parts for repair work.



This chapter contains instructions for the correct function, operation and maintenance of the Auger Extension

Page	Content
75	08 Auger Extension
76	08.01 Auger Extension LH
80	08.02 Auger Extension RH

06 Auger Extensions



This chapter contains instructions on the function, operation and maintenance of the auger extensions.

Contents	Page
06 Auger Extensions.....	75
06.01 Auger Extension LH.....	76
06.02 Auger Extension RH.....	80

06.01 Auger Extension LH

a.) Description

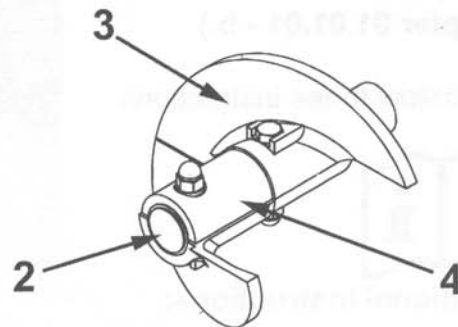
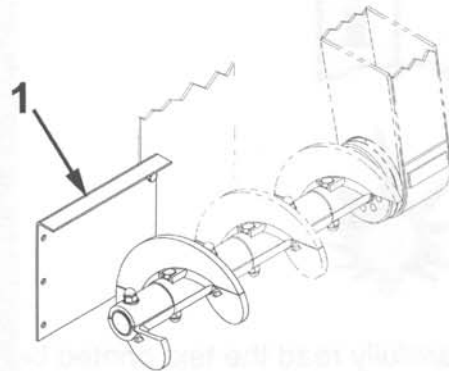


FUNKTION FUNCTION

Auger extensions are an option which should be used in connection with the screed extensions (chapter 02 refers) to uniformly distribute the paving material across the extended paving width.

An auger extension consists of:

- a channel plate extension (1)
- an auger shaft extension (2)
- an auger flight (3)
- a protective half shell (4)
- small parts.



06.01 Auger Extension LH
continued**b.) Operation**

Carefully read the text printed below the above illustrated symbols in:

Chapter 01.01.01 - b.)

and follow these instructions.

**Additional Instructions:****Fitting an Auger Extension:**

Fully extend the extendable screed sections.

Lower the screed onto level ground.

Remove the protective end caps from the basic augers.

Bolt the auger shaft extension with auger flights onto the basic auger.

06.01 **Operation b.)** continued

Bolt the channel plate extension (1) to the rear wall of the paver.

The auger extensions are dismantled in the opposite sequence.



Additional Instructions:

When fitting auger extensions, ensure that:

all connecting surfaces are clean,

you fit the auger extension to the correct side of the basic auger,

all nuts and bolts are correctly tightened.

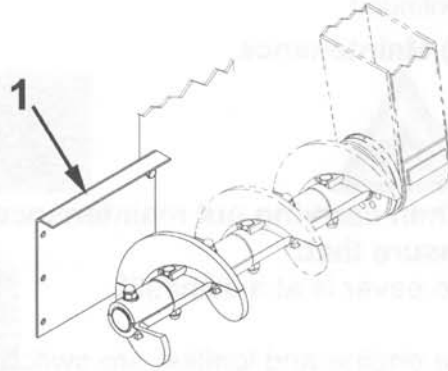
The channel plate extensions can be fitted on either side of the paver.

When using auger extensions, the paver and the augers will have a wider basic paving width.

Therefore, never completely retract the extendable screed sections.

This would damage the screed end plates, the augers and the channel plates.

When transporting the paver, observe the maximum permissible transport width and dismantle the auger extensions and channel plates if necessary.!



06.01 **Auger Extension LH**

continued

c.) Maintenance

When carrying out maintenance work, ensure that:

the paver is at a standstill,

the engine and ignition are switched off,

nobody has unauthorized access to the paver.

There is a danger of crushing and serious injury.



Wear suitable protective clothing during maintenance work.

There is a danger of squeezing and lacerating your fingers.



**Wartung
Maintenance**

Maintenance:

Completely extend the extendable screed sections.

Lower the screed onto level ground.

Check the auger extensions daily for:

Tight fitting (mounting parts)

Cleanliness, damage, deformation and wear.

Functional test.

06.01 Maintenance continued

Clean (as and when necessary)

**Clean the auger extensions:**

immediately after paving work using a bitumen removing solvent (emulsion).

For industrial safety reasons, obtain assistance when carrying out any assembly work on the auger extensions.

06.02 Auger Extension RH

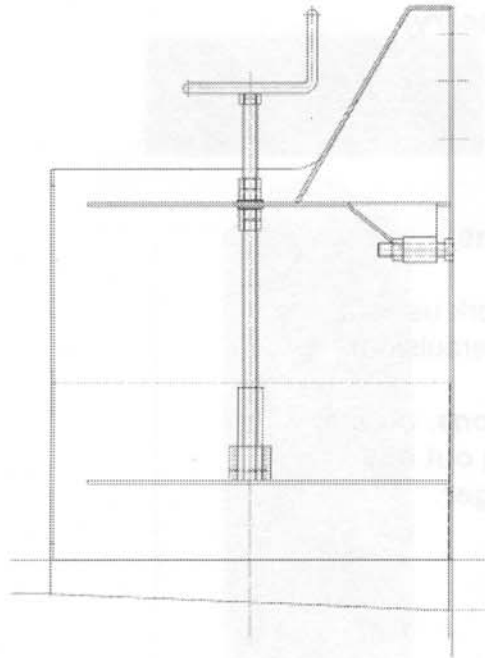
The RH auger extension is a mirrored version of the LH auger extension.

Observe the details and instructions for:

- a.) description
- b.) operation
- c.) maintenance

contained in **chapter 06.01.**

07 Adjustable Channel Plate



This chapter contains details and instructions for the function, operation and maintenance of the adjustable channel plates.

Contents	Page
07 Adjustable Channel Plate	81
07.01 Adjustable Channel Plates.....	82

07.01 Adjustable Channel Plates

07.01.01 Adjustable Channel Plate LH

a.) Description

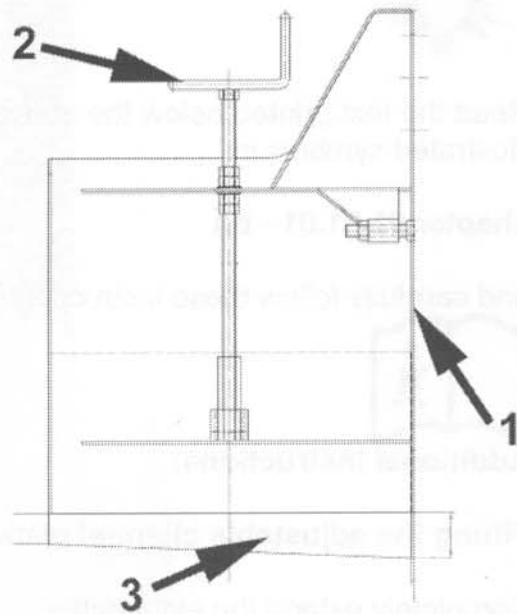


FUNKTION FUNCTION

The adjustable channel plates (1) are an option which should be used together with the screed extensions (chapter 02 refers) and the auger extensions (chapter 06 refers) to obtain a uniform distribution of paving material in front of the screed.

An adjustable channel plate consists of:

- the channel plate (1)
- an adjusting spindle (2)
- strike-off plate (3)
- small parts



07.01.01 Adjustable Channel Plate

LH continued

b.) Operation



Read the text printed below the above illustrated symbols in:

chapter 01.01.01 - b.)

and carefully follow these instructions.



Additional Instructions:

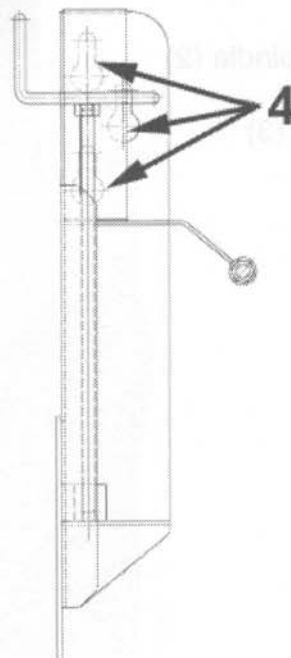
Fitting the adjustable channel plate:

Completely extend the extendable screed sections.

Lower the screed onto level ground.

Loosen the **3** bolts on the outer side of the towing arm (near the basic screed).

Slot the **3** keyhole shaped holes (**4**) onto the bolts and then tighten up the bolts again.



07.01.01 Operation continued

Thereafter, use the adjusting screw (5) to adjust the channel plate parallel to the front wall on the basic screed.

The adjustable channel plate is dismantled in the opposite sequence.



When fitting the adjustable channel plate, ensure that:

All surface flanges are clean.

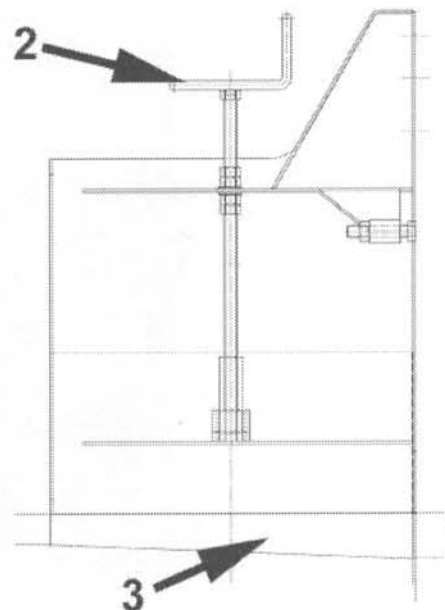
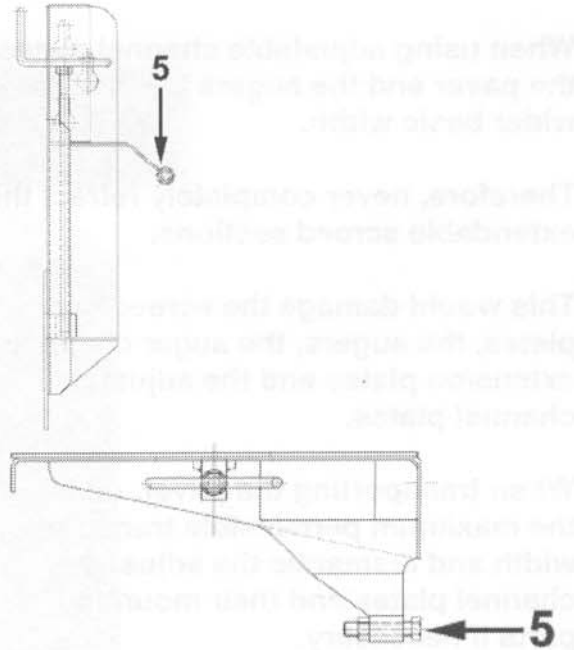
The channel plate is fitted to the correct side of the towing arm.

All nuts and bolts are securely tightened.

Adjustable channel plates must be fitted to both sides of the screed.

Use the spindle (2) to adjust the height of the strike-off plate so there is a gap of 2 to 3 cm between the lower edge of the strike-off plate (3) and the previous course.

This will ensure an adequate flow of paving material.



07.01.01 Operation continued

When using adjustable channel plates, the paver and the augers will have a wider basic width.

Therefore, never completely retract the extendable screed sections.

This would damage the screed end plates, the augers, the auger channel extension plates and the adjustable channel plates.

When transporting the paver, observe the maximum permissible transport width and dismantle the adjustable channel plates and their mounting parts if necessary.

07.01.01 Adjustable Channel Plate

LH continued

c.) Maintenance**When carrying out maintenance work, ensure that:**

the paver is at a standstill,

the engine and ignition are switched off,

nobody has unauthorized access to the paver.

There is a danger of crushing and serious injury.

Wear suitable protective clothing during maintenance work.

There is a danger of crushing and lacerating your fingers.**Wartung
Maintenance****Maintenance:**

Completely extend the extendable screed sections.

Lower the screed onto level ground.

Check the adjustable channel plate daily for:

Tight fitting (mounting parts).

Cleanliness, damage, deformation and wear.

07.01.01 Maintenance continued

Clean as and when necessary.

Grease and oil the moving parts as and when necessary.

**Clean the adjustable channel plates:**

immediately after paving work using a bitumen removing solvent (emulsion).

For industrial safety reasons, obtain assistance when carrying out any work on the adjustable channel plates.

07.01.02 Adjustable Channel Plate RH

The RH adjustable channel plate is a mirrored version of the LH adjustable channel plate.

Observe the instructions and details for

- a.) description
- b.) operation
- c.) maintenance

contained in **chapter 07.01.**

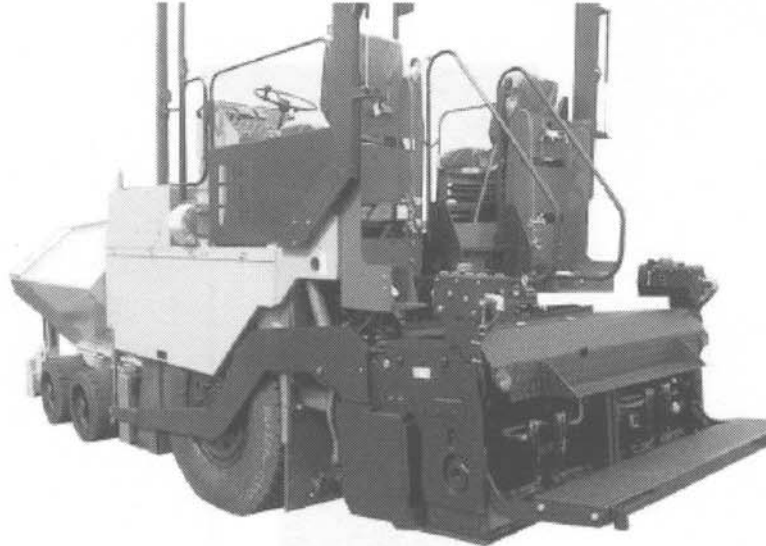
Hydraulics 09



This chapter contains the instructions for the function, operation and maintenance of the actual hydraulic system.

Page	Contents
88	Hydraulics
91	Hydraulic System

09 Hydraulics



This chapter contains details and instructions for the function, operation and maintenance of the screed hydraulics.

Contents	Page
09 Hydraulics.....	89
09.01 Hydraulic Hoses	90

09.01 Hydraulic Hoses

a.) Description



FUNKTION FUNCTION

Every paving screed is equipped with hydraulic hoses.

The hydraulic hoses should be renewed every 5 years.

The hoses convey the required flow of oil under pressure from the paver to the cylinders on the screed.

The hydraulic hoses between the paver and the screed are used for:

Feed pressure line

Return line

Overflow line

The hydraulic circuit diagrams are included in the spare parts list.

09.01 Hydraulic Hoses continued**b.) Operation**

Read the text printed below the above illustrated symbols in:

chapter 01.01.01 - b.)

and carefully follow these instructions.

**Additional Instructions:****Fitting / Removing Hydraulic Hoses:**

Lower the screed to the ground and relieve it of all pressure.

Switch off the paver's Diesel engine and ignition.

Have a suitable container at hand to catch any oil.

09.01 Operation continued

Connect an electric vacuum pump to the breather valve on the hydraulic oil tank if the hose to be renewed is located below the oil level in the hydraulic oil tank.

Otherwise the oil will run out and empty the hydraulic system due to the hydrostatic pressure.

If a new hose is not at hand, close the hydraulic connections using a screw fitting or threaded plug.

Loosen the connections and remove the hydraulic hose.

Fit a new hose and tighten up the connections.

Remove the electric vacuum pump from the hydraulic oil tank.

Check the hydraulic oil level and top up if necessary.

Thereafter, slowly breath the air off the hydraulic system.

Carry out a functional test.

**Additional Instructions:**

When changing hydraulic hoses, ensure that:

all connections and surfaces are clean,

09.01 Operation continued

the hoses are fitted to the right connections,

all threaded connections are screwed tight,

use a container large enough to catch the oil (**environment protection**),

filter any drained off oil before using it again.

We recommend topping up with new oil to replace any oil which may have been lost.

If you do not use

an electric vacuum pump

screw connections and threaded plugs

to prevent the oil running out of the system during assembly work,

it will be necessary to drain off the entire oil filling for some applications.

09.01 Hydraulic Hoses continued**c.) Maintenance**

When carrying out maintenance work, ensure that:

the paver is at a standstill,

the engine and ignition are switched off,

nobody has unauthorized access to the paver.

There is a danger of crushing and serious injury.



Wear suitable protective clothing during maintenance work.

There is a danger of squeezing and lacerating your fingers.



**Wartung
Maintenance**

Maintenance:

Extend the extendable screed sections.

Lower the screed onto level ground and relieve the pressure.

Check the hydraulic hoses daily for:

Tight fitting (mounting parts)

Cleanliness, damage, deformations, leakages and wear.

Functional test.

09.01 Maintenance continued

Clean as and when necessary

**Cleaning the Hydraulic Hoses:**

Remove all dirt and paving material which may have accumulated on the hoses during paving work.

Dirt and paving material can attack the insulation on the hoses and cause oil leakages.

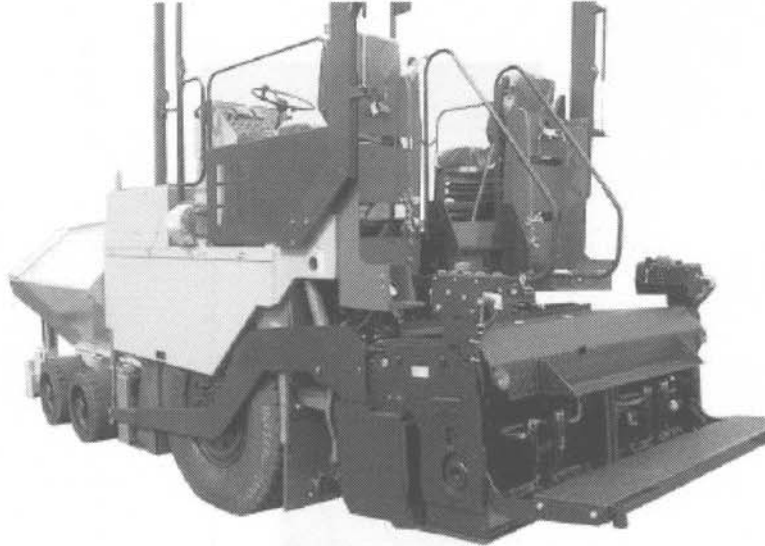
For industrial safety reasons, obtain assistance when carrying out any work on the hydraulic hoses.



This chapter provides information on the function, operation and maintenance of the electric system.

Page	Contents
81	10 Electrics
82	10.1 General Electrics

10 **Electrics**



**This chapter provides information on the function,
operation and maintenance of the electrics.**

Contents	Page
10 Electrics	97
10.03 Screed Electrics.....	98

10.03 Screed Electrics

a.) Description



**FUNKTION
FUNCTION**

The screed electrics consist of the following components:

Control cables LH and RH

Mounting parts

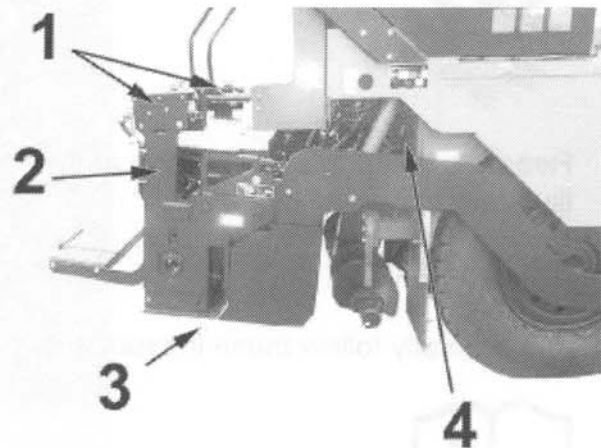
Supports (2) for both external control panels (1) are located on the ends of the extendable screed sections (3).

Both control cables for the external control panels (1) are routed through the extendable screed sections and basic screed to the rear wall of the paver (4).

The external control panels (1) also serve as the electrical connection between the paver and the:

Levelling system.

For safety reasons, an orange warning lamp is mounted on each external control panel (1) which flashes when the screed is extended or retracted.



10.03 Screed Electrics continued**b.) Operation**

Read the text printed below the above illustrated symbols in:

chapter 01.01.01 - b.)

and carefully follow these instructions.

**Additional Instructions:**

Switch off the paver's ignition before connecting or disconnecting any cables.

Breaking sparks or sparks on break may damage electric or electronic components.

10.03 Operation continued



Additional Instructions:

Connecting the External Control Panels:

Remove the protective caps.

Connect the control cable and cable for the levelling system.

Disconnecting the External Control Panels:

Disconnect the control cable and cable for the levelling system.

Replace the protective caps.

This will protect the electrical system from dirt, corrosion and short circuits caused by moisture.

10.03 Screed Electrics continued

c.) Maintenance



**Wartung
Maintenance**

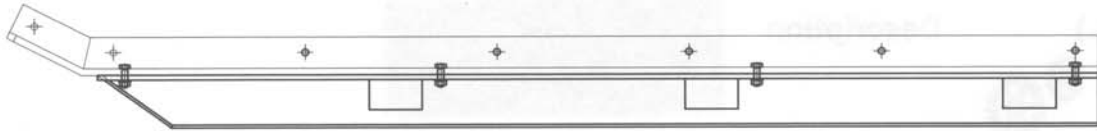


Read the text printed below the above illustrated symbols in:

chapter 01.01.01 - c.)

and carefully follow these instructions.

11 Special Accessories



This chapter contains information on the function, operation and maintenance of the special accessories.

Contents	Page
11 Special Accessories	103
11.01 Edging Shoes 3 cm / 45° (Option)	104
11.02 Edging Shoes 5 cm / 45° (Option)	108
11.03 Edging Shoes 7 cm / 45° (Option)	109
11.04 Edging Shoes 12 cm / 45° (Option)	110
11.07 Basic Paving Width Reduction Kit (Option).....	111

11.01 Edging Shoes 3 cm / 45° (Option)

a.) Description



FUNKTION FUNCTION

Edging shoes can be fitted to the end plate assemblies on the VBV 50 paving screed.

Edging shoes can be fitted to the end plate assemblies on the VBV 50 paving screed.

Edging shoes are bevelled metal rails which are bolted to the skids on the screed end plate assemblies for paving mats.

Edging shoes are available in the following sizes and angles:

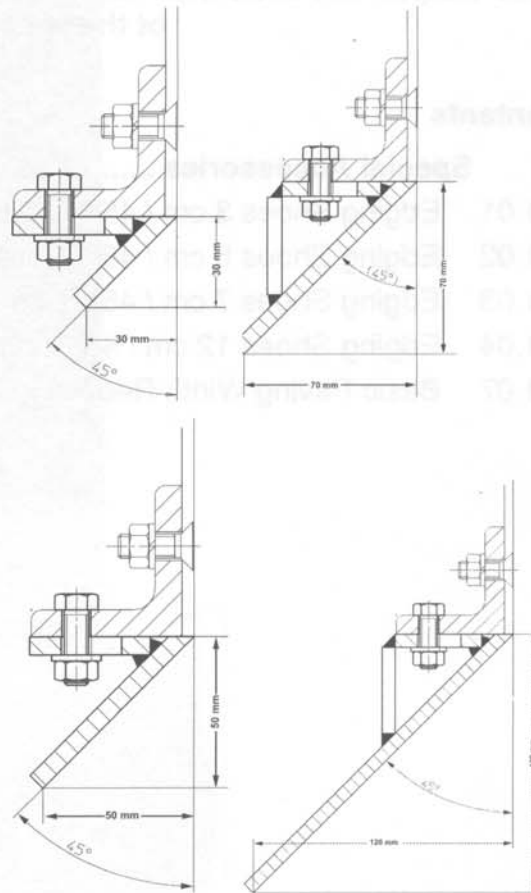
3 [cm] / 45°

5 [cm] / 45°

7 [cm] / 45°

12 [cm] / 45°

The size of edging used depends upon the thickness of the mat to be paved.



**11.01 Edging Shoes 3 cm / 45°
(Option) continued****b.) Operation**

Read the text printed below the above illustrated symbols in:

Chapter 01.07 - b.)

And carefully follow these instructions.

**Additional Instructions:****Fitting the Edging Shoes:**

Raise and support the screed.

Fit the edging shoes with the bearing surface towards the screed (all bearing surfaces must be clean).

Adjust the screed end plate assy to the thickness of the mat to be paved.

11.01 Operation continued



Additional Instructions:

When fitting the edging shoes, ensure that:

they are fitted to the correct side of the screed (the LH and RH edging shoes are mirrored and the front slope on the shoe must face the forward direction of travel).

the height of the edging shoes is **2 to 3 cm** smaller than the thickness of the mat to be paved.

This will avoid the screed end plate assemblies riding on the previously paved course.

If the height of the edging shoe is the same as the thickness of the mat to be paved, they will ride along the previously paved course and put the automatic levelling system out of function.

11.01 **Edging Shoes 3 cm / 45°**
(Option) continued

c.) Maintenance



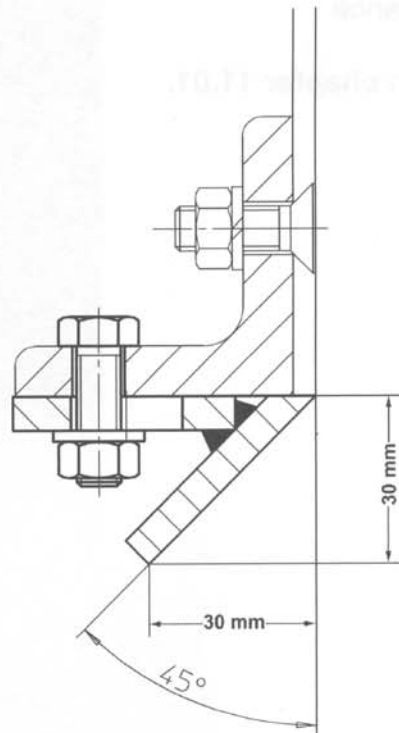
Wartung
Maintenance



Read the text printed below the above illustrated symbols in:

chapter 01.07 - c.)

and carefully follow these instructions.



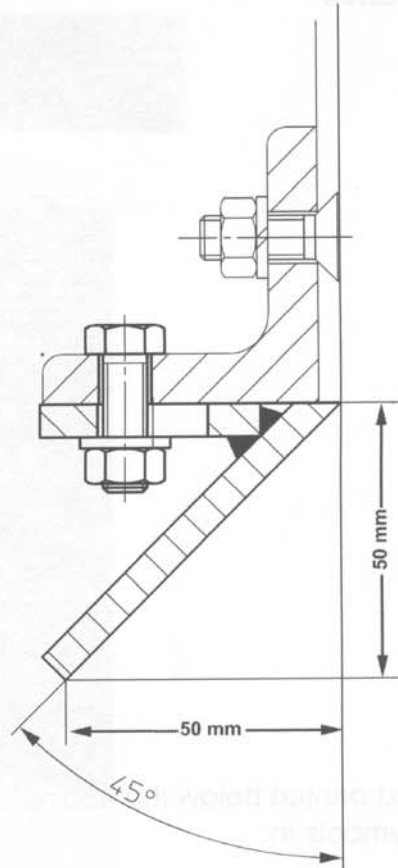
11.02 Edging Shoes 5 cm / 45° (Option)

Apart from their height, the edging shoes are basically all the same.

Observe the instructions for:

- a.) description
- b.) fitting the edging shoes
- c.) maintenance

contained in **chapter 11.01.**



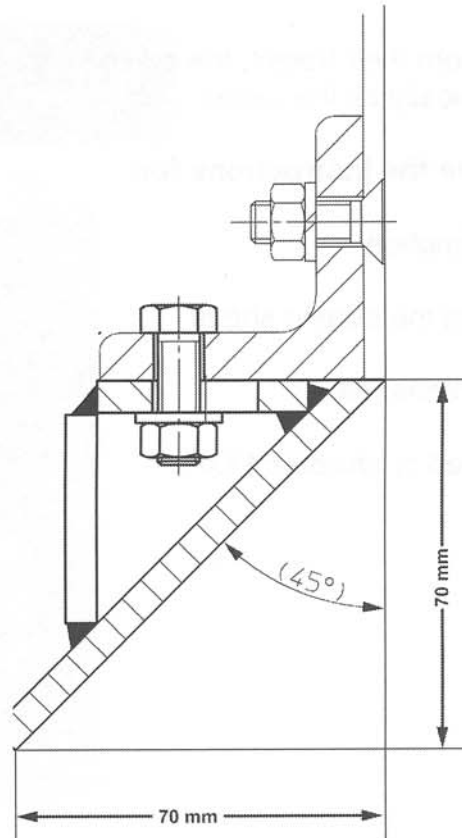
11.03 Edging Shoes 7 cm / 45° (Option)

Apart from their height, the edging shoes are basically all the same.

Observe the instructions for:

- a.) description
- b.) fitting the edging shoes
- c.) maintenance

contained in **chapter 11.01.**



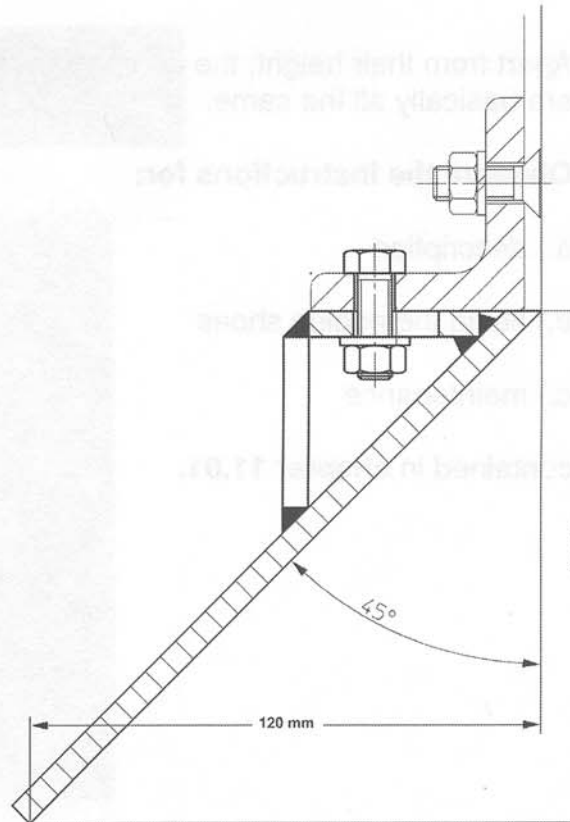
11.04 Edging Shoes 12 cm / 45° (Option)

Apart from their height, the edging shoes are basically all the same.

Observe the instructions for:

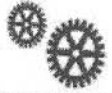
- a.) description
- b.) fitting the edging shoes
- c.) maintenance

contained in **chapter 11.01.**



11.07 Basic Paving Width Reduction Kit (Option)

a.) Description



FUNKTION FUNCTION

The screed end plates on the VBV 50 can be fitted with optional cut-off shoes to reduce the basic paving width (please refer to chapter 01.01. c and chapter 01.07).

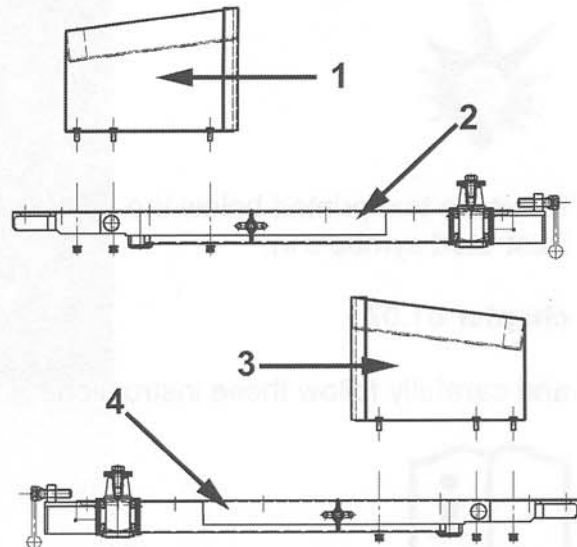
The basic paving width reduction kit consists of:

Reduction shoe LH (1)

Reduction shoe RH (3)

Mounting parts

By fitting the reduction shoes (1 and 3) to the screed end plates (2 and 4), the basic paving width can be reduced by using the screed's adjusting mechanism.



**11.07 Basic Paving Width
Reduction Kit (Option)**

continued

b.) Operation

Read the text printed below the above illustrated symbols in:

chapter 01.07

and carefully follow these instructions.

**Additional Instructions:****Fitting the Reduction Shoes to the
Screed:**

Completely extend both extendable screed sections.

Lower the screed onto level ground.

Allocate the LH & RH reduction shoes to the respective side of the screed.

Fix the reduction shoes to the side parts of the screed end plate assemblies.

11.07 Operation continued

Check the position of the augers (distance between the lower edge of the auger flight and the ground).

If necessary, raise the height of the augers (**please refer to chapter 06.01 in the operating manual for the PF 176**).

Slightly raise the screed.

Retract the extendable screed sections to the required paving width.

The reduction shoes are dismantled in the opposite sequence.

**Additional Instructions:**

If necessary, you can completely retract the extendable screed sections.

This will reach the minimum paving width of **0.8 m**.

Never completely raise the screed in this position. Otherwise the reduction shoes will collide with the augers.

Extend the extendable screed sections before raising the screed.

This will avoid causing serious damage to the reduction shoes, the augers and the side parts on the screed end plate assemblies.

**11.07 Basic Paving Width
Reduction Kit (Option)**

continued

c.) Maintenance**Wartung
Maintenance**

Read the text printed below the above
illustrated symbols in:

chapter 01.07

and carefully follow these instructions.

13 Sign Plates VBV 50 Screed



This chapter contains information on the purpose, use and upkeep of the sign plates.

Contents	Page
13 Sign Plates VBV 50 Screed.....	115
13.01 Sign Plates	116

13.01 Sign Plates

a.) Description



FUNKTION FUNCTION

All screeds are fitted with a set of sign plates.

The purpose of the sign plates is:

Identification (identification plate)

Adjustments and settings on the screed (scales).



13.01 Sign Plates continued

b.) Operation



Read the text printed below the above illustrated symbols in:

chapter 01.01

through to

chapter 11.07

and carefully follow these instructions.

13.01 Sign Plates continued**c.) Maintenance**

When carrying out any maintenance work, ensure that:

the paver is at a standstill,

the engine and ignition are switched off,

nobody has unauthorized access to the paver.

There is a danger of crushing and serious injury.



Wear suitable protective clothing during maintenance work.

There is a danger of squeezing and lacerating your fingers.



Wartung
Maintenance
Maintenance:

Check the sign plates as necessary, every 3 months or every 250 operating hours for:

Tight fitting (identification plate and scales)

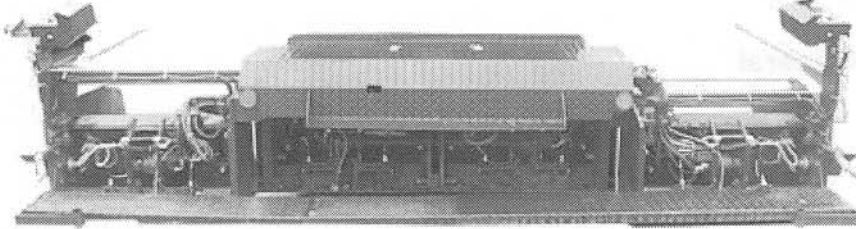
Cleanliness (readable)

Deformations



Use a cloth soaked in a bitumen removing solvent (emulsion) to clean the sign plates.

Paving Hints for the VB-50 Screed



This chapter contains additional instructions for paving with your Variomatic screed.

Contents	Page
Paving Hints for the VB-50 Screed	117
Hints on Paving.....	118

Hints on Paving

a.) **General**



The application of a Variomatic screed is basically the same as a conventional screed.

Special attention must be paid to the adjustments and settings on the Variomatic screed when paving lanes with a joint down the middle and paving thin mats.

b.) **Joints between lanes**



When paving adjacent lanes, you will have a joint between the individual mats.

In most cases, these joints are paved warm to cold.

This requires special skills and expertise on behalf of the paving crew.

On these applications, the paver is set up so that the screed slightly overlaps the existing cold adjacent lane.

Paving errors will occur if there is too much overlap in the area of the joint.

To pave a perfectly closed joint you will require an overlap of:

approx. 2 to 3 cm

Further explanations are continued on the next page.

Joints between lanes continued

A screed overlap of more than **6 cm** will have a negative effect on the paving results.

The following two errors will occur:

1. The degree of slump after final rolling will be more than the particle size in the asphalt paving material.
 - Grain destruction and an alteration in the material structure may occur along the edge of the cold mat if there is too much screed overlap.
2. Under these conditions, the floating behaviour of the screed will be negatively affected.
 - On the warm to cold joint side of the mat, the screed will not be kept in its height position by the buoyancy forces of the paving material but by riding along the overlap.
 - Consequently, the screed will reach a lower degree of compaction along the joint on the new mat.
 - This lower degree of compaction cannot be compensated by subsequent rolling.
 - Flute shaped unevennesses will also occur in the transition area between the cold and warm mats.

However, a minimum degree of overlap is necessary to pave perfect joints between lanes.

c.) **Paving thin mats**



The following hints should be observed when paving thin mats.

The minimum thickness which can be paved is determined by the particle size in the paving material.

Further explanations are continued on the next page.

Paving thin mats continued

Experience has shown that the minimum thickness of the mat must be double the diameter of the largest particles in the paving material.

If you attempted to pave a thin mat below this value, the screed would only have a **restricted guidance** and **no floating behaviour**.

This means, the height position of the screed would be determined by the particle size in the paving material.

Paving below the value twice the maximum particle size would also reduce the **floating behaviour** of the screed.

A further error is, that the screed's angle of attack would be forced to the **zero** or even **negative** setting.

This phenomenon is called "**riding on the nose**" when the screed rides on its front edge.

A negative angle of attack on the basic screed would force the extendable screed sections upwards.

The extendable screed sections would then pave a thicker mat than the basic screed.

A mat paved under these conditions would have steps in the surface in the area where the LH and RH extendable screed sections meet the basic screed.

The tow points should be set to a height position where the rear edge of the screed's base plate does not leave the surface of the mat.

If you drop below the recommended tow point settings during paving work:

- the mat thickness paved by the basic screed will be reduced

and at the same time

- the mat thickness paved by the extendable screed sections will be increased.

Further explanations are continued on the next page.

Paving thin mats continued

There is, however, a solution to the problem of dropping below the recommended tow point settings.

The solution is, to reduce the adjustment on the height adjusting spindles on the extendable screed sections.

The value on the scale must be set to below **zero** to obtain an equal paving level between the basic screed and extendable screed sections.

We strongly advise not to use this solution because:

- it will reduce the stability of the screed's floating and levelling behaviour
- it will cause severe unevennesses in the longitudinal profile of the mat
- excessive wear will occur at the front of the screed's base plates.

d.) Automatic Levelling System



The method of using an automatic levelling system is the same on both Variomatic and conventional paving screeds.

The following two configurations are mainly used:

- 1 x LH or RH grade control and 1 x slope controller
- or
- 2 x grade controls (LH and RH)

When using a grade control, it is necessary to have a reference surface such as a tensioned levelling wire, a rainwater gutter or the surface of an adjacent mat.

Further explanations are continued on the next page.

Automatic Levelling Systems continued

The sensing point for the grade control must be adjacent to the centreline of the auger shaft.

Further application instructions can be taken from the separate operating manual for the levelling system supplied with your paver.

A Operation and Maintenance

This chapter contains useful information on the operation and maintenance of your Variomatic screed.

Careful maintenance does not only improve the appearance of your machine, it also extends the working life and increases the reliability of your screed.



Contents	Page
A Operation and Maintenance	123
A-1.0 Initial Operation of the Screed	124
A-2.0 Taking the Screed Out of Operation	125
A-3.0 Safety Instructions for Service & Maintenance	126
A-4.0 Daily Check Before Starting Work	127
A-5.0 Screed Preservation.....	127

A-1.0 Initial Operation of the Screed



Only put the Variomatic screed into operation after you have become fully acquainted with its operation and handling.

Before initial operation, check your screed for any transport damage to avoid subsequent damage.

Avoid danger by strictly observing the instructions for operating the gas heating system in the relevant chapter in this manual.

⇒ For ocean going transport, our pavers and screeds are sprayed with wax to protect them against rust and corrosion. Use a suitable solvent for removing the wax to avoid damaging the paintwork. IR-ABG offers a wax remover under the CPN No. 54616818. If other solvents are used, IR-ABG will not accept any liability for damage.



- ⇒ Check the following before using the screed for the first:
- ⇒ Remove any packing and other measures taken for transport.
- ⇒ Remove the wax if your screed has been waxed.
- Check and ensure the screed's range of supply is complete.



If you are not fully acquainted with the paving screed, then you should request assistance from *INGERSOLL-RAND ABG* or from one of our authorized service partners and you will be fully instructed on its application.

- **INGERSOLL-RAND ABG** continuously offers training courses on the operation, service and maintenance of **IR-ABG** paving screeds.
- Further details can be obtained from our **Training Department** free of charge.

A-2.0 Taking the Screed Out of Operation



At the end of paving work or during work break, lower the screed onto level ground with sufficient bearing capacity and secure the paver from rolling off.

Park the paver where it does not present a hazard to other persons and road users.

Only leave the paver after the screed has been completely lowered or safely secured in the transport locking device.

Before leaving the paver, switch off all operating controls and switch off the Diesel engine.

Secure the paver against unauthorized access.

Avoid danger by strictly observing the instructions for operating the gas heating system in the relevant chapter in this manual.



Never switch off the Diesel engine when it is running under full load; let it run at operating speed for approximately 5 minutes to cool down.



- ⇒ Switch off the screed heating system and switch off the energy supply to the users.
- ⇒ Drive the paver to the parking area.
- ⇒ With the exception of the Diesel engine, return the drive lever and the controls for all other functions to the neutral position.
- ⇒ Lower the screed until it completely rests on the ground.
- ⇒ Switch off the Diesel engine.
- ⇒ Thoroughly clean the paver and screed.
- ⇒ Remove the ignition key.

A-3.0 Safety Instructions for Service & Maintenance

Ensure that cleaning, lubricating and maintenance work is only carried out by fully qualified and authorized personnel!

All appropriate safety instructions and the relevant accident prevention regulations must be strictly observed !

Maintenance work on the paver and screed may only be carried out when the machine is at a standstill and the Diesel engine switched off !

SERIOUS PERSONAL INJURY, DEATH OR CONSIDERABLE DAMAGE MAY BE CAUSED IF THESE INSTRUCTIONS ARE NOT ADHERED TO !



Observe absolute cleanliness when checking and filling grease and lubricant containers.



There is a danger of fire when cleaning the paver with inflammable cleaning solvents.
Wait until all hot components have cooled down before cleaning the paver.



When cleaning the screed with high pressure cleaners, do not direct the jet of water on the bearings and electrical components.
Grease all bearings after washing the screed.



Use suitable funnels or oil cans when filling up oil to avoid spillage and contamination of the ground.
Used oils and lubricants must be disposed of in a correct and environmentally friendly manner.



A-4.0 Daily Check Before Starting Work

Check the hoses on the gas heating for damage. Check the hydraulic hoses for damage and leakage.
Visual check of the complete screed for missing parts and damage before starting daily work.



A-4.1 Weekly Greasing after work

Universal joint shaft bearings on the vibrators.



A-4.2 Daily Cleaning

Clean all parts and components which have come into contact with paving material.

After paving bituminous materials, use the emulsion spraying system or the heavy duty spray cleaning gun on the paver for cleaning the components which have been in contact with bituminous asphalt.

Clean the screed with water after paving mineral aggregates, dry lean concrete or similar materials. Never direct the jet of water directly onto the bearings and electrical components. Remove all remnants of paving material from the paver and screed.

Prevent accidents by keeping all steps and walkways clean.



A-5.0 Screed Preservation

A-5.1 Standstill Times up to 6 Months

- Lubricate all grease points.
- Apply a film of grease to the cylinder rods.

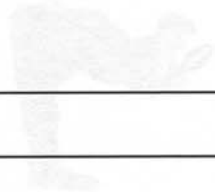
A-5.2 Standstill Times from 6 to 12 Months

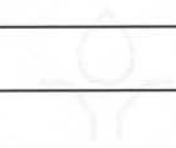
- Carry out the measures described under item A-5.1.

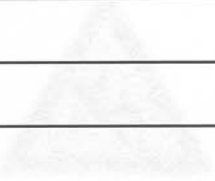
A-5.2 Putting the Screed back into Operation

- Remove the previous preservation measures taken and proceed according to the instructions contained in the chapter in this manual for putting the screed back into operation.

Notes


A-4.0 Daily Check Before Starting Work
Check the hoses on the gas heating for damage. Check the hydraulic hoses for damage and leakage.
Damage before starting daily work.


A-4.1 Weekly Cleaning after work
Uninstall joint shaft bearings on the roller.


A-4.2 Daily Cleaning
Clean all parts and components which come into contact after paving bituminous material. Use a jet of water to clean the rollers and the paving drum. Clean the components which have contact with bituminous material. Clean the crown with water. Clean the rollers of similar material. Remove all remnants of paving material from the drum and rollers. Prevent accidents by keeping all steps and walkways clean.

A-4.3 Road Preparation
A-4.1 Standard Time for a course
Apply a thin layer of gravel to the surface.
A-4.2 Standard Time for a course
Sift out the material.

A-4.3 Putting the screed into position
Remove the previous paving material from the roller and screed. Push the screed back into position. Contact with the roller. If it is not possible to push the screed back into position.

B Maintenance Charts

This chapter contains the maintenance charts for all maintenance work on your screed.

Please contact your nearest *Ingersoll-Rand ABG Service Partner* if you have any questions concerning repair and maintenance work.



Contents	Page
B Maintenance Charts	129
B-1.0 List of Oils and Lubricants.....	130
B-2.0 Routine Maintenance Points	131

B-1.0 List of Oils and Lubricants

Only use the oils, lubricants and other consumables specified in this list which have been approved by the manufacturer.

Using the wrong or insufficient oils and lubricants can lead to serious damage. Therefore, only use oils and lubricants which meet these specifications.

Description	Application	Quantity:	Product:
Multi-purpose Grease (Lithium Saponified)	Turnbuckles on the Towing Arms 2 grease nipples each	1 to 2 pumps on the grease gun	<ul style="list-style-type: none"> • Shell Darina 2 CPN: 13923115
	Universal Joint Shafts on the Vibrators 2 grease nipples each	1 to 2 pumps on the grease gun	

B-2.0 Routine Maintenance Points

For a better overview, this chapter contains a schedule of maintenance work and a maintenance chart.

The schedule of maintenance work is illustrated in tabular form.

The structure of the table is self-explanatory.

The particular maintenance work required can be quickly found in the maintenance schedule.

The maintenance intervals specified are periodically recurring intervals expressed in operating hours (Op. Hrs.).

The time intervals of 1 day, 1 month or 1 year are only approximate intervals. Your machine may work two shifts of 8 or 10 hours resulting in 16 or 20 operating hours a day.

The specified maintenance intervals are expressed in operating hours (Op. Hrs.) and are to be interpreted as follows:

- 8 – 10 Op. Hrs. = approx. 1 Day
- 100 Op. Hrs. = approx. 1 Month
- 1000 Op. Hrs. = approx. 1 Year

Carry out the maintenance work as soon as the screed has reached the specified number of operating hours, days, months or years whichever comes first.

Further (additional) intervals are specified in the right-hand column on the schedule of maintenance work.

An explanation for using the schedule of maintenance work is continued on the following page.

B-2.0 Routine Maintenance Points continued**How to use the Schedule of Maintenance Work:**

- Select the required maintenance point (the left-hand column contains the chapter number which specifies further maintenance instructions for that point)
- Select the column with the required number of operating hours.
- Look for the intersection of maintenance point and operating hours.
- The box at the intersection contains abbreviations for the maintenance work to be carried out (i.e. **Ch, Cl, G and O**).

Before starting any maintenance work, carefully read the explanations to the abbreviations.

Abbreviations:

Ch = Check

Cl = Clean

G = Grease

O = Oil

Some of the boxes require several of the following maintenance jobs to be carried out at the same time.

Before starting any maintenance work, carefully read the instructions contained in the respective chapter in the operating and maintenance manual.

- **Check** = for **tight fitting** / the **settings and adjustments** / for **damage** / for **leakages**, for **wear and tear** / do a **functional test** / etc.
- **Clean** = **clean by hand** / **mechanical cleaning** / with **water** / with **bitumen removing solvents (emulsion)**, etc.
- **Grease** = apply with a **paint brush** / with a **grease gun** / with a **compressed air grease gun** / etc.
- **Oil** = apply with a **paint brush** / use an **oilcan** / etc.

Further explanations are continued on the next page.

B-2.0 Routine Maintenance Points continued

The abbreviations used in the schedule of maintenance work represent the work necessary to ensure the safe and reliable operation of your Variomatic screed.

Regularly carry out these maintenance jobs on your screed.

Inform **IR-ABG's Service Department** if any more extensive work is necessary on your Variomatic screed such as repairs or a winter overhaul and which is not described in this manual.

An **IR-ABG Service Technician** or a **Service Technician** from one of **IR-ABG's Distributors** in your area will assist in repairing your Variomatic screed.

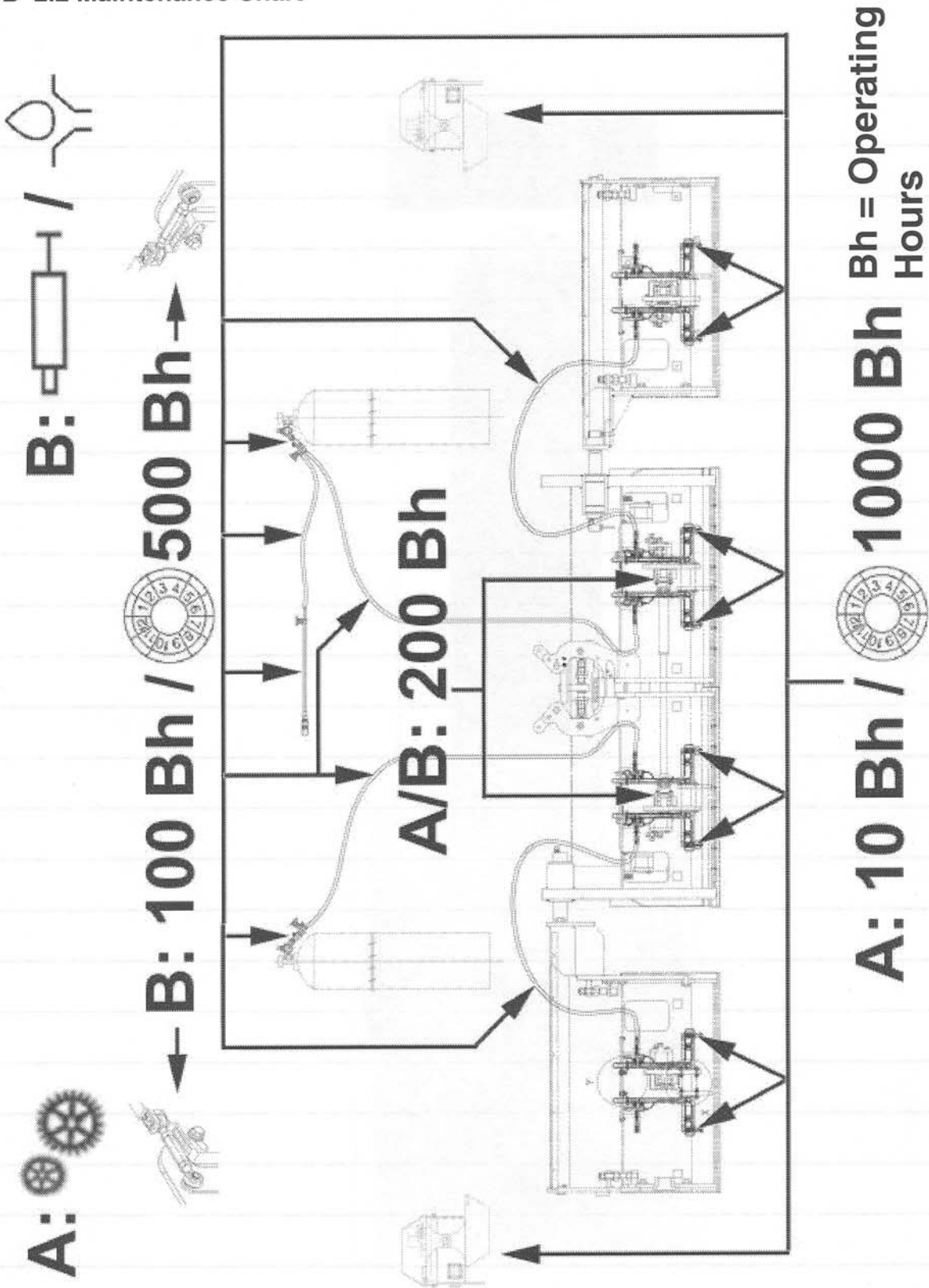
The maintenance chart is a graphical illustration and provides a simple overview of the maintenance points.

Use this maintenance chart in addition to the schedule of maintenance work.

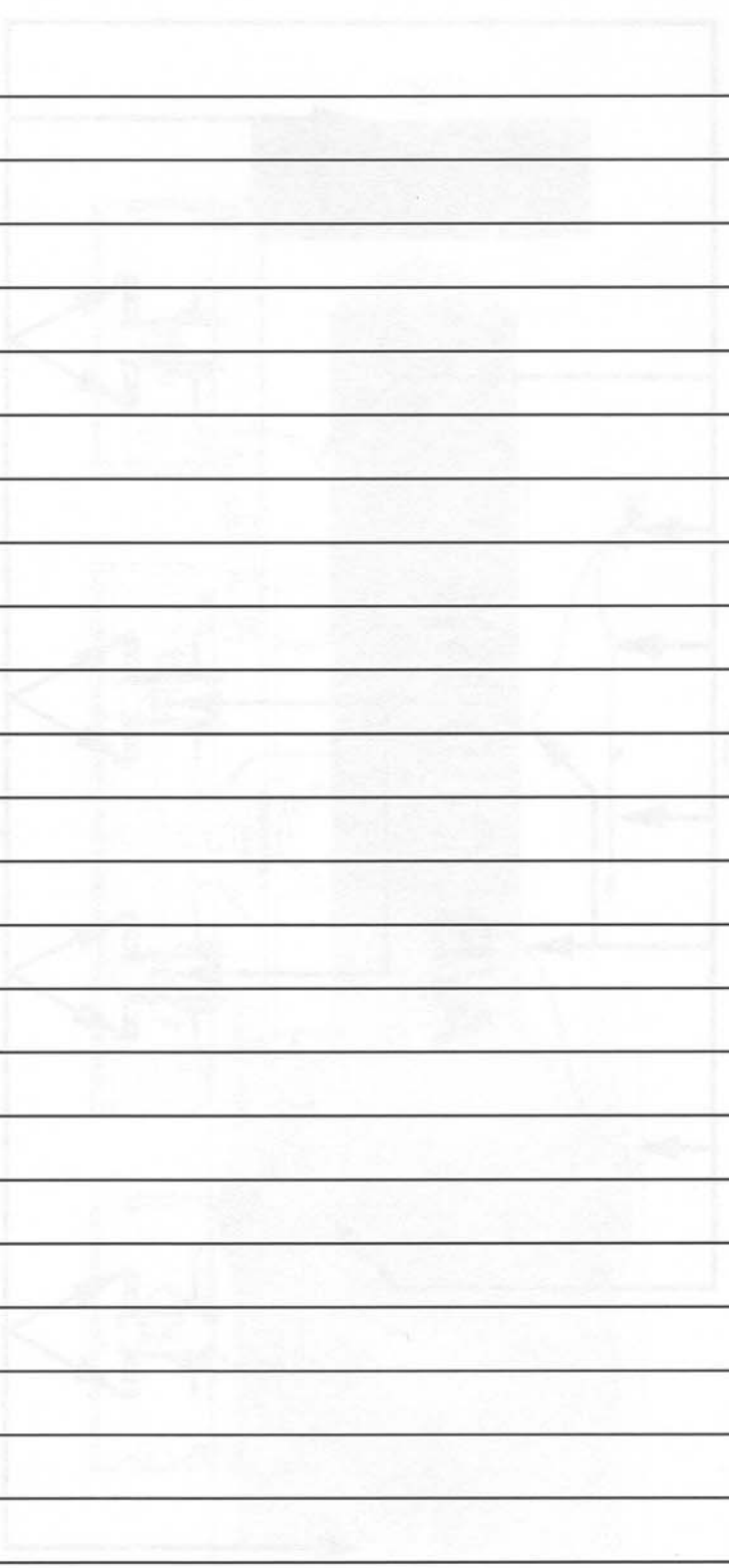
B-2.1 Schedule of Maintenance Work

Chapter	Maintenance Point	every ... Op. Hrs			Further Intervals
		10	100	1000	
01	Water outlets	Ch, R	CH, R	CH, R	Weekly
01	Crown Control Adjustment	Ch	CH, R	CH, CL, G, Ö	
01	Vibrator	Ch	P	CH, R	
01	Universal Joint Shafts		CH, F	CH, CL, G, Ö	Every 200 Op. hrs.
01	Ext. Screed Sections	Ch, R	CH, R	CH, R	
01	Walkways	Ch, R	CH, R	CH, CL, G, Ö	
01	Screed End Plates	Ch, R	Ch, CL, G, Ö	CH, CL, G, Ö	
01	Covers	Ch	Ch, R	CH, R	
02	Screed Extensions	Ch, R	Ch, R	CH, CL, G, Ö	(Refer to chapter 01)
03	Gas Heating	Ch	Ch	CH, R	(Refer to chapter 01)
04	Towing Arms	Ch	Ch	CH, R	
04	Turnbuckles	Ch	Ch, CL, G, Ö	CH, CL, G, Ö	Every 500 Op. hrs
06	Auger Extensions	Ch, R	Ch, R	CH, R	
07	Adjustable Channel Plate	Ch	Ch, CL, G, Ö	CH, CL, G, Ö	
09	Hydraulic Hoses	Ch	Ch, R	CH, R	
10	Gas Heating Fittings	Ch	Ch, R	CH, R	
10	Screed Electrics	Ch	Ch, R	CH, R	
11	Edging Shoes	Ch, R	Ch, R	CH, R	
11	Paving Width Reductions	Ch, R	Ch, R	CH, R	
13	Sign Plates			CH, R	

B-2.2 Maintenance Chart



Notes



Notes section with horizontal lines for writing.

C Technical Data

This chapter contains the paving screed's technical data.

Please approach your nearest
INGERSOLL-RAND ABG Service Partner
if you have any further questions concerning the screed's
technical data.



Contents	Page
C Technical Data	137
C-1.0 Technical Data Paving Screed VBV-50	138

C-1.0 Technical Data Paving Screed VBV-50	
Sales description	Variomatic Screed VBV 50
Screed versions	
Basic paving width	2.00 m
Adjusting range	2.00 – 4.00 m
Wheeled Paver PF 176	5.00 m
Basic screed	2.00 – 4.00 m = approx. 1700 kg
Screed extensions	0.37 m complete = approx. 100 kg
	0.65 m complete = approx. 150 kg
Vibrator frequency	3600 1/min
Depth of base plate	370 mm
Crown control setting	+ 4% to – 2%
Screed heating	Gas heating system