OPTIMUM
MASCHINEN - GERMANY

Operating manual

Version 1.3.1

Metal belt saw

Illustr. 0-1: Metal belt saw S275G

- ◯ **S210G**
- ◯ **S275G**
- ◯ **S210G Vario**
- ◯ **S275G Vario**

Keep for future reference!

Table of Contents

1 Safety

Explanation of the display

☞	Reference to another page in this manual
➔	Calls on you to act
❍ —— •	Enumerations

This section of the operating manual

- explains the meaning and use of the warning references contained in the operating manual,
- states the instructions with regard to the operation of the metal belt saw,
- warns you on the dangers to you and third parties, which could occur in the event the instructions in this manual are not observed,
- informs you on measures that help prevent hazard.

In addition to this operating manual please observe

- applicable laws and regulations,
- legal regulations for accident prevention,
- the danger, warning and mandatory signs such as the warning reference on the metal belt saw.

During installation, operation, maintenance and repair of the metal belt saw the European standards are to be observed.

With regard to relevant national legislation which has not yet been adjusted to the European standards, the applicable national legislation is to be observed.

If applicable, the relevant precautions, as to be observed in accordance with the national rules and regulations, are to be adhered to, prior to operating the metal belt saw.

THE DOCUMENTATION IS TO BE KEPT NEAR THE METAL BELT SAW, FOR POSSIBLE FUTURE REFERENCE.

INFORMATION

In the event this operating manual does not offer a solution to your problem, please feel free to contact:

OPTIMUM Maschinen Germany GmbH
Dr. Robert-Pfleger-Str. 26

D- 96103 Hallstadt, Germany

1.1 Safety warnings (warning notes)

1.1.1 Classification of hazards

We classify the safety warnings into various levels. The table below gives an overview of the classification of symbols (pictograms) and warnings for the specific danger and its (possible) consequences.

Ideogram	Warning alert	Definition/Consequences
	**DANGER!**	Imminent danger that will cause serious injury or death to persons.
	WARNING!	Risk: A danger that might cause serious injury or death to a person.
	CAUTION!	Danger or unsafe procedure that might cause injury to persons or damage to property.
	**ATTENTION!**	Situation that could cause damage to the lathe and to the product and other types of damages. No risk of injury to persons.
	**INFORMATION**	Application advice and other important or useful information and notes. No dangerous or harmful consequences for persons or objects.

In case of specific dangers we replace the ideogram by

general danger | with a warning of | injuries to hands | hazardous electrical voltage | or | rotating parts

1.2 Further ideograms

Automatic start-up!

Activation forbidden!

Pull the main plug!

Use safety glasses!

Use ear protection!

Use protective gloves!

Use protective boots!

Wear a safety suit!

Protect the environment!

Contact address

1.3 Proper use

Use

WARNING!

Improper use of the metal belt saw

- **will endanger personnel,**
- **will endanger the machine and other items used by the operator,**
- **may affect proper operation of the machine.**

The machine is designed and manufactured to be used in environments in which there is no potential danger of explosion.

The machine is designed and manufactured to saw cold metals, cast materials and plastics or other materials that are not harmful to health and do not generate dust.

The metal belt saw must not be used on wood.

The pieces to be cut must be of a shape that will allow them to be securely attached in the work-holder vice and ensure that the piece does not come loose when it is being sawed.

The metal belt saw must only be installed and operated in a dry and well-ventilated place.

Improper use!

If the metal belt saw is used in any way other than as described above, if it is modified without the authorisation of Optimum Maschinen Germany GmbH or if it is operated with different process data, then it is being used improperly.

We do not take liability for damage caused by improper use.

We would like to stress that any modifications to the construction, or technical or technological modifications which have not been authorised by Optimum Maschinen Germany GmbH will also render the guarantee null and void.

It is also part of proper use that

- the limits of the metal belt saw are complied with,
- the instruction manual is observed,
- review and maintenance instructions are observed.

☞ “Technical data“ on page 14

The decisive factor for achieving efficient cutting and the necessary angular tolerance is the correct choice of parameters such as the saw belt, feed, cutting pressure, cutting speed and cooling agent.

WARNING!

Very serious injury.

It is forbidden to make any modifications or alterations to the operating values of the metal belt saw! These could endanger personnel and cause damage to the machine.

1.4 Possible dangers caused by the metal belt saw

The metal belt saw has undergone a safety inspection (analysis of danger with assessment of risks). Design and construction based on this analysis were carried out with the latest technological advances.

Nonetheless, there remains a residual risk, since the metal belt saw operates

- with electrical voltage and current,
- with a continuous saw belt.

We have used construction resources and safety techniques to minimise the health risk to personnel resulting from these hazards.

If the metal belt saw is used by personnel who are not duly qualified, there may be a risk resulting from incorrect operation or unsuitable maintenance.

INFORMATION

All personnel involved in assembly, commissioning, operation and maintenance must

- be duly qualified,
- follow this instruction manual.

Improper use

- will endanger personnel,
- will endanger the machine and other objects,
- may affect proper operation of the metal belt saw.

Disconnect the machine whenever cleaning or maintenance work is being carried out.

WARNING!

THE METAL BELT SAW MAY ONLY BE USED WITH THE SAFETY DEVICES ACTIVATED.

Disconnect the metal belt saw whenever you detect a failure in the safety devices or when they are not fitted!

All additional installations carried out by the operator must incorporate the prescribed safety devices.

As the machine operator, this will be your responsibility!

☞ **“Safety devices“ on page 9**

1.5 Qualification of personnel

1.5.1 Target group

This manual is addressed to

- operators,
- users,
- maintenance stuff.

The warning notes therefore refer to both operation and maintenance of the metal belt saw.

Determine clearly and unequivocally who will be responsible for the different activities on the machine (use, maintenance and repair).

Vague or unclear assignment of responsibilities constitutes a safety hazard!

Always disconnect the metal belt saw plug from the mains. This will prevent it being used by unauthorised personnel.

Authorised personnel

WARNING!

Incorrect use and maintenance of the metal belt saw causes danger for personnel, objects and the environment.

Only authorised personnel may operate the metal belt saw!

Personnel authorised to use and perform maintenance are the trained and instructed technical staff working for the operator and manufacturer.

The operator must

Obligations of the operator

- train staff,
- instruct staff regularly (at least once a year) on
  - all safety standards that apply to the machine,
  - operation,
  - accredited technical guidelines,
- check staff's understanding,
- document training/instruction,
- require staff to confirm participation in training/instruction by a signature,
- check whether the staff are aware of safety and of dangers in the workplace and whether they observe the instruction manual.

The user must

Obligations of the user

- have received training in operation of the metal belt saw,
- know the function and principle of operation,
- before the machine is first used
  - have read and understood the instruction manual,
  - be familiar with all safety devices and regulations.

additional qualification require-ments

For work on the following machine components there are additional requirements:

- Electrical machine: Only an electrician or person working under the instructions and supervision of an electrician.

Before carrying out work on electric components or operating units the following measures must be taken in the order given.

- Disconnect all poles
- Ensure that the machine cannot be turned on again
- Check that there is no voltage

1.6 User positions

The user must stand beside the metal belt saw.

INFORMATION

In case a main plug is provided on the metal belt saw, it must be freely accessible.

1.7 Safety devices

Use the metal belt saw only with properly functioning safety devices.

Stop the metal belt saw immediately if there is a failure in the safety device or if it gets ineffective.

It is your responsibility!

If a safety device has been activated or has failed, the metal belt saw must only be used when

- the cause of the failure has been removed,
- it has been verified that there is no resulting danger for personnel or objects.

WARNING!

If you bypass, remove or override a safety device in any other way, you are endangering yourself and other personnel working with the metal belt saw. The possible consequences are

- **damage as a result of components or parts of components flying off at high speed,**
- **contact with rotating parts,**
- **fatal electrocution.**

The metal belt saw includes the following safety devices:

- EMERGENCY button
- Protective cover for the V-belts
- Saw blade casing with protective cover at the rear.

1.7.1 EMERGENCY button

The EMERGENCY button turns off the metal belt saw.

INFORMATION

After switching on, turn the EMERGENCY button clockwise to enable the metal belt saw to be started.

Illustr. 1-1: EMERGENCY button

1.7.2 Saw arch

The arch of the metal belt saw is fitted with a protective cover firmly screwed onto the rear. The protective cover protects the belt guide pulleys and the rotating saw blade.

WARNING!

Danger of injury! The teeth of the saw belt are sharp. Take great care when removing the rear cover to change the saw belt.

Illustr. 1-2: Saw blade casing

Close and screw down all protective covers before restarting the metal belt saw.

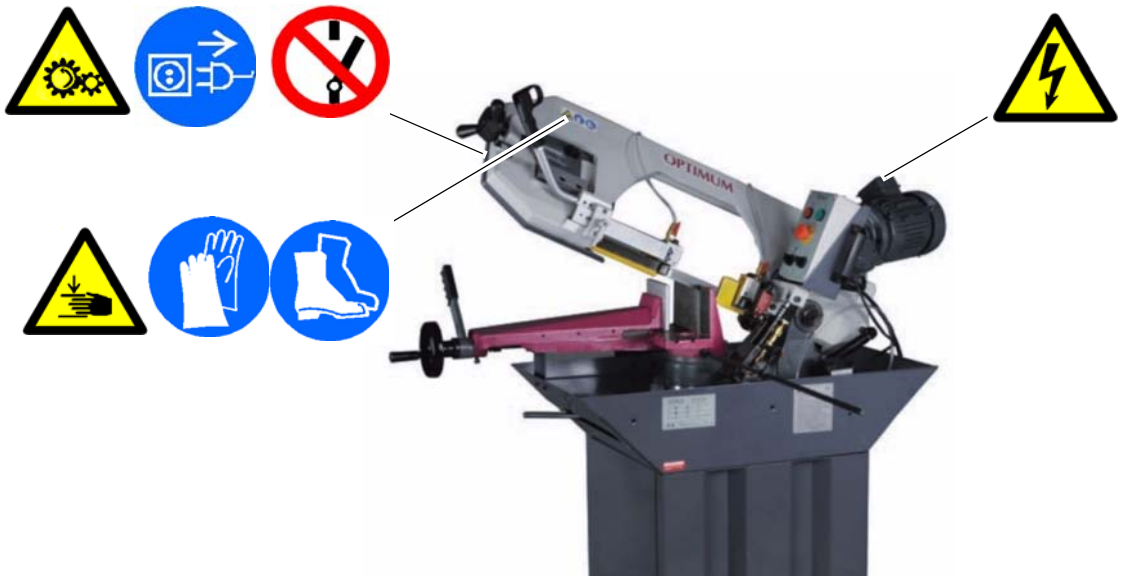
1.7.3 "Forbidden", warning and information labels

INFORMATION

All warning labels must be legible.

Check them regularly.

Positions of labels on the metal belt saw



Illustr. 1-3: Metal belt sawS 275 G

1.8 Safety check

Check the metal belt saw at least once per shift. Inform the person responsible immediately of any damage, defect or change in operating function.

Check all safety devices

- at the beginning of each shift (with the machine stopped),
- once a week (with the machine in operation),
- after every maintenance and repair operation.

Check that "Forbidden", Warning and Information labels and the markings on the metal belt saw

- can be identified (if not, clean them),
- are complete.

INFORMATION

Use the following table for checking.

General check		
Equipment	**Check**	**OK**
Protective covers	Fitted, firmly bolted and not damaged	
Labels, markings	Installed and legible	
Date:	**Checked by (signature):**	

Run test		
Equipment	**Check**	**OK**
EMERGENCY button	The metal belt saw must disconnect when the EMERGENCY button is activated.	
Date:	**Checked by (signature):**	

1.9 Individual protection gear

For specific work, equipment for personal protection as protection equipment is required. This includes:

- a safety helmet,
- protective goggles or face guard,
- safety gloves,
- safety shoes with steel toe cap,
- ear protection.

Before starting work check that the proper gear is available in the workplace.

CAUTION!

Dirty or contaminated body protection gear can cause disease.

Clean your individual protection gear

- **each time after it has been used,**
- **regularly, at least once a week.**

Individual protection gear for special work

Protect your face and eyes: During all work, and specifically work during which your face and eyes are exposed to hazard, a safety helmet with a face guard should be worn.

Use safety gloves when you lift or handle sharp-edged components manually.

Wear safety shoes when you position, dismantle or transport heavy components.

1.10 Safety during operation

In the description of work with and on the metal belt saw we highlight the dangers specific to that work.

WARNING!

Prior to activating the metal belt saw please double-check whether this will

- **not lead to any danger with respect to people,**
- **not cause any damage to equipment.**

Avoid unsafe working practises:

- Check that no one can be endangered as a result of the work to be initiated.
- The instructions in this manual must be observed during assembly, handling, maintenance and repair.
- Do not work on the grinder if your concentration is reduced, for example, because you are taking medication.
- Observe the rules for preventing accidents issued by your association for the prevention of occupational accidents and safety in the workplace or other inspection authorities.
- Stay at the metal belt saw until all rotating parts have come to a halt.
- Use prescribed protection gear. Make sure to wear a well-fitting work suit and, where necessary, a hairnet.
- Inform the inspector of any danger or failure.

1.11 Safety during maintenance

Report and document any changes

Inform operators timely on maintenance and repair work.

Report all safety relevant changes or performance details of the metal belt saw. Document all changes, have the operation manual changed accordingly and train the machine operators.

1.11.1 Disconnecting the metal belt saw and making it safe

Unplug the machine from the mains before beginning any maintenance or repair work.

Place a warning sign on the machine.

1.11.2 Using lifting equipment

WARNING!

Use of unstable lifting and load suspension gear that breaks under load can cause very serious injuries or even death.

Check that the lifting and load suspension gear

- **is of sufficient load capacity,**
- **is in perfect condition.**

Observe the rules for preventing accidents issued by your association for the prevention of occupational accidents and safety in the workplace or other inspection authorities.

Hold the loads properly.

Never walk under suspended loads!

1.11.3 Mechanical maintenance work

Remove all protection and safety devices before beginning maintenance work and re-install them once the work has been completed. These include:

- Covers
- Safety indications and warning signs
- Earth (ground) connection.

If you remove protection or safety devices, refit them immediately after completing the work.

Check that they are working properly!

1.12 Accident report

Inform your superiors and Optimum Maschinen Germany GmbH immediately in the event of accidents, possible sources of danger and any actions which almost led to an accident (near misses).

There are many possible causes.

The sooner they are notified, the faster the causes can be eliminated.

INFORMATION

In the description of work with and on the drill we highlight the specific dangers of this work.

1.13 Electrical system

Have the machine and/or the electric equipment checked regularly, and at least every six months.

Eliminate immediately all defects such as loose connections, defective wires etc.

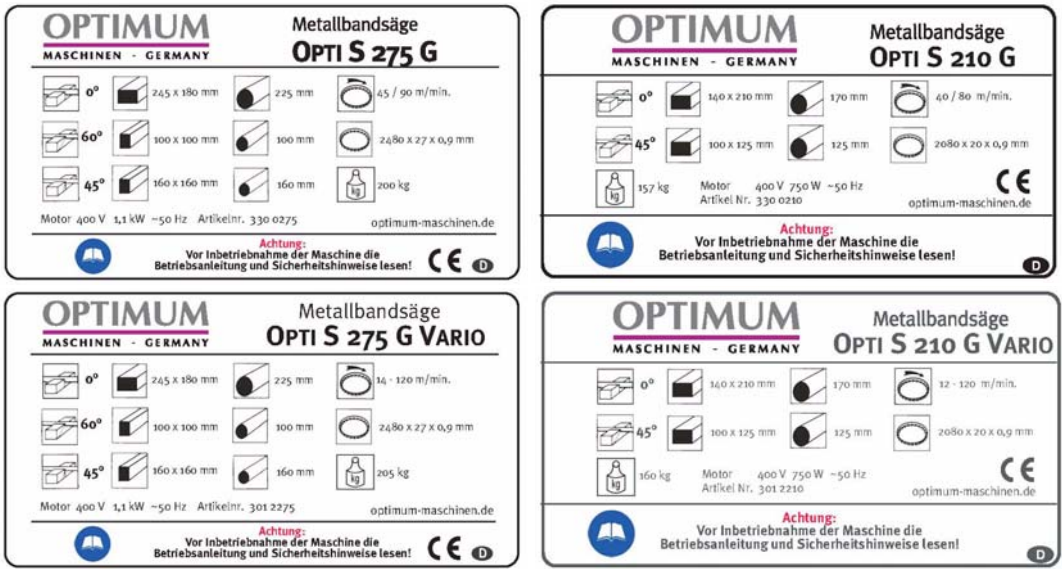
A second person must be present during work on live components, to disconnect the power in the event of an emergency.

Disconnect the metal belt saw immediately if there are any anomalies in the power supply!

☞ “Maintenance“ on page 34

2 Technical data

2.1 Characteristics plates



Illustr. 2-1: Characteristics plates

The following information gives the dimensions and weight and is the manufacturer's authorised machine data.

Power connection	S275G	S275G Vario	S210G	S210G Vario
Total connection rate	3 x 400 V; 50 Hz; 1,1 KW		3 x 400 V; 50 Hz; 0,75 KW	
Permitted voltage tolerance	380 V - 420 V			
Protection mode	IP 54			

Cutting field	S275G	S275G Vario	S210G	S210G Vario
90° round, max. (mm)	225		170	
90° rectangular, max. (mm)	245 x 180		170 x 210	
45° round, max. (mm)	160		125	
45° rectangular, max. (mm)	160 x 160		100 x 125	
60° round, max. (mm)	100		-	
60° rectangular, max. (mm)	100 x 100		-	
Cutting angle	0^0 - 60^0		0^0 - 45^0	

General	S275G	S275G Vario	S210G	S210G Vario
Cutting angle adjustment	Using the rotating saw arch			
Saw belt guide	Inversion pulleys supported on ball bearings			
Raising the saw arm	Manually			
Feed	Adjustable with continuous feed			

General	S275G	S275G Vario	S210G	S210G Vario
Tension of saw blade	Manually using the hand wheel			

Dimensions	S275G	S275G Vario	S210G	S210G Vario
Length [mm]	1500		1430	
Height of work table [mm]	935		935	
Total height [mm]	1570		1470	
Height of work area [mm]	1750		1650	
Width [mm]	510		510	
Width of work area [mm]	1400		1400	
Weight of metal belt saw [kg]	200	205	157	160
Weight with packaging [kg]	216	221	171	174
Dimensions of the saw belt [mm]	2480 x 27 x 0,9		2080 x 20 x 0,9	
Belt inversion pulleys [mm]	292		264	
Packaging dimensions [mm]	1380 x 580 x 930		1300 x 580 x 840	

Speed of saw blade	S275G	S275G Vario	S210G	S210G Vario
[m/min]	45 or 90	14 - 120	40 or 80	12 - 120

External conditions	S275G	S275G Vario	S210G	S210G Vario
Temperature	5-35 °C			
Humidity	25 - 80 %			

Operating material	S275G	S275G Vario	S210G	S210G Vario
Hydraulic cylinder	Hydraulic oil, viscosity 32 - 46 as per DIN 51519, HLP Quality			
Helical gear	Mobil 629 / 0,15 litres			
Spindle of the work-holder vice	Commercial heavy grease			
Friction bearing	Commercial heavy grease			
Liquid cooling system	Commercial lubricant and cooling agent			

Cooling pump	S275G	S275G Vario	S210G	S210G Vario
Power	3 x 400 V ; 50 Hz; 90 W			
Turning speed [rpm]	2850			
Volume of tank [litres]	10			

2.2 Emissions

The development of noise (sound pressure level) of the metal belt saw could, at the workplace, exceed the level of 73 dB(A).

INFORMATION

We recommend the use of sound insulation and ear protection.

The duration of the noise pollution, the type and characteristics of the working area, such as other machines which are operated simultaneously, influence the development of noise at the workplace.

Since Optimum Maschinen Germany GmbH has no knowledge of the positioning area of the metal belt saw, the organisation responsible for the operation is to ensure all noise insulation measurements.

3 Assembly

INFORMATION

The metal belt saw comes pre-assembled.

3.1 Parts list

When the machine is delivered, check immediately that the metal belt saw has not been damaged during shipping and that all components are included. Also check that the set screws are loosened.

- Metal belt saw
- Saw belt
- Liquid cooling system
- Depth stop
- Saw table
- Fitting tools
- Instruction manual

3.2 Storage

ATTENTION!

Improper storage may cause important parts to be damaged or destroyed.

Store packed or unpacked parts only under the following external conditions. ☞ **“External conditions“ on page 15**

Consult Optimum Maschinen Germany GmbH if the metal belt saw and accessories have to be stored for a period of over three months or under different external conditions to those given here.

3.3 Installation and assembly

3.3.1 Requirements of installation site

Organise the workplace around the metal belt saw in accordance with local safety regulations. ☞ “Tension of the saw belt“ on page 22

Operation, maintenance and repair in the work area must not be hindered.

INFORMATION

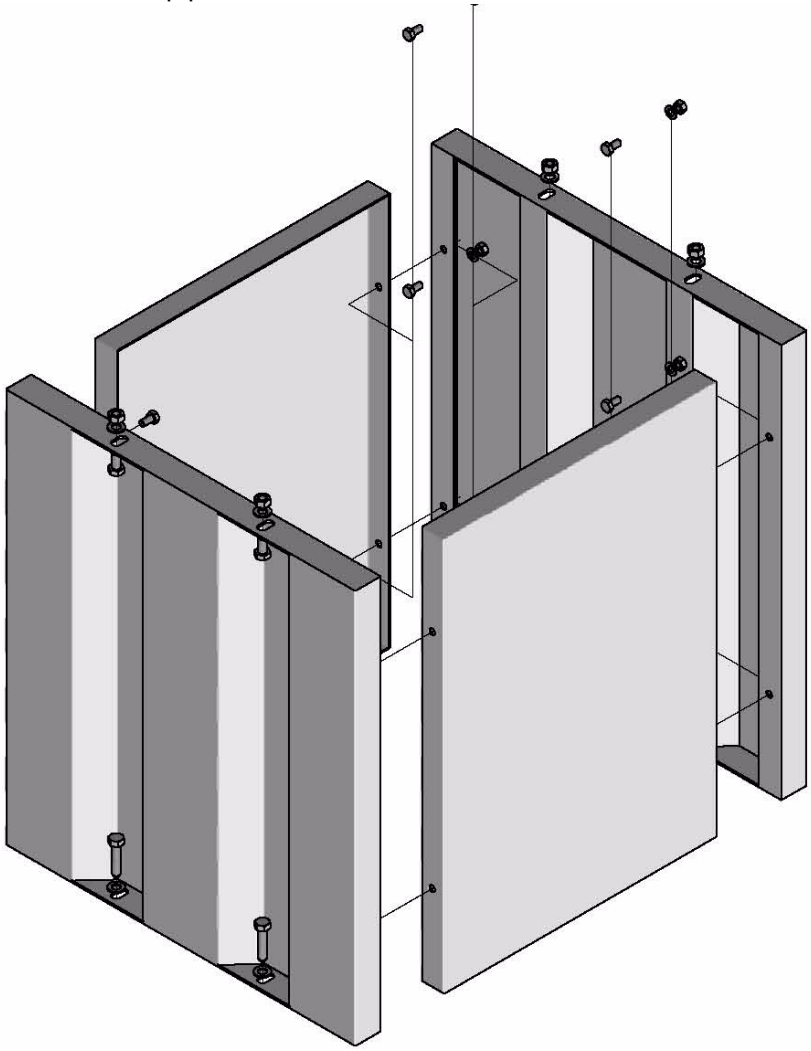
If a mains plug is fitted on the metal belt saw, it must be accessible.

ATTENTION!

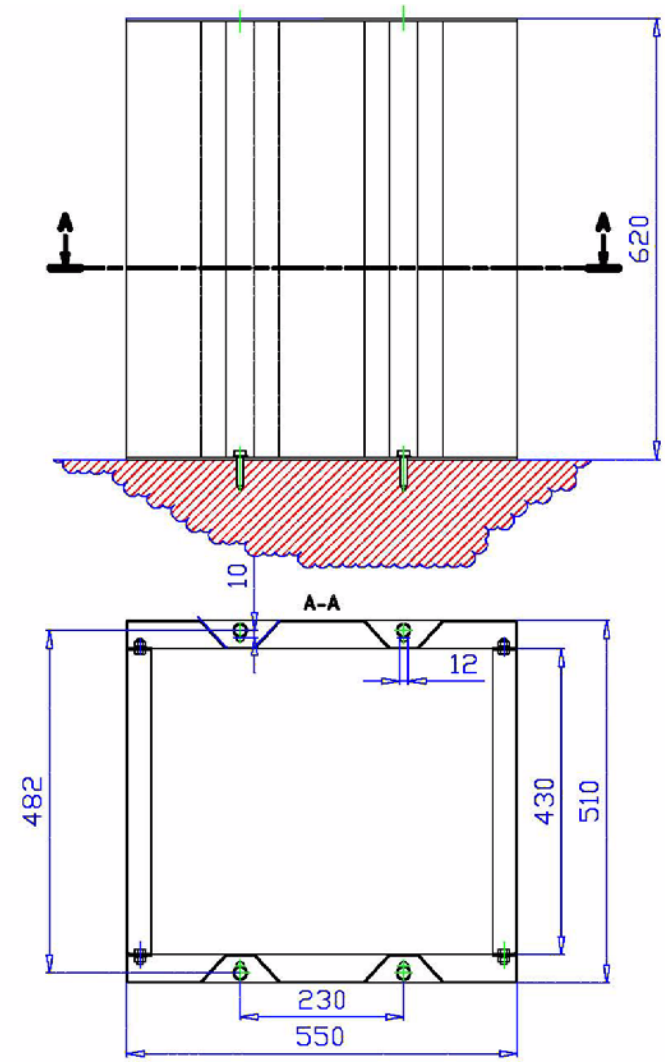
Danger of crushing and overturning.
Proceed with caution during the work described below.
The metal belt saw must be fitted on the machine stand by at least 2 people.

Assembling the machine stand

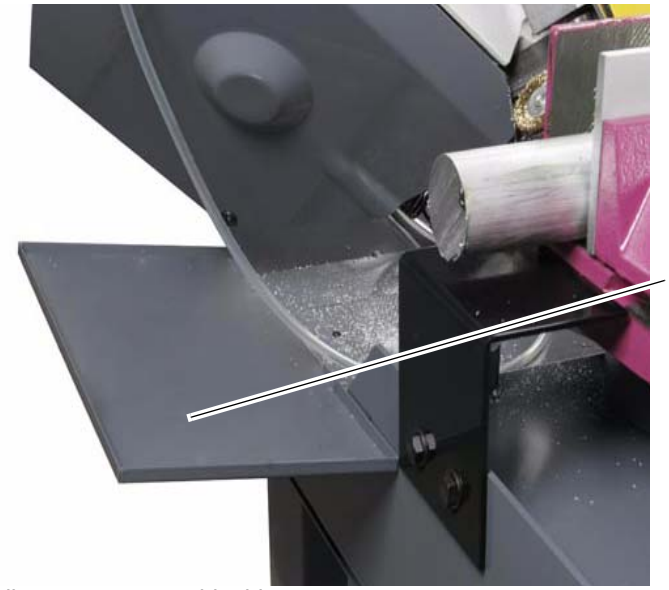
- ➔ Fit the side panels of the machine stand with the fitting tools supplied.
- ➔ Place the machine stand on a suitable base. Compensate for any unevenness in the base.
- ➔ Secure the machine stand on the ground.
- ➔ Place the metal belt saw on the machine stand.
- ➔ Screw the metal belt saw to the machine stand.
- ➔ Screw the drip pan to the machine stand.



Illustr. 3-1: Machine stand assembly diagram



Illustr. 3-2: Soil attachment



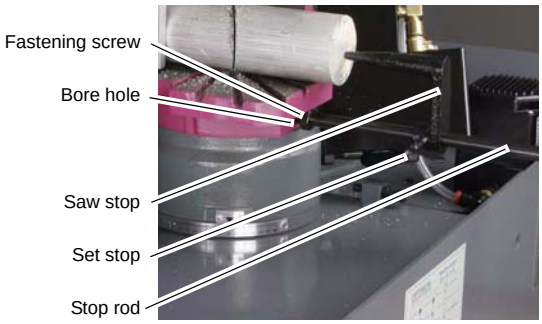
Illustr. 3-3: Assembly drip pan

Depth stop

➔ Position the stop rod in the hole and immobilise it with the lockscrew.

➔ Push the saw stop onto the stop rod.

➔ Lock the saw stop using the set stop.



Illustr. 3-4: Depth stop

3.4 Power connection

Connect the metal belt saw to the power supply in accordance with the total input power information.

ATTENTION!

For connection, install a lockable main switch or use a CE 16A combined plug.

Check the rotation field. Check the electrical fuse protection installed by the operator.

☞ “Power connection“ on page 20

☞ “Qualification of personnel“ on page 8

☞ “Schaltplan - Wiring diagram - S210G / S275G“ on page 42

ATTENTION!

Metal belt saws with frequency converter must not be operated with a CEE plug. Connect the machine permanently to a connection box (see EN 50178/ VDE 5.2.11.1)

- **S 210 G Vario**
- **S 275 G Vario**

ATTENTION!

Please pay attention that all three phases (L1, L2, L3) are connected correctly.

Most engine failure result from incorrect connection, for instance the neutral conductor (N) is being connected to a phase.

This might lead to the following results:

- The engine does get quickly very hot.

- The engine noise increases, i.e. becomes louder.

- The engine has no power.

When the phases are connected wrongly, the guarantee is being null and void.

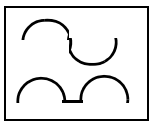
INFORMATION

On metal belt saws of the type "VARIO" the frequency converter (driving regulator) might release the FI protected switch of your electrical supply. In order to avoid malfunction, you either need an FI protected switch sensitive for pulse current or AC/DC sensitive.

In case of a mulfunction or release of the FI protected switch, please check the type installed.

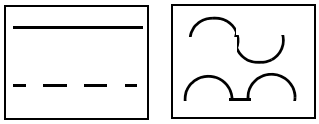
The following signs indicate if you have one of the FI protected switches described above.

FI protected switch sensitive to pulse current
type A



300 mA

FI protected switch sensitive to AC/DC
type B



300 mA

We recommend you to use an FI protected switch sensitive to AC/DC. FI protected switches sensitive to AC/DC (RCCB, type B aare adequate for 1 phase and 3phase fed frequency converters (driving regulator).

An FI protected switch type AC (only for alternating current (AC) is not appropriate for frequency converters. FI protected switches type AC are no longer used.

3.5 First use

WARNING!

Personnel and equipment may be endangered if the metal belt saw is first used by inexpert personnel.

We do not take responsibility for damage caused by incorrect commissioning.

3.5.1 Checking

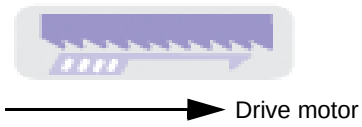
Check the following.

ATTENTION!

Danger of cutting! Proceed with caution during the work described below. Use the prescribed protection equipment.

Direction of the saw teeth

Check the direction of the saw teeth. They should be oriented towards the drive motor.

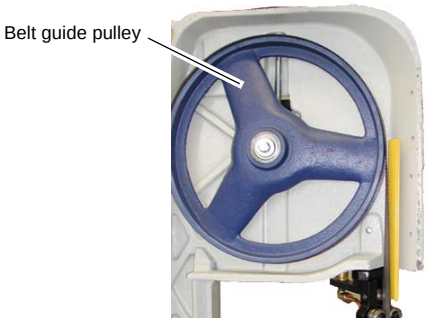


Turning direction of the saw blade

The blade turns anti-clockwise.

Inspecting the belt guide pulleys

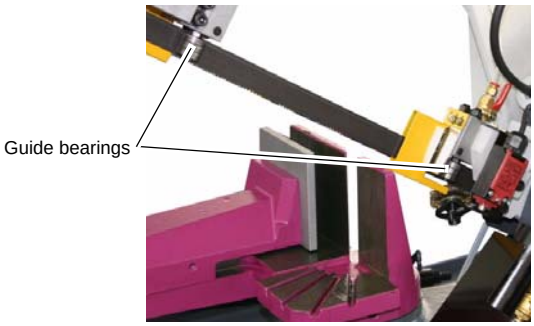
Check that the saw blade is in the right position on the belt guide pulleys.



Illustr. 3-5: Belt guide pulley

3.5.2 Saw belt guide bearings

Check that the saw belt fits snugly inside the guide bearings.



Illustr. 3-6: Guide bearings

3.5.3 Tension of the saw belt

Check the tension of the saw belt. The tension in the saw belt is correct if the middle can be pushed down 3 mm with a force of approximately 50 N.

Adjustment ☞ “Tension of the saw belt“ on page 24

4 Design and function

It is possible to saw multiple materials with the metal belt saw.

The speed of the saw belt can be changed using a speed selector on the control panel.

Two speeds may be selected which allow a wide range of materials to be sawed on metal belt saw S210G and S275G. The metal belt saws S210G Vario and S275G Vario allows an variable speed.

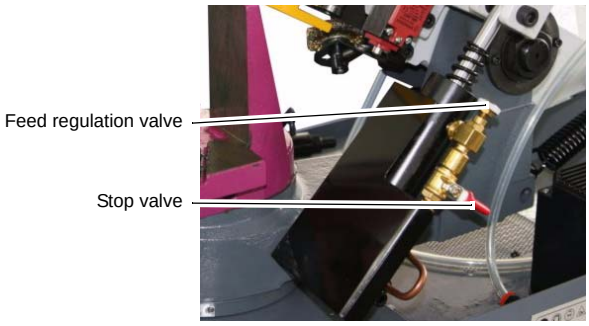
The arch of the OPTI S210 G metal belt saw can be turned 45° to allow angular cuts.
With the OPTI S275 G metal belt saw, you can make angular cuts in a range of 0º - 60º.

A hydraulic cylinder with a manually adjustable feed regulation valve acts as the feed adjustment system for the saw arch.

The tension of the saw blade is regulated using a hand wheel.

4.1 Hydraulic feed

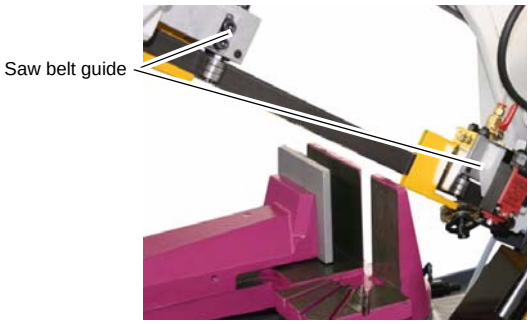
The saw arch is advanced by means of the hydraulic cylinder.



Illustr. 4-1: Hydraulic feed

4.2 Saw belt guide

The adjustable guide for the saw belt and flexible tube for the cooling agent can be used to adjust the free distance when sawing small parts.



Illustr. 4-2: Saw belt guide

ATTENTION!

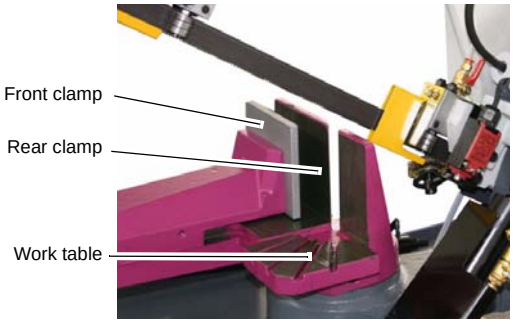
An unnecessarily wide space between the work piece and the saw belt guide, in combination with a high feed rate very quickly causes the saw blade to wear down.

4.3 Work-holder vice

The work-holder vice is used for securing the work piece.

The work-holder vice consists of

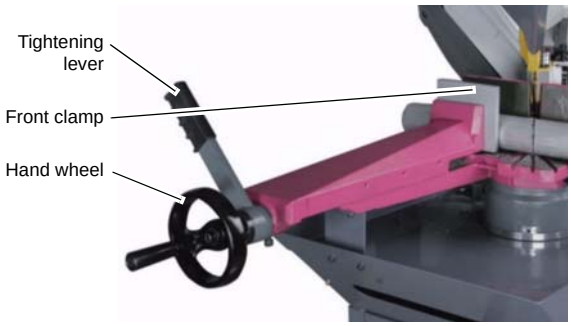
- the work table,
- the clamps,
- the rapid-securing device with hand wheel.



Illustr. 4-3: Work-holder vice

Regulate the required distance of the clamps by turning the hand wheel.

Secure the piece with the tightening lever.



Illustr. 4-4: Front clamp

4.4 Tension of the saw belt

The tension in the saw belt can be adjusted by means of the hand wheel.

Illustr. 4-5: Tension of the saw belt

4.5 Speed of the saw belt

4.5.1 Selector

You can change the speed using the selector.

Two speeds are available.

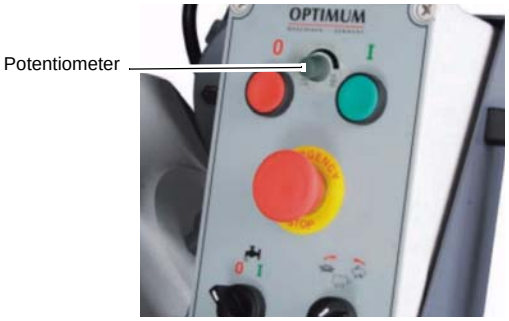
Illustr. 4-6: Control panel S210G/ S275G

4.5.2 Speed change adjustment of S210G Vario / S275G Vario

The speed change adjustment to VARIO metal belt saws occurs with a potentiometer.

The possible speed range for S210G Vario is 12 - 120 m/min.

The possible speed range for S275G Vario is 14 - 120 m/min.



Illustr. 4-7: Potentiometer S210G Vario/ S275G Vario

ATTENTION!

Wait until the saw blade has come to a complete halt before changing the speed using the selector.

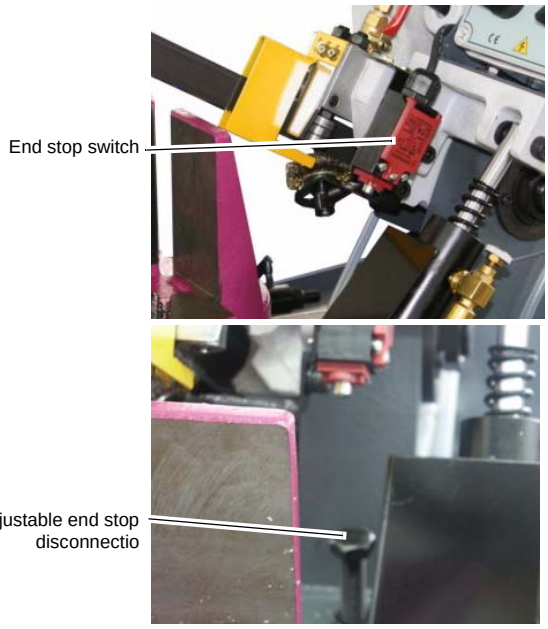
Changing the speed during operation on metal belt saw S210G and S275G can cause damage in the metal belt saw.

Never start up the metal belt saw after changing the speed if the belt teeth still are still in the cutting groove.

Changing the speed during operation on metal belt saw S210G Vario and S275G Vario is possible.

4.6 End stop switch

The end stop switch disconnects the metal belt saw in the bottom position.



Illustr. 4-8: End stop switch

4.7 Pressure of the saw arch

The pressure of the saw arch is regulated by means of a spring. The spring compensates for the force.

If the pressure of the saw arch is badly set, it can case curved cuts, breakage of teeth, deformation, and breakage of the belt guide pulleys.

Illustr. 4-9: Spring

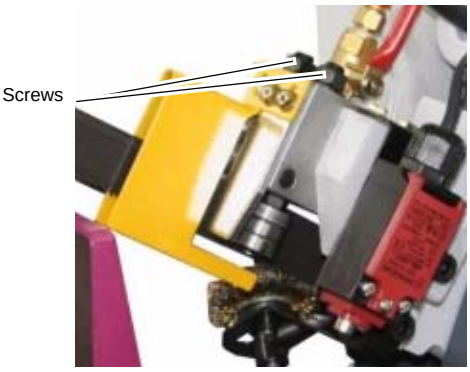
4.8 Belt guide bearings

ATTENTION!

The metal belt saws are designed for use with the following saw belts.

- **OPTI S 275 G**
  27 x 0.9 x 2480 mm
- **OPTI S 210 G**
  20 x 0.9 x 2080 mm

Use of other saw blades could cause damage to the saw.



Illustr. 4-10: Belt guide bearings

4.9 Liquid cooling system

The sawing movement produces high temperatures in the edge of the tool due to the friction generated.

The tool must therefore be cooled during operation. Using a suitable lubricant or cooling agent leads to better results and longer saw belt life.

Illustr. 4-11: Cooling pump

INFORMATION

We recommend that you use a water-soluble and non-pollutant sawing emulsion as a cooling agent. This can be acquired from authorised distributors.

Make sure to clean up the cooling agent after use.

Respect the environment when disposing of any lubricants and cooling agents.

Follow the manufacturer's disposal instructions.

5 Handling

5.1 Safety

Use the metal belt saw only under the following conditions:

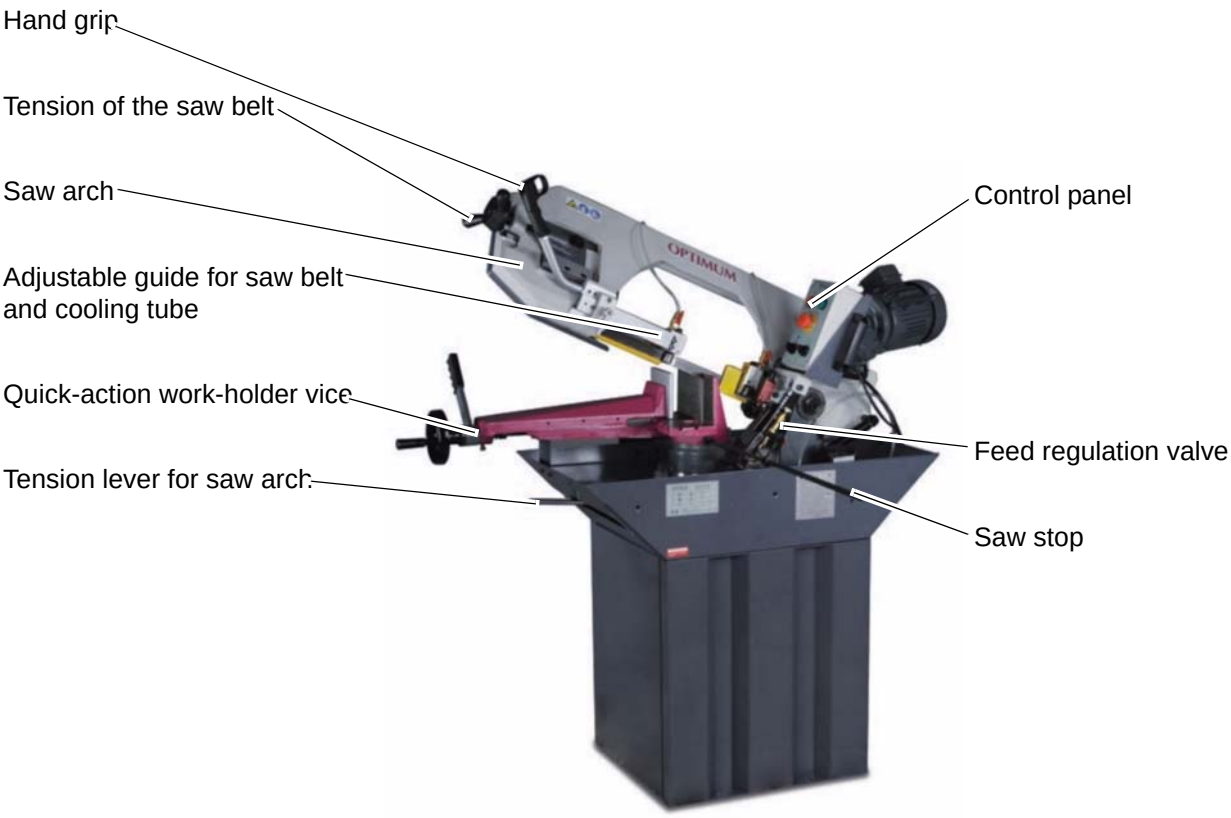
- The metal belt saw is in proper working order.
- The metal belt saw is used as prescribed.
- Follow the instruction manual.
- All safety devices are installed and activated.

All anomalies should be eliminated immediately. Stop the machine immediately in the event of any abnormality in operation and make sure it cannot be started up accidentally or without authorisation.

Notify the person responsible immediately of any modification.

☞ “Safety during operation“ on page 12

5.2 Control and indicating elements



Illustr. 5-1: Metal belt saw S 275 G

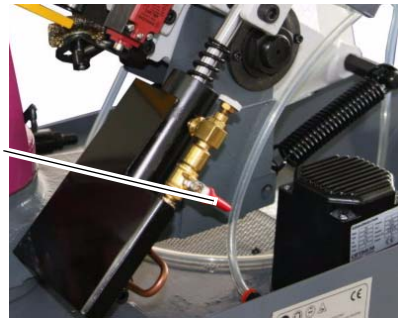
5.2.1 Control panel

Illustr. 5-2: Control panel of the metal belt saw

5.3 Inserting the work piece

➔ Raise the saw arch.

➔ Place the closing tap in vertical position to secure the arch in a given position.

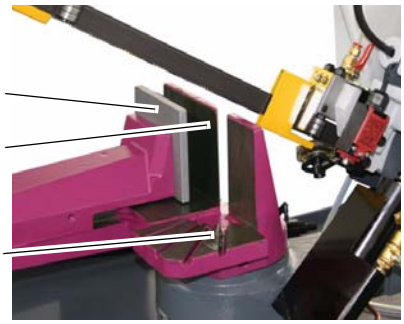


Illustr. 5-3: Hydraulic feed

➔ Place the piece to be cut in the work-holder vice.

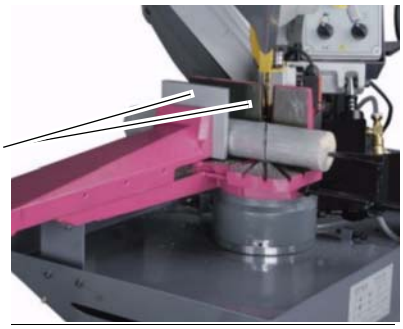
ATTENTION!

Danger of overturning of the metal belt saw. Support long work pieces before pushing the piece to be cut into the work-holder vice.



Illustr. 5-4: Work-holder vice

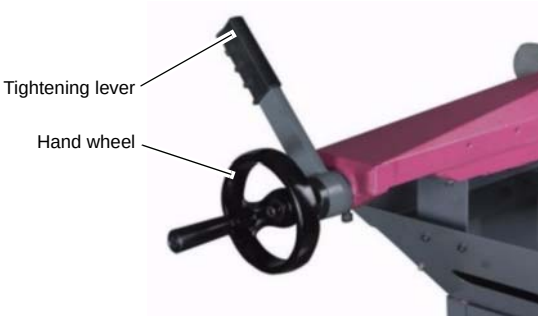
The saw arch can be regulated with continuous advance for angular cuts.



Illustr. 5-5: Angular cut

➔ Position the clamp approximately 4 mm in front of the piece by turning the hand wheel.

➔ Secure the piece using the tightening lever.



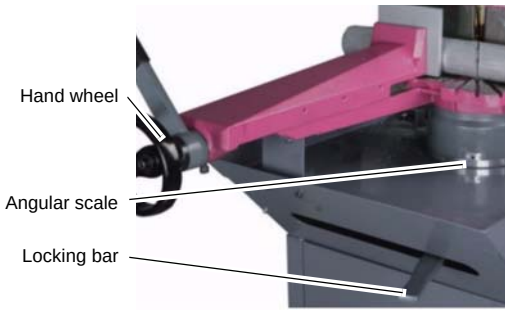
Illustr. 5-6: Hand wheel and tightening lever

5.4 Adjusting the angular cut

➔ To adjust angular cuts, place the locking bar of the saw arch in the left-hand position.

➔ Turn the saw arch to the required cutting position.

➔ There is a scale for adjusting the angle on the bearing support.



Illustr. 5-7: Locking bar

➔ Lock the adjustment by moving the locking bar to the right.

5.5 Adjusting the saw belt guide

Change the position of the saw belt guide depending on the size of the pieces to be cut.

➔ Loosen the setscrew.

➔ Place the saw belt guide near the work piece without affecting or hindering the sawing process.

Illustr. 5-8: Setscrew

➔ Re-tighten the setscrew.

ATTENTION!

An unnecessarily wide space between the work piece and the saw belt guide, in combination with a high feed rate very quickly causes the saw belt to wear down.

5.6 Adjusting the speed of the saw belt

5.6.1 Selector

You can change the speed using the selector. Two speed stages are available.

Illustr. 5-9: Control panel

Symbol for rapid speed.
.

Symbol for slow speed.

ATTENTION!

Wait until the saw blade has come to a complete halt before changing the speed using the selector.

Changing the speed during operation can cause damage in the metal belt saw.

Never start up themetal belt saw after changing the speed if the blade teeth are still in the cutting groove.

A speed changing during operating on S210G Vario and S275G Vario on the other hand is without problems possible.

Saw belt speeds

Guidelines values for cutting speeds [m / min] :

Material	[m / min]	Feed motion per tooth [mm]	Material	[m / min]	Feed motion per tooth [mm]
C10, C15, St34, St37, Steel up to 500 N/mm^2	30 - 50	0,03 - 0,06	Aluminium and alloy aluminium	600 - 900	0,04 - 0,09
C20, C40, 15Cr3, 16MnC35, Steel up to 800 N/mm^2	20 - 40	0,03 - 0,04	Aluminium and alloy aluminium (Profiles)	800 - 1200	0,03 - 0,07
38NCD4, 50CrV4, Steel up to 1200 N/mm^2	15 - 25	0,02 - 0,03	Brass and Copper	200 - 300	0,04 - 0,06
Stainless steel	10 - 30	0,01 - 0,03	Bronze	400 - 600	0,04 - 0,08
Casting	30 - 50	0,04 - 0,05	Synthetic materials	60 - 150	0,04 - 0,08

5.7 Liquid cooling system

ATTENTION!

Failure of the pump in the event of a dry run. The pump is lubricated by the cooling agent. Do not start up the pump without cooling agent.

Symbol: Cooling pump

Illustr. 5-10: Cooling pump

INFORMATION

We recommend that you use a water-soluble and non-pollutant sawing emulsion as a cooling agent. This can be acquired from authorised distributors.

Make sure to clean up the cooling agent after use.

Respect the environment when disposing of any lubricants and cooling agents.

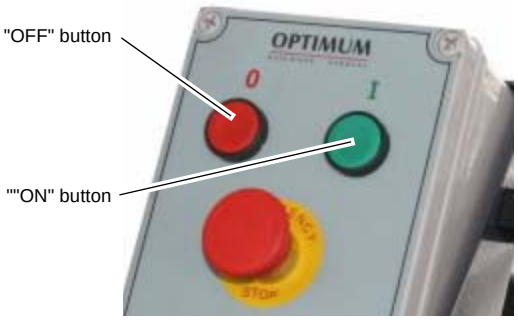
Follow the manufacturer's disposal instructions.

➔ Turn on the liquid cooling system with the switch.

Illustr. 5-11: Control panel

5.8 Starting the metal belt saw

➔ Start the metal belt saw by pressing the green button.

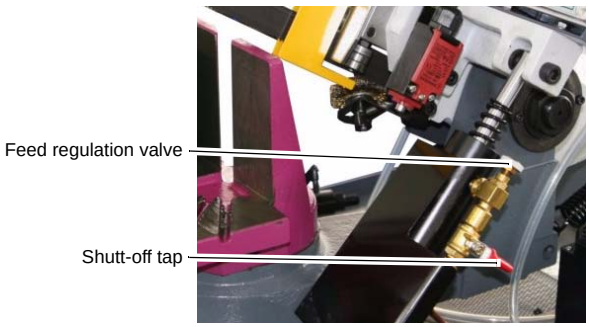


Illustr. 5-12: Control panel

5.9 Hydraulic feed

➔ Adjust the descent speed of the saw arch in the feed regulation valve.

➔ Open the shut-off tap.



Illustr. 5-13: Hydraulic feed

The belt saw is disconnected automatically once it reaches the end of the run.

Follow the same steps in reverse order to remove the work piece from the vice.

EMPIRICAL RULE!

The finer the tooth spacing and/or the thinner or smaller the work piece, the lower the feed should be.

6 Maintenance

In this chapter you will find important information about

- Inspection
- Maintenance
- Repairs

of the metal belt saw.

NOTICE !

Properly-performed regular maintenance is an essential prerequisite for

- **safe operation,**
- **fault-free operation,**
- **long service life of the metal belt saw and**
- **the quality of the products you manufacture.**

Installations and equipment from other manufacturers must also be in optimum condition.

ENVIRONMENTAL PROTECTION

Make sure that liquids and oils are not spilt on the ground.

Clean up any spilt liquid or oils immediately using proper oil-absorption methods and dispose of them in accordance with current legal requirements on the environment.

Collecting spillages

Do not re-introduce liquids spilt outside the system during repair or as a result of leakage from the reserve tank: collect them in a collecting vessel to be disposed of.

Disposal

Never dump oil or other pollutant substances in water inlets, rivers or channels.

Used oils must be delivered to a collection centre. Consult your superior if you do not know where the collection centre is.

6.1 Safety

WARNING!

The consequences of incorrect maintenance and repair work may include:

- **Very serious injury to personnel working on the metal belt saw**
- **Damage to the metal belt saw.**

Only qualified personnel should carry out maintenance and repair work on the metal belt saw.

Use the prescribed protection equipment.

6.1.1 Preparation

WARNING!

Only carry out work on the metal belt saw if it has been unplugged from the mains power supply.

☞ “Disconnecting the metal belt saw and making it safe“ on page 12

Position a warning sign.

6.1.2 Restarting

Before restarting run a safety check.

☞ “Safety check“ on page 11

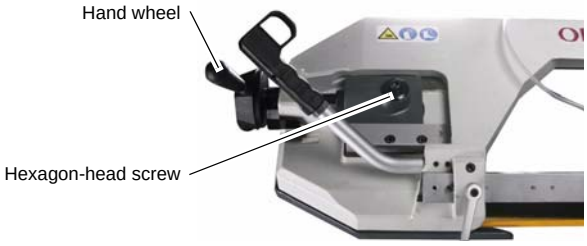
WARNING!

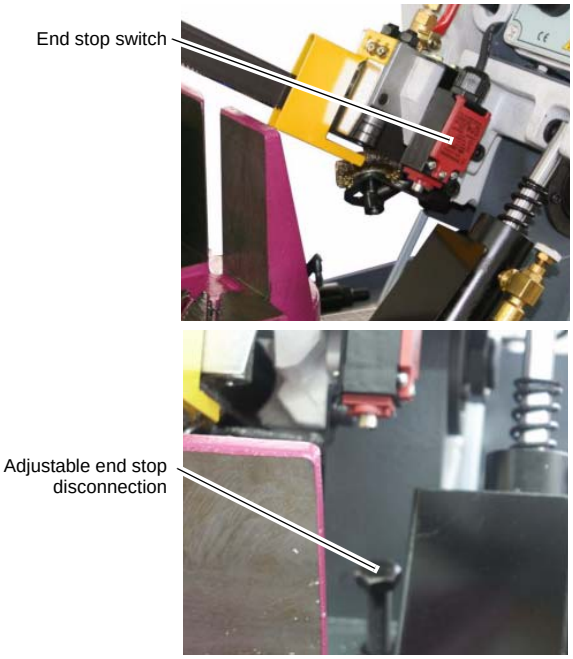
Before connecting the metal belt saw you must check that

- **there is no danger for personnel,**
- **the metal belt saw is undamaged.**

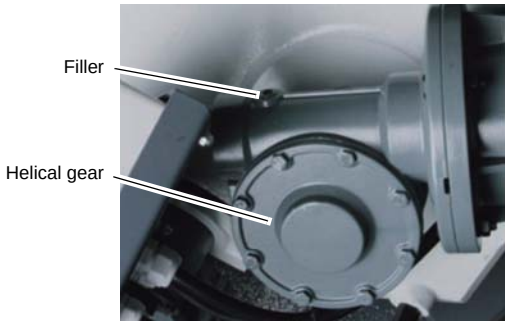
6.2 Revision and maintenance

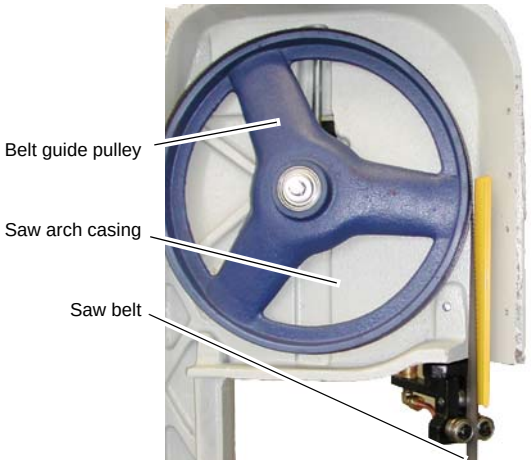
The type and extent of wear depends to a large extent on the individual usage and service conditions. For this reason, all the intervals are only valid for the authorised conditions.

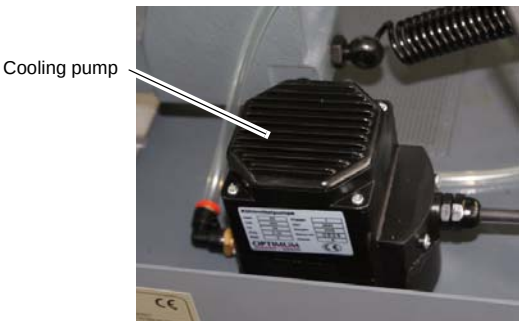
Intervals / When?	Where?	What?	How?
as required and after change of saw belt	Saw arch	Adjusting the tension in the saw belt	➔ Loosen the hexagon-head screw. ➔ Turn the hand wheel clockwise to increase the tension in the saw belt. ➔ The saw belt is at the right tension if it can be moved 3 mm in the centre applying a force of approximately 50 N.  Illustr. 6-1: Tension of saw blade **INFORMATION** **Do not strain the saw blade more than necessary. The blade could be overstretched and become warped.**

Intervals / When?	Where?	What?	How?
If there have been curved cuts, breakage of teeth, warping or breakage of the guide rollers.	Saw arch	Adjusting the pressure of the saw arch	➔ Place the saw arch in the upper position and close the shut-off tap on the hydraulic cylinder. ➔ Place a level in the work-holder vice. ➔ Let the saw arch descend slowly. ➔ Fully open the shut-off tap on the hydraulic cylinder once the saw belt has made contact with the level. ➔ The support force of the saw arch on the level should come to 15 - 16 kg. ➔ If necessary, correct the value by changing the position of the spring using the setscrew.  Illustr. 6-2: Pressure of the saw arch
If the metal belt saw and the cooling pump continue to operate after the sawing process is complete. If the metal belt saw and the cooling pump disconnect before the sawing process is complete.		Adjusting the end stop switch	➔ Turn the screw on the end stop switch up or down so that it comes into contact with the end stop switch when the sawing process finishes.  Illustr. 6-3: End stop switch ➔ Check the end stop of the saw arch. It should coincide with disconnection of the end stop switch.

Intervals / When?	Where?	What?	How?
Start of shift after each maintenance or repair operation	Metal belt saw	☞ “Safety check“ on page 11	
every week	Drive shaft	Bearing	• Lubricate
every month	Helical gear	Visual inspection	➔ Check the oil level through the inspection window of the helical gear. **INFORMATION** **During the first few days in service, the helical gear may become quite hot. If the temperature does not exceed 70°C, no further measures need be taken.** **This running-in process can improve considerably if a little Molykote G gear paste is added to the oil in the helical gear before the machine is first used. This reduces wear in the flanks of the teeth and increases the useful service life of the gear.**
as required	Work-holder vice	Spindle	➔ Lubricate the spindle of the work-holder vice

Intervals / When?	Where?	What?	How?
every year	Drive system	Oil change	➔ Unscrew the oil bleed screw at the bottom of the helical gear. To collect the oil, use a suitable vessel of sufficient capacity. ➔ Open the filler for better ventilation. ➔ Use viscous gear oil, e.g. Mobil 629  Illustr. 6-4: Helical gear **INFORMATION** **Let the metal belt saw run for a few minutes before beginning the oil change. This will heat the oil, making it flow more easily out of the outlet hole.**

Intervals / When?	Where?	What?	How?
after wear	Saw arch	Changing the saw belt	**ATTENTION!** **This metal belt saw was designed for use with belts of the following dimensions** **S 275 G; 2480 x 27 x 0.9 mm** **S 210 G; 2080 x 20 x 0.9 mm** **The use of other saw blades can cause inferior sawing results.** ➔ Place the saw arch in the upper position and close the shut-off tap on the hydraulic cylinder. ➔ Remove the saw belt brush by unscrewing the lock-screw. ➔ Remove the protective cover of the saw belt guide. ➔ Remove the protective cover from the saw arch. ➔ Loosen the tension of the saw belt by turning the hand wheel anti-clockwise. ☞ “Adjusting the tension in the saw belt“ on page 35 ➔ Carefully remove the old saw belt. ➔ Fit the new saw blade by inserting it first into the saw belt guide. ➔ Check the running direction and toothing. ☞ “Direction of the saw teeth“ on page 21 ➔ Place the saw belt on the two pulleys so that it is as close as possible to the casing of the saw arch ➔ Tighten the saw belt. ☞ “Adjusting the tension in the saw belt“ on page 35. ➔ Run a check as described in ☞ “Checking“ on page 21. ➔ For fitting the components, proceed in reverse order. ➔ Perform a run test. ➔ Re-fit the protective covers.  Illustr. 6-5: Changing the saw belt

Intervals / When?	Where?	What?	How?
as required	Liquid cooling system	Cooling pump	➔ The cooling pump is almost entirely maintenance free. Replace the cooling agent regularly, depending on usage. ➔ Because cooling agents are used that leave residues, the cooling pump must be washed.  Illustr. 6-6: Cooling pump

6.3 Repair

For any repair work, get assistance from an employee of Optimum Maschinen Germany GmbH's technical service or send us the metal belt saw.

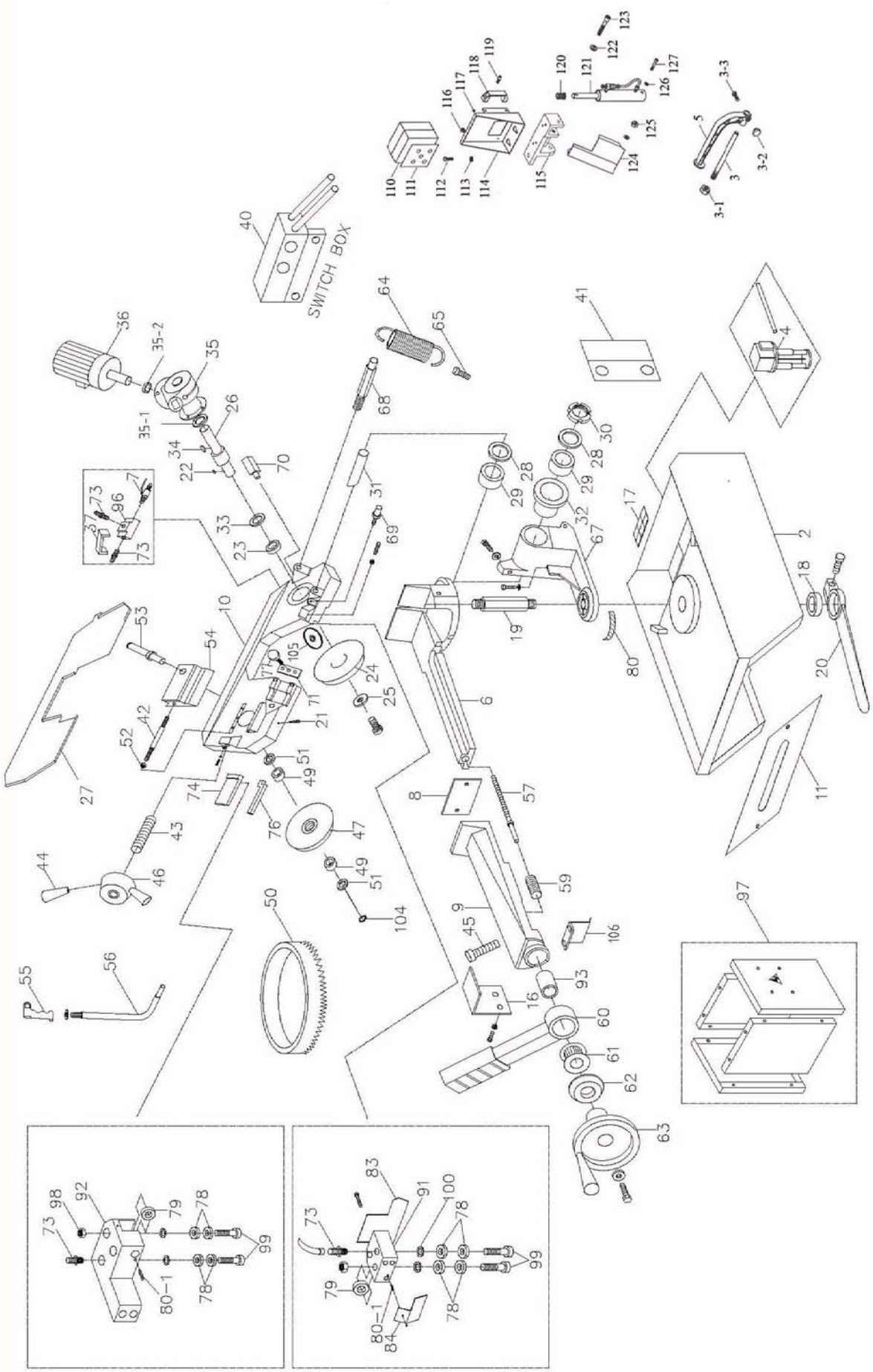
If the repairs are carried out by qualified technical staff, they must follow the indications given in this manual.

Optimum Maschinen Germany GmbH does not take responsibility nor does it guarantee against damage and operating anomalies resulting from failure to observe this instruction manual.

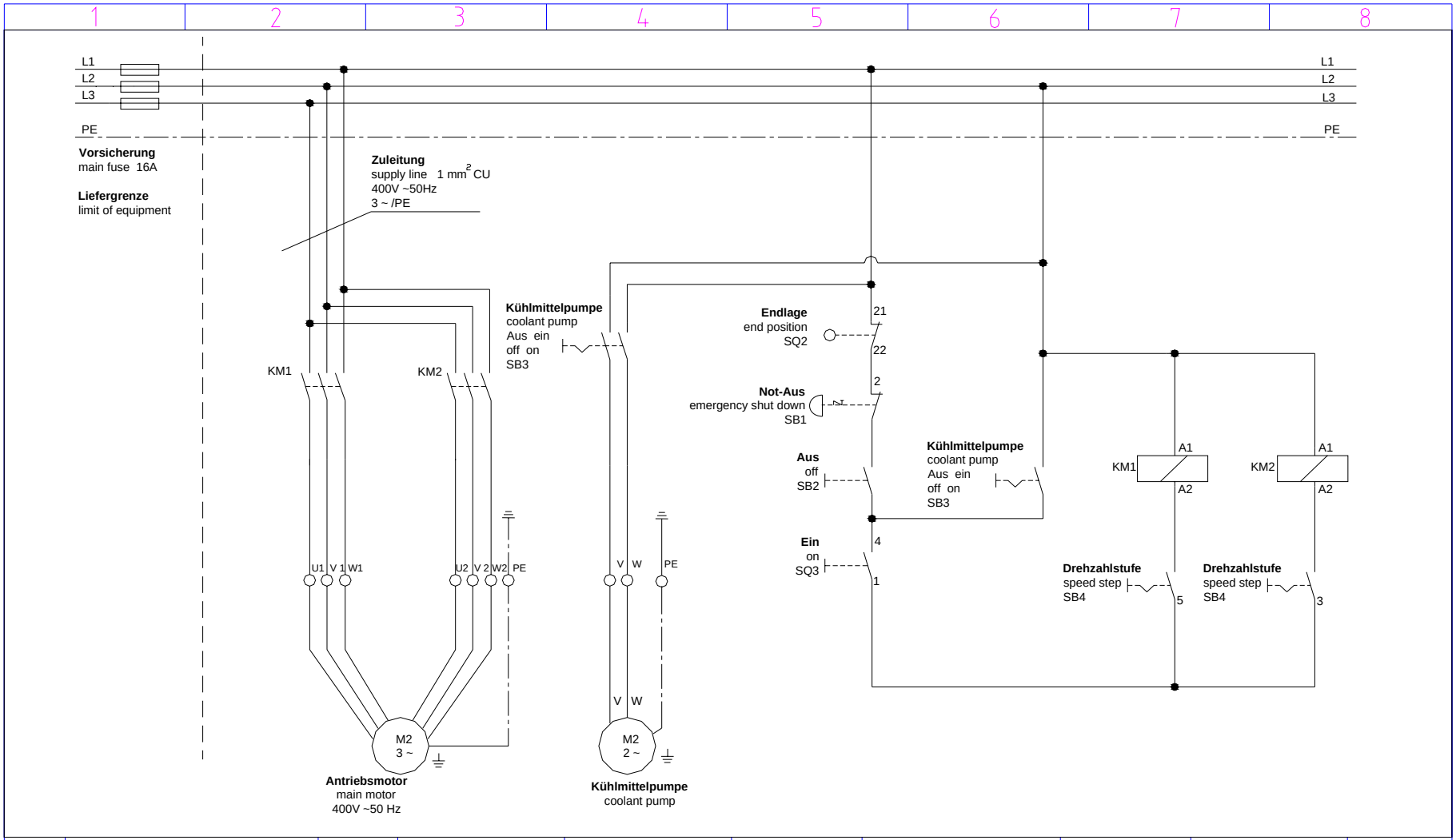
For repairs, only use

- faultless and suitable tools,
- original spare parts or parts from series expressly authorised by Optimum Maschinen Germany GmbH.

7 Ersatzteile - Spare parts - S210G, S275G



7.1 Schaltplan - Wiring diagram - S210G / S275G



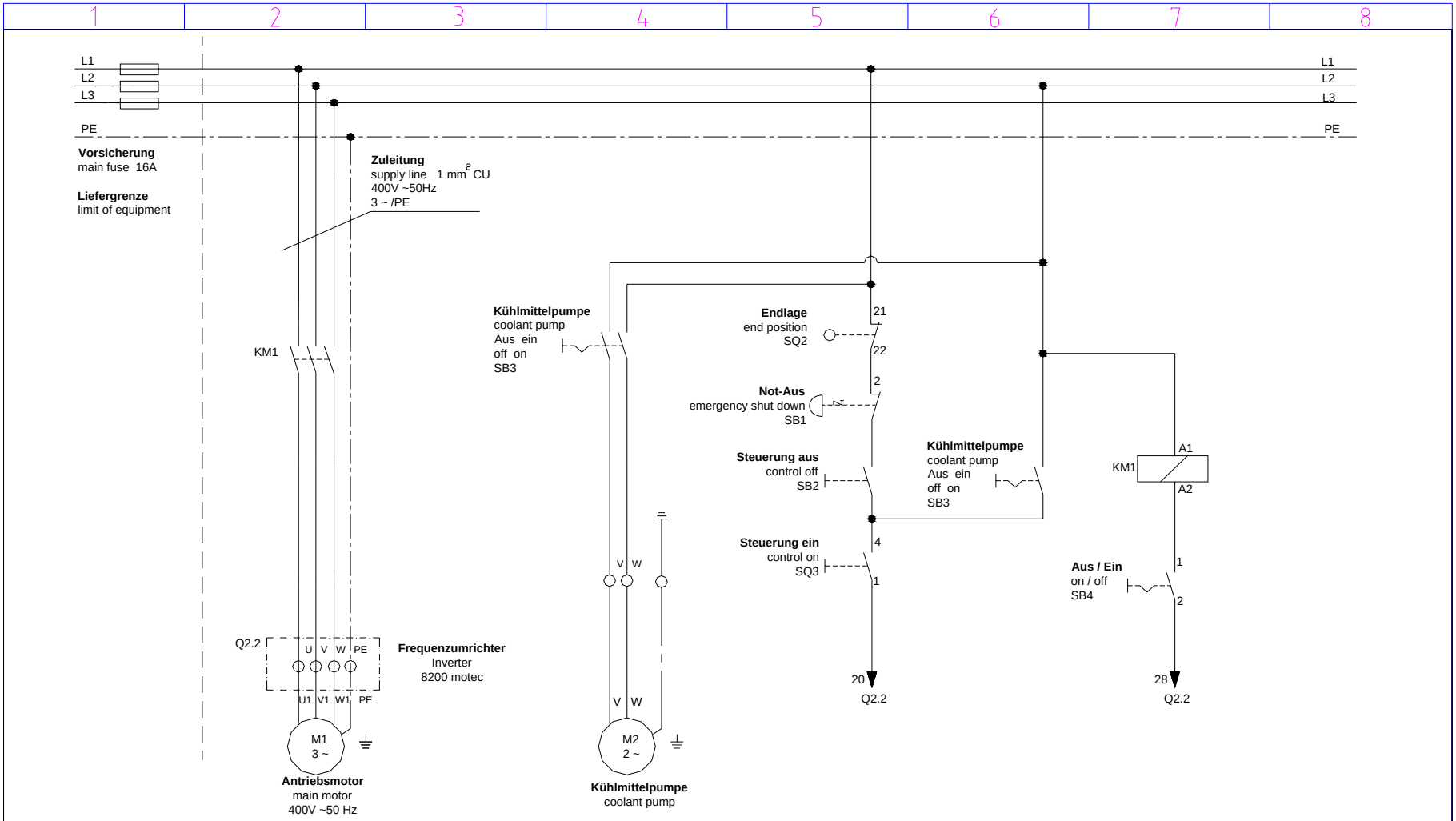
Ind.	Modification	Day	Name	Designed by	Verif. by	Approval date	Filename	Date
				Mücke	Ziegler	07/11/2003		07/11/2003

OPTIMUM MASCHINEN · GERMANY
Dr.-Robert-Pfleger-Str. 26
D-96103 Hallstadt

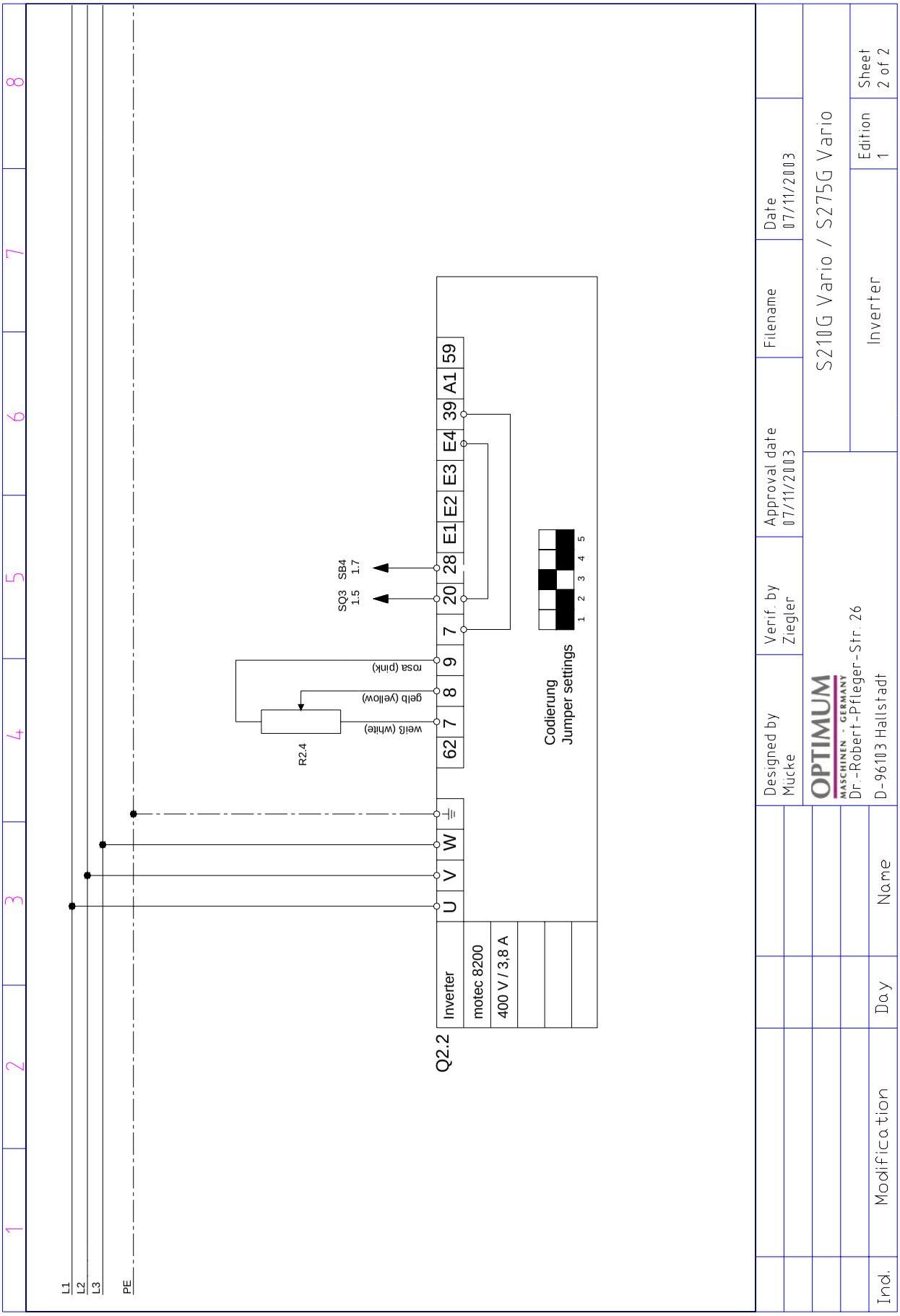
S210G / S275G

Edition 1 | Sheet 1 of 1

7.2 Schaltplan - Wiring diagram - S210G Vario / S275G Vario



				Designed by	Verif. by	Approval date	Filename	Date	
				Mücke	Ziegler	07/11/2003		07/11/2003	
				OPTIMUM MASCHINEN · GERMANY Dr.-Robert-Pfleger-Str. 26 D-96103 Hallstadt		S210G Vario / S275G Vario			
Ind.	Modification	Day	Name			Lastkreis		Edition 1	Sheet 1 of 2


L1
L2
L3
PE
Q2.2
Inverter
motec 8200
400 V / 3,8 A
U
V
W
62
7
8
9
7
20
28
39
A1
59
E1
E2
E3
E4
SQ3 1.5
SB4 1.7
R2.4
weiß (white)
gelb (yellow)
rosa (pink)
Codierung
Jumper settings
1 2 3 4 5
Designed by Mücke
Verif. by Ziegler
Approval date 07/11/2003
Filename
Date 07/11/2003
S210G Vario / S275G Vario
Inverter
Edition 1
Sheet 2 of 2
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Dr.-Robert-Pfleger-Str. 26
D-96103 Hallstadt
Ind.
Modification
Day
Name

7.2.1 Ersatzteilliste - Spare parts list - S210G, S275G

Pos.	Bezeichnung	Designation	Menge	Grösse	Machine	Artikelnummer
			Qty.	Size		Item no.
1	Dichtung	Seal	1		S210G	0322101
1	Dichtung	Seal	1		S275G	0322101
2	Maschinengestell	Machine casing	1		S210G	0330021002
2	Maschinengestell	Machine casing	1		S275G	0330027502
3	Anschlagstange	Stop bar	1		S210G	0330021003
3	Anschlagstange	Stop bar	1		S275G	0330021003
3-1	Sechskantmutter	Hex. Nut	1	M14xP1.5	S210G	03300210031
					S275G	03300275031
3-2	Rändelmutter	Knurled nut	1	M6	S210G	03300210032
					S275G	03300275032
3-3	Sechskantschraube	Hex. Head Screw	1	M6x30L	S210G	03300210033
					S275G	03300275033
4	Kühlmittelpumpe	Cooling pump	1		S210G	0330021004
4	Kühlmittelpumpe	Cooling pump	1		S275G	0330021004
5	Sägeanschlag	Saw stop	1		S210G	0330021005
5	Sägeanschlag	Saw stop	1		S275G	0330021005
6	Feste Backe	Fixed jaw	1		S210G	0330021006
6	Feste Backe	Fixed jaw	1		S275G	0330027506
7	Kühlmittelhahn	Cooling valve	1		S210G	0330021007
7	Kühlmittelhahn	Cooling valve	1		S275G	0330021007
8	Schraubstockbacken	Jaw	1		S210G	0330021008
8	Schraubstockbacken	Jaw	1		S275G	0330027508
9	Bewegliche Backe	Moveable jaw	1		S210G	0330021009
9	Bewegliche Backe	Moveable jaw	1		S275G	0330027509
10	Sägebügel	Saw bow	1		S210G	0330021010
10	Sägebügel	Saw bow	1		S275G	0330027510
11	Verkleidungsblech	Lining plate	1		S210G	0330021011
11	Verkleidungsblech	Lining plate	1		S275G	0330027511
16	Stützbügel	Support	1		S210G	0330021016
16	Stützbügel	Support	1		S275G	0330021016
17	Kühlmittelsieb	Filter	1		S210G	0330021017
17	Kühlmittelsieb	Filter	1		S275G	0330027517
18	Distanzscheibe	Spacer washer	1		S210G	0330021018
18	Distanzscheibe	Spacer washer	1		S275G	0330021018
19	Bolzen	Bolt	1		S210G	0330021019
19	Bolzen	Bolt	1		S275G	0330027519
20	Feststellhebel	Locking lever	1		S210G	0330021020
20	Feststellhebel	Locking lever	1		S275G	0330021020
21	Stift	Pin	1		S210G	0330021021
21	Stift	Pin	1		S275G	0330027521
22	Passfeder	Key	1	7 x 7	S210G	0330021022
22	Passfeder	Key	1	7 x 7	S275G	0330021022
23	Lager	Bearing	1		S210G	0322112
23	Lager	Bearing	1		S275G	0322112
24	Angetriebene Bandführungsrolle	Driven belt guide roller	1		S210G	0330021024
24	Angetriebene Bandführungsrolle	Driven belt guide roller	1		S275G	0330027524
25	Dichtung	Seal	1		S210G	0330021025
25	Dichtung	Seal	1		S275G	0330027525
26	Antriebswelle	Drive shaft	1		S210G	0330021026
26	Antriebswelle	Drive shaft	1		S275G	0330027526
27	Schutzabdeckung Sägebügel	Protective cover for saw bow	1		S210G	0330021027
27	Schutzabdeckung Sägebügel	Protective cover for saw bow	1		S275G	0330027527
28	Scheibe	Washer	2		S210G	0330021028
28	Scheibe	Washer	2		S275G	0330021028
29	Lager	Bearing	2	32006	S210G	04032006.2R
29	Lager	Bearing	2	32006	S275G	04032006.2R
30	Nutmutter	Groove nut	1	M30	S210G	0330021030
30	Nutmutter	Groove nut	1	M30	S275G	0330021030
31	Drehzapfen	Trunnion	1		S210G	0330021031
31	Drehzapfen	Trunnion	1		S275G	0330021031
32	Lagerabdeckung	Bearing cover	1		S210G	0330021032
32	Lagerabdeckung	Bearing cover	1		S275G	0330021032
33	Scheibe	Washer	1		S210G	0330021033
33	Scheibe	Washer	1		S275G	0330021033
34	Passfeder	Key	1	4 x 25	S210G	0330021034
34	Passfeder	Key	1	4 x 25	S275G	0330021034

Pos.	Bezeichnung	Designation	Menge	Grösse	Machine	Artikelnummer
			Qty.	Size		Item no.
35	Schneckengetriebe	Gear	1		S210G	0330021035
35	Schneckengetriebe	Gear	1		S275G	0330027535
35-1	Simmerring Getriebe	Shaft seal helical gear	1	TC 35/70/10 F542	S210G	0322169
35-1	Simmerring Getriebe	Shaft seal helical gear	1	TC 35/70/10 F542	S275G	0322169
35-2	Simmerring Getriebe	Shaft seal helical gear	1	25/40/7	S210G	0322180
35-2	Simmerring Getriebe	Shaft seal helical gear	1	25/40/7	S275G	0322180
36	Motor	Motor	1		S210G	0330021036
36	Motor	Motor	1		S275G	0330027536
37	Verkleidungsblech	Lining plate	1		S210G	0330021037
37	Verkleidungsblech	Lining plate	1		S275G	0330021037
40	Schaltkasten	Switch box	1		S210G	0330021040
40	Schaltkasten	Switch box	1		S275G	0330021040
41	Abdeckung	Cover	1		S210G	0330021041
41	Abdeckung	Cover	1		S275G	0330027541
42	Gewindestange	Threaded rod	1		S210G	0330021042
42	Gewindestange	Threaded rod	1		S275G	0330027542
43	Feder	Spring	1		S210G	0330021043
43	Feder	Spring	1		S275G	0330027543
44	Handradgriff	Hand wheel grip	2		S210G	0330021044
44	Handradgriff	Hand wheel grip	2		S275G	0330021044
45	Inbusschraube	Allen screw	1		S210G	0330021045
45	Inbusschraube	Allen screw	1		S275G	0330021045
46	Nabe	Hub	1		S210G	0330021046
46	Nabe	Hub	1		S275G	0330021046
47	Bandführungsrolle	Un-driven belt guide roller	1		S210G	0330021047
47	Bandführungsrolle	Un-driven belt guide roller	1		S275G	0330027547
49	Lager	Bearing	2	6004 2Z	S210G	0406004.2R
49	Lager	Bearing	2	6004 2Z	S275G	0406004.2R
50	SägebandHSS Bi-Metall	Saw belt	1	10-14 ZPZ	S210G	3357515
50	SägebandHSS Bi-Metall	Saw belt	1	10-14 ZPZ	S275G	3357525
50	SägebandHSS Bi-Metall	Saw belt	1	6-10 ZPZ	S210G	3357514
50	SägebandHSS Bi-Metall	Saw belt	1	6-10 ZPZ	S275G	3357524
51	Federring	Spring washer	1		S210G	0330021051
51	Federring	Spring washer	1		S275G	0330027551
52	Mutter	Nut	1		S210G	0330021052
52	Mutter	Nut	1		S275G	0330021052
53	Welle	Shaft	1		S210G	0330021053
53	Welle	Shaft	1		S275G	0330027553
54	Führungsblock	Guide block	1		S210G	0330021054
54	Führungsblock	Guide block	1		S275G	0330027554
55	Handgriff	Handgrip	1		S210G	0330021055
55	Handgriff	Handgrip	1		S275G	0330021055
56	Handgriffverlängerung	Handgrip extension	1		S210G	0330021056
56	Handgriffverlängerung	Handgrip extension	1		S275G	0330021056
57	Spindel	Spindle	1		S210G	0330021057
57	Spindel	Spindle	1		S275G	0330021057
59	Feder	Spring	1		S210G	0330021059
59	Feder	Spring	1		S275G	0330021059
60	Spannhebel	Tension lever	1		S210G	0330021060
60	Spannhebel	Tension lever	1		S275G	0330021060
61	Lager	Bearing	1	51106	S210G	04051106.2R
61	Lager	Bearing	1	51106	S275G	04051106.2R
62	Lagerabdeckung	Bearing cover	1		S210G	0330021062
62	Lagerabdeckung	Bearing cover	1		S275G	0330021062
63	Handrad	Hand wheel	1		S210G	0330021063
63	Handrad	Hand wheel	1		S275G	0330021063
64	Feder	Spring	1		S210G	0330021064
64	Feder	Spring	1		S275G	0330027564
65	Ösenschraube	Eyelet bolt	1		S210G	0330021065
65	Ösenschraueb	Eyelet bolt	1		S275G	0330021065
67	Lagerbock	Bearing support	1		S210G	0330021067
67	Lagerbock	Bearing support			S275G	0330027567
68	Bolzen	Bolt	1		S210G	0330021068
68	Bolzen	Bolt			S275G	0330027568
69	Inbusschraube	Allen screw	1		S210G	0330021069
69	Inbusschraube	Allen screw			S275G	0330021069

Pos.	Bezeichnung	Designation	Menge	Grösse	Machine	Artikelnummer
			Qty.	Size		Item no.
70	Endlagenschalter	End stop switch	1		S210G	0330021070
70	Endlagenschalter	End stop switch			S275G	0330021070
71	Block	Block	1		S210G	0330021071
71	Block	Block			S275G	0330027571
73	Schlauchnippel	Nozzle	2		S210G	0330021073
73	Schlauchnippel	Nozzle			S275G	0330021073
74	Arm	Arm	1		S210G	0330021074
74	Arm	Arm			S275G	0330027574
76	Bandführung	Belt guide	1		S210G	0330021076
76	Bandführung	Belt guide			S275G	0330027576
77	Griff	Hand grip	1		S210G	0330021077
77	Griff	Hand grip			S275G	0330027577
78	Lager	Bearing	10	6082Z	S210G	0406082.2R
79	Lager	Bearing		6082Z	S275G	0406082.2R
80	Skala	Scale	1		S210G	0330021080
80	Skala	Scale			S275G	0330027581
80-1	Gewindestift	Set screw	1		S210G	03300210801
80-1	Gewindestift	Set screw			S275G	03300275801
83	linke Schutzabdeckung	Protection cover left	1		S210G	0330021083
83	linke Schutzabdeckung	Protection cover left			S275G	0330027583
84	rechte Schutzabdeckung	Protection cover right	1		S210G	0330021084
84	rechte Schutzabdeckung	Protection cover right			S275G	0330027584
85	Schaltersatz	Switch set	1		S210G	0330021085
85	Schaltersatz	Switch set			S275G	0330021085
87	Skala	Scale	1		S210G	0330021087
87	Skala	Scale			S275G	0330021087
90	Schraube	Screw	1		S210G	0330021090
90	Schraube	Screw			S275G	0330021090
91	feststehende Bandsägeführung	Fixed belt saw guide	1		S210G	0330021091
91	feststehende Bandsägeführung	Fixed belt saw guide			S275G	0330027591
92	verschiebbare Bandsägeführung	Adjustable belt saw guide	1		S210G	0330021092
92	verschiebbare Bandsägeführung	Adjustable belt saw guide			S275G	0330027592
93	Distanzhülse	Spacer	1		S210G	0330021093
93	Distanzhülse	Spacer			S275G	0330021093
96	Kühlmitteleinrichtung	Cooling system	1		S210G	0330021096
96	Kühlmitteleinrichtung	Cooling system			S275G	0330021096
97	Unterbau komplett	Machine stand	1		S210G	0330021097
97	Unterbau komplett	Machine stand			S275G	0330027597
98	Sechskantmutter	Hexagonal nut	1	M 10	S210G	
98	Sechskantmutter	Hexagonal nut	1	M 10	S275G	
99	Führungsdrehzapfen Sägeband	Saw belt guide trunnion	4		S210G	0330021099
99	Führungsdrehzapfen Sägeband	Saw belt guide trunnion	4		S275G	0330027599
100	Dichtung	Seal	1		S210G	03300210100
100	Dichtung	Seal	1		S275G	03300210100
102	Bedienfeld	Control panel	1		S210G	03300210102
102	Bedienfeld	Control panel	1		S275G	03300210102
104	Sicherungsring	Safety ring	1		S210G	03300210104
104	Sicherungsring	Safety ring	1		S275G	03300275104
105	Sägebandbürste	Metal belt brush	1		S210G	03300210105
105	Sägebandbürste	Metal belt brush	1		S275G	03300275105
106	Stützblech	Support plate	1		S210G	03300210106
106	Stützblech	Support plate	1		S275G	03300210106
110	Schalterkasten Bedienschalter	Distribution box	1	243x54	S210G	03300210110
					S275G	03300275110
111	Schalter Platte	Switch plate	1		S210G	03300210111
					S275G	03300275111
112	Sechskantschraube	Hex. Socker Headless Screw	1	M6X10L	S210G	03300210112
					S275G	03300275112
113	Scheibe	Washer	1	6	S210G	03300210113
					S275G	03300275113
114	Halter Schaltkasten	Holder distribution box	1		S210G	03300210114
					S275G	03300275114
115	Halter Zylinder	Holder cylinder	1		S210G	03300210115
					S275G	03300275115
116	Sechskantmutter	Hex.Nut	2	M8	S210G	03300210116
					S275G	03300275116

Pos.	Bezeichnung	Designation	Menge	Grösse	Machine	Artikelnummer
			Qty.	Size		Item no.
117	Scheibe	Washer	2	8	S210G	03300210117
					S275G	03300275117
118	Handgriff	Knob	1		S210G	03300210118
					S275G	03300275118
119	Innensechskantschraube	Hex. socket head cap screw	2		S210G	03300210119
					S275G	03300275119
120	Feder	Spring	1		S210G	03300210120
					S275G	03300275120
121	Hydraulikzylinder	Hydraulic cylinder	1		S210G	03300210121
	Hydraulikzylinder	Hydraulic cylinder	1		S275G	03300275121
122	Scheibe	Washer	1		S210G	03300210122
					S275G	03300275122
123	Innensechskantschraube	Hex. socket head cap screw	1		S210G	03300210123
					S275G	03300275123
124	Schutzabdeckung	Protective cover	1		S210G	03300210124
					S275G	03300275124
125	Sechskantmutter	Hex.Nut	1		S210G	03300210125
					S275G	03300275125
126	Scheibe	Washer	1		S210G	03300210126
					S275G	03300275126
127	Innensechskantschraube	Hex. socket head cap screw	1		S210G	03300210127
					S275G	03300275127
KM1	Relais 12A	Relay 12A	1	Rayfx Ind		0322781
KM2	Relais 12A	Relay 12A	1	Rayfx Ind		0322781
M1	Sägemotor	Saw motor	1		S210G	
M1	Sägemotor	Saw motor	1		S275G	
M2	Kühlmittelpumpe	Cooling pump	1			
SB4	Schalter Geschwindigkeit	Switch speed selector "Slow / Fast"	1	10A, 500V		0322791
SB1	Not-Aus Pilzkopfschalter	EMERGENCY button	1	6A, 500V, Tend		0322793
SB3	Schalter Kühlmittelpumpe	Switch Cooling pump "ON/OFF"	1	10A, 500V, Tend		0322792
SB2	Schalter "AUS"	Switch "OFF"	1	10A, 500V, Tend		0322790
SQ2	Endlagenschalter	Limit switch	1	TZ-9211, Tend		
SQ3	Schalter "EIN"	Switch "ON"		10A, 500V, Tend		0322782
Box2	Klemmkasten Motor	Box motor		85x85		
Q2.2	Inverter	Inverter		motec 8200		
R2.2	Potentiometer	Potentiometer		1K Ω		
	Schlauchanschluss Kühlmittelpumpe	Connector coolant pump	1		S210	033002104-1
	Schlauchanschluss Kühlmittelpumpe	Connector coolant pump	1		S275	033002104-1
	Bandführung fest kplt.	Fix belt guide complete	1		S210	0330021091CPL
	Bandführung fest kplt.	Fix belt guide complete	1		S275	0330027591CPL
	Bandführung beweglich kplt.	Adjustable belt guide complete	1		S210	0330021092CPL
	Bandführung beweglich kplt.	Adjustable belt guide complete	1		S275	0330027592CPL
	Halter für Schaltkasten	Holder for switch box	1		S275	03300275297
	Lüfterrad	Motor flywheel	1		S275	0330027536-1
	Motorlüfterdeckel	Motor flywheel cover	1		S275	0330027536-2
	Motorflansch	Motor flange	1		S275	0330027536-3

8 Anomalies

8.1 Anomalies in the metal belt saw

Anomaly	Cause / possible effects	Suggested solution
Maschine does not run on	• The FI protected switch of your electrical supply release.	• ☞ “Power connection“ on page 20
Saw motor overloading	• Suction of motor cooling air hindered • Motor not correctly fixed • Power unit for saw belt not properly fixed	• Check and clean • Requires technical service! Have the machine repaired in the workshop
Cooling agent feed not working	• Cooling agent tank empty • Cooling agent tap closed • Cooling agent tap blocked • Cooling agent duct bent or blocked • Air in the system, e.g. after re-filling • Pump doesn't work	• Fill • Open • Clean • Check and clean • Bleed by briefly withdrawing the pressure hose • Check pump
Short life of saw belt (Teeth blunted)	• Quality of saw belt not suitable for this material • An incorrect tooth spacing causes breakage of teeth (the broken tooth in the work piece blunts the other teeth) • Missing cooling • Cutting speed too high • Feed too high	• Higher quality saw belt (choose bimetallic belt) • Select correct tooth spacing • Use cooling system • Reduce cutting speed • Reduce feed
Breakage of teeth	• Chip space in the saw belt full, tooth spacing incorrect	• Use saw belt with a different tooth spacing or reduce feed
Breakage of the saw belt	• Tension in the saw belt too high or too low • Saw belt defective • Saw belt guide adjusted incorrectly	• Check tension of the saw belt • Replace • Adjust saw belt guide correctly
Twisted cut (saw belt deviating)	• Distance between guide and work-work piece too high • Saw belt blunt • Saw tension too low • Feed too high • Cutting pressure too high • Saw belt defective (irregular set) • Saw blade guide badly set	• Bring the guide as close as possible to the work piece • Replace • Tighten correctly • Reduce • Reduce • Replace • Readjust
Cut not rectangular, but parallel	• Material does not rest on both rails of the work-holder vice • Clamps of the work-holder vice not adjusted to 90º	• Support material properly • Adjust clamps correctly

9 Appendix

9.1 Copyright

9.2 Terminology/Glossary

Term	Explanation
Work piece	• Material to be sawed
Belt guide pulley	• Pulley through which the saw belt passes in the saw arch
Saw arch	• Casing with protective cover for the saw belt
Depth stop	• Position for multiple cuts • Sawing stop
Hydraulic cylinder	• Hydraulic lowering cylinder • Hydraulic feed
Feed regulation valve	• Valve on the hydraulic cylinder
Protective cover for V-belt	• Protective cover of the V-belts
Protective cover for saw arch	• Cover on the rear of the saw arch
Belt guide bearings	• Rollers between which the saw belt passes and is guided • Guide bearing
Saw belt guide	• Belt guide bearings
Saw belt brush	• Device for scraping off impurities • Saw belt cleaning brush
Clamp	• Adjustable block on the work-holder vice
Work-holder vice	• Clamping device for the work piece
Helical gear	• Reduction gear from the drive motor to the pulley for V-belt
Drive motor	• Motor

9.3 Warranty

Within the term of warranty, the company Optimum warrants for a perfect quality of its products and will reimburse any cost for overhaul or exchange of defective parts in case of construction error, fault in material and/or defect of fabrication.

The term of warranty for commercial use is 12 months and as an amateur it is 24 months. Condition for a warranty claim due to construction errors, faults in material and/or defects of fabrication is:

- Proof of purchase and that the instructions for use had been followed.
  In order to assert the claim of warranty, you have to present a typescript original receipt of purchase. It must comprise the complete address, date of purchase and type designation of the product.
  The instruction for use the corresponding device as well as the safety information are to be observed. Damages due to operator‘s mistakes may not be accepted as warranty claims.
- Correct use of the devices.
  The products of the company Optimum had been designed and built for certain purposes. They are listed in the operating manual.
  The warranty claim may not be accepted if the operating manual is not being followed properly or if it is used for a purpose which has not been intended or with improper accessory.
- Maintenance work and cleaning.
  It is absolutely necessary to maintain and clean the machine in regular intervals according to the prescriptions of the instruction for use.
  By intervention of a third party, any warranty claim will expire. Maintenance work and cleaning are usually not part of the claim of warranty.
- Original spare parts
  Make sure to use only original spare parts and original accessory. This can be acquired from authorised distributors of the machine. When other than original parts are being used, consequential damages may occur and danger of accidents will increase. Disassembled or partially disassambled devices and devices which are repaired with foreign parts are excluded from warranty claims.
- Wearing parts
  Certain components are subject to wear out by time respectively a standard wear by use on the corresponding machine.
  Among these components are e.g. V-belts, ball bearings, switches, main cables, gaskets and washers, etc. . These wearing parts are not part of the warranty.

9.4 Disposal

Disposal of used electric and electronic machines
(Applicable in the countries of the European Union and other European countries with a seperate collecting system for those devices).

The sign on the product or on its packing indicates that the product must not be handled as common household waist, but that it needs to be delivered to a central collection point for recycling. Your contribution to the correct disposal of this product will protect the environment and the health of your fellowmen. The environment and the health are endangered by incorrect disposal. Recycling of material will help to reduce the consumption of raw materials. Your District Office, the municipal waste collection station or the shop where you have bought the product will inform you about the recycling of this product.

9.5 Product follow-up

We have a follow-up service for our products which extends even after shipment.

We would be grateful if you could send us the following information:

- Modified settings
- Experiences with the metal belt saw, which could be important to other users
- Recurring failures

Optimum Maschinen Germany GmbH
Dr.-Robert-Pfleger-Str. 26

D-96103 Hallstadt, Germany

Fax +49 951 - 96 822 - 22
E-mail: info@optimum-maschinen.de

9.6 EC Declaration of Conformity

The manufacturer / retailer:	Optimum Maschinen Germany GmbH Dr.-Robert-Pfleger-Str. 26 D-96103 Hallstadt

hereby declares that the following product,

Type of machine:	Metal belt saw
Name of machine:	**S 210 G** **S 210 G Vario** **S 275 G** **S275 G Vario**
Relevant EU directives:	
Machinery Directive	98/37/EC, Annex II A
	89/336/EEC
Low voltage directive	73/23/EEC

meets the provisions of the aforementioned directive, including any amendments valid at the time of this statement.

In order to ensure conformity, the following harmonised standards in particular have been applied:

EN 418: 01/1993	Safety of machinery - Emergency stop equipment, functional aspects - Principles for design.
EN 60034-1: 09/2000	Rotating electrical machines - Part 1: Ratings and operating characteristics.
EN 60034-9: 06/1998	Rotating electrical machines - Part 9: Noise limits.
EN 60204-1:11/1998	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 50081-2: 03/1994	Electromagnetic Compatibility -Generic Emission Standard - Part 2: Industrial environments.
EN 61000-3-3: 03/1996	Electromagnetic compatibility (EMC) - Part 3-3: Limit values - Limit value regarding power fluctuations and interruptions in the power supply network for equipment with an input current up to and including 16 A.

Thomas Collrep
(Managing Director)

Kilian Stürmer
(Managing Director)

Hallstadt, 13/06/07

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