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# Operating Instructions

According to Annex I of the EC Directive 98/37/EC Mechanical Equipment  
– Part 1.7.4

## Elevator Machine

Model: *oms*Hypodrive AZHP 2



Please archive this document for future reference

OMS No.

Date of Manufacture  
Month / Year



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## 1 Introduction

These instructions include pictograms for commenting on Warnings and Safety Issues.



*Application Tip:* Additional Comments and Information, no danger involved



*Warning:* of a general risk for the machine or a human safety hazard



*Warning:* of dangerous currents, a liability of serious damage to health or death



*Warning:* of hot surfaces, a liability of serious damage to health and / or serious material damage



*Warning:* of crush injuries, a liability of serious damage to health



*Warning:* of drawing in, a liability of serious damage to health



*Warning:* DANGER  
Risk for the machine or a human safety hazard, a liability of serious damage to health or death



## 2 Safety Instructions for OMS Elevator Machines

### 2.1 Applicable Use

The OMS-Elevator Machine AZHP 2 is for operating electrically driven sheave drive elevators for passengers or goods according to EN 81-1. The installation and use of the AZHP 2 for other purposes is not applicable. The OMS ANTRIEBSTECHNIK OHG are not liable for personal injury and or damage resulting from none applicable applications.

All Planning, installations and maintenance work may only be carried out by qualified personnel. Qualified personnel are such who having studied for qualifications, or are experienced, or have received instruction and have the knowledge relating to the relevant standards and directives, safety regulations and local knowledge required to install and maintain the machine and be able to recognise and access the risks appertaining to this machine. (Qualified Personnel, as defined in IEC 364).

This OMS – Elevator Drive is applicable to the 9th Directive of the Machine and Product Safety Law (*9. Verordnung zum Geräte- und Produktsicherheitsgesetz (Maschinenverordnung)*) and the 98/37EC Machine Directive. It is part of a plant that it is to implemented in an elevator system and is therefore not liable for CE certification. The required manufacturers release is included within these instructions (*Page 47*).

The commencement of regular use is not permitted until the erection (according to Elevator Directive 98/16 EC) has been completed in the pre determined elevator system and the CE label has been applied to the elevator to show that the safety requirements have been fulfilled for the machine as supplied by the manufacturer.

All other required regulations and certificates (e.g. applicable to general use, maintenance and inspections) remain in force.

The drive manufacturer only respects the warranty for operation and safety of the drive if it is has been erected, maintained and operated according to the printed specifications supplied individually with each drive. The warranty is void if the parameters outlined in the operating, maintenance and control documentation have been exceeded. An incorrect installation or incorrect use of the system, and or violation of the standards outlined above, lead to a complete and absolute none liability of the drive manufacturer.

The motors should only be used in conjunction with frequency converters.

Customer supplied frequency converters must be set up according to their instruction sheets, in order to comply with the requirements of the OMS-Elevator Machine.



The OMS-Elevator Machine AZHP 2 is for operating elevators and has been designed for installation in an enclosed area (e.g. elevator shaft or machine room).

OMS Drives may only be stored, erected and run in dry closed areas. The IQ/OQ representative and the user must ensure that adequate measures are taken to avoid a contamination with building dust and or dirt.

The machine may only be stopped by the frequency converters and with the machine brake.

OMS-Elevator machines may only be operated when in technically good condition and within the parameters as described by OMS.

Applicable use also includes the following:

- Working according to the supplied instructions,
- Observing the regulatory safety and environmental requirements,
- Adherence and observance of the Elevator documentation and regulations.

## 2.2 None Applicable Use

OMS Drives may not be operated in potentially explosive or environmentally aggressive areas.

The double circuit disc brake is only designed for a limited number of emergency stops. It's use as a stand operation brake is not permissible.

Further operation is not permissible once the pre determined wear points have been achieved.

### Permissible Limits:

- max. Motor Speed: refer to technical documentation;
- max. Drive Wheel Load: refer to technical documentation;
- max. Number of Starts / Hour = 240;
- Local ambient temperature during operating min.: 5° C, max.: 40° C;
- The technical data and specifications on the Motor Data Label are only valid for an installation height up to  $h \leq 1000\text{m}$  over NN.
- Max. rel. Humidity: 85% at 20°C (none condensing)

None applicable use also includes the following:

- Dry operation without oil or use of a lubricant other than specified
- Securing the drive with bolts weaker than those specified
- Opening the Gearbox when installed on the drive

## Important:



- All work related to; Transport, Electrical Connections, pre-Service Checks and Maintenance of the Drive System must be carried out by qualified technicians. Incompetent work can lead to serious personal injury and / or damage.

### *Warning !* Special Notes appertaining to AZHP 2:



- The machine is very efficient and has a very low natural friction rate. The machine operates immediately after the brake has been released.
- During the installation of the Safety gear , it is important that the Machine Brake is available and that the brake can be operated at any time as and when required.
- Using the elevator when the Emergency Brake is not operable is forbidden. The operator is responsible for the welfare and safe running of the elevator and all persons within.
- Regular checks of the Safety gear and the Buffer must be carried out according to EN 81-1 Appendix E with an empty cabin and at reduced speed. Regular checks should not cause wear or stress which could lead to a lessening of elevator safety. Due to the inherent high level of efficiency, the drive should not be tested at speeds higher than  $v_{max.} \leq 1,0ms^{-1}$ . Otherwise serious damage could be caused to the drive and/or other parts of the elevator system. Alternatively, the checks can be performed using test weights and testing at nominal speed
- The cabin may only be pulled out of the Safety gear by moving the cabin in the opposite direction that caused the Safety gear to holt the elevator. The elevator Machine may only be operated in a situations with the maximum loads as given by the machine specification. All other methods, which would put additional static or dynamic loads on the for example the Traction sheave , Motor or Gearbox are forbidden. OMS will not respect any warranty claims resulting from practices other than those laid out in this document.
- Ensure that the motor does not rest on or against the frame. If this should be the case, take appropriate action to remedy to free the motor. Take care to inspect the motor and the frame on each installation and document your actions.



## 2.3 Warranty and Liability for the Elevator Drive

- The drive manufacturer only respects the warranty for operation and safety of the drive if it has been erected, maintained and operated according to the printed specifications supplied individually with each drive.
- The warranty is void if the parameters outlined in the operating, maintenance and control documentation have been exceeded.
- The customer is responsible for the qualified installation of the drive by certified personnel.
- If damage or other problems are found on the elevator or the drive, then the system must be disabled, otherwise the operator will be liable for all damage and injury pertaining thereto.
- An incorrect installation or incorrect use of the system, particularly with respect to the forbidden procedures outlined above, lead to a complete and absolute none liability of the drive manufacturer.
- This is also applicable, when after damage has occurred, the operator and/or the installer and /or the maintenance company cannot supply a fully documented list of procedures relating to the erection, testing, maintenance and SOP's of the elevator (Elevator Book etc).

## 2.4 Dangers, that are associated with the Elevator Drive

Our elevator drives are at the cutting edge of technology and are delivered in a safe operating configuration. Any changes made by that customer or his operative that may affect the inherent safety of the elevator drive are not permissible.

The Drive Sheave and the Hand Wheel of the AZHP 2 are delivered by OMS without a safety cover and may only be operated in a secure Machine Room. Take care when working the Machine Room that an adequate safety distance is maintained away from the moving parts (yellow).

The elevator supplier is responsible for installing safety shields if required.





## 2.5 Instructions for Safe Use

If changes are observed during the service life of the machine, e.g. wear, ageing etc. then the machine should be serviced and the changes dealt with, according to the OMS General- and Maintenance Instructions.

The gearbox may only be opened by OMS at our factory site; the warranty will otherwise become invalid.

## 2.6 Requirements and Qualification – Installation and Maintenance Personnel

All installations, maintenance work and repairs on the electrical parts of the machine may only be carried out by qualified personnel.

Qualified personnel are such who having studied for qualifications, or are experienced, or have received instruction and have the knowledge relating to the relevant standards and directives, safety regulations and local knowledge required to install and maintain the machine and to be able to recognise and assess the risks appertaining this machine. (Qualified Personnel, as defined in IEC 364).

OMS recommend that the technical personnel acquaint themselves with the machine before it is erected and taken into service. Please read the General- and Maintenance Instructions carefully, these instructions will aid you to find mistakes and technical deficiencies during the installation and operating life of the machine.

## 2.7 General Information

Should damage occur during transport, or should the machine appear during erection to have errors or be damaged, please contact OMS and inform us of the damage or error.

In case of damage caused by water, please contact OMS.

A decision as to whether the damage or error can be rectified on site or not, can first be taken after the customer has contacted OMS. OMS will then decide if the machine can be taken into service or whether the machine should be returned – with the original packaging – to OMS.

Please retain the original packaging until after the machine has been taken into service.

OMS will not accept responsibility for the correct installation and function of the elevator in the shaft.

The responsibility for the correct installation and function of the elevator in the shaft lies with the elevator supplier and / or the elevator operator.

## 3 Construction And Function

Due to the high efficiency ratio of approx. 96% the machine generates little excess heat, this ensures that the modules and aggregate parts and electronics are not exposed to excessive temperatures and therefore a detrimental effect – ageing and wear – on these parts due to temperature influence is kept to a minimum.

This also means that the oil in the gearbox can be regarded as a **Life-time-Lubrication**. In an ambient temperature of approx. 35°C and a continuous operation mode the gearbox oil can be used for 40,000 machine hours. Apart from the routine checks, the viscosity of the gearbox oil should be checked every 2 – 3 years (Ref. Chapter 6).

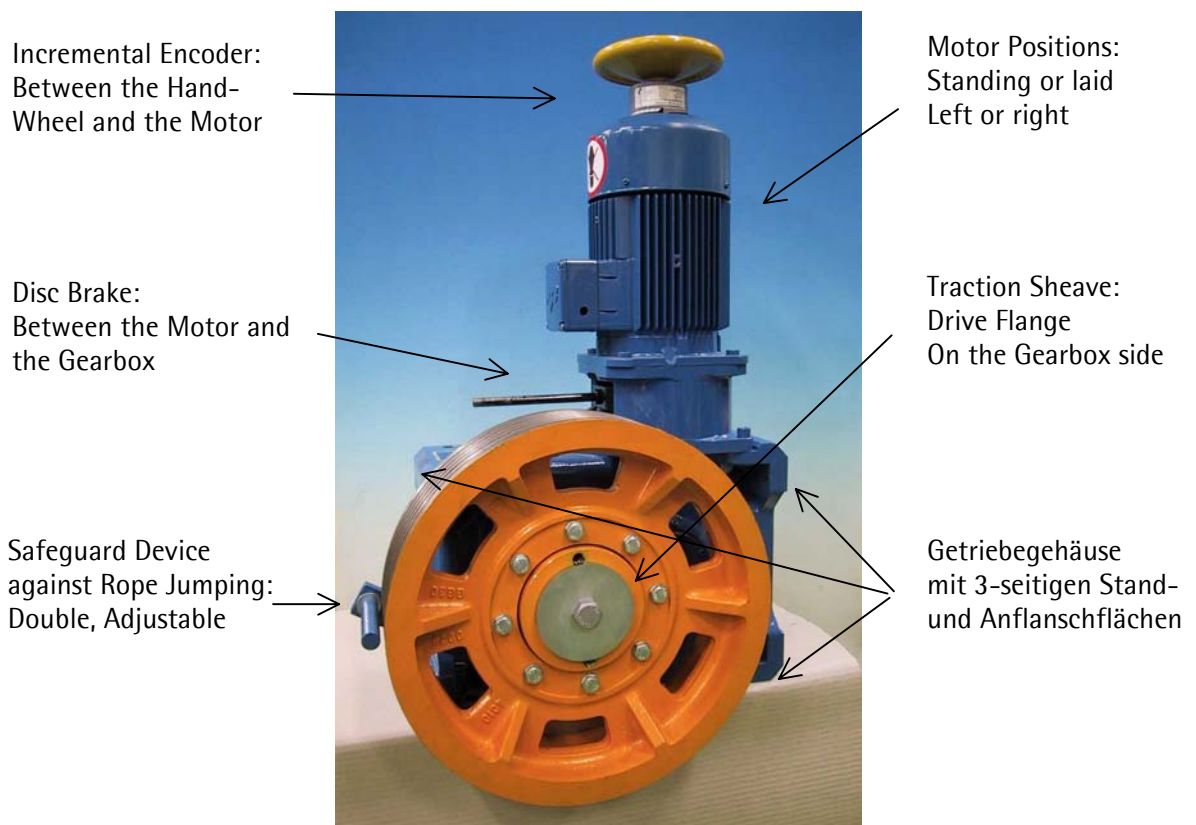


Fig. 1: OMS-Elevator Machine AZHP 2, General Layout



### 3.1 Technical Data

The efficiency of the OMS-Elevator Machine, relationship to the Elevator Cabin (1:1 or 2:1), Gearbox Version Specification, and possible installation constellations can be found in the Appendix:

**„Technical Data OMS – Elevator Machine AZHP 2“**

All measurements and fitting details for the OMS Elevator Machine can be found in the Appendix:

**“Dimensions Sheet – Elevator Machine AZHP 2“**

### 3.2 Noise Emission Information

All OMS elevator machines are subjected to a thorough noise emissions test before leaving our factory site.

The test is conducted according to DIN EN ISO 11200 at a mean distance of 1 meter to the machine surface.

Test procedure:

The machines are driven through Frequency Converters, the actual level of effort reflects the known torque load and the drive speed.

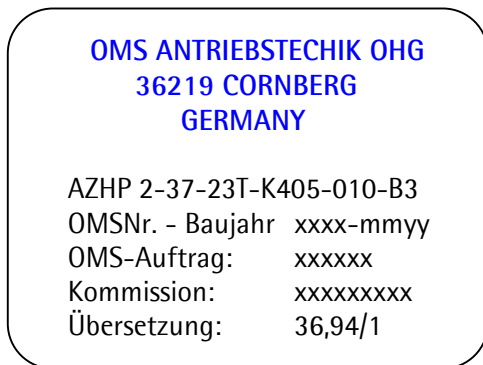
When working to the given limits, the machines emit the following noise emission parameters.

Machine	Max. Sound Pressure Level $L_{pA}$ in dB(A)
AZHP 2	< 61,0 at < 1500 min <sup>-1</sup>

If you have any further questions regarding noise emissions, please contact OMS.

### 3.3 Manufacturers Identification Plate

The following information can found on the manufacturers identification plate. For Example:



Model: AZHP 2  
Ratio: 37  
Motor type: 23  
Encoder: T  
Traction sheave: K405  
Brake Model: 010  
Mounting Configuration: B3  
OMS-No. xxxx-Month Year  
MMYY



## 3.4 Modules and Additional Parts – Spare Parts

The OMS-Elevator Machine AZHP 2 consists of:

- Gearbox complete
- Motor, complete with Incremental Encoder (between Hand wheel and Motor Cover)
- Brake system, complete
- Traction Sheave
- Safeguard device against Rope jumping (2-x)

Optional:

- Rope Clamp
- Lever System (2-x, each for opening one Brake Circuit manually)
- Traction Sheave Brake, a safety item for controlling the speed of an ascending cabin as specified in EN 81

## 3.5 Alternative Configurations

The elevator machines can be supplied with the following alternative configurations:

- Gearbox: Ratio  $i = 18,99; 24,68$  (Suspension. 2:1) and  $i = 28,43; 36,94$  (Suspension 1:1)
- Electric motors : various sizes (optional fan less)
- Electric motors : with or without hand wheels,
- Incremental Encoder with various signal outputs: SINUS, HTL, TTL
- Disc Brake: various torque ranges and electrical controls, with or without release levers
- Traction Sheave: various diameters (450, 560, 650, others optional)
- Safeguard device against rope jumping : Various fitting lengths, corresponding to the Traction sheaves, are available



## 3.6 Gearbox Variations and Applicable Mounting Configurations

The OMS Elevator Machine AZHP 2 can be supplied in three different constellations. Looking towards the Drive Shaft and the Traction Sheave (dotted), these are as follows:

**Version A** : Drive Shaft to the **left** of the longitudinal axis of the Motor

**Version B** : Drive Shaft to the **right** of the longitudinal axis of the Motor

**Version C** : Drive Shaft to the **central** with respect to the longitudinal axis of the Motor.

Additionally, common to all three versions, the Motor can be positioned vertically erect or lying horizontally, above or below, with respect to the gearbox.

The following diagrams (2-10) show these variations.

According to the position, the Oil Dipstick and or Air Bleeder Valve will be found on the highest position on the Gearbox Casing (See the notes on the diagrams).

Motor vertical:

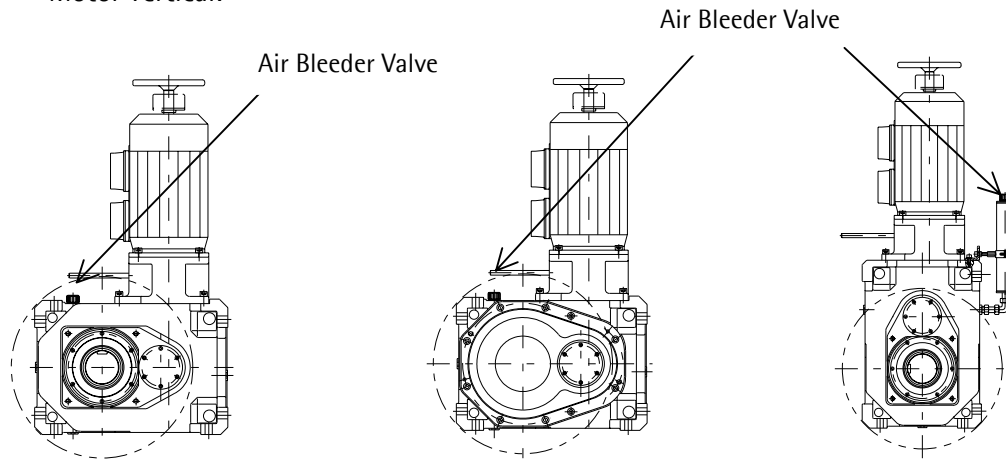


Fig. 2: Version A1,  
(Traction Sheave left)

Fig. 3: Version B1  
(Traction Sheave right)

Fig. 4: Version C1  
(Traction Sheave central)

Motor horizontal, laid, above:

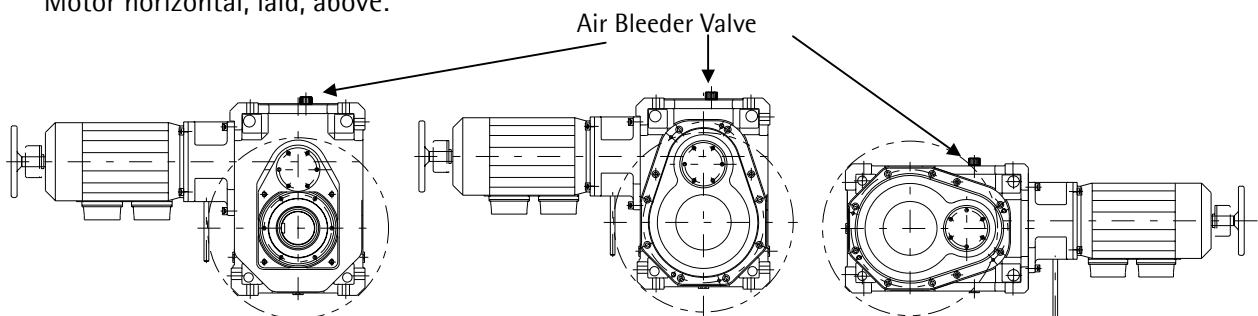


Fig. 5: Version A2

Fig. 6: Version B2

Fig. 7: Version C2

Motor horizontal, laid, below:

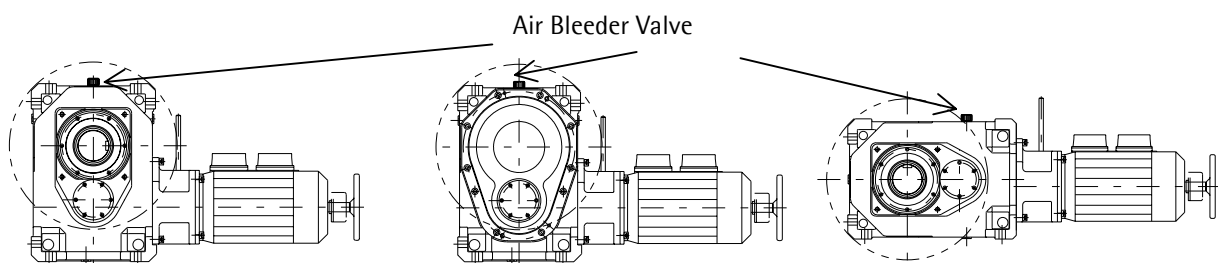


Fig. 8: Version A3

Fig. 9: Version B3

Fig. 10: Version C3

### Comments:

The standard position of the Terminal Connector Box on the Motor frame is in the direction of the Brake solenoid, but can be rotated with the Motor by 90° or 180°. To rotate the connector box, the motor fixing bolts must be unscrewed. Beforehand, disconnect the electrical supply and secure the machine against an unintentional power input. After repositioning the motor with the connector box, the bolts must be diagonally re-tightened (50Nm).

If the force acting on the cable has a torque component which is perpendicular to the direction of the Gearbox fixing bolts, then an additional bracket must be used that supports the drive unit in this perpendicular direction, thus preventing the fixing bolts from being adversely affected by the sheer strength forces due to the elevator load. (If you have any questions on this issue, please contact OMS).

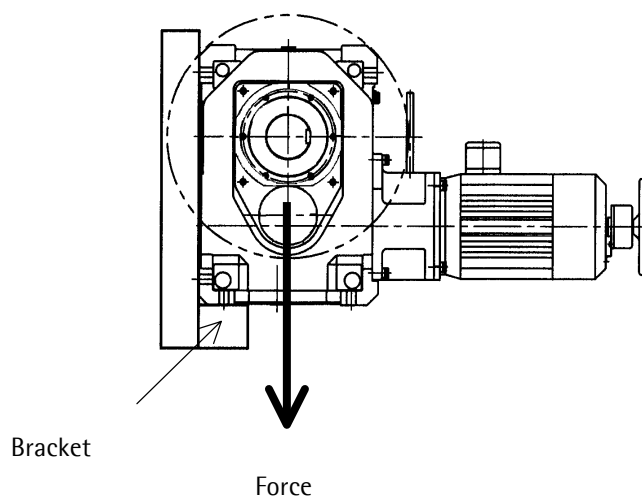


Fig. 11: Additional Bracket



To ensure adequate lubrication and Gearbox efficiency, the elevator machine may only be erected as ordered.



## 4 Transport and Storage

### 4.1 Transport

All elevator machines are inspected and passed prior to leaving our factory site.

When you accept delivery of your machine, please check the packaging for signs of exterior damage. If you find damage which appears to have been caused in transit, then please document this damage in the presence of the delivery agent. The machine may not be taken into service.

The Machine leaves the OMS factory in an Oil tight state. If the Machine has to be transported after having been installed, then the oil Dipstick and/or Air Bleeder Valve must be removed and replaced with the original OMS Oil Sealing Plugs. If the plugs are not available, please order new sealing plugs from OMS.

The weight of the machine (without traction sheave) can be found in the table on page 34. The weights of the traction sheaves can also be found on this page.

### 4.2 Storage

The Elevator Machine must not be stored outside and may not be exposed to outdoor weather conditions. If it is planned to store the machine for a longer period of time before installing it, then the measure must be undertaken to ensure an adequate conservation of the machine.

#### A) Up to 3 Months Storage:

No special storage requirements.

Before the Elevator Machine is installed the following points should be observed:

- All the Brake Parts must be inspected (activate the Brake in case there should be light corrosive spots on the Brake Drum).
- Turn the Machine a few times by hand, (to ensure that the Motor Bearings are evenly greased).

#### B) Up to 18 Months Storage:

If it is planned to store the machine for a longer period of time before installing it, then the Machine can be ordered with the optional conservation kit. The Machine is then treated in the OMS factory and packed in a humidity proof yellow plastic foil. If this wasn't the case, then:

- At the latest, after six months Storage the Gearbox must be filled to the highest bolt hole with Oil.
- **Warning: Oil Type: See the yellow label; only use one sort of Oil.**



- After filling with Oil, the Machine must be packed in a humidity proof (yellow) foil: (this foil can be ordered from OMS).
- Dry Storage is required

Before the Machine is installed:

- **Reduce the Oil Level!** to the standard level (ref. Chapter 6.3.1).
- All the Brake Parts must be inspected (activate the Brake in case there should be light corrosive spots on the Brake Drum).
- Turn the Machine a few times by hand, (to ensure that the Motor Bearings are evenly greased).
- Install the Machine (Ref. Chapter 5. Preparing for use)

## C) Longer than 18 Months Storage:

Optional factory conservation or procedures as in: **B) Up to 18 Months Storage**  
Dry Storage is required

Before the Machine is installed:

- Change all the Gearbox Oil. Take care to use the correct type of Oil and **observe the Oil Level** as outlined under: 6.3.1 and 6.3.3.
- All the Brake Parts must be inspected (activate the Brake in case there should be light corrosive spots on the Brake Drum)
- Turn the Machine a few times by hand, (to ensure that the Motor Bearings are evenly greased).
- If the Machine cannot be turned by hand, or the movement is stiff, then the Motor Bearings may have to be replaced.
- Install the Machine (Ref. Chapter 5. Preparing for use)



**After a lengthy storage period, the manufactures warranty will have run out. If a further warranty period is required, then the Machine may be returned to OMS to be refurbished (new Bearings etc.), this will incur some expense for the customer.**

Damage, that has been caused by negligible handling is not covered by our warranty specification.

## 5 Preparing For Use

### 5.1 Assembly

It is important that the planned frame or foundation for the elevator machine(s) has been calculated with an adequate reserve.

The frame must be stiff enough to resist the tension- and torque stresses that will occur during normal operation.

#### 5.1.1 Elevator Machine, complete

Fasten the Machine in the required position via the four mounting holes in the Gearbox Supports. Recommended is a through and through fastening with complete bolts each with a securing nut.



Bolts : ***M 16 in Quality 10.9***

Torque: ***200 Nm***

If required, supporting brackets and distancing plates should be used. (see examples, Fig 11).

#### Pre Use Requirements:

Exchange the labelled sealing plug on the Gearbox Casing with the supplied Oil Dipstick or the supplied Air Bleeder Valve. Take care to observe the correct positioning of the Gearbox (See Figs. 2-10). Retain the sealing plug for possible future transportation of the Machine.

#### Important:

The Gearbox has been sealed against oil leakage during transport. The Gearbox is airtight due to the sealing plug(s). If the Gearbox were to be taken into use with the sealing plug(s) in place, then excess pressure may build up in the Gearbox, eventually causing the Gearbox to leak – oil will be pressed out through the Shaft Gaskets.

The Oil Dipstick does not seal the Gearbox.

#### Electrical Connections



Only qualified personnel may open the Terminal Box on the Motor and connect the machine to the electrical supply. Only qualified personnel may carry out repairs and service work on the electrical parts of the machine.

Disconnect the main switch beforehand and secure the switch against unintended operation!!

The Safety Rules for the Construction and Erection of Elevators" according to DIN – EN 81-1 must be observed at all times.



## **Important:**

The electrical system for the machine has been designed according to: EN 60 204 – 1.

**In order to ensure failure free function of the machine, it is recommended that all wiring should be shielded according to the standard EMV regulations. Avoid ground loops when connections include multiple shields.**

## **Procedure:**

### **1. Motor:**

The electrical connections should be connected as per the diagram in the Motor Terminal Box. (See also: Appendix, Electrical Connections). Should a different wiring exit position be required, the Terminal Box can be turned by loosening the internal fixing screw and repositioning the Terminal Box.

Please take care when adjusting the fine wiring of the temperature monitor switches.

### **2. Frequency Converter:**

The connection and setting up of the Converter together with the OMS-Elevator Machine must be carried out according to the instructions supplied with the Converter.

### **3. Incremental Encoder:**

The Incremental Encoder (between Motor Cover and Hand wheel) is supplied with a 5m-shielded cable and a 2 row 15-pin connector, which should be connected to the Frequency Inverter. The shielding is wired to the plug casing, PIN 12 and the Incremental Encoder.

According to the Incremental Encoder used, the wiring for the connector can vary (See Appendix, Electrical Connections, Incremental Encoder).

Should the Connector on the Frequency Inverter be non-compatible, adapters and longer cables are optionally available (See Appendix).

### **4. Disc Brake:**

The connection of the Brake Magnet (Two Circuit Disc Brake), should be carried out in respect to the local elevator configuration:

- a) If the machine is accessible in a service room, then both Brake Magnet Circuits may be connected to a single Control Module.
- b) in case the machine is installed in an inaccessible position, and if emergency control and checking of each circuit will be done purely electrical, then each Magnet may be connected to two separate Control Modules, which in turn may be individually wired (for checking the individual Brake Circuits, See 5.2.2-b1)

## 5.1.2 Safeguard Device against Rope Jumping



The safeguard devices must be fitted to the elevator machines. The Rope Jump Devices can be fitted after the cables have been installed. They must be adjusted so that they do not rub or bind and there must be a gap between the Ropes of between max. 1 – 2 mm.

The safeguard device against rope jumping is supplied **twice** and consists of the following components each:

- (1) Safeguard device against rope jumping Diameter 400 mm – 450 mm
- (2) Safeguard device against rope jumping Diameter 500 mm – 560 mm
- (3) Safeguard device against rope jumping Diameter 650 mm – 800 mm
- (4) 2 hex screws M12 x 20
- (5) 1 bolt
- (6) 1 hex screw M10 x 25

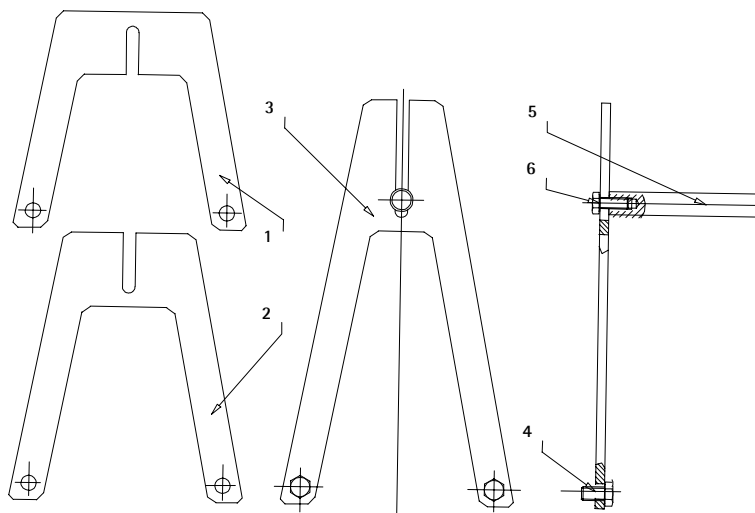


Fig. 12: Module, safeguard device against rope jumping

### Fitting the Safeguard Device against Rope Jumping and determining the rope run through direction:

1. Loosen the screws M 12 x 20 (2 per Bracket)
2. Swing the Rope Jump Resistor into the required position.
3. Bolt the Bracket to the nearest available hole in the Gearbox casing using the bolts; M12x20.

### Adjustment according to the Drive Sheave diameter:

1. Loosen the screw M10 x 25 and push the Safety Bolt along the slit to the required position.



## 5.2 The Brake

### 5.2.1 Setting the Brake

The Brake has been set up by OMS. The Brake set up should not be altered. Before taking the AZHP 2 into service, the function ability of the Brake should be checked. If the Brake should show any adverse behaviour, then we recommend changing the complete Brake System.

See the notes: „Erection and Instructions for the Disc Brake.“

### 5.2.2 Control, both Brake Circuits:

**Comments:** The procedure for conducting the final check of the brakes as part of the Elevator Acceptance Test is not described in detail here. Please refer to the relevant safety regulations and requirements.

The following points a) to b2) are only relevant, when an individual control of each Brake Circuit is required.

#### a) For an accessible machine

Is the machine accessible in a Service Room or Elevator Shaft, then it is possible to laterally open the Brake Levers and simply check the movement of each Brake Lever. (See the technical description of the Brake system in the Appendix).

#### b) For an inaccessible machine

If the machine has been installed in an inaccessible position, then an electrical or mechanical Remote Control will be required.

#### b1) External electrical Remote Control:

The Solenoids of the Brake Magnet can be individually activated. Thus, it is possible to individually operate the two braking circuits.

#### b2) Mechanical Remote Control :

To check the Brake Levers individually two linkages can be optionally supplied. A bracket is fitted to the Gearbox Casing to support the linkages. The linkages must be ordered together with the AZHP 2 for the brake



## 5.3 Emergency Release – Installation and Operation

The required *Emergency Instructions* – that must be placed adjacent to the Emergency Release – are not described here. Please refer to the relevant safety regulations and requirements.

### **a) for an accessible machine:**

Is the machine accessible in a Service Room or Elevator Shaft, then the Brake can be opened with the standard Lever.

If required the Elevator Cabin can be moved by turning the Hand Wheel on the Motor.

### **b) By Remote Control:**

If the machine has been installed in an inaccessible position, then an electrical or mechanical Remote Control will be required:

#### **b1) external Electrical Remote Control:**

If an *Emergency Power Source* is available, then the Electromagnets and the Motor can be wired into the Emergency Power.

#### **b2) mechanical Remote Control:**

The brakes can be opened using the (optional) external Brake Lever linkages.

## 5.4 Installing the Rope Clamp

During repair and revision periods a (optionally available) Rope Clamp can be fitted, so avoiding Rope slippage through the Traction Sheave.

The Rope Clamp must be fitted to one of the openings in the Traction Sheave. (See Fig. 13). Take care, that the lug on the Clamp Bracket snaps behind the frame that follows the opening. Thus preventing a slipping of the Rope Clamp after releasing the Locking Bolts.

Both Locking Bolts should be tightened so that the inner and outer bars lie parallel to each other. The inner bar is supported by the frame thus ensuring that all the ropes equally support the resulting forces.

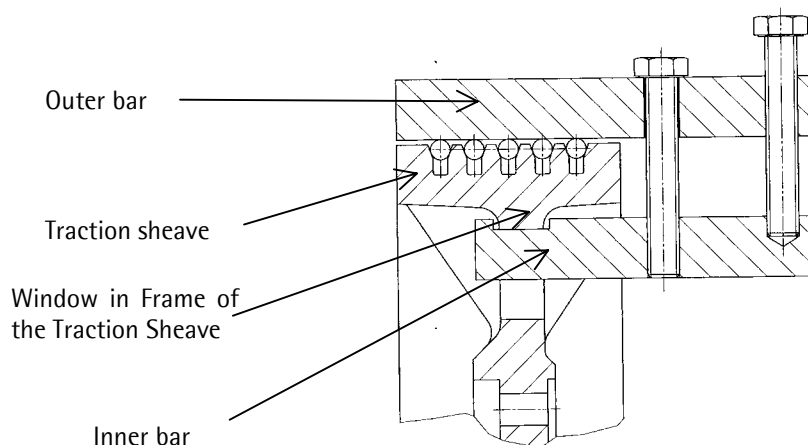


Fig. 13: Rope Clamp, fitted to the side of the Traction Sheave

When using a Rope Clamp ensure that:

1. It cannot collide with other parts of the machine.
2. It cannot get tangled in the vertical elevator ropes.
3. It cannot block the machine.
4. That the next following Rope Jumping Safeguard Device cannot support or obstruct the Rope Clamp. If necessary remove the Bolt from the Safeguard Device.



It is not permissible to raise the cabin out of the trap by using the Rope Clamp, an additional „loose rope“ and letting the balance weight fall.



## 6 Regular Use and Maintenance

The Safety- measures and instructions for the erection and use of elevator machines as according to: DIN EN 81: "Safety rules for the construction and installation of lifts – Particular applications for passenger and goods passengers lifts", Part 1 "Electrically operated passenger and goods lifts", "Technical rules for lifts" and other relevant regulations and instructions must be observed at all times.

The operator is responsible for the safe installation, control and maintenance according to the applicable regulations and standards.

### 6.1 Recommended Routine Maintenance

<i>Item</i>	<i>Maintenance Frequency</i>	<i>Source</i>
Oil Level, Control	Every 3 Months	Ref. 6.3.1
Oil Change	Ref. 6.3.2	Ref. 6.3.3
Bearing, Check (Audible)	In accordance with the regular elevator maintenance schedule, at least annually.	
Brake, Check	In accordance with the regular elevator maintenance schedule, at least annually.	Ref. 6.5
Traction Sheave, Check for wear	In accordance with the regular elevator maintenance schedule, at least annually.	
Electrical Wiring and Connections, Check for wear and loose connections	In accordance with the regular elevator maintenance schedule, at least annually.	
Cleaning the machine surfaces	When required, at least annually.	
Safety installations and mechanisms, Check for presence and function	In accordance with the regular elevator maintenance schedule, at least annually.	



## 6.2 Error – Troubleshooting Errors

<i>Error</i>	<i>Possible Cause</i>	<i>Answer</i>
Unusual, none rhythmic operating noises	<ul style="list-style-type: none"> <li>• Grinding / Scraping Bearings</li> <li>• Knocking / Jumping Gears</li> <li>• Regulator adjustment</li> </ul>	<ul style="list-style-type: none"> <li>• Call Customer Service</li> <li>• Check the parameters of the Frequency Converter</li> </ul>
Oil Leak	<ul style="list-style-type: none"> <li>• Seal damaged</li> </ul>	<ul style="list-style-type: none"> <li>• Call Customer Service</li> </ul>
Brake does not switch	<ul style="list-style-type: none"> <li>• Wiring is not OK</li> </ul>	<ul style="list-style-type: none"> <li>• Check all electrical connections</li> </ul>

## 6.3 Gearbox Oil

### 6.3.1 Controlling the Oil Level

Check the oil level at every maintenance opportunity, the oil level is checked using the Oil Dipstick.

- The Oil Level must lie between the marks

### 6.3.2 Controlling the Oil Viscosity

In normal situations with an average temperature of approx. 35°C the Gearbox has a „life time“ oil filling and an Oil Change will not normally be required.

However, we would like you to check the condition of the Gearbox Oil regularly.

**Control:**



- Check the oil viscosity by letting a drop of oil fall from the Dipstick onto a piece of white paper. Compare the colour of the oil with the Oil Check Card.

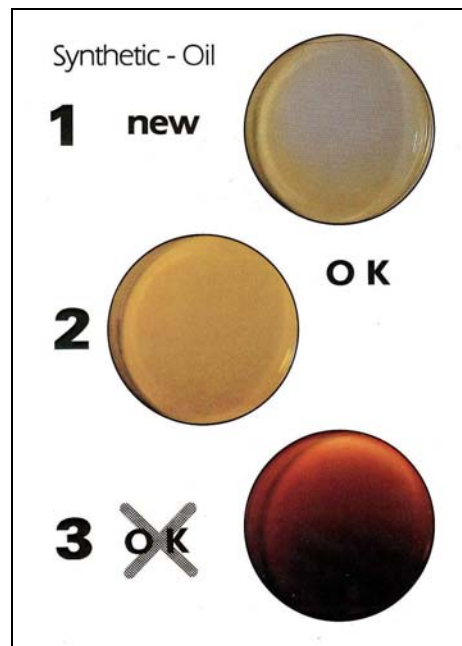


Fig. 14 Oil Check Card

- Oil colour straw yellow to mid brown: Oil good to still usable
- Oil colour mid brown to dark brown: Oil change required
- Oil colour dark brown to black: Oil no longer usable

### 6.3.3 Oil Change

Should you consider an oil change to be required, please adhere to the following instructions:

1. Place a suitable container below one of the Oil Drain Screws under the Gearbox.  
The Gearbox has a capacity for version:  
vertical 7  
horizontal 8,5  
A3 (37:1) 6,7  
B1 + C1 (18:1) 7,7 Ltr.
2. Carefully open the Oil Drain Screw.
3. After all the oil has run out, replace the Drain Screw and tighten it.
4. Replace the oil, either through the Oil Dipstick opening or through the Air Release Valve opening.
5. Observe the filling level.
6. **Only fill the Gearbox with the authorised oil:**

**Klüber Syntheso D 220 EP** Amount: according to installation version  
**(Never mix with mineral oil !)**  
(Please contact OMS before using oil from other manufactures)

7. Close the opening, either with the Oil Dipstick or the Air Release Valve.



If oil is spilled during the oil change, then the spilled oil should be cleaned up immediately.

**Used Oil is Special Waste!**

## 6.4 Replacing the Traction Sheave

The Traction Sheave is, like the Elevator Ropes, prone to wear and must be changed according to the regulations governing Elevators. The Traction Sheave is attached to an Adapter Flange on the Drive Shaft. The Flange has been attached in the OMS factory with a pre defined torque, and is considered a part of the Gearbox and may not be removed by the customer.

### How to change the Traction Sheave:



1. Disable and secure the complete elevator system. (Observe the instructions of the elevator manufacturer).
2. Loosen and remove the cable from the Traction Sheave. (Observe the instructions of the elevator manufacturer).
3. Should the Safeguard Device against cable jumping require adjustment, please consult Chapter 5.1.2.
4. Secure the Traction Sheave against falling – use a rope loop – and remove the fixing bolts M12 x 60.
5. Pull the Traction Sheave from the hub of the Drive Shaft.  
If necessary use two bolts M20, of at least 65mm length, place the bolts in the preformed Puller Holes.  
Remove the remaining Clamping Pins from the screw threads and clean the centre hub.  
Smooth down the uneven points that may have been formed by the Puller Bolts.
6. Place the new Traction Sheave on the centre hub.  
Secure the Traction Sheave against falling – use a rope loop.  
Ensure that the Traction Sheave has complete contact around the Flange.  
Rotate the Traction Sheave on the Drive Shaft until the Bolt holes are aligned.
7. Drive the **8 new** (supplied) Clamping Pins, DIN EN ISO 13337 – 16 x 36, fully in to the threaded holes until they lie flush against the threaded area.  
Bolt the Drive Wheel to the Flange using the required Bolts.  
**(Torque: 85 Nm)**  
Damaged bolts should be replaced (M12 x 60 - 8.8).
8. Reinstall the Elevator ropes (Observe the instructions of the elevator manufacturer).

## 6.5 Brake Maintenance

The Disc Brake is normally maintenance free. Brake Disc wear can be considered as being minimal.

### 6.5.1 Controlling the Brake

The Brake is fitted with Sensors that monitor the Brake function (opening and closing)

(See: Appendix, Technical Data, Disc Brake)

Please Check the Brake function regularly)

If the Brake should develop and abnormally, which cannot be attributed to an electrical problem, then the Brake can be disassembled according to the manufacturers instructions.

(See 5.2 and Appendix, Technical Data, Disc Brake)

### 6.5.2 Opening or Replacing the Brake:



The Motor must be dismantled before attempting to replace the Disc. Block the movement of the Elevator Cabin and Balance Weight; please refer to the relevant safety regulations and requirements.

- Disassemble all the electrical connections from the Motor and the Brake.
- Remove the 4 Bolts from the Motor Base above the Brake Flange Casing. Dismount the Motor using a rope loop through the Lifting Bolts attached to the Motor. **Do not attempt to lift the Motor by the Hand Wheel!**
- Remove the Manual Brake Lever.
- Remove the 3 bolts from the Brake and remove the Brake.  
(see Fig. 15)
- After the Brake has been replaced, re-assemble the Motor and Brake in reverse order. When replacing the Brake, observe the manufacturers instructions. When replacing the Flange Casing, take care when passing the electrical wiring for the Brake through the window in the Flange Casing.
- Tighten the Flange Casing diagonally (Torque 50 Nm)
- When reassembling the Motor, observe the comments: Replacing the Motor

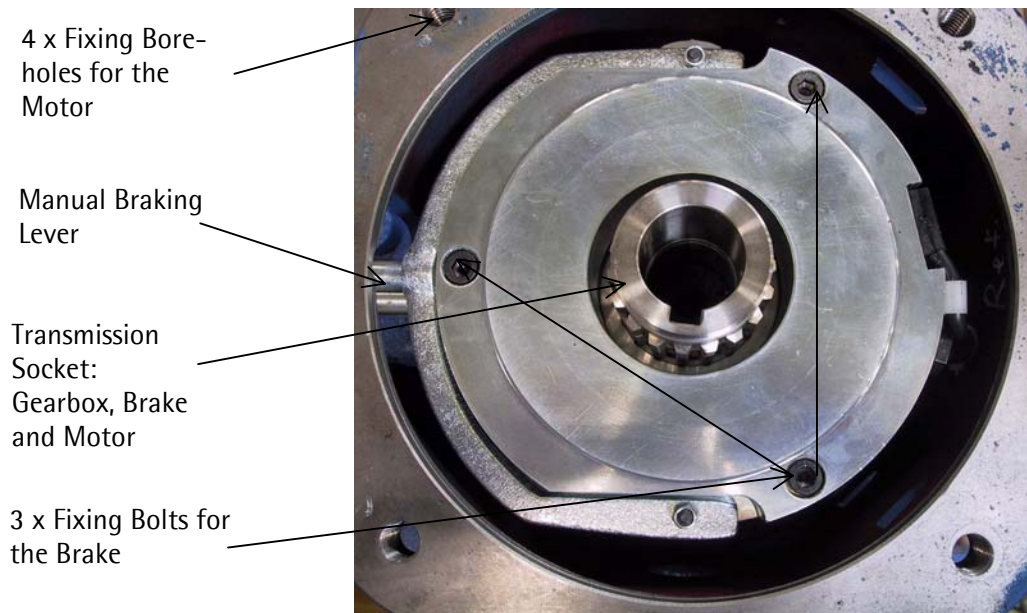


Fig 15: Looking at the Flange casing and Brake, the Motor has been removed

## 6.6 Replacing the Incremental Encoder

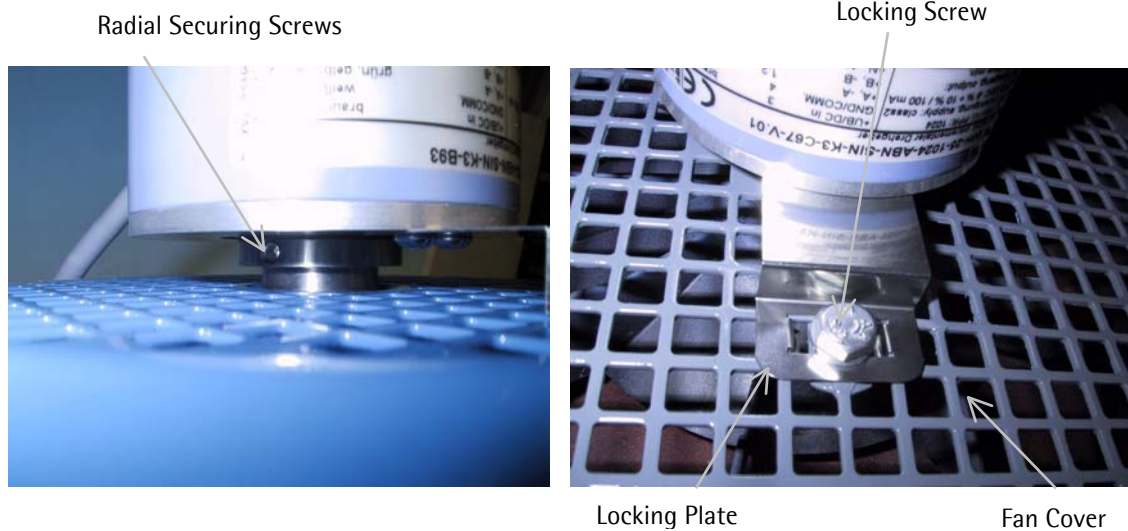


Fig. 16 Securing the Incremental Encoder

Fig. 17: Incremental Encoder Support

- Remove the Hand wheel, including Central Locking Screw and Washer.
- Loosen the two Radial Securing Screws that can be found under the Incremental Encoder (s. Fig. 16).
- The Locking Plate is secured with a screw.
- The re-assembly of the Incremental Encoder should be carried out in reverse order.

## 6.7 Replacing the Motor

Place the new Motor adjacent to the old Motor and compare the Technical Data.



Disable and secure the complete elevator system (Observe the instructions of the elevator manufacturer). Be careful not to pull out the sleeve of the disk brake when removing the motor. Otherwise the brake will become inoperable and the cabin and the counterweight will fall upwards / downwards respectively.



**Warning:** The Motor can become hot during operation – take care, contact with a hot Motor can result in burn injuries!

- Remove the four bolts on the Motor Base, which can be found above the Flange Casing.
- Lift the Motor, using Eye Ring Bolts and a rope loop; the Eye Ring Bolts can be attached laterally to the Motor.
- **Warning:** if the Motor should fall, then it may become damaged, the Motor may not be lifted by the Hand wheel.
- After replacing the Motor carry out the above-mentioned steps in reverse order, carefully tightening the Motor Bolts diagonally. (Torque 50 Nm)

**Comments:** The Motor and gearbox are centred with a Transmission Socket; therefore take great care when fitting the Motors to the Gearbox:

### a) Vertical Motor:

Initially, only tighten the Motor Fixing Bolts lightly. Carry through a complete run through test with the Motor and finally tighten the Motor Fixing Bolts to their final standard torque.

### b) Horizontal Motor:

The Motor must be hanging horizontally in a rope loop, guide the Drive Shaft carefully into the Transmission Socket and fastening the Motor Fixing Bolts while the Motor is still supported by the rope loop. Take care that the Motor doesn't twist or shear and that the Drive Shaft cleanly fits into the Transmission Socket!





---

## 7 Disassembly

### 7.1 Disassembly of the Elevator Drive

Remove the Oil Dipstick and replace it with the supplied Sealing Plug. The Gearbox is not sealed when the Oil Dipstick is fitted.

To disassemble the Elevator Drive carry through the same procedure as during the assembly – but in reverse order.

### 7.2 Scrapping the Elevator Drive

- The Gear Wheels, Axles and Bearings can be scrapped as standard steel scrap.
- The forged parts can also be scrapped as standard steel scrap.
- The Motor Winding and the Brake Unit are mainly brass and bronze and must be scrapped as such.
- Oil and Grease must be removed and disposed of accordingly.





## 8 Addendum

**Technical Data OMS Elevator Machine AZHP 2**

**Dimensions sheet OMS Elevator Machine AZHP 2**

Motor Positioning of Version A, B and C

**Electrical Connections**

**Technical Data, Disc Brake (Manufacturers Data Sheet)**

**Currently used:**

**Disc brake Type KEB COMBISTOP 71.642.00-4001**

**Technical Releases, Conformity Declarations**

(Page 1 and 2)

**We shall be pleased to receive your questions, comments and suggestions:**

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APPENDIX A  
DATA SHEET OMS – ELEVATOR MACHINE AZHP 2



(Technical changes reserved – Last Changes 09/2005)

**Gear:**

input-revolution, max.: n = 2500 rpm  
 efficiency:  $\eta, n = > 96 \%$   
 typical backlash range : 4 to 8 arc. minutes  
 sound pressure level (1500 rpm / nominal load):  $L_{pA} = 59 \text{ dB(A)}$

car suspension		2:1	1:1	
Gear ratio		18,99 / 24,68	28,43	36,94
output shaft max. torque		1700 Nm	2000 Nm	2500 Nm
max. axle weight		42 kN	42 kN	42 kN
for car load up to		1600 kg	900 kg	1000 kg
for car speed up to:		2 m/s		

**Motor :**

(for frequency converter only)  
 three phase induction motor: 4-pole, IP 54, motor protection: PTC,  
 type / diameter B / dimension type: 112 / B = 220 type: 132 / B = 246  
 motor nominal torque up to:  $T, n = 51,4 \text{ Nm}$   
 encoder: HTL, TTL, sine

**Brake:**

2-circle safety disc brake

**Traction sheave:**

diameter: D = 320, 400, 450, 500, 560, 650 mm \*)  
 weight: G = 34, 37, 46, 52, 59, 86 kg \*)  
 width: C = 112 mm \*), F = 176 \*)  
 125mm, (nur bei Drm. 320 mm) \*)  
 rope diameter: D, s = 10 mm \*)  
 numbers of ropes : n = 4 – 6 \*)  
 \*) options upon request

**Dimension:**

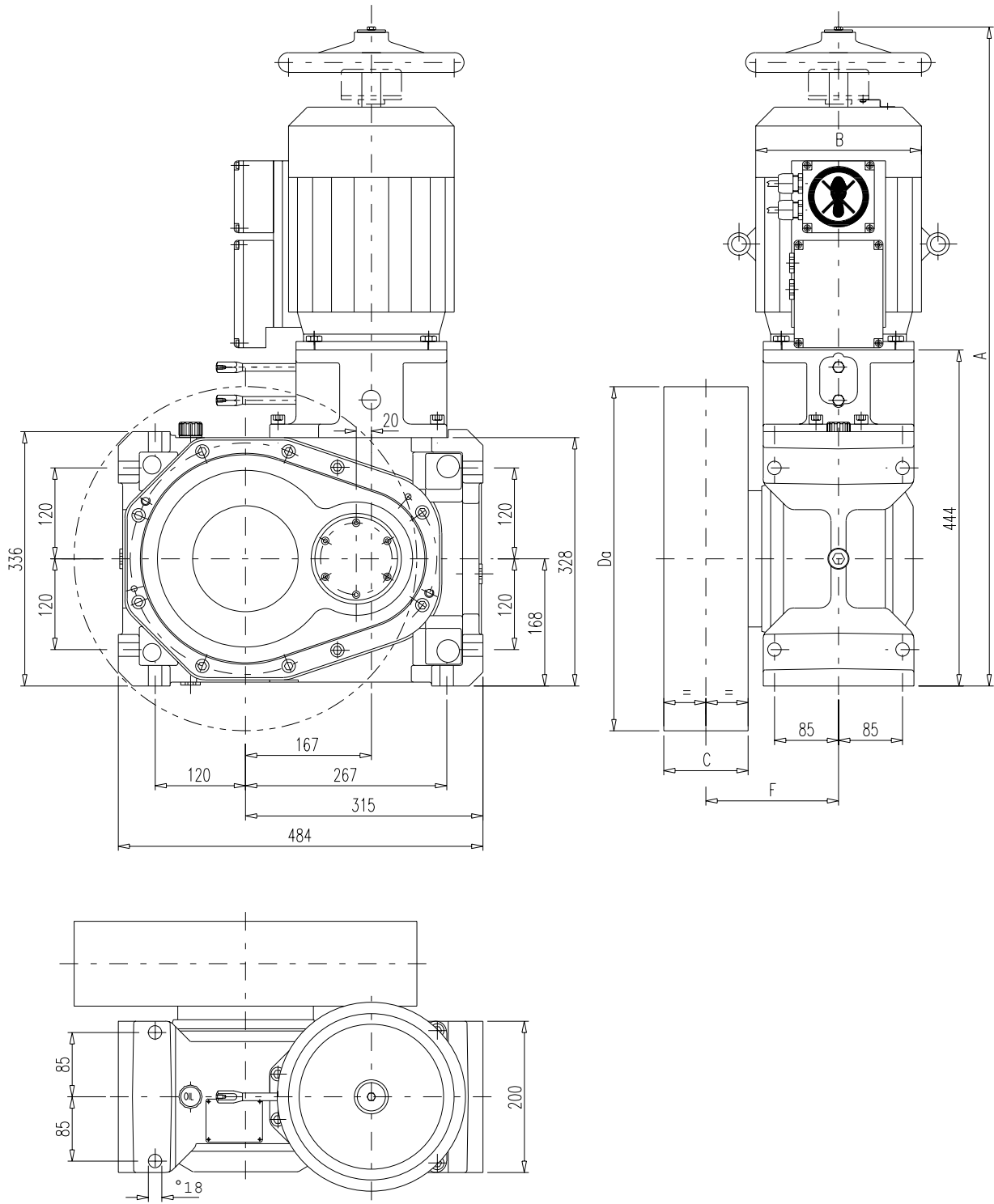
total height A according to motor dimension:  
 (weight of drive, all inclusive without traction sheave):

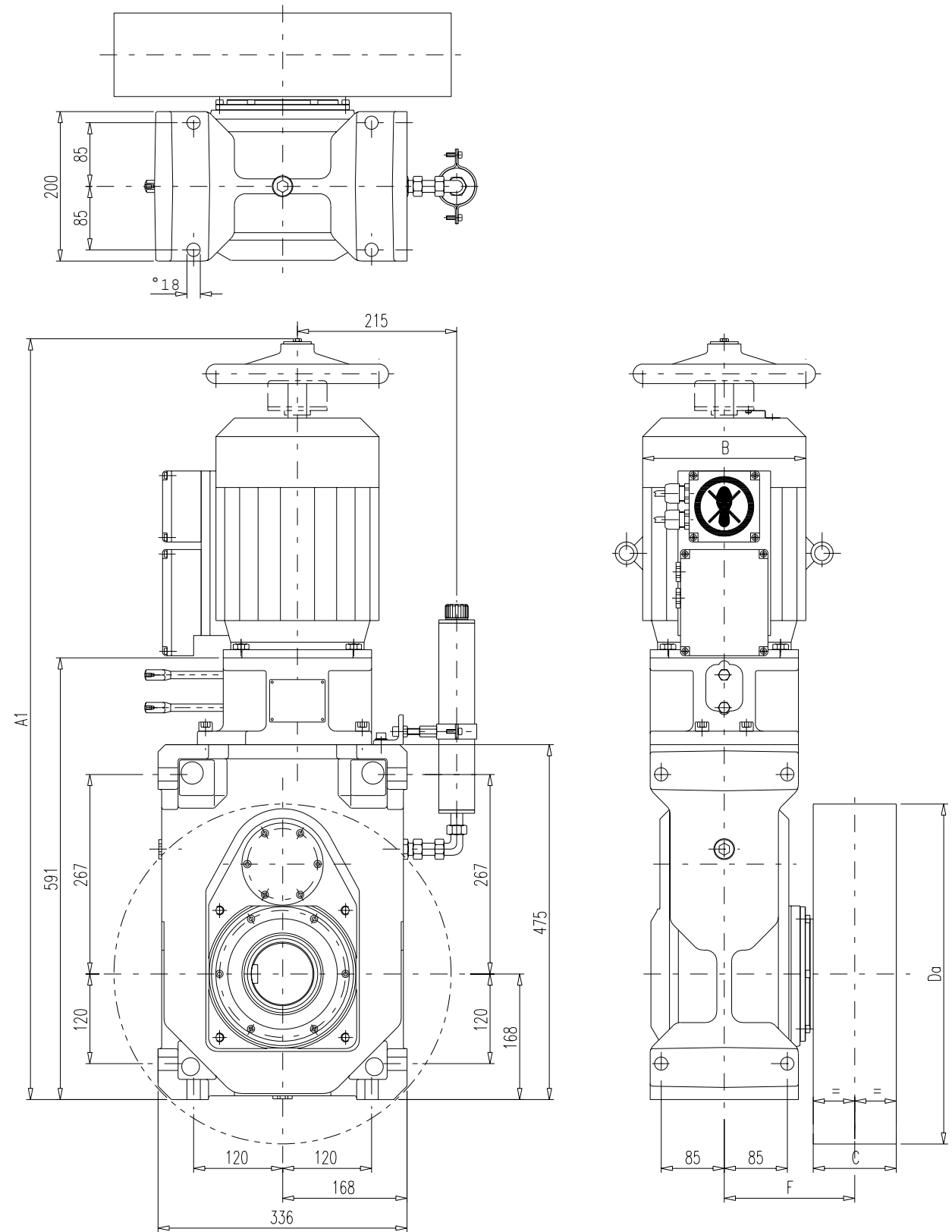
Motor Typ	P <sub>nenn</sub> kW	T <sub>nenn</sub> Nm	n <sub>nenn</sub> min <sup>-1</sup>	f Hz	A mm	A1 mm	G kg
112	4,2	22,3	1725	60	871	1018	196
112	3,8	32,4	1120	40	891	1038	201
112	5,5	30,5	1725	60	891	1038	201
112	7,5	41,4	1730	60	988	1135	212
132*	5,5	36,5	1440	50	883	1030	220
132*	7,5	49,8	1440	50	933	1080	239
132*	5,0	51,4	930	33	933	1080	239
132	9,0	49,6	1735	60	976	1123	228

Annotation : Length A by version A and B  
 Length A1 by version C

\* fan less motor





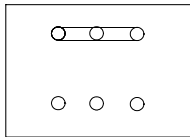


(Technical changes reserved – Last Changes 09/2005)

## 1. Wiring Diagram for Asynchronous Motor

Junction Box:

(Shorting Bars for Star – Connection)



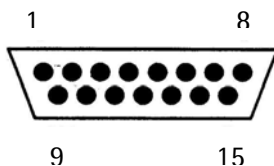
## 2. Wiring Diagram for Incremental Encoder, Extensions & Adapter

### 2.1 Connections, Encoder (Sinus / TTL / HTL)

Output SUB D 15 Pol. Plug

PIN – No.	Signal	PIN – No.	Signal
1	A+	9	-
2	A-	10	-
3	+5V	11	-
4	GND	12	Shield
5	B+	13	-
6	B-	14	-
7	N+	15	-
8	N-	casting	Shield

A ±: Channel 1, B ±: Channel 2, N ±: Reference



View from the Plug side

(Comment: the shielding connection to PIN 12 is only required for SIN/COS Encoder to "Dietz FU")

### 2.2 Encoder Extension Cable, l = 5m

SUB D 15 Pol. Socket to SUB D 15 Pol. Plug

OMS Part No. 3034 0060

PIN – No.	Signal	PIN – No.	Signal
1	A+	9	-
2	A-	10	-
3	+5V	11	-
4	GND	12	shield
5	B+	13	-
6	B-	14	-
7	N+	15	-
8	N-	casting	shield

A ±: Channel 1, B ±: Channel 2, N ±: Reference

PIN – No.	Signal	PIN – No.	Signal
1	A+	9	-
2	A-	10	-
3	+5V	11	-
4	GND	12	shield
5	B+	13	-
6	B-	14	-
7	N+	15	-
8	N-	casting	shield

A ±: Channel 1, B ±: Channel 2, N ±: Reference

(Technical changes reserved – Last Changes 09/2005)

**2.3 Connections, Adapter for „KEB“ Frequency Converter, I = 0,25m**

SUB D 15 Pol. Socket to SUB D 15 Pol. Plug - 3 - rows

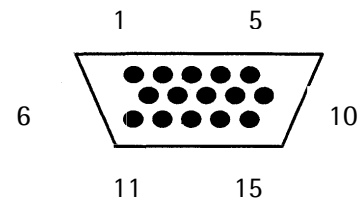
OMS Part No. 3034 0102

PIN - No.	Signal	PIN - No.	Signal
1	A+	9	-
2	A-	10	-
3	+5V	11	-
4	GND	12	shield
5	B+	13	-
6	B-	14	-
7	N+	15	-
8	N-	casing	shield

A ±: Channel 1, B ±: Channel 2, N ±: Reference

PIN - No.	Signal	PIN - No.	Signal
1	-	9	B+
2	-	10	-
3	A-	11	-
4	B-	12	+5V
5	-	13	GND
6	-	14	R-
7	-	15	R+
8	A+	casing	shield

A ±: Channel 1, B ±: Channel 2, N ±: Reference



viewed from the plug side

**2.4 Connections, Adapter for „Ziehl-Abegg“ Frequency Converter, I = 0,25m**

SUB D 15 Pol. Socket to SUB D 9 Pol. Plug

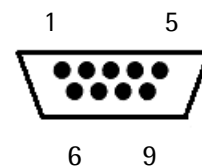
OMS Part No. 3034 0102

PIN - No.	Signal	PIN - No.	Signal
1	A+	9	-
2	A-	10	-
3	+5V	11	-
4	GND	12	shield
5	B+	13	-
6	B-	14	-
7	N+	15	-
8	N-	casing	shield

A ±: Channel 1, B ±: Channel 2, N ±: Reference

PIN - No.	Signal
1	A+
2	B+
3	-
4	+5V
5	GND
6	A-
7	B-
8	-
9	GND
Casing	Shield

A ±: Channel 1, B ±: Channel 2,



viewed from the plug side



(Technical changes reserved – Last Changes 09/2005)

**2.5 Connections, Adapter for "Danfoss" Frequency Converter, l = 0,25m**

SUB D 15 Pol. Socket to Phoenix Socket, 8 Pol.

OMS Part No. 3034 0126

PIN - No.	Signal	PIN - No.	Signal
1	A+	9	-
2	A-	10	-
3	<b>+5V</b>	11	-
4	<b>GND</b>	12	Shield
5	B+	13	-
6	B-	14	-
7	N+	15	-
8	N-	<b>casing</b>	shield

A ±: Channel 1, B ±: Channel 2, N ±: Reference

PIN - No.	Signal
1	+5V
2	GND
3	A+
4	A-
5	B+
6	B-
7	N+
8	N-
	shield

A ±: Channel 1, B ±: Channel 2, N ±: Reference

**Plug: Phönix Part. No. 184021**

**2.6 Connections, Adapter open ended cable, l = 0,25m**

SUB D 15 Pol. Socket to 9 open wires

OMS Part No. 3034 0127

PIN - No.	Signal	PIN - No.	Signal
1	A+	9	-
2	A-	10	-
3	<b>+5V</b>	11	-
4	<b>GND</b>	12	shield
5	B+	13	-
6	B-	14	-
7	N+	15	-
8	N-	<b>casing</b>	shield

A ±: Channel 1, B ±: Channel 2, N ±: Reference

Wire - No.	Signal
1	+5V
2	A+
3	A-
4	B+
5	B-
6	N+
7	N-
8	GND
9	shield

A ±: Channel 1, B ±: Channel 2, N ±: Reference

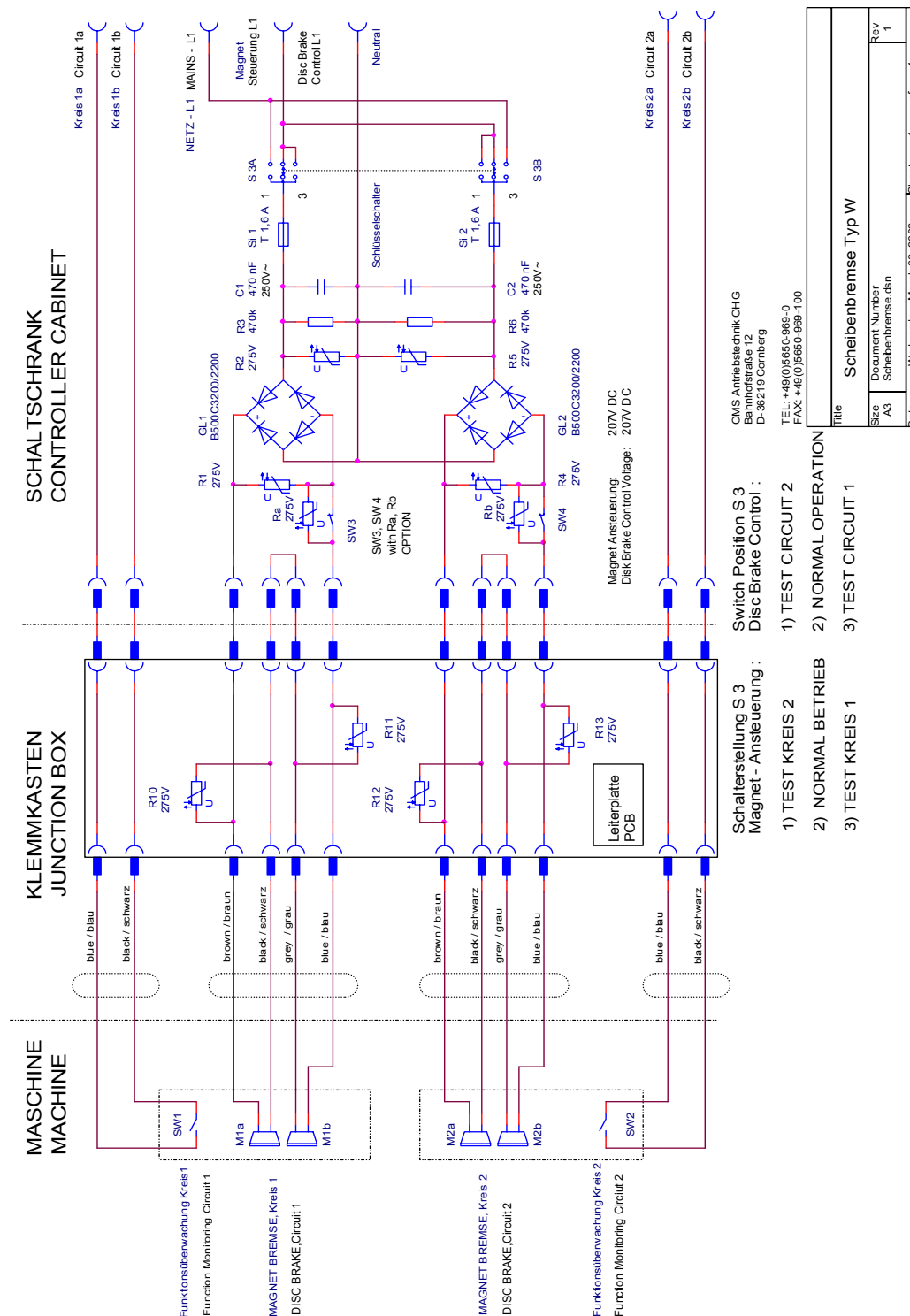


(Technical changes reserved – Last Changes 09/2005)



Suggestion for wiring diagram for the electrical disc brake. Checking of the two independently operating braking systems is possible by electrical control. To emergency operation an UPS is necessary. In case of a failure of one of the coils of a disk brake, the remaining functioning half of the coil can open the brake for approx. 1 min.

Operating voltage at disk brake: 207 V DC





## Assembly and Instruction Manual COMBISTOP

71.642.00-4004



### 1 Functional Description

#### 1.1 General Functional Description

The brake COMBISTOP is an electro magnetic actuated dual surface spring applied brake for dry operation (double brake as a redundant system).

While in a currentless state the brake power is generated by springs, which press the armature and the lining against the attachment surface. The lining is torsional free and attached to the hub yet still axially movable.

After the voltage is applied the DC coil of the magnet produces a magnetic field, which attracts the armature against the spring force. By this the lining is released and the shaft can rotate freely.

After the voltage is switched off the armature is released and pressed by means of the springs against the lining.

A braking torque is created, which has a braking effect on subsequent elements.

### 2. Safety Instruction

With these instructions we do not claim the right of sufficiency concerning the document. In case of questions, please contact one of our technicians.

Before taking the unit into operation, please read the installation and instruction manual thoroughly and also take the safety instruction, norms and the general state of technology which applies to the respective area into consideration.

To avoid danger to persons and material assets, only qualified personell should be deployed. Repair and maintenace is only to be made by trained personell.

The the time the spring applied brake leaves our factory, it corresponds to the current state of technology and is generally safe to operate.

Neither reconstruction nor alteration and improper usage of the spring applied brake are not permitted.

Impurities penetrating into the airgap are not allowed to hamper the movement of the armature. If necessary dust protection rings or other means of protection need to be taken.

Brake are danger spots, the user / operator has to take protective actions against rotating parts, dangerous temperatures, water and against electric shock.

Protect your machine against unintentional operation during assembly work.



It is not permitted to operate the spring applied brake in explosive or aggressive atmosphere!  
While maintenancing the brakes they have to be load free to avoid uncontrolled movement!  
Danger when getting in contact with under tension conductors!  
During maintenance and repair the brake has to be in a tensional free state!  
Humidity, temperatures near freezing, aggressive steam, aggressive fluids or similar can cause corrosion and lead to „sticking“ of the lining. Suitable measures have to be taken by the user!



Cleaning agents and dissolvers are not allowed to get in contact with the friction lining.  
Soiled friction linings generally have to be exchanged.  
When cleaning components (e.g. flange, armature) this advise has be taken unconditionally into consideration!

### 3. Connection: Brake, Micro switch

The COMBISTOP is supplied factory wise with pre-confectioned connection cables and pre-set micro switch (1 each per brake) for positioning control. The evaluation of the signals (brake closed, brake open) is made on the customers side.



**Electrical Connection:**  
The operation / connection has to be made with DC-voltage, the input supply voltage is listed on the name plate or the respective drawings.  
Connection is only permitted while in a currentless state!  
Voltage peaks can occur when turning on the brake, therefore the required protective actions need to be taken!

#### Wiring diagram:

As per attachment drawing no. 71.642.00-4004

**Assembly and Instruction Manual COMBISTOP**  
71.642.00-4004



**4. Technical Data**

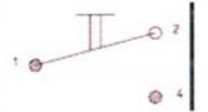
**COMBISTOP 71.642.00-4004**

M <sub>2N</sub> [Nm]	U [V DC]	P <sub>20</sub> [W]	J [10 <sup>-3</sup> kgm <sup>2</sup> ] lining	max. [min <sup>-1</sup> ]	Switching times		
					Release time t <sub>2</sub> [ms]	Engaging time (AC) t <sub>11</sub> [ms]	Engaging time (DC) t <sub>11</sub> [ms]
2 x 50	2 x 205	2 x 50	0,28	5000	85	75	15

X [mm] Brake A	X [mm] Brake B	XN [mm] Brake A + B	XA [mm] Brake A + B	Lining new [mm]	Lining min. [mm]	Weight [kg]
0,3	0,3	0,6	0,4	6,5	5,8	9,4

Nominal voltage	205 V DC
Protection type (electrical)	IP54
Protection type (mechanical)	IP10
Power-on time (ED)	100%

**Technical Data Micro Switch:**

Switch – acutating force max. [N]:	2,5	Connection Opener
Reverse switch force min. [N]:	0,3	
Distance max. [mm]:	0,1	
Overtravel	At equal position with the housing	
Permitted ambient temperature [°C]:	-20 bis +85°C	
Rated current [A]:	≥10mA	
Protection type	IP 67	

Leads for  
Micro switch

1= black  
4= blue

M<sub>2N</sub> = static torque  
U = Voltage  
P = Coil power at 20°C  
J = Mass moment of inertia

t<sub>2</sub> = separation time  
t<sub>11</sub> AC = Engaging time  
t<sub>11</sub> DC = Engaging time

X = Airgap, factory set  
XN = Recommended airgap resetting  
XA = Recommended airgap resetting in noise sensible  
m = Airgap hand release (drawing)

**5. Assembly**

**5.1 Assembly Instruction**

Before assembly of the spring applied brake the following point need to be checked:

Do the name plate and the ordered performance date correspond.

No damages of the brake and no impurities on functional parts.

Grease and oil need to be kept away from friction surfaces.

For cleaning of the brake no aggressive fluids (e.g. cleaning agents) or similar are allowed to be used.

The brake is not allowed to get in contact with water or similar substances.

During assembly the brake must be in a currentless state.

Micro switches are pre-set and secured. **Caution:** when reset - a new adjustment has to be made.

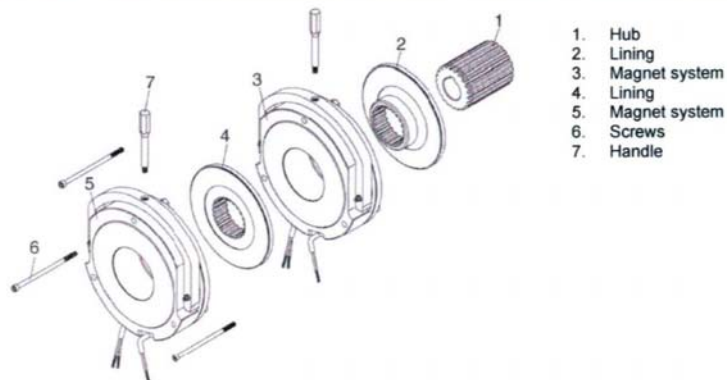
While assembling the hub and the magnet system ensure that the splining of the hub and lining are not damaged.

**5.2 Assembly of the Brake**

1. Secure hub (1) on the motor shaft
2. Fit lining (2) onto the hub
3. Assembly magnet system (3)
4. Fit lining (4) onto hub (1)
5. Fasten magnet system (5) and (3) with screws (6) to the motor end plate.  
Tighten the screws equally with the tightening torques listed on the drawing.
6. If necessary readjust airgap „X“ (brake A + B) in a currentless state with feeler gauge
7. Affix handles (7) for the hand release.
8. A disassembly is made the reverse sequence.



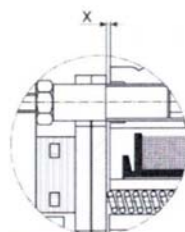
**Assembly and Instruction Manual COMBISTOP**  
71.642.00-4004



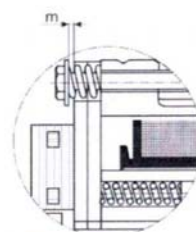
**Airgap Setting:**

While in a currentless state by means of a feeler gauge with unfastened screws the airgap is set to nominal „X“ according to the table listed below. After equal setting the screws are tightened again and the brake is ready for operation.

X = 0,3mm  
XN = 0,6mm  
XA = 0,4mm  
m = 1,0mm



Airgap „X“



Hand Release

**Airgap resetting:**

The wear caused by dynamic braking results in an enlargement of the airgap. Only regular checks and adjustment of the airgap „XN“ guarantee the functioning of the brake.

Since the noise level depends of the size on the airgap we recommend an airgap adjustment in noise sensible applications when the airgap value „XA“ is reached to reduce noise emissions to a minimum.

**5.3 Testing of Brake before taking into Operation**

*Prior to taking the spring applied brake into operation the following needs to be checked!*

- The performance data corresponds to the name plate data
- No damages of the brake and no impurities in the functional area
- By putting under current check function of the spring applied brake (brake closed, brake released)
- Check signals of the micro switch (brake closed, brake released)

**6. Maintenance**

The COMBISTOP brakes are mostly maintenance free.

The wear caused by operation results into an enlargement of the airgap. The functioning of the brake is only guaranteed if the airgap is checked regularly (refer to airga re-setting).

Since the noise development in noise sensible applications depends on the size of the airgap we recommend the exchange of the lining when the airgap „XA“ is reached.

When the airgap reaches „XN“ an exchange is mandatory.

Attachment: drawing 71.642.00-4004

Karl E.Brinkmann GmbH, Postfach 1109, 32677 Barntrop,  
Telefon 05263/401-0 / Telefax 401-880, / Internet: [www.keb.de](http://www.keb.de), / E-mail: [info@keb.de](mailto:info@keb.de)

28.09.05

Seite 3 von 3

APPENDIX E  
Traction Sheave for OMS – Elevator Machine AZHP 2

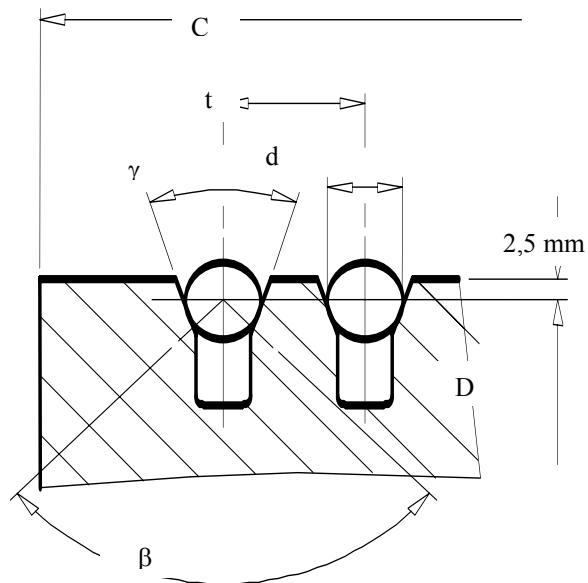


ANTRIEBSTECHNIK

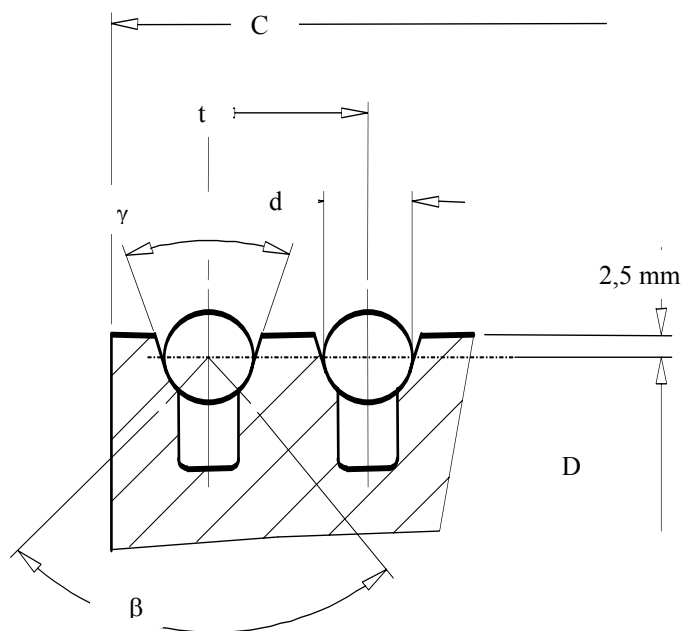
(Technical changes reserved – Last Changes 09/2005)

Two pieces Traction Sheave with a flanged connector, Material: GG 25 (ca. 230HB)  
Optional: Hardened Guides 50HRC.

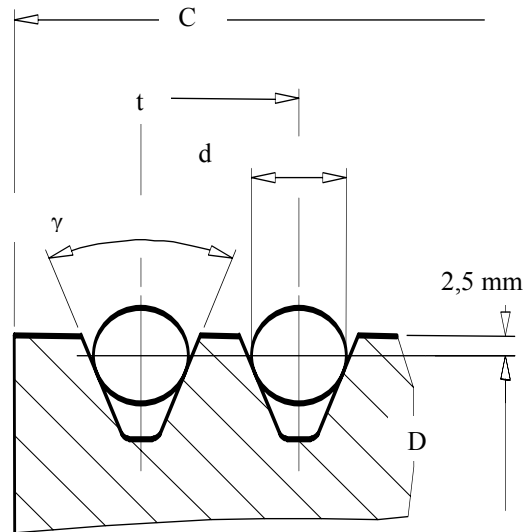
Standard Traction Sheave – Undercut Wedged Guides



Special Traction Sheave – Undercut Semicircular Guides



Special Traction Sheave – Wedged Guides sans Undercut



Available Traction Sheaves

Type	Traction sheave D in mm	guides		Dimensions				Weight kg
		z	D	C	T	$\beta^\circ$	$\gamma^\circ$	
K3..	320	6-10	8	125	12-17	80-104	35-45	34
K4..	400	5-6	8-10	112	17	80-104	35-45	40
K4..	450	5-6	8-11	112	17	80-104	35-45	46
K5..	500	6	8-11	112	17	80-104	35-45	52
K5..	560	6	8-11	112	17-20	80-104	35-45	59
K5..	560	6-7	8-14	130	17-20	80-104	35-45	65
K6..	650	6	8-11	112	17-20	80-104	35-45	86
K6..	650	6-7	8-14	130	17-20	80-104	35-45	96
K7..	750	4-7	8-14	90+112+130	17-20	80-104	35-45	
<b>Special Traction sheaves</b>								
	420-950	3-8	8-14	90-140	any	80-104	35-45	-



## Zertifikat

### Registrier-Nr.

Registration No.

78/208/YMA329655

<b>Zeichen des Auftraggebers</b> <i>Customer's reference</i>	<b>Auftragsdatum</b> <i>Date of application</i>	<b>Aktenzeichen</b> <i>File reference</i>	<b>Prüfbericht Nr.</b> <i>Test report no.</i>
PP- 020 / 2002 + 02/YMA157619 v. 26.04.2002	26.09.2005	8000329655	05/YMA329655

<b>Name und Anschrift des Auftraggebers</b>	<b>OMS Antriebstechnik OHG</b> <b>Bahnhofstraße 12</b> <b>D- 36219 Cornberg</b>	<i>Customer's name and address</i>
---	---	--

<b>Beschreibung des Produktes</b>	<b>Aufzugsgetriebe:</b> Typ: AZHP 1 Rev.-stand (Feb.2002); AZHP 2 Rev.-stand (Sep.2000); AZHP 3 Rev.-stand (Dez.2001);	<b>Nennbelastung:</b> 35000N 42000N 65000N	<i>Description of product</i>
---------------------------------------	---	---	-------------------------------

<b>Prüfgegenstand</b>	<b>Bruchfestigkeit der Gehäuse der Aufzugsgetriebe; Statik der Antriebswelle s.o.</b>	<i>Devise under test</i>
<b>Fertigungsstätte</b>		<i>Manufacturing plant</i>

<b>Geprüft nach</b>	<b>Aufzugsrichtlinie 95/16/EG EN 81 – 1, Februar 1999 (in Anlehnung)</b>	<i>Tested in accordance with</i>
---------------------	--	----------------------------------

<b>Anmerkungen</b>	<b>Bei senkrechter Belastung zur Aufspannfläche, in allen vorgesehenen Positionen, sind die Getriebe mit den zu Grunde gelegten Belastungen geprüft worden ohne dass Risse (Schäden), oder bleibende Verformungen auftraten. Bei der durch den Hersteller angegebenen Nennbelastung ist damit mindestens eine 3-fache Sicherheit gegen Bruch gegeben.</b>	<i>Remarks</i>
--------------------	---	----------------

Bitte beachten Sie auch die umseitigen Hinweise  
*Please also pay attention to the information stated overleaf*

TÜV NORD CERT GmbH & Co. KG  
Zertifizierungsstelle für  
Produkte

gez. O. Rosin

Gültig bis: 29.09.2008  
*Valid until:*

Hannover, den 29.09.2005

Am TÜV 1 • 30519 Hannover • Fon +49 (0)511 986 1470 • Fax +49 (0)511 986 1590  
*Please also pay attention to the information stated overleaf*





## Declaration of Conformity

According to the EC Machine Directive 98/37/EC, Appendix II B

Description : Drive Unit for Elevators according to EN 81-1

Type of Machine : AZHP 2

Machine No. :

Machine Data : According to the data recorded on the Manufacturers Plate

Machine, composed of the following components:

1. Hypoid Bevel / Spur Gear; (2 stages)
2. Motor; (3 Phase AC Motor, Motor Type B5 S, Protection Class IP 54, Insulation Class F)
3. Braking Unit; (2 Circuit Disc Braking Unit)
4. Traction Sheave, Safeguard against rope jump off

Applicable EC Directives:

EC Machine Directive 98/37/EC

EC Low Voltage Directive 73/23/EC

EC Prevention of Electro- Magnetic Emissions 89/336/EC

Herewith we declare that the above mentioned machine in it's original delivery state is in accordance with EC / DIN / ISO safety and health requirements due to it's conception, construction and implementation.

This machine may only be operated in elevator systems which adhere to the applicable directives and guidelines.

Manufacturers Signature

A handwritten signature in black ink, appearing to read 'Militzer', written over a dotted line.

Dr.-Ing. Michael Militzer / Management

OMS Antriebstechnik OHG; Bahnhofstraße 12; D-36219 Cornberg

## Material Safety Data Sheet According to 91/155 EEC

Printing date 03.02.2004

Reviewed on 03.02.2004



### 1 Identification of the substance/preparation and of the company/undertaking

- **Product details**
- **Trade name:** SYNTHESO D 220 EP
- **Article number:** 012056 neu
- **Application of the substance / the preparation** Lubricating oil
- **Manufacturer/Supplier:**  
KLÜBER LUBRICATION MÜNCHEN KG  
Geisenhausenerstrasse 7  
D-81379 München  
Tel.: 0049 (0) 897876-0  
Fax: 0049 (0) 897876-333  
Notfallauskunft: 0049 (0) 897876-700
- **Further information obtainable from:** Material Compliance Management

### 2 Composition/information on ingredients

- **Chemical characterization**
- **Description:** polyalkylene glycol oil

· **Dangerous components:**

CAS: 36878-20-3	Bis(nonylphenyl)amine	R 52/53	≤ 2.5%
EINECS: 253-249-4			
	Metalorganic compound	 Xi,  N; R 36-51/53	≤ 2.5%

- **Additional information:** For the wording of the listed risk phrases refer to section 16.

### 3 Hazards identification

- **Hazard description:** Not applicable.
- **Information concerning particular hazards for human and environment:**  
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
- **Classification system:**  
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

### 4 First-aid measures

- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Wash off with soap and plenty of water.
- **After eye contact:**  
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

(Contd. on page 2)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 03.02.2004

Reviewed on 03.02.2004

Trade name: SYNTHESO D 220 EP

(Contd. of page 1)

- **After swallowing:** If symptoms persist consult doctor.

### 5 Fire-fighting measures

- **Suitable extinguishing agents:**  
Water haze  
Foam  
Fire-extinguishing powder  
Carbon dioxide
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Protective equipment:** Wear fully protective suit.
- **Additional information** Cool endangered receptacles with water spray.

### 6 Accidental release measures

- **Person-related safety precautions:** Particular danger of slipping on leaked/spilled product.
- **Measures for environmental protection:**  
Do not allow to enter sewers/ surface or ground water.
- **Measures for cleaning/collecting:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose of the material collected according to regulations.

### 7 Handling and storage

- **Handling:**
- **Information for safe handling:** Prevent formation of aerosols.
- **Information about fire - and explosion protection:** No special measures required.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**  
Store in cool, dry conditions in well sealed receptacles.
- **Information about storage in one common storage facility:**  
Store away from oxidizing agents.  
Store away from foodstuffs.
- **Further information about storage conditions:** None.

### 8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **Ingredients with limit values that require monitoring at the workplace:**  
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists valid during the making were used as basis.
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
Do not inhale gases / fumes / aerosols.  
Immediately remove all soiled and contaminated clothing  
Avoid close or long term contact with the skin.  
Be sure to clean skin thoroughly after work and before breaks.

(Contd. on page 3)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 03.02.2004

Reviewed on 03.02.2004

Trade name: SYNTHESO D 220 EP

(Contd. of page 2)

- **Protection of hands:**  
Preventive skin protection by use of skin-protecting agents is recommended.
- **Eye protection:** Goggles recommended during refilling
- **Body protection:** Protective work clothing

### 9 Physical and chemical properties

#### · General Information

Form:	Fluid
Colour:	Light yellow
Odour:	Product specific

#### · Change in condition

Pour point	< -35°C (DIN ISO 3016)
------------	------------------------

#### · Flash point:

	> 200°C (DIN ISO 2592)
--	------------------------

#### · Danger of explosion:

	Product does not present an explosion hazard.
--	---

#### · Density at 20°C:

	~ 1.05 g/cm <sup>3</sup>
--	--------------------------

#### · Solubility in / Miscibility with water:

	Partly miscible.
--	------------------

#### · Viscosity:

Kinematic at 40°C:	~ 220 mm <sup>2</sup> /s (DIN 51562)
--------------------	--------------------------------------

### 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:**  
No decomposition if used and stored according to specifications.
- **Materials to be avoided:** oxidizing agents
- **Dangerous reactions** No dangerous reactions known.
- **Dangerous decomposition products:** none under normal use

### 11 Toxicological information

- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** > 2000 mg/kg
- **Additional toxicological information:**  
Prolonged skin contact may cause skin irritation and/or dermatitis.

### 12 Ecological information

- **General notes:** Do not allow product to reach ground water, water course or sewage system.

### 13 Disposal considerations

- **Product:**
- **Recommendation** Can be incinerated in accordance with local and national regulations.

(Contd. on page 4)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 03.02.2004

Reviewed on 03.02.2004

Trade name: SYNTHESO D 220 EP

(Contd. of page 3)

- **Waste disposal key:**  
For this product no waste disposal key according the European Waste Catalogue (EWC) can be determined, as only the purpose of application defined by the user enables an allocation. The waste code number has to be determined in accordance with the local waste disposer.
- **Uncleaned packaging:**
- **Recommendation:**  
Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.

### 14 Transport information

- **Land transport ADR/RID (cross-border)**
- **ADR/RID class:** -
- **Maritime transport IMDG:**
- **IMDG Class:** -
- **Air transport ICAO-TI and IATA-DGR:**
- **ICAO/IATA Class:** -
- **Transport/Additional information:**  
Not classified as dangerous according to the above specifications.

### 15 Regulatory information

- **Labelling according to EU guidelines:**  
The product is not subject to classification according to the calculation methods of the "General Classification Guideline for Preparations of the EU" as issued in the latest valid version.
- **Special labelling of certain preparations:**  
Safety data sheet available for professional user on request.

### 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant R-phrases**  
36 Irritating to eyes.  
51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- **Department issuing MSDS:** Material Compliance Management
- **Contact:** Tel.: +49 (0) 897876-564