

# **Oil Skimmer model WBS**

Serial N.

**FRIESS**<sup>GmbH</sup>

Böttgerstraße 2

D-40789 Monheim

## **Maintenance Manual**

## **Table of contents**

- 0. EU-DECLARATION OF CONFORMITY OF THE MANUFACTURER**
- 1. IMPORTANT SAFETY INFORMATION AND SAFETY INSTRUCTIONS**
  - 1.1 Range of application
  - 1.2 Safety information and safety instructions
    - 1.2.1 Fundamental safety information
    - 1.2.2 General safety instructions
    - 1.2.3 Special safety instructions
- 2. GENERAL DESCRIPTION**
  - 2.1 Description of parts
  - 2.2 Description of process
- 3. START UP**
  - 3.1 Preparation
  - 3.2 Start up and operating
- 4. CLEANING AND MAINTENANCE**
- 5. POSSIBLE MALFUNCTION**
- 6. TECHNICAL DOCUMENTATION**
  - 6.1 parts list
    - 6.1.1 wear parts
    - 6.1.2 parts list of oil skimmer model WBS
    - 6.1.3 part list (3)
      - 6.1.3.1 400 V (IP 54)
      - 6.1.3.2 230 V (IP 44)
  - 6.2 drawings
  - 6.2 Wiring diagram
  - 6.3 Manual and safety instructions of gear motor
- 7. APPENDAGE**
  - 7.1 Lubrication information

## Declaration of conformity According to EC-Machinery Directive 2006/42/EG

FRIESS GmbH declares that the

**Product:** Oil skimmer  
**Type:** WBS  
**Year of manufacturing:**  
**Serial-No:**

complies with the requirements of the European directives.

The manufacturer herewith declares conformity of above mentioned oil skimmer with following standards:

**Machinery Directive:** 2006/42/EG

The oil skimmer is a machine to remove floating oil and fat from water surfaces. The declaration of conformity is only valid if the oil collecting pan is used. If the oil collecting pan is not used, the conformity is unvalid unless an appropriate protection against touching the drive wheel is installed.

This declaration is not valid if the oil skimmer is used for other purposes than designed or if the construction is changed and not confirmed in writing by manufacturer.

Applied harmonized standards:

**EN ISO 12100-1** Safety of machinery  
**EN ISO 12100-2** Safety of machinery  
**EN 60204-1** Safety of machinery

This declaration certifies conformance with the above mentioned directives. Affirmation of attributes in a legal sence is not included. Security declarations given in the product documentation have to be considered.



Oliver Benneck / Executive director

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# FRIESS GmbH

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# 1. IMPORTANT SAFETY INFORMATION AND SAFETY INSTRUCTIONS

## 1.1 Range of application



Do not use the oil skimmer model WBS for other purpose than designed. The oil skimmer model WBS is designed to pick up floating oil and fat from liquid surface. The oil skimmer is not designed for other applications.

The manufacturer is not responsible for any damage because of using the oil skimmer for other purpose than designed. The manufacturer is not responsible for any damage because of mechanical, electrical or other changes made by others than the manufacturer.



Please follow the start-up, operating and maintenance instruction of this manual. Please pay attention to the local safety regulations and to the general and special safety regulations in your factory.

Please pay attention to the signs mounted at the oil skimmer model WBS.

## 1.2 Safety information and safety instructions

### 1.2.1 Fundamental safety information



Please pay attention to the local safety precautions and to any other general safety precautions and health regulations. Please pay attention to the safety precautions for electric components. If you do not watch these regulations the manufacturer will not be responsible for any damage. This manual is part of the **FRIESS** oil skimmer model WBS. In case you resell the oil skimmer you have to deliver the oil skimmer with this manual. For safe operation of this oil skimmer the oil skimmer has to be operated and serviced or fixed by trained personal only. Trained personal are persons, which have knowledge about necessary technical standards, technical regulations and safety information's and which are able to handle technical products and recognize possible dangerous situations and are able to avoid these dangerous situations.



The owner of this oil skimmer has to take care, that the persons who are responsible for operating, maintenance and service and repairing of this oil skimmer have read and understood this manual and pay attention to all points of this manual. This is necessary to avoid dangerous situations

- for the user and other persons.



-for safe operation of the oil skimmer model WBS  
and

-to avoid damage at the environment caused by wrong operation.

Before start working please lay down all competences. Everybody has to follow these competences.

Removal, shut-down or switching-off of covers, protection-switches or other safety equipment may cause **severe** injuries or death or material damage. For this reason the manufacturer prohibits to remove or shut off safety devices. The manufacturer prohibits working at the oil skimmer model WBS while the oil skimmer is connected with electric power. After maintenance or other work all safety devices have to be installed correctly.



The manufacturer warrants for the oil skimmer model WBS according to the general sales terms. The manufacturer warrants not for the oil skimmer model WBS in case of damage caused by wrong operation, repairing of maintenance done by not trained personal, using additional equipment or spare parts which are not specified for the oil skimmer model WBS by manufacturer, changes or conversions without confirmation by manufacturer in writing.



Any failure has to be reported to the responsible person as soon as possible. In case of malfunction the oil skimmer model WBS has to be marked as *defect*. Before restart all defects have to be fixed otherwise there is no warranty by the manufacturer.

### 1.2.2 General safety instructions



These safety devices may not be complete. Please contact manufacturer in case of questions or problems. The oil skimmer model WBS is manufactured according to the latest technology and is safe in operation. You may use the oil skimmer model WBS only under the conditions and circumstances which are confirmed by manufacturer. Any change or rebuilding of the oil skimmer is not allowed. Please contact manufacturer before changing the design of the oil skimmer.

### 1.2.3 Special safety instructions



The oil skimmer model WBS has to be used in vertical position only. During operation of the oil skimmer model WBS do not touch the belt or the pulley wheels. During operation do not remove the safety hood. During repairing, servicing, maintenance or cleaning you have to switch-off the oil skimmer before start working at the oil skimmer. Make sure, that it is not possible to switch-on the oil skimmer during working at the oil skimmer. If using the oil skimmer with an additional oil collecting tank you have to install a safety switch at the oil collecting tank in order to avoid environment damage caused by overfilling the tank with oil.



Make sure that it is not possible to touch the belt or the pulley wheels during operation. This can be done by additional safety guards or rails.

## 2. GENERAL DESCRIPTION

The oil skimmer model WBS is designed to remove floating oil from water, emulsions, washing water or waste water. The floating oil sticks to the endless belt. The oily belt is drawn into the oil skimmer. The stainless steel scrapers at the oil skimmer will remove the oil from the surface of the belt. The clean belt will return to the water surface and will pick up new oil. The oil, which has been scraped off by the scrapers floats into a collecting tank which is not delivered with the oil skimmer. The **FRIESS** oil skimmer models WBS were designed for small basins. The minimum surface should be 100 mm x 200 mm. The maximum height between water level and outlet of the oil skimmer is 173/364/698 mm. The oil skimmer WBS has to be mounted above the maximum water level.

## 2.1 Description of parts

The oil skimmer model WBS is made of four structural components:

structural component 1: oil skimmer model WBS 10 (part-no.:150 010 001)  
 WBS 20 (part-no.:150 020 001)  
 WBS 30 (part-no.:150 030 001)

structural component 2: one gear motor SN5FL  
 The gear motor is special designed for each application and may vary from one oil skimmer to the next. Only the data plate on the gear motor shows the correct technical data.

structural component 3: switchboard  
 two different switchboard covers are possible

1. standard cover (part-no.:108 010 005)  
 motor 400V 3 phase protection class IP54
2. additional switchboard cover with switch, cable and plug and capacitor (part-no.:108 010 001)  
 motor 230V single phase protection class IP44

structural component 4: oil collecting belt

### Following types of belt are deliverable for the FRIESS oil skimmer model WBS 10/20/30

type B (yellow)	for bath temperature by	+20°C by +40°C	lifetime/months approx. 6 -24
type ST (black)	for bath temperature by	+20°C by +40°C	lifetime/months approx. 6 - 24
type Super (grey)	for bath temperature by	+20°C by +75°C	lifetime/months approx. 6 - 12

*The above mentioned lifetime of the belts cannot be guaranteed. Lifetime of the belt is depending on the environment and the type of chemicals which come in contact with the belt. For exact data we recommend test. If necessary we will supply samples of belt.*

WBS 10 L=1150 mm	WBS 20 L=1500 mm	WBS 30 L=2200 mm
Belt type ST Part.no.: 151 010 001 colour: black	Belt type ST Part.no.: 151 020 001 colour: black	belt type ST Part.no.: 153 003 001 colour: black
Belt type B Part.no.: 151 010 002 colour: yellow	Belt type B Part.no.: 151 020 002 colour: yellow	belt type B Part.no.: 153 003 002 colour: yellow
Belt type SUPER Part.no.: 151 010 003 colour: grey	Belt type SUPER Part.no.: 151 020 003 colour: grey	belt type SUPER Part.no.: 153 003 003 colour: grey

## 2.2 Description of process

The oil skimmer model WBS is designed for small basin. The minimum surface of the basin should be 100 x 200 mm. The maximum height between water level and outlet of the oil skimmer is 173/364/698 mm. The oil skimmer WBS has to be mounted vertical.

In any case the belt must not touch other parts or components or walls in the basin. In case the oil is contaminated with sludge or fat, the scrapers and the scraper rim has to be cleaned from time to time.

The oil collecting tank has to be delivered and mounted by the customer.

## 3. START UP

### 3.1 Preparation

The oil skimmer model WBS is ready to use. After mounting the oil skimmer connect the oil skimmer with power. Start the oil skimmer by setting the switch on the gear motor to Pos. ON.

### 3.2 Start up and operating

After start up please check whether the oil collecting belt runs around the pulley wheels and through the scrapers without problems.

Check whether the oil floats correctly from the scraper rim into the oil collecting tank.

## 4. CLEANING AND MAINTENANCE

For trouble free operation of the oil skimmer following maintenance is necessary:

### **Every week**

- Please check the oil collecting belt.
- Please check whether the drain of the oil skimmer is clean and not blocked.

### **Every six months**

- Check, whether the scrapers or the belt is worn out.

**If necessary – depending from application –  
clean the oil skimmer, the scrapers and the scraper rim !**

**ATTENTION: Before servicing the oil skimmer watch the safety  
instructions in this manual !!!**



### **Changing the oil collecting belt**



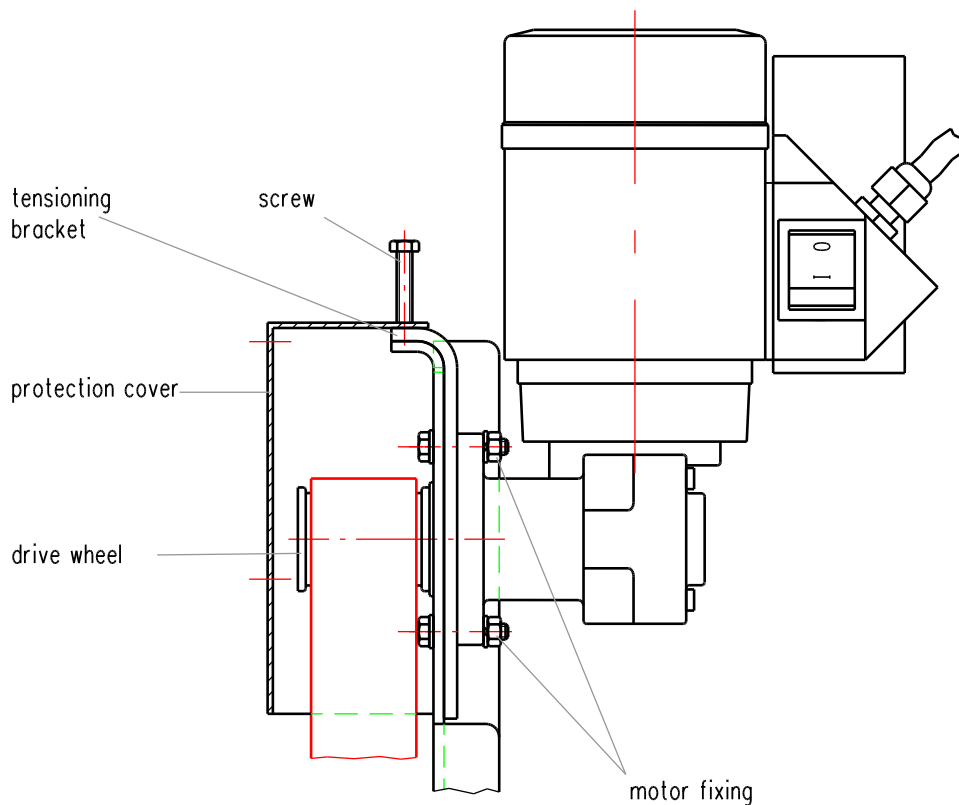
**ATTENTION:** Do not cut the oil collecting belt.  
It is possible to change the oil collector belt as one piece.

To change the oil collecting belt disconnect power! Remove the safety hood. Loosen the set screws and the screws which fit the motor. Remove the motor downwards to loosen the belt. Change the belt and remount the skimmer.



**ATTENTION:** Do not pull the oil collecting belt stronger than necessary!

The service life of the oil collector belt depends very strongly on the application.



## **5. POSSIBLE MALFUNCTION**

### Drive wheel turns but belt does not move

- Check whether the screw, that fits the drive wheel, is tightened.
- Check whether the tension of the belt is correct.
- Check whether the pulley wheel can be turned easily

### The oil skimmer runs but no oil is skimmed off

- Check whether oil floats on the liquid surface
- Check whether the scrapers are worn out
- Check whether the oil collector belt is worn out
- Check whether the scrapers touch the oil collector belt



## 6. TECHNICAL DOCUMENTATION

### 6.1 Parts list

#### 6.1.1 Wear parts

Pos.	no.		Drawing no.	Item
5	1	Pc	153 000 006	Scraper
-	1	Pc		Oil collecting belt

#### 6.1.2 Parts list oil skimmer WBS

Pos.	Q.ty	EH	Part N.	Description	
1	1	pc	153000009	main frame	
2	2	pc	153000001	shoulder bolt BS/WBS	
3	2	pc	153000002	pulley wheel BS/WBS	
4	1	pc	153000003	drive wheel BS/WBS	
5	1	pc	153000006	scraper BS/WBS	
6	1	pc	153000007	belt tensioner BS/WBS	
7	1	pc	153000008	safety hood BS/WBS	
8	0,01	x100	154000001	seal 10x22x8 BA	
9	1	pc	155000001	seal 10x28x1,5 PTFE	
10	2	pc	155000003	bearing H370FM-1012-15	
11	0,04	x100	105000018	tubular rivet DIN 7337 3x8 Al	
12	0,01	x100	105000047	set screw DIN551 M4x16 VA	drive roll
13	0,01	x100	105000013	hexagon nut DIN934 M6 V2A	deflection roll
14	0,01	x100	105100011	disc DIN9021 A6,4 V2A	deflection roll
15	0,01	x100	105000014	spring ring DIN127 A6 V2A	deflection roll
16	0,02	x100	154000002	countersunk screw DIN963 M4x10 V2A	safety hood
17	0,04	x100	154000004	hexagon bolt DIN933 M6x30 VA	gear
18	0,04	x100	105100011	disc DIN9021 A6,4 V2A	gear
19	0,02	x100	105100010	disc DIN9021 A8,4 V2A	gear
20	0,04	x100	105000013	hexagon nut DIN934 M6 V2A	gear
21	0,02	x100	154000005	hexagon bolt DIN933 M5x50 V2A	
22	0,02	x100	105000028	hexagon bolt DIN933 M5x10 V2A	scraper fastener
23	0,02	x100	105000010	spring ring DIN127 A5 V2A	scraper fastener
24	0,04	x100	105000002	hexagon bolt DIN933 M4x12 V2A	scraper
25	0,04	x100	105000007	disc DIN125 A4,3 V2A	scraper
26	0,04	x100	105000005	spring ring DIN127 A4 V2A	scraper
27	0,04	x100	105000004	hexagon nut DIN934 M4 V2A	scraper

#### 6.1.3 Parts list structural components

##### 6.1.3.1 Protection class IP 54 (108 010 005)

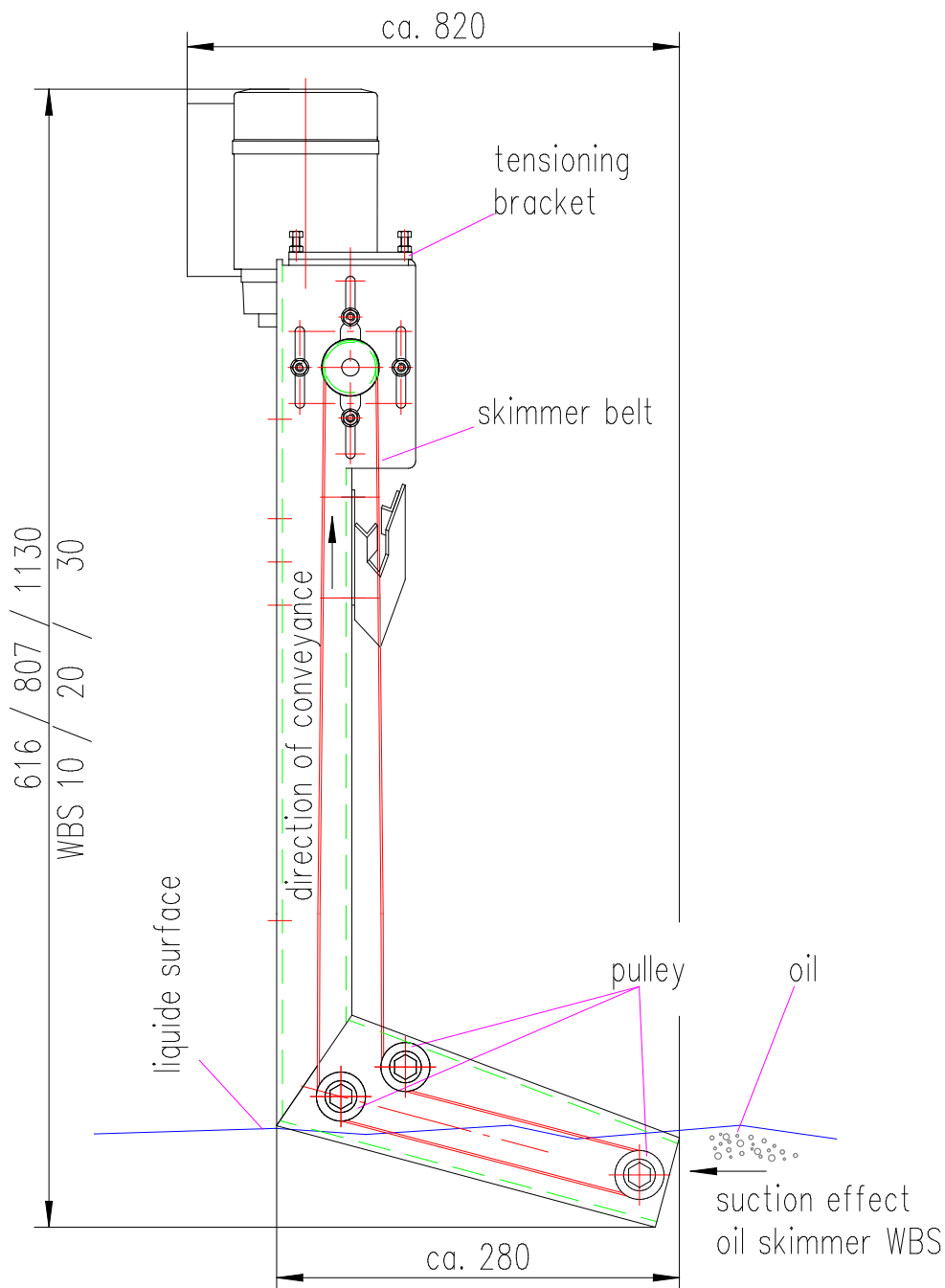
1	1	pc	108 010 005	switchboard standard
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### 6.1.3.2 Protection class IP 44 (108 010 001)

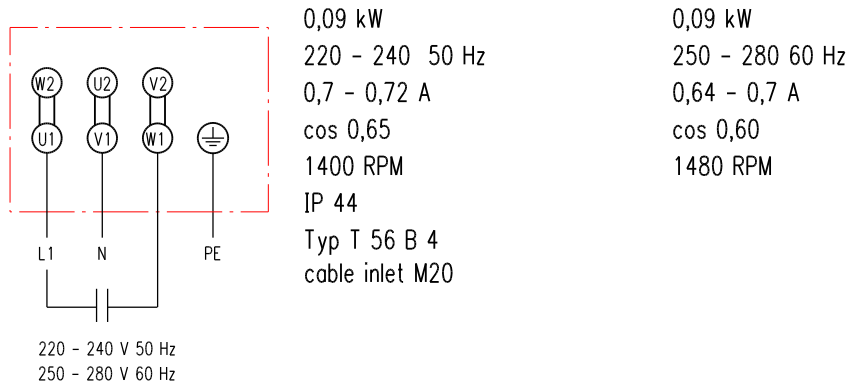
1-5	1	pc	108 010 004	switchboard with switch, cable, plug, capacitor
	1	pc	108 010 003	
	1	pc	108 010 002	
	1	pc	105 000 051	
	3	pc	105 000 052	

## 6.2 Drawing

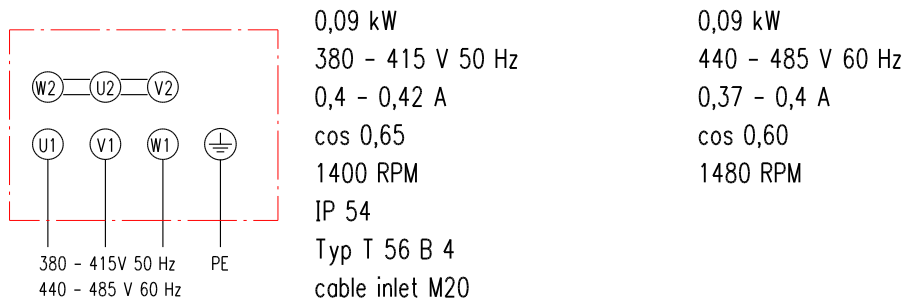
without cover



### 6.3 Wiring diagram



Attention! Pay attention to the data plate, special configurations are possible



Attention! Pay attention to the data plate, special configurations are possible

### 6.4 Manual and safety instructions of gear motor


#### Operating and safety instructions Worm gear motors

##### 0. Foreword

A geared motor proper is not subject to the Machinery Directive. Through appropriate installation and/or assembly in an overall system it becomes a component of the machine or plant under construction, which must comply with the relevant standards and directives. The manufacturer of the machine bears the sole responsibility for compliance with these standards.

##### 1. Safety Instructions

The commissioning of a machine is forbidden until it has been established that the protection and safety provisions of Machinery Directive 2006/42/EC have been complied with. A precondition for the proper installation and connection is the recognition and observance of the operating and safety instructions as well as workplace safety and accident prevention regulations. Work on the gear motors may be entrusted only to qualified staff. Malfunctions that affect safety must be immediately rectified by the aforementioned staff.



*Geared motors are devices for use in industrial machinery and plant. In operation, these devices can have dangerous live, non-insulated parts, or perhaps moving or rotating parts. Hence, for example, unauthorised removal of the required casing, or improper use, incorrect operation or poor maintenance, could lead to severe bodily harm or damage to machinery.*

*Persons responsible for the safety of the machine or plant must therefore ensure that*

- only qualified persons are charged with working on the machines or plant.
- such persons always have access to the current operating instructions and other product documentation applicable to the work in hand, and that they are charged with consistent compliance with these documents
- unqualified persons are prohibited from working on or near the machines or equipment.

**Qualified Personnel** are persons who by reason of their training, experience, instruction and their knowledge of the relevant standards, regulations, accident prevention rules and working conditions have been authorized by the person responsible for the safety of the machine or plant to perform the appropriate activities required, and thereby are able to recognise and prevent potentially dangerous situations (For the definition of skilled workers see VDE 0105 or IEC 364, which also regulate the prohibition of the employment of unqualified persons). A knowledge of first aid and the local rescue organisation must also be included.

It is assumed that the basic planning of the machine or plant and all operations relating to its transportation, assembly, installation, commissioning, maintenance and repair will be performed by qualified personnel or controlled by responsible skilled hands. In this respect, special attention should be paid to:

- technical data, and information on permissible use which are included in the catalogue, the documents relating to the order and on the data plate,
- the general regulations applicable to erection and safety,
- the local regulations and requirements specific to the machine or plant
- the proper employment of tools, lifting transport devices,
- the use of personal protective equipment,
- assembly conditions, to ensure the necessary protection for operators during use, and to prevent personnel from approaching too closely for safety.

The present documentation would become too unwieldy if it contained all the detailed information relative to possible construction variants, and it cannot take into account every conceivable case involving erection, operation or maintenance. Consequently, it only contains the essential instructions necessary for qualified personnel operating geared motors in industrial areas of application. Should, in a special case where it is intended to use the machine or plant in non-industrial areas of application, more stringent requirements have to be met (e.g. to prevent children's fingers from touching the machine), these conditions must be assured during assembly by introducing additional safety measures for the machine or plant.

Changes from normal operation (increased power consumption, raised temperatures, vibrations, noises, etc. or indications from monitoring facilities) lead to the assumption that the machine is not functioning correctly. To prevent faults which, in their turn, might cause serious indirect or direct damage to persons or machinery, the responsible maintenance staff must be informed immediately.

### **IN CASE OF DOUBT; SWITCH OFF THE MACHINE INVOLVED AT ONCE!!!**

#### **2. Regulation Use**

The geared motors are designed exclusively for installation in or for mating with a machine or plant in industrial use. Use for any other or extended purpose is non-regulation. The supplier will not be liable for any damage arising from this improper use.

#### **3. Erection**

The beds on which the gears and geared motors are to be erected must be adequately dimensioned and free from vibration. When mounting the geared motors care must be taken to ensure that these are immovably mounted, free from distortion, and on a level surface. Adequate ventilation for the motors must be assured. Should coupling elements be fitted onto the drive- or output-shaft blows to the shafts must be avoided since they could cause leakage or damage to the bearings. Prior to fitting, the shaft-end should be lightly greased to facilitate mounting. We recommend that a flexible coupling be employed in order to reduce shock on the gears or geared motor from the machine being driven.

#### **4. Electrical Connection**

The electrical connection of the motor may only be performed by personnel with the appropriate qualification and in compliance with the prescribed safety precautions and the local regulations governing electrical connections (see para.1 Safety Instructions). The motor must be connected in accordance with the circuit diagram in the terminal box. Care must be taken to ensure that the voltage of the power supply corresponds to that on the performance plate of the motor. Any additional devices installed, such as brakes, revolution counter generators, and secondary fans, must comply with the appropriate standards. The direction of rotation can be changed in three-phase motors by changing two phases, in alternating-current (a.c.) motors by re-clamping the bridges on the terminal boards, and in direct-current (d.c.) motors by changing the polarity of the armature voltage – all this may only be performed when the motor is at standstill!

#### **5. Safety Precautions**

The earth lead must without fail be connected to the marked earthing screw! To protect it against overloading every motor should be fitted with a trip switch. Heat-sensitive safety devices react to effective values, and the manufacturer will design them accordingly when ordered. Where a transformer is used, the voltage must be restricted to the level of the effective nominal voltage.

#### **6. Maintenance**

**ATTENTION!** Before starting any maintenance operations the geared motor must be permanently disconnected from the mains.

##### a) Motor:

It is recommended that, depending on the ambient dust arising, the dirt accumulation on the fan cowling of the motor and the motor and gears themselves should be cleaned off from time to time (heating). In the case of motors with carbon brushes, these should be checked at regular intervals. The life of the brushes depends on the mode and conditions of operation. The brushes must be renewed as and when this becomes necessary. Once the fan cowling, the holding band or the screw-caps have been removed the brushes are in most cases easily accessible.

##### b) Gears:

On delivery, the geared motors are ready for use and filled with gear grease or oil. This ensures long-term lubrication for all drive parts and bearings. No complicated stripping, cleaning or grease change are required. Should, however, any additional greasing become necessary then synthetic and mineral lubricants must not be mixed.

#### **7. Closing Remarks**

Your attention is drawn to the fact that the contents of the operating and safety instructions and of the product documentation do not form part of any previous or existing agreement, undertaking or legal relationship, nor are they designed to alter such. All the obligations incumbent upon the supplier are based on the contract of sale in each case, which also contains the complete and solely applicable regulations relating to the guarantee. The contractual provisions of the guarantee are neither extended nor restricted by the statements contained in these operating and safety instructions.

## **7. APPENDAGE**

### **7.1 Lubrication information**

The gear motors are filled with lubrication. During the life time of the gear motors it is not necessary to change the lubrication.