

TECHNICAL DATA - SPIRAL WORM CONVEYORDescription

System	KA Rybnik
Costumer	Fa. Passavant-Roediger
AB-Nr.	3536/99
Type	SS 06

Operating Data - Spiral Worm Conveyor

Trough Width	330 mm
Spiral Diameter	290 mm
Spiral Length	6700 mm
Erection	24° degree incline
Conveyed matter	sludge
Drive Motor	Flender-Himmel FDAF81-C132 S4 1440/32 rpm, 5,5 kW 50Hz, 400, IP 55, ISO F Construction Form H-01A/A300

MODE OF OPERATION

The conveyor is filled with material via the fill hopper. A rotating spiral transports the material, in a continuous stream, to the discharge hopper, where it is turned over to the next conveyor module.

The basic unit of the spiral conveyor system consists of a robust steel spiral placed into a u-shaped duct or pipe, plus an acceleration element. The material is discharged via a single-bearing spiral conveyor.

The worm conveyor is equipped with a complete cover which can be removed for maintenance purposes. Cleaning the interior of the system is not normally required; however, should the spiral have been worn out, a basic cleaning is recommended.

If requested, a pipe connector may be installed at the bottom of the system to allow for discharge of flush water.

!!! Caution is recommended in dealing with a lime worm conveyor !!!
!!! Danger of Dust Explosion !!!

Worm-Conveyor-Construction:

- pivotless steel spiral
- removable cover over the entire length of trough conveyors
- maintenance access openings at transfer points
- includes exchangeable seal inserts (spare parts for trough conveyors)
- flush connection (accessory)

INSTALLATION INSTRUCTIONS

1. Drive and Stop Plates:

To ensure proper, level positioning, the drive and stop plates of the worm conveyor may be placed only on a sturdy, motion free foundation, such as a base plate or steel construction. Exact alignment is of utmost importance.

2. Support Brackets:

If supports are provided, these will be mounted to the respective bores.

3. Inlet/Outlet:

The standard type system consists of the in- and outlet already pre-connected to the conveyor, and therefore must only be connected to the remaining modules

4. Electrical Installation:

Electrical Installation should be performed by appropriately trained specialists, as they are in possession of the terminal- / control diagrams.

REPAIRWORK

!!! CAUTION !!!

Never work in the open hopper while conveyor is in operation!

If the system is to be shut down temporarily, the feed opening (inlet) must be closed first and then the conveyor is emptied by allowing it to run for approximately 5 to 10 minutes.

This is particularly important when dealing with watery material during danger of cold temperatures, to avoid freezing of the system.

Deinstallation of the Drive Motor:

For deinstallation of the drive motor (1) loosen the hexagonal bolt of the solid axle, which is implanted in the hollow axle of the transmission. Then the bolts connecting the transmission to the stop plate of the conveyor are removed and the transmission motor (1) can be pulled off (use appropriate tools). For installation, the same procedures, in reverse order, are followed.

Deinstallation of Spur-Bearings:

For Deinstallation of spur-bearings (2), the worm screws of the bearing block are loosened (does not apply to compression gland bearings). Now the four bolts connecting the bearings to the stop plate are removed. Pull the bearing off by using appropriate tools. Now the plastic seal or the compression gland pack can be exchanged. For installation, the same procedures, in reverse order, are followed.

Wear and Tear Parts:

Seals or compression gland replacement packs (depending on system)

Seal Insert (accessory for trough conveyor systems)

LUBRICATION AND MAINTENANCE INSTRUCTIONS

The entire system must be thoroughly cleaned as prescribed, inspected, and maintained, at regular intervals. Checking for proper condition and safety of all parts is important.

!!! CAUTION !!!

Maintenance, cleaning, and inspection tasks may be performed only during stand-still and when the system is shut-off, and only by authorized personnel. A warning sign, to prevent unintentional turn-on of the system, will be posted at the main power supply switch. The keys will be kept by supervisory personnel or other authorized specialists. The operations manual, maintenance and special tools and material required, grease boxes and cleaning and lubrication materials will always be kept in the appropriate designated containers.

!!! CAUTION !!!

During maintenance operations and oil-changes, operating fluids (e.g. transmission oil) must be collected in appropriate containers and be disposed off properly (IAVV EG Guidelines 75/439/EWG).

TMG trough worm conveyors, because of simple design, are relatively easy to maintain; however, the following maintenance intervals must be complied with:

Weekly Maintenance:

Check compression gland bearings at the drive plate side for material discharge of dirt. If that is the case the hexagonal bolts must be tightened.

If the bearing can no longer be adjusted (tightened), a new bearing cord must be installed.

To do that, de-install the cover, remove old cord, and insert new cords.

Attention: Each cord must be installed so the seams are varied.

Replace cover and bring to chock. After about 2 hours of operation, recheck and tighten as necessary.

Monthly Maintenance:

Check trough and spiral for materials caught as well as heavy desposit. If that is the case, clean thoroughly.

In addition, th wear of the spiral as well as the seal insert must be inspected. Replacement parts must be obtained well in advance to replace worn parts.

Furthermore, the entire system of mechanical parts, steel constructions, electrical equipment, installation, and safety provision must be subjected to a thorough test.

All fill-hoppers and outlet hoppers must be inspected for proper material flow.

Should that not be the case, they must be cleaned.

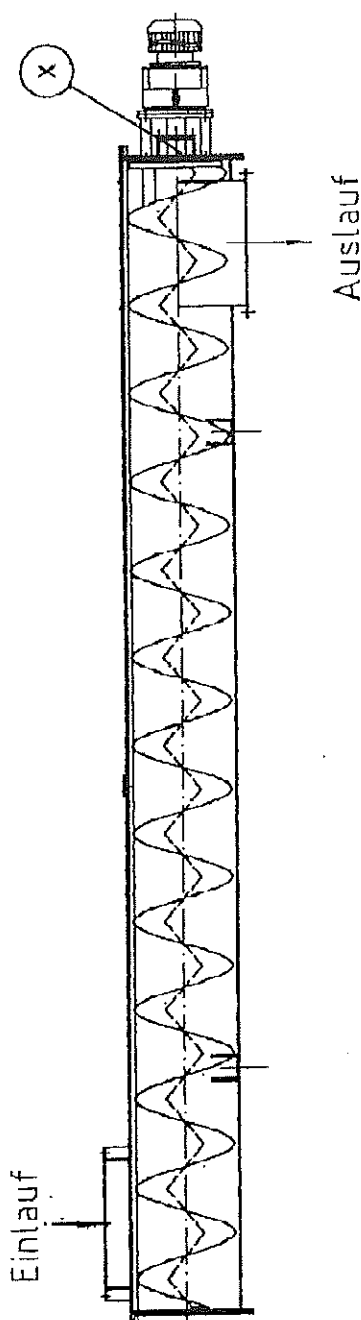
Drive motor (see enclosure Fa. Flender Himmel)

Lubrication Time Table

X = compression gland bearing

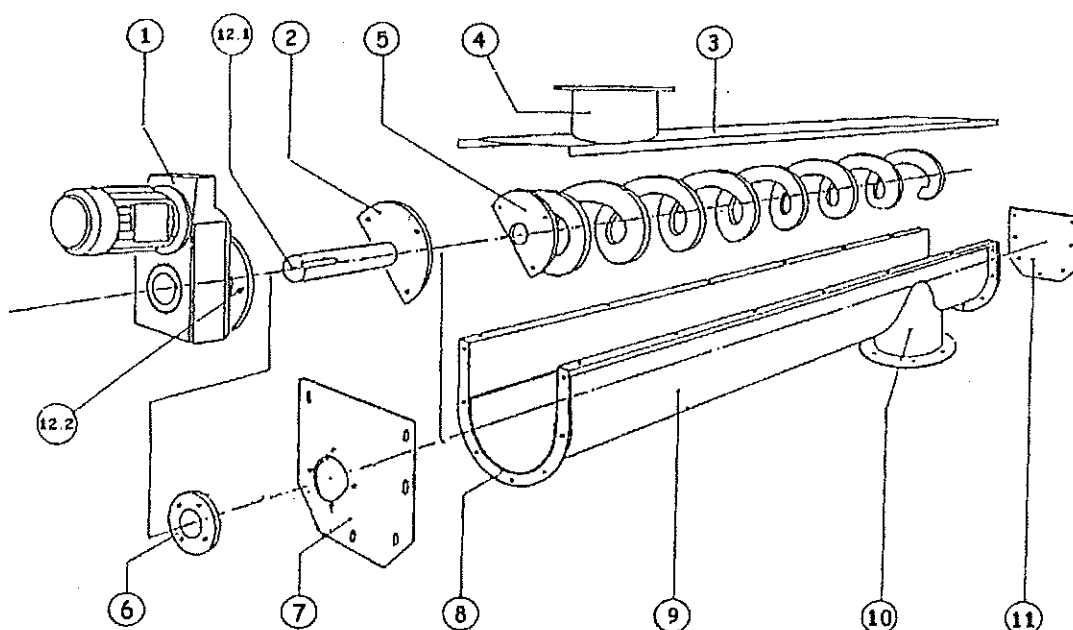
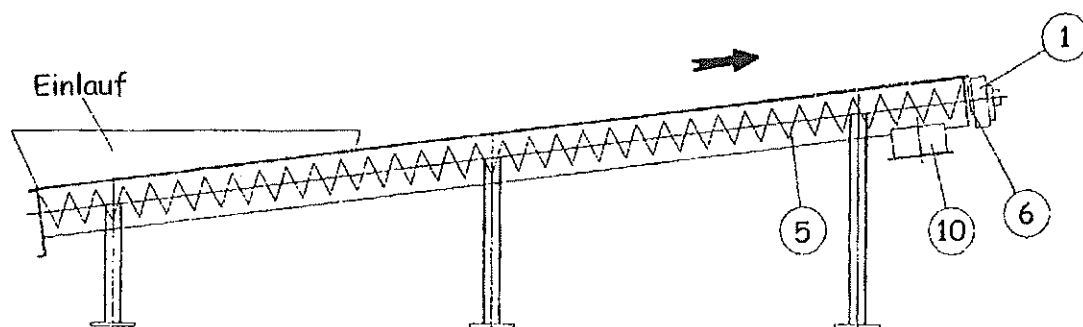
TMG worm conveyors require relatively little maintenance due to their simple construction design.

It is however recommended, to check and if necessary adjust, the referenced compression gland bearing once a month.

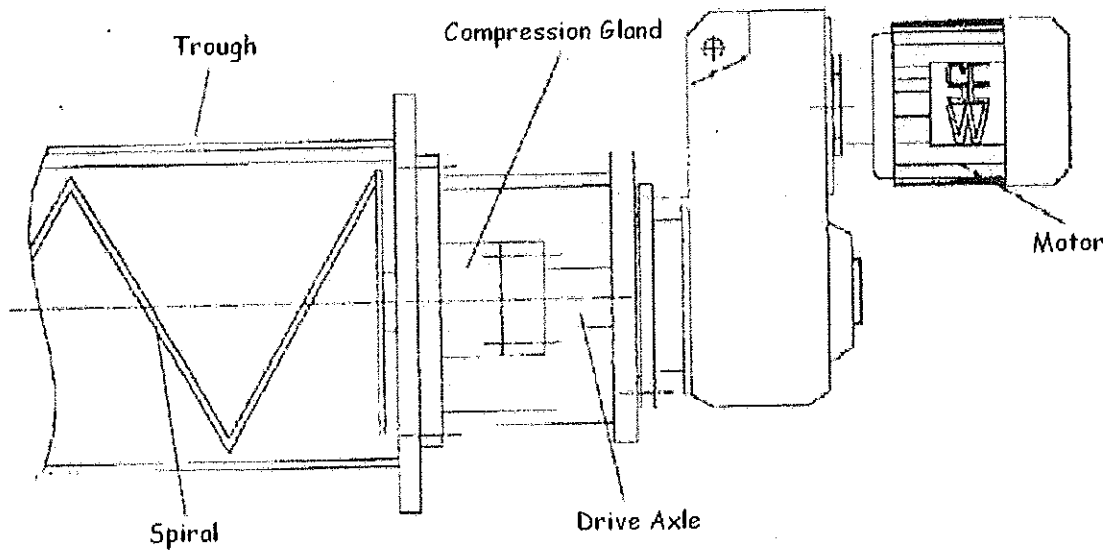
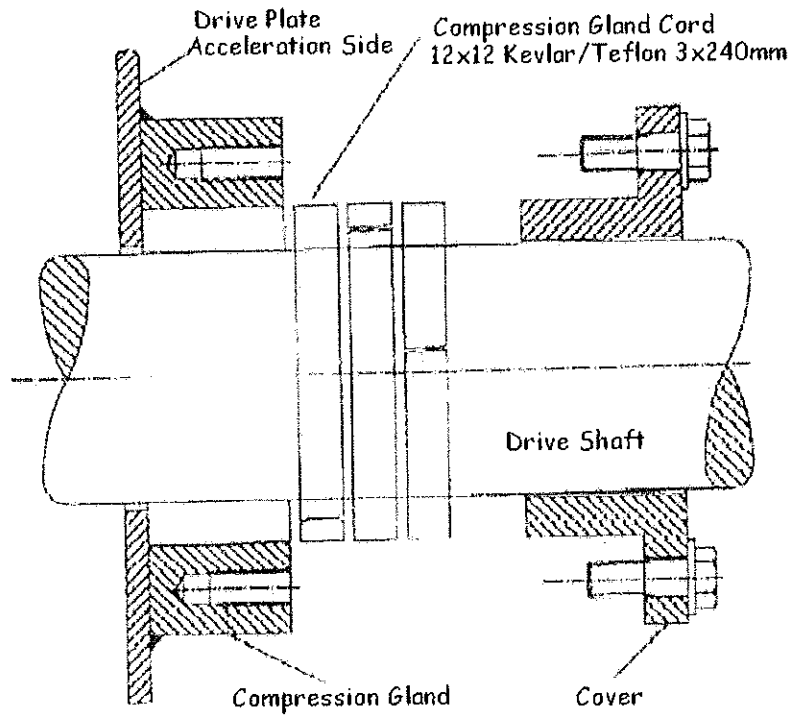


Spare Parts List

1	Drive Motor	7	Motor base plate
2	Drive Axle with Socket	8	Washer insert
3	Cover	9	U-shaped duct
4	Inlet	10	Outlet
5	Spiral with socket	11	Stop Plate
6	Plastic seal or compression gland bearing	12.1	SK-bolt
		12.2	Transmission mount



Compression Gland for Spiral Worm Conveyor



TECHNICAL DATA SLIDE VALVE

Description

System	KA Rybnik
Costumer	Fa. Passavant-Roediger
AB-Nr.	3536/99
Type	AS 40

Operation Data Slide Valve

Discharge length	400 mm
Dircharge width	400 mm
Frame height	100 mm
actuation	winder with round link chain

OPERATING INSTRUCTIONS - SLIDE VALVE

The slide valve provided by us consists of sectional steel. The valve serves to regulate the material discharge at a certain position. Acceleration through a winder with round link chain, which supports the trapez-threaded-spindle.

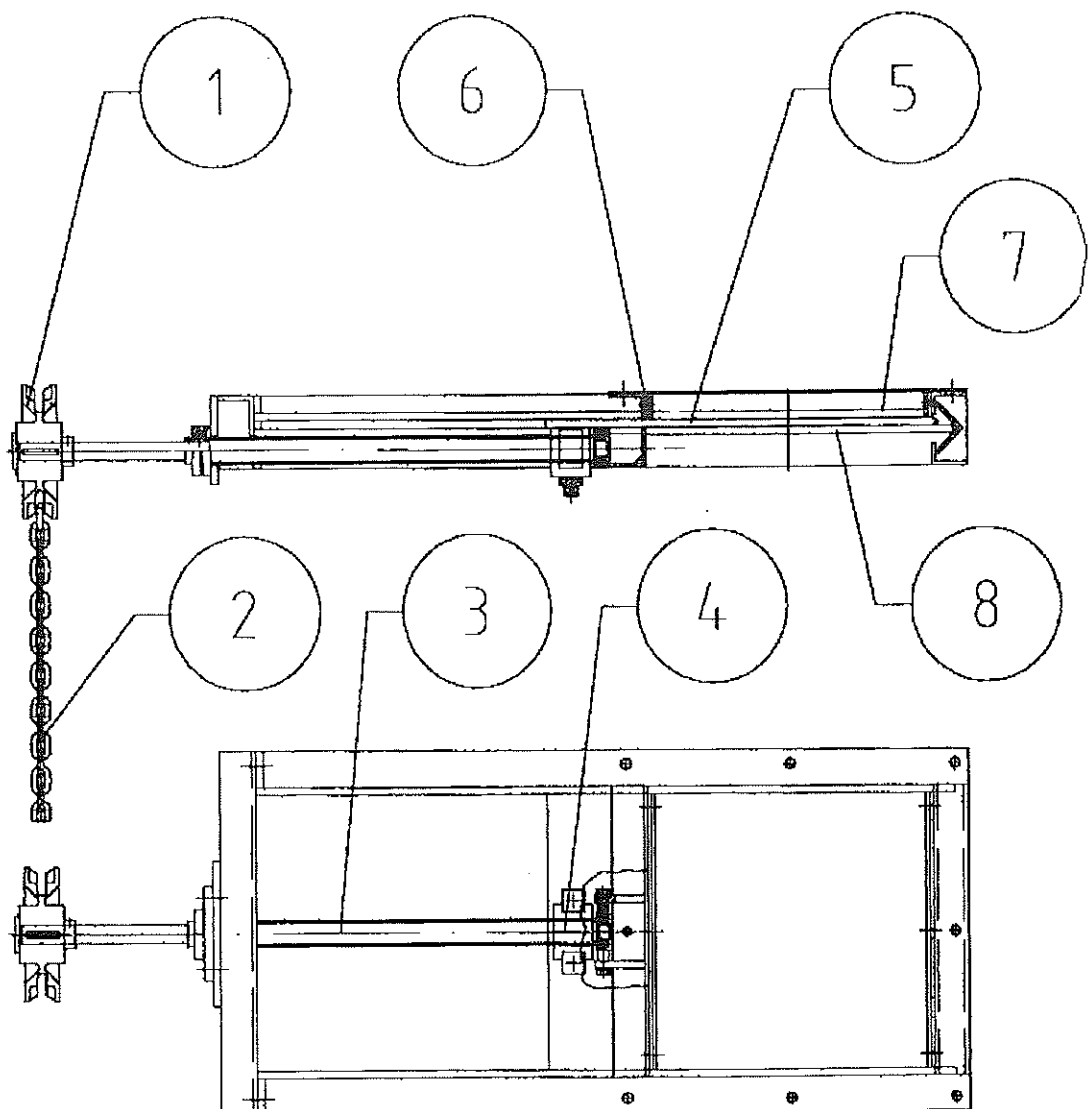
Prior to operation, connections must be checked for tightness.

Grease Plan:

TMG slide valves are relatively low on maintenance required, due to their simple construction design. It is however recommended to grease the indicated nipples approximately once every three months with regular cylindrical bearing grease.

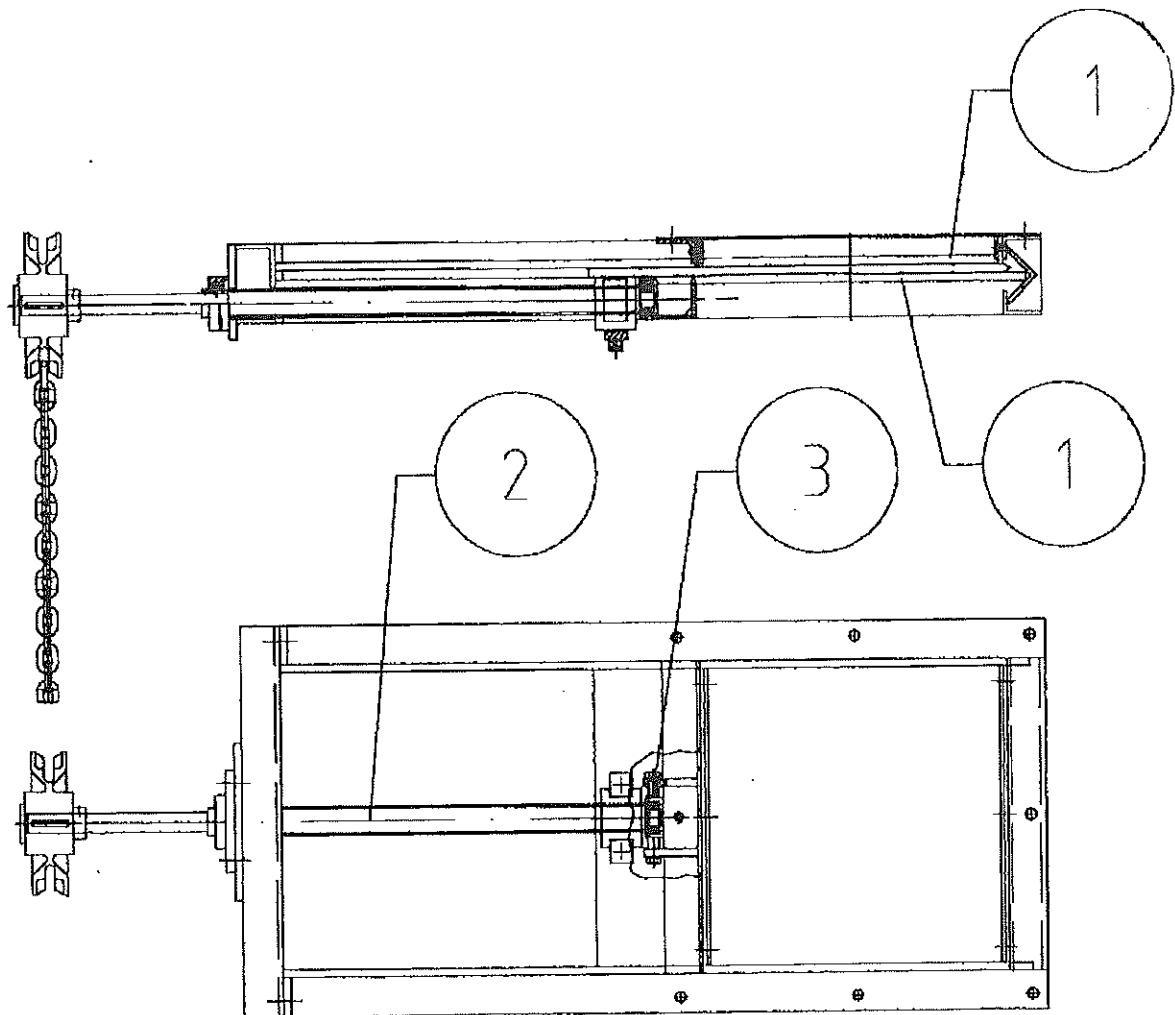
Spare Parts List Slide Valve

- 1) winder
- 2) round link chain
- 3) Trapez - threaded - spindle
- 4) Trapez - threaded - nut
- 5) Valve
- 6) Draw off device
- 7) Guide rail
- 8) Guide rail



Lubrication Plan Slide Valve

- 1) Guide rails
- 2) Threaded spindle with nut
- 3) Grooved ball bearings



COMMISSIONING INSTRUCTIONS

General safety rules

Only responsible personnel, thoroughly familiar with all details of the mechanical and electrical aspects of the system, should be employed for operation, maintenance and repair of the system; under supervision of a responsible Operations Foreman.

These Personnel will not be under the influence of drugs, e.g. alcohol or other intoxicans. Smoking, drinking and consumption of food is not allowed during the operation, maintenance, and/or repair of the respective system.

If possible, frequent changes in operating personnel should be avoided. Accident prevention methods, published by the trade commissions, must be prominently posted and followed closely. To ensure proper termination of operation in case of emergency, operating personnel must be instructed in electrical supply shut-off procedures.

Personnel without authority will be granted access only under competent supervision. Danger areas must be clearly marked with signs.

The system shall only be used for conveying matter/materials indicated in the design. Particularly, authorized load capacity and/or speed will not be exceeded.

Transporting personnel is strictly forbidden.

At least once a month, a proper test of the entire system, as far as mechanical parts, steel construction, electrical machinery, installations and safety requirements, will be conducted.

Special attention will be paid to all sheet metal wedge-, bolt-, and screw-connections. All moving parts, as well as wear and tear conducive parts will be particularly well maintained and controlled. Any noticeable signs of wear and tear will be reported to management; thus ensuring timely ordering of replacement parts. Any detected damages must be reported to the Operating Foreman immediately.

Proper lubrication of the system is of importance and will be conducted based on the established lubrication plan. For large systems, establishment of a special lubrication team is recommended.

Results of test as well as repair work must be recorded in a Operations-Controll-Book.

Individual parts and apparatus of the system are covered by the respective Operating- and Maintenance Instructions provided.

For systems including rotating parts, the GUV safety requirements must be complied with.

Safety areas must be properly marked and are strictly OFF LIMITS to unauthorized personnel.

Safety precautions may not be disabled or removed.

All work on the respective parts of the system will be carried out during standstill of the conveying process.

Operating personnel will be informed prior to start of special or repair work. Any type of work on the conveying system requires use of safety gloves and shoes.

Prior to start of work, all elements and electrical components will be secured to prevent accidental operation and will be disconnected from power the power source.

In case of hydraulic systems, all lines, hoses, and connections must be checked for leaks and visible damages at regular intervals.

Upon completion of repair work of respective parts, it is necessary to make sure that safety provisions have been installed.

The installed electrical safety provisions must be tested for proper functioning. Any changes in construction or installation, which may affect design process, are not authorized.

The danger areas and safety features (barriers) are indicated in the conveying system site plan.

Access to these areas is only granted during specially described activities by respectively instructed personnel or specialists and is subject to compliance with respective safety regulations.

Prior to commissioning

Preparation for commissioning includes cleaning of all system parts and areas.

All employed construction aids, used tools and other materials must be removed.

Any and all safety instructions must have been complied with.

The conveying system is intended solely for conveying the designated medium under consideration of authorized parameters.

Testing of the Protective and Electrical Control Systems.

Testing of proper electrical installation according to customer's as well as local area specifications; particular attention must be paid to stagnation sensors and motor protection relays.

Testing of the entire control system.

Testing of the accelerator protector.

Testing and commissioning of the three-phase motor based on manufacturer's instructions.

Sense of rotation of the accelerator.

For transmissions or drive motors, the relief valve must be mounted on the top of the transmission. The valve can be found either on the outside or inside the terminal box.

Overall Sight-Checks

Test for completeness and correct installation of:

- anchor- and mounting screws
- electrical surveillance systems
- fan belts or cog wheel true to line
- tension of belts or chains
- lubrication of all greasing points

Commissioning

Commissioning will be conducted only after the general rules for safety have been read and understood.

At time of commissioning the following must be checked or adjusted respectively:

- check storage temperature and voltage supply of the three-phase motor ;
- check for normale operating noises

After the checks conducted so far, the proper start up of the system in a no-load status, normal capacity loading may begin.

If no malfunctions are noticed, the system may be kept running.

In case of non-compliance with items 1.1 through 1.3, danger to personnel or limitations of the conveying system or other materials may occur. Should noncompliance with these rules and operating instructions result in accidents involving personnel or material, such circumstance relieves Fa. TMG mbH from any liability for damages caused, as well as subsequent damages, such as injury of personnel or damages caused to material not part of this contract, loss of income/production blamed on TMG mbH under „product liability“ provisions.