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WMS JUNIOR

Product Specification
Operating Instructions
Maintenance

The wrapping machine may only be operated by a specified person who is properly instructed and familiar with these instructions as well as safety rules, including Operating Instructions.

It is restricted to:

1) **Use the machine an other way or for other purposes than mentioned in this Manual.**
2) **Start up and use the machine if the protection device (covers, keyboard foil cover) are removed or damaged.**
3) **Touch the moving machine parts, rotating pallet or rolled-on film.**
4) **Manipulate in the space of prestretch rolls within rotating turntable.**
5) **Pass through or manipulate any way in the space between the mast and the turntable.**
6) **Enter a rotating turntable.**
7) **Manipulate the goods when top platen has been activated.**
8) **Operate the machine if there is not enough light in the working space and at the workshop.**
9) **Maintain, clean, or repair the machine under operation, or unsecured against inadvertent actuation.**
10) **Check and repair the electric device with a person who is not fully skilled.**
11) **Inactivate safety, protective and protecting device or intervene any way construction and electric elements of the machine.**

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1. GENERAL

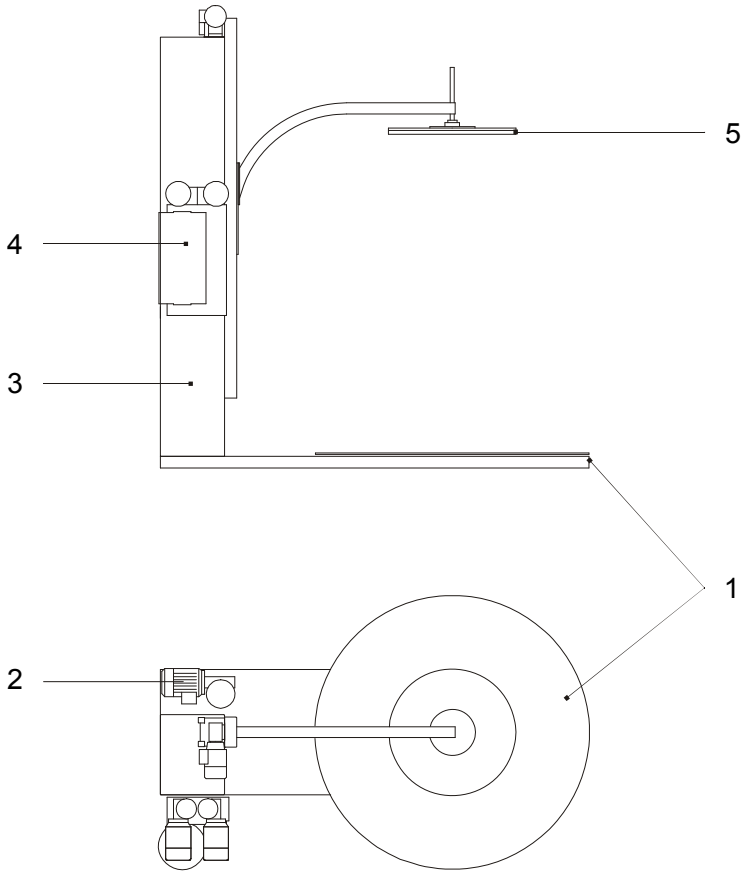
These instructions are the original instructions for use according to Directive EU no. 2006/42/ES and they are authorized by the manufacturer.

1.1. Usage

The wrapping machines of range **WMS** enable a wide variability of equipment and accessories according to the requirements of wrapped goods as well as according to the economic efficiency of machine´s run. They are suitable for fixation of pallet units with a stretch film.

The wrapping machine **WMS – JUNIOR** is suitable for fixation of pallet units with a stretch film. The machine is designed for companies who require good fixing and wrapping quality, and have a medium volume of pallets to be wrapped. Its modular conception enables the usage exactly to the requirements of wrapped goods and to demands for wrapping quality and efficiency.

1.2. Description, Accessories



1 **Basic frame with circular turntable**. There are fixed a drive of turntable and a mast with further accessories on the frame. The turntable is rotating on a central bearing and auxiliary rolls. The goods are placed on a turntable available for easier manipulation in executions as follows:

- basic execution – standard turntable. The diameter is 1500, 1800 or 2300 mm
- turntable with roll conveyor (driven)
- turntable with chain conveyor (driven). These executions are used for integration in a packing lines with roll event. chain conveyors
- turntable with gravitation conveyor (non-driven), the conveyor is feeded with the goods manually. Roll conveyor on turntable enables easier handling with the goods.
- forklift-shaped turntable – enables using of low-lift trucks for loading the goods on turntable without using a turntable bridge. The diameter is 1500, 1800 or 2300 mm

2 **Turntable drive** – available types:

- an electric motor with mechanic gearbox. Transmission of torque is done by a chain strained through a roller. On this execution with an exacter run is the motor with gearbox placed out of the mast.
- an electric motor with an intergearing by a V-belt. By this inter-transmission a power transfer to the required turntable speed is done, it supports the soft start and stop of turntable. The electric motor is put inside the mast.

3 **Mast** of the machine is fixed to the basic plate by bolts. Its construction is shaped by metal profiles and metal plate or plastic covers. A switchboard and control panel are integrated in the mast. Inside space of the mast contents guiding and traversing slides of film carriage, electric drive of film carriage, switchboard and system of end switchers. Standard heights of masts are

- 2300 mm
- 3000 mm

4 **Film carriage with prestretch device.** Film carriage is constructed by a welded frame with rolls of a travel which is driven by an electric motor via a belt. Respective film holder is created by various optional units of film carriage which are used according to wrapped goods:

- manual film brake – a cheap solution for occasional wrapping with no special requirements for quality of wrapping and reduction of film consumption
- elektromagnetic film brake – for lower and middle wrapping capacity
- mechanic prestretch – for middle wrapping capacity with requirement for lower film consumption caused by its stretching through rolls of prestretch device

5 **Top platen** of unstable goods. It is advantageous for use in case of light or unstable goods. It is mounted on the mast separately. This equipment is available in executions

- eletric top platen, pressing power 500 N (50 kg).

When the goods are loaded on a standard turntable (not forklift-shaped one) by a pallet truck or by other manipulation means the order can be completed by a turntable bridge which is firmly fixed to the machine base. Its orientation (a direction how to fix it) will be qualified by space and manipulation relations in the workshop. The turntable bridge may be ordered together with a machine or, when necessary, anytime later.

Further solution of this requirement would be to use the floor frame. The turntable surface gets on the same level as the floor level is, there is not necessary to pass any vertical interval. The floor frame is supplied by the producer incl. documentation. Building activities (embeding the frame into the floor and its fixation via concreting) are necessary, the machine is consequently put into the fixed frame withou any further mounting or other labours. Floor frame can be installed within machine delivery or anytime later. With a WMS machine placed in the built-in frame must be specially respected the prohibition to drive the fork lift on the turntable surface.

If the wrapped goods are to be pressed sufficiently with a heavy pressing power (because of stability or to reduce their volumen) a portal pneumatic top platen able to put on a power up to 13 000 N (1300 kg) is available. Small channels for inserting strapping band when the goods are strapped are situated on the pressing plate of portal pneumatic top platen.

A detailled description of single parts of the wrapper incl. attendance and operation can be found in Chapter 5.

1.3. Expendable property

The machine is used for stretch film wrapping of the goods on pallets by LLDPE (low linear density polyethylene) stretch film of 20 ÷ 40 μm of the thickness. In the machines provided with mechanical or one-motor prestretch device there must be used a stretch film of minimum stretching limit of 150%. The equipments as hand or electromagnetic brakes do not need any guaranteed stretching limit. The stretch film must be available in the form of rolls of 500±10 mm of the width and max. 250 mm of the diameter. The core on which is the film wrapped must be of inside diameter 76±3 mm and 510±5 mm of the length.

A cling stretch film as well as one-side-cling film can be used. The adhesive power of one side means the particular film layers wrapped on the goods cling each other perfectly and they do not have any habit to damage the goods on the pallet any way. The main purposes for using this film are the better goods fixation to the pallet, the higher packing rigidity and its better weather effects and mechanical strain resistance within transport. When wrapping the pallets with the goods the stretch film has to be orientated „inside cling“, i.e. the cling side to the

goods. When handling the pallets afterwards or transporting them there is no pallets tendency to adhere to each other.

The film is standardly 6 months UV resistant, i.e. the wrapped goods may be outdoor stored and exposed to the sun radiation for 6 months without any damage while all the original wrapping characteristics are kept. In case of requirement for longer outdoor conditions storage are to be used the stretch films with increased UV resistance.

Following stretch film grades meet the above mentioned requirements:

Type	Stretch Grade	Application	Executions Available
POWERFLEX SQ	160%	Hand or electromagnetic stretch film brake. Wrapping of heavy goods with sharp edges.	Various thicknesses Non-cling and one-side-cling With increased UV resistance
POWERFLEX PQ	200%	Mechanical prestretch devices. Wrapping of medium-heavy or light goods, or wrapping of fragile or deformable goods.	Various thicknesses Non-cling and one-side-cling With increased UV resistance

When putting the wrapping machine into operation it is recommended to contact the machine supplier or producer who is able based on experience to recommend an optimal stretch film grade for wrapping of the appropriate goods.

Any other kind of packing materials (e.g. perforated films, net ones, sandwich films, printed ones, bubble films, etc.) as mentioned above cannot be recommended to be used without previous consultation with the machine producer and without his approval – a propper machine operation cannot be guaranteed otherwise. In case the wrapping machine does not wrap a correct way during warranty time or if it is damaged or the wrapped goods injured a claim can be refused by the producer in case some non-approved packing materials or films have been used on the machine.

1.3.1. Ecology

The films can be classified as the plastic material (more precisely in the PE polyethylene class) in the sorted waste. It is well-recyclable. It can be successfully combusted and there do not appear any harmful combustion gases under corresponding combustion conditions. The PE polyethylene is not biologically decomposable and its degradation in the dumping ground takes rather long time. No dangerous products escaping to the air or contaminating water or earth are known.

1.4. Machine Performance

The performance satisfies the technical standards and regulations provided under the Letter of Conformity which is a part of this accompanying technical documentation.

The relevant norms and regulations are included in production documentation. Measures taken from the part of producer are described in this accompanying technical documentation, in this Manual.

The estimated lifetime of a machine is 50 000 hours as long as it is used in compliance with this accompanying technical documentation, required maintainance is provided, and periodic checks are performed.

1.5. Operating Conditions

The wrapping machine is designed for operations meeting following conditions:

Normal environment as per IEC 364-3 by the terms set forth in this Chapter, and installation and operating guidelines based on this accompanying technical documentation.

The machine will be installed and operated in sheltered workshops protected against weather effects.

There must be a flat and reinforced floor, maximum allowed deviation from floor flatness is ±3 mm/2m. Before setting the machine on a place, rough impurities, small stones, etc. must be deprived.

The range of temperatures for operating the machine is +5 up to +40 ºC, the changes of temperture must not be more frequent as 10°C / 30 min.

Relative moisture 30 ÷ 95% without condensing moisture (dew).

The machine and primarily its electrical devices shall be installed and operated in compliance with the manufacturer instructions provided in the accompanying technical documentation.

The machine shall be operated in sufficiently lit working areas satisfying national regulations for working environment.

It is prohibited to place the machine the way which would minimize the width of access pathes to an electric installations under minimum values given in national regulations.

There must not be placed any retardation which maight cause an injury of operator closer to the machine (stairs, ramps, lowered ceilings, other machines, etc.)

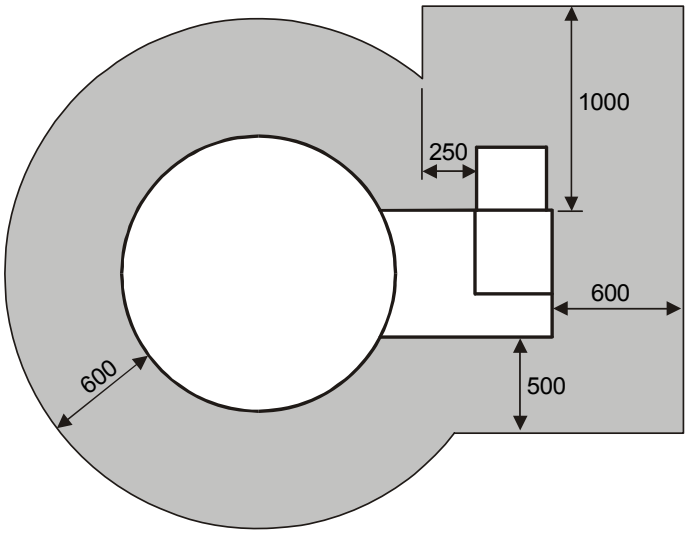
The operation of the product shall be prohibited in an explosive environment or in that one where conditions to explosion would appear even for a short while.

The machine and primarily its electrical devices shall be installed and operated in compliance with the manufacturer instructions provided in the accompanying technical documentation.

1.6. Safety space

A minimum space around the machine has to be reserved to keep the operating personnel save. It is prohibited to place any objects to this area, an other machine or the operating area of an other machine is not allowed to interfere in.

The minimum area diagram does not approve this area as considered even for bringing the goods in or carrying them away.



1.7. Operation

The machine shall be operated by a single person. The control board workstation will make sure the operator is out of the operating space of the machine.

1.8. Electric Outfit of the Machine

The electric outfit of the machine complies with the EN 60204-1 standard.

The machine is shielded in compliance with Group 1, class B. according to the standard EN 55011.

From the point of view of jamming the machine conforms to the requirements of standards

IEC 1000-4-2, EN 61000-4-2
IEC 1000-4-3, EN 61000-4-3
IEC 1000-4-4, EN 61000-4-4
IEC 1000-4-6, EN 61000-4-6

The electric outfit of the machine consists of a switchboard and the electric wiring in the machine. The switchboard includes a 5-pole line terminal block and a main switch of the whole machine.The power supply shall be protected using fuses or breakers. The grid in the place of connecting the machine has to be in conformity with international as well as national regulations and standards.

2. SAFETY INSTRUCTIONS

2.1. Revisions and tests of electric outfit

The machine is subject to periodic revisions and tests of electric outfit. Along that the conditions of EN 60204-1 have to be met.

Before putting the machine in operation the revision of electric equipment must be carried out – see Chapter 3.3.

2.2. Safety Recommendations

Whereas any unprofessional handling of the electrical devices within the machine might cause severe damages to the machine, or even injury of the operator, each operation may only be completed by a trained and authorized person as per the national guidelines for work on the electrical equipment.

The persons operating wrapping machine must be familiarized with this Manual by the way which is possible to demonstrate and this Manual has to be for stable disposal of operators..

The main switch on the switchboard may be locked in the OFF position. We recommend the user of the machine to address administration of the key to this lock within the operation where the wrapping machine is to be installed, thus preventing any unauthorized person, not familiar with the operation, to start up the machine.

2.3. Work Safety

2.3.1. Safety devices to ensure work safety

The wrapping machine has a simple frame without any occurence of hazardeous points which might jeopardize health of the operator within operation if the specified wrapping procedure is followed.

Hazardeous points in working space result from the principle of machine operation:

1) Turntable rotates together with a pallet placed on. The rotating section of the machine with a pallet is not protected using special covers since this would disable the actual process.
2) Film is led through the rolls of prestretch device.
3) Film is rolled on the wrapped goods and tighten on with certain power.
4) An electrostatic charge may arise on the film.
5) Film carriage drives all over the height of the mast down to the floor.

6) Top platen, when used, presses the pallet with a pressing power of 500 N (50 kg) in case of electric or pneumatic execution, when a portal top platen is used the value of pressing power comes up to 13 000 N (1300 kg).

7) Roll or chain conveyors, when used, allow an autonomous movement of pallets loaded with the goods.

To protect the opeator there are used on the machine:

1) Pushbutton **TOTAL STOP** for immediate outage of device. Pushbutton is blocked mechanicaly in off position and it is located on the control board within reach of the operator.

2) Supply pilot lamp. In case the machine is blocked from various reasons, it does not perform any movements in spite of blocking reasons elimination without respect to the actuators positions; before it is bring in the operation again all the drives have to be switched in the „0“ (off) position for its deblocking.

3) The machine is controlled via a control board which is located on the sidewall of the machine to be out of the operating space.

4) A protective deflective frame to stop the descending film carriage from moving. It is located in the lower part of the supporting carriage frame.

5) The machine is blocked by a sensor in case of pallet truck presence within loading or unloading the pallet in the cut-out area of a machine provided with forklift-shaped turntable.

6) A pressure plate of top platen unit for unstable products can be regulated not to exceed 500 N and jeopardize the operator by pressure.

7) Rotating parts of transmission devices are fixed inside the machine frame.

2.3.2. Operator and user obligations

For personal safety are the operators obliged to keep the directions as follows:

1) The machine may only be operated by a single person. Apart from the operator, no other people are allowed to stay nearby the machine under operation.

2) The machine may only be operated when the operator keeps permanently out of operating space of the machine (i.e. at control panel).

3) The wrapping machine may only be operated by a specified/determined person older than 18 years of age only, who is properly instructed and familiar with these instructions as well as safety rules.

4) No spirit consumation, use of addicting substances or medicines influencing the work safety is allowed by the staff.

5) The operators are obliged to operate and maintain the machine in accordance with this Manual. When using the machine a correct way material damages or injuries may be eliminated.

6) Prior to start working, the operator shall check on the overall condition of the machine and proper functionality of the individual parts. In particular,

integrity of electrical cables. For the whole period of operation, he/she should keep the work place and its immediate surroundings clean.

7) Changing of film roll or any other manipulation with prestretch equipment may only be done when the machine is disabled.

8) The operator will handle pallets on the turntable so that no of its parts overlap the turntable profile. The pallet shall not be positioned on the turntable eccentrically.

9) In case of handling a loaded pallet on a roll or chain conveyor any further handling with wrapped goods or with a conveyor under machine or conveyor operation an other way as decribed in this Manual is prohibited.

10) Covers may only be removed, dismounted, or lifted when the machine stops fully, and the shutdown condition is secured.

11) Rotating machine parts shall perform in a direction of the attached arrow.

12) Safety marks, symbols, and machine labels shall be legible. If they are damaged or unlegible, the user shall reinstate the original appearance.

It is restricted to:

12) Use the machine an other way or for other purposes than mentioned in this Manual.

13) Start up and use the machine if the protection device (covers, keyboard foil cover) are removed or damaged.

14) Touch the moving machine parts, rotating pallet or rolled-on film.

15) Manipulate in the space of prestretch rolls within rotating turntable.

16) Pass through or manipulate any way in the space between the mast and the turntable.

17) Enter a rotating turntable.

18) Manipulate the goods when top platen has been activated.

19) Operate the machine if there is not enough light in the working space and at the workshop.

20) Maintain, clean, or repair the machine under operation, or unsecured against inadvertent actuation.

21) Check and repair the electric device with a person who is not fully skilled.

22) Inactivate safety, protective and protecting device or intervene any way construction and electric elements of the machine.

2.4. Work Hygiene

The weight of a wrapping film role is approximately 17 kg. Pregnant women and juvenile are restricted to handle loads exceeding 15 kg.

For handling of wrapped pallets, the operator shall use mechanical lifting devices, provided by the employer, to reduce physical efforts.

If the nature of wrapped products is such that the operator's hands or other body parts might get injured while manually handled, or that the wrapped goods do not meet hygienic limits (chemical materials, dustiness, noise, etc.) the operator shall wear protective clothing to be provided by the machine owner.

There is in the place of operator 63.9 dB of equivalent level of acustic pressure meassured by function A within the time of wrapping cycle. The machine itself meets sanitary limits. Noise precautions are dependent on a specific workstation, and they follow the national health protection regulations.

2.5. Fire Protection

The user shall provide appropriate fire protection devices to ensure fire safety at the workstation when the wrapping machine is under operation. Their specification and location shall be consulted and approved by the supervisor and fire protection experts, primarily in respect to the nature of processed materials as well as to the classification of wrapping machine as an electric device.

The location and types of extinguishers shall be determined by a fire protection engineer, employed by the user, based on local conditions.

2.5.1. Instructions for operators

In case of fire, the operator shall first disconnect the power by unplugging the machine, or releasing the main switch.

The operator shall only use the specified extinguishers to put down the fire.

Fire extinguishing either with water or foam extinguisher is prohibited!

3. INSTALLATION, HANDLING

This chapter concerns the storage, installation and putting the WMS wrapping machine in operation. The information concerning any further handling with already operated machine is also included.

3.1. Storage

If the machine is not put in operation immediately following its delivery it is necessary to store it in the original protective packing on a sheltered place protected against atmospheric effects. The storage temperature range moves between 0ºC and +55ºC, allowed humidity from 5% till 95% without condensation (dew). In the storage place there must not be stored any corrosive matters, or the matters releasing evaporations able to damage the electric wiring insulation, or substances creating fire-hazarding or explosive environment.

3.2. Project

The project would be worked out for the machines buit-in to the embedded floor frame. The reason for that will be found in the subsequent difficult replacing the machine and the frame embedded in concrete. The project in question can be worked out in a simplified form showing a solution of wrapping machine location with respect to:

- the operating personnel safety as well as the safety of other persons present closely to the working area;
- the access of handling facilities to the wrapping machine enabling an easy supply of the goods to be wrapped on turntable and the transport of the goods already wrapped out of the machine wrapping area.

3.3. Assembly, handling

The machine handling is allowed via a lift truck, necessary fork dimensions and load capacity are always mentioned in the appropriate article. Any handling via pallet truck or a cran is prohibited on all of the machine models. It is also prohibited to handle the machine with a pallet loaded with goods.

When an extreme temperature difference appears during the transport to the destination it is necessary to wait an adequate long time until the machine and exterior temperatures are not equalized – condensation (dew) danger.

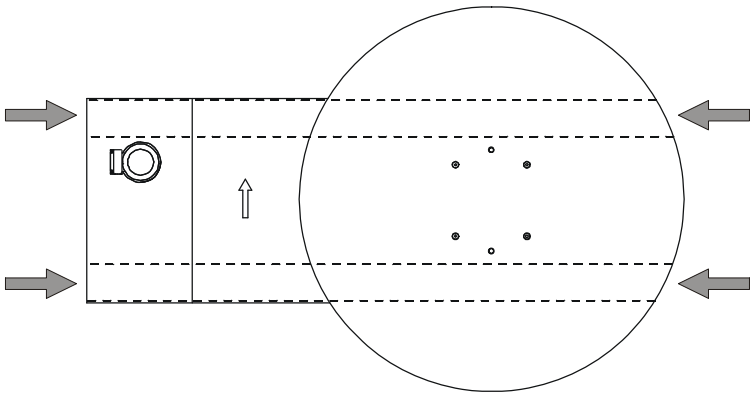
The machines are, exept those ones provided with a conveyor on turntable, supplied with the tilted mast which has to be erected when putting the machine into operation.

!	**!!! WARNING !!!** Working methodes as well as instructions stated further in the text must **ALWAYS** be kept when erecting or tilting the mast. Handling with mast without using the manipulation tool is **NEVER** allowed. Erected and to the turntable not yet fixed mast remains unstable. There is high danger of workers injury and machine damage due to the mast weight!
	The machine shall never be lifted at the turntable.

3.3.1. JUNIOR model

This concerns the standard execution the machines with standard turntable and without any roll or chain driven conveyors on turntable or without a gravitation conveyor on turntable.

The machine is supplied with a dipped mast. For machine handling there are handling holes in supporting profiles for application of lift truck forks, max. dimensions of them are 130×50 mm, meeting standards ISO 2328 – these holes are marked with arrows. The lift truck load capacity must be 1500 kg for turntable with diameter 1500 or 1800 mm, or 2500 kg for turntable with diameter 2300 mm as minimum.

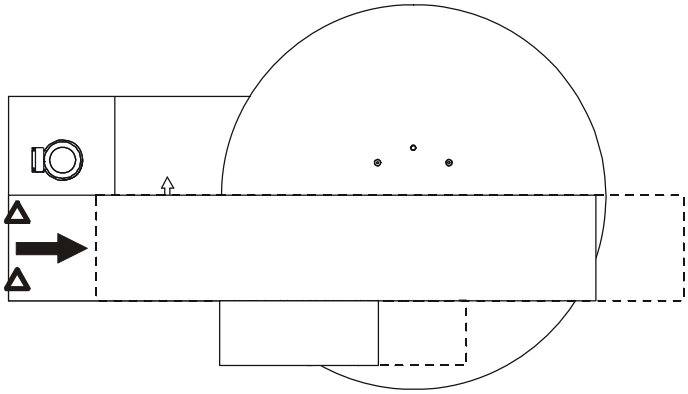


The machine is to be located on its operation place where it will also be put in operation. Any further handling with already assembled and ready-to-operate machine cannot be recommended – see thereinafter in this Chapter. The machine operation place has to meet the conditions mentioned in the Chapter 1.5. The material necessary for putting the machine into operation mentioned further in the text will be fixed by the producer on the spots on which it will be used when putting the machine into operation.

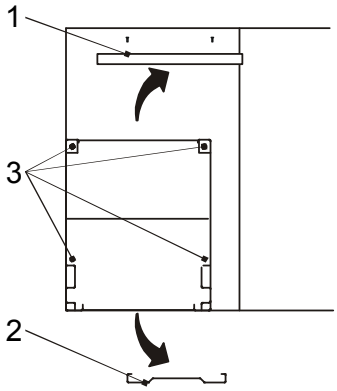
When the machine is put in operation it should be proceeded as follows:

- Put aside the transport packing
- The mast is dipped by means of a manipulation device on the machine supplied – the device consists of a shackle that effects an axis around which is the mast turned when put in working position. When transported, the

manipulation device with the mast is mounted in a transport position which has to be changed into the operation one. In assembly place for operating position there are prepared the holes with windings for manipulation device installation with the mast. The transport position and the change in operating position is marked (with interrupted lines) on the drawing:



The bolts fixing the device to the turntable (marked △ in the drawing) are to be removed, the mast incl. the device shifted to the fixing holes for operating position and the device fixed to the turntable with the bolts on this place again. The mast weight moves from 160 kg at the simpliest execution up to 270 kg when fully equipped.



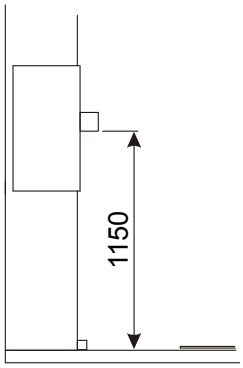
- Remove the mast bottom part cover Pos. 1 (a plastic cover under control panel on the bottom is fixed via four velcros and it is to be removed by a continuous pull in its corners, the sheet metal cover is fixed by screw). Remove four bolts M5 of the back cover Pos. 2 and take it off.
- Stand up the mast (take care that cabling is not damaged) and bolt it up to the machine base in the points marked as Pos. 3 – there are supplied four bolts M10×20, washers 10.5 and spring washers 10. Manipulation device can be either removed or left mounted on turntable and mast, neither machine functions nor parameters are disabled any way.
- Fix the covers on their places again.
- Remove the balk supporting the prestretch equipment.
- Should a machine with top platen be supplied, its arm will be separated. The assembly of this arm with the pressing plate is done via bolting up to the top platen carriage by connecting means (available are nuts M12, washers 13, spring washers 13 – 2 pcs of each).
- Check the energy supply finally and connect the machine in the network according to the methode described in the Chapter 3.4.
- All the machine parts as well as the connecting material should have to be reserved for an eventuall transport later.

The machine is allowed to be transported in standing position on short distances (in approx. meter units only, to correct the machine position in the workshop) and over plain and reinforced surface; standardly it is recommended to transport it in

dipped position as delivered. For a lift truck are valid the regulations mentioned above in this Chapter.

When preparing the machine for the transport it should be proceeded as follows (positions and marking refer to the drawings included in the Manual part Putting in operation):

- The machine is functional and connected to the network before it is prepared for the transport.
- A supporting balk of prestretch equipment is to be mounted there again. There is available the winding M8 on the prestretch equipment right side (directed to the turntable), the balk has to be mounted in the horizontal position the way allowing to support both the prestretch equipment and the mast.
- The prestretch equipment is to be adjusted in the level allowing the supporting balk lower edge to be distanced by (1150±20) mm from the mast lower edge.
- Switch off the machine and disconnect it by pulling the fork out of the socket.
- In case the manipulation device has been dismounted after installation it must be mounted in the mast and the turntable again.
- Should a machine be provided with top platen, its arm with the pressing plate will be separated – nuts M12 with washers, 2 pcs of each. The connecting material should have to be reserved for the further installation.



- Remove the mast bottom part cover Pos. 1 (a cover under control panel on the bottom is fixed via four velcros and it is to be removed by a continuous pull in its corners). Remove four bolts M5 of the back cover and take it off or shift it our upwards to enable free access to the bolts fixing the mast to the turntable.
- Release the mast from the turntable – unscrew in places Pos. 3 – bolts 10x20, washers 10.5 and spring washers 10. The connecting material should have to be reserved for the further installation.
- Fix the covers on their places again.
- Dipp the mast, remove the bolts fixing the manipulation device to the turntable and shift the manipulation device with the mast and prestretch equipment in the transport position (the right place for transport position – see the assembly description in this Chapter – take care that cabling is not damaged – and fix the transport device to the turntable in this place.

After replacing is the assembly processing equal to that one when putting the machine in operation, incl. supply inspection as per Chapter 3.4 especially in cases of machine connection in an other socket as before.

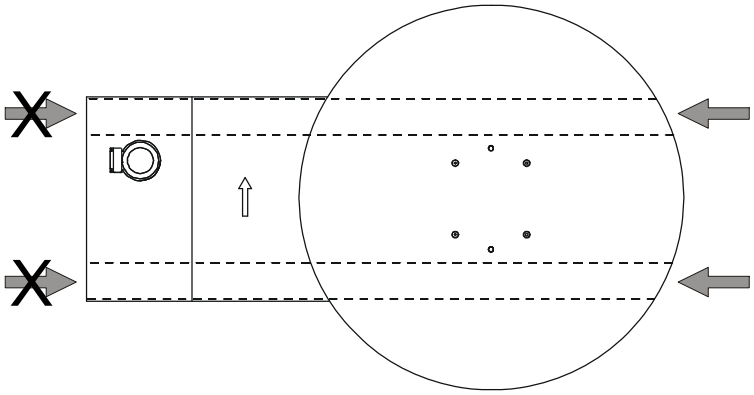
3.3.2. Execution with the conveyor on the turntable

This concerns the execution with roll or chain driven conveyor on the turntable or with the gravitation conveyor on the turntable.

The machines are to be fixed at the concrete place according to the project. The assembly as well as the installation is standardly done by supplying company (a correct mechanical and electrical connection to the transport conveyors has to be secured). The machines already assembled cannot be handled, any more.

These models are standardly supplied in partially disassembled state, the turntable and the mast separately. Should a machine be provided with top platen, its arm with the pressing plate will be separated, as well. The mast and, eventually, the top platen arm with pressing plate are placed on the pallets.

Handling with still packed turntable will be allowed via lift trucks with 1200 mm long forks of max. dimensions 130×50 mm, meeting standards ISO 2328, or with pallet trucks, their min. load capacity is 1500 kg for turntable with diameter 1500 or 1800 mm, or 2500 kg for turntable with diameter 2300 mm as minimum. There are handling holes in supporting profiles under the turntable for application of lift truck forks – these holes are marked with arrows. Use the ports for the skids under the turntable only - see the picture. The other machine parts are supplied separately on a pallet.



When the handling ways of various machine types differ, the distinct and complete information how to manipulate them are put directly on the machines transport covers.

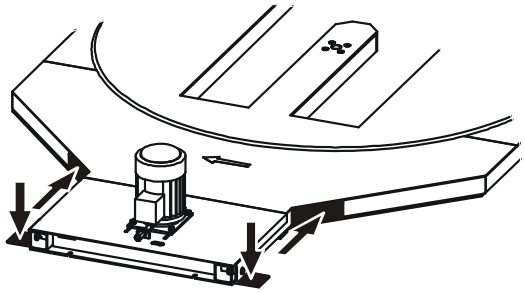
3.3.3. Execution with the forklift-shaped turntable

This concerns the execution with forklift-shaped turntable.

A. Machine with turntable 1500 mm

Manipulation with the machine is facilitated by:

- Holes for skids of a high-lift truck in load-bearing profiles under the turntable; their depth is 170 mm (the shortest side of the profile). For transportation the skids of the high-lift truck are slid into these holes.
- Footings fastened to the turntable. During manipulation they lean from the bottom against the skids of the high-lift truck.



The skids should have the dimensions max. 100 × 50 mm and length min. 1000 mm, and they should comply with ISO 2328. The pitch of inner surfaces of the skids is 720 mm. The load-bearing capacity of the high-lift truck should be min. 1500 kg.

After installing the machine on site, the manipulation footings must be removed (by pulling split pins on the inner side of the profile and sliding out the footings from the hole).

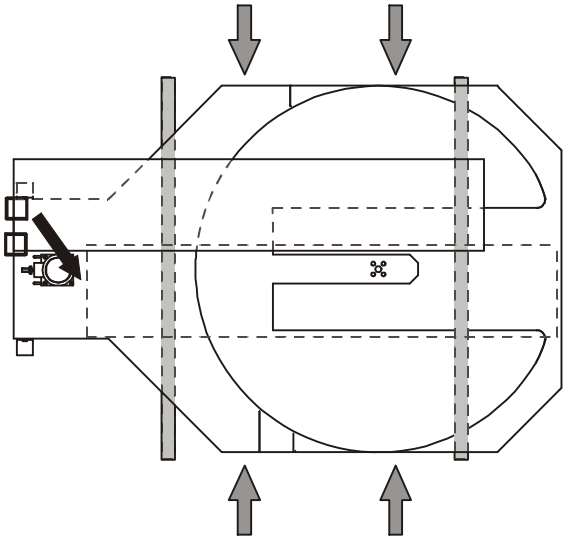
B. Wrapping machines with turntable of diameter of 1800 mm and more

The machine is supplied supported with the transport wooden scantlings for easier handling with the forklift. The forks of the forklift have to be inserted under the machine from the sides – see the light arrows on the drawing – and have to be of the length of 1500 mm as minimum. Recommended loading limit of the forklift is 1000 kg as minimum.

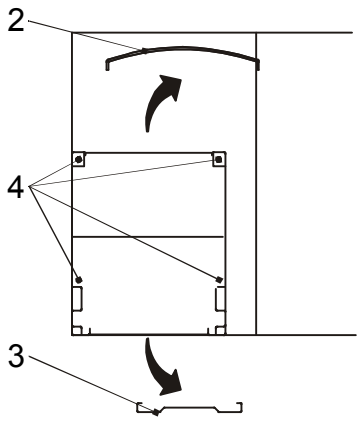
There are also for disposal handling holes and foots – they should be used just for machine handling when removing the transport scantlings. **It is prohibited to relocate the machine or to handle with via these holes and foots, the machine should have to be handled just the way as described further in this text only.**

Putting into operation is for all the turntable diameters identical, further described proceeding should also be the same for all of the possibilities. The eventual differences are mentioned directly in the text, if necessary.

- Put the machine on the operating spot and put it into operation right there. This place has to conform to the conditions stated in the Chapters 1.5 and 1.6. Any further handling with a machine already put into operation is not recommended – see further in this Chapter. The materials mentioned further in the text which will be necessary for putting the machine into operation, will be found on the places in which it will be used later.



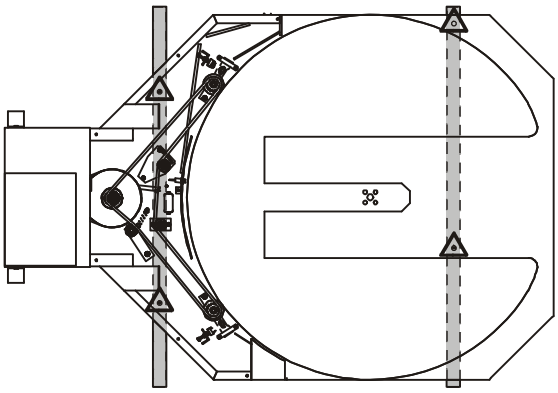
- Remove the protective packages.
- The mast is tilted in a handling component, this component consists of a hinge allowing the mast rotation around when it is erected. For the transport, the handling component with the mast mounted in a transport position which has to be moved to the working position; in the place for the working position there are in the turntable ready the holes with screw threads for the mounting of the handling component together with the mast. The screws fixing the handling component to the turntable (marked □ in the drawing) are to be removed, the mast together with the prestretch device are to be shifted to the working position (marked with dark arrows in the drawing) and fix the component with the mast on this spot to the turntable. The mast weight moves from 160 kg in the simpliest execution up to 270 kg at the fully equipped mast.
- Remove the front cover of the mast lower part Pos. 2 (the cover under the control board on the bottom, it is fixed by four velcros, the dismounting is to be done by the successive drawing the cover in its corners). Dismount the rear cover Pos. 3: remove four screws M5 and remove the cover.



- Erect the mast (take care not to damaged the wiring) and screw it to the base on the places as per Pos. 4 – available are 4 pcs screws M10×20, washers 10.5 and lock washers 10. As per the decision of the user can the handling element be left mounted on the turntable and the mast (it is recommended) or dismounted; neither operational ability nor the machine parameters can be thus influenced.
- Fix the covers back.
- Remove the wooden supporting scanlting from the prestretch device (Pos. 5).
- If the machine has been delivered on the transport scantlings: unscrew and remove the cover between the turntable and the mast. Remove the screws fixing the transport scantlings – marked △ in the drawing. Using the handling

holes and foots lift the machine and remove the transport scantlings. Put the machine on the floor again. No travel or traversing the machine is allowed!

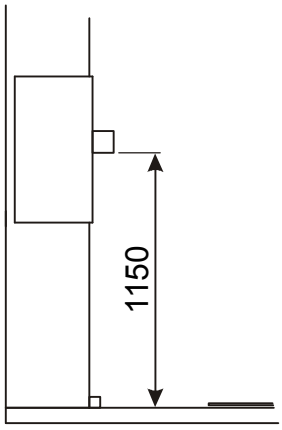
- If the machine has been delivered provided with a top platen from the production, its arm is dismounted. The arm and pressing plate mounting consists in its screwing to the top platen carriage by the connecting material supplied (2 pcs nut M12, washer 13, lock washer 12).
- In case the machine is provided with a pneumatic top platen, it should be connected to the compressed air source.



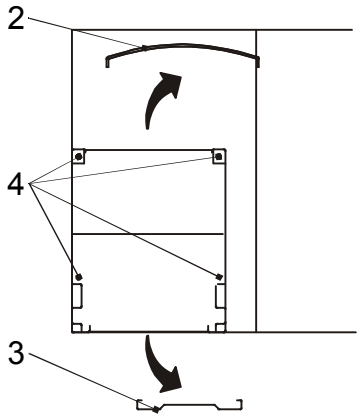
- Check the energy supply finally and connect the machine to the network proceeding as per description in the Chapter 3.4.
- Remove the handling foots fixed on the turntable (by pulling the safety-pins in the inside of the profile and shifting the foots out of the holes).
- All the parts removed when putting the machine into operation, incl. connecting materials, are recommended to be stored on the known place for the case of a future transport.

The machine in the erected position can be carefully transported just in the short distances (approx. meter units, or as a correction of its placing in the operational place) and over the reinforced floor surface without any unevenness, if it is placed on two pallets and the forks of the forklift can load the machine from the sides. **It is prohibited to manipulate and to transport the machine in the erected position via manipulation holes in the turntable or foots!** There are valid the same regulations for the forklift as stated above in this Chapter. Standard way of machine transport is in the tilted state as delivered. When **preparing the transport** it is to be proceeded as follows (positions and markings refer to the drawings from the part of putting the machine into operation):

- Before the transport is prepared, the machine is functionable and connected to the netowrk and, eventually, to the compressed air source (when the machine is provided with the pneumatic top platen).
- A supporting scantling is to be mounted to the prestretch device. There is a screw thread M8 ready for its mounting on the right side of prestretch device (in direction to the turntable); the scantling is to be mounted horizontally the way, when it is tilted, it should support both prestretch device and the mast.
- Prestretch device should be brought in the height that the lower edge of the supporting scantling is on (1150±20) mm from the lower edge of the mast. If the machine is provided with the pneumatic top platen, drive it to the lower position.



- Switch the machine off and disconnect from the network by pulling the fork from the socket. If the machine is provided with the pneumatic top platen, disconnect it also from the compressed air source.
- Mount the manipulation foots.
- If the machine is provided with a top platen, dismount the arm of top platen and its pressing plate - 2× nut M12 with washers. All the connecting material is to be stored for the future mounting.
- If the machine has been supplied with the transport scantlings (on turntables of diameter of 1800 mm and more are the transport scantlings used always), dismount the cover between the mast and the turntable, lift the machine via forklift and put the scantlings under the machine – do not travel the machine, at all! Use the scantlings supplied with the machine or use wooden scantlings 100x100 mm of the length of 1920 mm. Screw the transport scantlings by screws 8x50 to the machine – for the correct location of the scantlings and screws see the drawing in the part putting the machine into operation. Fix the cover back again.
- Remove the front cover of the mast lower part Pos. 2 (the plastic cover under the control board on the bottom, it is fixed by four velcros, the dismounting is to be done by the successive drawing the cover in its corners, the sheet metal covers is fixed by screws). Dismount the rear cover Pos. 3: remove four screws M5 and remove the cover or shift it the way enabling access to the screws fixing the mast to the turntable.



- Release the mast from the turntable – unscrew in the places of Pos. 4 - 4 pcs screws M10×20, washers 10.5 and lock washers 10. All the connecting material is to be stored for the future mounting.
- Fix the covers back again.
- Tilt the mast, remove the screws fixing the handling component to the turntable and the handling component with the mast and prestretch device shift into the transport position (for the position for transport see the mounting description in this Chapter) – take care not to damage the wiring – and fix the transport component to the turntable on this place.

When moving the machine is the mounting identical with the procedure of putting a new machine into operation as described above in this Chapter, incl. the supply checking as per Chapter 3.4 especially when the machine is connected to another socket as before.

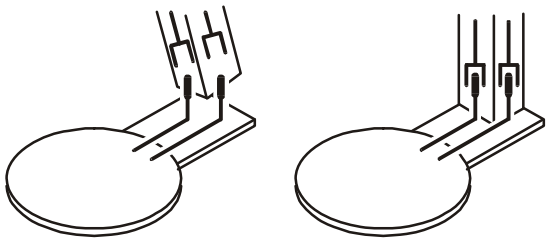
3.4. Network Connection

First of all, check on the operating voltage and frequence of the machine specified on the electrical equipment label for compliance to the voltage and frequency of the network where the machine is to be connected. Electric power distribution and socket connection must correspond to the valid international and

national regulations and standards. Voltage fluctuation of ±5% nominal value will yet ensure proper functionality of the machine.

The actual connection of the machine will be provided using a CVG 1643 fork terminated cable connected to U,V,W,N,Pe terminals on the switchboard. Supply cabel has to be led the way disallowing driving over of handling and transport means as well as eliminating it as a source of accidents.

Check the cable connectors connecting the turntable and the mast – they are located in the lower mast part. On standard machines supplied with the mast mounted on the turntable and tilted, there are the connectors connected properly already from the production. On the machines supplied either with a separated mast or when the mast is delivered as a separate part there are the connectors for easier handling and transport disconnected and protected by creelings made of PE-film. They have to be connected the way shown in the right part of the drawing.



After the service lines and connectors have been carefully checked remove protective adhesive label from the main switcher and switch it on. After these steps are done the fork is allowed to be plugged in the socket and the machine connected to the mains via the main switcher.

Check correct phasing of the machine. The checking should be done everytime when plugging the machine in an other socket as originally. The turntable or the film carriage have to move right direction according to the arrows on control panel. **Caution** – check the drive, there is no frequency changer of revolution. When changing the machine´s phasing **the electric supply of the machine must be disconnected** by switching off the main switch and drawing the fork out of socket. Rephasing of the machine may only be done by a person professionally qualified in terms of Chapter 2.2.

The protection terminals outside the machine as well as the contactor switchboard shall be connected to the user protection system, and properly preserved.

Prior to commissioning of the machine, a check for proper functionality of protection against hazardeous contact voltage as per IEC 60364-4-41, Protection against electric shock as well as inspection of the machine using a feeder (cable connection) as per IEC 60364-6 shall be completed by a person authorized for inspection who follows the terms of national inspection guidelines.

3.5. Dismantling of the machine

Before liquidation of the machine after the end of its technical life put all mechanisms in such positions, that there is no danger that dismantled machine parts will fall from elevated positions and to enable dismantled parts to be taken away safely. Disconnect the supply of electric energy by disconnecting the plug from the socket. A person qualified according to Chapter 2.2 will check the electric circuit for the presence of residual voltage; if such a voltage is present, it has to be discharged.

Dismantle motors with gearboxes, drain off oil from them and store it in safe, unbreakable and tight vessels.

Dismantle all parts of the machine.

Sort all parts according to classes of scrap (steel, non-ferrous materials, plastic materials, cables, electric elements etc.). Hand the so sorted material and lubricants to companies specialized for expert liquidation.

4. TECHNICAL PARAMETER

		WMS JUNIOR		
Execu-tions	turntable	1500 mm, basic	1800 mm, basic	2300 mm, basic
	conveyor	none	none	none
Weight (as per equipment, min.)		500 kg	600 kg	790 kg
		(see production plate)		
Dimen-sions	height	2366 mm (3366 mm)		
	width	1500 mm	1800 mm	2300 mm
	length	2350 mm	2650 mm	3150 mm
Turntable	diameter	1500 mm	1800 mm	2300 mm
	loading limit	1200 kg		1500 kg
	drive	el. motor 370W / 50Hz 400 V		el. motor 750W / 50Hz 400 V
	revolutions	10 rpm + 20%		7 rpm + 20%
	sense of rotation	right		
Film carriage drive		el. motor 180W / 50Hz 400 V		
Top platen carriage drive		el. motor 120W / 50Hz 400 V		
Weight of film roll		ca. 17 kg		
Roll conveyor	width	---		
	height	---		
	speed	---		
	drive	---		
Electric instal-lation para-meters	Operation voltage	3 × 400 V / 50Hz		
	Machine input	1.5 … 3.5 kVA (see production plate)		
	Mains protection	10 … 16 A (see production plate)		
	Control circuit voltage	24 V		
	Electric device protection class	IP 54		

		WMS JUNIOR		
Execu-tions	turntable	1500 mm, forklift-shaped	1800 mm, forklift-shaped	2300 mm, forklift-shaped
	conveyor	none	none	none
Weight (as per equipment, min.)		500 kg	600 kg	890 kg
		(see production plate)		
Dimen-sions	height	2369 mm (3369 mm)		
	width	1500 mm	1800 mm	2450 mm
	length	2350 mm	2650 mm	3245 mm
Turntable	diameter	1500 mm	1800 mm	2300 mm
	loading limit	1000 kg		
	drive	el. motor 370W / 50Hz 400 V		
	revolutions	10 rpm + 20%		7 rpm + 20%
	sense of rotation	right		
Film carriage drive		el. motor 180W / 50Hz 400 V		
Top platen carriage drive		el. motor 120W / 50Hz 400 V		
Weight of film roll		ca. 17 kg		
Air pressure	Input *)	max. 1.5 MPa		
	Working *)	0.5 MPa		
Roll conveyor	width	---		
	height	---		
	speed	---		
	drive	---		
Electric instal-lation para-meters	Operation voltage	3 × 400 V / 50Hz		
	Machine input	1.5 … 3.5 kVA (see production plate)		
	Mains protection	10 … 16 A (see production plate)		
	Control circuit voltage	24 V		
	Electric device protection class	IP 54		

*) only when portal top-platen is used

4.1. Production Plate

The production plate is placed in the mast bottom part, its identical copy is protected against damage inside the switchboard. Contents following data:

- supplier´s name and address
- type description of product
- serial number of machine
- vintage of machine
- wiring diagram No.
- weigt (kg)
- supply voltage (V)
- frequency of supply voltage (Hz)
- protection (A)
- input of machine (kVA)
- voltage of control circuit (V)

The data given on production plate are to be prefered prior to those ones given in charts of technical parameters or other ones given in this accompanying documentation.

5. EQUIPMENT

5.1. Prestretch Devices

On the machines **JUNIOR** there is used one of the types of prestretch devices – according to the order – described in Chapters 5.1.1 to 5.1.3. These systems are highly favourable when reduction of wrapping material (stretch film) consumption is required.

The prestretch devices for which are the films intended are specified in the Chapter 1.3.

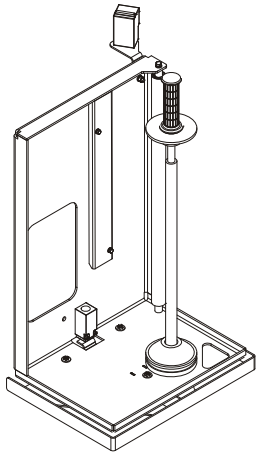
Primary prestretch occurs between rolls of the prestretch device as an incidence of difference of their revolutions, and products on the pallet will be wrapped into prestretched film; the major effect being film savings. Secondary prestretch occurs between the prestretch system and the pallet via direct pallet draw against braking rolls of the prestretch system, and it determines on the wrapping tightness (how film tightens up the wrapped products).

The whole equipment is installed on a carriage which moves over the whole height of mast using a chain gear in the mast of the wrapping machine.

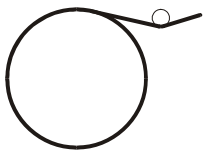
The equipment, except film hand brake and mechanic prestretch, is controlled from the control panel of the wrapping machine.

!	**!! WARNING !!** The machine turntable **must not** move while handling the prestretch device rolls.

5.1.1. Hand brake



The simplest equipment, where the tension of film at wrapping is reached by hand rotation of the grip; the brake is tightened or loosen this way. Setting of the brake is ensured by a safety rosette. No primary prestretch is possible on this equipment, the only prestretch is the secondary one the value of which is set on handgrip experimentally. The systems is used for wrapping without any special demand to wrapping quality and reduction of film consumption. It is mostly used when pallet wrapping is occassional.

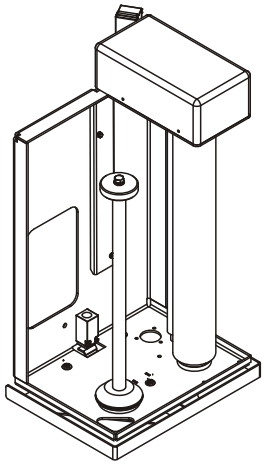


The brake device consist of a supporting frame and a film holder

Inserting of foil: release the rosette, and unscrew and take down the handle (including the rosette and cone). Insert new roll of the foil on a pin and screw-on the handle. When adjusting the braking force release the rosette above the handle. By turning the

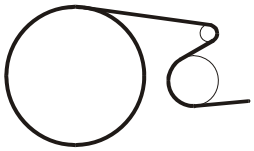
handle the brake is tightened or loosened and the braking force is thus adjusted. After adjusting tightness of the foil retighten the rosette; the set foil tightness is thus ensured.

5.1.2. Electromagnetic brake



Film spans over one operation roll. No primary prestretch is possible on this equipment, the only prestretch is the secondary one the value which is being set by tension power of a pallet against operation roll braked by electromagnetic brake. The stretching force given by braking force of electromagnetic brake is regulated by the machine control system. Usage of electromagnetic brake enables fixing of the film end to the pallet as well as the utilization of higher secondary prestretch (i.e. higher film tightness around the goods on a pallet).

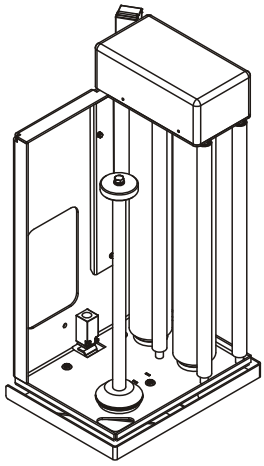
The braking device consists of a supporting frame, film holder, and a main roll effected by an electromagnetic brake.



To load the film, sit a roll on the pin and span the film around the roll as shown in the figure attached to the drive cover. For an easier handling it is to be recommended to draw up the film in a rope in the length sufficient for manual handling. The film will form to the correct shape on the rolls during operation again.

This type of a brake requires periodic checks, in particular its relining. For further instructions see Chapter 5.1.7.

5.1.3. Mechanic prestretch system



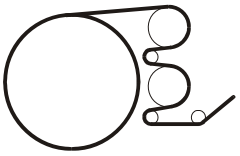
The film is unrolled by tension power of rotating pallet. Between two main rolls, which mesh together using a chain transmission, rise the primary film prestretch and thus reduction of film consumption. The gear ratio may be set up by replacing the gear wheels on the rolls and the chain, and you may add sets of gear wheels for different prestretch values (80%, 130%, 180%) based on the type of stretch film. The secondary prestretch is derived from the pallet draw against main roll, it is set by construction of prestretch device without possibility to regulate it. Mechanic prestretch system means an economic solution for middle demand on wrapping capacity with no requirement for regulation of prestretched film.

The mechanic prestretch device consists of a supporting frame, film holder, a set of main rolls and auxiliary guiding ones.

If not specially ordered the factory setting of primary prestretch is 130% what suits qualities of common stretch film and wrapping proceedings. Should the primary prestretch be changed, sets of gear wheel and chain of toothed wheels for various value of prestretch (80%, 180%) are to be supplied. There have to be changed a gear wheel and a chain, the pinion remains the same for all the values of primary prestretch. Remove the upper cover, remove the bolts in axis of gear wheels spindles and draw both wheels incl. chain off. Proceeding the opposite way install a new chain and new gear wheel together with original pinion (it has to be always installed on the main roll which is more distant from the mast). A correct chain tensioning and the adjustment procedure are described in Chapter 7.1.8.

prestretch	number of teeth	chain
80%	22	length 400
130%	27	length 419 + half link
180%	34	length 457 + half link

Maintenance of the device consists in an occassional check of chain tensioning and its lubrication – see Chapter 7.1.8.



To load the film, sit a roll on the pin and span the film around the roll as shown in the figure attached to the drive cover. For an easier handling it is to be recommended to draw up the film in a rope in the length sufficient for manual handling. The film will form to the correct shape on the rolls during operation again.Proceed analogically when inserting the film after its break.

5.1.4. Measuring of goods height on the pallet

The equipment for the pallet goods height scanning is instrumental to the prestretch device automatic stop as soon as the pallet top has been wrapped. The wrapping machines WMS JUNIOR do not have to be provided with this equipment – the correct pallet wrapping over its whole height is controlled by the operating personnel. In case the machines are provided with the equipment for the pallet goods height scanning there is one of two systems in question:

System with fixed pallet height – there is a mechanical limit switch located on a The system with mechanically scanned pallet height of the goods on the pallet is adjusted by a mechanical stop which is placed in a rail on the mast and can be displaced when the stopping screw is released. When the correct height is adjusted the screw is tightened again and thus the stop fixed. This system is reliable and used to be set in workshops with seldom changing height of the goods on pallets.

The system with optically scanned pallet height – there is a photocell located on a prestretch device. The phocell is monitoring the momentary pallet height. When the phocell does not register any further reflextion (it means it is above the pallet height) the prestretch device keeps on driving upwards according to the value stored in the machine parameters and stops subsequently. The system with variable pallet height is favourable in workshops with often changing height of the goods on pallets.

5.2. Top Platen

Top platen is used to fix unstable, light products as well as press down a loaded pallet prior to strapping.

5.2.1. Electrical top-platen

The electrical top platen unit is installed on the arm provided with a pressing plate on its end. The whole unit is fixed to the carriage moving along the mast over guiding profile bolted to the mast. The pressing plate is freely spinning and its pendulous bearing enables a slight tipping. Pressing power may be adjusted by a spring at the top platen drive. When the top platen is pressed to the goods the spring is depressed and opens an end switch of the carriage movement. This way is the respective pre-adjusted pressing power of max. 500 N (50 kg) activated.

The electric top platen is controlled via the control panel of the machine.

5.2.2. Portal top platen

Portal top platen is operated in cases when the wrapped goods are to be depressed with a heavy force – up to 1200 kg. The goods are pressed with a force developed by a pneumatic cylinder; the pressing power can be adjusted, see Chapter 7.1.10. There is built a portal with pneumatic cylinder and pressing plate above the turntable. The control of portal top platen is done via manual bar controlling the travel of pneumatic cylinder, there is no relation to the machine control system. The control bar is three-positionally operable:

- **Upper position:** pressing plate lifting over the goods and pressing plate positioning in the upper extreme position.
- **Middle position:** should not the pressing plate be lifted up to upper extreme position, switch the bar in the middle position when the plate is travelling upwards or downwards. Use this position for the shortest time necessarily needed for the wrapped pallet to be taken out and for a new one with the goods to be taken in. Using this position a longer time, a spontaneous position change of pressing plate might occur.
- **Lower position:** the bar is switched in the lower position all along the goods on the pallet are depressed. This is the only way how to develop the adjusted force during the whole pressing procedure.

Presing plate may be optionally provided with channels used for strapping of the goods.

Due to the manual control, there is no remark concerning the portal top platen use mentioned in the following text of this Specification more.

5.3. Turntable

The machines **JUNIOR** may be provided with turntables as follows::

- **Standard**. Pallets are handled using high-lifts; if you install a turntable bridge, you may use low-lifts as well. The turntable with a small metal sheet to lock the film before wrapping start is available when required; an additional installation of this catcher possible. The diameter of turntable is 1500 or 1800 mm.

- Provided with **roll** or **chain conveyor**. These modifications are to be used in packing lines. The goods are carried either automatically by **PALLET CALL** pushbutton and after the goods are wrapped they will be sent further along the line by **PALLET DESPATCH** pushbutton, depending on the situation in workshop.

- Provided with **gravitation roll conveyor**. It is also intended for packing lines. The conveyor on turntable is not driven, the goods have to be put there and transported manually after they are wrapped. The rolls on conveyor simplify the handling.

- **Forklift-shaped** turntable. Simple loading of pallets using low-lifts without turntable bridge. Any other machine abilities, its control and possibility to apply a film catcher remain standard. The diameter is 1500 or 1800 mm.

Two options of turntable drive are available:

- **Electromotor with gearbox**, the turntable is driven over the chain. This is used when higher demands for exact turntable stop in the point of orientated stop (see Chapter 5.3.1) or for higher loading limit (2000 kg) are required.

- **Electromotor with intergearing.** There is a V-belt as the first stage of intergearing. Usage of V-belt results in relatively soft start and stop, the turntable may also be rotated manually against counterpower of gearing – this possibility should be utilized just exceptionally only.

5.3.1. Orientated stop

The function Orientated Stop means ability of turntable to stop always in the same position what simplifies handling with pallets when loading or removing them.

The Exact Orientated Stop is always conditioned by equipment of a machine with frequency invertor and depends on the preset turntable speed. The position of orientated stop is subsequently kept for this speed.

The exactness of stop on machines not provided with frequency inverter will be influenced by persistence of rotating pallet. It is to be proceeded as follows: the first pallet of certain weight will be wrapped without the applied film. After the cycle is terminated the pallet stops in a direction in which all following pallets of the same or similar weight or those ones the weight of which does not differ more than by 100 kg will stop. The position of turntable with respect to the frame should be marked. The pallet will be removed from turntable and the turntable bridge (if used) will be positioned at turntable in the corresponding direction for loading of next pallets.

5.4. Control Panel

All the pushbuttons as on a fully equipped machine will be described in this chapter. In case the machine is provided with a lower standard of auxiliary devices, the corresponding parameters of these devices will have no meaning.

There are mentioned also special pushbuttons in a separate article which do not represent standard machine components and which may be installed additionally against a special requirement of the user.

The system is provided with control pushbuttons covered by polyester film. Pushing of each of pushbuttons will be indicated by short peep. All the activities that would cause a damage of pushbuttons or film cover of control panel (e.g. pushing or touching the cover film with sharp objects or with extreme power, impacts, etc.) must be eliminated.

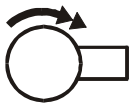
Polyester cover film is an integral part of electric insulation of the device and its damage may result in breakdown of the whole device or may cause an injury. When the film is damaged its repair must be secured without any delay.

A) **MAIN SWITCH** is placed on the mast side. It is lockable to eliminate an intervention of unauthorized person.

B) **SUPPLY** pilot lamp. This pilot lamp indicates control system blocking as the consequence of machine switching on, blocking by the staff, emergency stop or a failure. The normal state is indicated by the pushbutton on, if it is off the maschine is blocked. Processing for the machine deblocking according to the Chapter 5.5.2.

C) **TOTAL STOP**. When pushing this pushbutton the machine abilities are completely stopped, feeding of control voltage is disconnected (lamp **SUPPLY** gets off). It is intended for immediate stop of the machine in emergency situations - machine failure, goods falling from the pallet, collision, injury of operator etc. When the machine is after pushing of button **TOTAL STOP** brought in operation again see instructions in the Chapter 5.5.1.

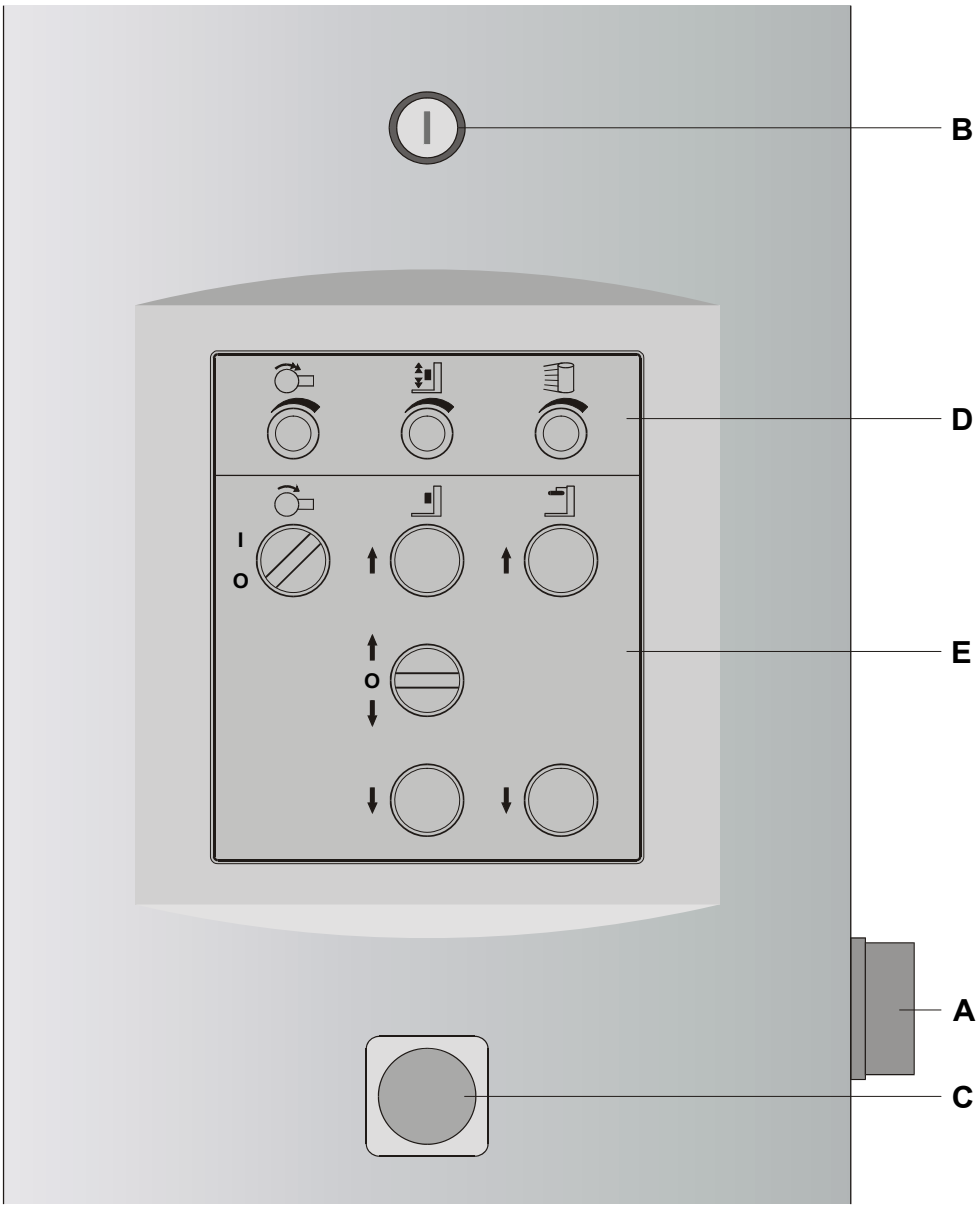
D) Potentiometers for regulation of machine elements:



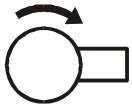
TURNTABLE SPEED. The turntable rotations can be regulated only in case the machine is provided with a frequency invertor.

FILM CARRIAGE SPEED is identical for the movement in both directions (both up and down). The film carriage speed can be regulated only in case the machine is provided with a frequency invertor.

BRAKE OF THE FILM. This potentiometer is active just in case the machine is provided with an electromagnetic brake of the film.

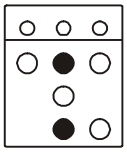

B
D
E
A
C
I
O
O

E) Control push buttons of individual movements:

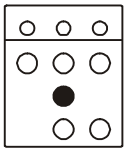


TURNTABLE SWITCH. By switching in "**I**" position will turntable be actuated, by switching in "**0**" will turntable be stopped in position Orientated Stop – see Chapter 5.3.1.

SHIFTING OF FILM CARRIAGE. This movement is controlled by two alternative equivalent ways (the sketches show the position of the push buttons on control panel):



- via push buttons for vertical movement up and down. When pushing a button the carriage moves in a corresponding direction, and it stops either when the button is released or when the carriage drives up to the limit/end switch.



- via controller. When switching from "**0**" position the carriage moves in a corresponding direction. When driving down it stops either by switching off in "**0**" position or when the carriage drives down to the limit switch. When driving upwards the configuration of the machine is decisive: if the machine is provided with monitoring of the goods height by photocell and the film carriage is located below the height of pallet, it stops in the moment when reaching the pallet height. If the machine is not provided with photocell or if the film carriage is located above the height, the carriage stops either by switching off in "**0**" position or when it drives down to the limit switch.

Both of these alternative possibilities must not be combined mutually!

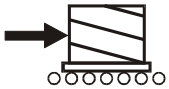
SHIFTING OF TOP PLATEN. The top platen arm is moving:

a) as long as the button for top platen shifting is kept pressed;
b) as long as the plate of top platen does not develop certain power;
c) as long as the arm does not reach the limit position.

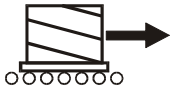
Special pushbuttons

Further pushbuttons or switches are used just on some machines only to meet special concrete solutions. They have not to be necessarily placed on control panel or close to it, but on the place corresponding the best way to the respective purpose (e.g. close to controlled element). In case your machine is not provided with these pushbuttons or switches ignore the description below.

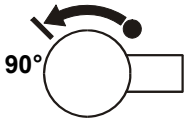
Machines equipped with pneumatic top platen or a portal one: there is a lever top platen device driver on the right side close to the control panel. By pushing the lever downward is the pressing plate of top platen driven to the goods, when pushing it upward it gets up above the wrapped pallet.



Call the pallet from conveyor line to the turntable. The pushbutton will be installed at modifications with roll or chain conveyors only.



Send off the pallet from wrapping machine to the conveyor line. The pushbutton will be installed at modifications with roll or chain conveyors only.



Swivelling/short turning of turntable. It is used when the wrapped pallet is to be sent off in an other direction as the pallet to be wrapped is brought on turntable. Wrapping cycle must be fully finished, the film cut and fixed to the goods. When pushing this pushbutton the turntable will turn to the pre-set position useful for sending off the wrapped pallet. On the plate there is stated the real resulting angle and the sinn of turning, in this appropriate case will the turntable be turned by 90° to the left.

5.5. Protective elements

There are some protective elements to cover health of operator or to minimize the defects when an emergency situation appears on the machine.

5.5.1. TOTAL STOP pushbutton

Pushbutton **TOTAL STOP** is placed close to control panel, its activation causes an immediate stop of the machine in emergency case (failure of machine, fallen goods from the pallet, collision, injury, etc.). When pushed, the pushbutton is automatically locked in pushed position, before the machine is started again it must be unlocked).

Upon putting the machine in operation again proceed as follows:

- Eliminate the reason of emergency stop
- Check the state of machine (it depends on concrete configuration):

  - protective frame of film carriage must be in idle position, an inappropriate subject must be removed from there
  - film must be inserted correctly in prestretch device
- Unblock **TOTAL STOP** pushbutton by turning to the right (in direction of arrow on pushbutton) until it is in its initial position
- Finally, before machine operation is started, switch on the supply voltage (pilot lamp **SUPPLY**) – more details in the Chapter 5.5.2.

5.5.2. SUPPLY pilot lamp

The pilot lamp of machine blocking, i.e. showing the state in which the machine does not perform any movements without respect to the **TURNTABLE SWITCHER** and **FILM CARRIAGE SHIFTING** actuators positions. During a standard operation the pilot lamp is on, the pilot lamp off-status indicates the machine blocking. After starting the machine is the pilot lamp off, the pilot lamp gets off, as well, if an error situation appears (failure, pressed Emergence Stop pushbutton, swinging out the film carriage protective frame, etc.). For renewed machine initialization it is necessary to eliminate the blocking reason and switch off all the drives, i.e. switch the **TURNTABLE SWITCHER** and **FILM CARRIAGE SHIFTING** actuators in "**0**" position. The pilot lamp on-status indicates the machine deblocking. This function eliminates an undesirable machine run after it is switched on, or when eliminating the failure or an error reason.

5.5.3. Film carriage protective frame

The film carriage protective frame avoids an accident of the staff or machine damage. It blocks the machine in case that the extremity or an improper subject get under the film carriage and thus the swinging out the film carriage protective frame from the idle (off) position has been caused. For the machine deblocking see the description in the Chapter 5.5.2.

5.5.4. Sensor in cut-out area

This concerns the machines with forklift-shaped turntable only.

The sensor is located on the cut-out edge and protects starting the machine during the time of pallet truck presence within loading or unloading the pallet in the machine cut-out area. In the moment of pallet truck arrival in the cut-out area the pilot lamp Supply gets off. When normally operated and within the pallet delivery are the Turntable switcher and Film carriage shifting actuators in "0" position. In such a case the Supply pilot lamp gets automatically on when the pallet truck leaves the cut-out area. If the Supply pilot lamp does not get on it indicates the machine blocking from another reasons – for renewed putting the machine in operation see the Chapter 5.5.2.

6. MACHINE OPERATION

6.1. Switch On and Off the Machine

The machine will be started by switching the main switch on the side of switchboard in the position "**I**". The pilot lamp **SUPPLY** must lit on.

The machine will be stopped by switching off the main switch in the position "**0**".

6.2. Film change

The film change methode differs according to the prestretch device used – for the complete film change processing see the Chapter 5.1.

The prestretch devices for which are the films intended are specified in the Chapter 1.3.

6.3. Types of wrapping

There are some types of wrapping available to be done on the Junior. Those types are representing various grades of goods fixation on the pallet and their protection:

A) Simple wrapping. The goods are wrapped in one direction, upwards from the bottom. This is the most economic way from the view of film consumption.

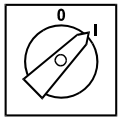
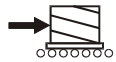
B) Cross wrapping. The carriage drives upwards from the bottom, the upper edge of the film drives the edge of pallet over approx. 10 till 20 cm, pallet top is wrapped by some film rotations and after that drives the carriage down again. The pallet is better fixed and protected by the film.

C) Single wrapping with top sheet. After the pallet is wrapped a single way the carriage drives for about 30 cm downwards, the turntable stops, an operator applies top sheet, actuates the turntable and drives approx. 20 cm over the upper pallet edge again where some film rotations fix the top sheet to the top of the pallet. The upper part of pallet is protected against dust and unfavourable weather effects.

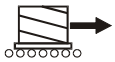
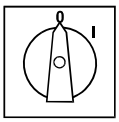
D) Cross wrapping with top sheet. When the pallet top is wrapped for the second time for fixing of top sheet drives the carriage down again. This way combines a good fixation and protection of the goods by double film layer as well as the goods protection against dust and unfavourable weather effects.

6.4. Wrapping methodes

In the following chart describing the wrapping methodes is a field in the column Wrapping type blackened in the case that the action is done under appropriate wrapping type, see the summary of wrapping types under Cahpter 6.3. For instance the row 17, action "Apply the top sheet only after the machine completely stopped " will be done on wrapping type C – single wrapping with top sheet, and D – cross wrapping with top sheet.

	Wrapp.type				Action	Controller
	A	B	C	D		
1					Switch on the Main switch – controller in "**I**" position.	
2					Switch on Control voltage – the lamp Supply lits on.	
3					Bring the machine in the initial position which is defined as follows: • turntable stops in the point of Orientated Stop – see Chapter 5.3.1 • film carriage is in the bottom position (either push and hold the button Film carriage shifting, or switch the controller Film carriage shifting in the position down. Wait until the carriage stops in the bottom position and turn eventually the controller Film carriage shifting in "**0**" position. • the carriage of top platen is located in the upper position (resp. in a position enabling safe drive of a pallet to turntable).	
4					Place the wrapped pallet on turntable. The pallet must be placed symmetrically to the turntable centre and must not overlap the turntable perimeter.	
					Junior: use a fork lift truck.	
					Junior with turntable bridge or with forklift-shaped turntable or with floor frame: a fork lift truck as well as a pallet truck can be used.	
					Junior with non-driven roll conveyor: a pallet will be handled manually over non-driven roll conveyor.	
					Junior with driven roll conveyor or non-driven one: according to the situation in the workshop comes the pallet over the line either automatically or it is called in by the button for pallet calling.	
5					Roll off the long enough piece of film from the prestretch device and fix it to the pallet to be wrapped (e.g. to the pallet support), or to the metal film holder placed on turntable, when available. In introducing the film, take also care that the film cannot come under the rotating part of the turntable any time later during the packing; there is a danger of winding up of the film on the turntable chain and the central bearing, and, possibly, of falling down of the chain from the sprocket and pinion.	
6					The goods can be fixed to the pallet by a top platen of unstable goods, if available. Keep on pushing the controller of top platen provided with down-arrow until the plate reaches the goods. After fixing them with adjusted power (usually approx. 500 N, i.e. 50 kg) the drive of top platen switches off by itself.	
7					Actuate the turntable by switching the controller in "**I**" position.	

	Wrapp.type				Action	Controller
	A	B	C	D		
8					When the frequency invertor of turntable drive is available on the machine the speed of turntable can be fluently regulated everytime within the wrapping cycle.	
9					After the first rotation a required prestretch (extension) of the film is to be set.	
					manual brake: by rotation of brake handle (see Chapter 5.1.1)	
					electromagnetic brake or 1-motor prestretch system: by the controller from the panel (see Chapters 5.1.2 and 5.4)	
					mechanic prestretch: regulation impossible	
10					The pallet is to be wrapped by some film layers. The number of layers (wrappings) is directed according to the sort of the goods and demand for the strength of the wrapping.	
11					Actuate the prestretch device in the direction upwards by one of alternative ways (by switch or switching the controller – see Chapter 5.4)	
12					When the frequency invertor of prestretch device drive is available on the machine the speed of prestretch device can be fluently regulated everytime within the wrapping cycle. The speed set is valid for both of directions.	
13					According to the way of control chosen (see 5.4) the prestretch device stops in the upper position automatically, or it will be stopped in position that its upper edge overlaps the pallet upper edge by approx. 20 cm. The pallet top will be wrapped by some film layers.	
14					Drive with the film carriage by approx. 30 till 40 cm downwards.	
15					Stop the turntable by switching in "**0**" position.	
16					When the top platen available drive it in the upper position. Push the button until the top platen arm does not reach sufficiently high for easy and safe application of top sheet, or until it does not reach the limit switch.	
17					Apply the top sheet only after the machine completely stopped.	
18					When the goods are to be fixed even when they were already wrapped, press them by top platen on the pallet.	
19					Actuate the turntable by switching the controller of turntable in "**I**" position.	
20					Actuate the prestretch device in the direction upwards.	
21					According to the way of control chosen (see point 5.4) the prestretch device stopps in the upper position automatically, or it will be stopped in position that its upper edge overlaps the pallet upper edge by approx. 20 cm. The pallet top will be wrapped by some film layers.	
22					Drive with the prestretch device down to the lowest position. Wrap the pallet with some film layers.	

	Wrapp.type				Action	Controller
	A	B	C	D		
23					Stop the turntable by switching in "**0**" position.	
24					When the top platen is available drive it in the upper position. Push the button until the top platen arm does not reach sufficiently high, or until it does not reach the limit switch.	
25					Bring the wrapped pallet out:	
					Junior with standard turntable, with forklift-shaped turntable or with non-driven roll conveyor or with floor frame: via suitable handling means (see point 4).	
					Junior with roll or chain conveyor: by pushing the button for sending the pallet off.	
26					Go on with point 3 or when no more pallets are to be wrapped switch off the machine by Main switch – controller in "**0**" position.	

6.5. Notices

The concrete setting of individual machine elements (potentiometers), number of film rotations at the beginning and at the end of wrapping, etc. depend on the goods to be wrapped and their characteristics, on the demands for quality of wrapping and grade of goods protection, as well as on requirements for economy of the whole operation.

6.6. Failures and their elimination

The table below shows some most frequent errors and failures, their causes, and remedies. These defects can be repaired by the operator or maintenance staff of the user.

Failure	Cause	Elimination
Impossible to switch on the machine	Energy supply, circuit breaker	
Machine switched on and non-functional	Emergency Stop push-button pressed	see Chapter 5.5.1
	deflected protective frame of prestretch device	see Chapter 5.5.3
	on cut-out turntable: sensor in cut-out part shielded	Remove the subject causing shielding. Clean both sensor and mirror. Check sensor functionality - see Chapter 5.5.4
Opposite sense of turntable rotation and prestrech device motion	changed supply phases	see Chapter 3.4
Film is wound around the rolls of prestretch device	too low secondary prestretch set	see Chapter 5.1
Film breaks	unsuitable film	see Chapter

Failure	Cause	Elimination
	sharp goods edges on the pallet	Change the way of goods wrapping or reduce the secondary prestretch (see the following point)
	too high secondary prestretch	see Chapter 5.1
Unexpected machine run	uneven floor	Replace the machine on an even floor (disturbed sensors position)
Machine heavy run	machine overloaded	machine loading limit has to be kept (see Chapter 4 or Commercial Documentation)
	wound up film on the turntable chain	remove the film from the turntable chain (see chap. 7.1.6)
Unreliable scanning of the goods height on the turntable	sensor orientation is not directed to the goods on the turntable	Direct to the goods on the turntable.

7. MAINTENANCE AND CLEANING OF THE MACHINE

The wrapping machine requires regular maintenance. Respecting this requirement guarantees a much longer lifetime of the whole machine. For correct checking, no pallet may be placed on turntable and the prestretch device must be free of film.

7.1. Machine maintenance

Recommended cycles	Procedure of maintenance
Every day	checking of: power supply cables for damages motion of the film carriage and the top platen overall condition of the machine function of the machine protection components cleaning of the machine and its surroundings
Every 500 hours of operation or 1× in 3 months	check and adjust tension and lubricate the mechanic prestretch (Chapter 7.1.8). It concerns the machines equipped with mechanic prestretch device only. lubricate the film carriage and the top platen chains
Every 1000 hours of operation or 1× in 6 months	check turntable bearings (Chapter 7.1.1) check the turntable rollers (Chapter 7.1.4) check tension and lubrication of turntable gear with gearbox (Chapter.7.1.6) check tension and lubrication of turntable gear with intergearing (Chapter 7.1.7)

Recommended maintenance cycles – according to the situation, what happens earlier.

Recommended lubrication fett for chains and turntable bearings: Mogul G3, Mogul LV2-3 or other lubrication fett of similar characteristic.

7.1.1. Lubrication of film carriage chain

The chain is placed inside the mast behind the cover. Drive the film carriage in the lower half of the mast to enable the screws to be accessible. Screw out 4 screws fixing the cover behind the top platen to the mast and move the cover in upwards direction. After the chain is lubricated mount the cover back on the spot proceeding an opposite way.

7.1.2. Lubrication of top platen carriage chain

The chain is place inside the mast behind the cover fixed with 4 screws. Drive the top platen downwards to the position enabling the screws to be accessible. Screw out the screws and move the cover in upwards direction. After the chain is lubricated mount the cover back on the spot proceeding an opposite way.

7.1.3. Inspection of turntable bearing

Turntable except for the forklift-shaped turntable: loosen the screws on the turntable and lift the turntable. Loosen the chain stretcher and take off the big chain-wheel, the axis of which is laid in the turntable bearing. Check and eventually lubricate the bearing, mounting procedure is the reverse procedure.

Forklift-shaped turntable: take off the turntable cover and move the turntable so that one pulley is in the cutout, if it is not there. Mark the position of one of the springs, which push the pulleys to the turntable and loosen the spring. Take off the spring from the pin in the chain stretcher. Then it is possible to take the turntable itself from the base by upward traction (rotating part, on which the pallet is placed during wrapping). Check the bearings, lubricate the axial bearing, if necessary and eventually check the condition of turntable rollers (see chapter 7.1.4). The mounting procedure is reverse, take care so that the ball is in the central pin of the turntable; finally adjust the springs back to their original stretching.

7.1.4. Inspection of the state of turntable rolls

Inspection must be done with removed turntable together when inspected turntable bearing. Rolls must not show any deformations (flats or ruptures) and bearings of rolls must rotate fluently without any sign of unregular run, rub or inadequate difficulties of turning. In case of need new rolls may be ordered (turntable diameter, loading limit of machine – artifficial or metal rolls – must be stated), on turntables of big diameters an information whether inside (at turntable perimeter) or outside rolls are required. The roll´s bearing does not required any other maintenance or lubrication.

7.1.5. Repair of turntable chain

If, suddenly, the turntable does not rotate or its rotation is hard and irregular the cause is usually in a film residue wound up on the chain gearing of the turntable. In extreme case, this can even cause falling down of the chain from the sprocket or pinion.

Turntable, except for forklift-shaped turntable: Loosen the screws on the turntable and lift the turntable.

All versions of turntable: Take down the guard between the pole and the turntable; whole chain gearing is now visible.

Remove film residues and impurities from the chain, sprocket and pinion. If necessary, refill the lubricant. Clean the whole space under the turntable and the guard between the turntable and the pole.

If the chain has fallen down the procedure of repair depends on the turntable version:

Turntable except for forklift-shaped turntable: Release the turnbuckle spring. If, under these conditions, the chain cannot be put on the sprocket it should be disconnected and, after putting on, connected again (there is always a swivel in the chain).

Forklift-shaped turntable: Release the spring of the swinging turnbuckle. Mark the position of the fixed turnbuckle (it is fixed with a screw in the bend nick) and loosen the screw; in this way the turnbuckle is released. Put the chain on the pinion and on a maximum possible number of teeth of the sprocket; put the chain on the sprocket by hand rotating the V-belt wheel. Return the fixed turnbuckle to its original position and retighten the screw. Put the spring on the swinging turnbuckle.

After any work with the turntable chain, put the guard and the sheet of the turntable back and test functionality of the turntable by packing several pallets taking increased caution.

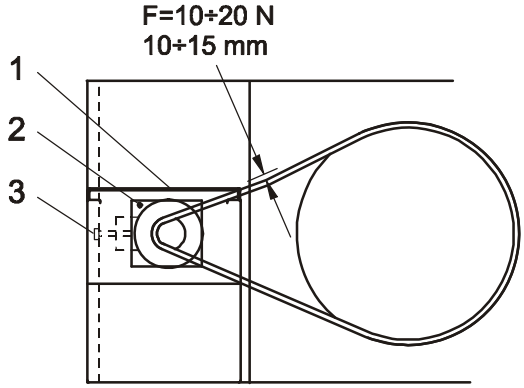
7.1.6. Ispection of turntable with gearbox

It concerns the turntable with gearbox – electromotor with gearbox is situated outside the mast, turntable is driven by chain.

Remove the turntable. The chain is tensioned by two strainer drawn by spring, the lifting of main strainer is limited by a stop bolt M10. When the machine is in an idle state without a pallet (goods) on the turntable, release the safety nut and turn the screw until it slightly touches the stretcher. In case of turtntable till the diameter of 1800 mm incl. tighten the screw by 2 more rotations afterwards, or by 3 more rotations with the turntable of the diamater of 1800 mm and more. The safety nut will be tightened again. If there is no chance to adjust the chain tension this proper way it means the chain is wear and has to be changed.

7.1.7. Inspection of turntable with intergearing

It concerns the turntable with intergearing – electromotor is situated inside the mast. Turntable drive is two-stage gear with first stage over V-belt and second one with chain..



Inspection of the belt and chain should be done together with inspection of central bearing (Chapter 7.1.3) and rolls (Chapter 7.1.4. Remove the turntable and the cover between mast and turntable (6× bolt M5) (proceed according to Chapter 7.1.3).

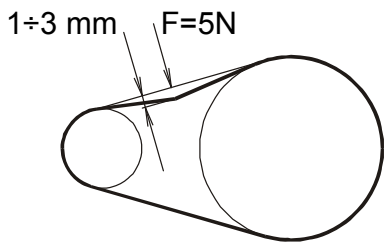
Inspection and tensioning of V-belt: check its state, when coating is frazzled or the belt half-broken or with missing pieces of rubber, it must be replaced by a new one of the same size and labelling. The V-belt must be tensioned a correct way: when pushing it with power of 10 up to 20 N (1 up to 2 kg) in the middle between pulleys it should be bended by 10 till 15 mm; too high tension of the belt mean higher abrasion of gearbox, bearings and the belt, as well, a shorter life time of the machine. When is the bending higher the belt must be tensioned: remove the cover of the lower part of mast Pos. 1 (it is fixed by four velcros and is to be removed by countinuous tension in its corners). Release bolts M8 of motor base Pos. 2 (4×) and by turning of strain nut M10 Pos. 3 shift the motor base in

oval holes, this way will be the belt released or tensioned according to the situation as long as the prescribed value of belt tensioning is achieved. Tighten the bolts Pos. 2 finally and cover the interspace.

V-belt should be inspected even in cases when after turntable start or stop an unfavourable whistling or screaping will appear; subsequently check all the possibilities how to eliminate it; spread the sides of the belt with soap, defat inside (functional) sides of pulleys as well as the belt; tension the belt correctly.

The chain is tensioned by two stretchers, which are hauled by spring. In the case of falling of chain from chain-wheel, the chain is used-up and it must be replaced.

7.1.8. Maintenance of mechanic prestretch



For intervals of inspection and lubrication of the chain see Chapter 7.1. When checking the prestretch there must not be any film inserted.

The chain of mechanic prestretch device must not be tensioned by power, otherwise abrasion of chain wheels and prolongation of the chain will appear. Slightly pressed (by power of ca. 5 N) should the chain bend by 1, max. by 3 mm. If necessary to adjust the distance of axis proceed as follows: upper bearing of main roll is inserted in a box with enlarged holes. When removing the bolts the box may be shifted and thus adjusted a correct chain tension. Do not handle lower bearing of main roll any way, a slight abberance does not inluence neither the functionality not the reliability of device. Tighten the bolts finally.

7.1.9. Maintenance of electromagnetic brake

It concerns the machines equipped with the electromagnetic brake.

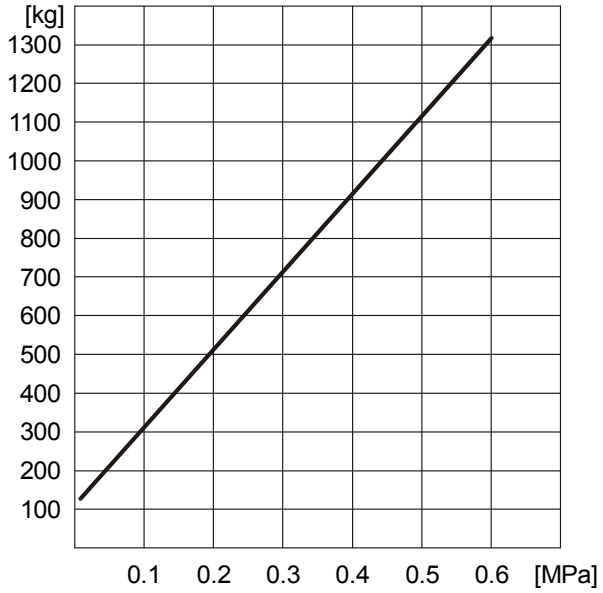
In case of reduced effectivity it is to recommend to inspect and clean working flats of the brake. If the bronze inlay between fix and moving parts of brake is abbrased, it must be replaced.

Dismantling the brake: Remove the cover of prestretch device and loosen the bolt M 10 on upper (moving) part of brake. Remove the upper part of brake, pressing disc and friction inlay. The mounting is done vice versa.

7.1.10.Portal top platen adjustment

The pressing force is to adjust by setting of air pressure by a pressure control valve according to the diagram of pressing force relations to the air pressure. The pressure control valve is a part of air treatment unit situated close to the control valve.

It is inadmissible to set the air pressure to the value higher than 0.6 MPa – at higher pressure there is a real danger of machine damage!	**!**



7.1.11.Maintenance of electric wiring

Provisions stated in the Chapter 2.2 as for authorization of a technician who is engaged in maintenance must be kept.

Before manipulation with contactor switchboard and any other labour with electric devices the **MAIN SWITCH** must be disconnected and locked, the key must be removed from the lock.

When repairs are of bigger volume disconnect **supply of electric current** feeding the machine by pulling out the feeding cable from the socket!

Electric device must be maintained regularly and according to the schedule. Thus the lifetime of the electric wiring will be significantly prolonged. There must be removed the powder and dirt from the space of electric device as well as from all the parts in short periods. Maintenace in longer periods means inspection and tightenning of all bolt connections and contacts of contactors, especially after heavy short circuits. The function of thermal protection, insulating resistors, zeroing, eventually earthing. Before any activity with electric motors is started, the main switch must be off !

In case of longer idle state of a motor its state must be checked as follows:

1) if there is not a visible defect on the motor or on any of its part
2) insulating resistance of winding
3) state of motor bearings (a fat filling must be refilled after longer time)

7.1.12. Notices

Periods of inspections and repairs mentioned in this documentation may be precized based on operation experiences and tests of the machine at the producer and the user.

7.2. Cleaning

1) remove powder and dirt in short intervals
2) machine surface may be washed with water provided with common detergents (the machine must be disconnected from the supply).

8. GUARANTEE

The warranty general conditions are defined in the Certificate of Warranty which forms an integral part of the documentation supplied together with the machine. The Certificate of Warranty has to be properly and completely fulfilled from the part of the producer.

One of the warranty conditions is the regular machine checking and maintenance, Operational Instructions observation and using just the original spare parts only.

The warranty is not applicable to the defects caused by improper handling, by non-performance the product Operational Instructions, in case of a product failure action performed by an unauthorized person (an unauthorized company) and in case of the product overloading. The warranty is also inapplicable to the parts which are subject to the ordinary wear and tear.

8.1. Obligations of the User

The user shall only provide such personnel to operate the machine who have appropriate physical skills and are properly instructed to use the machine in compliance with the Operating and Maintenance Instructions and safety rules.

9. SERVICE

All repairs within the guarantee and post-guarantee period will be provided by the manufacturer. He will also deliver individual spare parts based on customer purchase orders.

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