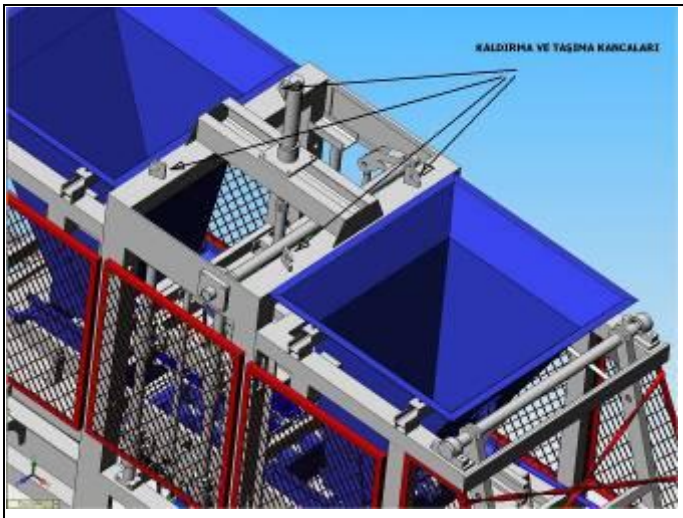
CONCRETE PAVER AND BLOCK MAKING MACHINE GUIDE AND PROCESS BOOK

1- INPUT

Full automatic system is machine which works with PLC without any need of an operator process. Our machines can do production over wooden pallets with legs or wooden pallets without legs. The sizes of wooden pallets change according to the machine production daily capacity and according to the size of the product which will be produced. The sizes of the machinery is done according to the standard sizes of transportation bases so the machinery sizes are according to the transportation trucks, containers etc.

2- POINTS TO BE CONSIDERED WHEN HANDLING AND TRANSPORTING THE MACHINERY



When downloading the machine from the means of transport use the handling hooks which are above the machine. Do not handle from any shaft, pipe, bedding system, hydraulic system or any unit which may make hazardous effects over these units.

-Do not drag your machine on the flor over the installation area.

-Handle and pick up the machine from the shown hooks as show on the picture with crane to put it on appropriate region for installation.

-Do not put any material over the device which will cause hazard to the machine. Do not forget that the machinery is designed according to hydraulic control movements and according to weight which the system can carry on.

-Be sure that your machine is under protestion to natural disasters that might happen when it is off.

-To prevent your machine against external factors you should paint your machine with anti-aging paints and anti-rusting paints. Dust, gas, burning steam and chemicals which might effect your machine by worning it out elements should not contact in touch with the machine. Especially when cleaning the machina chemical products shouldn't be used.

NOTE: HAZARDS WHICH WILL HAPPEN FROM WRONG HANDLING AND CARRIAGE OF THE MACHINERY AND WRONG PROTECTION OF MACHINERY WILL NOT BE UNDER GUARANTEE.

3-INSTALLATION

Machine should be put over land area which the area has been ready according to the lay-out project that has been given to you by our company which the surface is straight and hard and which will not prevent the work area, machine service. The product quality which come from the machine changes according to the strength of the concrete area. Fort his reason the lay out should be strictly done according to the project that we give you.

Before the delivery of the machine concrete area should be ready, electrical connections, water supplies and if needed air installation should be ready. The buyer is responsible fort he installation of power supply according to the values that we give. Hazards which might happen from the reasons of working the machinery with a ware line which is not according to our requirements will cause the service and fixing not under guarantee. Installation of the machinery and the equipments of it by our company supervisors (Electrical connections, water supply, revision pit will be ready before our supervisor comes).

At the same time there should be a pit made under the machine in the sizes that we have given you on drawings according to at least one person to go under and fix, do revsion for the machinery. Machine must be stabilized to the ground. To prevent puddle in the pit there should be put water transferring pipe.

Connection of the components

-Machinery lay out project should be done according determining of the right route of plant. By checking the service route which has been told before according to sequence installation and the connections are done.

-Make sure that the machine and the water weighing is on same strike. When placing the machine from the machine service side an empty area as big as the width of the main machine should be left. This empty area is needed when changing the moulds.

-When transferring the machine above press, below vibration electrical motors and hydraulic control panels will be sent disassambled.

4- CONNECTIONS

4.1-Electrical Connections

-All the electrical connections should be designed according to international standards.
-For machine grounding line should be installed.
-The switch material which are to be used, cables, all other control equipments should be choosed according to spesifications of machine and should be designed according to that.
-In normal applications direct way is given to the single speed motors which are used, to the motors which are 5.5kw or over there should be given star or triangular ways. Pump motors are out of this process.
-Electrical connections should be done by professional persons and should be done according to connetion table which has been sent with machine. If the connections are not done according to the table machine will not be under guarantee if it will have problem.
-Thermal relay connections should be done as shown below:
a) Direct departure: Thermal relay must be set according to the tem load current value shown on motor.
b) Star-Triangular departure: Thermal relay must be set according to the %58 of tem load current shown on motor.

-Motor terminal tags:
Motor terminal tags are made according to international standards, phases U.V.W., X.Y.Z and tagged as grounded.
Voltage value which is shown on capacity tag should be checked if it is compitable with network voltage.
Connection details are given in the table which is given with the machine.
-Standards makes it a neccessity to make all the motors grounded and fort his reason in electrical panel or terminal box there is grounding terminal.
-To prevent motors working in high load and two phase, motors should be protected by fuse, thermal or thermal magnetic cutters or electrical circuit.
-The axial fan which is used in hydraulic cooling systems must be feeded with 380 Volts.

5- ELEMENTS WHICH ARE LOCATED INSIDE CONCRETE PAVER AND BLOCK MAKING MACHINE

5.1-Hydraulic control unit

-Oil storage volume for our models are for BS12 250lt, for BS20 350 lt, for BS25 500 lt, for BS30 550 lt, for BS36 750 lt, for BS42 850. The hydraulic oil which is used tellus 46 and pump which feeds the electrical line of machine and electrical engine which do propulsion to pump; warmth of hydarulic flow, pressure, speed, such factors are used by finding engineering calsulations. Back robot and wooden palled pulling group is fed by a free pump. Electrical motor and pump connection is directly clutch gear coupled connection. To have easy and pratic usager hydraulic circuit and electrical control panel are designed together and machines all controls are directed from here. All the movements of machines which work with automatic sytem are provided with 24 volt electrical directional control valves. Valves are provided from becoming together of monoblock units. Pressure settings are done from directional control valves. And to see the set pressure level and working pressure manometer is used. The used manometer is between 0-160 bars. Set the processing pressure from the valve between 80-120 bars.

Hydraulic cylinders are double effective and equipped with fully sealing elements, working range is set according to the type of the machine and equipment that the customer choose anda re joint two side. Power transmission is made by choosing the possible cylinder area according to the pump.

Cylinders are designed by using high strength steel pipes which can be durable to the 1.5 times more pressure than the processing pressure. Hydraulic circuit is performed with compppletely off circuit.

When the choosing of elements are being done for using it on machine hydraulic circuit, capacity plan is made and the load which will be used is calculated. From the found load calculation the appropriate loop is being ready and before putting it in process hydrostatic test is done for it. This test is mad efor 30 minutes for 1.5 times more pressure. As a result of the test all the check ups are being done and all the points are controlled.

Changes which will be done over the machines hydraulic circuit (without taking permission of manufacturer) will cause to end the time of guarantee. Machines motor powers, piston sealing elements or to increase the capacity pumps should never be changed without taking permission of the manufacturer company.

With oil warmth and level indicator put over oil tank the situation of the oil is viewed. Please check it continuously. By checking it once a month the changing of the oil muct be done according to oil situation calculations. Dust holding of the oil filters are at the situation of 125microns. According to usage our company recommends to change the oil between 6 months and 1 year. Filters can be cleaned with compressed air and hot water. To reach the desired yield filter and oil changing must be done according to recommendations. Machinery problems which are from the cause of fitler dirtyness is out of guarantee.

HYDRAULIC SYSTEM EQUIVALENT OIL TABLE

SHELL	PETROL OFİSİ	MOBİL	BP	CASTROL
SHELL TELLUS 46	HYDRO OIL HD 46	MOBİL DTE 25	BP ENERGOL HLP-HM 46	CASTROL HYSPIN AWS 46

5.2- Wooden palet driving and picking unit

The sizes of wooden palet pulling picking units are made according to the dimensions of the wooden pallets. The pulling process of the wooden pallets under the mould is done by a hydraulic cylinder. Car movement range is set with a sensor until under the mould. Wppden pallet picking is made by two cylinder hydraulic which their srokes are equal. For these reason there shouldn't be made any difference fort he sizes and movements of them without asking our company. Unit is connected to the machines chase in a sensetive way. Do not put heavy material which might make hazardious deformation over it. This unit is all the time works in the way leaving the empty pallets and picking up pallets with products. Over the same hydraulic unit with free motor group the movement of units are made available.

5.3- Bunker and mortar car unit

Bunker volume is manufactured %15-20 bigger than the capacity of the mortar mixer. The cover which is used to empty the mortar is controlled with a hydraulic unit. As bunker adjusting screw galvanized square screw is used. When doing adjustment it should be equal against eachother. At the same time when the level of the mould is set it should be measured with spirit level from right and left sides. The bedding system of four wheels which is inside the rail system works in the idea of crank-rod-piston mechanizm idea. For Example: Let's say the mortar car is piston. Mortar car arm is rod arm. The other arm which rod arm connects is crank arm. Crank arm is welded to crank shaft and cranl shaft is bedded to there.

The rail system which is in the press unit and the rail system in the mortar system should be same. Otherwise the mortar car would make slipping and according to the number of movements it wont fill the volume of gear and folloving this the product which come from production will not be in perfect sizes.

There would be some agglegomeration over the table which is under the mortar car. The table which is under the mortar car has the tolerance to fill and adjust the empty area when filling the mould. To work the mortar car without any problem it is a good idea to clean it dailiy. At the time of moving of the steel brush there is being the process of brushing the above mould. The life of the brush is according to the number of the press.

If this unit is put over right and left side together it give manufacturer an advantage to produce colored interlocks.

When doing production with our machines at the time of mixing the mortar ironoxide color is added so product with color is manufactured from this.

5.4- Press Unit

This is the place where the pres is done. Bedding which is constructed over the main chasis of the machine which the mould construction is connected and the last products moulding process is provided in this area.

The dailiy capacity is important about the construction of the dimensions of the machine chasis. And at the same time it is connected with the dailiy capacity what quantity the vibrators will be. The pressure range which is used in the hydraulic system is between 100-120bars. This pressure process is done over pressure button after the below mould gets free and has enough height. If 15-20 pressure bars less adjustment is done with three way pressure adjustment valve which is put over pressure piston returnway and if the pressure range difference is storaged we would win the hydraulic power and the product comes easily from the female mould. Preddure piston curse height is adjusted is done with screw system which right and left gears are connected. At the times when the height adjustments are not done an apparatus is given which right and left screw welded pipe is given. Middle pipe aparatus is used when it is not possible to adjust the height of the pres.

There is a vibrator system which makes it possible for mortar to compress in the press unit. The return way of the shafts which are on the same table must be opposite route of eachother and to the center of the machine. As a result of this return processes 65 Hz frequency by taking propulsion from the electric motor, vibration. The bearings which are in the vibration system are designed with the strength enough to 6000 returns per minute. Bearing oiling must be done continueously. For the oiling you should use the vibrators greasors which you will need to go under the machine to the revision pit and screws should also be controlled. There should not be done any change for eccentrics which make power without talking to our company. To not transfer the vibration power to the machine chase and other equipments the table which the vibrators are connected to rubber wedge. Rubber wdges has the strenght of 75 shore. These wedges should be protected at the times of machine revisioning.

Cooling fans are used to protect vibrator motors get too much warm. They have to be worked together with the vibrator motors.

Scale equvalent arm makes the distribution of power equality between upper dead point and below dead point. Worn-out which will happen on main shaft beds will cause unbalanced work and it will have effect on direct product quality.

Joint patrs must be oiled together according to the pres frequency. Dry and working without oiling might cause mechanizms which are connected to eachother to bend, compress eachother and break.

5.5- Chain output unit

Product which it press is done in pressing unit with the movement of new wooden palet under the mould moves to the unit over a table with chain wich works with a motor. At the end of the unit over the stacking unit which is called front robot the product is stacked over eachother.

5.6- Stacking system robot unit

It is thought as a free from machine unit. It gave an easy way to carry the wooden pallets acouple of eachother together with forklift instead of carrying it one by one by hand. So this made a decrease and save from man power.

Unit works with a pump which is free from the main machine pump. With the usage of two hydraulic cylinder stacking of the pallets are being done. Everytime this cylinders wait for the fresh product which is coming above the conveyor. The driving time of the system is adjusted according to the pressing time speed.

For the chain output table, reductors oil must be controlled at some periods. When doing the chain maintenance it should be oiled with thin oil and as more oil will cause dust over the chain it should be cleaned with air compressor.

6- TO WORK THE MACHINE IN A SYSTEMATIC MANNER

Machine can be controlled automatic or manuelly. Please provide the below processes before starting your machinery.

- Check if empty wooden pallets are ready on the machinery.
- Be sure that you have joint the true mould.
- Do the adjustment of mould above level and mortar car table level to have smooth movement by controlling it. And do the adjustment fort he distance between mortar car and mould.
- Turn on the wlwctrical switch.
- By pressing pump start button to take under process the hydraulic system. Hidrolik pompanın dönme yönü kontrolünü yapınız. There should be seen an increase over manometer after the pump motor start. If there isn't any change over manometer the turning way of the motors can be changed from panel by changing the places of the phases.
- Make the pres height according to the mould type which you are going to use. As the manuel movements electrical controls are ove PLC by doing manuel settings over screen or panel pump is being started. Do the settings of the pistons according to the hegiht of product that you are going to use.
- Do the adjustment of wooden palet driver. Do the pushing of the wooden palet over vibration table from the center or same level by setting the adjustment of the nut over the head of the shaft.
- We set the chain output table little bit lower than vibration table. Because there should be difference to avoid hitting of wooden palet as the products are wet which come from production.
- After the mechanical settings are done all sensors places are being set and they are check if they are working or not.
- Before starting up the machine the part which should be oiled must be greased with oil. If there is leaking of oil they should be checked.
- Check the vibrator turning ways. If it is wrong phases places should be changed which are inside the panel.
- If mould settings are done do the plastic brush settings.
- Take all the movements of the machine to the starting point. Press the automatic setting button. Be sure that all the movements are checked. If it didn't come to starting point sensors should be checked and manufacturer company should be called.
-Be sure that there is mortar inside the machine hoppers.

After all these are done; according to the starting rules it should be started with control arms if it is manuel or if it is automatic with PLC it shoud be worked.

NOTE: When producing blocks do not process the front bunker and front mortar car.

7-SECURITY

The person who will operate the machine should have had the needed training for safe and proper production. This training is given by manufacturer(BETONSEN) company to the user(customer) after installation of machinery is done. After the training is taken the manufacturer company sends certificates to the operaters of the user company by post.

The machine is manufactured with safe protector material over the machinery as much as possible. But it shouldn't be forgotten that this machine produces construction elements with high hydraulic pressure. Machinary hydraulic and electrical parts doesn't work without any act of operator. For this reason operator should know all the important warning situations. Do not work the machinery with out closing the protector doors and equipments completely.

When checking up the machiney for troubleshooting all the electrical switches must be turned off. Do not make and cleaning or troubleshooting or adjustment when the machinary is working.

Do not put any material or part over the bedding surfaces or over moving parts.

All thue check uprs must be done before starting of the machine.

Over or near electric motors, control panels, electric panels never put water, fire, burning material or liquid which can burn.

After production moulds should be cleaned, there shouldn't be any mortar left. Work should be stopped after the mortar is finished inside the bunkers.

WARNING: At the situation of daily cleanings are not done, troubles which will cause from this reason are not under guarantee.

After all work is done pistons must be left under pressure.

At the start all the nuts should be checked, rubber belts should be checked.

At start of work central power should be 380V.

When machine is working do not go over the machinery, do not lay over the machinery, do not get close to any part except from the control panel.

To avoid from disturbance of voice from the machinery close you ears with ear protector.

Electricity must be off when changing the moulds.

7.1- Usage of device

The machinery which we manufacture are used for producing concrete pavers, blocks, curbstones etc.. If it is used out of it's aim if there will be an trouble these hazards are caused by the user. To get it under process and for installation process everything should be made accrding to the standarts of the buyer country. It is the buyers responsibility to get everything ready according to the rules and standards of the buyer company. User should avoid machine from all the sştuations which will cause problem fort he machinery.

It is customers responsibility to bring the electrical line according to the motors of the machinery which the manufacturer produce. At the time of test run of the machinery if there isn't proper electricity line for the machinery supervisor of manufacturer company wont start up the machine.

It is strictly forbidden to make any changes over machinery by the customer, user or operator. Problems which come from this situations are not under guarantee.

It is forbidden to make any changes over the electrical material, motors, hydraulic pumps, cylinder Hydraulic parts or vibrator system which are over the equipments and machinery. Without informing the manıfacturer company there shouldn't be made any additional parts over the machinery since this may cause for faulty production.

Device should be worked only by responsible personel.

User shouldn't take out the protector parts which ar efor safety. If they are taken out for troubleshooting after it is finished they should be put over their places.

In all cases of troubleshooting electricity should be turned off.

7.2-Warning symbols

-Repair ban tag when the device is under process.
-It is dangerous to open cover of machinery before switching off the electricity.
-Warning 400Volt
-Warning tags which show the hot parts.
-Do not interfere when the machine is working.

7.3-Personel training

-Installation, taking under process and troubleshooting must be done by personel which our company has given responsibity and education. This personel must be informed about the problemd that he might face at the time of production.

- Elektrical problems
- Travelling
- Acommodation
- Equipments that might be used
- Troubleshooting
- Personel

For continuous guarantee kontrols and all troubleshootings must be done on time.

7.4-Preventing the general hazards

Devices are manufactured according to, 89/392/EEC machine directives.

Against possible dangers protection doors are put. There are warning tags over dangerous parts. Over all moving parts protection boxes and doors are put over.

There has been markings made over grounding connections. All the grounding cables are done according to the standards with gren and yellow cables.

7.5-Recommended security processes

- Belt pulley protection: The belts pulley are under cover except from the parts which are over vibrator parts.
- At the time of troubleshooting and maintenance all the electrical switches must be off.
- Periodic maintenances must be done.
- There shouldn't any water over vibrator motor coolers.
- At the times when the machinery is not working it is a good idea to cover the machinery with something to avoid it get rain and snow over it.
- The personel who use the machinery should use head protectors.

7.6-Secret dangers which can not be seen directly

-Addition to moving parts of the machines in the conveyor system it should be watched out against drawning of material.
-Some lights stroscobic effects may show unturning material like they are turning. The turning parts must be watched out.
-Noise: At normal working situations the voice which will come in closed areas musn't be more then 75db(A).
-In very induced conditions and noise which come in closed areas might have hazardous effects on human health. Over 85db(A) and more noicy situations ear protector must be used.
- Grounding meausrements must be done and should be taken under controls. It is strictly forbidden to work which grounding settings and connections are not done.

7.7-Comissioning

On this part some rules are mentioned for production before comissioning to make a production under safety and for human health.
-Be sure that all the parts are cleaned properly.
-Be sure that all the security and protection parts are there.
-Make the oils filtered before filling.
-Is there any hole over the pipes, check it. Do check up for all the parts which are over hydraulic oil pressure.
-Check the main voltage.
-Put a switch near the machinery which you can cut the electricity.
-Dont forget to take the machinery under scale.
-Be sure that the sliding system is same.
-Check the belt pulley tightness. Check the motor turning ways.
-Check if the electricity line is made over proper phase and proper cpnnection is mad efor the motors.
-Be sure that the pulleys are connected to the shafts properly. Be sure that chain gears are over same axis.
-For machine control check the service part that you required.
-Be sur that the heights of the moulds are adjusted true.
-Make the moving equipments work for checking if there if any problem.
-İşletmeye almadan önce makine üzerinde bulunan tüm gresörlüklerden yağlama yapın.
Check the points below carefully.

- Excessive vibration
- Unusual noice
- Pulley-belt axis harmony
- Motor current and voltage

8-BELT TIGHTNESS AND AXIS CONTROL

As shown on the Picture there should be seen stretch about 25mm(1‘’). Excessive stretch shows that the belt is not tight enough. If it is not fixed there will be problems over the pulley and wearing of the belt. Little bit stretching shows that the belt is tight and this will cause bearing roblems and less live belts. Yield is something which the belt adjustment should be done properly. Excessive belt stretching will cause normally enough motor to work like it is loaded alot.

Before fixing the motor pulley axis should be paralel to the chanels over same axis. For this reason straight sided part should be put like as it is shown on Picture. If the pulleys are on same line it makes the life of belts longer and avoids noice.

At chain gear assembly there must be conformity of number of gears of chain. For this reason there will not be a lot of loading for chain.

WARNING: *For removing of the pulley do not use hammer or puller.Without taking written permission of manufacturer do not change the pulley with bigger or smaller ones. And the same for the gears do not change them with bigger or smaller ones without taking permission from the manufacturer. Otherwise manufacturer will not be responsible.*

9- CONTACT DETAILS FOR SERVICE STATIONS AND THE PROVIDING OF SPARE PARTS

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