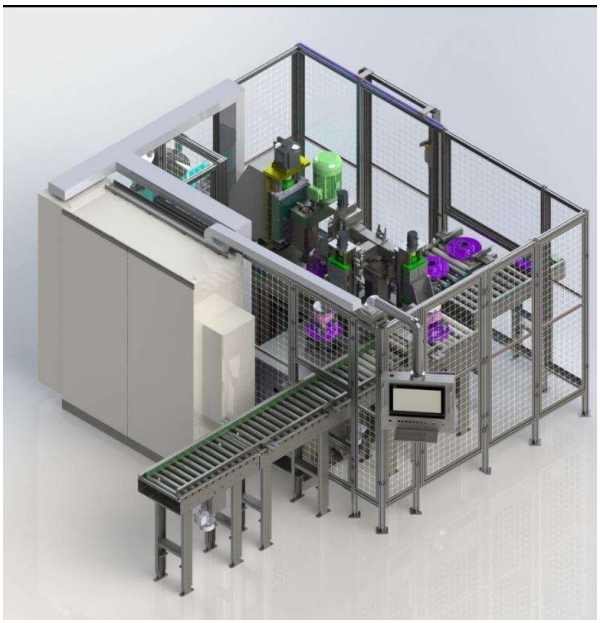
MESSMATIC®



ODF-21

AUTOMATIC

VERTICAL BALANCING MACHINE

TEKNİK BALANS
MAKİNA SANAYİ
VE TİCARET AŞ.

MESS MATİC®

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CHAPTER 1 INTRODUCTION

1.1 General Introduction and Fields Usage

It is a balancing machine designed to perform the balancing process of brake discs. It is not suitable for other uses and is not recommended. The axes of rotation of the parts perform balancing when they are vertical to the ground. Motor rotation movement (starting, turning and rotational speed) is provided with the help of motor speed controller. It is computer controlled and the software program runs under Windows. It is extremely fast and easy to use by the operator.

Machine; It measures the amount of unbalance by reading the vibration created by the rotating part through the sensors in the body. The angular position of this unbalance is determined by the encoder or eye connected to the mechanical system.

Before starting to use your machine, please read the user manual carefully in order to prevent misuse. Always keep your user manual with your machine for reference when needed.

1.2 Packaging and Handling

According to the customers' request, the machines are packaged in two ways to be sent to their destination from the factory.

1. In pallet
2. Unpackaged

In both cases, the machines are wrapped with stretch.

Handling must be carried out by crane or forklift. The machine must never be lifted over the balance adapter.

Please check if there is any damage to the outer structure of the machine after unpacking. If so, notify the seller or manufacturer from which you bought it.

1.3 Technical Specifications

Rotor Spindle	48 Nm.
Balancing RPM	200-1000
Measurement Type	Dynamic

Take care that your machine is used by an experienced and authorized personnel. Never make any changes in the control circuits of the machine.
In case of malfunction, contact the manufacturer or its authorized services.

CHAPTER 2 INSTALLATION AND COMMISSIONING

2.1 Loto Procedures

The following steps should be performed before maintenance and repair.

Enerji Kaynağı Adı	İzolasyon Cihaz Tipi		LOTO metodu	LOTO doğrulaması
E-1 Ana elektrik şalteri 400VAV	Elektrik izolasyon cihazı		E-1 elektrik şalterini kapalı konuma getirin.	Ölçü aleti ile klemens uçlarını ölçün, voltaj olmadığından emin olun.
			Kilidi ve etiketinizi takın.	
P-1 Ana hava girişi	Pnomatik izolasyon cihazı		P-1 ana hava giriş vanasını kapalı konuma getirin.	Havanın tahliye olduğundan emin olun.
			Sistemdeki havayı tahliye edin.	Hava basıncının 0 bara düştüğünü gözlemleyin
			Kilidi ve etiketinizi takın.	

Açıklamalı [CK1]: İngilizce görseli gerekmektedir.

After maintenance and repair, restore the system before recommissioning the machine.

2.2 User Requirements for Assembly

For installation; Prefer an area where you can work comfortably, with a safe, flat surface and away from devices that create vibrations on the floor by working with impact. **Make sure to fix your machine to the ground using the dowels given to you.** If you do not fix it on the ground, you cannot get the desired result from the machine. The efficient working conditions of your machine are as follows;

- Humidity : %30 - %95
- Heat : -20 ºC – 55 ºC

2.3 Power and Compressed Air Connection

If there is a voltage drop-increase in your network, before connecting the machine to power. Be sure to use a regulator first. Your system has a ground line.

ATTENTION!

When any safety function is violated (especially when the cage door is opened, etc.), a "RESET" is required in order to start the system / arm the machine. Before getting the machine ready for operation, the operator must make sure that no one is in the risky parts of the machine [inside the machine]. After making sure that there is no one in the risky parts of the machine, the machine should be ready for operation by pressing the safety reset button.

If there is a robot in the system, the sheet metal installed to close the robot door should never be removed, except for maintenance purposes, until the robot operation is activated. It must remain closed during operation.

If the machine is equipped with a light curtain, the front door will stop if there is a light curtain violation while the front door is moving while the front door is closing.

If there is a light curtain violation while the front door is in motion, the front door will stop.

After the light curtain violation condition is eliminated, the system

"RESET" must be done in order to operate / install the machine.
Before getting the machine ready for operation, the operator must make sure that no one is in the risky parts of the machine [inside the machine]. After making sure that there is no one in the risky parts of the machine, the machine should be ready for operation by pressing the safety reset button.

CHAPTER 3 INSTRUCTIONS FOR USE

3.1 Starting the Machine

After installing the machine completely and making the necessary electrical connections, first turn on the switch on the panel. Then, if your computer does not turn on automatically, press the computer button.

3.2 Login Information

After your machine is turned on, the Yetki Seviyesi ve Password Kontrol (Figure-1) is displayed on the screen. Enter your "Kullanıcı İsmi" (MESSMATIC) and password (1) and press the OK button.

Açıklamalı [CK2]: İngilizce ekran görüntüsü gerekmektedir.

Figure-1

After waiting for a short time, the Main Menu (Figure-2) appears on the screen.

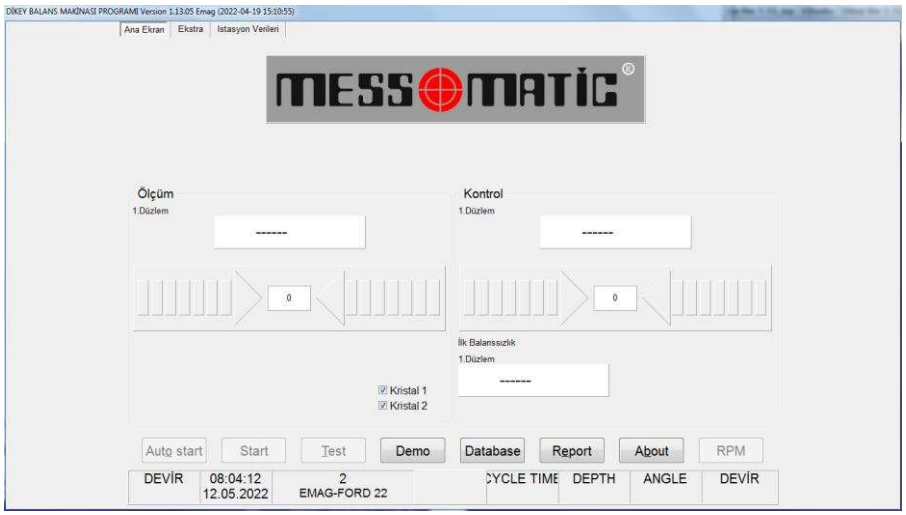


Figure-2

The keys and their functions on the Main Menu are briefly as follows:

- **Display Box** : Displays the unbalance in grams.
- **Right-Left Arrows** : Indicates which direction you need to turn the part to find the unbalance position. You have to turn the part in the direction of the arrow until the OK sign is seen.
- **No, Part Name** : The information of the selected part is displayed in the DATA section.
- **Start** : It makes your machine spin.
- **Demo** : It is selected to display the company's advertising message.
- **Databse** : It is selected for entering the information of the parts and for special operations.
- **Report** : The first and last unbalance values of the part to be balanced are selected in order to print a report from the printer. (Note: The printer is not included in the standard accessories of the machine, but is offered as an option.)
- **About** : It is selected so that the manufacturer company information can be displayed.
- **Devir** : The speed at which the machine is running is displayed.
- **Kademe** : The step that the machine measures is displayed.
- **Depth** : It is the maximum depth distance to be entered by drilling holes with a drill/mill during the balancing process.
- **Angle (Milling)** : The angle to be milled for both sides of the unbalance position during the balancing operation.

Açıklamalı [CK3]: ngilizce ekran görüntüsüne göre buton isimleri de görseldeki ile aynı olacaktır. CK sorumluluğunda.

3.3 Setting the Part Data to be Balanced

Before proceeding with the balancing process, it is necessary to enter the information about the part to be balanced by entering the DATA menu. In order to enter the DATA menu, it will be sufficient to click on the DATA box with the mouse or press the V key on the keyboard. The following (Figure-3) menu will appear.

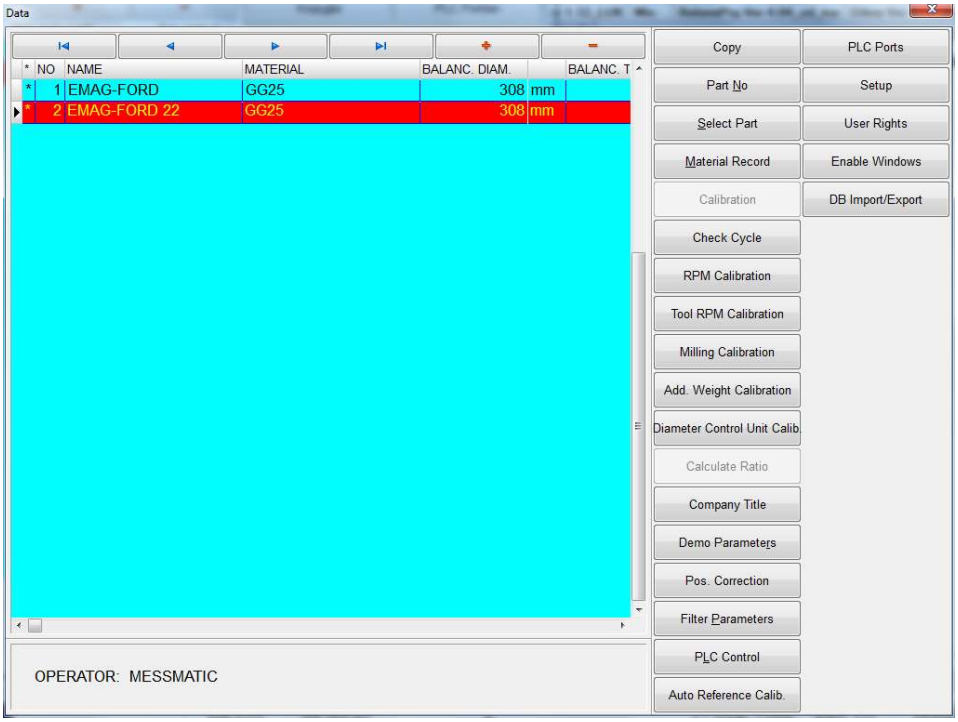


Figure-3

[You can move the cursor on the NO, NAME, MATERIAL NAME, BALANCE DIAMETER, BALANCE TOLERANCE fields by pressing the TAB] or [SHIFT+TAB] keys or clicking with the mouse, and you can start the information entry by selecting the area where the cursor is located. Here;

Açıklamalı [CK4]: İngilizce ekran görüntülerine göre tanımlar güncellenmeli. CK sorumluluğunda.

- **No** : It is the entry number given to the part to be balanced.
- **Name** : The name of the part to be balanced.
- **Material Name** : It is the name of the manufacturing raw material of the part to be balanced. When it is selected, its specific mass will also be selected.
- **Balans Diameter** : At which point the part will be balanced, that diameter must be entered.

- **Balance Tolerance** : It is the minimum amount of residual balance that can be allowed. You can change the BALANCE TOLERANCE value from the "BALANCE TOLERANCE" field of the record you are currently on. You can also change this value in the field named "BALANCE TOLERANCE" in the GLOBAL DATA-GENERAL menu. This value means that if the unbalance value falls below the entered tolerance value, it will not be displayed.

Açıklamalı [CK5]: Tanımları kontrol et.

Using the [CTRL+Home], Up arrow [↑], Down arrow [↓], [CTRL+End], [INSERT], [CTRL+Delete] keys,  or you can add, correct or delete records by clicking the buttons in the button group with the mouse.

By pressing the [INSERT] key or  clicking the button creates a new record.

By pressing the [CTRL+Delete] key or  an existing record can be deleted by clicking the button.

By pressing the [CTRL+Home] key or  clicking the button goes to the first record.

By pressing the [CTRL+End] key or  clicking the button goes to the last record.

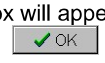
By pressing the up arrow [↑] key or  clicking the button goes to the previous record.

By pressing the down arrow [↑] key or  clicking the button goes to the previous record.

Pressing the [TAB] key moves to the next field.

Pressing the [SHIFT+TAB] key moves to the previous field.

Pressing the [End] key moves to the last field. Pressing the [Home] key will go to the first field.

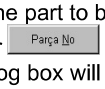
If you press the [CTRL+Delete] key, a dialog box will appear asking whether to delete the record, if you want to delete the record click the  button, otherwise  you can cancel the deletion by clicking the button.

The keys and their functions on the right side of the Data Menu are as follows.

- **Copy**

Copy between parts by pressing [Alt + A] or clicking the copy button.

- **Part No**

After entering the parts to be balanced, it is used to call the part to be balanced for the moment according to its number. by pressing the [Alt + N] keys or  you can select this option by clicking the button. When you select this option, a dialog box will appear asking you for the number of the track you want to go to. Here, type the No. of the track you want to go to, and then type in the dialog box that appears below.  click button.

- **Select Part**

It is used to select the part to be balanced. You can select this option by pressing the [Alt + S] keys or clicking the button. The selected item appears in red. The part to be processed should be selected with this option. After the selection of the part is completed, calibration, monitoring unbalance values, etc. The values of the selected part will be used in all operations required for balancing the part, such as.

- **Material Registry**

While entering the part information to be balanced in the DATA menu, if the manufacturing material of the part is not in the records, this section is selected to add a new record. You can select this option by pressing the [Alt + M] keys or clicking the button. A list of materials will appear. You can move the cursor and enter information by pressing the [TAB] or [SHIFT+TAB] keys or clicking the relevant field with the mouse. In this section, you can find the "MATERIAL NAME" and "DENSITY" information. Although the densities of some general materials are entered, if the material you use is not here, you must enter the values for this material.

A new record is created with the [INSERT] key.

An existing record can be deleted with the [CTRL+Delete] key.

The [CTRL+Home] key moves to the first record.

[CTRL+End] key goes to the last record.

The [TAB] key moves to the next field.

[SHIFT+TAB] key moves to the previous field.

The [End] key goes to the last field.

The [Home] key moves to the first field.

If you press the [CTRL+Delete] key, a dialog box will appear asking whether to delete the record, if you want the record to be deleted, click the OK button, otherwise you can cancel it by clicking the CANCEL button.

- **Calibration**

You must perform this operation before you start balancing the part selected from the DATA menu. You can start the process by pressing the [Alt + K] keys or clicking the CALIBRATION button. A dialog box will appear asking for Calibration Weight and Calibration Diameter values (Figure-4).

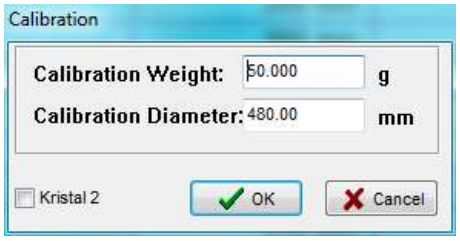


Figure -4

An important issue here is the calibration weight you will choose. Heavy calibration weights (20-30 gr.) should be used considering that heavy parts may be unbalanced in heavy parts from the parts to be balanced, and light calibration weights (5-10 g.) should be used, since a small amount of unbalance will be found in light parts, on the contrary. After entering the appropriate calibration weight (in grams) and the diameter (in mm) you have chosen, press the OK button.

You will see the message “Parçayı Takın ve Enter Tuşuna Basın” (Figure-5).

Figure -5

(Important: Never add the calibration weight!) Press the OK button. After a while the part starts to rotate, it stops and this time the message “Ağırlığı Takın ve Enter Tuşuna Basın” appears on the screen (Figure-6).

Figure -6

Now, add the appropriate calibration weight that you have chosen as described above and supplied with the machine and press the OK button. The piece starts spinning again. After the necessary tests are done by the machine, the rotation process ends and the message "Kalibrasyon İşlemi Bitti" appears on the screen (Figure-7).

Figure –7

Press the OK button to save this process in the computer memory. Click the CANCEL button to cancel the calibration process. If the data you entered is invalid, the computer will warn you.

Calibration should be done again in the following cases.

- After the device is installed
- When the device does not measure properly
- When the adapter is changed
- When the computer is replaced
- When the TMS card is replaced
- When the working speed of the machine is changed
- When the crystal is changed
- When the machine is relocated

- **Ratio Calculation**

It is a special process belonging to the manufacturer company. Please do not touch it so that the settings of your machine are not disturbed.

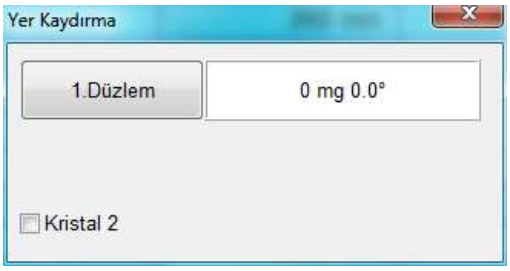
- **Company Letterhead**

It is used to display your company's letterhead on the report to be taken from the printer. You can select this option by pressing the [Alt + F] keys or by clicking the COMPANY LETTERHEAD button. A text editor will appear on the screen, the previously written text is displayed in this editor. After making the changes you want on this text, you must click on the OK button to save the operations and the CANCEL button to cancel. The text here will be printed as you type at the bottom when printing from the printer.

- **Advertising Parameters**

To run the ad, press the [Alt + R] key or click the ADVERTISING PARAMETERS button with the mouse.

- **Displacement**



The ground shift is used to change the unbalance position indicated by the machine. COMPENSATION is performed when no weight is attached to the part. Then the machine is started by attaching the calibration weight. After the machine stops, the mounted weight is brought to the position you want to see the unbalance. In order to activate the DISPLACEMENT, press the [Alt + D] key while in the DATA menu or click the DISPLACEMENT button with the mouse. The message “You have entered the Attention Shift Value” is displayed. Below it are OK and CANCEL buttons.

Press the OK button to save the DISPLACEMENT process in the computer memory. The process is completed with the message “Place Shift Completed...”. If you want to cancel the PLACING PROCESS, click the CANCEL button. The operation is canceled with the message “Floor Shift Canceled...”

"Crystal 2" should not be selected when shifting for the first station, "Crystal 2" should be marked when the same operation is performed for the second station.

- **User Definitions**

In user definitions, a user name and a password are assigned to each operator. Usernames and passwords have levels. Admin, Chief, Operator. The highest level is Admin. A lower level is the chief and the lowest level is the operator. (Figure-8)

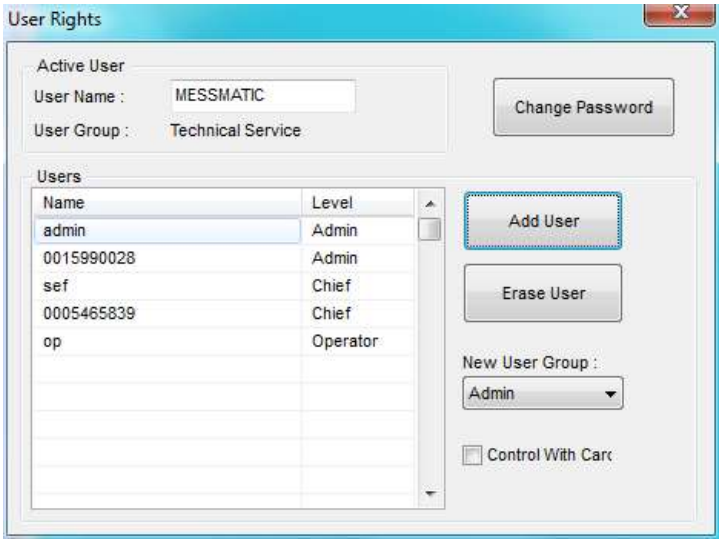


Figure -8

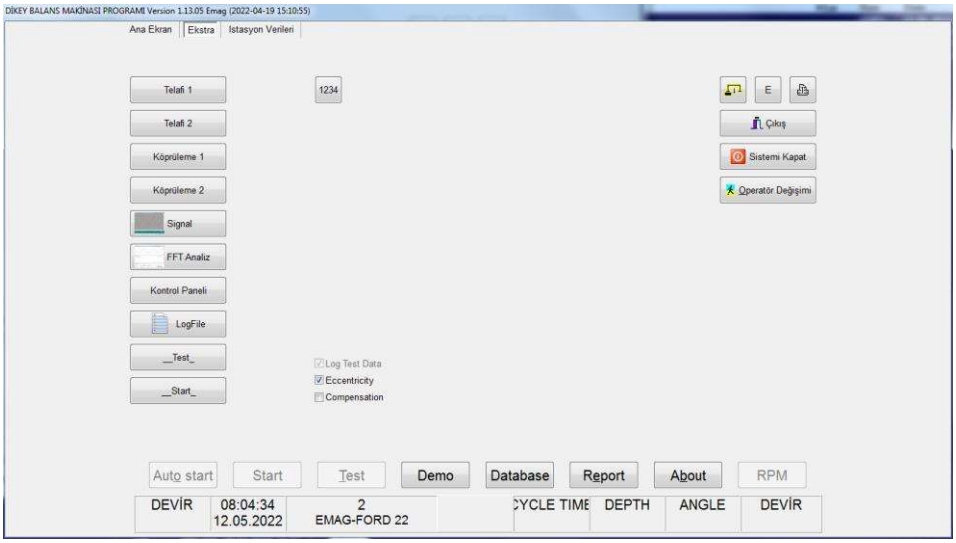
- **Win E Access**

Allows you to switch to the Windows desktop.

Exit

You can select this option by pressing the [Alt + Ç] keys or by clicking the EXIT button. This option provides the exit from the DATA partition. To access the detailed data of a part, it is necessary to double-click on the part. The data of the part should be entered into the database with the sub-menus in the GLOBAL DATA menu.

- **Home Screen – Extras Tab**



Telafi 1: For the first station, it saves the system unbalance as compensation. This value is used after calibration to confirm the measurement. After the compensation process, it is checked by attaching the calibration weight.

Telafi 2: For the second station, it saves the system unbalance as compensation. This value is used after calibration to confirm the measurement. After the compensation process, it is checked by attaching the calibration weight.

Köprüleme 1 and Köprüleme 2: It performs the bridging operation for the relevant station.

Eccentricity is the process to eliminate the eccentric misalignment caused by the coupling adapter. You can read an unbalance value when you loosen a balanced part from the connection adapter (by opening the clamp on workbenches with clamps) and turn it 180 degrees, provided that the adapter remains fixed. This value is due to the centering error of the adapter. Eccentricity should be done to resolve this error. Before starting the eccentricity process, the bridging angle must be determined and saved in the GLOBAL DATA-GENERAL menu. Then balance a part. Click the K button or press the K key on the keyboard to start the eccentricity process.
The message "Insert the part, the machine will be rotated" will appear. To the left of this message are the left arrow (KÖPRÜLEME GERİ), right arrow (KÖPRÜLEME İLERİ) and KÖPRÜLEME STOP buttons. Click the “KÖPRÜLEME İLERİ” button, the machine will start and stop after a while.

"Parçayı köprüleme açısı kadar çevirin, makina döndürülecektir" message will appear. Loosen the part from the connection adapter, turn it by the eccentricity angle provided that the adapter remains fixed and connect it again. Start the machine by pressing the "Köprüleme İleri" button, the machine will start and stop after a while.

Depending on the selected eccentricity angle, the post-processing will continue until the angle totals 360º. (twice for 180º, five times for 72º).
Finally, the message "Köprüleme İşlemi Bitti" appears. By pressing the "Köprüleme İleri" button, the eccentricity process is completed.
After the eccentricity process is successfully completed, the value fluctuation should not exceed the balance tolerance when the part is rotated 180º.

Save Test Data : Allows unbalance values to be saved in the database. The recorded data can be viewed with the REPORT option.

Eccentricity Enabled : Electronically compensates for eccentricity errors. This option must be selected during balancing.

Compensation Enabled : Electronically resets the balance of the adapter.

Exit : Windows ortamına çıkmak için kullanılır.

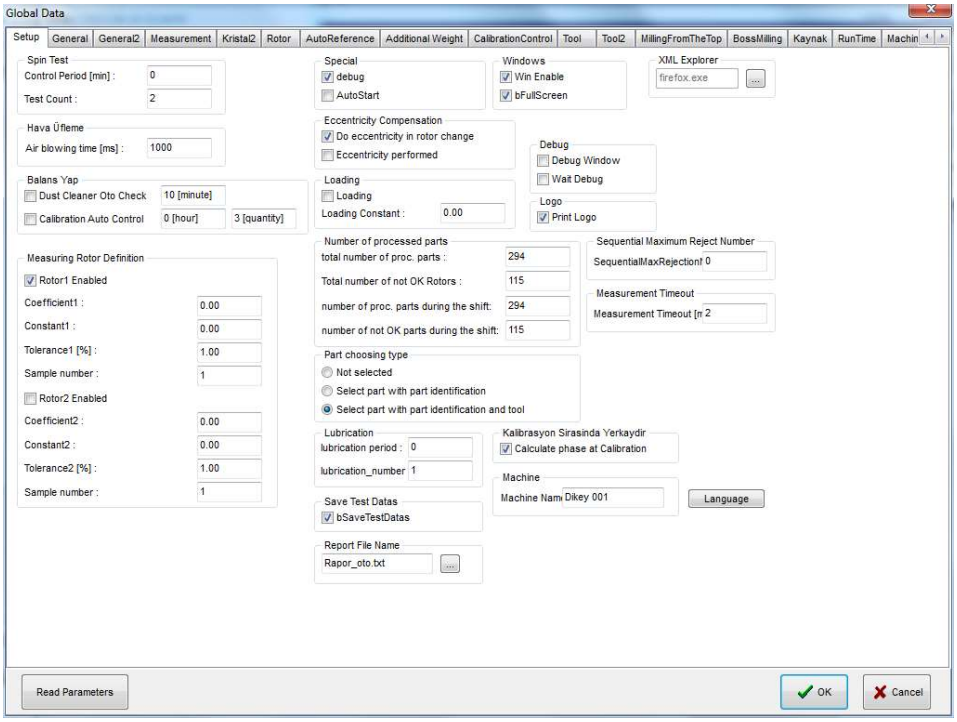
Compensation : It is selected to perform the necessary actions for electronically resetting the balance of the adapter. This option is used to verify the calibration.

Shut Down : Press this button to turn off the computer.

Change of Operator : When this button is pressed, the menu in Figure-1 is displayed. Each operator starts the operation by entering his own user name and password. Unauthorized persons can be prevented from intervening in the system by pressing this button during shift changes and when it is necessary to leave the machine.

Sub Menus:

Setup Tab



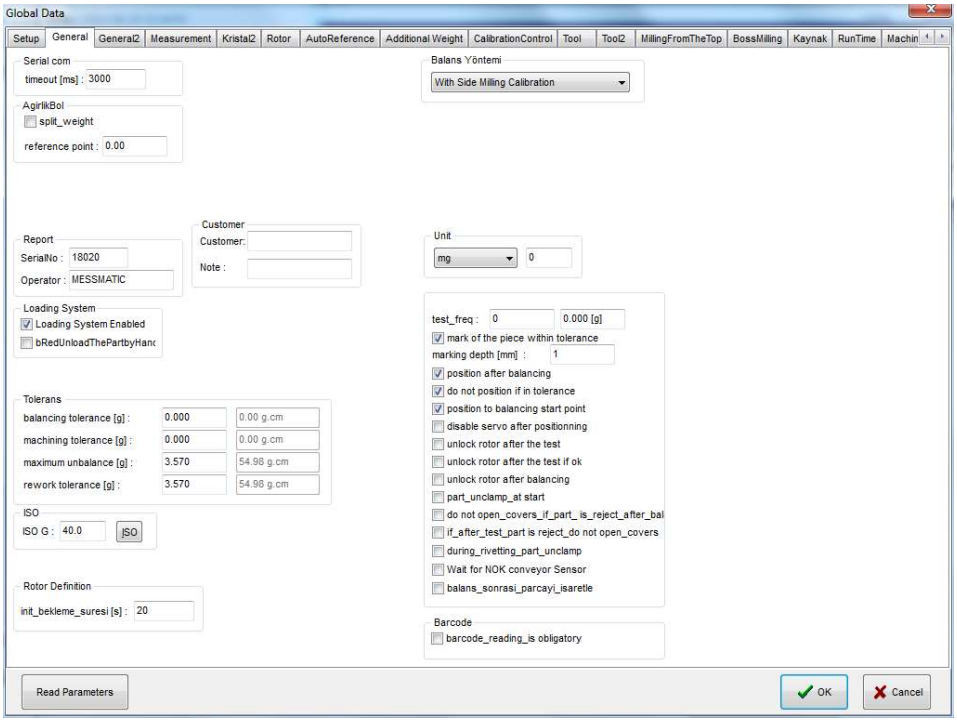
Hava Üfleme: N/A

Balans Yap

Dust extraction self-control: When this box is not checked, the dust extraction system operates during balancing. When selected, it runs continuously, the machine turns off when it is not used for the entered minute period.

Calibration Self-Check: When the auto-calibration option is enabled, the machine stops for the calibration check at the end of the selected time and does not run again until the check is done. Control frequency can be defined on the basis of number or duration.

General Tab



SERICOM[Timeout]: Time to try to re-establish communication when an error is faced during data transfer (milliseconds)

Report:

Serial No : The initial serial number to be used while saving the unbalance values to the database should be written in this section.

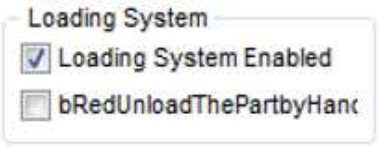
Operator : Operator name to use when saving unbalance values.

Customer : The customer name to be recorded in the report should be written in this box.

Note : If there is a note to be written on the report, it can be written in this box.

Loading System:

It should be same as below.



Tolerance:

Balance_tolerance: It is the target unbalance value. The default value is “0” and a different value can be entered to shorten the balancing process. In this way, the milling angle can be reduced. This value must be smaller than the persistent_unbalance value.

Machining Tolerance: When the measurement is made below this value, the part is considered within the tolerance and there is no need for balancing. All measurements above this value are milled. It is recommended that this value be lower than the permanent unbalance value, as much as the measurement uncertainty.

Example: Permanent unbalance 3.57 gr. For a part with a permanent unbalance 3 gr. If this value is given, the balancing operation is not performed below this value, and the balancing operation is performed above this value.

Persistent_unbalance: The maximum unbalance allowed according to ISO standards or artwork.

Rework Tolerance: N/A

Balanslama Yöntemi: The “With Side Milling Calibration” mode must be selected.

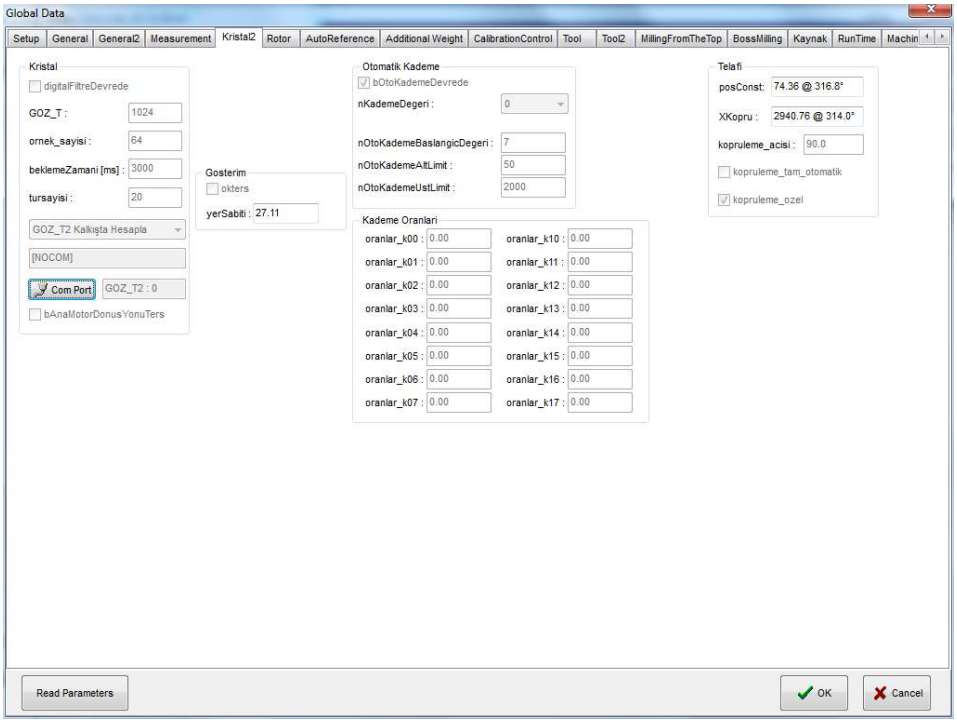
Unit: It is used to select the balance measurement unit to be used, the value here and the number of digits after the decimal point.

Compensation:

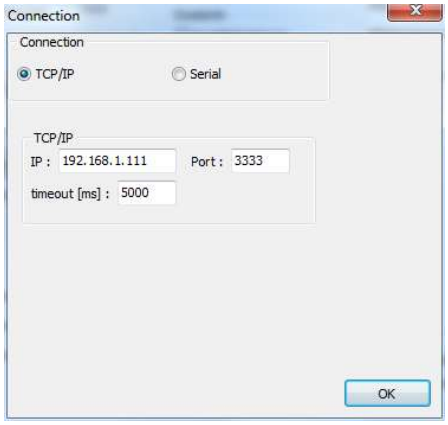
X0: Electronic compensation value. Compensation can be disabled by setting this value to 0.

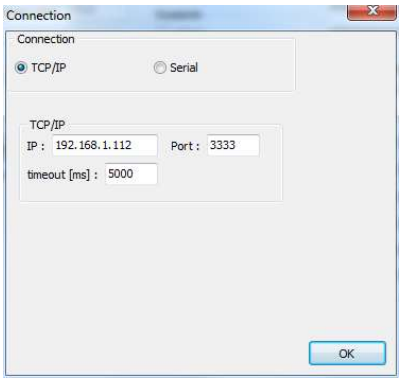
Xkopru: Electronic eccentricity compensation value. Bridging can be disabled by setting this value to 0.
Bridging angle: This value is the angle to be used in the bridging process to eliminate eccentric misalignment. The smaller this value, the better the operation will be.

BALANCING_SONRASI_POSISYONLAMA_YAP: When this option is selected, positioning is done automatically after the unbalance value is measured. This option is not available on all types of balancing machines.



Cyrstal: This section is for MESSMATIC users, should not be used. Here there is only the WAITING TIME that the customer must use. WAITING TIME, which varies according to the size of the piece to be balanced, should be reduced for small pieces and increased for large pieces.





CHAPTER 4 BALANCING

4.1 Machine Opening and Preparation for Balancing

4.1.1 Turn on the main switch on the right of the machine.

4.1.2 If the computer does not turn on automatically, turn on the computer. Wait a while.

4.1.3 Enter your username and password.

4.1.4 Check if the correct part is selected when the system boots up. Part data can be viewed at the bottom of the screen. If the correct part is not selected, enter the DATA menu, select the desired part and press the SELECT PART button. When entering the DATA menu, you must enter your username and password.

4.1.5 If you want to balance the new part, perform the process of DEFINING NEW PART. You can find the details of this process below.

4.1.6 Tests to be Performed at Power-On

i. Measurement Test

Assembly the part to be balanced and press the compensation button. Then attach the test weight and click the START button to spin the machine. Check if the value you read as a result of the operation is correct. Repeat the test with a different weight than the calibration weight and check the accuracy of the reading. Due to the diameter difference, the reading may not be the same as the value you inserted.

Reading = Test weight x Diameter where weight is attached / Calibration diameter

If the value read is not equal to the calculated value, perform CALIBRATION. Then click the POSITION button to check if the unbalance position is correct. For machines that do not have automatic positioning, do this manually with OK on the screen. If the unbalance position is not correct, perform DISPLACEMENT with the calibration weight against the mill or drill.

Before starting the balancing process, the part to be balanced must be dismantled and the adapter must be compensated.

ii. Eccentricity Test (180° test)

You can read an unbalance value when you loosen a balanced part from the connection adapter (by opening the clamp on workbenches with clamps) and turn it 180 degrees, provided that the adapter remains fixed. If this reading is more than the balance tolerance, bridging should be done.

4.2 Manual Balancing

To balance, press the START button after connecting the part to be balanced. The machine will show the unbalance value on the screen after rotation. For machines that do not have automatic positioning feature, turn the part until the OK mark is seen to detect the unbalance position. Balancing data is displayed on the screen according to the selected balancing method. These data are number of holes and hole depth for drilled machines, milling depth and balance angle for milling machines. The angle in question is valid for both sides of the unbalance point. For example, if the balance angle is 15º, the milling operation should be done 30º from both sides of the unbalance point.
Balans alındıktan sonra tekrar START butonuna basarak işlem doğrulanabilir.

4.3 Automatic Balancing

The machine is loaded and put into automatic mode. When the two-hand button is pressed, the machine balances. Starts to pick up and as the part continues to come from the line, the balancing process continues.

4.3 Type Change

4.3.1 Attach the connection adapter of the part to be balanced. Adjust the coupling adapter so that the runout and yaw are ± 2%.
4.3.2 If Drill/Mill, install the appropriate tool.

4.3.3 Matkap/Freze' yi parça için uygun pozisyona getirin.

4.3.4 Connect the part to the bench and adjust the part read sensor, if present, to approximately 3-4 mm with the light on.

4.3.5 Select the part from the DATA menu.

4.3.6 Perform a measurement test. CALIBRATE if necessary.

4.3.7 Eccentricity

4.3.8 Perform the eccentricity test. Eccentricy again if necessary.

4.3.9 Check a part by balancing it.

4.4 New Part Identification

4.4.1 Type Change Make the mechanical adjustments described in the first four items.

4.4.2 Enter the data menu and click the + button on the screen.

4.4.3 Click once on the new line that opens at the bottom. The line will be blue. After clicking the Copy button, press the OK button. All information of the selected track will be copied to the new line.

4.4.4 Double-click on the new record to select it.

4.4.5 General Menu

i. Permanent unbalance (Value indicated on the drawing or calculated according to ISO 1940).
ii. Balance tolerance (Desired unbalance value)

enter values.

4.4.6 Part Menu

i. Balance Diameter
ii. Channel width (width on picture)
iii. Maximum channel depth (on picture)
İv. Part Name
v. Number of arms (number of zones that can be balanced)

enter values.

4.4.7 Milling Menu

i. Milling Diameter
ii. Maximum balancing angle
iii. Milling depth

enter values.

4.4.8 Test. If necessary make calibration.

4.4.9 Eccentricity.

4.4.10 Perform the MILLING OFFSET operation. (Only for automatic machines)

4.4.13 Perform the Milling Calibration. (Only for automatic machines)

4.4.14 Test

4.6 Shutting Down Machine

4.6.1 Never turn off the machine directly from the switch, first turn off the computer.
4.6.2 Press the SYSTEM OFF button to turn off the computer.
4.6.3 Switch off

CHAPTER 5 MAINTENANCE, REPAIR INSTRUCTIONS AND WARRANTY CONDITIONS

5.1 Maintance Instructions

Before starting the cleaning, maintenance and repair process, the machine electrical switch must be turned off. After it is turned off, the safety lock should be attached to the closed position of the switch and its tag should be hung.

Machine maintenance should be carried out according to the instructions below.

EMAG AA21-0127 ODF-21 AUTOMATICAL VERTICAL BALANCING MACHINE MAINTENANCE MANUAL R0 / 10.11.2021

5.2 Repair Instrucitions

Crystal Replacement

Remove the body side covers. Loosen the M10 screw and M10 nut and remove the broken crystal. Remove the crystal cable from the terminal.
Putting the new crystal in its place, tighten the M10 bolt with a torque wrench to 1kg.m.
Connect the cable of the new crystal to the terminal and close the side covers of the body.

Encoder And Coupling Replacement

Remove the body side covers.
Remove the 3 bolts that the encoder is attached to the flange.
If the coupling will not change, remove the encoder coupling connections.
If the coupling is to be changed, disconnect the encoder's coupling connections and the coupling's mechanical coupling.
Remove the defective encoder and/or coupling.
Disconnect the broken encoder cable from the connector.
Connect the new coupling to the mechanical shaft first.
Connect the new encoder to the flange with 3 bolts. Connect the coupling to the encoder shaft.
Assemble the cable of the new encoder to the connection connector.
Close the body side covers.

5.3 Faults in Vertical Balancing Machines and Possible Reasons

Faults	Possible Reasons
1- There is no electricity to the machine.	1- The main fuse may have blown. 2- There may be a disconnection or lack of contact in the installation.
2- As soon as the machine is turned on, the main fuses blow.	1- There may be a short circuit in the installation. 2- There may be a short circuit in the speed control inputs.
3- The computer does not turn on.	1- There may be a lack of contact in the cables. 2- 3F1 fuse may be closed or blown. 3- Computer power may be corrupted. 4- Mainboard may be faulty. 5- The ram may be faulty. 6- HDD may be faulty.
4- 4- The program does not open.	1- Serial ports may be faulty. 2- The program may be corrupted. 3- Windows may be corrupted.
5- The machine does not rotate at all, the computer gives a serial communication error.	1- The emergency stop button may be pressed. 2- The cage may not be closed. 3- Locking may be activated. 4- The speed control may have given an error message. 5- Speed control may be broken. 6- Tms card may be corrupt. 7- The computer may be broken. 8- There may be a problem in feeding and wiring. 9- The engine may have burned out.
6- The machine turns for a short time, the computer gives a serial communication error.	1- Encoder or contrast sensor may be broken. 2- Speed control may have given an error message due to overload.
7- The machine does not stop.	1- Stop time may be low. 2- Encoder or contrast sensor may be broken. 3- The piece may be too heavy. 4- Brake resistor may be insufficient.
8- The machine cannot read the place properly.	1- Encoder or contrast sensor may be broken. 2- The belt may be slipping. 3- Signals may be distorted due to mechanical or electronic reasons.
9- Difficulty in balancing.	1- Place setting may be wrong. 2- Encoder or contrast sensor may be broken. 3- The belt may be slipping. 4- Signals may be corrupted due to mechanical or electronic reasons. 5- The calibration may have been done incorrectly.
10- Different values are read in each cycle.	1- Different values are read in each cycle.Kalkma zamanı az olabilir.

	1- The calibration may have been done incorrectly. If the signals are not smooth or absent; 1- There may be a mechanical problem. 1- Bearings may be crushed. 2- The crystal may be loose. 3- The coil spring may be broken. 4- There may be a problem in mounting the machine on the ground. 5- Tms card may be corrupt. 6- The crystal may be broken. 7- There may be a disconnection or lack of contact in the cables. 8- The machine may be receiving vibration from the surroundings.
11- When the part is removed and reinstalled, different values are read.	1- There may be runout and wobble in the connection apparatus. (Max should be □□ 2) 2- There may be a balance in the connection apparatus.

5.4 Warranty Conditions

1. The warranty period starts from the delivery date of the goods and is 1 year.
2. The entire product, including all parts, is under our company's warranty.
3. In case of malfunction of the product within the warranty period, the period of repair is added to the warranty period. The repair period of the goods is maximum 30 working days. This period starts from the date of notification of the malfunction of the goods to the service station, and in the absence of a service station, to the seller, dealer, agency, representative, importer or manufacturer-manufacturer of the goods. If the defect of the goods cannot be repaired within 15 days, the manufacturer-manufacturer or importer must allocate another product with similar characteristics to the use of the consumer until the repair of the product is completed.

4. In case of malfunction of the product due to material and workmanship or assembly faults within the warranty period, it will be repaired without any charge under any other name, such as labor cost, replacement part cost or any other name.

5. Despite the consumer's right to repair, the goods;
- Within one year from the date of delivery to the consumer, provided that it remains within the specified warranty period; The fact that the same fault is repeated more than twice or different faults occur more than four or the sum of different faults is more than six within the specified warranty period, as well as the fact that these faults perpetuate the inability to benefit from the goods,
- Exceeding the maximum time required for repair,
- In case the company's service station is not available, the consumer may request a free replacement of the product, a refund or a discount at a defective rate, in cases where it is determined that it is not possible to repair the fault with a report to be issued by one of the seller, dealer, agency representative, importer or manufacturer-manufacturer, respectively.

6. Defects resulting from the use of the product contrary to the terms in the user manual are not covered by the warranty.

7. For problems that may arise regarding the Warranty Certificate, the Ministry of Industry and Trade may apply to the General Directorate of Protection of Consumer and Competition.

CHAPTER 6 LOTO LOCKING/TAGINING PROCEDURE

In order to carry out maintenance and repair works in accordance with occupational safety rules, it is necessary to limit and control all kinds of energy.

LOTO – EKED Tag-Lock-Secure and Try; It is a system that defines the processes, methods and equipment used for the safe completion of the work, especially in maintenance and repair works. It is a security system used to prevent accidental or unauthorized access to energy sources. With this secure process, all individuals working on the same circuit or equipment install their own personal lock, which they will trust to a disconnect device before working on the system. In addition, each employee must identify their name and description of the work they do with a tag hung on their locks. No one except the authorized person can open this lock.

The process to be followed before starting the work in LOTO – Maintenance – Repair Interlocks against Mechanical and Electrical risks;

1. Preparation; Read the procedures, know the equipment very well, identify the energy sources.

2. Shutdown; Perform all shutdown steps.

3. Cutting off energy sources; Make sure they are all turned off.

4. Securing; Install locking equipment, attach padlocks, tag

5. Trial/Test; Check the remaining energy in the system.

6. Notify everyone in the area.

3 steps to be applied after the work is finished;

1. Restore everything as per procedure. (Assembling the removed covers, making the connections, etc.)

2. Evacuate the site and check the safety.

3. Notify all relevant persons. Unlock, energize, locks must be opened by the wearer, energizing procedures must be followed.

CHAPTER 7 MANUFACTURER AND AUTHORIZED SERVICE ADDRESSES

MANUFACTURER

Ünvanı : Teknik Balans A.Ş.
Adres : Atatürk Organize Sanayi Bölgesi 10001 Sk. No:15 Çiğli / İZMİR - TÜRKİYE
Tel : 0-232-376 84 40 (Pbx)
Faks : 0-232- 376 84 39
www.messmatic.com.tr

AUTHORIZED SERVICE

Ünvanı : Teknik Balans A.Ş.
Adres : Atatürk Organize Sanayi Bölgesi 10001 Sk. No:15 Çiğli / İZMİR - TÜRKİYE
Tel : 0-232-376 84 40 (Pbx)
Faks : 0-232- 376 84 39
www.messmatic.com.tr

Warranty Period: 1 Year
Lifespan: 10 Years