

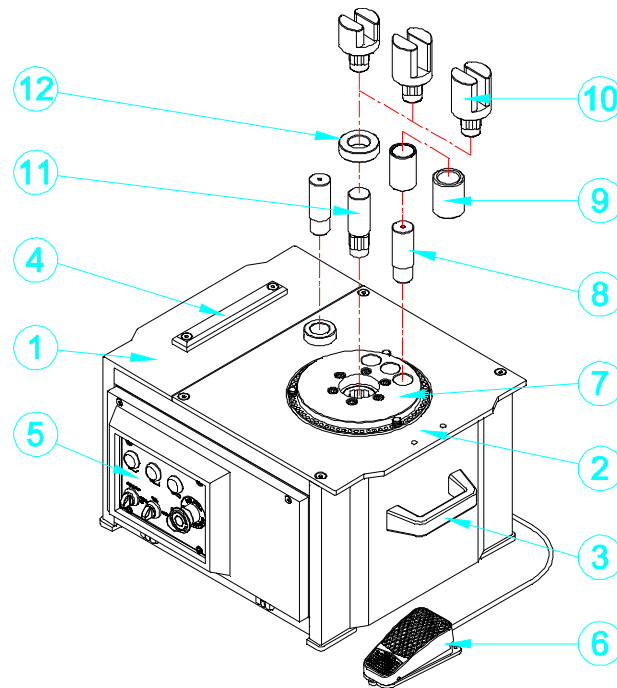


MG 20 B – PORTABLE REBAR BENDING MACHINE



MG 20 B PORTABLE REBAR BENDING MACHINE USER'S & MAINTENANCE MANUAL





1	Housing	5	Control Panel	9	Bending Sleeve
2	Upper Tray	6	Foot Pedal	10	Stirrup Heads (Apparatus)
3	Carrying Arm	7	Bending Disc	11	Fixed Pin
4	Rebar Feeding Roller	8	Straight Pin	12	Fixed Shim

MG20B Portable Steel bending machine is only intended for bending the steel. The utilization of it for all purposes is prohibited, except this purpose.

In order to operate your machine better, the machine should be placed so as to be operated easily and in the position which allows operator to work more productively. For this reason, the place, where the machine is operated, should be close to the area where the rebar is kept. In addition to it, it will be useful that the roof of the place, where the machine operates, is covered with shed. We recommend you to place the workbenches in the both sides of machine. The length of those workbenches should be at the longest length of rebar which will be bent. Since the operator may work easily by those benches without rotation, lifting all rebar, it shall allow operator to work more productively.

Important Warnings !!!

- The maintenance and user's manuals should certainly be read.
- Just the persons, who are adequately informed on it, should work with the machine.
- While the machine is checked, maintained, lubricated, etc., the power of the machine should be cut off.
- All instructions in the maintenance and user's manual should be observed.

1. INSTALLATION OF THE MACHINE

1.1 The machine should be balanced on the sturdy floor. **Figure :1**

1.2 The electrical installation of the machine should be made by the persons who are authorized to do so.

Remark :

Electrical Installation :

1.3 For the connection to the mains, the plug should be connected to the feeding line via isolated cable at (5x4 mm² up to 15 m distance, 4x2,5 mm² up to 100 m distance, 4x4 mm² up to 200 m distance) and then, plugged into the socket.

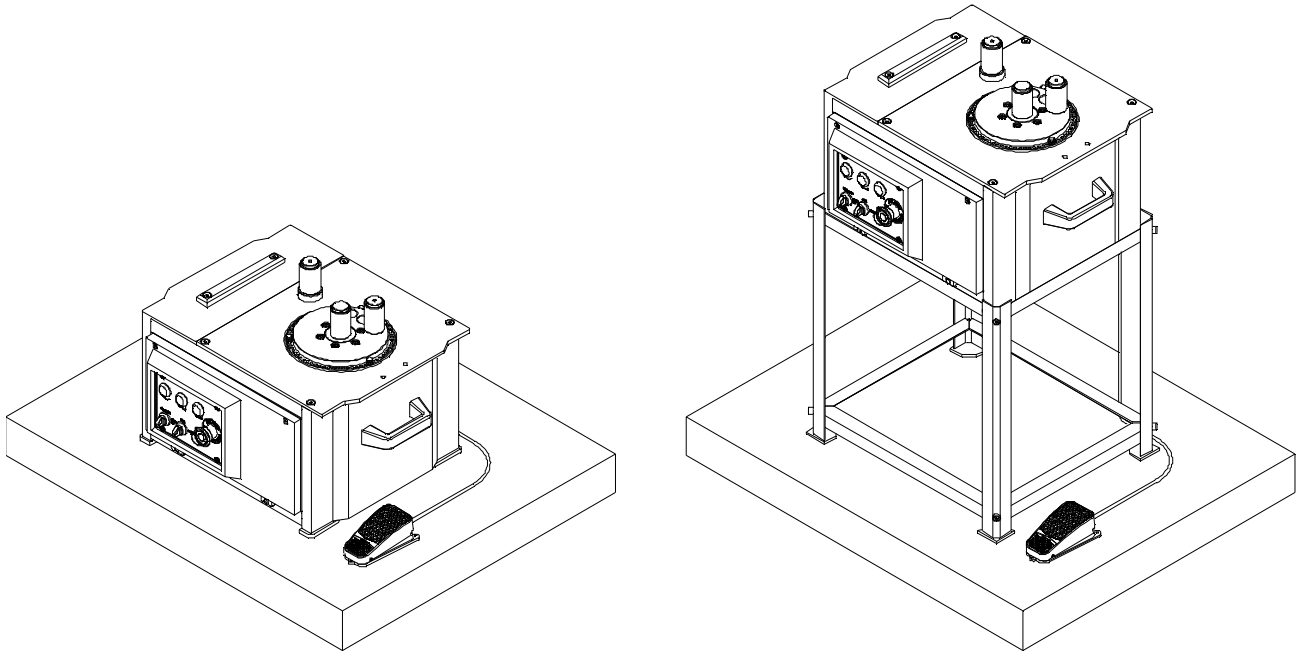
1.4 The grounding should be made for security. The machine should not be operated, unless the grounding is made.

Connection of grounding line :

The below procedure should be performed for this system.

Connect one of the end of grounding to a copper wire (minimum 16 mm²) so as providing the electricity conductivity. Other end should be connected to a pipe which is sufficiently buried into the ground (preferably damped ground) and has the conductivity characteristic, or copper plate should be buried into the ground as possible as deeper.

FIGURE :1



2. PROCESSING ORDER OF MACHINE OPERATION:

2.1. One should ensure that the machine is installed properly in accordance with the installation rules. If there is any substance on the machine, then it should be removed (including bending apparatus.)

2.2 Machine rotation direction should be determined by pressing ON Button on the control panel, bringing the MAN AUTO circuit breaker to the MAN position and pressing to foot pedal.

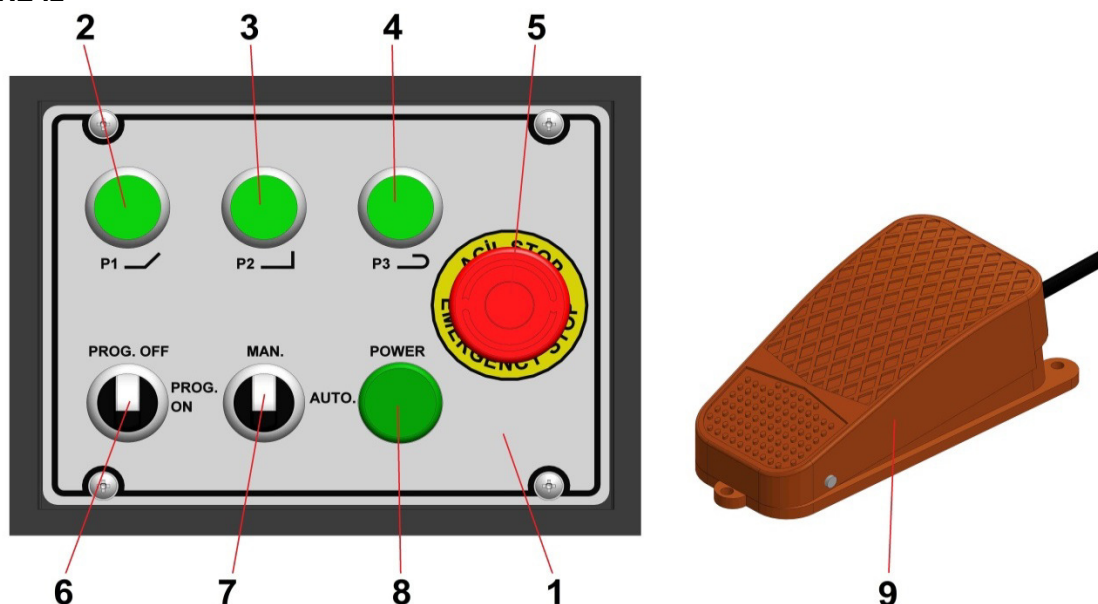
Remark : One should determine that the rotation direction is on the counter clockwise (control panel side) by taking the front section of the machine as reference

After the rotation direction is determined, the bending adjustments should be made.

2.3. With the help of switch pins over the bending disc, needed bending angle is adjusted

2.4. With the help of buttons on the control panel of the machine, bending adjustment should be started after the angle is adjusted. (Figure: 2)

FIGURE :2



1	Control Panel	4	P3 Button	7	Man-Auto Switch
2	P1 Button	5	Emergency Stop	8	Power Lamp
3	P2 Button	6	Prog. On-Off Switch	9	Foot Pedal

3. Technical Data

Machine Bending Capacity:

Strenght Of the Material	Diameter / Bendable Unit			
45 kg/mm ²	Ø 20x1	Ø 14x2	Ø 12x3	Ø 10x4
65 kg/mm ²	Ø 16x1	Ø 12x2	Ø 10x3	Ø 8x4
85 kg/mm ²	Ø 14x1	Ø 10x2	Ø 8x3	Ø 6x5

Machine Code : MG 20 B

Machine Name: Portable Rebar Bending Machine

Machine Dimensions:

Width : 45 cm
 Lenght : 60 cm
 Height : 32 cm
 Weight : 59 kg

Machine Table Dimensions:

Width : 43 cm
 Lenght : 50 cm
 Height : 30 cm
 Weight : 6 kg

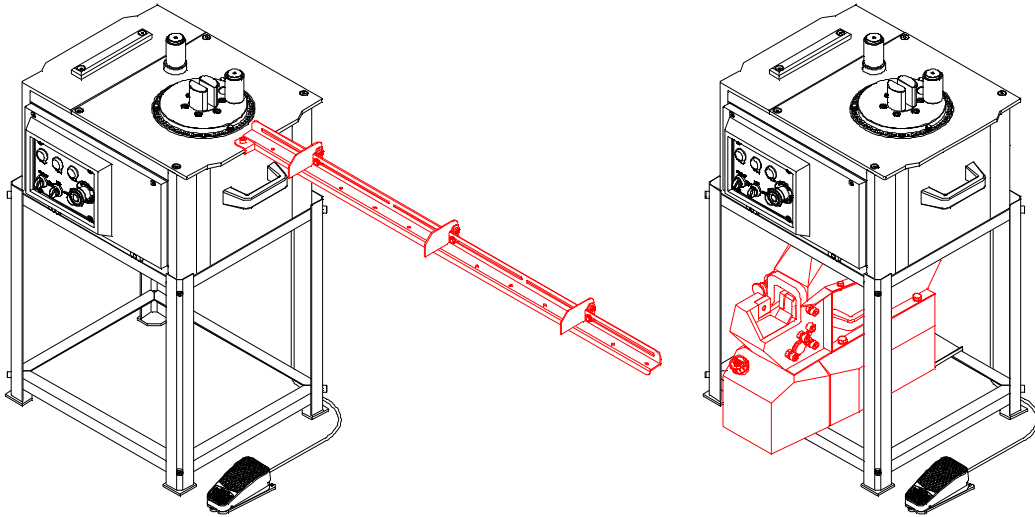
Motor Specifications:

Motor Power : 1,1 kw
 Motor Rotation : 1450 rpm
 Motor Voltage : 380/220 V
 Motor Frequency: 50 Hz

4. EQUIPMENTS & TOOLS SUPPLIED WITH THE MACHINE

Straight Pin : 2 Adet
 Fixed Pin : 1 Adet
 Fixed Shim : 1 Adet
 Stirrup Head : 3 Adet
 Bending Sleeve: 3 Adet
 Switch Pin : 3 Adet
 Zero Adjustment Pin : 1 Adet
 Table : 1 Adet

Optional Equipments:



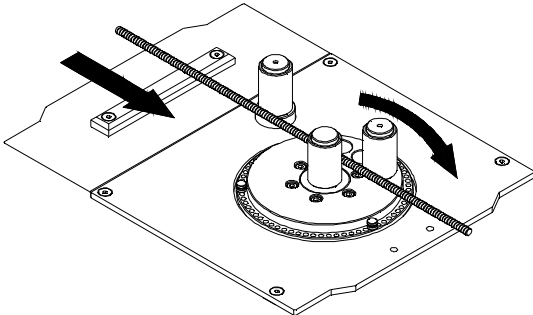
After adjusting the dimensions once by means of “**Dimension Adjustment Ruler**”, faster and easier bends are possible.

With the complement product (cutting machine) “**MG 20 H**”, you can **change your machine into a combined machine** and with only one foot pedal, you can operate both cutting & bending.

Correctly Binding Types of Rebar onto the Machine:

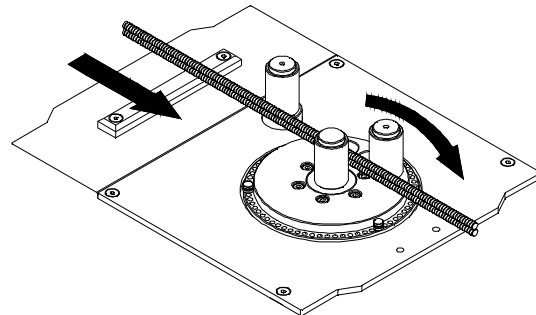
Fixing the rebar to be bent by bending sleeves onto the machine:

FIGURE : 3



Fixing the rebar to be bent by Bending Bushes onto the machine.

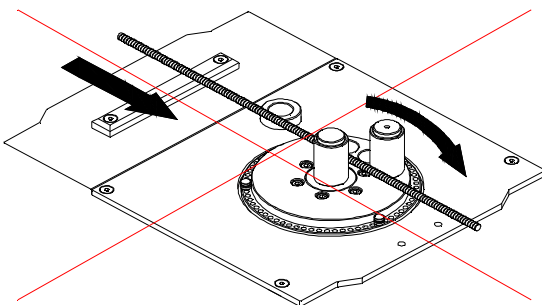
FIGURE : 4



Wrong Bending Types of Rebar onto the Machine

Wrong bending type of single rebar to be bent via bending sleeves onto the machine

FIGURE : 5



Wrong bending type of multiple rebar to be bent via bending sleeves onto the machine

FIGURE : 6

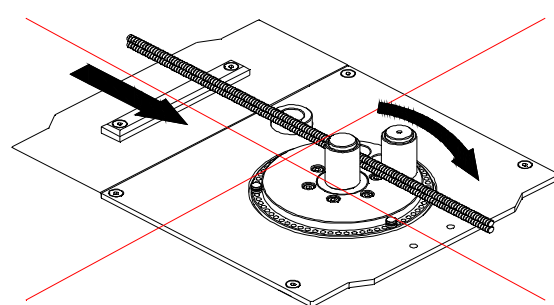


FIGURE:7

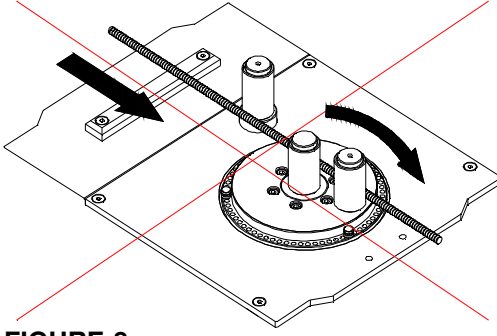
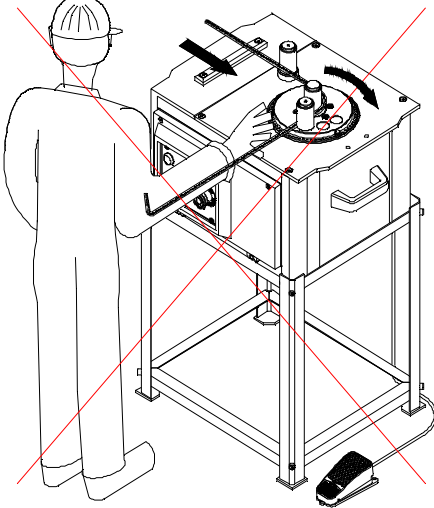


FIGURE:8



5. PROHIBITED UTILISATIONS ON THE MACHINE

- ▼ While the bending is made, nobody should stand before the machine; the persons, who stands, should be kept away. (FIGURE:8)
- ▼ As the machine operates, the adze, rule, calipers, crowbar and similar construction materials should not be inserted between the bending apparatus, except the material to be bent.
- ▼ While the machine is wet, do not operate.
- ▼ The bending should not be made out of size, dimension and pieces, indicated on the capacity label of the machine.
- ▼ During the multi bending processes, the bending should be made in the number of rebar which is shown in the capacity label by lining up them successively and leaning against the retainer or bending sleeves. The bending should not be made, except this type. (FIGURE:4)
- ▼ While the electric panel cover opens, do not operate the machine.
- ▼ The electrical adjustments, made in the factory, should not be changed
- ▼ Do not operate the machine without grounding.
- ▼ While the protective covers are removed, do not operate the machine.
- ▼ Only authorized people should operate the machine.
- ▼ Do not operate the machine without lubrication.
- ▼ Do not remove the warning labels on the machine.
- ▼ The components of the machine should be replaced with another manufacturer's components, except with the components, manufactured by Göçmaksan.
- ▼ Bending should not be made with the slanted, deformed, cracked and hole diameters expanded bending apparatus.
- ▼ The bending in wrong types should not be made on the machine. (FIGURE:5-6-7)
- ▼ Machine should be cleaned by lifting it and by compressors.
- ▼ In the cases which the electricity panel cover of the machine should be opened, the cover should not be opened without interruption power from main switch.
- ▼ The rebar to be bent should be fixed on the machine in the correct manner. The bending bush in the shelter and fixing with pins should be as indicated in the (FIGURE:3-4)

6. WARRANTY

The manufacturer accepts the warranty and liability only under the below terms and conditions.

- ▼ The protective materials on the machine should be used.
- ▼ The warning signs should be observed.
- ▼ The machine should not be operated without grounding.
- ▼ In the cases which the defected part of the machine should be replaced, they should be replaced with the parts which are manufactured by Göçmaksan.
- ▼ The conditions, which are indicated in the security precautions, should be observed.
- ▼ Prohibited utilizations should be observed.
- ▼ The machine should be installed in accordance with the installation instructions.
- ▼ The machine should be transported in accordance with the transport instructions.
- ▼ The machine should be operated by the authorized and trained persons.
- ▼ The size, dimension and steel quality in the capacity label should be observed.
- ▼ The machine should be used proper for the manufacturing purpose.
- ▼ The electricity installation should be made by the authorized persons.
- ▼ The machine should be operated, as one of the components is removed.
- ▼ The machine engine should not be changed.
- ▼ The maintenance on the machine should be carried out in accordance with the maintenance instructions.
- ▼ The greater rebar than indicated one should not be bent in the shelter.
- ▼ The bending should be made in the correct manner.

7. PROTECTIVE MATERIALS TO BE USED, WHEN ONE OPERATES IN THE MACHINE:

7.1. Protective garment :

- Hard hat should be worn.
- The goggles should be worn.
- Steel tipped boot should be worn.
- The glove should be worn.

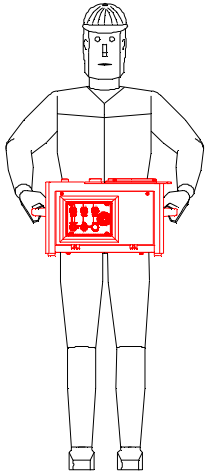
Above-mentioned protective materials shall be used. In case of they are not used, there are injury, hand injury and cut the hands off risks.

7.2. Work garments :

While the machine operates, the **improper** garments against the injury and pull are listed below; if not observed, there is injury risk.

Long hair, garment with long arms, identification tag, long garments, jewelry.

8. MACHINE'S TRANSPORTATION

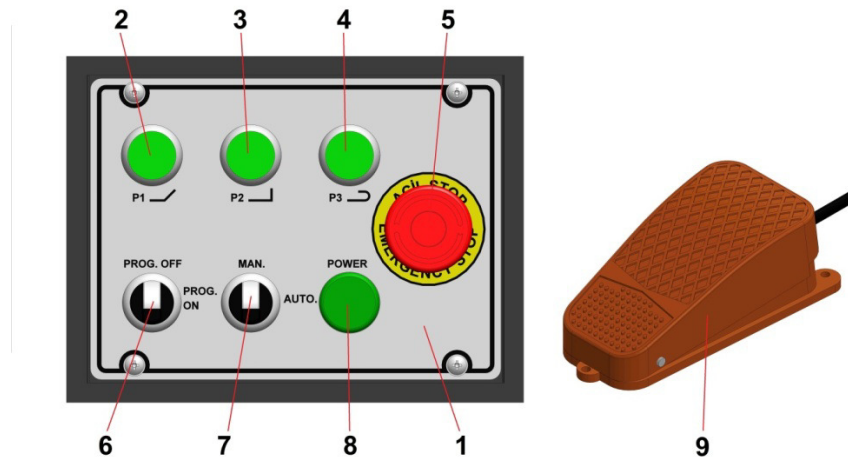


It is possible to lift the machine by manpower. Forklifts should be used only when machine is in its crate. When carrying the machine in a crate, a wedge should be located under the bottom of the machine. . The lifting up procedure should be carried out by the experienced people and subcontractors.

WARNING !!!

- The machine should be moved without vibration. The machine should not be carried on the wet surface.
- The components, which are lost or damaged during the carrying, should be reported and informed to the manufacturer.
- While the lifting and carrying equipment is used, the maximum load capacity of this equipment should be considered.
- During the lifting up, the weight mass center of the equipment should be considered.
- The warning signs on all carrier equipment should be observed.

9. CONTROLS AND ADJUSTMENTS ON THE MACHINE:



NO	BUTTON	FUNCTION
1	CONTROL PANEL	It is such a panel that keeps the control functions on it.
2	P1	Adjustment for bent bar bending
3	P2	Adjustment for setsquare bending
4	P3	Adjustment for hook bending
5	EMERGENCY STOP	Stops the machine by cutting the power off in case of emergency
6	PROG. ON-OFF	Adjusts the stirrup mode on-off.
7	MAN - AUTO	Provides the manual and automatic control of machine.
8	POWER	When ON button is pressed and power comes into the system, it lights on and shows that there is electricity in the system
9	Foot pedal	Powered machine component which allows for rotation of the bending disc of the machine.

9.1. Thermal current adjustment field setting and engine protection switch:

The machine is adjusted by its manufacturer as 1,1 kW 1400 rpm 10,2 A for engine. It is not allowed user to readjust it. The motor protective switch is placed in the machine in order to avoid damaging the system by cutting the power off which comes into the system, when the excessive current comes into the system. In case that the switch is off, the switch is turned into the 1 position and is on. Otherwise, the engine protection switch should not be removed.

9.2. Hook Bending adjustment: (P3)

There are three SWITCH pins on the bending disk at the same length. One should press the P3 button on the control panel. The machine should be brought into MAN position, and the rotation direction should be checked. After those checks are completed, in order to make the hook bending on the machine, the bending angle should be found proper for the hook bending by moving the SWITCH pin on the angle adjustment holes

on the bending disk. (As much as SWITCH pin closes toward SWITCH, the bending angle reduces, as much as it moves away from SWITCH, the bending angle increases).

After the adjustment procedure is completed, the pin is inserted into the axles hub where bending disk is inserted, then place the bending sleeves which is proper for the diameter of rebar to be bent onto the pin. Put one of other pins into one of the holes on the bending disc so as providing the suitable space due to the thickness of the rebar to be bent and place the one of proper bending bushes onto the pin. Place the rebar which you will bend onto the machine and again, insert one of the bending pins into one of the holes on the bending llama and based on the thickness of the rebar to be bent, place (shelter, if it is smaller than 12 mm or proper bending bush, if it is greater than 12 mm). Finally, in order to avoid injury possibly caused by moving of rebar after bending disk bends it and the rebar returns, it should be placed in front of the rebar and onto the bending bracket for security (FIGURE:3-4-9).

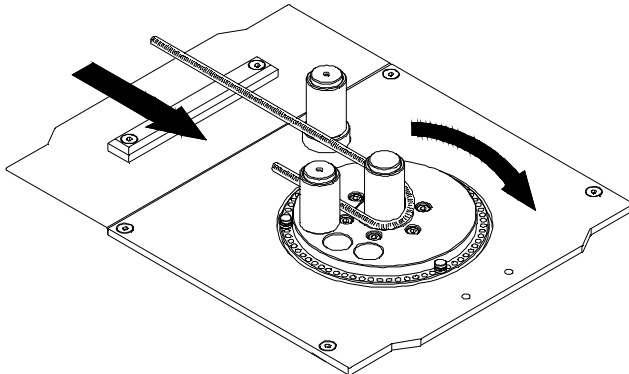
For serial bends, the machine should be in the AUTO position and the bending should be made.

NOTE : When the machine is in the MAN position, as long as the foot pedal is pressed, the bending disk turns, and it stops, as the bending procedure is completed and the machine comes to the stand-by position. When the machine is in the AUTO position, the bending disk bends by pressing the foot pedal once and stops, when the machine comes to the stand-by position. In addition, when the machine is in the AUTO position again, the bending disk may stop as the foot pedal is pressed during the bending process. When the bending disk stops in such manner, it stops in the zero point in contrary to the bending direction by pressing the foot pedal continuously.

In order to change the adjustment, press the P1-P2-P3 buttons and in case of changing the adjustment, wait until the machine completes the bending process and stops, and press to the desired button in order to change the adjustment. Otherwise, when the buttons are pressed in order to change the adjustment, the adjustment change shall not be affective.

WARNING !!! : While the bending process is applied, the rebar to be bent should be bent on the bending apparatus at least 3 times greater than its diameter.

FIGURE:9



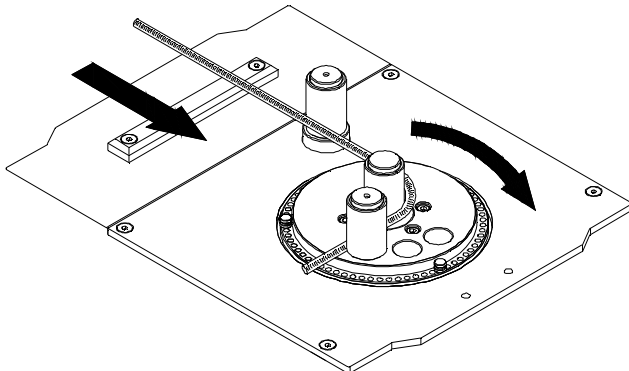
9.3.

Setsquare Bending Adjustment: (P2)



By pressing to the P2 button on the control panel, the adjustment should be made same as the adjustment method of hook bending.

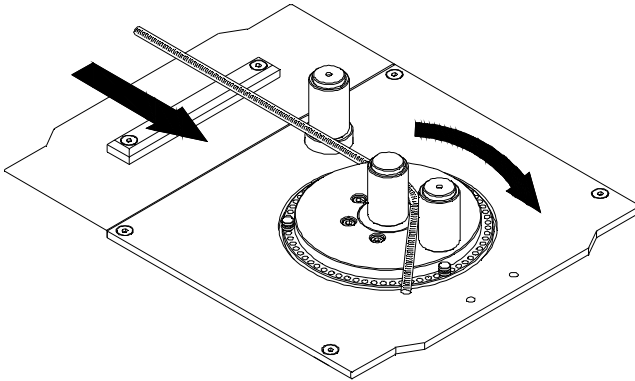
FIGURE:10



9.4. Bend- Up Bending Adjustment (P1) —————

By pressing to the P1 button on the control panel, the adjustment should be made same as the adjustment method of hook bending (Figure:11)

FIGURE:11



9.5. Stirrup Bending :

Adjustment arm is brought to the hook bending position (P3) and the first adjustment should be made for the end bending of the rebar which will be stirrup by the adjustment unit in the hook section so as the bending angle shall be 135° . And then, the adjustment arm should be brought to the setsquare bending position (P2) and the second bending adjustment should be made so as the bending angle shall be 90° . After the adjustment procedures are completed (FIGURE:12-13-14-15-16-17-18) , the bending order should be followed and stirrup bending procedures should be completed.

WARNING !!! : While the stirrup bending process is applied, the rebar to be bent should be bent on the bending apparatus at least 3 times greater than its diameter.

FIGURE:12

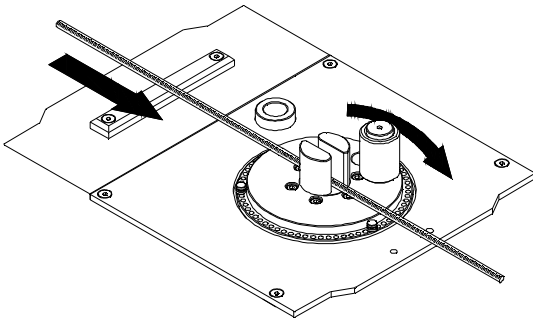


FIGURE:13

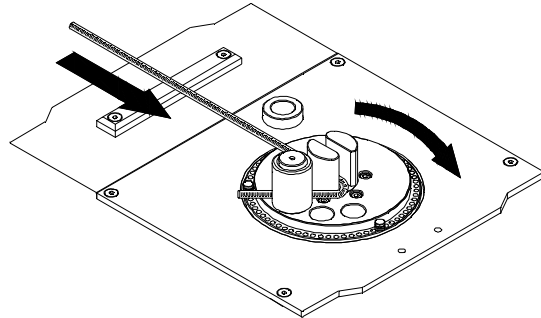


FIGURE:14

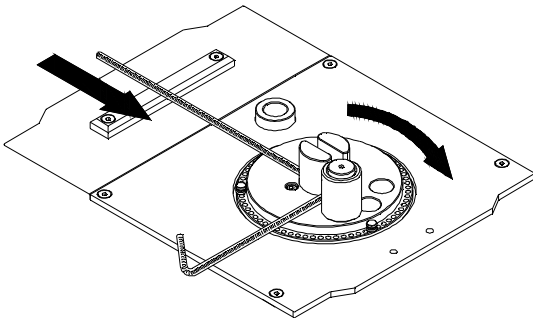


FIGURE:15

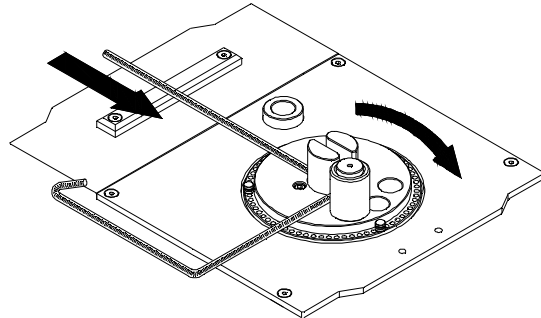


FIGURE:16

FIGURE:17

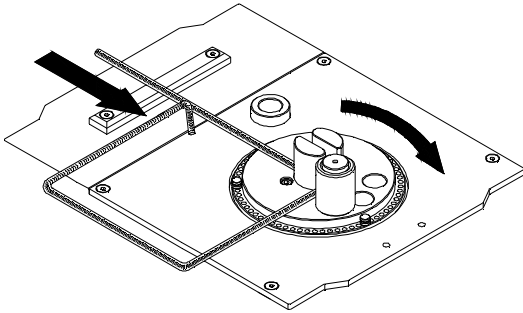


FIGURE:18

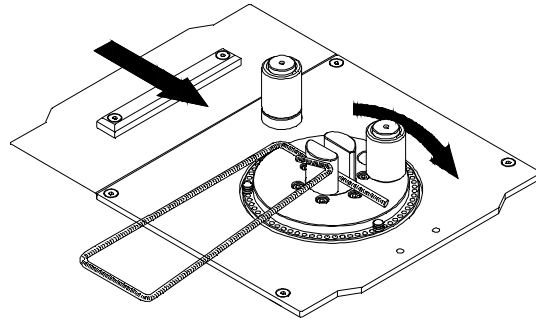
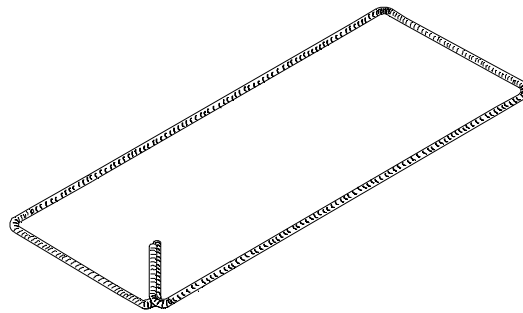
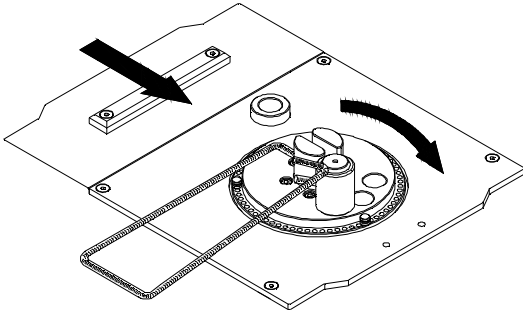


FIGURE:19



WARNING!!! : In case that the electric panel should be opened in order to determine the failure to remove the problem, the power of machine should be cut off absolutely and the failure should be determined by the authorized people.

9. MAINTENANCE AND LUBRICATION INSTRUCTIONS

In order to extend the economic life of the machine and to provide the safe bending, it is very important to carry out the maintenance in the correct manner. We strongly recommend that each user should establish a reliable system for the control and maintenance of the machine. The below explanations are provided for reference purpose only. The gear lubricant no. 140 and 90 is used in the gearbox unit of the machine.

10.1. Daily maintenance of the machine :

- Clean the dust and dirt on the machine with brush.
- If the machine operates outdoor, it should be protected from the rain, when it rains.
- It should be checked if there is an extraordinary sound is produced on the machine.

10.2. Weekly maintenance of the machine:

- All components, which move the bending llama of the machine, should be cleaned and lubricated.
- The adjustment arm mechanism of the machine should be cleaned and lubricated.

10.3. Monthly maintenance of the machine:

- Bending pins and bending llama should be checked and the cracked or slanted components should be used.
- Any lubricant leakage from the gearbox should be checked.
- It should be checked whether or not SWITCH reels of the machine are slanted.

10.4. Maintenance of the machine per six months:

- The fastness of all bolt connections in the machine should be checked.

10.5. Annual maintenance of the machine:

- The lubricant of the machine should be changed.
 - If broken, the felt and ball bearings should be replaced.
- The slanted, cracked, worn components should be checked and replaced

11. FAILURES AND SOLUTION RECOMMENDATIONS :

The possible failures, their reasons and solutions during the operation of machine are shown in the below table.

WARNING!!! : In case that the machine covers and electricity panel should be opened in order to determine the failures and electricity failures in the machine, the main switch should be turned to the

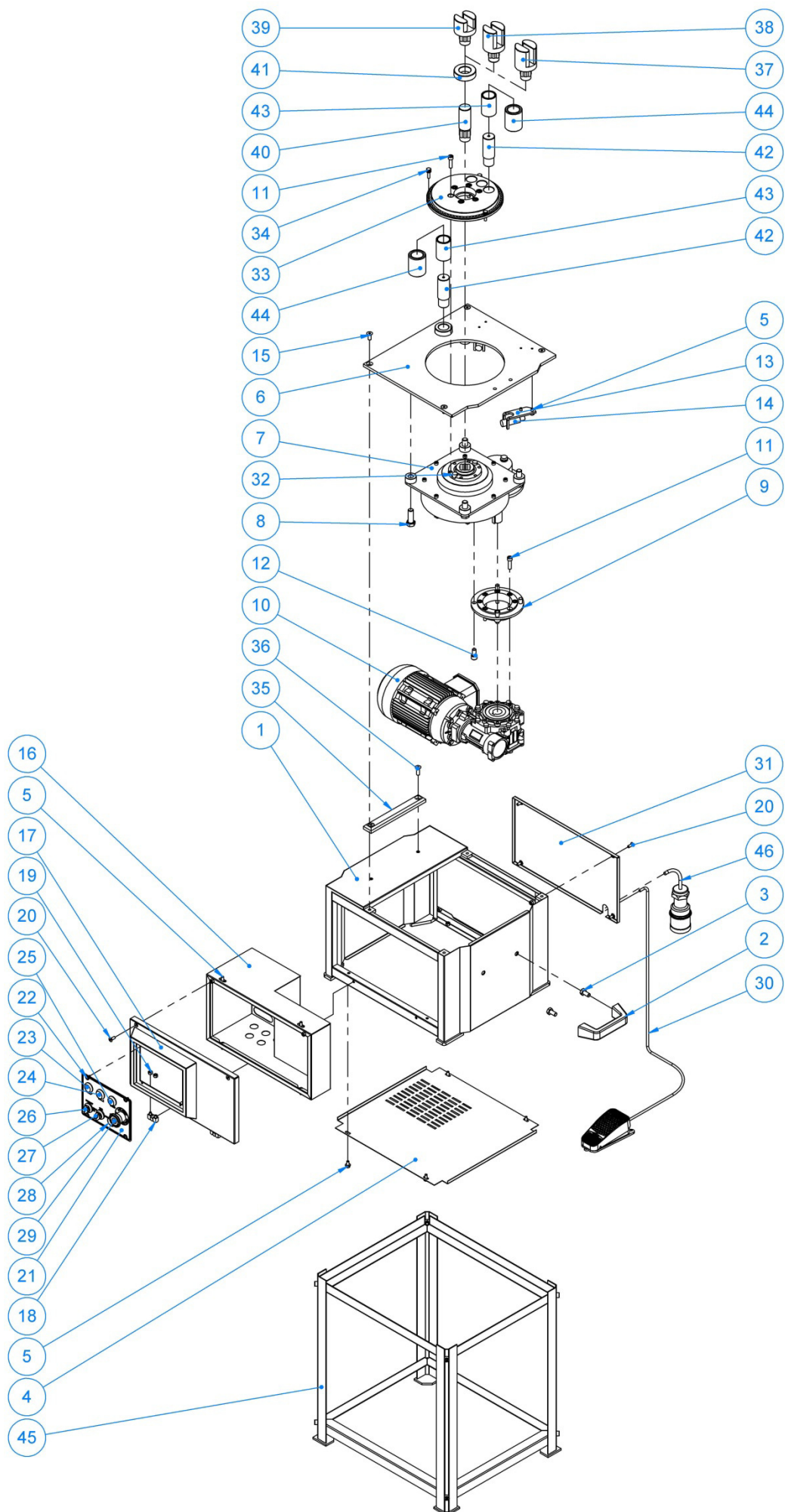
“0” position in order to cut the power off on the machine and it should be checked by the authorized people.

NO.	FAILURE	DESCRIPTION	SOLUTION
1.	Machine doesn't operate.	1. The phase may be missing to the power line which the machine connects. 2. Emergency Stop button is already pressed. 3. Engine protection switch may be off position. 5. Electricity Panel Cover may be open or not properly closed.	1. Check the phases. 2. Check the button. If it is pressed, switch it on by turning in the arrow direction. 3. Check the engine protection switch. If the switch is in the off position, turn it to the 1 position. 5. Check the electricity panel cover.
2.	Bending Disk rotates continuously.	1. SWITCH reel may be slanted or broken. 2. Zero adjustment pin and SWITCH pins may not be available on the machine flange. 3. The direction contactors may be failed.	1. Check the reels. If broken, replace them. 2. Check the pins, if missing, complete them. 3. Check the contactors.
3.	Motor protective switch always comes to off position.	1. Diode may be exploded. 2. Engine may be broken. 3. The rebar is bent, excessive to the bending capacity of the machine. 4. The phase may be missing to the power line. 5. Transformer may be failed. 6. There may be short circuit and tear and wear on the cables.	1. Check the Diode. 2. Check the engine. 3. Check the rebar bending based on the material type and size on the capacity label. 4. Check the phases in the main. 5. Check the transformer. 6. Check the cable and connections.
4.	Despite of pressing the foot pedal, the machine doesn't operate.	1. It may be unplugged. 2. Pedal SWITCH may be failed. 3. The contactors in the power system may be failed.	1. Check the plug. 2. Check the SWITCH. If broken, replace it. 3. Check the contactors.
5.	Emergency Stop doesn't operate.	1. Emergency stop contact may be failed. 2. Cable connections may be disconnected.	1. Replace the emergency stop button. 2. Check the cable connections.

6.	Machine produces noise.	1. Ball bearing may be broken. 2. Engine propeller cover contacts. 3. Gears may be broken. 4. The lubricant may not be available in the gearbox. 5. The phase may be missing to the power line. 6. Machine may be forced to the excessive for its capacity. 7. The brake may not properly function in the machines with electromagnetic brakes or brake lining may be broken and rub.	1. Check the ball bearings. 2. Check the propeller cover. 3. Check the gears. 4. Check the gearbox lubricant. 5. Check the phases in the main. 6. Check the rebar beinding based on the capacity label. 7. Check if the brake operates and the brake linings.
7.	Lubricant leakage in the machine.	1. The ventilation stopper of gearbox may not placed. 2. The motor felt allows for lubricant leakage. 3. The gearbox connection bolts may be loosen.	1. Check if the stopper is placed. 2. Check the engine from the propeller side. If the lubricant appears, replace the motor felt. 3. Check the connection bolts, if they are loosen, fasten them.

12. PRODUCT STICKERS





SPARE PARTS LIST			
NO	PART NO	PART NAME	QTY
1	MG20B-01	MACHINE HOUSING	1
2	MG20B-02	CARRYING ARM	2
3	MG20B-03	M10x20 BOLT	4
4	MG20B-04	BOTTOM PROTECTIVE SHEET	1
5	MG20B-05	M6x12 BOLT	12
6	MG20B-06	TABLE SHEET	1
7	MG20B-07	ADDITIONAL GEARBOX	1
8	MG20B-08	M14x40 BOLT	4
9	MG20B-09	GEARBOX CONNECTION BRACKET	1
10	MG20B-10	WORMWHEEL GEARBOX	1
11	MG20B-11	M8x30 BOLT	14
12	MG20B-12	M10x20 BOLT	4
13	MG20B-13	SENSOR BRACKET	2
14	MG20B-14	SENSOR	2
15	MG20B-15	M8x20 BOLT	4
16	MG20B-16	ELECTRIC PANEL	1
17	MG20B-17	ELECTRIC PANEL FRONT COVER	1
18	MG20B-18	SQUARE PANEL HINGE	2
19	MG20B-19	M6 NUT	4
20	MG20B-20	M6x16 BOLT	6
21	MG20B-21	CONTROL PANEL SHEET	1
22	MG20B-22	M4x10 BOLT	4
23	MG20B-23	P1 BUTTON	1
24	MG20B-24	P2 BUTTON	1
25	MG20B-25	P3 BUTTON	1
26	MG20B-26	PROG ON-OFF SWITCH	1
27	MG20B-27	MAN-AUTO SWITCH	1
28	MG20B-28	POWER BUTTON	1
29	MG20B-29	EMERGENCY STOP	1
30	MG20B-30	FOOT PEDAL	1
31	MG20B-31	BACK MAINTANENCE COVER	1
32	MG20B-32	KEY 14x13x11	2
33	MG20B-33	BENDING DISC	1
34	MG20B-34	SWITCH PIN	3
35	MG20B-35	LINING BRACKET	1
36	MG20B-36	M8x25 BOLT	2
37	MG20B-37	8mm STIRRUP HEAD / APPARATUS	1
38	MG20B-38	10mm STIRRUP HEAD / APPARATUS	1
39	MG20B-39	12mm STIRRUP HEAD / APPARATUS	1
40	MG20B-40	FIXED PIN	1
41	MG20B-41	FIXED SHIM	1
42	MG20B-42	STRAIGHT PIN	2
43	MG20B-43	Ø40 BENDING SLEEVE	2
44	MG20B-44	Ø47 BENDING SLEEVE	1
45	MG20B-45	TABLE	1
46	MG20B-46	ELECTRIC POWER PLUG	1