



08172017

GMC Powered Bending Rolls Operation and Parts Manual

Models:

PBR-0412 / PBR-0412E

PBR-04316 / PBR-04316E

PBR-0425 / PBR-0425E

PBR-0510 / PBR-0510E

PBR-0610E / PBR-0810E

PBR-1010E



WARNING

THIS IS A VERY DANGEROUS MACHINE!

ALWAYS FOLLOW THE SAFETY RULES TO AVOID ANY BODY INJURY

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I. MAIN SPECIFICATIONS

MODEL	PBR-0412E	PBR-04316E	PBR-0425E	PBR-0510E	PBR-0610E
Max rolling width	51"	51"	51"	61"	81"
Max rolling thickness	12GA	3/16"	1/4"	10GA	10GA
Rolling diameter	3-1/2"	4-3/4"	5-7/8"	4-3/4"	5"
Rotate speed	22rpm	16.5rpm	15rpm	16.5rpm	16.5rpm
Bending roll up/down	motor	motor	motor	motor	motor
Main motor	2HP	3HP	4HP	3HP	4HP

II. SAFETY INSTRUCTION

WARNING: THIS IS A VERY DANGEROUS MACHINE! FAILURE TO FOLLOW THE SAFETY RULES MAY RESULT IN SERIOUS PERSONAL INJURY

As with all machinery there are certain hazards involved with operation and use of the machine. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.

This machine was designed and constructed for roll forming metal plate and some similar material. We strongly recommend that this machine SHOULD NOT be modified and/or used for any application other than for which it was designed. If you have any questions about its application, do not use the machine until you contact us.

Read all instructions before using this very dangerous machine!

1. MACHINERY GENERAL SAFETY WARNINGS

- 1) Misuse of this machine can cause serious injury. For safety, machine must be set up, used and serviced properly. Read, understand and follow instructions in the operator's and parts manual which was shipped with your machine.
- 2) Wear proper apparel. No loose clothing or jewelry which can get caught in moving

parts. Gloves and rubber soled footwear is recommended for best footing.

- 3) Do not overreach. Failure to maintain proper working position can cause you to fall into the machine or cause your clothing to get caught — pulling you into the machine.
- 4) Keep guards in place and in proper working order. Do not operate the machine with guards removed.
- 5) Avoid dangerous working environments. Do not use stationary machine tools in wet or damp locations. Keep work areas clean and well lighted.
- 6) Avoid accidental starting, Make sure switch is in “**OFF**” position before plugging in power cord.
- 7) Never leave the machine running while unattended. Machine shall be shut off whenever it is not in operation.
- 8) Disconnect electrical power before servicing. Whenever changing accessories or general maintenance is done on the machine, electrical power to the machine must be disconnected before work is done.
- 9) Machinery must be anchored to the floor.
- 10) Use the right tool. Know the tool you are using — its application, limitations, and potential hazards. Don't force a tool or attachment to do a job it was not designed for.
- 11) Stay **alert**, Watch what you are doing; use common sense. Do not operate any tool when you are tired. Keep hands in sight and clear of all moving parts and rolling surfaces.
- 12) Keep children away. Children must never be allowed in the work area. Do not let them handle machines, tools, or extension cords.
- 13) All visitors should be kept at a safe distance from the work area. Make workshop completely safe by using padlocks, master switches, or by removing starter keys.
- 14) Store idle equipment. When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
- 15) General Electrical Cautions: This machine should be grounded in accordance with the National Electrical Code and local codes and ordinances. This work should be done by a qualified electrician. The machine should be grounded to protect the user from electrical shock.

2. TRANSPORTATION (CERTIFIED FORKLIFT DRIVER IS REQUIRED)

1. Each chain or strap belt should be capable of lifting weight over 5,000LBS
2. The strap belt must be arranged properly as per cavity center of wooden box.
3. The forklift driver should be a qualified & trained person.
4. Machine should be loaded at the cavity center of the truck to avoid any sliding.
5. After loading onto truck, use steel wire to fix the machine body on truck and ensure to fasten it firmly before transportation.

3. POSITIONING & CLEANING

·Site : When select site, ensure there is free space for material handing around the machine.

- Foundation:** The machine requires a plain & stable ground to have an excellent bending performance. It is better to be fixed on 150mm reinforced concrete ground.
- Leveling:** Four sheet shims are placed under the adjusting bolt of the foot plate, the machine is leveled by level gauge.
- Cleaning:** Use a liquid solvent such as kerosene or white spirit to remove the protective coating and any dirt from the up-painted surface of the machine. Don't disturb any moving parts until the full surface has been cleaned.

4. ELECTRICAL CONNECTION

- Before connecting machine into local 3-phase ac source at your plant, please double check same voltage and phase.
- Connect the ac source with machine cable which has 4 wires, correctly, the ground wire must be connected with ground.
- After connecting ac source to shaft, check motor rotation is in the correct rotation direction as per the arrow on the motor.
- If wrong direction, please immediately stop motor to avoid motor damage. Please correct your connection at ac source until motor rotation direction is in the correct direction.

III. OPERATION INSTRUCTION

For models#

PBR-0412E/ PBR-04316E / PBR-0425E / PBR-0510E / PBR-0610E/ PBR-0810E & PBR-1010E:

1.Press the down push button to move the bending roll down



2. Put the sheet metal material into the rolls as picture shown and crank the big hand-wheel to barely touch the material.

Width of the sheet metal – is necessary to form the designed size circles is the 1st

consideration in circle forming. Decide approximate length of material need. Use the formulary " $C=\pi \times ID$ " (C is Circumference; π is 3.1416; ID is Internal Diameter). Sample: $ID=12$ ", operator need to prepare material length approximate 37.7" or approximate length of material which need.



3. Push the up/down buttons to move the bending roll up/down for right position, and press foot pedal to roll the sheet metal material.



4. Press the foot pedal to make the rolls turn forward and reverse to roll the material back and forth completely to make the part.



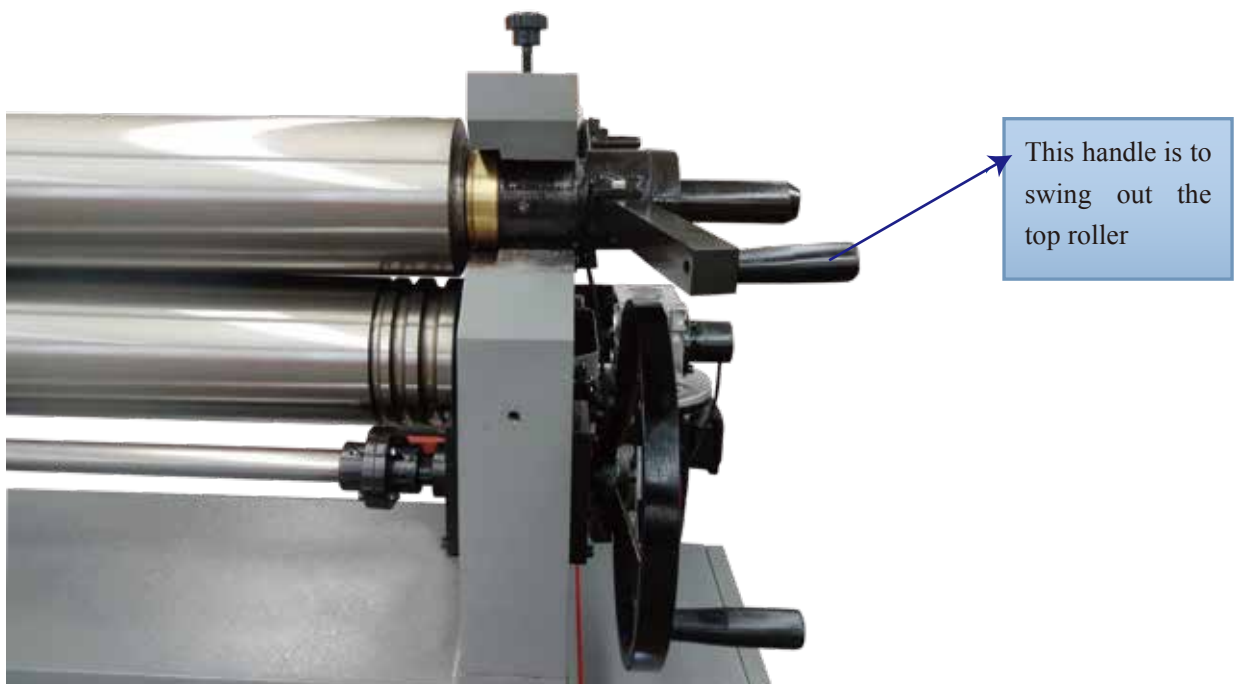
5. Press the foot pedal When finished with that part, then turn the cone attachment down 90 degrees.



Press the foot pedal Loosen this locking bolt, get ready to swing out the top roller.



6. Rotate this handle counter clockwise 90 degrees, and hold and pull the top roller shaft to swing out the top roller, then remove the part out of the top roller. Then push the top roller back into the housing, and turn this handle clockwise 90 degrees, make sure the top roller sits correctly. Turn the black knob of the locking bolt to lock the top roller in position.



HOW TO USE CONE ATTACHMENT TO MAKE A CONE:

1. Make the material like circular sector



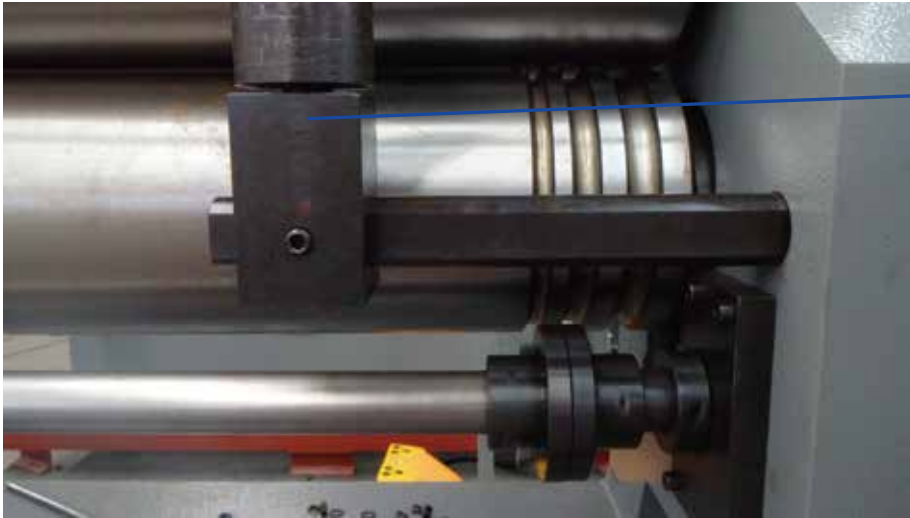
2. Loosen the set screw on the right coupler and remove it away from the left coupler to disconnect the two couplers.



3. Push the up button switch to move right side of the bending roll up to make it tilt as shown in the picture below.



4. After the bending roll tilting degree is set up correctly, please put the coupler back and connect properly, then tighten the set screw to lock the coupler.



Make this cone attachment vertical

5. Put the sector material into the rolls, and crank the big hand-wheel to move the pinch roll up till barely touching the sector material, one side of the sector material will keep touching against the cone attachment while rolling it.



Material against cone attachment.

6. Push the up button switch or down button switch to adjust the bending roll position. Press the foot pedal to make the rolls turn.



7. Press the foot pedal to make the rolls turn forward and reverse to roll the sector material back and forth completely to make the cone.



8. Loosen and turn the cone attachment down, and swing out the top roller to remove the cone part out.



IV. OPERATION INSTRUCTION

For Models# PBR-0412 / PBR-04316 / PBR-0510

1. Turn main switch on, then press push button "ON"



2. Length of material – necessary to form the designed size circles is the 1st consideration in circle forming. Decide approximate length of material needed, Use the formulary " $C=\pi \times ID$ " (C is Circumference; π is 3.1416; ID is Internal Diameter).

Sample: ID=12", operator needs to prepare material length approximate 37.7" or approximate length of material which is needed.

3. Cut a few pieces of material to the measured length for testing by roll forming. The material might need to be lengthened or shortened depending upon the testing result.

4. Rotate this left hand-wheel to move the pinch roll up/down to barely touch the sheet metal material, and rotate the right hand-wheel to move the bending roll up/down to set up the bending radius.



5. Press foot pedal forward and reverse to roll the material into the radius



V. LUBRICATION

In this machine we have three grease fittings, please use grease gun to lubricate all of them, 3 times a day, using grease oil Mobil # Dorcia-150



VI. TROUBLESHOOTING

Any questions, please call our service # 1-909-947-7787

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PROBLEM	SOLUTION
The motor does not run	make sure the power supply connected correctly
	Check the power voltage, 220V or 440V, +- 10%
	Voltage can not be lower than 208V, 3phase
The rolls do not turn	On the control foot pedal, make sure the E-stop is fully released and pops up
	check the safety wire and make sure the limit switch is fully released
Top roller can not push back	Need to jog the foot pedal to turn the rolls a little bit because the driven gears are not engaged well
Push or pull the safety cable but do not shut down the machine	Check the limit switch for the safety cable to make sure the distance is correct
The digital display number does not change when the bending roll moves up or down	Display wires may be loose or display is bad
	The encoder is bad
How to make cone	Tilt the bending roll and use the cone attachment
How to limit the flat spot	Make sure the pinch roll can not touch the material, need a little gap
	Roll the material one pass, then slip over the material and roll second pass, and repeat to make a round part
Material has cracking waves	Make sure the pinch roll isn't touching the material, needs a little gap

VII. ELECTRICAL SYSTEM

1. Preparation: The main wall breaker needs 30A or 50A, and 10Ga. 3 phase cables

2. Operation of the machine

Turn on main power switch, and the indicator light is on, which means the machine

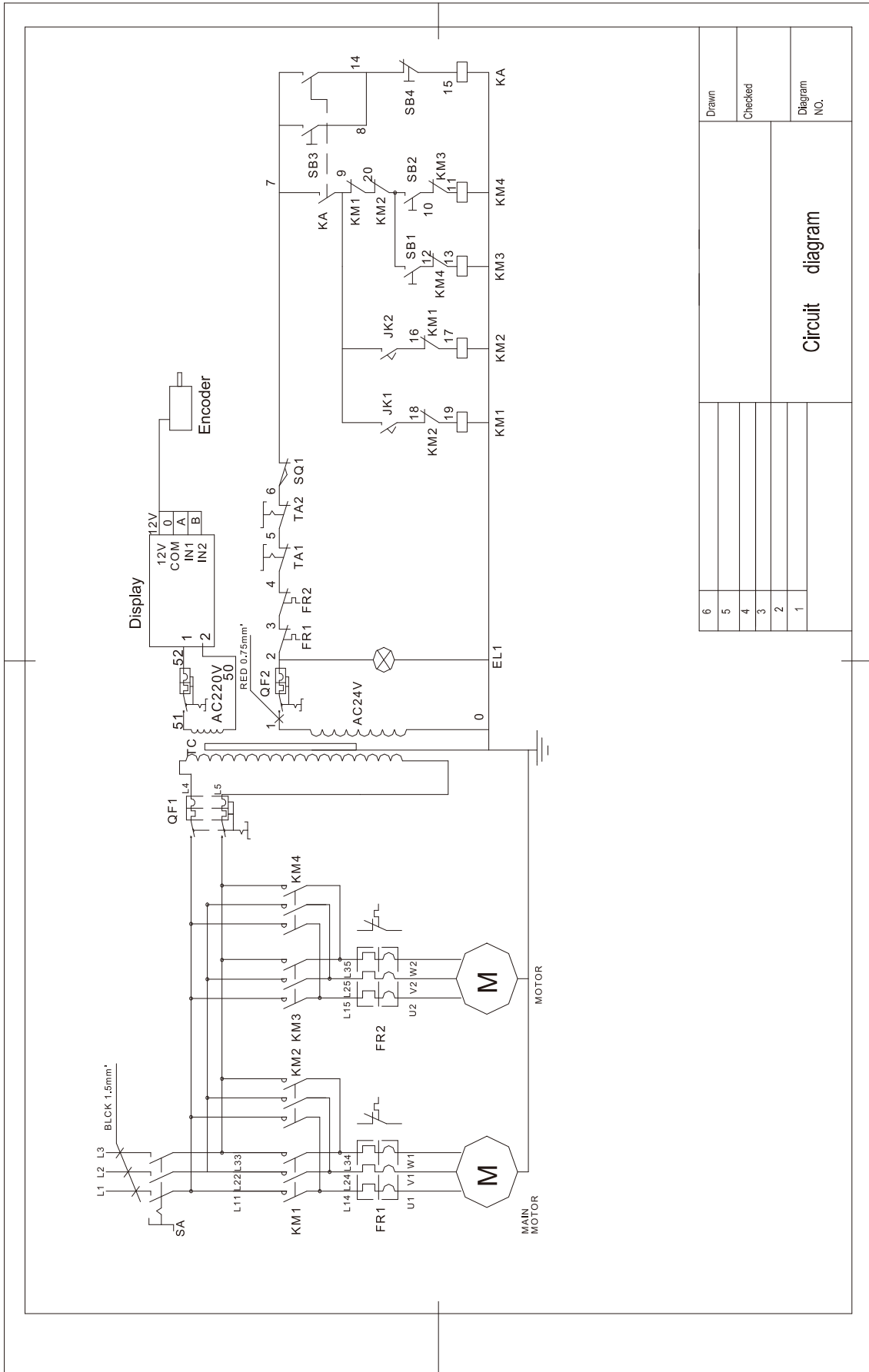
Is connected with power supply correctly. Press the right foot pedal, the rolls turn forward-clockwise continuously, release the foot pedal then rolls stop until loosen the pedal. Press the left foot pedal, the rolls turn reverse-counter clockwise continuously, release the foot pedal then rolls stop. If there is something wrong with the machine, push the emergency stop button, or hit the safety cable on the handle to stop the machine.

3. Electric diagrams

4. The list of electrical components

No.	Symbol	Name
1	LW	Main power switch
2	QF	Breaker
3	SQ	Limit switch
4	TC	Control Transformer
5	KM	Main contractor
6	FR1/FR2	Overload relay
7	EL	Indicator light
8	TA	Lash-up switch
9	M	Motor

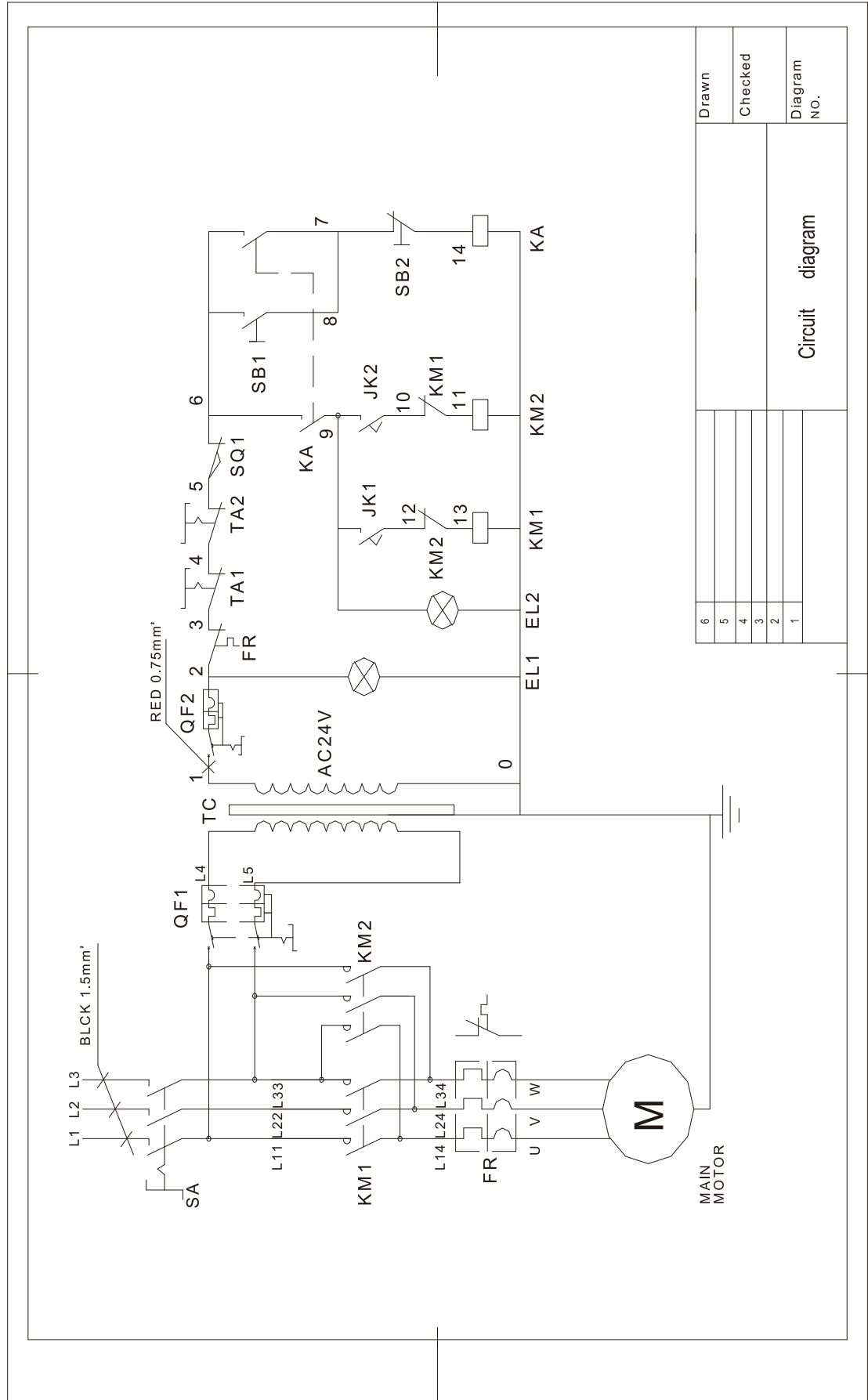
ELECTRICAL DIAGRAM FOR PBR-0412E/04316E/0425E/0510E/0610E/0810E/1010E:



6	Circuit diagram	Drawn
5		Checked
4		
3		
2		
1		Diagram NO.

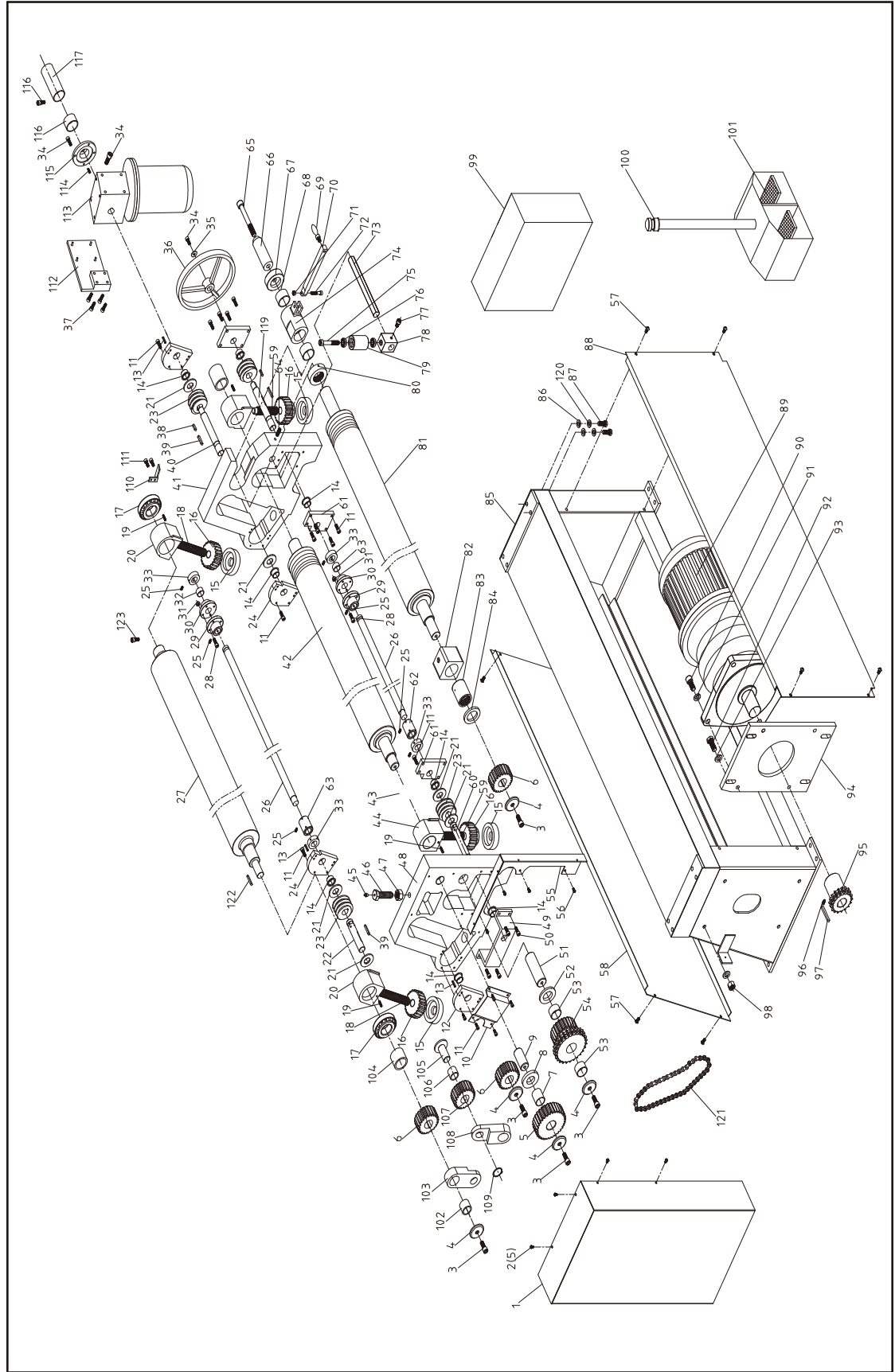
VIII. Electrical Diagrams for Manual Models

ELECTRICAL DIAGRAM FOR PBR-0412/ PBR-04316 / PBR-0510:



IX. Part Breakdown for E-Models

PARTS BREAK DOWN FOR PBR-0412E/04316E/0425E/0510E/0610E/0810E/1010E:



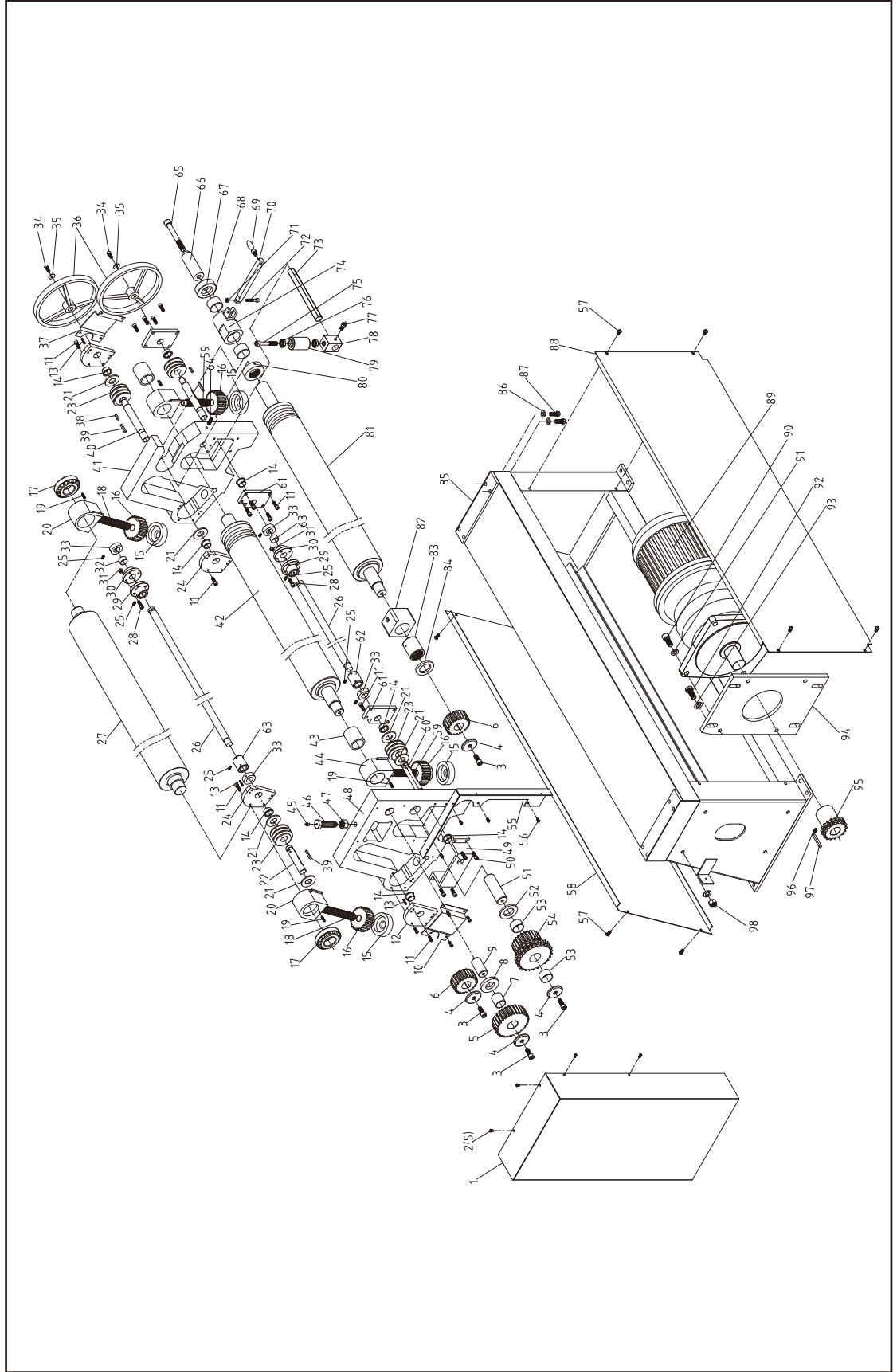
PARTS LIST FOR PBR-0412E/04316E/0425E/0510E/0610E/0810E/1010E:

Part #	Description	Qty	Part #	Description	Qty
1	Protecting Cover	1	39	Key 8x45	2
2	Hex Bolt M6X10	5	40	Worm Shaft	1
3	Bolt M12X30	5	41	Right frame	1
4	Washer	3	42	Bottom roller	1
5	Big gear	1	43	Sleeve	2
6	Small gear	2	44	Adjusting block	2
7	Bushing	1	45	Oil cup M8X1	1
8	Washer	1	46	Bolt	1
9	Shaft	1	47	Nut M20	1
10	Block plate	1	48	Left frame	1
11	Hex Bolt M6X25	40	49	Supporting plate	1
12	Block plate	1	50	Hex Bolt M8X25	4
13	Spring pin	2	51	Shaft	1
14	Spacer Bushing	8	52	Washer	1
15	Supporting bushing	3	53	Bushing	2
16	Worm wheel	3	54	Chain wheel	1
17	Bearing	2	55	Connecting plate	1
18	Screw rod	2	56	Bolt M6X12	9
19	Locking bolt M6X16	4	57	Bolt M8X16	8
20	Adjusting block	2	58	Block plate	1
21	Washer	8	59	Small screw rod	2
22	Worm	1	60	Worm shaft	1
23	Worm shaft	4	61	Block plate	2
24	Block Plate	2	62	Connecting bushing	2
25	Locking bolt M6X16	8	63	Bushing	1
26	Connecting shaft	2	64	Locking bolt M10X30	1
27	Rear roller	1	65	Hex bolt M16X30	1
28	Key 6X25	4	66	Handle	1
29	Connecting bushing	2	67	Connecting bushing	1
30	Connecting bushing	2	68	Bushing	2
31	Nut M6x16	8	69	Rotary handle	1
32	Spring washer	2	70	Pole of Handle	1
33	Connecting bushing	3	71	Locking Nut M8	1
34	Hex Bolt M8X20	9	72	Hex bolt M8X45	1
35	Sleeve	1	73	Shaft	1

36	Handle wheel	1	74	Locking bushing	1
37	Hex Bolt M6X10 M8X30	4	75	Hex bolt M12X85	1
38	Key 8x25	2	76	Bearing	2
77	Hex bolt M10X16	1	104	Sleeve	1
78	Sliding block	1	105	pitch roller	1
79	Limited block	1	106	Sleeve	1
80	Sliding sleeve	1	107	Gear	1
81	Top roller	1	108	Connecting plate	1
82	Adjusting block	1	109	Washer 30	1
83	Sleeve	1	110	touch stop switch bracket	1
84	Mat	1	111	Hex bolt M5X12	2
85	stand	1	112	Connecting plate	1
86	Nut 6	8	113	Reducer	2
87	Bolt M12X35	8	114	Hex bolt M3X8	3
88	Block plate	1	115	Connecting plate	1
89	Reducer	1	116	Encoder	1
90	Hex bolt M16X35	4	117	Cover	1
91	Spring washer 16	4	118	Lock screw M6X8	2
92	Bolt M16X40	4	119	Worm shaft	1
93	Washer 16	8	120	Washer	8
94	Motor support Plate	1	121	chain	1
95	Small chain wheel	1	122	key	3
96	Locking Bolt M8X16	2	123	Oil cup	1
97	Key 12x45				
98	Nut M16	4			
99	Electrical box	1			
100	Control box	1			
101	Foot pedal	1			
102	Bearing joint	1			
103	Connecting plate	1			

X. Part Breakdown for Manual Models

PARTS BREAK DOWN FOR PBR-0412/ P BR-04316 / PBR-0510:



PART LIST FOR PBR-0412/ PBR-04316 / PBR-0510:

Part #	Description	Qty	Part #	Description	Qty
1	Cover	1	39	Key 8x45	4
2	Allen cup head screws M6X10	5	40	Worm shaft	2
3	Hexagon head bolt M12x30	6	41	Right stand	1
4	Washer	3	42	Bottom roller	1
5	Rack wheel	1	43	Space bush	2
6	pinion	1	44	Adjust block	2
7	spacer bush	1	45	Oil cupM8x1	1
8	shock insulator	1	46	Screw	2
9	Shaft	1	47	Nut M20	1
10	Dam Board	1	48	Left stand	1
11	Socket head cap screw M6X25	40	49	Support plate	1
12	Dam Board	1	50	Socket head cap screw M8X25	4
13	Spring Pin	2	51	Shaft	1
14	spacer bush	8	52	Washer	1
15	Support Sleeve	3	53	Spacer bush	2
16	Worm wheel	3	54	Sprocket	1
17	oscillating bearing	2	55	Connector	1
18	Lead screw	2	56	Screw M6X12	8
19	Lock Screw	4	57	Screw M8X16	8
20	Adjust block	2	58	Dam board	1
21	Washer	8	59	Lead screw	2
22	Worm shaft	1	60	Worm shaft	1
23	Worm	4	61	Dam board	2
24	Dam board	2	62	Connecting set	2
25	Lock screw M6X16	8	63	Spacer bush	1
26	Connecting Shaft	2	64	Lock screw M10X30	1
27	Rear roller	1	65	Hexagon head bolt M16x30	1
28	Key 6x25	4	66	Handle	1
29	Cope coupling	2	67	Connecting set	1
30	Cope coupling	2	68	Spacer bush	2
31	Within six horn set M6X16	8	69	Rotary handle	1
32	Spring washer	2	70	Trolley	1
33	Connecting Set	4	71	Lock screw M8	1
34	socket head cap screw M8X20	2	72	Hexagon head bolt M8x45	1
35	spacer bush	2	73	Shaft	1

36	Hand wheel	2	74	Locking sleeve	1
37	Dam board	1	75	Hexagon head bolt M12x85	1
38	Key 8x25	2	76	Shaft	2
77	Hexagon head bolt M10x16	1	99	Electrical box	1
78	Slide block	1	100	Emergency stop	1
79	Limit roll	1	101	Foot pedal	1
80	Slide set	2	102	Bearing joint	1
81	Top roller	1	103	Connecting plate	1
82	Adjust block	1	104	Spacer bush	1
83	Spacer bush	1	105	Pitch roller	1
84	Washer	1	106	Set	1
85	Stand	1	107	Gear	1
86	Washer 6	8	108	Connecting plate	1
87	Hexagon head bolt M12x35	8	109	Ring 30	3
88	Dam board	1	110	Scale	1
89	Reducer	1	111	Rivet ϕ 2x5	4
90	Hexagon head bolt M16x35	4	112	Spring washer 12	6
91	Spring washer 16	4	113	Pointer	1
92	Hexagon head bolt M16x40	4	114	Key 10x35	3
93	Washer 16	8	115	Spring washer 12	8
94	Motor support plate	1	116	Chain 12A	1
95	Sprocket wheel	1	117	Oil cup M10X1	1
96	Lock screw M8X16	2			
97	Key 12x45	1			
98	Screw	1			

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