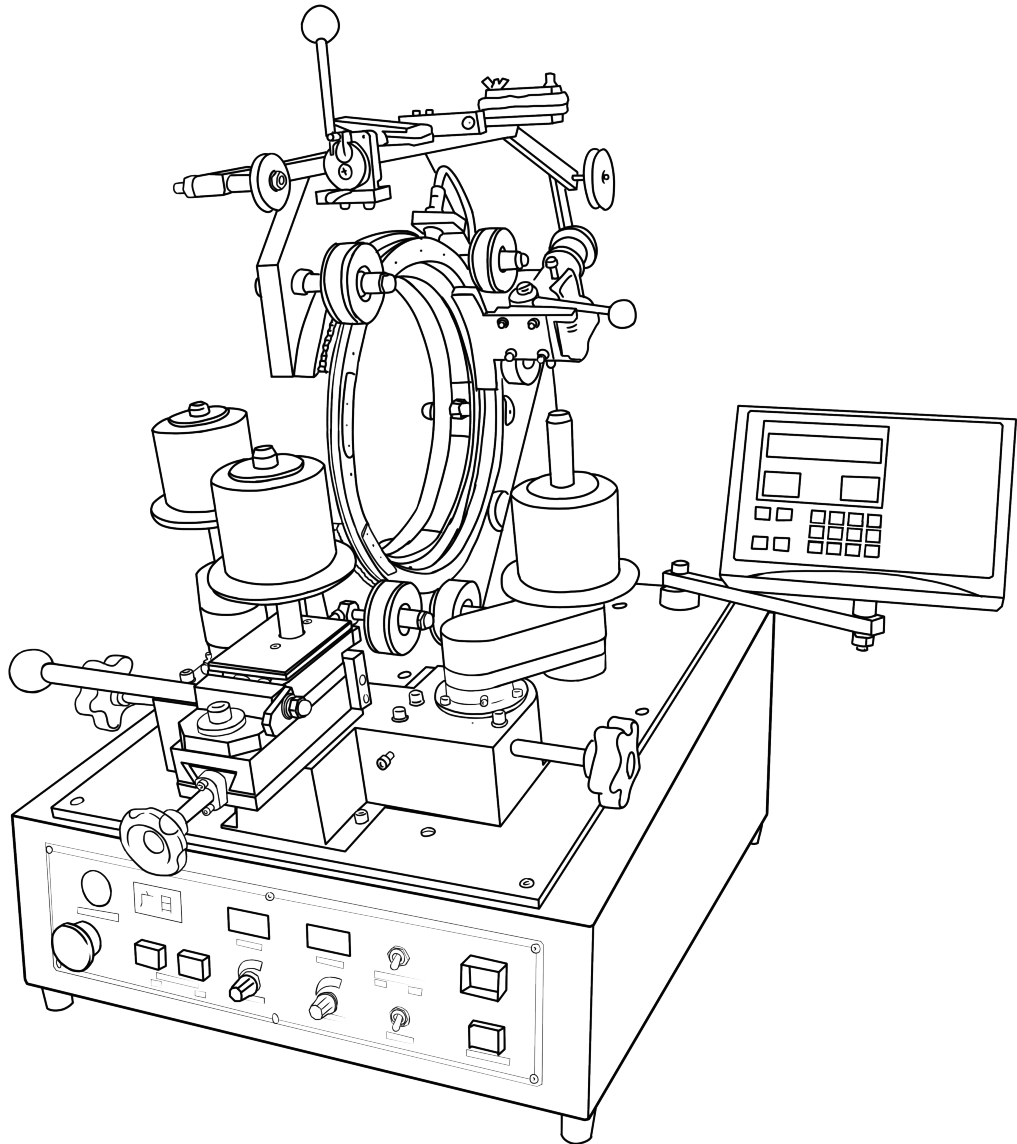




WINDER

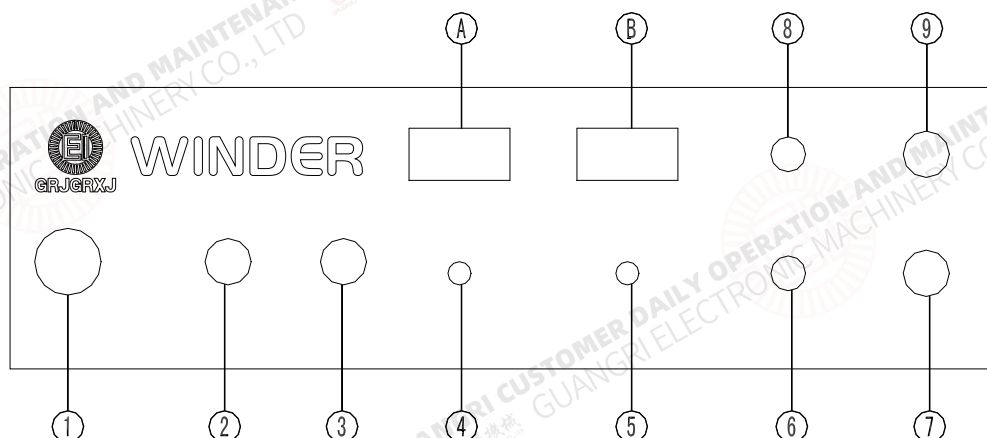
GUANGRI ELECTRONIC MACHINERY CO., LTD

Guangri Winding(Tape Wrapping) Machine User Manual (2023)



Front panel

Front panel diagram



There are nine function keys and two numerical indicators A & B

Function Key instructions:

Key ① power switch, for turn on or turn off the machine.

Key ②③ manual operation switch, used for slow and slight adjustments. Key ② rotates the shuttle or magazine clockwise, and. Key ③, counterclockwise.

To start winding, open the shuttle or magazine, insert core and close. After winding, open the magazine and remove the wound core. The user may adjust the magazine for opening and closing: 1) manually, using the hand wheel, and 2) by power, using keys ② and ③. Power adjustment is preferable in the case of the gear head machines, where it may require considerable force to rotate the larger and heavier magazines.

Knob④ serves to adjust winding speed, shown in Display A.

Knob⑤ adjusts the wire spacing (pitch). Display B.

Switch ⑥ selects the direction of core rotation. Left, clockwise, Right, counterclockwise.

Key ⑦ rotates the core for setting the starting point prior to winding.

Switch ⑧ selects Auto operation, (left) or Manual operation, (right). During Manual operation the core rotation may be reversed by means of switch ⑥.

Key ⑨ start key moves the machine to ready state. The controller lights up and the machine will work when the foot pedal is engaged. (For more information, please refer to the controller instructions).

The GuangRi coil winders also provide the Auto start mode. Auto Start does not require the foot pedal and is selected by turning switch 18 on the back of the machine base to Auto, and adjusting knobs 26 and 27 located on the controller back panel. In the Auto Start Mode, depressing the Start key will make the machine accelerate slowly to the pre set winding speed. For more information, please refer to the special function and setting.

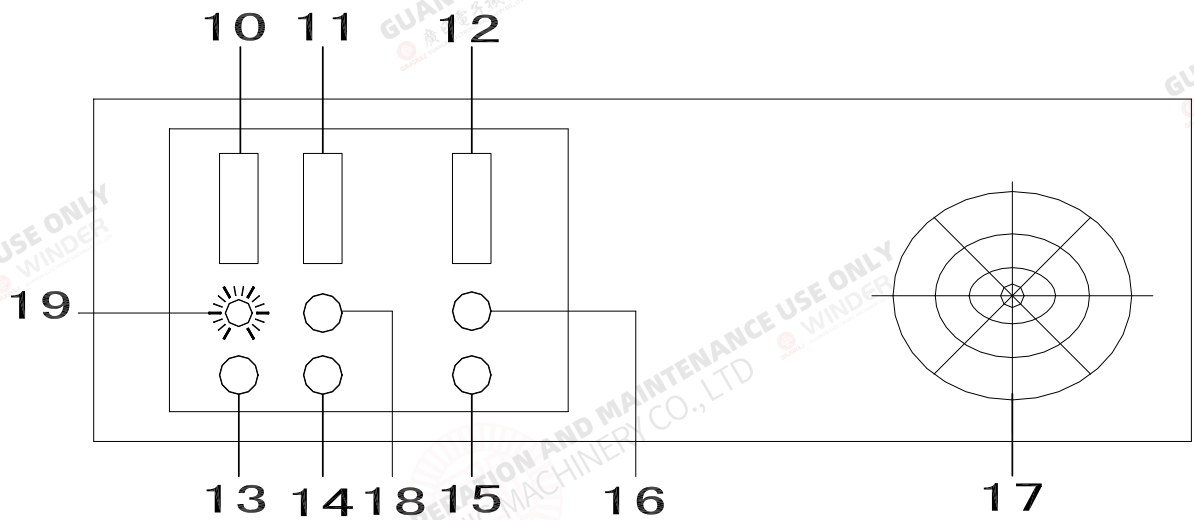
During operation the winding speed and core rotation is governed by proportional linking of the two variable speed AC drives which provide power to the main motor and core rotation motor respectively. The proportional link assures that the correct, preset winding pitch is maintained irrespective of winding speed. The correct pitch is best established by a “dry run” i.e. by marking the start position on the core, and adjusting knob ④ and ⑤ to accomplish one full core rotation during the pre determined number of turns. The settings of ④ and ⑤ is displayed in windows:

A: Winding speed, turns per minute.

B: Core rotation speed.

Making a notation of the two settings will save time for the operator next time the machine is set up for the same job.

Base Back panel:



10 Socket for controller cable.

11 Socket for foot pedal cable.

12 Socket for proximity and photo sensors on the winding head

13 Ground connection.

14 Power (220V/50Hz)

15 Output of counter power wire.

16 Fuse (15A)

17 Ventilation..

18 Winding mode selection switch (pedal or auto).

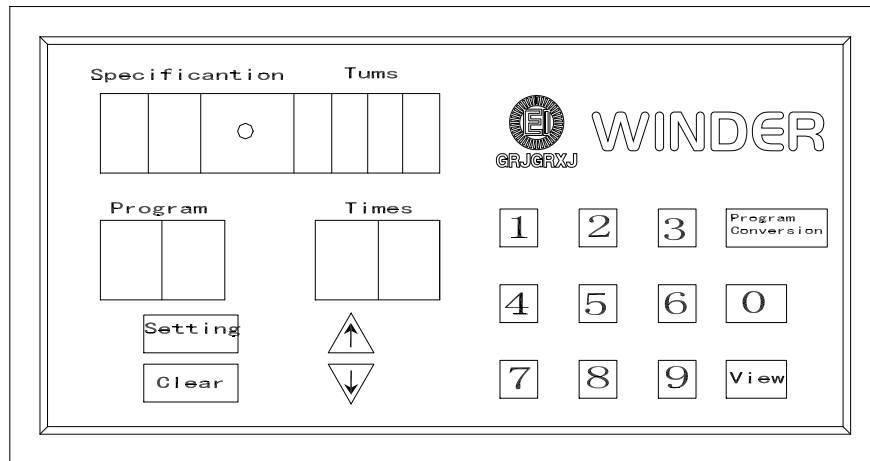
Left: Pedal mode. Start, stop and winding speed controlled by the pedal.

Right: Auto Start Mode. The machine will start up and accelerate gradually to the pre-selected speed when the start key is depressed, and it will decelerate gradually to stop upon completion.

19 Knob to adjust the pitch (wire spacing) of the secondary winding. Is used when the pitch of the secondary winding is different from the pitch of the primary, which was preset using knob 5 on the base front panel.

Programming the Machine.

The Controller Front Panel



Featuring five display windows, six function keys and ten numerical keys.

Display windows

Window status	Explanation	Remark
Flashing line	(1)	(3)
Flashing number	(2)	(3)
Stable number	number confirmed	(3)

- (1) Enter number using numerical keys.
- (2) Confirm the number. Press ↓
- (3) Always enter leading zeroes. For example to select 189, enter 0189 in the four digits window. To select 3 in a two digit window enter 03.

The **Specification** window is a two-digit window, 29 job specifications can be stored and displayed. All the entered data will remain unchanged for one year. To select any job, press **Setting** and enter the desired specification number, for example. **07 Enter**.

Program display window (2 digits)

9 program steps can be entered and displayed.

Completing a winding requires at least two steps, **Load 01**, and **wind 02**.

Program numbers **03** to **09** are used to select stops for taps in windings.

Times display window (2 digits)

Serves to select number of times a program step is repeated. Max is 99 times. Program step **01** (load) takes place only once, so **01** is comes up as the default value, whenever step **01** is

selected. And if the number of turns for each tap is the same, enter the number of repeats. In this case program steps **03 - 09** are not required..

Turns display window (four digits)

In program step **01** enter number of load turns calculated based on the length of wire required, and in number **02-09** enter number of turns on core. Three entries are required, turns (1), turns (2)& turns (3).

Turns (1), The total number of turns to be wound on the core.

Turns (2). Turns wound before the machine starts decelerating. If gradual deceleration is not desired, enter **0000**.

Turns (3). Turns before the core rotation is reversed. For example for **180** turns in three layers with reverse enter **0060**. If fan-shape is not desired, enter **0000**.

Ready signal display is a LED dot located between the Specification and Turns displays.

- 1) The **Ready** dot lights up when **Start** is depressed, indicating that all keys are locked, and all parameters are confirmed. The machine is in the **Waiting** state and will start up when the pedal is depressed. If the machine is set for **Auto Acceleration**, it will skip the **Waiting** state and start winding as soon as **Start** is pressed.
- 2) When the **Ready** dot is off, all keys are unlocked and parameters may be set or modified. This is called **Setting** state.
- 3) Pressing the **Review** key sets the **Ready** dot flashing, Press **Start** to return to **Setting** state, and press **Start** again to enter **Waiting** state.

Setting Key. Used before and after data entry.

Before pushing Setting	after pushing Setting	explanation
Stable number	flashing line	(1)
Flashing number	stable number	(2)

(1) Modify or confirm the number in the display.
(2) Press **Setting** (Press ↓ key to confirm each parameter and go to the next window).

“ ↓ ” ,confirm key, or skipping key.

It confirms the parameters entered in the present window, and enable the following window into input state.

“ ↑ ” return key.

Makes the flashing number return to a flashing line, so that user can enter new parameters or edit existing parameters. It can also be used to change the specification number if desired.

View key:

It is available only after **Setting** is completed. Before pressing **Start** press **View**, and all display windows will show the data of present program.

Clear key,

Function 1) It makes the **View** state return to **Setting** state. Function 2) enables the interrupted program to return to **Setting** state during winding. After pressing **Start**, the winder will enter **Waiting** state again.

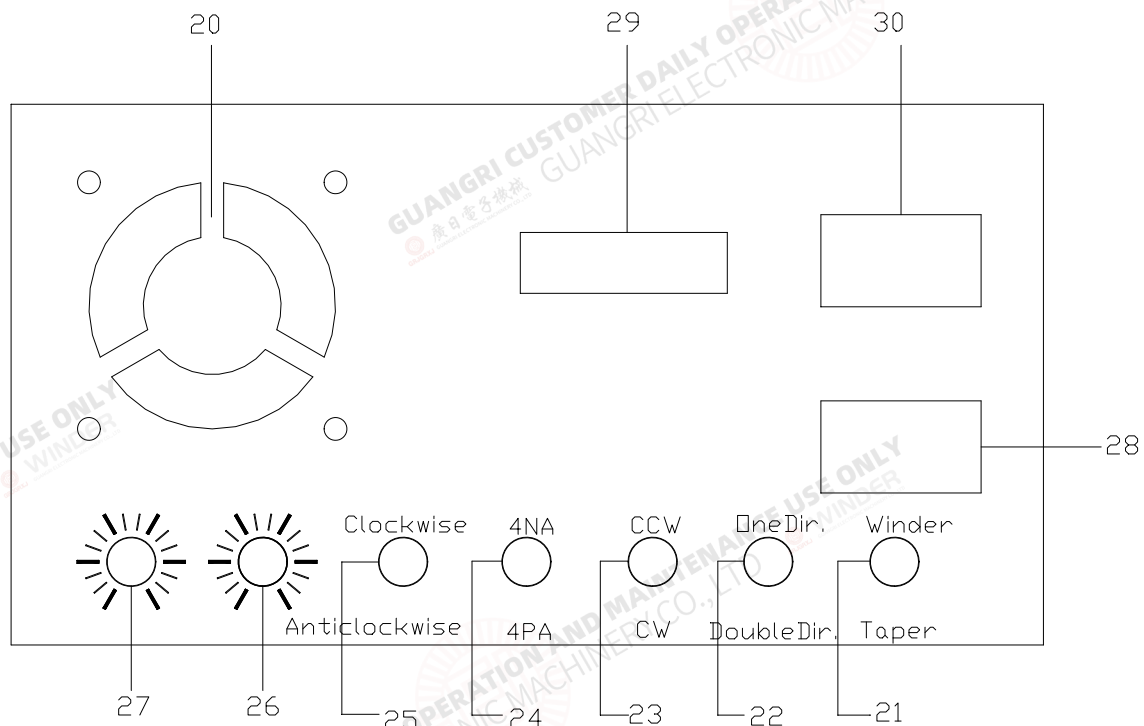
Program conversion key,

It is available only under **Setting** state, the function is to set a certain program as current specification

Number key,

0~9 is for entering value number

Counter back panel,



Counter back panel diagram.

20 Ventilation and cooling hole.

21 Identify the type of machine (toroidal wire winder or taping machine).

22 Choose the mode of rotation. On a Belt Head or Taping machine set to **single direction**. On a Gear head or Slider machine set to **double direction**.

23 Choose the start dir of the head. If a gear winder, please switch it to “**CW**”. On a slider winder, please switch it to “**CW**”.

.(this switch is operative only when switch **22** is set to “**double direction**”)

24 Transducer switch of JG series or JGC series. (JG series is 4PA, and JGC series is 4NA), User should use the correct choice, or the counter can not count.

25 Core start dir choice switch under the auto condition. It is special for the fan shape winding. It is the same to the ③ on the front panel

26 Setting the time that the machine reach top speed set by knobs ④⑤ on the front panel slowly (0~5s).

27 Setting the time of slowdown (0~5s).

28 setting depends on the auto method of switch on the back of machine base 18 that is to say that the machine work without the foot pedal.

- 28 Controller power socket
- 29 Socket for the power of auto scissor of taping machine.
- 30 Controller, sensor input.

Controller Setting

Gear, Belt, Slider style winder.

- 1) The first parameter of **Turns** window of program01 must be calculated. (Load Turns).
- 2) The second parameter of **Turns** window of program 01 needn't be calculated. (Enter the slowdown turns)
- 3) The first parameter of **Turns** window of program 02 needn't be calculated. (Enter wind turns)
- 4) The second parameter of the turns window of program 02 needn't calculated. (Enter the slowdown turns)
- 5) The third parameter of **Turns** window of program02 must be calculated. (In case of fan shape winding).

Taping machine,

- 1) The parameter of **Turns** window in program 1 (load turns) must be calculated.
- 2) The parameter of program2 (remaining turns) must be calculated.

For more info, please refer to the example,

Example 1, the dimensions of core, OD, 110mm ID 55mm H 45mm. Primary winding is 960 turns, Secondary winding 130ts, have a stop for tap at 65ts in the secondary winding. The slowdown turns is 2 in load turns, the slowdown turns is 3 in wind turns. The primary winding is divided into three layers (fan shape winding). The secondary winding is single layer. The core was taped with 12mm tape. The pitch is 4mm. Overlap is 8mm. Same taping pattern between the primary and secondary winding.

Operation: primary winding is 960ts (fan shape, reverse 3 layers) start and finish spaced apart. The secondary winding is 130ts, and has a stop for a tap at 65ts.

To finish this transformer, user should choose JG1235 taping machine, JG 2074 for primary winding & JG5204 for secondary winding.

How to set the taping machine.

1) Program 1 setting (load turns)

User must calculate the tape turns before calculating the load turns. The number of tape turns depends on core OD, tape width and required overlap.

Calculation:

$$\begin{aligned}
 \text{The tape turns} &= \frac{\text{the external circumference of the core}}{\text{The width of tape} - \text{the width of overlap}} \\
 &= \frac{110 * 3.14}{12 - 8} \\
 &= 86.35\text{ts} \quad = 87\text{ts}
 \end{aligned}$$

$$\begin{aligned} \text{The load turns} &= \frac{\text{the tape turns} * \text{the length of one tape turn}}{\text{the circumference of the magazine}} \\ &= \frac{87 * 145}{750} \\ &= 16.82\text{ts} = 17\text{ts} \end{aligned}$$

2) The parameters of turns window:

The final tape turns is $87 - 17 = 70\text{ts}$ (since while loading the tape, the tape is also being taped on the core)

The load turns is 17 ts

How to set the controller

The first time the machine is used, before it is turned on, user must set the switches on the back of counter and on the front panel of machine base. Important. This must be done before power up, or the machine will not recognize switch settings.

Switch **18** on the back panel of base. Set to **Auto start**

Switch **⑧** on the front panel of base.. Set to **Auto**

Switch **21** on the back of counter. Set to **Taper**

Switch **22** on the back of counter. Set to **One Dir.**

Switch **23** on the back of counter. Set to **CCW**

Switch **24** on the back of counter. Set to **4PA.**

Switch **25** on the back of counter. Set to **counter clockwise.**

Program 1, turn on the machine---- press **setting**, the **specification** window displays [_ _], enter "01" into the window----- press ↓, displays [_ _] in the **program** window, enter "01" into the window-----press ↓, displays [] in the **times** window (this indicates the speed of cutting the tape, (one unit = 0.2 sec. For 1sec., enter "5" into the window)-----press ↓, displays [_ _ _] in the **turns** window, enter [0017] into the window.

Program 2, press ↓, display [_ _] in the **program** window, enter "02" into the window-----press ↓, the times window displays [0], (it need not setting)-----press ↓, the **turns** window displays [_ _ _], enter [0070] into the window.-----press ↓ -----press ↑ the **specification** displays [01]----- press **setting**, then the setting is finished.

How to set the counter of high-speed winder JG2074.

User must set five parameters in accordance with the requirement.

- 1) The first parameter in **turns** window in program 01.
- 2) The second parameter in **turns** window in program 01.
- 3) The first parameter in **turns** window in program 02.
- 4) The second parameter in **turns** window in program 02.
- 5) The third parameter in **turns** window in program 02.

(1) The first parameter of program 01 in turns window. (The load turns)

$$= \frac{\text{The turns wound on the core} * \text{the length of one turn}}$$

The circumference of the magazine

$$= \frac{960 * 145}{630}$$

630

$$= 220.9 = 221$$

- (2) The second parameter of program 01 in turns window. (load turns before slow down)
220—2= 218
- (3) The first parameter of program 02 in turns window. (wind turns). 960Ts
- (4) The second parameter of program02 in turns window. (wind turns before slow down)
960—3= 957
- (5) The third parameter of program 02 in turns window. (turns between reverse of core rotation, fan shape)

The wind turns

The layers

= 960

3

=320Ts

Initial setting of switches. Must be set before power up.

Switch ⑨ on the back of base. Set to **Auto**. This setting enables automatic slow down after a pre set number of turns since it require decelerate in advance. If set to **Pedal**, acceleration and deceleration is controlled by the pedal and can not be pre-programmed. (The same to the below setting)

Switch ⑧ on the front . Set to **auto**.

Switch **18** on the back panel of base. Set to **Auto start**

Switch **21** on the back of the counter. Set to **winder**.

Switch **22** on the back of the counter. Set to **double Dir**.

Switch **23** on the back of the counter. Set to **CW**.

Switch **24** on the back of the counter. Set to **4PA**.

Switch **25** on the back of the controller. Set to **anticlockwise**.

Program 01: turn on the machine----- press **setting**, the **specification** window display [_ _], enter “01” ---- press ↓ , display [_ _] in the **program** window, enter “01”.----- press ↓ display “01” in the **times** window ----- press ↓ , the **turns** window displays [_ _ _], enter the load turns [0221] ---- press ↓ , the **turns** window displays [= = =] , enter the turns before slow down [0218] ----- press ↓ the **turns** window display [0000]. The **program** window displays [_ _].

Program 02: enter [02] into the **program** window -----press ↓ enter 01 into the **times** window----press ↓, the **turns** window display [_ _ _] , enter the [0960] into the window.----press ↓ , the **turns** window display[= = =], enter [0957] into the window (the same as program 01, turns before slow down), ----press ↓ **turns** window displays [_ _ _], enter [0320]. (The turns between reversal in fan shape winding), at the same time, the **times** window displays [_ _] , No data required.----- press ↓ , the **program** window will display [_ _] again. In order to let the machine cycle from program 01 to program 02, user must make the end setting operation.

- 1) Enter [03] into the **program** window.
- 2) Enter “0” into the all of the windows under program 03, using ↓ , until the **program** window displays [_ _] again,
- 3) Press ↑ , the **specification** window display [01].
- 4) Press **setting**, the counter enter setting state, press the **start** key on the front of base, the machine will enter into ready state.

□ **How to set the gear winder JG-5204** (for the secondary winding)

1) The first parameter of the turns window in program01 (the load turns).

The load turns:

The total turns wound on the core * the length of one turn

The circumference of the magazine

$$= \frac{130 * 160}{720}$$

$$= 28.88=29$$

(since the secondary is wound on top of the primary, more wire is required per turn, so we use 160mm instead of 145mm).

2) The second parameter of program 01, (load turns before slow down) $29 - 2 = 27$

3) The first parameter of turns window of program 02 (Because of the tap, user should set program 03 so the first parameter is 65). It is the same to the first parameter of turns window under program 03.

4) The second parameter of turns window, (wind turns before slow down). $65 - 3 = 62$.

5) The third parameter of turns window program02 is for fan shape winding. Enter "0000", since the secondary winding is not "fan shape".

Initial switch setting. Must be set before first time power up.

Switch the ⑧ on the front panel. Set to **Auto**.

Switch the 18 on the panel of base. Set to **Auto start**

Switch the 21 on the back of the counter. Set to **winder**.

Switch the 22 on the back of the counter. Set to **double dir**.

Switch the 23 on the back of the counter. Set to **CW**

Switch the 24 on the back of the counter. Set to **4PA**.

Switch the 25 on the back of the counter. Set to **counterclockwise**.

Because the winding has a center tap (both turns numbers are the same) there is two ways to program the machine.

Method one:

Program 01, turn on the machine----- press setting, **specification** displays [_ _], enter [01] in it.----- press ↓ , **program** window displays [_ _], enter [01] in it----- press ↓ -----press ↓ , the **turns** window displays [_ _ _ _], enter the load turns [0029] in it -----press ↓ , the **turns** window display [= = = =] , (for deceleration) ,----- enter [0027] in it.----press ↓ , the **turns** window display [0000] and the **program** window displays [_ _],

Program 02 enter 02 into the program window, ----- press ↓ , times window displays [_ _], enter [01] into it,----press ↓ , the turns window displays[_ _ _ _], enter [0065] into it (the tap turn)---- press ↓ , turns window displays [= = = =], enter [0062] into it,(for deceleration), ---- press ↓ , enter [0000] into the turns window.---- press ↓ , the program window displays [_ _].

Program 03 enter [03] into the program window ----- press ↓ , times window displays [_ _], enter [01] into it, ----- press ↓ , turns window displays [_ _ _ _], enter [0065] into it.(the leaving winding after the tap).---- press ↓ , enter [0062] into it, (for deceleration),---- press ↓ , enter[0000] into the turns window.----press ↓ , the program window displays[_ _].

In order to let the machine cycle form program 01 to program 03, user must have a same end setting mentioned above. But this end setting is in program 04.

Method two.

Program 01, this setting is the same as in **example One**.

Program 02, enter [02] into the **program** window ---- press ↓, enter [02] into the **times** window,---- press ↓, the **turns** window display[_ _ _], enter [0065] into it---- press ↓, the **turns** window displays [= = =], enter [0062] into it---- press ↓, enter [0000] into it---- press ↓, the program window displays [_ _], and have the end setting to make the machine cycle from program 01 to program 02.

(Enter [02] into the **times** window, it means that the machine will wind 65 turns twice, so it will have a stop for tap, and user press the **start** again when the machine stop for tap, the machine will go on working for the next winding).

Sample 2

Core dimension, OD 120mm, ID 60mm, H 50mm. Primary winding is 860 Ts, secondary winding is 125 Ts, primary winding does not have a tap, secondary has two stops for taps (50 Ts, 50Ts, and 25Ts). The core is taped with 12mm tape, pitch 5mm, overlap 7mm, Same tape pattern between primary winding and second winding.

User should use JG 1235 taping machine, high-speed slider winder JG2074, JG 5204 gear winder.

- The parameter calculation and setting of counter of JG 1235 taping machine are the same as Example 1.
- Use the JG 2074 to wind the primary winding.
Since the primary winding does not require reversion and slowdown in advance, in program02, enter “01” into the **times** window, and enter “0860” for the first parameter of the turns window, and “0000” for the second and third parameters of the **turns** window, from then on, same as Example 1.
- Calculating the parameter and setting program for the secondary winding.
(The same as Example 1)

The parameter of turns window of program01. (load turns)

= The total turns winded on the core (wind turns) * the length of one turn

The circumference of the magazine

$$= \frac{125 * 170}{720}$$

720 (we use 170 because the secondary is wound on top of the primary winding)

$$= 29.51 = 30 \text{ Ts}$$

Method one:

Program 01, the same as example 01, but since no advance slow down is required, enter “0000” for the second parameter of the **turns** window).

Program02, the same to the Example 01, but, the parameters for the **turns** window are [0050], [0000] and [0000].

Program03, the same to the example 01, the parameters for the **turns** window are [0050],[0000]and [0000].

Program04, this is an additional program to satisfy the winding requirement, the parameters are [0025] [0000] and [0000] for the **turns** window.

In order to make the machine cycle from program01 to program04, user should set end setting. The same as example 01, the end program is 05.

Method two:

Program 01 is the same as Method one.

Program 02 , enter [02] into the **program** window----press ↓ , **times** window displays [_ _], enter [02] into the window----press ↓ ,the **turns** window will display [_ _ _ _], enter [0050], (it means the machine will wind 50 turns twice, this can satisfy the first and second tap)----press ↓ , **turns** window displays[= = = =], enter [0000] into it,----press ↓ , displays [_ _ _ _], enter [0000] into it, (it needn't fan shape), ----press ↓ , and **program** window displays [_ _],

Program 03, enter [03], -----press ↓ ,enter [01] into the times window----press ↓ , enter [0025] into the **turns** window, for the second tap),----press ↓ , enter [0000] ----press ↓ , and enter [0000] into the **turns** window.----press ↓ ---- and set the end program [04] to make the machine cycle from program [01] to program [03].

Meanwhile, to calculate the load turns of JGC series(slider winder and belt winder) use:

$$T = (OD - ID + 2 * Ht) * \text{wind turns} \div 170$$

On these machines the sensor picks up turns wound rather than rotations of the magazine, so switch ⑤ on the back of the controller must be switched to 4NA. (Again, power must be off for switch settings)

The operation of winder:

- 1) Please read the manual before use, and connect the machine to ground. If the power cable is not grounded, please use the grounding screw on the back of the base. Check and secure all moving parts.
- 2) Set the controller according to the machine type, rotate the gap of shuttle or magazine to face the user, open the shuttle or magazine, insert the core, and adjust the three polyurethane core rotation rollers to provide a good grip on the core with proper clearance to the shuttle. Adjust the rollers along their shafts to position the core vertically. Insert the wire in the hole or slot in the shuttle or magazine. Prepare for load.
- 3) Press the start button, if set for **Pedal**, step on the foot pedal. During **Wind** adjust knobs ④ and ⑤ on the front panel of base for correct wire spacing (pitch). Make a note of pitch for future reference.

1. Slider head winder,

Loading: Open the shuttle, (The position of gap must be a little above the polyurethane rollers). Insert the core in the shuttle. Insert the wire end in the hole of shuttle, and secure it, press the start button, step on the foot pedal, the wire will be loaded in the shuttle. (Clockwise dir.)

Winding: After loading, cut the wire with the wire cutter, move the slider to the front of the.

Shuttle. Distance to the core surface should be 10~30mm. Adjust the friction between the slider and shuttle for correct wire tension. This adjustment is performed by bend carefully, the spring steel wire connecting the two parts of the slider. The magnet wire should be wound fairly tightly onto the core without breaking. Adjust the pressure pad in the middle of the shuttle, the pressure should be light so the wire can pass through without being blocked during winding. Place the wire in the slot of the slider. Hold the wire end against the core surface, press the start button and step on the foot pedal. The wire will be wound on the core. (Counter clockwise dir.)

2. Belt head winder,

Loading: Open the shuttle, insert the core in the shuttle, hook the wire end into the slot or hole in the shuttle, and secure it. Press the start button. Step on the foot pedal, the wire will be loaded onto the shuttle.

Winding: After loading, cut the wire using the wire cutter, grab the wire end and pull sufficient wire out of the shuttle over the edge, and stable the wire end, and position the free wire end underneath the core, using the hand wheel to rotate the shuttle. Adjust the pressure pad in the middle of shuttle, to allow free passage of the wire. Adjust the belt tension for proper wire tension, using the screw on the back of head. Press the start button. Step on the foot pedal, the wire will be wound onto the core.

3. Gear head winder:

Before loading, adjust the brake for proper wire tension. The best way is to close the magazine, apply the brake, rotates the magazine with hand while adjusting the friction with the hand wheel on the top of the brake. Then open the brake. Using a screwdriver, connect the magazine and slider base, and remove the slider.

Loading: insert the wire into the proper hole of the magazine (from inside to outside), insert the end in the adjacent hole and secure the wire end. Press **start**, the wire will be loaded onto the magazine.

Winding: after loading, position the slider base at the top of the head, cut the wire, and affix the slider in the slider base, grab the wire end, and place the wire on the slider, guide the wire end between the gear and magazine, and place it in the groove of the small wheel. Hold the wire against the core, close the brake, press **start**, step on the foot pedal. The wire will be wound onto the core.

4. Taping machine.

Before loading, hold the tape on the top of the head, and adjust the friction by means of the pressure screw.

Loading: pull the tape from the tape roll, through the pressure clip and the electric scissors, and insert the tape end in the magazine over the first brass roller above the gap of the magazine, and hold the tape firmly against the surface of the core.

Winding: press **start**, tape will be loaded into the magazine and wound onto the core at the same time. The machine will go on taping after the loading is completed and the tape automatically cut.

Preventive Maintenance.

Notice

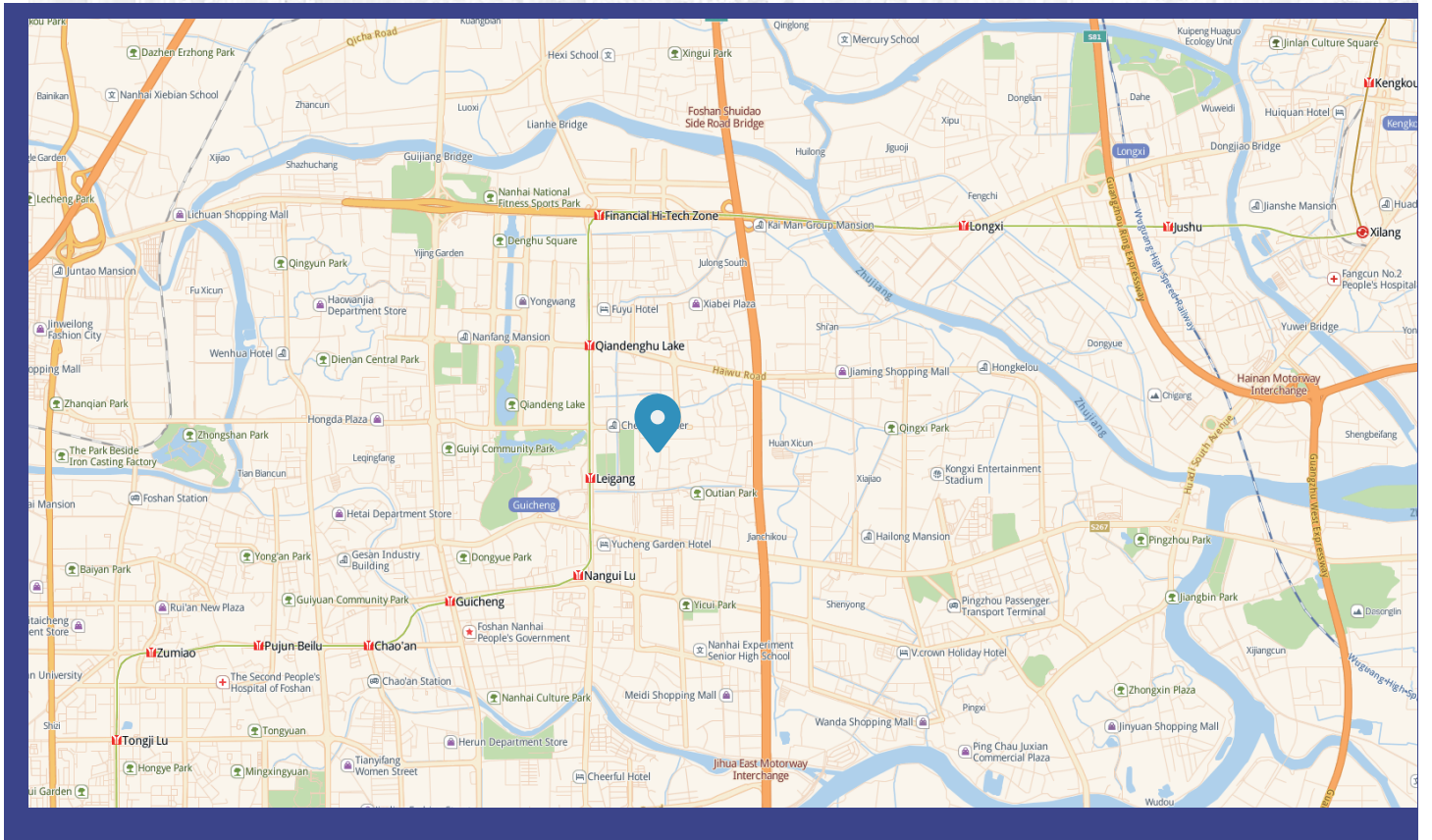
1. Machine must be placed in a well-ventilated environment. Temperature range from 10 to 40C. Vibration $\leq 0.5G$. No corrosive fumes.
2. The machine must be grounded, and the power source must be fitted with the correct value circuit breaker.
3. Shut off power before maintenance and repair.

Maintenance:

1. Grease and clean rotating components and at regular intervals. In particular grease and clean the gears of gear head machines and tapers.
2. Check that ventilation louvers are clear and cooling fans are working.
3. Check the ground connection and proper function of circuit breakers.

Fault	Check	Repair
LED's on controller and switches A & B on base front panel do not light up.	Power line Main fuse	Change and repair
Indicator light on base are on but LED's on controller do not come on/	Check power supply socket on controller	Repair and change
The base indicator lights are on, but the motor does not start up when the pedal is depressed	Press start or not The knob was set to zero There is something wrong with pedal	Press start Adjust Clean or change the pedal
Indication lights of base are on, but the core rotation motor does not work.	Check motor drive belt	Adjust or replace
The machine works but the controller does not count..	Check the transducer. Adjust distance or it may be defective.	Repair or replace.

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WINDER

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