



Pole Ideal Tajhiz Co.

—User Manual—

Shaker Rotator, Rocker shaker and Shaker Microplate

—PIT10LO, PIT16D and PIT3.0—

www.medpit.com

Cat.No.:99213

Contents

	Page		Page
* Critical Considerations	1	14 Setting the Stirring Time	17
* Useful Information	1	14-1 Setting the Minute	18
1 Importance of using the device according to the specifications	2	14-2 Setting the Hour	18
2 Risks	2	15 Setting the Speed	19
3 Technical Specifications	3	16 Stirring and Mixing	20
4 Safety Instructions	4	16-1 Stirring in Adjusted Time	20
5 Delivery Checklist	6	16-2 Endless Stirring	20
6 Unpacking the Device	6	17 Emergency Stop	20
7 Installation	7	18 Shaker Rotator's accessories (PIT10LO)	20
8 Installation and removal of Shaker Rotator's trays (PIT10LO)	8	18-1 Universal Tray (AS 260.1)	21
9 Displacement	8	18-2 Petri Dish Tray (AS 260.3)	21
10 Setting up	8	18-3 Separatory Funnel Tray (AS 260.5)	21
11 Loading the Tray	9	19 Maintenance and cleaning	22
12 Displays and controller items	10	20 Calibration	22
13 Shaker Performance	10	21 Electrical Protection Fuse	22
13-1 Performance Setting	10	22 Returning the Unit for Repair	23
13-2 Operating Mode A	11	23 Disposal of the Unit	23
13-3 Operating Mode B	13		
13-4 Operating Mode C	16		

*** Critical Considerations**

- Position the unit on a solid, stable, even, and level surface.
- When operating the device, no material, object or person should be within 30cm of the device which is safe.
- It is necessary to load the trays according to the "Loading the Tray" section of the manual.
- In order to use the device safely and correctly, each operator must read the instruction manual before using the device and be aware of the safety instructions listed in it.
- Take care of these operating instructions and keep them in a place where they can be accessed by everyone.
- Only operators who have been trained accordingly, know the appliance and are authorized to carry out work in this field should use this appliance.
- To repair, open the device only by a trained professional. The device must be disconnected (unplugged) before opening. Some electronic components may contain an electric charge for some time, even after the plug has been disconnected.
- Beware of the high dead weight of the appliance when transporting. Ensure that your fingers do not get crushed when setting down the appliance.
- Accessories must be inserted or replaced merely when the device is disconnected from the power supply.
- Do not use trays or clamping rolls to move at all.

*** Useful Information**

- The special design and shape of the device makes it very easy for the user to work with.
- The process of selecting and processing the materials used in this device has been such that it has completely facilitated the process of recycling the components of the device.
- The device motor allows you to adjust the speed without any restrictions in its allowable range. Another feature of the engine is that the speed is constant by changing the weight of the load.

1- Importance of using the device according to the specifications

Shaker Rotary (PIT10LO) with various accessories and trays, it is suitable for mixing liquids in bottles, Erlenmeyer, flask, test tubes, etc. with a maximum allowable weight of 7.5 kg. The device is designed and manufactured with the ability to move the moving screen in an orbital or linear (customer order).

The Shaker Microplate (PIT 3.0) device also provides the possibility of mixing and stirring liquids inside the microplates with its high speed and orbital rotation. The ergonomic design of the device has provided easy and convenient conditions for users in a variety of laboratories, including: medical, oil industry, food industry, training, etc.

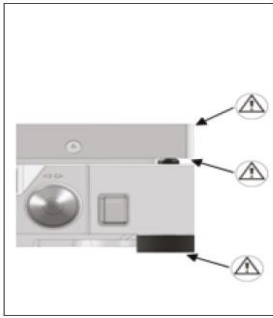
Rocker Shaker (PIT16D) device is suitable for mixing liquids, including blood bags with a maximum allowable weight of 5 kg. This device is designed and manufactured with the ability to swing.

By removing the rubber bases, the device can be attached or screwed to a specific location (for example on a table). Of course, the sinking depth of the screws should not be more than 5 mm. At the customer's request, the device is also provided with reverse motion (clockwise / counterclockwise movement).

The device is equipped with a serial port that allows the device to be controlled by a computer (by using the software and to the customer's order).

2- Risks

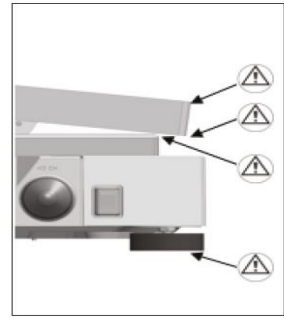
1. Defective or inadequate protective equipment can expose the user to the risk of spurting liquids, projectile parts or being pulled in at the shaking table or support.
2. Never touch moving parts (risk of crushing, impact and cutting, see fig. 1: Danger zones).
3. Ensure that parts of the body, hair or items of clothing cannot be trapped by the motion parts.
4. Avoid allowing objects to push or strike the agitation table. Even small undetectable damage may result in serious damage to the motor bearing. Careful handling will guarantee safe work and a long service life of the machine.



Shaker Microplate



Shaker Rotator



Rocker Shaker

Figure 1: Dangerous points while working with the device

3- Technical Specifications

Device Name	Shaker Rotator	Shaker Microplate	Rocker Shaker
Model	PIT10LO	PIT3.0	PIT16D
Shaking methods	orbital and linear <small>(depends on customer's order)</small>	orbital	swing
Tray shaking range	10 mm	3 mm	16 °
Maximum loading capacity	7.5 Kg	6 Plate	5 Kg
Engine input-output power	10 - 45 W		
Voltage	210-230 VAC		
Frequency	50 Hz		
Allowed time of use	Permanent working		
Speed Range	20 – 500 rpm	80 – 1100 rpm	5 – 80 rpm
Speed display	Digital		
Timer display	Digital		
Timer	0 – 99:59' / ∞		
Performance	With time limitation or Permanent working		
External dimensions without the tray (length x width x height)	420mm x 360mm x 100mm	420mm x 360mm x 110mm	420mm x 360mm x 130mm
Ambient permissible temperature	5 - 50 °C		
Maximum relative humidity allowed	80 %		

4- Safety Instructions



Components that can be detached from the device without the need for tools must be reconnected to the device for safe operation.

1. Along with the operating instructions and the legal regulations on accident prevention, you should also follow the recognized professional regulations for working in a safe and professional manner.
2. Do not use trays or clamping rolls to move at all.
3. These operating instructions should be read in conjunction with any other instructions concerning accident prevention and environmental protection.
4. Position the unit on a solid, stable, even, and level surface. When operating the device, no material, object or person should be within 30cm of the device which is safe.
5. To avoid damage due to condensate, when changing from a cold to a warm room, the incubator must warm up for at least 3 hours in the warm room before it may be connected to the mains or before transfer, operate the unit for 30 minutes until the unit has attained ambient temperature.
6. Only use accessories approved by the manufacturer (refer to the “Accessories” section)
7. If accessories and spare parts unapproved by the manufacturer or failure to use the device in accordance with the manufacturer's instructions and specifications, user safety and health cannot be guaranteed.
8. For loading of the trays should be refer to the “Loading the Tray” section.
9. You should make sure that the trays tightly closed in their places before the device operated.
10. Adjust the device speed depends on the container on the tray and refer to the “Loading the Tray” section. This prevents sudden vibration and trembling. In the other hand, all the accessories, containers and tubes used in this process should be completely secure and tight on the trays.
11. Load the device within acceptable balance range relative to the center of the tray.
12. In case of the speed unevenness or excessive vibration of the device, decrease speed of the device unless the symptoms become usual.

13. In case of sudden power failure during the mixing process, the device will not start automatically after reconnection of the power supply. (Except in C mode)
14. Trays and containers with corroded and damaged veins should not be used for mixing.
15. To repair, only trained professional persons approved by manufacturer are allowed to fix.
16. Better to use the device for mixing materials or a combination of materials that the operator is aware that these substances do not react dangerously to the excess energy generated during the mixing process. This also applies to the solar radiation energy during the operation of this device
17. Do not use this device in a flammable and explosive atmosphere to mix hazardous compounds as well as underwater.
18. Do not load any flammable or reactive materials for mixing.
19. When operating the device, the operator must select and use the cover and safety equipment appropriate to the type of mixture and extent of the risk.
20. If the containers and pipes that are shaking are not properly and securely positioned on the tray then they may be damaged or broken during the process, and the material inside them may splash out and causing injuries.
21. Due to improperly placed containers on the device and its central gravity state during the combining process the dynamic forces may occurs which results in the device moving on the benchtop. Due to the restrictions on loading the device and the weight placed on the tray at high speeds processes should be refer to the “Loading the Tray” section.
22. Before starting the rotation of the Shaker Microplate (PIT3.0) device’s tray, make sure all plates are in place. Otherwise, the correct and safe operation of the device is not guaranteed.
23. The safety and reliability of the incubator are only guaranteed if:
 - The incubator is operated according to the operating instructions.
 - The electrical installation at the set-up site of the incubator meets the requirements of the regulations.
 - Have an expert examine the device in accordance with the instructions.

5- Delivery Checklist

Along with the following items, the unit is packaged and delivered:

- 1 connecting cable
- 4 screws to connecting the tray (only in PIT10LO model)
- 1 spare fuse (1 amp)
- 1 operating manual

For the Shaker Rotator (PIT10LO), the trays and other accessories will be delivered separately and according to the customer's order.

6- Unpacking the Device

After unpacking, please check the unit and its accessories based on the delivery checklist for the completeness and possible transportation damage. Inform the carrier immediately if transportation damage has occurred.



Do not use trays or clamping rolls to move at all.

7- Installation

According to the standards for laboratory equipment, to completely separate the unit from the power supply, you must set a key to disconnect power supply in case of emergency. Install the unit in a way that the power plug is away from the unit, outside the unit installation site.

Information about environmental conditions (temperature, humidity, etc.) to be set up, read in the "Technical Specifications" section.

Position the unit on a solid, stable, even, and level surface.

When installing the device, no material, object or person should be within 30cm of the device which is safe.

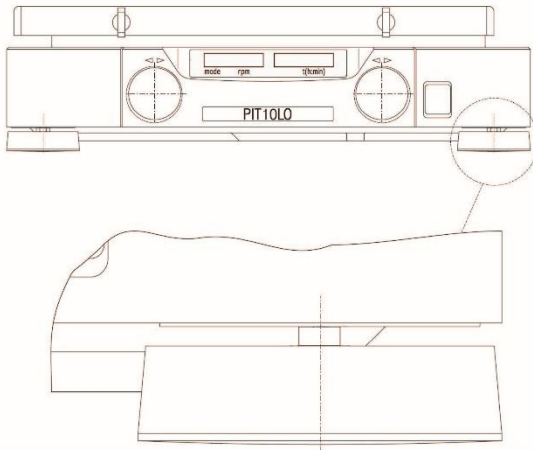


Figure 2: Where to clean the bases of the device

The vibration of the device is counteracted by its rubber foot, as a result, always keep the shaker's foot contact surface and the specified location on benchtop clean and dust-free. (Figure 2)

8- Installation and removal of Shaker Rotator's trays (PIT10LO)

Follow the steps below to install the trays:

1. The surface of the main tray and the floor of the tray being installed should completely clean and free of any external objects.
2. Mount the side tray vertically on the main tray, so that the four holes on the trays fit each other perfectly.
3. Close the four screws attached to the device in the holes listed in section 2.
4. Control the firmness of the tray on the device.

To remove the tray, open the four screws on the tray and then lift the tray gently.

9- Displacement

The following must be observed when Displacing the device:

1. Set the front key to zero.
2. Unplug the device cable from the socket and the body.
3. Open the tray from the device.

10- Setting up

- The electricity consumption of the network must match the contents of the identification plate.
- Connect the plug to a standard (ground) socket.
- Turn on the device by placing the front key on the device in mode one.
- The device model and application number appear on the screen.
- With the latest settings displayed, the device is ready to use.

11- Loading the Tray

Ensure proper tray placement.

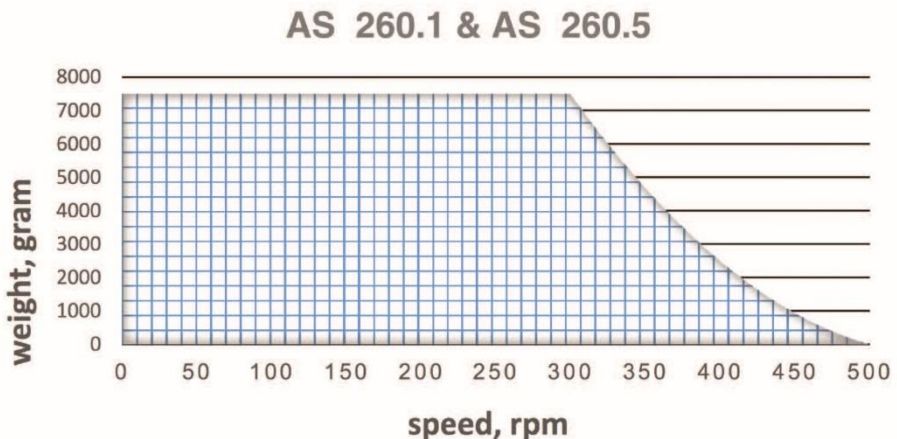
- To maintain safety, the weight on the stirrer and the speed of the device must be within the permissible range in the graph 1 (the hachured part is the legal limitation). The device is not allowed to use the range outside of the graph 1.
- The tray surface should be perfectly clean and level

If the device is next to another device, it is on at the same time, It should be noted that when working with the device due to undesirable loads and the position of the center of gravity, dynamic forces increase which may cause the device to vibrate or uncontrollable vibration of the table. In case of irregular operation and vibration of the device, the speed must be reduced to equilibrium (vibration elimination).

* Before starting the rotation of the Shaker Microplate (PIT3.0) device's tray, make sure all plates are in place. Otherwise, the correct and safe operation of the device is not guaranteed.

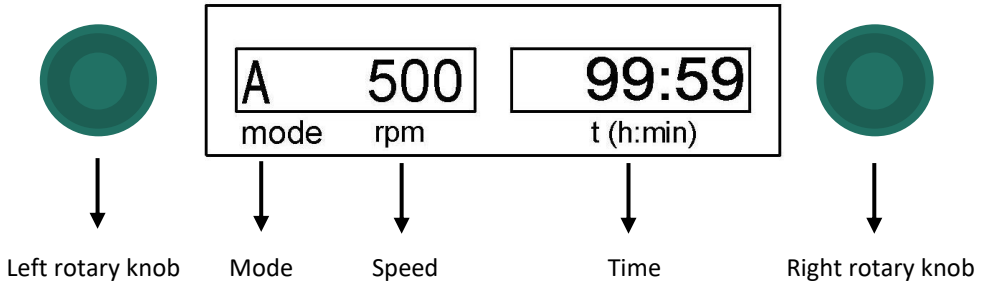


Load containers on the tray as balanced as possible (relative to center of tray).



Graph 1: The relationship between weight and speed

12- Displays and controller items



13- Shaker Performance



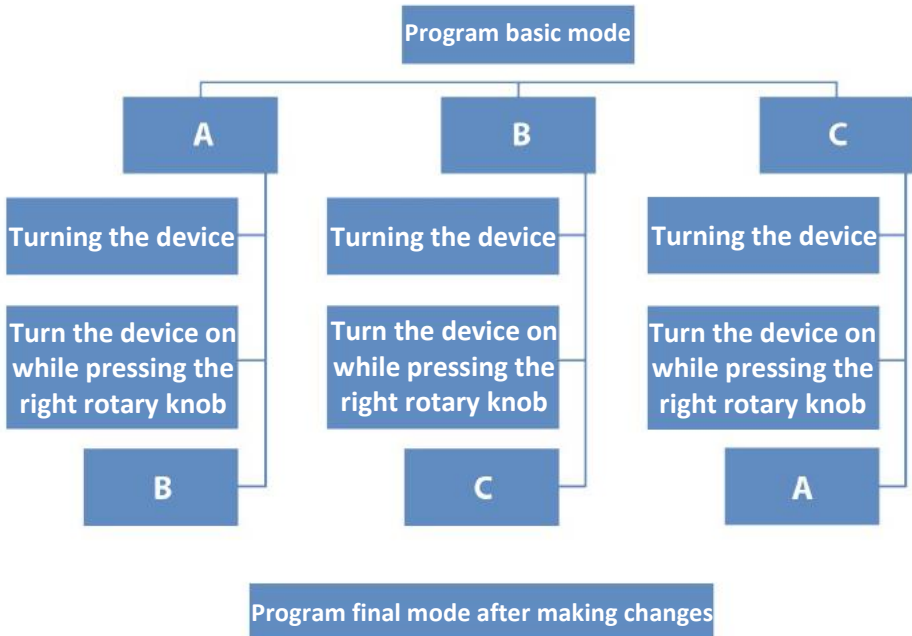
The dashed line around some of the numbers in the following images is a flashing variable in the display.

13-1 Performance Setting

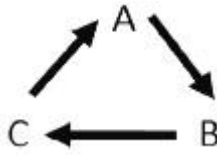
Follow these steps to change the application state:

1. Turn off the device.
2. Turn the device on while pressing the right rotary knob.

In this case, the device application will change as follows:



In short, the modes are like a cycle facing from A to B, from B to C and from C to A.



13-2 Operating Mode A

The device is in the operating mode A since leaving the factory. The "maximum speed" restriction can only be adjusted or changed in operating mode A. When the device is in the operating mode A, the letter A is displayed at the application mode display.

After changing the operation mode and turning on the device, the following process will be displayed by the display:

- The company name, device model and device software version appear for a few seconds.

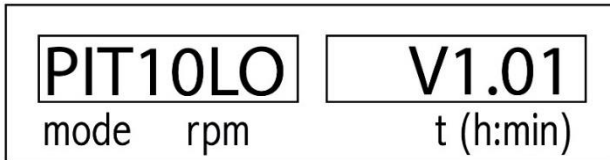


Figure 3: First page of display in PIT10LO model

- The most recent settings are displayed on the display.

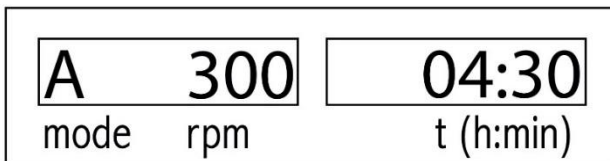


Figure 4: Operating Mode A – device is ready to work

- By pushing the right rotary knob, the minute variable will be flashing and the minute value will be set by rotating the same rotary knob. (in figure 5 The dashed line is a flashing variable in the display).

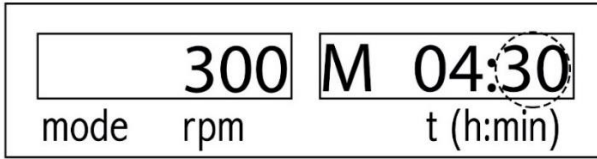


Figure 5: Operating Mode A – setting the minute

- By pushing the right rotary knob again, the hour variable will be flashing and the hour value will be set by rotating the same rotary knob. (in figure 6 The dashed line is a flashing variable in the display).

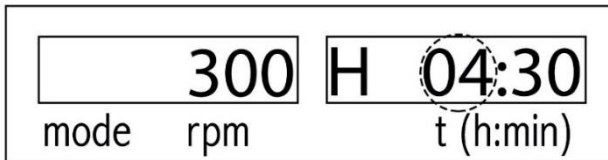


Figure 6: Operating Mode A – setting the hour

- By pushing the right rotary knob again, the speed variable will be flashing and the speed value will be set by rotating the other (in the left side) rotary knob. (in figure 7 The dashed line is a flashing variable in the display). In the end, by pushing the right rotary knob, all the settings will be set.

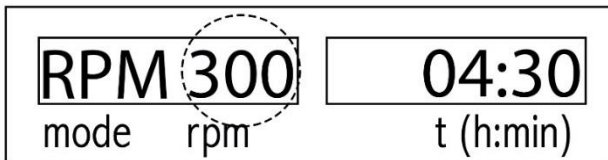


Figure 7: Operating Mode A – setting the speed

- Once the settings become set, by pressing the left rotary knob, the device will start working (figure 9) at the saved speed and time settings after displaying "Start" word (figure 8) on the display.

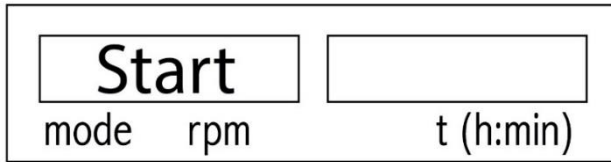


Figure 8: Operating Mode A – moment of rotating operation start

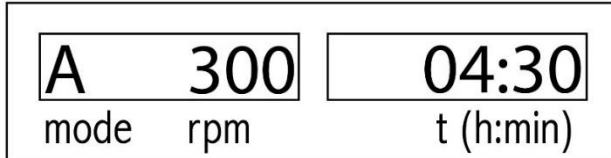


Figure 9: Operating Mode A – device is in rotating operation

- When the device is rotating, by pushing the left rotary knob the device will stop working after few seconds while displaying "Stop" word (figure 10) on the display. Now device is ready to work again. (figure 11)

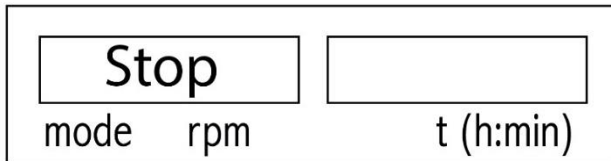


Figure 10: Operating Mode A – device is stop working

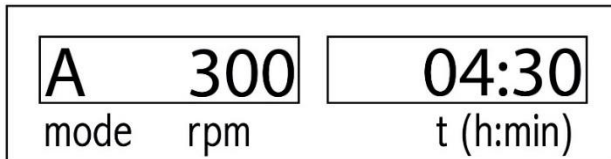


Figure 11: Operating Mode A – device is ready to work

13-3 Operating Mode B

Refer to the performance setting section for changes in mode of operation. The difference between A mode and B mode is just in limitation of speed in B mode. the limitation means that adjustable speed is equal or less than last speed value in A mode. so that means we will have:



Adjustable speed in mode B ≤ Last adjustable speed in mode A

After switching from A mode to B mode and turning the device on, the following process will be on display:

- The company name, device model and device software version appear for a few seconds.

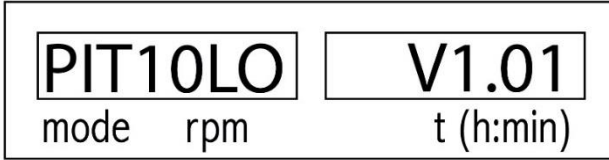


Figure 12: First page of display in PIT10LO

- The most recent settings are displayed on the display.

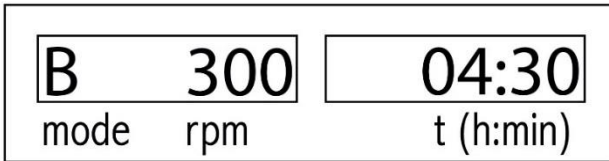


Figure 13: Operating Mode B – device is ready to work

- By pushing the right rotary knob, the minute variable will be flashing and the minute value will be set by rotating the same rotary knob. (in figure 14 The dashed line is a flashing variable in the display).

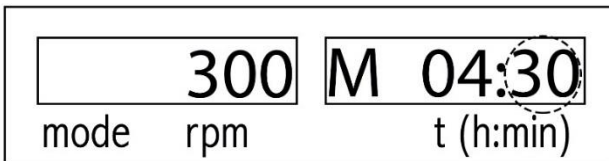


Figure 14: Operating Mode B – setting the minute

- By pushing the right rotary knob again, the hour variable will be flashing and the hour value will be set by rotating the same rotary knob. (in figure 15 The dashed line is a flashing variable in the display).

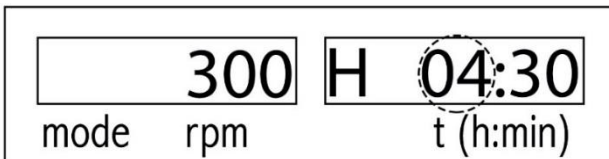


Figure 15: Operating Mode B – setting the hour

- By pushing the right rotary knob again, the speed variable will be flashing and the speed value will be set by rotating the other (in the left side) rotary knob. (in figure 16 The dashed line is a flashing variable in the display). In the end, by pushing the right rotary knob, all the settings will be set.

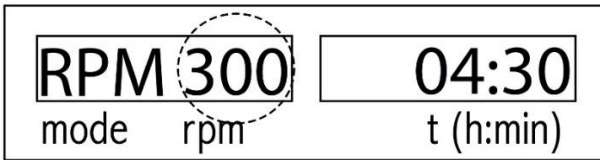


Figure 16: Operating Mode B – setting the speed

- Once the settings become set, by pressing the left rotary knob, the device will start working (figure 18) at the saved speed and time settings after displaying "Start" word (figure 17) on the display.

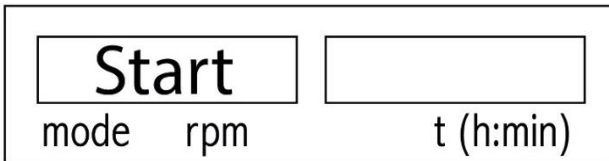


Figure 17: Operating Mode B – moment of rotating operation

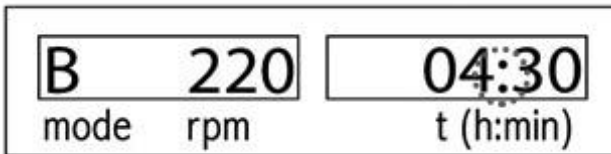


Figure 18: Operating Mode B – device is in rotating operation

- When the device is rotating, by pushing the left rotary knob the device will stop working after few seconds while displaying "Stop" word (figure 19) on the display. Now device is ready to work again. (figure 20)

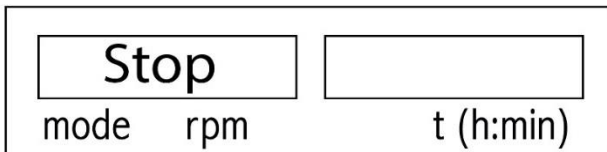


Figure 19: Operating Mode B – device is stop working

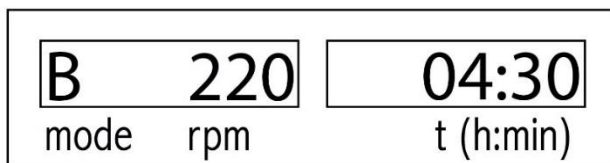


Figure 20: Operating Mode B – device is ready to work

13-4 Operating Mode C

By selecting this mode, the values of the variables (time and speed) cannot be modified and their values will take from the last settings of the previous mode (B). one feature of this mode (C) is repetition of the rotation after the power supply is turned off and on, it means that if during the rotation process the electricity goes off, after reconnection to the electricity the device will continue the rotation process automatically, while this operation is not performed for modes A and B. After changing the operation from B to C and turning on the device, the following process will be displayed by the display:

- The company name, device model and device software version appear for a few seconds.

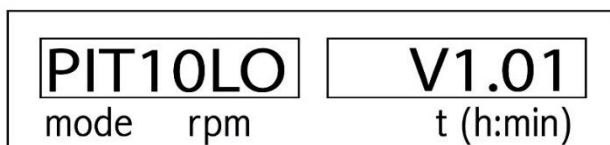


Figure 21: First page of display in PIT10LO model

- The most recent settings are displayed on the display.

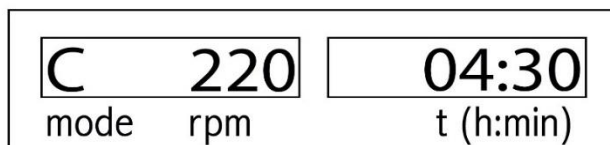


Figure 22: Operating Mode C – device is ready to work

- In operation mode C no modify can be applied. now by pushing the left rotary knob the device will start working in operating mode B (figure 24) at the saved speed and time settings after displaying "Start" word (figure 23) on the display.

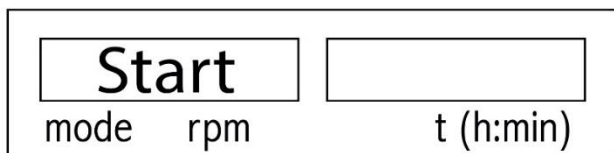


Figure 23: Operating Mode C – moment of rotating operation

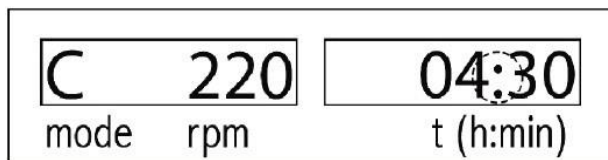


Figure 24: Operating Mode C – device is in rotating operation

- When the device is rotating, by pushing the left rotary knob the device will stop working after few seconds while displaying "Stop" word (figure 25) on the display. Now device is ready to work again. (figure 26)

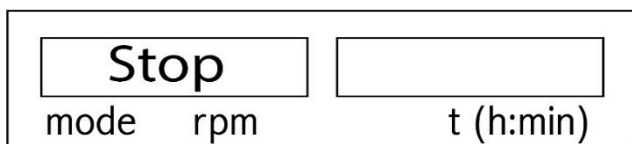


Figure 25: Operating Mode C – device is stop working

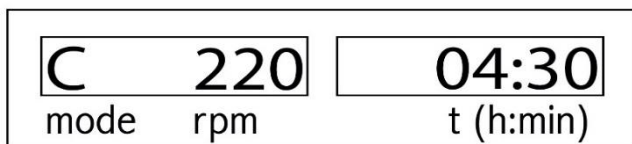



Figure 26: Operating Mode C – device is ready to work

14- Setting the Stirring Time

 All settings such as time and speed can only be modified if the tray stops rotating.

For time setting, only two variations of hour and minute are adjustable.

14-1 Setting the Minute

1. Push the right rotary knob once.
2. In this case, the minute's section becomes flashing and the letter M appears in the right display. (figure 27)
3. Now by turning the right rotary knob the minute's value increase or decrease (Increase by rotating the right rotary knob clockwise and decrease by turn it opposite).
4. Minute's value can be set from 0 to 59.

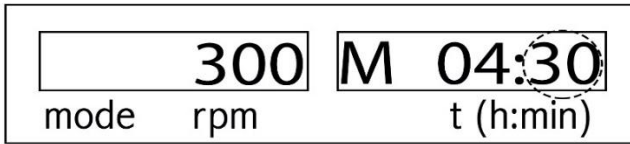


Figure 27: Setting the Minute

14-2 Setting the Hour

Follow these steps immediately after the minute settings are completed:

1. Push the right rotary knob once again.
2. In this case, the hour's section becomes flashing and the letter H appears in the right display. (figure 28)
3. Now by turning the right rotary knob the minute's value increase or decrease (Increase by rotating the right rotary knob clockwise and decrease by turn it opposite).
4. Minute's value can be set from 0 to 99.

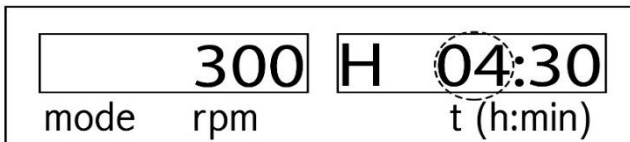


Figure 28: Setting the Hour



Set the minute and hour values to zero for rotating without interruption. Displaying the ∞ on screen is the sign of continuous rotation. (Figure 29)



If no changes are made to the variables during the setting for 10 seconds, the device returns to the default values. Set the values again if needed.

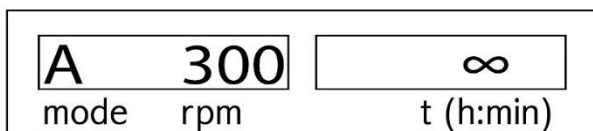


Figure 29: Displaying the ∞ on screen in limitless time mode

15- Setting the Speed

To adjust the rotation speed, follow these steps immediately after the hour settings are completed:

1. Push the right rotary knob once.
2. In this case, the speed's section becomes flashing and the RPM word appears on the right display. (figure 30)
3. Now by turning the left rotary knob the speed's value increase or decrease (Increase by rotating the right rotary knob clockwise and decrease by turn it opposite).
4. Speed's value can be set from 20 to 220 rounds per minutes with 5 rpm intervals is adjustable in Shaker Rotator (PIT10LO), from 80 to 1,100 rounds per minutes with 5 rpm intervals is adjustable in Shaker Microplate (PIT3.0), from 5 to 80 rounds per minutes with 1 rpm intervals is adjustable in Rocker Shaker (PIT16D).
5. Finally, by pushing the right rotary knob again, all the settings related to time and speed will be set.

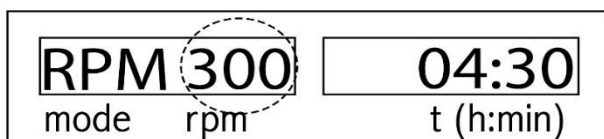


Figure 30: Setting the Speed



To ensure the safety of the rotation operation, the allowable speed value of each tray should be extracted from graph 1 in the "Tray loading" section. (Only on the Shaker Rotator)



If no changes are made to the variables during the setting for 10 seconds, the device returns to the default values. Set the values again if needed.

16- Stirring and Mixing

16-1 Stirring in Adjusted Time

1. Set the device time to any values except 00:00. (02:30 as an example)
2. By starting the rotation process, the time value start decreasing in reversal mode.
3. After the adjusted time reach to 00:00, the device decreases the speed and stop the rotation process.

16-2 Endless Stirring

1. Set the device time to 00:00, then the ∞ sign will display on screen.
2. By starting the rotation process, the time value starts from 00:00 and increasing up to 99:59.
3. According to the previous segment, the device keeps working until pushing the left rotary knob.

17- Emergency Stop

To stop rotating, push the left rotary knob once. if needed to emergency and fast stop just push the left rotary knob again to stop the device as fast as possible.

18- Shaker Rotator's accessories (PIT10LO)

For safe and secure operation of the device, the accessories provided by Pole Ideal Tajhiz Company must be connected to the stirring tray. (refer to "Mounting and Unmounting the Trays" section)

18-1 Universal Tray (AS 260.1)

A universal tray that allows you to stir a wide range of dishes (in terms of shape and volume)

Tray components:

AS 1.60 The main body of the tray - One pcs - length x width x height (mm): 135x334x425

AS 1.60 Clamping rolls package- Four pcs

Attention: The universal tray will be installing on the main tray by 4 screws (with the device)

18-2 Petri Dish Tray (AS 260.3)

The application of this tray is to gently stir the material at low speed. Cultivation flasks and petri dishes are among the dishes used in this tray

Tray components:

AS 260.3 Petri Dish tray - One pcs - length x width x height (mm): 33x370x410

Attention: The Petri Dish tray will be installing on the main tray by 4 screws (with the device)

18-3 Separatory Funnel Tray (AS 260.5)

For stirring at high speed.

Tray components:

AS 260.5 Separatory Funnel tray - One pcs - length x width x height (mm): 135x334x425

Attention: The Separatory Funnel tray will be installing on the main tray by 4 screws (with the device)

19- Maintenance and cleaning

Shaker devices do not require special maintenance, but the bottom surface of the bases and trays should always be completely clean and free of dust. These devices will only be exposed to natural wear and tear of parts (due to vibration). The device sent for repair must be completely clean and free of any hazardous substances.

Cleaning Tips:

1. Disconnect the device from the power supply before cleaning.
2. To maintain hygiene and prevent corrosion when contaminants stick, the parts of the device should be cleaned with a damp cloth in the recommended periods of one week.
3. Use cleaning detergents and disinfectants with pH between 5 and 8. Do not use alkali detergents with $\text{pH} > 8$.
4. Wear suitable gloves when cleaning.
5. Electronics should never be cleaned with detergent.
6. If you use a method other than the one in the manual, be sure to contact Pole Ideal Tajhiz Company's technical technicians before use to ensure that the device would not damage.

20- Calibration

These devices were calibrated and adjusted in the factory of Pole Ideal Tajhiz Company. It is designed to provide accurate performance. However, it is recommended that the device be calibrated periodically by companies certified by competent authorities, according to the device operation period, the sensitivity of the tests, and device application.

21- Electrical Protection Fuse

This device is protected by a fuse embedded on the rear of the device, next to the input cable, inside the power supply (female part). If this fuse is blown or faulty, you can replace it. There is also a spare fuse in the unit packaging in case of necessity.

Important points of fuse replacement:

- Make sure to unplug the device prior to replacing the fuse.
- The fuse may be replaced only with the spare fuse provided with the device or a substitute of the same technical specifications
- In case of re-burning of the fuse, notify the technicians of the Pole Ideal Tajhiz company.

22- Returning the Unit for Repair

If you return a unit for repair, you must clean and disinfect it totally for personnel safety. We certainly reserve the right to refuse contaminated devices. Customer is liable for disinfection and cleaning costs.



Only the personnel certified by the manufacturer are allowed to do repairs.

23- Disposal of the Unit

The unit must not be disposed at public collecting points.



For disposing of the device, act according to the directive 2002/96/EC on waste electrical and electronic equipment (WEEE) and also the national laws.



Pole Ideal Tajhiz Co.

Unit11, No.13, Hojjatdoust St., South
Felestin St., Keshavarz Blvd., Tehran, Iran

Sales Office: +98 21 88545922


Tel: +98 21 88994482-3


Fax: +98 21 88994484


Postal Code: 1416694334


info@medpit.com

www.medpit.com

 @poleideal

 @poleideal

 + 98 912 334 0197

 Pole Ideal Pars Co.