

# **PACKING MACHINE UPM-20, UPM 20V**



## **User Manual**

**Moscow, Russia  
2009**

*We are constantly working on our products to improve their reliability and operating conditions, so there may be slight differences not reflected in this manual.*

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## 1. INTRODUCTION

This user manual is an official document for study of the mechanism of the Packing Machine UPM-20 (hereinafter – **the device**), its operating principles and maintenance.

The device is produced in accordance with specification 5151-001-18739119-2006 and possess a certificate of conformity № ROSS RU.AU64.V17754.

### PERFORMANCE ATTRIBUTES OF UPM-20

Dimensions: length, mm	1480
width, mm	760
height, mm	1150
Weight: net, kg	180
set with package, kg	300
Power supply*	Battery 12V, 75A*h
Adjustable revolution number of turntable	1-9
Maximal revolution rate of turntable, rpm	22 (30)
Electronic non-nullable fiscal counter	0-999999999
Average power consumption, W	120
Average standby power consumption, W	0,5
Operation, persons	1
Average packing time for a piece of luggage, min	1,0-1,5
Film consumption, packages per roll	300-350
Noise level, dB	No more than 55

Note: maximal dimensions of cargo – 1500\*800\*1000 mm, maximal weight – 75 kg.

### LIST OF EQUIPMENT

В комплект поставки входит:

1. Packing Machine UPM-20	1 pc.
2. Polyethylene stretch film	1 roll
3. Scotch tape	2 rolls
4. Dispenser	1 pc.
5. Charger*	1 pc.
6. Battery*	1 pc.
7. Fuses	6 pcs.
8. Equipment certificate	1 pc.
9. Operator Manual	1 pc.
10. Operation Log	1 pc.
11. User Manual	1 pc.
12. Installation Guide	1 pc.
13. '+' button, green	1 pc.
14. '-' button, red	1 pc.
15. Certificate and User Manual for weighing machine **	1 set

\* Depending on a delivery set, battery and charger can be replaced with a constant power supply 220/12V.

\*\* For UPM-20V.

## 2. PURPOSE

**2.1.** The device is designed for packing of passenger luggage (cases, bags, boxes, etc.) into plastic stretch film in passenger service area, freight terminals and storehouses.

**2.2.** The UPM-20V model can be optionally equipped with built-in electronic balance allowing to weigh luggage and to tariff packaging on basis of its weight.

**2.3.** The device must be operated at atmospheric temperature 0-40<sup>0</sup>C, relative humidity 80% (at 20<sup>0</sup>C).

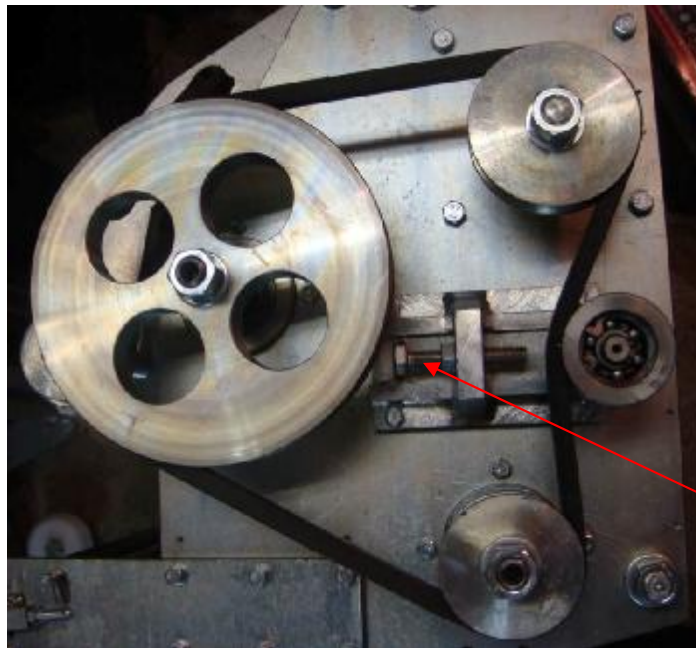
## 3. MECHANISM AND OPERATION PRINCIPLE

### 3.1. Description of the device

The device consists of a cabinet and a trolley. The cabinet is a welded case-shaped construction which locates in the rear part of the trolley. There are two doors in its rear wall which open to pre-stretching mechanism and rotary cassette with a film bobbin. The mechanism provides a preliminary stretching of film up to 200%, using rubber rollers which are set into the bearing supports fixed on the upper and lower plates of the pre-stretching mechanism. The plates are tied by bars fixed on the trolley. The bobbin with polyethylene stretch film is settled on the rotary cassette with a clamping spring.

Feeding and preliminary film stretching are carried out by rollers propelled by chain drive and pinions located above the upper plate of the mechanism. The chain is driven by a motor with regulated speed. The degree of preliminary film stretching depends on revolution rate of the rollers.

The belt tension is regulated by the regulatory bolt of the tension mechanism (pos. 1).



A turntable sets on the trolley, bears against supporting rollers fixed on the trolley, and is driven by a gear-motor with electronically regulated speed.

The trolley rests on three wheels. The front wheel is a rotary one and equipped with a brake.

Power is supplied by a battery (capacity not less than 70 A\*h) located in a battery cell, or by stabilized power supply (optional). Recharging and operation of the battery must be carried out in accordance with the State Standard Specification 29111-91, 959-2002 and User Manual in specially designated area. The provided charger should be used.

**ATTENTION!** To avoid electric injury, it is strictly prohibited to place charger inside the device during recharging!

### **3.2. Operation principle**

Packing of a luggage is carried out using special polyethylene stretch film (stretch factor not less than 2.5). The luggage is placed on the turntable of the device and fixed with clamping holders.

Film is reeled off bobbin by rubber rollers and fed to the cargo through a guiding (outlet) roller. Film tension (packing compactness) is regulated by adjustment of revolution rate of the turntable and of the film transport drive.

When the specified number of revolutions is achieved, the turntable stops, and film is cut by a tear-off knife. Film end is fixed on the packed luggage with a scotch-tape.



Fig. 1. Packing Machine UPM-20

## 4. SAFETY PRECAUTIONS

**4.1.** Only persons older than 18, who have passed medical examination, orientation training, safety training, electricity safety knowledge test, and special safety working instruction, and who have studied mechanism and operational principles of the device, are allowed to unrestricted operation of it.

**4.2.** During operation of the device, **it is strictly prohibited to:**

- leave cabinet doors open;
- carry out repair and regulatory procedures;
- operate without lids covering rotating parts of the pre-stretching unit;
- install or remove a cargo from the rotating turntable;
- try to stop turntable rotation;
- recharge the battery.

**4.3.** Safety system of electrical equipment

Thermal and current protection of gear-motors is provided by an electronic PDM unit. When protection acts, the respective gear-motor will be turned off automatically; turning it on is possible only after forced turning off and following turning on of the device. Protection of control circuits is carried out using fuses.

## 5. MACHINE DIAGRAM

1. Frame.
2. Wheel.
3. Rotary wheel with brake.
3. Case.
4. Film bobbin bearing.
5. Film.
6. Spring-mounted turning arm.
7. Rubber rollers.
- 9-11. Driving pulleys of pre-stretching unit.
12. Driving roller.
13. Guiding roller.
14. Cover.
15. Regulation handle for film bobbin fastening.
16. Operation panel.
17. Control panel.
18. Expansible holders.
19. Turntable engine.
20. Turntable.
21. Brake.
22. Film pre-stretching engine.
23. Screws for turntable fastening.



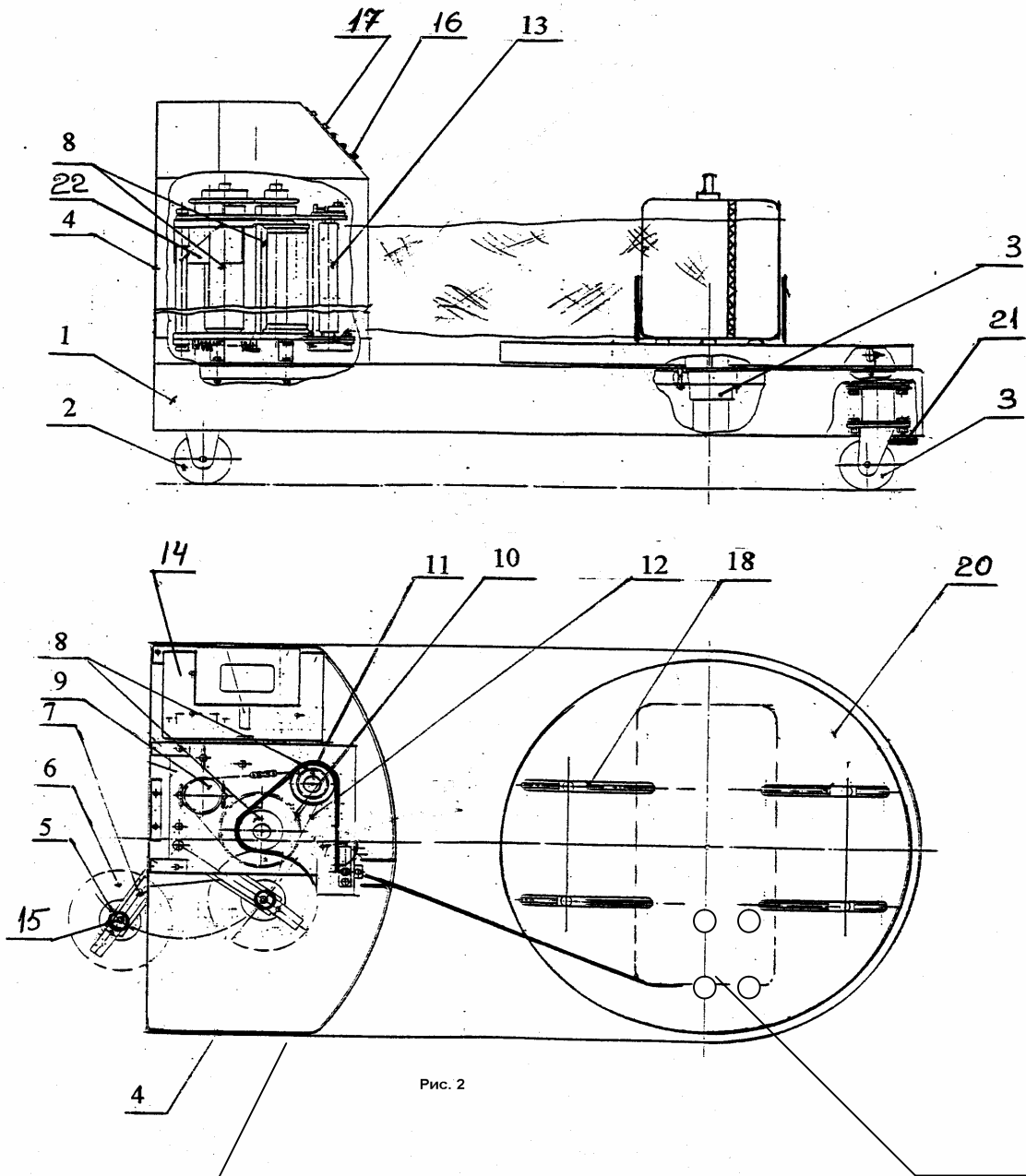


Рис. 2

Fig. 2. Machine Diagram

## 6. INSTALLATION AND OPERATION

**6.1** Before start, operator must put on a work wear and visually check condition of the device and availability of operating supply.

**6.2** Install a bobbin with film into the cassette:

- a). Pull the bearing (4, Fig. 2) until it is fixed;
- b). By turning the screw, lift the film clamping until the film roll freely enters under the clamping roller (7, Fig. 2);
- c). Place the bobbin with film on the lower bearing (4), so that when the film is unwinding, the roll is turning counter-clockwise; then secure the screw (7) to fix the bobbin;
- d). Push the bobbin inside the device;
- e). Unwind approximately 1 m of the film and place it (see Fig. 2) between two rubber rollers, so that it covers them on the outer side; lead the film out through the steel outlet roller and through the slot in the front wall of the cabinet. When the film is in tension, the outlet roller should move with it, deflecting from vertical axis.

**ATTENTION!** Film whipping is strictly prohibited – it can lead to adhesion of film to the bobbin and following winding on the rubber roller.

In case film has winded on the rubber roller:

- turn the device off by “Emergency Shutdown” button or “Off” toggle switch located inside the device, behind the right door;
- release the rubber roller from winded film by turning the roller manually in the direction opposite to winding;
- reinstall film into the device;
- turn the device on by “On” toggle switch or “Emergency Shutdown” button by turning it counter-clockwise.

**6.3** To carry out an electromechanical check, as well as to operate the device, it is necessary to:

- a) Check the reliability of battery contacts and polarity: red clip must be on the “+” clamp, black clip - on the “-” one;
- b) The battery must be fully charged; if it is uncharged, use the charger included in the delivery set, according to operating manual;
- c) Turn the device on by “On” toggle switch. The device will be initialized; the revolution counter will be set into the starting value “4”; the fiscal counter will display the last stored number (that is, a shift run).

**6.4** Place a luggage in the center of the turntable (20, Fig. 2).

**ATTENTION!** A packing luggage must meet the following requirements:

- **dimensions do not exceed the maximum allowed;**
- **weight is less than 75 kg;**
- **non-fragile object (glass, crystal, etc. are not allowed);**
- **non-crumplable object (thin paper boxes, etc. are not allowed);**
- **no sharp, protrudent edges (it can cause tearing of film).**

By bringing the expansible holders together or apart, press them to the packing object. It is highly recommended to move holders by laying stress on their lower part - to provide a smooth motion, to decrease an applied exertion and, therefore, a probability of breakage.

**6.5** Depending on dimensions and weight of cargo, set an appropriate number of turns using “+” (green) or “-” (red) buttons. Please note that maximum number of turns is 9.

**6.6** Pull the film out, press its edge to the lower part of the nearest holder and push the “Start” button; decimal point of turn number display and “Start-Stop” button will then become highlighted. After that, turntable will start to turn (the turn number indicator will show the number of revolutions remaining before stop).

**6.7** If needed, operator can force the turntable to stop by pushing the “Stop” button (decimal point will blink, signaling that the device is in a “PAUSE” mode; to switch to a full stop mode, operator should push the “STOP” button once again). To continue packing from the point of interruption, push the “Start” button.

**6.8** Upon reaching the “0” position (after the specified number of turns is done), the table will stop, and the turn number counter will return to the last value set by operator. Note that if during the forced stop operator changes the counter state by pressing “+” or “-” buttons, then, when a working cycle is over, the counter will return to the value set before the beginning of the cycle.

**6.9** Pack the object in one dimension, then turn it over (do not cut the film!) and continue packing in the other dimension. When packing is finished, cut the film. Fix the film edges by Scotch tape using dispenser.

**Note: Usually, 3-4 film layers are enough for appropriate packing.**

**6.10** Take the luggage off and cut holes for handles and wheels (suitcases, bags, etc.). If there are no handles (boxes, sacks, etc.), tie polypropylene cord round the luggage.

**6.11** Power supply of the device is provided by battery (8-10 hours without recharging). Recharging should be carried out during operational pauses.

**6.12** When operation is over, turn the device off by the “Off” toggle switch.

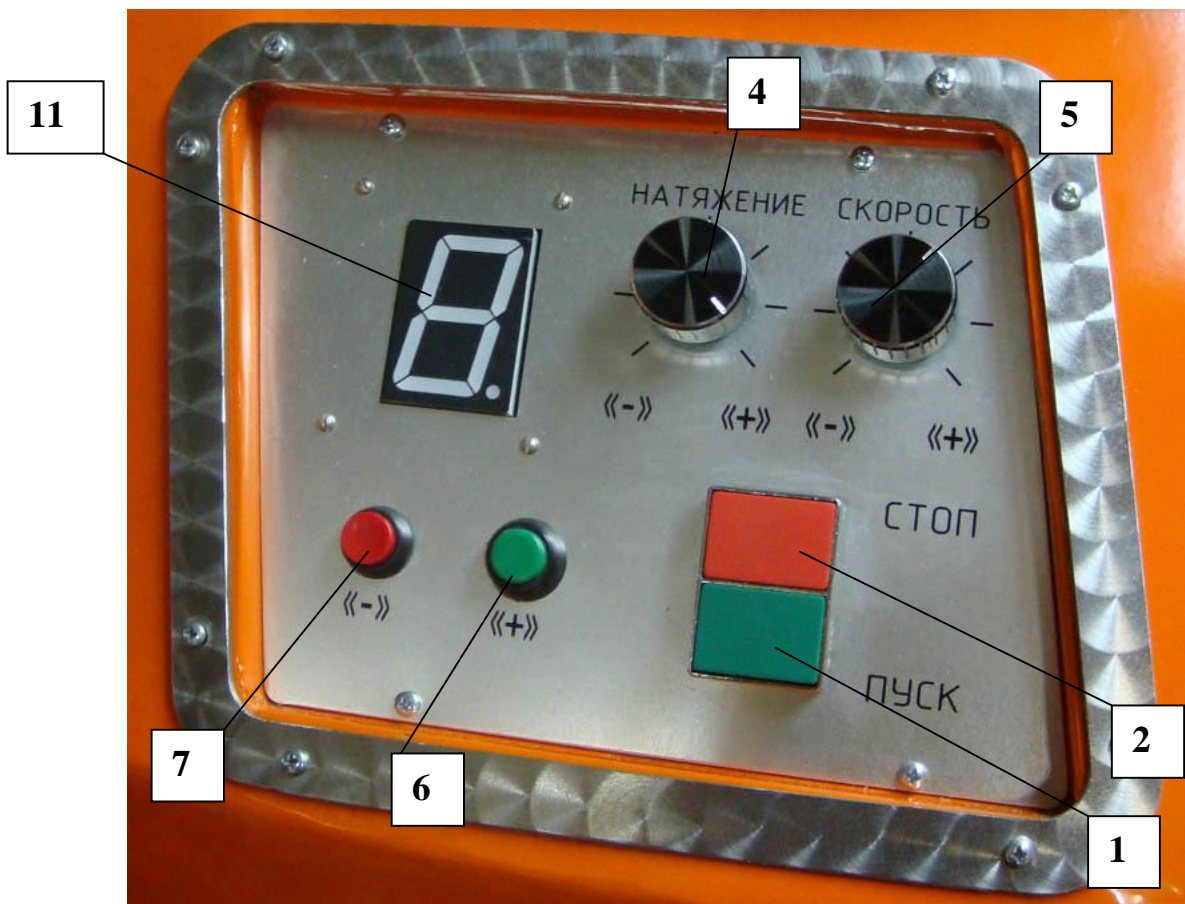
**ATTENTION!** In case of emergency, turn the device off by the “Emergency Shutdown” button and call your administrator.

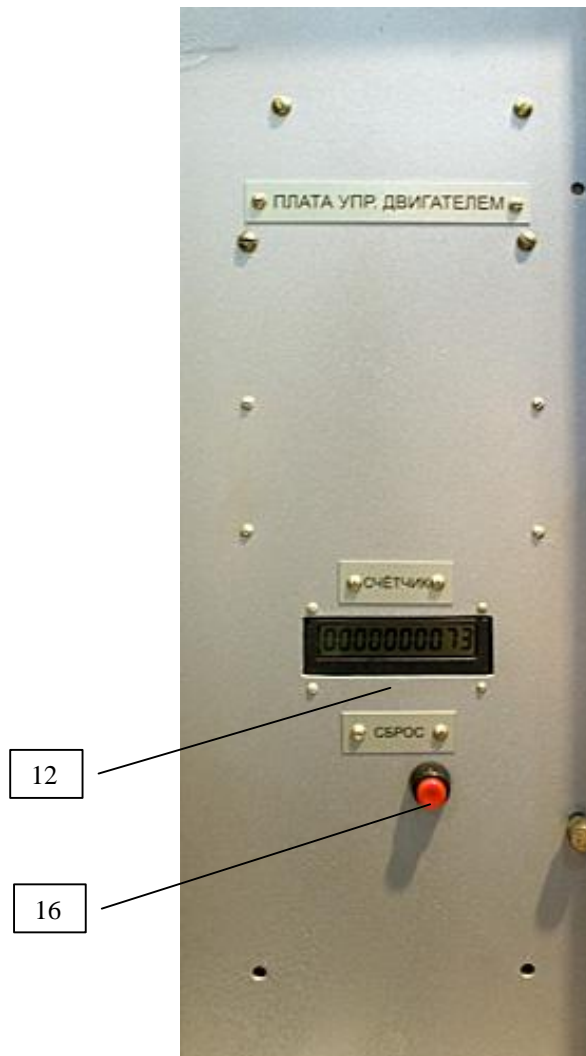
## 7. MANIPULATION

1. "Start" button.
2. "Stop" button.
3. "On-Off" toggle switch.
4. Regulator of film tension.
5. Regulator of turntable revolution rate.
6. Increase of turntable turn number.
7. Decrease of turntable turn number.
8. "Emergency Shutdown" button.

## 8. CONTROL

9. Voltmeter, battery voltage control (not less than 10V).
10. Ammeter, current consumption control (no more than 20A).
11. Indicator of turntable turn number (0-9).
12. Non-nullable fiscal counter.
13. Fuse of counter board (1A).
14. Fuse of turntable engine control board (15A).
15. Fuse of pre-stretching roller engine control board (15A).
16. "Reset" button, nulling of a run per shift.







## 9. FINISHING THE OPERATION

Upon finishing the operation:

- press the “Stop” button;
- turn power off by the “On-Off” toggle switch;
- recharge the battery, if necessary;
- close the doors and lock them;
- wipe the device by wet duster.

## 10. FISCAL COUNTER OPERATION

The purpose of a fiscal counter is to count the number of packed pieces of luggage. The counter records two values: run per shift and total run. The shift run counter records the number of a turntable revolutions and, therefore, indirectly reflects a number of the packed pieces of luggage. The counter can be nulled by a button located behind the protecting doors which can be opened by a foreman only. It is highly recommended to null the counter at every shift changeover and to record counter registrations in operation log.

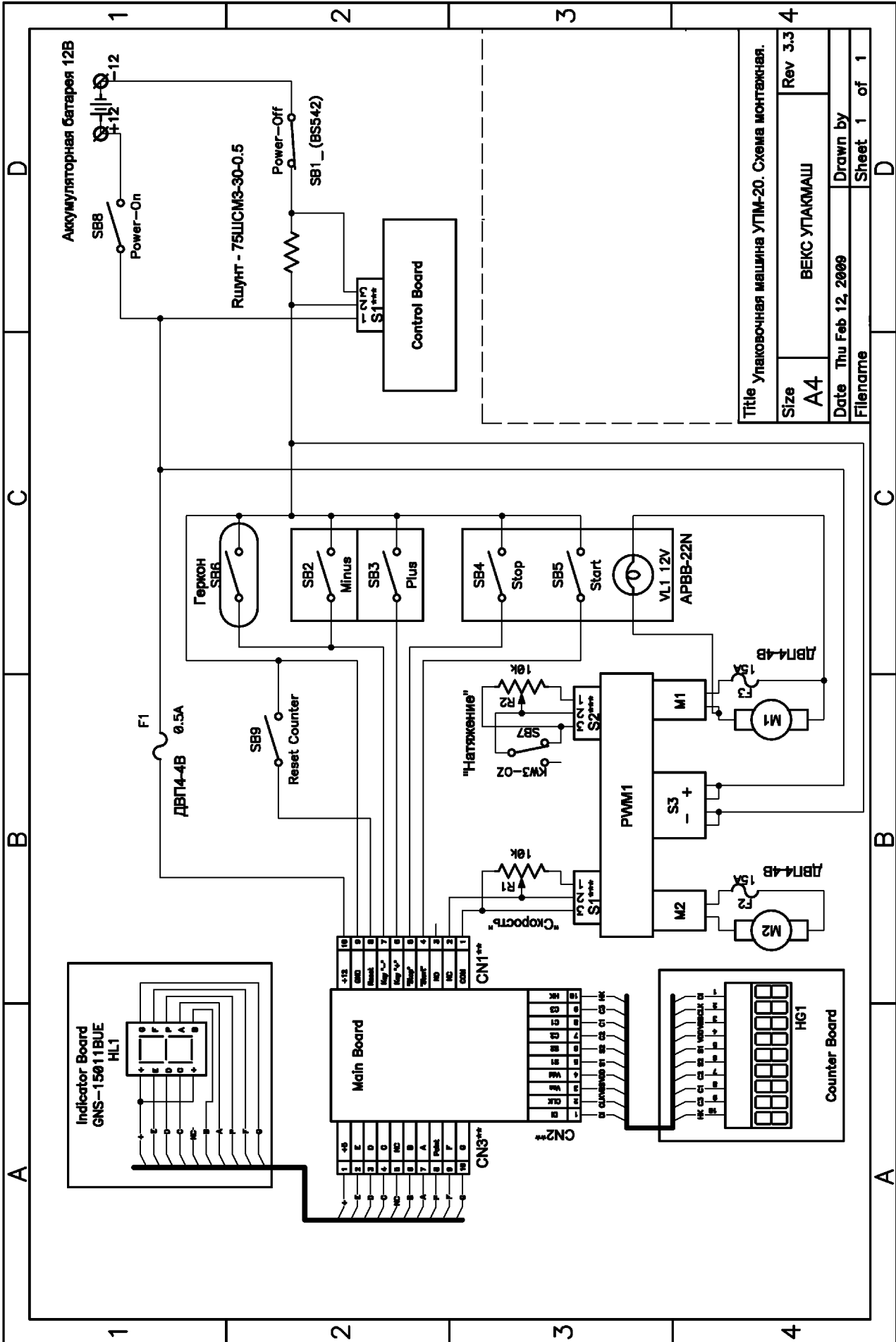
The total run counter is non-nullable, its indication can be changed by manufacturer only. To read the total run, press the “STOP” button and hold it down for 2-3 seconds. At first, total run will be displayed on the indicator of number of turns. Digits will be displayed sequentially and separated by “-” symbol. (Therefore, to read the total run, it is not necessary to see the fiscal counter display). When all digits are displayed on the indicator of turn number, data will be displayed on the fiscal counter and will stay displayed until turntable is started or any button is pressed.

## 11. OPTIONAL EQUIPMENT

Optionally, the device can be equipped with built-in electronic balance for tariffing of packaging on basis of luggage weight. Weighing terminal is equipped with an interface port for PC connection which allows calculation of packing cargos in warehouses.



12. WIRING DIAGRAM



Title Упакочная машина УПМ-20. Схема монтажная.  
 Size A4 ВЕКС УПАКМАШ Rev 3.3  
 Date Thu Feb 12, 2009 Drawn by  
 Filename Sheet 1 of 1



### 13. CARD OF PREVENTIVE MAINTENANCE

Maintenance operation	Units to be served	Standard time, min	Service periodicity	Executor
1. Visual check of technical condition, check of operation	Turntable, pre-stretching unit	2	Before work	Operator
2. External cleaning of the device	Cabinet, trolley, turntable covering	10	On end of a shift	-"
3. Internal cabinet cleaning	Cabinet	10	Once a month	-"
4. Oiling of metal surfaces that do not have a protective coating	Bearings of rolls of pre-stretching unit, holders	5	Once a month	-"
5. Regulation of a belt tension*	Pre-stretching unit	10	Once a month	-"
6. Turntable base cleaning	Trolley	30	Quarterly	-"
7. Wiping by solvent 646 or white spirit	Guides of turntable cargo holders	4	When dirt appears	-"
8. Oil change	Reducers	Not required		

\* When a packing machine is in use, it can be needed to regulate some parts of it for normal performance. Machine construction provides a possibility to regulate particular units, which details wear off during operation. Regulation of a tension of the pre-stretching unit belt can be carried out by turning the regulatory bolt in such manner that a sagging of the belt in the region between pulleys would be about 8-10 mm, when a force of 4 kgf is applied.

### 14. GUARANTEE OF MANUFACTURER AND ORDER OF RECLAMATIONS

The manufacturer guarantees clearing of malfunctions emerged and change of components of the device which are out of service due to manufacturer's fault (with the exception of battery, charger and belt) in 24 month-period from the day of sale, on conditions that total run for this period does not exceed 30,000 turns of turntable, and if operating and maintaining rules, indicated in the present Manual, have not been violated. During a warranty period, the manufacturer clears malfunctions (including change of parts, units and assemblies) that have not been caused by violations of the operation rules, free of charge.

Manufacturer: VEKS UPACKMACH

Address: Mezhdunarodnoye shosse, 1, off. 219, Sheremetyevo-2, Khimki, Moscow Region, Russia 141400