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**1 Intended use**

1.1 IPS drive (hereinafter referred to as the drive) is designed to rotate the IPS piston with the installed loads on the adapter plate or on the bell. The drive is intended for use with deadweight gauges produced by “Alfapascal” LLC (MP-60...MP-600) with modified adapter plate and bell plate.

1.2 The drive is designed to be used in laboratory at an ambient temperature of 10 to 30 °C at a relative humidity of not more than 80%.

**2 Technical specifications**

Rotation speed, not less than .....	30 rpm
Supply voltage .....	220 V ±10%
Mains frequency .....	50 Hz
Power consumption, not more than .....	50 W
Weight	
of rotation assembly, no more than .....	2.4 kg
control unit, not more than .....	2.0 kg
Overall dimensions (L×W×H)	
of rotation unit, not more than .....	210×130×230 mm
control unit, not more than .....	310×120×80 mm

**3 Supply package, pcs**

Rotation assembly .....	1
Pushers assembly .....	1
Adapter sleeve .....	1
Control unit .....	1
Operating Manual .....	1
Spare tools and accessories kit	
Rubber ring 1 .....	1

**4 Design and operation principle of the drive**

4.1 Outside view of the drive is shown at Fig. 1.

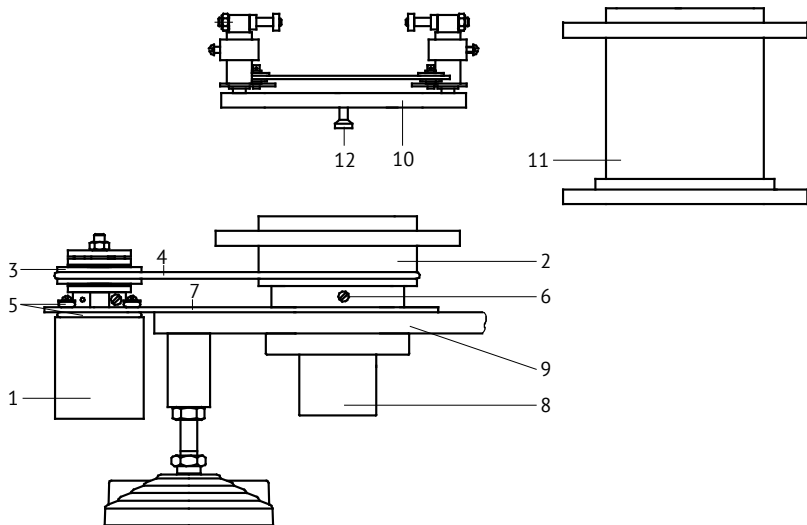


Fig. 1. Outside view of the drive.

- 1 — engine; 2 - slave unit; 3 — host unit; 4 — belt; 5 — rubber rings;  
 6 — screw fastening rotation assembly; 7 — plate; 8 — MP rack intended for IPS  
 installation; 9 — MP plate; 10 — pushers assembly; 11 — adapter sleeve;  
 12 — lock pin.

4.2 Outside view of the control unit is shown at Fig. 2.

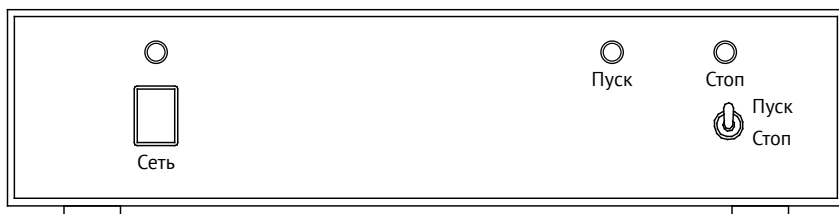


Fig. 2. Control unit

4.3 The IPS drive consists of a mechanical part (Fig. 1) and an electronic part (Fig. 2). The mechanical part includes the drive base consisting of engine 1 (Fig. 1), slave unit 2, host unit 3, drive belt 4. Drive parts are mounted on plate 7. To reduce vibration and noise, the motor is attached to the plate through rubber rings 5. To prevent possible impacts when starting and stopping, the drive unit has a friction clutch configured for a specific moment. The entire mechanical part of the drive is fixed on the

rack of IPS 8 of deadweight gauge 9 with screws 6. There is also a pushers assembly 10 and adapter sleeve 11.

4.4 For the operation of the bell, the pushers assembly shall be installed on the drive (see Fig. 3), then the IPS and the bell must be installed (see Fig. 4). To install the pushers assembly, it is necessary that the lock pins 12 (Fig. 1) simply enter the holes of the slave unit.

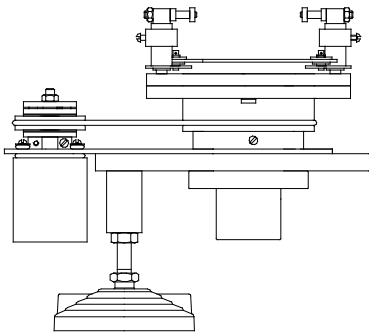


Fig.3.

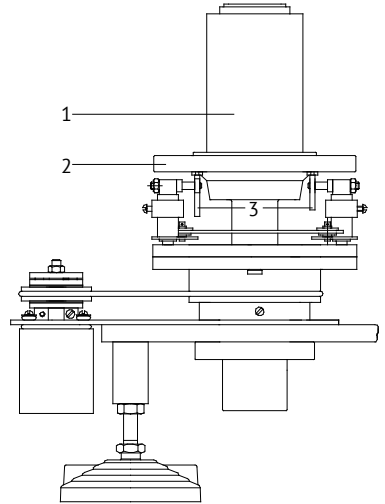
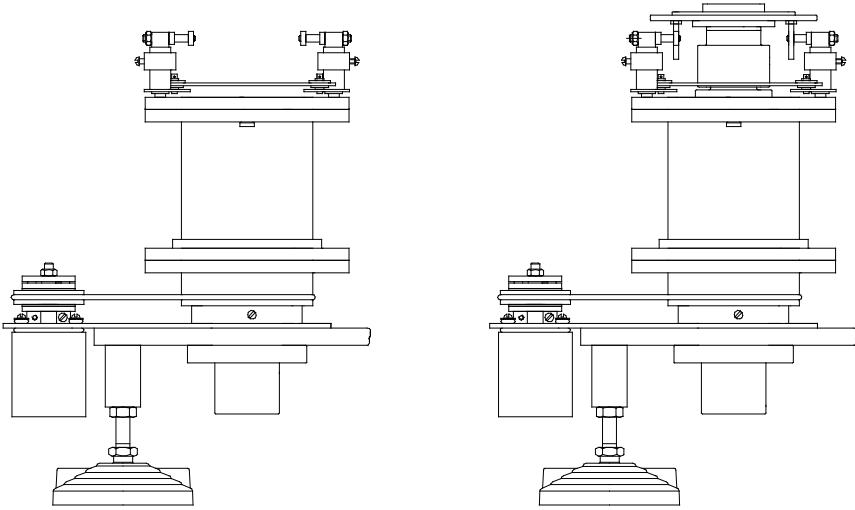


Fig.4.

- 1 – bell housing;
- 2 – bell plate;
- 3 – leashes

The pushers assembly is designed for uniform transfer of force from the slave unit to leashes 3 (Fig. 4) fixed on the bell plate 2.

4.5 In order to operate without the bell, with the adapter plate (Figures 5, 6), the adapter sleeve shall be installed first and then the pushers assembly (IPS must already be installed). The adapter sleeve is simply mounted (without fasteners) on the slave unit and after that the pushers assembly is installed on the adapter sleeve as described above.



## 5 Safety precautions

### Attention

This section is aimed at ensuring the safe work of personnel, at the safety of the Drive and the IPS used with it.

5.1 *It is prohibited to use the Drive for work not specified in this manual.*

5.2 *Do not use the Drive with faulty electrical wires and plug.*

5.3 *The Drive shall only be connected to an electrical outlet with grounding contact.*

5.4 To avoid electric shock, connect the Drive through a protective cut-off device (GFCI) designed for operating current at least 6 A and shut-off current of 10 or 30 mA.

5.5 *It is prohibited to troubleshoot the Drive if it is connected to the mains.*

5.6 *Do not operate the Drive if its control unit housing is open.*

5.7 In case of any foreign sounds, odors, immediately turn off the Drive, disconnect from the mains and consult a specialist.

5.8 The Drive shall be repaired by specially trained personnel.

5.9 When flushing certain parts with gasoline (B 70 – TU 38.10191382, Galosha – TU 38.401-67-108-92, Nefras – GOST 8505-80), it is necessary to observe safety measures when working with gasoline.

## 6 Preparation for work

6.1 Unpack the Drive and wipe it with a clean rag.

6.2 Assemble the Drive according to Fig. 7. To do this, it's necessary to install the mechanical part on the IPS rack of the deadweight gauge by fixing screws 6 (4 pcs.).

6.3 Check the operation of the friction clutch. Pulley 1 (Fig. 8) shall rotate slightly relative to the top of the host unit 2.

6.4 Install the drive belt on the pulleys of the drive and slave units (Fig. 7)

6.5 Check that the power switch is in the Off position (0).

6.6 Connect the mechanical part to the electronic unit with the cable. Connect the power plug to the power supply socket.

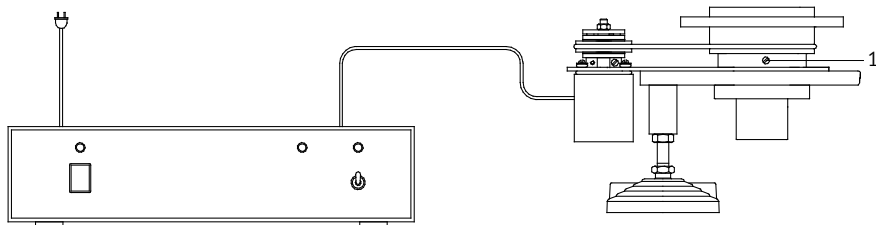


Fig. 7. Drive Assembly Diagram

1 — screw for mechanical part fastening (4 pcs.)

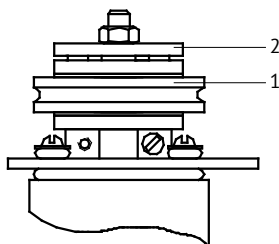


Fig. 8.

1 — pulley; 2 — upper part of the host unit.

## 7 Operating procedure

7.1 Install the required IPS. Next, depending on the measurement limit of the IPS, set the pushers assembly or the adapter sleeve with the pushers assembly on the Drive according to Figures 3... 6.

7.2 Set the required quantity of loads on the IPS and create pressure according to the MP manual before the piston pops up.

7.3 Power the control unit by moving the switch to the On position (1) and start the Drive by moving the switch to the Start position. The Drive will begin to smoothly accelerate the piston with loads to a speed of ~30 rpm. Adjust the pressure and make a measurement.

7.4 After making a measurement at this point, move the switch to the STOP position (the drive will start to slow down and slow down the rotation) and gently lower the piston with the weights to the stop.

7.5 The process shall then be repeated.

7.6 After making all measurements, turn off the control unit and disconnect the plug from the power supply.

### **Attention**

7.7 All manipulations with the deadweight gauge shall be carried out according to the manual of this pressure gauge.

## **8 Maintenance**

8.1 Daily and routine maintenance is required to keep the Drive in good condition.

8.2 Daily maintenance: Disconnect from the power supply, carry out an external inspection, clean with a dry clean cloth. Check whether the electrical cables are in good condition.

8.3 Routine maintenance: it is necessary to carry out rinsing with gasoline.

8.4 (B 70 — TU 38.101913-82, Galosha — TU 38.401-67-108-92, Nefras — GOST 8505-80) the bearings of the pushers assembly (without disassembly) Bearings should be easily rotated!

8.5 Perform routine maintenance as required.

## **9 Storage**

9.1 Storage of the Drive in laboratory conditions. In laboratory the Drive can be stored on a deadweight gauge or separately. When storing the Drive in laboratory conditions, it is necessary to wipe it with a clean rag and cover with a polyethylene cover.

9.2 Storage of the Drive in a warehouse. Before storing the Drive, it is necessary to wipe it with a clean rag, perform routine maintenance according to 8.3, and pack in factory packaging (or similar). Store the Drive in a dry heated room at air temperature not lower than +5°C and relative humidity not higher than 80%.

## 10 Possible malfunctions and solutions

Malfunction	Cause of malfunction	Solution
The system does not turn on	No mains voltage	Apply voltage
	Blown fuse	Replace fuse
	Faulty control unit	Contact an authorised technician
Drive jerks or does not move	Clogged bearings	Rinse bearings

## 11 Warranty

11.1 The manufacturer guarantees operation of the Drive under conditions of operation, storage, transportation.

11.2 The warranty period is 18 months.

11.3 Warranty period for warehouse storage is 6 months.

11.4 Average service life is not less than 8 years.

## 12 Complaint details

In case of a malfunction, draw up a certificate of repair necessity and send it to: LLC “Alfapascal”, 2nd Paveletskaya Str., 36, Chelyabinsk, 454047, tel.: +7 (351) 725-74-50, e-mail: q@alfapascal.ru

## 13 Acceptance Certificate

The Drive of the IPS, factory number \_\_\_\_\_ corresponds to KD 060.00.000 and is recognized as fit for operation.

Date of manufacture \_\_\_\_\_

Person in charge \_\_\_\_\_  
Signature Surname

LS

## 14 Packaging Certificate

The Drive of IPS, factory number \_\_\_\_\_ was packed in LLC “Alfapascal” in accordance with KD 060.00.000.

Packing date \_\_\_\_\_

Person in charge \_\_\_\_\_  
Signature Surname

LS



**Note**

The manufacturer reserves the right to make changes to the design of the Drive that do not affect its basic characteristics without further notice.