

**REPUBLICAN UNITARY ENTERPRISE  
“SMORGON ASSEMBLY PLANT”**

# **TWO-WHEELED TRACTOR**

## **BELARUS-08H, BELARUS-09H**

**TECHNICAL SPECIFICATION AND OPERATION MANUAL**

**PARTS AND ASSEMBLY UNITS CATALOGUE**

**09H-0000010 ИЭ**

## CONTEXT:

### TECHNICAL SPECIFICATION AND OPERATION MANUAL

|   |    |
|---|----|
| Customers attention   | 3  |
| 1 Introduction  | 4  |
| 2 Technical specifications  | 4  |
| 2.1 General data  | 4  |
| 2.2 Engine  | 5  |
| 2.3 Power train   | 5  |
| 2.4 Propulsion system   | 5  |
| 2.5 Two-wheeled tractor control   | 5  |
| 2.6 Power take-off shaft  | 5  |
| 2.7 Trailing appliance  | 5  |
| 2.8 Optional implement  | 5  |
| 3 Two-wheeled tractor operation and design                                      | 6  |
| 3.1 General information on the two-wheeled tractor design                       | 6  |
| 3.2 Controls  | 7  |
| 4 Design and operation of the two-wheeled tractor components                    | 9  |
| 4.1 Engine  | 9  |
| 4.2 Power train   | 9  |
| 4.3 Clutch coupling and clutch control  | 10 |
| 4.4 Gear box  | 11 |
| 4.5 Driving axle  | 13 |
| 4.5.1 Main gear   | 13 |
| 4.5.2 Differential  | 14 |
| 4.5.3 Final gears   | 15 |
| 4.5.4 Power take-off shaft  | 16 |
| 4.5.5 Trailing appliance  | 16 |
| 5 Safety precautions  | 17 |
| 5.1 General provisions  | 17 |
| 5.2 General requirements for the two-wheeled tractor technical condition        | 17 |
| 5.3 Protective measures in preparation of the two-wheeled tractor for operation | 17 |
| 5.4 Protective measures during the two-wheeled tractor operation                | 18 |
| 5.5 Fire safety regulations   | 19 |
| 6 Preparation of the two-wheeled tractor for operation                          | 19 |
| 6.1 General requirements  | 19 |
| 6.2 Pre-starting procedures and the engine starting                             | 19 |
| 6.3 Breakaway and movement of the two-wheeled tractor                           | 20 |
| 6.4 Two-wheeled tractor stoppage  | 20 |
| 6.5 Engine stoppage   | 20 |
| 6.6 Two-wheeled tractor run-in  | 20 |
| 6.7 The two-wheeled tractor re-equipping for operation on reverse               | 21 |

|   |    |
|---|----|
| 7 Order of two-wheeled tractor operation coupled with agricultural implements   | 21 |
| 7.1 General requirements  | 21 |
| 7.2 Soil tillage  | 22 |
| 7.3 Potato planting   | 24 |
| 7.4 Potato hilling  | 25 |
| 7.5 Cultivation   | 25 |
| 7.6 Harrowing   | 26 |
| 7.7 Operation with mower  | 26 |
| 7.8 Cargo transportation  | 26 |
| 8 Possible faults and methods of their elimination  | 28 |
| 9 Technical maintenance   | 29 |
| 9.1 Technical maintenance when preparing the tractor for operation  | 29 |
| 9.2 Scheduled maintenance during operation  | 30 |
| 9.3 Table of lubricants   | 31 |
| 9.4 Procedure of adjustment operations  | 32 |
| 9.5 Procedure of transmission disassembly and assembly and procedure of operations on use of spare parts, included into a set of spare parts, tools and accessories | 33 |
| 9.6 Adjustment of tractor wheel track   | 35 |
| 9.7 Tyre assembly/disassembly   | 35 |
| 10 Packing  | 36 |
| 11 Transportation   | 36 |
| 12 Storage rules  | 36 |
| 13 Annexes  | 37 |
| 13.1 Refill capacities  | 37 |
| 13.2 List of antifriction bearings  | 37 |
| 13.3 List of rubber reinforced collars  | 37 |
| 13.4 Adjusting values   | 38 |

### CATALOGUE OF PARTS AND ASSEMBLY UNITS

|                                       |    |
|---------------------------------------|----|
| Fuel intake control                   | 41 |
| Clutch                                | 43 |
| Clutch control                        | 45 |
| Gear box                              | 47 |
| Gearshift mechanism                   | 51 |
| Differential                          | 53 |
| Final drive                           | 55 |
| Wheel                                 | 57 |
| Steering link                         | 59 |
| Power takeoff shaft and drawbar hitch | 61 |
| PTO shaft drive and control           | 62 |
| Weight                                | 63 |
| Folding step                          | 63 |

# TECHNICAL SPECIFICATION AND OPERATION MANUAL

## CUSTOMERS ATTENTION!

Before two-wheeled tractors Belarus-08H and Belarus-09H operation (hereinafter referred to as two-wheeled tractor) read the manual, and the engine operation documentation carefully also and comply with their requirements rigidly. Noncompliance with the requirements of the manual, and with safe operating procedures at two-wheeled tractors can result in a failure or an accident.

1 Only stuff above 14 years old, mastering in Traffic Regulations and two-wheeled tractors and engines operation manuals attached herein, and physically qualified for two-wheeled tractors driving are allowed.

2 Run-in of the two-wheeled tractor is the must.

3 Keep the two-wheeled tractor clean, ensure every time that all the parts especially transmission, propulsion system and drag link are properly mounted. Before and after operation prevent the two-wheeled tractor from weather impact.

4 Lubricate of the two-wheeled tractor according to the Lubrication table observing the intervals and complying with the instructions on lubrication rigidly.

5 Reverse and forward running is activated when the two-wheeled tractor is stopped and clutch is disengaged. The two-wheeled tractor must not be stopped by reverse lever pushing into the floating neutral position. Noncompliance with this requirements results in gear teeth chippage and premature failure of the gear box.

6 Engagement and gear shifting shall be made only when the clutch is disengaged and the reduced engine speed. Noncompliance with this requirements results in breakage of balls and speed shifting mechanism failure.

7 When moving in reverse turn the two-wheeled tractor in a smooth manner and hold the drag link tight by hand.

8 You must not operate the two-wheeled tractor with trailer, having damaged brakes.

9 When operating the two-wheeled tractor without use of PTO shaft, the operating lever shall be put in neutral position.

10 To avoid failure of the two-wheeled tractor trailing appliance during operation with trailer and implements mounted, the hinge pivot of put the trailing appliance into the coupler port up to the stop and fix it with adhesion a forelock. It is prohibited to operate the two-wheeled tractor without hinge pivot properly fixed.

11 It is forbidden to carry out of hauling operations on public hard-surface roads.

12 It is forbidden to operate the two-wheeled tractor with the trailer under conditions of limited visibility.

13 Due to the constant improvement of the two-wheeled tractor it is possible to change the structure of individual assembly units and parts that are not specified in the given manual.

## 1 INTRODUCTION

Technical description and operation manual contain a brief description of the two-wheeled tractor design, technical data and operation regulations and maintenance statements.

The two-wheeled tractor is design for tilling of light soils, harrowing, cultivating, interspace cultivation of crops, mowing, and cargo transportation and stationary works driven by a power take-off shaft.

Continuous and reliable work of the two-wheeled tractors is ensured by compliance with operation regulations and full timely maintenance service (MS).

Engine operation and maintenance service shall be carried out according to guidelines, specified in the engine operational documentation.

Authorized abbreviations and explanation:

PTO shaft – power take-off shaft; GB – gear box; MS – maintenance service; SPTA – spare parts tools and accessories.

## 2 TECHNICAL SPECIFICATIONS

### 2.1 General data

Table 1

| Parameter description   | Parameter value        |        |     |        |        |        |
|---|------------------------|--------|-----|--------|--------|--------|
|   | «Belarus»              |        |     |        |        |        |
| Mark  |                        |        |     |        |        |        |
| Made  | 08H                    | 08H-01 | 09H | 09H-01 | 09H-02 | 09H-03 |
| Force exerted rating, кN  | 1,0                    |        |     |        |        |        |
| Design speed, km/h  |                        |        |     |        |        |        |
| a) forward running:   |                        |        |     |        |        |        |
| 1) I gear   | 2,6                    |        |     |        |        |        |
| 2) II gear  | 4,6                    |        |     |        |        |        |
| 3) III gear   | 6,4                    |        |     |        |        |        |
| 4) IV gear  | 11,4                   |        |     |        |        |        |
| б) reverse running:   |                        |        |     |        |        |        |
| 1) I gear   | 3                      |        |     |        |        |        |
| 2) II gear  | 5,35                   |        |     |        |        |        |
| Number of gears of:   |                        |        |     |        |        |        |
| - forward running   | 4                      |        |     |        |        |        |
| - reverse running   | 2                      |        |     |        |        |        |
| Two-wheeled tractor weight, kg:   |                        |        |     |        |        |        |
| - constructive  | 135 <sup>+10</sup>     |        |     |        |        |        |
| - operating (without ballast)   | 142 <sup>+10</sup>     |        |     |        |        |        |
| - operating with ballast  | 176 <sup>+10</sup>     |        |     |        |        |        |
| Overall dimensions, mm  |                        |        |     |        |        |        |
| - length  | 1780 ± 55              |        |     |        |        |        |
| - width (with track width 630 mm)   | 846 ± 30               |        |     |        |        |        |
| - height  | 1070 ± 30              |        |     |        |        |        |
| Two-wheeled tractor track, mm   | 450±30, 600±30, 700±30 |        |     |        |        |        |
| Road clearance, mm  | 295±5                  |        |     |        |        |        |
| Radius of turning with track 450 mm, m, not more than   | 1,0                    |        |     |        |        |        |
| Admitted weight of trailer towed (on made and un-made road), kg                                     | 650                    |        |     |        |        |        |
| Maximum vertical load of loaded trailer weight, acting over a two-wheeled tractor drawbar hitch, kg | 50                     |        |     |        |        |        |

continuation of Table 1

| Parameter description   | Parameter value                      |                      |                  |                    |                |        |
|---|--------------------------------------|----------------------|------------------|--------------------|----------------|--------|
|   | 08H                                  | 08H-01               | 09H              | 09H-01             | 09H-02         | 09H-03 |
| Temperature range, at which a two-wheeled tractor can be operated, °C                     | From - 20 to + 30                    |                      |                  |                    |                |        |
| Refill capacity, l  |                                      |                      |                  |                    |                |        |
| a) crankcase oil engine   | 1,1                                  |                      |                  |                    |                | 1,0    |
| б) fuel tank  | 6                                    |                      |                  |                    |                |        |
| в) transmission oil sump  | 3,5                                  |                      |                  |                    |                |        |
| <b>2.2 Engine</b>   |                                      |                      |                  |                    |                |        |
| Engine type   | four-stroke, carburetor, air-cooling |                      |                  |                    |                |        |
| Engine mark*  | GX240K1SE<br>HONDA                   | GX240K1QXQ4<br>HONDA | GX270SE<br>HONDA | GX270QXQ4<br>HONDA | KG280<br>KIPOR | ДК-7   |
| Engine rated brake power, kW  | 5,3                                  |                      | 6,0              |                    | 5,5            | 6,6    |
| Crankshaft nominal speed, min <sup>-1</sup>   | 3600                                 |                      |                  |                    |                |        |
| Specific fuel consumption at rated power, g/(kW·hour), not more than                      | 313                                  |                      |                  |                    | 374            | 313    |
| Fuel  | According to engine operation manual |                      |                  |                    |                |        |
| *Replacement by the engine of other mark with the same performance parameters is allowed. |                                      |                      |                  |                    |                |        |

### 2.3 Power train:

- Clutch coupling – multidisk, oil-driven, manually controlled;
- change speed gearbox – mechanical, step-by-step, permanent-mesh;
- main gear – spiral bevel gear;
- compensation gear – gear-type bevel with positive locking;
- final drive – one-stage with cylindrical gear.

### 2.4 Propulsion system:

- wheel arrangement 2×2;
- a two-wheeled tractor wheels with pneumatic tires 6L-12 acc. to GOST 7463;
- tire pressure depending on load of 0,08 – 0,12 MPa.

### 2.5 Two-wheeled tractor control:

- fuel intake control – by the lever on the steering rod, cable-operated;
- change speed gearbox control – by the lever on the steering rod via rodding system;
- power take-off shaft control – by the lever on the transmission body;
- differential lock control – by the lever on the steering rod;
- steering is a rod, height-adjustable and right/left-adjustable in horizontal plane by angle 15°, with possibility of realignment for reverse position.

### 2.6 Power take-off shaft:

- Rotational speed (at nominal speed of crankshaft) – 1200 min<sup>-1</sup>;
- Rotating direction – clockwise (at a glance to the end butt);

### 2.7 Trailing appliances:

Type - a hinged clip with a hinge pivot and canular coupling;

Coupling points height :

- up to the hinged clip – 415 mm;
- up to the PTO shaft axis and coupling – 370 mm.

### 2.8 Optional implement:

- a) ballast weights (for additional loading on wheel) up to  $17\pm 2$  kg, mounted on wheel disks – 2 pieces.
- b) loads fastening pieces:
  - 1) Bolt M10-6gx75.88.35.019 GOST 7795 – 4 pieces.
  - 2) Washer 10.OT OST 37.001.115 – 4 pieces.
- c) Wheel 05-3102020 (metal). – 2 pieces.

### 3 TWO-WHEELED TRACTOR OPERATION AND DESIGN

#### 3.1 General information on the two-wheeled tractor design

Two-wheeled tractor is (Figure 1, 2, 3) – single axis two-wheeled chassis, consisting of an engine, power train and reverse steering rod. The engine is fastened to flywheel clutch housing. Immediately behind the engine power train mechanism is located that is designed for clutch, gear box, main gear, and compensation gear with positive locking, final drive and power take-off shaft engagement.

The wheels are mounted on final drives flanges and equipped with pneumatic tires.

Two-wheeled tractor track is variable, can be changed by combination of wheels.

For mounting of the implements and accessories the special coupling is provided.

On the upper cover of the transmission body the steering link is fixed on which the two-wheeled tractor controls are located.

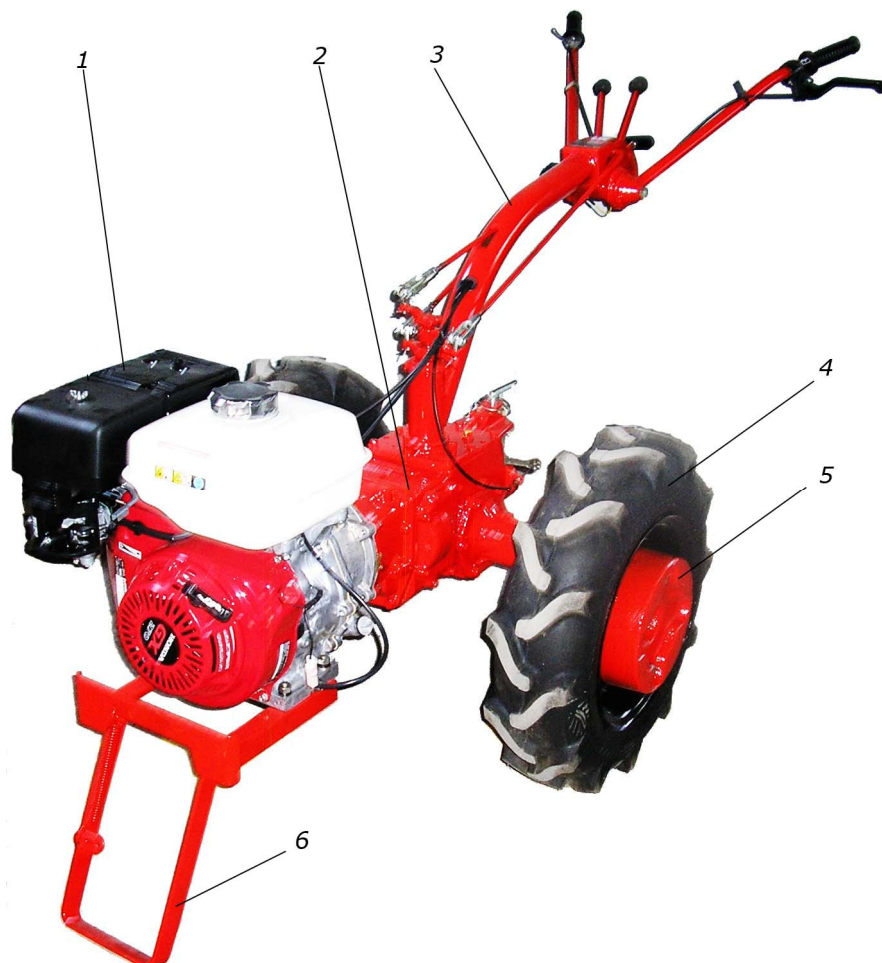


Figure 1 – Two-wheeled tractor (left-side view)  
 1 – engine; 2 – power train; 3 – steering link;  
 4 – wheel; 5 – load; 6 – holding step

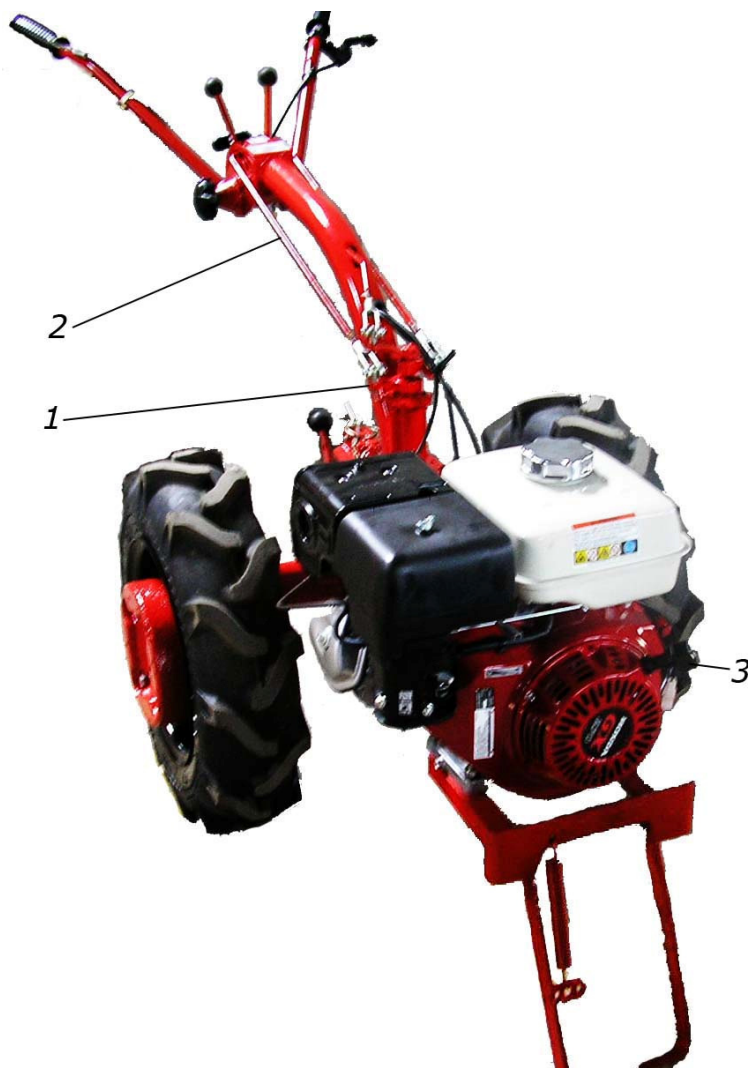


Figure 2 – Two-wheeled tractor (right-side view)  
 1 – gear-change lever; 2 – speed shifting mechanism rod;  
 3 – manual back starter

### 3.2 Controls

Two-wheeled tractor controls position is shown in Figures 2, 3.

Clutch operating control lever 12 (fig.3) is mounted on the left steering link lever and is designed for clutch engagement and disengagement. Lever-pressing disengages the clutch coupling and the lever-release engages the clutch coupling.

Reverse lever 7 (fig.3) is mounted on the left side of steering link instrument panel. It has two positions: front position - along the two-wheeled tractor run - corresponding to receipt of four forward gears, and reverse position - corresponding to receipt of two reverse gears (fig.4).

Gear-change lever 8 (fig.3) is mounted on the right side of steering link lever instrument panel.

For engagement of forward gears push the reverse lever straight ahead up to the stop, and by moving the lever 8 (fig. 3) back and forth along the two-wheeled tractor run get into the required gear. Position of gear-change lever is shown in fig.4.

In order to actuate the reverse gear push the reverse lever backward up to the stop, and by moving the lever 8 (fig.3) forth along the two-wheeled tractor run get into the I or II reverse gear. Position of the lever 8 at actuation of reverse gear is indicated in Figure 4 by black color.

PTO shaft engagement lever 5 (fig.3) is mounted on the transmission body. It has two positions: front position – «PTO shaft is engaged», reverse position – «PTO shaft is disengaged».

Fuel intake remote control lever 9 (fig.3) is fixed on the right lever of the steering link. Right position of the lever along the two-wheeled tractor run corresponds to the maximum, and left position – to the minimum engine rpm.

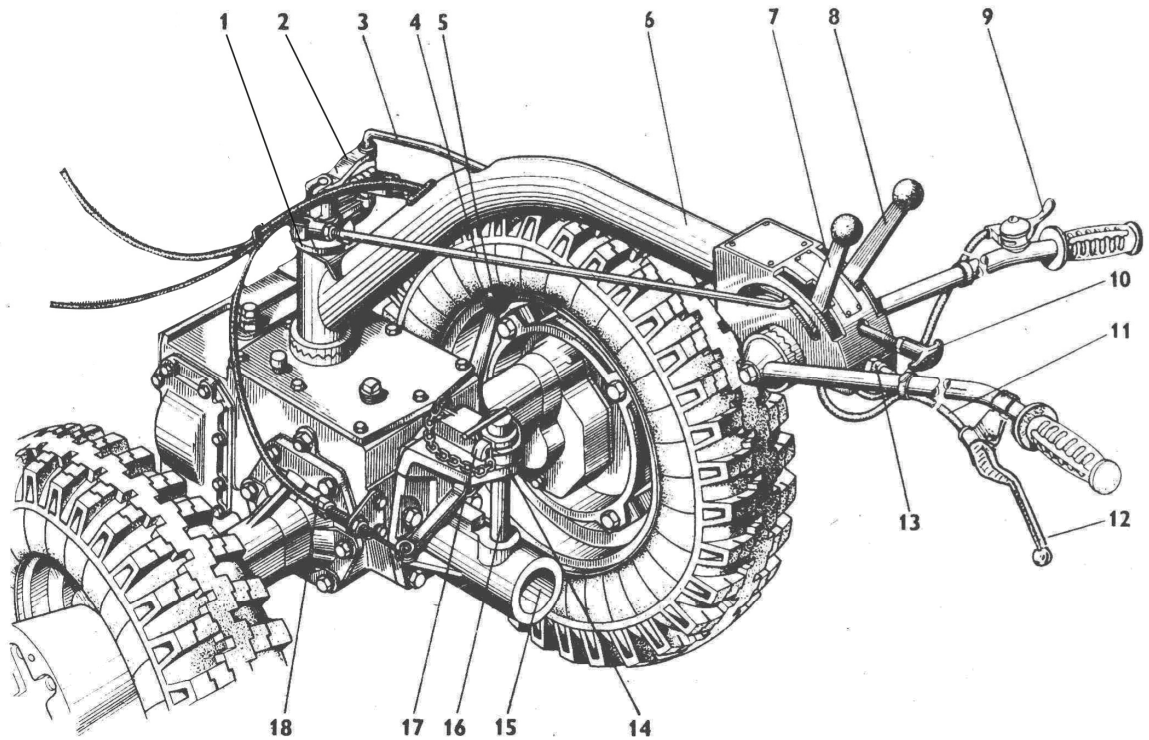
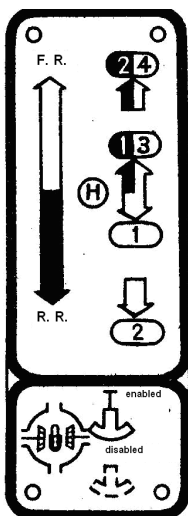


Figure 3 – Two-wheeled tractor (rear view)

1 – steering link rod nut; 2 – differential blocking engagement lever; 3 – differential blocking engaging device link; 4 – reverse thrust; 5 – PTO shaft engagement lever; 6 – steering link rod; 7 – reverse lever; 8 – gear-change lever; 9 – fuel pump lever; 10 – differential locking handle; 11 – hawser clutch-operating device rope; 12 – clutch operating control lever; 13 – emergency stop button; 14 – hitch bracket; 15 – PTO shaft coupling; 16 – hinge pivot; 17 – forelock; 18 – cable housing tension bolt



Gear-change lever 10 (Fig.3) is mounted on the steering link instrument panel. Forward position of the lever corresponds to enabled differential blocking, and backward position corresponds to disabled differential blocking (Fig.4).

**Note.** When working on reverse (for example, with mowing machine) functions of gear-change lever and reverse lever are changed, and their positions will not correspond to the positions shown in Fig.4 when forward or reverse gears are actuated. Two-wheeled tractor re-equipping to work on reverse is specified in cl. 6.7.

Figure 4 – Gear actuation and differential blocking diagram



### 4.3 Clutch coupling and clutch control

The clutch coupling is designed for torque transfer from the engine to the transmission, disconnection of the drive from the power train, and also smooth and bumpless connection. The multidisk, manually controlled, friction spring-loaded clutch working in oil is mounted on the two-wheeled tractor.

Clutch coupling (fig.6) consists of driving drum 1, mounted on the outlet end of the engine shaft; driven drum 5, mounted on gearbox primary shaft; clumping plate 2, drive plates set 3 and driving plate 4, thrust 7 and compression spring 6.

Compression springs 6 screwed in with one end to the driven drum 5, and are fixed to the pressure plate 2 with the other end with offset turn. Meanwhile driving and driven clutch plates become clenched due to the spring pressure whereupon the engine torque is transferred to the driven drum and through the splineways to the gearbox primary shaft.

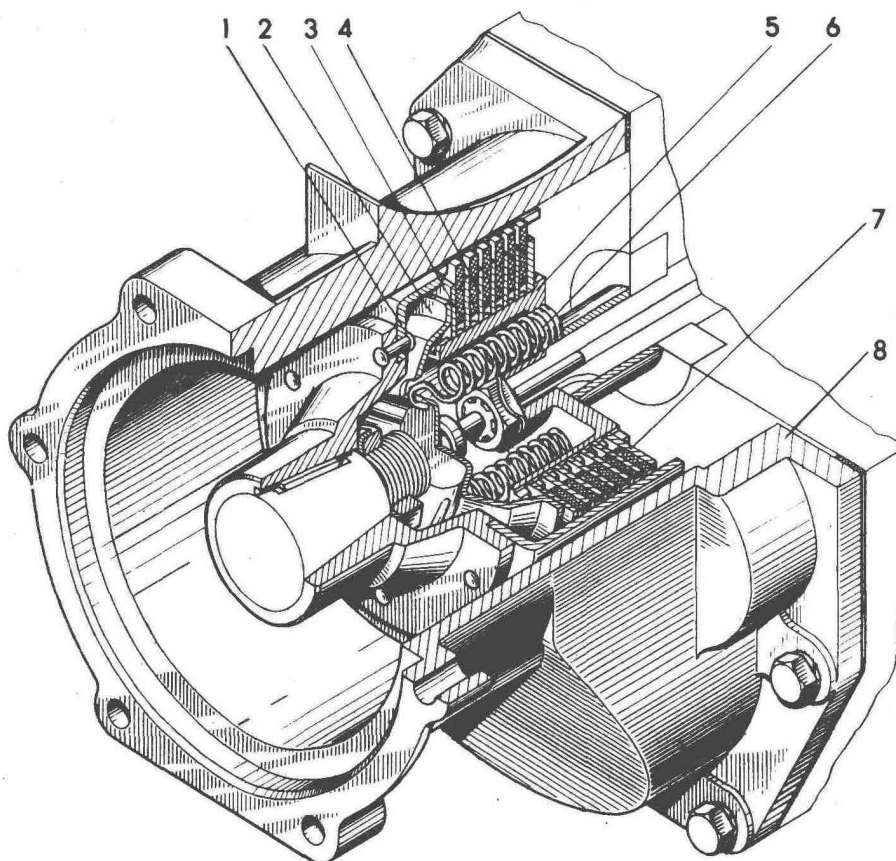


Figure 6 – Clutch coupling

1 – driving drum; 2 – clumping plate; 3 – driving plate; 4 – driven plate;  
5 – driven drum; 6 – spring; 7 – thrust plate; 8 – flange

Mechanical clutch operating control consists of clutch operating control lever 12, rope 11 (fig.3), lever 10, adapter 11, trust ball bearing 7 (single race and retainer with balls), adjusting washers 3, placed in shaft bore 4, centre guide 2 and knob 1 (fig.7).

Lever thrust 12 via the rope 11 (fig.3), lever 10, screw 9, adapter 11 and trust ball bearing 7 is transmitted to the shaft 4, which, moving axially actuate centre guide 2 (fig.7) via washers 3. Centre guide 2, bearing against knob 1, apply pressure to clumping plate 12. Meanwhile clumping plate is moving forward, tighten springs 13, release driving and driven plates and clutch disengagement occurs.

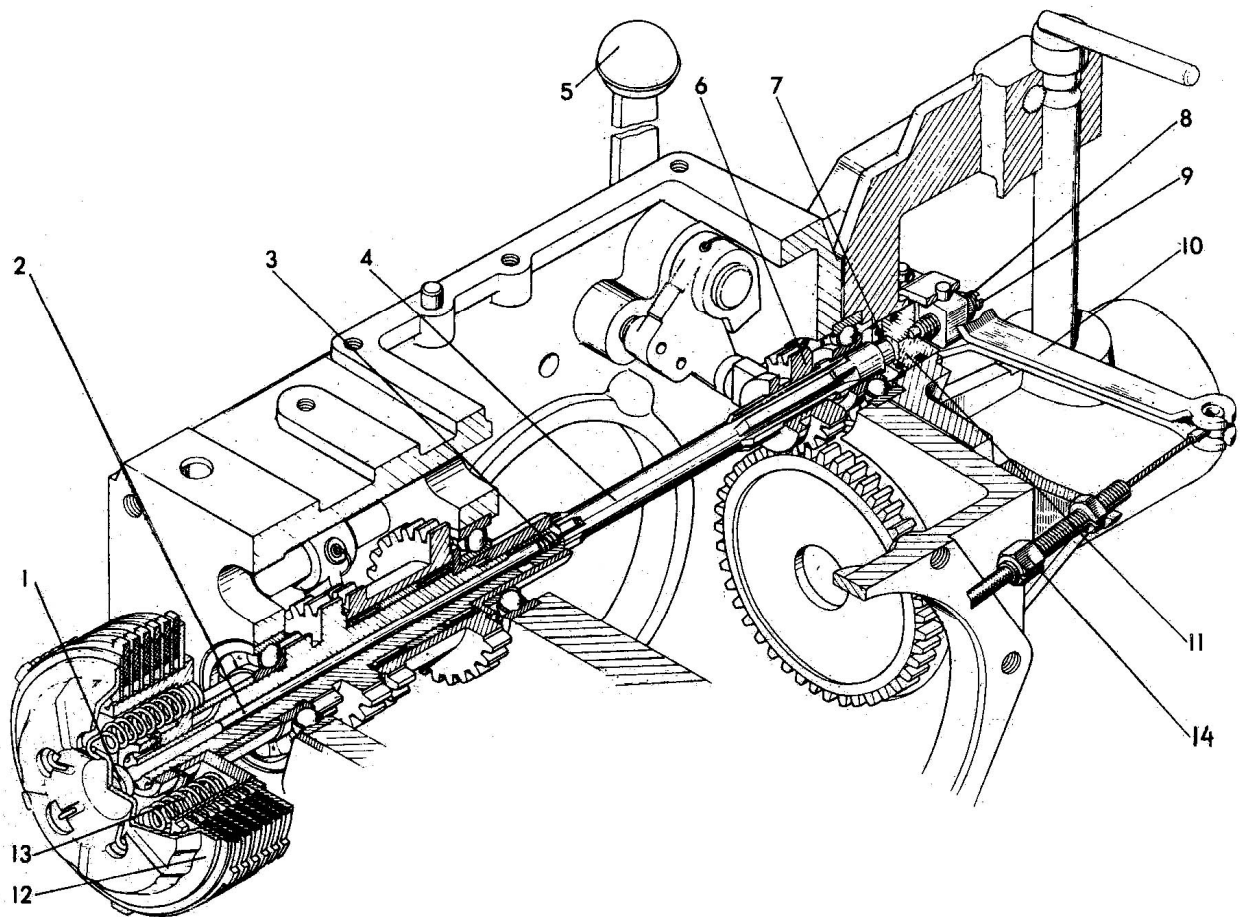


Figure 7 – Clutch operating device

1 – knob; 2 – centre guide; 3 – adjusting washer; 4 – PTO shaft drive axis; 5 – PTO shaft actuation lever; 6 – PTO shaft driving gear; 7 – trust ball bearing; 8 – crosshead adjusting counter nut; 9 – adjustment screw; 10 – clutch operating control lever; 11 – adapter; 12 – clumping plate; 13 – spring; 14 – cable housing tension bolt

#### 4.4 Gear box

Mechanical gearbox with constant-mesh gear is designed for the two-wheeled tractor speed change and reverse ensuring.

There are primary shaft 1, secondary shaft 6 (fig. 8, 8a) and mid-shaft 22 in gear-box casing 11.

Primary shaft 1 is hollow, is designed conjointly with gear block, fixed by two ball bearings in housing borings and locked against the axial movements by body collar and locking plate 12. Reverse gear block 4 is mounted on the shaft fixed by bearings.

Gear ring of the primary shaft are permanently-meshed with gears 20 and 21 of the mid-shaft. Reverse gear block 4 is meshed with gears 18 of mid-shaft and reverse gear block 7 of second shaft when reverse is actuated.

The mid-shaft 22 is mounted fixed by two ball bearings and locked against the axial movements by locking plate 12. The mid-shaft is hollow with four rows of bores positioned radial (three bores per one row), where blocking balls 13 successively inserted into the gaps of the gears 18, 19, 20 and 21 loose on the shaft by shifter shaft 17, are installed freely.

Secondary shaft 6 is designed conjointly with pinion gear and fixed by two ball bearings. The shaft is locked against the axial movement by locking a ring 8 and a screw 9.

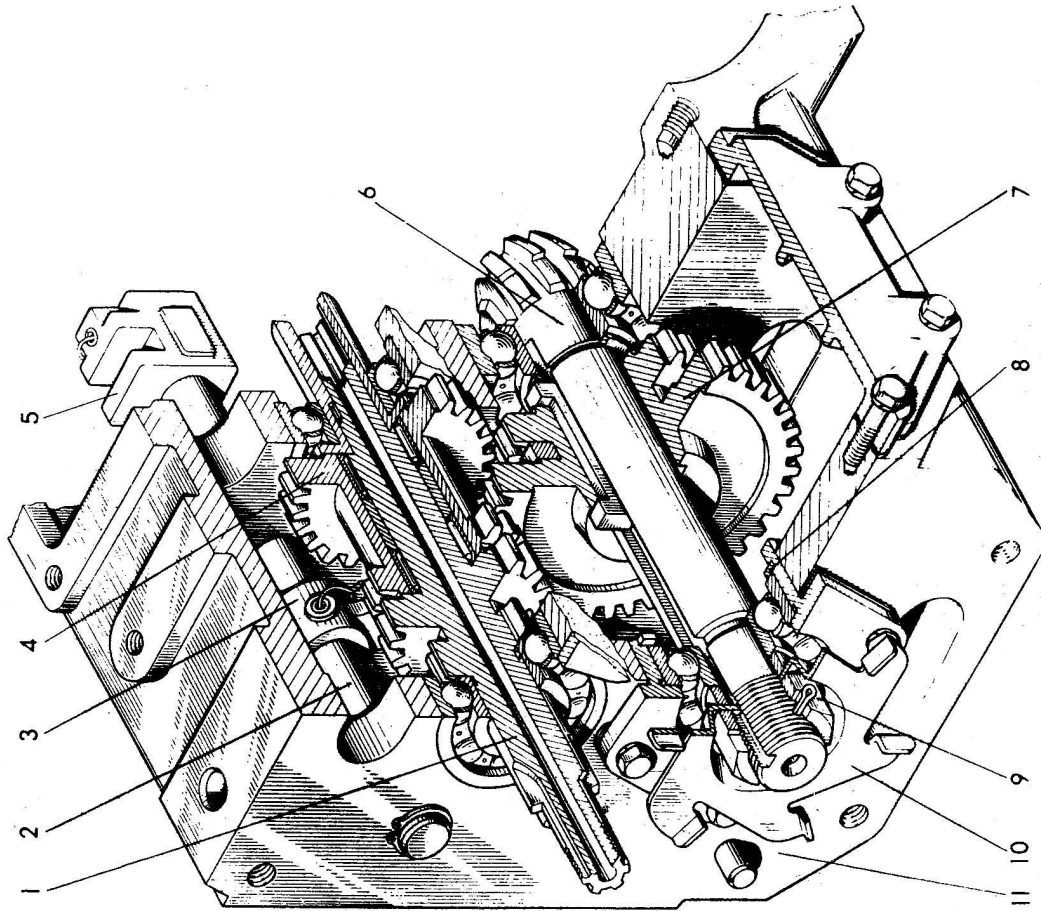


Figure 8 – Gear box

1 – primary shaft; 2 – reverse engagement lever; 3 – gear block fork; 4 – reverse gear block; 5 – tang; 6 – secondary shaft; 7 – reverse gear block; 8 – locking ring; 9 – nut; 10 – impellor; 11 – transmission body; 12 – locking plate; 13 – locking ball; 14 – gear operating shaft; 15 – stop-pin; 16 – fork; 17 – centre guide; 18 – gear for speed III and IV; 19 – gear for speed II and IV; 20 – gear for speed I and III; 21 – gear for speed I and III; 22 – mid-shaft; 23 – washer; 24 – carrier

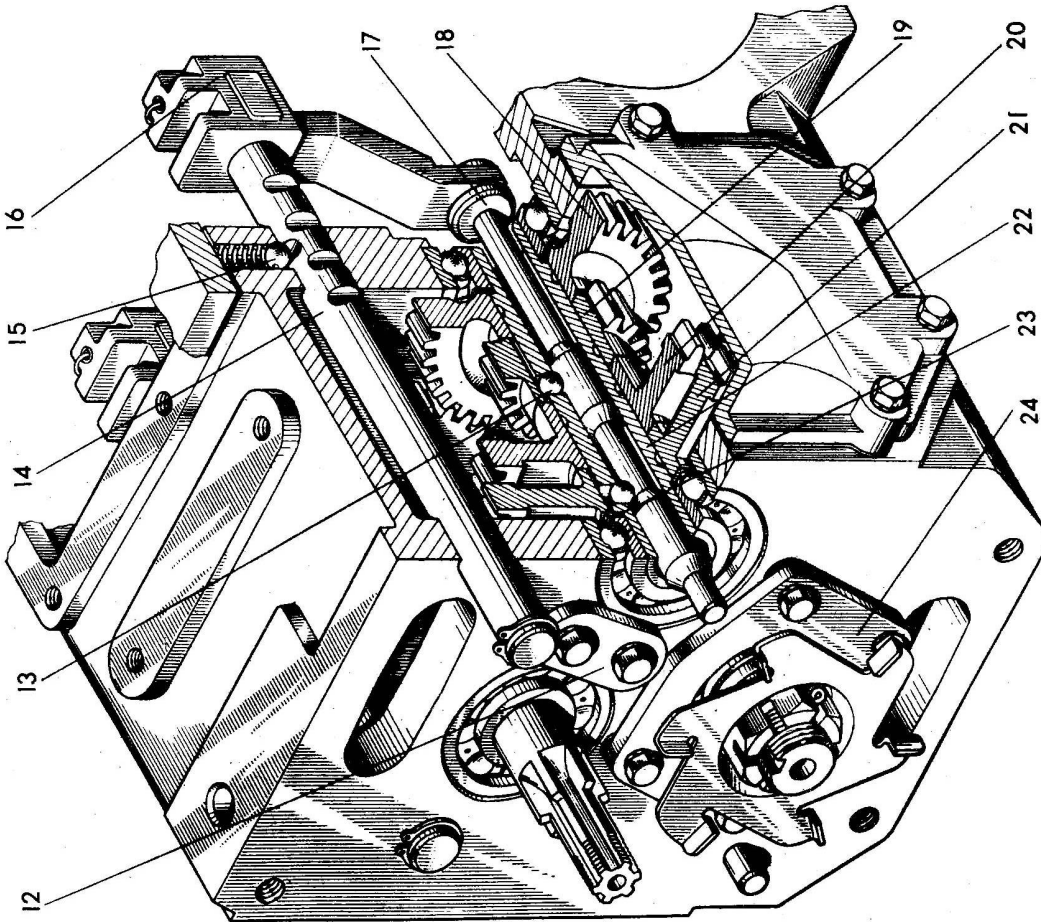


Figure 8a – Gear box

When the gear box is operated rotation activated by the engine through the clutch coupling is transmitted to the primary shaft 1, and from the shaft by means of gears 20 and 21 to the mid-shaft 22. Gears 18 and 19 transfer torque from the mid-shaft to the reverse slider block gear 7 mounted on secondary shaft.

Actuation of gears is carried out by centre guide shifting 17 which enables the required gear, displacing locking balls 13.

To actuate reverse gear, gear block 7 (fig.8) shall be shifted to position II (fig. 9).

Gear box power flows diagram in different gears is shown in fig. 9.

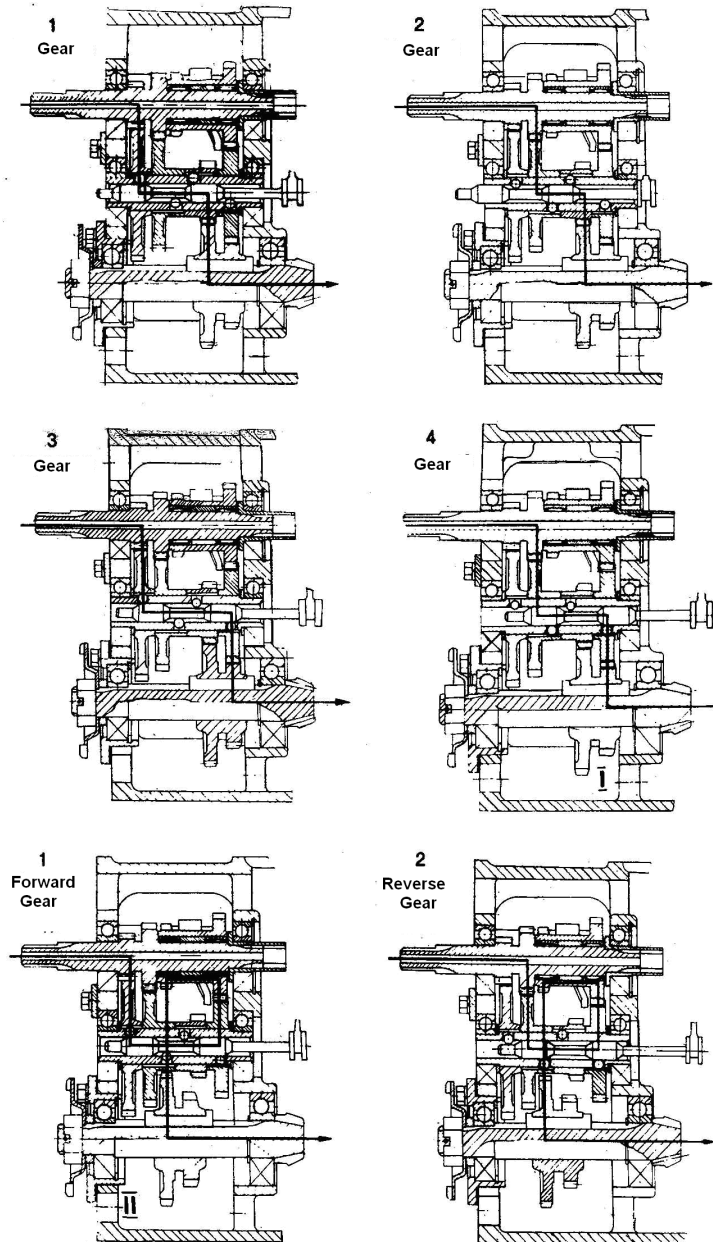


Figure 9 – Gear box power flows diagram in different gears

Speed control device used to engagement of forward and reverse gear and gear shifting.

Reverse gear control device consists of the reverse shaft 2 (fig. 8), mounted on the transmission body 11 on which the fork 3 of gear block 7 is rigidly fixed.

From the reverse lever 7 (fig. 3) the force is transferred via the rod 4 and the lever 19 to the shaft with the lever 2 (fig. 10) which by means of a pin which is entered into a slot of a tang 1, shifts the reverse shaft 2 (fig. 8) together with a fork 3 and the reverse gear block 7.

The speed shifting mechanism consists of the reverse shaft 14 (fig. 8a), moving into the transmission body, the fork 16 which are rigidly fixed on the reverse shaft and come into gear

with the centre guide 17 of mid-shaft. The force from the gear-change lever 8 (fig. 3) is transferred via the linkage and the lever to the shaft with the lever 7 (fig. 10) which by means of a pin entered into a fork notch 16 (fig. 8a) shifts the reverse lever 14 together with the fork and the centre guide 17.

Reverse lever 14 in neutral position is fixed by stop-pin 15 (fig.8a), and when the gear is actuated is fixed by similar stop-pin located in horizontal plane.

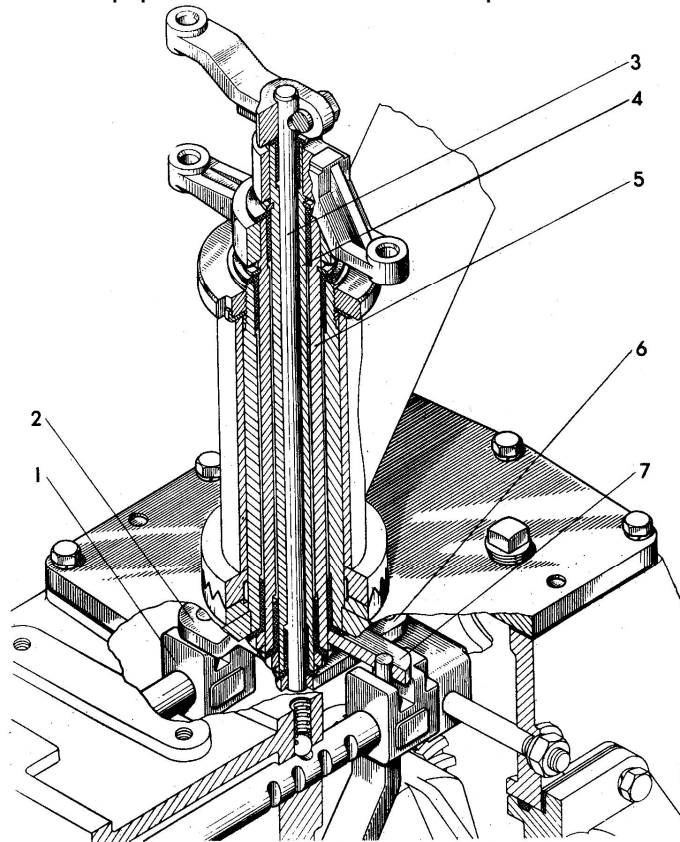


Figure 10 – Speed control device

1 – tang; 2 – reverse lever; 3 – vertical shaft of differential blocking engagement device; 4 – vertical shaft of reverse engagement; 5 – vertical shaft of speed shifting mechanism; 6 – differential blocking engagement lever; 7 – gear-change lever

#### 4.5 Driving axle

Serves for torque transfer from the secondary shaft of the gear box via the main gear, differential and final gears to the wheels of two-wheeled tractor.

The driving axle (fig. 11) consists of the main gear, differential and final gears.

##### 4.5.1 Main gear

The main gear is designed for torque increase and consists of one pair of bevel spiral gears.

Axle drive gear 15 (fig.11) is designed conjointly with the gear box secondary shaft. Driven gear 7 is fixed to differential housing 13 with four bolts. Bolts are locked from self unscrewing by bent-off retainers.

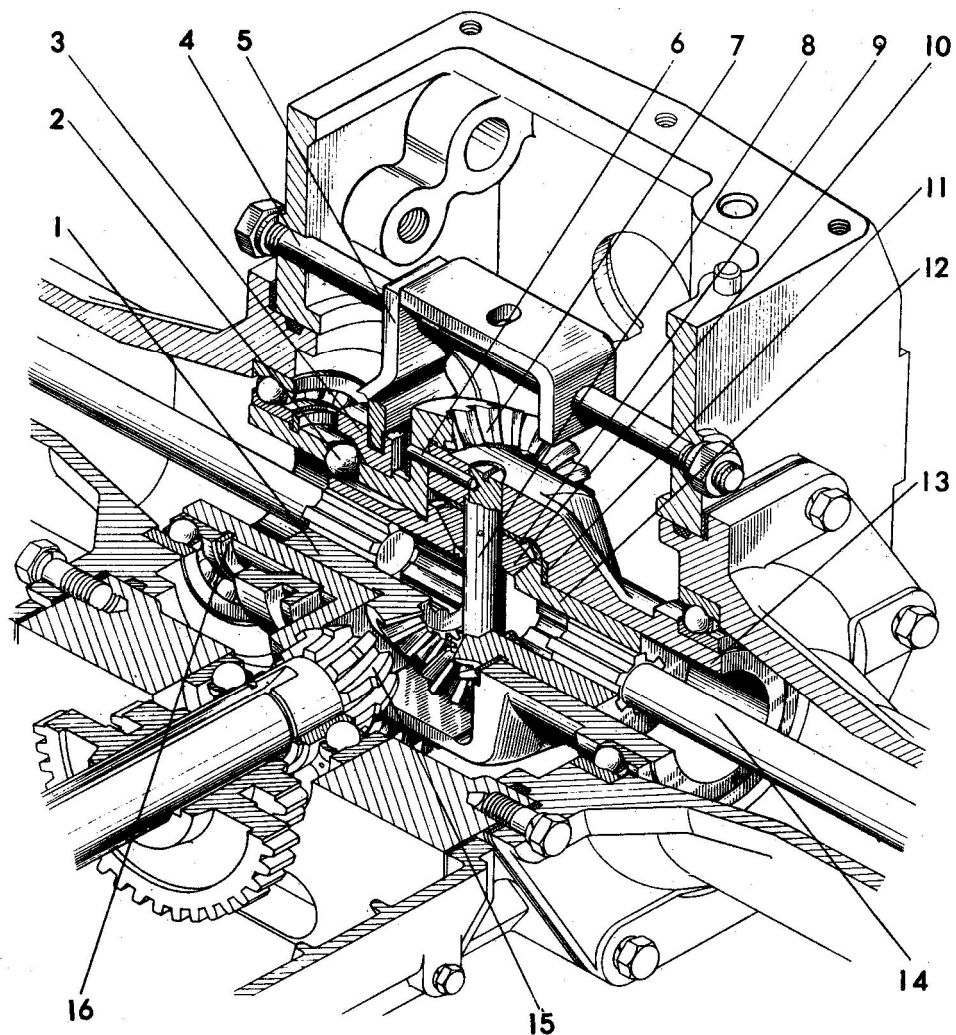


Figure 11 – Driving axle

1 – axle shaft gear; 2 – ball; 3 – tang; 4 – stud-bolt; 5 – fork; 6 – pin; 7 – main driven gear; 8 – spider pin; 9 – satellite support washer; 10 – satellite; 11 – axle shaft gear support washer; 12 – axle shaft gear; 13 – differential housing; 14 – final drive shaft; 15 – main driven gear; 16 – locking ring

#### 4.5.2 Differential

Ensures rotation of driving wheels with various rate of angular motion, necessary when turning of the two-wheeled tractor and when run on a rough road.

The differential consists of the housing 13 (fig. 11), driven gear 7, shaft 8, satellites 10, axle shaft gear 1 and 12 support washer 9 and 11.

The shaft 8 is located in the differential housing, it is fixed from jacking over by pins 6, with satellites 10 loosely fitted on it.

Satellites 10 are in permanently meshed with bevel axle shaft gears 1 and 12.

Axle shaft gears 1 and 12 are connected to final gears shafts by splineways. Support washer 11 is mounted beyond gear face 12.

The differential lock control device consists of a tang 3, three balls 2, stud-bolt 4 along which the fork 5 is moving.

From the differential blocking control handle 10 (fig. 3) the force is transferred via link 3 and lever 2 to the shaft 3 with the lever 6 (fig. 10) which by means of a pin which is entered into a fork hole 5, shifts it together with the tang 3 (fig. 11).

To activate differential blocking it is necessary to shift the handle 10 (fig. 3) forward along the two-wheeled tractor. Thus there is the tang shifting occurs causing the balls to arrive into the slots of the axle shaft gear, earthing it to the differential housing - so the blocking is engaged.

For disengagement of blocking of differential pull the handle 10 (fig.3). Thus the tang releases the locking balls, – so the blocking is disengaged.

### 4.5.3 Final gears

Final gears (рис.12) are designed for torque increase and torque transmission to the wheels. They are single-stage speed reducer with straight tooth gear.

Each speed reducer consists of primary shaft 11 made conjointly with gear, driven gear 4 mounted on the flange splineways 3, sleeve 6 and cover 2.

Sleeve and cover secured by bolts 1 make up reduction gear casing in bores of which primary shaft bearings and wheel flanges are installed. To prevent oil leakage from reduction gear casing, a baffle 12, placed in the cover bore, is used.

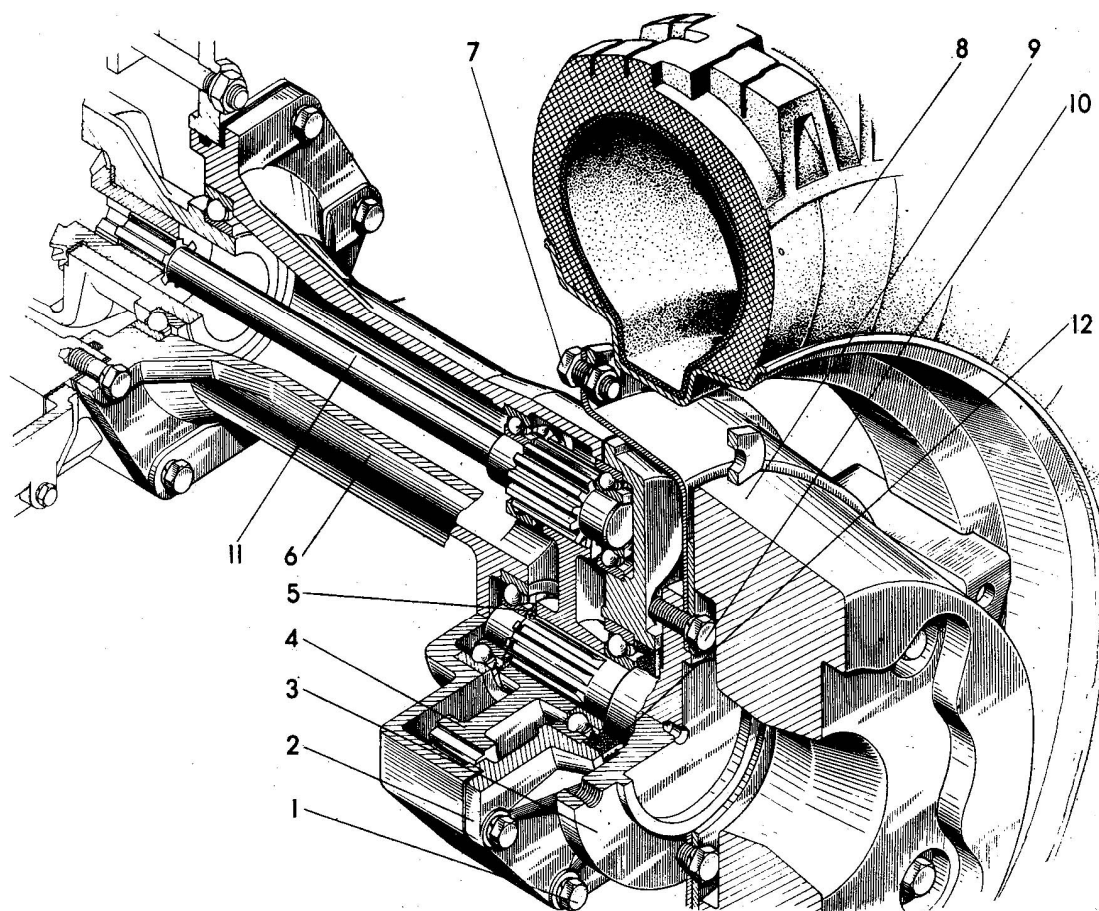


Figure 12 – Final gear

1 – cover bolt; 2 – cover; 3 – flange; 4 – driven gear; 5 – locking ring;  
6 – sleeve; 7 – wheel fastening bolt; 8 – wheel; 9 – load; 10 – wheel disk fastening bolt; 11 – primary shaft; 12 – baffle

### 4.5.4 Power take-off shaft

PTO shaft (fig. 13) is designed for driving of the implements operating stationary and in running order along with the two-wheeled tractor. PTO shaft rotation speed makes  $1200 \text{ min}^{-1}$ .

It consists of the shaft 6, on the splineways of which the driven gear 2 is mounted, coming into gear with driven gear 4, which rotates in two ball bearings 7, installed in housing 8. PTO shaft engagement is carried out by shifting the lever 1 forward and disengagements is carried out by shifting it backward along the two-wheeled tractor run. Splined gear bushing 4 in which the implement transmission shaft is inserted serves as PTO shaft end.

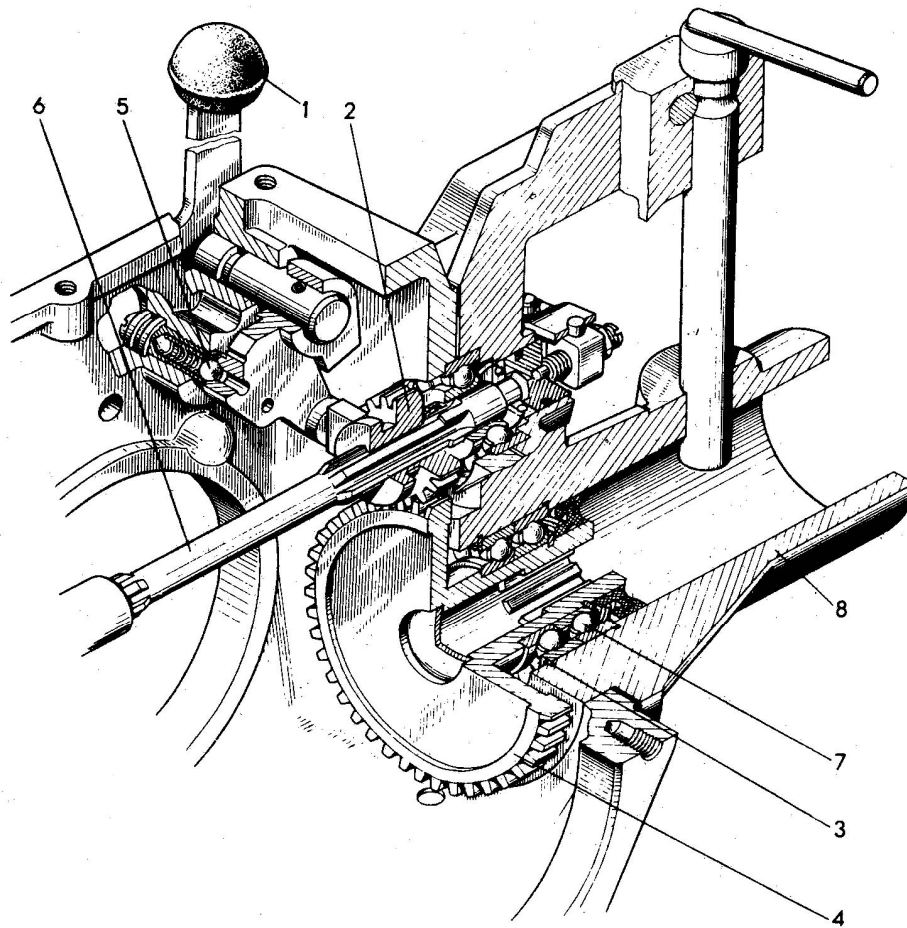


Figure 13 – Power take-off shaft

- 1 – PTO shaft disengagement lever; 2 – driving gear; 3 – locking ring;  
 4 – driven gear; 5 – engagement lever lock plate inclusion; 6 – shaft;  
 7 – ball bearing; 8 – body

#### 4.5.5 Trailing appliance

Trailing appliance is designed for coupling of the two-wheeled tractor with the trailer and the implements. It appears as cast draft attachment with bracket 14 and hinge pivot 16 (fig.3). When coupling is carried out the draft pole of the trailer and the front element of general-purpose coupling is brought into hitch iron jaws and is connected to the two-wheeled tractor by the hinge pivot 16. The hinge pivot is fixed by a forelock 17 to prevent its return out of the lower ear.

## **5 SAFETY PRECAUTIONS**

### **5.1 General provisions**

- strict compliance with the guidelines ensures the two-wheeled tractor safe operation, and improves its reliability and operating life also.
- Only stuff above 14 years old, mastering in Traffic Regulations and two-wheeled tractors and engines operation manuals attached herein, and physically qualified for two-wheeled tractors driving are allowed.
- To operate the two-wheeled tractor in a state of even mild intoxication is prohibited.

### **5.2 General requirements for the two-wheeled tractor technical condition**

- the two-wheeled tractor shall be complete in sets and technically sound.
- run-in of the two-wheeled tractor according to the manual requirements is the must.
- ensure that scrap tires have no through cracks and blow-outs, and tread pattern shall not be fully worn. The pressure is set according to the instructions specified in paragraph 7.

### **5.3 Protective measures in preparation of the two-wheeled tractor for operation**

- read the technical specification and operation manual carefully.
- follow the guidelines set forth in paragraph 6 and the corresponding instruction of paragraph 5 closely.
- preparation of two-wheeled tractor for operation, maintenance and cleaning shall be carried out with the engine switched off.

### **5.4 Protective measures during the two-wheeled tractor operation**

- Before starting the engine the gear-change lever shall be put in neutral position.
- Ensure that no other persons standing behind, before or between the two-wheeled tractor and the implement or trailer coupled.
  - in case of slap noise in the engine, transmission or unreasonable increase in the engine crankshaft speed, press the engine emergency stop button promptly. The button 13 is placed in steering link instrument panel (fig.3).
  - PTO shaft shall be engaged only at minimum rpm and when the clutch coupling is disengaged.
- when the two-wheeled tractor is operated without PTO shaft the PTO shaft operating lever shall be set to neutral position.
- take special care to operation with mowing machine coupled. During mowing operations turn it slowly. Ensure that there are no other people within the reach of mowing machine.
- during hauling operations it is necessary to follow the Traffic Regulations closely determining the road traffic order in the territory. It is forbidden to carry out of hauling operations on public hard-surface roads. It is forbidden to operate the two-wheeled tractor with the trailer under conditions of limited visibility.
  - the trailer coupled with the two-wheeled tractor shall have properly operating brakes ensuring holding of two-wheeled tractor with the loaded trailer aslope not less than 12°.
  - the two-wheeled tractor driving speed on the up or down grade, and sharp curve shall not exceed 4 km/h (gears I, II). When driving in this conditions hold the steering rod tight, and do not shift the gears.
  - crossing grooves and other obstacles shall be carried out at right angle to the obstacle at low speed; hold the steering rod tight during crossing.
  - in case of fault stop the two-wheeled tractor immediately until corrective measures are taken.

## 5.5 Fire safety regulations

- do not smoke at parking places and in course of operation.
  - exclude fuel leakage from the tank, fuel lines and carburetor float chamber. In case of attached to leak detection stop it immediately.
  - when refilling with petroleum, oil and lubricants (POL) you must not smoke and use open flame.
  - you must not use open flame for oil warming-up in the engine and transmission sump.
  - in case of flame formation cover it with sand or with canvas cloth, sackcloth or other dense texture.
- Do not extinguish burning fuel with water.

## 6 PREPARATION OF THE TWO-WHEELED TRACTOR FOR OPERATION

### 6.1 General requirements

The plant delivers the two-wheeled tractor packaged.

The set of spare parts and instruments, passport, technical specification and operation manual, and operation documentation are attached to each two-wheeled tractor.

Before starting of the new two-wheeled tractor perform following operations:

- inspect the two-wheeled tractor carefully, check for completeness, for tightening of threaded joints
- set the gear box and PTO shaft lever to neutral and off position.
- check up an oil level in the engine crankcase, transmission and air filter, refill if necessary.
- fill the fuel tank with fuel. Ensure the fuel is clean without mechanical impurity and water.
- execute all shift-time maintenance actions (STMA, 9.2).

### 6.2 Prestarting procedures and the engine starting:

- fill the fuel tank with filtered petroleum;
- open the valve of the fuel tank;
- close the carburettor choke partly;
- open the carburetor throttle plate by 1/3 by turning throttle lever arm 9 (fig.3) on steering rod clockwise;
- turn the crankshaft prior to the beginning of compression stroke in the cylinder, and then, start the engine by the starting braid jerking. After starting the engine, open wide the carburettor choke;
- warm up the engine at low idle for 1 minute. Check up whether the pressure is in the lubrication system with oil level indicator centre guide.
- if the engine won't start in 2-5 trials, make a small brake for 5-7 minutes and then try to start the engine once again..
- after the engine warming up you can start the two-wheeled tractor operation.

**Note.** The engine startup procedure is specified for the ambient temperature up to  $-5^{\circ}\text{C}$ . The engine startup at the lower temperature is set forth in the operational documentation.

### 6.3 Breakaway and movement of the two-wheeled tractor

In order to make the two-wheeled tractor move carry out the following actions:

6.3.1 Change the engine to the low speed.

6.3.2 Press the clutch coupling lever as far as will go and get into the required gear. If the gear is not actuated at once, release the clutch coupling lever gently and then press it again and get into the required gear. Breakaway shall be carried out in I, II and III gears on load and without load.

For this purpose turning the choker remote control lever into to the right position speed up the engine crankshaft releasing the clutch operating control lever synchronously.

The two-wheeled tractor will start moving slowly.

At breakaway in the reverse gear note that gear-change lever and operating modes interchange places. Therefore engage the gears as follows: press the clutch coupling lever as far as will go and shift the right lever (the reverse lever) forward along the two-wheeled tractor run. Then (when the clutch coupling is disengaged) engage I or II gear by pushing the left lever along the neutral.

Further actions shall be carried out according to cl. 6.2 of the present paragraph.

**Note.** It is recommended not to release the clutch operating control lever harshly, make great efforts for gear shifting; use the clutch operating control lever at breakaway, gear shifting, stops and backing off. Do not change the speed due to the clutch coupling slipping as it may result in the clutch coupling components wear; in order downshift decrease the rpm that is "cut the gun". When the two-wheeled tractor is slowed down disengage the clutch coupling. Then set to the low gear engage the clutch coupling slowly and speed up the engine crankshaft - "open up the engine".

#### **6.4 The two-wheeled tractor stoppage**

- decelerate the engine of the engine crankshaft.
- press the clutch coupling lever.
- set the gear shifting lever to neutral position.

#### **6.5 Engine stoppage**

- shutdown the engine by pressing the emergency stop button.
- close the fuel tank valve.

#### **6.6 The two-wheeled tractor run-in**

Before starting operation the new two-wheeled tractor shall be run-in for 50 h. In course of running-in the two-wheeled tractor components are worn in, promoting increase in operational life of all units and parts. Run-in must be carried out under an under partial load for simple hauling operations.

#### **6.7 The two-wheeled tractor re-equipping for operation on reverse**

- disconnect the link 2 from the lever 1 (fig.2), link 4 from the lever 19, and link 3 from the lever 2 (fig.3).
- back the nut 1 (fig. 3) off 3.5-5 turns, bending the locking washer nib before that.
- turn the steering rod through 180 ° and fix it in the required position.
- connect the links 2 (fig.2) and 4 (fig.3) to the levers 19 and 1 (fig.2). Meanwhile the lever and reverse gear functions are changed. Screw out the bolt for fastening of lever 2 (fig.3) and, turning the lever through 180° fix it with the bolt. Connect the link 3 to the lever 2.

Steering rod reversing diagram is shown in Figure 18.

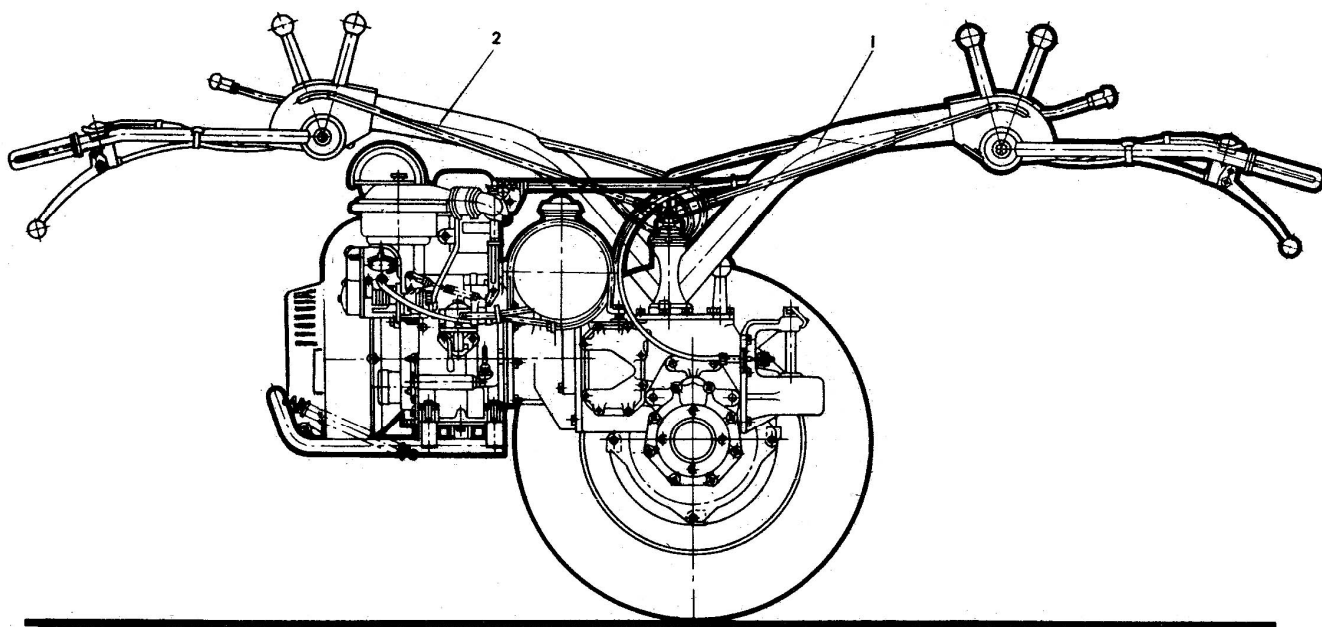


Figure 14 – Steering rod position diagram  
1 – in forward running; 2 – in reverse

## 7 ORDER OF TWO-WHEEL TRACTOR OPERATION COUPLED WITH AGRICULTURAL IMPLEMENTS

### 7.1 GENERAL REQUIREMENTS

The two-wheel tractor coupled with agricultural machines and implements can be used to perform various operations at a small ground area with light soil: tillage, cultivation, harrowing, grass cutting, hilling up potatoes and beet, haulage of goods. Besides, the tractor can serve as a drive for a food chopper, a disk saw, a pump and other machines and implements required at household plot.

However, operating the tractor will give you the highest pleasure and your labor will be productive only if the tractor is correctly coupled with agricultural machines and implements and you have certain operating skills.

Depending on the kind of the operation carried out and coupled machines and implements, set a proper wheel track, tyre pressure and operating or transport transmission gear.

Recommended values of the parameters specified are set forth in table 2.

Table 2

| Machine title                       | Machine type | Recommended wheel track, mm | Recommended tyre pressure, mPa | Transmission gears |
|-------------------------------------|--------------|-----------------------------|--------------------------------|--------------------|
| Mounted plough                      | ПУ-00.000-01 | 600-700                     | 0,08                           | I – II             |
| Rotary tiller                       | ФР-00010     | 450-700                     | 0,08                           | I – II             |
| Harrow cultivator (as a cultivator) | КБ           | 450                         | 0,08                           | I – II             |
| Harrow cultivator (as a harrow)     | КБ           | 450-700                     | 0,08                           | II – III           |
| Ridger                              | ОУ-00.000-01 | 450-700                     | 0,08                           | I – II             |
| Mower                               | КРМ-1        | 450-700                     | 0,08                           | I – II             |
| Trailer                             | ПМ           | 450-700                     | 0,12                           | III – IV           |

## 7.2 Soil tillage

In the beginning of tillage exploration set the tractor track to 600 mm. Till to the depth of 18 sm with plow width of not more than 20 sm. It is desirable to mount the second supplementary weight on the left wheel. Before starting tillage do not forget to clean paint off the moldboard.

To prepare the tractor with the plough for operation (fig. 19) perform the following operations:

1) Set a universal hitch 3 (fig. 15) on the plough into a working position and tighten with a bolt 2. Turning a handle 8 set moving members of the hitch in line with unmovable elements and with a pivot 7 attach a plough with a coupler to a hitch iron 10 and fix the pivot with a key 6.

2) Adjust stop bolts 9 of a hitch 3 so that the distance between the bolt heads and supporting surface of the hitch iron 10 was 7-10 mm by the hitch middle position (along the tractor axis).

**Note.** The universal hitch is delivered to the commercial network in assembly with a plough. A ridger, a cultivator and a harrow are also coupled to the tractor by means of this hitch. The coupling of the universal hitch 3 to the plough, ridger, cultivator and harrow is just the same. The hitch arm is inserted into a vertical arm of the implement 4 and fixed with the bolt 2.

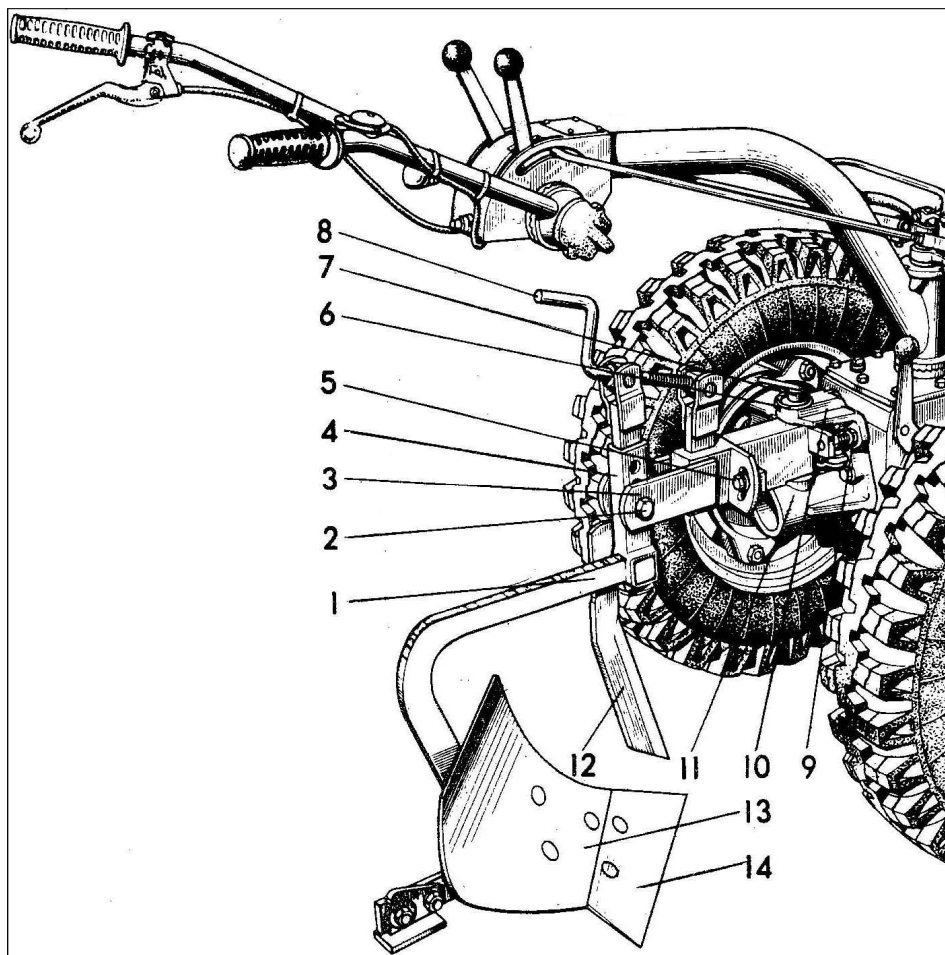


Figure 15 – Tractor coupled with plough

1 – bar; 2 – bolt to fix the implement post; 3 – hitch; 4 – vertical post;  
5 – bolt; 6 – key; 7 – pivot; 8 – depth adjusting handle; 9 – stop bolt;  
10 – hitch iron; 11 – PTO hitch; 12 – knife; 13 – moldboard; 14 – plough share

3) Lay a plate 16-18 sm high under the tractor left wheel and carry out all following operations on plough adjustment in this condition.

4) Release bolts 5 of the hitch, position the plough so that its post took a vertical position, tighten the bolts 5. Mark the position of the bolts in the hitch eyelet as it is necessary to set the plough into the vertical position when making the first furrow.

5) Remove the bolt 2 fixing the plough post and then fix it in such hole of the post so that the engine is a little uplifted (10 sm up from the horizontal position) and the plough share 14 and land board carrying cushion are positioned on the platform. Simultaneous touching shall be adjusted with a depth adjusting handle 8. Tighten the bolt 2 to fix the post.

6) Turning the handle 8 of the hitch contraclockwise raise a plough tip by 1-1,5 sm.

7) Staying behind the plough adjust the handles of the steering link according to your height.

8) If the area for ploughing is located far away from the house, detach the plough with the hitch from the tractor and put it inside the trailer. Having arrived to the field, attach the plough to the tractor, release the bolts 5, position the plough with a small left tilt, tighten the bolts 5.

9) Divide your area into equal parts lengthwise, having put wand markers from materials at hand in the middle of the field. Position the tractor at the beginning of the run so that the right wheel moved along the stake line, and starting to move at the first gear turn on the differential lock.

After some meters of movement check the furrow depth, with the first run it can be less than the designed one by 1-2 sm. Turning the handle 8 clockwise increase the tillage depth to 18 sm.

10) Before turning the tractor back it is required to turn off the differential lock, raise the plough, turn the tractor and moving in a backward direction with the right wheel staying on the edge of the ridge make a double furrow. Turn on the differential lock in the beginning of the run and turn it off in the end to facilitate the turnback.

11) Having plowed fist two furrows, stop, release the bolts 5 and set movable and unmovable hitch parts according to the marks, made on the eyelets before. Making the third run as the wheel moves on the furrow adjust the depth if necessary and shift to gear II or III.

12) If excessive skidding of the wheels is observed, it is necessary to decrease the plough width, to do this release the bolt 5 and turn the plough body by 1-2 sm in the direction of the ploughed land.

A plough correctly adjusted according to the run length follows the furrow automatically and it doesn't require large force to control it.

13) Tilling heavy soils and when there is excessive wheel skidding mount metal wheels instead of rubber ones.

### **7.3 Potato planting (most wide-spread method in Belarus)**

7.3.1 Plow a piece of land to the depth of 18-20 sm and cultivate it to the depth of 8-12 sm.

7.3.2 Bring in organic fertilizers and distribute them evenly over the field (in case organic fertilizers are not available distribute mineral ones).

7.3.3 Potatoes can be planted with row width up to 700 mm. The optimum width is 550-600 mm, as it is possible to plant one row of potatoes after every two runs of the plough.

Before planting mount wand markers and make a back ridge, plant potatoes on its both ends with a distance of 15-20 sm, putting them on the earth dump closer to the furrow bottom, leaving herewith a space for the tractor wheel. After two passes plant potatoes again.

7.3.4 Check the plough width:

- hammer in a peg on unfurrowed soil at a distance of 150 sm from the furrow end, measure a distance form the peg to the furrow end;

- measure a distance to the furrow end after two passes (for example, you got 92 sm);

- subtract the second result from the first one (for instance,  $150 - 92 = 58$  sm), i.e. you get a satisfactory width between rows for further potato cultivation (hilling, digging), as 600 mm track will correspond to the row width.

If you get the value for row width less than 55 sm, then increase the plough width, if more than 60 sm, then decrease it.

7.3.5 If you carried out tillage in autumn, then in spring it is possible only to cultivate soil to the depth of 8-12 sm before planting potatoes.

## 7.4 Potato hilling

7.4.1 Attach a ridger to the tractor (fig. 16).

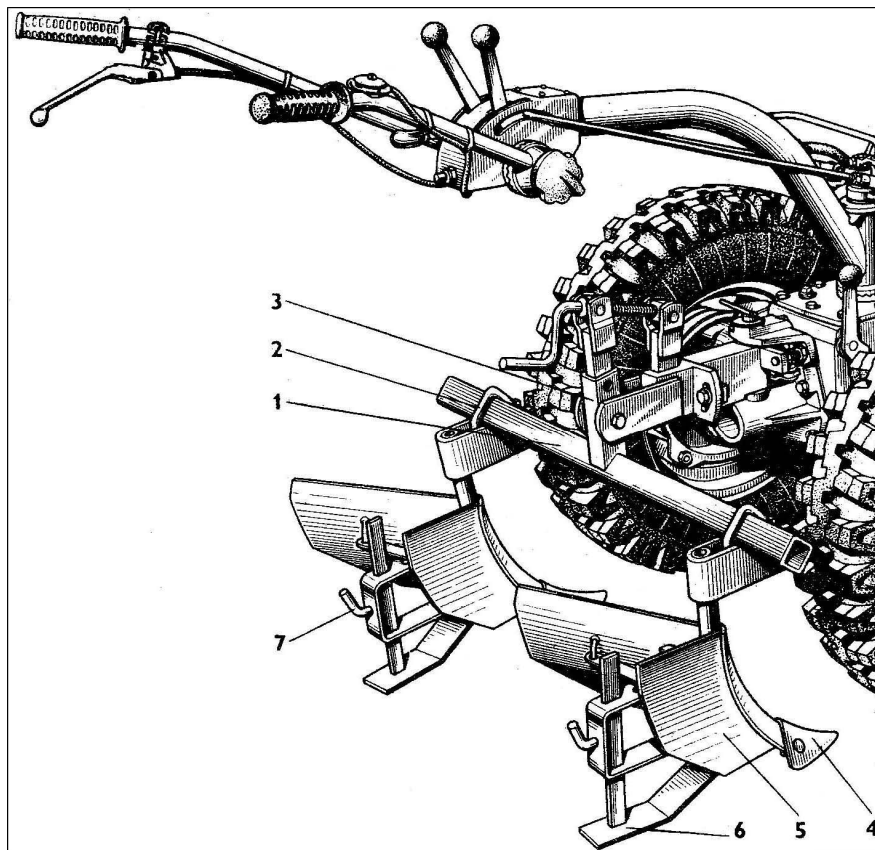


Figure 16 – Two-wheel tractor coupled with a ridger

1 – tube; 2 – clamp; 3 – post; 4 – tip; 5 – moldboard; 6 – carrying cushion; 7 – screw

7.4.2 Set tractor wheels on a track equal to potato inter-row width.

7.4.3 Set tractor wheels on plates 8-12 sm high. Adjust the ridger position so that the tractor engine is 10 sm uplifted, and the ridger tips are on the platform (post 3 of the ridger shall be in a vertical position).

7.4.4 Move the ridgers along the tube 1 so that they were behind the tractor wheels and the distance between them was equal to inter-row width, herewith every ridger shall stay at equal distance away from the post 3.

7.4.5 Let the carrying cushion 6 down on the platform and fix with screws 7 on such a height that the ridger tips 4 were above the ground at a height of 2 sm. Firmly fix them in this condition.

7.4.6 If during operation the tractor deviates to the right side, check the center plates for good tightening. If they stay at the right place then lift the right ridger by 1-2 sm using the bolt 5 of the sector (fig. 15), tighten the bolt and check at work.

If the tractor deviates to the left side, then lift up the left ridger in the same way. The tractor can deviate to the left when the wings are drawn at a different rate.

7.4.7 During the second and third hilling the cooling fan can pick up leaves and they can get on the engine heating plug. As a result a spontaneous stop of the engine may occur. In this case it is necessary to fix shield from cardboard or tin on a front arc of the folding step bracket to prevent potato stalks from getting inside.

### 7.5 Cultivation (chiselling)

Before cultivation carry out the following operations:

- 1) Attach a cultivator to the tractor (fig.17).
- 2) Set tractor wheels on a plate 10 sm high, position the tractor horizontally, having laid a plate of the same height under the platform.

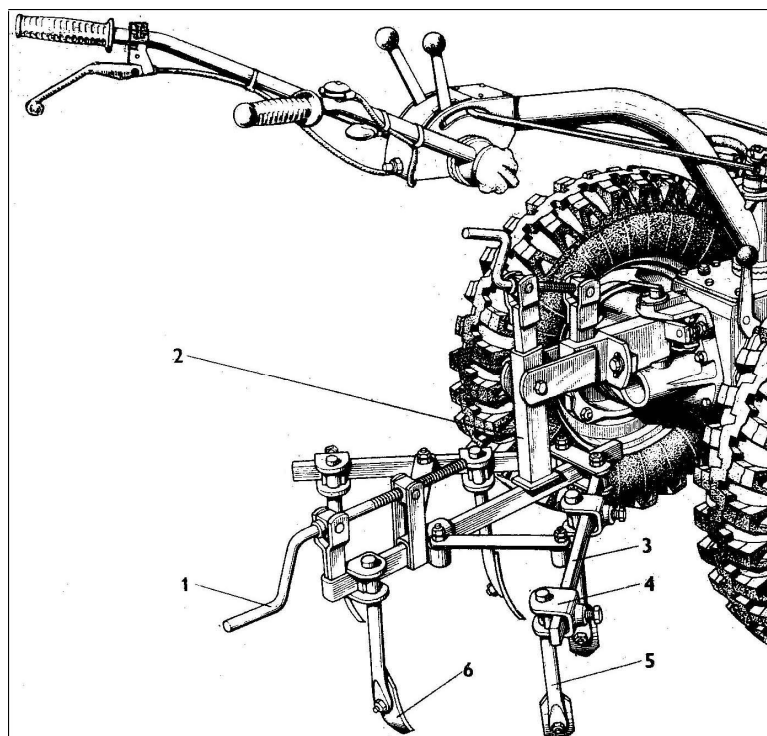


Figure 17 – Two-wheel tractor coupled with cultivator  
1 – handle; 2 – post; 3 – frame; 4 – clamp; 5 – bar; 6 – shovel

3) Fix working units of the cultivator so that they touched the ground and the distance between them was equal. Adjust the tractor handles so that hand elbows were bent.

4) Adjust quality of chiselling by turning the handle 1. Decreasing cultivation width provides for chiselling to smaller fractions, increasing the width – to bigger fractions. It is possible to change cultivation depth by turning hitch handle and by forced deepening (raising) the cultivator by steering link handles.

### 7.6 Harrowing

Coupling the harrow with the tractor is shown in figure 18.

By means of a hitch handle 8 (fig. 19) adjust the harrow position so that its teeth were evenly deepened in a working condition. Harrow width is set with a handle 4 (fig. 18).

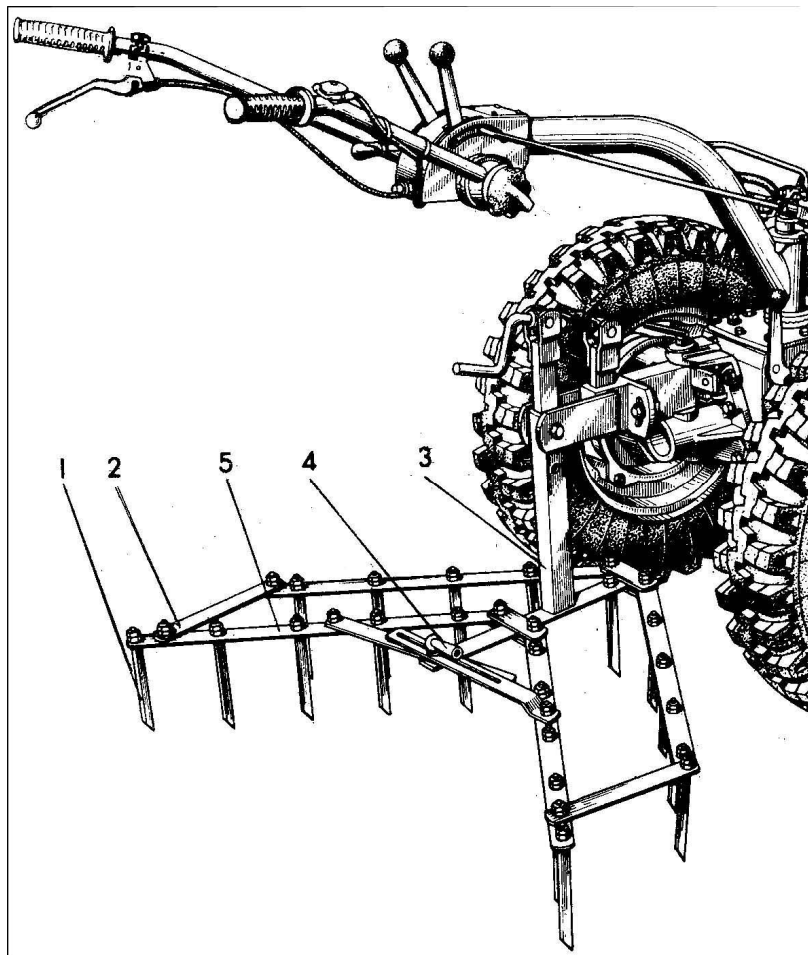


Figure 18 – Two-wheel tractor coupled with harrow  
 1 – tooth; 2 – cross-bar; 3 – post; 4 – handle; 5 – longitudinal bar

### 7.7 Operation with mower

Working with a mower, remove weights from wheels for simplification of tractor control. Hang one of the removed weights on a mower to counterbalance the implement as specified in the mower operation manual.

Run a mower at the minimum speed of the engine and with the coupling clutch disengaged.

During mowing carry out turns smoothly, there should be no people in a zone of knives operation. Make sure foreign objects didn't get under the mower knives.

### 7.8 Cargo transportation

Before transporting cargoes perform the following operations:

1) Set tractor wheels to a 600 mm track, fix additional weights on wheel disks, check up pressure in tractor and trailer tyres (pressure in the tractor tyres shall be 0,12 MPa, and in the trailer tyres – 0,25 MPa).

2) Attach a bar 6 (fig. 19) by means of a pivot 16 (fig. 3) to the tractor hitch iron, fix the pivot with the key 6. Lift up a support 5 (fig. 19) of the trailer and fix it in a horizontal position by means of a pin.

3) Adjust handles on the height so that they were situated over knees (when seated on a trailer seat) at a height of 150-200 mm.

4) Turn the tractor to the left, and then to the right against the stop, herewith retainers welded to the trailer bar shall rest against lugs made on the hitch iron body, and a distance between the wheel and the bar shall be not less than 50 mm (in case the bar touches the wheel an accident may occur).

5) Make sure brakes are in good order.

The braking way of the tractor with the trailer attached shall be not more than 3 m long, both wheels braking simultaneously.

6) Before starting to move do the following:

- brake the trailer, press the brake pedal 4 and fix it with a pedal 3 of a parking brake;
- set gear shifting lever to a neutral position;
- start the engine;
- sit down on a seat, disengage the trailer brake, to do this press the pedal 4 (the pedal 3 of the parking brake will return to the initial position under the influence of the spring);
- press the clutch lever against the stop, move the reverse lever forward (for forward movement) or backward (for backward movement), engage the required gear (primary the second one), set the fuel flow control lever to the engine top speed, after that smoothly release the coupling clutch lever – the tractor will smoothly take off.

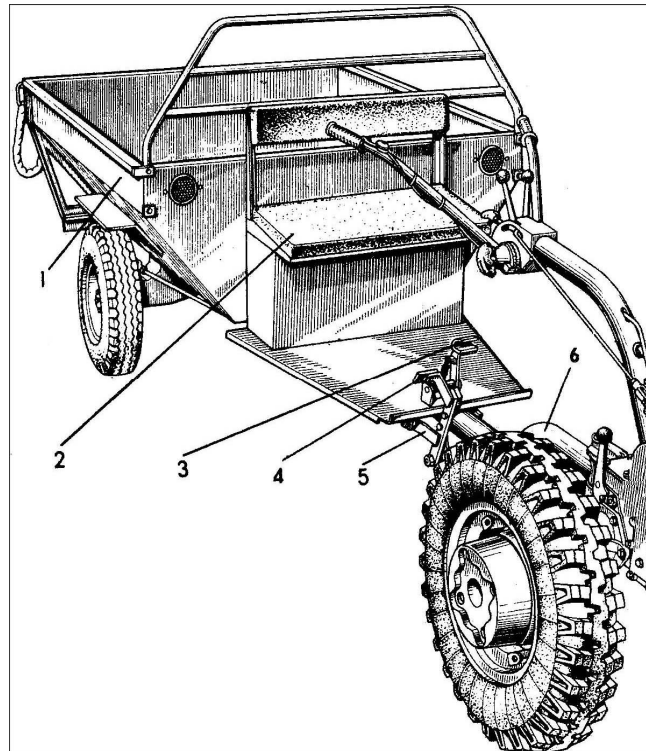


Figure 19 – Tractor coupled with trailer

1 – body; 2 – seat; 3 – parking brake pedal; 4 – brake pedal;  
5 – support; 6 – bar

Learn techniques of tractor control at gears I and II, increasing/decreasing travel speed at the cost of changing fuel flow control position; stopping (it is necessary to depress the coupling clutch, press the brake pedal, disengage the gear), then shift to gears III and IV.

Do not overload the trailer with cargoes above 500 kg, cross heavy road intervals at max. speed; to decrease tractor wheel skidding locate loads at the front part of the body; lock trailer brakes in time. It is possible to overcome a heavy road interval turning the tractor left/right during movement.

Put bulky cargoes (hay, thatch) inside the body, and then on the edges with overlapping (like a cock). Having finished loading, fix the cargo with a rope or a buckle.

Take a special care engaging a reverse gear. Move at a reverse gear with the engine speed reduced, holding your left hand on the coupling clutch lever. In a hazardous situation stop the engine with an emergency stop button.

## 8 POSSIBLE FAULTS AND METHODS OF THEIR ELIMINATION

Table 3

| Fault, external appearance   | Elimination method.<br>Necessary adjustments   | Tools and accessories to be used                            | Note                      |
|--|--|---|---------------------------|
| 8.1 Power train faults   |  |   |                           |
| 8.1.1 Coupling clutch does not transfer full turning torque  |  |   |                           |
| No free travel of the coupling clutch lever  | Adjust free travel   | Wrench 12x13, screwdriver                                   |                           |
| Pressure springs are loosened, driving disks are worn out  | Replace pressure springs   | Wrenches 12x13, 13x14                                       | See 9.4.1                 |
| Dragging of disks on splines, unscrewed nut of driven drum   | Check disks for freedom of movement, tighten the nut   | Wrench 13x14  | See 9.4.1                 |
| Disengagement of the pressure disk with driven drum  | Mount the disk back  | Wrenches 12x13, 13x14                                       | See 9.4.1                 |
| 8.1.2 Coupling clutch is not fully disengaged,   |  |   |                           |
| Increased free travel of coupling lever, cable is stretched  | Adjust free travel to reach a normal value, replace or shorten the cable                                       | Wrench 12x13, screwdriver                                   | Wrench 12x13, screwdriver |
| Nonuniform tension of pressure springs   | Screw in the pressure springs about flush with the butt end of the driven drum                                 | Wrenches 12x13, 13x14                                       | See 9.4.1                 |
| 8.1.3 Oil drains through coupling control adapter  |  |   |                           |
| Sealing ring is worn out   | Replace the ring   | Wrench 12x13, screwdriver                                   |                           |
| 8.1.4 Hindered engagement of gears   |  |   |                           |
| Seizure of vertical shafts of reverse motion switching and gears in plastic bushings as a result of moisture ingress | Face up sliding surfaces of upper and lower plastic bushings and shafts with emery and lubricate them with oil | Wrench 12x13, pliers, 400g hammer                           | See 9.5                   |
| 8.1.5 Gears I and II of front motion and reverse gear are not engaged  |  |   |                           |
| Lock ring on a gear shifting shaft is missing and three seizing balls have fallen out                                | Mount the lock ring on the gear shifting shaft and three seizing balls in front holes of gearbox mid-shaft.    | Wrench 12x14, pliers, knock-out $\varnothing$ 4 mm, adapter | See 9.5                   |
| 8.1.6 Self-disengagement of gears and of a reverse   |  |   |                           |
| Maladjustment of gear and reverse shifting rods  | Adjust rods against retainers on steering link control unit  | Wrench 13x14, pliers  |                           |
| 8.1.7 Increased noise in transmission  |  |   |                           |
| Maladjustment of backlash in the main drive  | Adjust main drive gear backlash  | Wrenches 12x13, 13x14                                       | See 9.4.3                 |
| 8.1.8 Oil drains through sealings and transmission cover   |  |   |                           |
| Breather opening in transmission cover is clogged  | Clean dirt out of the breather and clean the opening   | Wrench 12x13  |                           |

Table 3 continued

| Fault, external appearance                       | Elimination method.<br>Necessary adjustments | Tools and accessories to be used | Note             |
|--|--|----------------------------------|------------------|
| 8.1.9 Oil drains through PTO body and tube cover |  |                                  |                  |
| Seal boots are damaged or worn out               | Replace the seal boots                       | Wrench 13x14                     | See 9.5.7, 9.5.8 |
| 8.1.10 Oil drains through PTO control shaft      |  |                                  |                  |
| Sealing ring is worn out                         | Replace the ring                             | Wrench 12x13, pliers             |                  |

## 9 TECHNICAL MAINTENANCE

### 9.1 Technical maintenance when preparing the tractor for operation

The acquired tractor shall be run-in before being put in operation. In case the running in is insufficient or incorrect, wear of parts increases during the initial period of operation and the tractor life span reduces.

Preparing the tractor for running-in follow the instructions specified in subsection 6.1.

During running in carry out shift-time maintenance.

On finishing running-in (after 50 hours of operation or 65 liters of fuel consumption) perform the following operations:

1. Wash the tractor.
2. Replace oil in the engine sump, wash the oil filter.
3. Wash the filter and sediment cup of fuel tank cock.
4. Replace oil in transmission body and in final drives reduction unit.
5. Check and if necessary adjust coupling clutch control mechanism and throttle control mechanism.
6. Check and if necessary tighten all outer fixtures of the tractor.
7. Check air pressure in the tyres.
8. Eliminate the identified faults.

### 9.2 Scheduled technical maintenance during operation

Established kinds of tractor maintenance are specified in table 4.

Table 4

| Title and designation of kinds of maintenance | Periodicity   |                            |
|---|---|----------------------------|
|   | in hours of operation   | in liters of fuel consumed |
| 1   | 2   | 3                          |
| Shift-time maintenance (StM)                  | 10  | 13                         |
| Maintenance No1                               | 125   | 162,5                      |
| Maintenance No2                               | 250   | 338                        |
| Seasonal maintenance (SM)                     | Carried out during passing from autumn-winter to spring-summer period of tractor operation and vice versa |                            |

Table 5

| 9.2.1 Shift-time maintenance (StM is carried out in every 10 hours of operation)   |   |              |
|--|---|--------------|
| 1 Check oil level in engine crankcase and refill if necessary (fig. 24)  | To reach upper mark of the oil stick                    | Filling fuel |
| 2 Start the engine and check oil pressure. Make sure there is no leakage of oil, fuel, there are no abnormal noises and knocks | Outcome of oil pressure pin shall be not less than 5 mm |              |

Table 5 continued

| 1   | 2  | 3   |
|---|--|---|
| 3 Make sure the coupling clutch functions correctly. Adjust if necessary.   | Free travel of the coupling clutch lever on the handle of the steering link is 5-7 mm.   | Wrench 12x13, screw driver                          |
| 9.2.2 Technical maintenance No1 (TM No1 is carried out in every 125 hours of operation)   |  |   |
| 1 Wash the tractor  |  |   |
| 2 Carry out operations specified by StM   |  |   |
| 3 Make sure tractor parts and units are in good order and securely fixed. Tighten loose fasteners, eliminate detected faults      |  |   |
| 4 Check valve play and adjust if necessary  | 0,1-0,2 mm with cold engine  | Dipstick, screwdriver                               |
| 5 Remove and wash air filter  |  |   |
| 6 Remove regulator cover, wash and lubricate push rods and cam, and also a bearing if necessary.                                  |  | Wrench 8x10   |
| 7 Wash fuel tank, sediment cap and fuel tank cock filter, air filter.   |  | Wrenches 8x10, 12x13                                |
| 8 Check pressure in tyres and if necessary pump up to reach a required value.   | 0,08-0,12 MPa depending on the kind of operations performed  | Pressure indicator (tyre-pressure gauge), tyre pump |
| 9.2.3 Technical maintenance No2 (TM No2 is carried out in every 250 hours of operation)   |  |   |
| 1 Perform operations specified by TM No1  |  |   |
| 2 Unscrew a heating plug, decarbonize electrodes, adjust the clearance  | Electrode clearance is 0,6-0,7 mm  | Tube wrench 22x27, dipstick, needle file            |
| 3 Replace oil in transmission body (at the fourth TM No2)   | Drain oil from warmed up transmission, refill clean oil until it appears from a reference hole (right box cover, fig. 20)  |   |
| 9.2.4 *Seasonal technical maintenance (performed when passing to autumn-winter operation; ambient temperature is from 5 to -10°C) |  |   |
| 1 **Replace summer grades of lubricant with winter grades:<br>in engine crankcase,<br>in air filter,<br>transmission body         | See instructions in Engine operation manual<br><br>Drain oil from warmed up transmission, refill clean oil until it appears from a reference hole (right box cover, fig. 20) | Wrench 13x14, filling funnel                        |
| When passing to spring-summer operation (ambient temperature is from +5°C to +30°C)   |  |   |
| 2 **Replace winter grades of lubricant with summer grades:<br>in engine crankcase,<br>in air filter,<br>transmission body         | See instructions of clause 1   | Filling funnel<br><br>Wrench 13x14                  |

Note – After 500 hours of tractor operation it is required to perform operations on engine maintenance, specified in corresponding units of engine operational documentation.

\* Seasonal technical maintenance shall be brought into coincidence with operations on TM No1.

\*\* Lubrication points and applicable oil grades are specified in table 6.

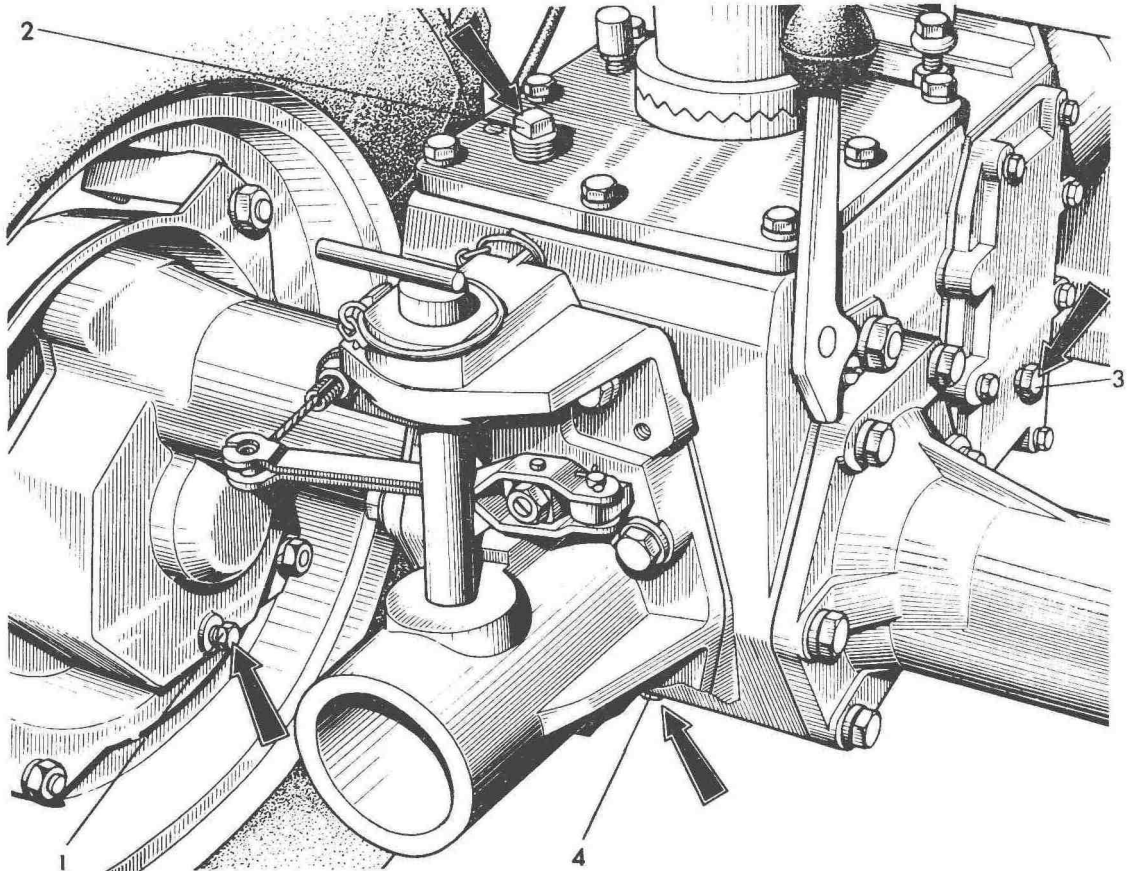


Figure 20

### 9.3 Table of lubricants

Table 6

| Name of assembly units | Number of assembly units within an item, pcs. | Denomination and designation of grades of petroleum, oil, lubricants |                                      | Volume of petroleum, oil, lubricants, refilled in the item, dm <sup>3</sup> |
|------------------------|---|--|--------------------------------------|---|
|                        |   | Main   | Duplicating                          |   |
| 1 Fuel tank            | 1   | Petrol Regulator-92<br>GOST 31077-2002                               | According to engine operation manual | 5,3   |
| 2 Engine oil sump      | 1   | According to engine operation manual                                 |                                      | 1,1   |
| 3 Transmission         | 1   | In summer (above plus 5°C)   |                                      | 3,5   |
|                        |   | Motor oil:<br>M-10Γ <sub>2</sub> or M-10B <sub>2</sub><br>GOST 8581  | Motor oil:<br>SAE15W-40              |   |
|                        |   | In winter (below plus 5°C)   |                                      |   |
|                        |   | Motor oil<br>M-8Γ <sub>2</sub> or M-8B <sub>2</sub><br>GOST 8581     | Motor oil:<br>SAE10W-40              |   |

Table 6 continued

|                           |   |                               |                  |      |
|---------------------------|---|-------------------------------|------------------|------|
| 4 Fuel flow control cable | 1 | Grease Litol-24<br>GOST 21150 | BECHEM<br>LCP-GM | 0,02 |
| 5 Coupling control cable  | 1 | The same                      | The same         | 0,02 |
| 6 Gear shifting mechanism | 1 | -"                            | -"               | 0,02 |

## 9.4 Procedure of adjustment operations

### 9.4.1 Coupling clutch

Release the locknut 8 of the adjustment screw 9 (fig. 7).

Screwing the adjustment screw in and out, set a free movement at the end of coupling disengage lever 12 (fig.3), equal to 5-10 mm. Herewith it is required to remember that the free movement will reduce with screwing the screw in, and will increase with screwing the screw out.

If the coupling clutch is not fully disengaged, i.e. with the lever fully depressed the engine strives to move, it is required to screw the adjusting screw in. If the clutch is slipping, i.e. with the lever fully released the tractor does not move or the engine rpm does not correspond to the speed of tractor movement at a given gear, then it is necessary to screw the adjusting screw out. After clutch adjustment it is necessary to locknut the adjusting screw. Adjust tension of the cable housing with the adjusting bolt 14 (fig. 7).

Disassemble and assemble coupling in the following order:

- drain oil out of transmission body. After this disconnect the engine together with the flange from the transmission body;
- using a wire hook disconnect springs from the pressure disk and remove it;
- take out the coupling knob and remove driving and driven disks;
- using a screwdriver unbend a lock washer;
- fix the coupling drum to prevent it from turning and unscrew a nut of the driven drum. It should be remembered that it has a left-hand thread;
- remove the drum.

Assemble in the reverse order.

Assembling the clutch make sure the splines of driving disks are aligned precisely.

### 9.4.2 Gearbox

A position of the main drive gear, integrated with the secondary shaft 6, is adjusted in the gearbox (fig. 8, 8a). The position of the drive gear is defined by the value of  $44_{-0,16}$  mm from the face to the positioning axis of the driven rear and is provided by a set of adjusting shims, mounted under the flange of the carrier 24.

### 9.4.3. Checking and adjustment of the main drive gear engagement

During operation bevel gear teeth of the main drive are permanently worn out, in this connection it might be necessary to adjust a tooth backlash. Carry out adjustment only when the main gear begins to run with increased noise, thus indicating an increased backlash. The backlash is reduced at the cost of transferring adjusting shims from under the right tube flange under the left tube flange, and vice versa in case of increasing, without changing the total thickness of the shims under both flanges.

A normal backlash between gear teeth is 0,18-0,4 mm, hereby the bearing clearance shall be 0,05-0,1 mm.

To make sure the adjustment is correct, check teeth adherence (contact) using paint. The adherence shall be not less than 50% of tooth surface. Position of print shall be in its middle part or closer to the vertex of cone.

## 9.5 Procedure of transmission disassembly and assembly and procedure of operations on use of spare parts, included into a set of spare parts, tools and accessories.

During tractor operation there can be a necessity for partial or full dismantling of transmission to replace sealing rings, carry out adjustments, wash or replace parts, etc.

Disassemble the transmission in the following order:

- 1 Clean the tractor from dirt and dust.
- 2 Drain oil out of the transmission body and final drives tubes.
- 3 Remove the wheels.
- 4 Disconnect a throttle control cable from the carburetor, a coupling clutch control cable from the lever and also disconnect a magneto switch wire, remove the transmission cover together with the steering link.
- 5 Disconnect the engine with the flange from the transmission body.
- 6 Unscrew one of the nuts fixing the stud bolt 4 (fig. 11) and remove the fork 5.
- 7 Unscrew fastening bolts and remove the final drive right tube together with the differential. Remove the left tube by analogy. When removing the tubes do not damage rubber sealing rings and do not mix up sets of adjusting shims, intended for adjustment of the main drive gear backlash and bearing clearance.
- 8 Unscrew fastening bolts and remove the PTO. Make sure the adjusting washers 3 didn't fall out of the PTO shaft drive axis 4 (fig. 7).
- 9 Remove lateral covers of the box together with sealing gaskets.
- 10 Take locking balls and springs out of the transmission body openings.

### **9.5.1 Gearbox assembly/disassembly**

- start gearbox disassembling with a mid-shaft, to do this remove the locking plate 12 (fig. 8a), take out a screw pin, remove the fork 16 and take out the center guide 17 (fig. 8a). After this incline the transmission and pick up the locking balls (12 pcs.). Then slightly knocking with an adapter in the shaft rear end (through PTO bore) take it out and remove gears;

- to remove the secondary shaft take the pin out and unscrew the nut 9 (fig. 8), remove the impeller, the ring, then slightly knocking on the adapter tap the shaft out to the rear part of the body;

- it is possible to take out the primary shaft together with the coupling clutch. To do this it is necessary to take out the center guide 2 (fig. 7) and using an adapter of 10 mm diameter remove the shaft out of the body;

Assemble the gearbox in a reverse order, following the below stated instructions:

- due to assembly difficulties mount the primary shaft with the coupling clutch disks removed;

- assembly of the mid-shaft requires a special attention. Before mounting the shaft put the transmission body on the rear wall surface, then mount the rear bearing in the bore;

After this mount the washer 23 (fig. 8a), the gears 18, 19, 20, 21 and the second washer in a certain order in alignment with the body bore. Mounting the gears watch their correct positioning according to the figure. Then take the mid-shaft 22, put the center guide 17 inside, fill every hole with the balls 13 and grease with solid oil or lithol. Carefully turning gears one by one and holding the center guide 17 with your right hand to prevent it from falling out, insert the shaft into the bore until it touches the fitment hole of the rear bearing. Then take the center guide 17 with your left hand from the rear bearing side and move it (turning the gears) until it coincides flush with the shaft end. Slightly knocking on the shaft end, position it in the bore. Make sure all the balls stayed inside during the assembly. The assembled shaft and gears shall turn freely without seizing.

**WARNING!** Do not apply great efforts when mounting the shaft, as it can cause deformation or cracks of the balls, thus resulting in premature failure of the unit.

### **9.5.2 Differential assembly/disassembly**

Disassemble the differential in the following order:

- remove the locking ring 16 (fig. 11) and the tang 3. Herewith pay attention to the fact that three balls 2 will fall out of openings of the driven gear 7.

- unbend bolt locking washers, unscrew the bolts and remove the gear;

- remove studs 6 from the differential housing 13, take out the spider pin 8, two satellites 10, two washers 9 and the axle shaft gears 1 and 12. Assemble in a reverse order.

Note – When assembling do not mix up the position for the axle shaft gears.

### **9.5.3 Final drive assembly/disassembly**

Disassemble the final drives in the following order:

- unscrew the fastening bolts 1 of the cover 2 (fig.12) and remove the cover together with the flange 3 of the wheel and the driven gear 4 of the final drive, not damaging paronite sealing gasket;

- remove the locking ring 5, the driven gear 4 and take out the wheel flange 3.

Assemble in a reverse order.

### **9.5.4 PTO assembly/disassembly**

Disassemble the PTO in the following order:

- remove the locking ring 3 through the cavities of the driven gear 4 (fig.13)

- remove the gear 4 together with bearings out of the body.

Assemble in a reverse order.

**Note.** Before mounting the PTO body it is obligatory to install the retainer washers 3 into the PTO shaft drive axis 4 (fig. 7) and a sliding block 3 in a slit of the gear 6.

### **9.5.5 Replacement of sealing rings (part 50-1601322) in final drive tubes**

Follow the instructions of sections 1, 2, 3, 7, subsection 9.5, mount a new ring, lubricate it with solid oil and assemble in a reverse order.

### **9.5.6 Replacement of clutch drive sealing ring**

Disconnect the cable from the clutch operating control lever 10 (fig.7), having preliminary unscrewed the adjusting screw 9.

Turn the lever 10 round the axis by 180°.

Carefully hold an outstanding part of the adapter 11 with pliers and pull. Replace the ring, grease it with solid oil and assemble in a reverse order.

### **9.5.7 Replacement of wheel flange packing seal**

Follow the instructions of section 9.5.3.

Press the bearing and old packing seal out, mount a new one and assemble in a reverse order. Before mounting the flange grease packing seals with solid oil and watch the packing seal ring stay in.

### **9.5.8 Replacement of PTO packing seal**

Follow the instructions on assembly of section 9.5.4, press an old packing seal out, mount a new one and assemble in a reverse order.

## **9.6 Adjustment of tractor wheel track**

The tractor track width can be changed within the limits of 450, 600 and 700 mm. The adjustment diagram is given in figure 21. The track width is changed by means of shifting wheels and their disks. To change the track width from 600 mm to 450 mm it is required to do the following:

- jack up one of tractor sides;

- unscrew nuts of the bolts 7 (fig.12), remove the bolts, turn the wheel 8 so that it could be moved in the direction of the transmission body and fixed in the condition, set forth in fig.27. Shift the other wheel in the same way.

It is possible to make a 700 mm track width from the initial position (600 mm track width), having turned the wheel with the disk by 180°. To do this it is sufficient to unscrew four bolts 10 (fig.12), remove the wheel 8, turn it by 180° and bolt the right wheel at the place of the left one and the left wheel – at the place of the right one (fig.20).

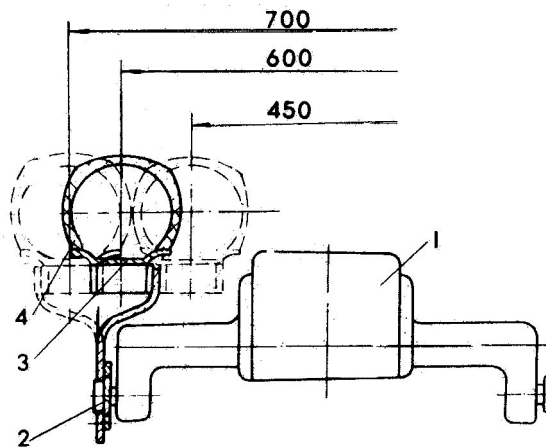


Figure 21 – Diagram of tractor track adjustment  
 1 – tractor transmission; 2 – wheel disk; 3 – wheel rim; 4 – tyre

### 9.7 Tyre assembly/disassembly

It is required to fit a tyre to the rim either on the floor or on a clean platform to prevent ground and dirt from getting inside. Before fitting it is necessary to check the state of the rim, tyre and tube. The rim shall be clean, without corrosion and nicks. If there are some nicks it is necessary to face them up, and to remove dirt and corrosion. After it the rim shall be painted and dried.

The tyre shall be fitted to the rim in the following order:

- bring in one tyre bead through the rim edge, to do this initially put on one bead end, and then using tire levers drag the rest of its part;
- cover a dry tube with a thin layer of talc, put it inside the tyre and expand. Put the tube valve in the rim opening;
- bring in the other tyre bead through the rim edge, to do this first drag one part of the bead and then the rest of the bead using tyre levers. Finish bead dragging at the valve. Assembling the tyre watch the correct position of the valve. Valve tilts are not allowed;
- pump up the tyre to reach a normal pressure. Check if there is no air leakage.

Disassemble the tyre in the following order:

- deflate the tyre;
- displace both tyre beads from the rim seat into its deepening from the side contrary to the valve;
- insert two assembly levers in between the tyre beads and the rim from the valve side at a distance of 10 sm from the valve both sides;
- first drag a bead part which is near the valve through the rim edge, and then drag the rest of the bead;
- take the valve out of the rim opening, then remove the tube from the tyre;
- turn the wheel, moving one side of the tyre bead into the rim opening, insert the tyre levers from the other side and remove the rim from the tyre.

## 10 PACKING

The tractor is dispatched to a consumer without packing. Packing of engine into a polyethylene film envelope is assumed.

Against a special order the tractor can be boxed.

Spare parts, tools and accessories for the tractor are preserved for the term of not less than one year for the medium category of storage and transporting, packed in a plastic bag, which is attached to the steering link with twine.

Technical and accompanying documents are packed into a bag from polyethylene film and attached to the tractor. A packing list is enclosed in the bag, where content is provided.

The tractor is preserved by filling all oil capacities and lubrication points with lubricating materials.

## 11 TRANSPORTATION

Tractor is delivered to consumers by railway vehicles in carriages, by road transport on automobile platforms and trailers.

Loading and unloading tractors is carried out by means of lifting devices with lifting capacity of not less than 0,25 t with usage of special grippers. Gripper cables are fixed to semi-axle tubes and a folding step (fig. 22).

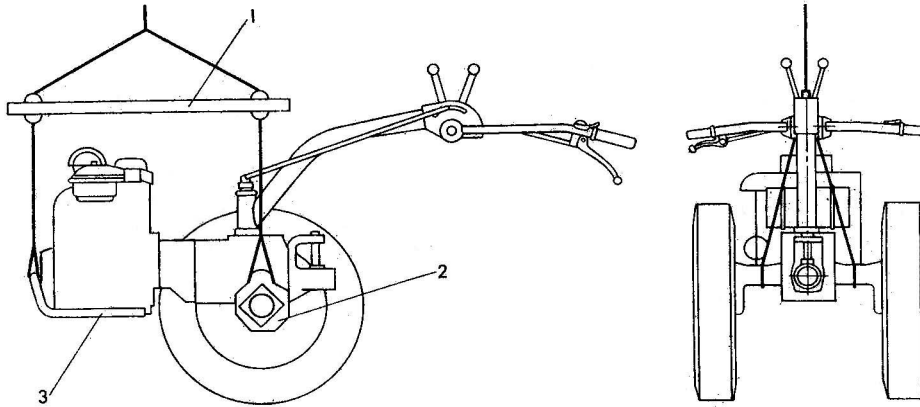


Figure 22 – Diagram of a tractor gripped with cables  
1 – load-handling fixture; 2 – final drive tube; 3 – folding step

## 12 STORAGE RULES

On finishing the working season before putting the tractor for storage it is required to clean it from dirt and dust, damaged surface shall be painted. The tractor shall be stored in a dry and closed room.

The room shall be equipped in accordance with fire regulations. The tractor shall be stored with tyres free. To set tyres free put the tractor on a pedestal in a horizontal position so that there was a spacing between tyres and bearing area.

After the tractor is mounted on the pedestal reduce tyre pressure to 0,4 MPa.

Do not store tyres and tubes close to fuel and lubricating materials and chemicals (acids, alkalies, etc.).

For instructions on engine storage refer to the engine operation documentation.

## 13 ANNEXES

### 13.1 Refill capacities

Table 7

| Name of capacity       | Volume, l | Grades of fuel and oil, refilled in capacities                       |
|------------------------|-----------|--|
| Fuel tank              | 5,3       | According to engine operation manual                                 |
| Engine crankcase       | 1,1       | According to engine operation manual                                 |
| Air filter feed trough | 0,07      | According to engine operation manual                                 |
| Transmission body      | 3,5       | In winter – Motor oil: SAE10W-40<br>In summer – Motor oil: SAE15W-40 |

### 13.2 List of antifriction bearings

Table 8

| Bearing type (dimensions, mm)                 | No in catalogue | Place of installation (figure 5) | Amount of bearings |                  |
|---|-----------------|----------------------------------|--------------------|------------------|
|   |                 |                                  | per unit           | per item totally |
| Radial ball bearing (30x55x13)                | 106             | PTO                              | 2                  | 2                |
| Ball bearing (20x47x14)                       | 204             | Gearbox, final drive             | 8                  | 8                |
| Ball bearing (30x62x16)                       | 206             | Final drive                      | 1                  | 2                |
| Ball bearing (50x80x16)                       | 110             | Main drive                       | 2                  | 2                |
| Ball bearing (15x42x13)                       | 302             | PTO                              | 1                  | 1                |
| Ball bearing (20x52x15)                       | 304             | Gearbox, final drive             | 3                  | 3                |
| Ball bearing (25x62x17)                       | 305             | Gearbox                          | 1                  | 1                |
| Needle bearing with one outer ring (20x26x14) | 941/20          | Gearbox                          | 2                  | 2                |
| Thrust ball bearing                           | 8100            | Clutch control mechanism         | 1                  | 1                |

### 13.3 List of rubber reinforced collars

Table 9

| Type of collar and dimensions, mm | Designation as per GOST 8752-70 | Place of installation          | Amount |
|-----------------------------------|---------------------------------|--------------------------------|--------|
| Rubber reinforced collar 30x52x14 | Collar 2-30x52-1                | PTO shaft end extension        | 1      |
| Rubber reinforced collar 38x58x14 | Collar 2-38x58-1                | Final reduction assembly cover | 2      |

### 13.4 Adjusting values

Table 10

| Title  | Unit of measurement | Value       |
|--|---------------------|-------------|
| See data on adjustment and control of the engine in the engine operation documentation |                     |             |
| Free travel of clutch control lever on steering link                                   | mm                  | 5-10        |
| Main drive gear backlash   | mm                  | 0,18 – 0,40 |
| Clearance between the bearing and the differential body                                | mm                  | 0,05 – 0,12 |
| Air pressure in wheel tyres for transporting works                                     | MPa                 | 0,12        |
| Air pressure in wheel tyres when working with implements mounted                       | MPa                 | 0,08        |

# CATALOGUE OF PARTS AND ASSEMBLY UNITS

The present catalogue contains the whole range of assembly units and parts of two - wheel tractors Belarus-08H, Belarus-09H without engine.

Assembly units and parts in this catalogue are divided into groups and subgroups according to their functions. Each group and subgroup is illustrated by figures, in order to make the use of the catalogue convenient when looking for a necessary part, making it possible for user to become familiar with parts and assembly units constructions and also to help in dismantling and reassembling of two-wheel tractor.

Parts numbers in each group and subgroup are ordered according to position sequence numbers, it makes easier to find the part in catalogue.

The column "Quantity" indicates the number of assembly units and parts, that belong to the group or subgroup.

The column "Material" indicates material which the part is made of and the column "Weight" gives information about weight of assembly units and parts in kilograms.

A seven-digit numbering system of assembly units and parts is used for two-wheel tractor.

According to this system, the gear box assembly has, for example, a number 05-1701010.

05 – the first two figures before dash designate model of two-wheel tractor where the part or assembly unit is taken from;

17 – the first two figures of a seven-digit number designate a group number, gear box in this case;

01 - the second two figures of the seven-digit number designate subgroup number, gear box number in this case;

010 – the last three figures of the seven-digit number designate part or assembly unit number, in this case "Gear box assembly".

Read the assembly unit number 05-1701010 in the following order: zero five dash seventeen zero one zero ten.

Some parts and assembly unit numbers have at the end alphabetic, alphanumeric and numeric extensions with dash, named suffixes. The suffixes A1, A2, A3 or 01, 02, 03 etc. indicate, that the construction of these parts is modified, but is still interchangeable with previously produced designs.

The suffixes Б1, Б2 etc. indicate, that new part constructions will not be interchangeable with parts of previously produced designs, but are interchangeable with each other.

In this catalogue the following abbreviations are used:

GOST - state standard specification;

TU- technical specification;

OST – industry standard.

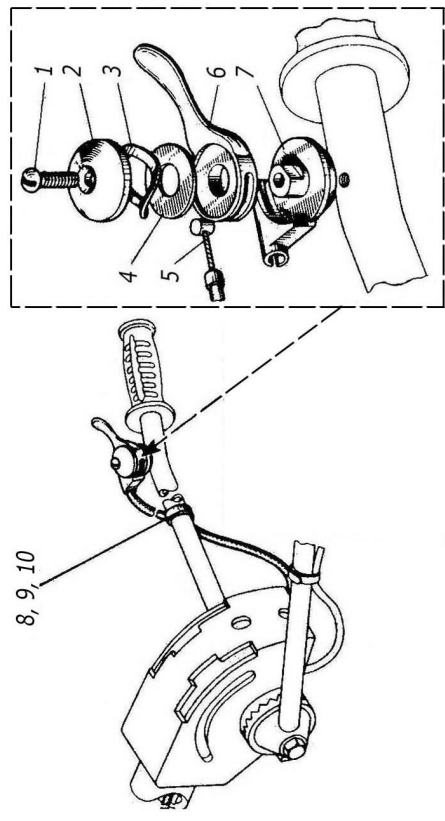
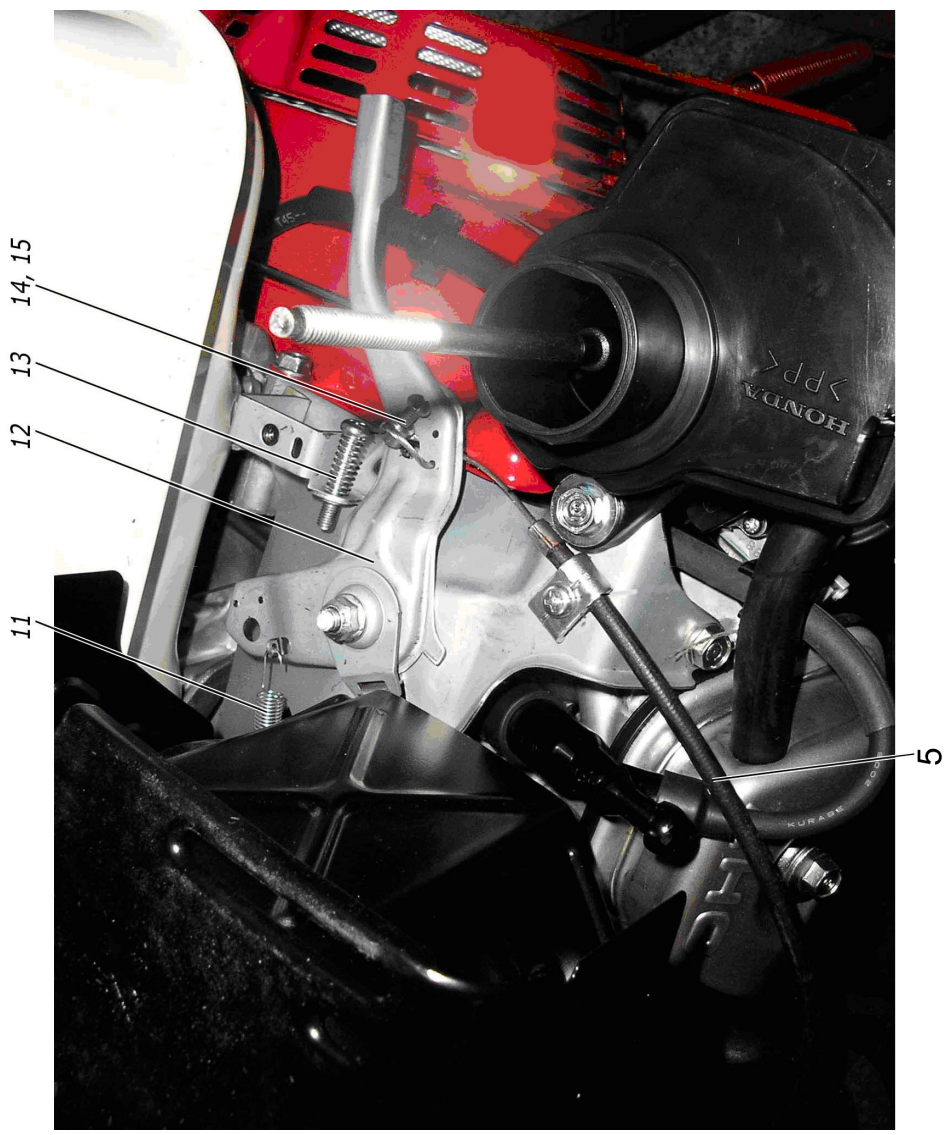


Figure 1 – Fuel intake control

**05-1108. Fuel intake control (figure 1)**

| Ref. No | Indication  | Designation                            | Q-ty | Material          | Weight, kg |
|---------|-------------|--|------|-------------------|------------|
| 1       |             | Screw M6-6gx25.58.019<br>GOST 17473-72 | 1    |                   |            |
| 2       | 05-1108013  | Cover                                  | 1    | Aluminium<br>АЛ-4 | 0,006      |
| 3       | 05-1108014  | Spring                                 | 1    | Steel 65Г         | 0,0018     |
| 4       | 05-1108016  | Washer                                 | 1    | Steel 65Г         | 0,0025     |
| 5       | 05K-1108020 | Cable                                  | 1    |                   | 0,25       |
| 6       | 05-1108011  | Lever                                  | 1    | Aluminium<br>АЛ-4 | 0,016      |
| 7       | 05-1108012  | Housing                                | 1    | Aluminium<br>АЛ-4 | 0,03       |
| 8       | 50-3407081  | Fixing strap                           | 1    |                   |            |
| 9       | 297580-П8   | Fastener                               | 1    |                   |            |
| 10      |             | Split pin5x36.001                      | 1    |                   |            |
|         |             |  |      |                   |            |
|         |             |  |      |                   |            |
|         |             |  |      |                   |            |
| 14      | 70-1310441  | Lock                                   | 1    |                   |            |
| 15      | 6912091     | Screw BM4.6gx8.58.019<br>GOST 17473-80 | 1    |                   |            |

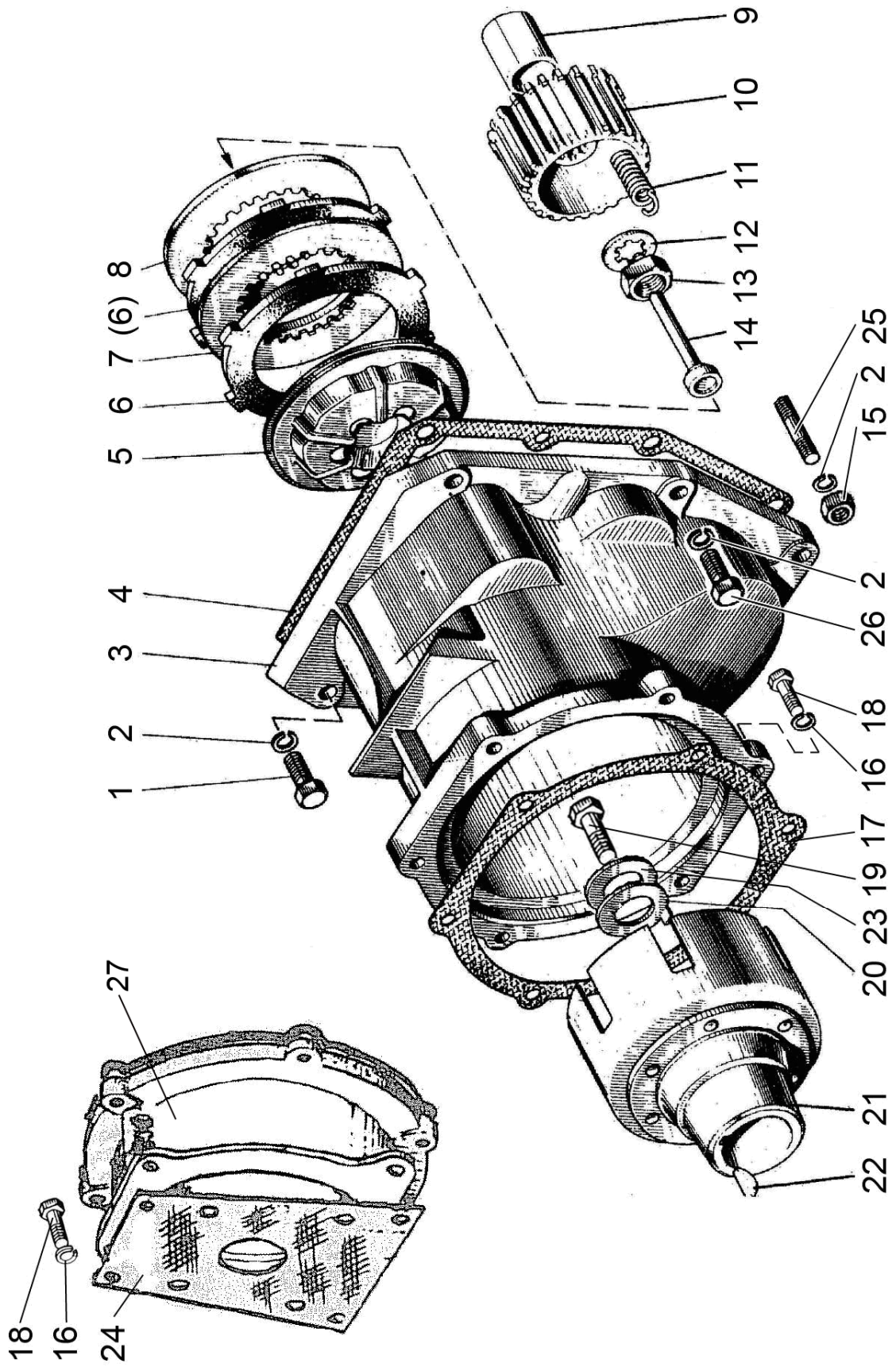


Figure 2 – Clutch

**05-1601. Clutch (figure 2)**

| Ref. No | Indication   | Designation                              | Q-ty | Material                    | Weight, kg |
|---------|--------------|--|------|-----------------------------|------------|
|         |              | Clutch assembly (1 – 13)                 |      |                             | 2,17       |
|         | 105-16120    | Driven drum (10, 11)                     |      |                             | 0,280      |
| 1       |              | Bolt M10-6gx30.88.35.019<br>GOST 7796-70 | 4    |                             |            |
| 2       |              | Washer 10.OT<br>OST 37.001.115-75        | 6    |                             |            |
| 3       | 06ЛД-1601021 | Flange                                   | 1    | Aluminium<br>АЛ-4           | 1,57       |
| 4       | 05-1601022   | Gasket                                   | 1    | Paronite ПМБ                | 0,008      |
| 5       | 103-16105    | Pressure disk                            | 1    | Steel 08кп                  | 0,133      |
| 6       | 05-1601026   | Driving disk                             | 6    | Press material<br>КФ-3П     | 0,0156     |
| 7       | 105-16128    | Driven disk                              | 5    | Steel 45                    | 0,0382     |
| 8       | MIA-1601134  | Bearing disk                             | 1    | Steel 45                    | 0,085      |
| 9       | 05-1601024   | Bushing                                  | 1    | Steel B20                   | 0,020      |
| 10      | 105-16121    | Driven drum                              | 1    |                             | 0,02       |
| 11      | 3.III-16122  | Pressure spring                          | 5    | Wire<br>T-2<br>GOST 9389-60 | 0,008      |
| 12      | 105-16136    | Lock washer                              | 1    | Steel 08кп                  | 0,002      |
| 13      | 105-16135    | Nut                                      | 1    | Steel A12-B                 | 0,010      |
| 14      | MIA-1601170  | Center guide knob                        | 1    | Wire 5,23-10                | 0,016      |
| 15      |              | Nut M10-6H.6.019<br>GOST 5915-70         | 1    |                             |            |
| 16      |              | Washer 8T<br>OST 37.001.115-75           | 10   |                             |            |
| 17      | 082-1601014  | Gasket                                   | 1    | Paronite                    | 0,004      |
| 18      |              | Bolt M8-6gx30.88.035.019<br>GOST 7796-70 | 10   |                             |            |
| 19      |              | Bolt M8-6gx25.88.035.019<br>GOST 7796-70 | 1    |                             |            |
| 20      | 06ЛД-1601014 | Washer                                   | 1    | St.3                        | 0,06       |
| 21      | 08Н-1601015  | Drum                                     | 1    |                             | 1,044      |
| 22      | 06ЛД-1601016 | Key                                      | 1    | Steel 40                    | 0,016      |
| 23      | 06-ЛД1601016 | Washer                                   | 1    | Steel08пс                   | 0,007      |
| 24      | 082Н-1601013 | Gasket                                   | 1    | Paronite                    | 0,004      |
| 25      |              | Stud M10 3p\8gx50.68.019<br>GOST22034-76 | 1    |                             |            |
| 26      |              | Bolt M10-6gx55.88.35.019<br>GOST 7796-70 | 1    |                             |            |
| 27      | 06ЛД-1601012 | Plate transition                         | 1    | Steel 40Л                   | 2,5        |

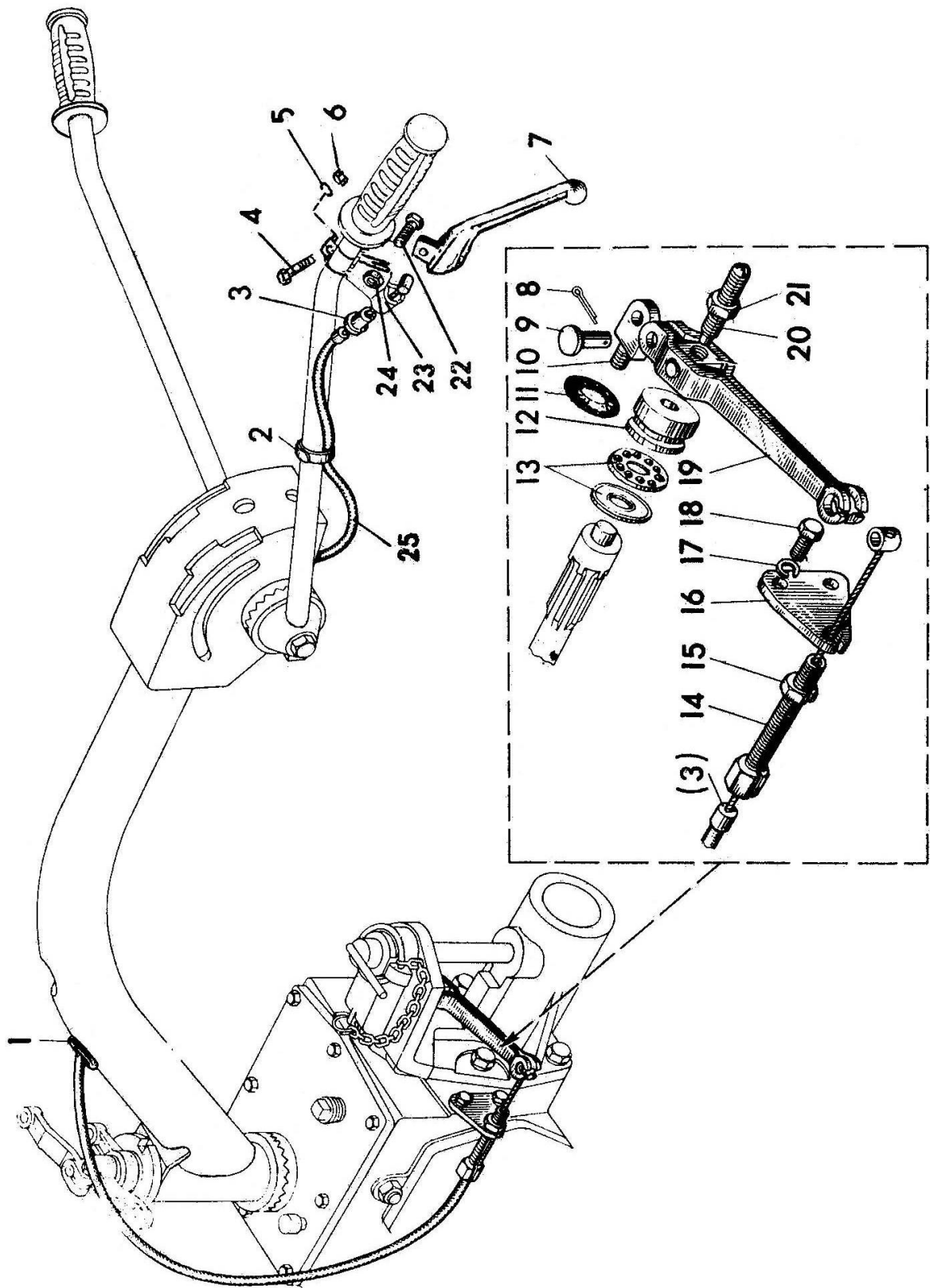


Figure 3 – Clutch control

**05-1602. Clutch control (figure 3)**

| Ref. No | Indication     | Designation                                 | Q-ty | Material           | Weight, kg |
|---------|----------------|---|------|--------------------|------------|
| 1       | 50-3723025     | Protective collar                           | 1    | Rubber             | 0,003      |
| 2       | 80-3723045     | Collar                                      | 1    | Steel 10кп         |            |
| 3       | MIM-1602172    | Stop  | 1    |                    |            |
| 4       |                | Bolt M6-6gx30.88.35.019<br>GOST 7798-70     | 1    |                    |            |
| 5       |                | Washer 6T OST 37.001.115-75                 | 1    |                    |            |
| 6       |                | Nut M6-6H.019<br>GOST 5915-70               | 1    |                    |            |
| 7       | 3.1121-34123   | Left lever                                  | 1    | Aluminium АЛ-32    | 0,066      |
| 8       |                | Splint pin 1,6x12.019<br>GOST 397-79        | 1    |                    |            |
| 9       |                | Pin 6x18<br>OST 37.001.163-97               | 1    |                    |            |
| 10      | 05-1602031     | Support                                     | 1    | Steel 45           | 0,04       |
| 11      |                | Sealing ring<br>020-025-30-1-4 GOST 9833-73 | 1    | Rubber<br>ИПП-1269 |            |
| 12      | 05-1602032-Б   | Adapter                                     | 1    | Steel 25 ХГТ       | 0,05       |
| 13      |                | Bearing 8100<br>GOST 7872-89                | 1    |                    |            |
| 14      | 3.112-34710    | Adjusting screw                             | 1    | Steel A12-B        | 0,0145     |
| 15      | 3.112-34711    | Locking nut                                 | 1    | Steel 10кп         | 0,004      |
| 16      | 05-1602022     | Plate                                       | 1    | Steel 20           | 0,027      |
| 17      |                | Washer 6T OST 37.001.115-75                 | 2    |                    |            |
| 18      |                | Bolt M6-6gx14.66.019<br>GOST 7798-70        | 2    |                    |            |
| 19      | 05-1602015     | Lever                                       | 1    |                    | 0,105      |
| 20      | 05-1602013     | Screw                                       | 1    | Steel 45           | 0,008      |
| 21      |                | Nut M8-6H.6.019<br>GOST 5915-70             | 1    |                    |            |
| 22      | 3.1121-34140   | Lever axle                                  | 1    | Steel A12-B        | 0,006      |
| 23      | 3.1121-34139-A | Support                                     | 1    | Alloy ЦА4МІ        | 0,029      |
| 24      |                | Nut M5-6H.019<br>GOST 5915-70               | 1    |                    |            |
| 25      | 05-1602020     | Cable                                       | 1    |                    | 0,320      |

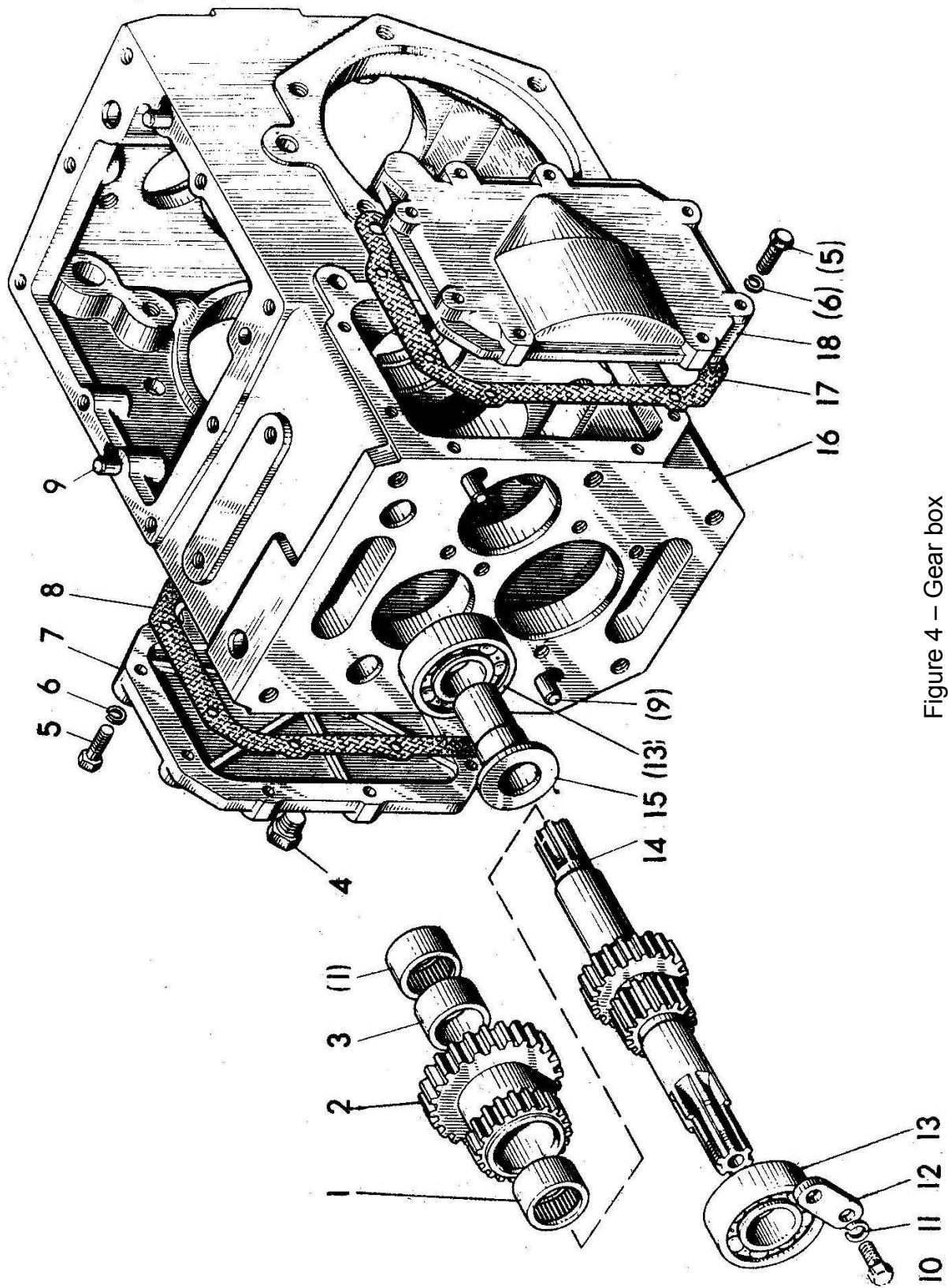


Figure 4 – Gear box

**05-1701. Gear box (figure 4)**

| Ref. No | Indication | Designation                             | Q-ty | Material          | Weight, kg |
|---------|------------|---|------|-------------------|------------|
|         | 05-1701010 | Gear box                                | 1    |                   | 16,8       |
|         | 05-1701220 | Gear wheel<br>(1, 2, 3)                 |      |                   | 0,390      |
| 1       |            | Bearing 941/20<br>GOST 4060-78          | 2    |                   |            |
| 2       | 05-1701222 | Gear wheel                              | 1    | Steel 18<br>ХГТ   | 0,340      |
| 3       | 05-1701224 | Ring                                    | 1    | Steel 45          | 0,025      |
| 4       |            | Plug КГ 1/8" MTCXM                      | 1    |                   |            |
| 5       |            | Bolt M6-6gx25.88.35.019<br>GOST 7798-70 | 15   |                   |            |
| 6       |            | Washer 6T<br>OST 37.001.115-75          | 15   |                   |            |
| 7       | 05-1701011 | Cover                                   | 1    | Aluminium<br>АЛ-4 | 0,242      |
| 8       | 05-1701014 | Gasket                                  | 1    | Paronite          | 0,009      |
| 9       |            | Pin 8h 8x16<br>GOST 3128-70             | 4    | Steel 45          |            |
| 10      |            | Bolt M8-6gx20.88.35.019<br>GOST 7796-70 | 2    |                   |            |
| 11      |            | Washer 8T<br>OST 37.001.115-75          | 2    |                   |            |
| 12      | 05-1701374 | Plate                                   | 1    | Steel 20          | 0,02       |
| 13      |            | Bearing 204<br>GOST 8838-75             | 2    |                   |            |
| 14      | 05-1701032 | Primary shaft                           | 1    | Steel 18<br>ХГТ   | 0,390      |
| 15      | 05-1701223 | Bushing                                 | 1    | Steel 18<br>ХГТ   | 0,04       |
| 16      | 05-2401011 | Casing                                  | 1    | Cast iron<br>СЧ18 | 10,8       |
| 17      | 05-1701013 | Gasket                                  | 1    | Paronite          | 0,009      |
| 18      | 05-1701012 | Cover                                   | 1    | Aluminium<br>АЛ-4 | 0,2        |

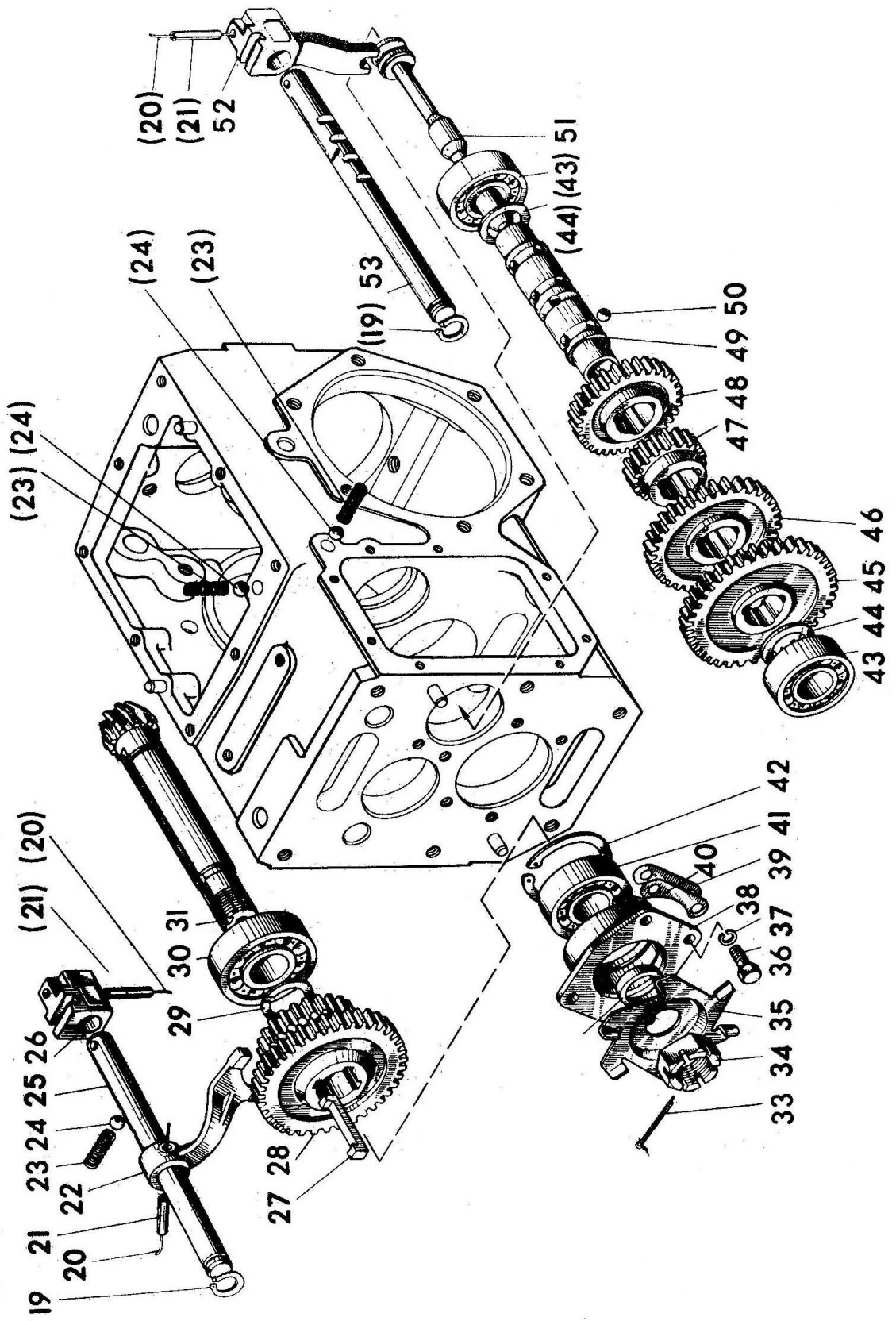


Figure 4a— Gear box

**05-1701. Gear box** (figure 4a)

| Ref. No | Indication    | Designation                             | Q-ty | Material          | Weight, kg |
|---------|---------------|---|------|-------------------|------------|
|         | 05-1701060    | Sleeve (38, 41, 42)                     |      |                   | 0,25       |
|         | 05-1701250    | Shaft (29, 30, 31)                      |      |                   | 1,5        |
| 19      |               | Ring Б15 GOST 13942-68                  | 2    |                   |            |
| 20      |               | Wire 1,0-0-C<br>GOST 3282-74            | 3    |                   | 95 mm      |
| 21      |               | Pin 4x30.65Г<br>GOST 14229-78           | 3    |                   |            |
| 22      | 05-1702022    | Fork                                    | 1    | Steel 45          | 0,105      |
| 23      | 05-1701375    | Spring                                  | 3    | Wire 1-1,4        | 0,004      |
| 24      |               | Ball 7,938-100 GOST 3722-81             | 3    |                   |            |
| 25      | 05-1702123    | Shaft                                   | 1    | Steel 45          | 0,225      |
| 26      | 05-1702024    | Arm                                     | 1    | Steel 45П         | 0,095      |
| 27      | 05-1701317    | Key                                     | 1    | Steel 40X         | 0,032      |
| 28      | 05-1701314    | Gear-train                              | 1    | Steel 18<br>XГТ   | 0,59       |
| 29      |               | Ring 2Б.25 GOST 13940-68                | 1    |                   |            |
| 30      |               | Bearing 305<br>GOST 9338-75             | 1    |                   |            |
| 31      | 05-1701252    | Secondary shaft                         | 1    | Steel 25<br>XГТ   | 0,58       |
| 32      | 05-1601024-01 | Bushing                                 | 1    | Steel 20          | 0,007      |
| 33      |               | Splint pin 4x36.019 GOST 397-79         | 1    |                   |            |
| 34      |               | Nut M20x1,5.6H.6.019<br>GOST 5915-70    | 1    |                   |            |
| 35      |               | Impeller                                | 1    | Steel 10          | 0,075      |
| 36      |               | Bolt M8-6gx20.88.35.019<br>GOST 7796-70 | 4    |                   |            |
| 37      |               | Washer 8T OST 37.001.115-75             | 4    |                   |            |
| 38      | 05-1701062    | Sleeve                                  | 1    | Cast iron<br>CЧ18 | 0,02       |
| 39      | 05-1701373    | Gasket                                  | 4    | Steel 10          | 0,0022     |
| 40      | 05-1701373-01 | Gasket                                  | 6    | Steel 10          | 0,0008     |
| 41      |               | Bearing 304 GOST 8338-75                | 1    |                   |            |
| 42      |               | Ring Б52 GOST 13943-68                  | 1    |                   |            |
| 43      |               | Bearing 204 GOST 8338-75                | 2    |                   |            |
| 44      | 05-1701203    | Washer                                  | 2    | Steel 65Г         | 0,009      |
| 45      | 05-1701212    | Gear wheel                              | 1    | Steel 18<br>XГТ   | 0,395      |
| 46      | 05-1701214    | Gear wheel                              | 1    | Steel 18<br>XГТ   | 0,4        |
| 47      | 05-1701216    | Gear wheel                              | 1    | Steel 18<br>XГТ   | 0,1        |
| 48      | 05-1701219    | Gear wheel                              | 1    | Steel 18<br>XГТ   | 0,2        |
| 49      | 05-1701182    | Shaft                                   | 1    | Steel 65Г         | 0,24       |
| 50      |               | Ball 7,144-40                           | 12   |                   |            |
| 51      | 05-1702053    | Center guide                            | 1    | Steel 25<br>XГТ   | 0,093      |
| 52      | 05-1702050    | Fork                                    | 1    |                   | 0,18       |
| 53      | 05-1702112    | Shaft                                   | 1    | Steel 45          | 0,252      |

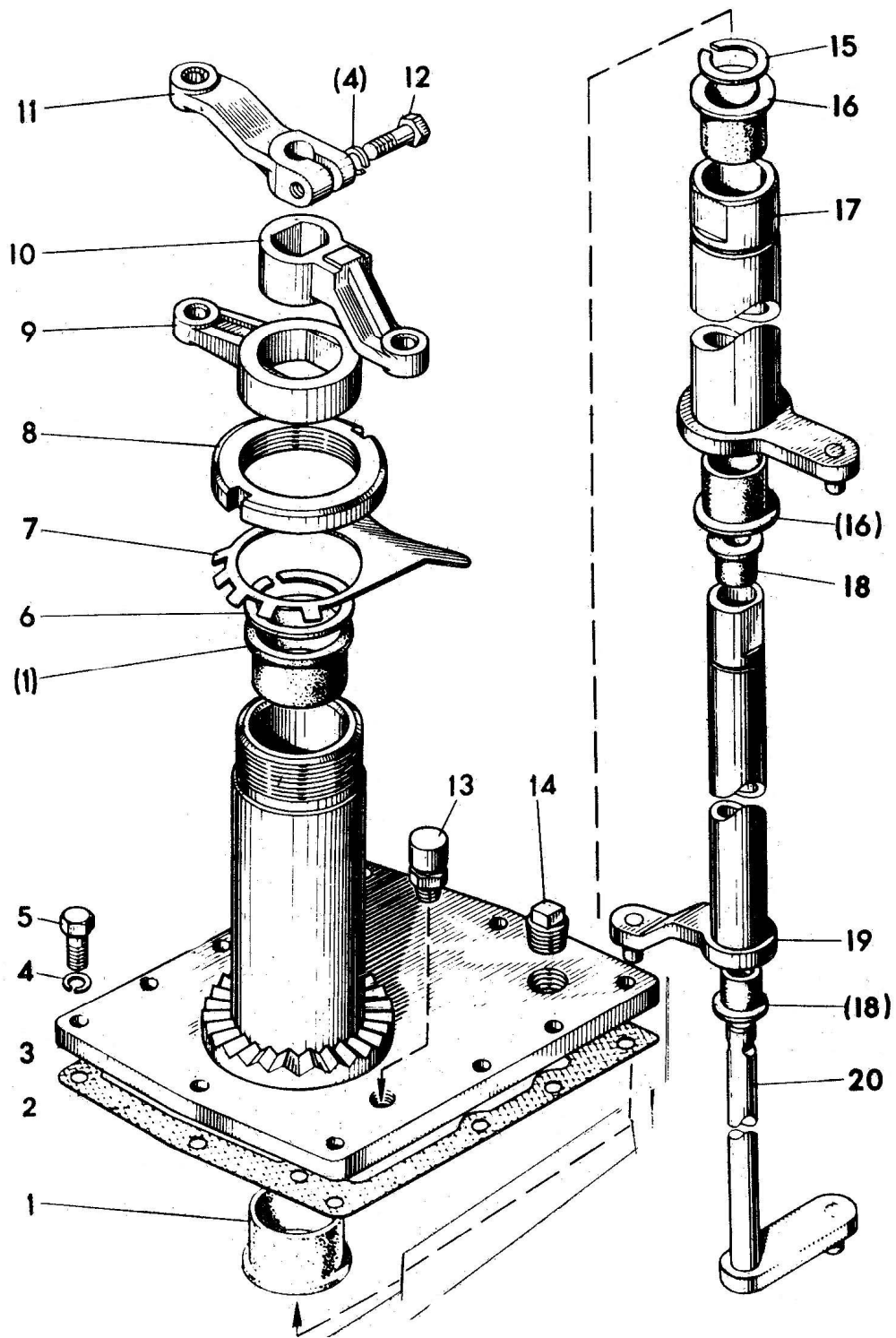


Figure 5 – Gearshift mechanism

**05-1702. Gearshift mechanism (figure 5)**

| Ref. No | Indication    | Designation                             | Q-ty | Material   | Weight, kg |
|---------|---------------|---|------|------------|------------|
|         | 05-1702110    | Shift mechanism<br>(1, 3, 6-12, 15-20)  |      |            | 4,0        |
| 1       | 50-4607079-A1 | Bushing                                 | 2    | Polyamide  | 0,007      |
| 2       | 05-2401013    | Gasket                                  | 1    | Paronite   | 0,010      |
| 3       | 05-2401015    | Cover                                   | 1    |            | 2,4        |
| 4       |               | Washer 8T<br>OST 37.001.115-75          | 9    |            |            |
| 5       |               | Bolt M8-6gx25.88.35.019<br>GOST 7796-70 | 8    |            |            |
| 6       |               | Ring 2Б32<br>GOST 13940-68              | 1    |            |            |
| 7       | 05-1702033    | Lock washer                             | 1    | Steel 08кп |            |
| 8       |               | Nut BM45x1,5.6H.6.019<br>GOST 11871-73  | 1    |            |            |
| 9       | 05-1702017    | Lever                                   | 1    | Steel 45Л  | 0,08       |
| 10      | 05-1702027    | Lever                                   | 1    | Steel 45Л  | 0,11       |
| 11      | 05-2409011    | Lever                                   | 1    | Steel 45Л  | 0,09       |
| 12      | 05-2409023    | Bolt                                    | 1    | Steel 45   | 0,015      |
| 13      |               | Breather CY 1/8"                        | 1    |            |            |
| 14      |               | Plug КГ 3/8" 2МТСХМ                     | 2    |            |            |
| 15      |               | Ring 2Б18<br>GOST 13940-68              | 1    |            |            |
| 16      | 05-1702149    | Bushing                                 | 2    | Polyamide  | 0,005      |
| 17      | 05-1702140    | Shaft                                   | 1    |            | 0,78       |
| 18      | 05-2409018    | Bushing                                 | 2    | Polyamide  | 0,005      |
| 19      | 05-1702120    | Shaft                                   | 1    |            | 0,4        |
| 20      | 05-2409020    | Shaft                                   | 1    |            | 0,23       |

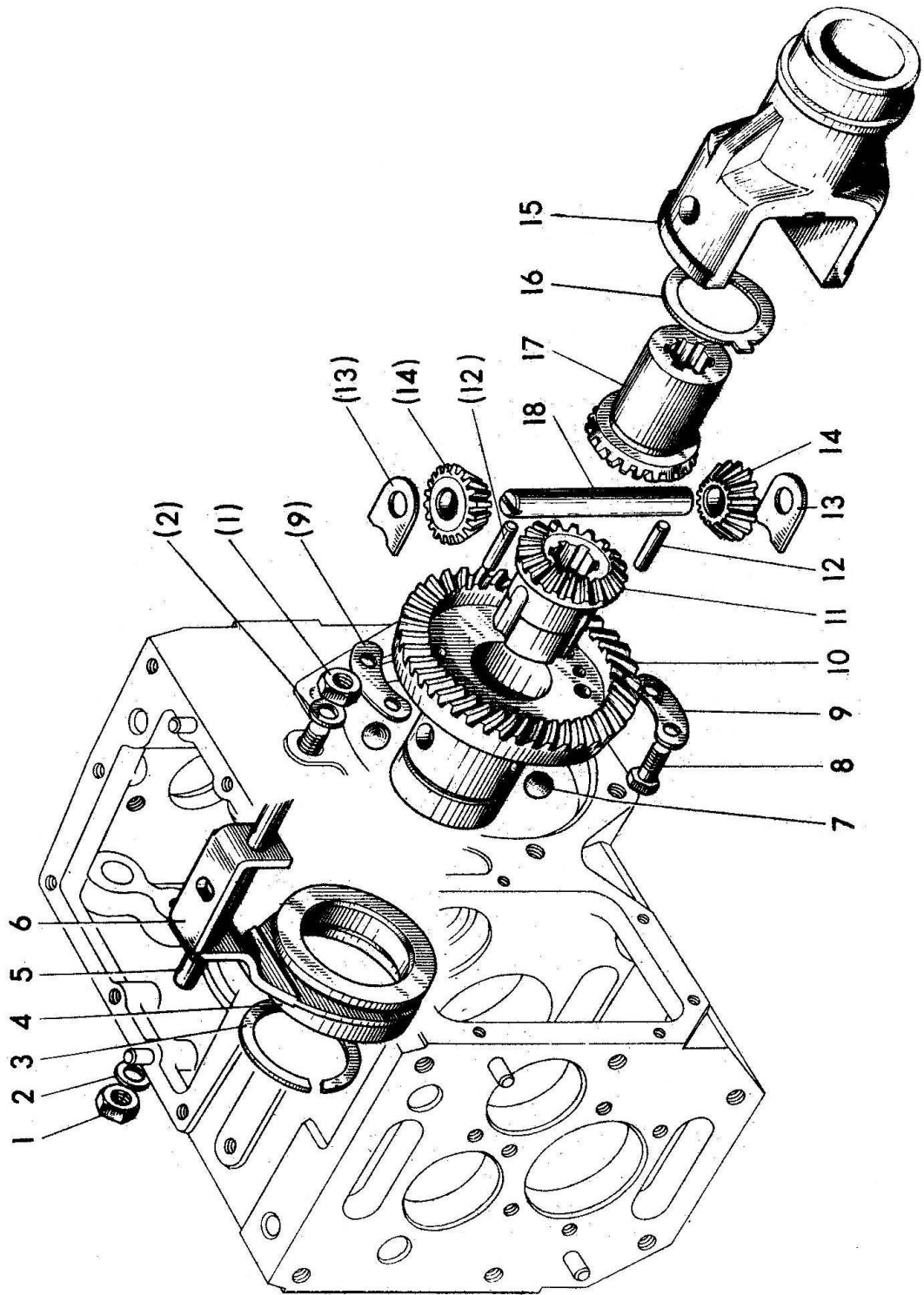


Figure 6 – Differential

**05-2403. Differential (figure 6)**

| Ref. No | Indication    | Designation                             | Q-ty | Material          | Weight, kg |
|---------|---------------|---|------|-------------------|------------|
|         | 05-2403110    | Differential (8-18)                     | 1    |                   | 2,35       |
| 1       | 52-2203013    | Nut                                     | 2    |                   |            |
| 2       | 36-1104788    | Gasket                                  | 2    | Copper M3         |            |
| 3       |               | Ring 2B50<br>GOST 13940-80              | 1    |                   |            |
| 4       | 05-2409014    | Drive piece                             | 1    | Steel 25<br>XГТ   | 0,15       |
| 5       | 05-2409012    | Stud                                    | 1    | Steel 45          | 0,11       |
| 6       | 05-2409015    | Fork                                    | 1    |                   | 0,205      |
| 7       |               | Ball 11, 112-100<br>GOST 3722-81        | 3    |                   |            |
| 8       |               | Bolt M8-6gx20.88.35.019<br>GOST 7796-70 | 4    |                   |            |
| 9       | 05-2403124    | Locking plate                           | 2    | Steel 10          | 0,01       |
| 10      | 05-2403117    | Gear wheel                              | 1    | Steel 25<br>XГТ   | 1,038      |
| 11      | 05-2403123-01 | Axle shaft gear                         | 1    | Steel 25<br>XГТ   | 0,36       |
| 12      |               | Pin 5Пp22ax25<br>СТП 118.1271-76        | 2    |                   |            |
| 13      | 05-2403121    | Planet gear washer                      | 2    | Steel 65Г         | 0,005      |
| 14      | 05-2403118    | Planet gear                             | 2    | Steel 25<br>XГТ   | 0,039      |
| 15      | 05-2403116    | Differential housing                    | 1    | Cast iron<br>CЧ20 | 1,2        |
| 16      | 05-2403122    | Washer                                  | 1    | Steel 65Г         | 0,01       |
| 17      | 05-2403123    | Axle shaft gear                         | 1    | Steel 25<br>XГТ   | 0,4        |
| 18      | 05-2403119    | Planetary gear shaft                    | 1    | Steel 40X         | 0,07       |

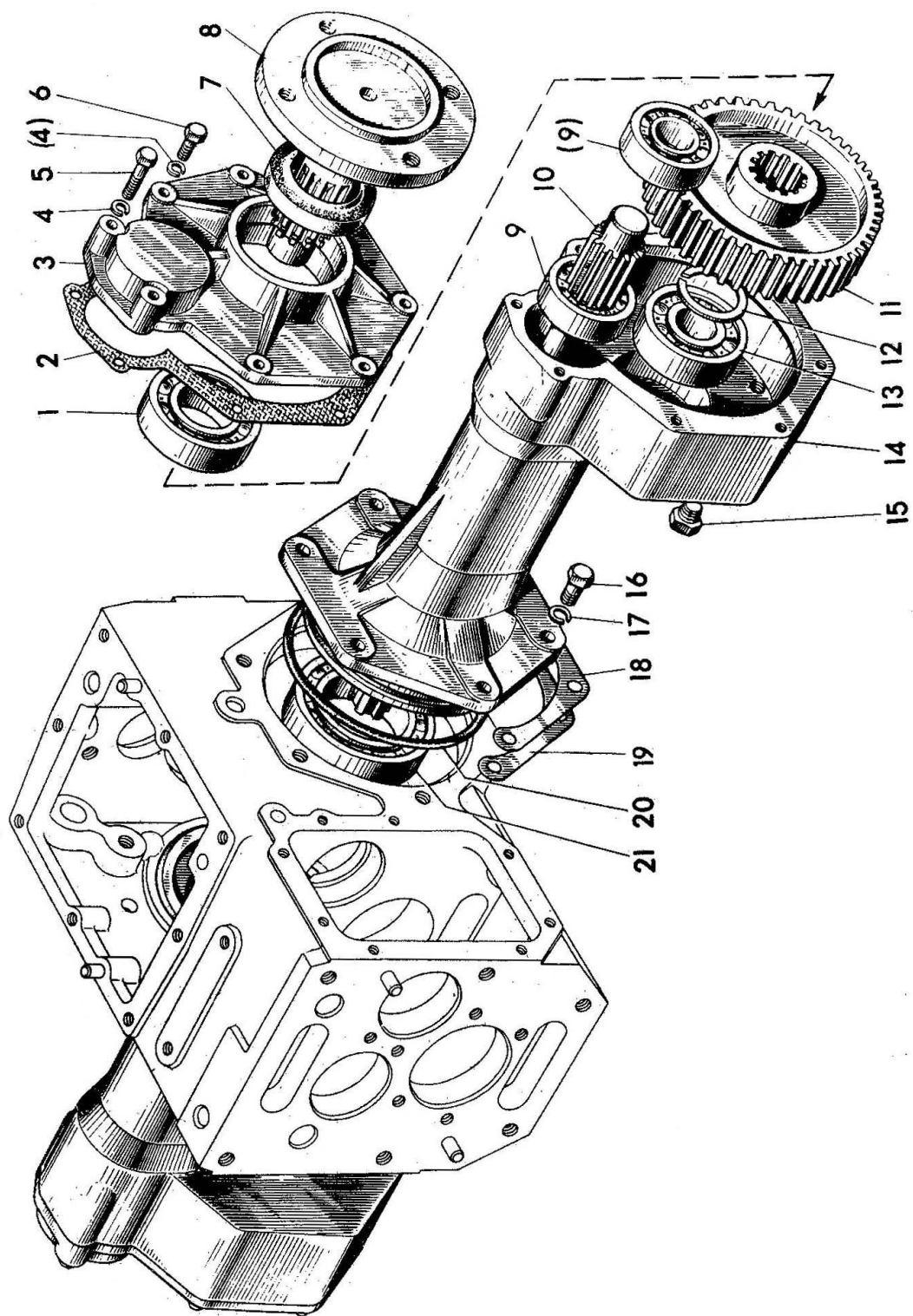


Figure 7 – Final drive

**05-2407. Final drive** (figure 7)

| Ref. No | Indication    | Designation                              | Q-ty | Material          | Weight, kg |
|---------|---------------|--|------|-------------------|------------|
|         | 05-2407010    | Final drive<br>(1-20)                    | 2    |                   | 10,61      |
|         | 05-2407020    | Cover (1, 3, 7-9, 11-13)                 | 1    |                   | 4,5        |
| 1       |               | Bearing 206<br>GOST 8338-75              | 1    |                   |            |
| 2       | 05-2407056    | Gasket                                   | 1    | Paronite          | 0,02       |
| 3       | 05-2407028    | Cover                                    | 1    | Cast iron<br>C418 | 1,6        |
| 4       |               | Washer 8T<br>OST 37.001.115-75           | 8    |                   |            |
| 5       |               | Bolt M8-6gx35.88.35.019<br>GOST 7796-70  |      |                   |            |
| 6       |               | Bolt M8-6gx25.88.35.019<br>GOST 7796-70  | 6    |                   |            |
| 7       |               | Collar 2-38x58-1<br>GOST 8752-70         | 1    |                   |            |
| 8       | 05-2407054    | Flange                                   | 1    | Steel 38<br>ГХС   | 1,0        |
| 9       |               | Bearing 204<br>GOST 8338-75              | 2    |                   |            |
| 10      | 05-2407152    | Shaft                                    | 1    | Steel 18<br>ХГТ   | 0,52       |
| 11      | 05-2407053    | Gear wheel                               | 1    | Steel 18<br>ХГТ   | 0,9        |
| 12      |               | Ring 2Б30<br>GOST 13940-68               | 1    |                   |            |
| 13      |               | Bearing 304<br>GOST 8378-75              | 1    |                   |            |
| 14      | 05-2407118    | Tube                                     | 1    | Cast iron<br>C418 | 5,3        |
| 15      |               | Plug КГ 1/8"                             | 1    |                   |            |
| 16      |               | Bolt M10-6gx30.88.35.019<br>GOST 7796-70 | 6    |                   |            |
| 17      |               | Washer 10T<br>OST 37.001.115-75          | 6    |                   |            |
| 18      | 05-2407058    | Gasket                                   | 12   | Steel 10          | 0,010      |
| 19      | 05-2407058-01 | Gasket                                   | 12   | Steel 10          | 0,025      |
| 20      | 50-1601322    | Sealing ring                             | 1    | Rubber            |            |
| 21      |               | Bearing 110<br>GOST 8338-75              | 1    |                   |            |

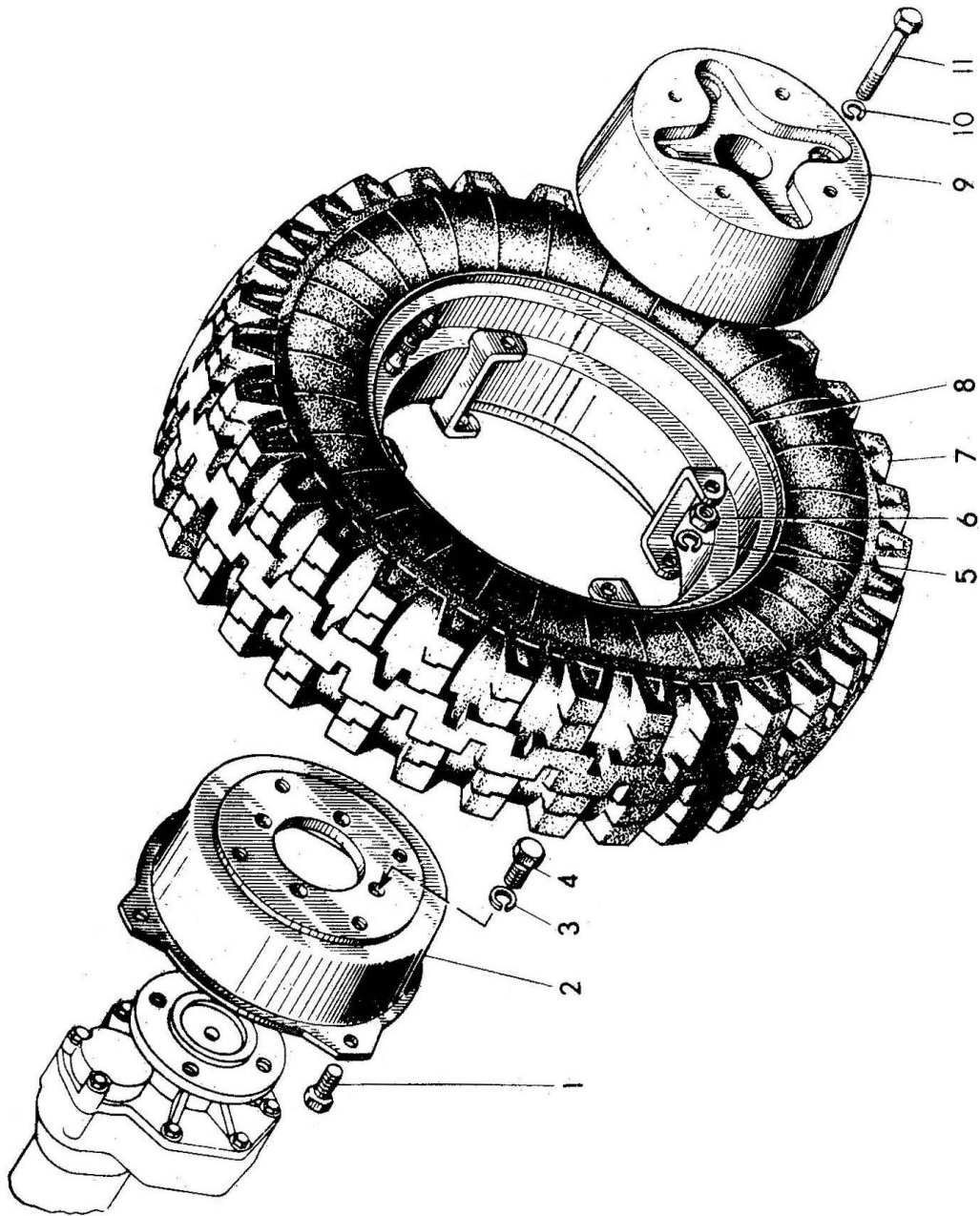


Figure 8 – Wheel

**3101. Wheel (figure 8)**

| Ref. No | Indication     | Designation                               | Q-ty | Material | Weight, kg |
|---------|----------------|---|------|----------|------------|
|         | 05-3102015     | Wheel (1, 2, 5, 6-8)                      | 2    |          | 15,0       |
|         | *05-3102015-A  | Wheel 6L-12                               | 2    |          |            |
| 1       |                | Bolt M10-6gx20.88.35.019<br>GOST 7796-70  | 4    |          |            |
| 1       | *              | *Bolt M10-6gx60.88.35.019<br>GOST 7796-70 | 4    |          |            |
|         |                |   |      |          |            |
| 2       | 05-3101015     | Disk                                      | 2    |          | 1,9        |
| 3       | *              | *Washer 8 OT<br>OST 37.001.115-75         | 4    |          |            |
| 4       | *              | *Bolt M8-6gx16.88.35.016<br>GOST 7796-70  | 4    |          |            |
| 5       |                | Washer 10 OT<br>OST 37.001.115-75         | 4    |          |            |
| 6       |                | Nut M10-6H.6.019<br>GOST 5915-70          | 4    |          |            |
|         | *              | *Nut M8-6H.6.019<br>GOST 5915-70          | 4    |          |            |
| 7       |                | Tyre ИВ-167 (5,90x13)                     | 1    |          |            |
|         | *              | *Tyre 6L-12<br>GOST 7463-2003             | 1    |          |            |
| 8       | 05-3101000     | Rim                                       | 1    |          |            |
|         | *05-3102010    | Rim                                       | 1    |          | 3,38       |
|         | *05-3101021    | Rim                                       | 1    |          |            |
|         | *05-3101021-01 | Rim                                       | 1    |          |            |
|         |                |   |      |          |            |

\* for wheel 6L-12

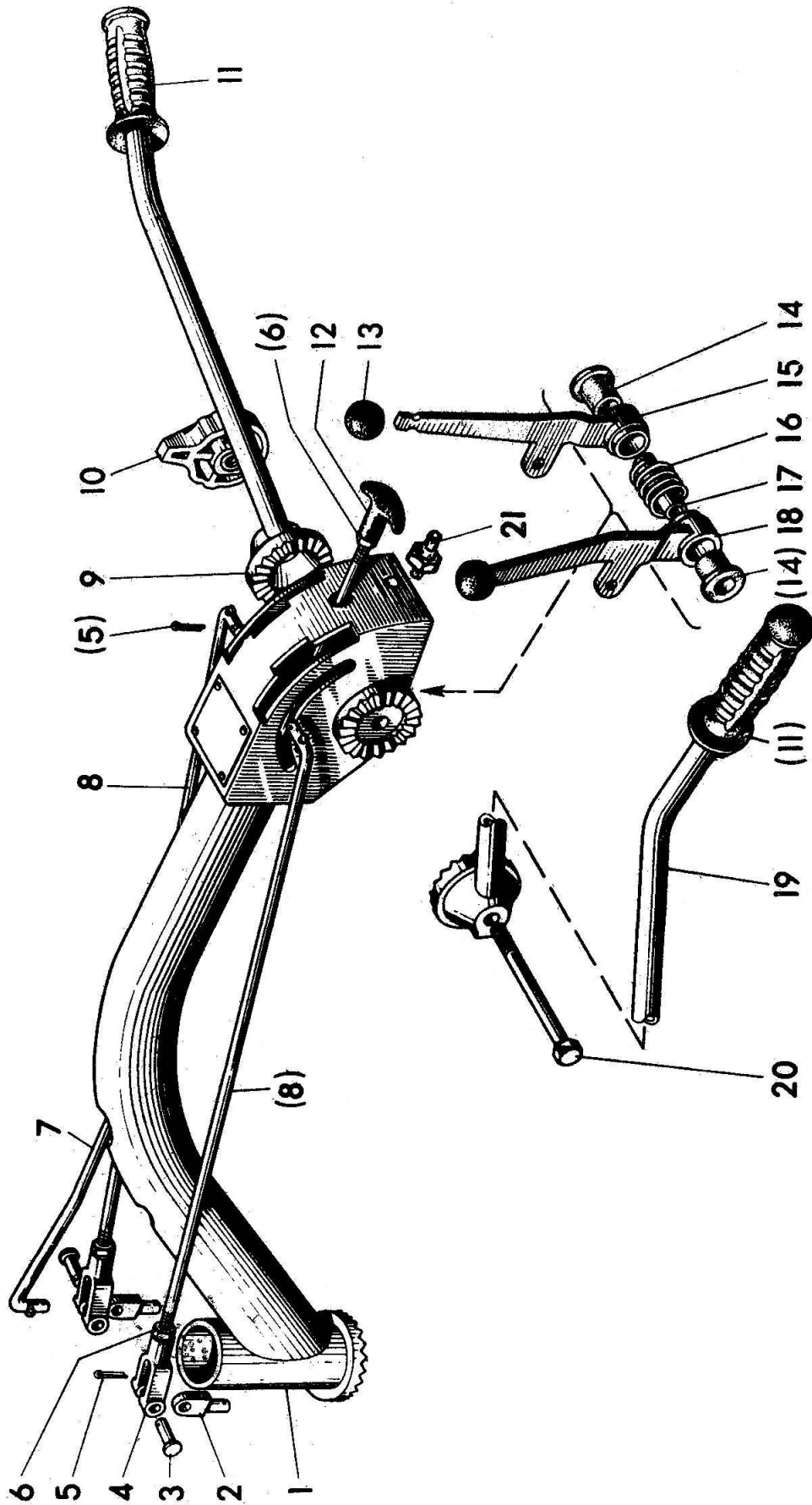


Figure 9 – Steering link

**05-3401. Steering link (figure 9)**

| Ref. No | Indication   | Designation                                    | Q-ty | Material     | Weight, kg |
|---------|--------------|--|------|--------------|------------|
|         | 05-3401110   | Steering link (1, 9, 10, 14-20)                | 1    |              | 8,75       |
| 1       | 05-3401120   | Control unit                                   |      |              | 5,31       |
| 2       | 05-1702028   | Fork   | 2    | Steel 45     | 0,035      |
| 3       |              | Pin 8x30 OST 37.001-163-79                     | 2    |              |            |
| 4       | A20-213-A    | Fork   | 2    |              |            |
| 5       |              | Splint pin 2x16-019 GOST 397-79                | 7    |              |            |
| 6       |              | Nut M8-6H.6.019                                | 3    |              |            |
| 7       | 05-2409025   | Link   | 1    | Steel 45     | 0,3        |
| 8       | 05-1702029   | Link   | 2    | Steel 45     | 0,4        |
| 9       | 05-3401030   | Right lever                                    | 1    |              | 1,58       |
| 10      | A13.24.000   | Handle   | 1    |              |            |
| 11      | 3.115-34120A | Handle   | 2    | Rubber       | 0,060      |
| 12      | 50-1310136-A | Handle   | 1    | Foam plastic | 0,0287     |
| 13      | 36-1310139   | Handle ball                                    | 2    | Rubber       | 0,015      |
| 14      | 50-4607078-A | Bushing  | 2    | Polyamide    | 0,005      |
| 15      | 05-1702035   | Right handle                                   | 1    |              | 0,20       |
| 16      | 50-4608057   | Spring   | 1    | Wire П-2,5   | 0,017      |
| 17      | 05-3401111   | Bushing  | 1    | Steel 20     | 0,08       |
| 18      | 05-1702030   | Left handle                                    | 1    |              | 0,20       |
| 19      | 05-3401025   | Left lever                                     | 1    |              | 1,65       |
| 20      |              | Bolt M12x1,25-6gx180.88.35.019<br>GOST 7795-70 | 1    |              |            |
| 21      |              | Switch BK12-1<br>ЦИКС 62241.001 TU             | 1    |              |            |

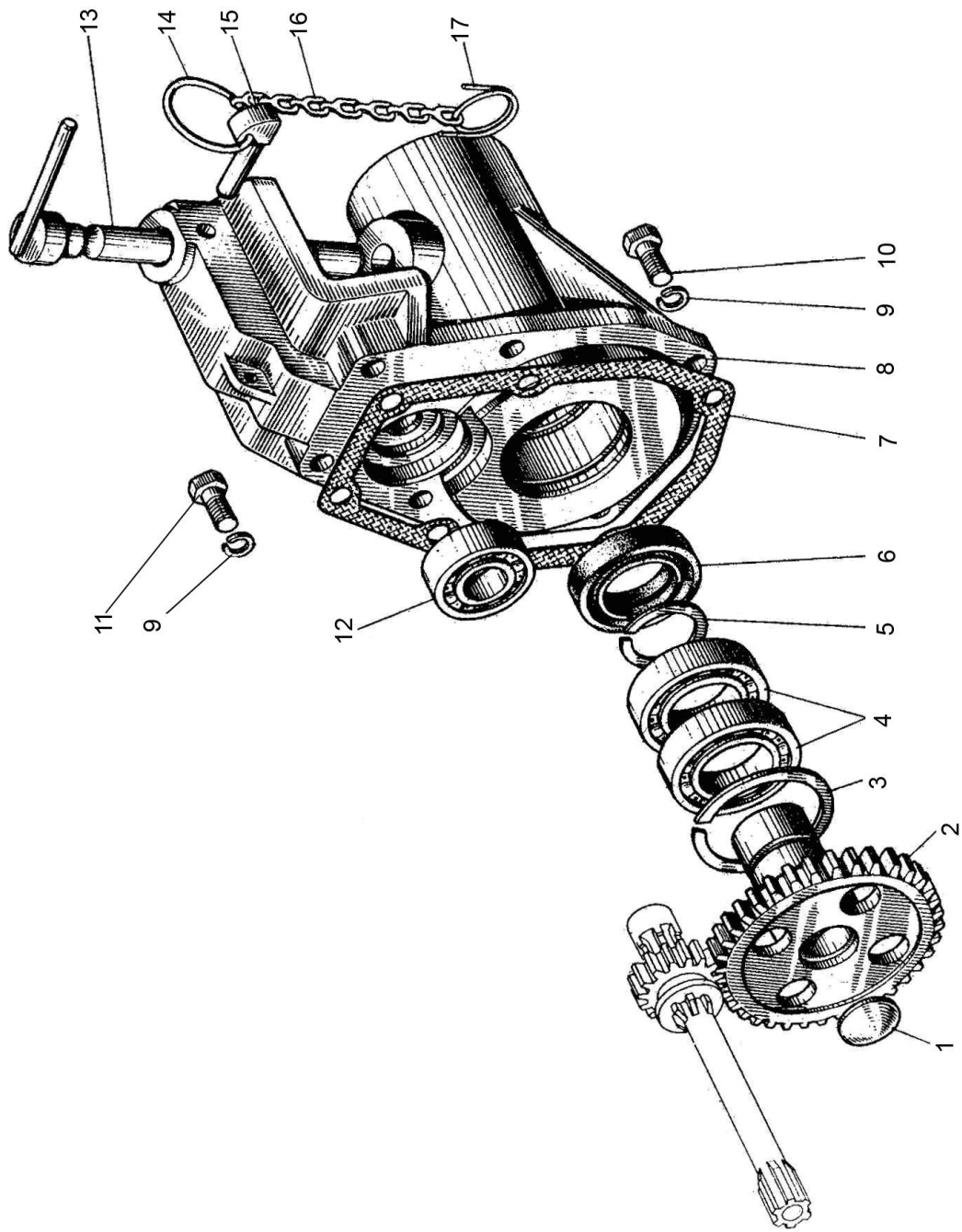


Figure 10 – Power takeoff shaft and drawbar hitch

**05-4202. Power takeoff shaft and drawbar hitch (figure 10)**

| Ref. No | Indication   | Designation                              | Q-ty | Material          | Weight, kg |
|---------|--------------|--|------|-------------------|------------|
|         | 05-4202010   | PTO shaft<br>(1-6, 8, 11)                |      |                   | 4,4        |
|         | 05-4202015   | Gear wheel (2-5)                         |      |                   | 0,5        |
| 1       |              | Blind plug24-00<br>GOST 3111-67          | 1    |                   |            |
| 2       | 05-4202017A  | Gear wheel                               | 1    | Steel 18 XГТ      | 0,24       |
| 3       |              | Ring B55 GOST 13943-68                   | 1    |                   |            |
| 4       |              | Bearing 106<br>GOST 8338-75              | 2    |                   |            |
| 5       |              | Ring 2Б30 GOST 13940-68                  | 1    |                   |            |
| 6       |              | Collar112-30x52-1<br>GOST 8752-79        | 1    |                   |            |
| 7       | 05-4202012   | Gasket                                   | 1    | Paronite          | 0,019      |
| 8       | 05-4202011-Б | Body                                     | 1    | Cast iron<br>CЧ20 | 4,6        |
| 9       |              | Washer 10 OT<br>OST 37.001.115-75        | 6    |                   |            |
| 10      |              | Bolt M10-6gx25.88.35.019<br>GOST 7796-70 | 3    |                   |            |
| 11      |              | Bolt M10-6gx45.88.35.019<br>GOST 7796-70 | 3    |                   |            |
| 12      |              | Bearing 302<br>GOST 8338-75              | 1    |                   |            |
| 13      | 05-4202020Б  | Pivot                                    | 1    | Steel 40X         | 0,257      |
| 14      | H61.05.001   | Ring                                     | 1    | Wire<br>П-4,0     |            |
| 15      | A61.05.002   | Key                                      | 1    | Steel 45П         | 0,043      |
| 16      | 50-1002460   | Chain                                    | 1    | Steel 10          | 0,054      |
| 17      | H50-4202146  | Ring                                     | 1    | Wire<br>П-2,0     | 0,0035     |

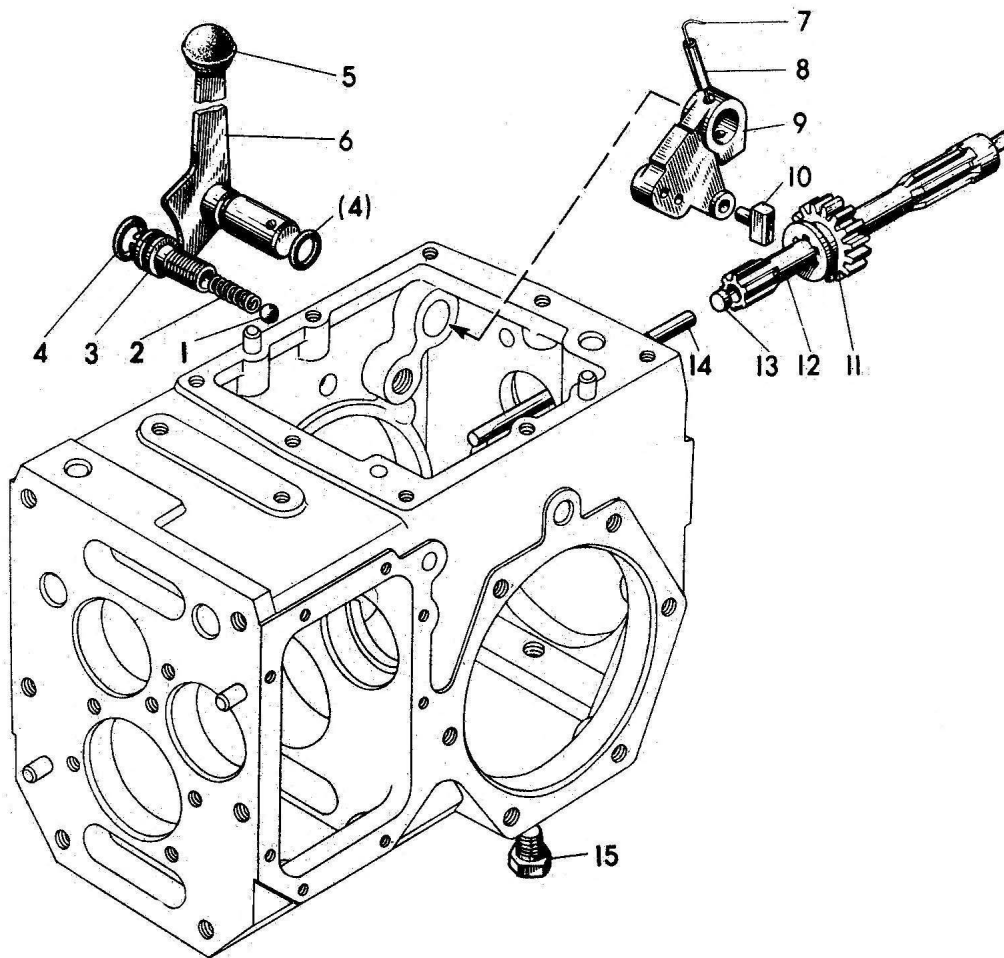


Figure 11 – PTO shaft drive and control

**05-4216. PTO shaft drive and control (figure 11)**

| Ref. No | Indication   | Designation                                     | Q-ty | Material        | Weight, kg |
|---------|--------------|---|------|-----------------|------------|
| 1       |              | Ball 7,938-100<br>GOST 3722-81                  | 2    |                 |            |
| 2       | 05-1701375A  | Spring  | 1    | Wire 1-1,4      | 0,004      |
| 3       | 05-4216012   | Retainer  | 1    | Steel 40X       | 0,03       |
| 4       |              | Ring 013-017-25-1-4<br>GOST9833-73/GOST18829-73 | 2    | Rubber          | 0,00025    |
| 5       | 36-1310139   | Lever ball                                      | 1    | Rubber          | 0,015      |
| 6       | 05-4216020   | Lever   | 1    |                 | 0,20       |
| 7       |              | Wire 1,0-0-C<br>GOST 3282-74                    | 1    |                 | 95 mm      |
| 8       |              | Pin 4x30.65Г<br>GOST 14229-78                   | 1    | Steel 65Г       |            |
| 9       | 05-4216011   | Lever   | 1    | Steel 45Л       | 0,14       |
| 10      | 05-4216013   | Sliding block                                   | 1    | Steel 45X       | 0,06       |
| 11      | 05-4202016   | Gear wheel                                      | 1    | Steel 18<br>ХГТ | 0,07       |
| 12      | 05-4202014   | Shaft   | 2    | Steel 18<br>ХГТ | 0,182      |
| 13      | 05-1602018-Б | Washer  | 2    | Steel 65Г       | 0,0008     |
| 14      | 05-1602016   | Rod   | 1    | Steel 40        | 0,02       |
| 15      |              | Plug КГ3/8" 2МТСХМ                              | 1    |                 |            |

**05-4235. Weight (figure 8)**

| Ref. No | Indication | Designation                              | Q-ty | Material          | Weight, kg |
|---------|------------|--|------|-------------------|------------|
| 9       | 05-4235011 | Weight                                   | 2    | Cast iron<br>C418 | 16,04      |
| 10      |            | Washer 10 OT<br>OST 37.001.115-75        | 4    |                   |            |
| 11      |            | Bolt M10-6gx75.88.35.019<br>GOST 7796-70 | 4    |                   |            |

**05-8405. Folding step (figure 12)**

| Ref. No | Indication   | Designation                              | Q-ty | Material | Weight, kg |
|---------|--------------|--|------|----------|------------|
|         | 08BC-8405010 | Folding step (1, 5-9)                    | 1    |          | 3,0        |
| 1       | 08BC-8405020 | Buckle                                   | 1    |          | 1,75       |
| 2       |              | Bolt M10-6gx50.88.35.019<br>GOST 7790-70 | 4    |          |            |
| 3       |              | Washer 10 OT<br>OST 37.001.115-75        | 4    |          |            |
| 4       |              | Nut M10-6H.6.019<br>GOST 5915-70         | 4    |          |            |
| 5       | 50-1605152   | Spring                                   | 1    |          |            |
| 6       | 08BC-8405030 | Mounting                                 | 1    |          | 1,0        |
| 7       |              | Washer 10.01.019<br>GOST 1137-78         | 4    |          |            |
| 8       |              | Splint pin 3,2x18.019<br>GOST 397-79     | 2    |          |            |
| 9       |              | Pin 10x42<br>OST 37.001.163-97           | 2    |          |            |

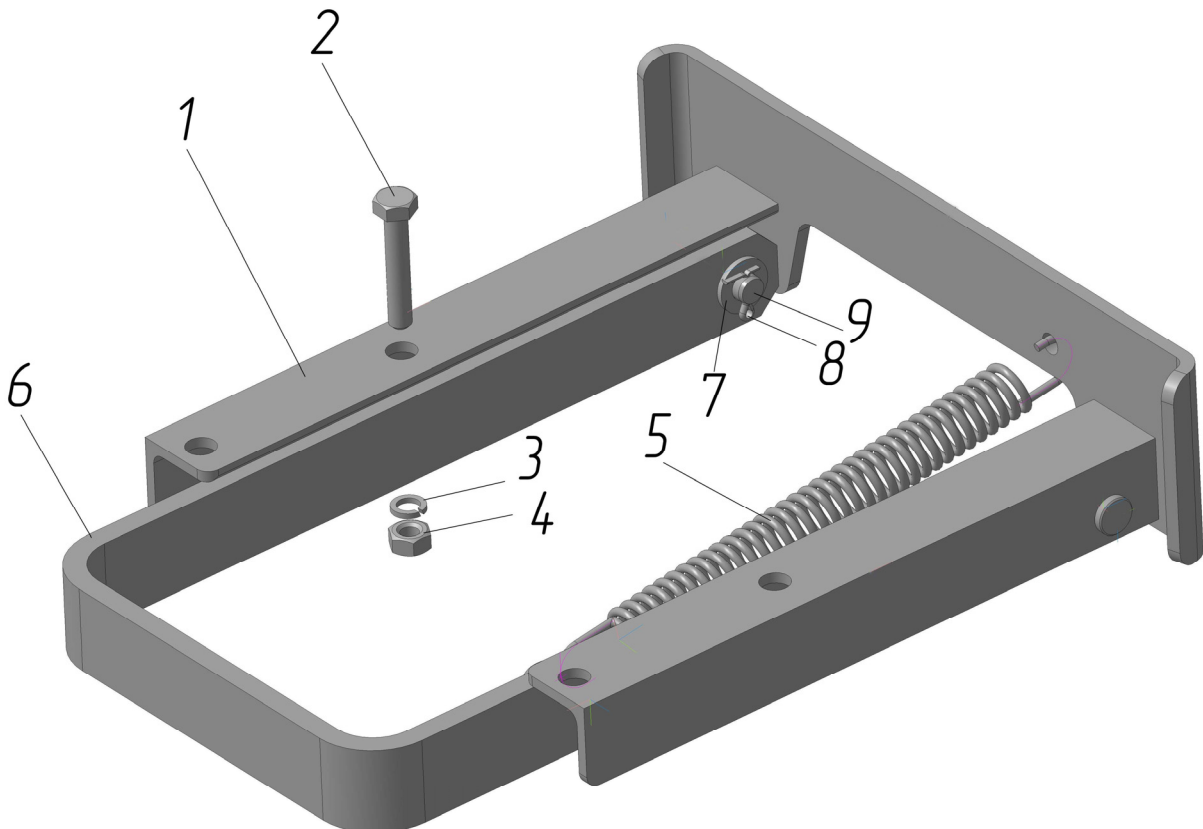


Figure 12 – Folding step