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BE-S-DSL PUMPS

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1. APPLICATION OF FUEL PUMPS

The distributive type fuel pumps present a unified series to be applied in automobile, tractor and stationary engines for metering out fuel under pressure into the engine cylinders.

Peculiarities of Fuel Pumps

1. Besides reciprocating motion the fuel pump plunger performs also rotary motion, distributing thus the fuel into the cylinders.

2. There being need to change the amount of fuel delivery, the dosimeter should be shifted along the plunger.

2. SPECIFICATIONS OF THE FUEL PUMPS

Number of plungers	- 1
Camshaft rotation direction (viewing from drive side)	- right
Plunger bore, mm	- 8
Plunger stroke, mm	- 8
Fuel booster pump	- piston-type
Oil volume in fuel pump housing, cm ³	- 100
Weight (dry), kg	- 7.5
Fuel pump dimensions, mm:	
length	- 216
width	- 158
height	- 285

Note. The length is measured from the adjoining plane.

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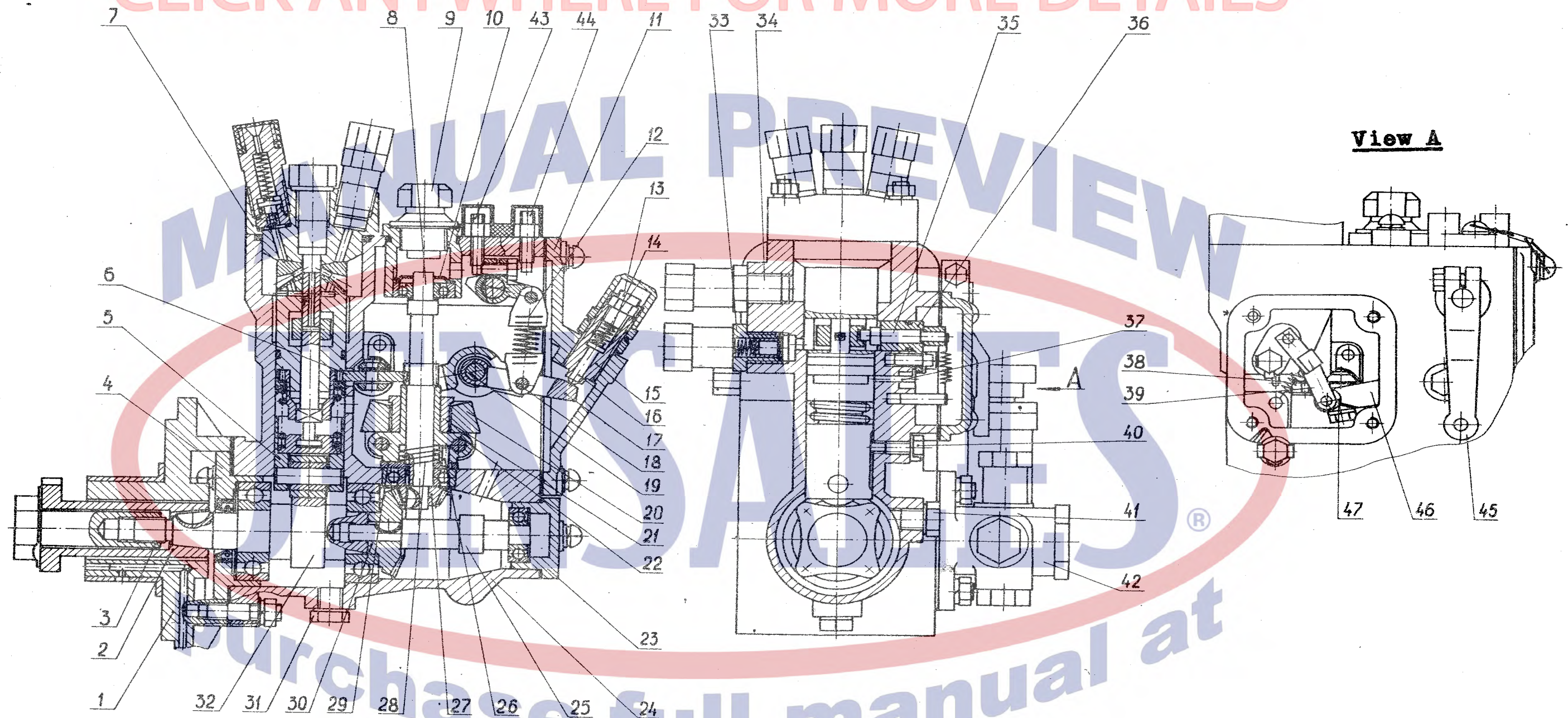


Fig. 1. The fuel pump:

- 1 - mounting flange; 2 - spline bushing; 3 - drive nut; 4 - cover with packing; 5 - roller tappet; 6 - intermediate gear; 7 - high pressure injection unit; 8 - governor shaft; 9 - breather; 10 - limb; 11 - cover; 12 - governor spring; 13 - adjusting screw; 14 - spring; 15 - housing; 16 - rod; 17 - corrector lever; 18 - axis; 19 - floating lever axis; 20 - load; 21 - coupling; 22 - governor hub; 23 - cover with bearing; 24 - housing; 25 - eccentric shaft; 26 - pin; 27 - bevel gear; 28 - damper spring; 29 - limiter; 30 - bevel gear; 31 - drain plug; 32 - camshaft; 33 - union; 34 - delivery union; 35 - dosimeter drive guide; 36 - bushing; 37 - stop; 38 - starting spring; 39 - control rod; 40 - adjusting screw; 41 - control plug; 42 - fuel booster pump; 43 - stop screw; 44 - screw; 45 - control lever; 46 - floating lever; 47 - eccentric pin

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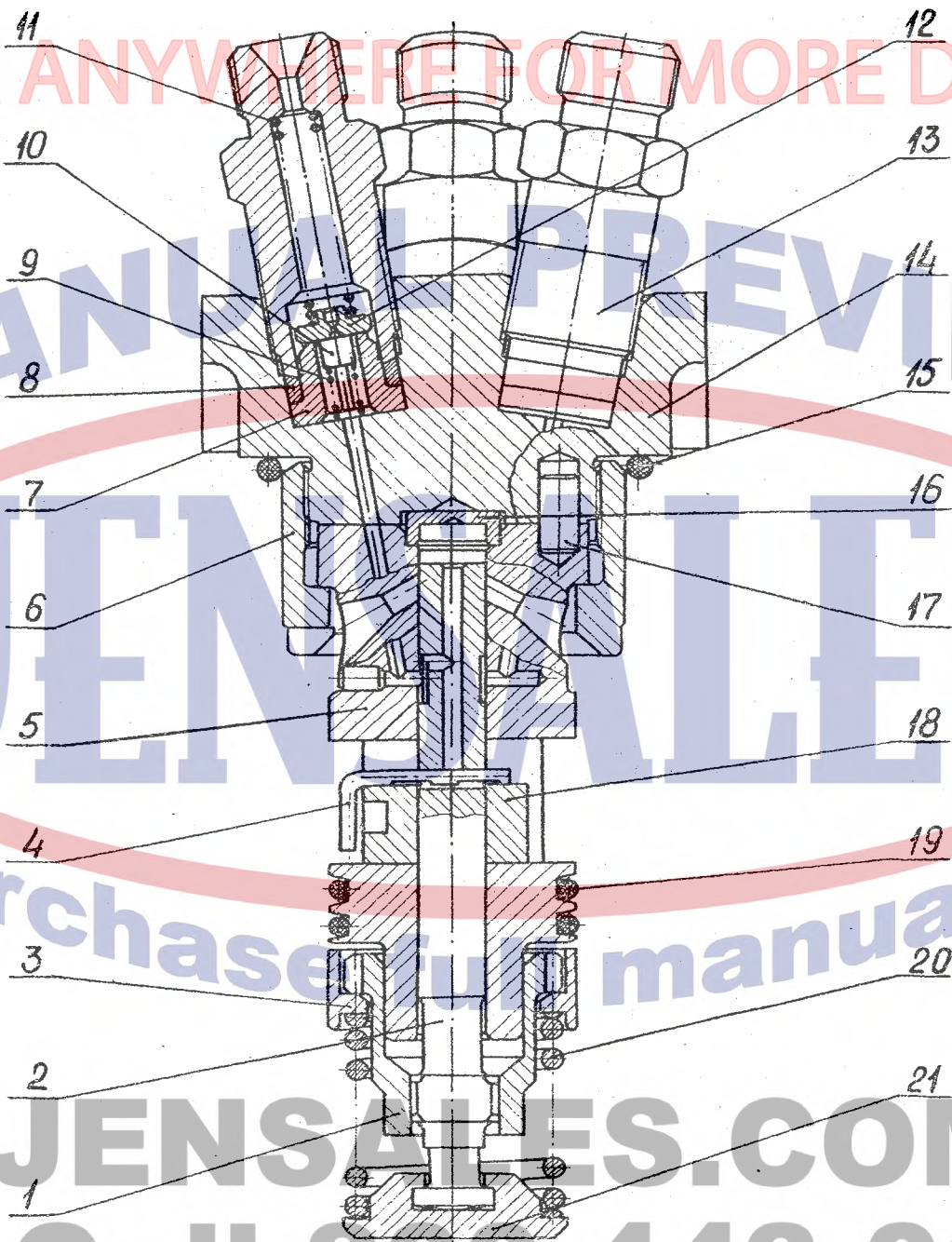


Fig. 2. High-pressure unit:

1-toothed bushing; 2-plunger; 3-top disk; 4-mounting pin;
 5-plunger bushing; 6-connecting nut; 7-delivery valve seat;
 8-valve gasket; 9-back valve spring; 10-back valve; 11-de-
 livery valve spring; 12-delivery valves; 13-high-pressure
 union; 14-pump head; 15-sealing ring; 16-cap; 17-adjusting
 pin; 18-dosimeter; 19-sealing ring; 20-tappet spring; 21 -
 bottom disk

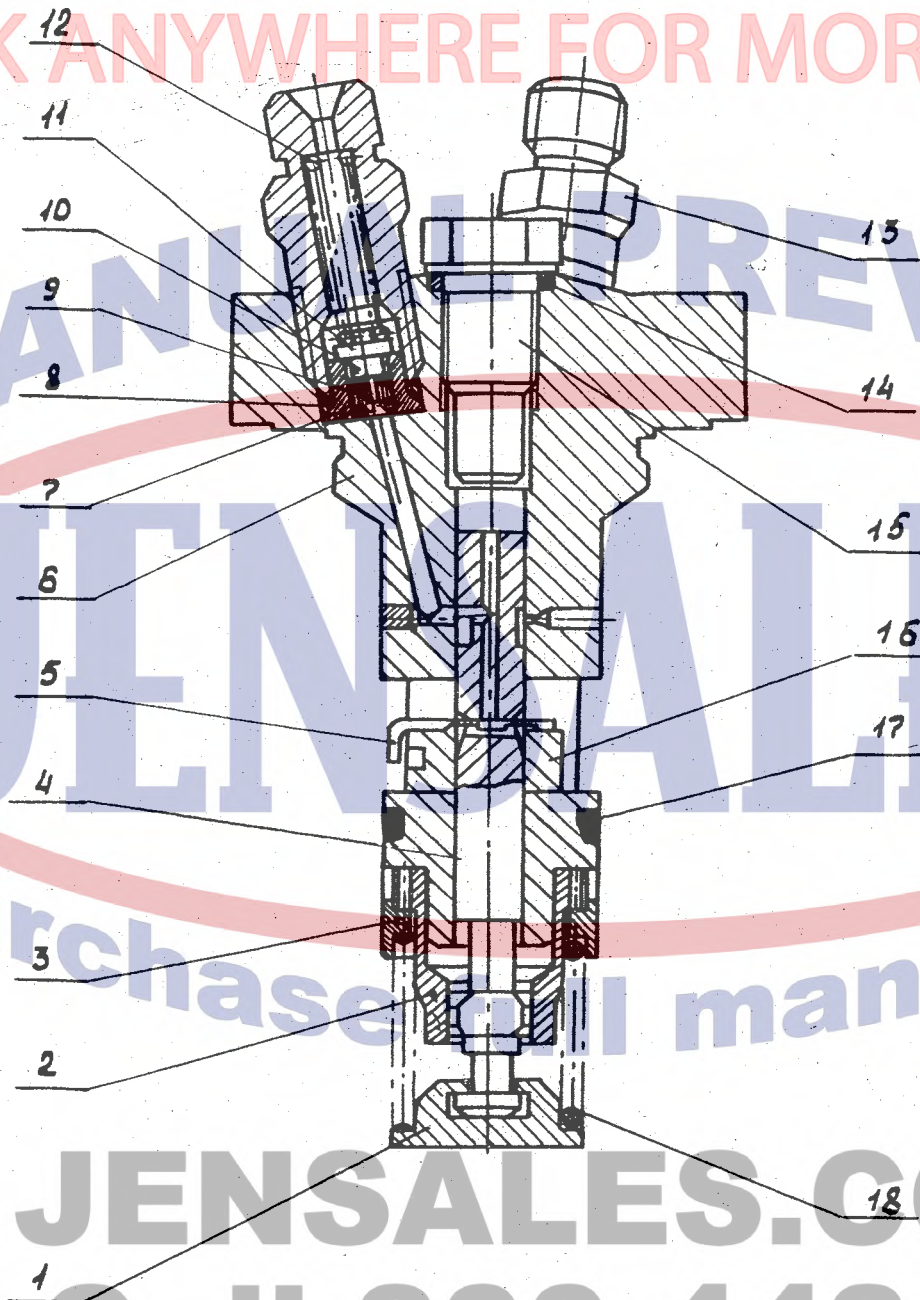


Fig.2a. High-pressure unit:

1 - bottom spring disk; 2-toothed bushing; 3-upper spring disk; 4 - plunger; 5-mounting pin; 6-plunger bushing; 7 - delivery valve seat; 8 - valve gasket; 9-back valve spring; 10-back valve; 11-delivery valve; 12-delivery valve spring; 13-high-pressure union; 14-gasket; 15-plug; 16-dosimeter; 17-sealing ring; 18-tappet spring

the distributing port $\bar{A}$ of the rotating plunger coincides with the distributing channel E in the bushing.

The fuel from the space above the plunger passes along the fuel pipe and the channel B through the distributing port $\bar{A}$, the channel E, the head channel and the delivery valves 12 (Fig. 2) into the fuel injectors.

The fuel delivery continues up to the moment when the plunger cut-off ports B exit from the dosimeter 18 (Fig. 2). Then the high-pressure fuel pipe gets relieved through the jet of the delivery valve 12 and the back valve 10.

The double action plate valves ensure identical fuel relief in all high pressure fuel pipes. The amount of fuel delivered is changed by axially displacing the dosimeter along the plunger with the help of the lever system.

The maximum fuel delivery is achieved when the dosimeter rests in its extreme upper position. The cut-off of the fuel delivery is achieved by moving the dosimeter to its extreme bottom position. The fuel delivery to the fuel injectors is thereby also cut off, since the fuel inlet port A gets blocked after the cut-off port B leaves the dosimeter (Fig. 3).

At present our Plant is manufacturing and installing on fuel pumps H $\bar{A}$ 21/2-4 undismountable high-pressure units.

The unit is to be installed in a vertical nest of the fuel pump body and is interchangeable with the former type of unit, i.e. the new type of high-pressure units can be installed in fuel pump bodies of old make (Fig. 2a).

For operation rules of the undismountable high-pressure units see Chapter "High-pressure Unit".

Arrangement and Functioning of the Governor

The fuel pump governor is an all-duty mechanical device of direct action, provided with a fuel delivery corrector and an automatic device for additional fuel delivery.

The governor shaft 11 (Fig. 4) is mounted on two bearings in the vertical cavities of housing 24 (Fig. 1) and is connected with camshaft 32 by means of a cone gear-drive.

The hub 4 (Fig. 4) with two loads 5 is installed on the governor shaft. The forces of the loads act through the bearings onto the governor coupling 25 and through it onto the floating lever 10.

The governor floating lever is connected with dosimeter 7 through rod 8 and the dosimeter drive guide 35 (Fig. 1).

The corrector lever 20 (Fig. 4) is set on the same shaft as the floating lever 10; through governor spring 18 it is connected with control lever 16.

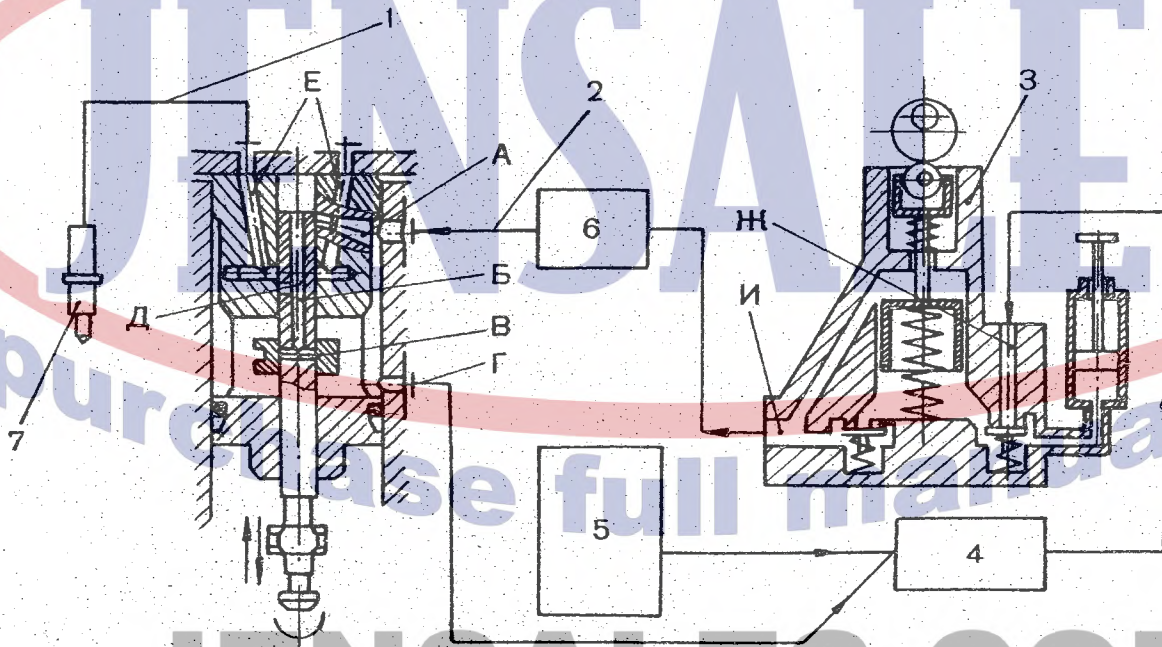


Fig. 3. Hydraulic diagram of the engine feed system:

А - inlet port; Б - central operating channel; В - cut-off port; Г - damper; Д - distributing port; Е - distributing channels; Ж - suction cavity of fuel booster pump; И - delivery cavity of fuel booster pump; 1 - high-pressure fuel pipes; 2 - low-pressure fuel pipes; 3 - fuel booster pump; 4 - rough filter; 5 - fuel tank; 6 - fine filter; 7 - injector