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INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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29 JUL 1965

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10177-43

COUNTRY USSR

REPORT

SUBJECT Album of Drawings for the MIG-21F-13 Aircraft

DATE DIST. 7 July 1965

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REFERENCES

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DATE OF INFO.

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Soviet English-language manual on the MIG-21F-13, entitled Aircraft Ye-6T, Technical Description, Book III, Construction (Album of Drawings). The book consists of 237 figures. No publishing data are given. Figures one, two, and three are missing from the text.

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GROUP 1
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AIRCRAFT Ye6T
TECHNICAL DESCRIPTION
Book III
CONSTRUCTION
(Album of Drawings)

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AIRCRAFT E6T

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Construction

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AIRCRAFT E6T

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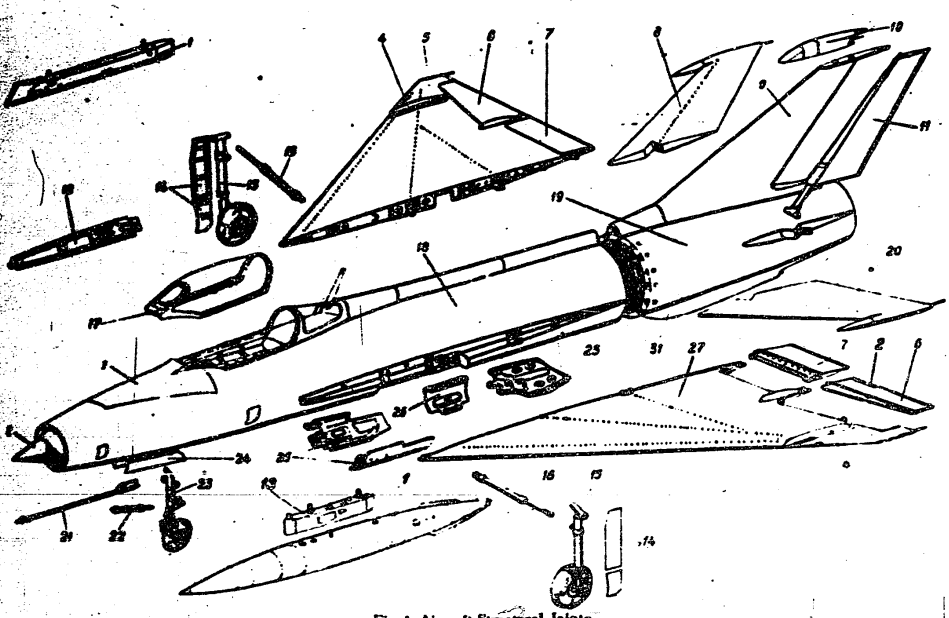

Fig.4. Aircraft Structural Joints

1 – drop tank; 2 – wing tank; 3 – ventral fin; 4 – wing stall fence; 5 – right wing panel; 6 – aileron; 7 – flap; 8 – right half of horizontal stabilizer; 9 – fin; 10 – fin tip; 11 – rudder; 12 – fairing; 13 – pylon; 14 – main wheel well doors; 15 – landing gear main strut; 16 – landing gear main strut actuating cylinder; 17 – canopy; 18 – fuselage nose section; 19 – fuselage tail section; 20 – left half of horizontal stabilizer; 21 – Pitot-static tube; 22 – landing gear nose strut actuating cylinder; 23 – landing gear nose strut; 24 – nose strut doors; 25 – air brake; 26 – main wheel well door on fuselage; 27 – left wing panel.

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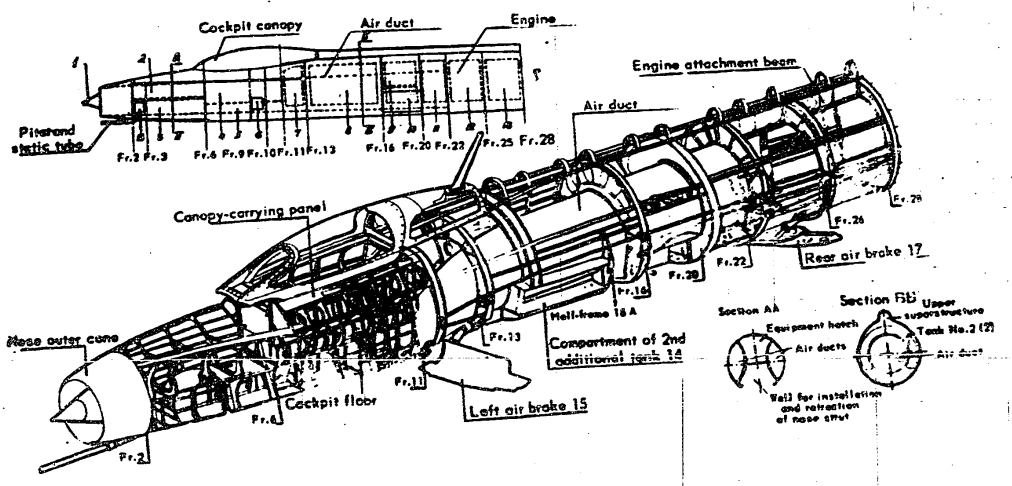

Fig.5. Fuselage Nose Section Structural Details

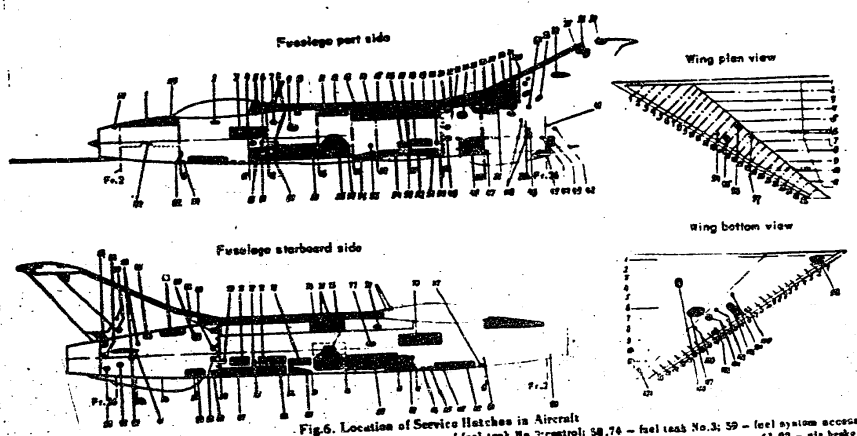

Fig.6. Location of Service Hatches in Aircraft

1 – radio equipment; 2 – "Boeing opened canopy vacant ground safety pin into canopy emergency handle"; 3,79 – electrical equipment; 4 – hatch for assembly; 5 – fuel system cables; 6 – reduction valve for oxygen supply; 7 – inspection of cartridge bolts; 8 – silence bell-cranks; 9 – wing tank connection; 10 – tank filler; 11 – float valve and [illegible] level warning units; 12,93 – fuel tanks venting and circuit control; 13 – gasoline filler; 14 – tank filler; 15 – fuel tanks 4,5 and [illegible]; 16 – engine and hydraulic system accessories; 17, 72 – engine attachment fittings; 18 – engine and hydraulic system accessories; 19 – fuel tanks venting and control elements; 20 – connecting servo system pumps; 21 – hydraulic reservoir filler; 22 – fuel line connection; 23 – automatic transmission ratio controller АРУ-3Б; 24 – thermocouple; 25 – artificial feel mechanism АРУ-3Б; 26 – hydraulic accumulator of servo system; 27 – pumping unit ПП-27; hydraulic booster and marker-beacon receiver МРП-9611; 29, 35, 36, 37 – attachment fittings of radio wiring; 29, 41, 65 – stabilizer control; 30, 31, 32, 33 – rudder control bell-cranks; 34 – induction transmitter ИД-2; 42, 64 – jet nozzle connecting cylinder; 69 – hydraulic pipes of jet nozzle; 44, 62 – attachment fittings of silencers; 45 – brake chute hook; 46, 91 – lubrication of bearings; 47 – drainage of telescopic joint; 48 – brake sleeves; 49, 89 – hydraulic line disconnect valves; 50 – fuselage attachment fittings; 51 – kerosene drains; 52, 71 – engine and hydraulic system accessories; 54 – kerosene drains; 56 – sediment drains; 57 – pump of fuel tank No.2 control; 58, 74 – fuel tank No.3; 59 – fuel system accessories; 60 – fuel line and pipe line of cockpit defroster system; 61, 82 – air brake attachment fittings; 62, 83 – L.G. strut axle; 63 – rudder bell-crank; 66 – main hydraulic system accumulator; 67 – thermocouple; 70 – connection of ground pump to main hydraulic system; 73 – hydraulic units; 75 – fuel tank No.3 attachment screws; 76 – charging of oxygen supply system; 77 – wing tank joint; 78 – inspection of cartridge link bolt; 80 – hook for towing aircraft; 83 – voltage regulator; [illegible] connector with latch; 85 – fire extinguishing bottle; 86 – fire detector; 90 – valve; marker-beacon receiver МРП-9611; 94, 97, 100, 103 – attachment of special missile; 95 – ПУС-96 launching control unit; connector; 106 – aileron 98 – non-linear mechanism; 101 – kerosene drains; 102 – rack connector; 104 – bell-crank; 105 – access to wing navigation lights БАНО; 107 – hydraulic booster; 108 – flap cylinder; 109 – place for jack; 110 – destruction bottom; 111 – oxygen filler; 112 – storage battery hatch; 113 – checking [illegible] of battery cells; 114 – access to radio-altimeter units РВУ; 115 – ground supply; 116 – access to electric units; 117 – access hole for inspection of L.G. [illegible] strut attachment fittings; 118, 119 – inspection holes of control bell-cranks bolts; 120 – [illegible] holes for inspection of bolts securing booster; 121 – access to aileron [illegible]; 99 – air bottles.

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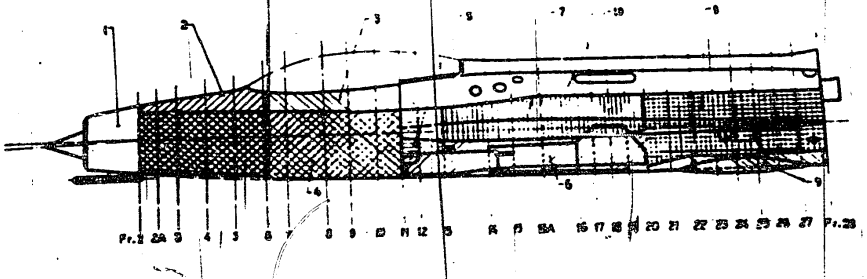

Fig.7. Assembly Compartments of Fuselage Nose Section

1 – nose cone; 2 – nose upper compartment; 3 – compartment between frames 6 and 11; 4 – side panels; 5 – compartment between frames 11 and 18; 6 – bottom panel; 7 – side panels from frame 18 to frame 20; 8 – side panels from frame 20 to frame 28; 9 – bottom panel; 10 – upper panel.

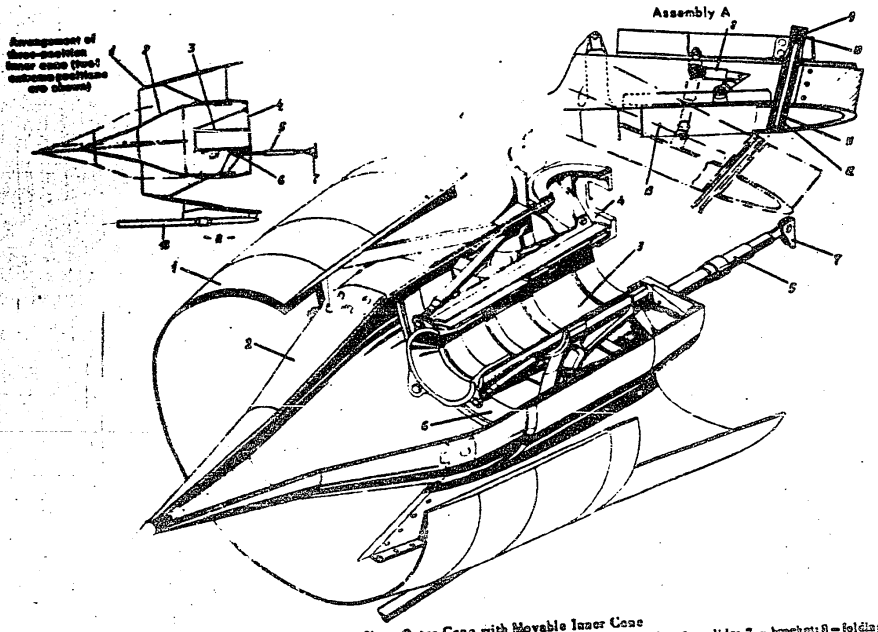

Fig.8. Nose Outer Cone with Movable Inner Cone

1 – nose outer cone; 2 – movable inner cone; 3 – guide tube; 4 – disc; 5 – three-position cylinder; 6 – slider; 7 – bracket; 8 – folding mount; 9 – support; 10 – spring; 11 – self-locking bolt; 12 – bushing; 13 – Pitot and static tube boom.

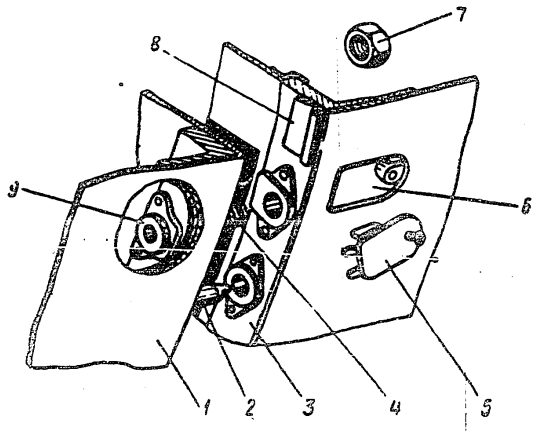

Fig.9. Fuselage Nose-to-Tail Section Joint
1 – frame 28; 2 – locating dowel; 3 – frame 29; 4 – clamp bolt; 5 – cover; 6 – hole; 7 – nut; 8 – rubber-packing; 9 – abutment member.

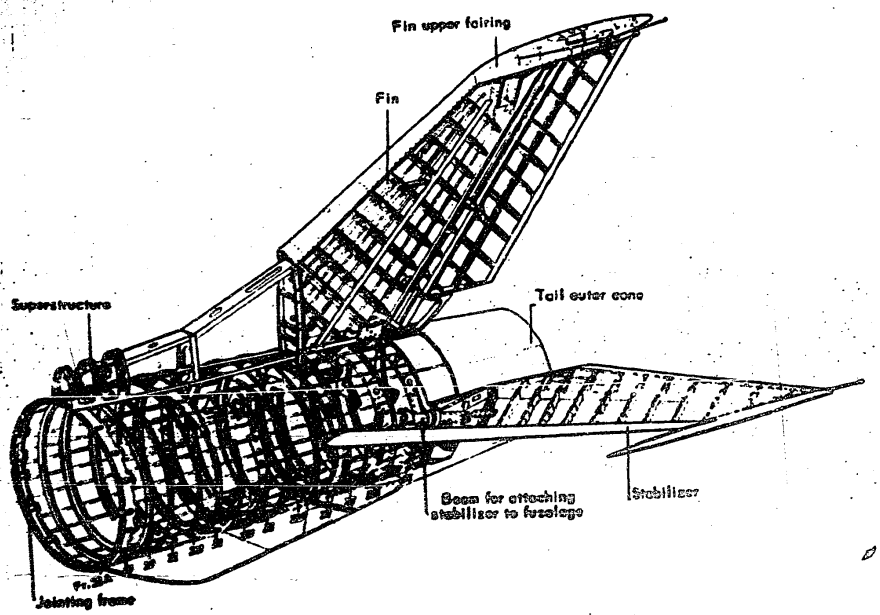

Fig.10. Structural Elements of Fuselage Tail Section and Tail Unit

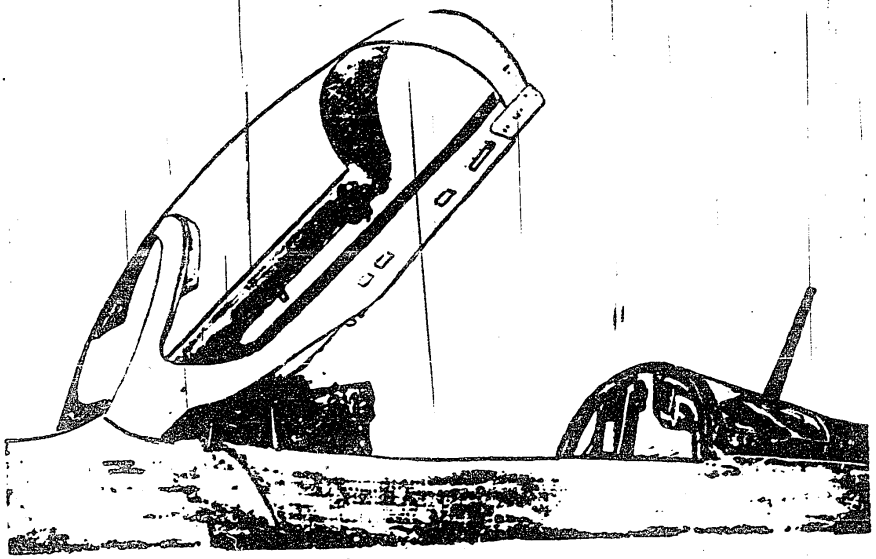

Fig.11. Cockpit Canopy. General View

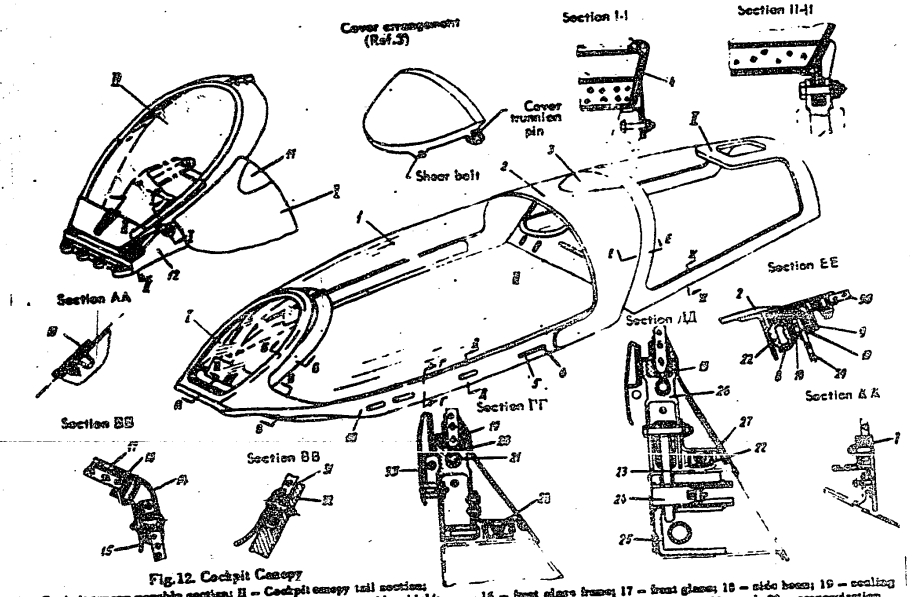

Fig.12. Cockpit Canopy

1 – Cockpit canopy movable section; II – Cockpit canopy tail section; III – Sealed bulkhead; IV – Transparent shield; V – Canopy side shield; 1 – main glass; 2 – rear arch; 3 – cover; 4 – transparent shield frame; 5 – handle for manual opening of canopy; 6 – batten; 7 – rubber bush-ings; 8 – channel for pressurization hose; 9 – canopy tail section frame; 10 – sealed bulkhead duralumin sheet; 11 – side shield glass; 12 – sight bracket; 13 – de-icer manifold plate; 14 – edging; 15 – inner lining; 16 – front glass frame; 17 – front glass; 18 – side beam; 19 – sealing varnish V-32M-2; 20 – canvas tape; 21 – rod; 22 – pressurization hose; 23 – canopy loop; 24 – operating lockpin; 25 – operating lock; 26 – pressed clearance section; 27 – skin; 28 – duralumin section; 29 – sealed bulkhead glass; 30 – glass; 31 – rubber packing; 32 – bracket; 33 – deflector tube.

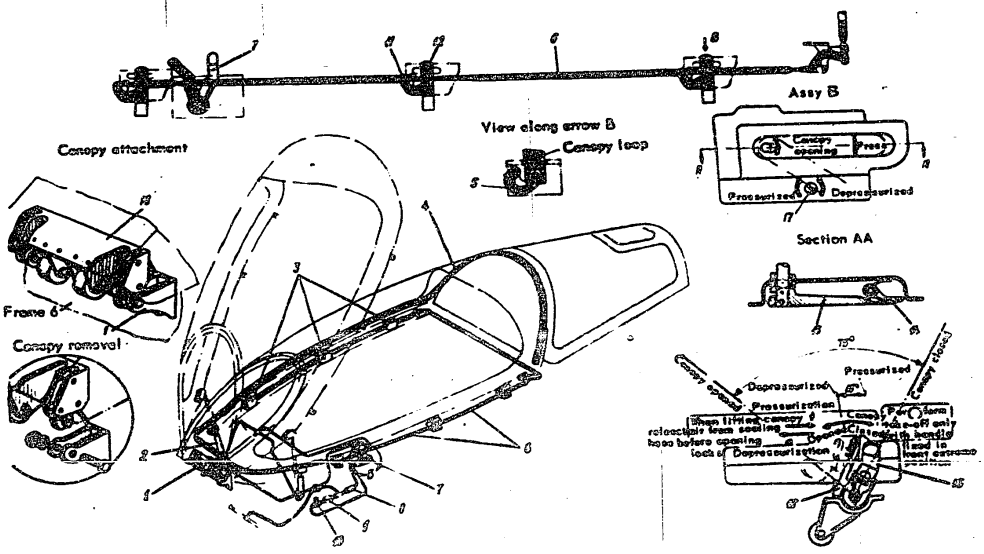

Fig. 13. Canopy Pressurization and Control Systems

1 – canopy mounting bracket; 2 – canopy lifting cylinder; 3 – canopy operating lock; 4 – sealing hose; 5 – stop; 6 – rod; 7 – canopy control two-arm handle; 8 – return valve; 9 – reducer PB-1.5; 10 – air valve; 11 – bell-crank; 12 – pin; 13 – outside arm; 14 – button; 15 – pressurization handle; 16 – inside arm; 17 – slotted shaft for canopy pressurization from outside; 18 – hinge lock.

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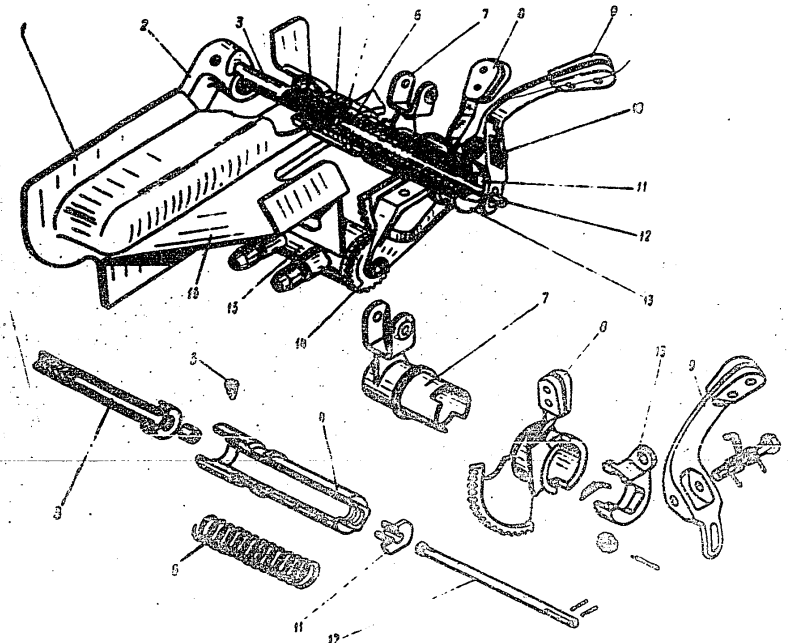


Fig.14. Canopy Control Two-Arm Handle

1 – outside arm base; 2 – outside arm; 3 – shaft; 4 – nut; 5 – screw; 6 – spring; 7 – guide; 8 – pneumatic handle; 9 – inside arm; 10 – spring; 11 – pin; 12 – link; 13 – bushing; 14 – gear; 15 – canopy pneumatic and control valve; 16 – panel.

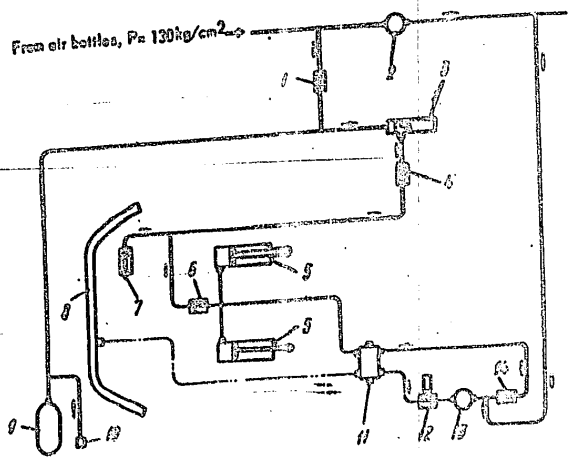


Fig.15. Canopy Air System

1 – non-return valve; 2 – reducer PB-391; 3 – emergency valve; 4 – filter; 5 – canopy lifting cylinders; 6 – non-return valve; 7 – cylinder for opening canopy time delay lock; 8 – sealing hose; 9 – emergency air bottle; 10 – pressure measuring connection; 11 – canopy pressurization and control valve; 12 – safety valve; 13 – reducer PB-1.5; 14 – non-return valve.

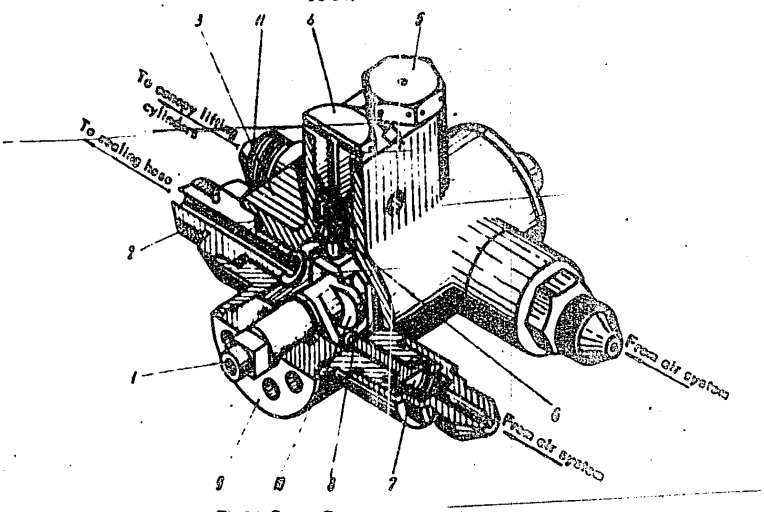


Fig.16. Canopy Pressurization and Control Valve

1 – axle with cams; 2 – connection; 3 – body; 4 – connection; 5 – connection; 6 – valve; 7 – valve; 8 – guide; 9 – cross; 10 – cam; 11 – connection.

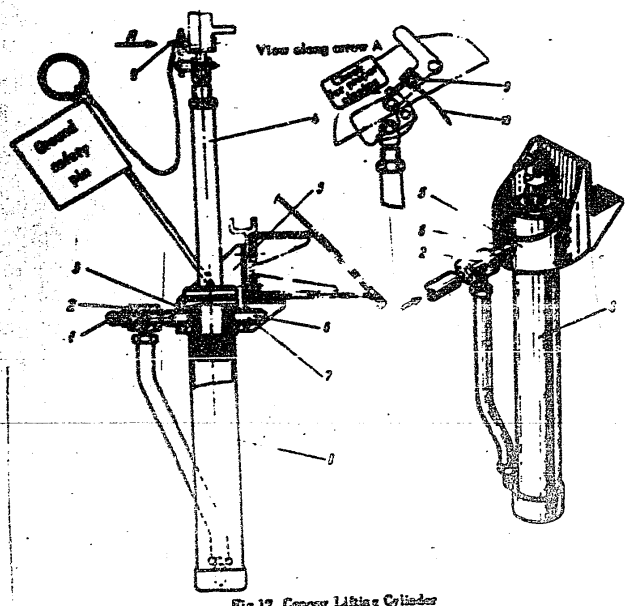


Fig.17. Canopy Lifting Cylinder
1 – connection; 2 – turning connection; 3 – casing; 4 – rod; 5 – cylinder mounting bracket; 6 – locking pin; 7 – pin; 8 – cylinder; 9 – emergency system lock; 10 – cord.

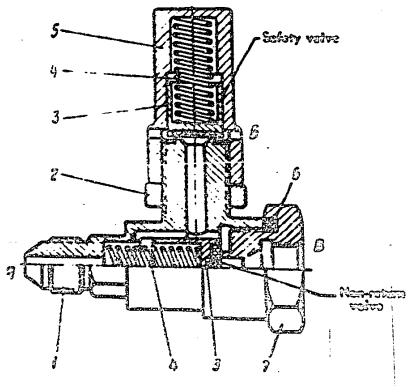
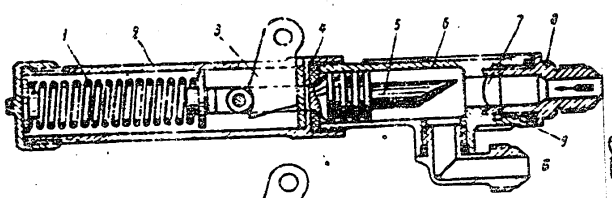
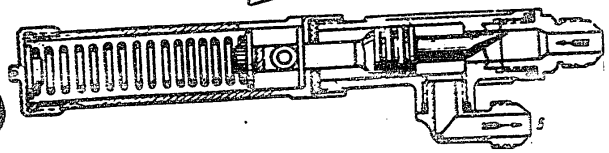


Fig.18. Air Valve
1 – body; 2 – bottom; 3 – slide valve; 4 – spring; 5 – cover; 6 – rubber packing rings; 7 – plug.

Valve in cocked position



Piercing diaphragm



Operation of valve

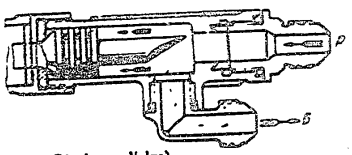


Fig.19. Emergency Valve (Diaphragm Valve)
1 – spring; 2 – tube; 3 – pin; 4 – rubber washer; 5 – rubber; 6 – body; 7 – diaphragm; 8 – connection; 9 – bushing.

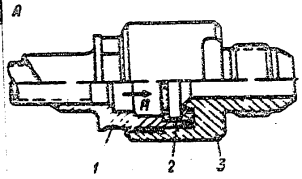


Fig.20. Filter
1 – body; 2 – grid; 3 – cover.

View along arrow A

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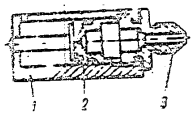

Fig.21 Cylinder for Opening Canopy Time Delay Lock
1 – body; 2 – rod; 3 – cover.

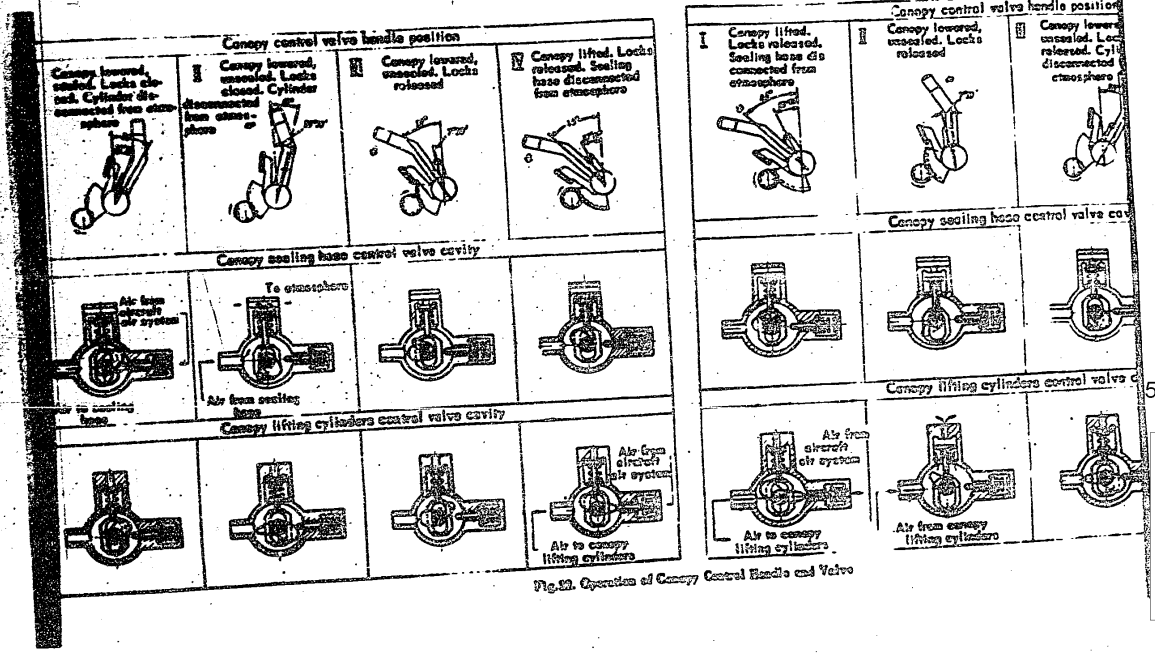

Fig. 52. Operation of Canopy Control Handle and Valve

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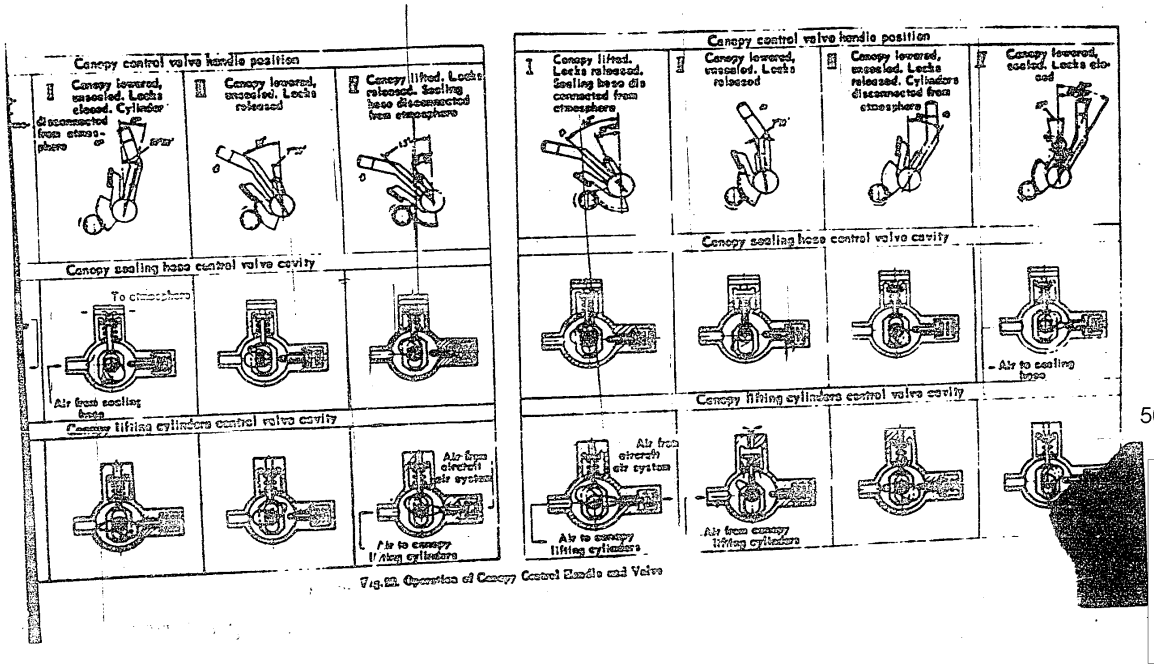

Fig. 22. Operation of Canopy Control Handle and Valve

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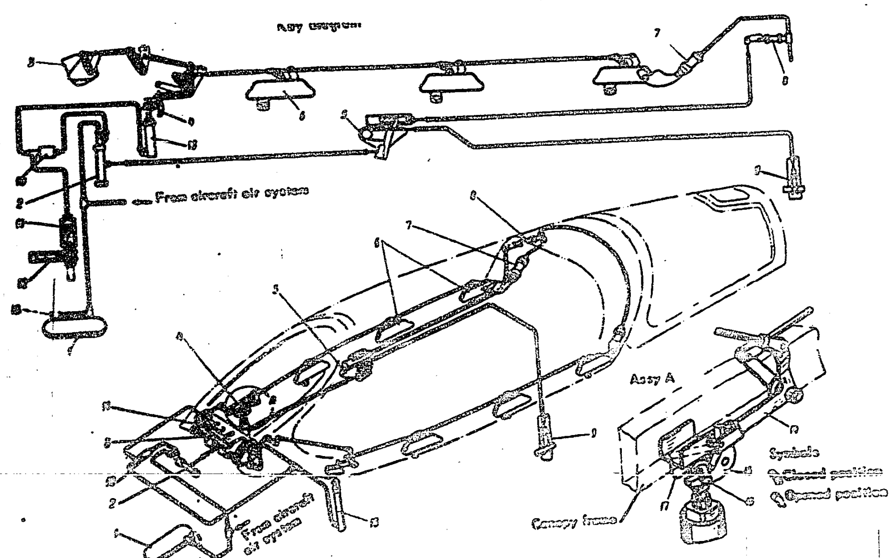

Fig. 23. Canopy Jettison System

1 — emergency air bottle; 2 — emergency valve; 3 — hinge lock; 4 — cylinder rod fixing lock; 5 — canopy jettison handle; 6 — side emergency locks; 7 — explosive charge actuated cylinder; 8 — canopy jettison gun; 9 — cotter pin of ejection gun TCM-2250 release valve; 10 — filter; 11 — cylinder for opening canopy time delay lock; 12 — canopy time delay lock; 13 — canopy tear cylinder; 14 — bell-crank; 15 — pawl; 16 — shaft; 17 — bracket; 18 — connection for measuring pressure in the canopy emergency system air bottle and for charging during system checking.

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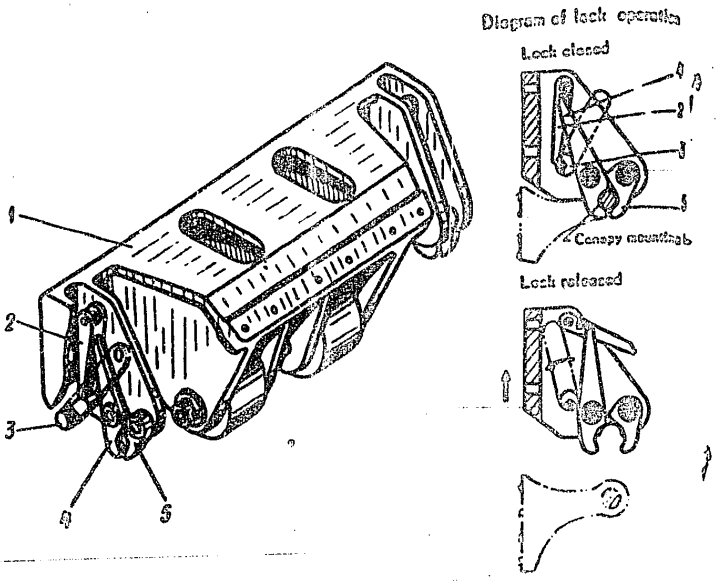


Fig.24. Hinge Lock
1 – housings 2 – pawls 3 – shafts 4-5 – grips

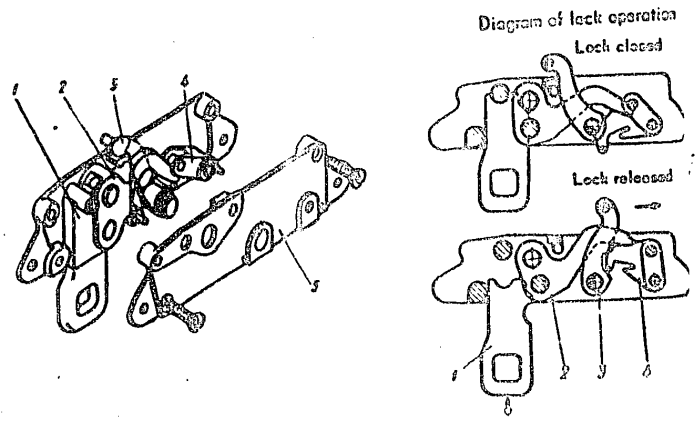
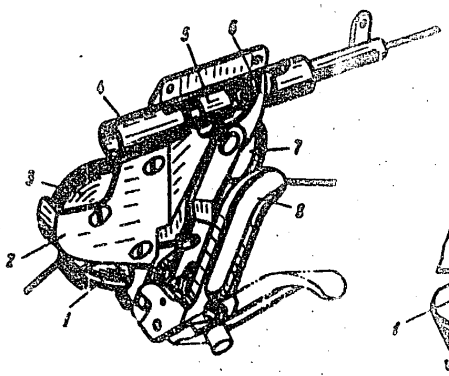


Fig.25. Side Emergency Lock
1 – loops 2,4 – levers 3 – bell-cranks 5 – body.



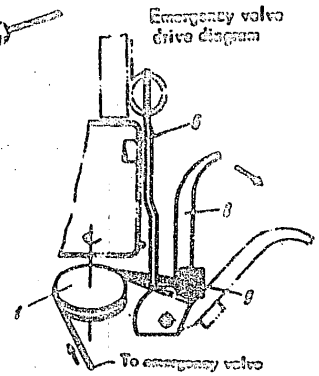


Diagram of canopy firing mechanism drive and release valve of ejection gun TCH-2500-30

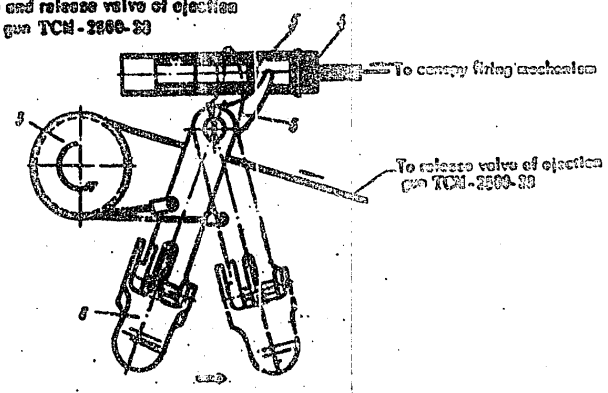


Fig.25. Canopy Jettison Handle

1,2 – rollers; 3 – cover; 4 – jettison gun drive; 5 – plunger; 6 – lever; 7 – handle; 8 – hinge bearing; 9 – bushing.

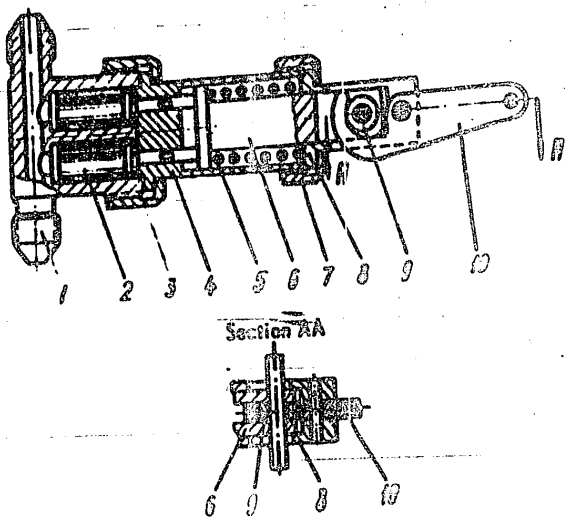


Fig.27. Canopy Jettison Gun
1 – body; 2 – cartridge ПВ-1; 3 – nut; 4 – locking plunger; 5 – spring; 6 – striker; 7 – nut; 8 – sleeve; 9 – roller; 10 – release lever.

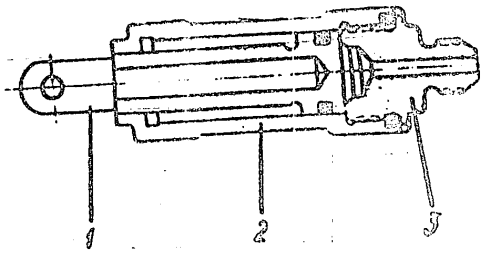


Fig.28. Explosive Charge Actuated Cylinder
1 – rod; 2 – body; 3 – cover.

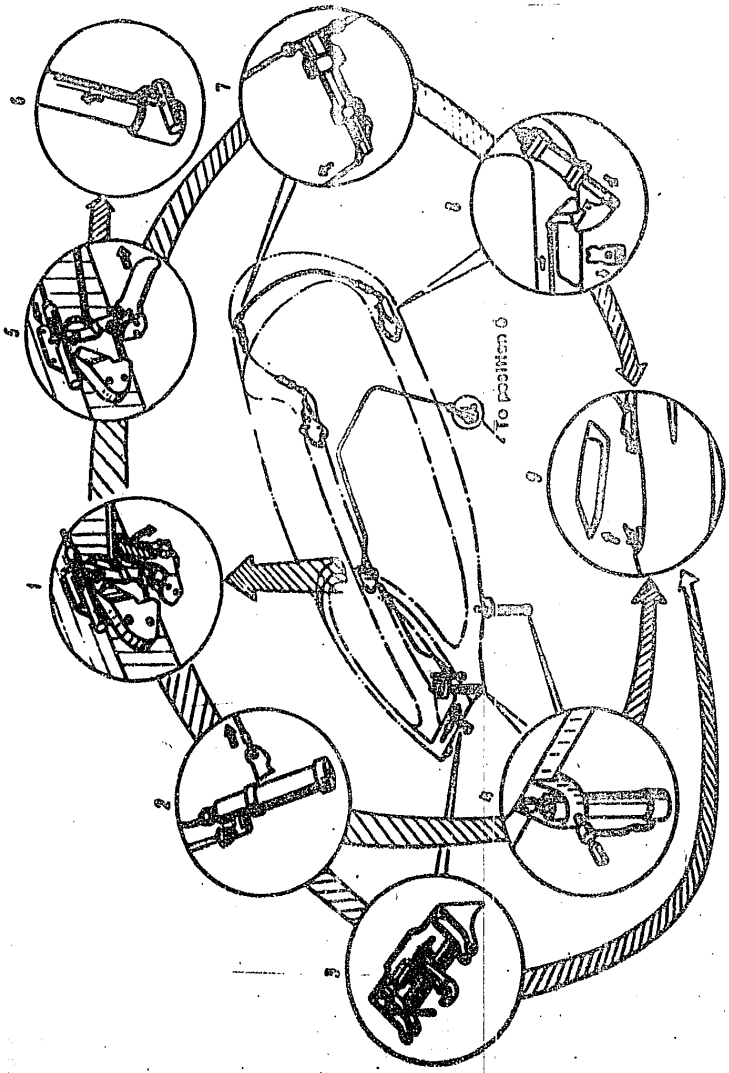


Fig.2. Diagram of Canopy Jettison System Operation

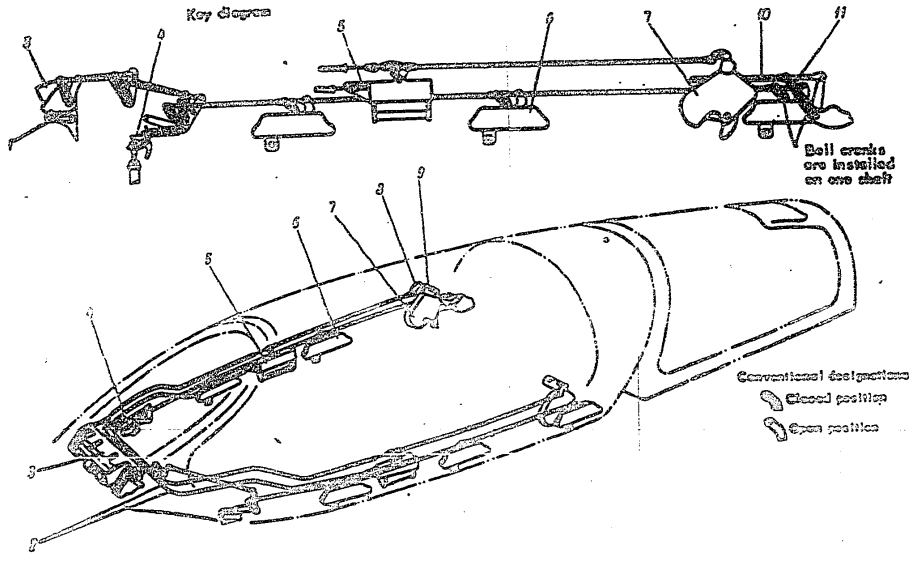
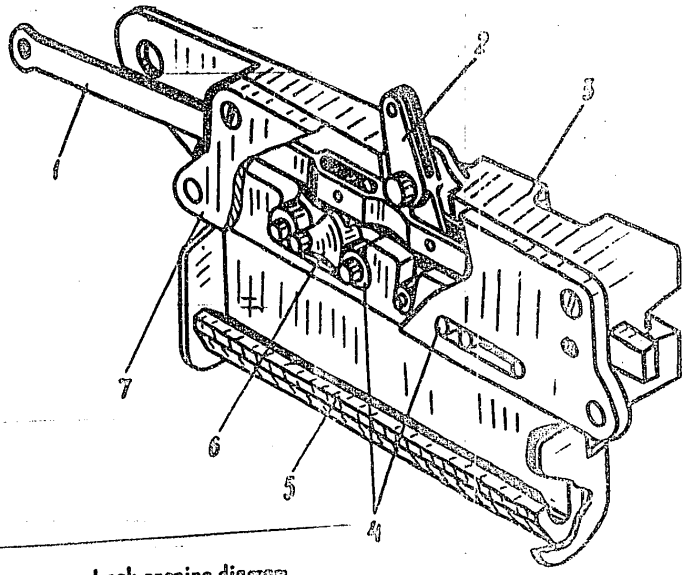


Fig.20. Canopy Retention System

1 – canopy time delay lock; 2 – cable tubes; 3 – hinge lock; 4 – lock for firing cylinder rod; 5 – front grip lock; 6 – canopy catch lock; 7 – rear grip lock; 8 – bell-crank for releasing front grip locks; 9 – release lever for opening front locks; 10 – rod; 11 – bell-cranks.

Fig.81. Rear Grip Lock
1 – stops; 2 – spring; 3 – lever; 4 – body; 5 – rod; 6 – pawl; 7 – grip.



Lock opening diagram

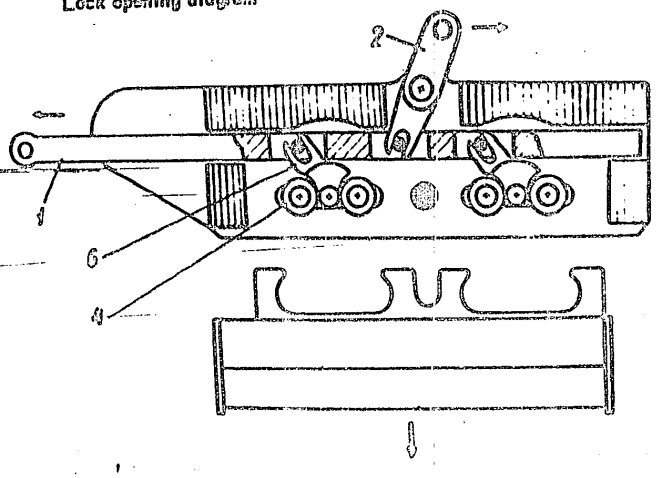


Fig. 32. Front Grip Lock

1 – rod; 2 – lever; 3 – body; 4 – roller; 5 – insert; 6 – cam; 7 – body cover.

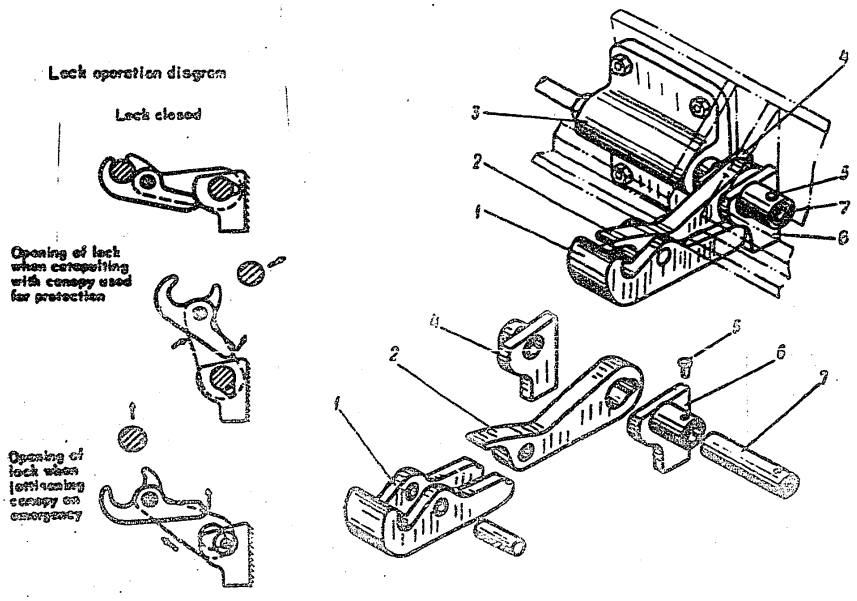


Fig.33. Canopy Time Delay Lock
1 – lever; 2 – shackle; 3 – air cylinder; 4 – bushing; 5 – shear rivet; 6 – bush; 7 – axis.

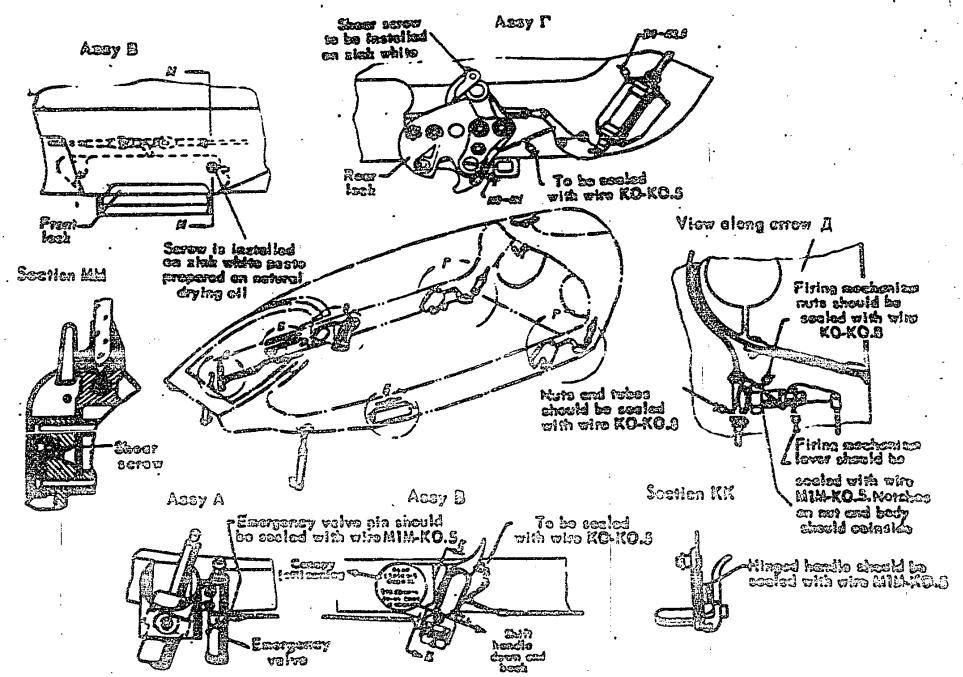


Fig.34. Canopy Locking Diagram

Fig.35. De-icing System
1 – alcohol tank; 2 – rubberized hose; 3 – manifold; 4 – control button; 5 – reducer РВ-3; 6 – electric pneumatic valve 623000 12; 7,8 – non-return valves; 9 – drain connection; 10 – drain plug; 11 – filler; 12 – burning head; 13 – clamp bolt; 14 – screw; 15 – cover; 16 – filter; 17 – plate.

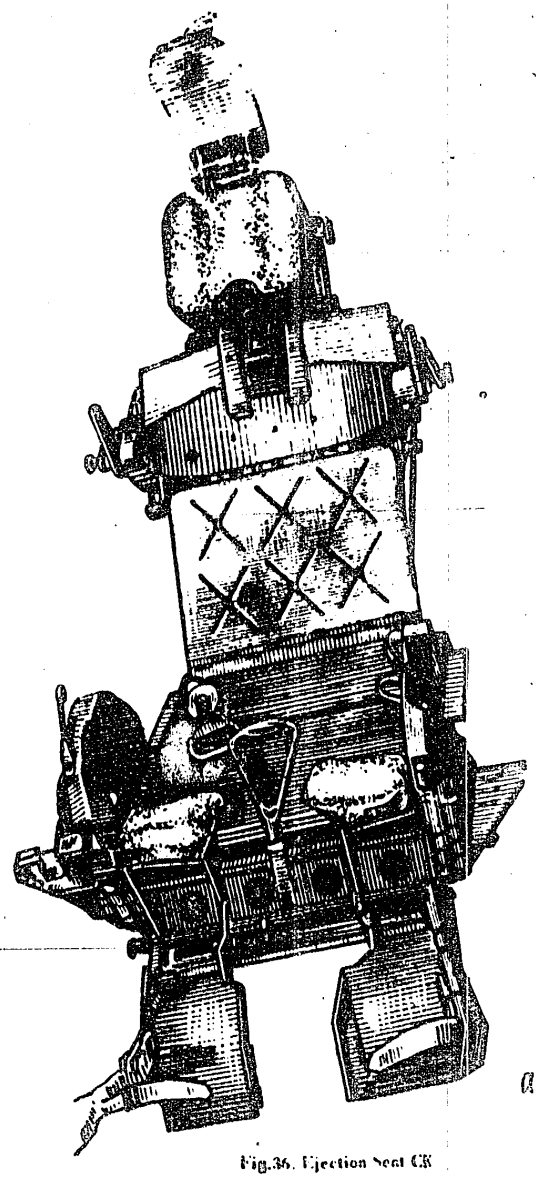
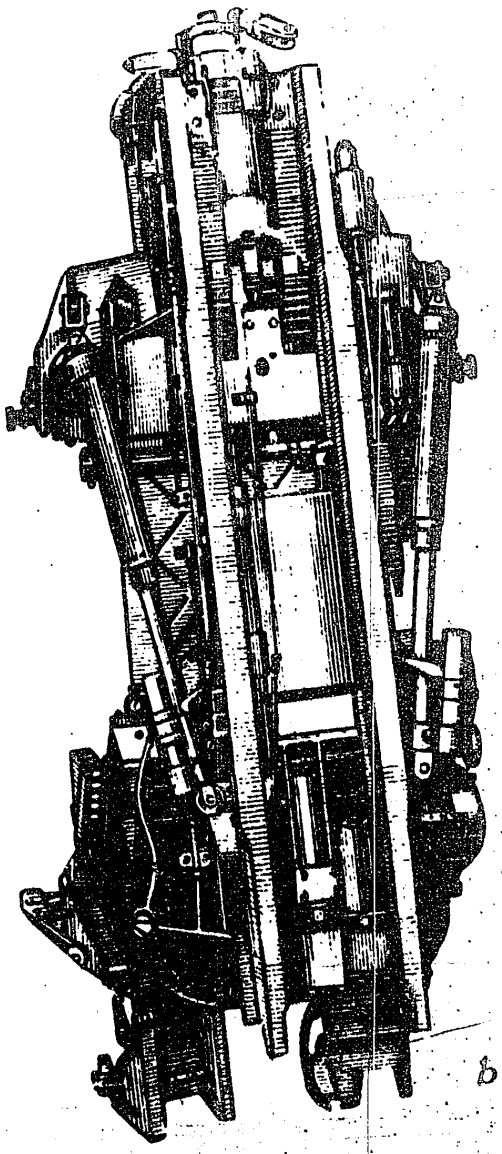


Fig.36. Ejection Seat CK



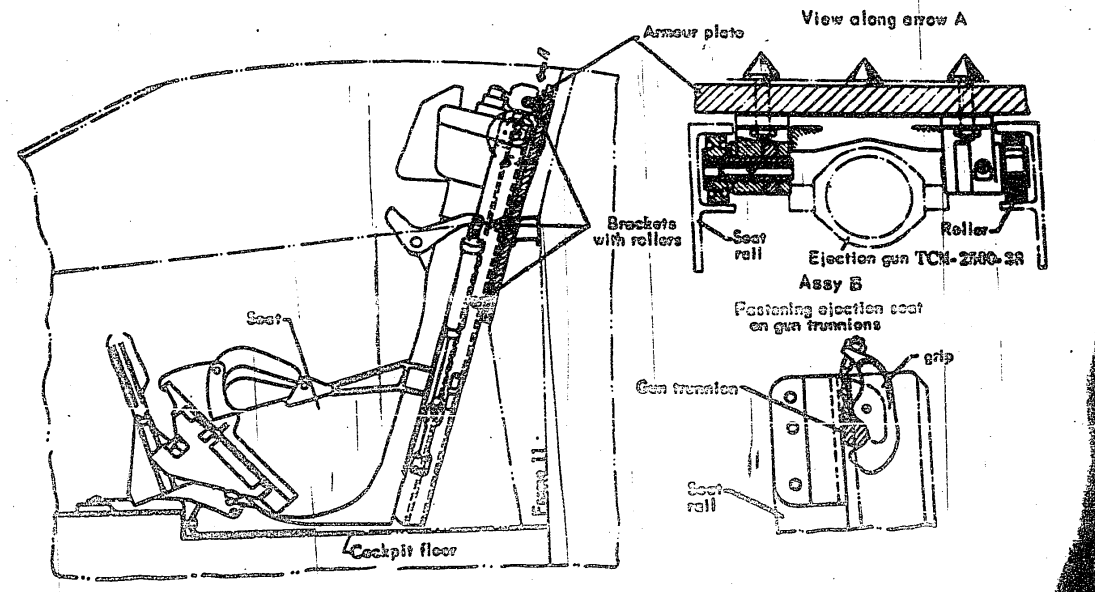


Fig.37. Installation of Ejection Seat in Cockpit

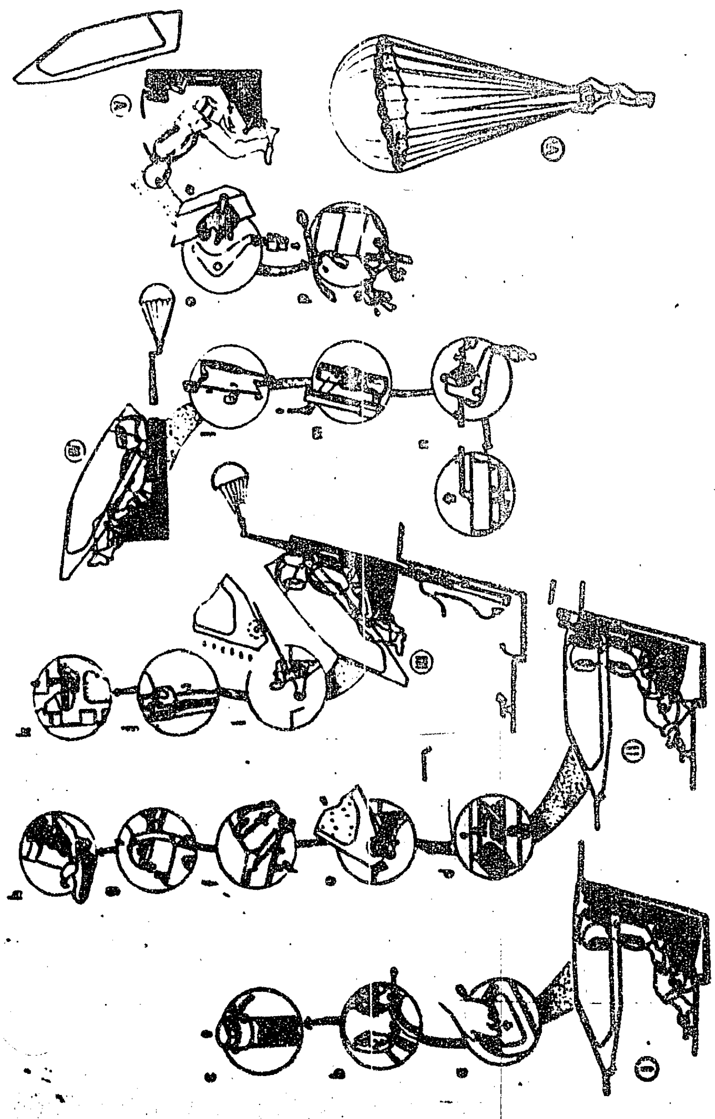


Fig.38. Ejection with Canopy Used for Protection

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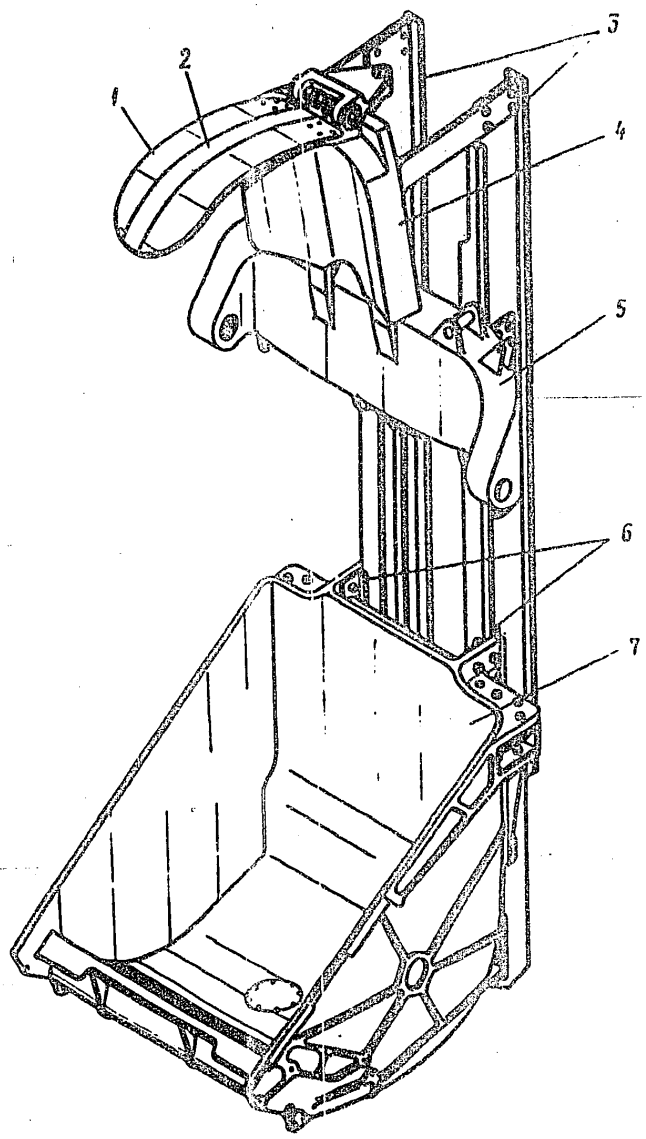


Fig.29. Ejection Seat Frame
1 – guard plate; 2 – covering of artificial chamois leather; 3 – vertical section; 4 – crosspiece headrest; 5 – upper boom; 6 – seat pan guides; 7 – seat pan.

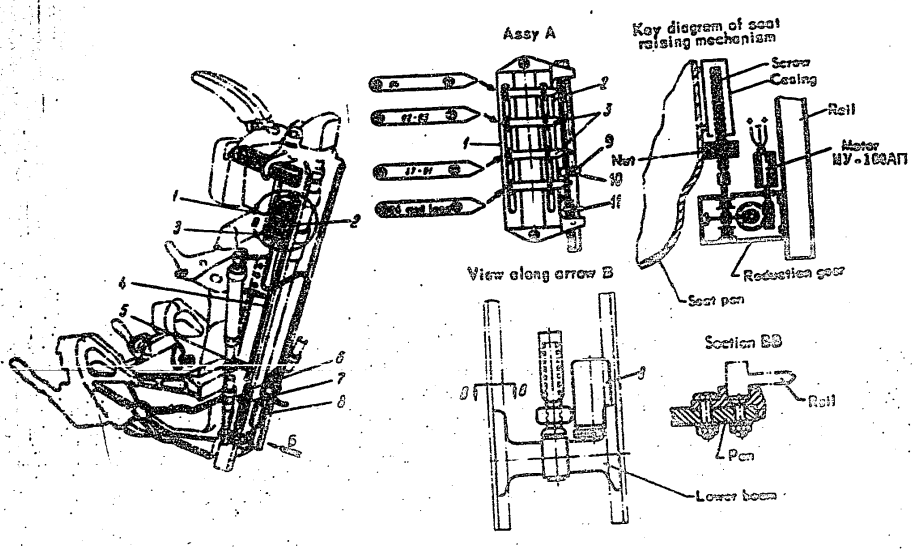
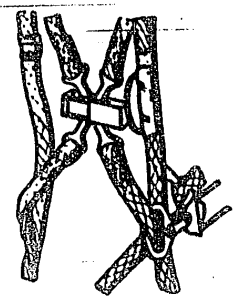


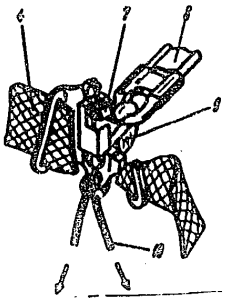
Fig.40. Ejection Seat Pan Control System

1 — seat pan adjusting mechanism; 2 — control rod; 3 — arrow-indicator; 4 — rod; 5 — bracket; 6 — screw; 7 — nut; 8 — electric motor; 9 — movable ring; 10 — locking screw; 11 — fixed ring.

Difference between personnel parachute harness system C-3 and harness system IIHC-16I



Assy A



Harness system IIHC-16I

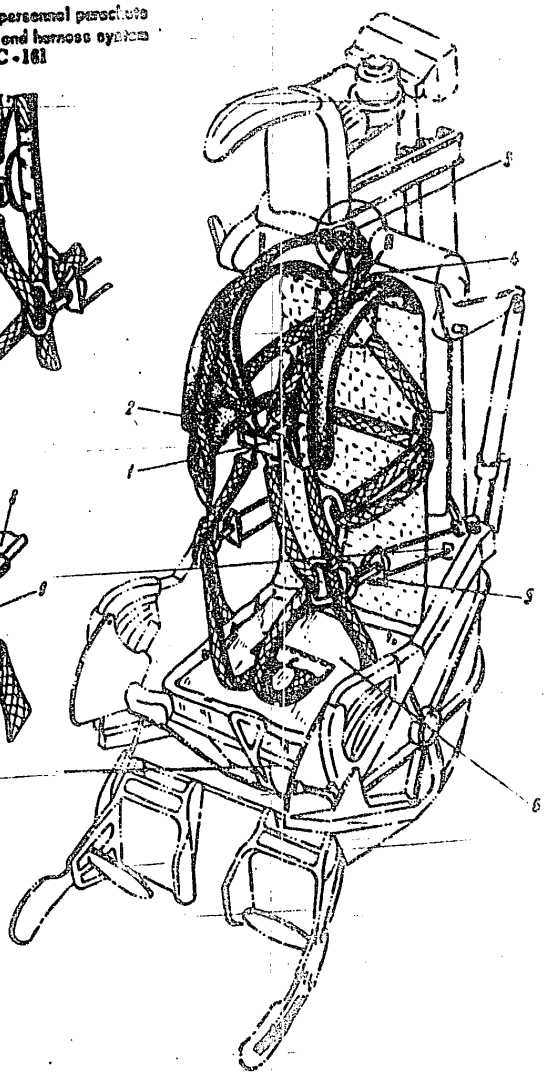


Fig.41. Harness Assembly

1 – central lock; 2 – shoulder lock; 3 – back lock; 4 – shoulder belt; 5 – pulley; 6 – personnel parachute; 7 – latch; 8 – strap; 9 – back with buckles; 10 – check-shooting cord.

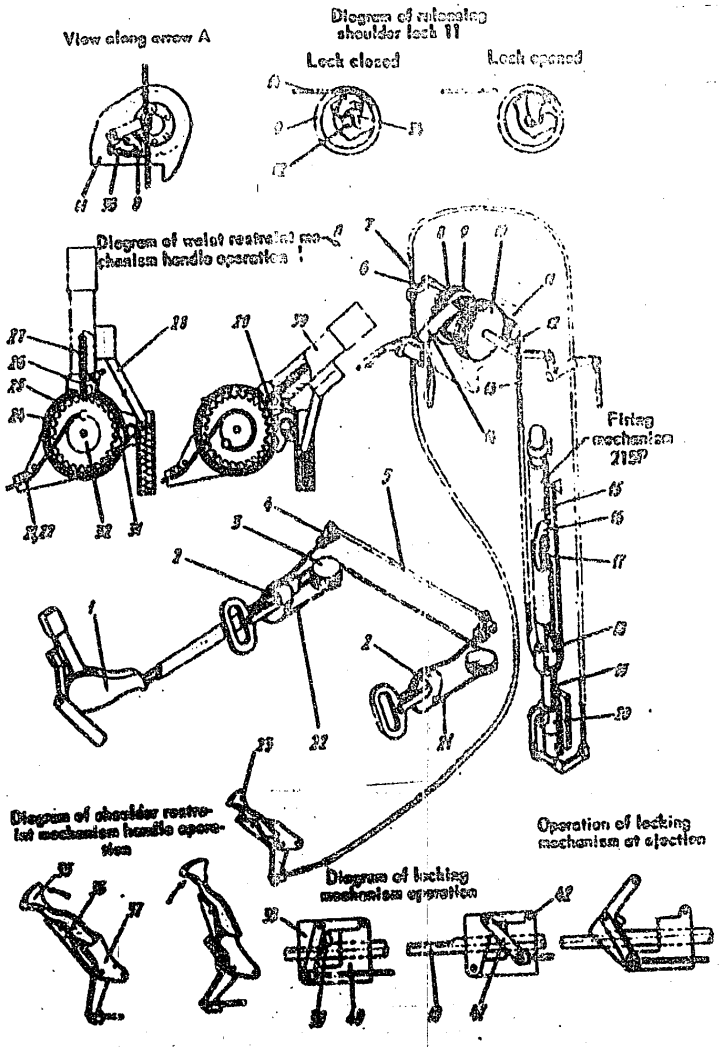


Fig. 42. Harness System Restraint Mechanism

1 – waist belt restraint mechanism handle; 2 – pulley with buckle; 3 – guide roller; 4 – waist belt restraint mechanism body; 5 – rod; 6 – bell-crank; 7 – cable; 8 – ratchet; 9 – rock; 10 – roller; 11 – shoulder belt restraint mechanism lock; 12 – locking rod; 13 – restraint mechanism cable; 14 – straps; 15 – outer tube of firing mechanism 21SP; 16 – inner tube of firing mechanism 21SP; 17 – springs; 18 – rollers; 19 – rock; 20 – pilot's ejection position locking mechanism; 21,22 – waist belt restraint mechanism cables; 23 – shoulder belt restraint mechanism handle; 24 – handle stop; 25 – body stop; 26,27,28 – pawls; 27 – spring; 28 – pusher; 29 – stop; 30 – handle; 32 – roller; 34 – hinge support; 36 – stop lever; 38 – bell-crank; 39 – bracket; 40 – hinge piece; 39 – stops; 42 – bracket; 43 – bell-crank; 43 – shear screw.

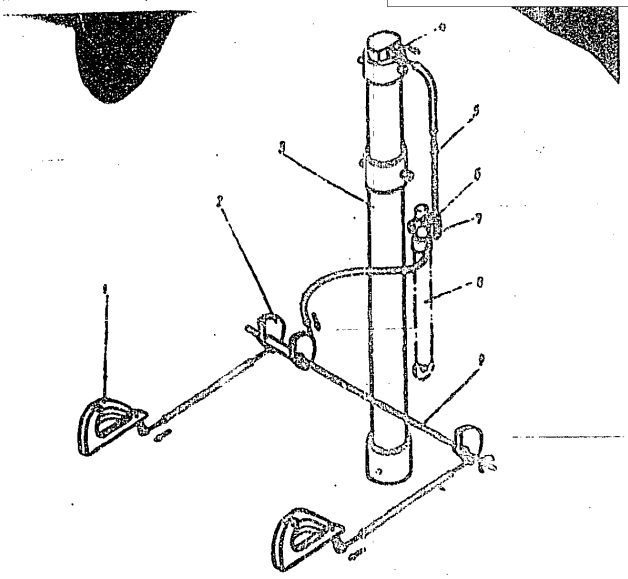


Fig.43. Control System of Ejection Gun TCH-2000-30
1 – hand-grip; 2 – casing; 3 – ejection gun TCH-2000-30; 4 – pin; 5 – rod; 6 – firing mechanism release lever; 7 – shackle; 8 – firing mechanism shaft; 9 – shaft.

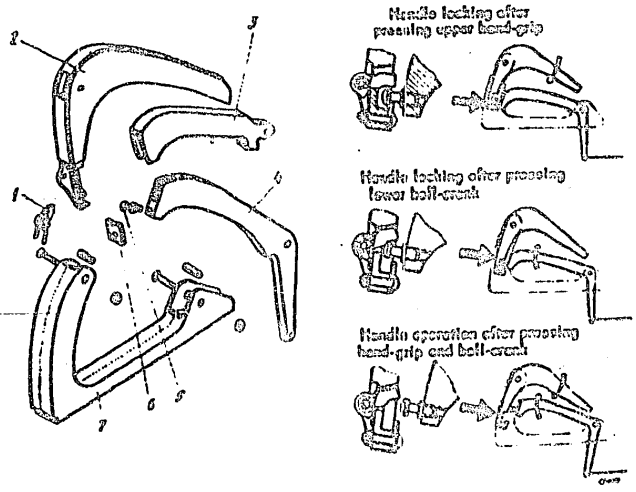


Fig.44. Hand-Grip Construction and Operation
1 – pawl; 2 – safety lever; 3 – protecting yoke; 4 – release lever; 5 – bolt; 6 – plate; 7 – body.

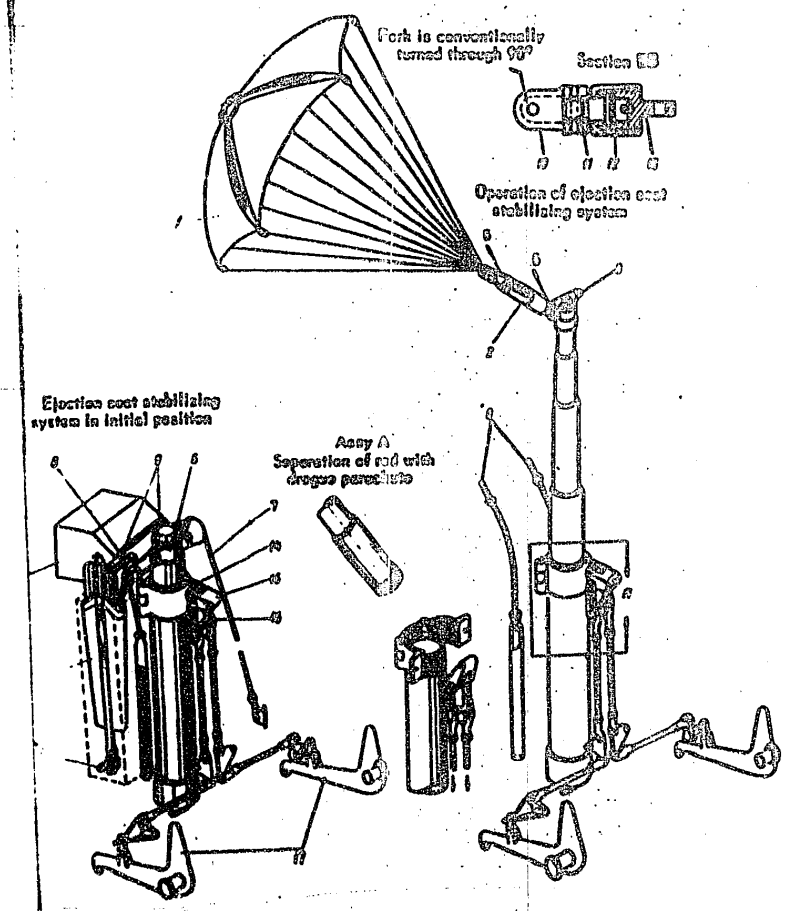


Fig.45. Ejection Seat Stabilising System

– dragon parachute; 2 – adapter; 3 – parachute container; 4 – cone for shroud lines; 5 – yoke; 6 – pin of ring mechanism 215П; 7 – cable; 8 – yoke; 9 – rod; 10 – fork; 11 – shafts; 12 – holder; 13 – bag; 14 – collar 15 – yoke; 16 – fork; 17 – levers for canopy separation.

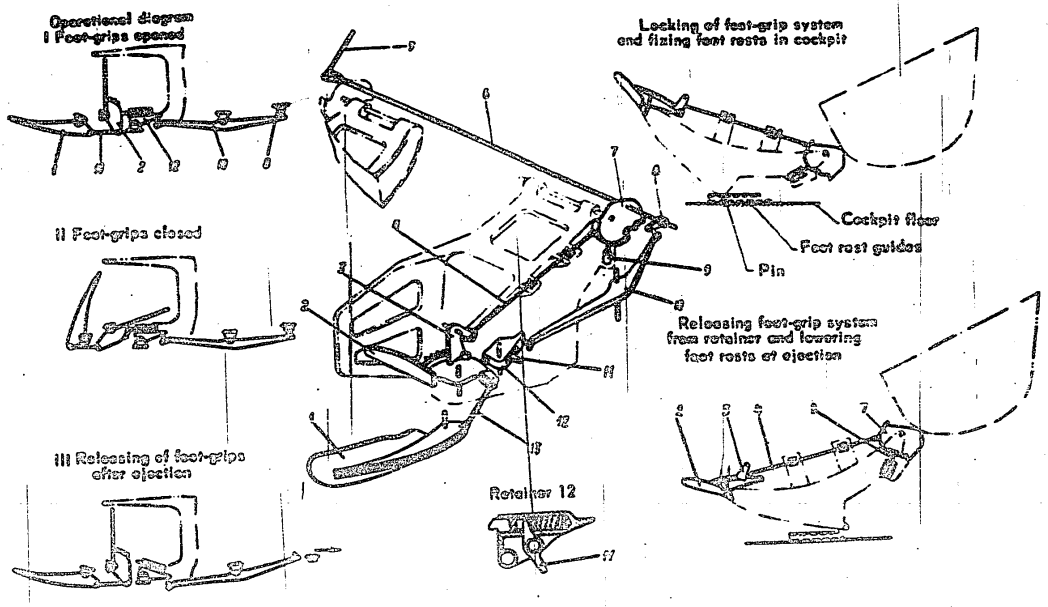


Fig.46. Foot-Grip System

1 – foot-grip; 2 – lever; 3 – retainer; 4 – pusher; 5 – rod; 6 – shaft; 7 – shaped sector; 8 – bell-crank; 9 – retainer; 10 – lever; 11 – pawl; 12 – retainer; 13 – rod.

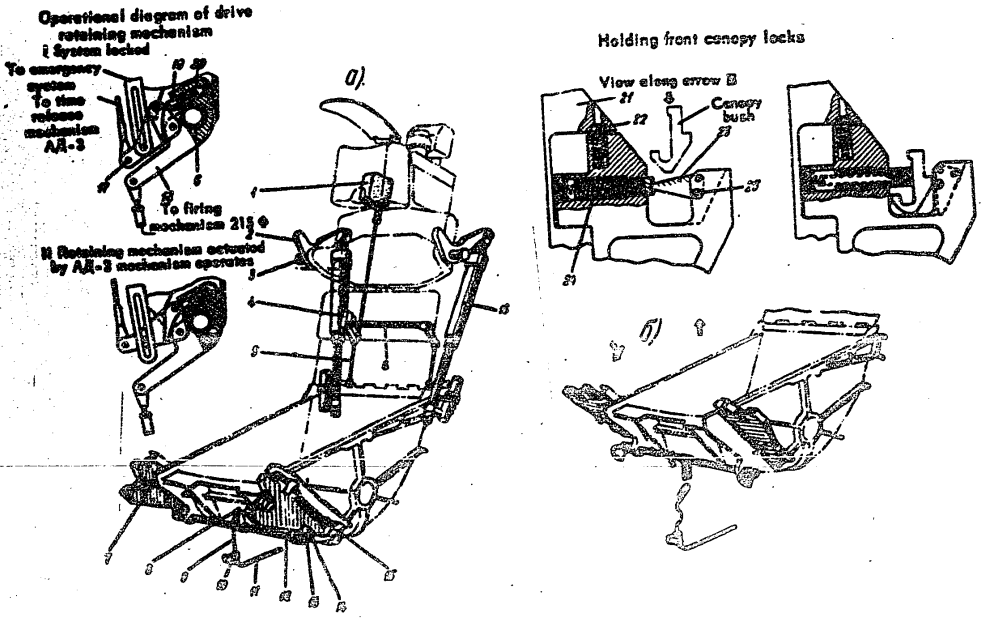


Fig.47. Canopy Holding and Separation System

1 – АД-3 time release mechanism; 2 – canopy separation levers; 3 – trunnions; 4 – drive retaining mechanism; 5 – rod; 6 – shafts; 7 – hinge supports; 8 – bell-cranks; 9 – cables; 10 – brackets; 11 – tubes; 12 – shafts; 13 – steps; 14 – shear screws; 15 – springs; 16 – firing mechanism 213Ф; 17 – levers; 18 – bell-cranks; 19 – pushers; 20 – springs; 21 – brackets; 22 – stop pins; 23 – stops; 24 – pins; 25 – shear screws.

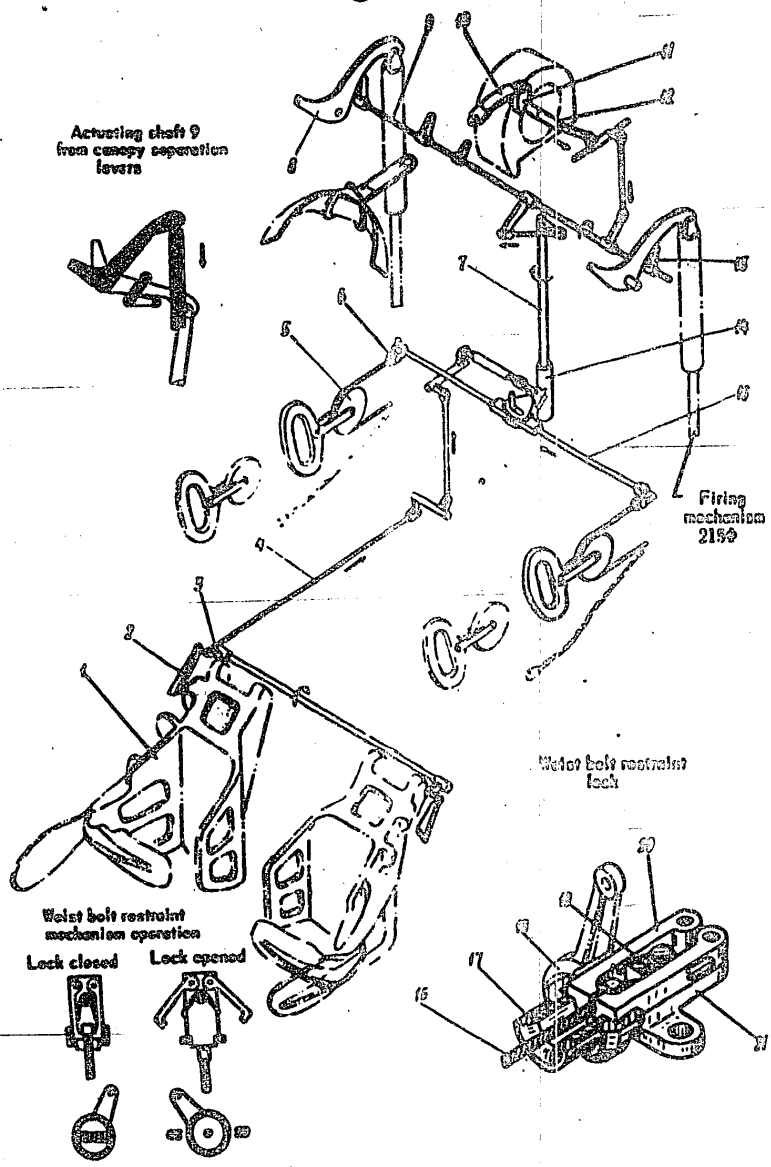


Fig.63. Release System for Restraint Locks and Foot-Grips

1 – foot-rest; 2 – lever for opening foot-grips; 3 – bell-crank; 4 – rod; 5 – pulley with buckle; 6 – waist belt restraint lock; 7 – vertical shaft; 8 – levers for canopy separation; 9 – driving shaft; 10 – shoulder belt restraint mechanism strap; 11 – hinge support; 12 – locking rod; 13 – release system drive bell-crank; 14 – sliding bell-crank; 15 – release rod for waist belt restraint lock; 16 – waist belt restraint mechanism cable; 17 – nut; 18 – bell-crank; 19 – spring; 20 – grip; 21 – body.

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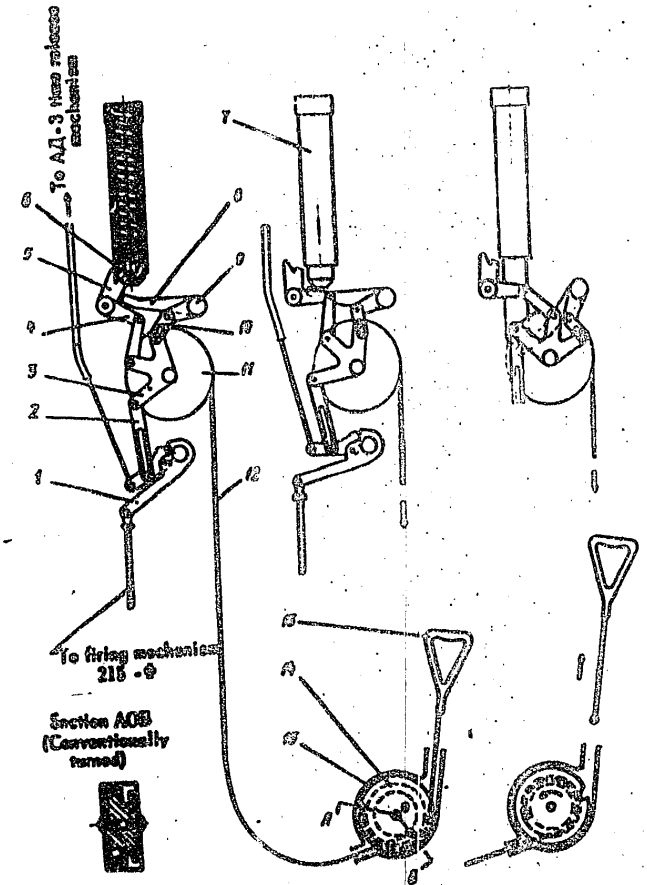

Fig.49. Emergency System for Actuating Firing Mechanism 21Э-Ф and Releasing Rocket Locks

1 – mechanism for drive locking; 2 – shackle; 3 – three-arm lever; 4 – bell-crank; 5 – stop; 6 – rod; 7 – spring intermittor; 8 – lever; 9 – driving shaft of rocket lock release system; 10 – shackle; 11 – roller; 12 – cable; 13 – emergency handle; 14 – roller; 15 – body.

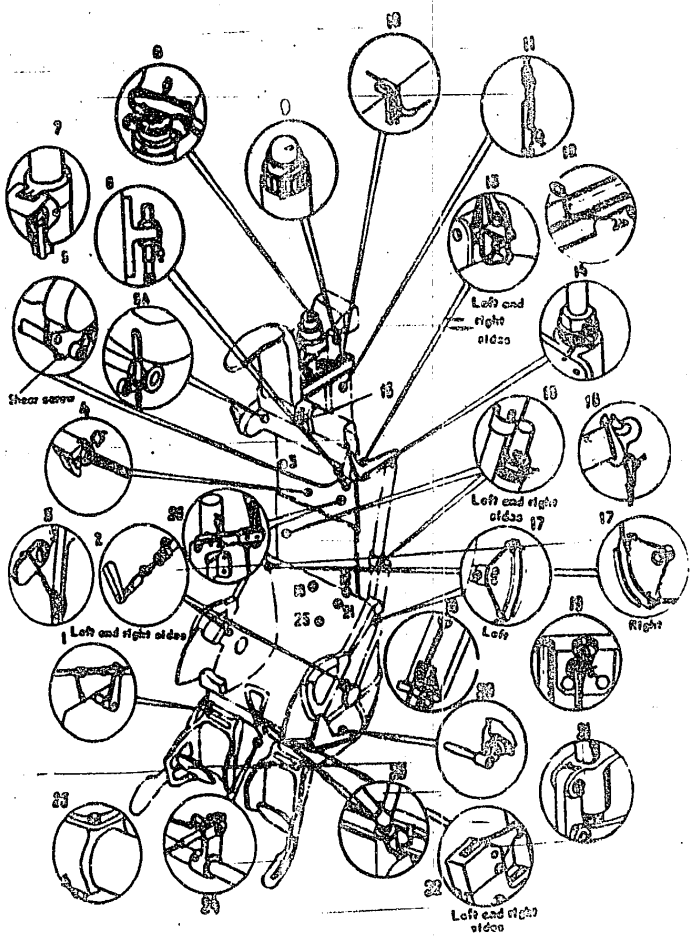

Fig.50. Seat Locking Diagram
(See Table 1)

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Table 1

Seat Locking System
(Fig. 59)

Reference Nos in Fig. 59	Place of locking	Locking device
1	2	3
1	Foot-grip release rod	НI-КО.8 without seal
2	Tip of control cable of seat ejection gun ТСМ-2500-60	КО-КО.8 without seal
3	Lock holding roller from turning when operated by АД-3У mechanism	НI-КО.8, Seal 1038А63
4	Bowden cable of restraint lock emergency release system	КО-КО.8 Seal 1038А-63
5	Transverse shaft with bracket	Shear bolt АМТКТО-3 State Stand. ГОСТ 6793-60
5A	Actuating rod of restraint lock release system	Б-КО.8 Seal 1039А-63
6	Locking device of 21БП firing mechanism cable	КО-КО.8 Seal 1039А-63
7	Fastening lock of 21БП firing mechanism collar shoulders	Shear screw, 2 pcs. Steel 10, annealed, МПТУ 2333-49
8	External sleeve with backing of firing mechanism 21БП head	Locking screw, Steel 20МПТУ 2333-49 (attached to part 21БП) КО-КО.8, Seal 1038А-63
9	Locking plunger nut of ejection gun ТСМ-2500-60	КО-КО.8 Seal 1038А-63
10	Channel for cable of firing mechanism 21БП	КО-КО.8 without seal
11	Control rod of ejection gun ТСМ-2500-60	КО-КО.8 Seal 1038А-63
12	Waist belt restraint lock release rod	КО-КО.8 Sp.Sp. ГОСТ 792-41 Seal 1038А-63
13	Lock release shackle of firing mechanism 21БП	Special cord АМЦ-К2
14	Firing mechanism 21БП locking plunger nut	КО-КО.8 Seal 1038А-63
15	External cylinder with rod	Locking screw, Steel 20 МПТУ 2333-49 (attached to part 21БП) КО-КО.8, Seal 1038А-63
16	Shoulder belt restraint mechanism fastening unit	КО-КО.8 without seal
17	Shaft center of ТСМ-2500-60 ejection gun control	КО-КО.8 without seal
18	Pin of ТСМ-2500-60 ejection gun release valve	НI-КО.8 Seal 1038А-63
19	Flexible pin of АД-3У mechanism cocked position	One cotton thread
20	Hinge support stop	Shear screw АМЦ-К2
21	K	
21	Locking mechanism of shoulder belt restraint system	Shear screw ЛТ-Т dia. 2.5; Shear screw АМЦ-К2
22	Canopy holding hinge supports	КО-КО.8 Seal 1038А-63
23	Emergency handle	Shear wire АМЦ-К2
24	Shaft bolt-crank for fixing hinge supports	КО-КО.8
25	Regulator plug of seat raising mechanism	КО-КО.8, Seal 1038А-63
26	21БП firing mechanism lever	

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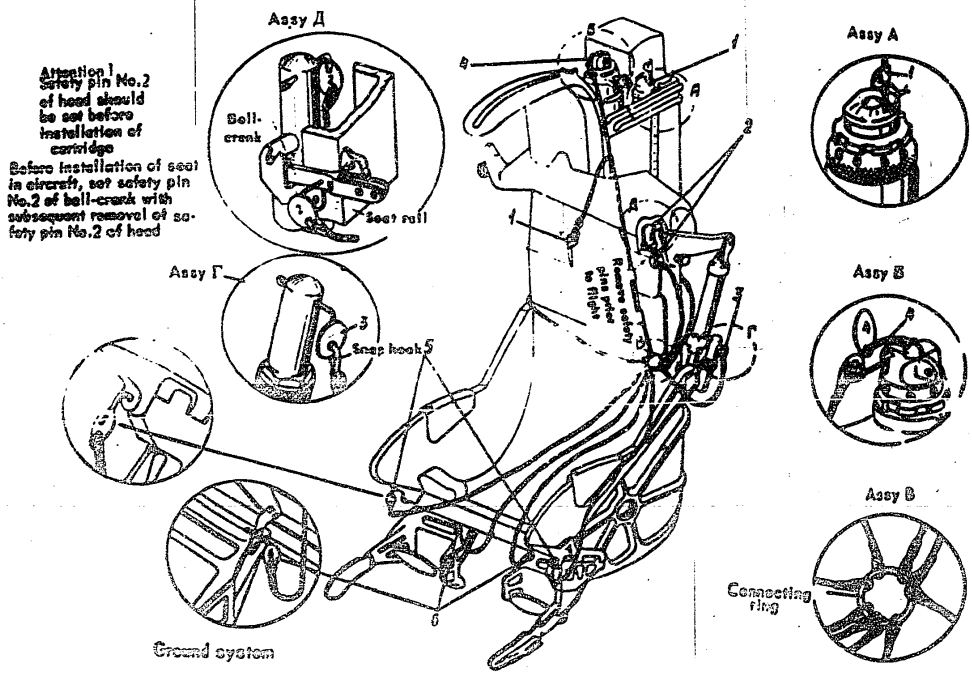

Fig.51. Locking Systems

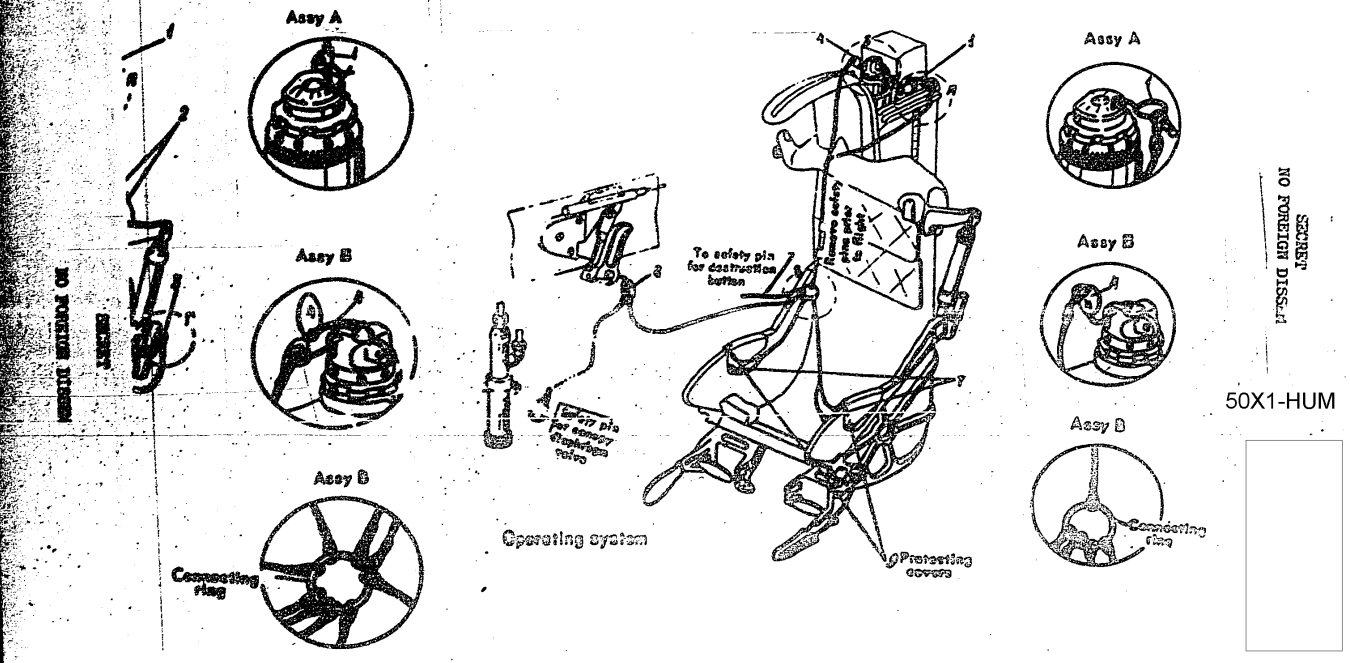

Fig.51. Locking Systems

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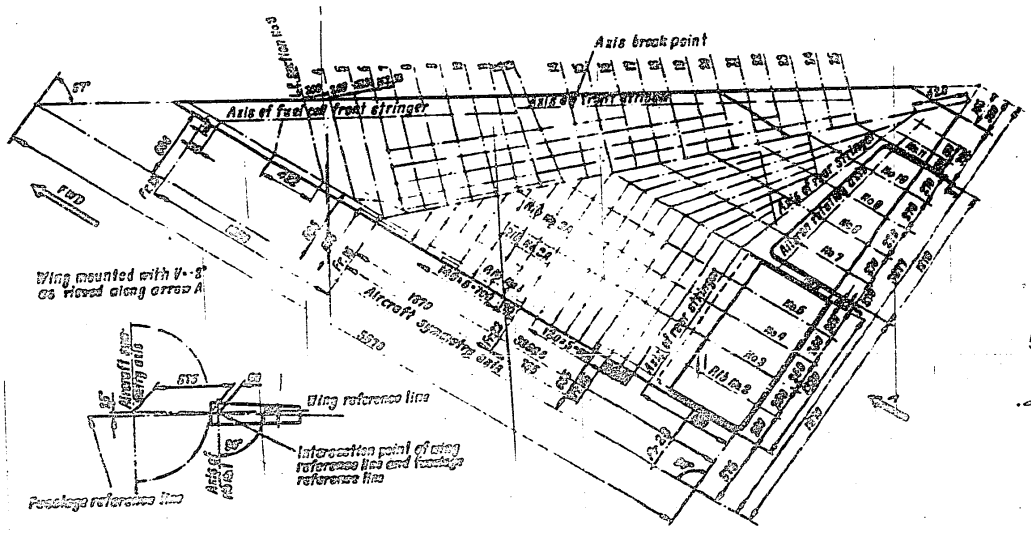

Fig.52. Geometrical Diagram of the Wing

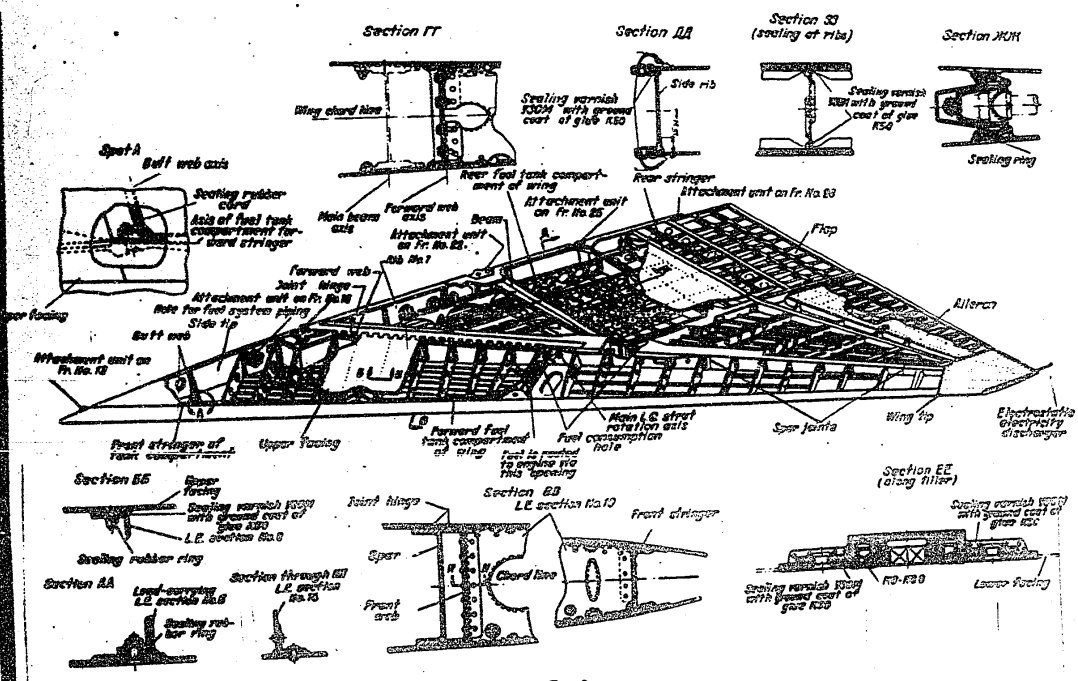

Fig. 33. Wing Structure

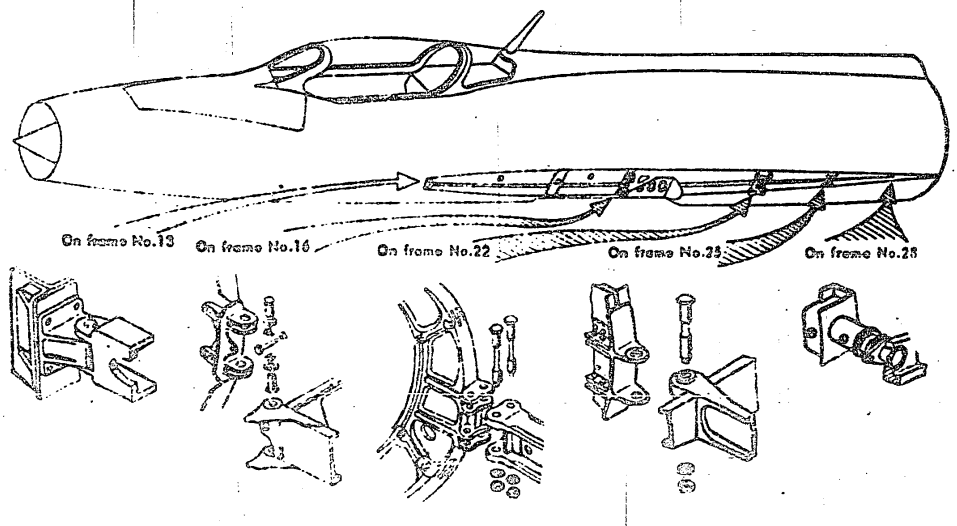

Fig.54. Wing Attachment Units

Fig.85. Aileron

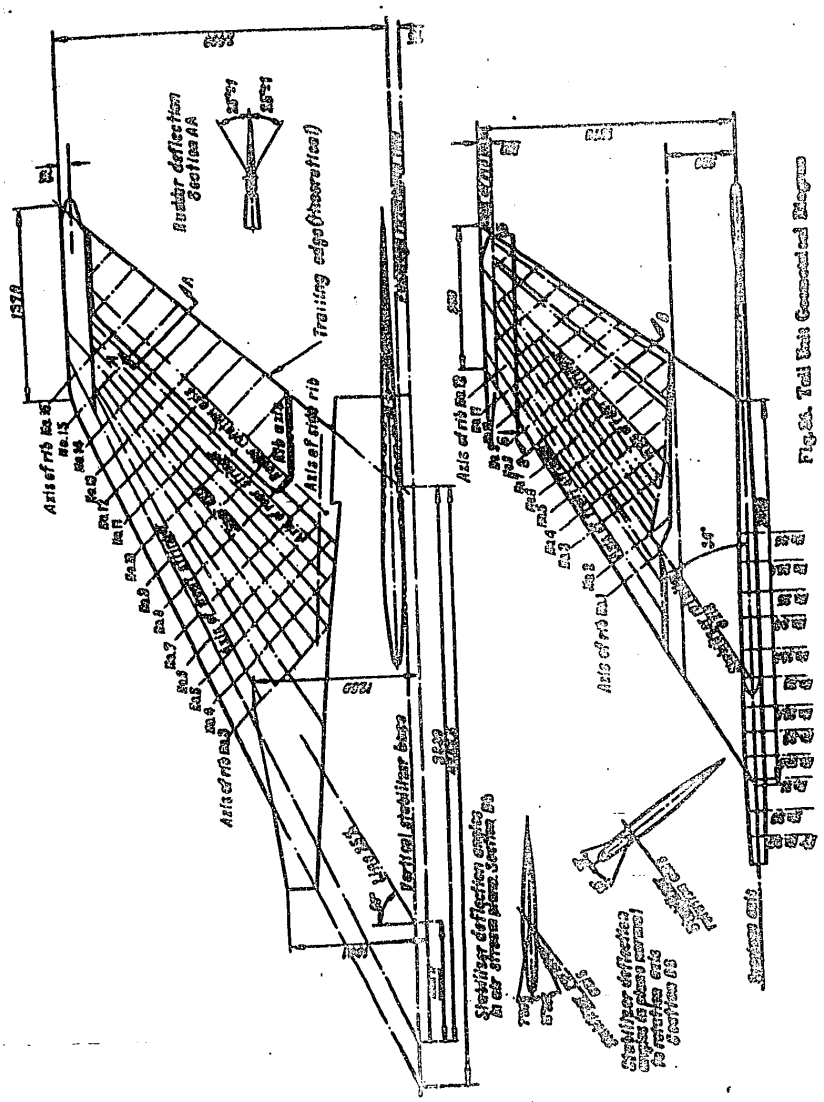

Fig.24. Tail Unit Connected Diagram

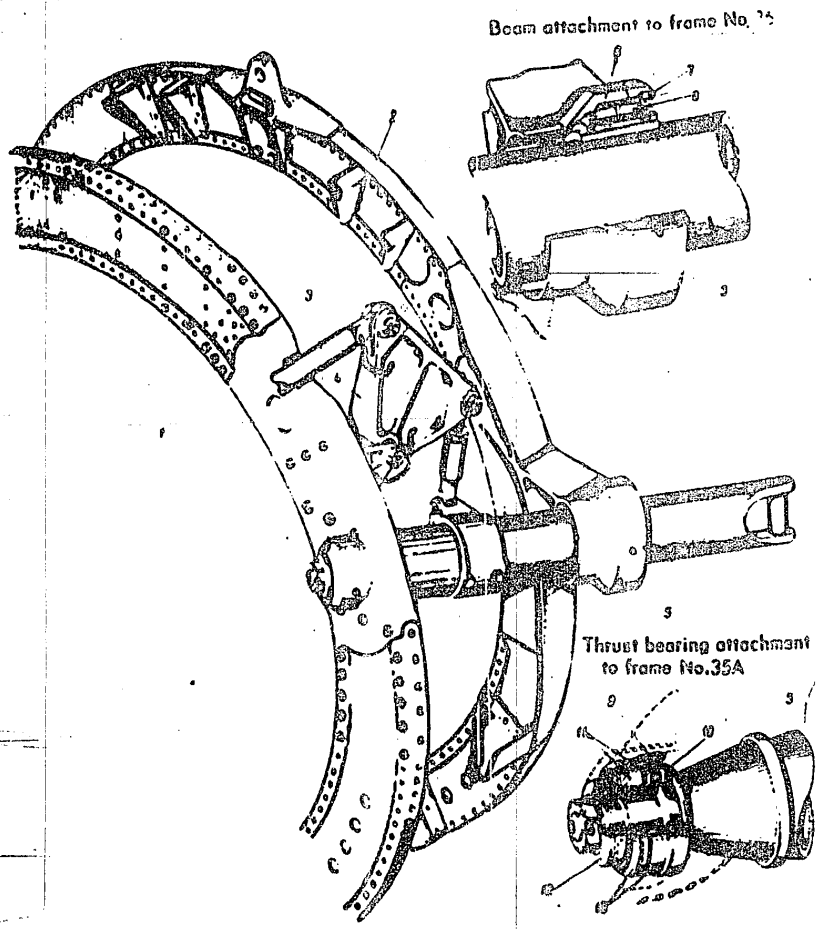

Fig.57. Stabilizer Attachment Beam

1 – frame No.35A; 2 – frame No.35; 3 – control rod; 4 – bell-crank; 5 – attachment beam; 6 – ring; 7 – nut; 8 – ball bearing; 9 – nut; 10 – cover; 11 – ball bearing; 12 – bushing; 13 – ring

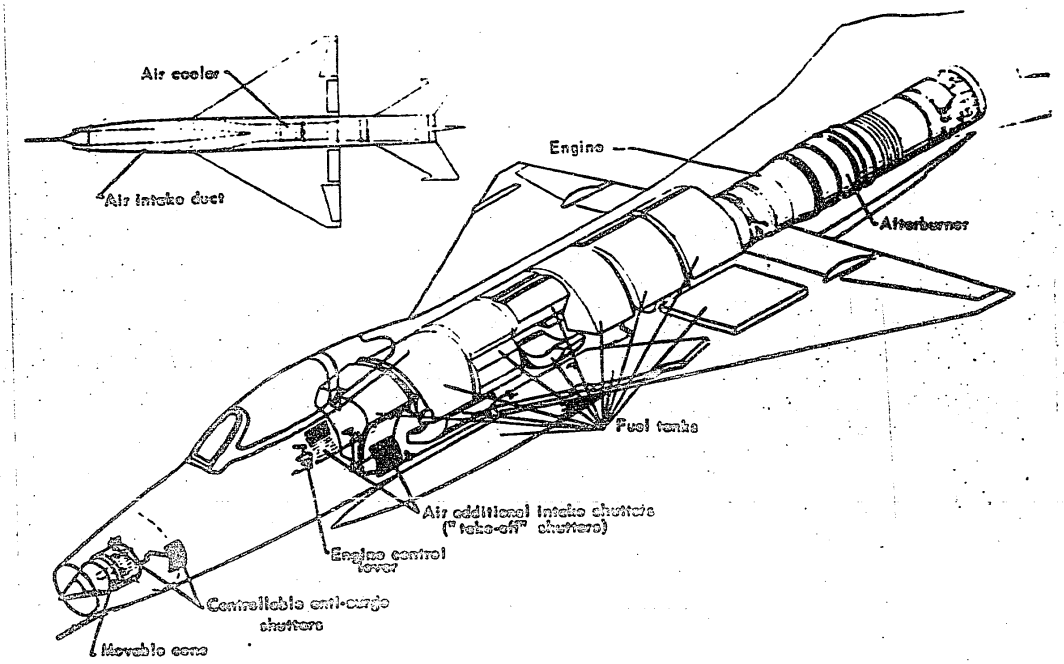

Fig.58. Power Plant (General View)

Fig.89. Engine and [illegible]

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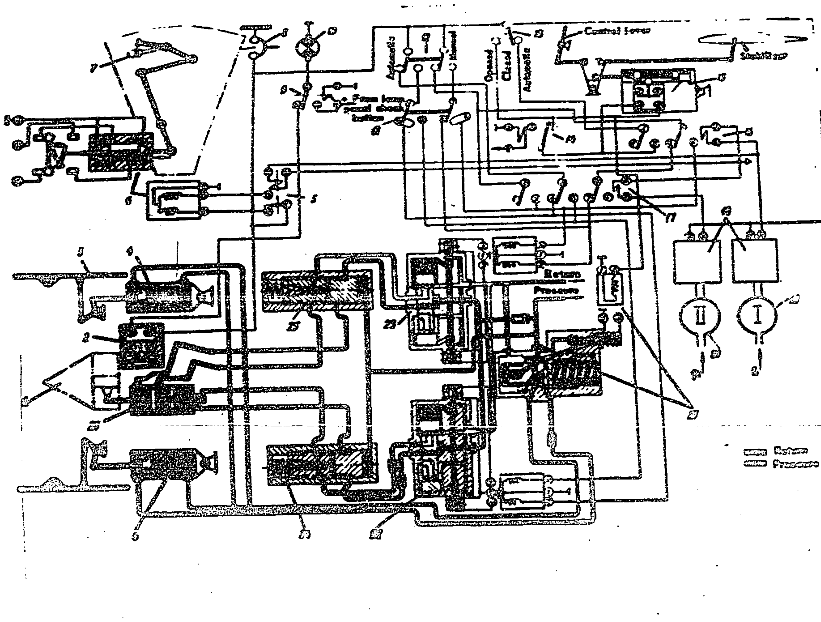

Fig.60. Diagram of Movable Cone and Anti-Surge Shutters Control

1 – movable cone; 2 – microswitch KB-9A (reference 105M) in the circuit of the cone extended position indication system; 3 – anti-surge shutters; 4 – hydraulic cylinder; 5 – engine control lever blocking system cut-in relay TKE-52ПД; 6 – electromagnet ЭМО-2/2 (reference 75M) of engine control lever blocking system; 7 – M number stop on engine control lever; 8 – cone-engine control lever blocking system circuit breaker АЗС-10 (reference 33M); 9 – relay for checking panel lamps and hydraulic system warning lamps, TKE-56ПД (reference 86M); 10 – cone extended position warning lamp (reference 104M); 11 – cone manual control selector switch (reference 57M); 12 – cone selector 2ПП-45 (reference 54M); 13 – anti-surge shutter control selector 1ПП-45 (reference 120M); 14 – relay TKE-21ПД (reference 141M) for blocking anti-surge shutters at augmentation; 15 – microswitch KB-9A (reference 114M) in anti-surge shutter control circuit; 16 – cone control relay TKE-53ПД (reference 126M); 17 – cone control relay TKE-53ПД (reference 127M); 18 – filters МР-1.5 (reference 58M) and МР-1.9 (reference 125M) in M number transducer circuit; 19 – M number transducer МР-1.5 (reference 66M); 20 – M number transducer МР-1.9 (reference 124M); 21 – anti-surge shutter control valve ГА-13А (reference 121M); 22 – electro-hydraulic valve ГА-183 controlling cone extension to second position (reference 122M); 23 – electro-hydraulic valve ГА-183 controlling cone extension to first position (reference 72M); 24 – hydraulic lock; 25 – hydraulic lock; 26 – cone control three-position cylinder.

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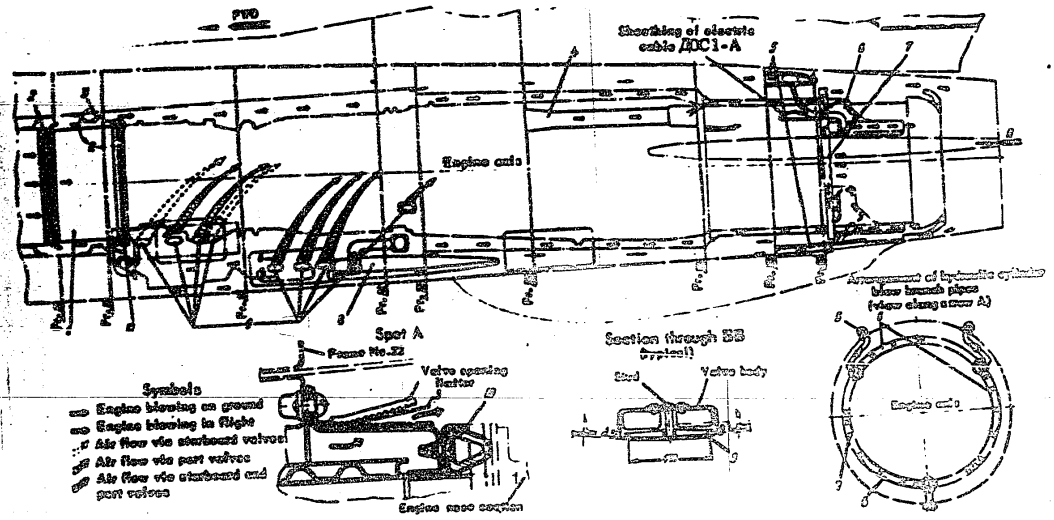

Fig.61. Diagram of Engine Compartment Blowing

1 – air section; 2 – gauze-protected parts; 3 – plate valve; 4 – branch pipe; 5 – branch pipes; 6 – shroud; 7 – jet nozzle flap control ring; 8 – branch pipe; 9 – disc valves; 10 – profile.

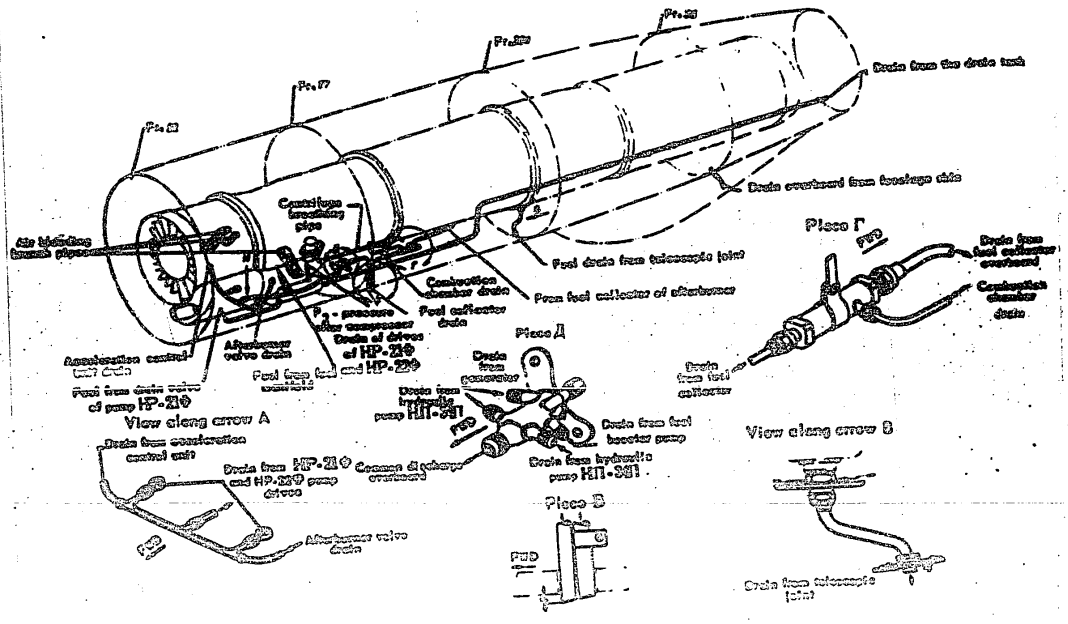

Fig.62. Power Plant Breathing and Drain Systems

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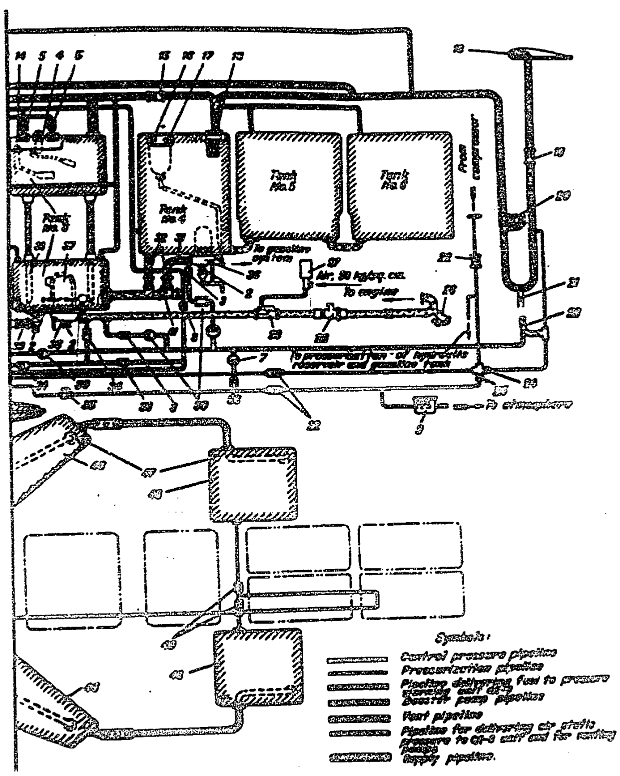


Fig.63. Key Diagram of Fuel System

1 – booster pump 622A; 2 – drain valve; 3 – throttles, dia. 0.8 mm; 4 – float valves in tanks No.1 and No.2; 5 – float valve filter; 6 – throttle, dia. 2.1 [illegible] mm; 7 – pressure warning unit СДУ2-0.25; 8 – vent valve of wing tank consumption system; 9 – safety valve box; 10 – vent valve of wing tank filling system; 11 – interconnecting pipe between tanks No.1 and No.2; 12 – branch pipes for filling wing tanks; 13 – fuel filler neck; 14 – low level fuel warning transmitter (C3-1[illegible]); 15 – non-return valve; 16 – gasoline tank filler neck; 17 – gasoline tank; 18 – velocity head intake branch pipe; 19 – non-return valve with port, dia. 3 mm; 20 – safety valves; 21 – throttle, dia. 3 mm; 22 – non-return valves; 23 – special connections; 24 – throttle, dia. 3 mm; 25 – throttle, dia. 2 mm; 26 – drain valve; 27 – electropneumatic valve [illegible]; 28 – flowmeter transmitter PTC-16A; 29 – shut-off valve; 30 – pressure warning units; 31 – throttle, dia. 25 mm; 32 – non-return valves; 33 – control pressure filter; 34 – non-return valves; 35 – vacuum valve; 36 – booster pump 4[illegible]; 37 – inverted flight valve; 38 – non-return valves; 39 – pipeline with non-return valve; 40 – throttle, dia. 17 mm; 41 – special valve; 42 – non-return valve; 43 – drop tank filler neck; 44 – branch pipe with non-return valve; 45 – gauze filter; 46 – front wing tanks; 47 – drain plugs; 48 – rear wing tanks; 49 – throttles, dia. 7 mm; 50 – non-return valves; 51 – protective gauze; 52 – non-return valves for wing tanks filling; 53 – throttle, dia. 1 mm.

Fig.64. Fuel System Component Parts(For keys to ref. numbers see Fig.63)

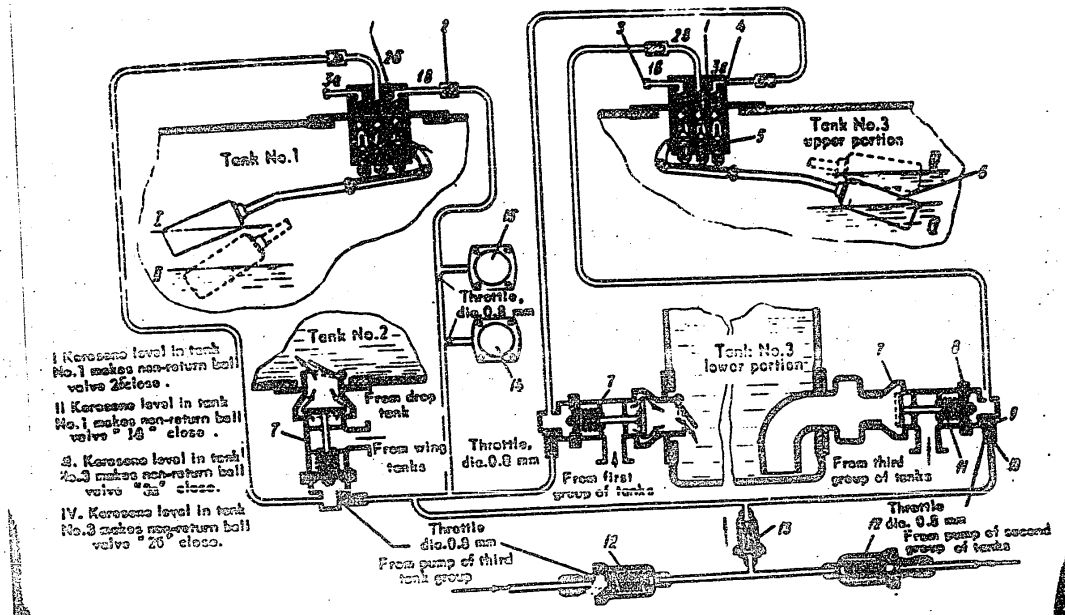
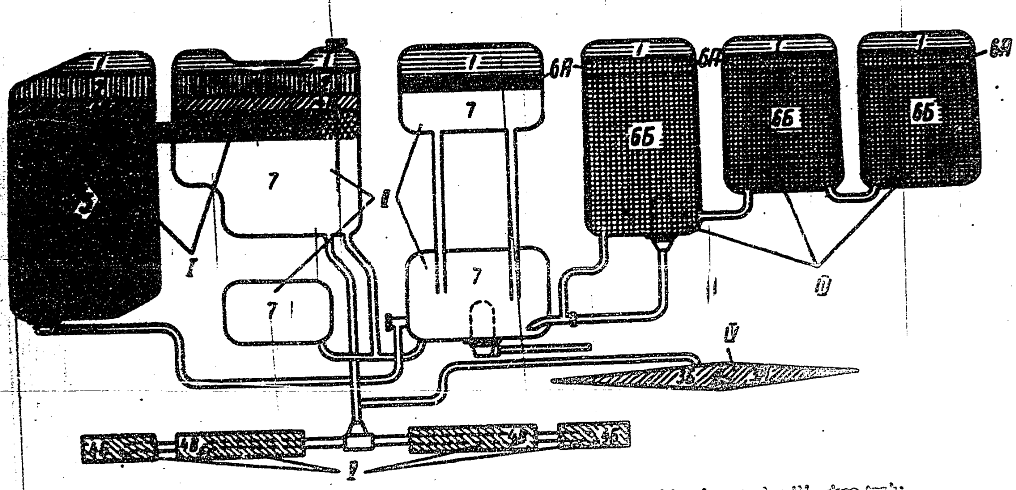


Fig.65. Operational Diagram of Special and Float Valves

1 – float valves; 2 – float valve filters; 3 – plug 4 – non-return ball valve; 5 – floating rods; 6 – floats; 7 – special valve; 8 – diaphragm; 9 – protective washer; 10 – non-return ball valve; 11 – special valve spring; 12 – non-return valves; 13 – control pressure filter; 14 – vent valve of wing tanks, filling system; 15 – vent valve of wing tanks consumption system.

Fuel consumption diagram.



Note: I - group of fuselage tanks; II - group of fuselage tanks; III - group of fuselage tanks; IV - drop tank; V - wing tanks; 1, 2, 3A, 3Б; 4 A; 4Б; 5; 6A; 6Б; 7 - sequence of consumption; 7 - low fuel level making warning lamp "[illegible] lit. remainder" come on (остаток [illegible] литров).

Fig.66. Diagram of Fuel Consumption

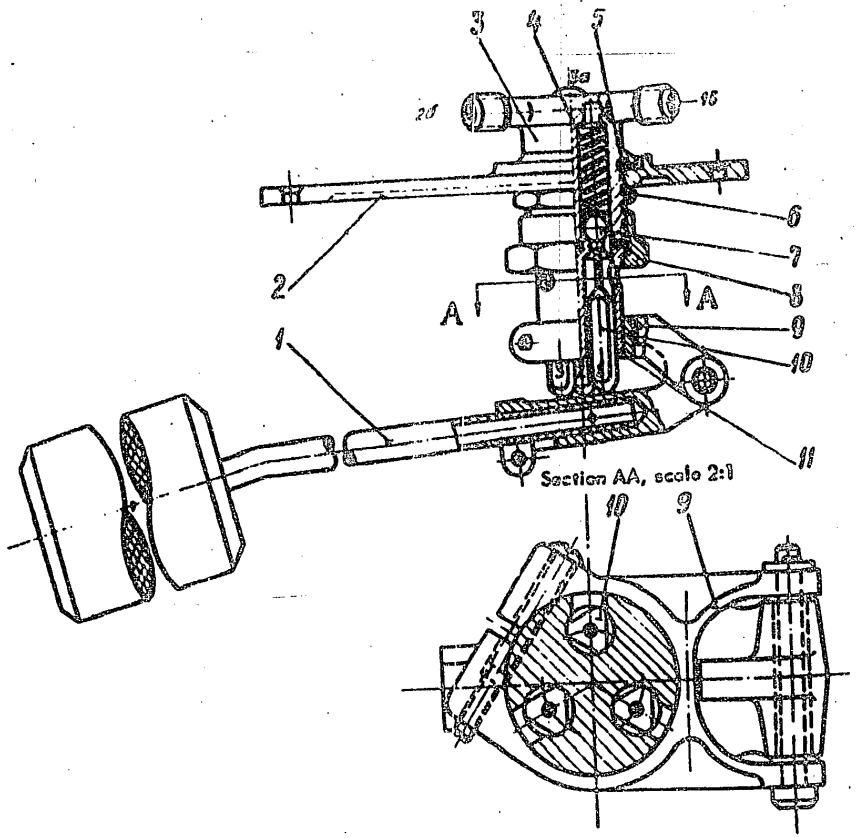


Fig.67. Float Valve

1 – float lever; 2 – plate; 3 – body; 4 – spring; 5 – rubber ring; 6 – nut; 7 – ball; 8 – valve nut; 9 – bracket; 10 – floating rod; 11 – bush.

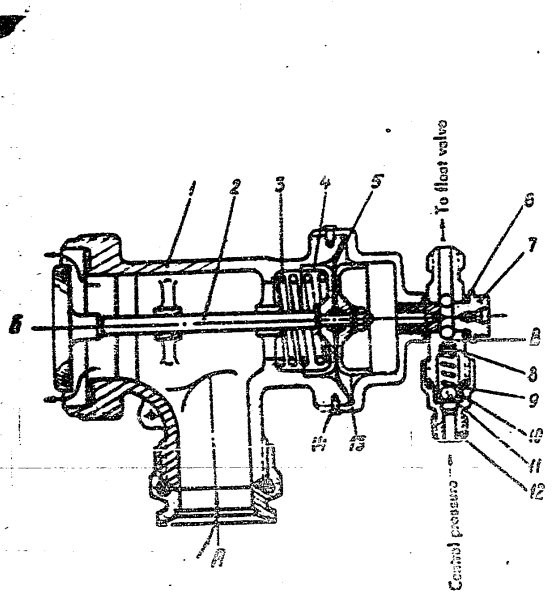
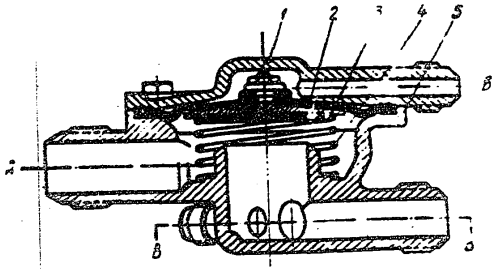


Fig.68. Special Valve
A – from booster pump line; B – to tank; B – throttling port, dia. 0.8 mm; 1 – body; 2 – valve; 3 – spring; 4 – sliding protective washer; 5 – rubber diaphragm; 6 – packing; 7 – clamp; 8 – protective washer; 9 – spring; 10 – body; 11 – ball; 12 – connection; 13 – cover; 14 – screw.



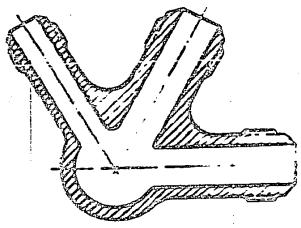


Fig.69. Vent Valve
1 – cover; 2 – diaphragm; 3 – valve; 4 – spring; 5 – body.

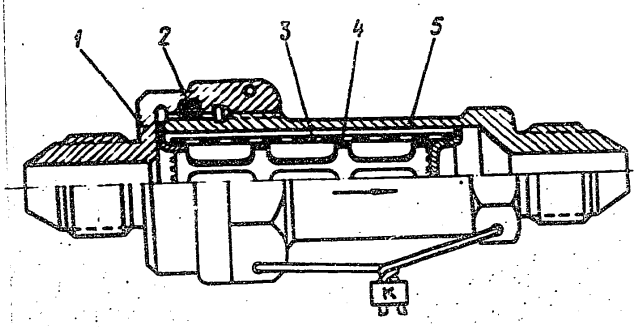


Fig.70. Control Pressure Filter
1 — cap; 2 — rubber rings; 3 — piece; 4 — frame-work; 5 — body.

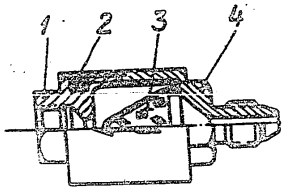


Fig.71. Float Valve Filter
1 — connection; 2 — ring; 3 — grate; 4 — body.

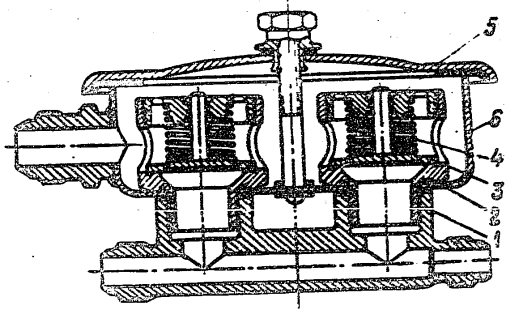
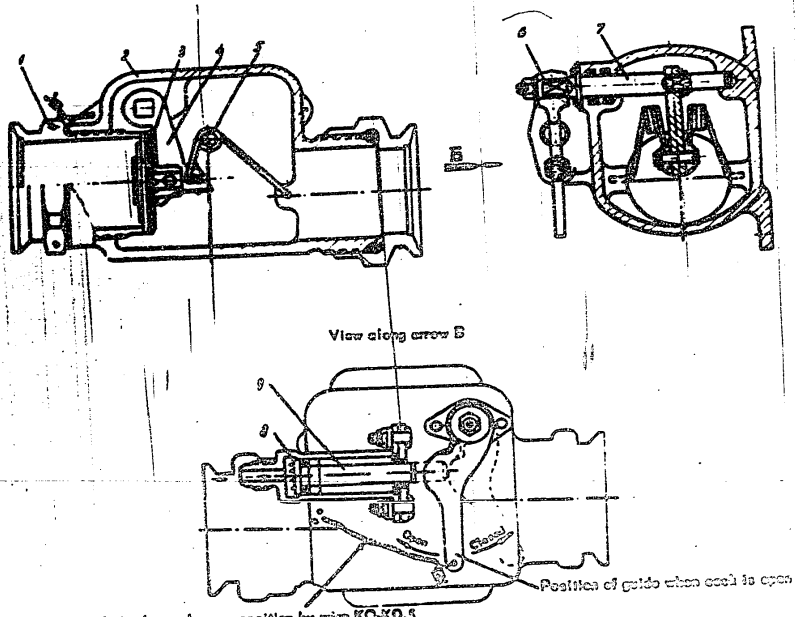
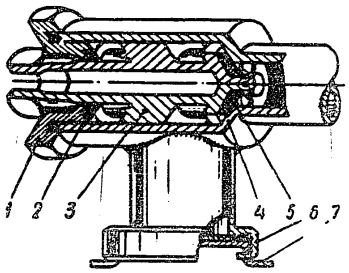


Fig.72. Safety Valves Box
1 — body; 2 — valve body; 3 — valve; 4 — springs; 5 — cover; 6 — box.



Lock the guide in the cock open position by wire KO-KO.5 (without sagging)

Fig.78. Shut-Off Cock
1 – connection; 2 – body; 3 – valve; 4 – lever; 5 – spring; 6 – guide; 7 – cam; 8 – cylinder; 9 – piston.



Operation diagram

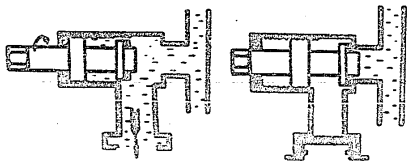


Fig.74. Drain Valve
1 – nut; 2 – rubber gasket; 3 – rod; 4 – body; 5 – valve; 6 – drain connection; 7 – plug.

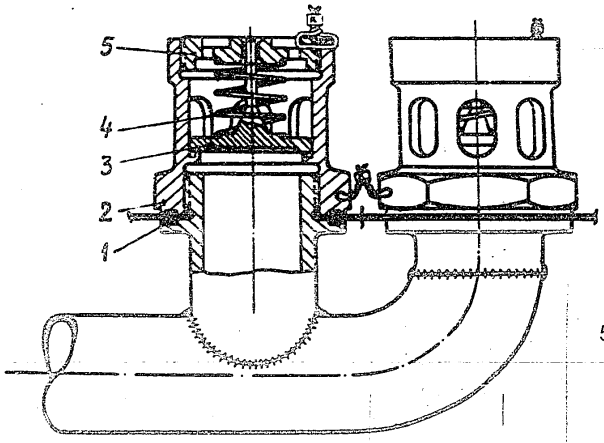


Fig.75. Safety Valves
1 – gasket; 2 – body; 3 – valve; 4 – spring; 5 – cover.

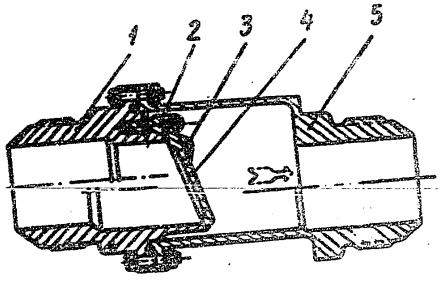


Fig.76. Non-Return Valve
1 – connection; 2 – lug; 3 – spring; 4 – flap valve; 5 – body.

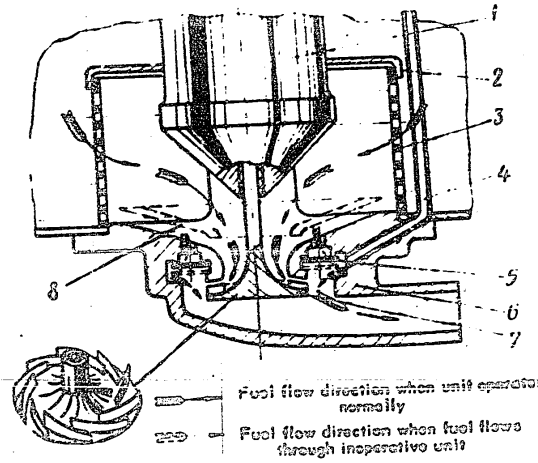


Fig.77. Operation Diagram of Unit 695A-2
1 – electric motor; 2 – body flange; 3 – gauze filter; 4 – by-pass pipe; 5 – non-return valve; 6 – body; 7 – impeller; 8 – deflector (only for unit 423A).

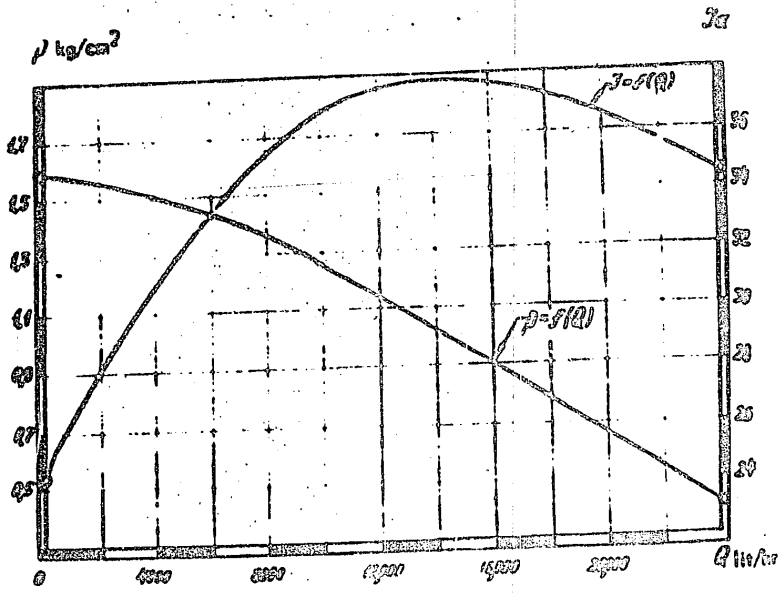


Fig.78. Graph Showing Pressure and Current Intensity Versus Unit 495A Capacity

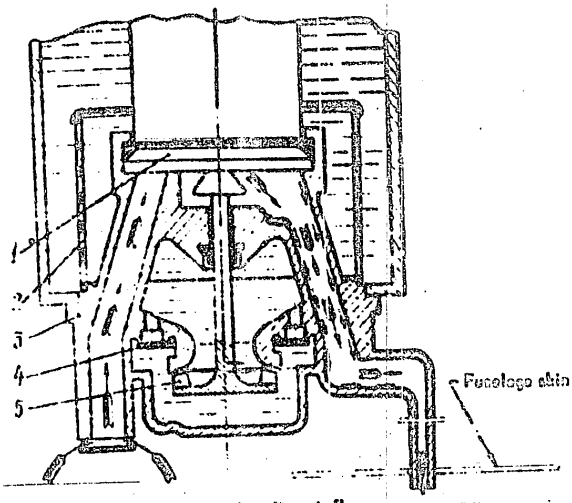


Fig.79. Diagram of Cooling Electric Motor of Unit 403A-2
1 – electric motor; 2 – gauze filter; 3 – body; 4 – valve; 5 – impeller.

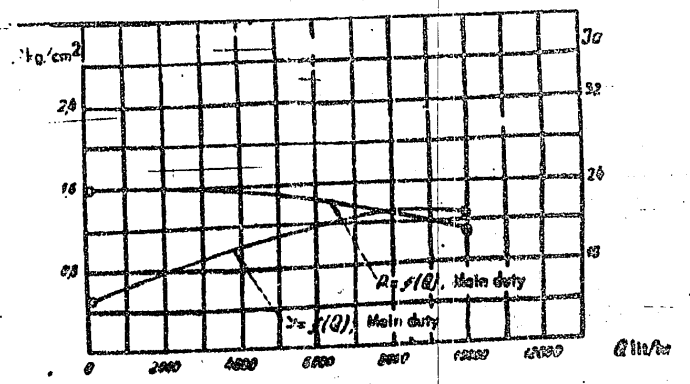


Fig.80. Graph Representing Pressure and Current Intensity versus Capacity of Unit 422A

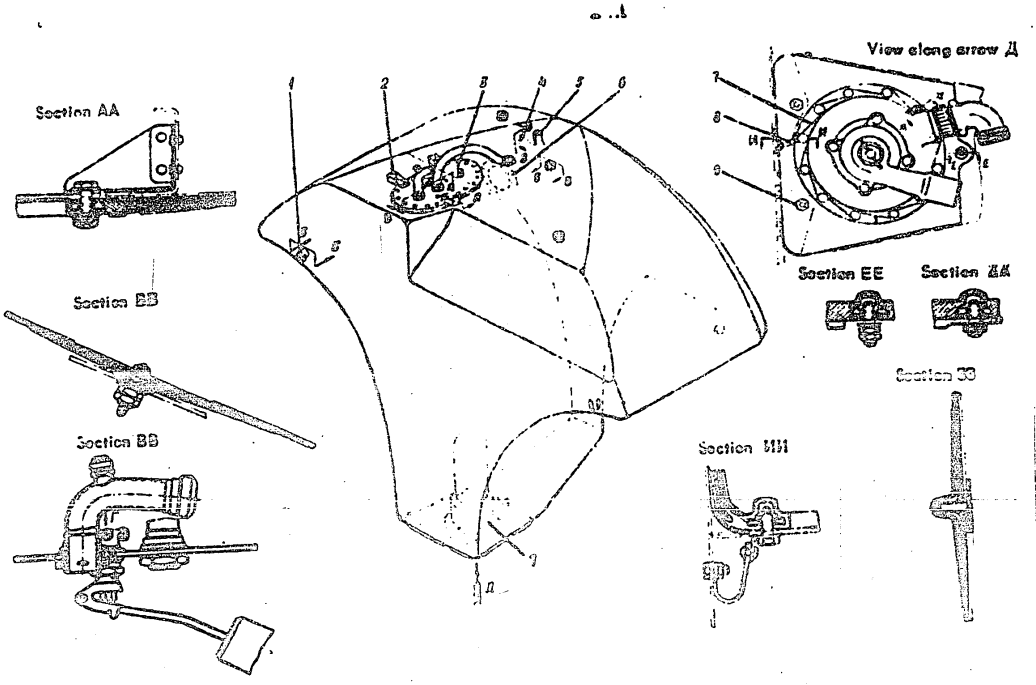


Fig.81. Tank No.1

1 – pin; 2 – bracket; 3 – plate; 4 – screw; 5 – soft pipe union; 6 – flange; 7 – bolt 4224; 8 – bonding jumper; 9 – stud.

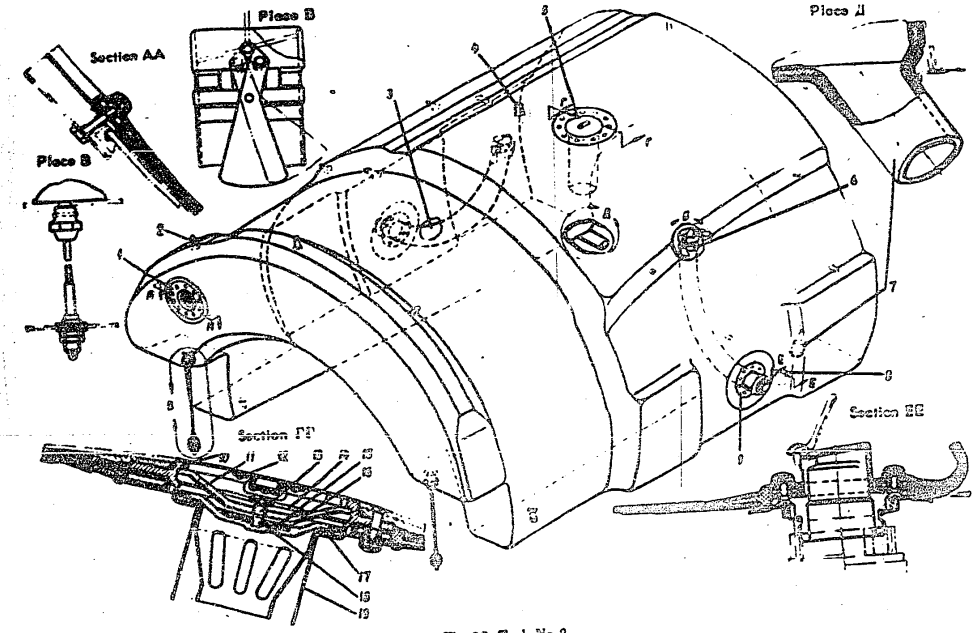


Fig.82. Tank No.2

1 – flange; 2 – pin; 3 – connections for filling wing tanks; 4 – vent pipe union; 5 – filler; 6 – inertia valves; 7 – soft pipe union; 8 – return valve; 9 – side flanges; 10 – filler body; 11 – crosspiece; 12 – access panel; 13 – screw; 14 – small plate; 15 – disc; 16 – locking ring; 17 – cover; 18 – locking washer; 19 – screen filter.

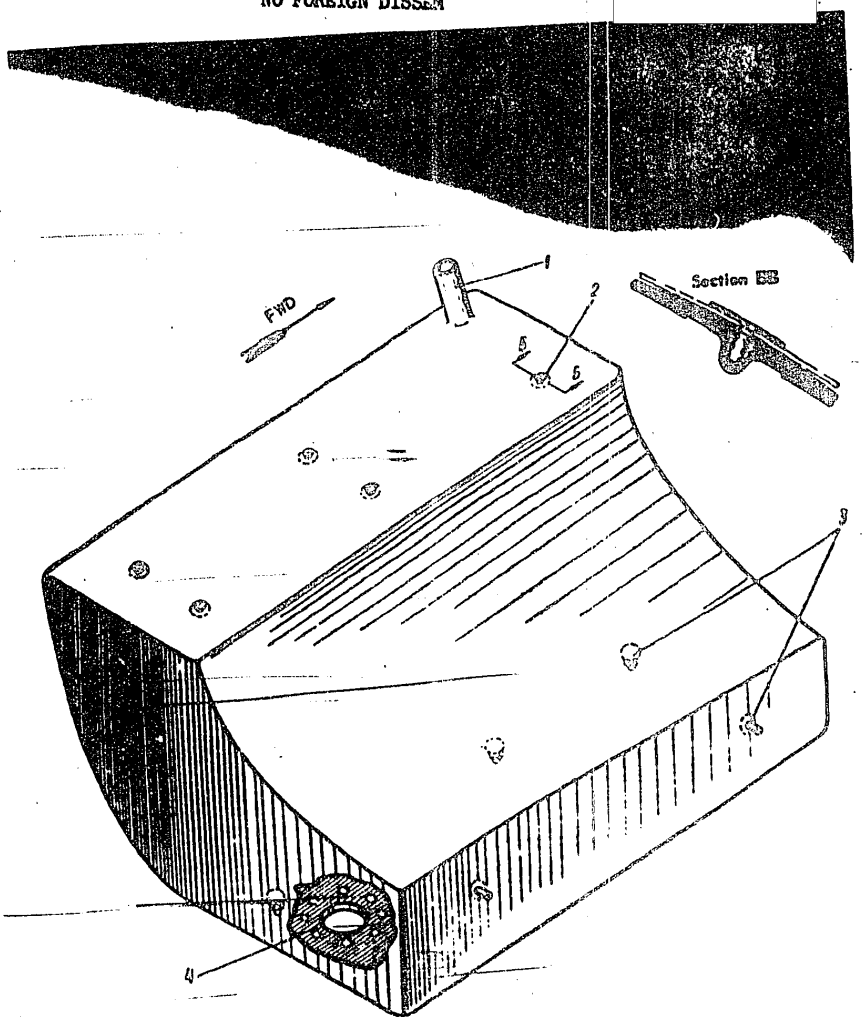


Fig.13. Tank No.2a
1 – soft pipe union; 2 – screw; 3 – pin; 4 – flange.

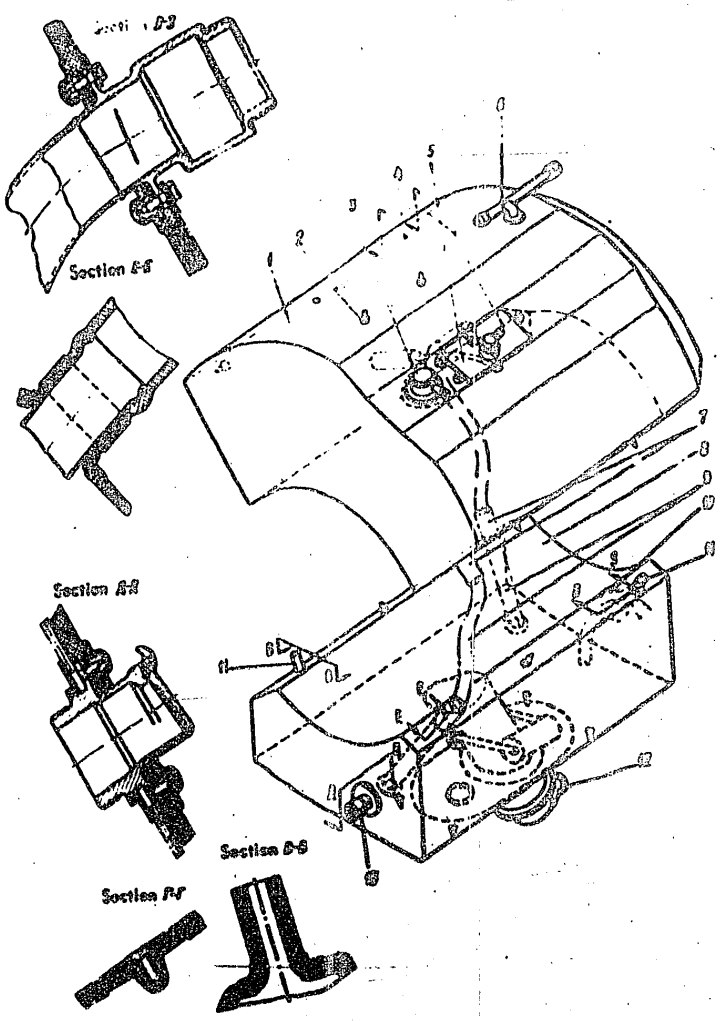


Fig.84. Tank No.3

1 – tank upper half; 2 – pipe; 3 – fuel low level warning unit CЭ-1637; 4 – screw; 5 – float valve; 6 – vent connection; 7 – soft pipe union; 8 – tank lower half; 9 – connecting pipe; 10 – connection; 11 – soft pipe union; 12 – unit 605A-12 13 – return valve.

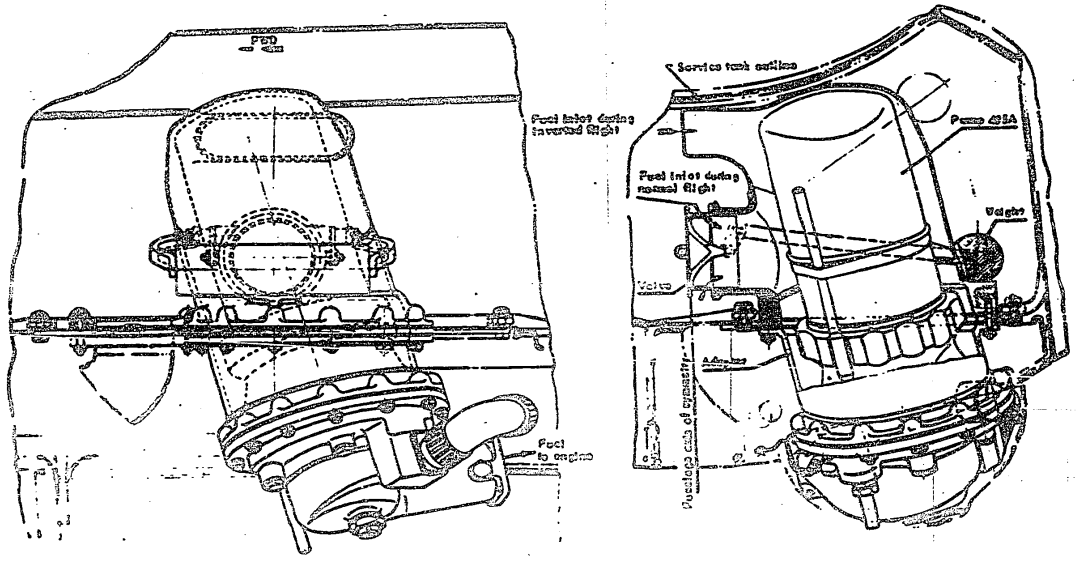


Fig.23. Inverted Flight Valve

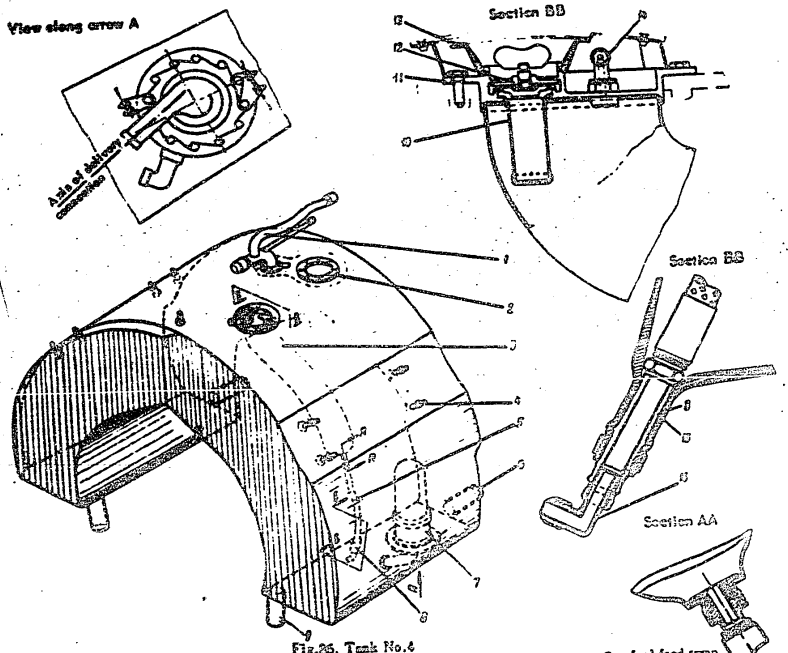
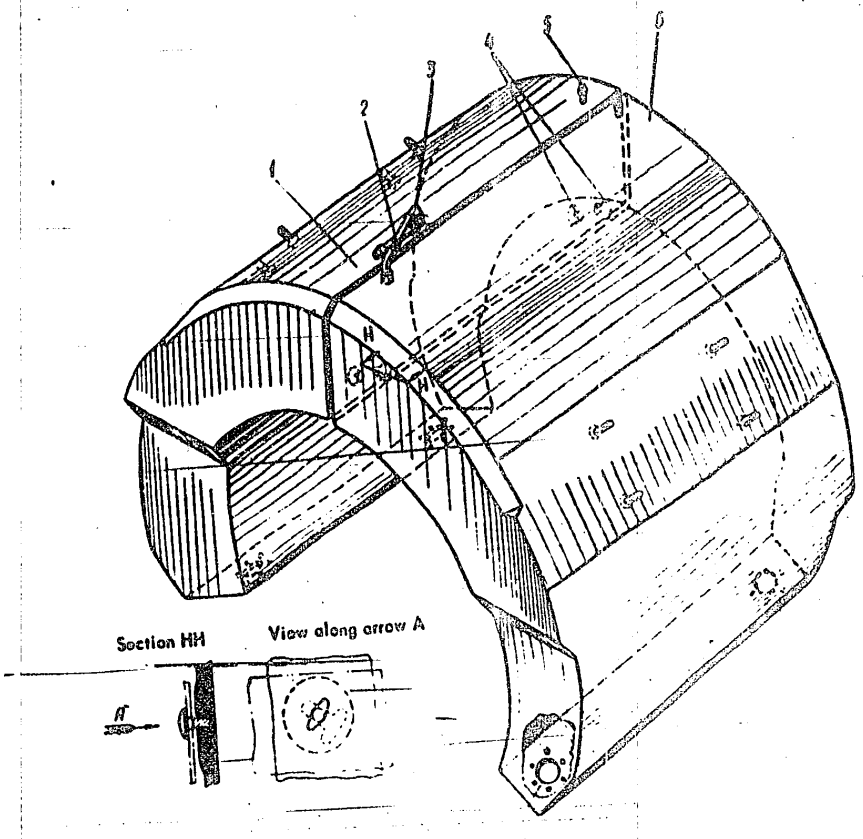


Fig.25. Tank No.4

1 – vent connection; 2 – filler; 3 – gasoline tank; 4 – pipe; 5 – flexible hose; 6 – soft pipe union; 7 – fuel feed pump GSA-2; 8 – soft pipe union; 9 – soft pipe union; 10 – screen filter; 11 – plate of gasoline tank; 12 – filler cap; 13 – funnel; 14 – preservation pipe union; 15 – hose nozzle; 16 – pipe union.



7

Fig.87. Tank No.5

1 – tank right-hand part; 2 – vent pipe; 3 – soft pipe union; 4 – fastenerer; 5 – pin; 6 – tank left-hand part; 7 – flange.

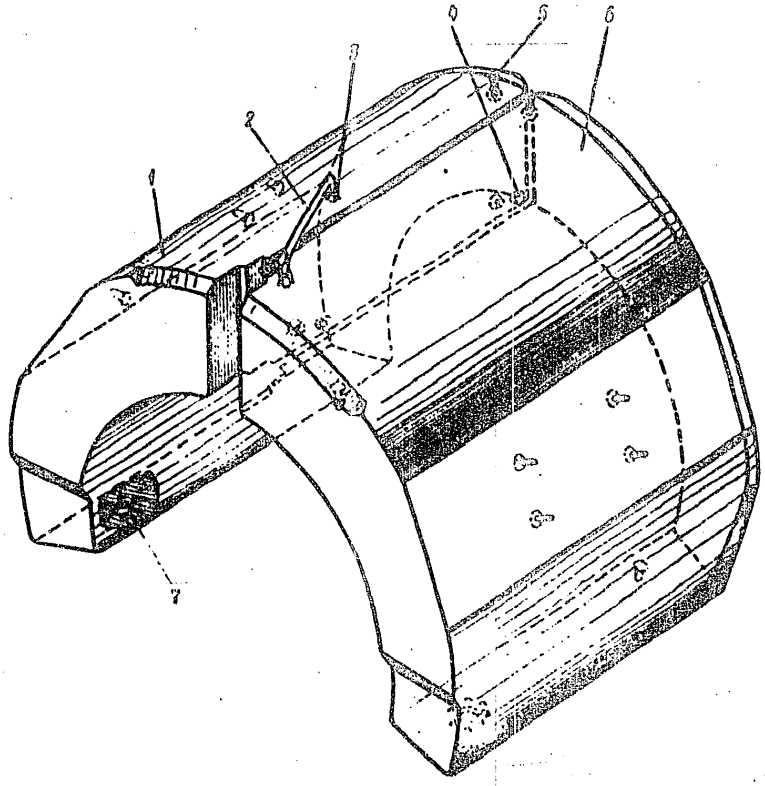


Fig.68. Tank No.6
1 – tank right-hand part; 2 – vent pipe line; 3 – soft pipe union; 4 – fastener; 5 – pipe; 6 – tank left-hand part; 7 – flange.

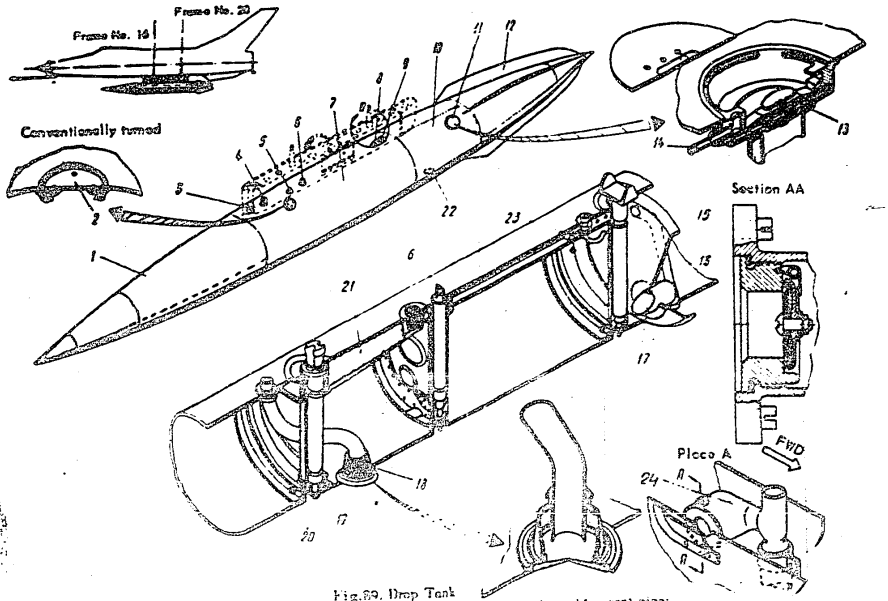


Fig.69. Drop Tank

1 – tank front part; 2 – drain cock; 3 – consumption pipe union; 4 – front rest; 5 – bushing for explosive pusher; 6 – eyebolt; 7 – tank middle part; 8 – pressurization pipe union; 9 – rear rest; 10 – tank rear part; 11 – filler; 12 – stabilizer plate; 13 – filler cross-piece; 14 – vent pipe; 15 – partition; 16 – by-pass pipe; 17 – return valve; 18 – screen filter; 19 – drain plug cap; 20 – profiles; 21 – beam; 22 – drain plug; 23 – pressurization pipe; 24 – vacuum valve

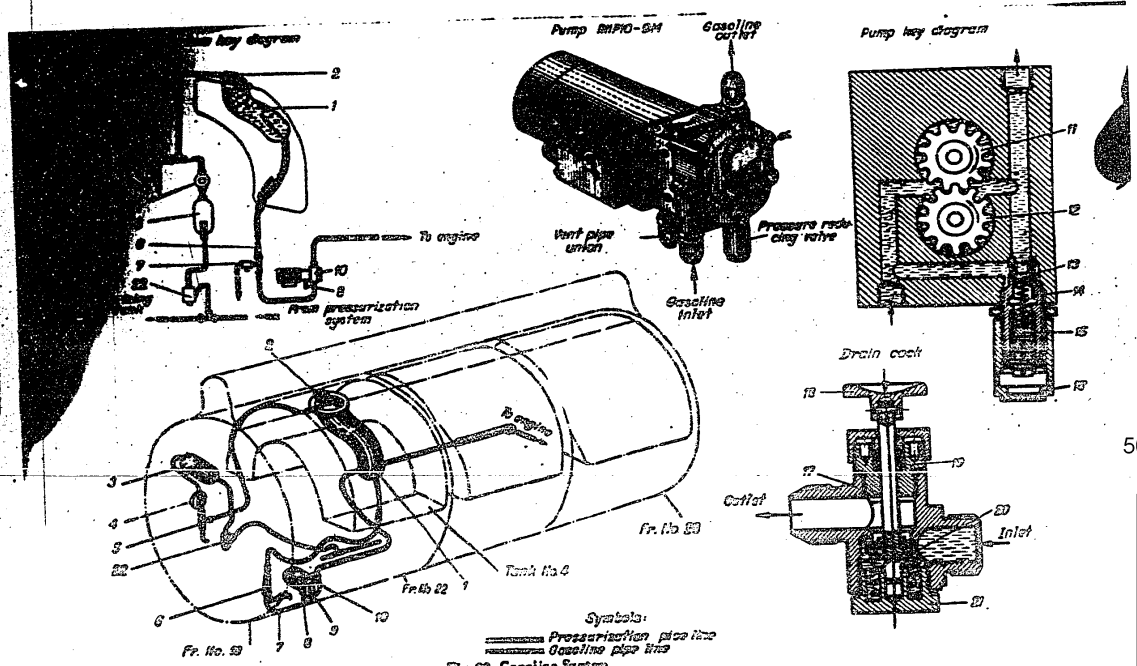


Fig.20. Gasoline System

1 – gasoline tank; 2 – filler; 3 – pressurization unit; 4 – PB-0.4 reducer; 5 – return and safety valves; 6 – screen filter; 7 – drain cock; 8 – drain pipe; 9 – reducing valve; 10 – pump; 11 – driving gear; 12 – driven gear; 13 – cap; 14 – valve body; 15 – adjusting screw; 16 – cap; 17 – drain cock body; 18 – knob; 19 – rod; 20 – valve; 21 – cover; 22 – moisture trap.

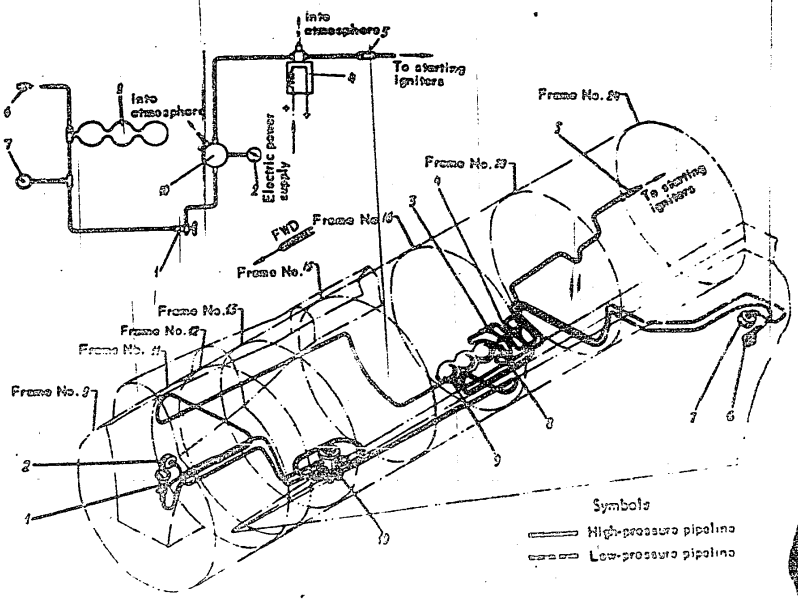
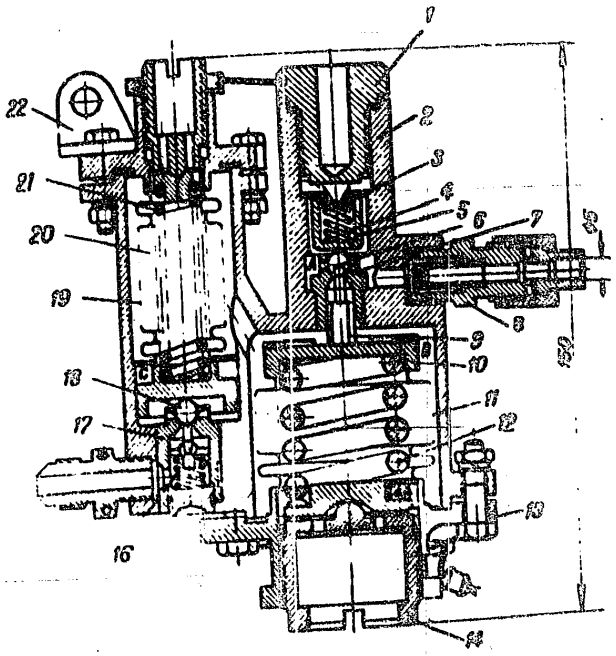


Fig.91. Oxygen Feed System. Arrangement and Key Diagrams

1 – oxygen valve KR-25C; 2 – pressure gauge MK-16; 3 – T-piece; 4 – electropneumatic valve 6944M; 5 – return valve; 6 – charging connection 11100; 7 – pressure gauge MK-12M; 8 – T-piece with return valve; 9 – oxygen bottle; 10 – [illegible] reducer 2130A.



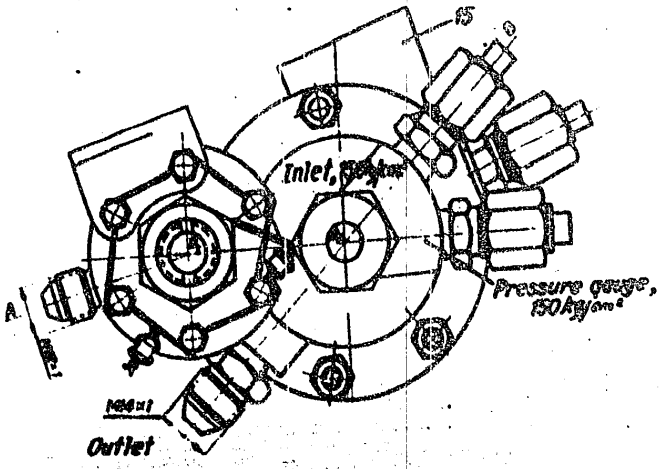


Fig.92. Oxygen Reducer 21814

1 – plug; 2 – body; 3 – plate; 4 – springs; 5 – valve; 6 – ball; 7 – seat; 8 – pipe union; 9 – tappet; 10 – bushing; 11 – sylphon; 12 – springs; 13 – flange; 14 – plug; 15 – eyes; 16 – springs; 17 – safety valve seat; 18 – ball; 19 – sylphon; 20 – safety valve; 21 – springs; 22 – eye.

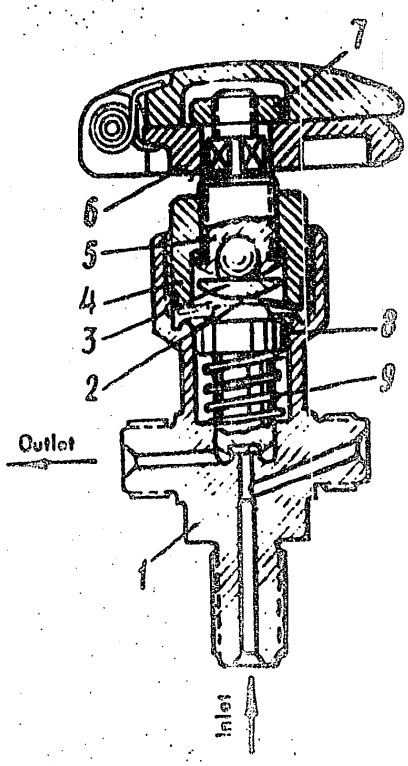


Fig.93. Oxygen Valve KB-2MC
1 – body; 2 – membrane; 3 – segment; 4 – plug; 5 – spindle; 6 – handwheel; 7 – nut; 8 – valve; 9 – spring.

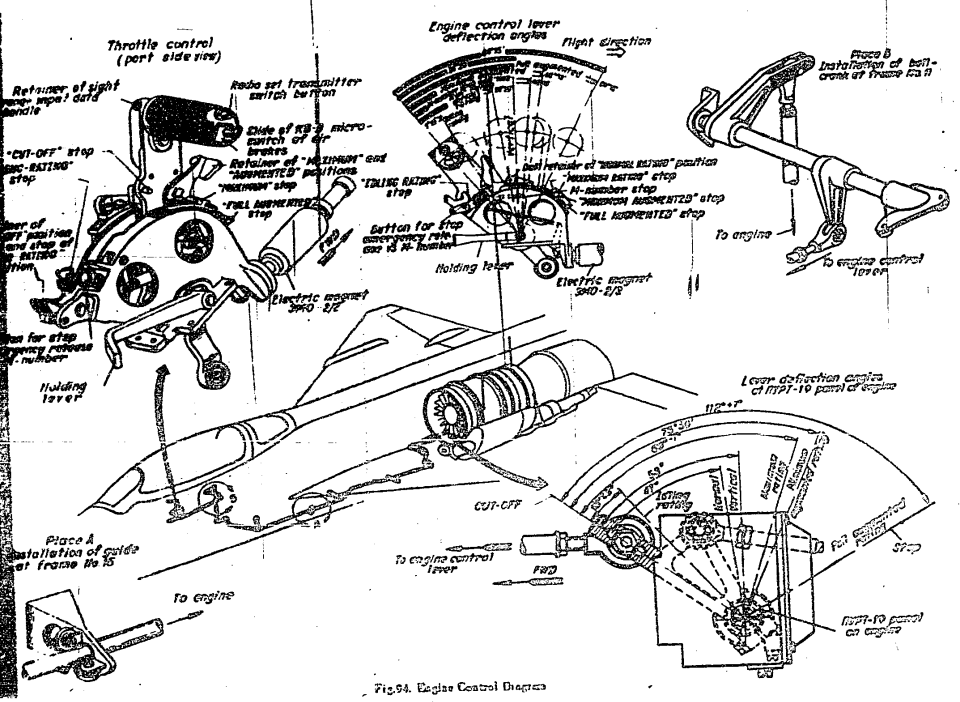


Fig.94. Engine Control Diagram

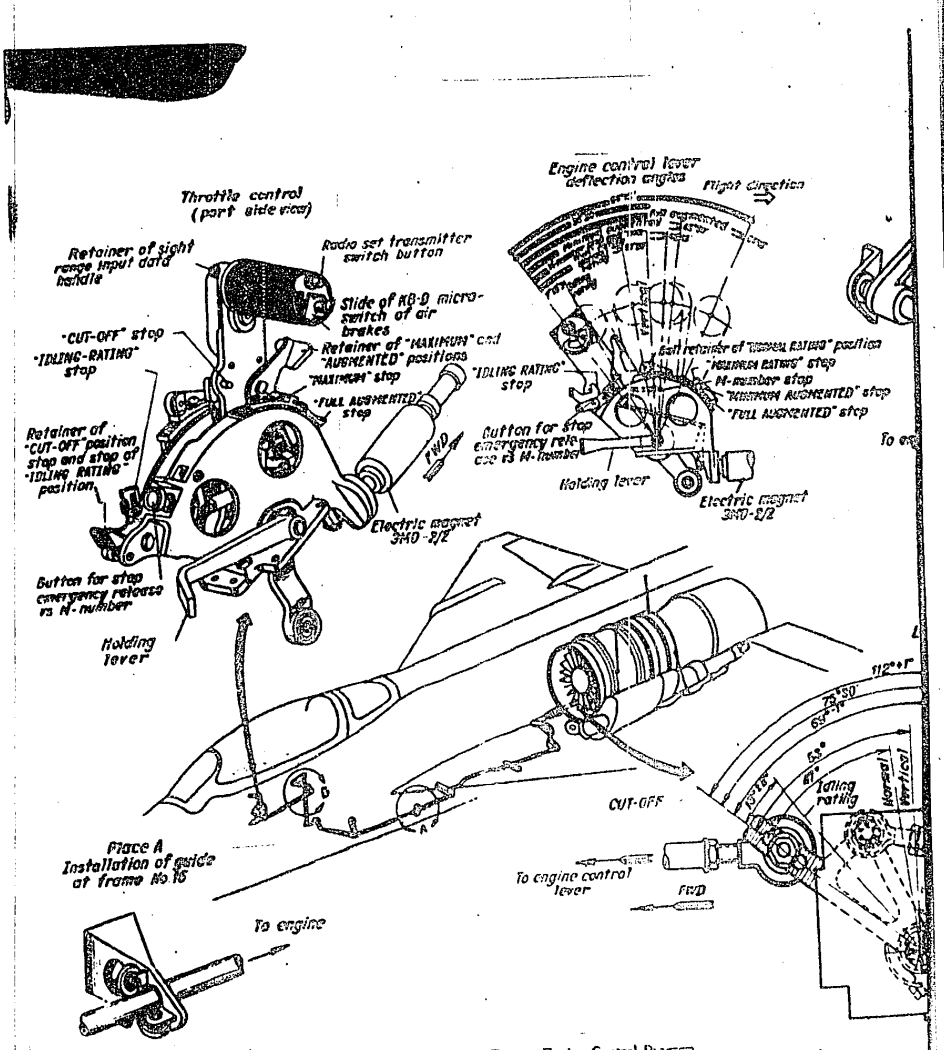


Fig.94. Engine Control Diagram

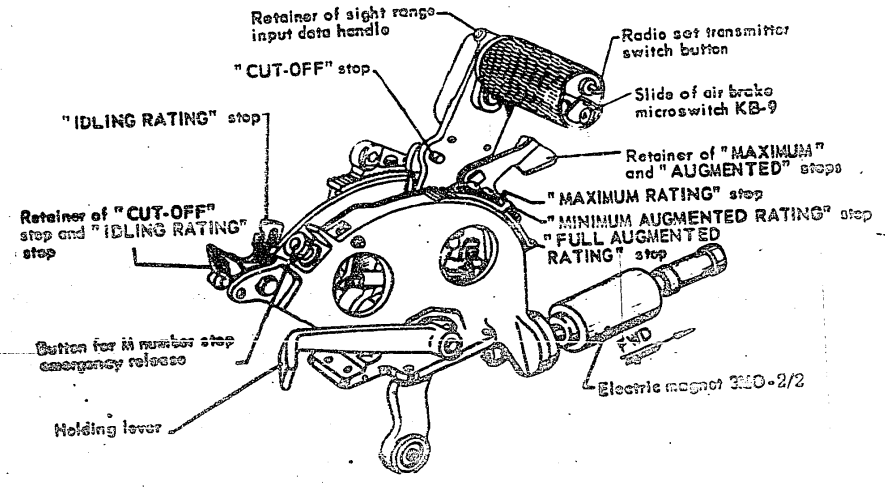


Fig.95. Throttle Control

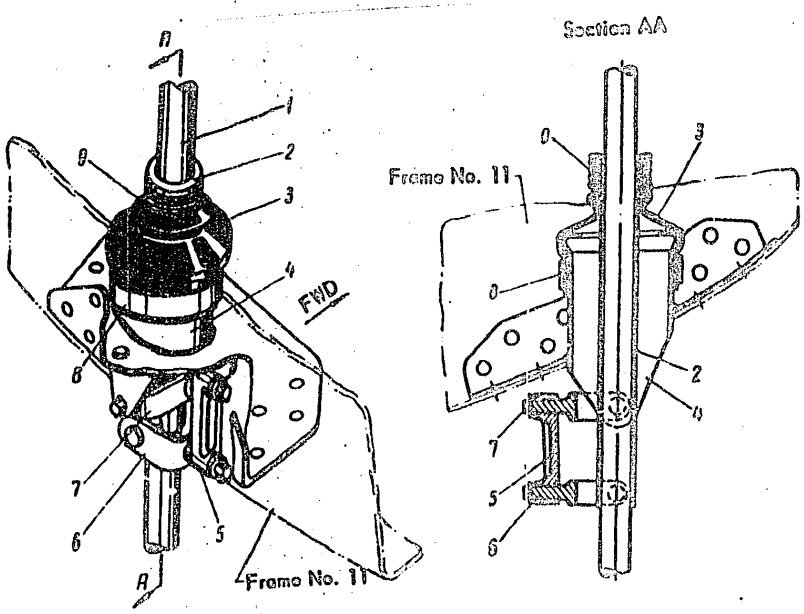
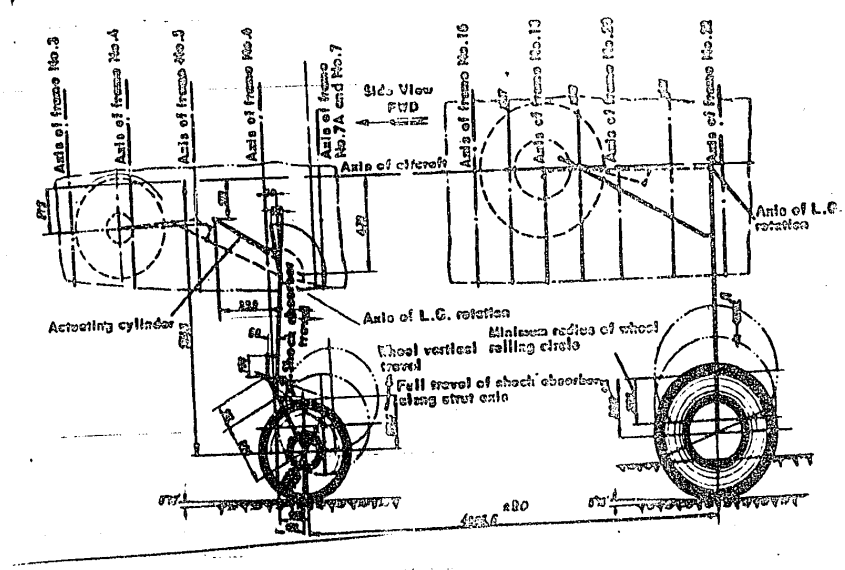


Fig.96. Pressure Sealing Unit

1 – engine control rod; 2 – bushing; 3 – sealing boot; 4 – sealing connection; 5 – shackle; 6 – clamps; 7 – clamp; 8 – collar; 9 – wire bend.



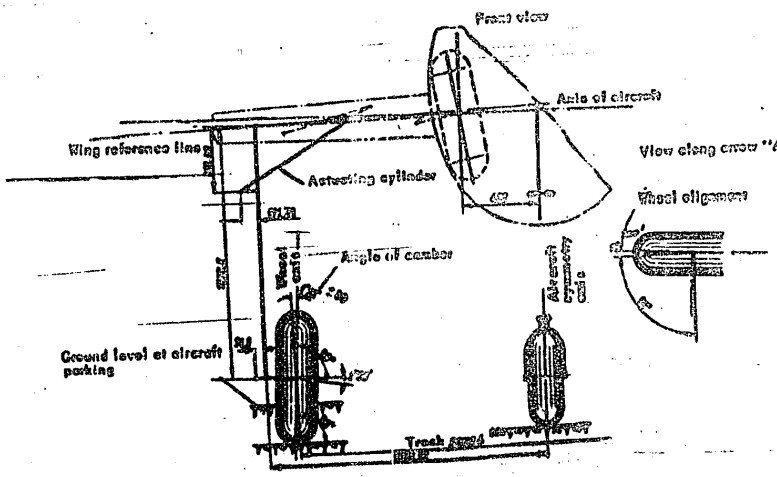


Fig.97. Landing Gear Geometrical Diagram

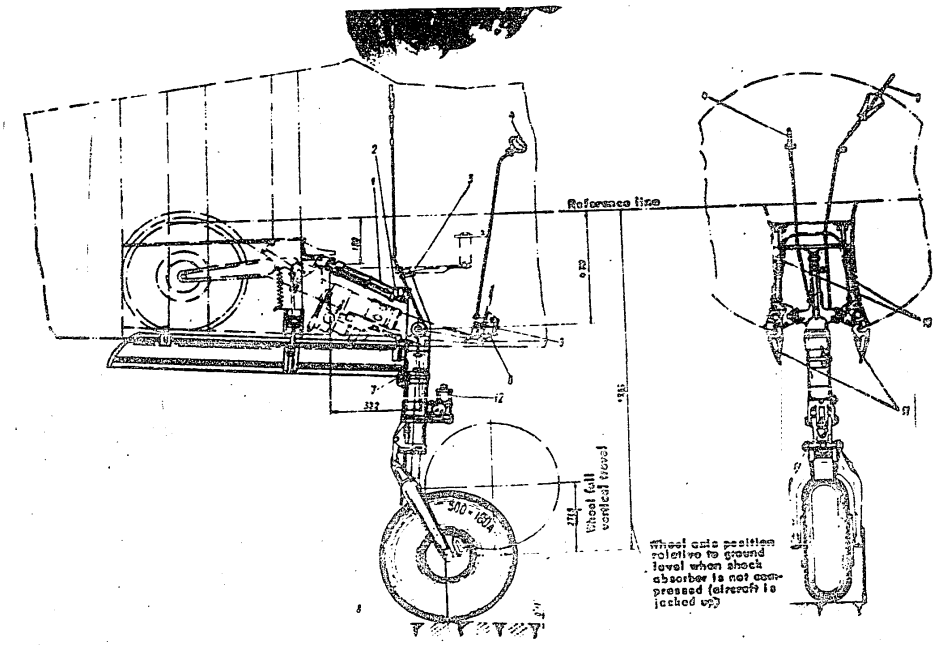


Fig.98. Nose Strut Assembly

1 — actuating cylinder; 2 — terminal switch of strut down position; 3 — nose strut support; 4 — independent strut extension control; 5 — terminal switch; 6 — up-lock; 7 — warning lamp; 8 — wheel KT-33; 9 — mechanical indicator; 10 — mechanism for opening and closing strut well doors; 11 — well doors; 12 — damper.

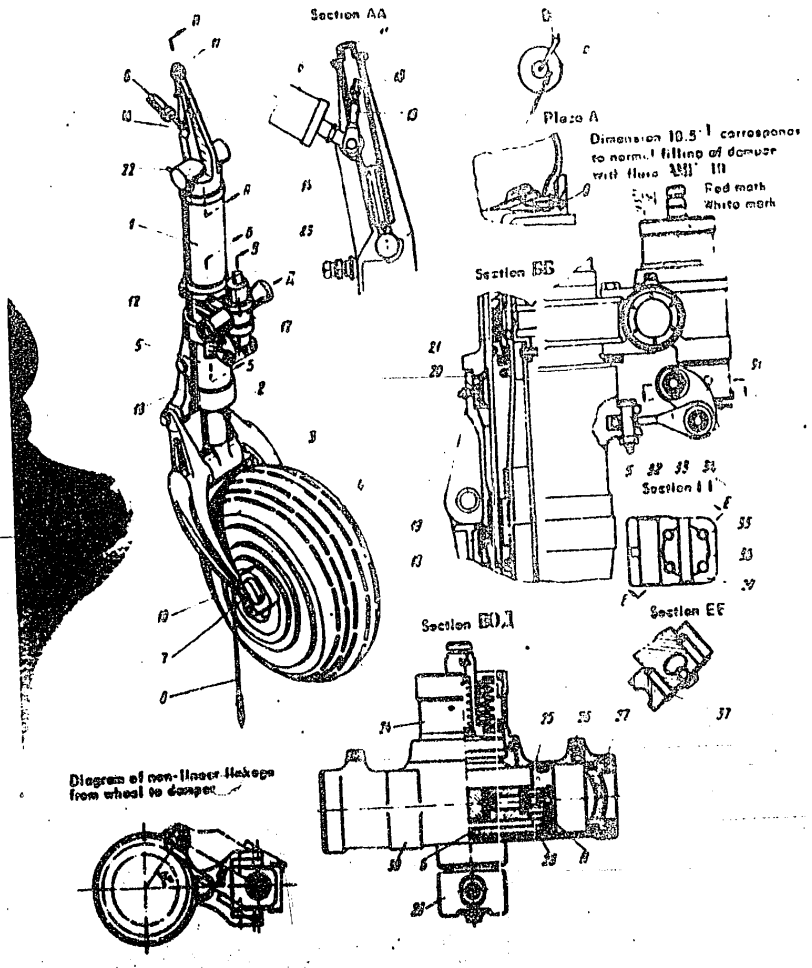


Fig.99. Landing Gear Nose Strut

1 – upper sleeve; 2 – rod; 3 – fork; 4 – wheel KT-36; 5 – lower attachment fitting with swivel coupling; 6 – hydraulic actuating cylinder; 7 – transmitter УА-30; 8 – ground cable; 9 – chamber charging connection; 10 – brake connection; 11 – fixing pin; 12 – indicating lamp; 13 – link; 14 – disc springs; 15 – bolt connecting link with fixing pin; 16 – bolt connecting link with actuating cylinder; 17 – damper; 18 – lower bearing ЦКБ-1128; 19 – tie rod; 20 – upper bearing ЦКБ-1123; 21 – balls (6 pieces arranged circumferentially) State Standard ГОСТ 3722-54; 22 – lubricator; 23 – shock absorber filler connection; 24 – compensator; 25 – plates; 26 – plug; 27 – cover; 28 – valve; 29 – cellar; 30 – body; 31 – link; 32 – lubricator; 33 – bolt; 34 – bell-crank; 35 – pin; 36 – guide; 37 – washer.

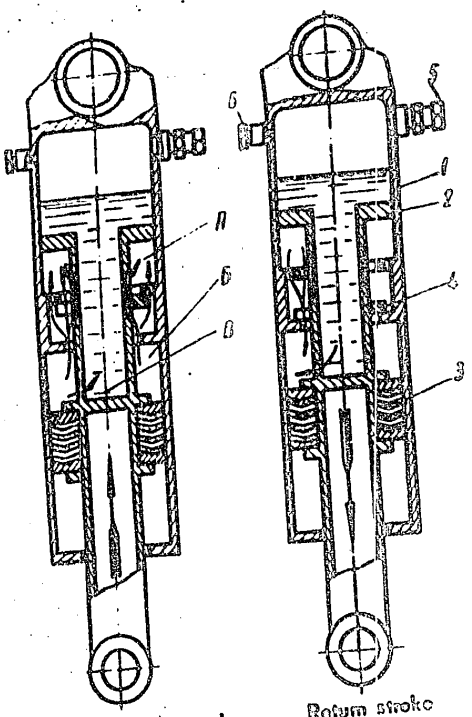
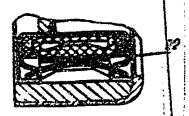
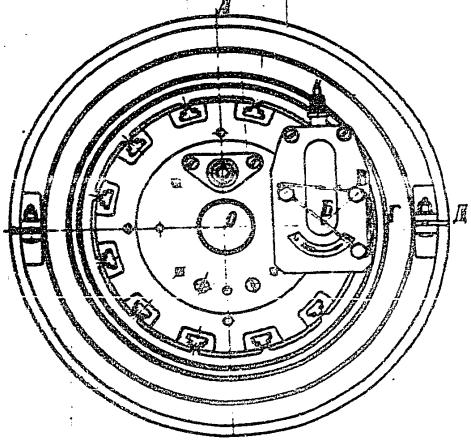


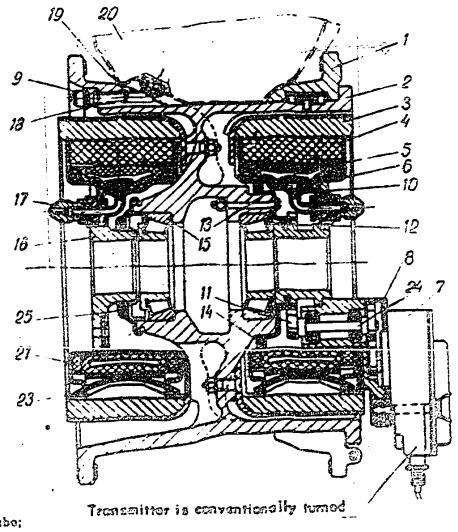
Fig.100. Diagram of Shock Absorber Operation
1 – cylinder; 2 – piston; 3 – packing assembly; 4 – valve split spring ring; 5 – connection for filling with fluid and charging with nitrogen; 6 – connection for draining excessive fluid.

Installation of packing into brake





Section АОБВГД



Transmitter is conventionally turned

Fig.101. Wheel КТ-38

1 — removable rim halves; 2 — drum; 3 — jacket; 4 — shoe; 5 — tube; 6 — cap; 7 — transmitter УА-24/2 (assembly Dwg А24-200-5); 8 — bracket; 9 — cap; 10 — valve; 11 — driven gear; 12 — gland; 13 — driving gear; 14 — gland; 15 — roller bearing; 16 — body; 17 — connection; 18 — nut; 19 — valve; 20 — tyre; 21 — adjusting ring; 22 — gasket ring; 23 — return spring; 24 — shaft; 25 — gland.

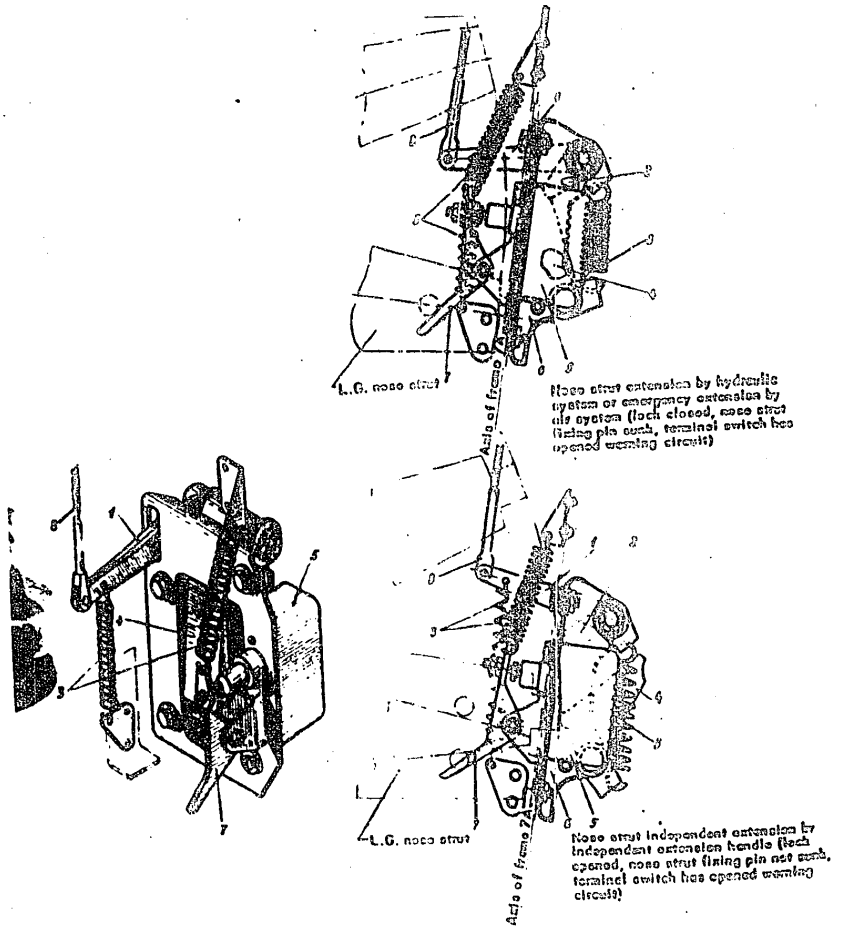


Fig.162. Up-Lock

1 – lever; 2 – cam; 3 – springs; 4 – support lever; 5 – terminal switch BK-2-142P; 6 – bracket; 7 – warning system lever; 8 – cable from independent extension handle.

Fig.103. Down-Locks

1 – hydraulic cylinder; 2 – hydraulic lock; 3 – pin of nose strut strut; 4 – front rack; 5 – rear rack; 6 – supporting ring; 7 – link; 8 – nose strut arm; 9 – disc springs.

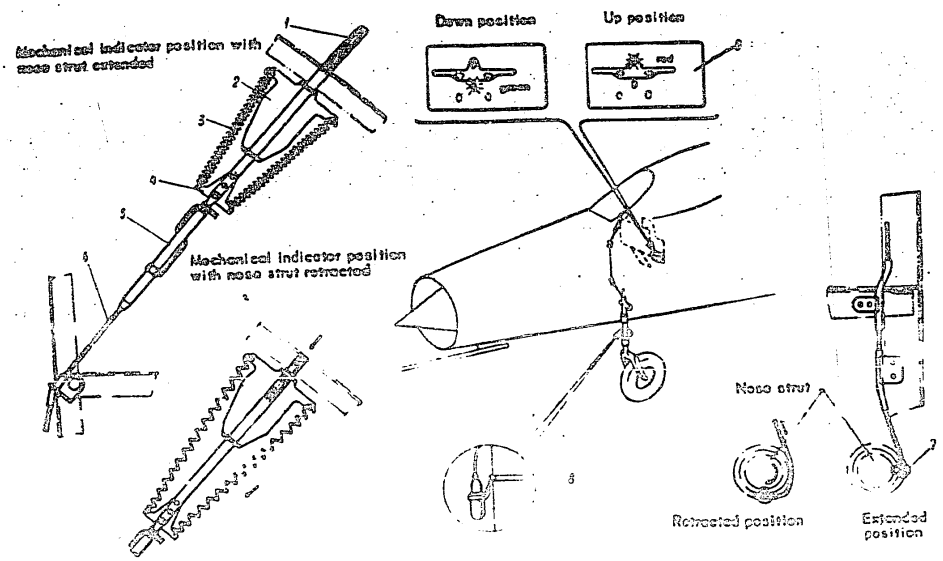


Fig.104. Nose Strut Position Warning System
1 – mechanical indicator – pin; 2 – fixed bracket; 3 – springs; 4 – bracket; 5 – adjusting turnbuckle; 6 – cable; 7 – bolt securing cable to strut; 8 – L.G. position outer indication lamps; 9 – panel ПИС-2.

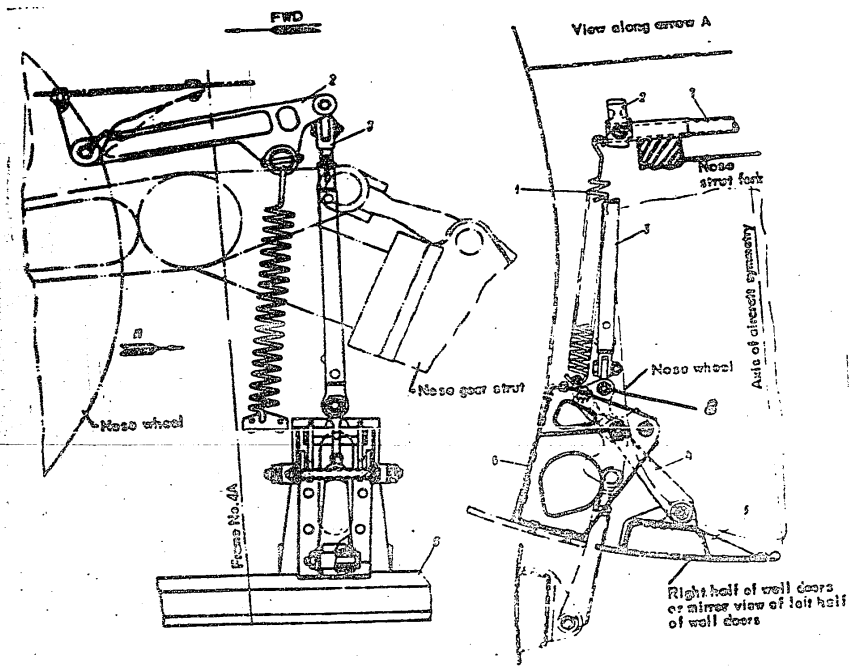
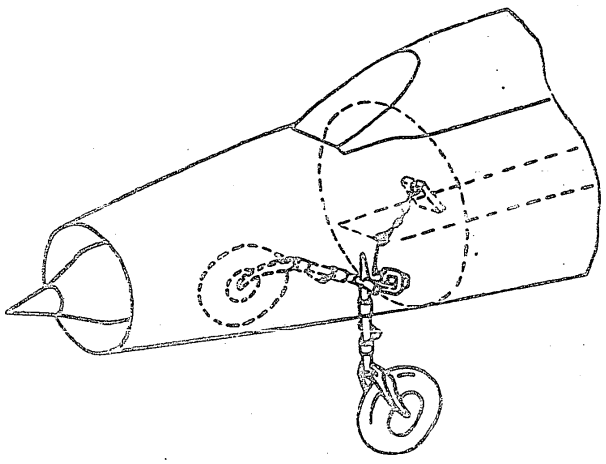


Fig.103. Nose Strut Well Doors

1 – coupling 2 – connecting arm; 3 – universal rod; 4 – rod; 5 – well doors; 6 – bracket fastening rod to door; 7 – pipe; 8 – link.



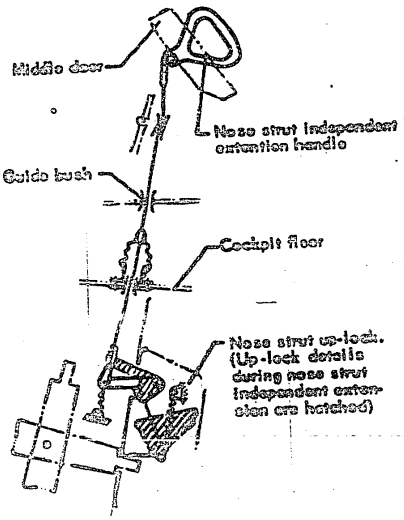


Fig.106. Nose Strut Independent Extension Diagram

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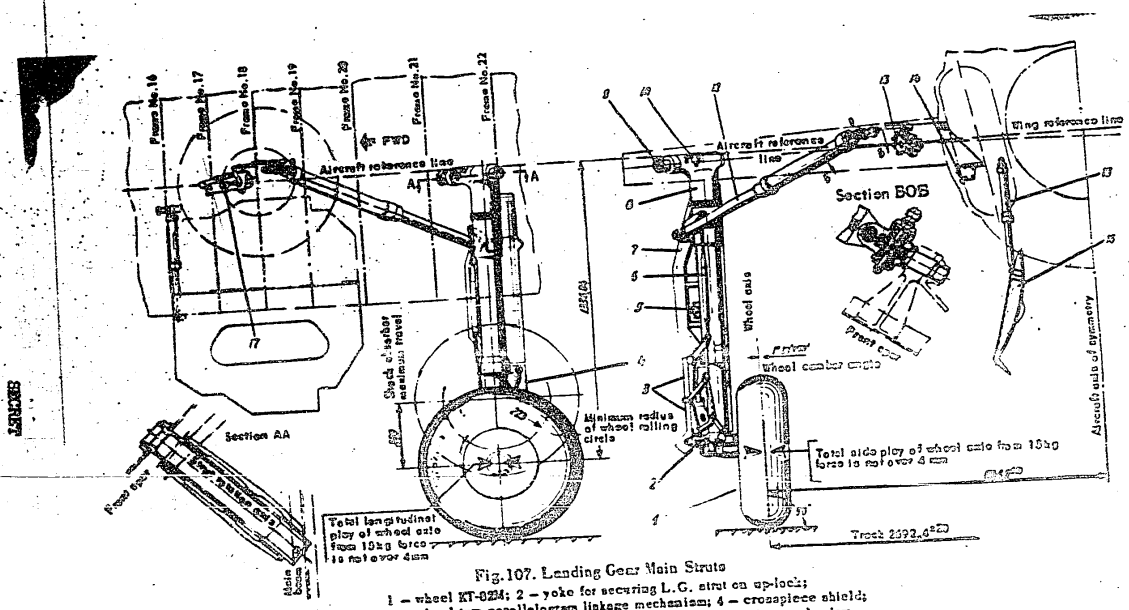


Fig. 107. Landing Gear Main Struts

1 – wheel KT-02M; 2 – yoke for securing L.G. strut on up-lock; 3 – wheel turn parallelogram linkage mechanism; 4 – crosspiece shield; 5 – L.G. position outer indicating lamp; 6 – wheel turning mechanism rod; 7 – shield on main strut; 8 – landing gear main strut; 9 – main strut fulcrum; 10 – L.G. down position warning system terminal switch; 11 – indicator; 12 – hydraulic cylinder for strut retraction and extension; 13 – main strut up-lock; 14 – door lock; 15 – door actuating hydraulic cylinder; 16 – wheel door; 17 – L.G. up position warning system terminal switch.

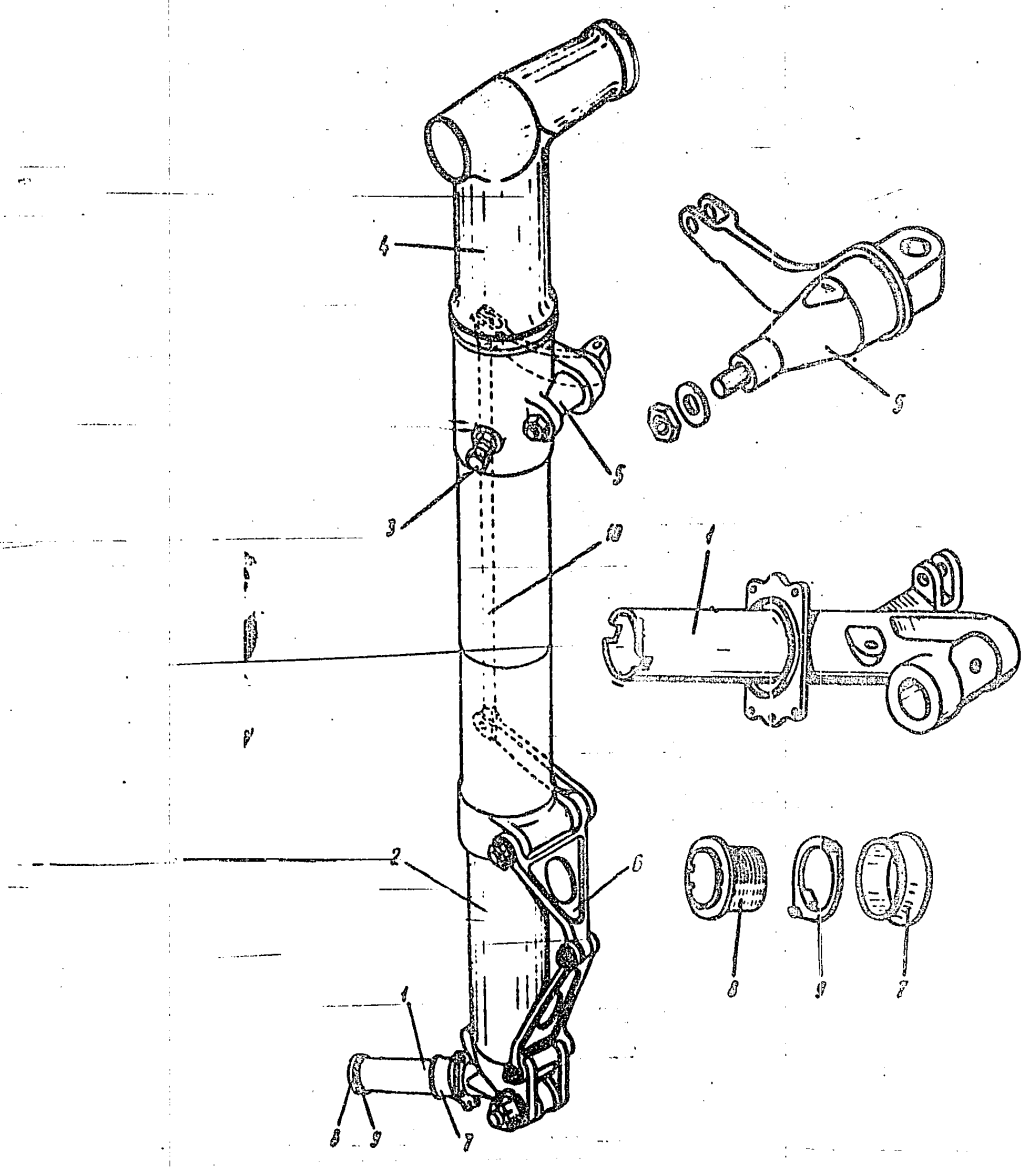


Fig.103. Landing Gear Main Strut Construction

1 – wheel axle shaft; 2 – rod; 3 – charging valve; 4 – sleeve; 5 – bolt with ball-crank; 6 – torque arm; 7 – hub; 8 – nut; 9 – washer; 10 – rod.

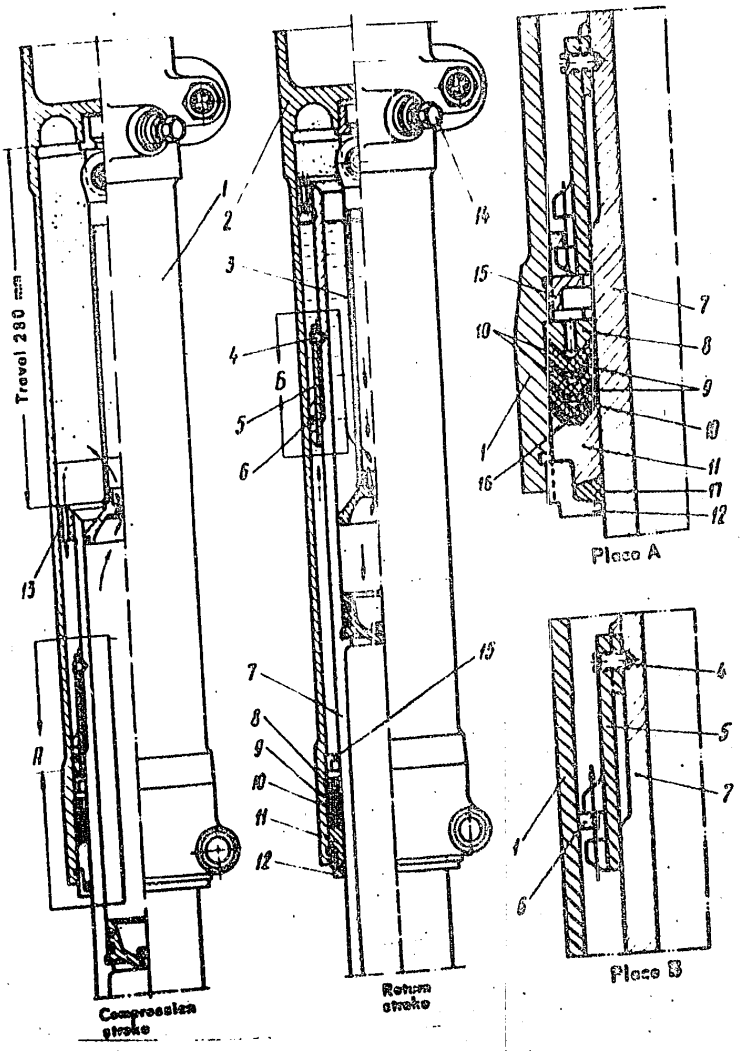


Fig.109. Shock Absorber Operation Diagram

1 – sleeve; 2 – cylinder; 3 – plunger; 4 – screw; 5 – supporting ring; 6 – packing ring; 7 – rod; 8 – upper support ring; 9 – duralumin ring; 10 – rubber cup; 11 – lower bearing; 12 – nut; 13 – upper bearing; 14 – charging connection; 15 – nut; 16 – leather cap; 17 – gland.

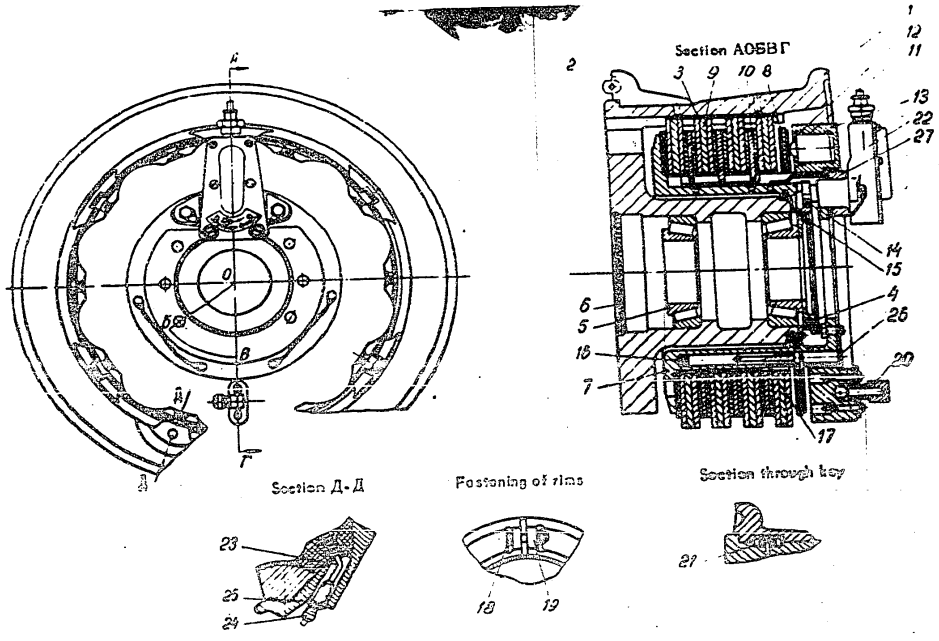
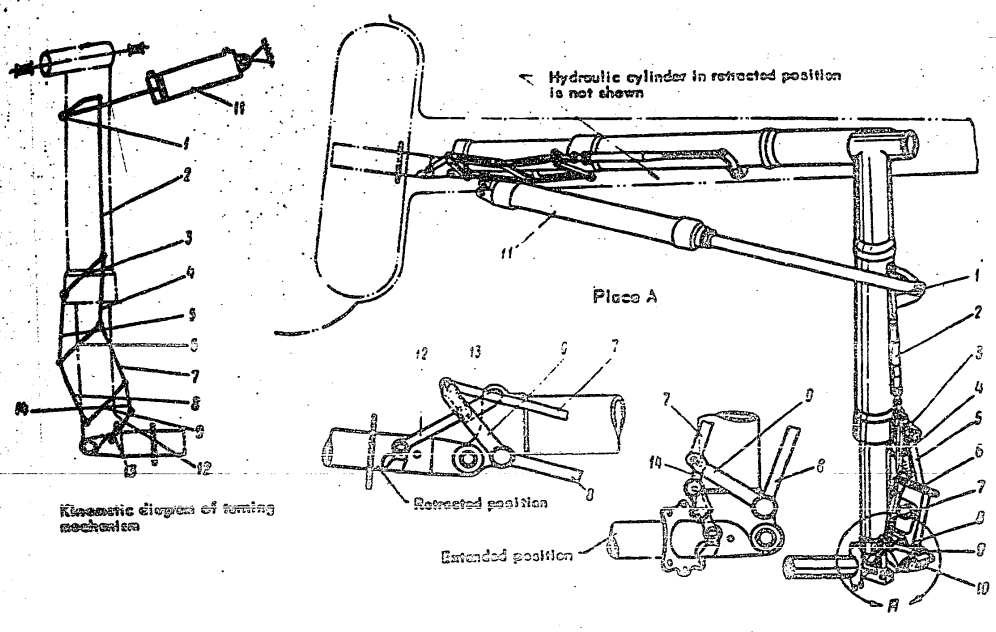


Fig.110. Wheel KT-82M

1 – drum; 2 – rim half; 3 – guide; 4 – gland; 5 – roller bearing; 6 – cover; 7 – body; 8 – pressure disc; 9 – bimetallic disc; 10 – powder-metal disc; 11 – piston; 12 – packing ring; 13 – cylinder block; 14 – gear; 15 – gear; 16 – return spring; 17 – pin; 18 – bolt; 19 – lug; 20 – connection; 21 – key; 22 – transmitter; 23 – valve; 24 – cap; 25 – nut; 26 – shield; 27 – flange.



Kinematic diagram of turning mechanism

Fig.111. Wheel Turning Mechanism

1 – hinge joint of hydraulic cylinder rod; 2 – rod; 3 – bell-crank; 4 – rod; 5 – upper crosspiece; 6 – bell-crank; 7 – rod; 8 – lower crosspiece; 9 – bell-crank; 10 – yoke; 11 – hydraulic cylinder; 12-13 – kinematic lock rods; 14 – link.

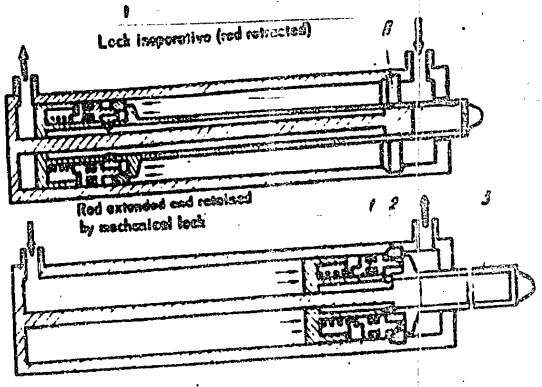
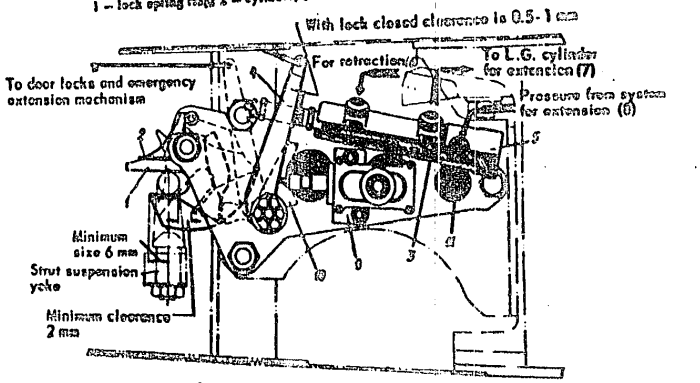


Fig.112. Diagram of Hydraulic Cylinder Lock Operation
1 – lock spring stops; 2 – cylinder; 3 – rod; A – lock cent.



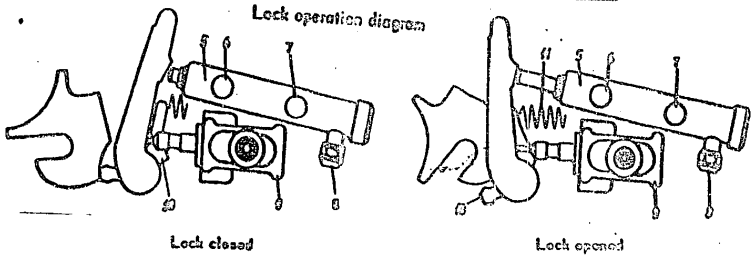


Fig.113. Up-Lock
1 – hook; 2 – hook spring; 3 – lock body; 4 – lever; 5 – lock hydraulic cylinder; 6 – retraction pressure supply connection; 7 – extension pressure supply connection; 8 – extension pressure supply connection; 9 – terminal switch; 10 – cam; 11 – cam spring.

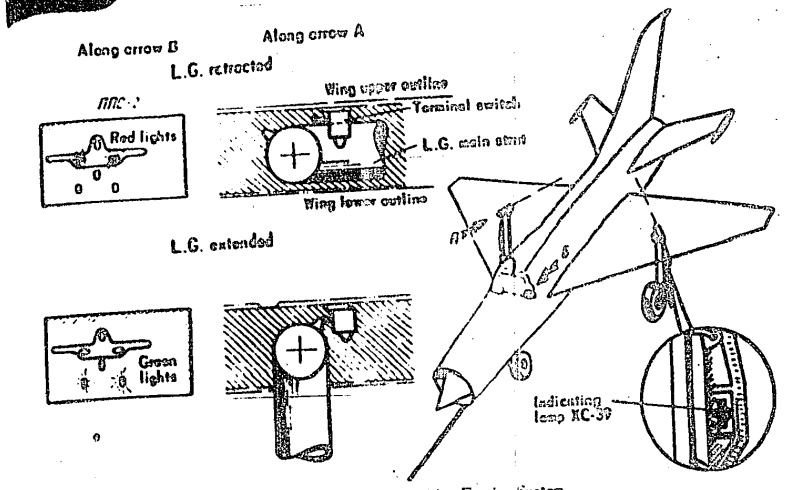


Fig.114. L.G. Main Strute Position Warning System

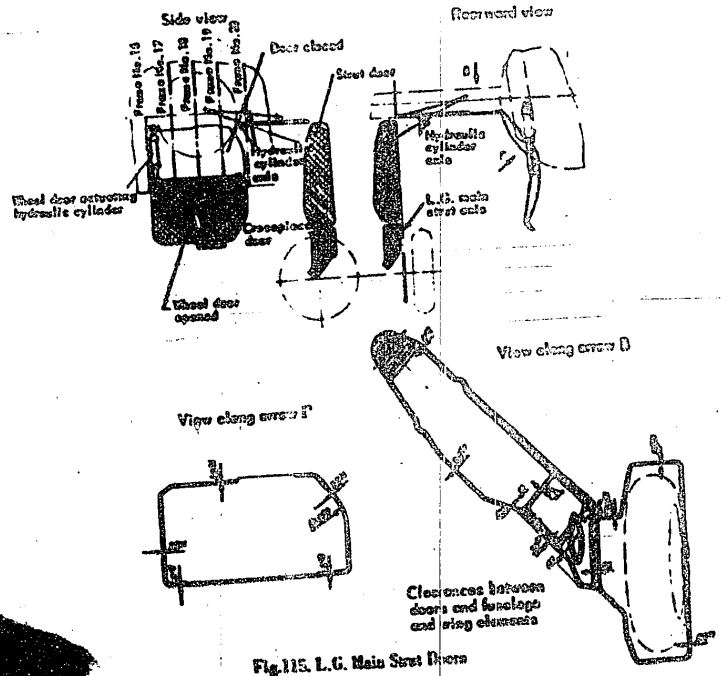
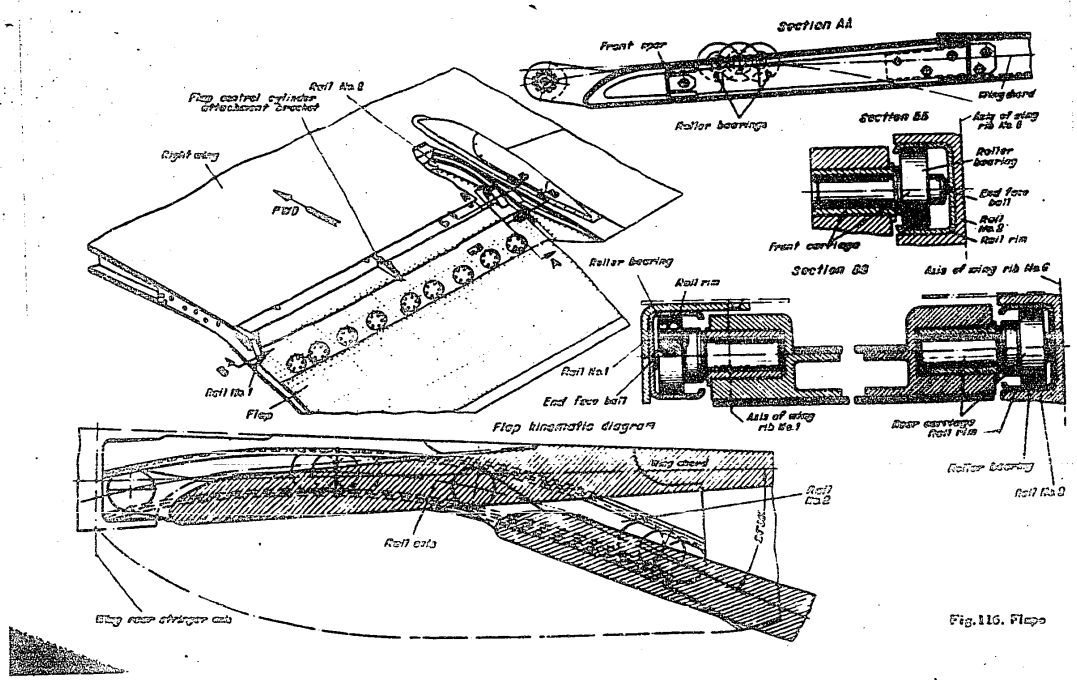


Fig.115. L.G. Main Strut Doors



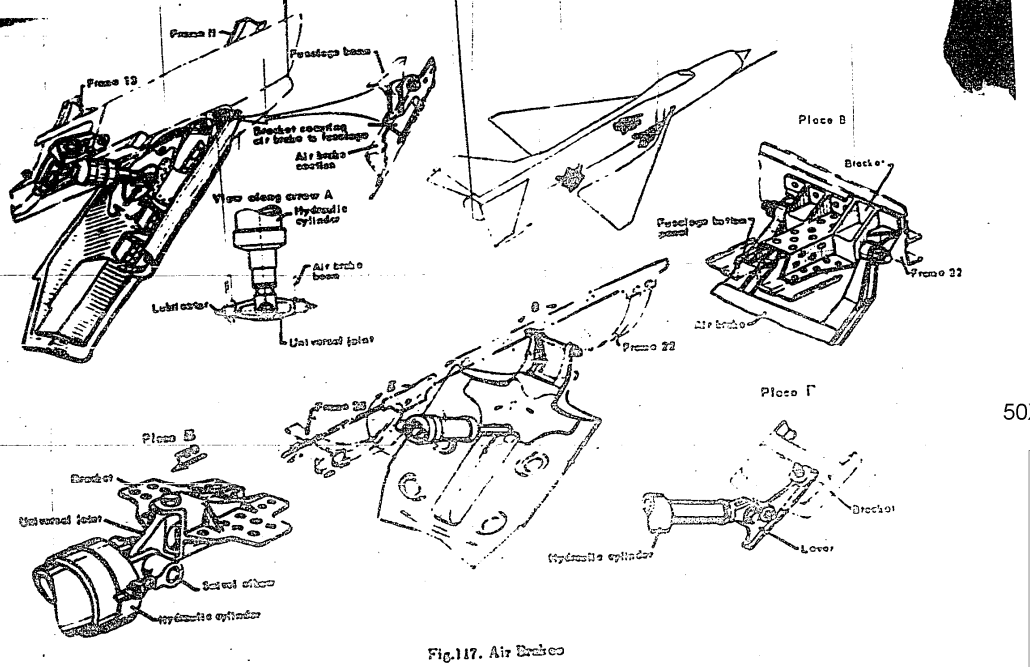


Fig.117. Air Brakes

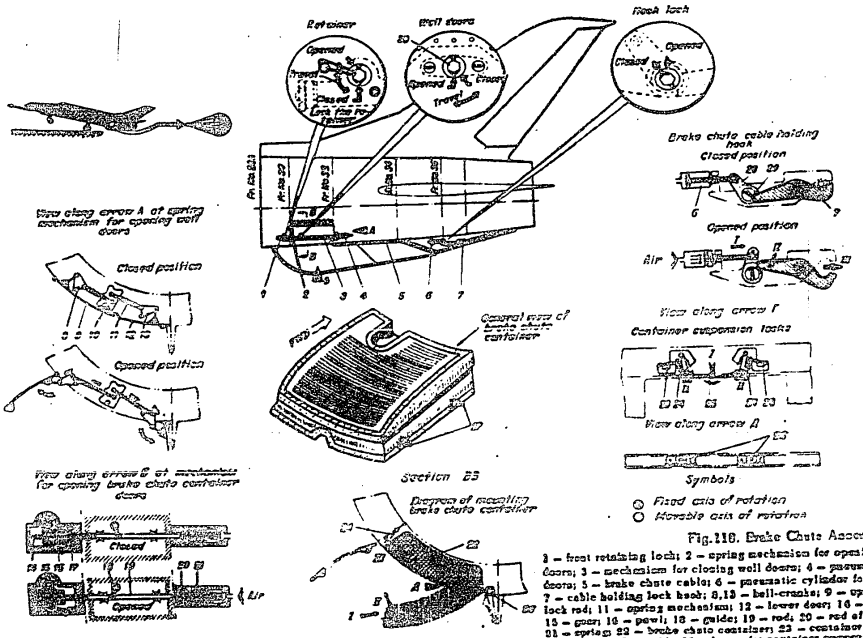


Fig.116. Brake Chute Assembly

1 – front retaining lock; 2 – spring mechanism for opening brake chute container doors; 3 – mechanism for closing well doors; 4 – pneumatic cylinder for opening well doors; 5 – brake chute cable; 6 – pneumatic cylinder for dropping brake chute; 7 – cable holding lock hook; 8,13 – bell-cranks; 9 – upper door; 10,17 – retaining lock rod; 11 – spring mechanism; 12 – lower door; 14 – retaining lock spring; 15 – gear; 16 – pawl; 18 – guides; 19 – rod; 20 – rod of pneumatic cylinder; 21 – springs; 22 – brake chute container; 23 – container suspension lock springs; 24 – hooks; 25 – cable; 26 – bases for container suspension plate; 27 – plate; 28 – bell-crank; 29 – shaft; 30 – door lock.

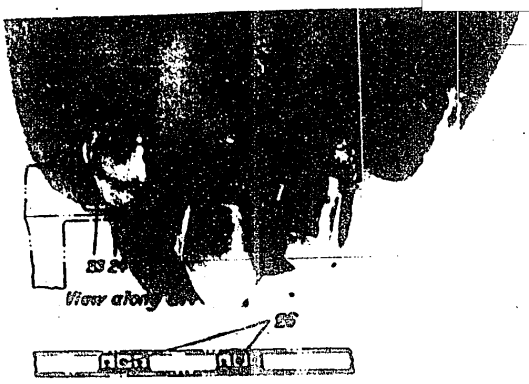


Fig.118. Brake Chute Assembly

1 – front retaining lock; 2 – spring mechanism for opening brake chute container doors; 3 – mechanism for closing well doors; 4 – pneumatic cylinder for opening well doors; 5 – brake chute cable; 6 – pneumatic cylinder for dropping brake chute; 7 – cable holding lock hook; 8,13 – bell-cranks; 9 – upper door; 10,17 – retaining lock rod; 11 – spring mechanism; 12 – lower door; 14 – retaining lock spring; 15 – gear; 16 – pawl; 18 – guide; 19 – rod; 20 – rod of pneumatic cylinder; 21 – spring; 22 – brake chute container; 23 – container suspension lock springs; 24 – hooks; 25 – cable; 26 – boxes for container suspension pins; 27 – pins; 28 – bell-crank; 29 – shaft; 30 – door lock.

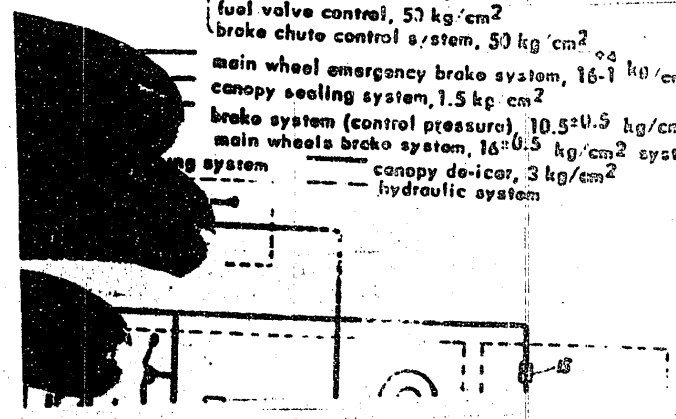


Fig.118. Brake Chute Assembly

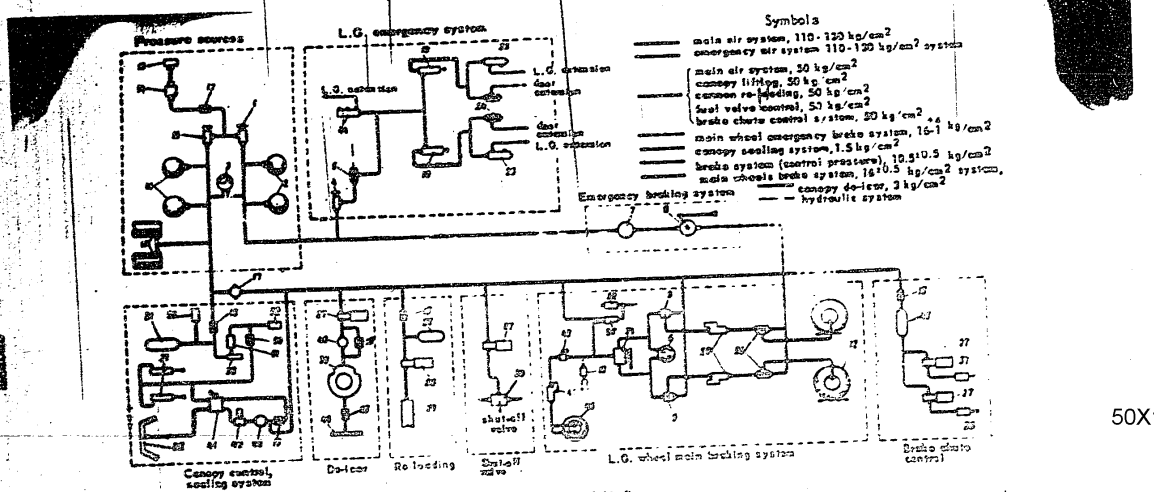


Fig.119. Key Diagram of Air System

1 – emergency system charging valve; 2 – emergency system bottles, 1.3 lit. capacity each; 3 – ДА-150 two-pointer air pressure gauge; 4 – L.G. emergency extension valve; 5 – drain valve; 6 – НВ-12 brake system two-pointer pressure gauge; 7 – 622500 emergency braking reducer; 8 – 623000А emergency braking valve; 9 – УП-24/1 pressure amplifier; 10 – main system bottles, 2 lit. capacity each; 11 – main system bottles, located in main struts, 2 lit. capacity each; 12 – КТ-62М main strut wheels; 13 – aircraft charging connection; 14 – air cruiser; 15 – return valve; 16 – main system charging valve; 17 – РВ-30М reducer; 18 – УП-22 switch; 19 – L.G. main struts emergency extension cylinder; 20 – УП-53/1-2 servovalve; 21 – canopy lifting cylinder; 22 – automatic braking cylinder; 23 – main struts hydrolocks; 24 – emergency valves; 25 – cannon reloading bottle; 26 – emergency switches; 27 – 623000М pneumatic valve; 28 – ПК-10 pneumatic valve; 29 – mechanism of cannon pneumatic reloading; 30 – fuel shut-off valve; 31 – bottle of canopy emergency jettisoning system; 33 – canopy seal (canopy sealing hose); 34 – emergency valve (diaphragm valve); 35 – ИВ-8 (УП-33) differential valve; 36 – brake chute dropping cylinder; 37 – brake chute doors opening cylinder; 38 – cylinder for checking pressure in auxiliary bottle; 39 – throttle valve; 40 – РП-3 reducer; 41 – canopy control valve; 42 – РВ-1.6 reducer; 43 – nose strut brake valve; 44 – nose strut hydrolock; 45 – brake chute control system air bottles; 46 – КТ-58 nose strut wheel; 47 – УП-53/1-2 electromagnetic servovalve; 48 – collector; 49 – safety valve; 50 – check valve; 51 – strainer; 52 – cylinder for operating canopy jettisoning lock.

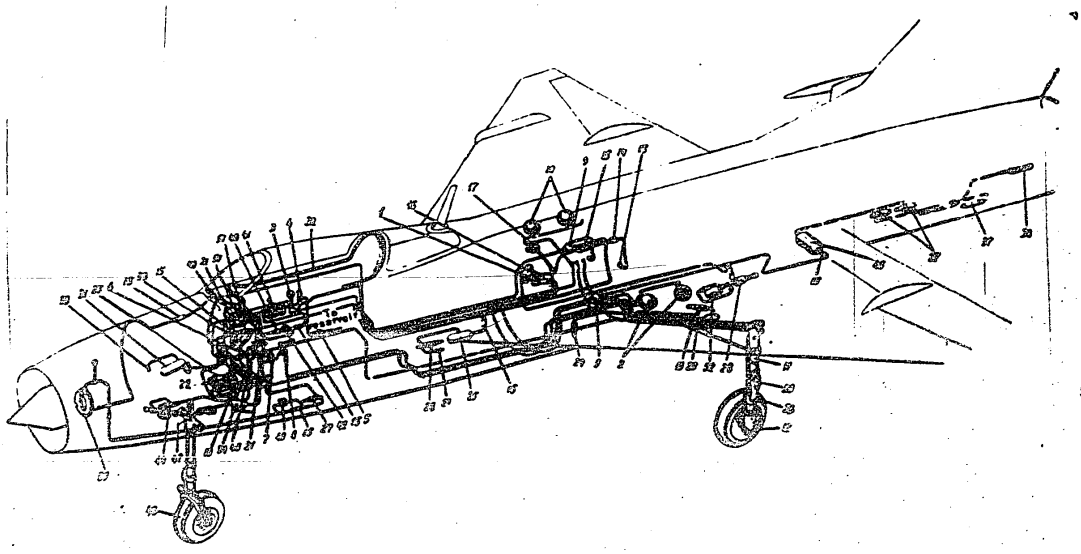


Fig.120. Air System Arrangement Diagram
(For keys to reference numbers see Fig.119)

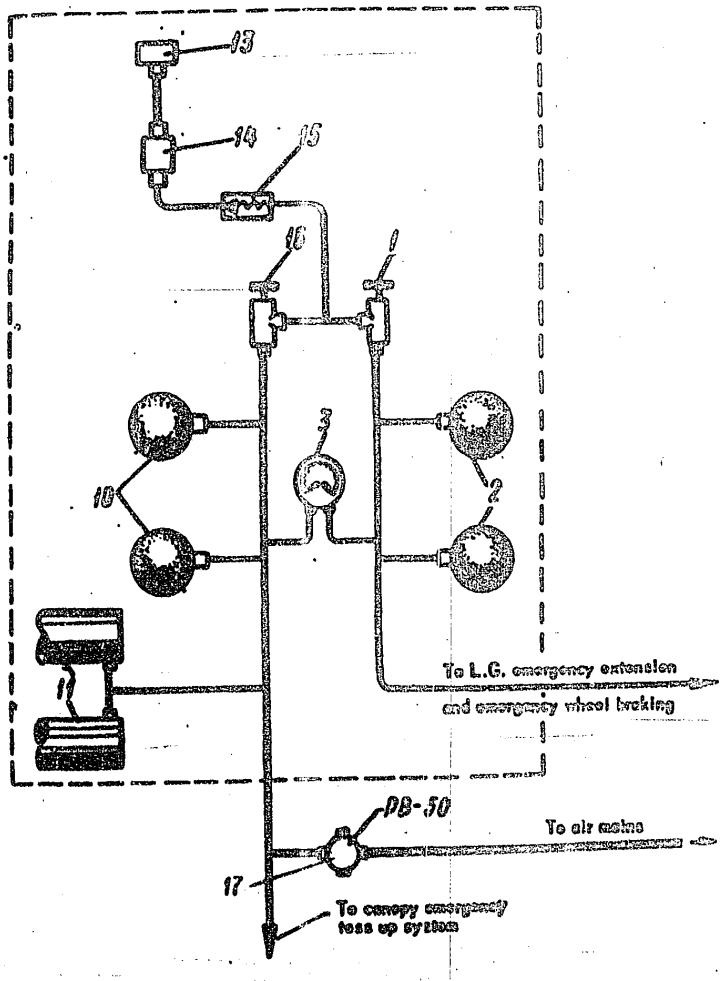


Fig.121. Pressure Sources (For keys to reference numbers see Fig.119)

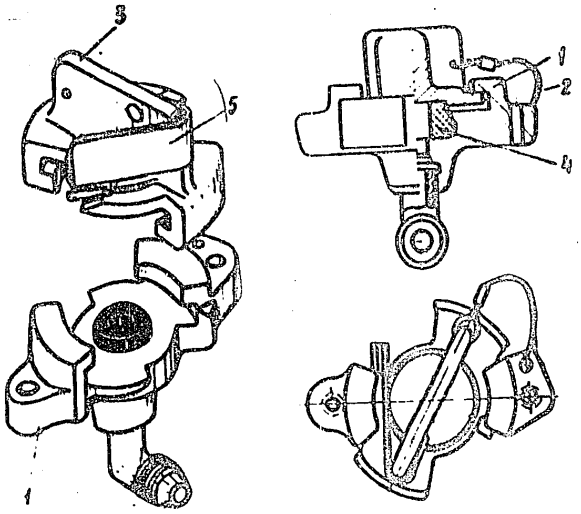


Fig.122. Aircraft Charging Connection
1 – body; 2 – cable; 3 – plug; 4 – rubber gasket; 5 – plate spring.

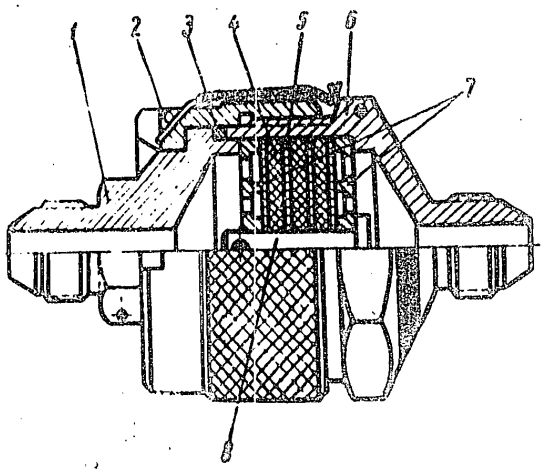


Fig.123. Air Scraper
1 – cover; 2 – union nut; 3 – packing ring; 4 – felt washer; 5 – gauze; 6 – body; 7 – support; 8 – shaft.

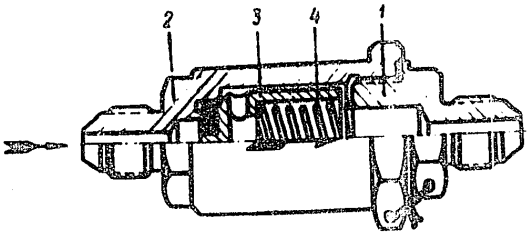


Fig.124. Return Valve
1 – cover; 2 – body; 3 – valve; 4 – retracting spring.

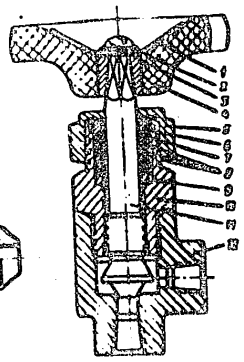


Fig.125. Charging Valve
1 – nameplate; 2 – washer; 3 – screw; 4 – handwheel; 5 – cover; 6 – bush; 7 – plate; 8 – packing rings; 9 – bush; 10 – cover; 11 – shaft; 12 – body.

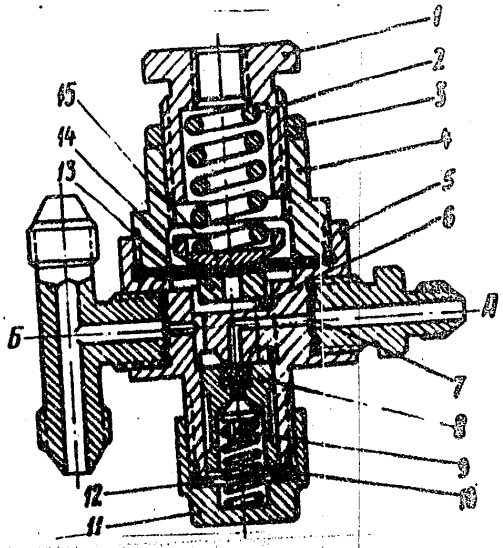


Fig.126. PR-56M Reducer
1 – adjusting cover; 2 – reducing spring; 3 – locknut; 4 – sleeve; 5 – body; 6 – support; 7 – sealing washer; 8 – inlet valve; 9 – sleeve; 10 – packing cover; 11 – retracting spring; 12 – cover; 13 – gasket; 14 – diaphragm; 15 – bush; 16 – supporting washer.

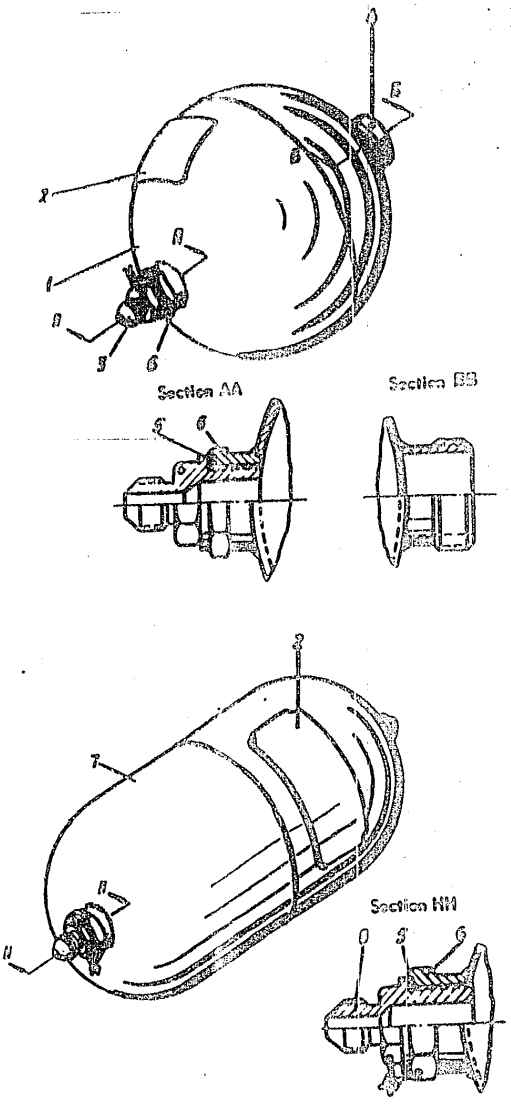
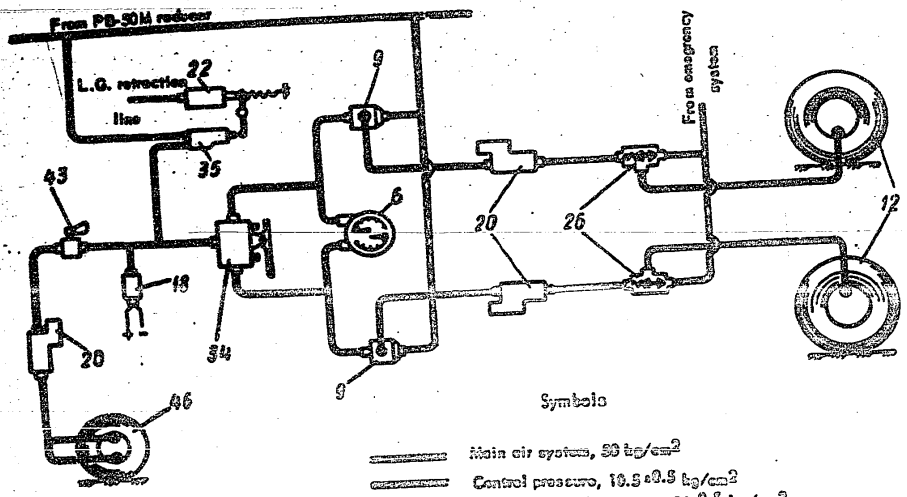


Fig.127. Air Bottles

1 – spherical bottle; 2 – nameplate; 3 – inlet connection; 4 – bush with outer thread; 5 – gasket; 6 – bush with inner thread; 7 – cylindrical bottle; 8 – inlet connection.



Symbols

- Main air system, 30 kg/cm²
- Control pressure, 10.5 ±0.5 kg/cm²
- Main wheel brake system, 15±0.5 kg/cm²
- Emergency air system

Fig.122. Wheel Brake System (For keys to reference numbers see Fig.119)

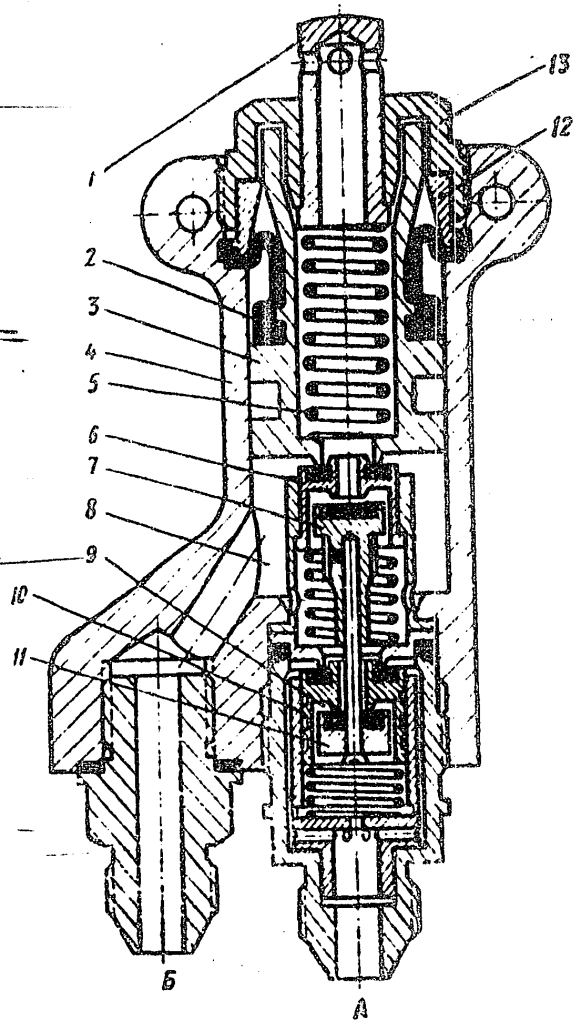


Fig.129. Reducing Valve

1 – tappet; 2 – tubular diaphragm; 3 – piston; 4 – body; 5 – reducing spring; 6 – big outlet valve; 7 – small outlet valve; 8 – middle cavity; 9 – lower cavity; 10 – big inlet valve; 11 – small inlet valve; 12 – bush; 13 – cover.

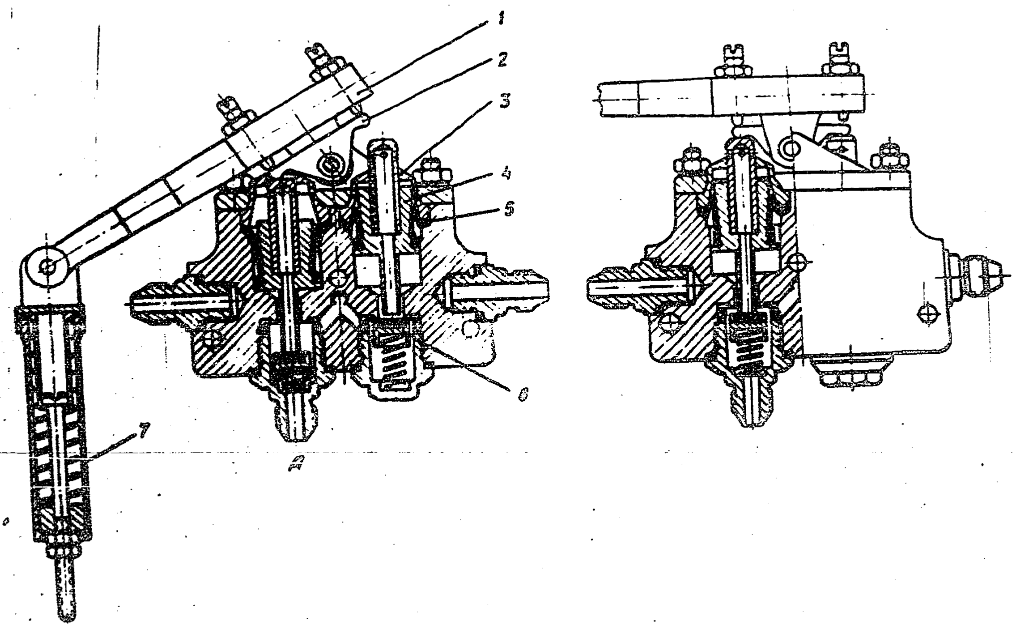


Fig.130. ПУ-8 (У1-35) Differential Valve
1 – lever; 2 – rocker arm; 3 – bush; 4 – piston; 5 – tubular diaphragm; 6 – valve; 7 – reducing rod.

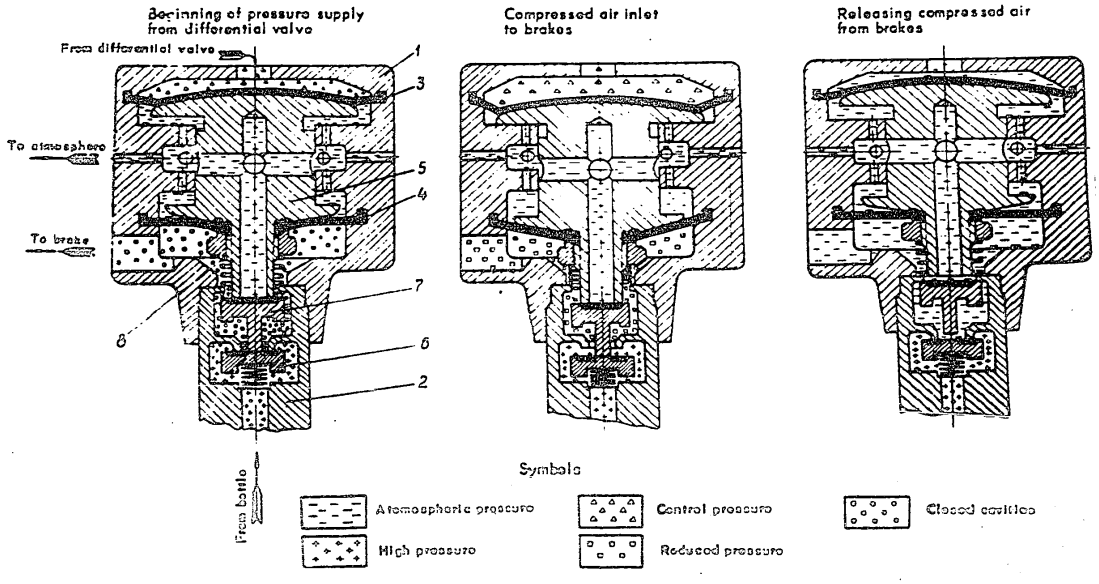


Fig.131. УП-24/1 Pressure Amplifier

1 — body; 2 — guide; 3 — diaphragm; 4 — diaphragm; 5 — piston; 6 — inlet valve; 7 — outlet valve; 8 — spring.

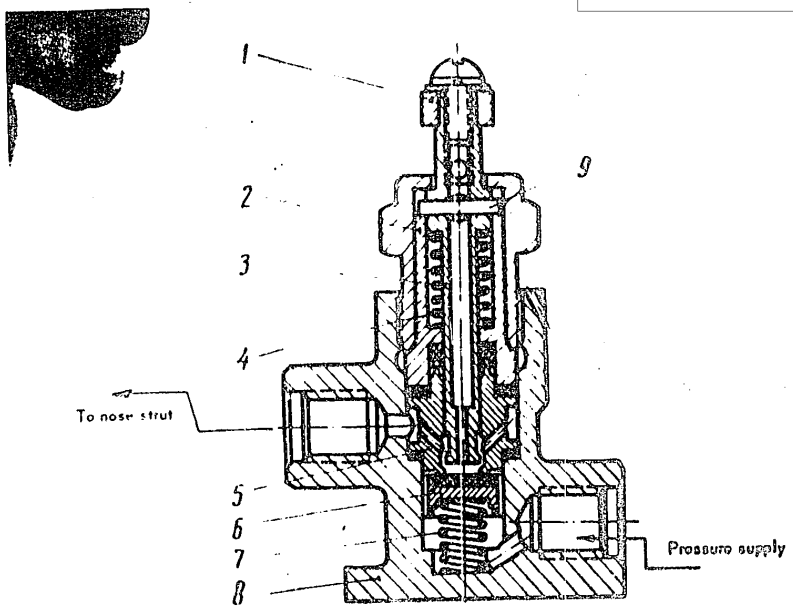


Fig.132. УП-33/1 Nose Strut Brake Valve
1 – handle; 2 – guide; 3 – rod; 4 – retraction spring; 5 – seat; 6 – valve; 7 – spring; 8 – body; 9 – pin.

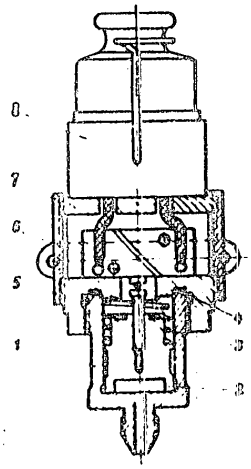


Fig.133. УП-22 Switch
1 – connection; 2 – valve; 3 – spring; 4 – sealing gasket; 5 – body; 6 – limit switch; 7 – bottom; 8 – electric connector.

I Braked condition

II Released condition

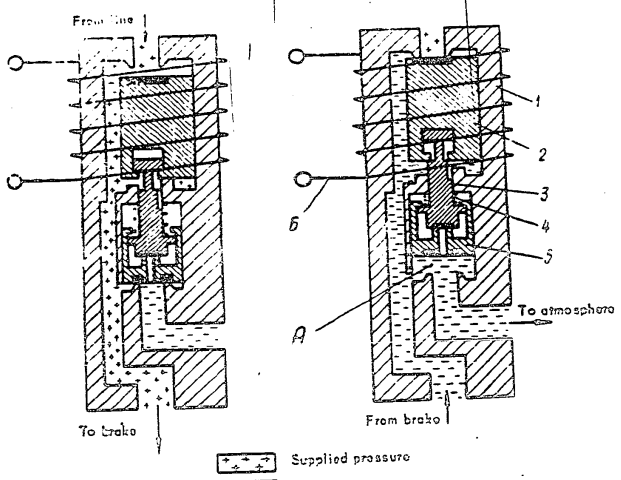


Fig.134. VII-53/1-2 Electromagnetic Servovalve
1 – body; 2 – core; 3 – servovalve; 4 – spring; 5 – valve; 6 – electromagnetic coil.

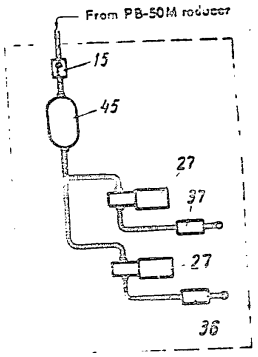


Fig.135. Brake Chute Control System
(For keys to reference numbers see Fig.119)

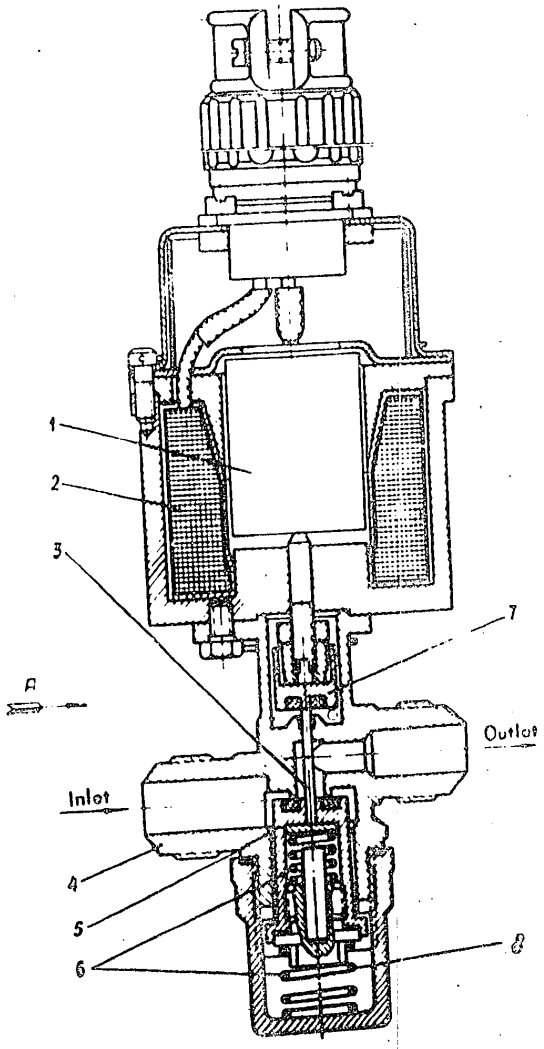


Fig.136. 695000M Electric Pneumatic Valve
1 – core; 2 – electromagnet; 3 – tappet; 4 – body; 5 – inlet valve; 6 – spring; 7 – outlet valve; 8 – spring.

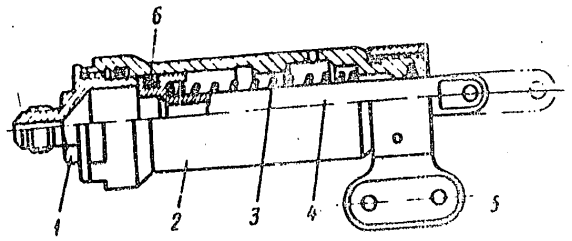
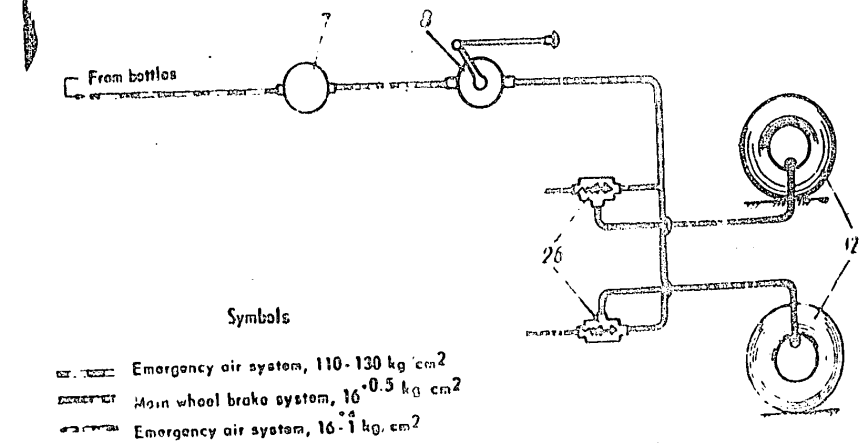


Fig.137. Brake Chute Dropping Cylinder
1 – cover; 2 – body; 3 – retractice spring; 4 – rod; 5 – bracket; 6 – sealing ring.



Symbols

Emergency air system, 110 - 130 kg/cm²
Main wheel brake system, 16 +0.5 kg/cm²
Emergency air system, 16 -1 kg/cm²

Fig.138. Emergency Braking System (For keys to reference numbers see Fig.119)

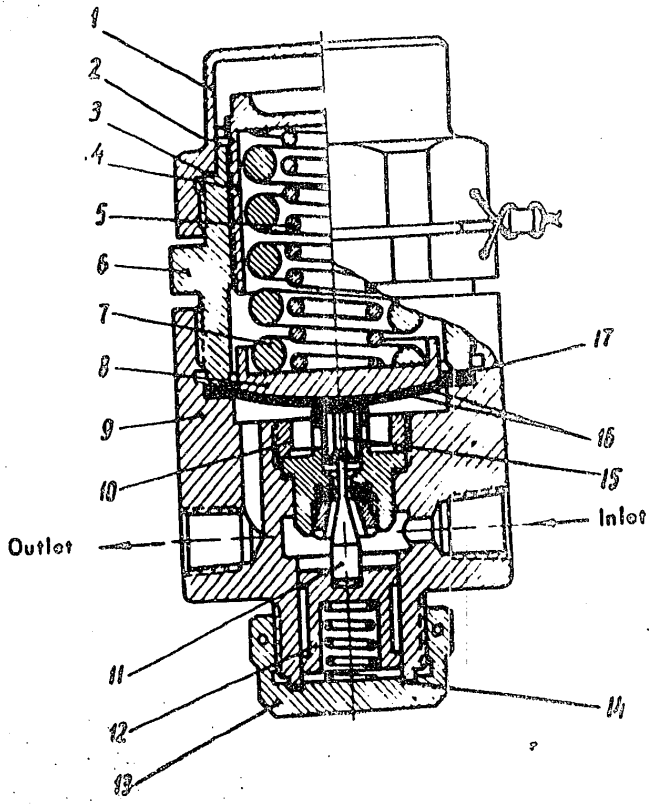


Fig.139. 682500 Reducer

1 – cover; 2 – locking pin; 3 – gasket; 4 – nut; 5 – calibrating spring; 6 – sleeve; 7 – calibrating spring; 8 – support; 9 – body; 10 – nut; 11 – tappet; 12 – piston; 13 – cover; 14 – gasket; 15 – stop; 16 – diaphragm; 17 – ring.

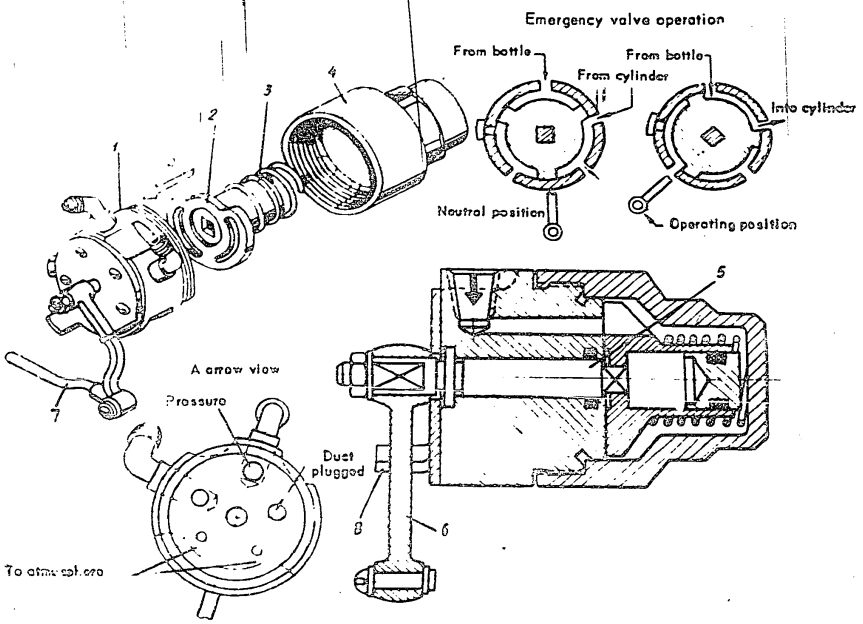


Fig.140. Emergency Braking Valve

1 — body; 2 — slide valve; 3 — spring; 4 — cover; 5 — shaft; 6 — lever; 7 — connecting rod; 8 — washer with stops.

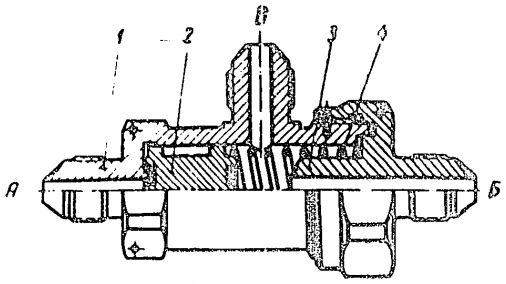


Fig.141. 563600 Emergency Switch
1 – body; 2 – shuttle lock; 3 – connection; 4 – spring.

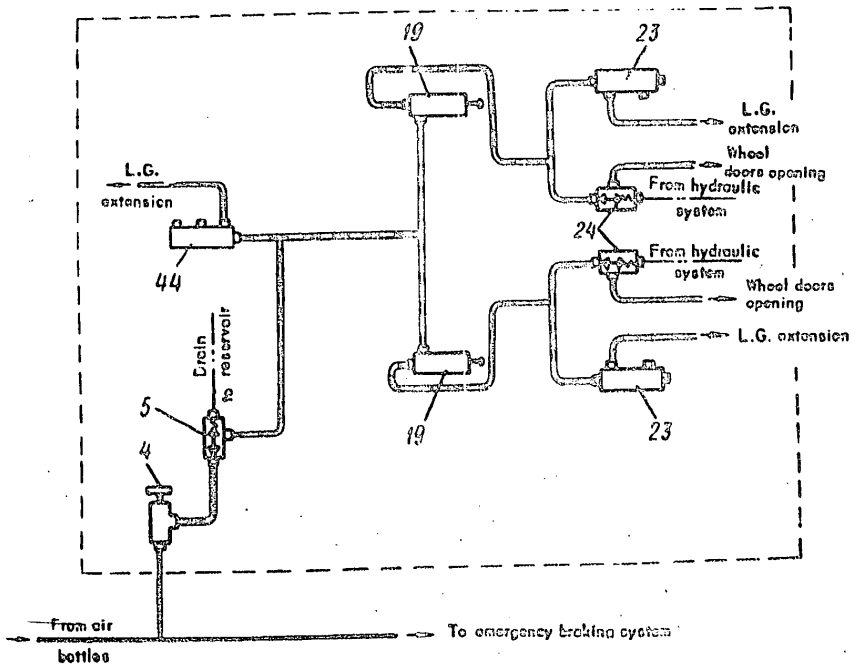


Fig.142. L.G. Emergency Extension System (For keys to ref. numbers see Fig.119)

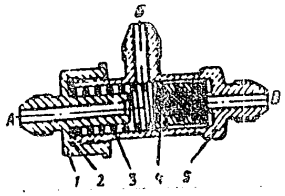
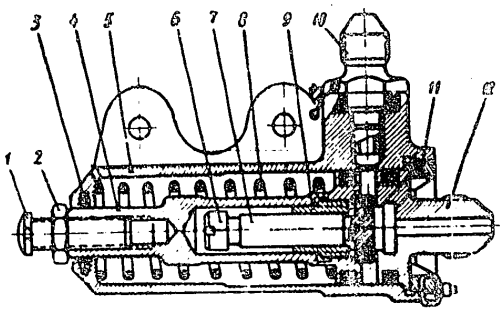


Fig.143. Drain Valve
1 – cover; 2 – gasket; 3 – spring; 4 – valve; 5 – body.



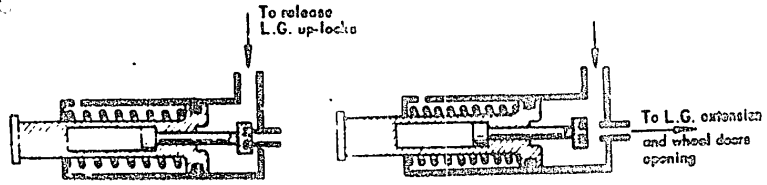


Fig.144. L.G. Main Struts Emergency Extension Cylinder
1 – adjusting bolt; 2 – locknut; 3 – packing gland; 4 – rod; 5 – body; 6 – limiting bush; 7 – valve; 8 – restriction spring; 9 – nut; 10 – connection; 11 – nut; 12 – cover.

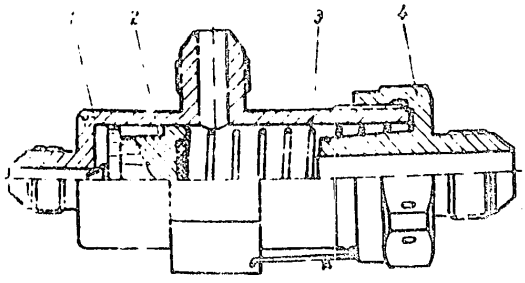


Fig.145. Emergency Valve
1 – body, 2 – piston; 3 – spring; 4 – cover.

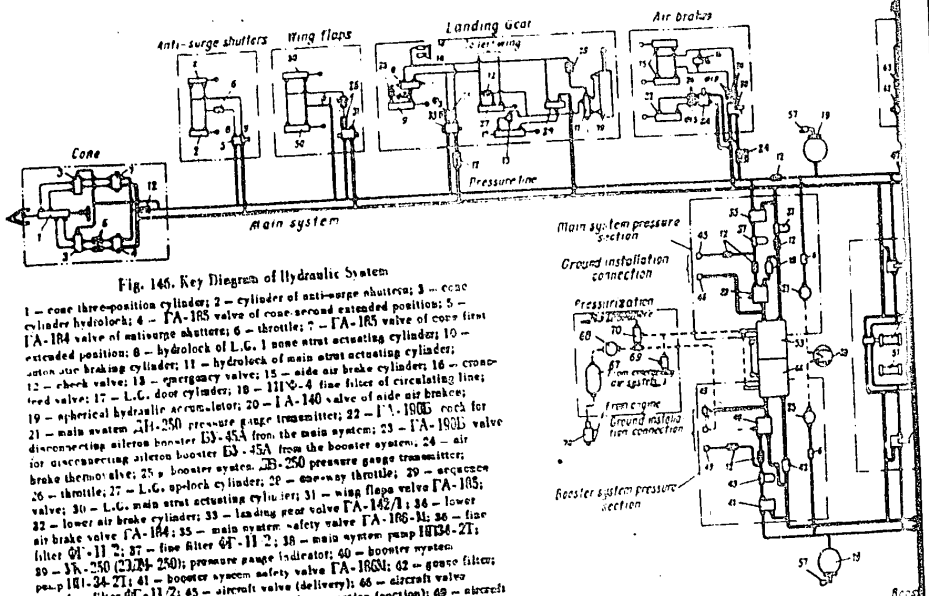
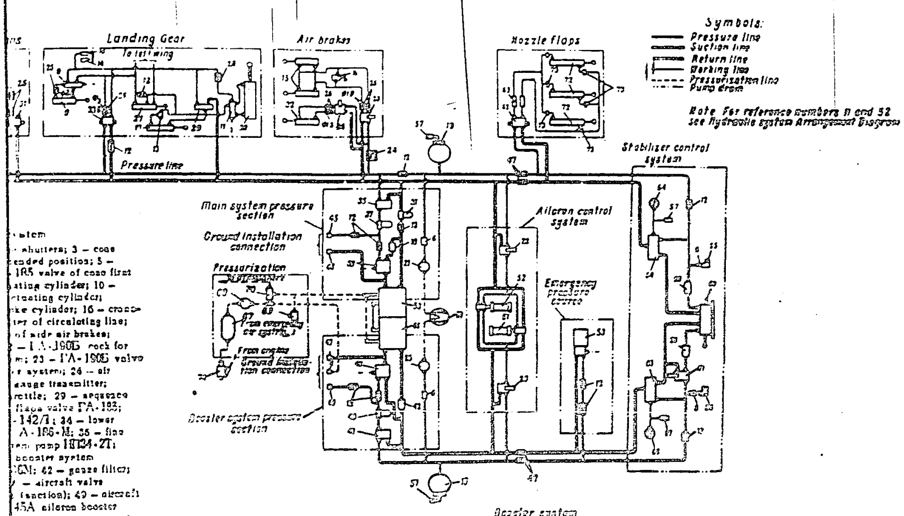


Fig. 146. Key Diagram of Hydraulic System

1 – cone three-position cylinder; 2 – cylinder of anti-surge shutters; 3 – cone cylinder hydrolock; 4 – ГА-185 valve of cone-second extended position; 5 – ГА-184 valve of anti-surge shutters; 6 – throttle; 7 – ГА-185 valve of cone first extended position; 8 – hydrolock of L.G. 1 nose strut actuating cylinder; 9 – main gear braking cylinder; 11 – hydrolock of main strut actuating cylinder; 12 – check valve; 13 – emergency valve; 15 – side air brake cylinder; 16 – cross-feed valve; 17 – L.G. door cylinder; 18 – 111Ф-4 fine filter of circulating line; 19 – spherical hydraulic accumulator; 20 – ГА-140 valve of side air brakes; 21 – main system МН-250 pressure gage transmitter; 22 – ГА-190Б cock for disconnecting aileron booster БУ-45А from the main system; 23 – ГА-190Б valve for disconnecting aileron booster БУ-45А from the booster system; 24 – air brake thermovalve; 25 – booster system МВ-250 pressure gage transmitter; 26 – throttle; 27 – L.G. up-lock cylinder; 28 – one-way throttle; 29 – sequence valve; 30 – L.G. main strut actuating cylinder; 31 – wing flaps valve ГА-185; 32 – lower air brake cylinder; 33 – landing gear valve ГА-142/1; 34 – lower air brake valve ГА-184; 35 – main system safety valve ГА-186-М; 36 – fine filter ФГ-11 2; 37 – fine filter ФГ-11 2; 38 – main system pump НП34-2Т; 39 – ИК-250 (23,24-250); pressure gauge indicator; 40 – booster system pump НП-34-2Т; 41 – booster system safety valve ГА-186М; 42 – gauge filter; 43 – fine filter ФГ-11 2; 45 – aircraft valve (delivery); 46 – aircraft valve (suction); 47 – disconnect valve; 48 – aircraft connection (section); 49 – aircraft connection (delivery); 50 – wing flaps cylinder; 51 – БУ-45А aileron booster (left wing); 52 – БУ-45А aileron booster (right wing); 53 – main system compensator in hydraulic reservoir; 54 – main system cylindrical hydraulic accumulator; 55 – main system pressure-sensitive relay ГА-135Т*; 56 – booster system pressure-sensitive relay ГА-135Т*; 57 – charging valve 800500А; 58 – fine filter 111Ф-4; 59 – emergency pump unit НП-27Т; 60 – stabilizer booster БУ-51МС; 61 – ГА-190Б valve for disconnecting stabilizer booster from booster system; 62 – afterburner flaps control valve ГА-164М; 63 – ГА-173 metering valve; 64 – cylindrical accumulator pressure gage МВ-250; 65 – booster system cylindrical hydraulic accumulator; 66 – booster system compartment in hydraulic reservoir; 67 – pressurization unit; 68 – РВ-1,5 reducer; 69 – drain valve; 70 – pressurization valve; 71 – tank pressurization aircraft connection; 72 – afterburner flaps ram cylinders; 73 – synchronizing valves; 76 – ramp.

* Note: ГА-135Т relay replaces ГА-135/32 relay.

SECRET
NO FOREIGN DISSEM



...stem
... shutters; 3 – cone
...ended position; 5 –
...185 valve of cone first
...ating cylinder; 10 –
...ctuating cylinder;
...ke cylinder; 16 – cross-
...ter of circulating line;
...of side air brakes;
... – ГА-190Б cock for
...m; 23 – ГА-190Б valve
...r system; 26 – air
...gauge transmitter;
...rottle; 29 – sequence
...flaps valve ГА-183;
...-142/1; 34 – lower
...А-186-М; 35 – fine
...em pump НП34-2Т;
...booster system
...СМ; 42 – gauze filter;
... – aircraft valve
...(suction); 49 – aircraft
...45А aileron booster
... main system compart-
...hydraulic accumulator;
... – booster system
...00600А; 58 – fine
...tabilizer booster
...zer booster from
...-431; 63 – ГА-173 metering
...; 65 – booster system
...partment in hydraulic
... – drain valve; 70 –
...nection; 72 – afterburner

SECRET
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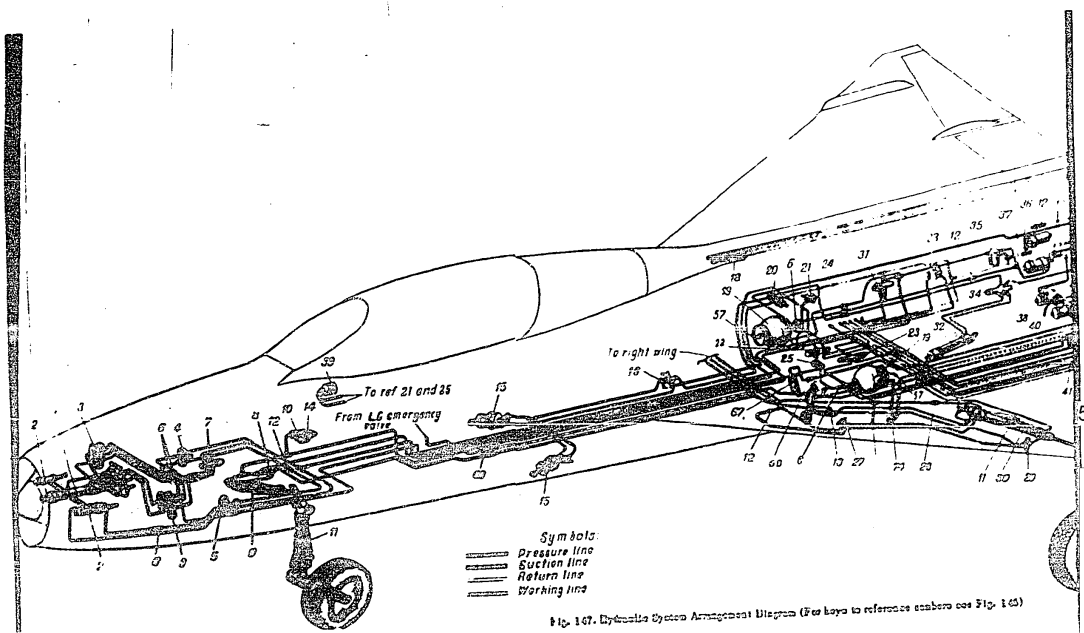
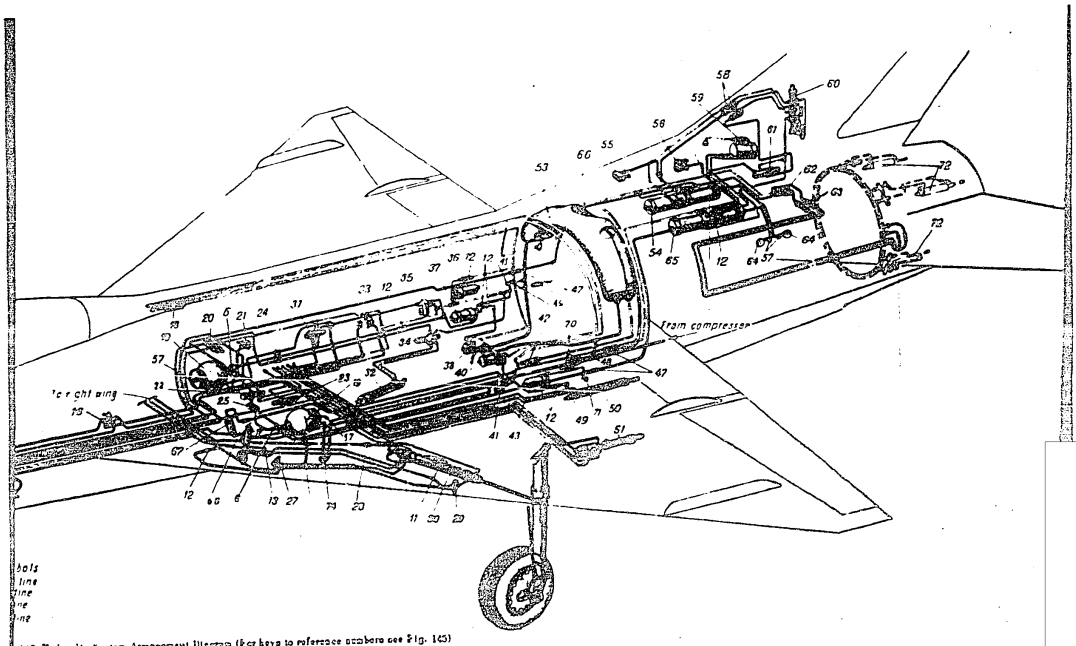


Fig. 147. Hydraulic System Arrangement Diagram (For keys to reference numbers see Fig. 145)



147. Hydraulic System Arrangement Diagram (for keys to reference numbers see Fig. 145)

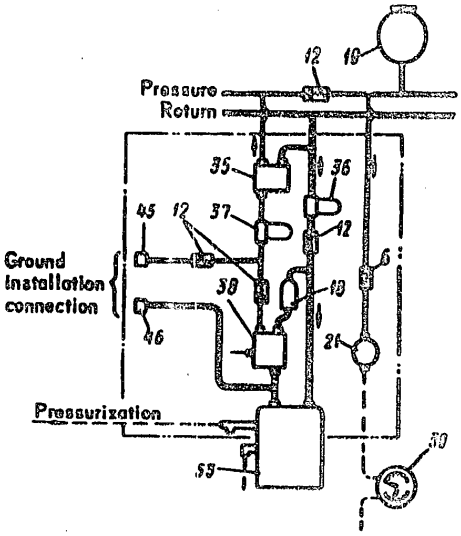


Fig.148. Pressure Section (For keys to reference numbers see Fig.145)

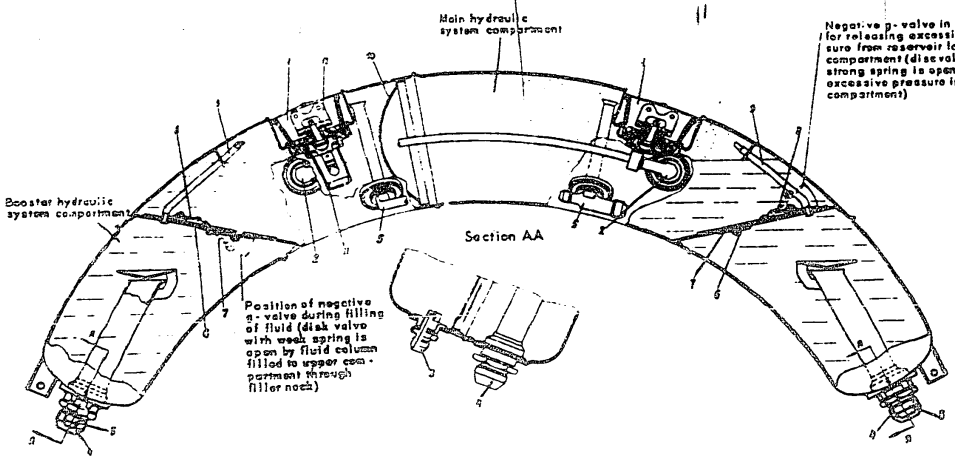


Fig.149. Hydraulic Reservoir

1 – filler neck; 2 – overflow pipe; 3 – return connection; 4 – suction connection; 5 – pressurization and connection tube; 6 – separating diaphragm; 7 – weak spring valve; 8 – valve with strong spring; 9 – vent pipe; 10 – pressurized diaphragm; 11 – gauze filter; 12 – plug with level stick.

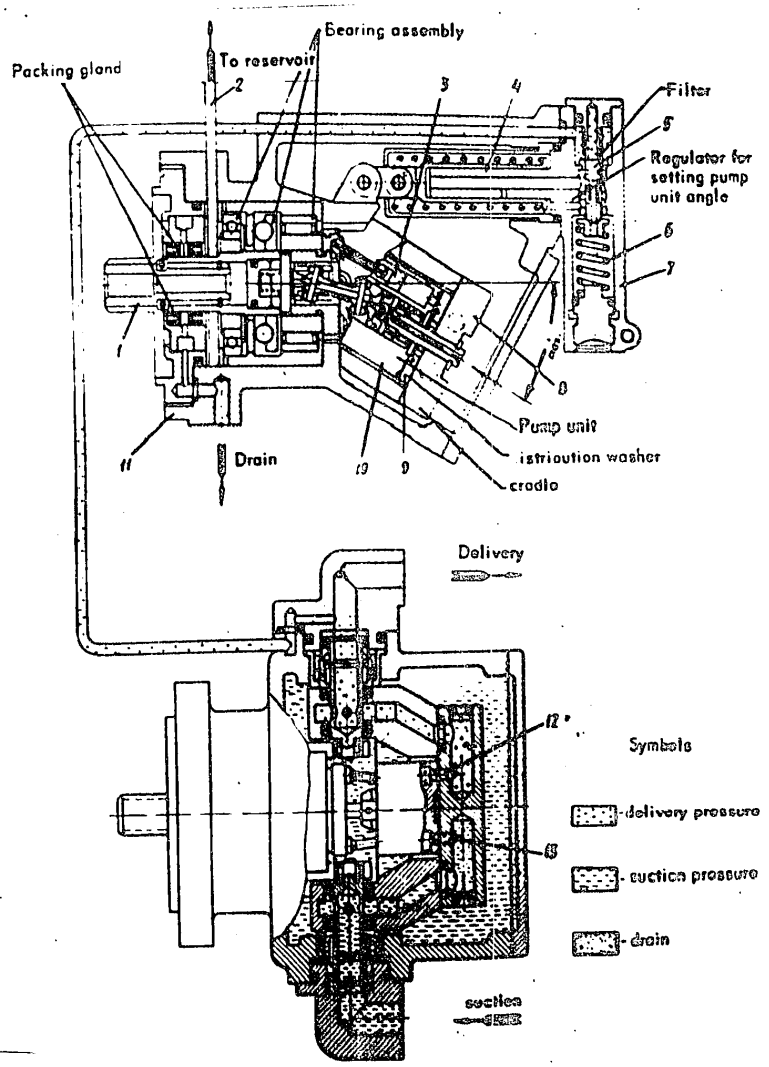


Fig.150. H1134-2T Pump

1 – pump shaft; 2 – outer circulating line; 3 – piston; 4 – capacity regulator cylinder; 5 – regulator slide valve; 6 – adjusting spring; 7 – regulator body; 8 – cradle; 9 – slide valve; 10 – cylinder unit; 11 – body; 12 – pressure line; 13 – suction line.

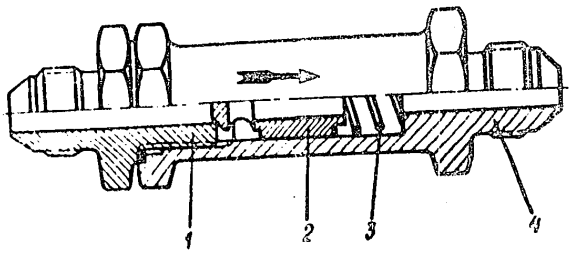


Fig.151. Check Valve
1 – connection; 2 – piston; 3 – spring; 4 – body.

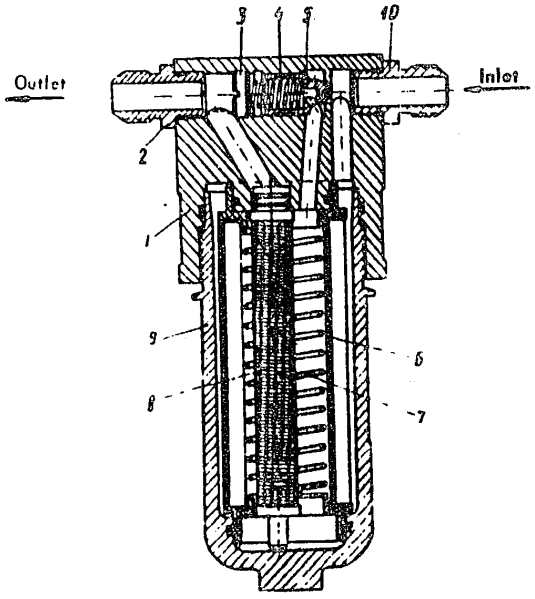


Fig.152. ФГ-11/2 Filter
1 – cover; 2 – outlet connection; 3 – nut; 4 – spring; 5 – by-pass valve; 6 – fine filtering element; 7 – spring; 8 – coarse filter; 9 – cap. 10 – outlet connection.

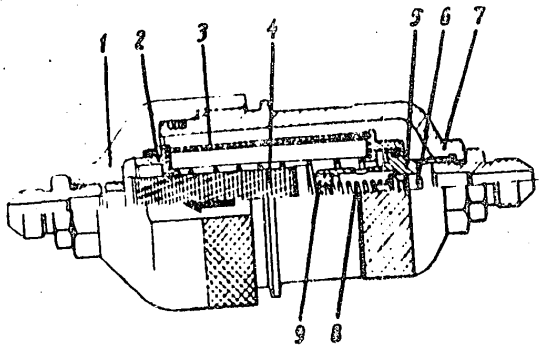


Fig.153. ПГФ4 Filter
1 – cover; 2 – filtering element head; 3 – fine filtering element; 4 – coarse filter; 5 – by-pass valve body; 6 – by-pass valve; 7 – cup; 8 – spring; 9 – nut.

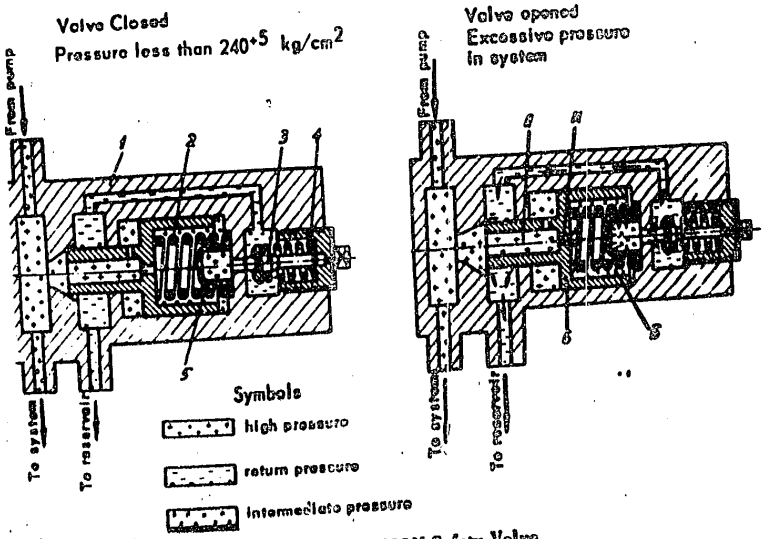
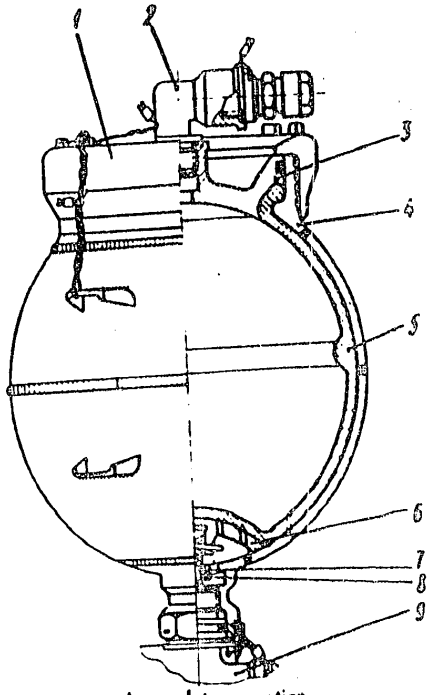
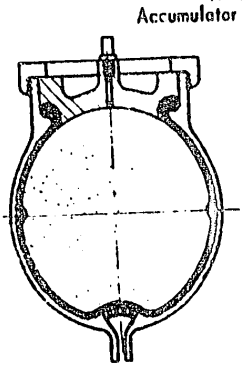


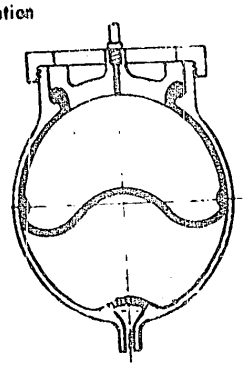
Fig.154. ГА-186М Safety Valve
1 – body; 2 – retraction spring; 3 – pressure sensing valve; 4 – adjusting spring; 5 – filter; 6 – main valve.



Accumulator operation



Initial position: gas cavity filled with nitrogen



Working position: hydraulic cavity filled with fluid under pressure

Fig.155. Spherical Accumulator

1 – n... 4 – ...ging valve with elbow; 3 – cover; 4 – body; 5 – diaphragm; 6 – mushroom-type surface; 7 – screw, 8 – nut; 9 – collector.

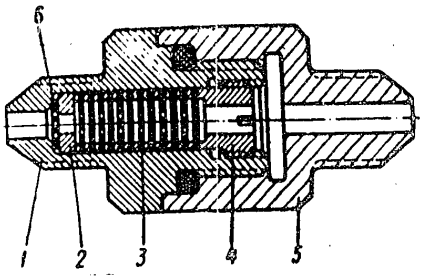


Fig.156. Flow Restrictor
1 – body; 2 – support; 3 – throttling washer; 4 – nut; 5 – cover; 6 – plate.

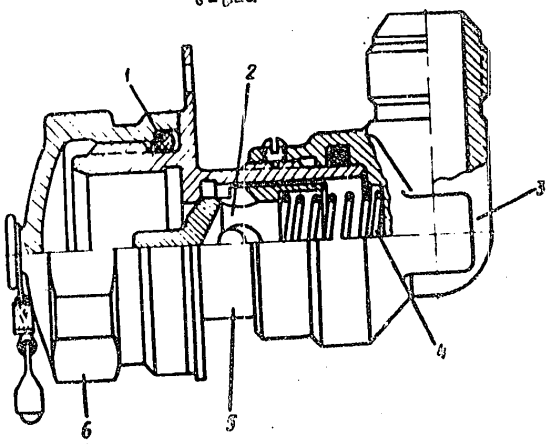


Fig.157. Aircraft Connection
1 – ring; 2 – valve; 3 – elbow; 4 – spring; 5 – body; 6 – plug.

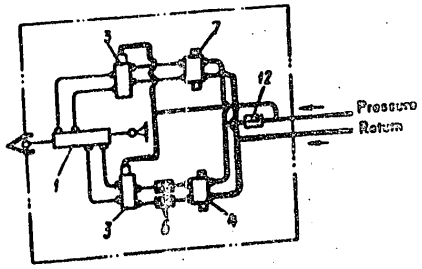


Fig.153. Gear Control System
(For keys to reference numbers see Fig.160)

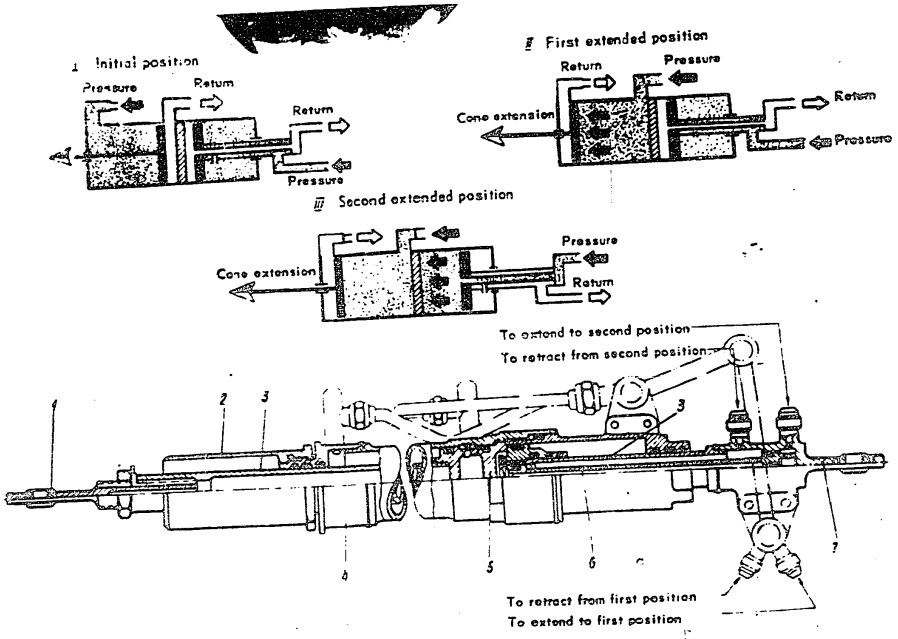


Fig.159. Cone Cylinder
1 — cycbolt; 2 — bush; 3 — rod; 4 — liner; 5 — insert; 6 — inner rod; 7 — stationary rod; 8 — liner.

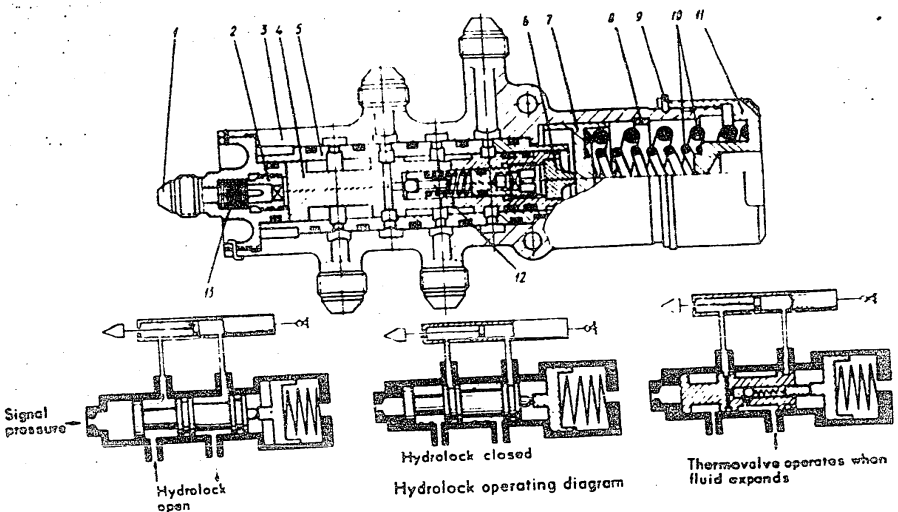
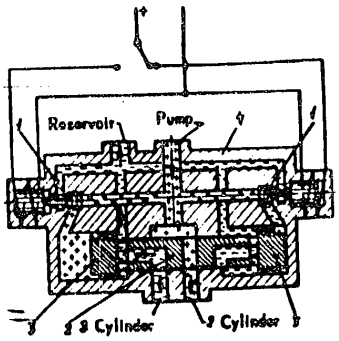
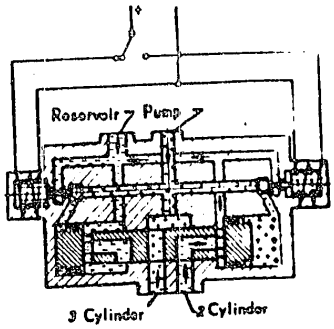


Fig. 160. Cone Cylinder Hydrolock

1 — connection for signal pressure; 2 — nut; 3 — body; 4 — slide valve; 5 — bush; 6 — support; 7 — piston; 8 — lock; 9 — locking ring; 10 — adjusting springs; 11 — cover; 12 — thermovalve; 13 — throttling assembly.



Right-hand electromagnet energized. Slide valve is shifted to extreme right position and connects "PUMP" connection with "2 CYLINDER" connection and "3 CYLINDER" connection with "RESERVOIR" connection



Left-hand electromagnet energized. Slide valve is shifted to extreme left position and connects "PUMP" connection with "3 CYLINDER" connection and "2 CYLINDER" connection with "RESERVOIR"

Working pressure
Return line pressure

Fig.161. PA-105 Valve
1 – ball valve; 2 – slide valve; 3 – plunger; 4 – housing.

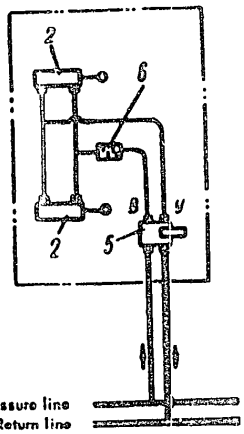


Fig.162. Anti-Surge Shutter Control System
(For keys to reference numbers see Fig.145)

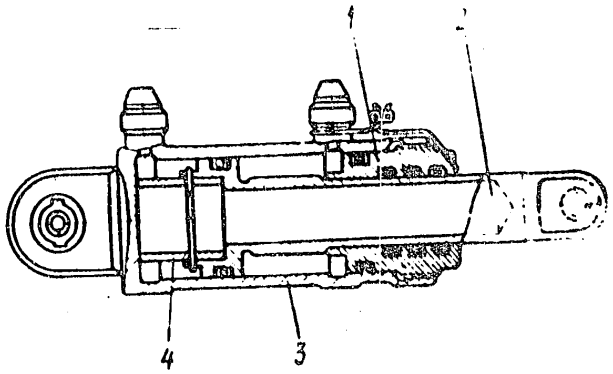
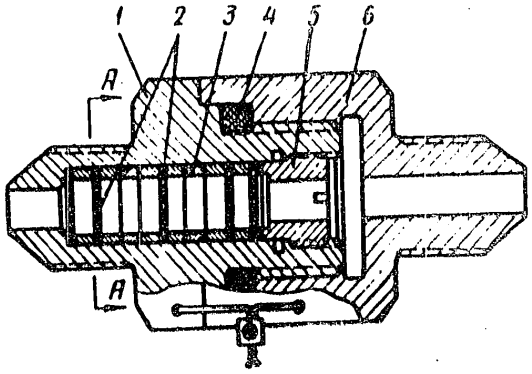


Fig.163. Shutter Cylinder
1 — nut; 2 — rod; 3 — body; 4 — limiting bush.



Section AA

Fig.164. Shutter Throttle
1 — body; 2 — throttle; 3 — spacing ring; 4 — packing ring; 5 — nut; 6 — cover.

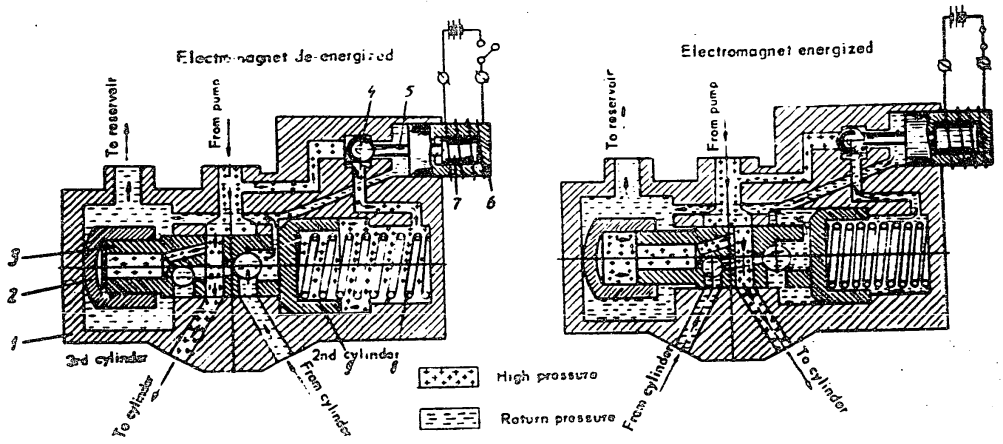


Fig. 165. EA-134 Valve

1 – body; 2 – piston; 3 – slide valve; 4 – ball valve; 5 – [illegible]; 6 – coil body; 7 – core; 8 – spring; 9 – piston.

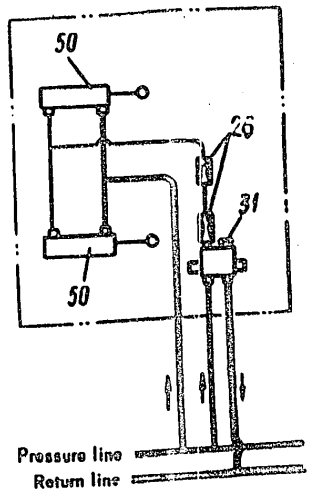


Fig.166. Wing Flaps Control System
(For keys to reference numbers see Fig.165)

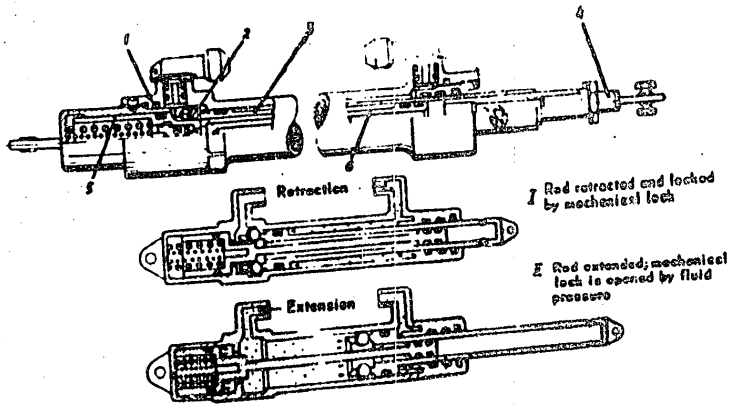


Fig.167. Wing Flap Cylinder
1 – body; 2 – ball lock; 3 – rod; 4 – adjusting bolt; 5 – bush; 6 – stationary rod.

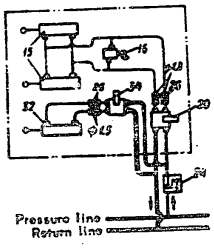


Fig.168. Air Brake Control System
(For keys to reference numbers see Fig.143)

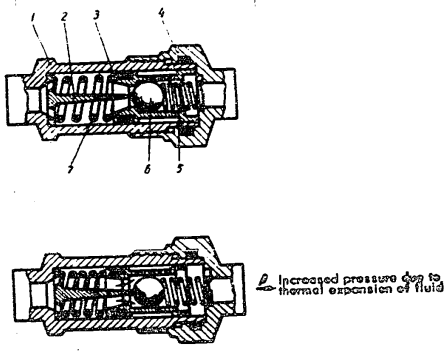


Fig.169. Air Brake Thermovalve
1 – body; 2 – rest; 3 – seat; 4 – cover; 5 – spring; 6 – ball; 7 – calibrated spring.

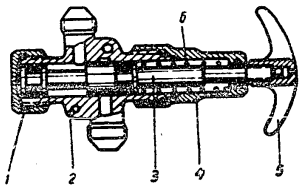


Fig.170. Cross-Feed Valve
1 – cover; 2 – body; 3 – rod; 4 – cover; 5 – handle; 6 – retracting spring.

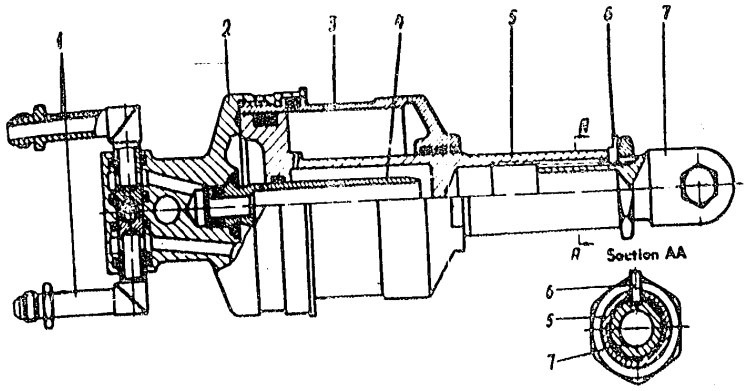


Fig.171. Side Air Brake Cylinder
1 – connection; 2 – cover; 3 – body; 4 – inner bush; 5 – rod; 6 – slide block; 7 – eyebolt.

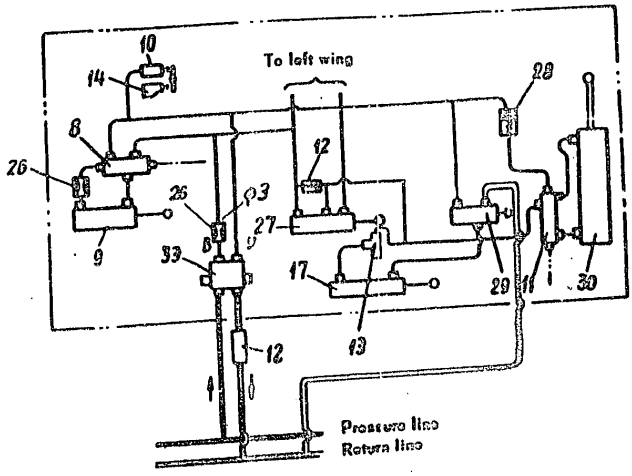


Fig.172. Landing Gear Control System
(For keys to reference numbers see Fig.169)

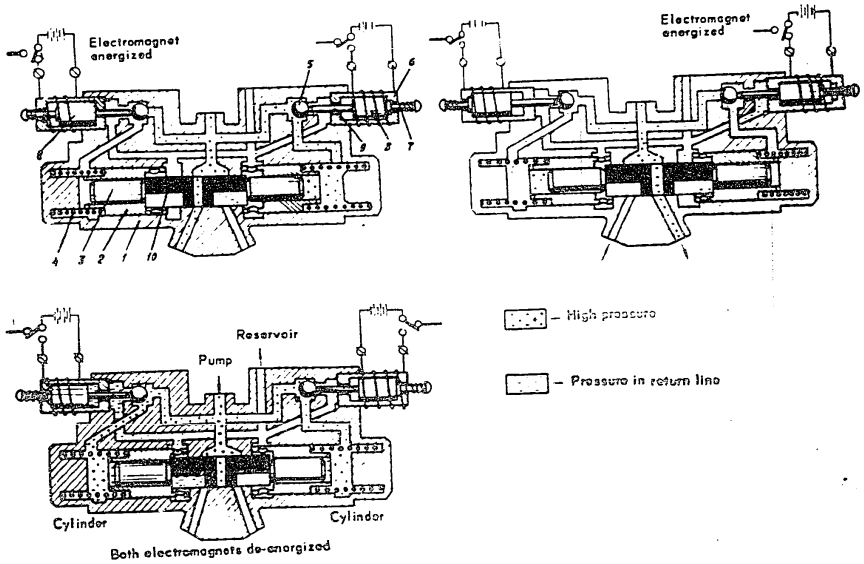


Fig.173. Landing Gear Valve ГА-142/1

1 – body; 2 – piston-bush; 3 – plunger; 4 – spring; 5 – ball valve; 6 – coil body; 7 – manual control button; 8 – core; 9 – tappet; 10 – slide valve.

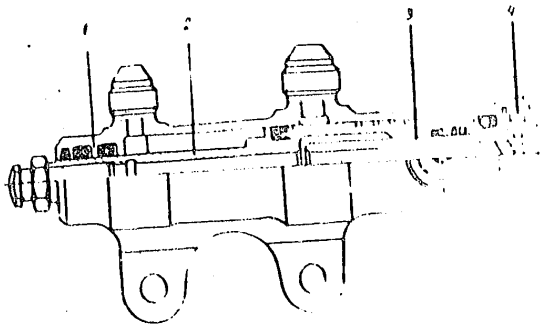
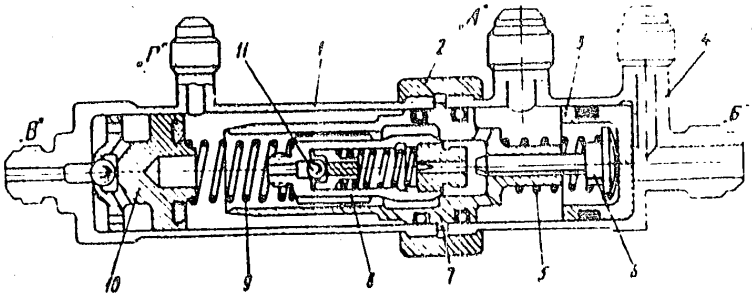
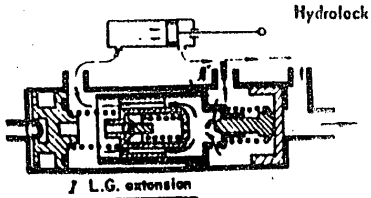


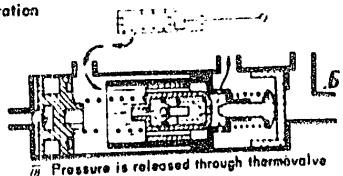
Fig.174. Up-Lock Cylinder
1 – body; 2 – rod; 3 – plunger; 4 – cover



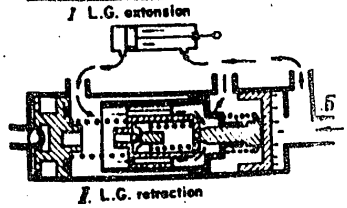
Hydrolock operation



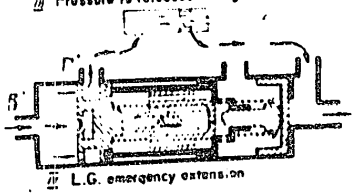
I L.G. extension



II Pressure is released through thermovalve



III L.G. retraction



IV L.G. emergency extension

Fig.175. Landing Gear Hydrolock
1 – body; 2 – connecting nut; 3 – piston; 4 – body; 5 – retracting spring; 6 – tappet; 7 – sleeve; 8 – valve; 9 – retracting spring; 10 – emergency release valve; 11 – thermovalve.

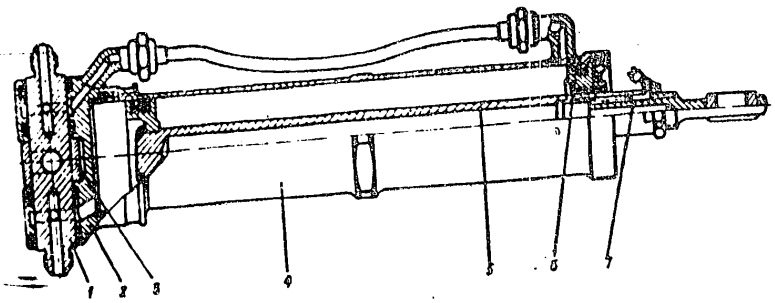


Fig.176. Nose Strut Actuating Cylinder

1 – hinge attachment fitting; 2 – upper cover; 3 – up-lock universal joint; 4 – sleeve; 5 – rod; 6 – cover; 7 – eyebolt.

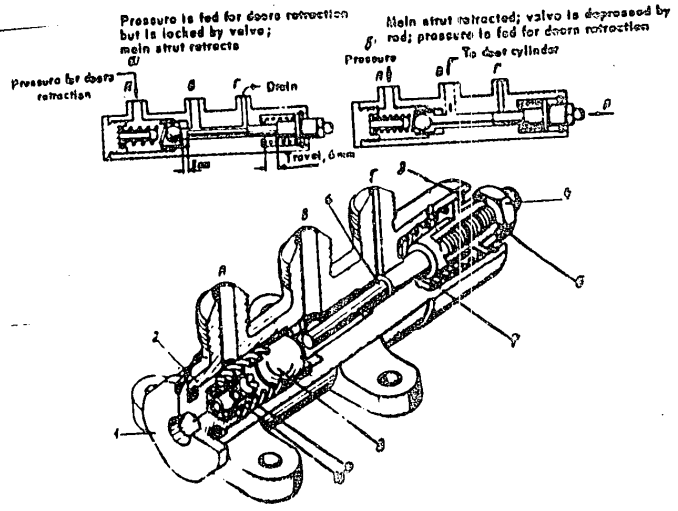


Fig.177. Segunco Valve

1 – cover; 2 – body; 3 – locking ring; 4 – locking nut; 5 – screw; 6 – rod; 7 – retraction spring; 8 – ball; 9 – spring; 10 – seat.

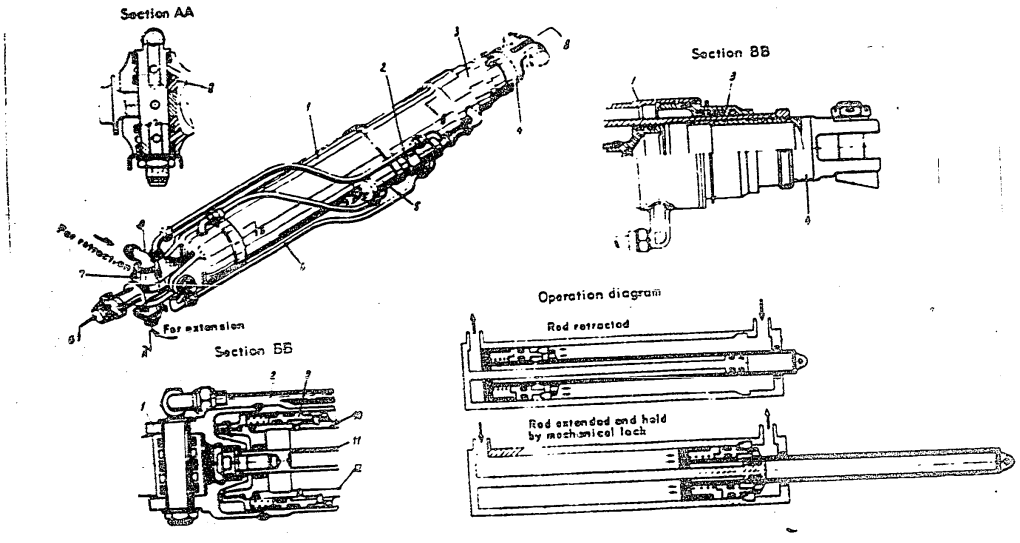


Fig.178. L.G. Main Strut Actuating Cylinder

1 – cylinder sleeve; 2 – retraction pipe line; 3 – lower cover; 4 – eyebolt; 5 – hydrolock; 6 – extension pipe line; 7 – L.G. attachment unit; 8 – universal joint; 9 – locking bush; 10 – rod; 11 – inner piston; 12 – expansion ring.

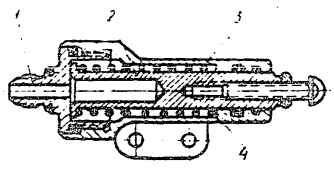


Fig.179. Automatic Breking Cylinder
1 – cover; 2 – rod; 3 – body; 4 – retraction spring.

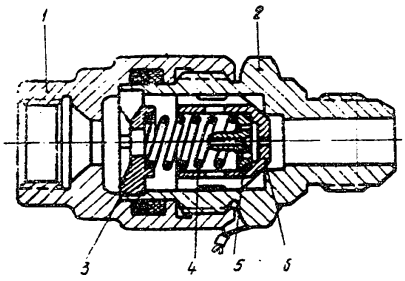


Fig.180. One-Way Restrictor
1 – body; 2 – cover; 3 – support; 4 – retraction spring; 5 – protective screen; 6 – plunger.

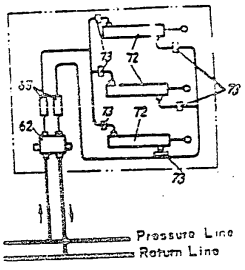
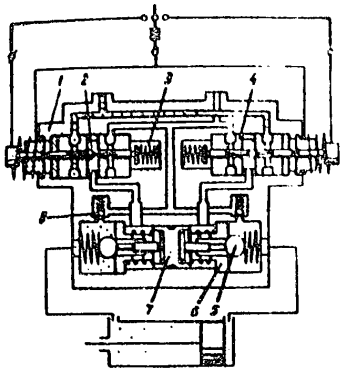
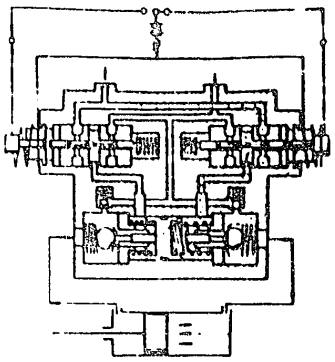


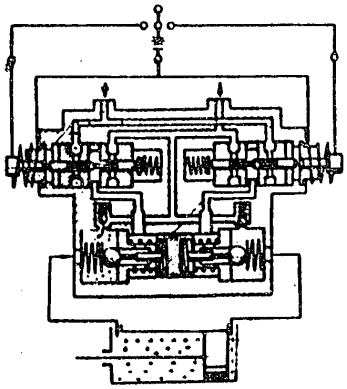
Fig.181. Engine Nozzle Flaps Control System
(See Ref. Nos in Fig.146)



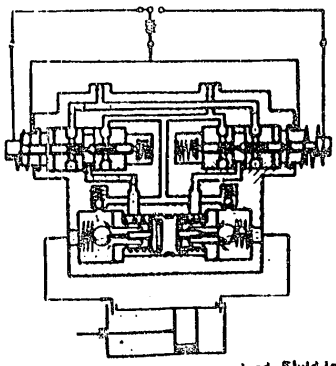
Electromagnets cut off. Delivery of fluid into cylinder stopped. Cylinder cavities closed



Right-hand electromagnet energized. Fluid is delivered into cylinder right-hand cavity. Left-hand cavity connected to return line.



Electromagnets cut off. Pressure in cylinder left-hand cavity exceeds working pressure. Thermal valve operates.



Left-hand electromagnet energized. Fluid is delivered into cylinder left-hand cavity. Right-hand cavity connected to return line.

Fig.182. 1'A-164M Hydraulic Valve

1 – body; 2 – transmitter; 3 – spring; 4 – bushing; 5 – ball; 6 – bushing; 7 – piston; 8 – thermal valve.

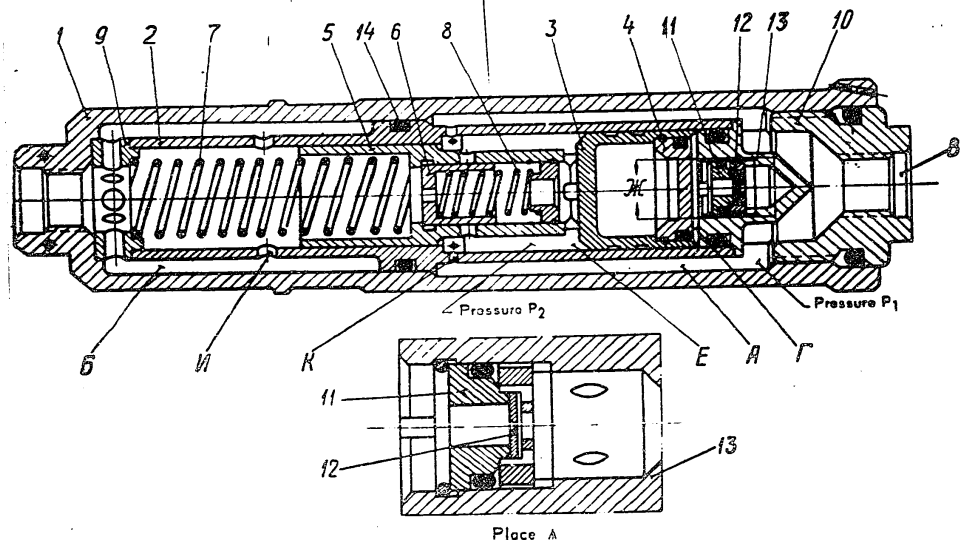


Fig. 183. PA-173 Metering Unit

1 — body; 2 — sleeve; 3 — floating valve; 4 — valve bottom; 5 — slide valve; 6 — valve; 7 — spring; 8 — spring; 9 — stop; 10 — cover; 11 — seat; 12 — diaphragm; 13 — sleeve cover; 14 — packing ring.

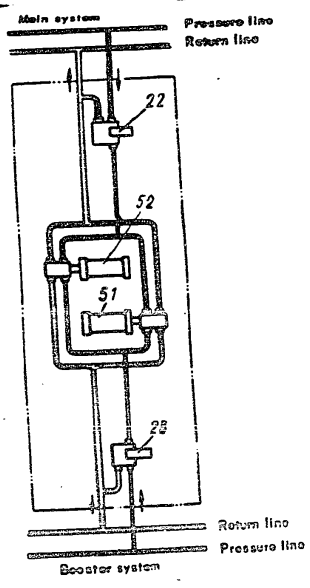


Fig.184. Diagram of BY-45A Booster Supply from Main and Booster Systems (See Ref. Nos in Fig.146)

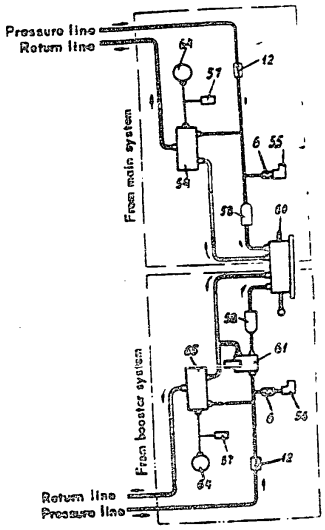
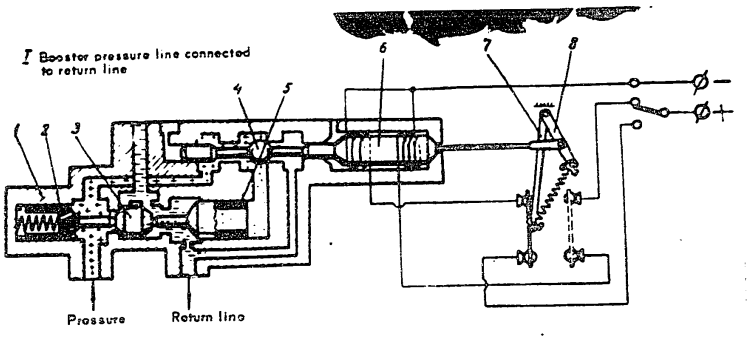


Fig.185. Diagram of BY-51MC Booster Supply from Main and Booster Systems (See Ref. Nos in Fig.146)



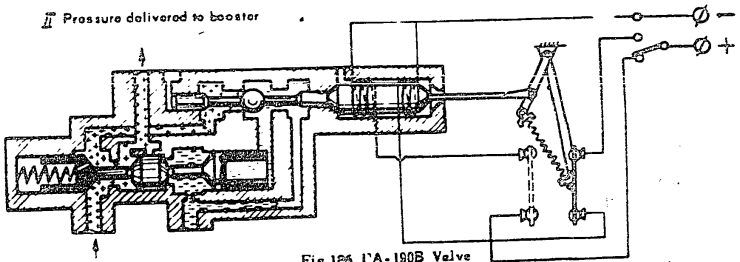
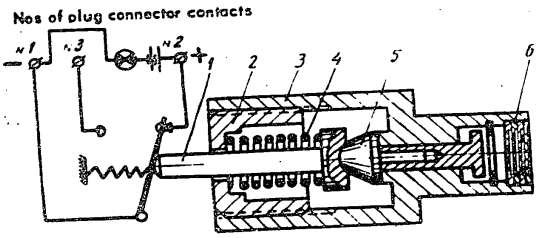
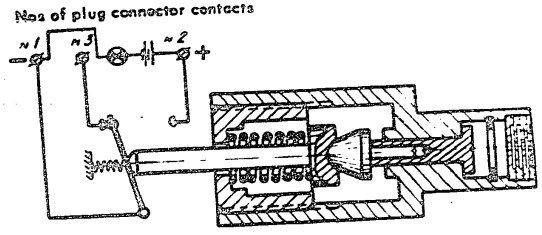


Fig. 125. PA-190B Valve

1 – body; 2 – piston; 3 – distributing slide valve; 4 – ball valve; 5 – piston; 6 – electromagnet; 7 – rocking shaft; 8 – hinged lever.

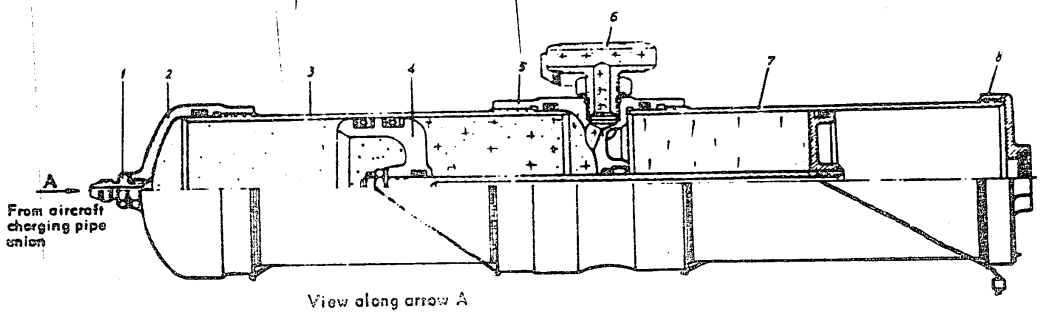


Pressure delivered to pipe union has decreased down to 165^{+10}_{-5} kg/cm^2
Warning system cut in

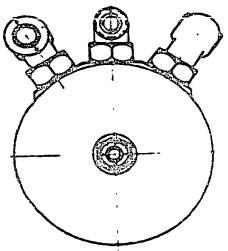


Pressure delivered to pipe union has increased up to 195 kg/cm^2.
Lamp is cut

Fig. 187. 1'A-135T Pressure-Sensitive Relay
1 – seat; 2 – nut; 3 – body; 4 – spring; 5 – tappet; 6 – damper.



View along arrow A



Symbols

- working pressure
- return line pressure
- air under pressure
- atmospheric air

Fig. 188. Cylindrical Hydraulic Accumulator

1 — charging pipe union; 2 — cover; 3 — high-pressure chamber; 4 — piston assembly; 5 — connecting sleeve; 6 — pipe unions; 7 — low-pressure chamber; 8 — cover.

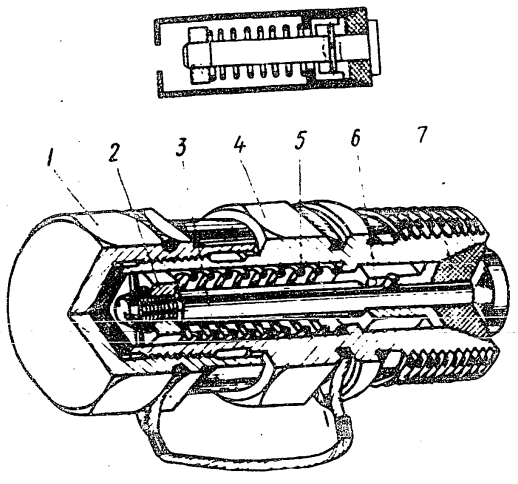


Fig.189. 800600 \ Charging Valve
1 – cover; 2 – nut; 3 – pressure rod; 4 – body; 5 – spring; 6 – bush; 7 – rubber tapered washer

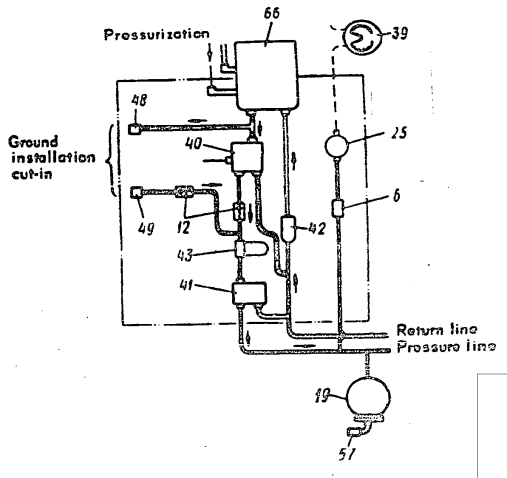


Fig.190. Booster System Pressure Section (See Ref. Nos in Fig.166)

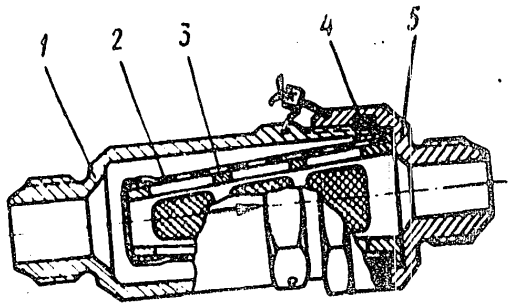


Fig.191. Gauze Filter
1 – body; 2 – filter; 3 – filter frame; 4 – packing ring; 5 – cover.

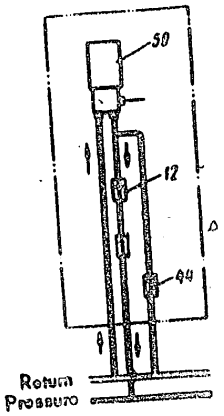


Fig.192. Emergency Pump Unit System
(See Ref. Nos in Fig.163)

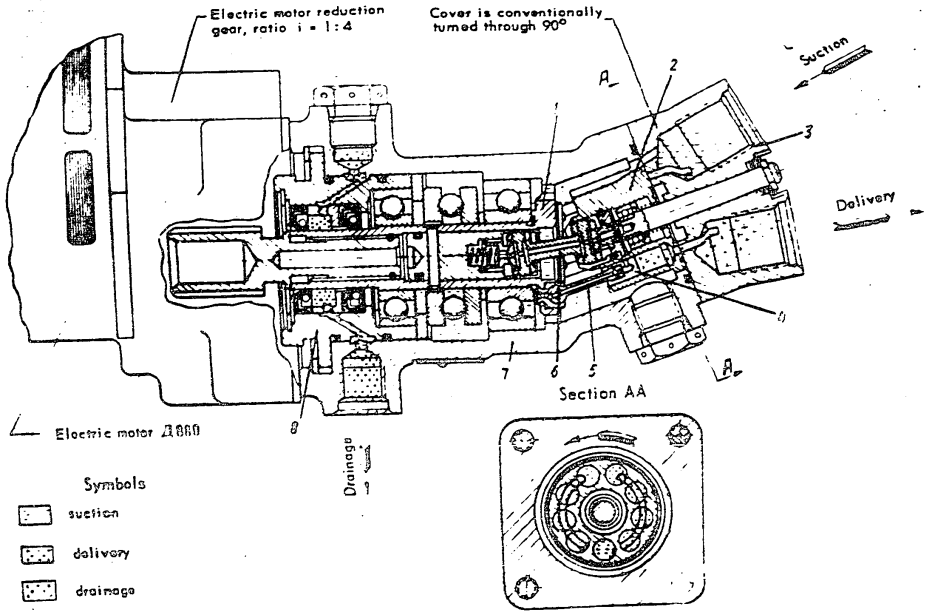


Fig.193. ШЛ-27Т Emergency Pump Unit

1 — pump shaft; 2 — rotor piston assembly; 3 — cover; 4 — piston; 5 — rod; 6 — ball thrust joint; 7 — bushing; 8 — sleeve

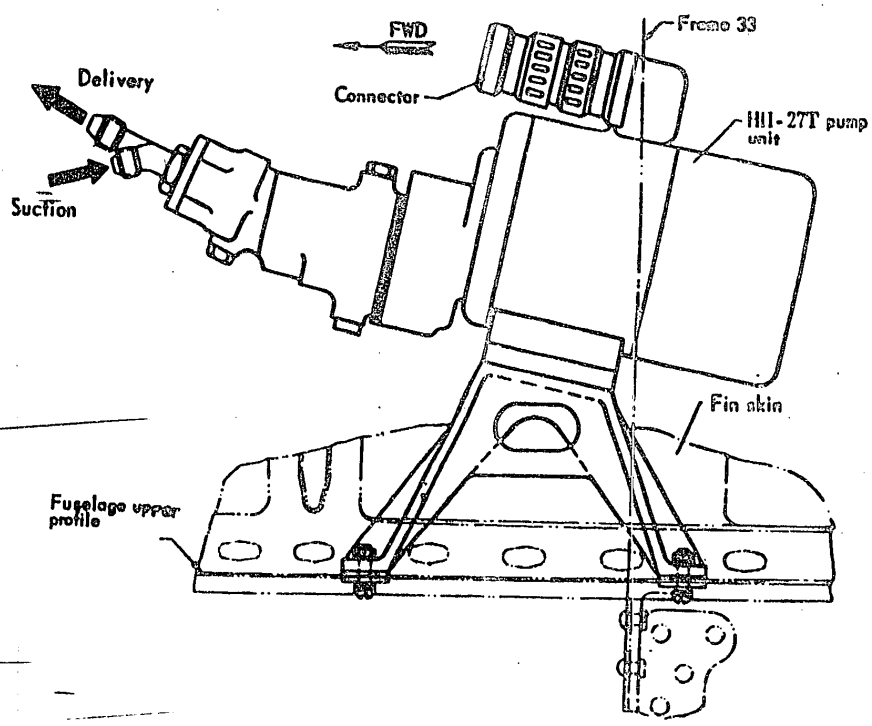


Fig.194. HII-27T Pump Unit Installation

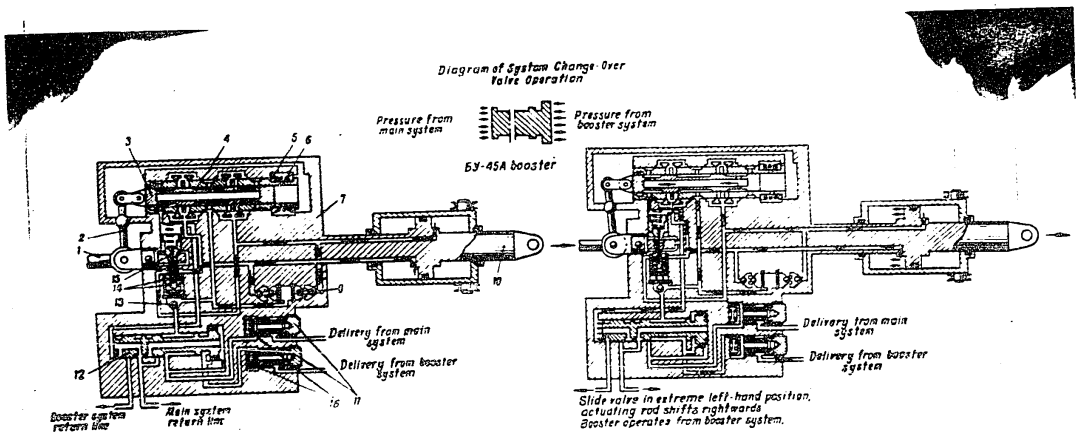


Fig. 195. БУ-45А Booster

1 – eyebolt; 2 – lever; 3 – distributing slide valve; 4 – duplicating slide valve; 5 – bushing; 6 – spring; 7 – booster head; 8 – ball valves; 9 – cylinder; 10 – cylinder rod; 11 – inlet filters; 12 – discharging slide valve; 13 – non-return valve; 14 – cross-feed valve; 15 – retainer; 16 – shut-off valve.

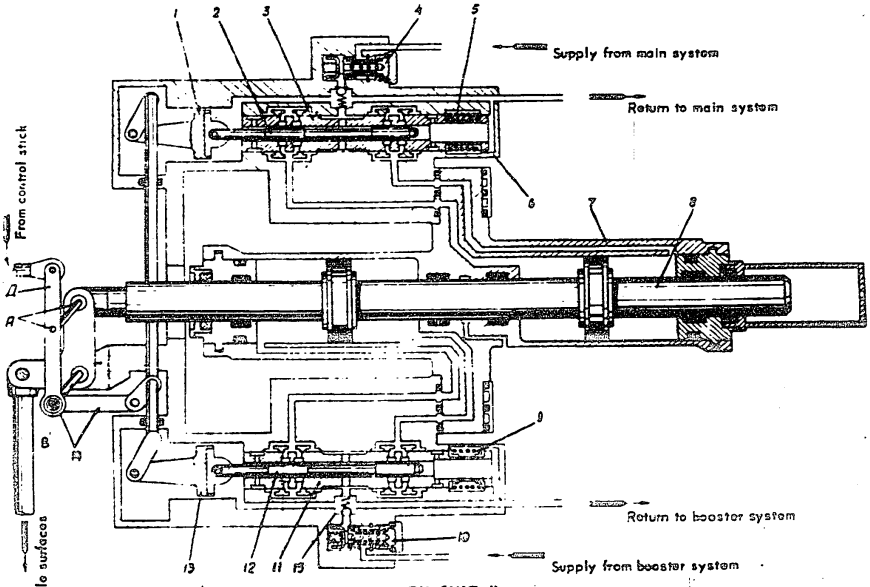


Fig.196. БУ-51МС Booster

1 – damper; 2 – main distributing slide valve; 3 – duplicating slide valve; 4 – inlet filter; 5 – duplicating slide valve spring; 6 – bracket; 7 – cylinder; 8 – actuating cylinder rod; 9 – duplicating slide valve spring; 10 – inlet filter; 11 – duplicating slide valve; 12 – main slide valve; 13 – damper; 14 – system of rods, rocking shafts and levers (linkage mechanism); 15 – non-return valve

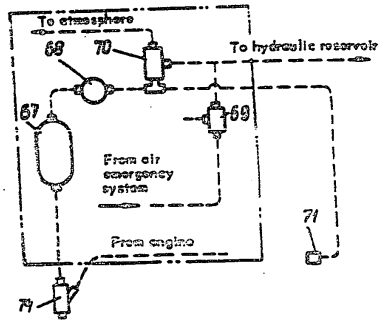
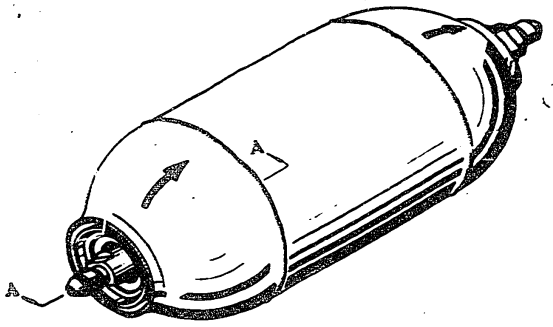


Fig.197. Hydraulic Reservoir Pressurization System
(See Ref. Nos in Fig.145)



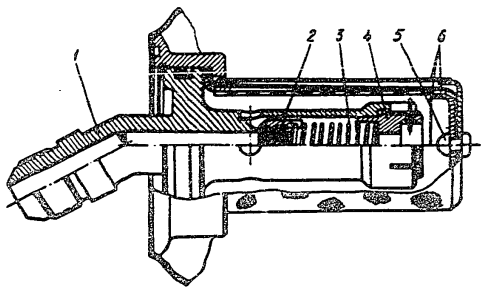


Fig.198. Pressurization Unit
1 – inlet pipe union; 2 – non-return valve; 3 – spring; 4 – support; 5 – rivet; 6 – silk and gauze filters.

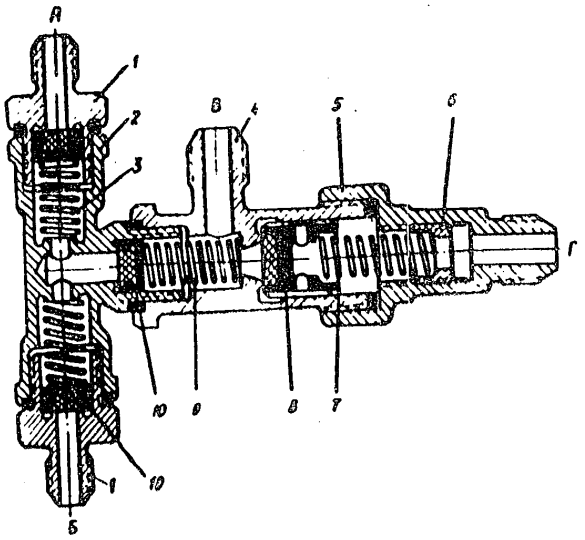


Fig. 199. Pressurization Valve
1 – pipe union; 2 – T-piece; 3 – spring; 4 – body; 5 – cover; 6 – nut; 7 – spring; 8 – safety valve; 9 – spring; 10 – non-return valve.

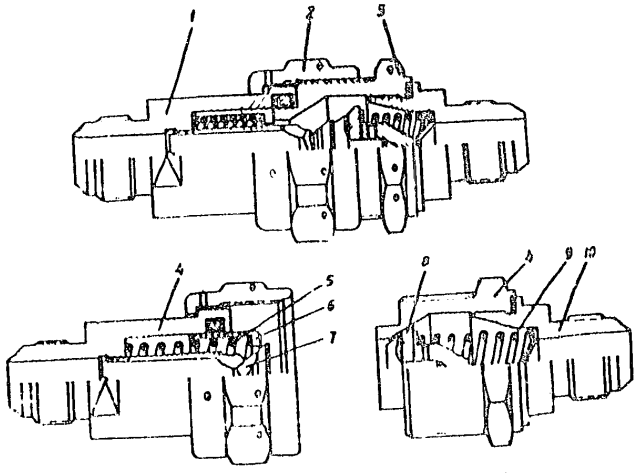


Fig. 200. Line Disconnect Valve
1 – locking valve; 2 – union nut; 3 – locking valve; 4 – body; 5 – spring; 6 – sleeve; 7 – head; 8 – head; 9 – spring; 10 – pipe union.

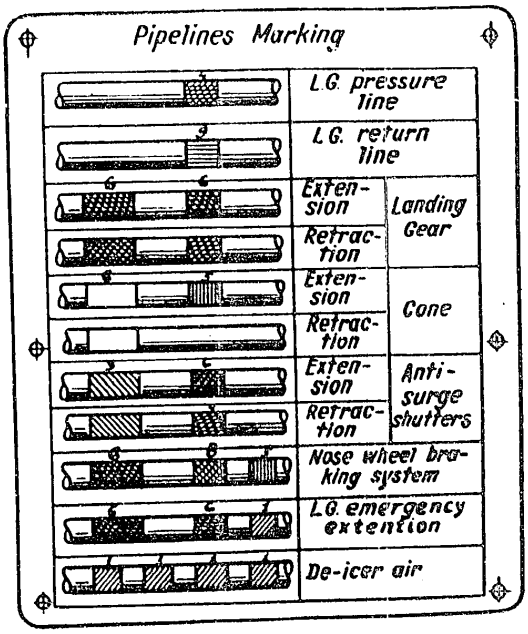


Fig.201. Pipelines Marking Plate (installed in nose strut well)
Designation of pipelines: 1 – red; 2 – dark red; 3 – rosy; 4 – blue; 5 – dark blue; 6 – emerald green; 7 – light green; 8 – yellow; 9 – grey.

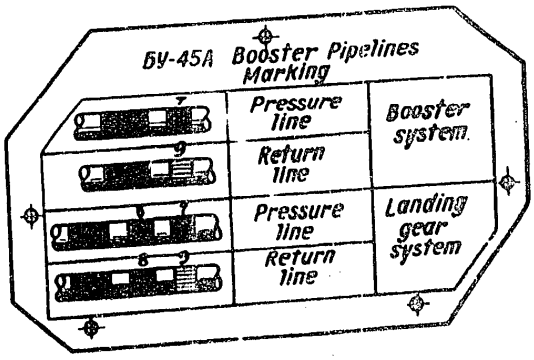


Fig.202. Pipelines Marking Plate (installed in each wing on BY-45A booster hatch)

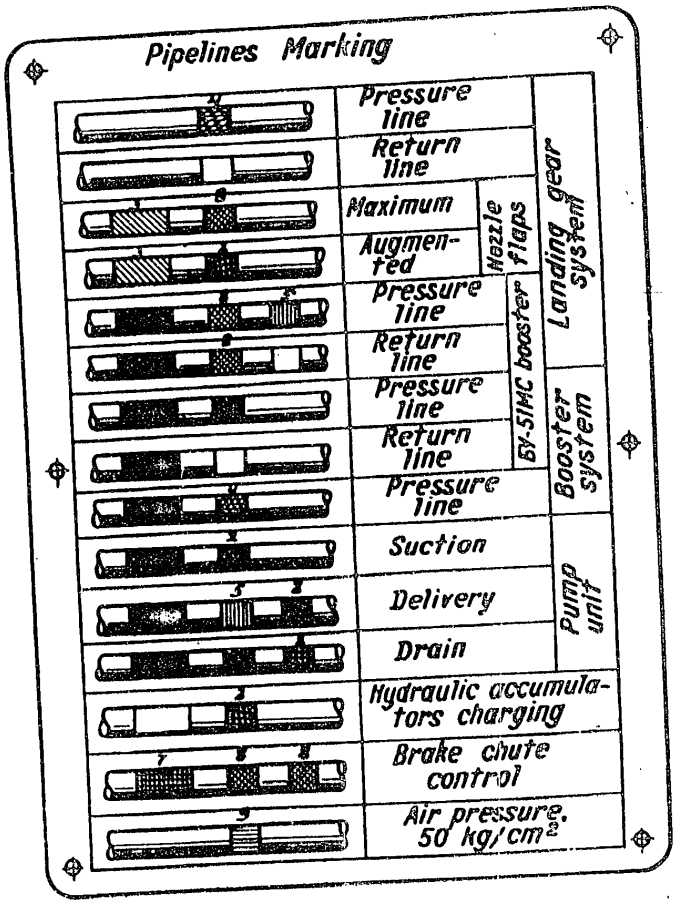


Fig.203. Pipelines Marking Plate (installed in HH-27 pump unit hatch)

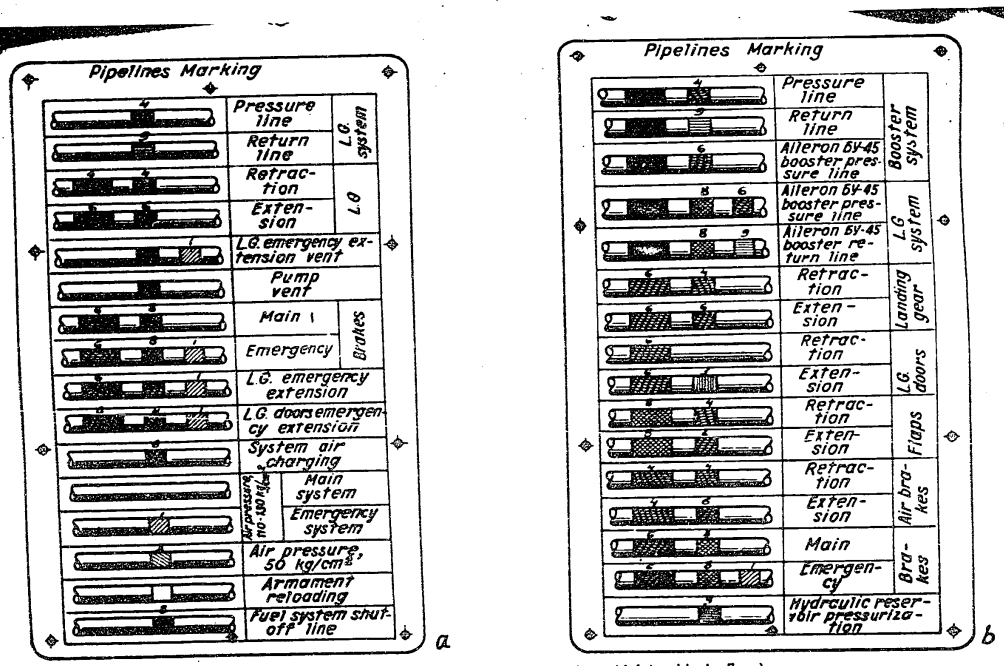


Fig.204. Pipelines Marking Plate (installed on wheel right-and left-hand brake flaps)

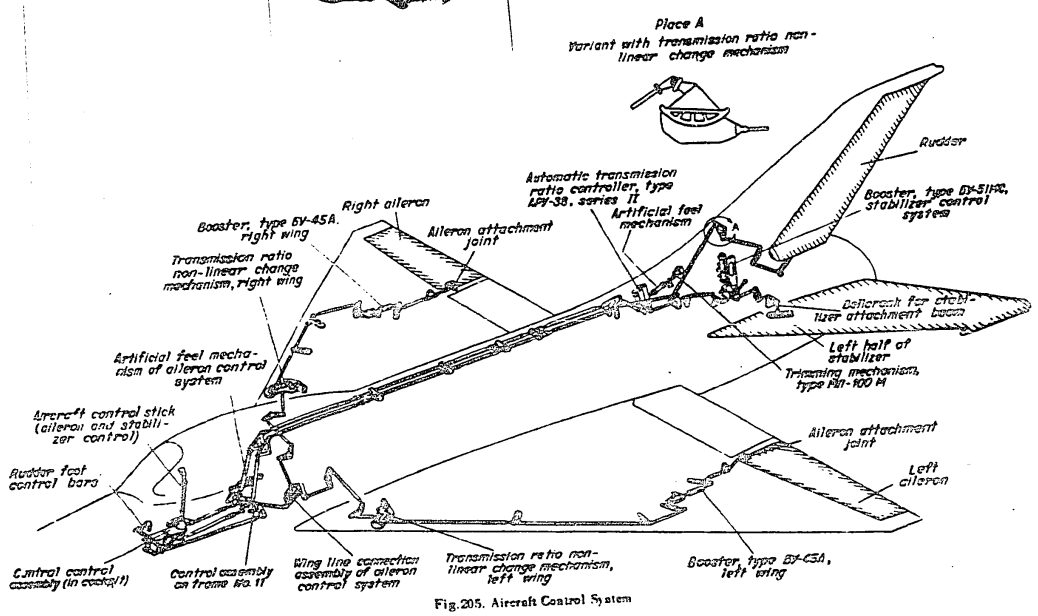


Fig. 205. Aircraft Control System

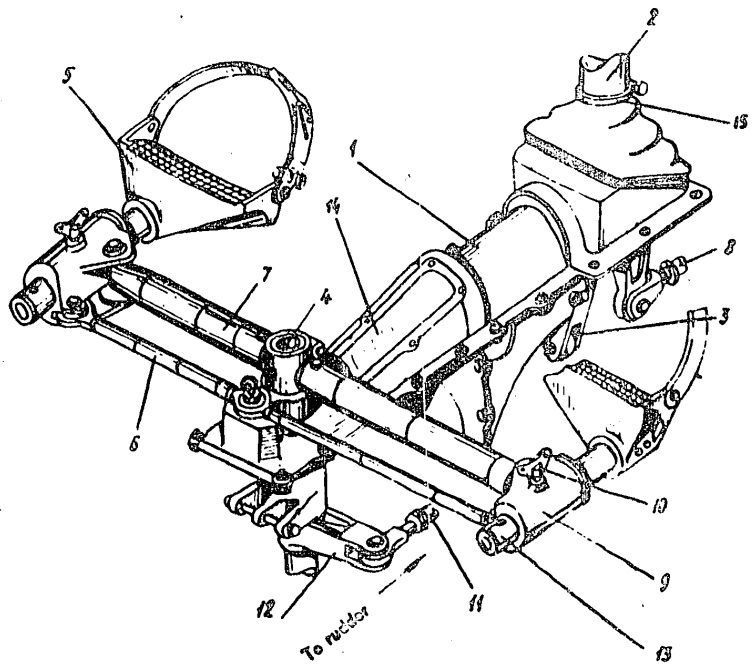


Fig.205. Central Control Assembly

1 – bracket; 2 – control stick; 3 – aileron control lever; 4 – axle; 5 – foot control bar; 6 – connecting rod; 7 – tube; 8 – stabilizer control rod; 9 – side bracket; 10 – adjusting screw; 11 – rudder control rod; 12 – lever; 13 – foot control bar stem; 14 – cover; 15 – collar.

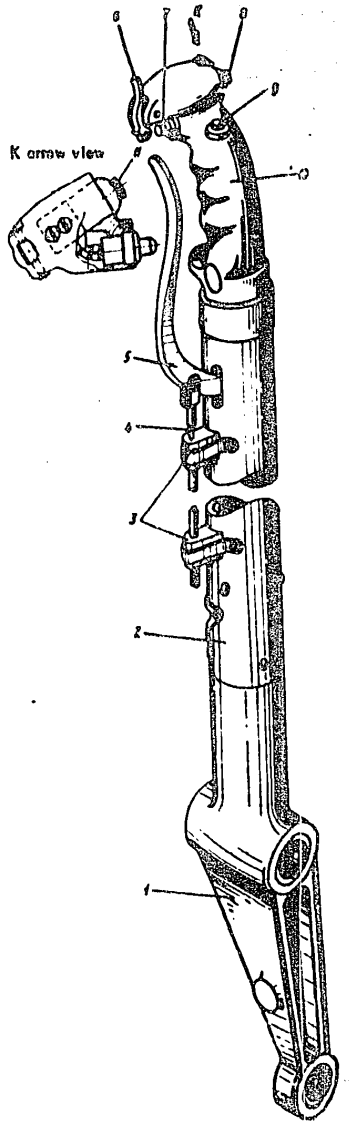
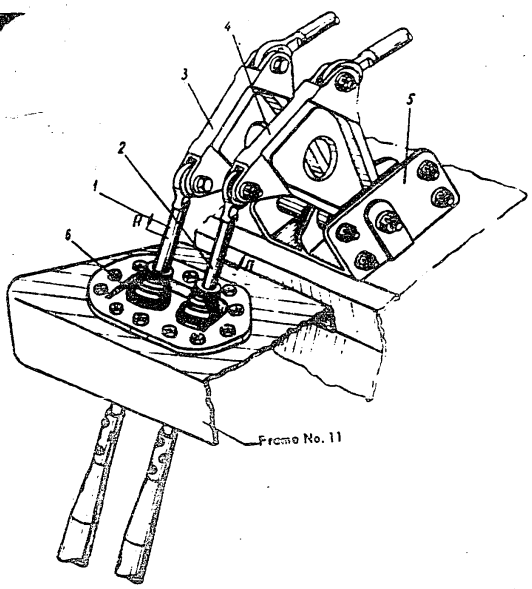


Fig. 207. Control Stick

1 – elevator control lever; 2 – sleeve; 3 – cable attachment fittings; 4 – cable; 5 – wheel brake control lever; 6 – trigger; 7 – fire control button; 8 – sight damping button; 9 – air brake control button; 10 – grip; 11 – trimming mechanism control button.



Section AA

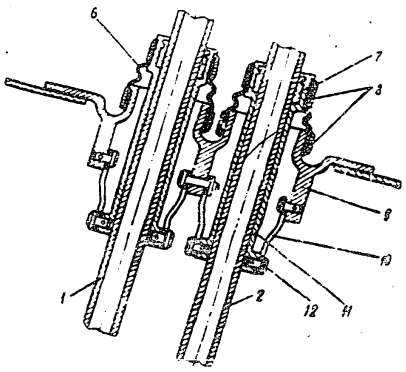


Fig. 208. Control Assembly Sealing Arrangements

1 – stabilizer control rod; 2 – rudder control rod; 3 – bell-crank; 4 – bell-crank; 5 – bell-crank attachment bracket; 6 – sealing jacket; 7 – sealing plate; 8 – wire binding; 9 – sealing arrangement bracket; 10 – brace; 11 – bushing; 12 – sheft.

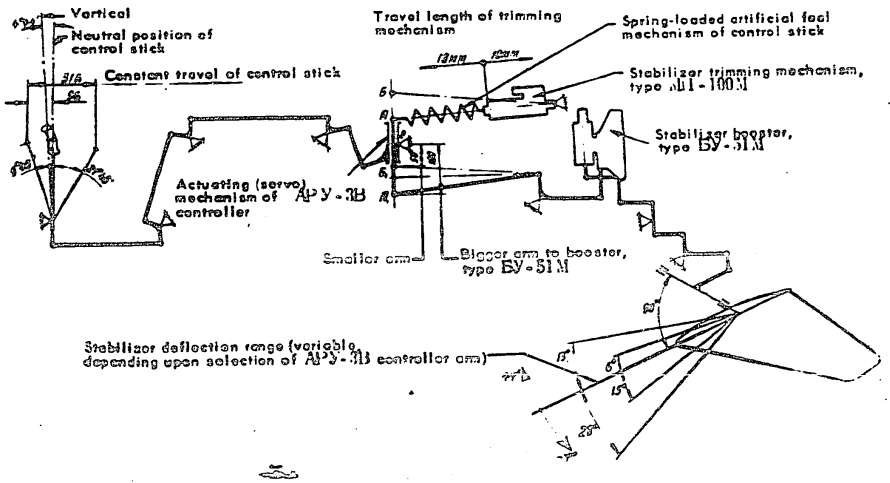


Fig. 209. Longitudinal Control Diagram

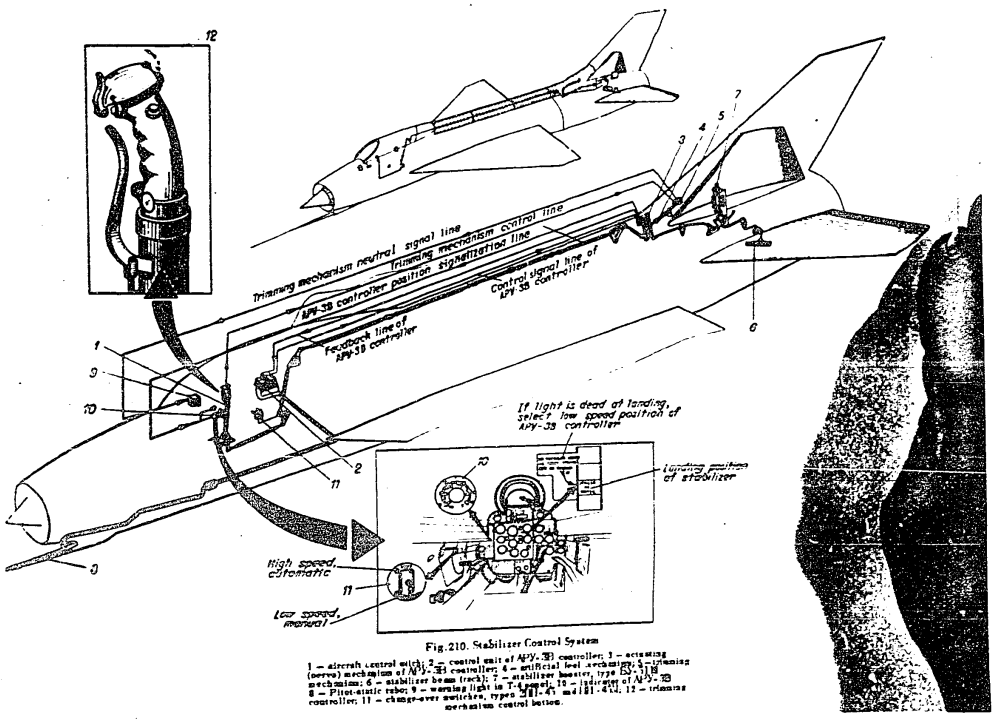


Fig.210. Stabilizer Control System

1 – aircraft control stick; 2 – control unit of APY-3B controller; 3 – actuating (servo) mechanism of APY-3B controller; 4 – artificial feel mechanism; 5 – trimming mechanism; 6 – stabilizer beam (rack); 7 – stabilizer booster, type ÉU-11B; 8 – Pitot-static tube; 9 – warning light in T-4 panel; 10 – indicator of APY-3B controller; 11 – change-over switches, types [illegible] and [illegible]; 12 – trimming mechanism control button.

50X1-HUM

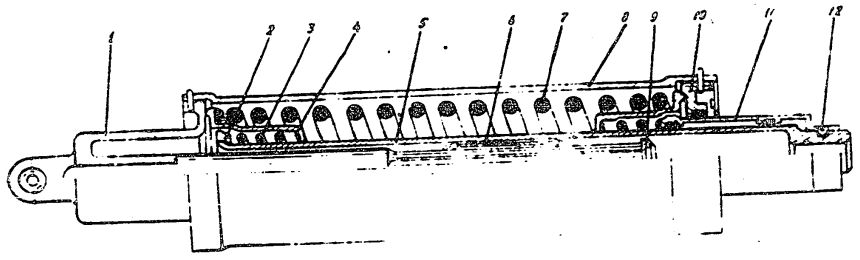


Fig.211. Artificial Feel Mechanism of Stabiliser Control System
1 – axle; 2 – washer; 3 – spring; 4 – support ring; 5 – rod; 6 – separator; 7 – spring; 8 – cylinder; 9 – nut; 10 – cap; 11 – bushing; 12 – screw.

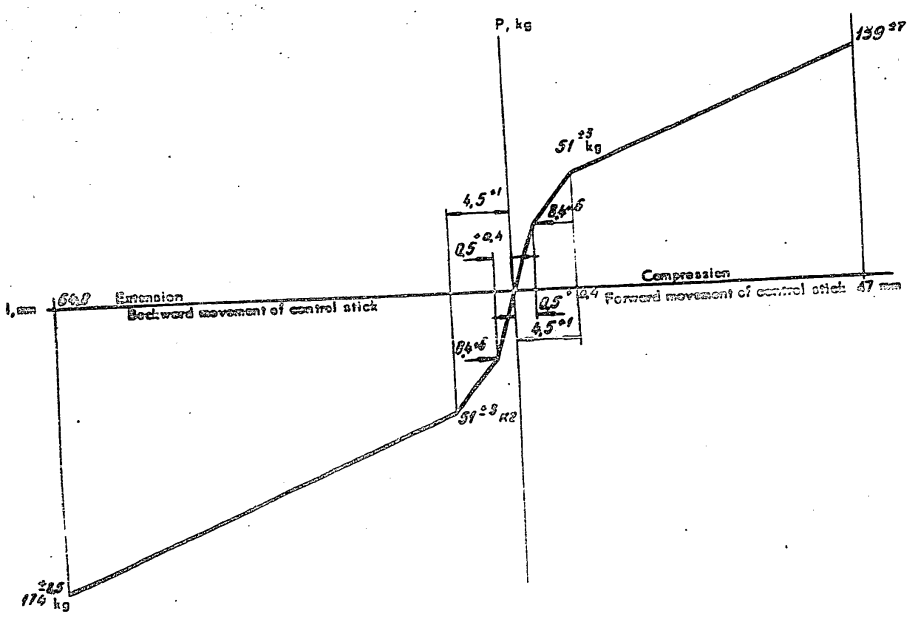


Fig.212. Characteristic Curve of Spring Set of Stabilizer System Artificial Feel Mechanism

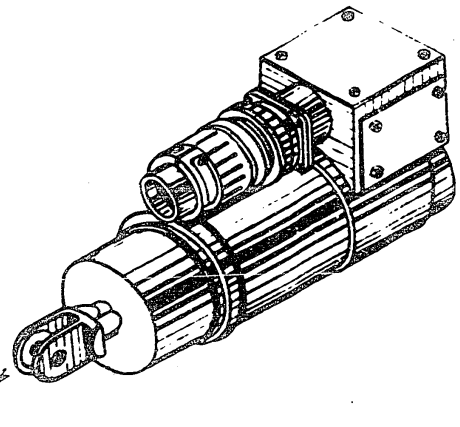


Fig.213. Trimming Effect Mechanism of Stabilizer Control System

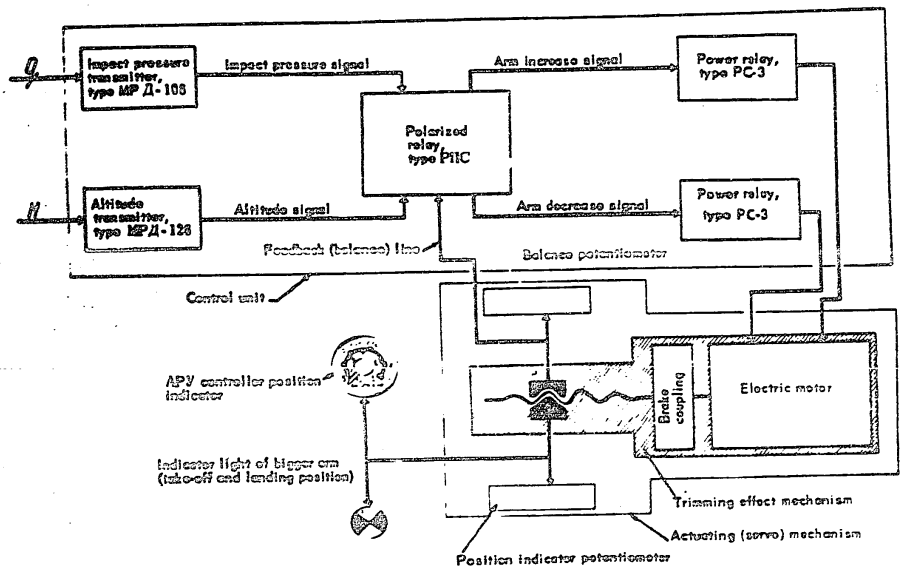


Fig.214. Diagram of APV-3B Controller Units

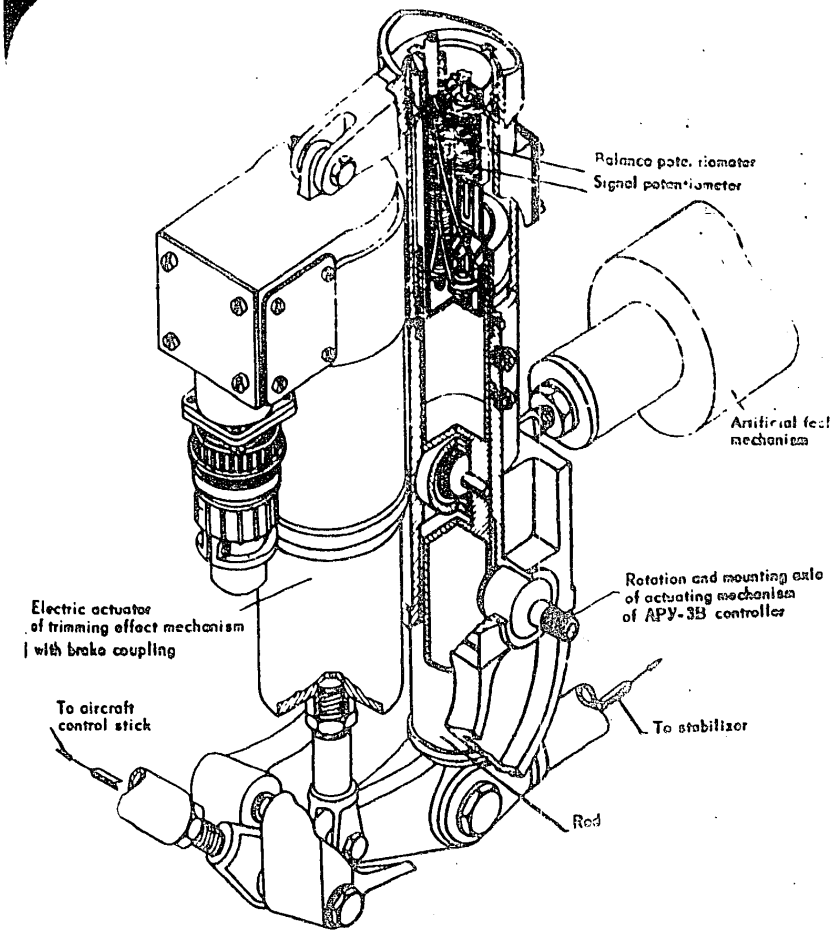


Fig.215. Actuating (Servo) Mechanism of APY-3B Controller

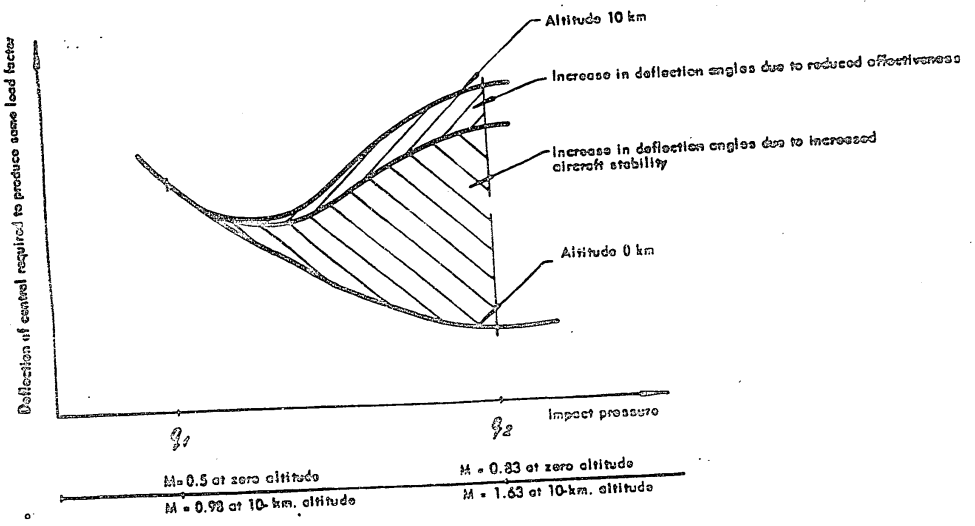


Fig.216. Aircraft Control Vs Impact Pressure, Static Stability Margin and Stabilizer Effectiveness

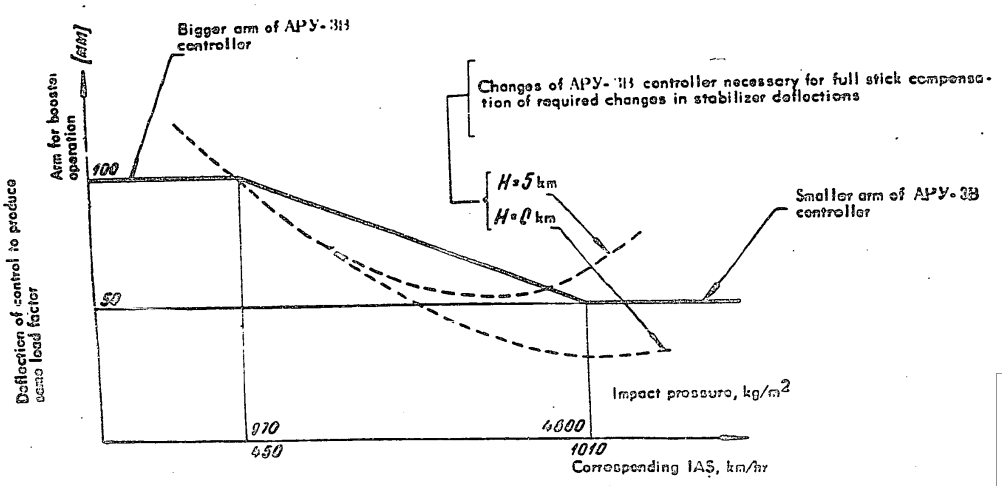


Fig.217. APY-3B Arm for Booster Operation Vs Impact Pressure at Altitudes from 0 to 5 km

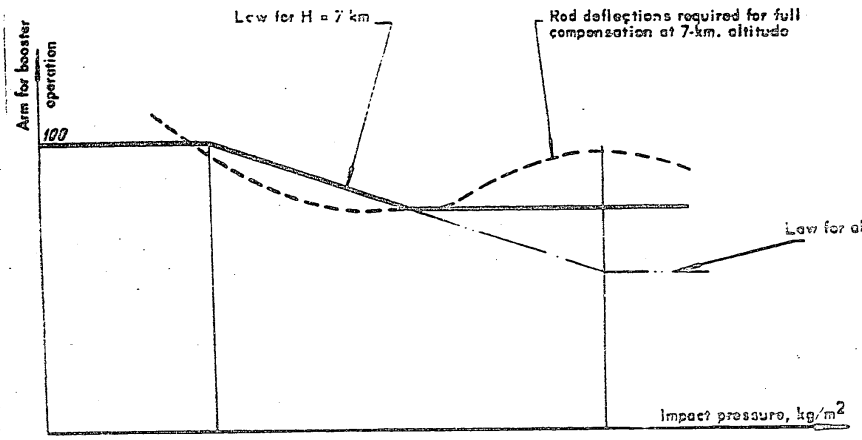


Fig.218. APU-3B Arm for Booster Operation Vs Impact Pressure at Altitude of 7 km.

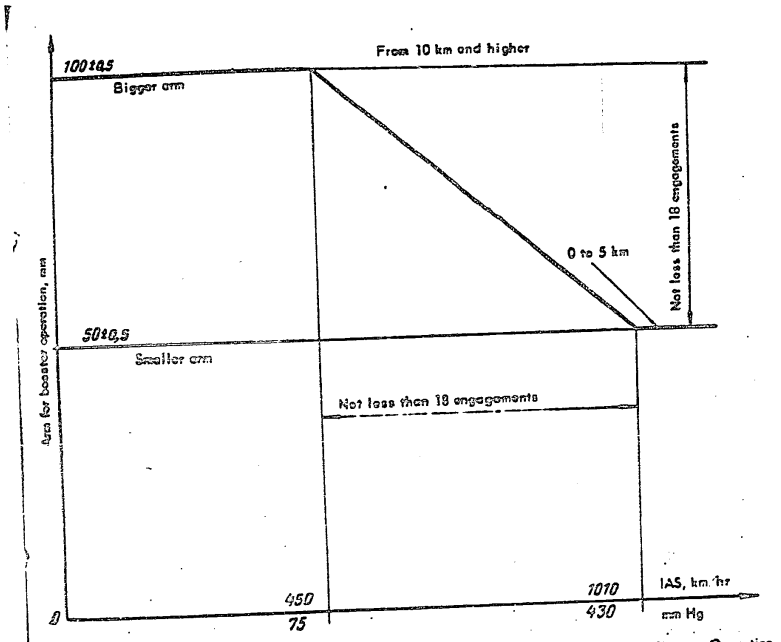


Fig.219. Assumed Law for Adjusting APY-3B Controller Actuating Mechanism Rod for Booster Operation

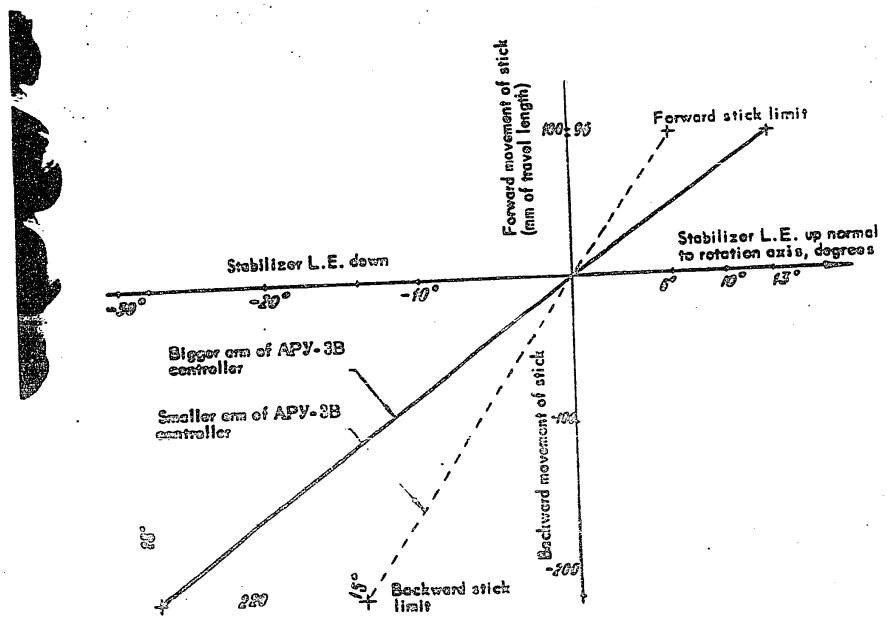


Fig.220. Stabilizer Deflection Angle as Function of Direction of Control Stick Deflection

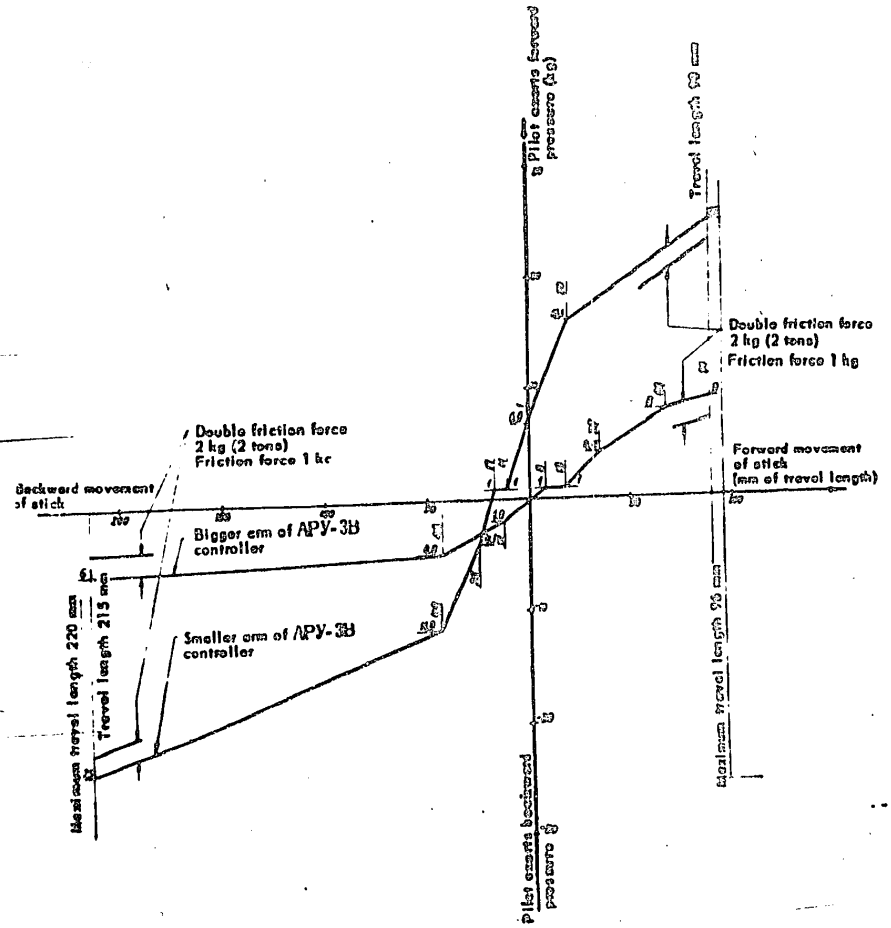


Fig.221. Stabilizer Deflection Angle Vs Stick Loading and Pressure in Off-Neutral Position

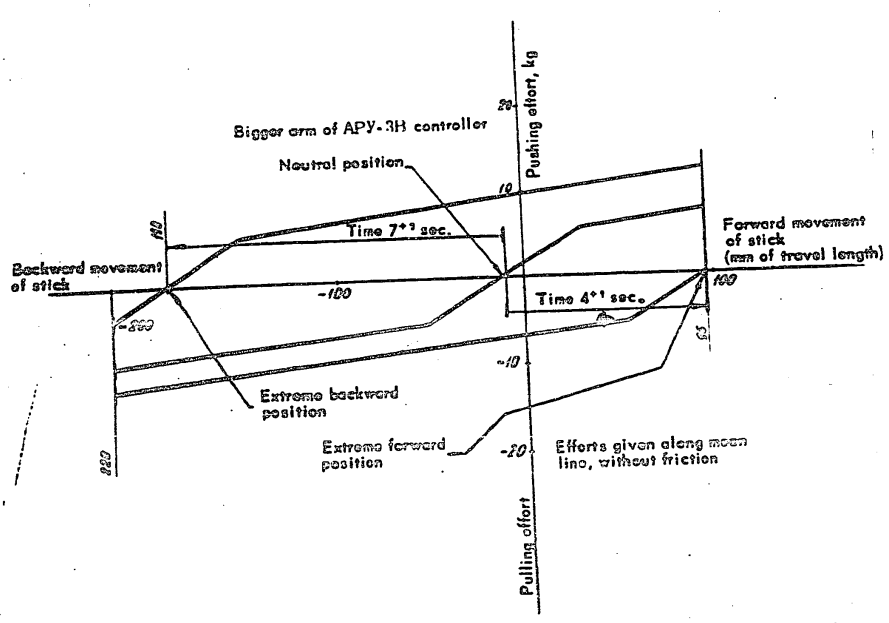


Fig.222. Range and Time of Stick Pressure Variations at Full Travel Length of Trimming Mechanism from Neutral Position with Bigger Arm of APY-3B Controller

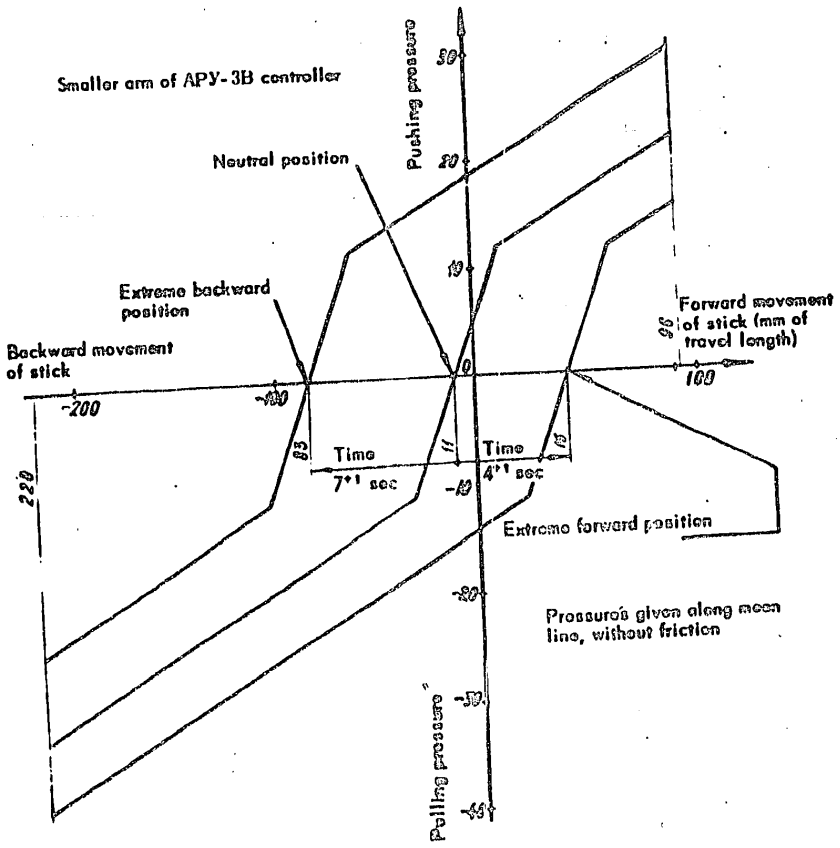


Fig.223. Range and Time of Stick Pressure Variations at Full Travel Length of Trimming Mechanism Rod with Smaller Arm of APY-3B Controller

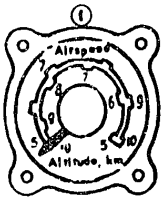
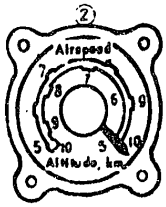
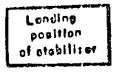
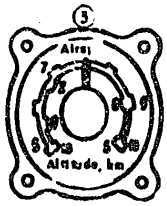
Means of checking APY controller automatic operation	Flight procedures
 Pointer on left stop  Indicator light in T-4 panel burns	Flying at IAS lower than 450 km/hr, all altitudes Flying at IAS beyond 450 km/hr, and 10-km altitude or higher In landing approach
 Pointer on right stop  Indicator light on T-4 panel is dead	Flying at IAS beyond 1010 km/hr, at altitudes from 0 to 5 km
 Pointer in mid-scale position  Indicator light on T-4 panel is dead	Flying at IAS beyond 750 km/hr at 7-km altitude

Fig.224 Position Indicator of APY-3B Controller

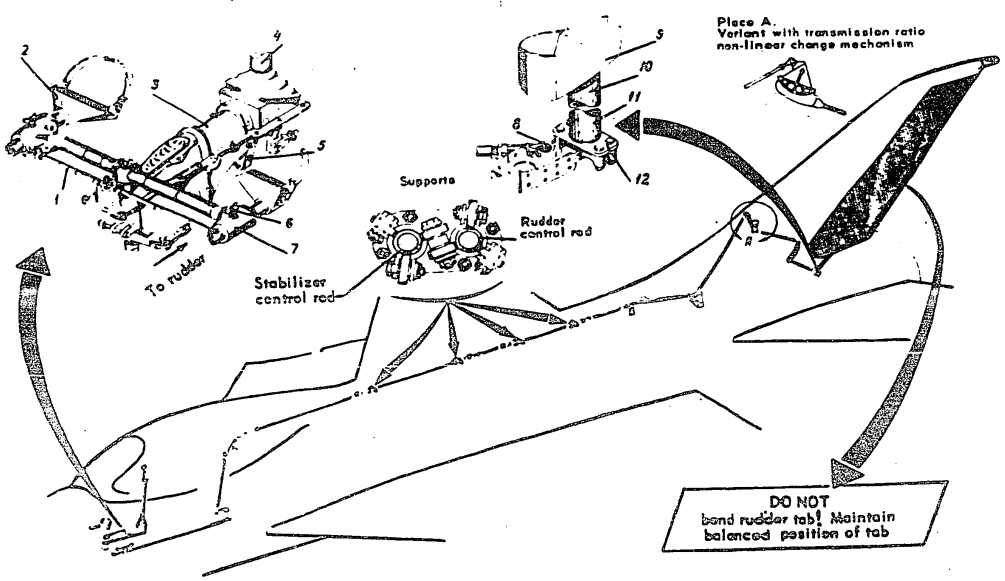


Fig.225. Rudder Control System

1 — connecting rod; 2 — foot control bar; 3 — bracket; 4 — aircraft control stick; 5 — aileron control lever; 6 — adjusting bolt; 7 — side bracket; 8 — bell-crank; 9 — rudder; 10 — axle; 11 — lower rudder attachment joint; 12 — bracket.

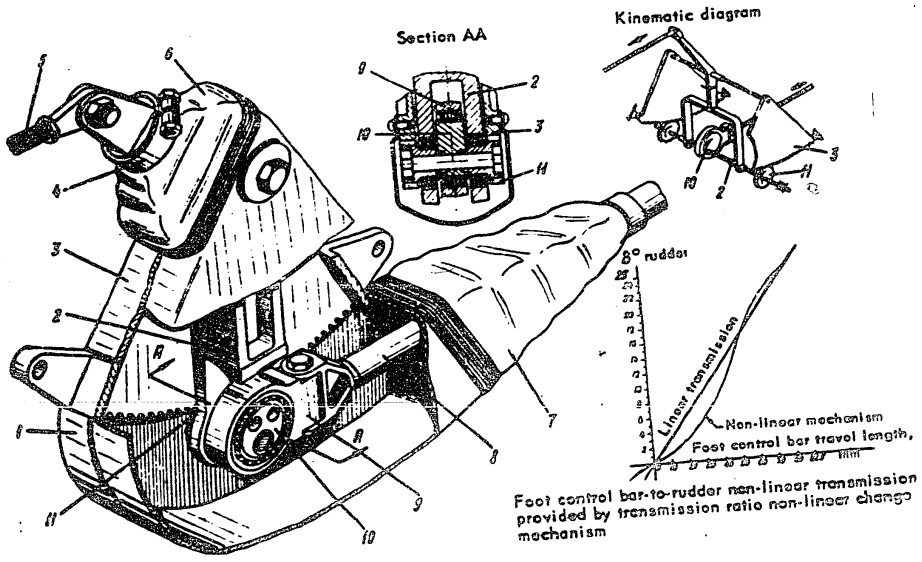


Fig.226. Foot Control Bar-to-Rudder Transmission Ratio Non-Linear Change Mechanism
1 – cage; 2 – bell-crank; 3 – bracket with toothed sector; 4 – yoke; 5 – control rod; 6 – sealing jacket; 7 – sealing jacket; 8 – control rod; 9 – eyelug; 10 – eccentric; 11 – gear.

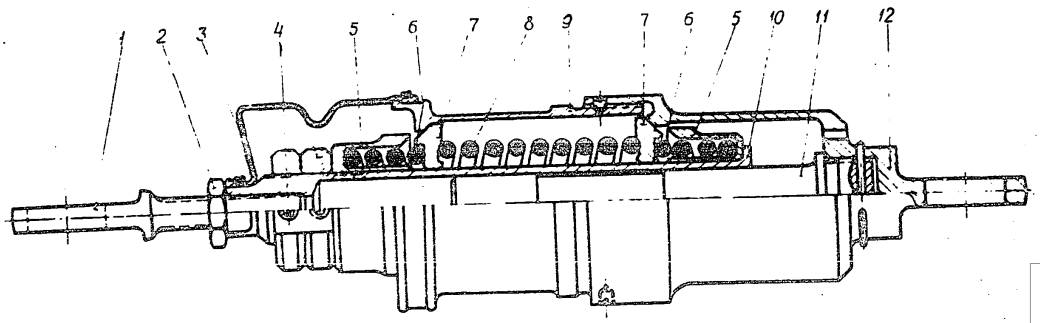


Fig. 220. Artificial Feel Mechanism of Aileron Control System
1 – eyebolt; 2 – nut; 3 – sealing jacket; 4 – nut; 5 – sleeve; 6 – spring; 7 – thrust washer; 8 – spring; 9 – case; 10 – rod; 11 – axle; 12 – case.

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NO FOREIGN DISSEM

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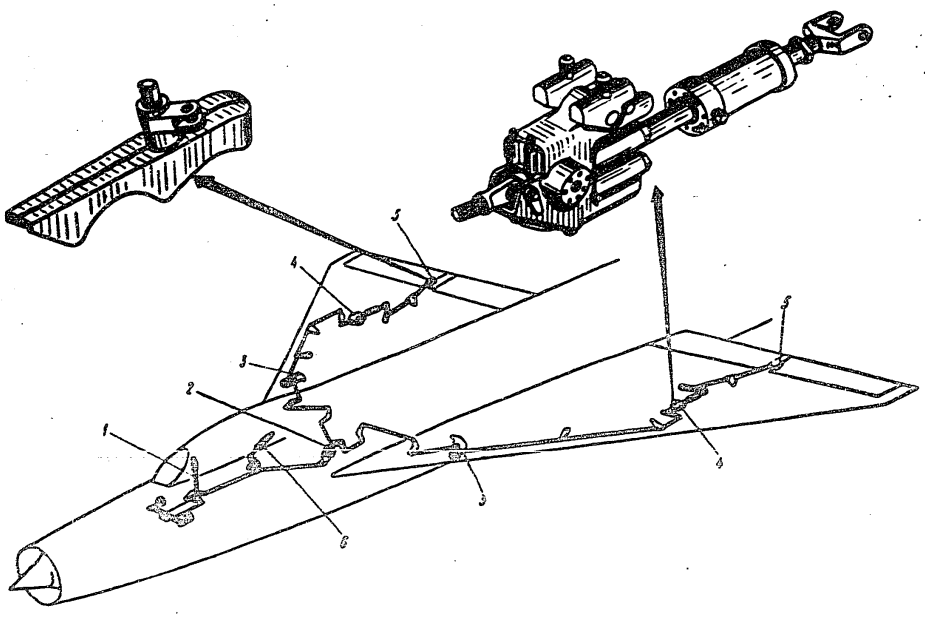

Fig. 227. Aileron Control System

1 – aircraft control stick; 2 – wing line connection assembly of aileron control system; 3 – transmission ratio non-linear change mechanism; 4 – booster, type BU-45; 5 – aileron attachment joint; 6 – artificial feel mechanism.

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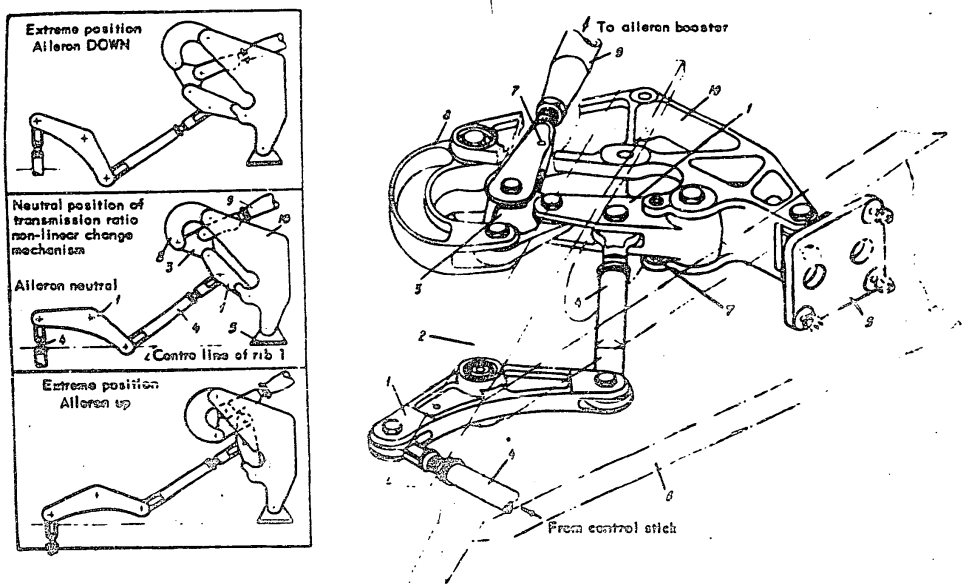


Fig. 229. Transmission Ratio Non-Linear Change Mechanism of Aileron Control System
1 – bell-crank; 2 – front stringer; 3 – link; 4 – control rod; 5 – bracket; 6 – rib 1; 7 – holes for locking the mechanism in neutral position during control adjustments; 8 – bell-crank; 9 – control rod; 10 – bracket.

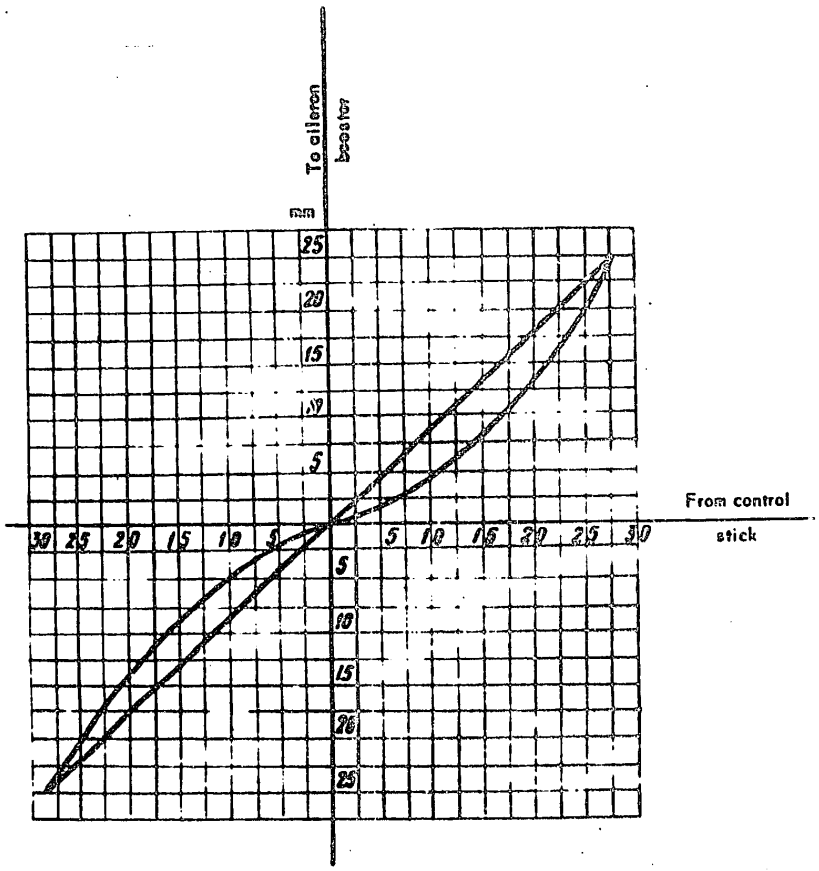


Fig. 230. Functional Curve of Transmission Ratio Non-Linear Change Mechanism of Aileron Control System

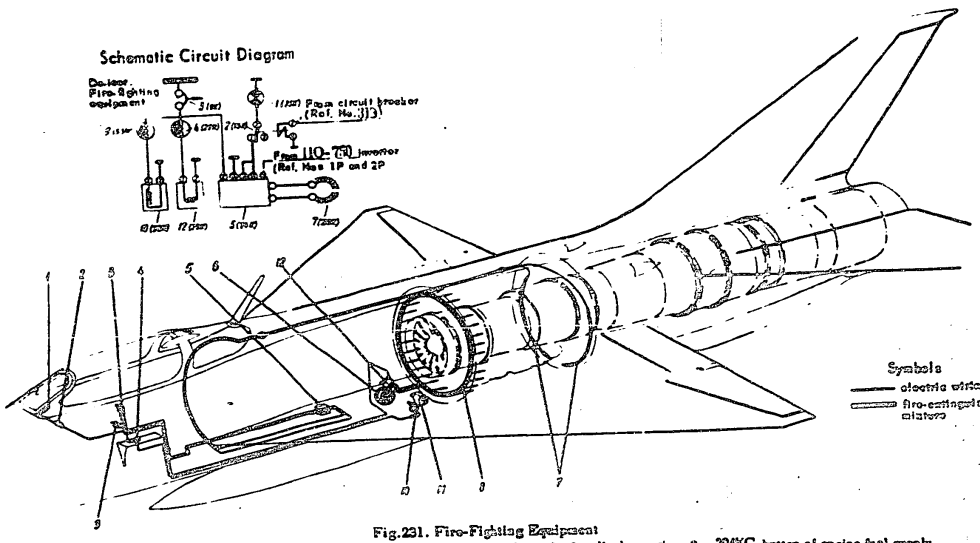


Fig.231. Fire-Fighting Equipment

1 – warning lamps; 2 – ТКЕ-56ПД lamp panel control relay; 3 – circuit breaker АЗС-5; 4 – 2ПЖС fire button; 5 – ИС2М electronic amplifier; 6 – 2ЖС-2-1С fire-extinguishing cylinder; 7 – ion fire detector sensitive unit; 8 – discharge ring; 9 – 2ПЖС button of engine fuel supply cut-off cock; 10 – 815000М electropneumatic valve; 11 – fuel system cross-feed cock; 12 – equip of 2ЖС-2-1С fire-extinguishing cylinder.

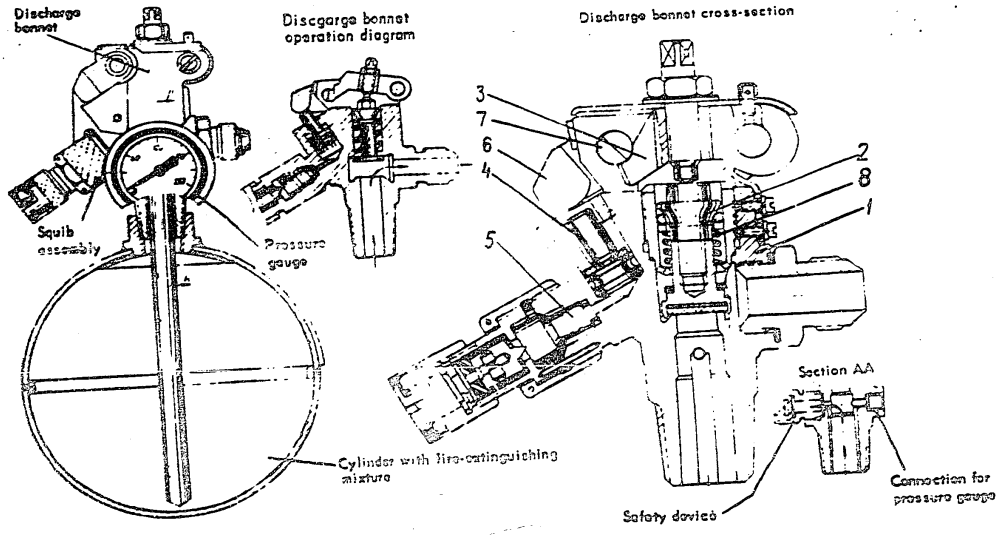


Fig. 232. Fire-Extinguishing Cylinder with Discharge Bonnet
1 — discharge bonnet body; 2 — valve; 3 — lever; 4 — piston; 5 — squib; 6 — lever; 7 — axle; 8 — spring.

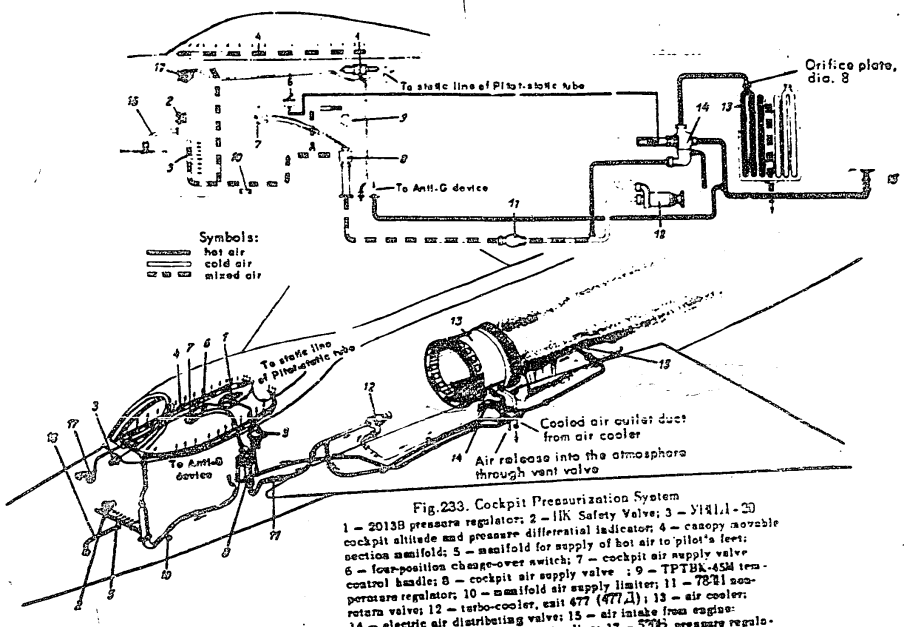
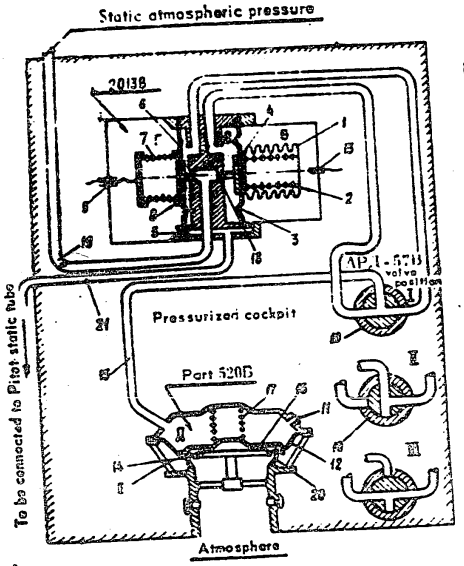


Fig.233. Cockpit Pressurization System

1 – 2013B pressure regulator; 2 – 1IK Safety Valve; 3 – 9181.1-20 cockpit altitude and pressure differential indicator; 4 – canopy movable section manifold; 5 – manifold for supply of hot air to pilot's feet; 6 – four-position change-over switch; 7 – cockpit air supply valve control handle; 8 – cockpit air supply limiter; 11 – 7871 temperature regulator; 10 – manifold air supply limiter; 11 – 7871 temperature regulator; 12 – turbo-cooler, unit 477 (477A); 13 – air cooler; 14 – electric air distributing valve; 15 – air intake from engine; 16 – cockpit ground ventilation pipe line; 17 – 520B pressure regulator valve.



Positions of Pressure Regulator Valve

Position I – ON (ВКЛЮЧЕНО)

Valve is cut in before flight. From 0 to 2km – ventilation. From 2km. to 9 - 12km. – excessive pressure rise up to 220 ± 10mm of mercury. From 9 to 12km. – constant excessive pressure of 220 ± 10 mm of mercury.

Position II – CHECK (ПРОВЕРКА)

Valve is cut in for cockpit ground operation at constant excessive pressure of 220 ± 10mm of mercury.

Position III – OFF (ВЫКЛЮЧЕНО)

Valve is cut in for checking cockpit airtightness. Cockpit air outlet duct is closed.

Fig.234. АРД-57Б Pressure Regulator

1 – sylphon; 2 – spring; 3 – diaphragm; 4 – valve; 5 – capillary tube; 6 – diaphragm; 7 – spring; 8 – valve; 9 – screw; 10 – valve; 11 – orifice; 12 – diaphragm; 13 – screw; 14 – supporting disk; 15 – tube; 16 – bottom of valve disk; 17 – spring; 18 – orifice in pressure regulator; 19 – tube; 20 – valve; 21 – tube.

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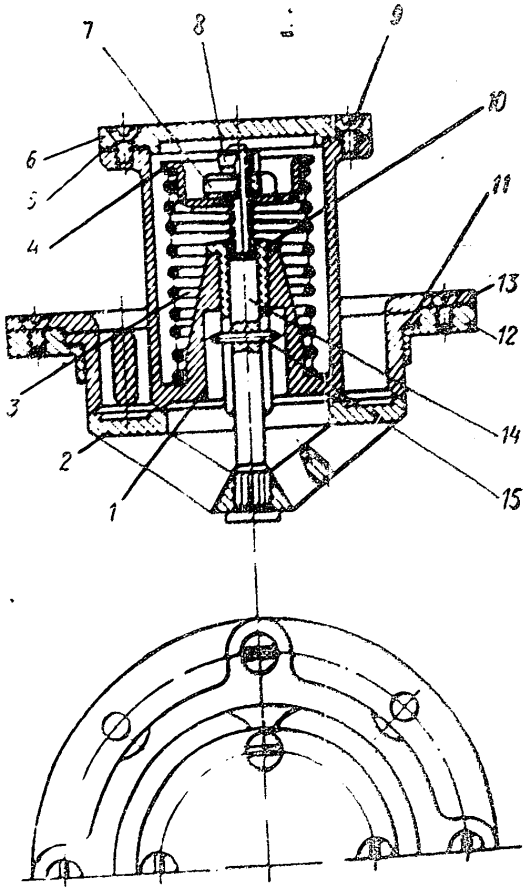

Fig. 235. Safety Valve

1 — body; 2 — valve; 3 — spring; 4 — washer; 5 — gasket; 6 — cover; 7 — nut; 8 — lock nut; 9 — screw; 10 — bushing; 11 — gasket; 12 — flange; 13 — ring; 14 — rod; 15 — pin.

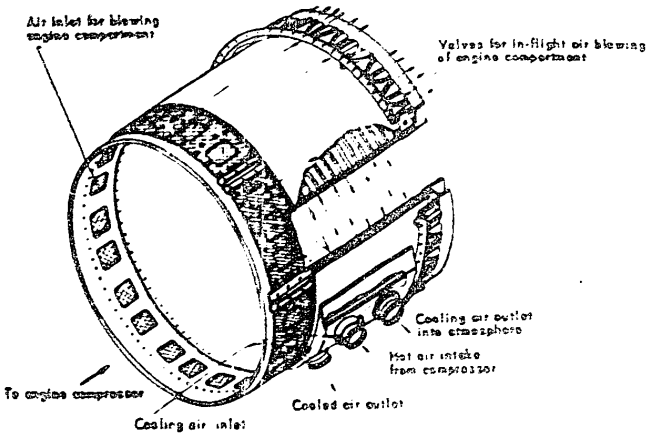

Fig. 236. Air Cooler

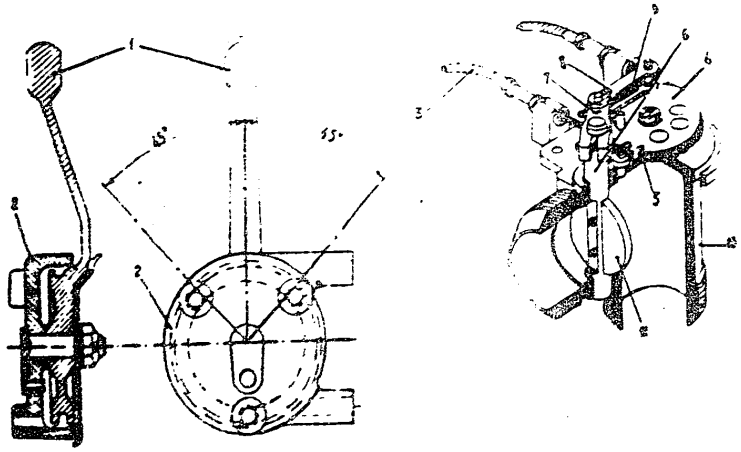

Fig. 237. Cockpit Air Supply Valve

1 – valve control handle; 2 – control body; 3 – bowden cable; 4 – rollers; 5 – cylinder; 6 – pin; 7 – guide; 8 – rod; 9 – spring; 10 – shut-off valve; 11 – shutter.