

Condition - inspection chart of "Card" 7.021.010

I-1052

Sl. No.	Fault	Fault removing procedure and tools	Technical Specifications	Restoring procedure and tools
1	2	3	4	5

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1. Damaged basic coating of card 9 7.021.010.

	Inspection.	Damaged coating is not allowed.	Coat with black enamel Hy-25 as per instructions given in appendices.
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2. Chips and other damages of temporary effect luminous compound on Marks, numerals and letters.

	Inspection.	Damaged coatings are not allowed.	Faint with luminous compound of temporary effect.
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VII. Butler repair process

Sl. No.	Serial number of the fault	Operations	Tools
1	2	3	4
xx	1. Item 3 of condition-inspection chart of assembly unit 127-cd1.	1. Turn-out screw 3177A-5-9, holding axle 127-76 from inside of the body and remove stepped gear 252-cd11 together with washers and axle. 2. Turnout 2 Locknuts 2538-192 from two sides. 3. Turn-out studs 9 8.927.001-1 and 9 927.001.2. 4. Turn-out the fork axle 127-72. 5. Remove cage fork 127-cd4 from the cage clutch 160-cd31 by lifting the cage clutch to disengage blocks 160-196. Remove the cage spring 127-73 and stop 127-74. 6. Remove cage clutch 160-cd31 from body flange 127-34. 7. Turn-out screw HK21.21.24 and screw 3157A-3-8K with washers 3402A-0, 8-3-6K and 3K OCT 111532-74 and remove bracket with slideblock 127-cd2 and gasket 160-208 from the body. 8. Clean the assembly units and parts of grease wash in petrol 6-70, blow with compressed air.	Screw driver 7810-0326, wrench - 5350-4603. Wrench S = 8 x 9mm. Screw driver 7810-0326. Pliers with PVC nose-tips. Screw driver 7810-0313.

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9. Place a new bracket 127-cd2 with gasket 160-208 on studs 3481A-2c₃-8 and tighten with screws.
10. Place and screw on front wall 127-cd5 to body 127-34 with 3 screws.
11. Check for absence of sticking when shaft 252-31 is moving. Turnout the screws and remove the front wall.
11. Slightly lubricate body flange and clutch over the periphery with oil 132-20. Select the cage clutch 160-cd31 to match the body flange so that the clutch can freely fall down under its own weight. If required ream the hole in the clutch.
12. Select two blocks 160-196 fitting the cage clutch groove. They should freely smoothly move in the groove. Lubricate the groove of the gear with grease GKB-122-7.
13. Mount cage fork 127-cd4 on to the body 127-34 through the axle of cage fork 127-72 and stop 127-74.
14. Into the body turn in two studs 9 927.001-1 with lock nuts 253B-192 using gasoline-proof lubricant. If require stud 9 8.927.001-1 can be replaced with stud 9 8.927.001-2. ~~the~~ The axle of fork 127-72 should be aligned with ~~the~~ for stud holes and in the body. Cage fork without gear should forely move in the joint under its weight.
15. Secure studs 9 8.927.001-1 and 9 8.927.001-2 with lock nuts 253B-192. Select the studs while assembling and adjusting.
16. Mount over the cage fork gds 127-cd4 two blocks 160-196, place cage clutch 160-cd31 on the body flange of 127-34, insert blocks 160-196 into the gear groove.
17. Mount cage spring 127-73 on stop 127-74 and cage fork 127-cd4.

Screwdriver
7810-0313Screwdriver
7810-0314

Reamer

~~Screwdriver~~
2360-0219AWrench
8 = 8 x 9 mmWrench
6350-4717

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18. Check the operation of caging mechanism. The gear with fork should smoothly without sticking move on the flange in all positions and the dogs of cage fork should smoothly without jamming slide over the slide lock grooves in and latch. If required adjust the unit by shifting studs, polishing blocks 160-196 or changing the cage clutch 160-cd31. After adjusting secure studs 9 8.927.001-1 and 9 8.927.001-1 with lock nuts 253B-192 and prime with Ak-070.
19. Mount stepped gear 252-cd11 on axle 127-76, place washers 3402A-0, 5-6-14K, 3402A-0, 2-6-14K and 3402A-0, 1-6-14K and fix the axle with stopwasher 3436A-3K by setting it into the groove of axle 127-76. The gear should move smoothly on the axle longitudinal play upto 0.1mm is checked by hand.
20. Screw the assembled unit of stepped gear onto body 127-34 with screw 3177A-5-8K.
21. Adjust the smooth meshing of gear 252-cd11 with the worm of unit 127-cd2 and total play of caging mechanism. Adjustment is performed by selecting washers 3402A-0, 2-6-14K and 3402A-0, 1-6-14K (place if required) and by shifting the eccentric axle 127-76. Total play from the shaft with disc 252-31 to the gear of cage clutch 160-cd31 should not exceed 18° (20°).

Screwdriver
7310-0328Wrench
6350-4503Fixture
6350-7185

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2. Item No. 4 of condition - inspection chart of assembly unit 127-cd1.

1. Report operations 1 to 7 of ref. No. 1 (repair) for assembly unit 127-cd1.
2. Turn the slide block to 4th and remove it.
3. Knockout pin 3494A1-8 (Fig. 6) fastening shaft 252-31 in the worm, remove thrust bushing 252-36, special washer 252-34 and shaft 252-31 with disc.
4. Press out pins 252-30 and 252-299 and turnout 3 screws 3177A-1.4-3K.
5. Remove special washer 252-28 and replace with a new one turn it in such a way that holes \varnothing 0.75 do not align with the holes in the worm.
6. Along the hole in washer 252-28 drill 2 new holes of \varnothing 0.75mm in the worm and **run** them to provide 0.01 to 0.02mm interference fit with pins.
7. Press in pins 252-30 and 252-299.
8. Mount shaft 252-31 with disc into the bracket, place special washer 252-34 on the shaft with disc, connect the shaft with disc to the slide block 127-4, fit thrust bushing 252-36 on the shaft with disc. The axial play should be upto 0.1mm.
9. Check for smooth unit jointing. If required run-in the unit, using oil 132-20 to lubricate friction parts.
10. Mount the unit into attachment, align the hole of thrust bushing 252-36 with the hole of shaft 252-31. Press pin 3494A-1-8 into thrust bushing 252-36 and shaft 252-31 providing a play of 0.1mm.
11. Check for proper working of the unit. The unit should smoothly move in the joints, the pins should freely enter into the disc holes in all positions. If required parts inside the unit should be run-in.

Screwdriver
7810-0313

Drill \varnothing 0.75 Reamer
set of 0.7670 to 0.79mm,
6120-239, attachment
6350-4417.

Set of feeler
gauges.

Textolite stick \varnothing 2 to 3mm.

Support 6350-6938
hammer with textolite
block head of 50 gm.
weight.

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Rinse the unit in petrol Φ -70 and blow with compressed air, lubricate all friction joints with oil 132-20. Check for proper working of the unit.

Textolite stick
of Φ 2 to 3mm.

Inspection

Check smooth movements of parts and joints. Lock pins should freely enter all disc holes.

12. Assemble unit 127-cd1 repeating operations 8 to 21 of item No.1 overhauling unit 127-cd1 chart.

3. Item No.5 of condition-inspection chart of assembly unit 127-cd1.
1. Repeat operations 1 to 7 of ref.No.1 for repairing assembly unit 127-cd1.
 2. Turn slideblock 127-4 with parts by $\frac{1}{2}$ of revolution and remove it.
 3. Bring together the ends of cotter pin 0.8 x 6 and remove from pin 127-13; remove washer 3402A-0, 8-3-6K, pin 127-13, latch 127-7 and spring 127-15 from slideblock 127-4.
 4. Assemble into unit slideblock 127-4, latch 127-7, pin 127-13 new spring 127-15, washer 3402A-0, 8-3-6K and cotter pin 0.8 x 6 spread the ends of the cotter pin. Mount the slide block with parts into the bracket.
 5. Assemble unit 127-cd1 repeating operations 8 to 21 of item No.1 of overhauling unit 127-cd1.

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| 4. Item No.6 of condition-inspection chart of assembly unit 127-cd1. | | <ol style="list-style-type: none"> 1. Repeat operations 1 to 6 of item No.1 for overhauling assembly unit 127-cd1. 2. Separate (remove) gasket 160-139. 3. Clean the locating place from adhesive with petrol 5-70 and cement a new gasket with adhesive 884 as per instructions specified in the appendices. 4. Assemble the unit repeating operations 12 to 21 of item No.1 of overhauling assembly unit 127-cd1. | |
| 5. Item No.2 condition-inspection chart of assembly unit 127-cd5. | | <ol style="list-style-type: none"> 1. Separate the index plate. Remove the remainings of the index plate and epoxy adhesive by machine cleaning. 2. Rinse the groove for index with petrol 5-70 and blow compressed air. 3. Place a new index place and fill in the groove with cold cure epoxy adhesive prepared as per instructions specified in the appendices. Keep for 24 hours at room temperature ($T = +18^{\circ}$ to 35°C). | |
| 6. Item No.3, Item No.4 of condition inspection chart of assembly unit 127-cd5. | | <ol style="list-style-type: none"> 1. Turnout lampholder 9 6.615.003 with bulb and gasket 9 8.683.031. 2. Press out the threaded bushing 9 8.229.001, tightening the cap. 3. Remove cap 9 6.635.001 and gasket 9 8.683.008 inspect the gasket. If there are cracks, replace the gasket. 4. Place gasket 9 6.683.008, cap 9 6.635.001, measure the locating diameter in the front wall $\varnothing 22 A_3$ select bushing 9 8.229.001 with the external diameter to ensure tension fit upto 10 to 2 press-in the bushing. 5. Turn-in the lampholder 9 6.615.003 with bulb MH-26-0, 12-1. | <p>Internal dial gauge with 0.01mm division value micrometer 0 to 25mm attachment 6350-5201</p> |

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| 7. Item No.12 of condition-inspection chart of assembly unit 127-cd5. | <ol style="list-style-type: none"> 1. Turn out two screws 3157A-3-6K with washers 3OCT111532-74 and remove body of the oilseal 9 6.11.002 and gasket 9 8.683.029 (or 160-cd42 and 252-99). 2. Remove two pushers 9 8.352.002 and springs 9 8.383.015 (only for devices manufactured after Nov.1968). | Screwdriver
7810-0313 |
| 8. Item Nos.1, 2 and 3 of condition-inspection chart of assembly unit 127-cd15. | <ol style="list-style-type: none"> 1. Remove varnish from contact unit 127-cd22. 2. Unsolder wires from contact unit 127-cd22. 3. Remove packing 127-77 and 252-98 and clamp 252-97. 4. Make free the wire from collector by cutting the threads holding it to the frame. 5. Impregnate packing 252-98 in petrol 5-70 and squeeze dry. 6. Press out collector 9 6.617.000. 7. Make hole ϕ 3mm as per the instructions specified in appendix 5-70 and blow with compressed air. 8. Inspect packing 127-17 and if cracks are present, replace with new ones. 9. Screw on front wall 127-cd5 to the body with components 127-cd11 and three technological screws 3157A-3-10K. 10. Mount clamp 252-97 on the bracket shaft with slideblock, packing 127-17 and packing 252-98 (1 to 3 pieces) and apply grease on them. 11. Cut the wires in situ with account of a 2-3 times soldering. 12. Place gasket 9 8.683.029 (or 252-99) and coat it from two sides with grease gasoline proof lubricant grease. 13. Strip the insulation from wires and solder of contacts and solder. 14. Install the body of oil seal 9 6.115.002 so that shaft 252-31 can freely (without sticking) rotate in the oilseal body. 15. Tighten by two screws 3157A-3-6K with spring washers 3OCT111532-74 check free rotation of shaft 252-31. If there is sticking and if the pins are preventing displacement of the oilseal body, trim them. | <p>Electric soldering iron of 36V.</p> <p>reamer ϕ 3mm
2360-011213.</p> <p>-201</p> <p>Electric soldering iron.</p> |
| 9. Item No.5 of condition - inspection chart of assembly unit 127-cd15. | <ol style="list-style-type: none"> 1. Knock out pins and remove cage frame with washers 160-57 and special washers. 2. Replace the shaft of the unit. | Screwdriver
7810-0311 |

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8. Item Nos. 1, 2 and 3 of condition-inspection chart of assembly unit 127-cd15.	<ol style="list-style-type: none"> 1. Remove varnish from the contact assembly unit 127-cd22. 2. Unsolder wires from contact unit 127-cd22. 3. Make free the wires from collector by cutting the threads holding them to the frame. 4. Press out collector 9 6.617.000. 5. Make hole ϕ 3A3 clean of adhesive \bar{b} \downarrow wash with brush soaked in petrol \bar{b}-70 and blow with compressed air. 6. Press in new collector 9 6.617.000 on adhesive \bar{b} \downarrow. 7. Place the wires into the groove in the frame, tie with cotton threads No.00 and coat threads with adhesive \bar{b}- \downarrow. 8. Just all unit 127-cd22 on pins and secure with technological screw 3157A-2, 5-8K . 9. Cut the wires in situ with account of a 2-3 times soldering. 		Electric soldering iron of 36V.
	<ol style="list-style-type: none"> 10. Strip the insulation, secure wires in the holes of contacts and solder. 		Reamer ϕ 3mm 2360-0112A3.
9. Item No. 5 of condition - inspection chart of assembly unit 127-cd15.	<ol style="list-style-type: none"> 1. Knock out pins 3494A-1-10\bar{a} remove axle 160-56, remove cage frame with tooth 127-cd28, special washers 160-57 and spring 127-93. 2. Replace the spring with a new one and reassemble the unit. 		36V electric soldering iron.

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10. Item No.11 of condition - inspection chart for assembly unit 127-cd15.	<ol style="list-style-type: none"> 1. Remove varnish from the unit of contacts 127-cd22. 2. Unsolder the wires from contact unit 127-cd22. 3. Remove assembly unit 127-cd22 from the pins. 4. Turn-out screw 160-86. 5. Replace the broken contact 127-cd12 or 160-cd22 or gasket 160-39 and reassemble the unit. 		<p>36V electric soldering iron.</p> <p>Attachment -6018.</p>
11. Items No.6,7 and 8 of condition-inspection chart of assembly unit 127-cd18.	<ol style="list-style-type: none"> 1. Remove varnish from the unit of contacts. 2. Unsolder three wires from the contacts. 3. Bend out the lobe of clamp 127-82, separate 3 ends of the wire remove PVC tube from the wires. 4. Unlock nut 3320A-2,5K which fastens the stud with unit of contacts to the body, turn-out stud 127-25 with contact unit, remove clamp 127-82. Inspect the contacts. If burns and notches are present, disassemble the assembly unit and polish the contacts. Compare their heights with the height of the feeler. The height should be at least 0.14mm. In case the height is less, replace the contacts. Assemble the unit of contacts on stud 127-25. Inspect clamp 127-82. If cracks are seen, replace it. Turn-in the stud. 5. Turn-out the lock nut 160-330 from the axle of the gyromotor. 6. Turn-out the threaded bushing 160-329 from the axle of the gyromotor. 7. Remove the cover of gyromotor 127-cd20 from the gyromotor body 127-cd19 by rotating the axle of the gyromotor clockwise with a screwdriver. In this case gyromotor MA-4 thrust against body 127-cd19 and separates the cover and the body. 8. Remove the gyromotor from the body. 		<p>36V electric soldering iron.</p> <p>Screwdrivers 78100313, 7810-0306, 7810-0308, 7810-0326.</p> <p>Wrench S = 5 x 6 mm.</p> <p>A set of feeler gauges.</p> <p>Wrench 6350-290.</p> <p>Wrench 6350-1197.</p> <p>Wrench 6350-4758.</p> <p>Wrench 7810-0308.</p>

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9. Turn-out 2 screws 3320A-2,5K , which fasten the balancing weights 127-57, remove washers 3402A-0, 5-2, 5-5, 5K , remove balancing weights, place new weights (upto 6 pcs), place flat washers 3402A-0, 5-2, 5-5, 5K , and fasten with nuts 3320A-2.5K .
10. Select new gyromotor 359.00.00.000 to suit body 127-cd19 with cover-templet providing a clearance of 0.03 to 0.2mm between gyromotor rotor and body when the rotor is in different positions. Templet 6356-4592.
11. Remove the cover-templet from the body.
12. Assemble body 127-cd29 with components and cover with selected gyromotor 359.00.00.000. Fix the gyromotor with threaded bushing 160-329 and lock nut 160-330, provide even clearance of 0.2 to 0.3mm between the gyromotor and body and gyromotor and cover. Screwdriver 7810-0308.
Wrench 6350-290 and
6350-4768.
Wrench 6350-1151.
13. Cut-out the excess length of wires of gyromotor 359.00.00.000 in accordance with location of the contacts providing a spare length for resoldering the wires. Slip PVC tube \varnothing 2mm dia. and 7 to 10mm in length over the wires. Wire-cutters, shears.
14. Remove insulation at a length of upto 4 to 6mm.
15. Secure the wires through PVC tube by clamp 127-82. Pliers 7814-0081.
16. Check insulation resistance between electric elements and body axle. The insulation resistance should be infinite. 500V, Megohmmeter type
M1101.
17. Rinse the working bearings in petrol Б-70, and blow with compressed air. Lubricate the bearings with oil 132-20 and mount them on the axles.
18. Install the gyrounit in the centers of the installation. Balance the gyrounit statically indifferent position by cutting out lead weights 127-57 and by shifting balancing screw 132.03.83.018, screw 127-46 with nut 127-66 should symmetrically be arranged with respect to the body boss. Installation Y-119.
Shears, Wrench 6350-4768
Wrench 6350-290
Wrench S = 8 x 9 mm.
If big portions of weights are being cut-out, it is

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With a great unbalance a slight shifting of gyromotor 350.00.00.000 is allowed.

necessary to remove gyrounit from the installation to avoid bending of axles.
Residual unbalance should not exceed 0.2 gm.cm.

Screwdriver 7810-0313.
Wrench 6350-1151.

19. Write down the number of gyromotor 359.00.00.000 on cover 127-cd20 with white enamel Hy-25, dry at normal temperature for two hours and then coat with adhesive Б-4.
20. Carryout stabilization at a temperature of +50 to 60°C for two hours.
21. Keep the assembly units in rooms under normal temperature till it reaches the room temperature.
22. After stabilization check the static balance of gyrounit. If the gyrounit is unbalanced for more than 0.4 gm.cm. (weight of 160mg on 25mm arm) then balance the gyrounit to obtain unbalance value 0.2 gm.cm. (80mg weight on a 25mm arm) 28mm in length of wire - β 0.62 correspond to 80mg weight. Re-stabilize the gyrounit. The gyrounit with a less than 0.4 gm.cm. unbalance is unbalanced to obtain an unbalance value of 0.2 gm.cm. without re-stabilizing.
23. Check the play of body axles (the play should not exceed 0.02mm).
24. Coil the wire ends 1.5 to 2 times around the bars of contacts 127-cd7 and 127-cd8, quickly solder (for 2 to 3 sec.) thoroughly wash the soldered places with rectified ethyl alcohol and wipe with batiste cloth removing the traces of flux and burns. Check the quality of soldering for the absence of flux, burns cavities and pores.

Centers 63624-018 indicator gauge with a division value upto 0.01mm stand for indicator gauge.

36V electric soldering iron.

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| <p>25. Coat the soldered places with coloured varnish AK-113.</p> <p>26. Check the insulation resistance of gyrounit electric elements with respect to body. The insulation resistance should be of at least 80 megohms.</p> <p>27. Check for proper functioning of gyrounit under normal conditions. Consequently:</p> <p>a) Time to obtain full speed should not exceed 2 min.</p> <p>b) Current consumption under 36V 400 Hz should not exceed 0.3A.</p> | <p>25. Coat the soldered places with coloured varnish AK-113.</p> <p>26. Check the insulation resistance of gyrounit electric elements with respect to body. The insulation resistance should be of at least 80 megohms.</p> <p>27. Check for proper functioning of gyrounit under normal conditions. Consequently:</p> <p>a) Time to obtain full speed should not exceed 2 min.</p> <p>b) Current consumption under 36V 400 Hz should not exceed 0.3A.</p> | <p>500V Megohmmeter Type M1101.</p> <p>Stopwatch.</p> <p>Desk 6365-1373.</p> |
| <p>12. Item No.9 of condition - inspection chart of assembly unit 127-cd18.</p> | <p>1. Disassemble the gyrounit repeating operations 1 to 9 of item No.11 for overhauling assembly unit 127-cd18.</p> <p>2. Remove varnish from the soldered places of special screw 127-46 with nut 127-66 using rectified ethyl alcohol.</p> <p>3. Remove solder from solderal places with electric soldering iron.</p> <p>4. Screw out nut 127-66.</p> <p>5. Turn out special screw 127-46. Remove gasket 127-59 and spring 252-206 (or 9 8.383.015).</p> <p>6. Drill a threaded hole M2.5 upto \varnothing 2.5mm dia. Cut thread M3 class 2.</p> <p>7. Install spring 252-206 (or 9 8.383.015) and gasket 127-59. Turn-in special screw 127-46 and turn out nut 127-66 with corresponding thread.</p> <p>8. Solder-screw 127-46 with nut 127-66 . Thoroughly wash the soldered places with rectified ethyl</p> <p>alge</p> | <p>36V electric soldering iron.</p> <p>Screwdriver 7810-0347. pliers 7814-0081.</p> <p>Drill 2.5 Tap M3 Kd2.</p> |

I-1059

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alcohol and wipe with coarse calico cloth removing the traces of flux and burns.

9. Coat the soldered places with coloured varnish AK-113.
10. Assemble the gyrounit repeating operations 12 to 27 of item No.11 for overhauling unit 127-cd18.

I-1059

ГПК-59 -136-

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alcohol and wipe with coarse calico cloth removing the traces of flux and burns.

9. Coat the soldered places with coloured varnish AK-113.
10. Assemble the gyrounit repeating operations 12 to 27 of item No.11 for overhauling unit 127-cd18.

Directional gyro - 59	Technical specifications for overhauling			137. Page
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I-1052

IX Process sheet for
assembling and adjusting the
device.

I-1059

FNK-59

- 138 -

PROCESS SHEET FOR ASSEMBLY AND ADJUSTING THE DEVICE

No. of operation.	Operation	Equipment and tools	Materials
1	2	3	4
1.	Visually inspect parts and assembly units for the absence of dirt, damaged coating, nicks chips and burrs.		
2.	Rinse the frame axles 127-cd25 in petrol 5-70 and thoroughly wipe with coarse-calico cloth. Rinse bearing A100009.5Ky in three pots with petrol and blow with compressed air. Check for smooth and easy rotation of bearings. Set bearing A1000095Ky on the frame axle place protective washer 127-87 and fasten it with lockring ring 562M56-5 K .	Petrol 5-70, Coarse-calico cloth Screw driver 7810-0313	
3.	Select bushings 127-50 to match thread M 1y x 0.75 in frame 127-cd25 to ensure tight fitting (without swinging). Turnout bushings 127-50 from the frame, rinse bushings in petrol 5-70 with a tooth brush, wash corrugated bands 127-2 in petrol wipe out dust and scales from the bands with coarse-calico cloth if any. Place bands 127-2 inside bushing 127-50, ensure with the working bearing the fitting diameter of the bushing with band. Wash bushing with bands in petrol, wipe the bands with coarse-calico cloth wetted in oil 132-20. Thoroughly rinse bearings 523 YM in three pots containing petrol, blow with compressed air. Install protective washers 953-116, bearings 523YM on the axle of gyrounit 127-cd18 and fasten the bearings with nuts 127-86. Lubricate the bearings with oil 132-20 (1 to 2 drops); Rotate the bearings (select bearings 523YM for the axles of gyromotor to ensure tight fitting by hand).	Support 6355-1042, Wrench 6350-4608, Tooth brush Bearing holder 6355-1080 Syringe needle of 0.6 to 1mm dia. hypodermic syringe	Petrol 5-70, Coarse-calico cloth Coarse-calico cloth oil 132-20 petrol 5-70
4.	Select bearing A6005 (SMA6025) to match the axle of frame 127-cd25 providing xxxx tight fitting by hand. If required grind the journal of the axle with sand paper K3M-14. Thoroughly wash the axle in petrol 5-70, wipe with clean coarse calico cloth fasten the inner race of the bearing with nut 127-86.	Support 6355-1002 Wrench 6350-4604	Coarse-calico cloth, petrol 5-70 sand paper K3M-14

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5.	<p>Install gyrounit 127-cd18 into frame 127-cd25. Turn-in the assembled bushings 127-50 with corrugated band 127-2 inside the frame. Held the gyrounit in horizontal position. Lubricate the threads of bushing with oil 132-20.</p> <p>Center gyrounit 127-cd18 over cam 127-45 127-45. Adjust the axial play of gyrounit in the frame to obtaining 0.02 to 0.04, applying a force of 700 gm. with the gram gauge. Lock bushings 127-50 with locknuts 953-40.</p> <p>Remark: The clearance between special screw 127-46 (fig.10) and cage frame 127-cd26 (fig.9) should be at least 0.5,mm.</p>	<p>Attachment 6350-6704</p> <p>Indicator with 0.01mm division value Gram gauge 6350-7920</p> <p>Wrench 6350-4608 Wrench 64410-003</p> <p>Set of feeler gauges.</p>	Oil 132-20
6.	<p>Fasten stop 127-84 to frame 127-cd25 with screw 3157A-2-6K , with washer 3402A-0, 5-2-4, 5K , primer AK-070.</p>	<p>Support 6355-1042 Screwdriver 7816-0306, Textolite stick of 2 to 3mm dia.</p>	Primer AK-70
7.	<p>Set unit of contacts 127-cd22 on 2 pins 3481A-1C3-6 and fasten the unit of contacts 127-cd22 to the frame with screws 3157A-2, 5-9K , with washer 3402A-0, 5-2, 5-5, 5K .</p>	<p>Support 6355-1042 Screwdriver 7810-0809, Textolite stick of 2 to 3mm dia!</p>	Primer AK-70
Rx	<p>Place the screws on primer AK-070. Adjust the contact pressure of the plates till obtaining 7±1 grams by shifting the unit of moralle contacts on the stud.</p> <p>Gaskets 160-112 may be arranged under the unit of contacts 127-cd22 if required. Check the value of friction torque of gyrounit 127-cd18 in the axles. The friction should not exceed 0.5 gm.cm. on both sides. Check for absence sticking of gyromotor parts in gimbal in the whole range of gyrounit movements with screw 127-46 and nut 127-66 (fig.10) in the extreme positions.</p>	<p>Stud 6350-4432 gramgauge upto 10 gm. 6350-1967</p> <p>Weight 1.25 gm. 6350-4766</p>	

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8.	<p>Conduct static balancing of gyrounit 127-cd18 in gimbal 127-cd25 till indifferent position in two perpendicular positions. Seal screws, nuts, locknuts with coloured adhesive ** -4. Apply thin layer of grease OKB-122-7 on friction surfaces of cam.</p>	<p>Stand 6355-1042 Screwdriver 7810-0308 Textolite stick \varnothing 2 to 3 mm dia.</p>	<p>Coloured adhesive \varnothing4 Grease OKB-122-7</p>
9.	<p>Check the clearance between special screw 127-46 with nut 127-66 (fig.10) and cage frame. It should be of at least 0.5mm.</p>	<p>Set of feeler gauges.</p>	
10.	<p>Fasten card 9 7.021.010 to the frame with parts by four screws 3157A-2-6K , with washers 3402A-0,5-2-45K , and 2 OCT111533-74. The gap between contacts unit and card should be of at least 0.5mm.</p>	<p>Support 6355-1042 Screwdriver 7810-0306 feeler gauge 6355-1072</p>	
11.	<p>Mount the unit in attachment 6350-6549 and as per the unbalanced condition determine the weights to be fastened to the card. Fasten weights 127-40, 127-43 and 127-38 to the card (if required) with four screws 3157A-2-6K with washers 3402A-0, 5-2-4,5K conduct static balancing of gimbal assembly unit by shifting the weights along the card and also by changing the quantity of weights. The unit is considered balanced if the gimbal slightly shifts in both directions with same acceleration by slightly tapping on the base of the attachment in "North-South" plane. In plane "East-West" the unit should be indifferent condition in both positions.</p>	<p>Support 6355-1042 Screwdriver 7810-0313</p> <p>Attachment 6350-6549</p>	
	<p>Check and adjust the butt-end play of the card (Tolerance for play is 0.3mm). Check the balance paint the three sides butt-ends of weights from primer AK-0 70. Secure screws, fastening weights with primer AK-070. Before sealing and painting wipe the places with coarse-calico cloth wetted in petrol - 670.</p>	<p>0.01mm indicator with division value Textolite indicator contact point 6355-1074</p>	<p>Petrol 6-70 Primer AK-070 calico cloth</p>
12.	<p>Wipe card 9 7.021.010 with batiste of contaminants.</p>	<p>Batiste.</p>	
13.	<p>Check for reliable contact of current feeders and brushes rotating the gyrounit till stop. Faulty contact are not allowed.</p>	<p>Tester.</p>	

1

2

3

4

14. Check insulation resistance between slip rings and
frams. It should not be less than 20 megohms.

500V Megohmmeter
M1101 type.

1	2	3	4
1. Visually inspect the gyro. Mechanical damages, cracks, scales and other faults are not allowed. Silver enamel coating -165 should not have damages.			
2. Rinse plug 127-95 in petrol 5-70 and blow with filtered compressed air.			Petrol 5-70
3. Select and turn-in plug 127-95 in cover 127-30 using oil 132-20, providing screwing without play.		Wrench 6350-6455	Oil 132-20
4. Rinse threaded plug 127-34 in petrol 5-70 and blow with compressed air. Select and turn-in plug 127-64 in body 127-cd1, lubricating the thread with oil 132-20 and ensuring screwing without play.		Wrench 6350-4605	Petrol 5-70 Oil 132-20
5. Turn-out and rinse the plug 127-64 petrol - 5-70 and blow with compressed air. Rinse spring washer 075.00.00.007 in petrol and wipe the washer with clean calico cloth moistened in oil 132-20.		Wrench 6350-4605	Oil 132-20 Petrol 5-70 calico cloth
6. Rinse corrugated band 127-1 in petrol 5-70, wipe it with calico cloth and then lubricate with oil 132-20. Insert spring washer and 0.75.00.00.007 and corrugated band 127-1 into plug 127-64 and set external race of bearing A6005KI(5MA6025). Turn the plug with components into body 127-cd1.		Wrench 6350-4605	Oil 132-20 Petrol 5-70 calico cloth
7. Set the gimbal unit 127-cd14 into the body. Adjust the meshing so that the tooth of the small cage frame fits into the groove of cage cam 127-45 (fig.10) by 0.8 to 2mm. Adjust with stop screws 160-265 and 252-193 (fig.4) and with the bottom plug 127-64.		Wrench 6350-4605	

I-1052

- | 1 | 2 | 3 | 4 |
|---|---|---|---|
| 8. Adjust clearance between cage clutch and cage ring with supports.
When uncaged the clearance should be of at least 0.3mm. | | Feeler gauge
6355-1076 | |
| 9. Set a technological cover on the body and measure the clearance between card 9 7.021.010 and body with components 127-cd1. The clearance should be not less than 0.4mm.
Remove the technological cover. | | Technological cover 6350-7562
Feeler gauge
6034-2161 | |
| 10. Turn-out upper plug 127-85 from cover 127-30, rinse in petrol 5-70 and wipe the corrugated band 127-3 with calico cloth and lubricate with oil 132-20.
Set the band into plug 127-85 and run the working bearing A10000 95Ky (with holder) over the Band setting it right inside the plug. | | Wrench
6350-6455

Bearing holder
6355-1077 | Oil 132-20
Petrol 5-70
calico cloth |
| 11. Set cover 127-30 on body 127-cd1 inserting gasket 9 9.693.011 between them, fasten cover 127-30 with four studs 127-100 with spring washers 4 OCT111532-74 and washers 3402A-0, 8-4-8K . | | | |
| 12. Turn plug 127-85 into cover 127-03. Adjust the axial play of gimbal to 0.06 to 0.1mm applying 2.5Kg force to the lower semi-axle.
Adjustment is conducted by upper plug 127-85 or lower plug 127-64 from greater play to the smaller check for the absence of sticking of the gimbal gainst the body components. | | Wrench
6350-6455
Wrench
6350-6454
Attachment
6350-4443
Dynamometer
6350-1835
indicator with
0.01mm division
value | |
| 13. Trim gasket 9 8.683.011 in flush with body 127-cd1 and cover 127-30. | | Scalpel | |
| 14. Secure the upper plug with nut 127-101 and the power plug with nut 252-114. Seal nuts 127-101 and 252-114 with primer AK-070. | | Wrench 6350-6454
Wrench 6350-6455
Textolite stick of
2 to 3mm dia. | Primer AK-070 |

I-1062

1	2	3	4
<p>15. Recheck the gimbal play and check the friction torque of gimbal in body. It should be 2 gm.cm., at some points upto 3 gm.cm.</p> <p>Recheck the engagement of frame tooth with the cam. While checking the play of cardan keep it in vertical position, apply the dynamometer force of 2.5Kg. towards the lower semiaxle of the gimbal.</p>	<p>Gram gauge 6355-6537</p>		
<p>16. Screw the lower stopper 9 8.632.000 in with gasket 127-94, lubricating thread of the stopper with petrol resistant grease. Recheck the friction of gimbal. Before placing the gasket 127-94 grease it on both sides with petrol-resistant lubricant.</p>	<p>Wrench 6350-6751 Textolite stick of 4 to 6mm dia.</p>	<p>Petrol resistant grease</p>	
<p>17. Tighten the unit of contacts 127-cd10 with two screws 3157A-2-14K .</p> <p>Place adjusting gaskets 352.00.009034 and 352.10.00.003 under the unit of contacts. The gaskets are placed if required. Contact brushes should be approximately in the middle of the collector rings.</p>	<p>Screwdriver 7810-0306</p>		
<p>18. Cut the wires in situ xxx to the unit of contacts 127-cd10. Protect the collector with a special cap. Cut PVC tubes into lengths of 15mm; one piece of \varnothing 2.5, one piece of \varnothing 2, one piece of \varnothing 3. Slip the tubes over both branches of wires, burn the wire ends to a length of 4 to 6mm.</p>	<p>Cap for collector 6355-1078 knife.</p>		
<p>19. Quickly solder wires to brush holders (within 2 to 3 sec) supply 36V power and check proper direction or rotation of the rotor (from side '0' of the card the rotation should be in clockwise direction) if required, change the polarity. Turnout two screws 3157A-2-14K , and remove the unit of contacts 127-cd10.</p> <p>Thoroughly rinse the soldered places with rectified ethyl alcohol and wipe with calico cloth removing the traces of flux and burns.</p> <p>Inspect the quality of soldering. Check for the absence of flux and burns, cavities and pores.</p> <p>Seal the soldered places with coloured varnish AK-113.</p>	<p>36V electric soldering 36V electric soldering</p>	<p>Rectified ethyl alcohol calico cloth</p>	<p>Varnish AK-113</p>

I-1059

- | 1 | 2 | 3 | 4 |
|-----|---|--|---------------|
| 20. | Install assembly unit 127-cd10 in its place and secure finally with screws 3157A-2-14K , with primer AK-070. | Screwdriver 7810-0306
Textolite stick of
Ø 2 to 3mm dia. | Primer AK-070 |
| 21. | Adjust the tension of brushes of unit of contacts 127-cd10. Adjust the tension by bending spring. The tension should be 0.8 to 2gm. | Gram gauge
6350-4769 | |
| 22. | Secure the wires by clamp 2274A-4-1 and 2 clamps 1629A-2 over PVC-tubes with screw 3159A-2-4K , and two screws 3159A-2-6K , and spring washers 2 OCT111533-74. | Screwdriver
7810-0306 | |
| 23. | Check reliable contact of current feeders of the gimbal with a tester rotating with the cage handle the gimbal unit through +360°. Faulty contacts are not allowed. | Tester | |
| 24. | Tighten front wall 127-cd5 to the body with components with three working screws 3157A-3-8K .
Check the position of the bushing so that when the card with mark '0' is in position against the index, the screwdriver can exactly fit the slot in adjusting screw 127-46 (fig.10).
Turnout three working screws, set gasket 9 8.683.012 and finally tighten wall 127-cd5 to the body with eight screws 3157A-3-8K , with spring washers 3 OCT111532-74 fasten the stopper chain placing additionally one washer 3402A-0, 8-3-6K .
To provide better tightness secure the screw with primer AK-070. | Screwdriver | Primer AK-070 |
| 25. | Cut redwire M 8 of 0.35mm ² section in situ from plug to the illumination lampholder 9 6.635.001 (fig.7) slip PVC tube of 2mm dia. and 15mm length over the wire. Fix the wire to lampholder with screw 3159A-2, 5-6K , with three washers 3402A-0, 5-2, 5-5, 5K . | Watch Screwdriver
7810-0308 | |
| 26. | Fix the wire to cover 127-30 with clamp 1629A-1 and screw 3159A-2-6K , with spring washer 2 OCT1115333-74 over the PVC tube. | Screwdriver
7810-0306 | |

I-1059

1	2	3	4
27. Mount control button 9 6.354.001 on the shaft and fix with set screw 3220A-2, 5-5K , on adhesive Б -4. Seal screw 3220A-2.5-5K , with adhesive Б -4 with pigment.		Screwdriver 7810-0306 Textolite stick of 2 to 3mm dia. Screwdriver 7810-0313	Adhesive Б -4 with pigment Adhesive Б -4 with pigment
28. Set the gasket and tighten the upper cover 127-83 with 8 screws 3177A-3-8K , with adhesive Б -4 with pigment.			
29. Fill in one screw 3159A-3-8K , and one screw 3177A-3-8K , two holes in the plug 9 8.632.000 and sealing cup 1-3-2 OCT1110066-71 (fig.3) and one screw 3177A-2-6K ; (fig.7) fastening the cover plate with sealing compound OCT110066-71.		Seal	
Remark: Sealing compound is used to seal the devices. This compound possesses a good adhesiveness to metal and skaxkx and xxxxkx does not separate firm metal and plastic and retains seal mark at a temperature upto $+60^{\circ}\text{C}$.			
30. Check the device for tightness applying an access pressure of 0.1Kg/m ² . The pressure drop upto 20mm H ₂ O per minute is allowed. Adjustment of directional gyro.		Installation 6365-2057, both containing ethyl alcohol for technical purposes, stopwatch	
31. Mount the device onto installation "SKORSBI" or with the vibrator in horizontal position.		Installation "SKORSBI" 6365-325 or set -48 with vibrator Bracket 6350-4636	
32. Supply 36V, 400Hz power to the device.		Desk 6365-1373, wire bundle 6350-4911 or 6350-4912	
33. Check the consumed AC under stable working condition at 36V, 400Hz the current in each phase should not exceed 0.3A.			

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34. Adjust the readings of the device against point '0' on a swinging base of the installation which imparts to the device rotational movement at an angle of $\pm 7.5^\circ$, 3.7 to 5 cycles per minute, reverse time 100 to 140 sec. and vibration with a frequency of 40 to 50Hz and an overload of 0.3 to 0.9g. The value of card drift is determined in 15 min. after switching on the supply. Set the card against mark '0' and uncage the device after 30 minutes. Switch-off the installation reset the table to its initial position and note the drift of the card. The drift should be within ± 2 small divisions on the directional gyro scale. If the drift ~~max~~ is beyond carryout adjustment in the following way:-
- if the card drifts with respect to the index leftwards, rotate the adjusting screw clockwise.
 - if the card drifts rightwards, rotate the screw anticlockwise.
 - To compensate the drift of the card for one division rotate the screw for 1 to 2 divisions marked on the screwdriver.
35. Adjust the readings of the device against points ^E₃, ^W₃, or ^E₃ with an accuracy of ± 2 small divisions on directional gyro scale and repeat operation No.34.
36. Adjust the article on a vibrating base imparting vibrations to the device with a frequency of 40 to 50Hz and an overload of 0.3 to 0.8g, at point '0' under normal temperature. The value of drift of the card on a vibrating base is determined in 15 min. after switching on the supply. Set the card against mark '0', uncage and after 30 min. note the drift which should be within the limits of ± 1 small division on the directional gyro scale.
- If the drift exceeds, adjust it in the following way:-
- set the device at mark '0' and cage it.

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Unscrew plug 9 6.433.001 from the hole in front wall (fig.7) and turn balancing screw with screwdriver 127-cd6.

If the card drifts leftwards, turn the screwdriver clockwise. If the card drifts rightwards, turn the screw anticlockwise.

REMARK: Adjustment and rechecking is allowed three times only.

Devices having faults after third adjustment should be sent for overhauling.

37. Check the total play of the card. With the axle of the cageshaft fixed the play should not exceed 2 small divisions on the directional gyro scale.
38. Check the rotational torque of the cage handle, which should not exceed 500 gm.cm. The difference of rotational torque at various points should not exceed 350 gm.cm. The axle of the cage should move smoothly without sticking.

While rotating the cage shaft in pushed position the clutch should rotate freely without sticking and jamming.

I-1059

X Transportation and

storage of devices.

Transportation and Storage

Devices subject to repairs should be dismantled from the vehicle, cleaned from dust and dirt, wrapped in telephone cable paper and put into the special cardboard boxes. To prevent the devices from shifting corrugated card-board sheets are placed inside the boxes.

Cardboard boxes with devices are tightly placed into wooden cases with either moisture-proof lining or lined from inside with packing lutumen or tar paper; the space between the boxes should be filled in with dry wooden chips or paper strips in order to prevent the boxes inside the wooden case from shifting during transportation.

A packing list indicating all packed items is placed inside each case. The gross weight of the case should not exceed 50 Kg. Outside the following inscriptions are applied with indelible paint on the surface of the cases: "HANDLE WITH CARE", "FRAGILE", "DO NOT TURN OVER", "TOP", "OPEN HERE", "DO NOT DROP".

The devices may be transported by sea, air, railways and motor transport to any distance and at any speed.

The cases with devices should be stored in a room with relative humidity from 30% to 85% and temperature from $+5^{\circ}\text{C}$ to 30°C .

Unpacked devices and their units should be stored in a room with relative air humidity from 30% to 85%.

The room where devices are stored should be free of acid fumes and other aggressive agents.

The devices are transported inside the repair factors on special trolleys with flanges; during transportation the devices should be protected from sharp impacts and falls.

The above rules for transportation and storage also refer to repaired devices.

XI Appendices.

I-1059

LIST
of modifications in device ГПК-59 Assembly Unit 127Cd5
"Front wall with components"

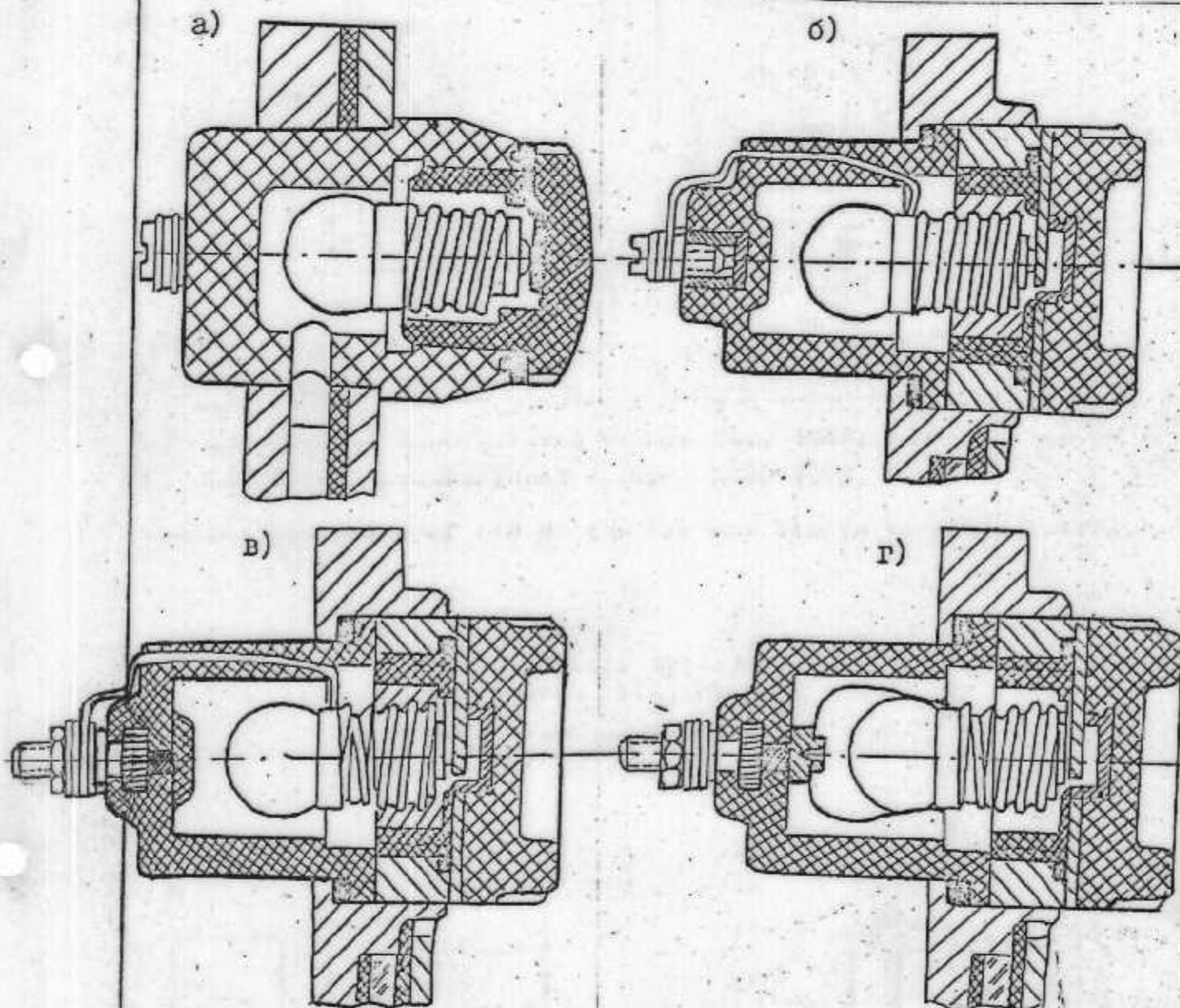


fig. 11 Design of the dial illumination .

- a) In devices manufactured before January, 1966,
- b) In devices manufactured after Jan, 1966.
- c) In devices manufactured after May, 1971.
- d) In devices manufactured after April, 1974.

Devices and assembly units of old design are not subjected to checking for tightness as per item 19 of condition-inspection chart of device and item 3 of condition-inspection chart of assembly unit 127-cd5.

If the dial illumination of old design is damaged, unit 127-cd5 should be replaced.

I-1059

INTRODUCING OF CAGE HANDLE RETAINER

- 1) In devices manufactured before Nov. 1968.
- 2) In devices manufactured after No. 1968.

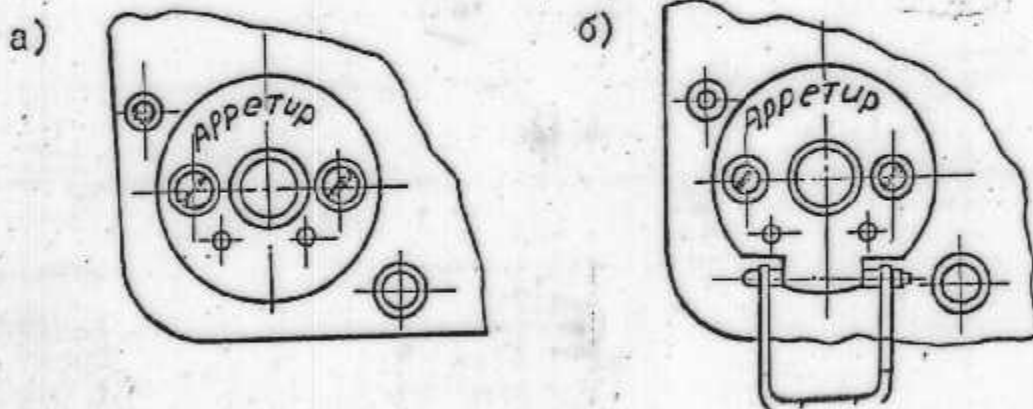


Fig. 12. DESIGN OF THE FRONT WALL WITH COMPONENTS:

- a) In devices manufactured before Nov. 1968.
- b) In devices manufactured after Nov. 1968.

Devices and units of old design are not liable to modification.

ASSEMBLY UNIT 127-cd2
"Bracket with slide block"
Change in securing the latch.

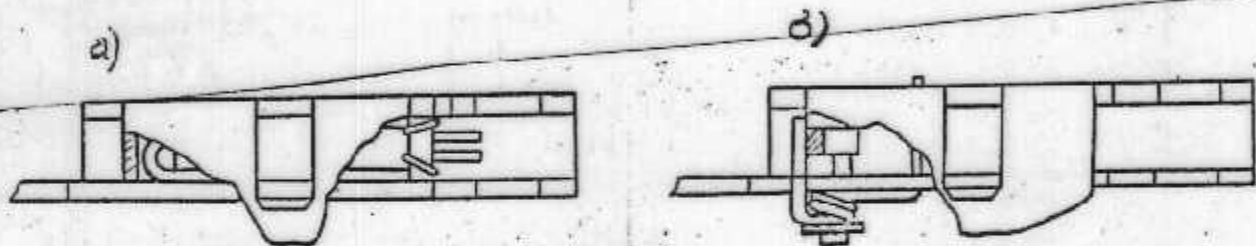


Fig. 13. SLIDE BLOCK WITH COMPONENTS:-

- a) In devices manufactured before Jan. 1965.
- b) In devices manufactured after Jan. 1965.

If the slideblock unit is broken replace it with a new one.

I-1052

List

of spare parts repair set for overhauling the directional
gyro -59.

(for 20 devices)

Sl. No.	Nos. of parts and assembly units	Description	Price per piece	Qty.	Cost
1	2	3	4	5	6
1.	127-cd2	Bracket with slide block	k	1	
2.	127-cd6	Screedriver		20	
3.	127-cd7	Contact unit		3	
4.	127-cd8	Contact unit		3	
5.	127-cd10	Block unit		3	
6.	127-cd12	Contact unit		3	
7.	160-cd22	Contact unit		3	
8.	9 6.354.001	Control button		2	
9.	9 6.615.003	Lampholder		18	
10.	9 6.617.000	Collector		1	
11.	9 6.430.019	Cap		3	
12.	359.00.00.000	Gyromotor TMA-4		1	
13.	51000095Ky ^x	Bearing		2	
14.	56005K1 ^x	Bearing		4	
15.	523ym ^x	Bearing		4	
16.	MH-26-012-1	Miniature bulb		10	
17.	127-6	Glass		5	
18.	127-3	Corrugated band		17	
19.	9 6.433.001	Plug with chain		10	
20.	127-59	Gasket		5	
21.	127-73 ^{x7}	Spring		3	
22.	127-100	Stud		5	
23.	160-75	Wire		4	
24.	9 8.683.011	Gasket		12	
25.	9 8.683.012	Gasket		5	
26.	3494A-1-8	Pin		3	
27.	3494A-1-10	Pin		4	
28.	127-cd5	Assembled front wall		5	

Total:

REMARKS: The above specified spare parts are delivered upon special agreement only.

2. Parts marked with X) are liable for slushing and deslushing.

3. It is permitted to deliver bearing SMA6025 in the place of A6005Ki.

Appendix No.3

I-1052

List of

repairing-and-mounting tools and accessories to disassemble, repair, assembly, adjustment and testing devices -59.

Sl. No.	Description and purpose of tools and attachments	Code of the tools	GOST Standards
1	2	3	4
I. Special tools.			
1.	Attachment to assemble contact unit.	-6018	
2.	Installation for statically balancing the assembly unit.	y-118	
3.	Torque meter of 0 to 1000 gm.cm. to rotate cage shaft.	y-169	
4.	Set of threaded plugs to check eccentricity in part 127-cd25.	6034-1122	
5.	Feeler gauge of 0.4mm to measure the clearance between card and body with components.	6034-2161	
6.	Reamer set of 0.76 to 0.79mm. dia. to ream holes for the pins in the bracket with slide block 127-cd2.	6120-239	
7.	Wrench (spanner) for locknut 160-330.	6350-290	
8.	Wrench for threaded bushing 160-229.	6350-1151	
9.	Dynamometer for applying force when axial play of the gimbal is adjusted.	6350-1935	
10.	Gramgauge to check contact pressure of the plates (brushes).	6350-1967	
11.	Wrench for axle 127-76.	6350-4603	
12.	Wrench for nut 127-86.	6350-4604	
13.	Wrench for plug 127-64.	6350-4605	
14.	Wrench for bushing 127-50.	6350-4608	
15.	Attachment to press-fit pins 252-30 and 252-299 into the disc of bracket with slide block 127-cd2.	6350-4427	
16.	Special stud to center contact group.	6350-4432	
17.	Attachment to check the axial play of the gimbal in the body.	6350-4443	
18.	Template to check clearance between gyromotor rotor and nozzles.	6350-4592	
19.	Bracket to mount directional gyro on "SCORBI" installation and y -48 unit.	6350-4636	
20.	Wrench for stud 127-100.	6350-4716	
21.	Wrench for lock nut 253B-192.	6350-4717	

1	2	3	4
22.	Special weight of 1.25gm. to check the value of gyrounit friction.	6350-4766	
23.	Special wrench for bushing 150-229.	6350-4768	
24.	Gramgauge of 0 to 3 gm. to check the tension of brushes of contacts unit.	6350-4769	
25.	Technological wire bundle for "SKORSBi" installation.	6350-4911	
26.	Technological adapter wire bundle for -48 unit.	6350-4912	
27.	Attachment to press-fit bushing 9 8.229.001 into assembly unit 127-cd5 (front wall with components).	6350-5201	
28.	Wrench for nut 252-144.	6350-6453	
29.	Wrench for nut 127-191.	6350-6454	
30.	Wrench for plug 127-95.	6350-6455	
31.	Wrench for threaded plug 127-50.	6350-6472	
32.	Attachment with indicator to check the unit for play.	6350-6549	
33.	Attachment for measuring axial play of the gyrounit in the gimbal.	6350-6704	
34.	Wrench for stopper 9 8.632.000.	6350-7195	
35.	Attachment to measure the transmission play (backlash).	6350-7195	
36.	Technological cover for measuring the clearance between card and body with components.	6350-7562	
37.	Gram gauge, 0.4 to 1 Kg, to check the force while adjusting the axial play of the gyrounit.	6350-7920	
38.	Feeler gauge, 0.5mm, to measure clearance between card and contact group.	6355-1072	
39.	Indicator foot.	6355-1074	
40.	Feeler gauge, 0.2 to 0.3mm, to measure clearance between body and gyrounit cover.	6355-1075	
41.	Feeler gauge, 0.3mm, to measure the clearance between ring and cage clutch.	6355-1076	
42.	Holder for bearing A1000095A.	6355-1077	
43.	Technological cap for protecting the collector.	6355-1078	
44.	Support.	6355-1078	
45.	Holder for bearing "A23ym"	6355-1080	
46.	Attachment for press-fitting pin into unit 127-cd2.	6350-6938	
47.	Gram gauge for checking friction torque of the gimbal in the body.	6355-6537	

Sl. No.	Description and purpose of tools and attachments	Code of the tools	GOST Standards
1	2	3	4
48.	Installation "SKORSBi" for checking and adjusting (6365-326) or -48 unit with vibrator.		
49.	Desk for checking and running.	6365-1373	
50.	Set to check tightness.	6365-2057	
51.	Centers to check play.	63624-018	
52.	Wrench for locknut 953-40.	64410-003	
53.	Textolite head hammer of a weight of 50 gm.		
54.	Textolite stick 2 to 3mm dia.		
55.	Textolite stick 4 to 6mm dia.		

II. Standard Tools

56. Viscosity meter B3-4.	GOST 9070-75
57. Indicator with 0.002mm division value.	GOST 9696-82
58. Indicator with 0.01mm division value.	GOST 577-68
59. Micrometer 0 to 25mm.	GOST 4381-80
60. Tester TT-I.	GOST22261-76
61. Working bearing A23yM.	Ty 100/6 BH
62. Working bearing A1000095Ky.	Ty 100/6 BH
63. Drilling machine, type CAT.	
64. Lath.	TB-320
65. Megohmmeter, type M1101, 100V.	GOST23706-79
66. Megohmmeter, 500V, type M1101.	GOST23706-79
67. Electric soldering iron, 36V.	GOST 7219-77
68. 7.5X magnifier.	GOST10513-73
69. Support for indicator.	GOST10513-73
70. Wrench S = 5 x 6mm.	
71. Wrench S = 8 x 9mm.	
72. Vice.	AH-1332
	<u>54464-04</u>
	033
73. Hypodermic syringe and needle, 0.6m. dia.	
74. Stopwatch.	GOST 5072-79
75. Scalpel.	

1	2	3	4
76.	Forceps (direct).		<u>54450-04</u>
77.	Forceps (side).		011 GOST 21241-77
78.	Screwdriver B=2.		7810-0313
79.	Screwdriver B=3.		7810-0309
80.	Screwdriver B=4.		7810-0308
81.	Screwdriver B=5.		7810-0326
82.	Drill, 0.75mm dia.		GOST 885-77
83.	Drill, 2.5mm dia.		GOST 885-77
84.	Tap M3 cl.2.		GOST 3266-81
85.	Feeler gauge set.		GOST 882-75
86.	Reamer, \emptyset 24A.		GOST 10902-77
87.	Tooth brush.		GOST 6388-74
88.	Kolinsky hair brush.		GOST 10597-80
89.	Flat plano parallel glass plates.		GOST 1121-75
90.	Cover glasses.		GOST 6672-75
91.	Wire net No.016.		GOST 6613-73
92.	Thermostat with temperature control device upto a temperature of $\pm 200^{\circ}\text{C}$.		BIII-0035
93.	Pliers.		AH-1332
			<u>54440-05</u>
			061
94.	Screwdriver B=9.		7810-0304
95.	Reamer \emptyset 3A ₃ .		GOST 7722-77
96.	Internal dial gauge with value of division 0.01mm. and measuring range of 18 to 35mm.		GOST 868-82
97.	Wire cutters.		AH-1332
			<u>54160-09</u>
			007
98.	Scissors.		AH-1332
			<u>54110</u>
			041
99.	Knife.		GOST 11704-75
100.	Balance with different weights.		
101.	Wooden head hammer, 30gr.		
102.	Seal.		GOST 17271-76
103.	Microscope MEC-1.		GOST 14968-69

Rates of consumption of materials for
repairing device -59.

Sl. No.	Description of the material	Standard (GOST, Ty)	Unit of measurement	Rates of consumption for 100 devices
1	2	3	4	5
1.	Aniline hydrochloride.	GOST 5822-78	Kg	0.02
2.	Acetone.	GOST 2603-79	"	0.2
3.	Bleached calico-cloth type-200, width 62cm.	GOST 11680-76	LinearM.	2
4.	Batiste, type 1401, width 78cm.	GOST 8474-80	"	2
5.	Petrol Б-70.	GOST 1012-72	Kg	10
6.	Oil litumen (Rubrax), grade A or Б.	GOST 781-78	"	0.08
7.	Capacitor paper, KOH-1, thickness 0.15mm.	GOST 1908-77	"	0.05
8.	Hygroscopic medical cotton wool.	GOST 5556-81	"	0.5
9.	Primer AK-070.	GOST-10-Y01-76	"	0.1
10.	Hexamethylene diamine.	Ty6-09-36-73	"	0.01
11.	Groundtale.	GOST 19729-74	"	0.02
12.	Dibutyl p-pthalate.	GOST 2102-67	"	0.01
13.	Common phenol-formaldehyde resin.	GOST 18694-80	"	0.02
14.	Xylol.	GOST 9949-76	"	5.0
15.	Adhesive 88-II	Ty-38-105540-73	"	0.2
16.	Pine rosin.	GOST 19113-73	"	0.05
17.	Distilled water.	GOST 6709-72	"	2.0
18.	Adhesive БФ-4.	GOST 12172-74	"	1.0
19.	Castor oil.	GOST 6990-75	"	0.01
20.	Oil 132-20.	Ty6-02-897-78	"	0.1
21.	Instrument oil MB	GOST 1805-76	"	0.05
22.	Bleached medical gauze, type-6423, width 68cm.	GOST 9412-77	Linear M	10.0
23.	Transformer oil.	GOST 982-80	Kg	0.05
24.	Alcohol-soluble nigrosine.	GOST 9307-78	"	0.005
25.	Cotton stitching threads, No.00.	GOST 6309-80	"	0.005
26.	Red wire M WB, section 0.14mm.	Ty16-505.437-73	M	5.0
27.	Red wire M WB, section 0.35mm ² .	Ty16-505.437-73	"	3.0
28.	Solder OC-61.	GOST 21931-73	Kg	0.1
29.	Temporary effect luminous compound Ø K -03.	Ty6-09-768-77	"	0.02
30.	Diluter P-5.	GOST 7827-74	"	0.5
31.	Thinner ПКБ-1.	Ty6-10-1326-77	"	0.3
32.	Diluent P B.	GOST 18188-72	"	0.5

1	2	3	4	5 kg
33.	Rectified ethyl alcohol.	GOST 5962-67	Kg	2.0
34.	Technical ethyl alcohol (hydrolytic).	GOST 17299-78	"	2.0
35.	Instrument grease ОКБ-122-7.	GOST 18179-72	"	0.1
36.	Petrol resistant grease.	GOST 7171-78	"	0.5
37.	Grease АТНМ-201.	GOST 6267-74	"	0.1
38.	Epoxy resin 3 -6.	GOST 10587-76	"	0.1
39.	Triethylamine.	GOST 9966-78	"	0.01
40.	White tube W-TB-40-230 (int. dia. 4.5mm).	GOST 19034-73	"	0.01
41.	White tubes W-TB-40-230 (int. dia. 2mm, 2.5mm and 3mm).			
42.	Varnish AK-113.			
43.	Ceresin.			
44.	White enamel, Hy-25.			
45.	Black enamel, Hy-25.			
46.	Grey hammer silver (colour) enamel -165.			
47.	Ethyl acetate.			
48.	Sand paper K36-14.			
49.	Phtoroplastic tube, int. dia.			
50.	Butyl meta acrylate.			
51.	Methylmeta acrylate.	GOST 20370-74	"	0.05
52.	Benzole peroxide.	GOST 14888-78	"	0.01
53.	White enamel -223.			
54.	White spirit.			
55.	Ethyl alcohol.			
56.	Sodium hydroxide (caustic soda).			
57.	Phenolphthalein.	GOST 5850-72	"	0.01

I-1052

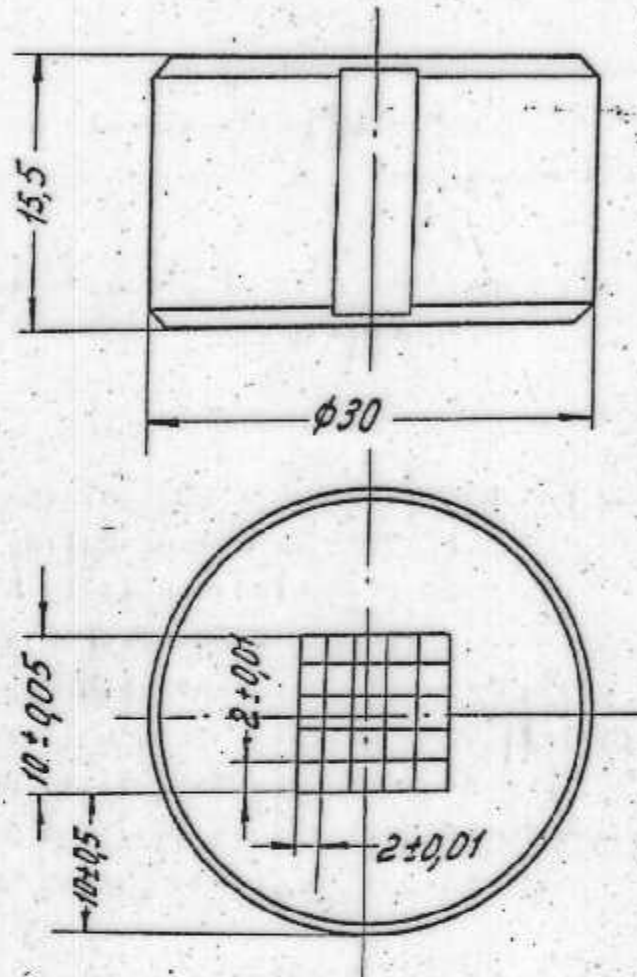


Fig. 1. TEST PLATE.

Distance between the lines is 2mm place the test plate on the stage of microscopic M5C-1

REMARKS: The microscopic stage should be of black colour so that the fire dust particles on test plate can be distinctly seen through the microscope.

I-1052

Appendix 5.

Instructions to determine dust contents in air by settling method.

I. Purpose and Use

The present instructions specify:

- a) The procedure to determine dust content in air by settling method.
- b) Dust content rates in rooms intended for assembling, adjusting and testing aviation devices.

II. Required materials and equipments.

1. Batiste napkins 200 x 200mm, (washed and hemmed) GOST 9474-80.
2. Medical cotton wool-GOST 5556-81
3. Rectified ethyl alcohol- GOST 5962-67.
4. Petrol, grade B-70-GOST 1012-72
5. Microscope БМС-1 (Binocular, stereoscopic).
6. Plano parallel glass plates- GOST 1121-75 with rectile of 1cm^2 area (test plates).
7. Container for test plates (stand and cover)
8. Capacitor paper, КОН-1, GOST 1908-77.
9. Guarding ring
10. Ethyl alcohol- GOST 8981-78.
11. Cover glass- GOST 6672-75.

III.-Method to determine dust content by settling method.

1. Dust content is determined by settling method and is characterised by quantity and size of particles settled on an area of 1cm^2 per hour.
2. Dust content is determined as arithmetic mean of three measurements carried out simultaneously at various places of the premises.
3. To determine dust content by settling method plano parallel plates (test plates) are used.
Rectical of 1cm^2 are (see fig.1) is marked on the upper polished surface of the test plate.

so that the fine dust particles on test plate can be distinctly seen through the microscope.

4. To bring the plate into focus rotate the screw which moves the optical head of the microscope in vertical position.

Various degrees of microscope magnification are set by rotating the wing nut connected to the cylinder having numbers. Every position of the cylinder should be fixed accurately with a special spring retained. While inspecting the test plate reticle through the eye-piece, turn the eye-piece tube to such position so that the two images of reticle converge as one. Inspect the test plate in reflected light.

The focal plane of the changeable eye-piece "8^x" has a scale the division value of which is 15 when the microscope magnification is "56^x".

REMARK: 56^x total microscope magnification is equal to multiplication of 8^x eye-piece magnification by objective 7^x magnifying.

Bright (slining) spots on graduation lines are permitted. Bright spots on the working surface are not permitted.

IV. Dust content Technique.

1. Preparation of test plates and containers:

- a) The test plates and containers are prepared in premises where dust content makes up 150 particles maximum settling on 1cm² area per hour.
- b) To wash containers, test plates and cover glasses filter petrol E-70.

REMARK: For washing test plates and cover glasses, it is permitted to use a mixture of ethyl ether and rectified ethyl alcohol in a ratio of 7 to 1.

- c) Thoroughly wash and rinse the cover glasses and test plates containers in filtered petrol and dry them in air. While drying the cover, close its internal cavity with a cover glass.
- d) Set the test plate in the support.
- e) Place the test plate along with the support on the stage of microscope M5C-1;
- f) Set 56X magnification by aligning number "7" on the cylinder

with the graduation line of the optical head eye-piece gives 8X magnification. Switch on the illumination of the microscope through step-down transformer, 6V tap.

- g) Bring the plate in focus with screw and adjust the illumination in such a way that the reticule marked on the test plate could be seen distinctly. The background of the surface should be such that dust particles of upto 5 microns in size are not seen. Uniformity of illumination is adjusted by rotating the holder with bulb around it's axis. Brightness of illumination is adjusted by rotating transformer knob.

REMARK: While preparing plates and when counting the dust particles the background of the surface and the brightness of the illumination should not change.

- h) Check all the squares of the reticle applied on the plate under the microscope. The detected particles are removed with dry washed and hemmed batiste cloth by light motions without applying any pressure onto the plate.

- i) Count the remained particles inspecting all squares in the following order:

First row - from top to bottom,

Second row - from bottom to top and so on.

Simultaneously determine the size of the particles with the scale inside the microscope eye-piece.

- j) Make record in the dust content register chart.

REMARK: No more than 20 particles including bright spots (defects in the glass) which are to be accounted when estimating the dust content are permitted on the prepared test plate reticle.

- k) Carefully without touching the prepared surface, close the plate with a cover. Prepare two more test plates in the similar way.

2. A test for dust contents is conducted in the following manner:

- a) Place three test plates prepared as per item 1 above in three different locations of the premises.

REMARK: 1. Place the plate inside a guarding ring to avoid blowing-off of dust particles by air movements when the workers are moving.

2. The plate should not obstruct the assembler's work.

3. If there is no possibility to place the plate in the working place, locate it within the radius of one meter from the working place.

4. The working personnel is to be warned not to shift plates, touch them and bend over them.
 - b) Remove the covers from plates and note down the time when the plates are placed, close the covers with cover glasses prepared as per item 1 "C".
 - c) After an hour \pm 5 minutes carefully, without touching the plate surfaces close them with covers and transfer them to the microscope for inspection.
 - d) Place the test plate on the microscope stage and carefully remove the cover.
 - e) Repeat operations as per item 1, f, g, h.
 - f) Count the detected particles inspecting all squares in the following manner: First row - top to bottom, second row - bottom to top and so on.
Simultaneously determine the size of the particles with the scale located inside the microscope eye-piece. The value of division with 56X magnification is 15 microns.
 - g) The quantity and size of the dust particles is determined against a black background.
 - h) Put down the results into the dust content register chart (Table 1).
 - i) Dust particles above 5 microns in size are counted only.
 - j) Deduct from the obtained results the particles of particular size left on the plate after preparation and counted as per item 1 "i".
 - k) Count dust particles on second and third plates in the similar manner.

V. BASIC INSTRUCTIONS.

1. Dust content in the assembly premises is checked as per special schedule at least once a month.
2. After finishing the work, rinse thoroughly test plates, covers and other tools in alcohol or petrol.
3. All the equipment and materials required to work as per the present instructions should be stored in the laboratory cabinets. Store the test plates in a packing container. Store the microscope in a polyethylene cover to protect from dust.
4. Do not touch the working surface of the test plate while using it. While transferring the plate hold it by the dull cylindrical surface.
5. In the remarks column of Table 1 indicate number of personnel working in the shop at the time of measuring the dust content, location of the test plates and operation of ventilation system.
6. Only fully qualified persons are allowed to conduct dust content measuring works.

VI. SAFETY PRECAUTIONS.

Observe fire safety precautions while working as per present instructions.

DUST CONTENT REGISTER CHART.

Date	Number of premises.	Time of measuring	Number of dust particles left on the plate after preparations.	Number of dust particles per 1 cm ² of each plate settled per one hour including those left on the plate.	Arithmetic mean value of the dust quantity.	Size of dust particles on each plate.		Remarks	Signature of the inspector.
						Upto 30 μ	From 30 μ to 80 μ		
1	2	3	4	5	6	7	8	9	10

Ordnance Factory
Project
Hyderabad.

I-1052

NUMBER..... LTK-54
SHEET 187 OF

7. Instructions for slushing and
deslushing spare parts.

1. Store the set of spare parts in manufacturer's cardboard boxes on racks under normal storage conditions.
2. In 6 months after the manufacture (see spare parts register) check for corrosion by opening 5% of the stored spare parts. Neither disturb the slushing compound nor touch the parts with unprotected hands.

If there is no corrosion traces keep storing the parts and checking them after every 6 months.

3. If corrosion is detected all parts are deslushed and are subjected to 100% check.

Conduct deslushing of:

- a) completely preserved parts by dipping them in transformer oil (GOST 982-80) at a temperature of +100 to 110°C and subsequently rinsing them in petrol B-70.
 - b) Partially preserved parts by wiping the greased areas with calico-cloth napkin moistened in petrol B-70.
4. Remove the corrosion products with paper, grade K36H-14, moistened in oil. Remove white film settled on zinc plated steel parts with a dry napkin.
 5. Slushing of parts is conducted immediately after inspection, washing in petrol B-70 and drying in the following manner:
 - for steel part without protective coating - 2 times dipping into the bath containing gun-grease : first time at a temperature of 105 to 115°C; second time at a temperature of 60 to 70°C.
 - for steel parts with protective coating as well as of non-ferrous metals and alloys - 2 times dipping in a bath containing petroleum jelly ; first time at a temperature of 105 to 115°C, second time at a temperature of 60 to 80°C;
 - for parts with local paint coating - by applying on unpainted places with a brush petroleum jelly with 3 to 5% of ceresin under a temperature of 60 to 80°C. After slushing wrap all parts first in paraffined and then in wrapping paper and place in cardboard boxes.
 6. Check reslushed parts in the way specified in item 2 above.

7. Total storage period of spare parts is indefinite.

Appendix No.7

Instructions for impregnating Oil
seal gaskets in instrumental Oil MBII.

1. Place the gaskets in a glass jar containing instrument Oil MB for 1.5 to 2 hours until they get saturated.
2. Take out the gaskets from the jar and remove excess oil in the following way:
Place the gaskets on a four-time folded calico cloth and cover them with similarly folded calico cloth and put a 200 gr. weight for one minute.
3. 2% of parts but not less than two parts from a batch are subjected to saturation (impregnation) test.
Cut the gaskets and visually inspect them. They should be impregnated to the entire thickness.
If the parts are not completely saturated with oil MBII, continue the saturation operation and again test the parts.

Appendix No.8.Instructions for preparation and usace
of cold-curing epoxy adhesive.1. Required materials and equipment

- | | | |
|--|---|---------------|
| 1. Epoxy resin | 6 | GOST 10587-76 |
| 2. Dibutyl phthalate | | GOST 2102-67 |
| 3. Hexamethylene diamine | | Ty6-09-36-73 |
| 4. Petrol - B-70 | | GOST 1012-72 |
| 5. Acetone. | | GOST 2603-79 |
| 6. Medical gauze | | GOST 9412-77 |
| 7. Sand paper | | GOST 10054-75 |
| 8. Balance with various weights | | |
| 9. Thermostat with thermo-control device upto +200°C | | |
| 10. Kolinsky hair brushes | | |
| 11. China cups, glasses and porcelain mortars. | | |
| 12. Surgical rubber gloves. | | |
| 13. Smoke-proof tight goggles. | | |

II Process for preparing epoxy adhesive

1. Separately weight on the balance in china or aluminium glasses 100 parts by weight of epoxy resin 10 parts of dibutyle phthalate and in a weighing bottle 8 parts of hexamethylene diamine.
2. Place the resin in a drying cabinet heated upto +80 \pm 5°C and keep there for 3 to 5 minutes.
3. Take out the resin from the drying cabinet and place it into exhaust cabinet and while stirring ~~gradually~~ gradually add dibutil phthalate.
4. Place the obtained mass into the drying cabinet with +80 \pm 5°C and keep there for 30 to 40 minutes.
5. Take out the mass from the cabinet and cool to room temperature.
6. Just before cementing the parts, place hexamethylen diamine in a drying cabinet heated to a temperature of +45 to 50°C and keep under this temperature for 2 to 3 minutes.
7. Take out the melted hexamethylen, diamine from the drying cabinet and add it to the already obtained mixture.

REMARK: Hexamethylen diamine may be added into the mixture of resin and dibutyle putalate in crystals. But for this it should be ground in the mixture for 3 to 5 minutes.

8. The prepared adhesive may be used for cementing at a temperature of 15 to 25^oC for 15 to 20 minutes.
9. To reduce the viscosity of adhesive hexamethylene diamine may be used as a 50% alcohol solution by weight per 100 parts of resin.

III. Preparation of surfaces to be cemented

1. Match the surfaces which are to be cemented.
2. Clean the surfaces with sand paper to obtain uniform roughness.
3. Remove emery and metallic dust particles from the surface with a brush.
4. Degrease the surfaces with petrol B-70.
5. Dry in air for 5 to 10 minutes.

REMARK: 1. Oxidized, electroplated and varnish paint coated surfaced are not cleaned with sand paper.

IV. Cementing Process

1. Apply a thin layer of adhesive on the prepared surfaces with a brush or spatula.
2. Keep them for 3 to 5 minutes in air.
3. Place the parts on each other and ensure a tight contact.
4. Remove excess adhesive with a gauze tampon moistened in acetone.
5. Keep the unit under room temperature for 24 hours.

V. Checking

Check the quality with tweezers (forceps) creating tensile force.

VI. Storage of materials

1. Store the epoxy resin in a glass container tightly closed.
2. Store hexamethylen diamine in a glass jar with a ground stopper. Ingress of moisture (in the jar) is not allowed. After taking a portion of hexamethylen diamine, seal the stopper with paraffin.

VII. Safety Precautions

1. Preparation of the adhesive should be conducted in a specially equipped room with plenum exhaust ventilation in rubber gloves.

2. It is not recommended in the premises to conduct the works which are not connected with the preparation of epoxy adhesive.
3. Use tight fume-proof goggles while handling hexamethylen diamine separately or in mixture with the resin.
4. If resin or adhesive drops on the skin, immediately remove it with a tampon moistened in acetone and then wash thoroughly in hot water with soap.
5. After the work clean the hands with gauze moistened in acetone and then wash thoroughly in hot water with soap.
6. Use acetone for removing resin and adhesive from the vessels.
7. The working table should be covered with a paper which is removed after work along with resin drops on it.
8. Paper and rag soiled with the adhesive and its components, adhesive wastes should be collected into a box, which is removed after work from the premises.
9. People with highly sensitive skin should not be allowed to work with epoxy resin.

Appendix No.9

Instructions for coating parts
with primer AK-070 during assembly

1. Purpose and use

The present instruction is a guide for conducting the technological process of coating fastening parts of aluminium and it's alloys, copper and it's alloys, steel stainless steel and flared places with primer AK-070 during assembly.

Primer AK-070 is applied to protect fasteners and other parts, flared places from corrosion during maintenance in different climatic conditions.

II. Required Materials

1. Primer AK-070	GOST 6-10-401-76
2. Diluent P-5	GOST 7827-74
3. Petrol 6-70	GOST 1012-72
4. Alcohol - soluble nigrozin	GOST 9307-79
5. Wire net No.016	GOST 6613-73
6. Calico cloth	GOST 11680-76
7. Medical gauze	GOST 9412-77

III. Required equipment

- 1. Viscosimeter B3-4 GOST 9070-75
- 2. Stop watch GOST 5072-79
- 3. Kolinsky hair brushes. GOST 10597-80

IV. Description of technological process

- 1. Before using thoroughly stir primer AK-070 and filter it through net No.016 or through 4-6 times - folded gauze.
- 2. Working viscosity of primer AK-070 should be 35 to 40 sec. as per viscosimeter B3-4 at T = +20°C.
- 3. The primer AK-070 with nigrosine is prepared in the following way:
 - 100 parts by weight of primer AK-070.
 - 5 parts by weight of nigrosine.

Thoroughly stir the mixture and filter it through net No.016 or 4-6 times folded gauze. Reach the working viscosity of 35-40 sec. on viscosimeter B3-4 by keeping it in air in an open pot. If necessary, dilute the primer with diluent P-5.

- 4. Service period of the primer from the time of preparation is 20 days.
- 4. Primer AK-070 is applied on the surface in two uniform layers with a brush and each layer is dried in air for one hour.
- 5. Painting works are performed in a bright, dry and clean premises with a temperature of not below +12°C and relative air humidity not exceeding 75%.

V. Technical requirements

The quality of coating is inspected visually. The coating should be uniformed without swelling, bubbles and foreign impurities.

VI. Safety Precautions.

While working with primer AK-070 open fire is not allowed. Works related with preparation and application of primer AK-070 should be performed under local exhaust ventillation.

Appendix No.10

Instruction for coating parts with rivelled enamel U-165.

1. Purpose

The present instruction specified technological process for applying silver colour revetted enamel № 165 on different parts of aluminium and copper alloys, steel and other metals.

Required materials and equipment

1. Silver revetted enamel -155	GOST 12034-77
2. Diluent PKB-1.	
3. Petrol B-70.	
4. Medical gauze	GOST 9412-77
5. Calico cloth	GOST 11590-76
6. Sand paper	GOST 10054-75
7. Kolinsky Hair brushes	GOST 10597-80
8. Viscosimeter B3-4	GOST 9070-75
9. Stopwatch	GOST 5072-79
10. Thermostat with temperature control device α upto 200°C.	

III. Technological Process

1. Before painting clean the parts surfaces with sand paper, wash them in gasoline with a brush and make them dry for 10 to 15 min.
2. Before applying dilute enamel № 165 with thinner PKB-1 until the working viscosity of 35 to 40 sec. on viscosimeter B3-4 at $+20^{\circ}\text{C}$ is obtained and then filter it through gauze which is 4 times folded.
3. The damaged places are coated with enamel № 165 with a brush in one layer and dried at ambient temperature for 24 hours. During this, the painted places are heated with a filament lamp for 1 to 1.5 hours. To expedite the drying process, the temperature may be increased to $+50^{\circ}\text{C}$; In this case drying time is 4 hours.

IV. Inspection

The quality of coating is checked by visual inspection. The coating should be continuous uniform without peelings, bubbles, swelling or any foreign impurities.

V. Safety Precautions

1. The painting premises should be equipped with pleumeum exhaust

ventilation.

2. The daily stock of solvents should be stored in air-light closed vessels in metal cabinets. To avoid sparking, usage of steel vessels is prohibited.

Appendix No. 11

Instruction for painting the parts with black and white nitroenamel/H4-25

Purpose

The present instruction describes the technological process of painting parts made of plastic textolite, getinaks anodized aluminium and its allies. *and steel.*

II. Required materials

- | | |
|---------------------------------|---------------|
| 1. White and black enamel Hy-25 | GOST 5406-73 |
| 2. Gasoline - B-70 | GOST 1012-72 |
| 3. Diluent P B | GOST 18188-72 |
| 4. Medical gauze | GOST 9412-77 |

III. Required equipment and attachments

1. Drawing table with ventilation
2. Viscosimeter B3-4
3. Stopwatch
4. Kolinsky hair brushes.

IV. Preparation of materials

~~Be~~ Before usage thoroughly stir the enamel dilute to the working viscosity of 25 to 30 sec. on the viscosimeter B3-4 at +20°C and filter it through 4-folded gauze. If thickened while working with enamel, add diluent P B to obtain the working viscosity.

V. Application of the enamel

1. Clean the surfaces of parts to be painted of dirt, grease and finger prints. If any doubts in cleanness of part surfaces degrease them by wiping with a calico cloth wad moistened in petrol.

2. Enamel is applied with a brush or pen in one layer without swellings and leaks in.
3. To paint deep scale divisions and signs on the parts recesses of dials, signs or numbers should be fully filled in with enamel.
4. The painted parts ~~are~~ are placed into a drying cabinet for 1 to 1.5 hours at a temperature of 18 to 25°C. The relative humidity in the room should not exceed 70%.

VI. Inspections

Inspect 100% of painted parts with naked eye.

The painted parts as well as the signs, dial divisions and numbers should have smooth semiglossy surface without stains, bulges, shrinks, wrinkles and foreign inclusions.

The colour, appearance of the surface, legibility of applied signs should comply with the standard.

VII. Causes of defects and their elimination

Causes of defects may be as follows:

1. Poor quality of nitroenamel .
2. High viscosity of nitroenamel which cause rough and non-uniform film.
3. Low viscosity of nitroenamels which cause streaks (dripping) and uniformity of coating.
4. Low temperature and high air humidity in the room where parts are painted and dried, this results in a dull film with a whitish shade.

While removing the enamel from part surfaces, it may get wiped from some of the small cavities.

To fill in these wiped out dials divisions signs and numbers the enamel is applied with a brush or pen. After correcting the defect with brush let the paint dry and then wipe with a calico cloth moistened slightly ~~in~~ in the petrol.

In case of minute surface defects they may remedied by rectifying or applying a thin layer of enamel over the damaged coating. In case if it is not possible to correct the defects, remove the enamel coating and reapply it as per process.

If while washing off the defects the main coating gets damaged remove it and reapply as per existing technology.

Appendix No.12Instructions for usage of adhesive
"88 HII"1. Purpose

The present instruction describes the process of usage of adhesive "88HII" for cementing metal to rubber and rubber to rubber.

II. Required materials

1. Adhesive No.88HII	Ty-38-105540-73
2. Ethyl acetate	GOST 8981-78
3. Petrol B-70	GOST 1012-72
4. Medical gauze	GOST 9412-77
5. Sand paper	GOST 10054-75

III. Preparation of surfaces to be cemented

Preparation of surfaces to be bonded (metallic and rubber) prior to cementing includes as follows:

1. Clean the metallic surface with a coarse sand paper (Exceptions: Oxidized ^{and anodized} surfaces which are degreased with petrol).

REMARK: It is permitted to bond painted metallic surface with rubber. For this purpose before cementing first lightly rub the varnish film on the metal with sand paper and wipe with a piece of cloth to remove the sand dust. While bonding rubber to rubber apply only one layer of adhesive 88H on surfaces to be cemented and dry them for 5 to 8 minutes in air. Then join the surfaces in a pressing device and dry for 6 to 8 hours.

VI. Inspection

To check the quality of bonding inspect visually the cemented areas and test them for compliance with the technical specification for a given article.

VII. Elimination of faults

Parts having faults can be corrected. For this, the adhesive on both surfaces is mechanically removed using petrol. Then both the surfaces are dried until there is no petrol smell and are bonded again as per above specified method.

REMARK: When bonding rubber or any other soft material to the hard material it is recommended to roll it with the aid of a roller of 0.5 to 1.0 Kg. Then place the bonded parts under a weight or squeezed in a pressing fixture and dry as specified in the present instruction.

2. Thoroughly file the rubber surfaces. Filing is necessary to remove the talc which is often available on the rubber surface and to make the surface rough.
3. Degrease the surfaces to be cemented with gauze tampon moistened in petrol.
4. Dry the degreased surfaces till there is no petrol smell.

IV. Preparation of Adhesive

Before using thoroughly stir the adhesive. In case the adhesive is thick check it for the dry residue content as per Ty 38-105540-73 and if it is above $30 \pm 2\%$, dilute the cement with a mixture of ethyl acetate and petrol in a ~~zik~~ 2:1 ratio.

Store the adhesive in sealed closed containers.

V. Bonding and drying

With a brush, apply two layers of adhesive (mixed in advance) on the surfaces prepared for bonding. After applying the first layer dry the parts for 5 minutes. Then apply the second layer, dry the part for 5 to 8 minutes and make the surfaces together. Place the bonded area under a press which provides tight adjoining of rubber to the metal leave the bonded area under the load for 24 hours at $+18$ to 25°C . Load under which the parts are placed after bonding should be of at least 1 Kg. per cm^2 of the bonded surface.

The clamping devices are selected as per design of parts which are to be cemented.

Appendix No.13

Instruction for preparing flux $\pi \pi$ -1 to solder parts from different metals.

1. Purpose

The present instructions includes the technological process for preparing flux $\pi \pi$ -1 for soldering parts of non-ferrous and ferrous metals.

II. Required materials

1. Rosin 22%
2. Rectified ethyl alcohol 70%
3. Aniline Hydrochloride of 6%
4. Tri-ethyl amine 2%

III. Preparation of the flux

Prepare the flux in the following way:

Weigh the required quantity of materials, dissolve rosin in ethyl alcohol, add aniline hydrochloride in this solution and stir till aniline is completely dissolved after this add a required quantity of tri-ethyl amine.

Amendment List

Name of document	Pages (sheet) No				Total No. of (sheets) pages in the document.	Document No	Entry No. of accompanying document and date	Signature	Date
	Amended.	Removed.	New	Cancelled					

Technical specifications for overhauling directional gyro ГПК-59.