

	<p>screen assembly or sieve .</p> <p>b) clean the signaling oil screen assembly in clean non-ethylated gasoline , then keep it for 2 hours in a solution made of 80% alcohol and 20% glycerin and blow it with dry compressed air . Before installation check the electric circuit .</p> <p>c) install the signaling oil screen assembly , tighten the nuts and connect the wire .</p> <p>4. Drain oil from the oil tank and oil cooler . Remove , visually inspect , clean , install and wirelock the oil screens assembly . Clean propeller governor oil screen assembly .Fill the tank with fresh oil .</p> <p>5. Inspect for evidence of external circuit of the signaling oil screen assembly: remove the rubber cover and make the earth connection . The signaling lamp from the control panel shall lit . When opening the circuit the lamp goes off that is certifying the good condition of the external electric circuit . <i>Caution : Under difficult conditions of operation (dust) change oil after 50 hours of operation and clean oil screens .</i></p> <p>6. Clean the fuel screens .</p> <p>7. The following works are carried out on carburetor ;</p> <p>a) remove fuel screen , visually inspect, clean in gasoline . Install the cover and wirelock it</p> <p>b) install the fuel screen in carburetor , by hand . Tighten with the wrench at 45-60° .</p> <p>c) measure the initial position of the altitude self-actuated compensatory and if necessary , adjust it again to the pressure diagram ;</p> <p>d) remove the ventilation plug of the aneroid cavity , check the holes –to be clean , wash them with clean gasoline and dry it in compressed air ;</p> <p>e) remove the intake nozzle and wash it with clean gasoline and dry it in compressed air . <i>Remark : Before installing the screen and plugs , check the condition of the sealing rings . The damaged sealing rings shall be replaced by new ones from the spare parts kit .</i></p> <p>f) unscrew the lower drain plug and drain the settlings from the fuel chambers ,as per para8.1.8 ;</p> <p>g) it is allowed to keep the carburetor not prepared for storage if the engine is not</p>	<p>No foreign bodies and metallic deposits are allowed .</p> <p>In compliance with the requirements of the airplanes factory . No foreign bodies ,breakage of the sieve , corrosion are allowed .</p> <p>Air pressure max 0.5 daN/cm²</p>
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<p>8.</p> <p>9.</p>	<p>operated less than 7 days provided the fuel cavities were filled up with gasoline .</p> <p>h) if the engine is not operated more than 7 days the engine is to be stored in compliance with the specific requirements; <i>Remark : If the airline is spoiled (change of fuel consumption) it is allowed , no matter the periodicity of service, to:</i></p> <p>a) pump gasoline into the air system through the hole of the air pressure measuring plug at 1 kgf/cm² and blow dry air at max 0.5kgf/cm² .Set the lever control throttle in this case on full open position;</p> <p>b) remove , wash with gasoline and blow with compressed air the inlet nozzle ;</p> <p>c) check the control system of the throttle and adjust the clearance from the joints .</p> <p>Carry out the regularly works to the magnetos and check the condition of the following assemblies :</p> <p>a) breaker mechanism – check all threaded joints ,the rotation of the lever on the shaft check the clearance between the contact points when held open by the cam , clean the contacts wipe them with chamois leather or clean cloth , soaked in clean alcohol and adjust the clearance ; each adjustment will be entered in the magneto certificate .Remove the oil drains from the metallic surface of the parts and assemblies in the cavity of the breaker mechanism with a thick cloth , soaked in clean alcohol .Smear the spring of the breaker with a thin coat of turbine oil . No leaks are allowed . Avoid oil dropping on the breaker contact points .</p> <p>b) breaker cover – check the proper installation of the contact spring in the seat of the breaker cover for the high voltage terminal ; check the contact points and the spring and, if necessary replace them with the spare parts from the engine kit .</p> <p>c) the high voltage outlet terminals , the elements from the upper cover will be replaced with the parts of the spare kit , if necessary .</p> <p>d) examine the cam follower if it is properly lubricated . If oil appears on its surface when squeezed with the finger , no further lubrication is necessary .If the cam surfaces are dirty or dry wipe them with chamois leather or cloth slightly soaked in alcohol up to</p>	<p>Remove the impurities with a piece of clean and dry chamois leather .</p> <p>Cracked thread screws shall not be used .</p> <p>No cracks and other damages of the generator body ,gear and passage flange are allowed .</p>
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<p>10.</p> <p>11.</p>	<p>luster , then moisten with aircraft engine oil .Avoid over-oiling as any excess oil is likely to get between the contact points and cause burning or pitting .</p> <p>Perform the regularly works to generator :</p> <p>a) Inspect the generator for properly installed, especially the condition of the circlips . Remove the dust oil and other foreign bodies from the generator ;</p> <p>b) Check the contacts in all connection points and the generator air-blowing system ;</p> <p>c) Check the condition of the commutation brush assembly .Pay attention to the travel of the brushes inside the housings – it should be smooth – their proper adjustment to collector , the condition of the collector surfaces and the springs of the brushes .Measure the height of the brushes .The brushes smaller than 17 mm will be replace with new ones, of the same type Clean the collector from the dust generated by the brushes , or other impurities , by means of a cloth soaked in clean gasoline . If the collector has oil spots that can not be removed with gasoline , try to remove them with an emery cloth .If the collector show wear or black deposits , send the generator to repair .</p> <p>d) Remove the plug from the generator gear body , drain the oil ,then screw the plug in and wirelock it .</p> <p>Inspect air compressor for proper safetying .Replace the felt filter by a new one from the spare parts kit .Check the smooth travel of the valve .</p> <p><i>Caution : The safety lock shall be installed with the middle section bent towards the sieve .</i></p> <p>Perform the regularly works on the spark plugs :</p> <p>a) remove the spark plugs from the engine , by observing the dismantling rules ;</p> <p>b) clean the spark plugs with gasoline and air drying ;</p> <p>c) remove the hard carbon deposits by fine sandblast cleaning ; blow dry air and wash in gasoline;</p> <p>d) Visually inspect the spark plug insulator ; if the insulator is cracked , replace the spark plugs ;</p> <p>e) Adjust the clearance between the electrodes .</p> <p>f) Check the formation of the continuous spark , under pressure on the special equipment .</p> <p>g) Inspect the spark plugs for leaking gaskets , at a pressure of 40 kgf/cm² .</p>	<p>Air pressure : 6-8 kgf/cm²</p> <p>No cracks are allowed</p> <p>Clearance should be from 0.4 to 0.46mm</p> <p>At a clearance of 0.4 mm –11.5 kgf/cm²</p> <p>At a clearance of 0.46 mm –10kgf/cm²</p> <p>Up to 60 air bubbles are allowed</p>
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12.	h) If the spark plug is wet , wipe it with a dry clean cloth then , dry it at 120-130°C for 1h and 30 minutes , then check the formation of the spark	
13.	The dismantled spark plugs may be installed on the engine till the end of the life time if they are running without the adjustment of the clearance at the electrodes at a pressure of min 8 kgf/cm ² . Replace the filter cell for the fine filtering as per par. 8.8.3 <i>Perform the engine test after caring out the regularly works .</i>	

8.10 *Engine service inspection and associated maintenance after 200±10 hours of operation*

Crt No.	Inspection and methods	Technical conditions
1.	Perform the service activities as prescribed after 100 hours of engine operation	
2.	Remove ,visually inspect and clean the fuel screen assembly of the carburetor in clean gasoline , after removing the cover	

8.11 *Engine service inspection and associated maintenance after 300±10 hours of operation*

Crt No.	Inspection and methods	Technical conditions
1.	Perform the service activities as prescribed after 100 hours of engine operation	
2.	Check the pressure inside the cylinders : a) Screw the pressure gauge in the hole provided for the spark plug of the cylinder on which the test is made ; b) Remove a spark plug from the other cylinders ; c) Turn propeller over by hand and watch the reading of the pressure gauge .	Check the pressure when the engine is warm and the cylinder head temperatures is min 40°C. Normal pressure is 3.5-5 kgf/cm ² .
3.	Clean the main oil line and oil tank with gasoline	No foreign bodies and coke are allowed in the oil line or oil tank
4.	Remove the AK-50A delivery valve , dismantle , clean it from hard carbon deposits and	

	wash it in gasoline . Install it on the compressor .	
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9. AGGREGATES REPLACEMENT AND ADJUSTMENT

9.1 *Replacement of the 8D2.966.064 fuel screen*

Disconnect the fuel line , remove the screen from the airplane . Inspect all safety wiring on new screen and remove the storage grease from the external surface then dry it in dry and filtered compressed air .

Remove the storage grease inside the screen by successively washing it in filtered gasoline , after removing the screen covers .Blow the screen with dry and filtered compressed air , then clean it by pumping gasoline inside (the gasoline should be of the same grade as that used to operate the engine) to an equal quantity or 5 times higher than the volume of the screen body .Install the screen on the airplane in vertical position , with the cover downward . Connect the gasoline system lines , according to the arrow from the body .

Remark : When handling the screen avoid the dropping of impurities inside its cavity or in the pipes .

Lubricate the dismantled screen for storage ,as necessary :

- a) internal storage consists in pouring engine oil heated at 60-70°C till the internal cavities are fully filled up and there are no air bubbles . Obstruct all holes with plugs ;
- b) apply a thin coating of melted petrolatum by brush or spray to all external unpainted surfaces .

9.2 *Replacement of the fuel pump*

Dismantle the pipes of the fuel system and remove the pump from the engine Preparation of the new pump that has been stored will necessitate the removal of the corrosion preventive compound and the petrolatum.

In order to remove the corrosion preventive compound from the inside of the pump , dip it into engine oil bath heated to 60-70°C up to the total heating (20-30) minutes . Take the pump out of the bath and drain the grease by driving the rotor rod ; immediately dip the pump in the clean gasoline bath and wash it , by rotating the rod 5-10 times to both directions By rotating the rod the gasoline is drained out .Fill with clean fuel through the drain hole within the area with oil-retainers of the pump till the jet of clean fuel gets through the opposite hole .

After washing , dry the internal and the external surfaces of the pump with compressed air . Install the sealing ring on the pump flanges and place the pump , so that the rotor rod enters freely into its seat and the inlet nozzle shall be located in the rear , at 45° to the longitudinal axis of the engine .

Start the engine and adjust the gasoline pressure . In order to adjust the gasoline pressure , unscrew the adjusting screw by $\frac{1}{4}$ turns . Adjust the gasoline pressure within the range 0.2-0.5 kgf/cm² at NOMINAL (to increase pressure , rotate the adjusting screw clockwise). One rotation of the adjusting screw modifies gasoline pressure by 0.06-0.12kgf/cm² . Check the fuel pressure on the running engine .Wirelock the cap of the adjustment screw.

9.3 *Replacement of the oil pump*

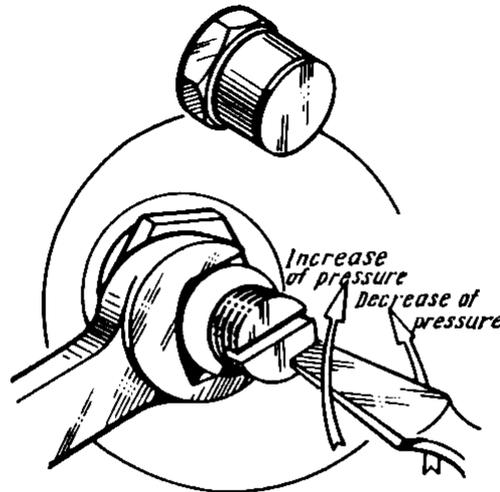
Drain oil , disconnect the fuel and oil lines and dismantle the oil pump together with fuel pump from the engine . Remove the fuel pump from the oil pump .Wipe and visually inspect the surfaces of the flanges and grooves of the vertical axle and the driving axle . Any damage shall be repaired .In order to install the new oil pump on the engine , perform the following operations :

- unpack the pump and remove the transportation caps .

- preparation of the pump for service that has been stored will necessitate the removal of the corrosion preventive compound and the petrolatum .
- wipe and visually inspect the surfaces of the flanges and grooves of the axle ; any damage shall be repaired .
- install a new sealing ring , previously lubricated with compound , on the pump body .
- check the existence and condition of the sealing ring on the pump shaft .
- install new locks , tighten evenly the nuts and wirelock .
- connect oil lines providing the tightness of the joints .
- start the engine and set oil pressure .

Check oil pressure when the pump has been replaced or the pressure relief valve has been removed or adjusted . Oil pressure shall be 4-6 kgf/cm² at a speed of the crankshaft of 1860r.p.m. (64%) . Adjust the pressure when the engine is not running .

- unlock and remove the adjustment screw cap (fig.8) ;
- open the palnut of the screw by using a wrench and keeping the screw pressed with a screwdriver to prevent its rotation ;
- rotate the adjustment screw clockwise (when rotating the screw by 1½ turns , oil pressure is changed by 1kgf/cm²)
- screw in and lock the caps of the adjustment screw ;
- see oil pressure on the running engine .



Adjusting Oil Pressure by Oil Pump Reducing Valve

Fig. 8

9.4 Replacement of the magneto

9.4.1 Definition of magneto angle of assembly

- 9.4.1.1 Two M-9F magnetos are installed on the engine (left and right) The right hand magneto controls the rear spark plugs and the left hand magneto controls the front ones .
- 9.4.1.2 The total feed upon ignition on the running engine according to the rotation angle of the crankshaft shall be $23^{\circ} \pm 1^{\circ}$ before top center during compression .
- 9.4.1.3 The gear ratio from the crankshaft to the propeller shaft is 0.658 .
- 9.4.1.4 If timing of the ignition system is made to the crankshaft the magneto is timed correctly at $23^{\circ} \pm 1^{\circ}$ before top center . If timing of the ignition system is made to the propeller shaft the magneto is timed correctly at $14,5^{\circ} - 16^{\circ}$, before top center .

9.4.2 Magneto preparation

9.4.2.1 Restore the magneto to service from storage as follows before its installation on the engine

- a) remove the grease from the rotor rod ;
- b) unscrew the fastening screws of the joint and carefully remove the screen and the distribution without damaging the high voltage terminal and the insulation .
- c) put up the brush from the cam disk and take out the grease impregnated band by means of a pair of tweezers and then , clean the breaker from grease . Use dry chamois leather or cloth for this operation . *Caution : Do not rotate the rotor of the magneto before removing the band .*
- d) wipe the cam up to luster with a chamois leather or cloth soaked in clean alcohol .
- e) lubricate the cam working surface and the lever spring with a thin layer of engine oil , by means of a brush without any leaks of oil on the contacts or the parts near them .
- f) when the magneto is restored to service from storage after a long period (min. 2 years) on the engine or separately , it is necessary to drop two drops of engine oil with a pipette on the end of the wick that grease the cam .
- g) carefully clean the breaker contacts with chamois leather or cloth soaked in clean alcohol .

Caution : 1. It is absolutely forbidden to wash the breaker and cam with gasoline or other solvents .

2. The corrosion shall be carefully removed and then lubricate the respective surfaces . In case the spring of the breaker and the active profile of the cam are corroded , the parts shall be replaced . IT IS NOT ALLOWED to remove corrosion from these parts .

- h) refit the parts of the magneto and wirelock the fastening screws of the joint .

9.4.3 Magneto installation on the engine

9.4.3.1 Visually inspect the magneto and check if the arrow from the front cover indicates a rotation to the left and the clearances between the breaker points are set within 0.25-0.35mm .

9.4.3.2 Take up backlash in gear train by turning the crankshaft opposite the direction of rotation to about 45 degrees before top center . Unscrew the front spark plug from cylinder 4 and screw the device that determines the piston's top center in its place

9.4.3.3 Turn in the direction of rotation so that No.4 cylinder will be exactly at 14.5-16° before top center on the compression stroke .

9.4.3.4 Install the magneto on the engine with the studs located in the center of the magneto flanges holes and screw the nuts ,but not completely tighten .

CAUTION : Before installing the new magneto , check the clearance between the magneto drive shaft and the front surface of the sleeve that shall be within 1.3-3mm .

9.4.3.5 Keep the crankshaft steady and rotate the magneto drive shaft until the engraved marks on the teeth of the large distributor gear are lined up with corresponding marks on the inside of the front plate and the marked edge of the cam near the breaker contacts because in this position the spark is generated in cylinder No.4 when the engine is running.