

- g- stop pumping when oil leaks on the fuel injection nozzle and make 2-3 turns of the throttle from the extremes of their “open” to “closed” positions ;
- h- unscrew the pipe from connection 6 (Fig.12) dismantle the lower drain plug 5 (Fig.11) and the upper drain plug 2 (FIG.12) and drain oil from carburetor through the open holes ;
- i- refit the plugs , connect the fuel pipes to the studs 6 and 7 and wirelock the plugs and the studs (Fig.11 and 12) ;

- 11.4.10 Wipe the engine external surfaces with a clean cloth soaked in B-70 gasoline and the durite unions , with a clean , dry cloth ;
- 11.4.11 Carefully inspect the engine on the outside , remove the marks of corrosion and all parts should be covered with a light coat of corrosion preventive mixture ;
- 11.4.12 Lubricate the external surfaces of the engine , that are not painted with a light coat of corrosion preventive mixture ;
- 11.4.13 In case of a long breaks of operation , the engine shall be stored for one month , but not more than two times , then store it for 90 days ;
- 11.4.14 The engine stored for 30 days shall be returned to service from storage before starting in the following sequence :
 - a- unscrew all spark plugs ;
 - b- drain oil from the lower cylinders and the cylinders No. 1,2,3,7,8,and 9 by means of the storage pump;
 - c- the AK-50A air compressor shall be returned to service from storage in the following sequence :
 - 1. disconnect the pipe from the compressor discharge valve connection ;
 - 2. dismantle the external lock and the sieve ;
 - 3. turn the engine in its direction of rotation 5-10 complete revolutions till the storage oil is completely drained from the compressor cylinders ;
 - 4. wash the screen with gasoline and blow out by air compressed ;

WARNING :

- 1. Do not rotate the engine before the air compressor is returned to service from storage ;
- 2. The filter cell shall be installed inside the screen on the same surface as before washing.

- d- refit the spark plugs .

11.5 Engines stored on the airplane up to 90 days and its return to service from storage

- 11.5.1 Repeat steps of par.11.4.1-11.4.5 for 30 days engine storage ;
- 11.5.2 Drain oil from engine and oil tank , as well as the fuel from fuel tank and carburetor ;
- 11.5.3 Pour 3-4 l of clean engine oil (MK-22 or MS-20) onto the crankcase through the breather and turn the engine in its direction of rotation 8-10 complete revolutions;
- 11.5.4 Spray interior of each cylinders 70-100 g of K-17 heated oil (up to 40°C) through the spark plugs holes ; in this case , do not rotate the propeller ; refit the spark plugs and the pipe of the air compressor discharge valve ;
- 11.5.5 Store the carburetor according to the instructions of par.11.4.9.and 11.4.12 ;
- 11.5.6 Store the fuel screen according to the instructions of par. 11.4.8 (for 30 days engine storage)
- 11.5.7 The fuel screen shall not be stored externally ;
- 11.5.8 Wipe the external surfaces of the engine with a cloth soaked in gasoline and the durite unions with a dry cloth ;
- 11.5.9 Carefully inspect the outside of the engine , remove the corrosion with emery cloth and lubricate with a light coat of corrosion preventive mixture ;
- 11.5.10 Lubricate the engine external parts that are not painted with a light coat of corrosion preventive mixture , cover the holes with polyethylene foil and fit transportation taps on the breather ;
- 11.5.11 When the storage term has expired , the engine may be stored again for 20 up to 90 days .Before that , the engine shall be returned to service from storage . Remove the

propeller , wash the top of the propeller shaft and the propeller body with B-70 gasoline . Remove the corrosion from the parts ,as necessary and lubricate with a light coat of corrosion preventive mixture . Refit the propeller ;

11.5.12 Preparation of the engine for service will necessitate :

- a- removal of the corrosion preventive compound and petrolatum ;
- b- unscrew the spark plugs from all cylinders and the drain plugs of the exhaust pipes of cylinders No. 4,5,and6 ;drain grease from the lower cylinders crankcase by rotating the propeller 8-10 complete revolutions . remove oil from cylinders No. 1,2,3,7,8,9 by means of the storage pump . If the ambient is below +10°C , drain the oil with the engine heated ;
- c- the air compressor must be prepared for service as in par. 11.4.14 (c) This operation is made simultaneously with the work of item (b) ;
- d- the carburetor must be prepared for service as per par. 11.11 .

11.5.13 The engine may be stored for another 90 days period only once . At the expiry of the second storage period , the engine must be prepared for service and tested for 30 minutes in all runs ; then store the engine for necessary period .

11.6 *Preparation for storage/transportation up to 180 days of the engine installed on the airplane*

The engines installed on the airplane that are going to be transported by train will be subject to the preparation for storage up to 180 days .

11.6.1 The works set forth in par. 11.4.1 up to 11.4.4 will be performed for a 30 days storage ;

11.6.2 Drain oil from engine and oil tank . Remove the propeller , prepare the propeller for storage according to the instruction , install a safety ring for rotation of the propeller shaft ;

11.6.3 Pour storage oil heated up to 40°C through the rear breather till oil leaks from the front breather ;

11.6.4 Disconnect the fuel pipes from the fuel pump and rotating the propeller shaft , pour clean engine oil (heated up to 60-80°C) in the fuel pump through the fuel inlet connection , till oil leaks from the exhaust fuel connection ;

11.6.5 Disconnect the inlet air compressed pipe and insert 40-60g storage oil heated up to 40°C , in the compressed air distributor by rotating the propeller 3-4 complete revolutions . In order to avoid the unexpected rotation of the engine after the aggregate storage , do not connect the inlet air compressed pipe to the compressed air distributor . Install corks on the inlet air compressed connection and on the air pipe .

11.6.6 Compressor preparation for storage :

- a- dismantle the circlip , the sieve , the screen and second sieve ;
- b- pour heated oil (up to 40°C) , through the intake valve by rotating the propeller till oil leaks from the exhaust valve ;

11.6.7 Remove oil excess from the fuel pump cavities and compressor, then press by hand the compressor starting valve and rotate the propeller 5-6 complete revolutions Connect the fuel-air pipes ;

11.6.8 Prepare for storage the carburetor as in par.11.4.9 ;

11.6.9 Dismantle the exhaust manifold and the rocker box covers and spray with heated oil (up to 40°C) the springs , the cylinders exhaust holes , the spring washers and retaining split cone keys ;

11.6.10 Spray interior of each cylinder 150-250g of heated oil through the spark plugs holes , turn the propeller over by hand 3-4 complete revolutions , then add 100-150 g without rotating the propeller. Rotate the propeller with the air compressor starting valve pressed ;

11.6.11 Refit the compressor screen body , the sieves and the circlip . Drain the storage oil from the engine crankcase through the oil sump drain ;

- 11.6.12 Remove the excess of storage oil from cylinders No. 1,2,3,7,8,9 through the spark plugs holes , then screw the spark plugs in . Refit the rocker box covers and the exhaust manifold . Fit the covers on the exhaust manifold and wrap it in paraffin paper ;
- 11.6.13 Connect the fuel pump pipes and air compressed discharge valve pipes ;
- 11.6.14 Prepare for storage the magneto as per par. 11.7.16 ;
- 11.6.15 The engine is externally stored as follows :
- a- clean the engine and blow out with compressed air . Take care not to drop cleaning solution inside the internal cavity of the engine ;
 - b- visually inspect and paint all places where the paint is damaged by previously degreasing . The painting is made by spraying or with a brush . After painting, the engine is dried 30-60 minutes at 10-30°C by protecting the painted areas against the contact with oil or other storage products ;
 - c- disconnect the fuel line and prepare for storage fuel screen , as per par. 13.4.8. the fuel screen is not stored externally .
- 11.6.16 Apply a thin coating of melted petrolatum by brush or spray to all external unpainted steel and aluminum parts ;
- 11.6.17 Prepare for storage the generator as follows :
- a- check the absence of corrosion . If there are marks of corrosion , remove them with very fine emery cloth soaked in oil ;
 - b- lubricate the ends of the fastening screws and bolts and anchor bars without dropping oil inside the generator .
- 11.6.18 Grease in excess the propeller shaft with storage oil , install a ring on it , wrap it in paraffin paper (2-3 layers) ;
- 11.6.19 Record the date and storage term , the name of the operator in the engine logbook and the certificates of the aggregates ;
- 11.6.20 Preparation of the engine for service that has been stored will necessitate the removal of the corrosion preventive compound and the petrolatum as per par. 5.2 Clean the air and fuel line to remove the storage oil .

11.7 Preparation for storage of the engine for 1 year

This storage is made for the engines that are designed for long storage or repairs .

- 11.7.1 Before removing the engine from the airplane perform the works shown in par. 11.4.1 up to 11.4.4 to prepare for storage the engine up to 30 days ;
- 11.7.2 Drain oil from the engine and oil tank ;
- 11.7.3 Remove the engine from the airplane and install it on a suitable assembly stand ;
- 11.7.4 Dismantle the generator from the engine and install a cover in its place ;
- 11.7.5 Pour heated oil to 30-40°C inside the engine crankcase through the rear breather till oil leaks in the front breather . Install corks on the rear and front breather ;
- 11.7.6 Pour heated engine oil to 60-70°C in the fuel pump through the inlet fuel connection , by rotating the propeller till oil leaks at the exhaust fuel connection ;
- 11.7.7 Pump 60 g of heated to 40°C storage oil to the air compressor distributor , through the inlet connection by rotating the propeller 3-4 complete revolutions ;
- 11.7.8 Prepare for storage air compressor :
- a- dismantle the circlip , the sieve , the screen and second sieve ;
 - b- pour heated oil (up to 40°C) , through the intake valve by rotating the propeller till oil leaks from the exhaust valve;
- 11.7.9 Remove oil excess from the fuel pump cavities and compressor, then press by hand the compressor starting valve and rotate the propeller 3-4 complete revolutions . Install the sieve , screen , second sieve and circlip ;
- 11.7.10 Prepare for storage the carburetor as per 11.4.9 of 30 days storage ;
- 11.7.11 Dismantle the exhaust manifold and the rocker box covers and spray with heated oil (up to 40°C) the springs , the cylinders exhaust holes , the spring washers and retaining split cone keys ;

- 11.7.12 Spray interior of each cylinder 150-250g of heated oil through the spark plugs holes , turn the propeller over by hand 3-4 complete revolutions , then add 100-150 g without rotating the propeller. Rotate the propeller with the air compressor starting valve pressed ;
- 11.7.13 Drain the storage oil from the engine crankcase through the oil sump drain ;
- 11.7.14 Remove the excess of storage oil from cylinders through the spark plugs holes , then screw the spark plugs in ;
- 11.7.15 Install corks on the fuel pump connections and the compressor discharge valve connection ;
- 11.7.16 Prepare for storage the magneto :
- a- unscrew the fastening of the unions , dismantle the shield and the distributor taking care not to damage the high voltage terminal and the central electrode;
 - b- clean the cam from impurities and the breaker points . The impurities shall be removed from this parts with a chamois leather or a cloth slightly soaked in clean alcohol;
 - c- wrap the active surface of the cam profile in a cloth of 0.2-0.3 mm thickness , impregnated with heated grease at temperature of 105-110°C ;
 - d- apply a thin coating of petrolatum by brush to breaker spring , without any leaks;
 - e- refit the disassembled parts by observing the correct installation of the distributor , the high voltage terminal ;
- WARNING :It is forbidden to rotate the propeller after installing the plugs on the compressor discharge valve connection and the storage of the magneto .*
- 11.7.17 Prepare for storage the generator as follows :
- a- clean the rod generator flange ;
 - b- check the absence of corrosion . If there are marks of corrosion , remove them with very fine emery cloth soaked in oil ;
 - c- apply a thin coating of melted petrolatum by brush or spray to all external unpainted steel and aluminum parts of the generator ,without dropping oil inside the generator ;
 - d- pack the generator in paraffin paper and place it in a separate box .
- 11.7.18 Take the engine from suitable assembly stand , install it in its shipment box and attach the engine to its mounting plate and the plate to the engine bed :
- a- remove the split pins and unscrew the mounting nuts 2(Fig.3) ;
 - b- remove the lock washers 3 and 1 ;
 - c- install three holders for transportation instead of the dismantled washers ;
 - d- screw in the nuts 2 on the studs of the mounting plate , tighten and lock with cotter pins used to prevent retaining nuts from vibrating loose during shipment ;

11.8 *Engine storage and packing up to 6 years*

- 11.8.1 The storage term of the engine in the factory shipping box is 6 years . It is allowed to store the engine in open places , without protection roof maximum three years, excepting those areas with large temperature differences where the term of storage in open places is two years and on platforms provided with shelter three years . The term of storage in the warehouse is also reduced ;
- 11.8.2 The engine service life is included in the storage term . During the storage terms it is allowed to move the engine from open platforms to warehouses and viceversa ;
- 11.8.3 When storing the engines on open platforms the instructions set forth at the end of this chapter shall be observed ;
- 11.8.4 The storage of the engine for 6 years is made as in the case of one year storage ;
- 11.8.5 M14 P engines are packed for domestic and overseas shipment in a special box . The base of these shipping boxes is designed as an engine bed with steel plate serving as the engine mounting ring . The engine is packed for shipment with the center plane of its cylinders in a horizontal position , with the propeller shaft extending vertically up . The top of the shipping box acts as the engine cover , and

is equipped with lifting hooks facilitate ease of loading and unloading as the entire unit may readily be suspended from any chain hoist or boom .

- 11.8.6 Unpacking . The top of the shipping box may be separated from its base by first removing the attaching nuts , and then lifting it vertically with the aid of a chain hoist . Remove the shipping cap from the propeller shaft threads and install the crankshaft lifting eye assembly . Remove the bolts securing the engine mounting plate to the shipping box bed , and lift the engine clear with a hoist .

11.9 Engine transportation

- 11.9.1 The engine its aggregates and spare parts shall be transported on road in its shipping box ,covered with tarpaulins or polyethylene foil ;
- 11.9.2 The transportation on the railway shall be made in clean sealed wagons . It is forbidden to use wagons that transported chemicals ;
- 11.9.3 Unload the engine , its aggregates and spare parts on sheltered platforms ;
- 11.9.4 After unpacking , visually inspect the engine ,wipe the wet places with a dry and clean cloth and apply a thin coating of melted petrolatum as necessary.

11.10 Engine and spare parts warehouse storage

- 11.10.1 Record the date and time of engine arrival, the date and storage term in the plant (these dates are written in the engine logbook) ;
- 11.10.2 The spare parts boxes will be kept in a kit with the engine , specifying the arrival date , the date and storage term ;
- 11.10.3 The spare parts that come from the subcontractors are stored to a term specified in the shipment documents .This term is in force provided the storage integrity is observed , thus the boxes shall not be opened during this period . The rubber parts shall be stored only packed .

11.11 Engine preparation for storage in view of its sending to overhaul or to the supplier , in case of claim

- 11.11.1 The engine that are sent to overhaul or to the supplier shall be equipped with all aggregates , according to the engine logbook and the shipment documentation , stored and packed as per chapter 11.7 “One year storage of the engine” (excepting 11.7.8(b)).