ENGINE-ALTERNATORS - DIESEL

AUTOMATICALLY CONTROLLED

KS-5750, 30-, 40-, AND 60-KW AC

1. GENERAL

1.001 This addendum supplements Section A401.252, Issue 1.

1.002 This addendum is issued to add information covering brush pressure, new fuel oil filters, new overspeed cutoff switch, and to list additional wrenches required for the adjustment of the new switch.

The following changes apply to Part 1 of the section:

(a) 1.16 - added

1.16 If the fuel tank or piping (including vent and fill pipes) requires repairs involving the use of an open flame or tools which are likely to cause sparks, discuss the matter with the supervisor. He may find it desirable to have a new tank or piping provided or to obtain special instructions. An empty fuel tank shall not be refilled several times with water as a means of driving out the explosive gases, since such a method does not provide adequate protection.

Caution: The contents of any partially filled or used fuel tank or piping are highly explosive.

2. REQUIREMENTS

The following changes apply to Part 2 of the section:

(a) 2.01 - added Notes B, C, and D and reference to 3.01(4) in Lubrication Chart

(b) 2.06(c) - revised

(c) 2.06(f) - added

(d) 2.09(b) - revised

(e) 2.16 - revised heading and (c), (d), and (e) added

2.01 Lubrication (In chart add the following)

In Lubricant column, for "Overspeed Trip," add "See Note D."

In Amount column for "Crankcase," "Interval of every 75 hours of operation or at least once every 6 months," add "See paragraph 3.01(4)."

In Lubricant column, for "Air Cleaners," add "See Note B."

In Amount column, for "Starting Motor and Bendix Drive Bearings," add "See Note C."

Notes (Add the following)

B. Use the oil listed under "Lubricant" to fill the air cleaner in air temperatures down to 0°F. In air temperatures below 0°F, no oil should be in the air cleaner. Since this is a cold temperature requirement only, oil definitely must be used for any air temperature above 0°F.

C. To prevent sticking of the pinion gear Bendix drive at temperatures below 0°F, remove the starting motor just before the cold season starts and add a few drops of Casite to the shaft on which the pinion gear rotates.

D. Use the same oil as covered in Note A, except that in air temperatures below 0°F, use a mixture of 80 per cent SAE 10 oil with 20 per cent Casite for lubricating overspeed trip switch.

*2.06 Filters - Air and Oil

(c) The primary fuel oil filter (see Fig. 2) element shall be cleaned or replaced, depending upon the type furnished, every 500 hours of engine operation or more often if necessary.

(f) The fuel suction line oil filter element shall be replaced every 500 hours of engine operation or more often if necessary.

2.09 Temperature

(b) The water-temperature switch shall shut the engine down when the water temperature reaches 190 ±2F, if the radiator is not equipped with a pressure cap, or 200 ±5F when a pressure cap is furnished. Use engine water-temperature gauge or thermometer.

#2.16 Brush Length and Brush Pressure

(c) Brush pressure shall be sufficient to insure successful commutation. (See 1.09.)

(d) Brush pressure of all brushes on the same machine shall be as nearly uniform as possible.

(e) Brush pressures shall be as follows:

Brushes	Pressure in Ounces	
	Min	Max
DC Commutator	6	8
DC Collector Ring	6	8

Use spring balance.

3. ADJUSTING PROCEDURES

The following changes apply to Part 3 of the section:

(a) 3.001, List of Tools (a) - revised injector nut wrench and added plate wrench
(b) - revised wrench information
List of Gauges - added balance

(b) 3.02(2)(a) - revised first sentence

(c) 3.05(1) - revised second sentence

(d) 3.06(3) and (4) - revised

(e) 3.08(1) - revised

(f) 3.08(2) - revised third sentence

(g) 3.10 - revised

(h) 3.16 - revised heading and (2) added

(i) 3.20(5) - revised first sentence

(j) Fig. 20 - added

3.001 List of Tools, Gauges, and Materials (Equivalents may be substituted) →

Tools (Add the following under (a))

Quan.	Description of Part	Manufacturer and Mfr's Part No. General Motors Corp.
1	Injector nut wrench or 3/4-inch deep socket wrench square drive (for injector nut)	2133066 or 5194296
2	Plate wrench, open end, 9/16 inch Note: These wrenches are furnished with sets starting with the following serial numbers: 30KW sets, 3A-16378; 40KW sets, 4A-35839; and 60KW sets, 6A-33305.	5187758

Tools (Revised wrenches under (b))

Wrenches, hex. flat, open, double end 7/32 - 1/4, 5/16 - 3/8, 7/16 - 1/2, 9/16 - 5/8, 11/16 - 3/4, 25/32 - 13/16, 7/8 - 15/16, 1 - 1-1/8, 1-1/16 - 1-1/4, 1-3/16 - 1-5/16

Wrench, adjustable, single end, 8 inches, R2512

Wrench, Allen, 3/32 hex., Snap-on Tools Corp. Cat. No. AW-3

Wrench, ignition, 3/8 - 7/16, Snap-on Tools Corp. Cat. No. C2428

Wrench, ignition, 7/16 - 3/8, Snap-on Tools Corp. Cat. No. C2824

Wrench, ignition, 5/16 - 11/32, Snap-on Tools Corp. Cat. No. C2022

Wrench, ignition, 11/32 - 5/16, Snap-on Tools Corp. Cat. No. C2220

Wrench, socket, 3/8-inch drive, 7/16 up to 1-1/4

Wrench, socket, 1/2-inch drive, 7/16 up to 1-1/4

Wrench, socket, 3/4-inch drive, 7/16 up to 1-1/4

Gauges (Add the following)

Balance, spring, 0 to 6 lbs, with 2-ounce graduations, R-2771

3.02 Speed (Rq 2.02)

(2)(a) Referring to Fig. 4, the speed range can be decreased by increasing distance, F, or it can be increased by decreasing the distance. →

*# 3.05 Injector Setting (Rq 2.05)

(1) (Revised second sentence) During the timing adjustment, the crankshaft should be rotated so that the exhaust valves of the cylinder, on which the injector is to be adjusted, are fully opened. →

3.06 Filters - Air and Oil (Rq 2.06)

(3) The primary fuel oil filters (Model AC Type T-2), whose elements may be cleaned, are furnished with engine bearing serial numbers lower than covered below.

KW of Set	Serial Numbers
30	3A-12655
40	4A-28791
60	6A-25775

The primary fuel oil filters (Model B6 1/4-B12D), having replaceable elements, are

furnished with engines bearing above-mentioned serial numbers and higher.

(a) To clean the element in the primary fuel oil filter (Model AC Type T-2), stop the engine if running. To provide a suitable vent, loosen the retaining cap screw at the top of the filter-mounting bracket before opening the drain at the bottom of the filter. With a suitable container, catch the drainings until the tank or shell of the filter is empty. Then close the drain and remove the cap screw at the top of the filter-mounting bracket, which holds the shell to the filter head bracket and which was slightly loosened for venting purposes. Support the shell while removing this cap screw, and when free, lift it away from the engine. Remove the element and wash it thoroughly in clean fuel oil. Do not use a brush for cleaning the element and do not scrape or scrub the discs under any circumstances. Wash out the shell thoroughly with clean fuel oil. Be sure the element is clean. Set the element in place in the shell with coil spring below it. Insert new gaskets, if necessary, between the shell and filter head and between the element and filter head. Set the shell into place under the filter head and secure it with the cap screw in the bracket, making certain the gasket under the cap screw is not damaged. If damaged, replace with a new one. Remove the plug in the top surface of the filter head, and with a small funnel placed in the plug hole, fill the filter shell with clean fuel oil. Reinsert plug. After running the engine for a few minutes, inspect the filter for leaks.

(b) To replace the element in the primary fuel oil filter (Model B6 1/4-B12D), stop the engine if running, open the drain cock at the bottom of the shell, and remove filler plug located off-center on the cover and mounting bracket. With a suitable container, catch the drainings until the tank is empty. Then close the drain cock. While supporting the shell, remove the cover nut which holds the filter to the shell and gasket. Lift the shell away from the engine. Remove and discard the old element. Wash the shell thoroughly in clean fuel oil or petroleum spirits and install a new element. Using a new gasket between the shell and the cover, if required, place the shell and element up against the cover and secure with a cover nut and gasket. With a small funnel placed in the filler plug hole, fill the shell with clean fuel oil. Replace filler plug. After running the engine for a few minutes, inspect the filter for leaks.

(4) The secondary fuel oil filters (Model AC Type T-50), having replaceable elements, are furnished with engines bearing serial numbers lower than those covered below.

KW of Set	Serial Numbers
30	3A-12655
40	4A-28791
60	6A-25775

The secondary fuel oil filters (Model B4 1/4-B12D), having replaceable elements, are furnished with engines bearing above-mentioned serial numbers and higher.

(a) To replace the element in the secondary fuel oil filter (Model AC Type T-50), stop the engine if running. For vent purposes, loosen the retaining bolt at the top of the filter housing which holds the bowl into the filter head, open the drain cock at the bottom of the filter bowl, and with a suitable container, catch the drainings until the tank is empty. Then close the drain cock. Remove the loosened retaining bolt at the top and lift the bowl away from the engine. Remove and discard the old element. Wash the bowl thoroughly in clean fuel oil. After setting the new element in place over the coil spring, fill the area between the element and bowl with clean fuel oil until the bowl is about two-thirds full. Using new seals, if required, between the element and the filter head and also between the bowl and the filter head, set the bowl into place and draw it up tight by means of the retaining bolt at the top. Remove the plug on the top surface of the filter head located just in front of the retaining bolt, and using a small funnel inserted in the plug hole, fill the remaining space in the filter bowl with clean fuel oil. Reinsert plug. After running engine for a few minutes, inspect the filter for leaks.

(b) To replace the element in the secondary fuel oil filter (Model B4 1/4-B12D), follow instructions as outlined in (3)(b) above, since the secondary and primary (Models B4 1/4-B12D and B6 1/4-B12D, respectively) are the same.

(c) To replace the element in the suction line fuel oil filter (Model B6 1/4-B12D), follow instructions as outlined in (3)(b) above.

3.08 Automatic Shutdown Devices (Rq 2.08)

(1) Each of the different types of overspeed cutoff (or trip) devices furnished is mounted on the end of the

blower drive shaft which projects beyond the auxiliary drive gear housing, as shown in Fig. 2. Each device is properly adjusted before leaving the factory and no further adjustment in the field should be necessary unless the unit has been damaged or put out of adjustment by someone not familiar with the device. If such is the case and an adjustment is required, the following procedures should be observed.

(a) When the overspeed cutoff assembly is held together by two spring-type or screw-type clamps, whichever is supplied, the cap may be removed from the unit by loosening the above-mentioned clamps. On each side of the cover will be found a setscrew and a locknut for securing the knurled adjusting sleeve. After loosening the nuts and setscrews, turning the knurled sleeve counterclockwise will raise the point at which the unit will make contact and turning clockwise will lower it.

(b) When the overspeed cutoff switch as shown in Fig. 20 is furnished, the cover and sleeve may be removed from the unit by cutting the lockwire and removing the wingnut. After loosening the two overspeed switch-attaching screws, the distance between the switch plunger and guide may be decreased by loosening the inner locknut and tightening the outer locknut alternately with wrenches supplied with this set for this purpose (G.M. Part No. 5187758). Decreasing the distance between the switch plunger and guide decreases the speed setting.

(c) When it becomes necessary to replace or remove the overspeed trip switch, loosen the setscrew,

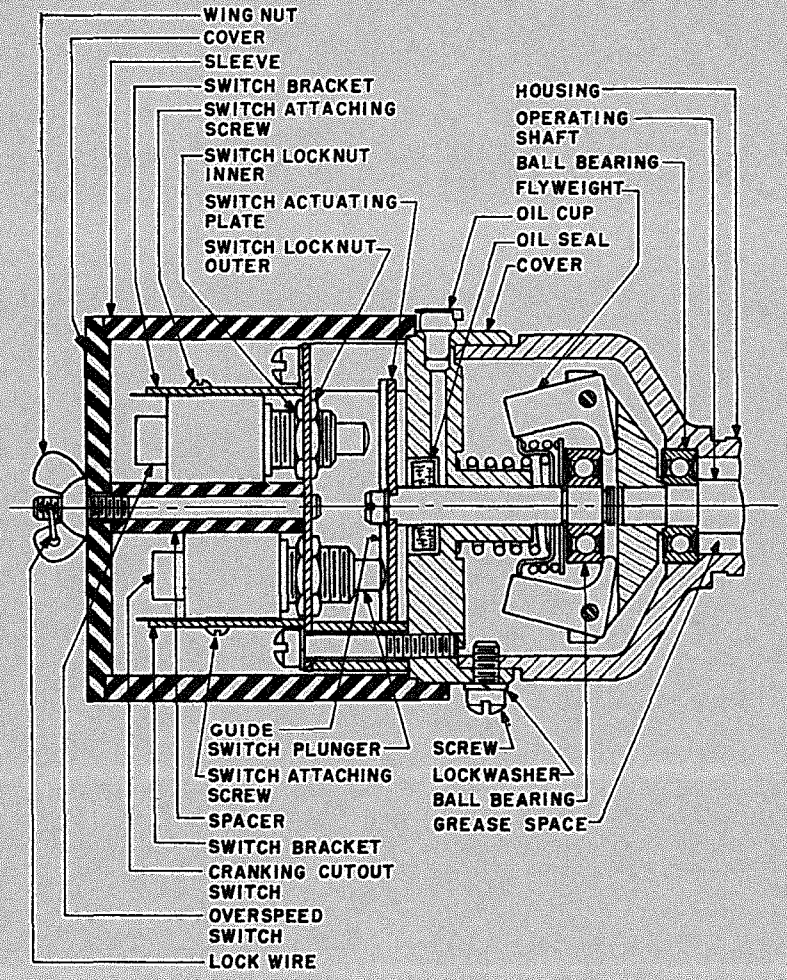

Fig. 20 - Overspeed Trip Switch

holding the device to the end of the blower drive shaft with a 3/32 Allen wrench provided for this purpose.

(2) (Revised third sentence) Access to the alternator shaft is obtained after the plug in the end bell of the alternator has been removed. ←

3.10 Antifreeze Solution (Rq 2.10)

(1) When it becomes necessary to check the antifreeze or replace the water in the cooling system with a nonfreezing solution, follow the procedures as outlined in Section A501.231. It will be noted that only an ethylene glycol type is approved as an antifreeze for engines of this type due to their high operating temperatures. ←

3.16 Brush Length and Brush Pressure (Rq 2.16) ←

(2) The brush pressure may be determined by looping a piece of cord under the brush finger as near the point where it touches the brush as possible. Exert a radial pull on the finger by means of the spring balance hooked into the cord. The reading of the gauge, just as the finger starts to move away from the brush, gives the total brush pressure. Should the pressure need adjusting, increase or decrease the tension of the brush spring until the requirements are met.

3.20 Starting Battery (Lead-acid or nickel-cadmium type) (Rq 2.20)

(5) During life, the charge should be checked periodically to make certain the voltage across the 32-volt lead-acid type battery is maintained at 34.6 volts and across the nickel-cadmium type battery at 35 volts. ←