

c. Condensation. Condensation forms on weapons when they are taken from the extreme cold into any type of heated shelter. This condensation is often referred to as "sweating." When the weapon is taken out into the cold air, the film of condensation freezes, especially in the internal parts, and stoppages and malfunctions result. When weapons are taken into heated shelter for cleaning purposes, "sweating" may continue for as long as 1 hour. Therefore, when time is available, wait 1 hour, remove all condensation, and then clean the weapon.

Clean and Lubricate M296 .50 Cal Machine Gun

1. Clean weapon IAW TM 9-1090-214-23&P, paragraph 4-3.

- a. Under ideal conditions, clean weapon every 30 days.
- b. When exposed to dirt and/or moisture, clean weapon every 14 days.
- c. When fired, exposed to field or combat conditions, clean weapon daily.

2. Lubricate weapon IAW TM 9-1090-214-23&P, paragraph 2-11.

- a. The weapon requires lubrication immediately after every cleaning, upon assembly or when replacing parts.
- b. At temperatures below 0 F, substitute MIL-L-14107, Lubricating Oil, Weapons (LAW) for MIL-L-46150 LSAT. If LAW is not available, MIL-L-46000 (LSA) is an acceptable cold weather substitute.

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OH-58D KIOWA WARRIOR HELICOPTER ARMAMENT COLD WEATHER OPERATION

This abbreviated checklist is not to be used as a replacement for the -23 series Tech Manual or any other PMCS guide.

FM 9-207, Operation and Maintenance of Ordnance Materiel in Cold Weather contains basic instructions for care of weapons in cold weather conditions.

FM 31-70, Basic Cold Weather Manual contains detailed instructions for living and working in cold weather conditions.

TM 9-1090-214-23&P contains detailed PMCS instructions for proper maintenance and operation.

NOTE: A large part of a soldier's time and energy in cold weather is spent in self-preservation. This naturally reduces the efficiency of personnel when operating and maintaining materiel. Besides operating equipment, soldiers must learn to protect themselves against climatic factors by dressing properly and improvising protective measures and shelters.

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Factors Affecting Weapons

Rubber - Besides natural rubber, there are hundreds of rubber substitutes. Synthetic rubbers look and usually react the same as natural rubber, although most do not attain a greater flexibility at high temperatures. As it cools, natural rubber gradually stiffens, but retains a large part of its elasticity until reaching temperatures below -20 F. Below -20 F, certain peculiarities occur. Also, if rubber is consistently kept at the relatively higher temperature of -20 F for a long time, an effect similar to crystallization occurs, causing it to become brittle.

a. Sluggishness. Normal lubricants thicken in low temperatures and stoppage or sluggish action of firearms results. During the winter, weapons must be stripped completely and cleaned to remove all lubricants and rust prevention compounds. The prescribed application of lubrication should then be made. These lubricants will provide proper lubrication during the winter and help minimize snow and ice from freezing on the weapons.

b. Breakages and Malfunctions. These can also be attributed primarily to the cold, although snow in a weapon may cause stoppage and malfunctions. The weapons should first be fired at a slow rate of fire. Once the parts have warmed up, the rate of fire may be increased to the cyclic rate. One of the main problems is to insure that snow and ice do not get into the working parts, sights, or barrel.

	°F
NORMAL OPERATIONS	> 10°
INCREASINGLY DIFFICULT OPERATIONS	10°<-25°
DIFFICULT OPERATIONS	-25°<-50°
MAXIMUM EFFORT REQUIRED	<50°

Operational difficulty vs. temperature range

GENERAL:

PROACTIVE - Placing equipment in proper mechanical condition before the onset of cold weather requires time for necessary and careful disassembly, repair, cleaning, and reassembly. Low temperatures must be anticipated far enough in advance to permit completion of winterization. Refer to TM 9-1090-214-23&P for operation, lubrication, preventive maintenance checks and services (PMCS), and maintenance under unusual conditions. Operators must be very cautious when using equipment that has been inactive for a long time. For example, if lubricants congeal in various components, parts can fail.

Metals - Metals become brittle in severe cold temperatures; thus, parts cannot withstand the shock loads that they sustain at higher temperatures. For example, at -20 F certain steels can withstand only 50 percent of the shock load that they can sustain at room temperature. For a given change in temperature, various metals will expand or contract by different amounts. When cooled gradually but continuously over a short time, rubber remains flexible until it reaches approximately -60 F.