

## CHAPTER 8

### Maintenance Company

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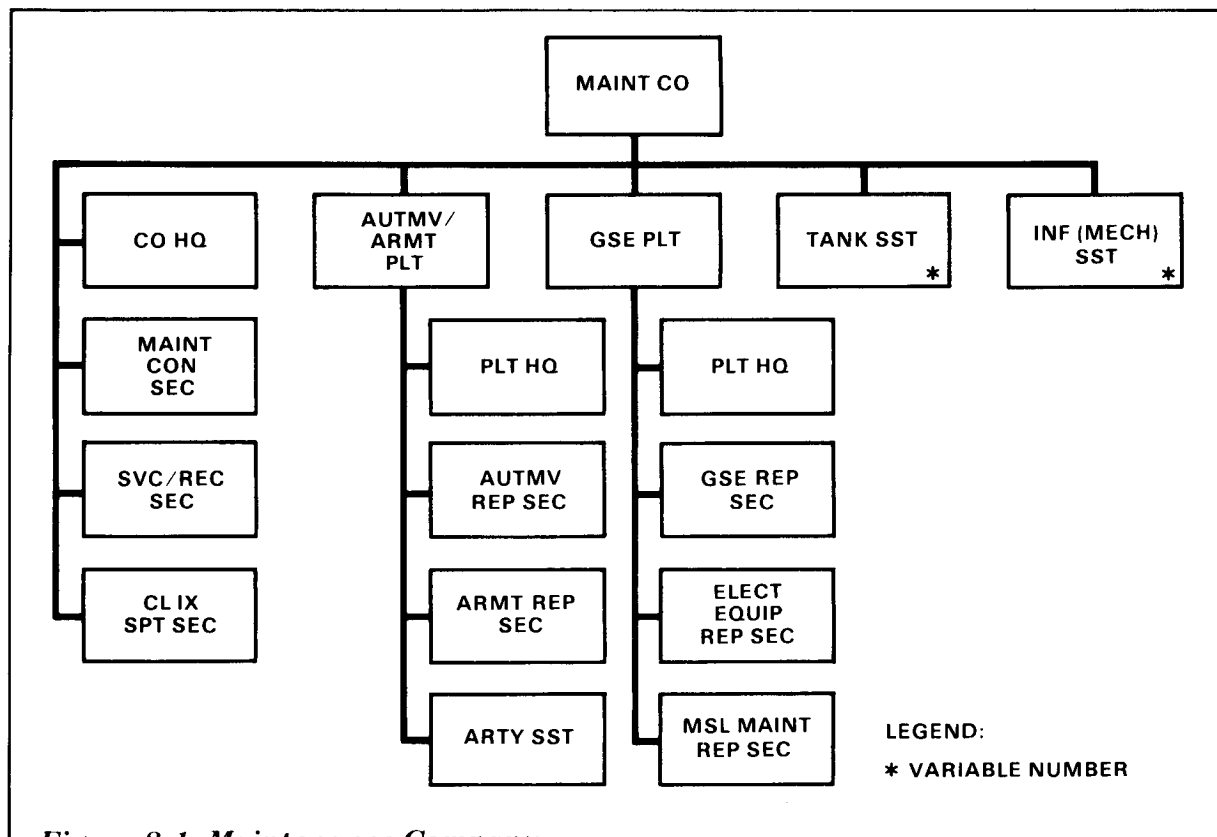
#### ORGANIZATION AND MISSION

The maintenance company is a critical component in fixing the force. To counter a potential superiority in weapon systems fielded, the brigade must be able to make the most of each system it has. The maintenance company provides direct support maintenance and common repair parts service to supported units in the brigade area. The company is organized as shown in Figure 8-1. The organization varies with the structure of the supported force. The company consists of a base structure with a company headquarters, maintenance control section, service/recovery section, class IX support section, automotive/armament platoon (which includes an artillery system support team), and ground support equipment platoon. In addition, the company includes a variable number of system support teams. Each team is designed to support a tank or mechanized infantry battalion. The company receives one team for each maneuver battalion assigned to the brigade. As discussed later in

this chapter, these teams form the bases for MSTs normally sent to work out of the maneuver trains areas.

The company performs the following functions:

- Provide DS maintenance to supported elements in the brigade area. This includes repair of communications, engineer, power generation, quartermaster, chemical, and utilities equipment. It also includes repair of artillery, missiles, small arms, tank turrets, track and wheel vehicles, and field artillery systems.
- Provide limited backup recovery assistance to supported units when required.
- Provide technical assistance to supported units that provide unit maintenance within the brigade.
- Provide technical supervision of supply of PLL items for supported units.



**Figure 8-1. Maintenance Company**

- Maintain an ASL to support the items stocked in combat PLLs of supported units. (The DMMC will also include other repair parts for which a significant demand is expected on the ASL.)

The class IX manager in the DMMC determines the ASL for the FSB.

- Provide reparable exchange service for selected common repair parts.

## PRINCIPLES

### FORWARD SUPPORT

The overriding goal in FSB maintenance operations is to provide forward support to return combat systems to the battle as soon as possible. Repairing equipment forward reduces transportation requirements and time. It maximizes the availability of equipment to the user. The FSB maintenance company has been given the capability to perform the mission operations well forward. Whenever possible, equipment is repaired on

site. However, this is not always possible and practical. The tactical situation, extent of damage, or availability of people, parts, or tools may make recovery or evacuation more desirable.

### REPAIR TIMELINES

The decision on whether to repair or recover to a maintenance site must be made on a case-by-case basis. As a tool to help

make this decision, timelines may be established. Sample timelines are shown in Table 8-1. If the time to repair an item once all repairers, tools, and repair parts are on hand exceeds the specified time, recovery or evacuation should be considered. Timelines may be set by SOP or by logistics or combat commanders for specific operations. All personnel—users, maintainers, and maintenance managers—must always bear in mind that these timelines must be flexible. If they are not accomplishing their purpose, which is to maximize equipment available to the user, they must be changed.

**Table 8-1. Maintenance timelines**

LOCATION	HOURS
On site	2
UMCP	6
BSA	24
DSA	36

### **CENTRALIZED CONTROL**

The maintenance company commander with assistance from the maintenance control officer has control over all operations for which they are responsible even though support assets may be decentralized. They must be aware of the total DS maintenance work load across the brigade area as well as the available assets and their locations. When the situation changes, the maintenance control officer shifts resources to minimize backlogs. When combat units reorganize into task forces for specific missions, maintenance resources must be reorganized.

### **BATTLE DAMAGE ASSESSMENT AND REPAIR**

BDAR techniques expedite return of a damaged piece of equipment to the current battle. Battle damage assessment is used to determine the extent of damage to equipment.

Equipment is classified according to the type of repair required, and plans are made for repair of each item. Priorities for repair of battle damaged items are usually—

- Most essential to immediate mission.
- Reparable in the least time.
- Reparable but not in time for immediate mission.

Battle damage repair involves use of emergency repair techniques to return a system to a full or partial mission capability. BDR is normally used only in combat at the direction of the commander. It includes—

- Shortcuts in parts removal or installation.
- Modifying components from other items.
- Using parts from a noncritical function elsewhere on an item to restore a critical function.
- Bypassing noncritical components to restore basic function capability.
- Cannibalization.
- Making parts from kits or available materials.
- Using substitute fuels, fluids, or lubricants.

Armored and fuel systems are primary candidates for BDR in combat. When the mission is over, standard maintenance procedures are used to repair the item.

### **CONTROLLED EXCHANGE**

Controlled exchange involves the removal of serviceable parts, components, and assemblies from unserviceable, economically repairable equipment. It is done in strict compliance with the division commander's published guidance. The goal is to restore a system to mission capable status.

## **CANNIBALIZATION**

Cannibalization is the authorized removal of serviceable parts, components, and assemblies from uneconomically repairable equipment. During combat, cannibalization may be a valuable source of critical repair parts. Commanders should designate the conditions, items, and level of repair for cannibalization. Cannibalization operations are controlled by the designated commander.

## **RECOVERY AND EVACUATION**

Items that cannot be repaired on site must be recovered to the appropriate maintenance site. Recovery is the process of retrieving or freeing immobile, inoperative, or abandoned materiel and returning it to operation or to a place where it can be repaired, evacuated, or otherwise disposed of. Self-recovery and like-vehicle recovery should be used whenever possible. When this is not possible, the right vehicle should be used. Wreckers are used for wheel vehicles, but they may also be used for light track vehicles. When recovery requirements for a supported unit exceed its

capability, the FSB maintenance control officer will provide assistance. When all recovery capability is exceeded, the unit commander may have to designate priorities for recovery. Usually combat vehicles are recovered before tactical vehicles.

Evacuation is a coordinated effort between maintenance and transportation elements. It involves moving an item from a collection point to another logistics activity for repair, cannibalization, or other disposition. HETs for heavy equipment evacuation (and other missions) are located in the MSB for centralized control. Whenever possible, units locate UMCPs close to MSRs to allow HETs to pick up unserviceable equipment there. The maintenance company, with assistance from supported units, identifies equipment for evacuation. It includes unserviceable items beyond the FSB's repair capability, unserviceable assemblies, and abandoned items. Recovery and evacuation principles are covered in depth in FMs 20-22 and 43-5.

## **SECTION FUNCTIONS**

### **COMPANY HEADQUARTERS**

The company headquarters provides command and control for accomplishment of the company's mission. It provides unit-level administrative, supply, and maintenance support to elements of the company. Unit supply operations are discussed in FM 10-14 and unit maintenance in FM 43-5. FM 10-63-1 covers unit GRREG responsibilities. C3 considerations for the headquarters are covered in Chapters 3 and 4. A particular concern for the maintenance company headquarters is C3 for MSTs operating at UMCPs and other maintenance teams performing onsite repairs. As discussed below, the company normally retains command and control of these teams and must ensure that it maintains communications with them at all times.

### **MAINTENANCE CONTROL SECTION**

The maintenance control officer is the main assistant to the company commander for DS maintenance support. With the other members of his section, he provides the control, coordination, and overall supervision of the maintenance shops, MCPs, and MSTs. The section performs job ordering and equipment accountability. It is also responsible for quality control. Maintenance management is supported by SAMS software run on the TACCS device in this section.

The section includes an inspection element which is responsible to the maintenance company commander for quality assurance, technical inspections, and quality control for all DS maintenance functions. The inspectors

also serve as the nucleus for BDA teams. These teams may go to UMCPs or on-site locations to make determinations on repair and evacuation.

The maintenance control officer also dispatches MSTs to provide forward support. Assigned SSTs are integrated into the maintenance company under the control of the maintenance control officer. He creates MSTs tailored to support task-organized maneuver forces.

### **SERVICE/RECOVERY SECTION**

The recovery supervisor advises the maintenance control officer on recovery and other services provided by the section. Support provided by the section includes—

- Welding.
- Metal body repair.
- Heavy lift capability for shop operations.
- Recovery of organic equipment.
- Limited recovery assistance to supported units.
- Limited evacuation.

### **CLASS IX SUPPORT SECTION**

This section provides class IX supply support. It receives customer requests, does an initial edit, and fills requests from on-hand stocks or passes a requisition for an item not on hand to the DMMC. The section also provides—

- Technical assistance to supported units.
- Receipt, storage, and issue of ASL and NSL items.
- Preservation and packaging. This function includes repair of containers to protect stocks from damage during storage and shipment.

The TACCS device to run SARSS-1 for class IX is located in this section.

### **AUTOMOTIVE/ARMAMENT PLATOON**

In addition to the headquarters, this platoon consists of two sections and an SST—the automotive repair section, armament repair section, and an artillery system support team.

The automotive repair section repairs transmissions, engines, electronics items, hydraulics, and steering controls on track vehicles. It also works on the engines, power trains, and chassis components of wheel vehicles. The armament repair section performs the following repairs:

- Tank turret—turret; cupola; loading, firing, and recoil mechanisms.
- Fire control system—laser rangefinders, electronic ballistic computers, tank thermal sights.
- Fire Control instrument—binoculars, telescopes, aiming circles, rangefinders.
- Artillery—self-propelled weapons, including firing and breech mechanisms.
- Small arms—rifles, mortars, pistols, machine guns.

The artillery SST is designed to provide DS maintenance to a division direct support artillery battalion. It repairs automotive, artillery, power generation, fire control and communications equipment.

The bulk of the two sections normally work out of the base shop. However, the maintenance control officer may include elements of the platoon in MSTs or designate assets to operate at an MCP or to perform on-site repairs or technical assistance. The artillery SST may be tailored and work out of the

artillery battalion UMCP, although the company retains command and control of the team.

### **GROUND SUPPORT EQUIPMENT PLATOON**

This platoon consists of a headquarters, GSE repair section, electronics repair section, and missile repair section. As with the sections of the automotive/armament platoon, elements may operate in the base shop, at an MCP, on site, or as part of an MST.

The GSE repair section performs DS maintenance on power generators, construction equipment, air conditioner units, refrigeration equipment, heaters, utility packs, water purification units, and chemical equipment.

The electronics repair section repairs radio receivers and transmitters, teletypewriters, facsimile machines, switchboards, and special electronic devices such as infrared weapon sights, searchlights, and mine detectors. The missile repair section performs limited DS maintenance on TOW and Dragon missile systems, trainers, night sights, battery chargers, and systems peculiar test equipment.

### **SYSTEMS SUPPORT TEAMS**

The tank and mechanized infantry SSTs perform the same types of repair, though capabilities differ to match equipment densities of the associated battalions. These teams provide the core for the MSTs typically sent to operate out of battalion task force UMCPs.

## **OPERATIONS**

### **PLANNING**

Maintenance planning in the FSB anticipates personnel, equipment, and repair parts requirements and matches them against available resources. The goal is to manage limited resources to return the maximum number of critical items to the battle. Planners must recognize limitations in armor protection, mobility, and communications which influence the company's capabilities. Planning considerations include—

- Tactical situation.
- Time and distance factors.
- Backup support responsibilities.
- Command support priorities.
- Critical weapon systems and repair parts.
- Proposed MCP locations.
- Maintenance timelines.
- Work load across the brigade area.

- Cannibalization and controlled exchange policies.

On the basis of these considerations, the maintenance control officer assists the company commander in planning support along with the FSB support operations officer. Together they must determine which maintenance assets will operate at the BSA base shop, MCPs, UMCPs, and on-site locations. This determination is a continuing process, not a one-time decision. Task organizing of tactical units and changes in the number and types of CS and CSS units in the brigade area require changes in maintenance configuration.

When combat battalion task forces are cross-attached to another unit (usually another brigade), the associated MST (with a slice of assets from the MSB) is typically attached to the supporting maintenance element (the FSB or FAST maintenance company). When a supported CS or CSS unit

is deployed outside the brigade area, a share of the maintenance company will also likely accompany the unit. This will be coordinated with the DISCOM support operations branch through the FSB support operations section.

One of the key planning processes for the maintenance company is formation of maintenance support teams. Teams to provide DS maintenance to maneuver battalions must be task organized in most cases. This is because the tank and mechanized infantry system support teams consist of assets to support pure armored or mechanized infantry battalions, while the brigade rarely fights pure battalions. The brigade commander normally task organizes maneuver battalions to perform the assigned mission. This requires the maintenance company commander to create tailored MSTs.

The FSB maintenance company is assigned SSTs on the basis of the battalions assigned to the brigade. The company receives one tank SST for each armored battalion and one mechanized infantry SST for each mechanized infantry battalion. The teams assigned to the company along with the platoons organic to the company contain the pool of assets available to the company commander to form MSTs. Normally, the SST is the core for forming an MST.

However, the MST should only have the number and types of repairers and equipment required to support the particular battalion task force. Remaining SST assets not required to support that task force maybe used to augment base company capabilities. If an SST does not have all of a specific capability required to support the task force, additional assets to form the MST may come from the base company or another SST.

The following is one example of how MSTs may be formed to support an armored brigade with two armored battalions and one mechanized infantry battalion. To perform the mission in this example, the brigade commander has decided to task organize his battalion task forces as follows:

- 1 One mechanized infantry balanced task force with the infantry battalion HHC, two tank companies, two rifle companies, and the antiarmor company.
- 1 Two armored heavy task forces with three tank companies and one rifle company in each task force.

To support these task forces, the maintenance company commander would have the assets of two tank SSTs and one mechanized infantry SST in addition to the base company. SST personnel are shown in Table 8-2.

**Table 8-2. Personnel in L-edition TOE system support teams**

	<b>Tank SST</b>	<b>Mechanized Infantry SST</b>
29E C-E Radio Rep	1	2
41C Fire Con Inst Rep	2	0
29N Telephone Cen Ofc Rep	0	1
45B Small Arms Rep	1	1
45G Fire Con Sys Rep	1	0
45K Tank Turret Rep	9	1
52D Pwr Gen Eq Rep	1	1
63H Trkd Veh Rep	17	10
63J QM/Cml Eq Rep	1	1
63W Wh Veh Rep	4	4
<b>Total personnel</b>	<b>37</b>	<b>21</b>

The teams also include associated TMDE, tools, vehicles, and other required equipment. TOES are subject to change. The assets available to the commander may differ, but the principles employed in this example remain the same.

In this case, the maintenance company commander could choose to task organize the MSTs as shown in Figure 8-2. In addition, each team would have a set of vehicles from one of the SSTs. The team would also get the tools and equipment associated with the types of repairers in the team.

In this example, each tank SST was reduced from 37 to 32 personnel, while the mechanized infantry SST was increased from 21 to 31 to support the addition of tanks to the task force. The commander decided in this case that support could be provided using only the assets of the SSTs without taking any from the base company.

Two other common task force structures and sample MST personnel numbers are shown in Table 8-3.

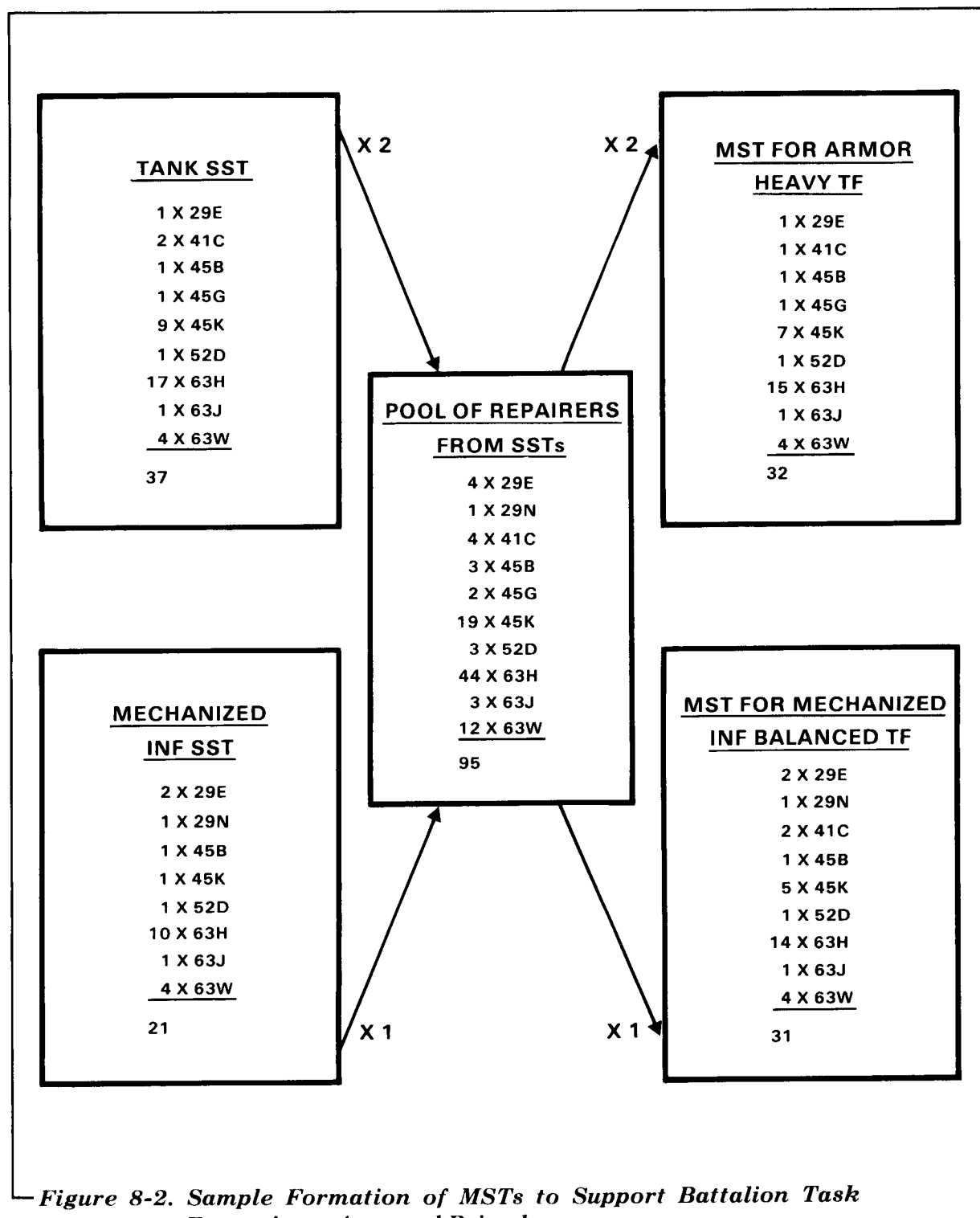
The commander must keep in mind that these examples represent only one possible set of MSTs. In forming the optimal MSTs for his situation, the commander must consider a variety of factors to include:

- Tactical situation.
- Supported task force repair capabilities.
- Repair assets available to the maintenance company.
- Length of LOCs.
- Recovery and evacuation capabilities.
- Specialized tool and test set requirements and availability.
- Time constraints.
- Parts availability.
- Risk assessment.
- Mobility requirements.
- Communications.
- Security requirements.

One point to emphasize is that the SST serves as the core for an MST. Its structure should be retained as much as possible. Moving personnel from one team to another should be minimized. In particular, team leaders should remain with the core of their associated SSTs. Further, each team should habitually support the same base battalion. This allows a team leader to develop a working relationship with one battalion HHC. Keeping the same core of an SST also leads to strong command and control lines within the MST.

Commanders must plan other aspects of MST use besides the composition of the team. The commander, normally through the maintenance control officer, must coordinate with the brigade S4 and task force S4s and BMOs for employment of the teams. One detail they must work out is how the team will receive its required support, including administrative, unit logistics, and class IX support. If the team is expected to be at the UMCP for an extended time, the maintenance control section should coordinate with brigade and battalion S4s to have the supported task force feed the team and provide class 111 and V and limited class 11 and IV support. The maintenance control section must also ensure production and quality control responsibilities are specified. Usually the maintenance control officer has work order control and the team chief is responsible for quality control.





**Table 8-3. Sample MSTs to support representative battalion task forces**

<b>Mechanized Heavy Task Force</b>	<b>Sample MST</b>
<b>Mech Inf Bn HHC</b>	<b>2 x 29E</b>
<b>1 Tank Co</b>	<b>1 x 41C</b>
<b>3 Rifle Co</b>	<b>1 x 45B</b>
<b>Anti-Armor Co</b>	<b>4 x 45K</b>
	<b>1 x 52D</b>
	<b>14 x 63H</b>
	<b>1 x 63J</b>
	<b>3 x 63W</b>
	<b>27</b>
<b>Armor Balanced Task Force</b>	<b>Sample MST</b>
<b>Tank Bn HHC</b>	<b>1 x 29E</b>
<b>2 Tank Co</b>	<b>1 x 41C</b>
<b>2 Rifle Co</b>	<b>1 x 45B</b>
	<b>1 x 45G</b>
	<b>5 x 45K</b>
	<b>1 x 52D</b>
	<b>14 x 63H</b>
	<b>1 x 63J</b>
	<b>3 x 63W</b>
	<b>28</b>

### BASE SHOP OPERATIONS

The base shop in the BSA consists of maintenance company elements not employed at MCPs, UMCPs, or task force field trains. The shop is responsible for receipt, inspection, control, repair, and coordination of evacuation of equipment received from supported units.

The shop must be laid out to allow free flow of work and to minimize the required movement of repair parts, tools, and equipment. In addition to considering the positioning

tenets listed in Chapter 5, the company commander should, whenever possible, try to lay out the shop so that—

- Supply storage areas are accessible to trucks.
- The service section provides easy access from all shop locations.
- Electronics and instrument repair can be done in a dust-free area.

- Vehicles may be dispersed near maintenance areas but located to facilitate control and security.
- The control and inspection elements are near the area entrance.
- The supply storage and RX areas are near the entrance to keep traffic out of the work area.

Figure 8-3 shows a sample base shop layout in a field environment. The same principles apply to shops in a built-up area. For example, the control, inspection, and supply activities should be near the entrance to the shop area, and elements with related or complementary functions should be near each other. Where buildings are sound and road systems adequate, use of buildings is preferred. They may provide better work areas and concealment.

Shop procedures will be outlined in the maintenance internal SOP which should be based on guidance in DA Pam 738-750. An external SOP for use by supported units should also adhere to those guidelines.

The management activities vary depending on the system available in the division. TAMMS is a manual system described in DA Pam 738-750. The MRM system provides management reports for the company commander and MCS. Some of the source data input for this system is automated. Policies are prescribed in TM 38-L09-11. SAMS-1 replaces MRM and all associated source data automation systems. It also provides a daily interface with SARSS-1. SAMS-1 procedures are in AISM 18-L21-AHN-BUR-EM.

### **MAINTENANCE COLLECTION POINTS**

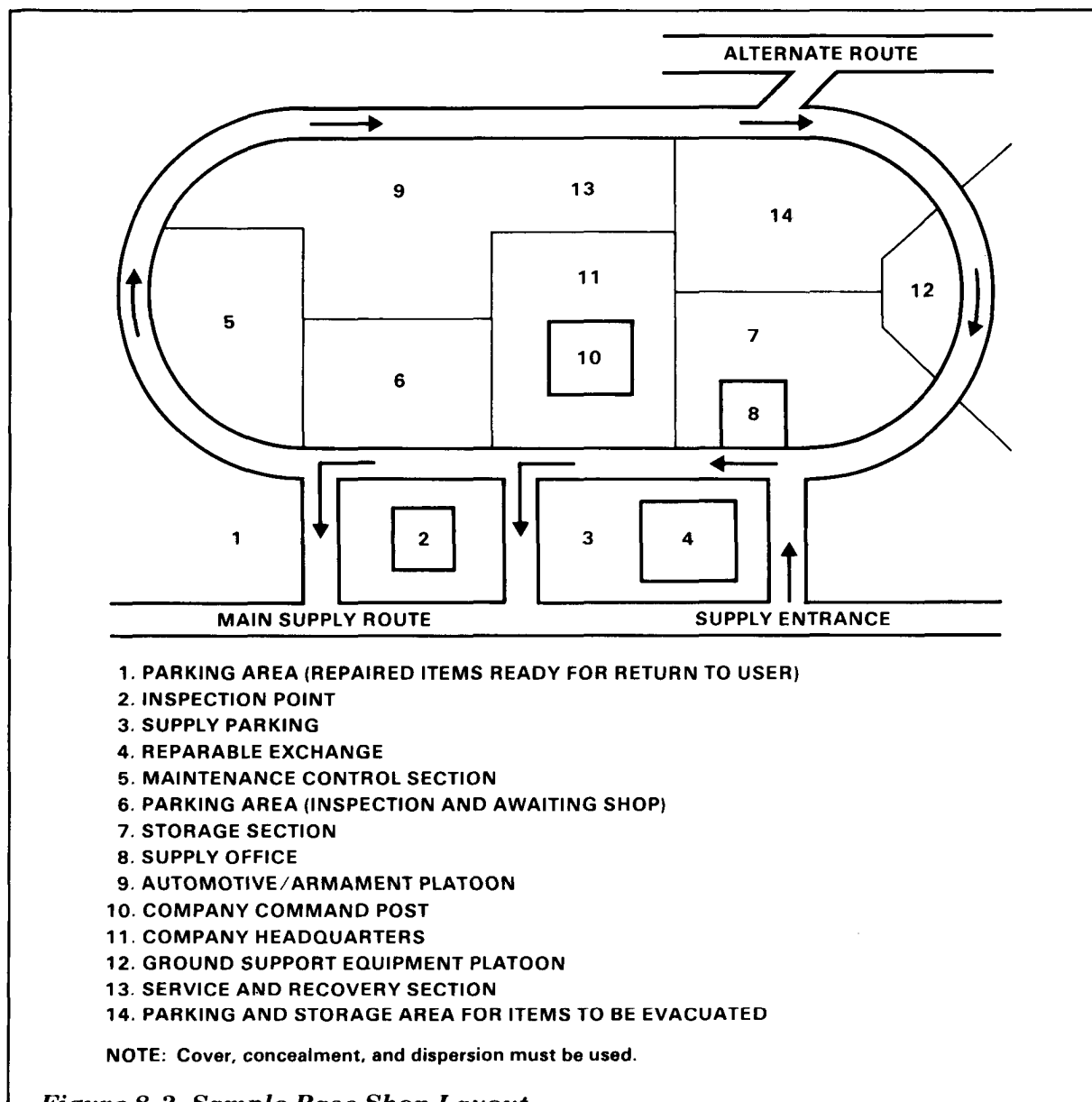
MCPs operated by the maintenance company receive unserviceable equipment from supported units. The company can operate up to two MCPs. One is at the base shop. A

forward moving tactical situation may make another point forward of the BSA advisable to reduce recovery distances. At the MCPs, maintenance company personnel assigned by the maintenance control officer perform large scale BDA. Controlled exchange and cannibalization may be used to maximize operational systems. Contaminated equipment must be segregated within the MCP. When supported units cannot recover equipment to an MCP, they should be instructed to recover items as close as possible to an MSR to await maintenance support. Security must be provided by or arranged for by the unit, and accurate location information must be provided to the MCS.

US equipment found by units in the brigade area will also be turned in to the MCP. There, maintenance personnel inspect it and make decisions on whether to repair or evacuate. The DMMC provides the disposition instructions. It may direct that the item be turned in to a supply unit or evacuated to a corps facility.

### **MAINTENANCE SUPPORT TEAMS**

MST operations present the company commander, maintenance control officer, and MST leader and members with the same challenges faced by any other small unit in a tactical environment. Besides performing the technical mission, the team must have the mobility to get to the repair site and move with the supported unit. It must also be protected on the way to and from the site and while at the repair site. The team must be proficient in self-protection techniques during a move as discussed in Appendix A. Once it arrives at the UMCP, the team will tie into the defense plan under the control of the BMO. All elements involved in the operation must be aware that the team is a group of repairers with limited self-defense assets, and time spent in defense activities reduces maintenance mission time.



**Figure 8-3. Sample Base Shop Layout**

For operations other than self-defense, command and control of the teams is retained by the company commander. However, control may be threatened by changes in the tactical or maintenance situation or communications limitations. Therefore, SOPs must exist and MSTs must be prepared to conduct independent operations when

required. Though the company retains control of the team in most cases, while it operates in the UMCP, the BMO normally sets priorities for the equipment to be repaired.

MSTs require adequate communications capability to assist in security, report the DS

maintenance situation to the MCS, and request additional support or repair parts from the base shop. Whenever MST organic radio capability is inadequate, additional support may be available from the supported unit. MSTs also carry a limited amount of repair parts with them. Parts carried are based on past experience and work load.

The maintenance company SOP should spell out MST procedures in detail to preclude having to develop them for each mission. SOPS should cover organization of teams for recurring situations, command relationships, assignment of work order numbers, hand receipting and repair parts procedures, and recovery and evacuation guidelines.

### ON-SITE OPERATIONS

When unit maintenance resources are inadequate, MSTs or other maintenance teams formed from the maintenance company may be sent to perform on-site repairs. Many of the considerations are the same as those identified for MSTs working out of an UMCP. They include mobility, security, adequacy of tools and parts, and communications. Procedures for requests for such support must be spelled out in SOPS and available to all units supported by the FSB. Requests should include the following information:

- Identification of unit and equipment.
- Location (grid coordinates).
- Nature and extent of damage.
- Repair parts required.
- Security and NBC considerations.
- Recommended route of approach.
- Pickup points for unit guides, if required.

Once the team arrives at the site, the team chief makes a BDA and decides whether to repair on site or recover to an MCP. Maintenance timelines and the tactical situation are primary determinants. If on-site repair is feasible, the team repairs the item and returns it to the user. If recovery is required, short-tracking or other expedient self-recovery and like-vehicle recovery is considered before a recovery vehicle is committed.

### REPAIR PARTS SUPPLY

The class IX support section of the maintenance company receives, stores, and issues repair parts. The section may maintain a quick supply store for customers to get low-dollar, high-demand, consumable parts (light bulbs, wiper blades, common bolts) without formal requests. RX of selected reparable is handled as a simple exchange of an unserviceable for a serviceable item.

All requests are edited and filled when parts are available. The section also notifies the DMMC of the issue. If the part is not available, the section passes a requisition to the DMMC. The DMMC updates required records. If the item is available in the MSB class IX section, the DMMC passes an MRO to the MSB which provides the item to the FSB. [f the MSB does not have the item, the DMMC passes a requisition to the COSCOM MMC. The DMMC also specifies the items and quantities of class IX items to be located in the brigade area. This decision is based on the PLLs of supported units and the mobility requirements. To ensure that FSBs meet mobility requirements, stock age in the maintenance company is restricted. Stockage parameters for forward direct support units are listed in AR 710-2. The remaining stocks of the ASL are maintained in the DSA. Critical items are transported by air whenever possible.

The flows of class IX requests and stocks is discussed in Chapter 7 also applies to class shown in Figure 8-4. The aerial resupply IX.

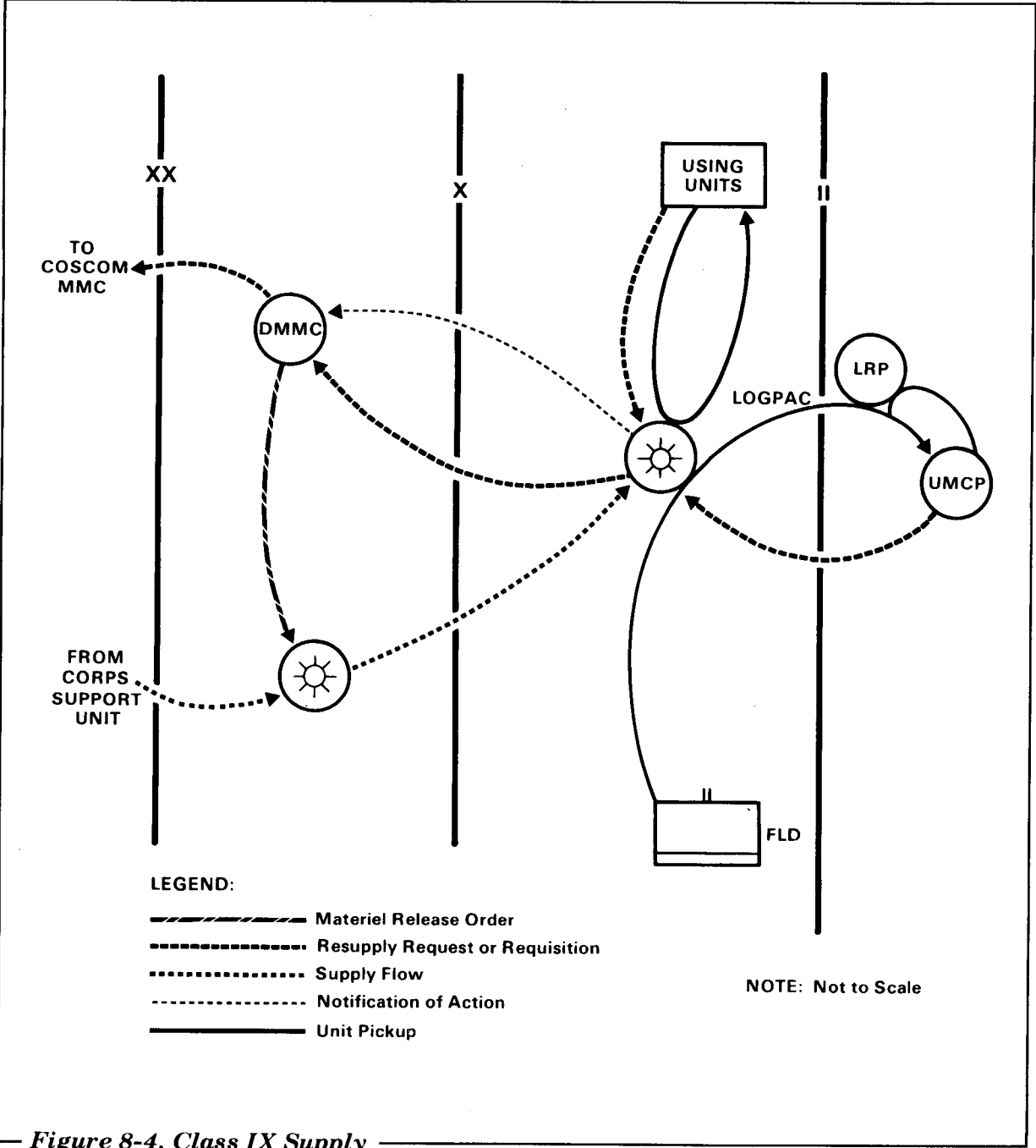


Figure 8-4. Class IX Supply

## CONSIDERATIONS FOR VARYING TACTICAL SITUATIONS

### OFFENSE

Before an offensive operation, equipment is inspected and required maintenance is performed. Shortages are eliminated whenever possible and reserve stocks are set up. On the basis of the operation, geography, terrain, and weather, stockage of certain items is increased. For example, in many offensive operations, MSTs going forward would increase stock age of small, high-usage RX items such as automotive subassemblies and fire control instruments.

As the tempo increases and distances lengthen, maintenance support is moved forward. However, such forward deployment must take into account MST vulnerability, possible enemy counterattacks, and maneuver element requirements for space and roads. Maintenance elements may require security assistance if they have to bypass pockets of enemy activity. Continuous movement forward may also require the commander to adjust the maintenance timelines. As lines continue to lengthen, expedient maintenance techniques as listed below may be required:

- Having procedures to allow MSTs to draw from ASL or RX stock items expected to be required in large quantities.
- Increasing emphasis on cannibalization and controlled exchange.
- Setting up MCPs between UMCPs and the base shop.
- Increasing emphasis on evacuation, with repair in forward areas limited to component replacement, adjustments, and servicing.

- Using air transportation to move MSTs and repair parts.
- Attaching MSTs to maneuver units.

### DEFENSE

Typically, supported units are not as widespread as in offensive operations. Therefore, the maintenance company assets can usually be more centralized.

In a static defense, movement is less frequent. Therefore, more time is available for maintenance operations. Timelines for forward repair may be increased and reserves of critical items may be built up consistent with mobility requirements and capabilities. Inspections and technical assistance are emphasized.

A dynamic defense has many of the same maintenance implications as an offensive operation. For instance, maintenance sites will have to move frequently and vehicle maintenance requirements will rise.

### RETROGRADE

Maintenance company assets begin to move to the rear before combat elements. Movement is done by echelon with maintenance points leapfrogging each other so that continuous support may be maintained. Maintenance operations concentrate on weapon systems and other items required to support the retrograde. Other equipment is evacuated to future planned support areas before opposing forces can overtake it. Priority of support is determined by the commander but is usually given to units that have completed the move and are preparing new positions.