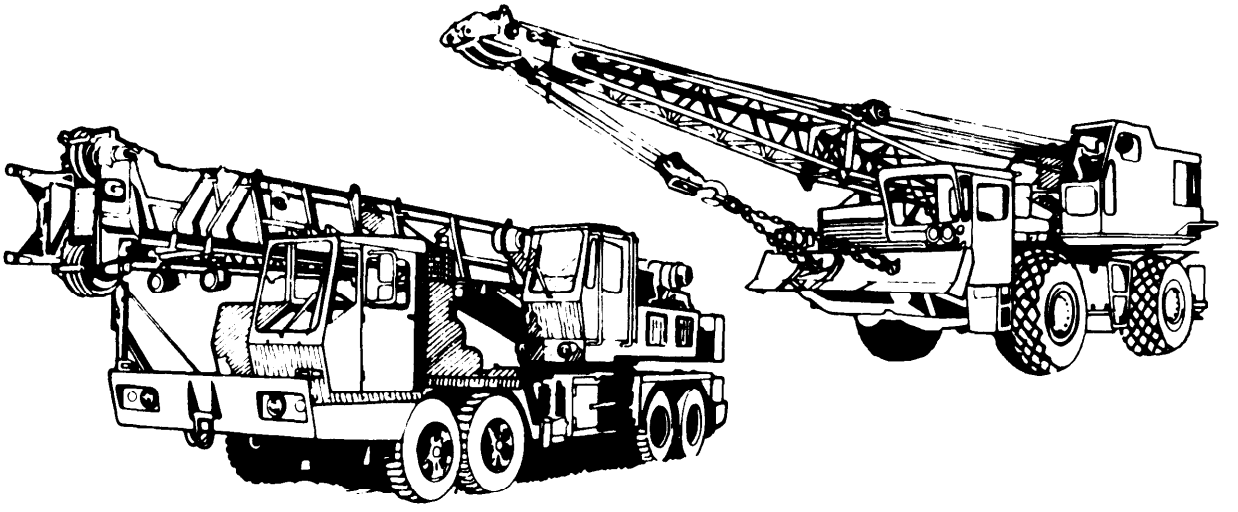
Appendix
GENERAL ENGINEER SUPPORT EQUIPMENT

This appendix describes various types of equipment that can be used to support general engineer missions. This information is provided to help planners choose and locate the types of equipment needed. The equipment is grouped into four categories: lifting and loading, earthmoving, hauling, and special purpose equipment.

LIFTING AND LOADING EQUIPMENT

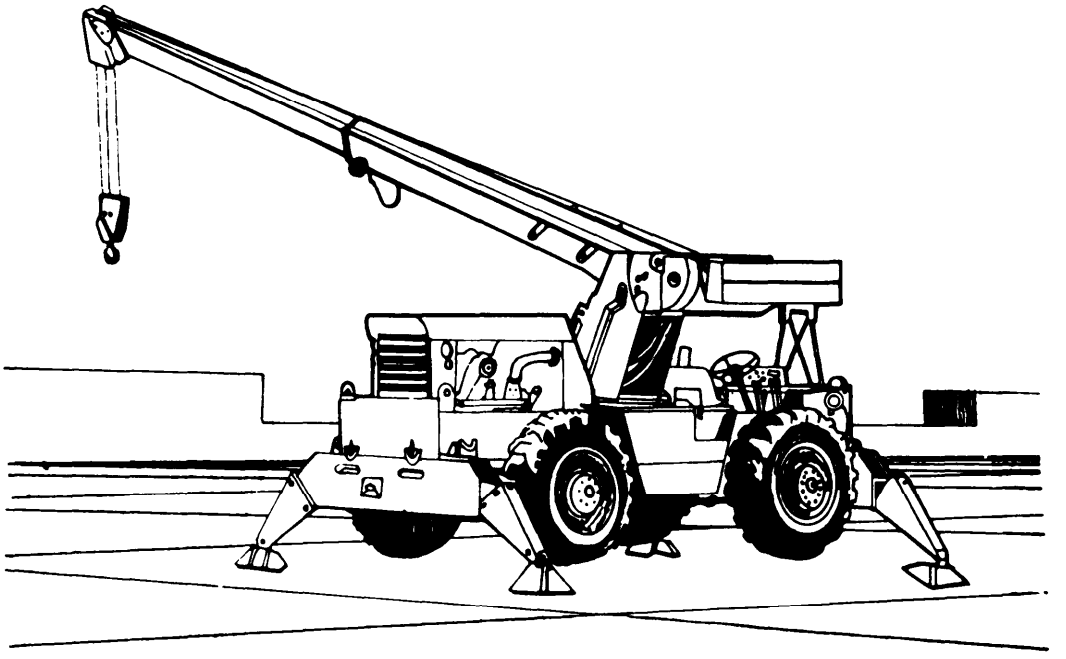


WHEEL- AND CRAWLER-MOUNTED CRANES

DESCRIPTION: Engineer units use a wide variety of cranes. The cranes are of three basic types—crawler, truck mounted, and wheel mounted. They are capable of operating various attachments. The 12½-ton crawler cranes and 20- to 25-ton truck- and wheel-mounted cranes are capable of operating with hook, ¾-cubic yard clamshell and dragline, concrete bucket, wrecking ball, and 7,000-pound diesel-operated pile driver. The 40-ton crawler crane is capable of operating a hook, 2-cubic yard clamshell and dragline, and a 12,000-pound diesel-operated pile driver. In addition, crawler cranes are capable of operating backhoe and shovel front attachments. The 25-ton truck-mounted crane is hydraulically operated, whereas the 20-ton truck- and wheel-mounted cranes and crawler-mounted cranes are hoist/drum operated.

EMPLOYMENT CONCEPT: The truck- and wheel-mounted cranes are employed by units that have material-handling and excavating capability to support combat support missions. The crawler cranes are employed by construction support units that have a primary mission to operate quarries or construct port facilities.

BASIS OF ISSUE: Crawler cranes are authorized in the equipment platoons and quarry sections of the Engineer Construction Support Company, Engineer Equipment Maintenance Company (Combat Heavy), Engineer Port Construction Company, and in various Engineer Teams. The 25-ton hydraulic crane is found in the same TOEs. The 20-ton wheel-mounted crane is authorized in the Engineer Combat Battalion (Corps), Engineer Bridge Companies, and in supply /support TOEs.



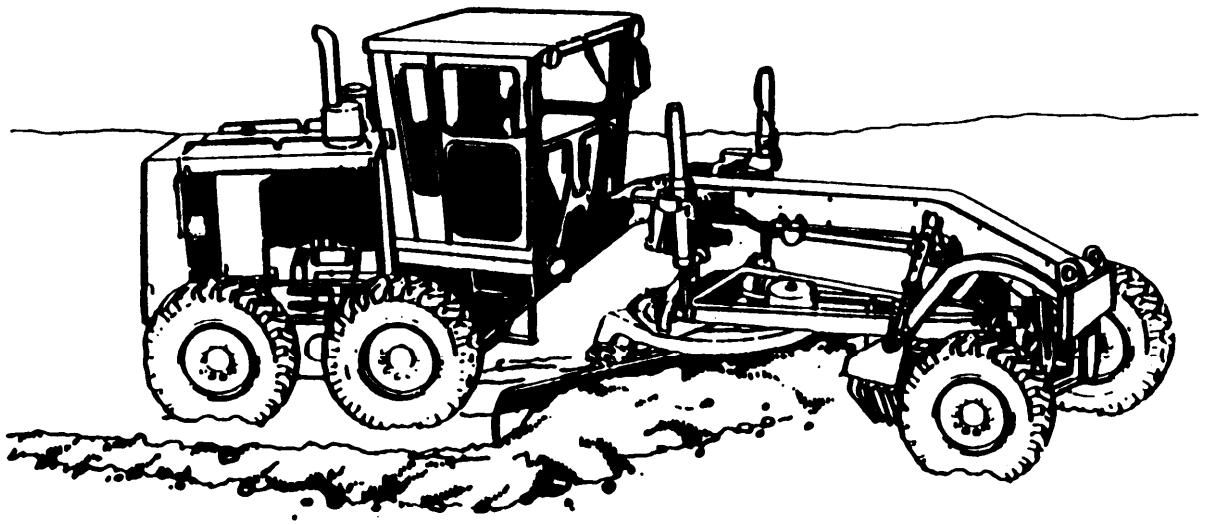
THE 7.5-TON CRANE

DESCRIPTION: The 7.5-ton crane is a diesel-engine driven, 2- and 4-wheel drive vehicle. It is hydraulically operated and equipped with a full revolving telescoping boom. The family consists of two types of the same basic crane. A Type I crane (non-sectionalized) is for units other than airborne/airmobile (ABN/AMBL). The Type II crane (sectionalized) is for ABN/AMBL units and will be supplied with a kit to aid in sectionalization. The cranes used in ABN/AMBL units are capable of airdrop and low altitude parachute extraction. The Type II crane is externally transportable by medium lift helicopter.

EMPLOYMENT CONCEPT: United States Forces require materials handling equipment to be utilized in combat support and combat service support roles in the division, corps, and theater army areas. Due to the variety of units requiring a materials handling capability, the crane must perform many different tasks, including: ammunition resupply for armored and artillery units, construction materials handling for engineer units, disassembly and reassembly of equipment for air transport and air drop operations, general cargo and supply handling for all types of units.

BASIS OF ISSUE: The existing assets of the 3-, 5-, and 7-ton cranes will be replaced by the appropriate version of the 7.5-ton crane on a one-for-one basis.

EARTHMOVING EQUIPMENT

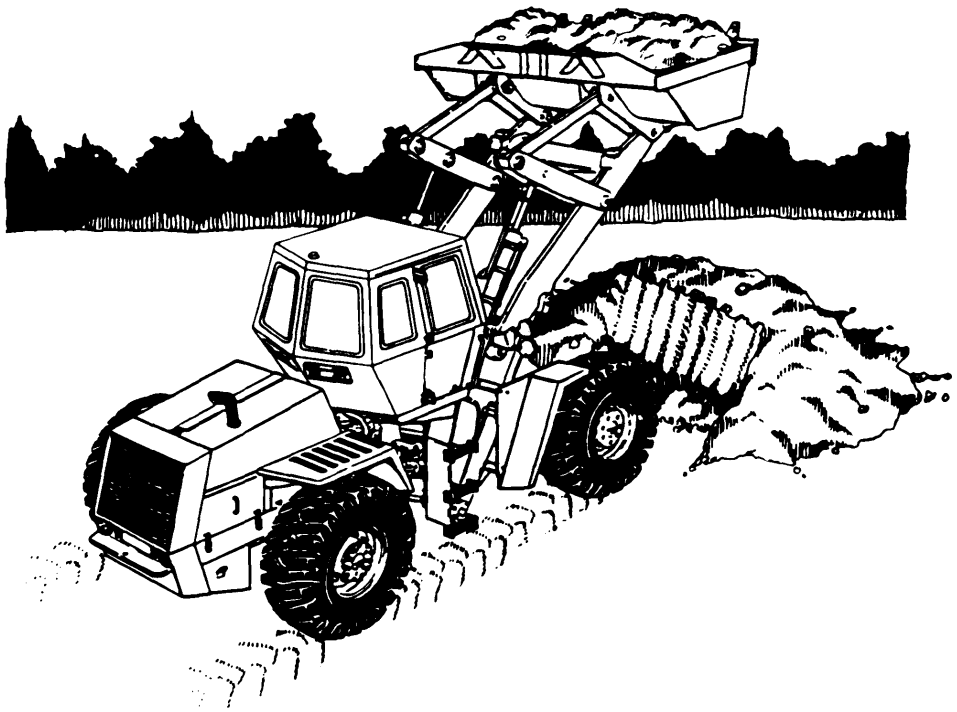


GRADER, ROAD, MOTORIZED, HEAVY

DESCRIPTION: The heavy duty grader is diesel-engine driven, pneumatic-tired, 6 x 4 front wheel steer with articulated frame steer type. It is equipped with a power shift transmission, fully enclosed cab, hydraulically-operated blade and scarifier. The grader is roadable from one field/work site to another; however, for long distance moves it should be moved on a transporter.

EMPLOYMENT CONCEPT: The heavy grader is employed by non-divisional Combat Engineer and tables of distribution and allowances (TDA) units. The grader is used for grading, shaping, bank sloping, ditching, scarifying, and for general construction and maintenance of roads and airfields.

BASIS OF ISSUE: The grader is normally authorized in the equipment section or at platoon level in nondivisional Combat Engineer units.

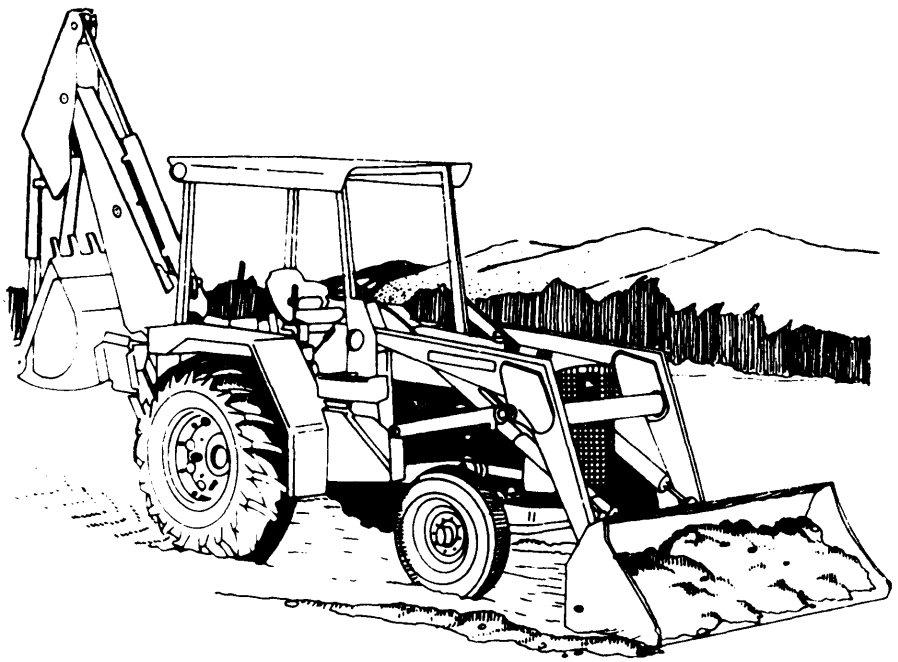


SCOOP LOADERS

DESCRIPTION: The scoop loader is a versatile item of equipment for performing horizontal and vertical construction tasks. The loader is a diesel-engine driven, four-wheel drive machine with rear axle oscillation and articulated frame steering. The hydraulically-operated scoop bucket is attached to the front of the loader by means of a push frame and lift arms. Loaders are usually equipped with a one-piece general purpose bucket, a rock bucket, or a multipurpose (hinged jaw) bucket. Current loaders range from 2½- to 5-cubic yard capacity. New 2½-cubic yard scoop loaders for ABN/AMBL units feature a quick-coupler mechanism to attach/detach the multipurpose bucket. The loaders in ABN/AMBL units can be delivered by airdrop and low altitude parachute extraction, and a small number are capable of sectionalization for helilift operations.

EMPLOYMENT CONCEPT: The loader can be used for loading trucks, stockpiling aggregates, excavating loose or compacted soil, and in quarry operations.

BASIS OF ISSUE: The scoop loader is employed in the equipment section or at platoon level in divisional and nondivisional Combat Engineer units and in other Combat Support type organizations.

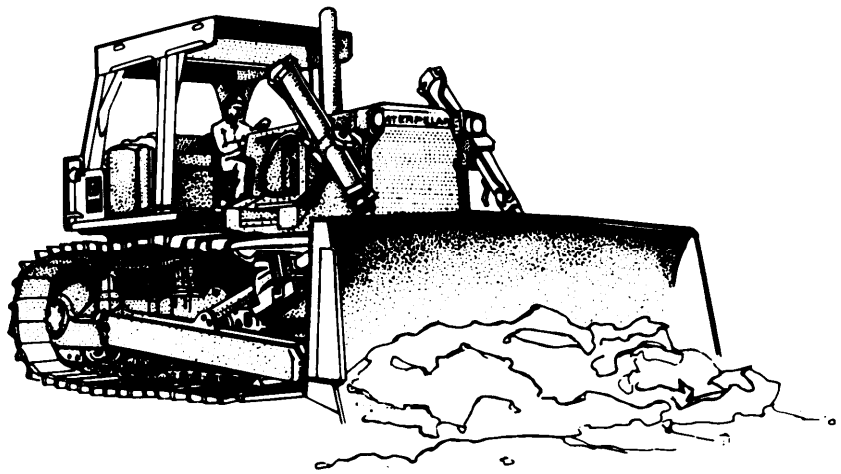


TRACTOR, BACKHOE/LOADER JD 410

DESCRIPTION: The backhoe/loader JD 410 is a commercial item of construction equipment used for excavating, trenching, backlifting, and limited earthmoving. It can be equipped with a variety of attachments, including a hydraulic-operated concrete breaker, a tamper, backhoe, and a front-mounted scoop bucket. It is primarily used in the backhoe/loader configuration. Backhoe digging capability is approximately 30 cubic yards per hour in good terrain. The backhoe/loader tractor is roadable for short distances at speeds of only 15 to 20 miles per hour. For long distances, it must be transported.

EMPLOYMENT CONCEPT: The backhoe/loader is used for excavation of pipeline trenches, building footings, drainage ditches, hasty fortifications, backfilling, loading small quantities of earth in trucks, and for moving earth and material within confined areas of a construction site.

BASIS OF ISSUE: The backhoe/loader in the Division, Corps, and Heavy Engineer Battalion is normally authorized as one per company.



TRACTOR, FULL TRACK, LOW SPEED, MEDIUM AND HEAVY DRAWBAR PULL

DESCRIPTION: The crawler tractor, commonly referred to as a dozer or bulldozer, is the basic item of earthmoving equipment for heavy dozing and clearing. Both tractors are full-tracked, low speed, and diesel-engine driven. The tractors are equipped with a power shift transmission and hydraulic operated semi-U-type dozer blade with tilt cylinder, and a rear-mounted winch or ripper. The medium dozer has an operating weight of 50,000 pounds, 200 horse power (HP) engine and 39,000-pound drawbar pull. The heavy dozer has an operating weight of 83,000 pounds with ripper, 300 HP engine and 56,000-pound drawbar pull. The dozers are transported to the job site by a truck-tractor (M916/M920) and low bed semitrailer (M172Al\M870) transport system. Both dozers are air transportable in C-5 aircraft. The medium dozer can also be transported in C-130 aircraft with removal of some components.

EMPLOYMENT CONCEPT: Due to the low ground bearing pressure, the crawler tractor has the capability of working in adverse underfoot conditions and is normally the first piece of construction equipment on a job site. The tractors are used to perform dozing, rough grading, cutting and filling, ripping, and towing in support of general engineering tasks.

BASIS OF ISSUE: The medium tractor is presently employed at the platoon level in divisional and nondivisional Combat Engineer units. The M9 Armored Combat Earthmover (ACE) is programmed to replace the medium tractor in divisional and Corps Combat Engineer Battalions and in separate Brigade Companies. The basis of issue for the heavy tractor includes. the Engineer Construction Support and Combat Support Equipment Companies and the Heavy Combat Battalion.

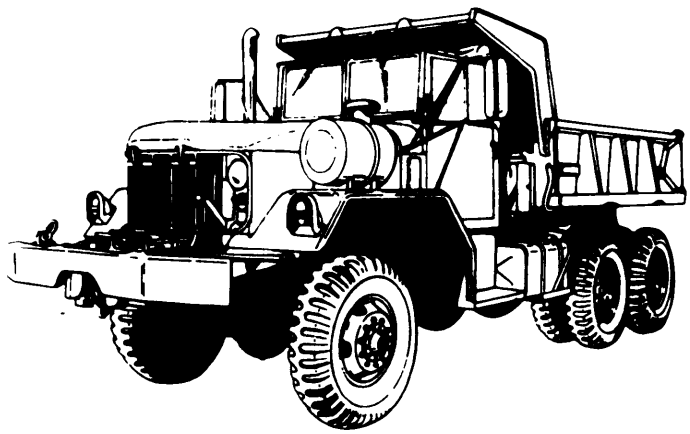
TRACTOR-SCRAPER, 14 TO 18 CUBIC YARDS

DESCRIPTION: The scraper is a self-propelled open bowl, pneumatic-tired, two-axle, single diesel-engine driven, articulated frame steer vehicle. Its loading capacity is 14 cubic yards minimum struck, and 18 cubic yards heaped. The self-propelled scraper can work alone and self load, but production is increased when assisted by a pusher tractor during loading. The scraper provides a self-loading, hauling, and dumping capability to perform efficient earthmoving tasks in support of earthmoving projects.

EMPLOYMENT CONCEPT: The tractor-scraper can be used for loading, hauling, and spreading earth materials. It will be employed by Engineer units for improving, maintaining, and constructing combat trails, main supply routes, airfields, excavating protective positions and antitank ditches, and developing logistics support facilities.

BASIS OF ISSUE: The tractor-scraper will be assigned to the Engineer Combat Support Equipment Company (nine each) and the Engineer Company, Combat Battalion, Heavy (four each).

HAULING EQUIPMENT

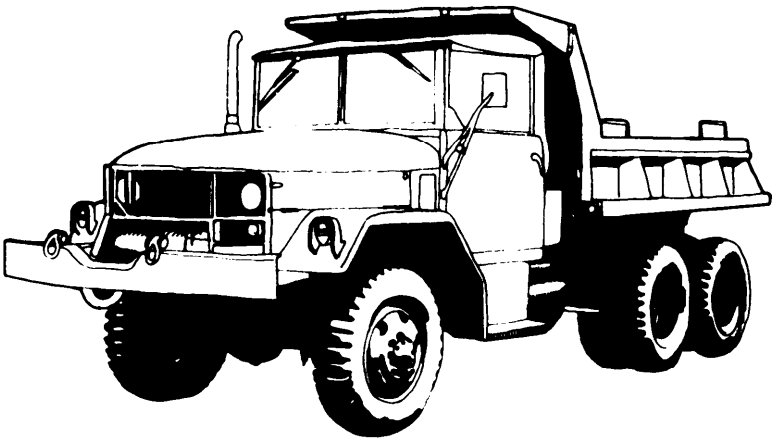


THE 5-TON DUMP TRUCK

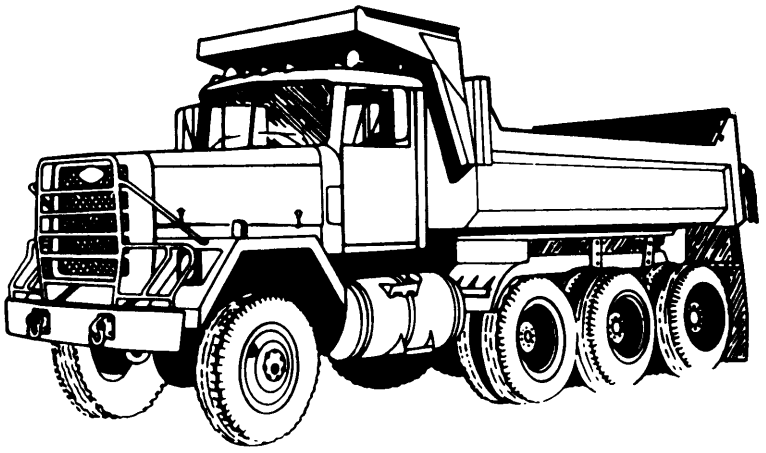
DESCRIPTION: The primary haul capability in engineer units for earth, rock, aggregate, and construction materials is accomplished by 2½-ton, 5-ton, and 20-ton dump trucks (see page 138). All models are equipped with tandem axles, dual wheels and a rear dump body. The 2½-ton and 5-ton dump trucks are a part of the tactical vehicle series used throughout the Army. The 20-ton dump trucks are commercial vehicles with minor modifications to meet military needs. The 2½- and 5-ton dump trucks serve dual roles as engineer squad carriers and as carriers for equipment and construction materials. The 2½- and 5-ton dump trucks are capable of being operated over all types of roads, highways, and cross-country terrain. The 20-ton dump trucks are authorized where large hauling requirements exist and for limited off-road requirements.

EMPLOYMENT CONCEPT: The 2½-ton and 5-ton dump trucks are used to tow trailers, to carry squad tools and personnel, and to haul earth, rock, general cargo, and construction materials in support of unit missions. The 20-ton dump trucks are used where there is a large requirement for earth, rock, and asphalt in support of major construction projects.

BASIS OF ISSUE: The 2½-ton dump truck authorization is limited to ABN/AMBL units. The 5-ton trucks are authorized at the platoon level in divisional and nondivisional engineer units to include ABN/AMBL units. The 20-ton dump truck is authorized in the Equipment and Maintenance Company Engineer Heavy Battalion, Combat and Construction Support Company, and the Engineer Dump Truck Company.

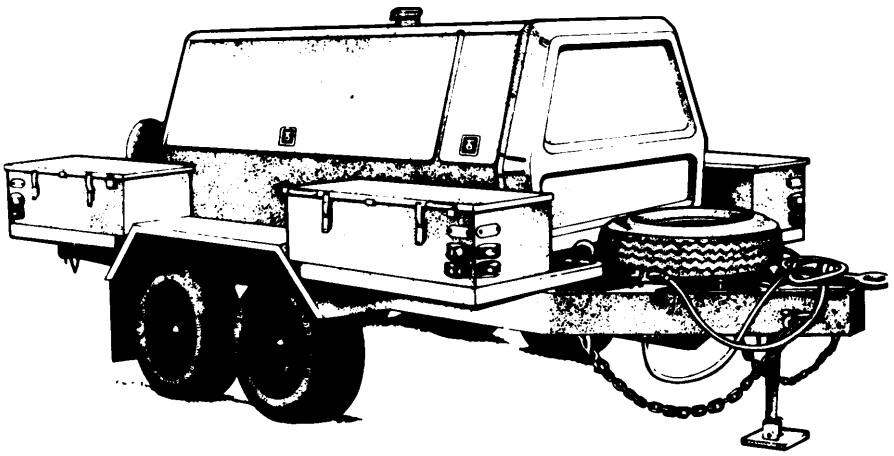


THE 2½-TON DUMP TRUCK



THE 20-TON DUMP TRUCK

SPECIAL PURPOSE EQUIPMENT

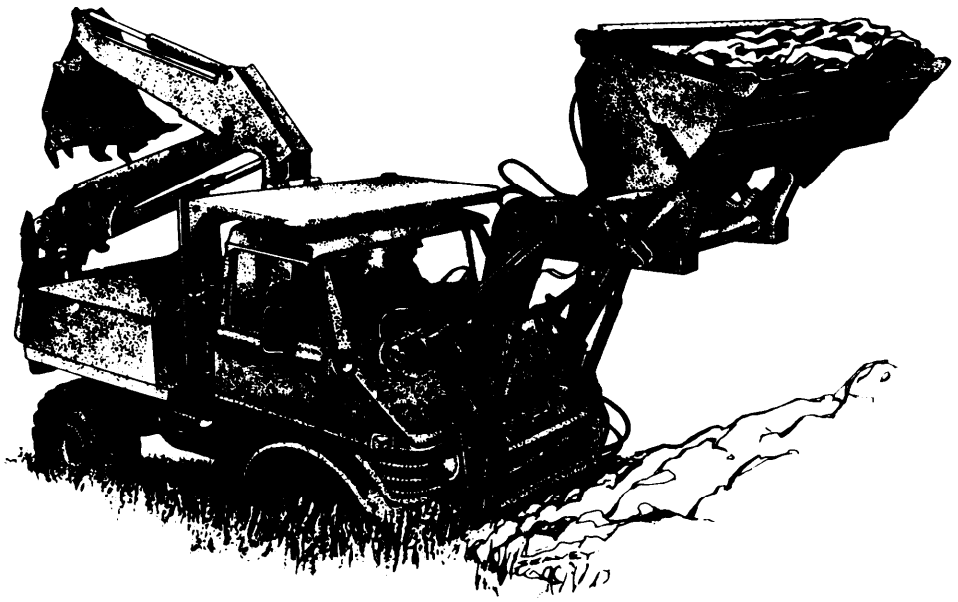


PNEUMATIC TOOL AND COMPRESSOR OUTFIT

DESCRIPTION: The pneumatic tool and compressor outfit is a diesel-engine driven, trailer-mounted, rotary-screw air compressor with integral storage compartments and pneumatic tools with accessories. The tools consist of a pavement breaker, rock drill, wood borer, nail driver, centrifugal pump, tamper, chain and circular saws, and accessories for each tool.

EMPLOYMENT CONCEPT: The compressor is capable of supplying large volumes of air under pressure to operate the pneumatic tools utilized in repair and construction of roads, bridges, landing strips, heliports and port facilities.

BASIS OF ISSUE: The tool and compressor outfit is assigned at the platoon level in divisional and nondivisional Combat Engineer units and in other combat support organizations.

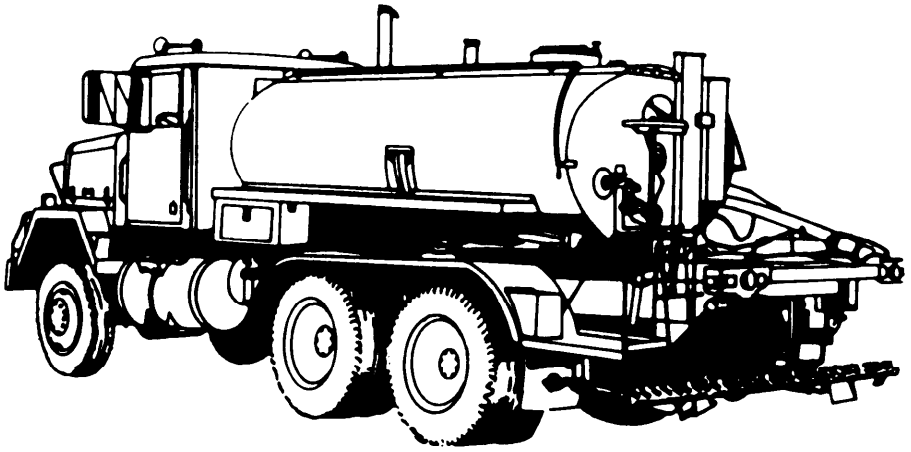


SMALL EMPLACEMENT EXCAVATOR (SEE)

DESCRIPTION: The SEE is a lightweight, all-wheel drive, diesel-engine driven high-mobility vehicle with backhoe, bucket loader, and other attachments such as a hand-held hydraulic rock drill, chain saw, and pavement breaker. The SEE weighs less than 16,000 pounds, is air transportable, can travel at speeds of more than 40 miles per hour on improved roads, and has excellent off-road mobility.

EMPLOYMENT CONCEPT: Although the SEE is used primarily to dig combat emplacements (crew-served weapon positions, command posts and individual fighting positions) for units in the main battle area, its versatility also provides earthmoving, pavement-breaking, and chain saw capability for general engineer tasks.

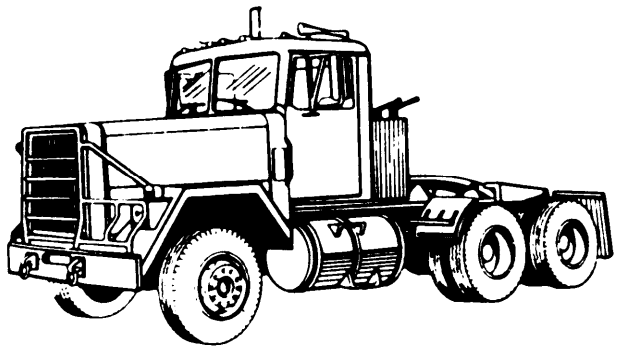
BASIS OF ISSUE: Excavators will be fielded at one per squad, in the Engineer Company, Engineer Battalion, Infantry Division; the Combat Engineer Company, Division 86; and the Combat Engineer Company, Light Infantry Division. The SEE will also replace the John Deere 410 excavator on a one-for-one basis in Corps Engineer Battalions.



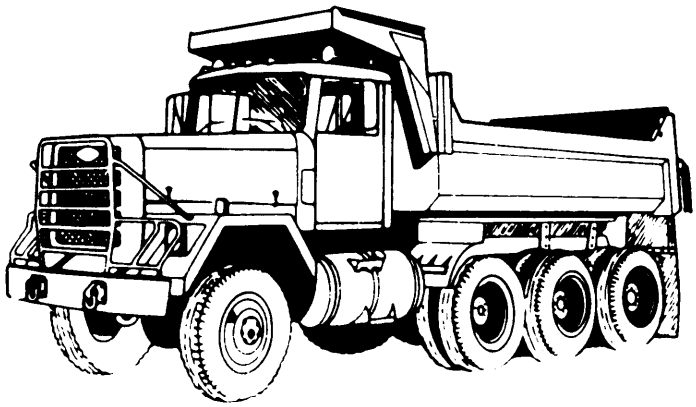
DESCRIPTION: The M915 series of vehicles consists of six different vehicles (M915-M920) which use the same power train, axles, and chassis with different body configurations. The M917, M919, M920 (see page 142) are equipped with a pusher axle for equalizing the load on the rear axles. The M915 is a line-haul tractor used primarily in transportation units. The M916 through M920 are used predominantly in engineer units. The M916 and M920 truck tractors are used to tow compatible semitrailers, low bed type (M172A1, 25-ton payload and M870, 40-ton payload). The M917 is a 20-ton, 12-cubic yard dump truck. The M918 is a 1,500-gallon bituminous distributor equipped with a hydrostatically-driven bituminous pump and spray bar. The M919 is a concrete mobile mixer with the capability to transport dry concrete ingredients and water, mix the ingredients in various proportions and discharge mixed concrete directly into forms or other handling equipment.

EMPLOYMENT CONCEPT: The general mission of engineer units authorized M916-M920 vehicles is to provide construction, rehabilitation, and maintenance of LOCs/MSRs and for all types of facilities (horizontal and vertical) in a Theater of Operations. The family of vehicles enables Engineer Combat and Construction Support units to perform combat engineering and construction tasks in support of unit missions.

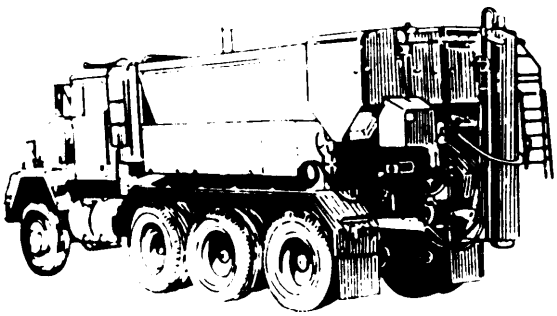
BASIS OF ISSUE: The truck tractors (M916 and M920) are employed at the platoon level in essentially all engineer TOEs except ABN/AMBL. The M917, M918, and M919 vehicles are authorized in Corps units, primarily the Construction and Combat Support Companies and the Combat Heavy Battalions.



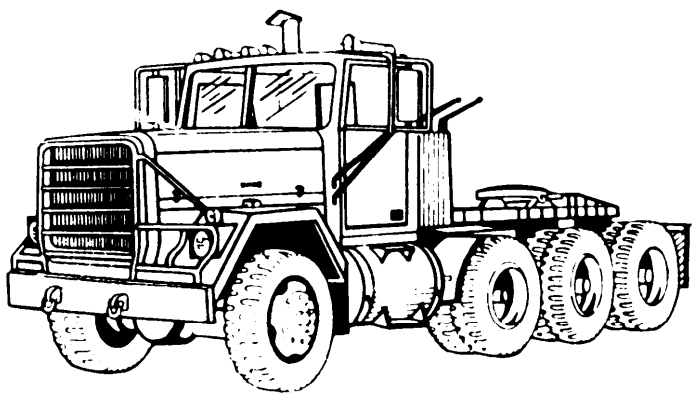
THE M916



THE M917



THE M919



THE M920