

# **SUPER M-TA TRACTORS**

## **OPERATORS MANUAL**

1004374R1

Reprinted

**CASE III**



*This symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED.** The message that follows the symbol contains important information about your safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.*

SB001

IF THIS MACHINE IS USED BY AN EMPLOYEE, IS LOANED, OR IS RENTED, MAKE SURE THAT THE OPERATOR UNDERSTANDS THE TWO INSTRUCTIONS BELOW.

BEFORE THE OPERATOR STARTS THE ENGINE:

1. GIVE INSTRUCTIONS TO THE OPERATOR ON SAFE AND CORRECT USE OF THE MACHINE.
2. MAKE SURE THE OPERATOR READS AND UNDERSTANDS THE OPERATOR'S MANUAL FOR THIS MACHINE.



**IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH.**

BEFORE STARTING THE ENGINE, DO THE FOLLOWING:

1. READ THE OPERATOR'S MANUAL.
2. READ ALL SAFETY DECALS ON THE MACHINE.
3. CLEAR THE AREA OF OTHER PERSONS.

LEARN AND PRACTICE SAFE USE OF MACHINE CONTROLS IN A SAFE, CLEAR AREA BEFORE YOU OPERATE THIS MACHINE ON A JOB SITE.

It is your responsibility to observe pertinent laws and regulations and to follow manufacturer's instructions on machine operation and maintenance.

See your Authorized Case dealer for additional operator's manuals, parts catalogs, and service manuals.



**Bulletin**



**Introduction**

Farm tractors are essential to modern, high-output agriculture. Without them, food production would fall far short of meeting our needs.

Unfortunately, each year tractor accidents in the United States account for an estimated 500 to 600 fatalities. Thousands more suffer disabling injuries, and millions of dollars are lost due to property damage, medical bills, time off work, reduced productivity, and added insurance costs.

Thanks to roll-over protective systems (ROPS), improved shielding, hydraulic control systems, and rigorous education by manufacturers and safety leaders, tractor-related accidental injuries have decreased in number and severity in recent years. However, tractor accidents still claim many lives and are very costly. To control these losses,

**Tips for Safer Tractor Operation**

- Stay away from ditches, embankments, and holes to avoid upset.
- Do not permit others to ride. Keep children off and away.
- Slow down when turning, crossing slopes, or on rough, slick, or muddy surfaces.
- Watch where you are going at all times. Watch for and avoid obstacles. Be sure everyone is clear before moving.
- Stay off hills and slopes too steep for safe operation.
- Do not overload tractor. Always engage the clutch slowly.
- Hitch heavy loads only to the drawbar. If the drawbar is on a three-point hitch, set it no higher than a fixed drawbar. Use front weights to balance tractor.
- Keep the PTO shielding in place. Turn off the PTO and the engine before unclogging, adjusting, or servicing equipment.
- Set the wheel tread as wide as practical for the job for maximum stability.
- Hold road speed to a controllable rate.
- When stopped, shift to neutral or park, and firmly set the brakes. Take the key with you when leaving.

**And Always Be Personally Fit  
And Ready to Drive Safely Today!**



Two deliberate overturns demonstrate the safety advantage of roll-over protective systems (ROPS). The tractor without ROPS completely rolled over. The operator probably would have been killed. The frame-equipped tractor's roll was limited to 90° degrees.

users should utilize safety equipment and adopt safe operating and maintenance practices.

This bulletin outlines common tractor accident and injury causes and recommends safety equipment and operating practices to help prevent them.

## Types of Accidents

Overturns are involved in about half of the fatal tractor accidents and are responsible for many disabling injuries and much property damage. However, as the use of protective frames and crush-resistant cabs with safety (seat) belts increases, the number of serious and fatal injuries from such accidents should decrease. Overturns are generally due to driving too fast for conditions, striking surface hazards as rocks, stumps, and holes, running into ditches, hitching high for extra traction, driving on steep slopes, and operating front-end loaders improperly. Tractor upsets also occur when handling large round hay bales and other heavy loads with front-end loaders.

Falls from moving tractors often result in serious and sometimes fatal injuries. Many times the victim is a child, but operators and adult riders also fall occasionally. This type accident more often involves tractors without cabs, so as more become cab-equipped, falls-from-tractor accidents should decline. Falls often occur from smaller and/or older "chore" tractors used around the farmstead, or for mowing, where extra riders and overhead hazards are more common than in fields.

Another tractor-related death and serious-injury cause is being caught by, or entangled in, rotating power take-off (PTO) shafts. In most cases, the PTO shields were inadequate or had been removed. PTO accidents are also declining because most new machinery now is equipped with integral PTO shielding.

Other tractor-connected injuries and damage involve:

- Colliding with motor vehicles or roadside objects;
- Slipping and falling while mounting and dismounting;
- Running over bystanders;
- Striking overhead hazards;
- Being struck by flying objects, broken parts, or hydraulic fluid;
- Being crushed by a poorly supported tractor during repair work;
- Sustaining cuts, bruises, burns, and other nuisance, but painful, injuries connected with maintenance and routine operation;
- Being overcome by exhaust gases inside closed buildings;
- Being burned by fires that erupt during refueling or as a result of a collision or upset.

## Operator-Machine-Environment

Looking at the operator-machine-environment relationship is helpful in understanding some of the reasons for tractor accidents and what can be done to prevent them.

On the farm, the operator and *Machine* (tractor and implements) team up to perform *Work* (tilling, planting, harvesting, and hauling

in an *Environment* (fields, lots, roads, and buildings). The work environment also includes weather conditions, temperature, visibility, and atmospheric pollution.

When operator and machine are functioning normally, and there are no work environment changes or conditions with which one cannot cope, the task is usually accomplished safely. Sometimes, however, the "unexpected" happens, or a hazard and error combination culminates in an accident.

Primary fault for a specific accident might lie with the operator... or with the machine... or with a hazardous environmental condition. However, accidents are more apt to occur when two or more unfavorable circumstances exist simultaneously. Therefore, all three (operator, machine, and/or environment) must be examined to determine the accident's cause—and what must be done to prevent a recurrence.

People differ in ability. But all are subject to error, oversight, or failure, that is generated by the work situation or as a product of their own making.

Human errors arising from the work situation are often the result of environmental hazards or distractions or machine inadequacies. Tractor operators face rough or slippery surfaces, obstacles, slopes, ditches, moving parts, and poor visibility. They may be subjected to temperature extremes, dust, excessive noise, monotony, and long, jolting, fatiguing hours at the wheel. Certain work requires multiple decisions and control movements in short time spans.

Other human factors in tractor accidents include illness, poor vision, slowed reflexes, alcohol, age, haste, inattention, anger, inexperience, psychological distress, ignorance of safety rules, and unwillingness to follow recommended procedures.

When a tractor is improperly ballasted or lacks protective equipment, or if the work is complex, difficult, or tiring, the chances for an injury accident are increased. Mechanical malfunction or outright failure also raises the potential for mishap.

Minimize accident risk by competent, alert operation of tractors that are properly maintained and designed for comfort, convenience, and safety. With forethought most hazards involved in tractor mishaps can be avoided, controlled, or compensated for by the operator.

## Training

Train young persons, or new employees who operate tractors, not only to physically manipulate the controls, but to recognize hazards and know how to avoid them.

Show trainees how the tractor works and have them study the operator's manual. Let them help prepare the tractor for work. Teach them how to drive and operate the equipment. See that they follow all safety procedures. Point out special hazards on your farm or ranch. Supervise young operators until they are competent and safety conscious. Do not let them drive on public roads without a driver's license. (State law may require a license.)

Ask your vo-ag teacher, extension agent, or farm equipment dealer about training programs or youth projects on tractor operation in your community.

## Big Tractors

Until recently, the average farm tractor pulled two or three plows at three or four miles per hour (5 to 6.5 kms./hour). That was sufficient for most farming operations. But

today's farmers/ranchers with more acreage to cover must use larger machines to keep on schedule. Tractors have increased in power and can now handle larger equipment at much faster speeds. Huge four-wheel-drive tractors are now used on thousands of farms/ranches.

Though most safety recommendations apply to both large and small tractors, there are special safety concerns when operating super-sized tractors. The tractor's dimensions may cause difficulties in tight places, at corners and gates, and on narrow roadways. Overhead clearances, especially around overhead power lines, may cause a problem.

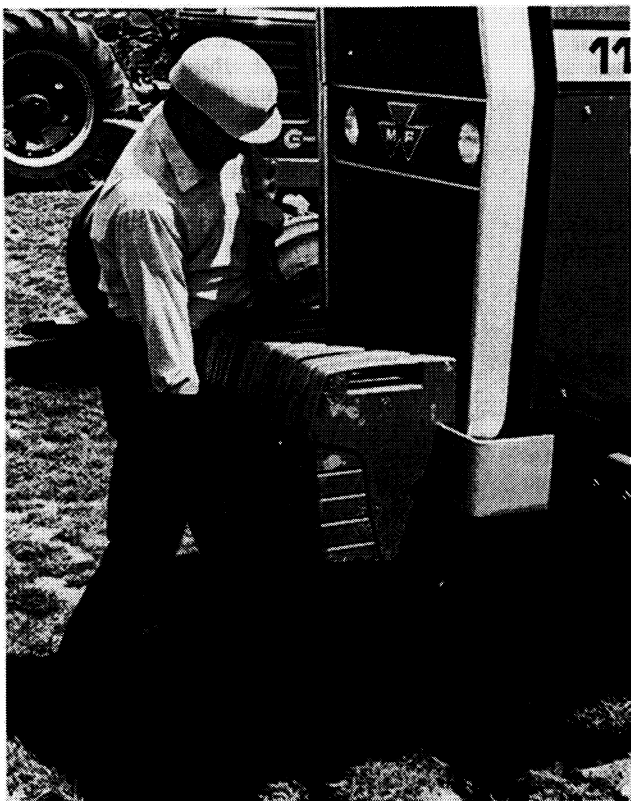
Most large four-wheel drive tractors have unique steering systems which mean new handling problems, especially for beginning drivers. All-wheel (or four-wheel) steering can shift the towed implement into an unexpected path. Articulated steering changes the rig's center of gravity so that an overturn can occur under unexpected conditions. With articulated steering, high-speed road travel requires more operating skill than does conventional tractor steering.

If an operator steers a unit with articulated steering while it is stand-

ing still, a bystander can be trapped in the "hinge" region. All new tractors carry warnings, but it is the operator's responsibility to be sure everyone is clear before starting or maneuvering the machine.

Safety reminders for large two and four-wheel drive tractors include:

- Watch your step. Use the handholds when climbing up and down the cab access steps or ladder. Clear them of mud and ice. Clean your shoes or boots before mounting the tractor.
- Refuel with care. It takes longer to fill the big tanks. You may have to climb up, and find a secure position from which to refuel. Even though diesel fuel is less flammable than gasoline, turn off the engine and refrain from smoking.
- Be sure everyone is out of the way before moving. A child, worker, or animal next to or under a big rig may be hidden from view.
- Drive slowly when approaching tight turns, narrow gates, buildings, low wires or branches, and other obstructions that might not be a problem when a smaller tractor is being used.
- Remember heavily ballasted, big tractors cannot stop on the



When pulling heavy loads, front-weights help with steering control and reduce the risk of a rear tip-over.

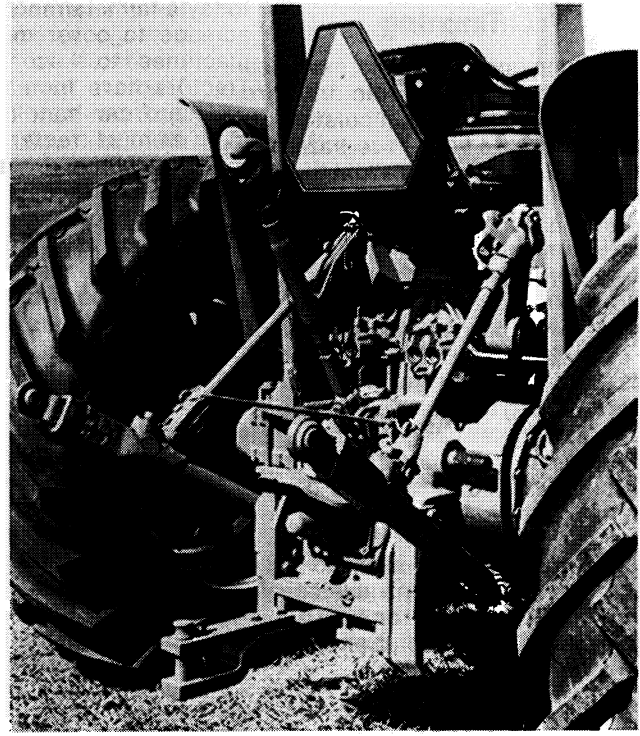


Steps and handholds make getting on and off the tractor safer and easier. Clean the steps and your shoes, before climbing aboard. Set the brakes and/or park lock before dismounting. Do not jump off.





Be sure the PTO shield is free-turning before starting work and stay clear when the PTO is operating. Turn off the engine before unclogging, adjusting, or servicing PTO-driven machines. This PTO is fully enclosed for greater safety.



This modern tractor has a three-point hitch, SMV emblem, and PTO master and stub shields.

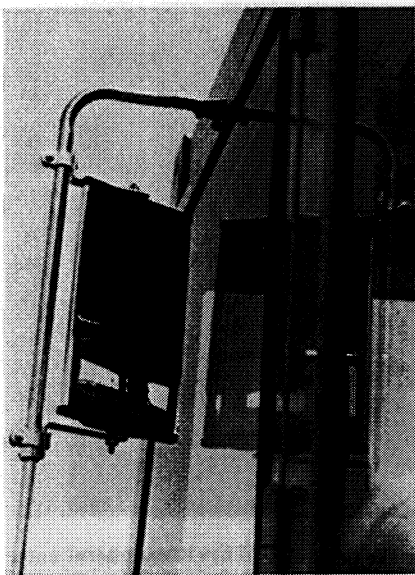
proverbial dime. When the tractor tows a heavy unbraked wagon(s), the added load might increase the stopping distance to an unsafe degree, especially on downgrades. Slow down early. Equip large wagons with brakes. Keep tractor brakes properly adjusted and equalized.

- Steer articulated four-wheel drive tractors with care at transport

speeds to assure straight-line tracking. Slow down if the tractor's rear section begins to "fish tail." Avoid steep sideslopes. Do not pull so far right on roads that right-side wheels are in the ditch. The rear section of the tractor could then slide into a jack-knife position resulting in loss of control or an overturn.

- Be sure that small bridges, floors, and flatbeds, will safely support a big tractor's weight.

arms of the raised loader onto the driver. Loader buckets of heavy manure, dirt, or rocks also cause tipping accidents if the tractor is driven too fast while the bucket is elevated. Safety precautions include rear ballasting, driving slowly—especially on slopes and while turning—and keeping the load low during transport. Equip front-end loaders with grapple forks for big bales. However, the bales are carried more safely by rear-mounted transport devices.



A rear-view mirror makes trips on public roads safer.

## Mounted Equipment

Properly adjusted, mounted or semi-mounted implements attached to the three-point hitch are made to work safely with the tractor. However, operators should check that all hydraulic lines are in good condition and connections secure and leak free. Never allow riders on implements. If needed, add weight to the tractor's front-end to maintain good steering control. Operating rear-mounted post-hole diggers are hazardous to anyone standing too near.

Front-end loaders are often involved in tractor accidents. Recently, serious accidents have occurred while handling large round hay bales. Usually bale accidents involve a tip-over or the bale rolling down the

## Hitching Cautions

Tractors are designed to tow loads only from the rear hitch. Use three-point hitches for pulling heavy loads only when they are level with the regular stationary drawbar. Raising the hitch point or attaching a tow line to any tractor part above the drawbar may cause the tractor to rotate around the rear axle, ending in a backwards overturn.

Tow ropes or cables that store energy by stretching under load can generate special hazards. Making a running start to move a heavy stationary load can stress a nylon tow rope or steel cable to the breaking point. Connectors have failed and have been slung toward the towing tractor with fatal consequences.



Clean windows help drivers see the hazards and avoid trouble.

### Freeing a Mired Tractor

One invites a rear overturn when an object such as a block, chain, or post is attached to the wheels of a mired tractor to boost traction. If a tractor cannot be driven or backed out of the mud, tow it out with another properly hitched tractor. To make the job easier, detach any towed implements and pull them out separately.

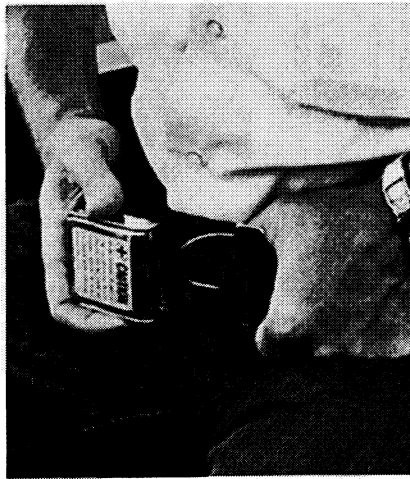
### Tractor Safety Equipment

Many features on today's tractors enhance operator safety and comfort. Many are standard equipment—others optional. Much of this equipment can be added onto tractors now in use.

### Roll-Over Protective System (ROPS)

Each year tractor overturns result in many deaths and injuries. Most involve tractors without roll protection. This major farm accident fatality problem could be reduced to relative insignificance through the universal use of protective equipment. The majority of new tractors have ROPS cabs or frames. They also can be mounted on many tractor models now in use. However, do not add ROPS if the manufacturer does not approve its use. Because a tractor overturn involves tremendous force, a home-made ROPS is not recommended.

The ROPS frame is a steel structure that protects the operator in case of overturn. A sun and rain canopy can be added. The ROPS cab resists crushing in an overturn. Both come with safety (seat) belts, that when used, will hold the operator



Before moving out, buckle your safety (seat) belt.

within the zone of protection provided by the strong structure.

The ROPS cab is a very popular option due to its comfort, health, and safety benefits. The cab provides weather protection and can be heated and air-conditioned. Filters remove dust and insects. The latest cabs are relatively quiet when the windows are closed. The operator is protected from low branches, and flying parts, and from being sprayed by chemicals or hydraulic fluid if lines rupture.

ROPS cabs and frames should



Mount or carry a fire extinguisher on your tractor. A tri-class unit with at least a 2-A, 10-B:C rating is a good choice.

meet or exceed the performance requirements set by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA).

### Shielding

New farm tractors come with power-take-off (PTO) master shields and stub shaft caps. Most PTO-driven equipment has free-turning integral shields, and the latest versions may even have fully enclosed universal joints. Always leave the master shield in place when the implement is unhitched.

Unfortunately, on older equipment the PTO shielding often has been damaged or completely removed. Uncovered PTO shafts and knuckles can quickly wrap clothing—even when turning slowly. Without proper shielding PTO operation is dangerous. Replace missing or damaged shields.

Manufacturers also may shield protruding exhaust-system components (usually on V-type engines) to reduce the risk of user burns and field fires. The sheet metal at the radiator's side and a fan shroud offer some protection from the cooling fan.

### Operator Station and Controls

Control location and motion standardization is important so any tractor can be operated safely with



Be sure all hydraulic lines are in good condition and fit snugly. Sudden failure could cause loss of control of an implement or attachment or someone could be sprayed with hot fluid.



Modern tractors can do jobs more safely *provided* basic safe practices are followed. Operator safety is enhanced by ROPS, good lighting, front weights, and shielding danger points.

minimum instruction, and workers can move from one make to another without confusion. Convenient, responsive controls with predictable action also improve the quality of work, reduce fatigue, and help operators quickly deal with emergencies.

Power steering, a good safety feature, reduces operator fatigue and enhances control regardless of terrain and front-end load. Hydraulic control of implements helps operators do a better job and reduces accident-producing fatigue.

Improved brakes have markedly increased the stopping ability of farm tractors. Manufacturers have also incorporated power assist



To help assure straight-line stops when driving at transport speeds lock brake pedals together.

devices to further reduce pedal effort. However, tractor brakes may not be adequate for pulling heavy wagons or implement carriers at transport speeds. Therefore, equip such wagons and carriers with brakes.

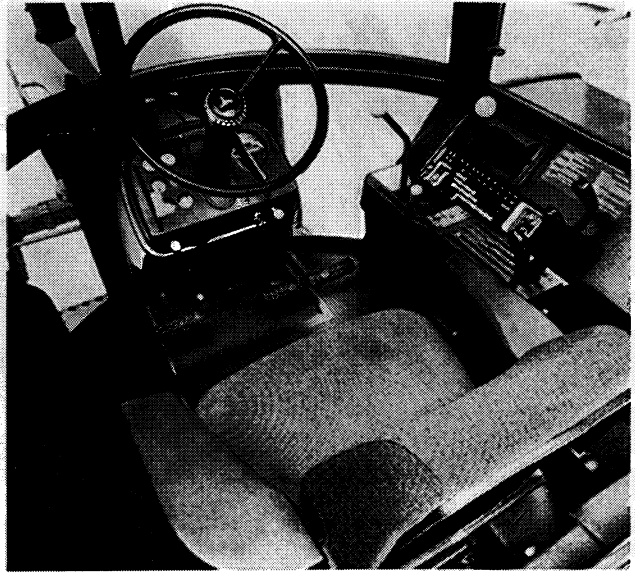
Key ignition switches that prevent in-gear starts eliminate a common cause of serious injury. When the key is removed, children cannot start the tractor and the risk of an unauthorized person starting the engine is reduced.

Instruments tell the driver tractor speed and engine performance. But operators must watch the gauges and warning lights and respond to problems such as overheating, low oil pressure, and engine overloading.

Modern tractor seats are a far cry from the unpadded, bucket seats of a few decades ago. Good seating reduces fatigue and thus becomes a safety "plus." Skid-resistant steps, platform, and pedals minimize slips and falls, and the danger of the foot slipping off the clutch or brake pedal. Uncomfortable seats often are replaceable, and skid-resistant materials can be installed on steps, platform, and pedals.

Most tractors now have mounting steps and handholds that, when used, aid in safely getting on and off the operator's platform.

Fenders provide a barrier between the operator and the wheel on tractors without cabs, and are a convenient place to mount lights, a fire extinguisher, rear-view mirrors, a first-aid kit, and handholds. Add-on fenders are available for many older tractors.



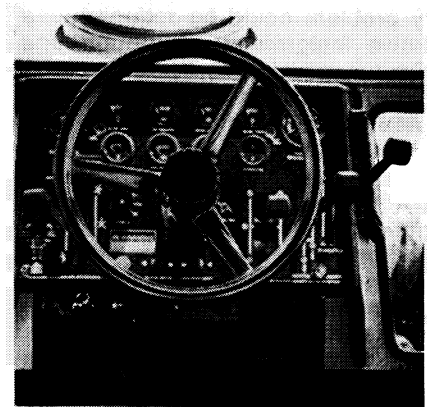
This modern tractor features roll protection, shelter from bad weather and bugs, insulation from noise, heating, air conditioning, an adjustable seat, full instrumentation, and convenient, responsive controls.

### Lighting and marking

Because tractors often are used around the clock, good lighting is necessary to do the job and prevent mishaps. On older models, lighting can be upgraded.

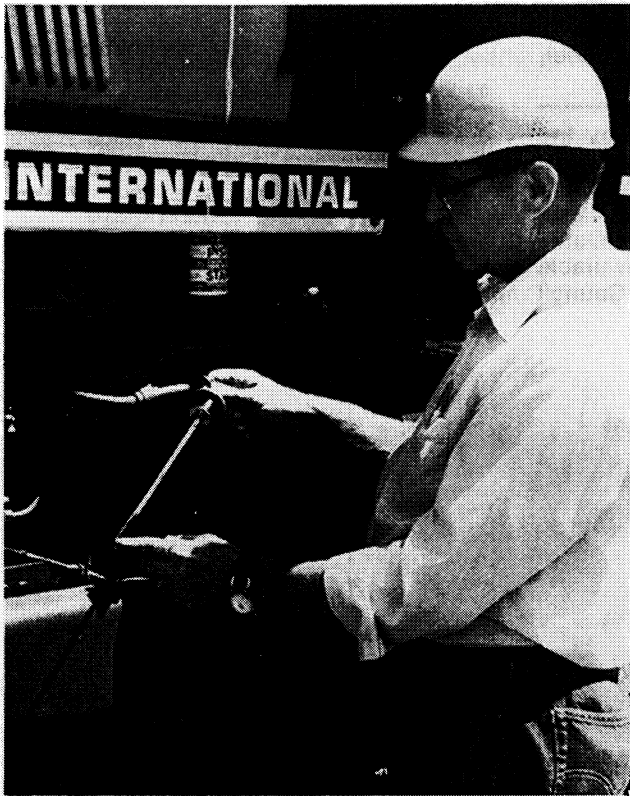
Highway use requires headlights, red taillights, and reflectors, standard on current tractors and easily obtained for older models. Two flashing amber lights, now standard on tractors, provide a day and night warning to traffic approaching from both directions. Installation of such lights is recommended for older tractors.

To provide day and night identification to traffic approaching from the rear that a tractor is traveling less than 25 mph, many states require installation of a slow moving vehicle (SMV) emblem. When these triangular reflective devices fade,

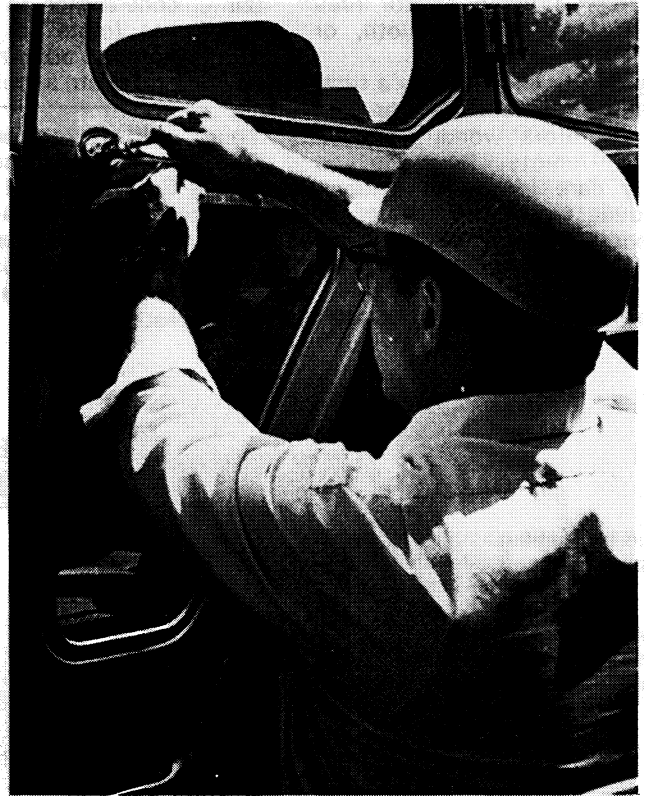


With modern instruments there is no question about how this tractor is performing.





**A well-maintained tractor is safer and cheaper to operate, and it's less likely to break-down during planting or harvesting.**



**Before leaving the tractor, always remove the ignition key and lock the cab.**

replace them with emblems meeting ASAE standards.

Turn-signals and rear-view mirrors offer added safety when tractors are driven on public roads. Often the mirrors come with cabs or can be ordered as optional equipment. A recent development allows the flashing amber lights to signal turns. When the turn signal control is activated, the amber light on the side in the direction of turn flashes faster than normal, while the other lamp

emits a steady light. After the turn is completed and the signal canceled, both amber lights resume flashing at normal frequency.

### **Hitching System**

Manufacturers now offer sophisticated hitching systems that permit quick, easy, one-man tractor-implement coupling. Mounted and semi-mounted implements are attached to the three-point hitch and con-

trolled hydraulically, thus reducing operator fatigue.

### **Other Equipment**

A fire extinguisher costing a few dollars could save a tractor worth tens of thousands of dollars. The two types of extinguishers approved for petroleum (class B) and electrical (class C) fires are dry chemical and carbon dioxide (CO<sub>2</sub>). A good choice for a tractor is a tri-class extinguisher rated at 2-A, 10-B:C. It also gives

**Extra caution is needed when driving big tractors and wide equipment on highways. Always put implements in transport mode or haul them sideways on an implement carrier. Keep to the right. Use flashing lights and make sure the SMV emblem is readily visible.**



**Buy Now**



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