

PRODUCT MERCHANDISING MANUAL

" Demonstrations "

**Willys Motors, Inc.
and
Willys-Overland Export Corporation
Toledo, Ohio**

DEMONSTRATIONS

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DEMONSTRATING

The most effective way to sell Willys 4-wheel drive vehicles is to demonstrate what they can do. Prospective buyers have to be shown. They have to be convinced that a Willys vehicle will meet the requirements of the job applications they have in mind. The way to show them, convince them, and sell them is to DEMONSTRATE.

Seeing these vehicles in action, sitting behind the wheel, feeling the power and performance of 4-wheel drive -- these are the selling factors that will convince prospective buyers of the truly amazing versatility and performance of the Willys line of 4-wheel drive vehicles.

DEMONSTRATING is the most essential, most effective, most successful step toward the final sale.

VEHICLES TO BE DEMONSTRATED

Which vehicles?

The vehicles to be demonstrated depend upon the requirements of the prospects attending the demonstration. It should be made certain that the vehicles as well as the special equipment to be used are available for demonstration.

GETTING READY FOR THE DEMONSTRATION

Condition and appearance of vehicles. The effectiveness of a demonstration depends upon performance and appearance of the vehicles. It is of paramount importance that they all be in perfect working order as well as clean and presentable in appearance.

Interruptions, even minor ones, can offset all careful planning and effort and leave the customer poorly impressed and the demonstrator highly embarrassed. Therefore, it is necessary to have all vehicles and units of equipment adjusted and tested on the demonstration field before the demonstration. Also, conditions of terrain should be checked ahead of time, and proper planning and preparation made accordingly.

Selection of site for the demonstration. It is wise to select a demonstration area with the same type of terrain as that over which the vehicles will ultimately be used. If this is not practical, then as close an approximation as possible should be made to actual conditions.

The demonstrating personnel should become thoroughly acquainted, beforehand, with terrain and characteristics of area they will work.

For example, to demonstrate power and performance of a Willys 4-wheel drive vehicle, demonstration area should consist of an obstacle course made up of steep grades, rough ground surfaces, deep ravines and ditches, mud holes, stretches of sand and all other conditions of rough terrain that will simulate off-the-road travel.

PRECAUTIONS to remember in selection of terrain:

For demonstrating uphill climbing performance, select grades that vehicles can climb.

Be sure crest of hill is rounded and smooth.
A sharply angled peak or ridge at top will "hang up" vehicle on its frame understructure.

Carefully examine banks of any streams to be crossed.
A vehicle can also be "hung up" if bank is too steeply angled, or overhangs stream bed.

In crossing a stream, make sure water is no deeper than height of the vehicle's running board. Drive slowly to prevent fan from splashing water on distributor and spark plugs.

SPECIAL PRECAUTION

Make sure that all vehicles demonstrated over rough terrain are equipped with a front end winch and cable. Should vehicle become stuck in heavy going, it can winch itself out of trouble. This turns a bad situation into a good demonstration.

If specialized demonstrations are to be performed by 4-wheel drive line and its equipment, such as farm implements, people in charge of demonstrating should first lay out a field based on the implements to be demonstrated.

Now, the order of demonstration can be arranged in logical sequence and with a minimum of confusion. A practical size for a farm demonstration field is 100 yards wide and 300 yards long. The length will vary, however, with the number of implements to be operated. Stake out the field in alternate sections of 10 and 20 yards.

The first plot should already be plowed so that early arrivals at the demonstration can inspect the ground and so that the demonstrator can refer to this plot in his descriptions as the demonstration progresses. Headland furrows

should be cut on each end of the field for clean, workman-like appearance.

This type of field layout permits operation of the plows in three plots as the first step in the demonstration. These same plots can be gone over with discs and harrows to show complete seedbed preparation before going on to the bush and bog harrow and other implements. Two or more different types of plows should never be demonstrated in the same plot. It is advisable, though not essential, to follow this plan with other implements.

SELECTION OF PERSONNEL

In order to stage a high-type, smooth-running demonstration program, it is of utmost importance that people doing the actual demonstrating be thoroughly versed and trained in sales, mechanical, and performance features of every vehicle.

They should be able to --

1. Operate and drive the vehicles
2. Give sales story on each one
3. Teach prospective buyer to drive and handle the equipment.
4. Answer questions about performance and functions of the equipment.
5. Make minor adjustments and repairs in the field.

A sufficient number of demonstrating personnel must be on hand to --

1. Handle number of people expected to attend
2. Operate vehicles in proper sequence.
3. Change attachments and implements to avoid delay in program
4. Answer questions and explain features promptly

NOTE: A competent mechanic should always be on hand to make proper adjustments or repairs to the equipment, if required.

GUIDE TO VEHICLE DEMONSTRATION

Following is a guide or check list by business and industry, etc. as to the Willys 4-Wheel Drive vehicles, attachments, and equipment that can be demonstrated:

1. Police
Sedan Delivery Paddy Wagon

Jeep patrol car
Station Wagon patrol car
4WD Truck as wrecker and tow car
Truck, and Sedan Delivery for traffic light maintenance
Sedan Delivery for accident investigation squad

2. Lumber

Mining

Oil Fields

Jeep

Scout Car: surveying, patrolling, foreman's car
Trailing log trailer
Pulling mine cars
Supervisors runabout

Truck

Truck in winching operation
Carrying equipment

Ambulance

As a mobile aid station
As transporter of sick or injured

Jeep Fire Engine

As plant protection

Station Wagon

Transportation for supervision and exploration work

Sedan Delivery

Parts car, maintenance vehicle.

3. Dept. of Forestry

Conservation

Jeep

Scout Car
With tree hole digger
For terracing
Fire engine (for field fires)

Station Wagon and Sedan Delivery

As patrol car
Carrying light equipment

Truck

As fire lane plow and pumper
Carrying light equipment
For conservation

4. Municipalities
Dept. of Roads

Jeeps

- With power mower for mowing along roadway shoulders
- Road and Land leveler
- Show road conditioning and general maintenance
- Field sprayer -- demonstrate weed control
- With air compressor or generator

Truck

- With front sweeper broom
- Street sweeping
- Front mounted snow plow (in season, when applicable)
- Carrying light maintenance equipment

Station Wagons and Sedan Delivery

- For carrying small equipment
- For supervisors of maintenance crews
- For emergency power plant

5. Manufacturing

Jeep

- Fire Engine
- Pulling trailers, dollies, etc.
- Plant protection
- Mobile Power Sources

Sedan Delivery

- Show cargo-carrying possibilities
- Personnel transport
- Ambulance

6. Public Utilities

Gas, Water, Power, Telephone

Jeep

- With Jeep-a-Trench
- Scout Car
- Post Hole Digger

Truck

- For use as maintenance vehicle
- Back Hoe
- Carrying crews and light equipment

Station Wagon
Supervision transportation
Carrying crews and light equipment
Ambulance

7. Service Stations

Jeep Service Station Unit
For pushing and towing stalled vehicles
Equipped with wrecker crane for hoisting stalled
auto and towing away vehicle
Snow blade for keeping drives open in winter
(where applicable)
Front end winch for pulling vehicles out of ditch, etc.

Truck
Wrecker for handling light trucks as well as
passenger cars.
Pushing and towing of stalled vehicles
Front end winch pulling vehicles out of
mud hole
As snow plow
Sweeping attachment

8. Fire Department

Truck
Maintenance truck or hose carrier
Tow truck

Station Wagon and Sedan Delivery
Chief's car
Rescue rig
Communication center
Maintenance and parts vehicle
Checking hydrants and alarm boxes
Fire protection (plant inspection)

Jeep
Jeep Fire Engine for first-in-duty
Chief's vehicle

Ambulance

ADVANCE PUBLICITY FOR PUBLIC DEMONSTRATIONS

Daily and weekly newspapers in the distributor's or dealer's territory should be provided with full information on the demonstration several weeks in advance of the date. Most editors welcome news material of this nature

covering a public event taking place in the area through which their publications are circulated. Small, paid advertisements, which are usually inexpensive in weekly papers, should be timed to appear several days before the date of the demonstration.

Also, radio spot announcements of 30 to 60-second duration can be broadcast daily, a week or two before the event.

INDIVIDUAL AND PERSONAL INVITATIONS

In addition to the general publicity in advance of the demonstration date, careful attention should be given to the personal invitation.

This will follow, of course, after the names of the prospects to be invited have been carefully selected and placed on the invitation list. Each prospect should receive from the distributor, or the dealer, a personally written and signed letter of invitation about two weeks before the date of the event. If at all possible, the letter should be followed-up by a personal call or at least a personal telephone communication a day or two in advance of the demonstration.

Special invitations should also be extended to certain "key" people of influence in the community. Such individuals might be:

- Local bankers
- Government officials of State
- Government purchasing agents
- Local newspaper editors
- Local radio station news editors

REGISTRATION OF VISITORS AT DEMONSTRATION

The distributor or dealer will naturally have a vital interest in compiling a record of the individuals who attend the demonstration. From this record he will be able to make a proper and intelligent follow-up of each prospect and can build a really worthwhile and workable prospect list for the future sale of Willys vehicles and equipment. While the demonstration itself might prove to be highly successful, it will fall short of its purpose and end usefulness if the members of the audience are not properly and accurately registered.

Following is a suggested registration card which will serve to collect the necessary information about each registrant:

Name _____

Address _____

Type of business or industry engaged in:

Type of mobile or stationary power equipment now
using: _____

Make and age _____

Now being used for _____

I am interested in the following equipment:

I would like to see a demonstration of the Jeep _____

Willys Truck _____ Station Wagon _____ Sedan Delivery _____

Ambulances _____ Fire Engines _____ Special Equipment _____

In order to insure 100% registration of guests at the demonstration, many distributors and dealers have used an effective method that has always worked. This method is the offering of prizes at a drawing to be made at the close of the demonstration by a member of the audience. The announcement of the prize drawing is made at the start of the demonstration. All guests are asked to make sure they have registered and have dropped their registration cards in the prize drawing box. This inducement will tend to hold the audience until the demonstration has come to an end. Prizes may include, depending upon the number in attendance, the following:

Merchandise certificate

Crankcase motor oil

Pen or pencil

New tire or new tube

Battery or spotlight

Key chain or pen knife

REFRESHMENTS AND COMFORT FACILITIES

The final touch that crowns the successful demonstration is the distributor's or dealer's concern for, and the consideration of, the welfare and comfort of his invited guests.

Past experience proves that the serving of coffee and cake, soft drinks or candy, or some simple refreshment is always welcome and very gratefully

received. The thoughtfulness behind it, not the refreshment itself, is the gesture of good will most appreciated by the people attending the demonstration.

It is also wise to make arrangements -- either on the field or nearby -- for a shelterhouse, containing comfort station facilities, which may be used as protection in case of sudden or unexpected bad weather.

A GOOD DEMONSTRATION A BENEFIT TO ALL

The benefits derived from the staging of a well-planned, well-organized and well-performed demonstration are many -- both for the spectators and the demonstrators.

Members of the audience gain first-hand knowledge of the diversified line of top-performing Willys 4-wheel drive utility vehicles. They discover new job applications, new uses to which this equipment can be put in the mechanization of agriculture, industry, commerce, and transportation. This enables them to make a correct and accurate choice of the vehicles and attachments best suited to their requirements.

The distributor or dealer benefits by the immediate profits he realizes through additional sales as a result of the demonstration. He gains by the excellent impression he makes on his guests and the resultant good will he has created for his organization. This may be carried over into the future, affecting an increase in parts, service, and sales volume.

DEMONSTRATION is of mutual benefit to all concerned. It holds distinct advantages for seller and buyer alike . . .

DEMONSTRATION TECHNIQUES

Demonstrating is the most essential, most effective, and most successful step toward the final sale. A successful demonstration is one which is executed perfectly and this requires thorough knowledge of the equipment being demonstrated. You must become thoroughly familiar with this section of the manual for it gives the "Whys," "Wheres," and "Hows" in demonstrating the many attachments to Willys commercial vehicles.

THE DEMONSTRATION OF 4-WHEEL DRIVE

PREPARATION

Before making any demonstration, make sure that unit to be used is ready to perform. Have the engine thoroughly warmed up and see that it will operate under all load and speed conditions.

Check the operation of transmission, transfer case, power take-off, accelerator, clutch, and governor.

So that all implements can be attached and operated most efficiently throughout the demonstrations, Jeep should be equipped as follows:

1. Governor
2. 7:00 x 15 tires - 15" wheels (recommended for farm operation)
3. Front bumper weight
4. Complete rear power take-off assembly, pulley and pulley drive
5. Monroe Hydraulic Lift
6. Heavy duty rear springs
7. Drawbar

To insure traction and give proper floatation on the soil, tire pressure should be reduced to 16 pounds.

Other equipment that should be considered includes:

1. Radiator weed screen
2. A "hot climate" radiator if operation is in high altitudes or extremely hot weather.
3. Propeller shaft weed guards.

SHIFTING

1. TRANSMISSION. A standard 3-speed transmission is used in both 2 and 4-wheel drive.
2. TRANSFER CASE. Shift lever nearest driver shifts transfer case into gear train. Leave this lever in "Out" position for 2-wheel drive. Shift lever into "In" position for 4-wheel drive and for all power take-off operations.

Shift lever farthest from driver has three positions: high, neutral, and low. Shifting lever from neutral position to rear places transfer case in high position for 2-wheel drive. This shift is to be made for higher speed operations on hard surface roads. Shifting lever forward from neutral into low gear position, requires an additional shift of 4-wheel drive lever into 4-wheel drive position. After this shift is made transfer case can be shifted into low gear position.

The high and low shift lever should be in neutral position for all stationary power take-off operations.

TECHNIQUES OF SHIFTING

1. INTO 4-WHEEL DRIVE. To engage front-wheel drive, depress clutch pedal, release accelerator, and move left hand transfer case shift lever to rear or "In" position. With front axle drive engaged, right hand lever may be shifted to rear into "High" (Direct) or forward into "Low". The neutral position, midway between "High" and "Low" is for use when power take-off drive is used. Vehicle cannot be driven when lever is in neutral position.
2. WHEN IN 4-WHEEL DRIVE. When front axle is engaged the transmission can be used, as in 2-wheel drive operations, to obtain various speeds. Shifting from "High" to "Low" in transfer case should be attempted only when vehicle is practically at a standstill. Front axle drive must be engaged in order to shift from "High" to "Low". Shifting from "Low" to "High" in transfer case may be accomplished at any time regardless of the vehicle speed. The clutch must be depressed in all shifting operations.
3. OUT OF 4-WHEEL DRIVE. To disengage front axle drive, depress clutch pedal, release accelerator, and shift lever to the forward position. Transfer case must be in "High" range (direct drive) when front axle drive is disengaged.

WHEN TO USE 4-WHEEL DRIVE

Four-wheel drive should be used to provide additional traction and lower gear ratios for use in difficult terrain and to provide low-speed pulling power

for industrial and agricultural use. It should be used only when greater traction and power are required than that provided by standard transmission. Use it off the road when you need it. Use it in snow. Use it for pulling heavy trailers or agricultural implements. Use it on ice.

WHEN NOT TO USE 4-WHEEL DRIVE

Four wheel drive should not be used for normal driving on hard-surfaced highways. The additional tractive effort it provides is not needed under such conditions and will result in excessive front tire wear. The driver of a vehicle with selective 2 or 4-wheel drive should realize that the driving front axle is an added source of power and traction to be used ONLY when conventional rear axle will not do the job.

DRIVING

1. In transportation -- on or off the road -- empty or loaded -- Willys vehicles will climb and descend unusually steep inclines. They will cross sand, mud, ice, or streams. They will also pull or push other vehicles through these obstacles. These are things that only demonstration will prove.

To start, seat prospect next to driver and take him on the road to show handling ease, speed, maneuverability, and pick-up. After explaining and showing these features in operation, let prospect drive on the road to become acquainted with the above features. Emphasize economy and point out that when front-wheel drive is disengaged, as it should be on good roads, extra fuel savings are obtained.

Then leave highway for fairly flat territory, gradually increasing the severity of obstacles.

The impression to be conveyed is that the vehicle will traverse most any obstacle, no matter who is driving. Therefore, demonstrator must show that vehicle does not overcome obstacles because of the driver's special skill, but because of vehicle's own power. A better impression is created when obstacles are taken slowly for there is less danger of frightening the passenger (a not uncommon occurrence), and he is less likely to discount the climbing feat as being attributable to a good running start.

The impression of SURENESS and SAFETY in overcoming obstacles must be created.

2. MUD, ICE, SNOW, SAND

Conditions such as ice, snow, mud, and sand can usually be taken in 4-wheel drive with the transfer case in high. Enter obstacle in the lowest gear necessary to overcome it. Enter slowly and stop, if possible, in middle of obstacle and then start up again. Exercise caution so that engine is not stalled by splashing water on distributor or spark plugs, or by exhaust pipe opening being clogged with mud, snow, or water.

Do not risk getting vehicle stuck unless it has a winch. And be sure that a place (such as a post or tree) is available to which winch cable can be anchored.

3. CLIMBING STEEP HILLS

Hills should be approached and climbed straight-on. A diagonal ascent greatly increases the danger of overturning.

On the other hand, front and rear overhang must also be kept in mind to avoid scraping when ascending or descending steep hills. Removal of truck's license plate will give it additional rear-end clearance on these occasions.

WHEN ASCENDING STEEP HILLS, start in lowest gear and transfer case position necessary for a successful climb. Avoid running starts, but be sure to maintain enough speed to prevent stalling. A stall on a steep hill presents the problems of keeping vehicle from drifting backwards, or re-starting engine, and again obtaining forward movement. Regardless of gear position used on steep hills, vehicle should be in 4WD to insure holding action on all four wheels when emergency brake is set.

When restarting engine leave vehicle in gear and depress clutch, so that if hand brake does not hold, clutch can be let out again.

Once engine is restarted, an attempt at forward movement can be made by letting out clutch. At this time the gear ratio should be sufficiently low to assure a successful start and climb.

If vehicle has stalled in low-low on a steep hill, it may be necessary to accelerate engine fully with clutch depressed and then release clutch suddenly. If hill is so steep that this method too is ineffective, and if there is no winch to help, vehicle must be safely backed down slope. To do this with safety, low transfer and reverse should be engaged while the hand brake is still on. Then before releasing emergency brakes, brake pedal should be pumped to insure its maximum effectiveness.

The hand brake can then be released allowing the vehicle to back slowly down the hill, at a speed controlled by compression of engine and hydraulic brakes.

4. DESCENDING STEEP HILLS

Hills should be taken straight-on.

Before commencing descent, transmissions should be switched to a low gear so as to use engine for additional braking power.

The clutch should not be released during descent, even when braking hydraulically. The very slow rotation of low-low transmission-transfer position enables vehicle to come practically to a standstill without requiring release of clutch.

5. CROSSING SHALLOW STREAMS

Before crossing a stream, the stream bed and banks should be carefully examined. Height of both banks must be considered to avoid hanging up of vehicle's underside. Likewise, a steep angle of inclination of the bank will involve the possibility of overturning -- when it is drawn up the bank on a cross angle.

If possible crossing should be made where winch cable can be secured to another vehicle, tree or post as a guarantee against becoming hopelessly mired.

Streams should be crossed in 4WD in low-low transmission-transfer position. Before crossing a stream or water hole where the water may be of such a depth to interfere with the fan and generator, loosen the generator bracket and release the fan belt so that the fan will not turn. This avoid splashing water on the distributor or spark plugs. However, should this occur, these parts must be wiped dry by hand or sprayed with a little carbon tetrachloride found in most fire extinguishers. After three to five minutes, the carbon tetrachloride will have absorbed the humidity and engine can be restarted.

CAUTION: After fording a stream apply the brakes to check their effectiveness before going down a steep hill or having to use them for an emergency stop.

6. CROSS SLOPES

AVOID THIS SITUATION

Ordinarily additional tractive effort of 4-wheel drive vehicles will permit direct ascent of a slope, and it can be negotiated with less danger of

tipping than if taken at an angle to the grade. However, in some instances, wet grass, mud, or snow may necessitate angling up or down a hill.

WHEN NECESSARY TO ANGLE UP OR DOWN A HILL, KEEP MOVING

Make sure that the angles are not so sharp that vehicle will upset, and see that any turns are made smoothly but quickly.

MONROE HYDRAULIC LIFT DEMONSTRATION

The Monroe Hydraulic Lift makes the Jeep the world's most useful farm vehicle. It requires but a few minutes to attach any 3-point hitch implement to the Jeep. This 3-point hitch gives the Jeep full usefulness as a farm unit for any piece of equipment that requires lift control for its operation.

This unit is made up of the following: A hydraulic pump, connected to the front of the crankshaft, and a fluid tank and finger-tip control box mounted between the seats. The finger-tip control operates the lift arms mounted at the rear of the Jeep.

A downward pressure valve mounted on fluid tank allows operator to apply down pressure of up to 500 pounds, on mounted equipment, thus eliminating the use of weights to hold the implement down. Turning down pressure valve clockwise will increase pressure 85 pounds for each half turn of valve.

Through use of down pressure valve more weight can be placed on the front wheels, thereby increasing tractive effort of front wheels and efficiency of the Jeep as a tractor.

The construction of lift arms with ball sockets gives proper alignment for correct trailing and following of equipment for plowing or hillside contour work.

OPERATION OF THE MONROE HYDRALIC LIFT ON THE JEEP

FINGER-TIP CONTROL The control handle on side of fluid tank will raise or lower implements that are attached to lift arms. To raise lift arms, move handle to rear. To lower them, move handle forward. Placing handle in center, or neutral, position will lock lift arms at any desired height.

DOWN-PRESSURE VALVE The down-pressure valve will increase pressure on the lift arms when handle is in forward position.

LEVELING CONTROL For hill side or contour work, implements can be leveled or tilted by turning handle connected to left hand lift arm. This handle is conveniently located at rear of operator's seat. For example, the implement can be tilted to compensate for any off-level condition in which the Jeep may be operating.

STABILIZER BARS

Stablizer bars are used whenever a piece of equipment requires that it be held rigid for trailing.

NOTE: Use the stabilizer bars whenever the instructions for implement use require that bars be used. See Operating instructions for each implement.

ATTACHING EQUIPMENT TO MONROE LIFT ON THE JEEP

NOTE: The Moldboard Plow will be used as an example of the method for attaching equipment to Monroe Lift on the Jeep. Where there are exceptions, they will be covered in Demonstration Section on piece of equipment in question.

After you have made all preliminary adjustments to equipment, you are ready to attach plow to Jeep. The Jeep should be in low range 4-wheel drive for better control of the vehicle. Back Jeep to plow. Lower lift arms of Monroe Lift. Move hydraulic control handle into the full forward position and be sure that down pressure screw is turned off. The simple procedure for attaching plow is as follows:

1. Attach lower link of Lift - the one that does not have the leveling box - to cross shaft of plow.
2. Attach lower link of Lift with leveling box to cross shaft of plow, simply turn leveling box either up or down to obtain proper alignment.
3. Now attach top link of Lift. Be sure that it is first properly attached to plow and check the link to be sure that the two little marks that indicate position are together. Now lower top link to top link connection point of Monroe Hydraulic Lift housing and align it properly. If link appears to be too long, put the Jeep in reverse, making sure that the ignition is turned off, that transfer case is in low range, and transmission in reverse. By touching starter you can move Jeep backwards an inch or two to bring it into proper alignment. If top link appears too short, the reverse of the above procedure should be followed. This simple procedure will allow any 10-year old youngster to change implements on the Jeep with very little

effort. Then, be sure to raise the implement before moving Jeep forward or backward. As soon as your implement is in raised position you are free to move the Jeep.

POWER TAKE-OFF DEMONSTRATION

KNOW YOUR JEEP AND WHAT IT CAN DO. -- by knowing how to make all applications of its power take-off. The demonstration of the Jeep as a 4-wheel drive vehicle has proved that it will go just about anywhere. Now demonstrate that it has the power to operate as a power unit to drive other pieces of equipment for all types of power application.

1. POWER APPLICATION

A. REAR POWER TAKE-OFF (Stationary Power.)

Power take-off is taken from rear of transfer case. The sliding gear, when shifted, will engage the main drive gear in the transfer case. The easy-to-reach lever at right of the driver shifts sliding gear into or out of power take-off.

TO OPERATE. Disengage clutch and shift transmission into low gear position. Then shift power take-off lever to rear, thus engaging sliding gear with main drive gear in transfer case. Releasing clutch with engine running will put power take-off shaft into operation. Making the above shifts will place power take-off in correct position for the greatest power application. (The transfer case shifting lever is in neutral position for this operation.)

THE GOVERNOR. If Jeep is equipped with a governor, it has nine points of governor settings. These range from 1000 r.p.m. at first notch setting to 2600 r.p.m. at ninth notch setting.

There is a 200 r.p.m. difference between each notch setting of governor. This gives a range of engine speeds to develop 13 hp. at 1000 r.p.m. to 24 hp. at 2600 r.p.m. through power take-off shaft. Combine this with the range of shaft speeds through the 3-speed transmission, from 358 in low gear range at 1000 r.p.m. to 2600 at 2600 r.p.m. of the engine. All speeds are governor-controlled. This gives a range of power and shaft speed that cannot be found in any other type of mobile unit and which can also be adapted to stationary power application.

Rear power take-off is mounted on rear cross member of frame. The shaft is a standard S.A.E. 1-3/8 inch, 6-splined shaft, used for driving power-operated implements that are towed behind the Jeep.

BELT DRIVE. For belt-driven equipment a flat belt drive pulley unit is bolted to rear power take-off. This unit has a 8 inch diameter pulley with speeds ranging from 306 r.p.m. with the transmission in low gear position to 2228 r.p.m. with transmission in high position.

DEMONSTRATION OF REAR POWER TAKE-OFF (Stationary Application)

The buzz saw, hammermill, or any unit that requires belt drive for transmission of power can be used to demonstrate use of rear power take-off as a stationary power unit.

B. REAR POWER TAKE-OFF (Vehicle moving.)

When rear power take-off is used to transmit power to a piece of equipment for its operation and at the same time pull the unit, the following demonstration should be made:

Attach the power take-off to the piece of equipment to be powered, and see that the splined coupling is slipped onto the power take-off shaft of the Jeep and the clamp bolt tightened.

TO OPERATE. Whenever the Jeep is used to pull a piece of equipment and also furnish power to operate it, the operation should be in 4-wheel drive and in low-range position. To do this shift transfer case lever to neutral and engage power take-off lever. With engine running and clutch disengaged, place transmission shift lever in low gear position. Engaging the clutch will place power take-off in operation. Check to see that unit is being properly powered. Now disengage clutch again and move transfer case shift lever into low-gear position. This will allow the vehicle to move forward when clutch is engaged and at the same time operate power take-off.

THE GOVERNOR. If governor is to be used in this operation, pull governor control button out to correct setting for speed required to operate piece of equipment correctly.

CAUTION. When demonstrating a piece of equipment that requires power take-off while being towed, make sure power take-off shift lever is disengaged whenever vehicle is stopped. Two shifts are required. One: Disengage clutch and shift the transfer case shift lever to the neutral position. This will stop forward motion of vehicle. Two: While clutch is disengaged, shift the power take-off shift lever forward. This will disengage the power take-off shaft.

DEMONSTRATION OF REAR POWER TAKE-OFF (Vehicle moving)

The following pieces of equipment can be used to demonstrate use of rear power take-off in combination with drawbar pull: Mower, Rear-End Sweeper, Ditcher. This demonstration will also take in the Monroe Hydraulic Lift.

C. FRONT POWER TAKE-OFF

There are two methods of taking power off front of the Jeep.

(1) DIRECT CONNECTION TO FRONT OF ENGINE

There are two methods of taking power from the front of the engine: belt drive and by direct connection with the engine crankshaft.

- (a) Belt Drive - As a rule units that are driven from the front of the engine by belt drive are hydraulic pumps such as the Hydra Clutch Pump for dump trucks. Caution: Always take into consideration horsepower rating of drive belt when confronted with problem of belt drive from front of the engine.
- (b) Direct Connection With the Engine Crankshaft - This type of power take-off as a rule requires a clutch in drive line so that the unit can be disconnected when not in use. In the case of a fire pump that is connected directly to engine crankshaft, there is a governor control attached at front of the radiator grill so operator can adjust speed of engine from front of Jeep.

(2) FRONT POWER TAKE-OFF FROM THE TRANSFER CASE

This type of power take-off offers the advantage of having a choice of three speeds forward and one speed in reverse. Through use of a separate transfer case that is attached to rear of the present truck transfer case, controlled power take-off is available. This power take-off is available only on winch applications.

With this type of power take-off the operation of equipment is controlled from the driver's seat. The control of operations is same as that for rear power take-off. All shifts are made in same manner as that for rear power take-off.

The governor can be used to control speed of unit being powered as outlined in rear power take-off section.

POWER TAKE-OFF IN REVERSE. Whenever power take-off is through the Jeep transfer case, power take-off shaft can be reversed. This operation will

be used in demonstration of post hole digger where it is desirable at times, to reverse auger's turning direction.

To reverse power take-off shaft, disengage clutch and shift transmission shift lever into reverse gear position. Then release clutch.

DEMONSTRATION OF THE FRONT POWER TAKE-OFF

Units that can be demonstrated for front power take-off are:

The winch (See Winch Demonstration) and the fire pump.

Note: There is available for use on 4 WD Truck or Station Wagon a separate transfer case that has connections for front power take-off as well as for rear power take-off. This is for special winch applications. Where this type of power take-off is used, there will be two shift levers at transfer case: one for front shift and one for rear shift.

This two-directional type of power take-off would be used when the unit is employed to power two types of attached equipment at the same time: a winch at front and regular power take-off at rear for a belt drive or any other type of power adaptation.

D. CENTER POWER TAKE-OFF OR REAR POWER TAKE-OFF FRONT UNIT

The center power take-off is mounted at rear of transfer case on Jeep Station Wagon or Truck. It is the same adaptation connected to the rear of the transfer case that is used for rear power take-off. A 4-V-belt pulley is connected to the power take-off shaft. This allows from one to a set of four belts to be used, depending upon the amount of power required. The power take-off shift lever at right of driver engages power take-off. Power take-off at this point on the vehicle allows it to be used in a number of ways: to operate generators, welders, air compressors, pumps, and winches. There is also an adaptation for the use of a side mower powered by center power take-off.

DEMONSTRATION OF THE CENTER POWER TAKE-OFF

The following pieces of equipment can be used to demonstrate the use of the center power take-off: generator, welder, air pump, or a wrecker that uses a winch mounted in the body of the truck.

Note: Follow operating instructions of equipment after power take-off power is applied.

REVIEW OF POWER TAKE-OFF

After demonstration has been completed, use chart covering "Power Take-Off Shaft Speeds and Vehicle Ground Speeds" to show all adaptations that can be made up through the use of the Jeep as a power unit.

The Jeep will Power Anything That Requires Power From 1 hp. To 24 hp. at Speeds From 306 r.p.m. to 2600 r.p.m. All Speeds and Power Requirements Are Governed.

SPECIAL EQUIPMENT

WINCHING

WINCH DEMONSTRATION ON A 4-WHEEL DRIVE UNIT.

This demonstration can be made as a part of 4-wheel drive demonstration or as a separate demonstration. For this outline it is assumed that 4-wheel drive demonstration with all power take-offs has been made.

1. Using winch to pull truck out of a hole.

The R-100J Koenig is a front end winch connected to front power take-off. It provides reverse and forward rotation and is controlled by a lever mounted in cab.

This type of winch can be used for all kinds of loading and hoisting operations.

Note: There is another type of winch (the 100J Koenig) which is connected directly to the front end of the engine. This type is not reversible. It is used for pulling only.

When the winch dog clutch at front is disengaged, unreel cable and secure it to some solid object. Be sure to inspect cable as it is unreeled. Do not use a cable that is frayed or cut in any way. Always make sure that the pull of the cable is directly toward drum of winch. Do not have a side pull since cable will not be taken up on drum evenly.

Caution: Before any strain is put on cable, make sure all persons are out of the way. Make sure that you, as operator, will not be in line with pull of cable should it break.

With the engine at idle speed, engage the clutch and take up the slack on the cable. Never whip a cable when taking up slack since a sudden shock load on the cable may snap it.

Govern the r.p.m. of the engine according to the speed that is required to pull the load.

2. Pulling an object with the front end winch.

Pulling an object with the winch is the same as pulling the vehicle itself with the exception that brakes should be set whenever the winch is used to pull or move another object.

The following illustrations will outline various methods of running a line to

make a straight pull: two line pull where the load is great; back line pull used in pulling a load into the bed of the truck; and a right angle pull.

USING THE WINCH WITH A LOG HOOK

During the winch demonstration the use of a Log Hook can be demonstrated.

In logging operations Jeep can be used as a jammer or loader through use of a swing boom attached to rear of the Jeep. The winch cable is run through chuck at the front of the winch, up through the pulley on the "A" frame, and over to the pulley on the boom. The Log Hook is attached to the end of this cable. The Hook can be used as a sling to pick up a log, and through the use of the Jeep as a mobile unit, transport the log to any location required. In loading or jamming, the log can be placed on a truck or piled on a skidway.

In this type of demonstration winch would be used as previously demonstrated in pulling an object to the Jeep. By using reverse gear, the winch can be used to lower object, as in the case of lifting a log and then lowering it into position.

If the overhead boom is not available, the Log Hook can be demonstrated in skidding logs using winch as it has been demonstrated in pulling a object to the Jeep.

AFTER USING THE WINCH: When the winch demonstration has been completed, release clutch and pull cable off the drum. Inspect the condition of the cable as this is done. Engage clutch and wind the cable on the drum evenly. Giving cable a coating of black oil will help keep it in good condition.

Caution: Use care in demonstrating the winch.

Keep the cable free of kinks, and replace if it frays.

THE MOLDBOARD PLOWS

Adjusting the Plows

1. Assemble plow, following accompanying instructions.
2. By using paint remover, remove all paint from moldboards, shares, landsides, rolling coulters, and jointers.
3. Lubricate rolling coulters, rolling landsides, and depth wheel.
4. Check all bolts to see that they are properly tightened.
5. Adjust rolling couler as follows:

- (a) The average setting of the rolling couler is 1-1/4 inches above the nearest point of the share.
 - (b) The couler stem should be turned so that when the couler blade is running parallel with the landside, it will be approximately 3/4 inches to the left of the landside. When this adjustment has been set, tighten the eye bolt that holds the couler stem.
6. Adjust jointers so that the point of the jointer is just touching the couler blade and the upper edge of the straight side of the jointer is about 3/8 inch to 1/2 inch away from the couler blade. The depth the jointer should run will vary from 3/4 inch to 2 inches into the furrow slice. Care should be taken to operate only deep enough to cover all trash.
 7. Check the adjustment of the cross shaft. The cross shaft of the plow has a positive relationship to the left beam of the plow. This adjustment is from the shoulder of the cross shaft (against which the ball of the lower link rests) to the beam. It should measure 3-3/4 inches on a 14 inch double bottom plow, 7-3/4 inches on a 12-inch double bottom plow, and 9-1/4 inches on a 16-inch single bottom plow.
 8. Adjust the depth wheel as follows:
 - (a) With the plow resting level on its shares and rolling landside, the depth wheel should be loosened and adjusted with a 4-inch block between the tire and the floor so that the adjusting point will be above the floor.
 - (b) When this position has been set, care should be taken to see that the "U" bolts are properly tightened, and if the wheel is not parallel with the beams of the plow some thin shimming should be done on the depth wheel bracket to give it this proper alignment. Depth wheel tire inflation pressure must be 35 pounds.
 9. Adjust the rolling landside as follows: Loosen the large nut that holds the small quadrant on the arm of the rolling landside so that, with a 1/2 inch board under the heel of the landside, the rim of the rolling landside will be resting on the floor. In other words, the lowest point of the rim of the rolling landside will be 1/2 inch below the bottom of the landside.

ATTACHING THE PLOW TO THE MONROE LIFT ON THE JEEP

Note: See section on attaching Equipment to Monroe Lift on Jeep.

SINGLE BOTTOM MOLDBOARD PLOW DEMONSTRATION

To demonstrate the moldboard plow, first lay out your field. Then adjust

the plow and throw up a back furrow in the first plow operation plot. After you have plowed down and back to complete the back furrow bring to the attention of the crowd the fact that you have continued your plowing after your back furrow without any further adjustment of the plow. Also, the back furrow will be practically level with the balance of the plowed area. That is, there will be no high ridge on the back furrow. After you've made several rounds around the back furrow, then you should start plowing turning to the left around the unplowed area between the back furrow and the first plot of plowed ground. Plow around this plot until all of the land has been turned over. You will finish up with a dead furrow.

TO FINISH THE DEAD FURROW

No further adjustments will be needed in the plow to finish the dead furrow. (See Fig. I, Page 32). The operator should drive in normal plowing position with the right wheel of the Jeep riding against the furrow wall. Do not allow the left wheel of the Jeep to drop into the furrow on the left side until this area has been reduced to the point where both wheels will ride in the bottom of the furrows from one end of the field to the other. (See Fig. II, Page 32). When the plot has been narrowed to this point the operator should drive with the left wheel against the furrow wall DISREGARDING the position of the right wheel. This will reduce the unplowed strip to a uniform strip from one end of the field to the other. (See Fig. IIIA & IIIB, Page 32). On the last trip across drive with the RIGHT WHEEL against the furrow wall the same as in normal plowing, and the dead furrow will be completed. Point out to the observers the action of the depth wheel on the plow, how it is riding on the plowed land and holding the plow at proper operating depth, not allowing the dead furrow to be plowed any deeper than the balance of the field. Also point out that all of the various operations of the plow were carried on without any adjustments on the part of the operator other than the simple raising and lowering of the hydraulic lift.

It should also be emphasized that all these plowing operations have been carried on without any complicated adjustments, that any ten year old boy could plow the plot as well as a man. It is very often a good stunt to choose a youngster from the crowd, have him ride with your operator to insure careful operation, and have him repeat the same plowing demonstration. This impresses on the public the ease of handling the Jeep as a plowing vehicle.

DOUBLE BOTTOM MOLDBOARD PLOW DEMONSTRATION

A new plowing experience in faster, better plowing is found in the combination of the Jeep and the Double Bottom Moldboard Plow.



Fig. 2



Fig. 3B



Fig. 1



Fig. 3A

The Jeep, with its 4-wheel drive traction and equipped with the Monroe Hydraulic Lift and the double bottom 12-inch plow, makes an efficient plowing unit for any size field under normal soil conditions.

After opening up the headland furrows, ONE adjustment for leveling is all that is required. After the adjustment is made the plowing job can be completed by any competent operator.

PROPER ADJUSTMENTS. (before demonstration)

Rolling coulters properly set reduce the draft and increase the quality of plowing. For average soil conditions the edge of the coulter blade should be set at 1-1/4 inches above the nearest point of the plow share and 1/2 inch to 3/4 inch from the edge of the coulter blade to the edge of the plow landside. These dimensions will vary slightly in clay or trashy soils, or soils in which scouring is difficult. Raising the coulter one extra inch will allow the plow to penetrate more readily.

See that the coulters are not set too near the landside of the plow or the furrow will not be smooth, and loose dirt will fall into the furrow bottom. Coulters set too wide will cause a decided step on the furrow wall.

To adjust the coulters, loosen the eye bolts that fasten the coulter cranks to the plow beams. Then adjust the coulters to the correct position as outlined above.

The jointers should be set deep enough to turn all trash and lay the weeds over into the furrow slice. The depth, for average soil, should be 1/2 inch. This may vary slightly with different soil conditions.

The point of the jointers should be set 1/16 inch away from the coulter blades, and the heel or top should be 1/2 inch from the edge of the coulter blades. To adjust the jointer, loosen the set screw on jointer palm.

To set the jointer at the desired angle, loosen the two plow bolts that hold the jointer blade to the jointer palm, then adjust to the correct specifications as given above.

ATTACHING THE DOUBLE BOTTOM PLOW TO THE MONROE HYDRAULIC LIFT.

1. Back the Jeep up to the plow, center the Jeep with the plow "A" frame.
2. Push the hydraulic control lever forward. Turn out down pressure screw on the valve so that no weight is on the lift arms.

3. Attach the solid lift arm (right side) to the plow cross shaft.
4. Attach the crank lift arm to the plow cross shaft using the leveling crank to align the ball joints with the cross shaft of the plow.
5. Attach the top link to the plow "A" frame.
6. Attach the top link to the Jeep. If the top link is too long, raise the plow with the control lever so the top link hole aligns with the lift housing.
7. See that all lynchpins are installed and locked securely.

LEVELING THE PLOW

If the plow is adjusted correctly, the beams and cross shaft will be running parallel with the ground. The furrow bottom will be smooth and level. The furrow wall will be clean cut. The furrow slices turned over will be uniform in size, and the surface trash and tall vegetation will be turned over and under.

To adjust for uniform depth and for level furrows, rotate the leveler on the hydraulic lift counterclockwise to raise the plow and clockwise to lower the arm. Raise or lower until the cross arm is level.

ADJUSTMENT OF THE FURROW WHEEL

The furrow wheel carries the side draft of the plow and not the weight of the plow. Adjust the furrow wheel to ride very lightly on, or just clear of, the furrow bottom. If the wheel is too low, the plow will not enter the ground at the start of each furrow. If the wheel is too high the furrow wall will tear out in the loose soil.

To adjust, loosen the two nuts that hold the furrow wheel bracket to the landside of the rear base. Then raise or lower to the correct position with the adjusting bolt located on the bottom edge of the furrow wheel bracket.

ADJUSTMENT OF THE DEPTH WHEEL

When the plow is used with a Jeep a depth wheel is used to control the MAXIMUM plowing depth. Plowing to lesser depths for short periods of time may be done by lifting the plow with the hydraulic lift. The hub assembly that mounts the Jeep spare tire can be used as the depth wheel, or any standard 5 bolt hole wheel with a 5-1/2 inch bolt circle may be used in its place.

To adjust to required depth, loosen the two U bolt nuts which fasten the hub assembly to the main beam. Slide it up or down on the beam until the

correct setting is obtained.

CORRECT FURROW WIDTH ADJUSTMENT

The front plow bottom should always cut the same width as the rear bottom. To check the width of cut proceed as follows:

1. Make sure that the front wheels of the Jeep are against the furrow wall.
2. Stop the Jeep on level ground.
3. See that both coulters are the same distance away from the plow land-side. This dimension should be from 1/2 inch to 3/4 inch.
4. Measure the width of cut from the edge of front coulter to the furrow wall. If the width of cut is incorrect, cross shaft of plow must be adjusted as described below.

CORRECT CROSS SHAFT ADJUSTMENT

Measure the distance from the left edge of the left frame to the shoulder of the cross shaft. This dimension should be 3-3/4 inches for double bottom 14-inch plows. To set this dimension loosen the four nuts on the two U-bolts which secure the cross shaft to the plow beams. Then slide the cross shaft to the required dimension. Tighten all nuts evenly.

If the width of the cut is still incorrect after setting the cross shaft, loosen the bolts and rotate the cross shaft as follows:

Mark the cross shaft with a pencil and extend the pencil mark up along the plow beam. To increase the cut rotate the R.H. side of the crank forward. To decrease the cut rotate crank backward. One-eighth of an inch rotation of the shaft forward or backward increases or decreases width of cut one inch. After changing the rotation of the cross shaft recheck with width setting described above and correct if necessary. Tighten all bolts securely.

UPPER LINK ADJUSTMENT

The grooves or notches on the top of the upper link should be in line with each other for normal use.

This produces maximum suction of the plow. The link may be lengthened to reduce the suction if it is so desired. However, care should be exercised when lengthening the link since a small adjustment makes a big difference in the amount of suction. The link should be kept at its longest, most

efficient length, thereby reducing wear on the shares.

Note: It is usually necessary to readjust the length of the top link after installing new shares.

If the upper link is too long, poor suction will result and difficulty will be encountered in obtaining good penetration at the start of the furrow. It may also cause the furrow wheel to landside to ride hard against the furrow floor. This will make penetration poor and difficult to maintain.

PLOW SHARES

The shares are the most important cutting parts of the plow. To do a good job of plowing, they must be kept sharp at all times. Dull or worn shares cause incomplete cutting of soil roots and result in poor penetration. Always have extra plow shares on hand to replace those that are dull or worn out.

The amount of suction on the plow share is measured by placing a ruler or straight edge along the bottom edge of the landside of the share point. The distance from the straight edge to the curve center of the share sole should measure from 1/8 inch to 3/16 inch on all Jeep plow shares. point.

When shares become flat and no hook is shown on the point, replace or sharpen. Do not attempt to correct plow by shortening the top link on the hydraulic lift and tilting the plow bottoms. This will only gouge the furrow bottom and increase the draft of the plow.

After installing new shares it is usually necessary to readjust the length of the top link. (See Upper Link Adjustment)

BASES

When new bases are installed or changed, the following procedure of installing the mounting bolts is recommended:

- (a) Install the 3 attaching bolts without tightening them. Then -
- (b) Completely tighten the bolts in the following order:
1st the lower bolt; 2nd the center bolt; and last, the top bolt.

PLOW CONTROL WHEEL ADJUSTMENT

The Plow Control Wheel controls suction and is available as an accessory for double bottom plows.

With the plow setting on a level surface, place a 1/2-inch thick board under the forward share point. This will tilt the plow. Loosen the U-bolt. Move the Plow Control Wheel in its keyed mount until the wheel, while in its

vertical position, touches the floor. Tighten the U-bolt securely. The wheel fork is hinged so that the wheel may be swung up clear of the ground when plowing a back furrow.

THE DOUBLE DISC PLOW

Demonstration of the disc plow will not demand the time nor the technique required for the moldboard plow because, unlike moldboard plows, the disc plow is not designed to do "high quality" or picture-type plowing. As a rule, farmers who buy disc plows do so because their farms are not suitable for moldboard plow operation. There are many farmers in every territory who need disc plows and who are interested in their operation, so be sure to include a demonstration of this implement.

ADJUSTING THE PLOW

The adjustment of the disc plow are much simpler than those of the moldboard plow. The two points to be remembered are:

1. Always have your disc plow operating level both crosswise and lengthwise. This is necessary in order to have both discs cutting the same depth. The linear adjustment, when once set with the top link, very seldom needs any changing. The crosswise adjustment should be watched very carefully. It is controlled with the leveling box on the hydraulic lift. When operating on hillsides or uneven terrain it may be necessary to change the leveling box several times during the demonstration. In order to have the disc plow operate to full depth it is imperative that headland furrow be used at the end of the field the same as with the moldboard plow. For the disc plow this headland furrow should be about 5 inches deep.
2. The rear wheel of the plow that follows the rear disc acts much as a rudder on a boat. This wheel should be turned either to the right or to the left to eliminate any tendency of the Jeep to ram the plow away from the furrow or into the earth.

ATTACHING THE DISC PLOW TO MONROE LIFT ON THE JEEP.

Note: See section on "Attaching Equipment to the Monroe Hydraulic Lift on the Willys Jeep"

THE DEMONSTRATION

Demonstration of the disc plow should include the striking out of a furrow similar to the strike-out furrow made with the moldboard plow, and the actual plowing of a few furrows. This should be performed after your moldboard plow demonstration, thus enabling your audience to compare the work of the two plows and to witness first the quality plowing that is

possible only with the moldboard plow.

Most land in which disc plows are used continuously is either land that is adapted for contour farming or fields that are not plowed in strips but rather in a circular manner. Therefore, your demonstration will be more impressive if set up to plow around the plot rather than attempt to plow in strips. In other words, plow completely around, on all sides, whether the plot is square or triangular. To swing the corners on this type of plowing the operator should drive through and give one backing operation to align himself with the other side of the plot.

Another demonstration that is quite impressive with the disc plow is that of building a terrace. The same method of operation applies as with the moldboard plow. The disc plow, is suitable for fields strewn with stones or new ground, since it will roll over stones and roots, stumps and snags, break up the soil, and develop your terrace where a moldboard plow would fail. This demonstration should not be attempted unless you are in strictly disc-plow territory.

THE BUSH AND BOG HARROW

PROPER ADJUSTMENTS

1. **TOP LINK OF THE LIFT.** Adjust the top link of the lift so that the vertical members of the bush and bog harrow frame are straight up and down when the harrow is resting on level ground. This will assure best penetration for operations.
2. **LEVELING RODS OF THE HARROW.** Adjustment of the two disc gangs to produce a level field is made by moving the nuts in or out on the leveling rods. The same method is used to adjust the gangs for any other desired angle for special types of work.
3. **CUTTING ANGLE.** Adjustment of the cutting angle is made to increase or decrease depth of penetration. The picture shows the long link rod (7) in the last hole of the drawbar. In this position the two gangs of the harrow are in line and have no cutting angle. To increase the cutting angle, bring the outer ends of the gang forward and install the link rods (7) in the pair of holes that give the desired penetration. **ALWAYS USE EVENLY PAIRED HOLES.**
4. **DOWN PRESSURE OF THE LIFT.** Down pressure of the Monroe Lift is used to control the working weight of the implement. Turn the finger control clockwise until it stops against the top of the valve body. This will give a down pressure of approximately 500 pounds. To reduce

the amount of pressure, back off on the finger control valve. One half turn of the valve will change the pressure by approximately 85 pounds.

IMPORTANT: THE DOWN PRESSURE OF THE LIFT AND THE CUTTING ANGLE OF THE HARROW TOGETHER REGULATE THE PENETRATION OF THE HARROW. ALWAYS USE MAXIMUM CUTTING ANGLE ON THE HARROW AND MINIMUM DOWN PRESSURE OF THE LIFT TO GET DESIRED PENETRATION.

ATTACHING THE HARROW TO THE MONROE LIFT ON THE JEEP

Note: See demonstration section on attaching equipment to Monroe Lift on Jeep.

IMPORTANT: For special operations such as building waterways and ditches or any operation that requires the Harrow to be held rigid, stabilizer bar should be used.

DEMONSTRATION

During any demonstration the operation of the bush and bog harrow will demand a lot of attention. Like the field and pasture cultivator, it fits into several different types of operations. The demonstration of the bush and bog harrow thus can be broken down in much the same manner as that of the field and pasture cultivator.

Use it, for example, to cut and cultivate turf sods for emergency planting. In this operation you can cut the same land over two or three times. In order to have a level operation of this implement the operator should lap his work 1/2 the width of the harrow; that is, each time you go across the field, the harrow should be cutting 1/2 new soil. If you do not lap your work 1/2 you will develop ridges in the field.

SHOW THE LIFT DOWN PRESSURE

The bush and bog harrow is an excellent implement with which to demonstrate the down pressure of the Monroe Lift. Going through the field for the first cut, it is well to call attention to the fact that you are operating without down pressure. The harrow will be cutting very lightly, the way it would cut with most tractors. On the next trip across the field the operator should adjust the down pressure screw, explaining to his audience that he is actually increasing the weight of the implement by approximately 500 pounds. This will greatly increase the cutting capacity of the harrow so that the audience can readily see the difference between the implement operating with, and without, the down pressure. You should emphasize the fact that although this implement weighs only 525 pounds the working weight of the implement, by using the down pressure on the Monroe

Hydraulic Lift, has been increased to more than 1,000 pounds. The Jeep is a 4-wheel drive vehicle, and it should be pointed out that as you add down pressure to the implement you are actually lifting some weight from the rear of the Jeep and transferring it to two other points. Part of the weight is transferred to the implement to increase the implement weight, and the balance of it is transferred to the front of the Jeep resulting in an increase of traction.

This change of weight distribution is very advantageous in the Jeep. The normal weight distribution is such that when operating under load you have less weight distributed on the front axle than on the rear. By using down pressure you bring these two weights into balance and get more nearly a 50-50 distribution of weight on the two axles of the Jeep. It should be stressed here that operating a 2-wheel drive tractor and attempting to exert down pressure on the attached implement in this way would result in the tendency to lift the rear wheels of the tractor from the ground. Therefore, the Jeep is the outstanding unit on which down-pressure can be sold because the 4-wheel drive compensates for the normal loss of traction.

Other points to bring out in your bush and bog harrow demonstration are:

1. Using the bush and bog harrow for breaking ground instead of using a plow. This demonstration should be carried on in land that has never been plowed and should be worked both lengthwise and crosswise until a seed bed has been developed. Unless you have extremely hard soil conditions you will be able to develop a very satisfactory seed bed in about three operations providing you lap 1/2 on each operation. That would be working the operation once lengthwise, once crosswise, and then another time lengthwise.
2. Using the bush and bog harrow in ground that has been plowed but that has been left idle for a time and become packed hard and solid. As a rule, the bush and bog harrow will loosen up this type of soil for seed bed in one operation. This can be shown on ground that has been previously plowed.
3. Using the bush and bog harrow for hilling operations and wide row crops. By adjusting the outer ends of the bush and bog harrow upward so that the outer blades are above the inner blades, it is possible to do considerable hilling in orchards, vineyards, etc. This is simply a matter of pulling the soil from the center of the row and depositing it on either side at the base of the plants or trees. In arid country, where irrigation is used, this type of hilling will form irrigation canals through orchards or vineyards.

4. Using the bush and bog harrow in territory where you normally plant in hills or build up seed beds. In this position the bush and bog harrow can be used to throw up planting beds. This can be demonstrated very successfully in ground that has been previously plowed during the demonstration.
5. The last demonstration of the bush and bog harrow can be quite spectacular. Lift the outer ends of the gangs as much as possible through adjustment of the top adjustment rods. Starting on a level piece of ground which you have just finished plowing, drive the Jeep back and forth and very rapidly develop a drainage ditch. With the outer ends of the harrow raised it is possible to dig the dirt from the center of the ditch and deposit it on the banks and thus develop very quickly a drainage ditch from 24 to 30 inches deep. This ditch should not be over 100 to 150 feet long, because it is much easier to work the dirt out of the ditch and onto the banks than to close the ditch up. You can use this drainage ditch in a later demonstration of the terracing blade.

Note: It is good policy to always operate your bush and bog harrow with stabilizer bars.

THE SPRING TOOTH HARROW

PROPER ADJUSTMENTS

There are two rack adjustments which raise or lower the teeth in five positions. Adjust to depth required. All teeth are easily removed and replaced.

ATTACHING SPRING TOOTH HARROW TO THE MONROE LIFT ON THE JEEP

NOTE: See section on "Attaching Equipment to the Monroe Hydraulic Lift to the Willys Jeep."

THE DEMONSTRATION (This demonstration should follow the plowing and Harrowing Demonstration)

The demonstration of the spring tooth harrow should be carried on in ground that has been previously plowed and harrowed during the demonstration. The main points that should be brought out are:

1. This implement does a good job of covering the ground
2. Does a fine job of eradicating grasses and weeds

3. Prepares seed beds and is generally useful in all soil conditions
4. Often used for first cultivation of listed corn
5. Gives deep penetration
6. Tilt adjustment gives flexible operation on hillside and in contoured terrain
7. Gives a leveling action to your soil and has a tendency to work the large lumps to the top of the ground so that they can be crushed and pulverized
8. Simply raise the hydraulic lift to clear all the debris which loads up on the harrow

THE TANDEM DISC HARROW

The second most popular tool on the American Farm is the disc harrow. This tool should be covered quite thoroughly during the demonstration. The Newgren tandem disc harrow is a fixed angle harrow, and with it you can emphasize the levelness of the job of harrowing that can be performed.

PROPER ADJUSTMENTS

Point out that by adjustment of the top link into a fully extended position the rear gangs will do more work than the front gangs and the implement can be used to "pull in" the sides of a dirt furrow and make them level. By shortening the top link and putting the front gangs deeper into the ground than the rear gangs the harrow will have a tendency to work the ground from the center out and can be used for leveling back furrows.

ATTACHING THE TANDEM DISC HARROW TO THE MONROE LIFT ON THE JEEP

NOTE: See section on "Attaching Equipment to the Monroe Hydraulic Lift on the Willys Jeep."

THE DEMONSTRATION

The two points that opposition will use against the fixed angle harrow have been covered, and you have demonstrated how they are overcome. The action of down pressure should be shown as well as the tilting adjustment

so that the harrow will operate level in all soil conditions.

You should also demonstrate the action of this harrow in sod or turf conditions to show the real difference between a tandem disc harrow and the bush and bog harrow.

LIFT-TYPE MOWER

ATTACHING THE LIFT-TYPE MOWER TO THE MONROE LIFT ON A JEEP

NOTE: See section on "Attaching Equipment to the power take-off on the Jeep" and "Attaching Equipment to the Monroe Hydraulic Lift on the Willys Jeep," with the following exceptions.

1. The safety release should be set so that about 500 pounds pull at the end of the bar will trip it.
2. The spring that controls the float of the inner shoe should be adjusted so that the inner shoe rests on the ground with approximately 50 pounds of weight.
3. The tilting device of the Monroe Hydraulic Lift should be set so that the mower cross bar is parallel with the ground.
4. All bolts and nuts should be properly tightened and the mower bar should be checked so that the outer end of the bar is leading the inner end by approximately 3 inches.

PROPER ADJUSTMENTS

The following adjustments must be made before the mower is put into operation.

1. The mower main frame must be parallel with axles of tractor and main lift bar must be straight back from the Jeep. If these conditions do not exist then adjust left stabilizing chain by shortening or lengthening. If in doing this the left end of mower raises and is still not parallel, then adjust right draw arm with crank or plate adjustment as provided on your Jeep.
2. CUTTER BAR ALIGNMENT. This is of vital importance. When the cutter bar is in proper alignment, the center of pitman and center of knife must be in line. Check this alignment with a length of string. If not perfectly aligned then loosen three bolts that

fasten bar to Inner Shoe. Loosen thrust stud so that shoe wedge which holds heel of cutter bar is free. Now manually move cutter backward or forward as necessary, insert shoe wedge and cutter bar firmly. Re-tighten three hold-down bolts. **THIS ADJUSTMENT IS VERY IMPORTANT TO ELIMINATE UNNECESSARY WEAR AND BREAKAGE.** Due to the way this mower is designed there should be no lead on the cutter bar. Bend end of shoe wedge to further tighten wedge.

3. Raise mower again to top position and install universal drive to power take-off and lower mower to cutting position.
4. Check all nuts, bolts, screws, studs, and cotter keys.
5. Place a few drops of oil on all moving parts. The film of oil on the new metal will prolong the life of the mower and give better operation and satisfactory service.
6. There are five Alemite grease fittings on the mower. Use bearing grease in each of these fittings.
7. If safety release operates too easily, tighten safety adjusting screw about a quarter turn at a time until proper setting is obtained.
8. If slip clutch ratchet (located just in front of main drive pulley) operates too freely, increase tension on slip clutch spring by drawing up on nut.
9. To adjust belt loosen two bolts on center or main bearing housing and slide bearing either way. Belt is tight enough when you can move it up and down with your fingers about one inch.
10. Tighten main spring by drawing up on hookbolt until outside shoe presses onto ground with about an estimated 10 to 15 pounds pressure. If spring is drawn too tight it will tend to arch bar.
11. To adjust knife register so that knife will be centered with the guard in dead position loosen two bolts in flywheel bearing housing and shift in either direction as required.
12. If excessive wear appears on the knife head caps and clips it is due to either excessive speed or guards being out of alignment. The Newton Mower is now ready for operation.

THE DEMONSTRATION

The area which you have selected for mowing should be large enough to

allow approximately 15 minutes mowing time for completion. The mower should be operated so that the corners are all square. In order to have these square corners one backing operation will be required at each corner. Care should be taken by the operator to have the sickle bar in motion before it enters the hay. This will give clean cutting from the edge of the hay plot.

POINTS TO BE COVERED

During the course of the mowing operation you should demonstrate hitting a blind obstruction. If the field in which you are operating is clear from obstructions, it is a good idea to go into the hay field before you start to mow and either bury a post or drive a substantial 2 x 4 stake at least 20 inches into the ground. Have the top of the stake project about 10 inches above the ground. This stake will be substantial enough to trip the bar when struck. It is well to place the obstruction in a spot in your field where you think most of the observers will be standing. As soon as the obstruction has been hit the operator should pause, allowing the people witnessing the demonstration to see the action of the mower hitting an obstruction. He should put the mower back into operation by simply backing the unit. This will automatically re-set the break-away.

In completing your demonstration the mower should be put into transport position, taken to the side, lowered, and detached, since one of the big selling features of the mower is the fact that it can be attached and detached in a very few minutes even though it is a fully mounted unit.

SAFETY PRECAUTIONS

Extreme precaution must be taken during all mowing operations. More people are injured on farms during the year by mowing machines than by any other single farm implement. A few precautions are:

1. Never operate the mower when anyone is standing ahead of the cutter bar.
2. Never attempt to unclog the cutter bar with the mower running.
3. Never attempt to make any adjustments on the mower with the mower running.
4. Never attempt to operate the mower at speeds in excess of the 3rd notch on the governor, second gear of the transmission, and low range in the transfer case; or, the 4th notch on the governor, low speed of the transmission, and low range of the transfer case.

5. Never leave the mower unattended in an idling position.
6. Never leave the mower, with the power take-off in gear, even though your engine is shut off.
7. Never let an inexperienced man operate a mower during a demonstration.

THE HYDRO-SCOOP AND ATTACHMENTS

The hydro-scoop should be demonstrated with all its attachments, but with the most emphasis on the implement in its standard form.

PROPER ADJUSTMENTS

(Instructions available at later date)

ATTACHING THE HYDRO-SCOOP TO THE MONROE LIFT ON THE WILLYS JEEP.

Note: See section on "Attaching Equipment to the Monroe Hydraulic Lift on the Willys Jeep" with the following exceptions:

The hydro-scoop should be attached to the regular Jeep you are using for your demonstration, and the top link should be adjusted so that when the scoop is lowered onto a level surface the heel of the scoop will be approximately 1 inch above the surface. This will give the scoop the proper penetration and will reduce its tendency to gouge. Stabilizer bars are used to give precision operation.

THE DEMONSTRATION

There are several demonstrations that will interest a wide variety of spectators:

1. Using the scoop to move dirt, to fill up holes and washouts such as terrace breakouts, wet mud holes around the barn lot, and wet spots in driveways, etc.
2. Using the scoop to move dirt to establish a grade, such as building a new drive way, leveling off or grading up for a new building being constructed.
3. Showing contractors how the scoop can do a complete job of digging basements, water ponds, and drainage silos.

4. The landscape gardener is much interested in a demonstration showing the movement of dirt to level the lawn. Also a landscape gardener could use the scoop for the stripping of old sod where he wishes to replace a complete lawn.
5. Using the scoop to dig small waterways and slopes by tilting the scoop with the tilting device on the Monroe Hydraulic Lift.

In some soil conditions it may be necessary for you to first plow up the ground with a ripper, a field and pasture cultivator, or even with a plow, before the scoop can successfully move the dirt.

REVERSING FIXTURE AND LEVELER BLADE

From the operation of the standard scoop we should next move on to the scoop with the reversible fixtures attached. There are three important points you should make when using the scoop with the reversible fixtures:

ADJUSTING THE HYDRO-SCOOP FOR BACK-UP OPERATION (Instructions available at later date)

THE DEMONSTRATION

1. Show how it is possible to back into stock piles and load the scoop where it would be impossible to drive the Jeep over the pile.
2. Show how it is possible to load the scoop and re-pile the material at a more convenient place, such as moving stone and gravel from stock piles to cement mixers, etc.
3. Show how it is possible, with the scoop in reverse position, to back into a corner and cut the corner down square for the benefit of people who are concerned with digging basements, drainage siloes and fruit cellars.
4. Show how it is possible to use the scoop as a back filling machine. As we all know, after foundations have been laid and the forms removed there is a considerable amount of dirt lying about which has to be replaced between the foundation and the bank of the excavation. It is possible with the scoop in reverse position to fill the scoop, back up to the wall, dump the load, and fill this position without any hand work whatsoever.
5. Show how it is possible, now that your back filling operations have been completed, to level down with the leveling blade all surfaces where piles of dirt have accumulated during the preceding demon-

strations. This will be of interest to everyone attending, because the operations you are performing with the leveling blade are operations that normally require hand work.

A FEW PRECAUTIONS

1. When using the scoop in the reverse position and when using the leveling blade, be sure that you have stabilizer bars on the Jeep.
2. If you hit an obstruction with the cutting edge of your blade, do not back up and ram into it, but lift the scoop and avoid the obstruction.
3. Never operate the Jeep, when the scoop is loaded, in speeds in excess of 15 m.p.h.

THE POST HOLE DIGGER

PROPER ADJUSTMENTS

Check all attachments against the assembly diagram to insure correct assembly before operating the digger, and make sure the universal joints and the top cap of the auger are greased. Fill the housing with 5 pounds of 140 SAE Gear Oil.

ATTACHMENT TO THE MONROE LIFT ON THE JEEP

For a good demonstration of the post hole digger you should show the actual attaching of the digger to the Jeep. Since the attachment is simple, the audience will be greatly impressed by seeing a conventional Jeep, equipped with the Monroe Hydraulic Lift and a power take-off, change from strictly a farm tractor to a hole boring machine. Step by step the attachment of the digger to the Jeep is as follows:

1. Allow the digger to ride on the ground with the tip of auger pointing toward the Jeep.
2. Attach the extension arms to the lift arms of the Jeep.
3. Back the Jeep to the digger and attach the extension arms to the digger assembly.
4. Get back into the Jeep and drive it forward, bringing the digger to approximately a 45 degree angle to the ground.
5. At this point attach the power take-off shaft, get back into the Jeep, and drive it forward until the digger is standing straight

up and down.

6. Now attach the top link. The top link was attached to the main housing of the digger but was riding directly opposite the auger. After the digger has been brought to a vertical position you simply swing the top link over and attach it to the lift housing.
7. Raise the digger so that the top of the auger clears the ground. Then swing the digger from right to left and attach your stab-bars. (See section on "Operation of Monroe Hydraulic Lift" for instructions on use of lift.)
8. Use stablizer bars where required by the equipment manufacturer.

HOW TO OPERATE THE UNIVERSAL 'JEEP' WHILE DRILLING

1. Post Hole Digger is operated from operator's seat of 'Jeep'.
2. P. T. O. lever engaged.
3. Transmission in 1st.
4. Transfer case shift lever in neutral.
5. Engine speed set at 5 notches on governor or not over 500 rpm of the power take-off shaft.

THE DEMONSTRATION

1. Show how the auger can be adjusted for operating on hillsides. By turning the leveling device on the Monroe Hydraulic Lift you can swing the auger to either the right or left through approximately 15 degrees. Also, by adjustment of the top link you can swing the auger forward or backward through another 15 degrees. This universal action gives the operator an opportunity to drill holes through the 30 degrees pendulum adjustment of the digger.
2. The operator should drill several holes in conditions which are obstacle-free and where the digger will make a good showing.
3. The operator should show the effect of down pressure on the auger and how it can greatly increase the speed of digging and the penetration of the digger in hard ground.
4. The last demonstration should show the exclusive reversing

feature of the Jeep in connection with the digger. When an obstruction is hit, any other ordinary digger-mounted unit would be stopped, the digger would have to be freed by hand, and the obstruction cleared by manual labor. But with the Jeep equipped with the Monroe Hydraulic Lift and Newgren Post Hole Digger the operator can simply reverse the direction of the power take-off by shifting the transmission of the Jeep into reverse and the digger will unscrew itself from the hidden obstruction without any extra effort on the part of the operator.

If you are working in soil where obstructions cannot be found for this demonstration here are several suggestions:

1. Dig close to an old tree stump where there will be a lot of large roots under the soil.
2. Bury a piece of 2 x 4 or a piece of fence post in a horizontal position from 15 to 20 inches below the surface of the ground.
3. Drive a piece of pipe (1-inch or large, about 4-feet long) into the ground at approximately a 45-degree angle, and spot the digger so that it will hit the pipe at approximately the middle point. This will be a matter of starting the hole directly over the pipe and 20-inches from the point at which the pipe entered the ground.

To get maximum depth when operating the digger it must be completely immersed until the supporting arms on the gear box are resting on the level of the ground.

PRECAUTIONS

1. Never operate the post hole digger except in low speed or in reverse gear of the Jeep transmission. Do not exceed 500 r.p.m. at take-off shaft.
2. Never operate the post hole digger faster than five notches on the governor.
3. Always be sure that your post hole digger is sitting plum with the ground before attempting to dig your hole, and be sure that the emergency brake on the Jeep is set.

THE TERRACING BLADE

PROPER ADJUSTMENTS

(Instructions available at later date)

ATTACHING THE TERRACING BLADE TO THE MONROE LIFT ON THE JEEP

NOTE: See section on "Attaching Equipment to the Monroe Hydraulic Lift on the Willys Jeep".

THE DEMONSTRATION

The terracing blade, after being attached to the Jeep, should be equipped with stabilizer bars. In making your several demonstrations with the terracing blade you should take advantage of the results of your preceding demonstrations by working in the ground already covered by the bush and bog and disc harrow, the post hole digger, and perhaps the 6 cubic-foot hydro-scoop.

1. In your first demonstration, the terracing blade should be set at an angle of about 30 degrees and used to smooth up the side walls of the ditch that was made with the bush and bog harrow. After this demonstration the blade should be set in a level position at about a 30 degree angle to the Jeep and used to roll the dirt into the ditch. It is suggested that you roll in one side, the terracing blade driving the long way of the ditch.
2. In your second demonstration use the blade for building a terrace. To get the best results work in ground previously worked with the plow and disc harrow so that it is in a reasonable mellow condition. Setting the blade at an angle of about 45 degrees and taking a shallow cut, start rolling the dirt up onto the terrace in a manner similar to that used in throwing up a back furrow with a moldboard plow. Make several trips across the terrace to throw up the required amount of dirt. Build your terrace to a height of 15 to 20 inches, making sure that the terrace bank is at least 8 feet in width. If you can build it to a width of 10 or 12 feet, all the better. On one side of the terrace the operator should throw the soil away from the terrace in one shallow cut in order to make a waterway. At this point the operator should put the terracing blade in a square position behind the Jeep so that the blade is at a 90 degree angle to the direction of the Jeep's travel. Use a shallow cut and tip the top of the blade well forward to level the top of the terrace. This will serve to settle the terrace and make it firm, giving a much smoother picture of your completed terrace. In doing this, you will also be showing the action of the terracing blade in being used as a land leveler.

THE HYDRO-GRADER AND TERRACER

PROPER ADJUSTMENTS

The adjustment of the blade is positive and very rigid. Instead of the gears and hand wheels that are common to the pull type of grader, the blade and circle assembly of the Hydro-Grader are fixed to the frame, and the blade is raised and lowered by the Monroe Hydraulic Lift.

ATTACHING THE HYDRO-GRADER TO THE MONROE LIFT ON A JEEP

NOTE: See section on "Attaching Equipment to the Monroe Hydraulic Lift on the Willys Jeep."

THE DEMONSTRATION

No demonstration in a rural community is complete without showing the road grader and terracer. This implement is attached to the Monroe Hydraulic Lift, and the only action the lift has in the operation of this blade is to raise and lower it. The operator should go through several types of demonstrations, including:

1. Using the implement as a leveling blade for open field work. This is important in irrigated territory.
2. Showing how the blade can be used to build a terrace. Use terrace previously built with the terracing blade.
3. Using the blade to build a short piece of road, similar to farm lanes which farmers use. The method of constructing a road or farm lane is very similar to the method of starting a terrace:

Strike out the road by using shallow cuts on either side of the roadway and work the soil into the crown. Care should be taken to avoid digging the berms too deep; as the road or lane is used the farmer will have to pull soil from the berms to build up the crown.

This is a demonstration that requires some practice, ahead of time, on the part of the operator.

THE STANDARD BODY EXTENSION

Although the Koenig body extension does not require an elaborate demonstration you can easily give your public a clear picture of its utility by placing a Jeep on the side-lines with an attached body extension fully

loaded with bulky material such as sacks of feed or rolls of barbed wire. In this way you will be sure to impress the public with the 7 cubic feet of additional loading capacity that the extension gives the Jeep.

ATTACHING THE BODY EXTENSION ON A JEEP

NO HOLES TO DRILL. No cutting or trimming is required.

1. Remove the tail gate from the Jeep. Attach the tail gate to the rear of the body extension.
2. The body extension attaches to the body of the Jeep by using the tail gate hinges. Use two bolts to fasten the top of the body extension to the Jeep body.
3. Fasten the steel angle braces to the drawbar angle on the Jeep.

JEEP FIRE ENGINE DEMONSTRATION

This demonstration is made after the demonstration of 4-wheel drive, or it can be made a part of the 4-wheel drive demonstration as a sales feature of the Jeep Fire Engine in its ability to go anywhere.

OPERATING INSTRUCTIONS

Once the Fire Engine has been unpacked and re-assembled, the vehicle and the pumping mechanism must be lubricated and prepared for operation. Be sure to check oil, water, and gasoline. When the Jeep Fire Engine is used for demonstration or for fire fighting, be sure to use a good grade of gasoline so the engine will develop ample power and operate at as near normal temperature as possible.

PREPARATION OF UNIT

1. Grease the Jeep chassis and the motor in accordance with the lubrication instructions contained in the manual on Operation and Care.
2. Examine the grease level in the gear box of the fire engine pump by removing the plug located at the side of the gear box beneath the splash guard and fill with regular motor oil (the same as used in the Jeep engine) for the different seasons of the year.
3. Remove the caps of the Zerk fittings located on each side of the pump and fill with one shot of standard chassis grease.

4. Check the packing gland on drive shaft between gear box and pump. If it is loose water will leak from the gland when taking water from a hydrant. Looseness of the gland will also make pump-priming difficult when taking water from a lake or reservoir. The gland should be tightened sufficiently to prevent leaks, but never any tighter. The condition of the gland can be partially determined by removing the pump inlet cap and screen and turning the pump impeller. Always test the pump impeller before operating to be sure that it is not corroded in the pump case, because this will make the pump starting difficult. When tightening the gland, be sure to tighten each adjusting nut an equal amount so that the gland will not be damaged.
5. Be certain that all drain cocks at the bottom of the pump are closed and that the Siamese lever located at the top of the pump, which controls the flow of water to the hoses, is in the off position. This sometimes assists in priming the pump.

PUMP OPERATION

For stationary pump the Jeep Fire Engine is operated with transmission in neutral and the handbrake set. The 4WD should be engaged so that the handbrake applies to all four wheels.

PUMP DEMONSTRATION

Show Jeep Fire Engine pumping from hydrant and throwing water through 2-1/2 inch, 1-1/2 inch and 1 inch booster lines. Use solid stream and fog, and show fog applicator in action.

Pump from well, stream, or pool, but remember that the greater the elevation between stream level and pump, the more difficult it becomes to lift water. At best, the Jeep Fire Engine can draw from a depth of 15 feet.

If the pump is unable to draw water, and the problem cannot be traced to elevation trouble, a thorough examination of pump and hose strainers should be made to ascertain whether or not they are plugged.

HEAT EXCHANGER

In order to keep engine from overheating during long pumping, a heat exchanger is provided. Water from the engine block runs through a jacket cooled by water from pump. In order to function, the cock labelled "engine cooler" must be opened. Demonstrate this in operation.

PRESSURE RELIEF GOVERNOR is provided to feather the engine when nozzles are shut down. When nozzles are again opened the governor accelerates the engine to regain original pressure. To put relief governor into operation, the cock marked "Engine Relief Governor" should be opened. Demonstrate this by throwing stream from hose engaging relief governor, shutting down, and reopening hose. The governor should feather and accelerate engine when line is shut down and accelerate it when it is reopened.

AT HYDRANT

1. Connect inlet hose from center connection at bottom of pump to to the hydrant.
 - a. 4 inch hard rubber inlet hose (pump to hydrant) or
 - b. Install Siamese fitting 4 x 2-1/2 x 2-1/2 inches on center connection at bottom of pump and connect two 25 foot 2-1/2 inch hoses to the small outlets on hydrant and Siamese fitting.
2. Connect 1-1/2 inch or 2-1/2 inch hose to either side of pump outlets.
3. If 2-1/2 inch hose is used on pump, install the Seamese 2-1/2 x 1-1/2 inch fitting at end of line and connect the 1-1/2 inch hose.
4. Use desired type of nozzle.
5. Start Jeep engine in regular manner leaving transmission in neutral with hand brake set.
6. Turn on water at hydrant.
7. With the engine running at idle speed -- not over 1000 RPM -- proceed as follows: Raise the clutch lever slowly to the horizontal position. Caution: Make sure that the impeller shaft is rotating; if it is not, investigate the cause before engaging the clutch. If the impeller is rotating, continue raising the lever to the horizontal position. If the lever cannot pass the horizontal position, the interlocking clutch jaws are in such a position that they cannot engage. In this case the lever must be dropped back to the downward position and then lifted again. With the interlocking clutch jaws engaged the lever will go all the way to the vertical position. **ALWAYS ENGAGE THE PUMP CLUTCH SLOWLY AND DO NOT TRY TO FORCE ENGAGEMENT. THIS IS VERY IMPORTANT.**

8. A pressure identical to hydrant pressure will register on both gauges - vacuum and pressure - when hydrant is opened and clutch is engaged; pumping pressure will increase as throttle is pulled out while vacuum gauge reading above zero (hydrant pressure) will drop in relation to pressure gauge reading. The degree of variation is dependent on pressure of water in mains, size of hose, and amount of water being used.

CAUTION:

9. If reading on vacuum gauge falls to zero or below while pumping from a hydrant, it indicates no water at hydrant, and pump should be stopped immediately to avoid damage to mechanism. Pressure may be built up again on vacuum gauge by pushing throttle in and allowing hydrant pressure to return.
10. Siamese lever on top of pump which controls flow of water to hoses is in "off" position when ball lock is in notch located at rear of pump. Flow to either outlet can be controlled by turning Siamese lever to corresponding notch, and if both outlets are to be used at the same time, ball lock should be imbedded in forward notch.
11. Throttle should be pulled out to whatever position gives desired pressure reading, and continuous pumping for many hours can be maintained.
12. To shut off pump, push throttle all the way in, place Siamese lever in "off" position, and disengage clutch. The Jeep engine should be allowed to idle for a few minutes to permit it to cool properly.

AT RESERVOIR, LAKE, OR WELL

1. Attach 4 inch hard rubber hose to center lower connection on pump. Tighten all inlet hose connections securely, because air leaks will make priming very difficult.
2. Install screen on other end and insert hose in reservoir at least 18 inches below surface of water, to keep from sucking air.
3. Connect outlet hose to pump as described in paragraphs 2, 3, and 4 of Hydrant Operation.
4. Start engine in regular manner with transmission in neutral and hand brake set.

5. Engage clutch by pulling it up and forward, thus connecting Jeep to pumping mechanism. Great care should be taken to engage clutch easily, bringing it up halfway until pump begins to rotate, before pulling it all the way forward, to permit complete engagement and high-speed operation.
6. Pump must be primed by pulling primer lever (located at rear of pump) forward.
7. Throttle should be pulled out to a position where engine is running at approximately 1000 r.p.m. (fast idle). As soon as engine is heard to be pumping water and engine operates smoothly, vacuum (lower) gauge should read about 20 pounds vacuum (below zero) and pressure (upper gauge) should read about 20 pounds pressure. Primer handle can then be released and pumping pressure regulated by adjustment of throttle. Vacuum gauge reading should remain relatively constant during entire operation although it will increase if less than 20 feet of intake hose is used and will vary with height of above reservoir.

PUMP MAINTENANCE

1. Remove hoses and drain pump by opening petcocks located at bottom of pump.
2. Grease Zerk fittings after every operation to prevent corrosion of impeller.
3. After every 100 hours of pump operation, drain gear box by removing plug at bottom of gear box and refill as previously directed.
4. If pumping salt water, remove priming valve cap by removing the seven retaining screws and run fresh, clean water through pump so that all foreign matter and salt residue will be removed from internal fitting.
5. Roll up hoses. At station house, hang up hose by one end to dry.

DEMONSTRATING EQUIPMENT

Show ease of removing equipment such as axe, lights, extinguishers, nozzles, adapters.

Remove the wooden ladders, show their ready accessibility and ease of handling.

Detach tank trailer by disconnecting tank and booster line under rear step of Jeep Fire Engine. Disconnect the power line to the trailer's tail light. Unhitch the trailer coupling.

THE JEEP-A-TRENCH DEMONSTRATION

The Jeep-A-Trench is designed to meet the needs of the contractor who requires equipment to do speedy, accurate, trench-digging for such jobs as laying of water pipe, tile, gas lines, or underground cable. The Jeep-A-Trench cuts costs in two ways: It speeds up the work of digging a trench, and with front mounted angle blade, allows for ease in backfilling.

The adequate power of the Jeep combined with the size requirements of the Jeep-A-Trench, makes it desirable for many contractor uses.

This unit is driven by the rear power take-off. A gear reduction to the wheels gives it a slow forward movement. The speed is controlled by the operator, from neutral to 800 feet an hour. The depth of the trench is controlled by the hand wheel.

The Jeep-A-Trench has a hydraulic drive so that it can maintain the proper chain speed for the most desirable results, regardless of the ground speed. The hydraulic unit is driven by two V-belts and in turn drives the machine through a large capacity roller chain. This smooth hydraulic positive drive reduces the shock and excessive strain on the gears, sprockets, chains, and other power-transmitting parts.

PROPER ADJUSTMENTS

OPERATING INSTRUCTIONS FOR JEEP-A-TRENCH

All Models after Serial Number 270

1. Place center line of Jeep-A-Trench along center line of trench to be dug. With front wheels in straight forward position, lock steering wheel lock and shut off Jeep engine.
2. Using hand wheel (if machine is equipped with electric boom lift), depress DOWN button. Crank boom away from Jeep-A-Trench frame to horizontal position. DO NOT ALLOW BOOM TO REST ON GROUND.

3. Loosen clamps on auger brackets. Move bottom auger as close as possible to Jeep-A-Trench boom housing bracket. NOTE: After adjustment of bottom auger has been made (the first time machine is used) it will not be necessary to move it again except in case of extremely shallow trenches.

Move top auger outward to a distance of approximately 8 to 10 inches from bottom auger. (Bracket to bracket measurement.)

4. Engage governor. **CAUTION:** Be sure engine is not running during this operation.
5. Start engine, shift to 4-wheel drive.
6. Shift transfer case to neutral and main transmission to intermediate or high gear as desired. (High gear for all normal digging.)
7. Engage power take-off lever and pull dash throttle out to full speed.
8. Pull governor control out to approximately 175 to 200 rpm of digger chain driving sprocket.
9. Move travel control lever to forward travel position. On ratchet models this engages ratchet; on hydraulic models it engages the hydraulic clutch.
10. Engage swing gear by pushing inward on grip handle just below driver's seat. Be sure lever snaps over center in a positive engagement. **CAUTION:** Be sure emergency brake is off before engaging this gear.
11. Move travel control lever back to neutral position.
12. Lower boom into ground to desired depth. If machine has manually operated boom lift, lock hand wheel. Shut off engine.
13. Adjust auger brackets so that auger flights contact surface of ground. Tighten clamps securely. **CAUTION:** Augers should move only loose dirt and should not cut into surface. This is final auger adjustment for actual trench depth selected.
14. Start engine again, then move travel control lever until machine travels forward at desired speed. Under normal conditions

machine will travel at full speed forward. If machine is equipped with hydraulic clutch, it will first travel forward rapidly then slow down. This is due to change in viscosity of hydraulic clutch fluid as clutch "warms up." When machine slows down after this warming up period, further engagement of travel control lever is necessary to reach desired speed.

Hydraulic clutch is variable in speed from neutral to positive drive. When it is fully engaged, there is no slippage and it is not self-adjusting. Always adjust speed so that there is no overload on Jeep engine. At all speeds except full speed, clutch is to a certain extent self-adjusting and, in most cases, will not overload engine in case machine encounters rougher conditions. This clutch is built to operate at all speeds, and prolonged slippage will not harm it.

15. Clutch throw-out lever is mounted on machine beside travel control and should not be used except in emergencies. It should not be left disengaged while engine is running since this will cause excessive wear on clutch throw-out bearing.
16. As safety precaution, machine is equipped with shear pins to prevent damage to mechanism. When machine is shipped, it has four wooden (oak) shear pins (1/2 inch dowel) in shear pin sprocket. This number may be increased to six after machine has been broken in without harm to mechanism. Machine is also equipped with brass shear pin in universal joint on traction drive shaft to prevent damage in case it encounters a hard pull or if emergency brake is left on when machine starts forward.
17. Machine should be lubricated after every four hours of operation. Care should be exercised in greasing this machine to prevent damage to grease seals in bearings. Only a low pressure hand gun should be used.
18. After trench has been dug, make sure you have disengaged traction drive gear. (Grip handle below driver's seat.)
CAUTION: Jeep should not be moved before this is done or pin in traction drive will shear.

GENERAL INFORMATION ON OPERATING OTHER IMPLEMENTS

The general pattern for the operation of all other implements should be to make your demonstrations short and interesting. Cover the pertinent

features but do not bore your audience with a lot of "sameness" of operation.

Also, plan to have a "practice area" where the people can go at the close of the demonstration and operate the implements themselves. It is well to develop groups. For instance, one group consisting of those who are interested in plowing should be taken aside with the operator who demonstrated the plow. Those interested in post hole digging should be channeled to the man operating the post hole digger. And so on. This will eliminate the confusion of attempting to change implements to meet one request and then another, and another, without reference to each other.