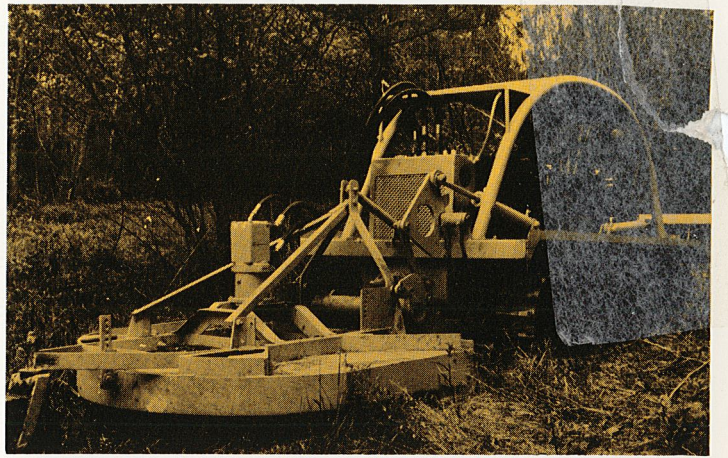
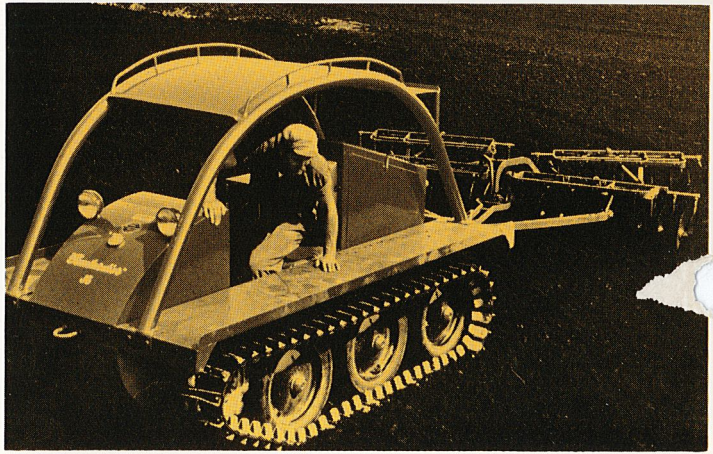
BOMBARDIER

operator's manual

bombardier ltd.

J-5*, J-5*T, J-5*TS





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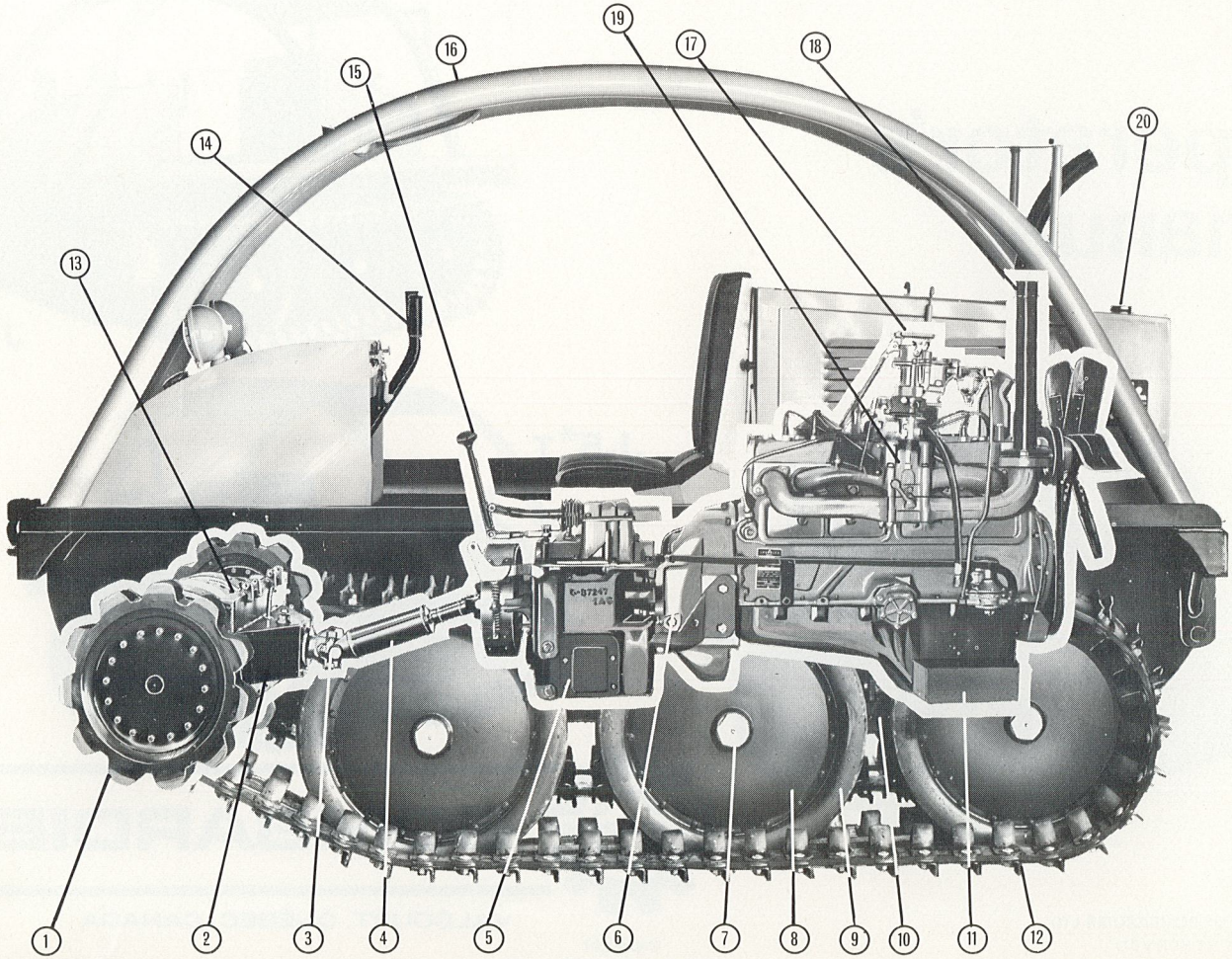
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BOMBARDIER J-5

1 – Drive Sprocket

2 – Differential Carrier

3 – Universal Joint

4 – Propeller Shaft

5 – Transmission

6 – Clutch Housing

7 – Hub Cap

8 – Wheel

9 – Tire (solid rubber; optional)

10 – Hydraulic Track Adjuster

11 – Oil Pan (special on J-5T and J-5TS)

12 – Crosslink

13 – Brake Band and Lining

14 – Steering Lever

15 – 4 speed Gearshift Lever

16 – Head Protector

17 – Carburetor

18 – Exhaust Pipe

19 – Engine

20 – Radiator (special tropical for J-5T and J-5TS)

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CHAPTER I

GENERAL INFORMATION

1 – INTRODUCTION:

Intended as a reference book, this manual provides information essential to the up-keep and reliability of your Bombardier J-5 tractor.

Care and maintenance are of prime importance to any mechanical device and the contained instructions will help you maintain your Bombardier tractor in good operating condition, allowing the use of its full potential.

No definition is to be regarded as affecting the validity of any trademark.

The content of this manual is based on the latest product information available at time of printing. Bombardier Ltd. reserves the right to make changes at any time without notice.

2 – GENERAL DESCRIPTION AND SPECIFICATIONS:

	J-5	J-5T	J-5TS
DIMENSION:			
Overall length	112"	112-1/2"	119-1/4"
Overall width	64"	64"	64"
Frame height	31-1/2"	31-1/2"	31-1/2"
Track width	16-9/16"	16-9/16"	16-9/16"
Ground Clearance	12"	12"	12"
Width between tracks	29-1/2"	29-1/2"	29-1/2"
Weight (with H.P.)	4,000 lbs.	4,070 lbs.	5,027 lbs.
PERFORMANCE:			
Fording depth	30"	30"	30"
Top speed in high gear	20 M.P.H.	20 M.P.H.	20 M.P.H.
Top speed in low gear	4 M.P.H.	4 M.P.H.	4 M.P.H.
Turning radius	13'	13'	13'
Ground pressure at 0 penetration (unloaded)	Approx. 1.3 P.S.I.	Approx. 1.3 P.S.I.	Approx. 1.3 P.S.I.
BRAKES:			
Type	Drum on controlled diff.	Drum on controlled diff.	Drum on controlled diff.
Drum diameter	10-3/4"	10-3/4"	10-3/4"
Surface area	175-1/2 sq. in.	175-1/2 sq. in.	175-1/2 sq. in.
Adjustment	Yoke adjuster nut	Yoke adjuster nut	Yoke adjuster nut
Parking Brake	Sector on steering levers	Sector on steering levers	Hand brake; drum on transmission drive line

	J-5	J-5T	J-5TS
SUSPENSION:			
	Front wheels on bogie spindles. Center and rear wheels in tandem. Standard bogie spring.	Front wheels on bogie spindles. Center and rear wheels in tandem. Standard bogie spring.	Front wheels on bogie spindles. Center and rear wheels in tandem. Heavy duty bogie spring and leaf spring on tandem.
Number of wheels and size	6 wheels – 4.50 x 16-6 ply nylon reinforced walls.	6 wheels – 4.50 x 16-6 ply nylon reinforced walls.	Solid tires 25" diameter
Number of belts and size	2 rubber belts per track 5-1/2" wide	2 rubber belts per track 5-1/2" wide	2 rubber belts per track 5-1/2" wide
Type of belts	Endless, reinforced with steel wire	Endless, reinforced with steel wire	Endless, reinforced with steel wire
Type and length of cross links	Forged spring steel 16-9/16" long.	Forged spring steel 16-9/16" long.	Forged spring steel 16-9/16" long.
Type of drive	Heavy duty rubber sprockets	Heavy duty rubber sprockets	Heavy duty rubber sprockets
STEERING:			
Type	Two levers operating bands on Planetary controlled diff. brake drums.	Two levers operating bands on Planetary controlled diff. brake drums.	Two levers operating bands on Planetary controlled diff. brake drums.
ENGINE:			
Make	Chrysler industrial	Chrysler industrial	Chrysler industrial
Model	251	251	251
Series	"L" head six	"L" head six	"L" head six
Horse power	113 BHP @ 3600 R.P.M.	113 BHP @ 3600 R.P.M.	113 BHP @ 3600 R.P.M.
Bore	3.437"	3.437"	3.437"
Type	In line	In line	In line
Stroke	4.50"	4.50"	4.50"
Displacement	251 cu. in.	251 cu. in.	251 cu. in.
Compression ratio	7.1 to 1	7.1 to 1	7.1 to 1
Number of cylinders	6	6	6

	J-5	J-5T	J-5TS
Crankcase oil capacity With oil filter	4 Imp. Qts./4.8 U.S. 5 Imp. Qts./6.0 U.S.	7 Imp. Qts./8.4 U.S. 8 Imp. Qts./9.6 U.S.	7 Imp. Qts./8.4 U.S. 8 Imp. Qts./9.6 U.S.
DISTRIBUTOR:			
Firing Order Breaker point gap Condenser capacity	1-5-3-6-2-4 .020 inch .250-.285 MFD	1-5-3-6-2-4 .020 inch .250-.285 MFD	1-5-3-6-2-4 .020 inch .250-.285 MFD
SPARK PLUGS:			
Type Size Gap Shank length	J-7 Champion 14 MM .025" without suppression 3/8" reach	J-7 Champion 14 MM .025" without suppression 3/8" reach	J-7 Champion 14 MM .025" without suppression 3/8" reach
ALTERNATOR:			
Make Output	Chrysler 46 amps.	Chrysler 46 amps.	Chrysler 46 amps.
FAN:			
Type and number of blades Diameter Fan Belt	6 blades pusher fan 20" Bombardier (102 9033)	6 blades pusher fan 20" Bombardier (102 9033)	6 blades pusher fan 20" Bombardier (102 9033)
GOVERNOR:			
Type Make	Velocity King-Seeley	Velocity King-Seeley	Velocity King-Seeley

	J-5	J-5T	J-5TS
AIR CLEANER:			
Type	Oil bath	Oil bath	Oil bath
Make	Donaldson	Donaldson	Donaldson
FUEL SYSTEM:			
Tank capacity	15 Imp. Gals./18 U.S.	15 Imp. Gals./18 U.S.	12 Imp. Gals./14.4 U.S.
Fuel grade	Good regular	Good regular	Good regular
Fuel pump	Diaphram 3.5 to 5 lbs.	Diaphram 3.5 to 5 lbs.	Diaphram 3.5 to 5 lbs.
Fuel filter	Chrysler	Chrysler	Chrysler
Choke type	Manual	Manual	Manual
LUBRICATION SYSTEM:			
Oil filter type	Partial flow	Partial flow	Partial flow
Oil filter make	Mopar	Mopar	Mopar
Oil pressure	40 p.s.i. at 1000 R.P.M.	40 p.s.i. at 1000 R.P.M.	40 p.s.i. at 1000 R.P.M.
TRANSMISSION:			
Type	Manual helical synchromesh in 2nd, 3rd and 4th gear	Manual helical synchromesh in 2nd, 3rd and 4th gear	Manual helical synchromesh in 2nd, 3rd and 4th gear
Speeds	4 forward 1 reverse	4 forward 1 reverse	4 forward 1 reverse
Nominal torque rating	275 ft. lbs.	275 ft. lbs.	275 ft. lbs.
Weight	130 lbs.	130 lbs.	130 lbs.
Oil capacity	3 Imp. qts./3.6 U.S.	3 Imp. qts./3.6 U.S.	3 Imp. qts./3.6 U.S.
Gear ratio			
1st	6.68 to 1	6.68 to 1	6.68 to 1
2nd	3.34 to 1	3.34 to 1	3.34 to 1
3rd	1.66 to 1	1.66 to 1	1.66 to 1
4th	1.00 to 1	1.00 to 1	1.00 to 1
reverse	8.26 to 1	8.26 to 1	8.26 to 1

	J-5	J-5T	J-5TS
CLUTCH:			
Type	Dry friction disc.	Dry friction disc.	Dry friction disc.
Disc diameter	11"	11"	11"
Pedal free-play	1-1/4"	1-1/4"	1-1/4"
DIFFERENTIAL:			
Type	Planetary controlled	Planetary controlled	Planetary controlled
Ratio	5.83 to 1	5.83 to 1	5.83 to 1
Oil capacity	4-1/2 Imp. gals./5.4 U.S.	4-1/2 Imp. gals./5.4 U.S.	4-1/2 Imp. gals./5.4 U.S.
COOLING SYSTEM:			
Capacity	3-1/2 Imp. gals./4.2 U.S.	4-3/8 Imp. gals./5.2 U.S.	4-3/8 Imp. gals./5.2 U.S.
Thermostat	160°F.	160°F.	160°F.
Coolant	Anti-freeze	Anti-freeze	Anti-freeze
Radiator pressure cap	7 p.s.i.	7 p.s.i.	7 p.s.i.
Radiator location	Top of engine	Rear	Rear
ELECTRICAL SYSTEM:			
Battery	Heavy duty	Heavy duty	Heavy duty
Voltage	12 volts	12 volts	12 volts
Capacity	70 amps. hrs.	70 amps. hrs.	70 amps. hrs.
HYDRAULIC SYSTEM:			
Reservoir capacity	3-1/2 Imp. gals. 4.2 gals. U.S.	3-1/2 Imp. gals. 4.2 gals. U.S.	27 Imp. gals./32.4 U.S. W/O mower. 30 Imp. gals./36 U.S. with mower. Rotary cutter drive: 7/8 qts./1.04 U.S.

	J-5	J-5T	J-5TS
Type of valve	4 position control valve. Gresen SPK-4.	4 position control valve. Gresen SPK-4.	Vickers CM-2N02-R25 VIL-30 (mower) Vickers CM-11-N01-R15 DD CL-21 (cylinders).
Pump type	Vane	Vane	Vane
Pump make	Chrysler	Chrysler	Vickers V-2010-1F-125-4S-1CC-10L
Pump rotation	Clockwise	Clockwise	Counter clockwise
Output	2 G.P.M.	2 G.P.M.	12 G.P.M. (mower) 4 G.P.M. (cylinders)

3-SPECIAL FEATURES:

A) The J-5 features a new adjustable seat and gear shift lever.

B) The addition of a tropical radiator and special oil pan for 40° slopes to the J-5 gives us the J-5T.

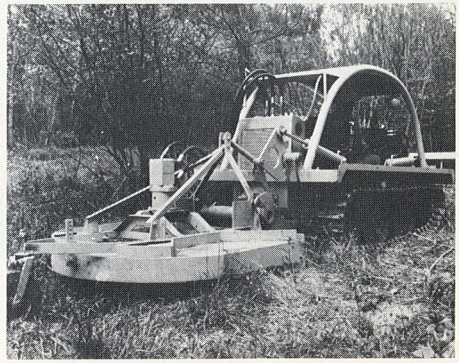
C) The J-5TS combines the J-5T features with heavy duty suspension, full rubber tires and special hydraulic system for rotary mower option.

The optional 62 inches wide by 61 inches long rotary mower is powered by a Vickers hydraulic motor. The rotating 25 inch blades perform the mowing action.

A hydraulically operated three point hitch and a unique rear wheel support the mower assembly.

The ground to mower clearance is adjustable by means of a trail wheel frame to mower link.

NOTE: *Operating mower may be dangerous if not done properly. Be very careful.*

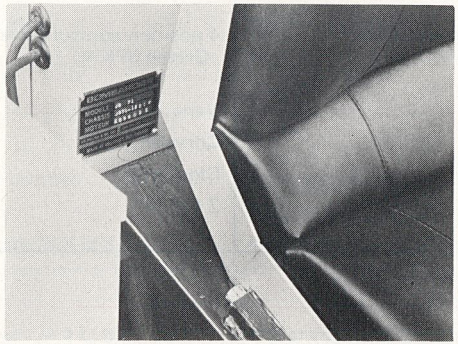


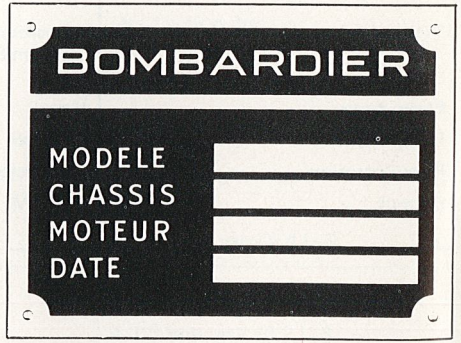
CHAPTER II ACCESSORIES

1 – IDENTIFICATION:

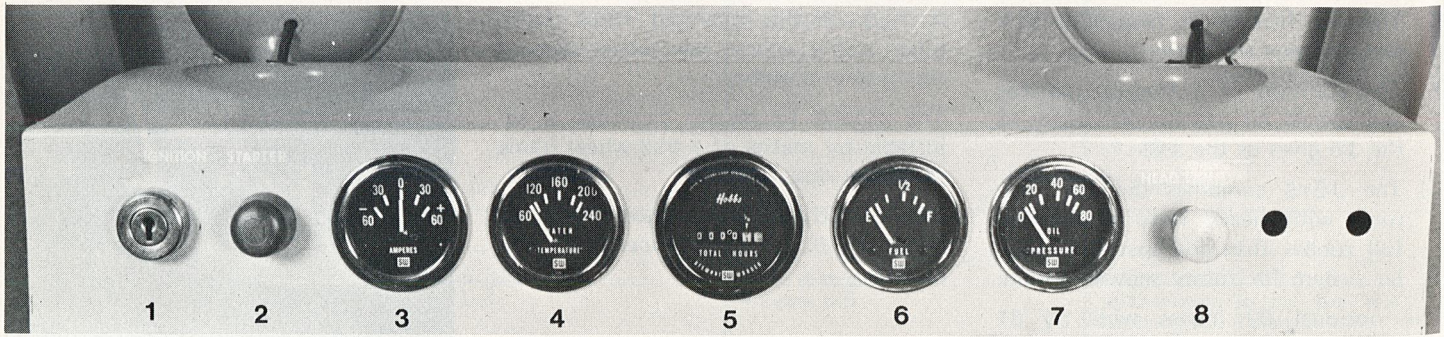
The data plate is located on the firewall on R.H. side of operator's seat. It identifies model, chassis and motor serial numbers. Serial number is also stamped on front bumper.

NOTE: *It is necessary to locate and specify these numbers in ordering of parts or/and correspondence concerning vehicle.*





2 – INSTRUMENT PANEL:



1 – Ignition Switch
2 – Starter
3 – Ammeter
4 – Temperature Indicator
5 – Hourmeter
6 – Fuel Gauge
7 – Oil Pressure Gauge
8 – Headlight Switch

Ignition Switch:
On and off key-operated switch.

Starter:
Push starter button.

Ammeter:
Indicates amount of current from or to battery.

Temperature Indicator:
Indicates temperature of engine.

NOTE: *When pointer reaches "H" or 220° F. stop engine immediately.*

Hourmeter:
Registers the time the engine has been in operation.

Fuel Gauge:
Indicates the amount of fuel in the fuel tank.

Oil Pressure Gauge:
Indicates oil pressure (not level) in the engine.

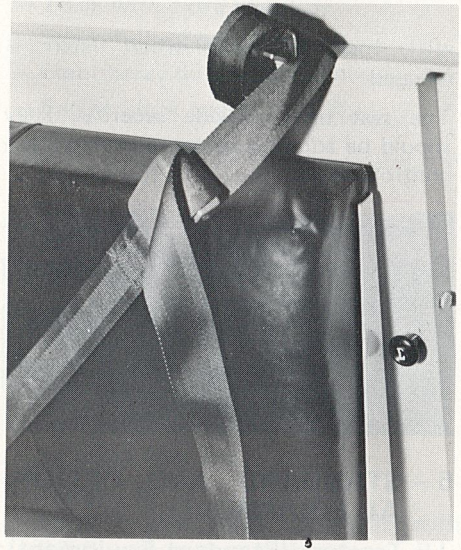
NOTE: *Do not operate when oil pressure is low.*

Headlight Switch:
Pulling switch out turns on headlights and instrument panel lights.

Heater Switch: (Optional)
Located at far right of panel. Two levels of efficiency. To operate, pull knob.

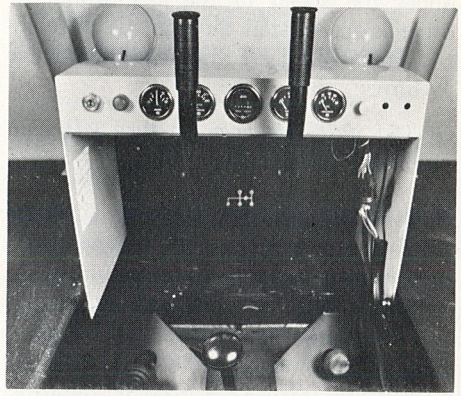
Wiper Switch: (Optional)
Cab models only. Located at right end of panel. One speed wiper, operates by pulling knob.

Choke:
Located on firewall on left hand side of driver's seat.



NOTE: *Pull to choke and push back slowly as engine warms up.*

3 – CONTROLS:



Clutch:
Left hand side pedal, it is used to engage or disengage drive train. Depress to shift gears and when stopping.

NOTE: *Do not shift from high gear to first gear when vehicle is moving. (No synchromesh).*

Throttle:
Right hand side pedal. It controls the speed of engine (R.P.M.).

Control Levers:
The control levers provide steering and braking of vehicle. The levers operate bands on differential brake drums.

When one lever is pulled the pressure applied on the corresponding drum reduces the speed of the axle while the other is accelerated through the differential planetary gears thus causing vehicle to turn.

NOTE: *Pull left lever to turn left. Pull right lever to turn right.*

Brake:

Braking is effected by depressing clutch and pulling both levers simultaneously. Parking brake operates through sectors on steering levers of J-5 and J-5T and a lever on right mudguard of J-5TS.

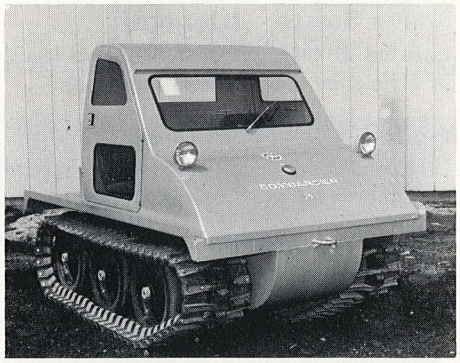
Gear Shift Lever:

NOTE: *Four speeds forward, one speed reverse.*

4 – CAB AND SEAT:

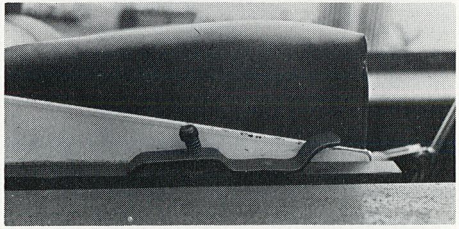
Cab is optional on the J-5. That option includes wiper.

The operator's seat has five positions; to change position, pull latch located near front of seat and exert slight body pressure in desired direction. The seat



will lock in place when latch is released.

The seat belts provide security. They should be adjusted so operator can reach controls easily.



5 – STANDARD AND OPTIONAL EQUIPMENT:

J-5 Tractor: (Standard Equipment):

Chrysler industrial 251 cu./in. engine 6 cyl. with 12 volts alternator and 6 blades pusher fan, 4 speed transmission, hourmeter, hydraulic adjusters, velocity type governor, adjustable seat, 16-1/2" L. st'l cross link, anti-freeze, differential ratio 5.83 to 1. Horizontal regular radiator and brake sectors.

Optional Equipment:

- Gas tank protector assembly with 2 headlights.
- Head protector.
- 3 man cab assembly with 2 headlights.
- Track with steel-rubber cross links.
- Track with extra high lugs.
- Front heavy duty suspension.
- Solid tires (Full rubber tires).
- Engine block heater (400 W.).
- Dimming type lights.
- Heater and defroster.
- Speedometer.
- Tachometer.
- Back-up light.
- Safety belt.
- Escape hatch (W/3 man cab).
- Pintle hook rear.
- Pintle hook front (not available with front blade and front winch).
- Draw bar for trailer.
- Swinging draw bar.
- Trailer T-6 (less draw bar).

– Loading mast with end pullies only (on T-6 trailer).
– Tractor brackets and pullies for winch and loading mast.
– Winch W-2 with drums.
– Winch W-5 rear.
– Rear braden winch LU-2-10 with P.T.O. and cable guide.
– Front braden winch LU-2-10F with P.T.O.
– P.T.O. with output shaft to front (for front winch).
– P.T.O. with output shaft to rear (for rear winch).
– Shifting lever for P.T.O.
– Sump for P.T.O.
– Set of skis for T-6 trailer.
– Hydraulic system for front blade.
– Straight blade 70 inches wide.
– Counterweight 300 lbs.

J-5T Tractor: (Standard Equipment)

Chrysler industrial 251 cu./in. engine 6 cyl. with 12 volts alternator and 6 blades pusher fan, 4 speed transmission, hourmeter, hydraulic track adjusters, velocity type governor, adjustable seat, 16-1/2" L. st'l cross link, anti-freeze, differential ratio 5.83 to 1. Vertical full tropical radiator, oil pan for 40° slopes, and brake sectors.

Optional Equipment:

– Gas tank protector assembly with 2 headlights.
– Head protector.
– 3 man cab assembly with 2 headlights.
– Track with steel-rubber cross links.
– Track with extra high lugs.
– Solid (full rubber) tires.
– Front heavy duty suspension.
– Engine block heater (400 W.)
– Dimming type lights.
– Heater and defroster.
– Speedometer.
– Tachometer.
– Back-up light.
– Safety belt.
– Escape hatch (with 3 man cab).
– Pintle hook front.
– Draw bar for trailer.
– Swinging draw bar.
– Trailer T-6.
– Front braden winch LU-2-10F with P.T.O. with output shaft to rear.
– Shifting lever for P.T.O.
– Sump for P.T.O.
– Set of skis for T-6 trailer.
– Counterweight (300 lbs.)
– Straight blade 70" wide.
– Hydraulic system for front blade.

J-5TS Tractor: (Standard Equipment):

Chrysler industrial 251 cu./in. engine 6 cyl. with 12 volts alternator and 6 blades pusher fan, 4 speed transmission, hourmeter, hydraulic track adjusters, velocity type governor, adjustable seat, 16-1/2" L. st'l cross link, anti-freeze, differential ratio 5.83 to 1. Vertical full tropical radiator, oil pan for 40° slopes, partial hydraulic system with Vickers pump for all hydraulic attachments, heavy duty suspension, all solid tires, parking brake on transmission and safety belt.

Optional Equipment:

– Track with steel-rubber cross links.
– Engine block heater (400 W.)
– Draw bar with universal hitch.
– Pintle hook rear.
– Rear rotary mower with hydr. motor.
– Dozer blade.
– Hydraulic motor.
– Fire plow.

OPERATING VEHICLE

1 – STARTING ENGINE:

Before starting engine, the following checks should be performed daily.

a) Check engine oil level on dipstick.

b) Check electrolyte level in battery.

c) Check radiator coolant level.

d) Check oil level in hydraulic system.

e) Check tire pressure (100 p.s.i.) if equipped with.

f) Check track tension.

g) Make overall inspection, looking for loose or missing bolts, broken or bent parts, unusual wear, etc.

To start engine, turn key to "ON" position and press starter, making sure drive train is disengaged (depress clutch) in neutral.

NOTE: *As soon as engine starts, release starter. Use choke only when engine is cold.*

2 – "BREAK-IN" PERIOD:

After the first day or first 10 hours of operation, make a thorough inspection for evidence of damage or looseness of parts, giving particular consideration to the following items:

a) Check engine oil level and for oil leaks.

b) Check cooling and hydraulic systems for leaks.

c) Check battery and connections.

d) Tighten cylinder head nuts when engine is warm.

e) Check panel meters.

f) Check fan and alternator belt tension.

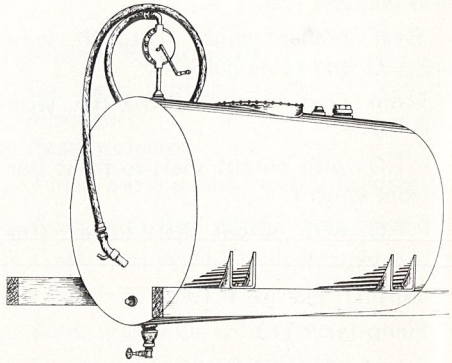
g) Check control levers.

h) Check sprocket bolts and wheel bearing adjustment, wheel flange nuts and bolts, cross links and track tension.

i) Check lubricant level.

3 – FUEL:

A good grade of regular gasoline with a minimum of 93 octane is best suited for the J-5.



NOTE: *Fuel storage (supply).*

The manner in which fuel is stored can be of major importance to the performance of the engine. Storage tanks, drums or portable service tanks must be free from rust, scale, sediment or any foreign matter. The fuel storage tank should be installed so that one end of the tank is slightly lower than the other and should be equipped with a drain valve at the lower end for draining off the sediment and water. It should also be equipped with a hose with self closing nozzle to prevent entrance of dirt.

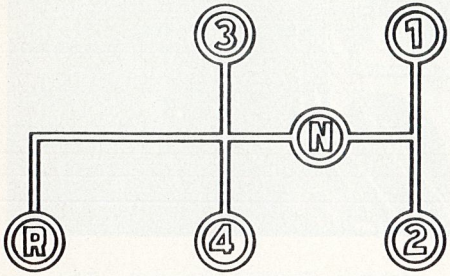
4 – DRIVING VEHICLE:

After engine has started, depress clutch and engage in first gear, release clutch slowly as you press on gas pedal, repeat successively for higher gears.

To steer, pull the corresponding control lever.

To brake, pull both levers simultaneously as you depress clutch.

To stop engine, bring ignition switch to "OFF" position.



5 – EXTREME COLD WEATHER STARTING:

The starting procedure under extreme cold weather conditions is basically the same as for normal conditions, adding a few steps:

a) Should the engine start, run a few seconds and then stall, repeat the normal procedure. If engine does not restart with five seconds of cranking, depress the accelerator to the floor and hold it. Do not pump while cranking. Do not crank more than 30 seconds at a time.

b) If engine turns slowly during starting, depress the clutch while cranking.

6 – INTRODUCTION TO THE OPERATION OF THE VEHICLE:

After the engine has started, engage in gear; reverse or forward according to desired direction. It is important to shift gears successively starting in first. Loading the engine may cause overheating and eventually damages. It is also important not to shift from higher gears to first when vehicle is moving since there is no synchronization to first gear.

Release clutch slowly as you press on the throttle. When vehicle has started to move, release clutch completely until time comes to shift again. It is important not to race engine, specially going downhill.

NOTE: *When shifting, always use clutch.*

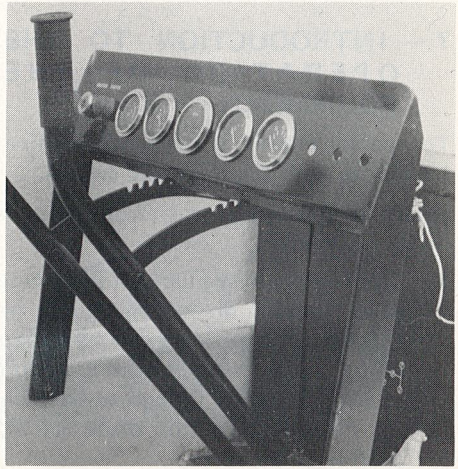
To steer vehicle, pull the control lever corresponding to direction desired; right hand side lever to turn right and left hand side lever to turn left.

NOTE: *The best way to avoid accidents is to steer when engine idles in first, second or reverse. Operator should avoid steep hillsides and more than 40° slopes. A sharp turn at high speed may result in overturning of the vehicle.*

To brake, depress clutch and pull control levers simultaneously.

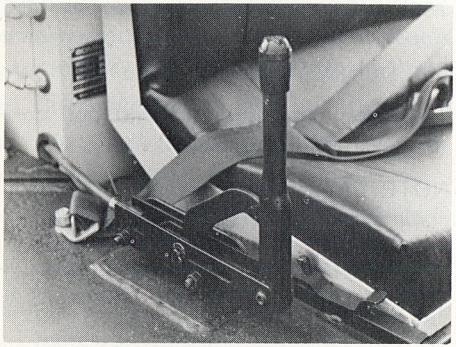
NOTE: *Never brake suddenly, specially going downhill, except in emergency.*

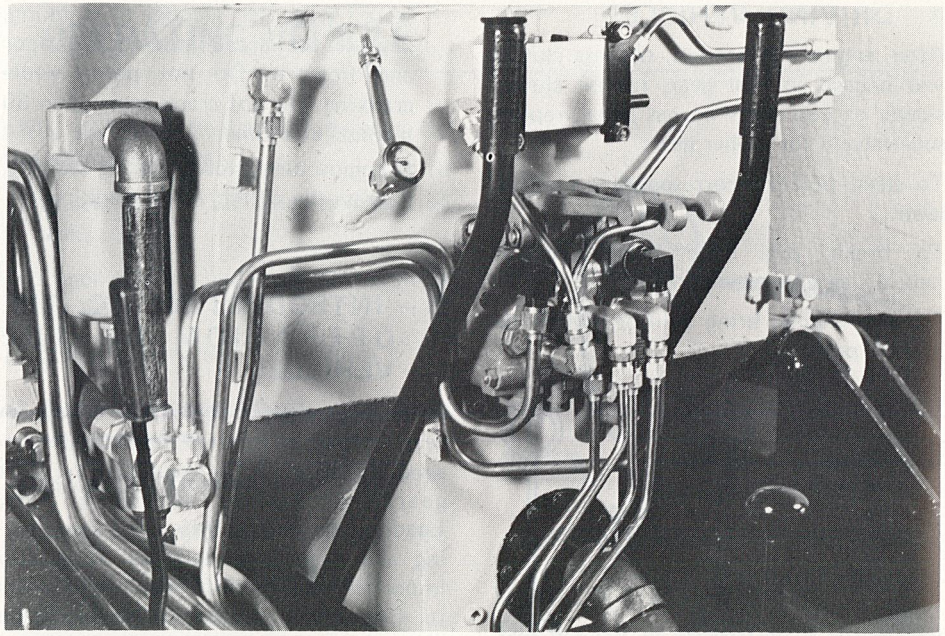
Parking brake on J-5 and J-5T operates through differential brake drums. It is



retained by means of sectors located on steering levers.

On J-5TS a lever located on right mudguard operates parking brake through transmission brake drum.





7 – INTRODUCTION TO THE OPERATION OF THE EQUIPMENT:

To operate mower, it is essential to first familiarize with the hydraulic system.

When in operator's seat, from left to right, you find:

1 – The Vickers hydraulic motor control valve, located on left mudguard of tractor. The Vickers hydraulic motor provides the rotating action of the blades and is engaged by pulling this lever. To stop blade action, push back the lever.

2 – The front dozer blade control valve, located at left in front of operator's seat. It is used to operate optional front dozer blade on tractor. The up position raises the blade, middle position for standstill and down to lower the blade.

3 – The optional equipment control valve, located in the middle, facing the operator's seat. It is used to operate the optional rear equipment on tractor (except mower). The up position raises the equipment, middle position for standstill and down to lower the equipment.

4 – The mower adjusting valve, located at right in front of operator's seat. It is used to operate the optional mower assembly. The up position raises the mower, middle position for standstill, low at floating and down to lower.

Security Tips in Operation of Mower:

The operation of mower must be done with great caution and can be extremely dangerous if not used properly. Safety measures must be taken and strictly observed. The consideration of the following tips added to your own precautions will help you avoid accidents.

1 – Never operate mower when lifted.

2 – Never expose oneself to rotating blades.

3 – Do not stand or walk near running mower.

4 – Mower should be operated only by the designated operator.

5 – Always inspect the grounds before mowing; remove or avoid all objects that may be hazardous to the operator or the machine.

6 – Before performing inspections, maintenance or repairs, make sure the machine is completely stopped and disengaged, including tractor engine.

7 – Before operating, check all parts and components of tractor and mower.

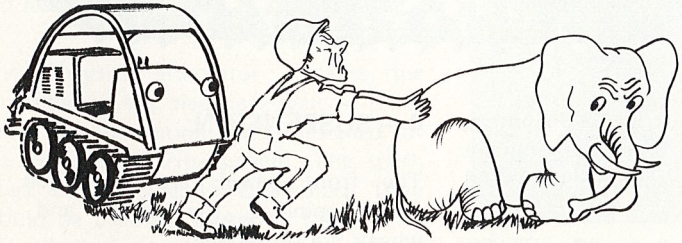
NOTE: *It is extremely important to make the necessary adjustments and repairs before operating the mower.*

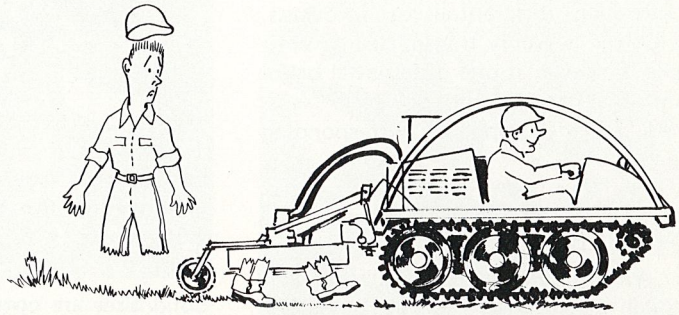
8 – Allow no one to ride on tractor and equipment.

9 – Always use safety belt, security hat and security glasses while operating the mower.

Storage of Mower:

Store flat on the ground, lubricate and clean.





1 – TRACKS:

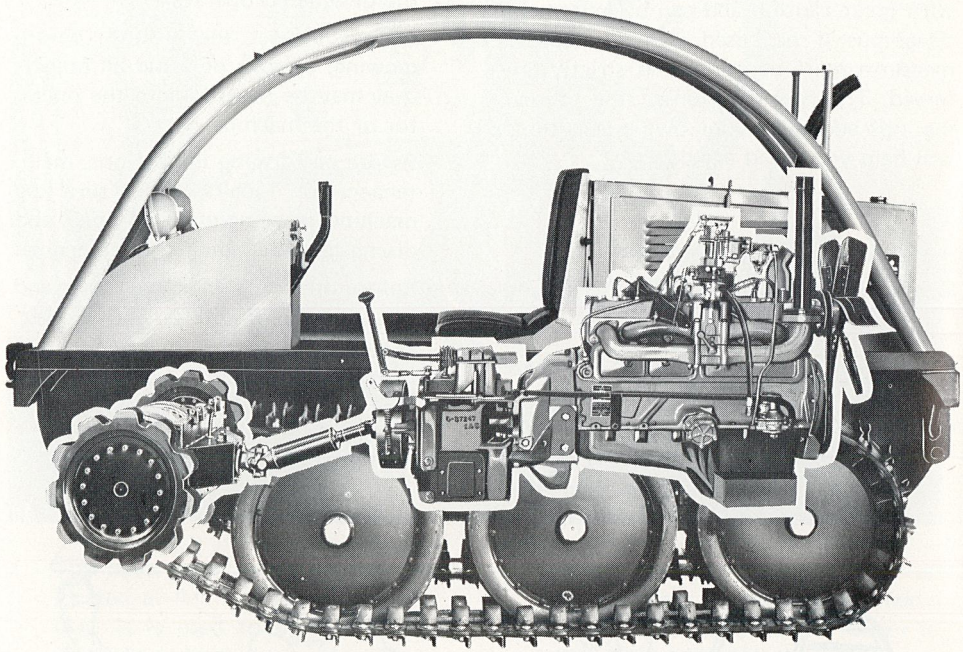
They consist of two endless rubber belts 5 inches wide, 5 ply rayon-nylon steel wire reinforced. These belts are attached together by 16 9/16 inches long steel cross links. Rubber cross links are available as an option.

2 – DRIVE:

The rubber drive sprocket is bolted on a flange with 16 bolts. It drives the track assembly.

Drive Train:

The power is transmitted from the engine through transmission and propeller shaft to the pinion and then directly through differential to sprockets. The power is evenly transmitted to both tracks, however, if one differential brake drum is at a standstill, power is transferred to the opposite corresponding axle.



3 – WHEELS:

The wheel spindle is usually greased through a fitting on the hub cap. If for one reason or another the wheels must be removed, care must be taken not to get any dirt into the unit. The tires are 4.50 x 16 – 6 ply nylon, reinforced walls.

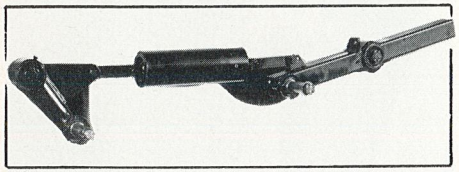
Solid tires are optional on J-5 and J-5T and standard on J-5TS.

4 – SUSPENSION:

The front wheels are articulated on bogie spindles, the center and rear wheels are on tandem.

Bogie spring is attached to the rear tan-

dem and front axle assembly. The forward facing part of the cylinder is fixed while the other part is a movable rod. Leaf springs assisted heavy duty suspension is standard on J-5TS and optional on J-5 and J-5T.

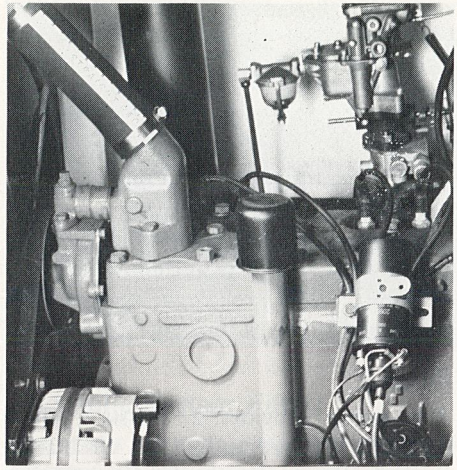


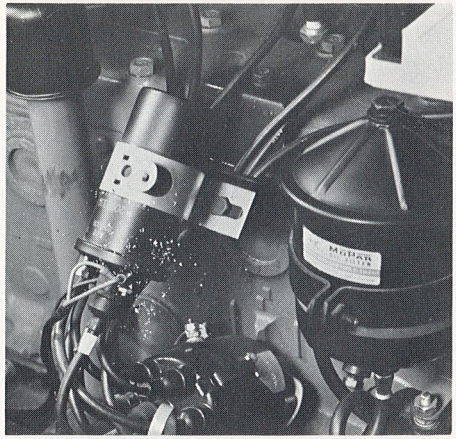
5 – ELECTRICAL SYSTEM:

The energizer is a heavy duty, 12 volts, 70 amps./hrs. battery. Keep fully charged, especially in cold weather conditions.

NOTE: *Make sure hold-downs are properly adjusted so battery won't bounce and leak acid.*

The Chrysler alternator replaces the generator in the electrical system. It requires no lubrication and is designed for use on one polarity system. The spark plugs are of type J-7 Champion. They should be cleaned, regapped (.035 inch) and filed after 100 hours of use and changed after 300 hours of use.





NOTE: *To ensure good reliability, use manfacturer's specified spark plugs. Make sure gaskets are in good condition and that spark plugs be tightened at 25 ft.-lbs.*

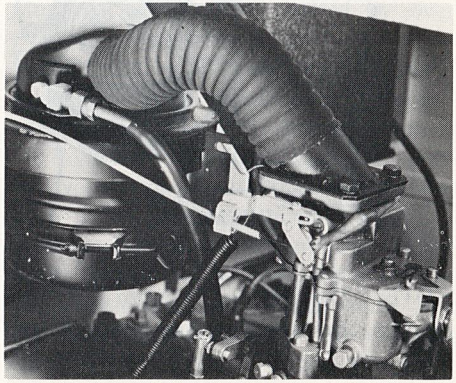
The distributor firing order is 1,5,3,6,2,4.

6 – FUEL SYSTEM:

The fuel system consists of a Chrysler fuel filter and diaphram fuel pump. The filter should be inspected every day and cleaned every 200 hours.

7 – AIR FILTER:

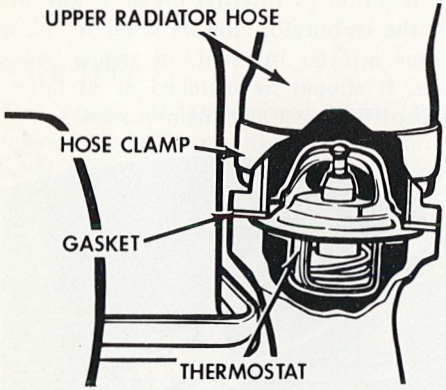
In addition to filtering the air drawn into the carburetor, the air filter is also a flame arrester in events of engine backfire. It should be installed at all times, except for repairs or maintenance.



8 – ENGINE COOLING SYSTEM:

The cooling system maintains the operating temperature of the engine within safe limits.

As the capacity of the water pump to circulate water varies with engine speed, the action of limiting this flow so that a constant temperature may be maintained in the engine is assured by the thermostat. The thermostat automatically regulates the flow of water from the jacket to the radiator maintaining proper engine temperature.



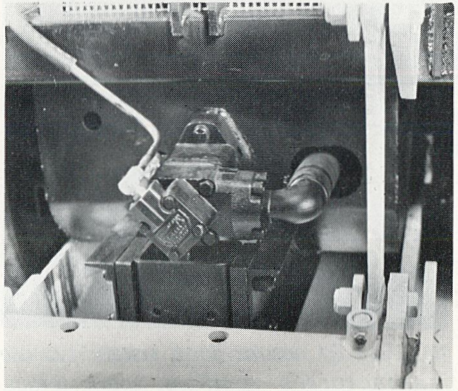
NOTE: *The cooling system is pressurized. Do not remove radiator cap when the engine is warm. Do not operate if thermostat is not in good condition. The thermostat is settled at 160° F.*

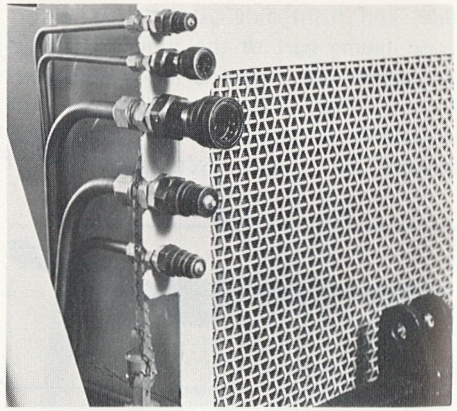
9 – HYDRAULIC SYSTEM:

An understanding of the system is of utmost importance, should it fail, all work comes to a halt. The system consists of a pump, valve, relief valve, reservoir, filters and other various accessories.

Pump:

The pump provides a pressure which controls the hydraulic fluid circulation through the hydraulic circuit onto the load, i.e. – hydraulic cylinders, where the fluid potential is converted back to mechanical power.





CAUTION:

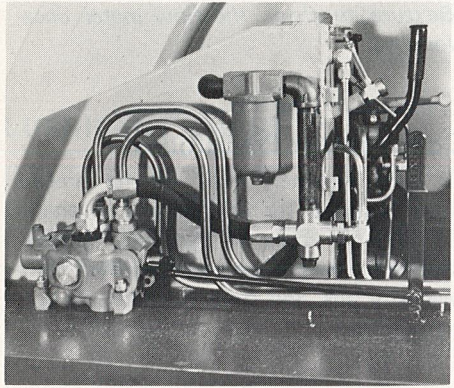
1 – *Be sure the system is filled to its normal capacity and all lines are free to circulate oil before starting the pump. A pump can be damaged in a very few minutes if operated dry.*

2 – *Avoid operating equipment at top speed and full pressure when oil is cold. Allow the system to warm up. This precaution is particularly important if the pump is new. Remember pumps must be built to very close tolerances if they are to develop pressure.*

3 – *Clean the system and reservoir each time you change the oil.*

Control Valve:

This valve is operated by a handle mounted on the valve housing. It controls fluid flow direction, pressure or flow rate; (by way of spool activation.)

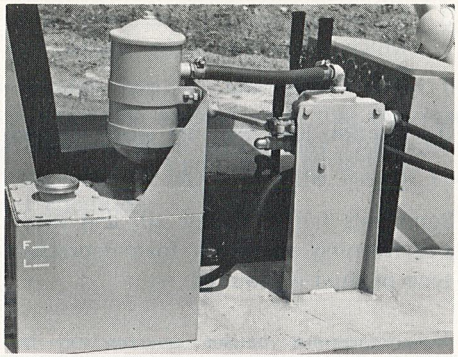


Relief Valve (Pressure Control):

A pressure control valve whose primary function is to limit system pressure. This relief valve is designed to give overload protection for the hydraulic circuit and structural members of the machine due to excessive pressure build up.

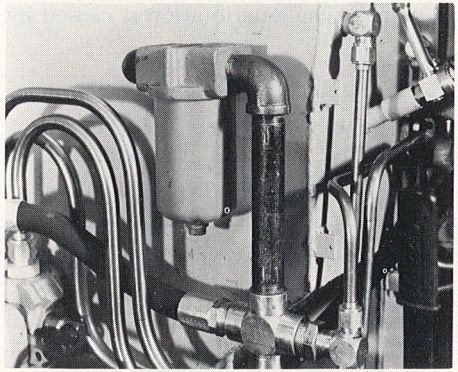
Filter:

The No. 1 enemies of hydraulic pumps, valves and other components are dust, dirt, or any foreign matter in the oil system.



Hydraulic System Filter:

One inside the tank. One type engine oil filter on the return line.



The importance of Filtration:

The correct filter plus regular maintenance can eliminate a great percentage of the causes of hydraulic system failure. Contaminants may enter through the seals, and breather caps in reservoirs. Replenishing fluid may contain dirt. When the system is opened, lint could enter. Foreign particles produced by wear, abrasive dust, and metal chips may be present. When these particles are present in the system they get between moving parts and score the surfaces to greater clearances resulting in internal leakage. This generates heat, lowers the efficiency of pumps and cylinders, which decreases the ability of valve control flow. Parts may stick or seize due to sludge or silting. The importance of a clean hydraulic system cannot be over emphasized.

Hydraulic Fluid:

Most of the troubles caused by overheating, air-entrapment, and contamination of the oil, can be traced to inadequate preventive maintenance; failure to keep a close watch on the condition of the hydraulic fluid. Air in the oil leads to overheating when pressure is applied by a pump. The heat, in turn, causes oil breakdown and the formation of deposits within the oil and on the surfaces of precision-finished components. And like any contaminant, air destroys the lubricity of the oil.

All oils eventually break down through use and oxidation, condensation, and contamination. Frequent changes, keyed to operating conditions, avert heating from these causes.

Operating equipment beyond its rated capacity guarantees overheating. Improper relief-valve adjustment and delayed replacement of worn parts sometimes is indicated by a tendency to overheat.

Air entrapment:

May be caused by:

1 – Improper purging when filling the system with oil, leaving pockets of air in the line.

2 – Loose connections and worn seals, which allow air to be drawn into the system.

3 – Suction lines that are worn, chafed, or fretted, admitting air.

Some oils fail to release air, and excessive foaming occurs. A foam-depressant type of fluid is required.

Air-entrapment causes overheating because a gas, when compressed, gets hot. Considerably more air can be dissolved in oil under pressure.

Aerated oil produces cavitation damage in pumps. The deterioration is caused by the abnormally high temperatures developed and the instantaneous changes in volume.

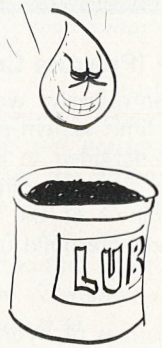
NOTE: *Check pump performance periodically with a portable flow meter. (Be sure to check the flow meter occasionally).*

Cold Weather Precautions:

In cold weather, most of the precautions required for engines and mechanical systems apply to hydraulic systems; shelter, warm-up procedures, low-viscosity oils, and steps to minimize condensation.

"You are driving me nuts."

"Who put sand in the vaseline?"



"I am fresh and can't wait to warm up."

10 – LUBRICATION:

Mechanism in general, requires lubrication. Given the importance of that subject, it must be insisted upon that you read and execute thoroughly the following given instructions. Using the recommended lubricants at prescribed intervals is half the task of keeping your vehicle in excellent condition.

LUBRICANT CHART

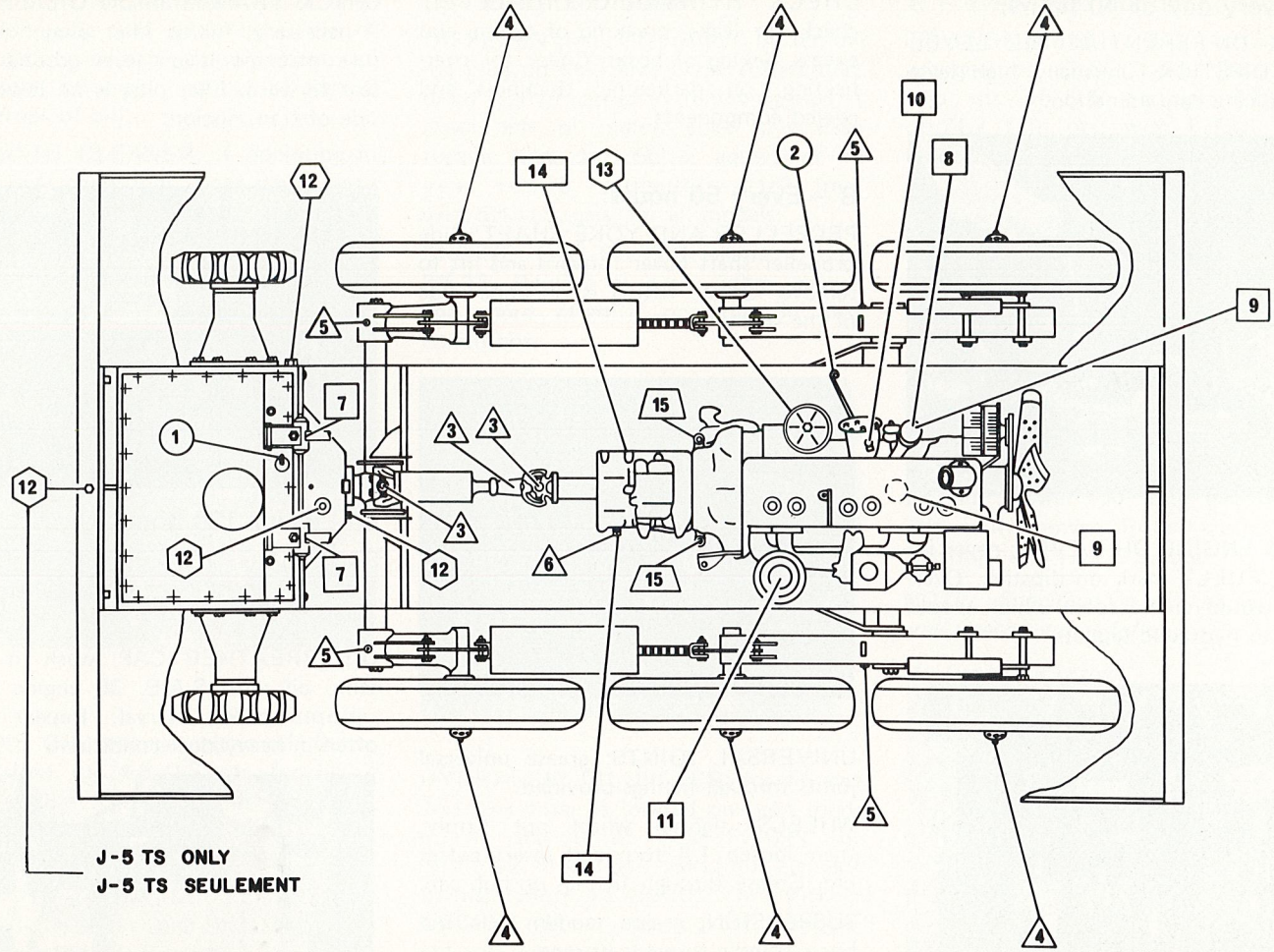
Item	Recommended	Operating temp.	Lubricant
Crankcase	Multi-viscosity motor oil	Above 32°F. 10° to 32°F. –10° to 10°F. Below –10°F.	S.A.E. 20W-40 S.A.E. 10W-30 S.A.E. 10W-20 S.A.E. 5W-20
Differential	Esso Torque Imp. No. 56	All year round	
Transmission	Gear Oil		S.A.E. 75-80
Grease fittings	Good Quality Multi-purpose grease	Above 0°F. Below 0°F.	Water resistant grease Superior shear stability grease
Hydraulic System J-5 and J-5T	Esso Univis No. 42	Summer Winter	SD-20W SD-10W
Mower, J-5TS Assembly	Multi-viscosity oil	All year round	SD-10W

LUBRICATION SCHEDULE

Ref. No.	Lubrication points	Grease	Change	Check	Few Drops of oil	Every
1	Differential oil level*			●		10 hours or daily ○
2	Engine oil level			●		
	Hydraulic oil level			●		
3	Propeller and yoke shaft (joints)	●				50 hours △
4	Wheels	●				
5	Suspension	●				
6	Transmission oil level			●		
7	Steering and brake band yokes	●				100 hours □
8	Oil breather cap**			●		
9	Engine oil (fill and drain)		●			
10	Distributor cam and wick				●	
11	Oil bath cleaner**		●			
	Clutch, throttle, levers				●	
12	Differential oil** (fill and drain)		●			200 hours ⬡
13	Engine oil filter**		●			
	Hydraulic oil filter		●			
14	Transmission oil (fill and drain)		●			600 hours ▭
15	Clutch release fork	●				1,200 hours ⏢
	Hydraulic oil		●			

* Check for water contamination.

** More often in dusty conditions.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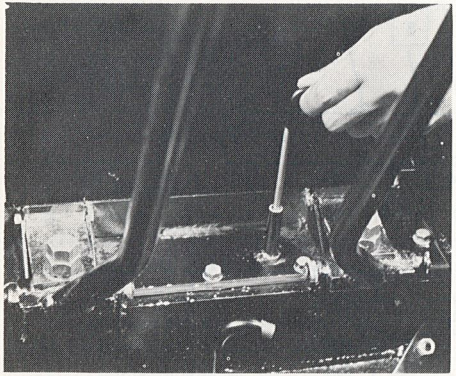
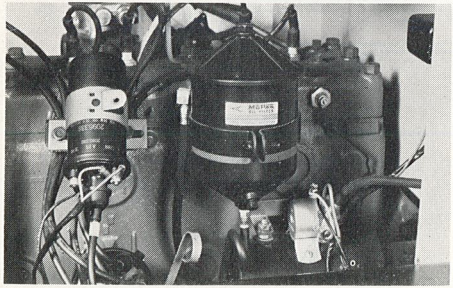
J-5 TS ONLY
J-5 TS SEULEMENT

A – Every day or 10 hours:

CHECK DIFFERENTIAL OIL LEVEL WITH DIPSTICK, unusually high level may indicate contamination.



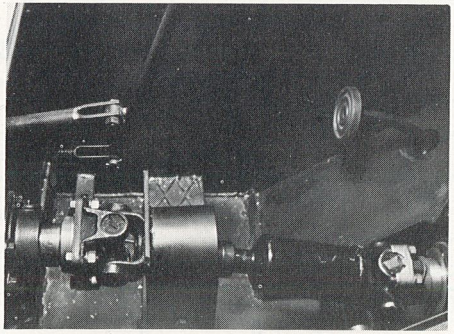
CHECK ENGINE OIL LEVEL; never fill above "FULL" mark on dipstick. Overfilling would create foam which would be fed to hydraulic tappets.



CHECK HYDRAULIC OIL LEVEL; check for leaks, breaking of tubing and excess flexing of hoses. Check for overheating, oil darkening, thickness and peeled components.

B – Every 50 hours:

PROPELLER AND YOKE SHAFT; slide propeller shaft cover forward and lift to remove. Grease fitting is on upper side of the shaft.

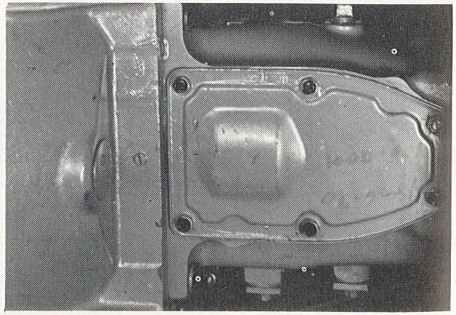


UNIVERSAL JOINTS; grease universal joints through fittings provided.

WHEELS; tighten wheel nut firmly, then loosen 1/4 turn and insert cotter pin. Grease through fittings on hub cap.

SUSPENSION; grease tandem axle and bogie spindle through fittings.

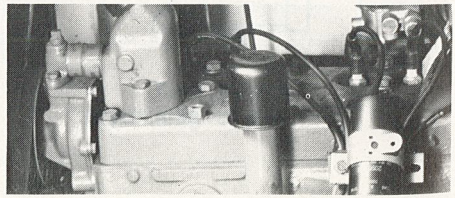
CHECK TRANSMISSION OIL LEVEL; if necessary, fill to filler plug hole. Be sure machine is on level ground. Lift seat forward, filler plug is on lower left side of transmission.



C – Every 100 hours:

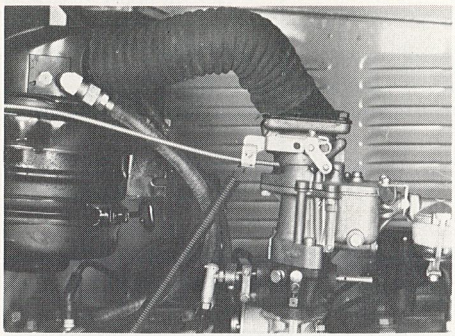
STEERING AND BRAKE BAND YOKES; grease where levers contacts yokes.

OIL BREATHER CAP; wash in kerosene, oil with S.A.E. 30 engine oil at recommended interval. Repate more often in heavy dust conditions.



DISTRIBUTOR CAM AND WICK; wipe off old grease and apply light film of fresh distributor cam grease, remove cap and rotor, oil wick in center of cam (2 or 3 drops of oil).

OIL BATH CLEANER; if operating in heavy dust conditions, clean daily; clean receptacle and fill to mark with fresh engine oil. Quantity: 1/2 Imp. pint/0.6 U.S. pint.



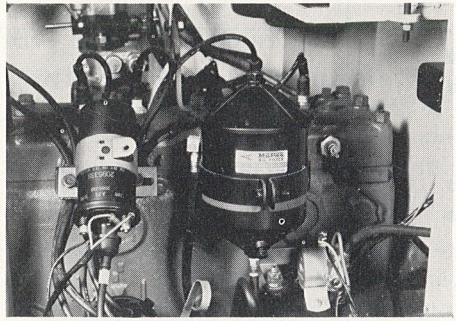
ENGINE OIL; change engine oil. Quantity 4 Imp. qts./4.8 U.S. qts. for J-5. 7 Imp. qts/8.4 U.S. qts. for J-5T and J-5TS. Add 1 qt. with oil filter.

CLUTCH, THROTTLE LEVERS; remove floor plates and shaft cover, oil rod where there is friction.

D – Every 200 hours:

DIFFERENTIAL OIL; empty by removing plug on the frame under differential, drain rear of carrier by removing plug at lower left of pinion yoke. Use Esso torque Imp. No. '56 or equivalent all year round. Quantity: 4-1/2 Imp. gals./5.4 U.S. gals. for all models.

ENGINE OIL FILTER; element type PM-13. Replace at every other change and more often if operating in dust conditions.



HYDRAULIC OIL FILTER; for J-5 and J-5T the filter is located on right mudguard and is of type FH-8-PL or WIX-P-92. For J-5TS, use filter element Bombardier (1189001) or Vickers (228467). When replacing use new gasket and tighten securely.

E – Every 600 hours:

TRANSMISSION OIL; change oil use gear oil 75-80 S.A.E. Quantity: 3 Imp. qts./3.6 U.S. qts. and 3-1/2 Imp. qts./4.2 U.S. qts. with P.T.O. for all models.

F – Every 1,200 hours:

CLUTCH RELEASE FORK; clean and wipe-off old grease and put on fresh grease.

HYDRAULIC OIL; change oil. Use multi-viscosity oil. Quantity: 3-1/2 Imp. gals./4.2 U.S. gals. for J-5 and J-5T. J-5TS: 27 Imp. gals./32.4 U.S. gals. without mower. 30 Imp. gals./36 U.S. gals. with mower. Rotary cutter drive: 7/8 Imp. qts./1.04 U.S. qts.

NOTE: *Specification oil change is generally peformed as follows:*

1) *Drain the system.*
2) *Flush the system thoroughly, using as flushing oil, the new specification oil.*
3) *Fill the system with fresh new specification oil to indicated "FULL" mark.*
4) *Operate system for a few minutes and check for leaks.*
5) *Check oil level.*

11 – MAINTENANCE:

MAINTENANCE SCHEDULE

Items	Check	Adjust	Change	Clean	Every
Radiator coolant	●				
Fan and alternator belt	●				
Chassis and suspension				●	10 hours
Tracks	●				
Wheels (100 lbs. tire pressure)	●				
Steering levers	●				
Battery electrolyte level	●				
Axle support bolts	●				
Wheel bearings		●			50 hours
Suspension bearings		●			
Air cleaner	●				
Battery cables	●				
Ventilator valve				●	10 hours
Clutch		●			
Wiring	●				
Spark plugs (.035 inch)				●	
Distributor points	●	●		●	
Fuel Filter			●		300 hours
Spark plugs			●		
Ignition timing	●	●			

A – Daily or every 10 hours:

RADIATOR COOLANT LEVEL: Check. Maintain within 4 inches of filler neck and remove dirt from radiator core.

FAN AND ALTERNATOR BELT: Correct if necessary, 1/4 inch deflection at mid-point. Check wear.

CHASSIS AND SUSPENSION: Remove mud and dirt from tracks, wheels and frame.

TRACKS: Check tension, cross links, track guards and condition of track belts.

WHEELS: Maintain tire pressure at 100 lbs. and check wear.

STEERING LEVERS: Maintain 3 inches between levers and panel.

B – Every 50 hours:

BATTERY ELECTROLYTE LEVEL: Check and maintain electrolyte level.

AXLE SUPPORT BOLTS: Tighten firmly.

WHEEL BEARINGS: Check and adjust wheel bearings.

SUSPENSION BEARINGS: Tighten firmly, if bearing still loose, add shim between inner grease retainer and frame cross tube.

AIR CLEANER: Check and clean receptacle.

BATTERY CABLES: Check and keep terminals and connections clean and secure.

C – Every 100 hours:

VENTILATOR VALVE: Remove valve and tube, disassemble and wash with solvent, dry and reassemble. Clean more often when operating under heavy dust conditions.

CLUTCH: Tilt operator's seat forward. Adjust to 1 inch free-play by unlocking bolts on clutch release fork. If too tight, damage on bearing will result from friction.

WIRING: Look for loose connections, frayed, broken or scorched wires.

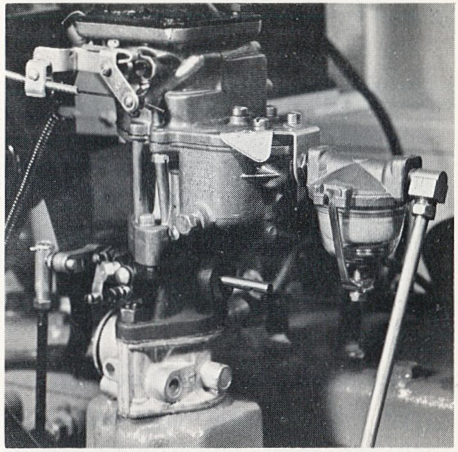
SPARK PLUGS: Check for oil fouling or burned condition. Clean and reset gaps to 0.35 inch. Tighten to 25 ft. lbs.

NOTE: *Without suppression 0.25 inch gap.*

DISTRIBUTOR POINTS: Clearance should be .020 inch. Tighten lock screw and make sure the braker point spring tension is between 17 and 21.5 ounces.

D – Every 300 hours:

FUEL FILTER: Located between fuel pump and carburetor. Check for rust which may indicate fuel supply needs attention. Check for leaks.



SPARK PLUGS: Change.

IGNITION TIMING: Check and adjust if necessary.

REPAIRS

1 – TRACKS:

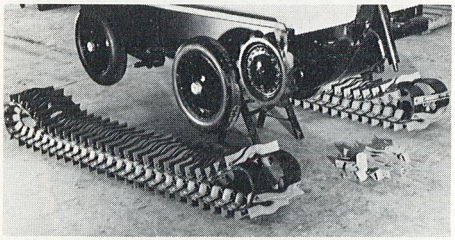
To remove Tracks:

a) Jack-up machine and remove center wheel.

b) Release track tension by bleeding track adjuster.

c) Loosen 4 nuts on rear wheel spindle assembly and remove 2 cross links over the sprocket.

d) Pull the track off the rear wheel with the help of the engine starter.



To install Tracks:

a) Jack-up machine.

NOTE: *Front wheel, rear wheel and sprocket must be in place before installing track.*

b) Remove center wheel and two cross links on track.

c) Loosen bolts on rear spindle and advance rear wheel.

d) Place track (where cross links are off) over the sprocket and move the track forward with the help of the engine starter, then slide track under the rear wheel.

e) Lower rear of tractor and place cross links, then lower front of tractor.

f) Place a 2-ft. long 2 x 4 block on the lower track on each side of the wheel and then move track on reverse with the engine starter.

This allows the slack in the track to be in the rear.

g) Lift rear of tractor and push the rear wheel backward using a hooked bar to help.

h) Lower the tractor and place the hydraulic track adjuster in position, use a pressure grease gun to fill the latter. Backward hooked bar pressure would help.

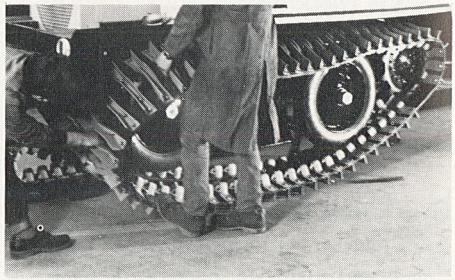
i) Lift rear of vehicle to place center wheel in position, with the use of a wrecker bar.

j) Insert bearings and spindle nut and tighten. Turn back 1/4 turn, insert cotter pin and hub cap.

k) Refill hub cap with grease through fittings.

l) Adjust track tension, leaving approximately 2 inches between center and rear wheel.

m) Tighten bolts on rear tandem wheel assembly. If track tension needs adjustment, make sure vehicle rests on solid and even ground.



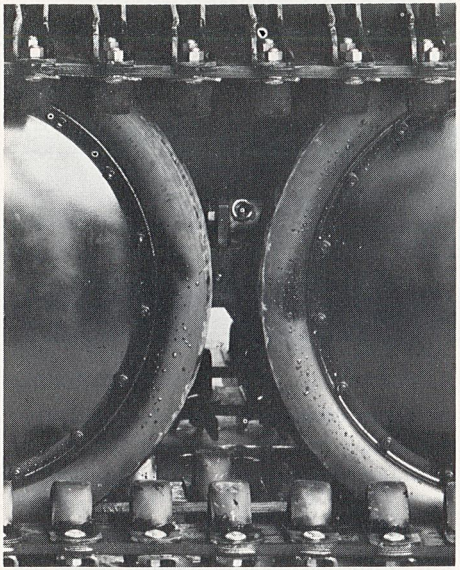
NOTE: *Always check for loose bolts before installing track. Any bolts sticking out could cause belt clatter and unnecessary wear.*

To adjust Track tension:

a) Make sure the vehicle is on solid and even ground.

b) Loosen bolts on rear spindle assembly.

c) Pump grease through the hydraulic track adjuster grease fitting until the free-play between track and front wheel is about 1 inch.



d) Tighten the bolts on the rear wheel spindle assembly.

To release Track tension:

a) Make sure vehicle is on even ground.

b) Loosen bolts on rear spindle assembly.

c) Bleed track adjuster by removing the grease fitting.

2 – DRIVE:

To remove Drive Sprockets:

a) Release track tension.

b) Bring slack of track over the sprocket.

c) Remove 4 cross links over the sprocket.

d) Remove sprocket flange.

e) Remove sprocket.

To remove Sprocket-Drive Axle Assembly:

a) Release track tension.

b) Carry slack of track over the sprocket.

c) Remove 5 cross links over the sprocket.

d) Remove bolts holding sprocket-axle housing to frame.

e) Remove the sprocket-axle assembly and put flat on the ground, axle housing on top.

f) Press on the lock sleeve and remove the lock ring, using a screwdriver.

To install Sprocket and Sprocket-Axle Assembly:

Reverse the removal procedure.

3 – WHEELS:

To remove Front Wheel:

a) Jack-up the vehicle by the bogie spindle.

b) Release track tension.

c) Remove 2 track guards facing the wheel.

d) Remove hub cap.

e) Remove cotter pin and spindle nut.

f) Remove the wheel being careful not to get any dirt into the unit.

To reinstall Front Wheel:

a) Reverse the removal procedure.

b) Tighten spindle nut firmly, loosen 1/4 turn and insert cotter pin.

c) Grease through fitting on hub cap.

To remove Center Wheel:

a) Jack-up the vehicle.

b) Remove hub cap.

c) Remove cotter pin and spindle nut.

d) Remove wheel being careful not to get any dirt into the unit.

To reinstall Center Wheel:

a) Reverse the removal procedure.
b) Tighten spindle nut firmly then loosen 1/4 turn and insert cotter pin.
c) Grease through fitting on hub cap.

To remove Rear Wheel:

a) Jack-up the machine.
b) Release track tension.
c) Remove track (see 1-Track removal).
d) Remove hub cap.
e) Remove cotter pin and spindle nut.
f) Remove the wheel being careful not to get any dirt into the unit.

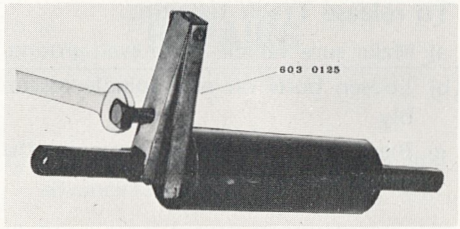
To reinstall Rear Wheel:

a) Reverse the removal procedure.
b) Tighten the spindle nut firmly then loosen 1/4 turn and insert cotter pin.
c) Grease through fitting on hub cap.

4 – SUSPENSION:

To remove Bogie Spring:

a) Jack-up the vehicle.
b) Remove center wheel (see 3-wheels)
c) Extend bogie spring using the bogie spring extender (603 0125) as illustrated.



d) Remove nuts holding bogie spring to bogie spindle and rear tandem assembly.
e) Remove bogie spring.

To reinstall the Bogie Spring:

a) Extend bogie spring with the bogie spring extender (603 0125) as illustrated.
b) Bolt bogie spring to rear tandem assembly and to bogie spindle.
c) Release bogie spring extension.

To remove Bogie Spindle:

a) Jack-up the vehicle.
b) Release track tension.
c) Remove front wheel (see 3-wheels).
d) Disconnect bogie spring from bogie spindle (see bogie spring removal).
e) Remove bogie spindle cotter pin and nut.
f) Remove bogie spindle.

To reinstall Bogie Spindle:

a) Reverse the removal procedure.
b) Grease through fittings provided.
c) Tighten bogie spindle nut firmly, loosen 1/4 turn and insert cotter pin.

To remove Rear Tandem Assembly:

a) Jack-up the vehicle.
b) Remove the track (see 1-tracks).
c) Remove wheels (see 3-wheels).
d) Disconnect bogie spring from rear tandem assembly. (see bogie spring removal).
e) Remove the rear tandem spindle cotter pin and nut.
f) Remove rear tandem assembly.

To reinstall Rear Tandem Assembly:

a) Reverse the removal procedure.
b) Tighten rear tandem spindle nut firmly then loosen 1/4 turn and insert cotter pin.
c) Grease through fittings provided.

5 – PROPELLER SHAFT AND DIFFERENTIAL:

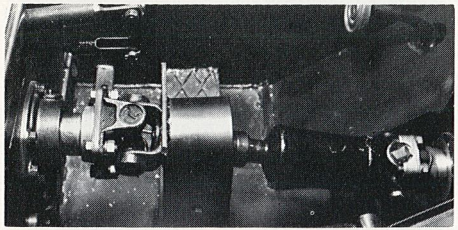
The propeller shaft is located under the protective cover on the floor between the operator's legs. To have access to the propeller shaft, remove wing nut on the front end of cover.

To remove the two floor plates, unscrew pedal pads and bolts on upper corner of each plate.

The drive line may be disconnected at the universal joints on either ends of the propeller shaft; by removing bolts holding joint flange to its unit.

Before the slip joint can be pulled apart, the dust cap must be unscrewed from the sleeve, or female member.

NOTE: *Punch mark both members before disassembling so as to reassemble correctly.*



Universal Joints:

Pinch the ends of the snap rings together and remove rings and lubrication fittings. Bring out the opposite trunnion bearing from yoke then bring out the other bearing by using a brass drift on the end of the trunnion pin. Move the journal sideways as far as possible then tilt it so it will clear the side of the yoke. Clean and inspect all parts and replace those that are worn or damaged.

To reassemble:

a) Make sure universal joint bearings are well lubricated and always use new cork seal.

b) Insert one trunnion of the journal into the yoke as far as possible from the inside and tilt until the opposite trunnion clears the yoke and drops into position. With seals and retainers in place, insert the bearings from outside the yoke, tapping into place with a brass hammer (never use a steel hammer).

NOTE: *The use of new rings is recommended.*

Then tap trunnion bearings against snap rings.

Now assemble joint to propeller shaft making sure splines are lubricated and that punch marks are in line. Change oil seals on slip joint.

NOTE: *Reassembly should be made in the reverse order to removal.*

Differential:

1 – Disconnect battery, remove bolts that are holding gas tank protector to body and be sure to disconnect all electrical connections between panel and body, then remove hood.

If the vehicle is equipped with optional cab or hydraulic equipment, then remove choke and/or disconnect the hydraulic equipment between cab or hood and body.

2 – Remove fuel line and release two security straps by removing screws at the lower ends.

3 – Remove nuts on the end of the yoke which passes through steering lever plate, lift the plate, then remove all bolts around differential cover.

Since assembling differential proved more difficult than dismantling, we shall hereby explain the assembly procedure.

NOTE: *To dismantle reverse procedure.*

Punch Marks:

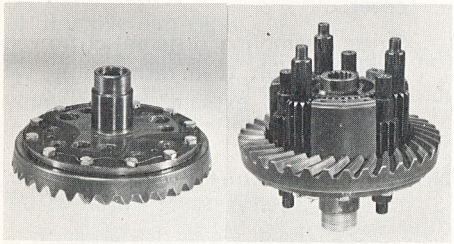
Existing on gears; dot like punch marks located on the out-facing side of pinion and planetary gears. When assembling differential, install gear such that the marks are in line between center of gear and center of differential assembly.

Side and center cases punch marks; dot like punch marks located at both ends of differential assembly, on the side and center cases. These marks must be in line and correspond to one another.

Before dismantling differential, punch mark all parts, so to reassemble in same place.

1 – Starting with differential side case (682 0022), with center and side cases L.H. or R.H., bolt to the crown gear (103 1002) by means of 12 bolts (309 8018) of torque 80 ft. lbs.

NOTE: *The crown and pinion*



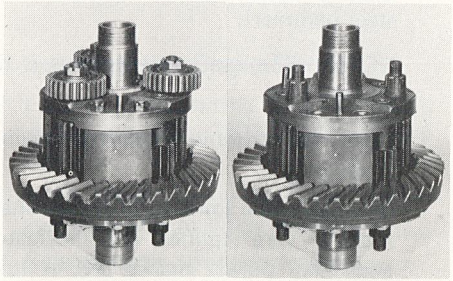
gears are furnished in matched sets, and if either is damaged, both must be replaced.

2 – Lock the bolts in position, by means of a 14 gauge continuous wire through the holes provided in the head of the bolts.

3 – Oil all bushings well on the center and side cases (682 0022) then place the axle gear in place (608 0024). (See punch marks)

4 – Place the differential center case carefully on the three dowel pins (608 0019) and press center case into position. (See punch marks)

5 – Place differential planetary thrust washers (114 0162, 114 0163) over the bushing holes, then place the differential pinion gears (608 0026) in the holes; three up and three down according to hole size. Align



with reference marks. (See punch marks)

6 – Place the second axle gear (608 0024) in position.

7 – Place the differential planetary thrust washers (114 0162, 114 0163) on the end of the differential pinion gear (608 0026) ends.

8 – Place the differential side case on top of assembly using the holes provided, and bolt with 6 differential gear case bolts (309 8015). (See punch marks) Tighten nut.

9 – Using a wrench about 8" long, turn the differential pinion gears to test for ease of action. If too tight, teeth will have to be inspected again, and if necessary, the part changed. They should turn without effort.

10 – Insert cotter pins in each differential gear case nut (381 2028) and bolt.

11 – A brake drum gear thrust washer (608 0013) is added to the base of sleeve (608 0076) and secured by means of two tiny pins pressed into place.

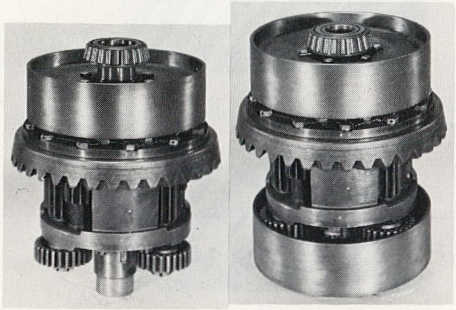
12 – Place synchronized planetary gears (608 0015) on the ends of each differential pinion gear (608 0026) and secure with washer (391 0036) nut (389 8008) and cotter pin (371 0033) with 100 ft. lbs. torque. (See punch marks)

13 – Place steering brake drum assembly with brake drum gear and turn to verify if all turns well.

14 – Remove brake drum and force the dowels (608 0019) completely into the opposite side case if everything turns correctly.

15 – Add the second large thrust washer on the other sleeve and press in the small pins.

16 – Add the three remaining planetary gears (608 0015) to the second side case on the ends of the differential pinion gears (608 0026).



17 – Place the drums assembled with brake drum gear and lock on the assembly.

18 – Press the differential carrier bearing cone (105 0025) to the assembly; both sides.

NOTE: *Use proper puller (629 0009) for the differential bearing cones.*

Differential Backlash Adjustment:

The differential carrier is bolted and tack welded to the frame. When removing differential, unsolder and remove bolts. Then hoist differential and carrier assembly.

Backlash adjustment can be made before placing differential and carrier assembly into position.

1 – Clean adjuster bearings (608 0018) in solvent and dry. Verify the threads.

2 – Screw the adjuster bearings (608 0018) into the carrier housing.

3 – Place the stiffener (608 0041) and tighten bolts.

4 – Paint blue layout fluid sparingly on both sides of the teeth of crown gear. When the pinion is rotated, the fluid is squeezed away by contact of the teeth, leaving bare areas of contact. With adjustment properly made, the correct tooth contact will be secured.

5 – Use a gauge micrometer to test for backlash, to a tolerance of .007 inch. Should it not test correctly, the adjuster bearings should be moved accordingly to .001 inch. This is called correcting for backlash. The teeth mark on the layout fluid should be in the center.

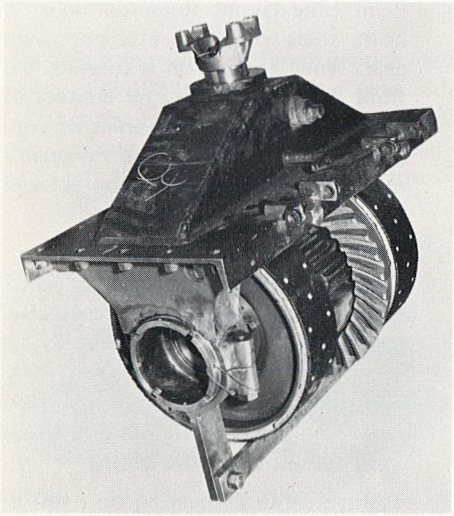
6 – Tighten adjuster bearing bolt (~~90~~ 20 to 25 ft. lbs.) and lock the adjuster bearings into position on the outside with 14 gauge wire.

Placing Differential and Carrier Assembly into Position:

1 – Clean the differential carrier with solvent and dry with pressurized air.

2 – Place the brake bands on the differential assembly. Grease brake band yoke ends.

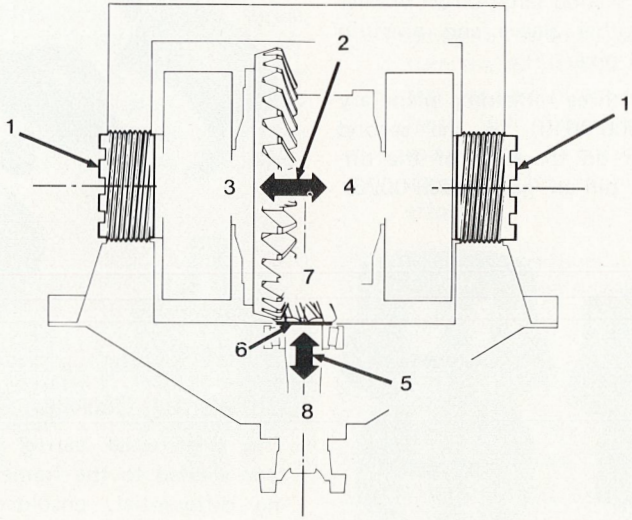
3 – Lower the differential and carrier assembly into place.



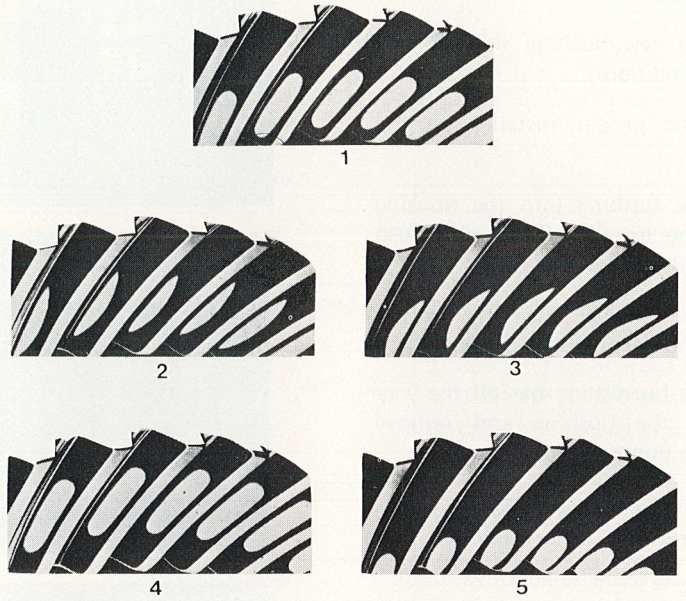
4 – Bolt and weld both ends of differential carrier to the frame. Weld about 1" long, on top. Make sure differential "U" gasket is in good condition.

5 – Place gasket and differential cover into position and bolt.

6 – Verify if all plugs are in place and then refill the differential with 4½ Imp. gallons/5.4 gallons U.S. of Esso-torque Imperial No. 56 or equivalent.



1. Bearing adjuster
2. Backlash adjustment
3. Increase backlash
4. Decrease backlash
5. Pinion depth adjustment
6. Shims
7. Add shims
8. Remove shims



1. Correct tooth pattern
2. Low contact
3. High contact
4. Contact on the heel
5. Contact on the toe

NOTE: *Two adjustments affect crown gear and pinion tooth contact. They are pinion depth and backlash. Adding or removing shims would move pinion toward crown gear or away from it. Increasing or decreasing backlash could move the crown gear toward pinion or away from it. So when replacing a crown gear and pinion it should be noted that the original factory-installed shim is of the correct thickness. If the original shim pack was lost or if a new carrier housing is being istalled, substitute a nominal shim for the original and run a tooth pattern. The tooth pattern will indicate if shim pack needs to be increased or decreased.*

Bushing Installation:

The following tools are required in the removal and installation of bushings:

(629 0018) Brake drum gear bushing installer.

(629 0017) Center and side case bushing installer.

(629 0020) Pinion gear large bushing installer.

(629 0019) Pinion gear small bushing installer.

(629 0016) Pinion gear large bushing 1¼ burnishing bar.

(629 0015) Pinion gear small bushing 1 inch burnishing bar.

A bushing remover punch.

A suitable press.

To remove bushings, insert bushing remover punch between the bushing and the case and pry out the bushing.

To install:

1 – Position the bushing housing on the table of a press.

2 – Start the new bushing straight into the housing bore.

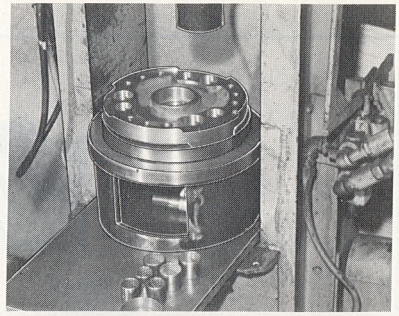
3 – Insert the proper installer on the bushing.

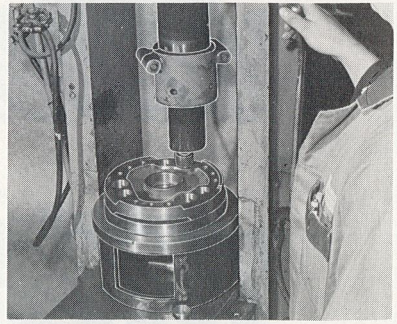
4 – Press the bushing into the housing where the installer flange sits flush with the housing.

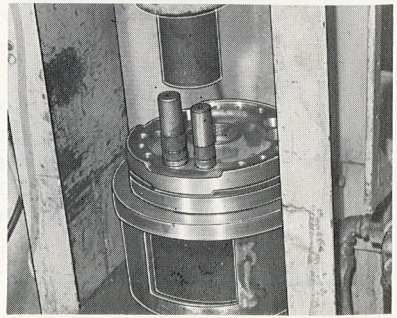
5 – Place the smaller diameter of the burnishing bar into the bushing.

6 – Press the burnishing bar all the way through the bushing and remove from the opposite side.

NOTE: *Do not drive bushings with steel hammer.*







6 – CONTROLS:

Steering and brake levers are adjusted by means of a nut. Leave about 3 inches of free-play between levers and instrument panel. Adjust all control rods from the pedals by means of adjusting nuts.

CHAPTER VI TROUBLE SHOOTING

1 – ENGINE

See engine manufacturer's manual.

2 – CLUTCH

TROUBLE	CAUSES	SUGGESTIONS
Clutch is slipping	a) Adjustment	1. Check clutch release lever adjustment and correct if necessary. 2. Check clutch linkage adjustment and correct if necessary.
	b) Clutch mechanism	1. Check and change weak or broken clutch pressure plate springs. 2. Check for worn or broken or glazed facings on clutch disk, change if necessary. 3. Check for oil or grease on clutch disk facings, clean or change if necessary. 4. Check for warped clutch disk, change if necessary. 5. Check for warped or scorched pressure plate, get pressure plate machined if necessary. 6. Check for binding clutch release lever, change if defective.
Clutch is noisy	a) Release lever	1. Check for improper clutch release lever adjustment. Correct if necessary. 2. Check for binding release lever, change lever or assembly if necessary.
	b) Disks facings	Check for oil or grease on disks facings, clean or change.
	c) Transmission shaft	Check for worn spline on transmission shaft or on clutch disk hub.
	d) Pressure plate	Check for binding pressure plate and repair defective corts.
	e) Clutch disk	1. Check for a binding clutch disk hub. Change disk assembly or repair faulty parts. 2. Check for bent clutch disk. 3. Check for loose clutch disk facings if loose, change clutch disk assembly.
	f) Clutch release lever spring	Check for uneven lever spring pressure. Change springs if necessary.
	g) Alignment	Check transmission to clutch housing alignment. Realign if necessary.

3 – TRANSMISSION

TROUBLE	CAUSES	SUGGESTIONS
Transmission hard to shift	a) Clutch mechanism	1. Check and readjust clutch pedal free-play. 2. Check for binding of throw out bearing. 3. Check the alignment of clutch housing with transmission housing.
	b) Transmission mechanism	1. Check for binding of shaft linkage. 2. Check for worn parts in shift housing. 3. Check for burred splines or defective shifting parts. 4. Check if lubricant used in transmission is of the correct type.
Transmission is noisy	a) Internal mechanism	1. Check and change badly worn pitted or chipped gears. 2. Check and change badly worn pitted or chipped bearings. 3. Check for excessive clearance due to worn shaft. Change the shaft if the play is out of specifications.
	b) Transmission assembly	1. Check for loose transmission mounting bolts. Tighten bolts or change mounting if necessary. 2. Check if transmission is well lined up with engine and drive line. 3. Check transmission oil level.
Transmission does not stay in gear	a) Shifting mechanism	1. Check for broken rail poppet notch worn interlock and poppet balls. 2. Check for spring or loose transmission shift fork or loose gear shift cover bolts.
	b) Transmission assembly	1. Check for proper alignment of transmission, clutch housing and flywheel. 2. Check end play of transmission main shaft, repair if out of specifications. 3. Check linkage adjustment.
Transmission oil leak	a) Overfilled	1. Correct transmission oil level. 2. Check type of oil. Drain oil if incorrect.
	b) Transmission assembly	1. Check for excessive bolt threads clearance. 2. Check for broken or misaligned gaskets and oil seals.

TROUBLE	CAUSES	SUGGESTIONS
The clutch is grabbing	a) Adjustment	1. Check and readjust improper clutch release lever adjustment. 2. Check transmission for clutch housing misalignment.
	b) Clutch disk	1. Check for oil or grease on clutch facings, clean or change disk if necessary. 2. Check for clutch disk hub sticking on transmission shaft and investigate splines conditions. 3. Check for worn or glazed facings.
	c) Clutch mechanism	1. Check for worn pressure plate of flywheel. 2. Check for worn or binding clutch release lever, if defective change it. 3. Check and change broken or weak clutch release springs.
	d) Engine mounting support	Check and change loose or deteriorated engine mounting support.
Clutch is dragging	a) Adjustments	1. Check adjustment of clutch release lever. 2. Check adjustment of clutch linkage.
	b) Clutch assembly	Check for dust or ditr accumulation into clutch assembly.
	c) Clutch mechanism	1. Check for worn or broken disk facings. 2. Check for binding clutch disk hub on transmission shaft. 3. Check for binding transmission shaft into flywheel pilot bushing. 4. Check for sticking clutch release bearing sleeve. 5. Check for warped pressure plate. 6. Check for improper transmission to clutch housing alignment.
	d) Water in tub	Drain.

4 – DIFFERENTIAL

Noisy axle on drive	a) Insufficient oil	Add oil
	b) Crown gear and pinion	Check for scored crown gear and pinion.
	c) Carrier bearings	Check and change worn carrier bearings.
Noisy axle on coast	a) Crown gear and pinion	Check for scored crown gear and pinion. Check for backlash between crown gear and pinion. If necessary, replace bearings, ring and pinion.
	b) Pinion	Check for end play in pinion.
Noisy axle on both drive and coast	a) Crown gear pinion and differentiel bearings	Check and replace damaged pinion, gear and bearings.
	b) Crown gear or pinion scored	Check and replace crown gear and pinion.
Excessive backlash	a) Axle gears and pinion	Check for worn axle gears, splines and idling pinions.
	b) Universal joints	Check and replace worn universal joint parts.
	c) Crown gear, pinion and differential	Check for worn crown gear, pinion and differentiel side bearings.
Lubricant leaks	a) Differential carrier housing	Check gaskets.
	b) Pinion housing	Check oil seals.
	c) Sprocket	Check hub oil seal.

TROUBLE	CAUSES	SUGGESTIONS
Veers to one side	Faulty bogie spring	1. Tighten bogie spring by backing up to second anchor hole. 2. If at 2nd hole, advance other side to first hole.

8 – BRAKE

No brake	a) Loose bolt on yoke	Tighten
	b) Worn brake lining	Replace

9 – ELECTRICAL

Flichering lights	a) Loose connections	Tighten
	b) Poor ground at socket	Tighten connection.
Starter failure and dimming of lights	a) Weak battery	Charge.
	b) Loose connections	Tighten.
	c) Dead battery cells	Replace battery
	d) Corroded terminals	Clean.
Failure to light	a) Burned out bulb or unit	Replace.
	b) Faulty wiring	Check and correct.
	c) Light switch	Charge.
	d) Loose connections	Tichten.
	e) Run down battery	Charge.

10 – HYDRAULIC SYSTEM

TROUBLE	CAUSES	SUGGESTIONS
Low pressure in system	a) Air in system	Bleed the system.
	b) Clogged inlet strainer	Repair.
	c) Defective pump	Replace.
	d) Dirt	Clean tank with pressurized air.
No pressure in system	a) Not enough hydraulic fluid	Replenish.
	b) Inlet to pump blocked	Clean inlet.
Excessive noise	a) Air entering the pump line	Repair the line.
	b) Defective pump	Repair or replace.
Air in system	a) Defective seals	Change.
	b) Leaks in joints	Tighten.
	c) Loose inlet	Repair.
No response of controls	a) Dirt in system	Clean system.
	b) Leaking hose	Change hose.
Loss of power	a) Faulty valve	Check valve pressure.
Cavitation	a) Clogged oil filter	Drain system and clean filter.
	b) Leak in intake line	Tighten fittings or replace line.
	c) Overspeed of pump	Check engine governor.

HYDRAULIC TROUBLE SHOOTING:

Leak in fittings and hoses:

A dark accumulation of dirt around line, hose or fitting generally indicates a leak. Tighten and if repeating too often, replace fitting or damaged lines and hoses.

NOTE: *Oil leak causes low pressure which may damage the pump.*

Hydraulic Cylinders:

A good hydraulic cylinder leaves a film of oil on the extended rod. Any other condition indicates packing out or damage.

NOTE: *To avoid serious damage to pump, keep oil above level of pump intake lines.*

Sticking Valve Spools:

Most common causes of sticking and jamming of spools are overheating, excessive pressure, contaminated oil or warped mountings. Readjust relief valve if oil pressure not to manufacturer's recommendations.

Changing contaminated oil may solve the valve problem.

Regular oil change as recommended keeps system from deteriorating prematurely.

Good oil should be used, otherwise, unusual wear would occur.

Faulty Check Valve:

Most systems have load-holding check valves. If valve is not holding properly, dirt or rust between poppet and seat may be the cause. Clean valve and check the condition of the filter. The filter should be checked more often if operating in dusty conditions. Good care and regular maintenance is very important. It is also very important to remember that extreme caution must be taken in the operation of the hydraulic system, specially the mower equipment. Accident prevention is worth a lot more that a few minutes saved.

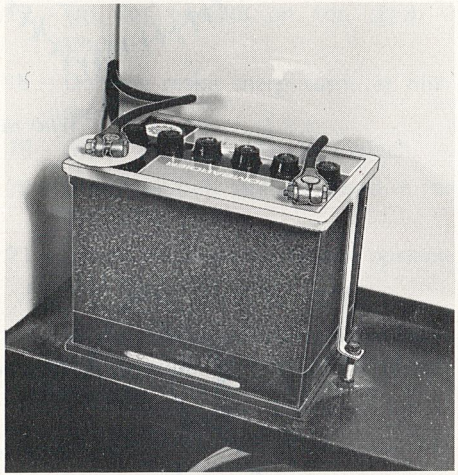
MISCELLANEOUS

1 – STORAGE:

Preparation for season storage of the J-5 is a very important factor in the protection of the vehicle from rust, corrosion and stress to which it is subjected.

A section of "Preparation of industrial engines for long term storage" may be found in Chrysler's Industrial Engine Operator's Manual. The following steps should be taken in the preparation of the other parts of the J-5.

a) Machine should be thoroughly cleaned.
b) It should be inspected and repaired if needed to.
c) Lubricate all points as mentionned in maintenance schedule.
d) Drain crankcase, differential, transmission and hydraulic system. Refill with fresh oil and operate a few minutes to check for leaks.
e) Lift and block vehicle off the ground to take the weight off the suspension.
f) Release track tension.
g) Relieve the load on all hydraulic equipment by operating valves to float position.
h) Remove battery and put on trickle charge or charge every 30 days.



Preparations should also be made in the storage of the equipment. Cleaning, oiling and greasing prevents rust and corrosion of parts.

2 – TOOL BOX:

Each vehicle is equipped with a number of items which proved valuable. They include:

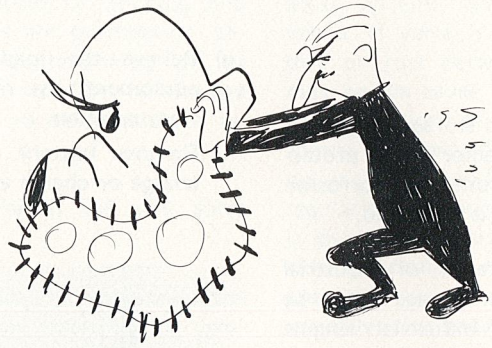
2 cross links
4 track guards
8 track bolts
8 track nuts
1 wrench
1 socket
1 grease gun
1 hub cap wrench
1 bleeder cap adjuster
1 maintenance manual (Chrysler)
1 operator's manual (Chrysler)
1 operator's manual (Bombardier Ltd.)
1 parts manual (Bombardier Ltd.)
1 bag

3 – SECURITY TIPS:

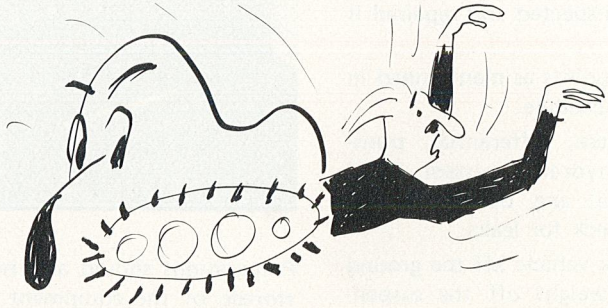
The operation of any mechanical device requires some security measures. It is important to be aware of some of the possible causes of accidents. Your own personal attitude will help avoid them.

Here are a few do's and dont's:

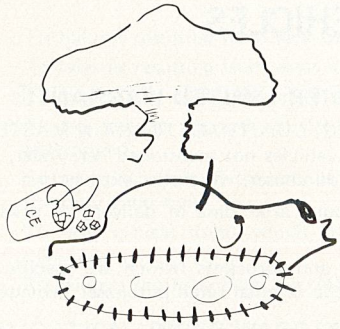
1 – Never fill fuel tank:
   a) When engine is running
   b) When smoking
   c) Near sparks or open flames
2 – Never oil, grease or adjust vehicle in operation.
3 – When starting engine make sure the drive train is disengaged in neutral.
4 – Vehicle should be operated only by those delegated to do so.
5 – Provide adequate ventilation when operating in an enclosed area.
6 – Operator should always be in the driver's seat.
7 – Do not dismount from vehicle while in motion.
8 – Operate at a moderate speed.
9 – Never leave engine running while unattended.
10 – Stop engine before working on accessories (specially the mower).



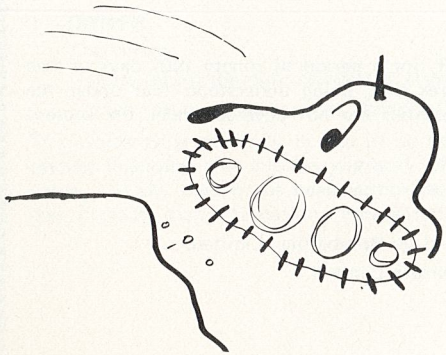
"Who needs who?"



"Next time, use blocks, Buster!"



"I have the feeling I'm going to crack up."



"OOUPS! forgot to start in neutral."

11 – Use hoist to lift heavy assemblies.

12 – To support heavy parts, replace jack with blocks.

13 – Never ignore loose or worn parts.

14 – Do not remove radiator cap when engine is hot.

15 – Seat and seat belt should be adjusted so operator may reach controls.

16 – Do not stand or walk near operating vehicle.

17 – Do not operate on too steep a slope.

18 – Do not make sharp turns at high speed.

19 – Stand far from operating winch.

20 – Winch or pull straight ahead in the desired direction.

21 – Check for branches or any obstacle that may harm you.

Special security measures must be taken in the operation of the J-5TS Mower Combination.

They are listed on page 19.

4 – PRE-DELIVERY SERVICE:

Before delivery, the vehicle was subjected to a series of checks and tests by the distributor, as prescribed by the manufacturer. It also went through rigorous inspections before leaving the factory.

You have the assurance that the new vehicle you took possession of at your local authorized dealer is in good working condition.

5 – 150 HOURS INSPECTION:

An inspection is to be made after 150 hours. The forms used for this inspection require your signature and must be forwarded to Bombardier Ltd.

NOTE: *Failure to have the 150 hours inspection performed, will render void any claims made thereafter.*

6 – OWNER'S RESPONSIBILITY:

Normal maintenance services such as, lubrication, engine tune-up, electrical checks, belt adjustments, and replacement of service items such as brake linings, spark plugs and ignition points, filters etc . . . are the responsibility of the owner and as such are not considered defects in material or workmanship under the provisions of the warranty.

WARRANTY FOR BOMBARDIER INDUSTRIAL VEHICLES

SUBJECT TO THE CONDITIONS AND EXCEPTIONS STATED HEREUNDER, BOMBARDIER LIMITED WARRANTS:

1 — Each new industrial vehicle, including track belts, crosslinks and sprockets, of type J-5, MUSKEG, QUA/TRAC, TERRAIN MASTER, SNOWMOBILE 12 passengers, TRAILERS T-6 and T-7 and all other Bombardier industrial type vehicles not mentioned hereunder, for a period of ninety (90) days or five hundred (500) hours, after date of delivery to original retail purchaser, whichever expires first.

2 — Each new industrial vehicle of type SW for a period of one (1) year or five hundred (500) hours, after date of delivery to original retail purchaser, whichever expires first.

3 — A) Each new industrial vehicle of type SKIDOZER, with the exception of track belts, crosslinks and sprockets (which are specifically covered below), for a period of one (1) year or five hundred (500) hours, after date of delivery to original retail purchaser, whichever expires first.

B) **WHERE VEHICLE TRAVELS ON SNOW ONLY:**

a) Track belts, steel crosslinks, steel-rubber crosslinks and sprockets used on every new vehicle of type SKIDOZER, for a period of one (1) year or one thousand (1000) hours, after date of delivery to original retail purchaser, whichever expires first, provided that the said vehicle has been used solely on snow.

b) Aluminum crosslinks used on every new vehicle of type SKIDOZER, for a period of ninety (90) days or five hundred (500) hours, after date of delivery to original retail purchaser, whichever expires first, provided that the said vehicle has been used solely on snow.

C) **WHERE VEHICLE TRAVELS ON TERRAIN OTHER THAT SNOW:**

Track belts, steel crosslinks and sprockets used on every new vehicle of type SKIDOZER, for a period of ninety (90) days or five hundred (500) hours, after date of delivery to original retail purchaser, whichever expires first, being understood that under the conditions described in present sub-paragraph, steel-rubber crosslinks and aluminum crosslinks are not covered under the present warranty.

WARRANTY NOT APPLICABLE:

This warranty does not apply:

1 — To failures resulting from repairs made by persons other than those employed and/or authorized by Bombardier Limited.

2 — To failures resulting from modifications or additions made without prior approval from Bombardier Limited.

3 — To failures resulting from accidents.

4 – To failures resulting from lack of preventive maintenance or failure to follow normal maintenance and storage procedures.

5 – To failures resulting from wear due to terrain conditions.

6 – To expendable parts, like spark plugs, etc. . . which must be periodically replaced during normal operation.

7 – To any vehicle upon which the hour-meter has been altered or disconnected in any way, such that the real time of operation cannot be determined.

8 – To all other parts of the vehicle for which there is a warranty other than that of Bombardier Limited and in which case such warranty is the only valid one.

9 – To any vehicle upon which the one hundred and fifty (150) hours inspection has not been made by an authorized Bombardier distributor.

10 – To failures resulting from overloading or misuse.

OBLIGATION UNDER WARRANTY

1 – **BOMBARDIER LIMITED**

The obligation of Bombardier Limited under this warranty is limited to the replacement of part or parts, which said Bombardier at its sole discretion is satisfied are defective in material and/or workmanship and cannot be repaired, and does not include any damages resulting from delays and/or loss of time due to vehicle immobilisation, maintenance, repairs, and/or alterations whatsoever; *except that* the liability of Bombardier Limited for drive sprockets, tracks and tires shall be reduced in proportion to the period of use as compared to the period of warranty.

2 – **OWNER**

The owner:

– must return the duly completed warranty registration card to Bombardier Limited.

– must return at his expense, defective part or parts to the distributor within thirty (30) days of breakage or malfunction.

This warranty is expressly in lieu of all other expressed or implied warranties of Bombardier Limited, its distributors and/or other authorized agents, including any implied warranty of merchantibility or fitness for any particular purpose. Neither the distributor, nor any authorized agent, nor any person has been authorized to make any affirmation, representation or warranty other than those contained in the warranty, and, if made, such affirmation, representation or warranty shall not be enforceable against Bombardier Limited.

BOMBARDIER LIMITED,
VALCOURT, QUE.
CANADA

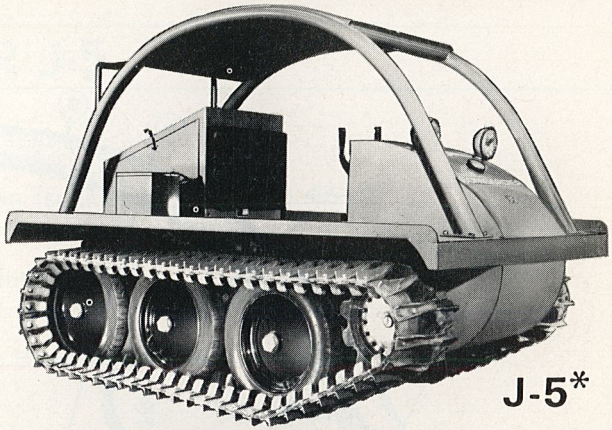
ALPHABETICAL REFERENCES

U

V

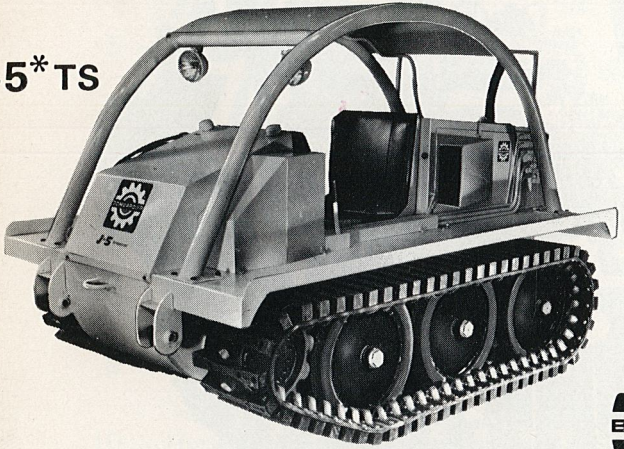
W

operator's manual

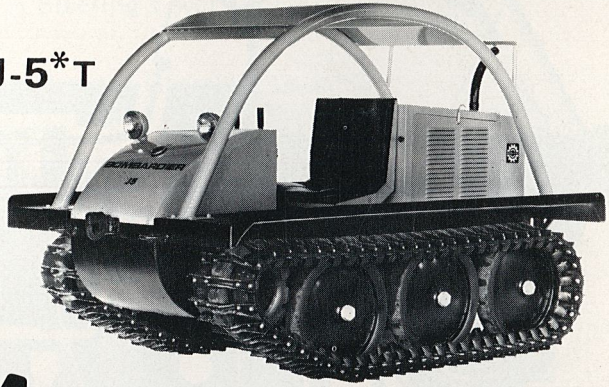


J-5*

J-5*TS



J-5*T



BOMBARDIER LTD.

VALCOURT, QUÉBEC, CANADA

* TRADE MARK OF BOMBARDIER LTD.

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