

Remember the equipment that you are driving is a valuable resource and as a professional equipment operator you need to protect it to the best of your ability. Also remember what you do with the equipment can have a great effect on aircraft and its passengers. There can literally be hundreds of lives that you can have a direct effect upon. You as the operator are responsible for the vehicle you are operating.

You can't abuse your truck just because it's big and powerful.

Your truck needs as much care as your car does. In fact, your truck works a lot harder than your car ever will and is likely to require a lot more care.

Most experienced drivers can tell you all kinds of stories about trucks that were destroyed years too soon simply because somebody didn't check something or forgot to top it up or was too lazy to tighten it up.

We have various trucks at Winnipeg James Armstrong Richardson International Airport. As an example, we have sand trucks, single axle dump trucks, tandem dump trucks, chemical trucks and plow trucks.

Get to know these trucks and learn how to operate them properly.

Some or all of the following features are commonly found on most trucks:

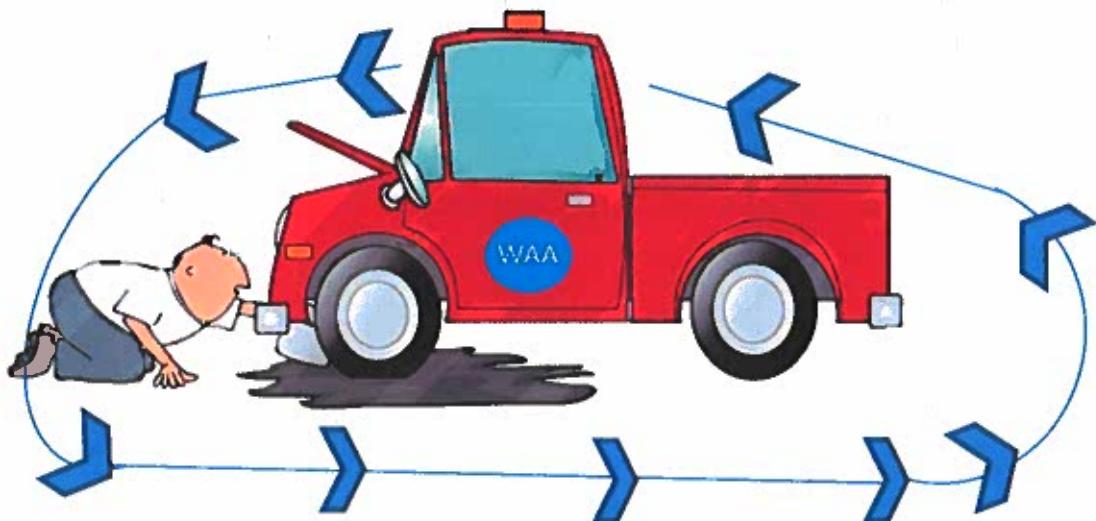
- ROTATING BEACON (must be on when you go airside)
- TWO-WAY RADIO (for airside use)
- PINTLE HOOK (trucks are often used for towing)
- BACK-UP ALARM (because you can't see behind you)
- SEAT BELTS (both seats)
- WEST COAST MIRRORS (better visibility)
- FIRE EXTINGUISHER
- LOW AIR PRESSURE ALARM

Most of the features are safety related.

## **THE CIRCLE CHECK**

Before you climb into the cab of your truck, you want to make sure that your truck is ready to go.

- make sure your vehicle is safe
- Make sure you'll get through your shift without a breakdown.



## **PRIOR TO OPERATING ANY VEHICLE AT THE CSB YOU MUST DO THE FOLLOWING.**

1. Check for any fluid leaks under Vehicle
2. Preform a walk around checking for damage to the vehicle (Report any damage found)
3. Pull the oil dip stick **WIPE IT CLEAN** insert it back into the vehicle and check the oil level.
4. Add washer fluid if needed
5. After any vehicle use **ALWAYS ADD FUEL TO TOP UP THE TANK**
6. **Make a One-Call ticket if needed at 204-987-9798**

It's impossible to give a detailed checklist in a manual such as this one. The one given here should serve as a guide to the things that you have to look after.

For example, the battery will probably be in different areas on different makes of trucks, but you know that you still have to check it, wherever it is.

### **Under The Hood Checks**

- Engine Oil Level
- Radiator Level
- Power Steering Fluid Level
- All Belts for Tension and Wear
- Windshield Washer Level

### **Body Checks**

- Cracked Lights and Lenses
- Mirrors
- Wheel Lugs
- Tire Pressure
- Tire Wear and Damage

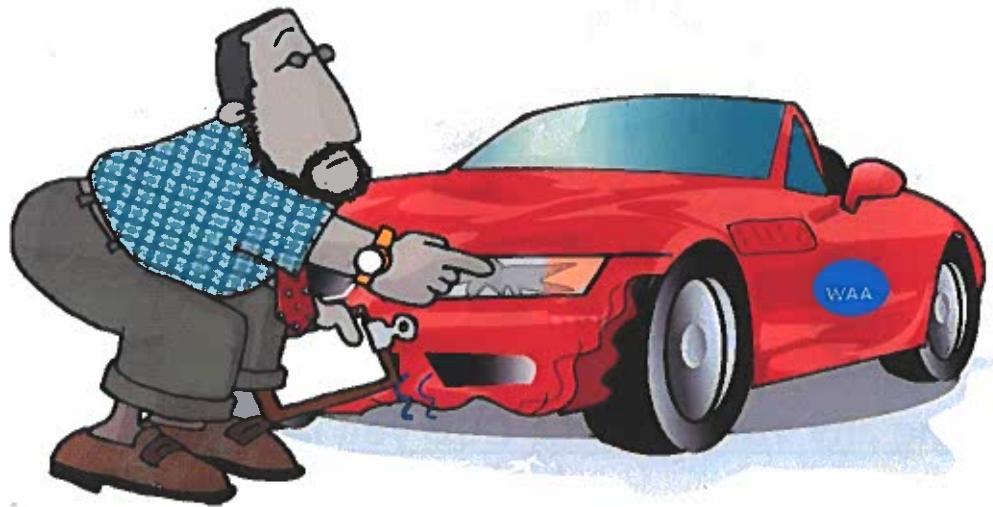
### **Check Components**

- Battery Levels
- Battery Tie Downs
- Battery Connection
- Hydraulic Oil Level
- Check for Obstructions around Vehicle
- Cock Closed on Air Tanks

### **Other Checks**

- Evidence of Oil Leaks
- Evidence of Anti-freeze Leaks
- Locate Source if Possible
- Hydraulic Pump and Drive shaft

Report all damaged and defective items to your supervisor. Do not operate a defective truck. A decision will be made by the supervisor if the truck will be taken out of service at that time.



Since it is not good to put a cold engine to work, you have time to run secondary checks while waiting for the engine to warm up.

**Cab Equipment**

- Fully Charged Fire Extinguisher
- Wiper Motor
- Wiper blades
- Windshield Washer
- Horn City/Highway

**Adjust**

- Seat
- Mirrors

**Check**

- Brake Operation
- Back-up Alarm
- Air pressure Build Up
- Air Leaks with Engine Off
- Automatic Transmission Oil

**Radio**

- Check for Proper Frequency
- Check with Tower for Proper Operation

**Lights (Working and Clean)**

- Beacon
- Headlights
- Taillights
- Flashers
- Plow Lights
- Back-up Lights



**After using any vehicle at the CSB you must top up the fuel tank.**

Date: \_\_\_\_\_

Equipment Number: \_\_\_\_\_

		✓	X	N/A
<b>Walk Around</b>	Leaks (Fluid/Air)			
	General Condition			
<b>Under Hood</b>	Oil Level			
	Transmission Fluid			
	Brake/PTO Fluid			
	Power Steering Fluid			
	Coolant/ Radiator			
	Belts			
	Hoses			
	Air Cleaner			
<b>Battery</b>	Cable Condition			
	Mountings/Hold Down			
	Cover Secured			
<b>Tires</b>	Tread/Match			
	Tire Condition			
	Tire PSI			
	Wheel/Lugnuts			
<b>Hydraulics</b>	Reservoir Level			
	PTO Operation			
	Hose Condition			
	Cylinder Condition			
<b>Frame/ Suspension</b>	Loose Bolts			
	Cracks			
	Springs/ U Blots			
	Mud Flaps			
<b>Broom</b>	Shroud Shoveled			
	Body Shoveled			
	Broom Core			

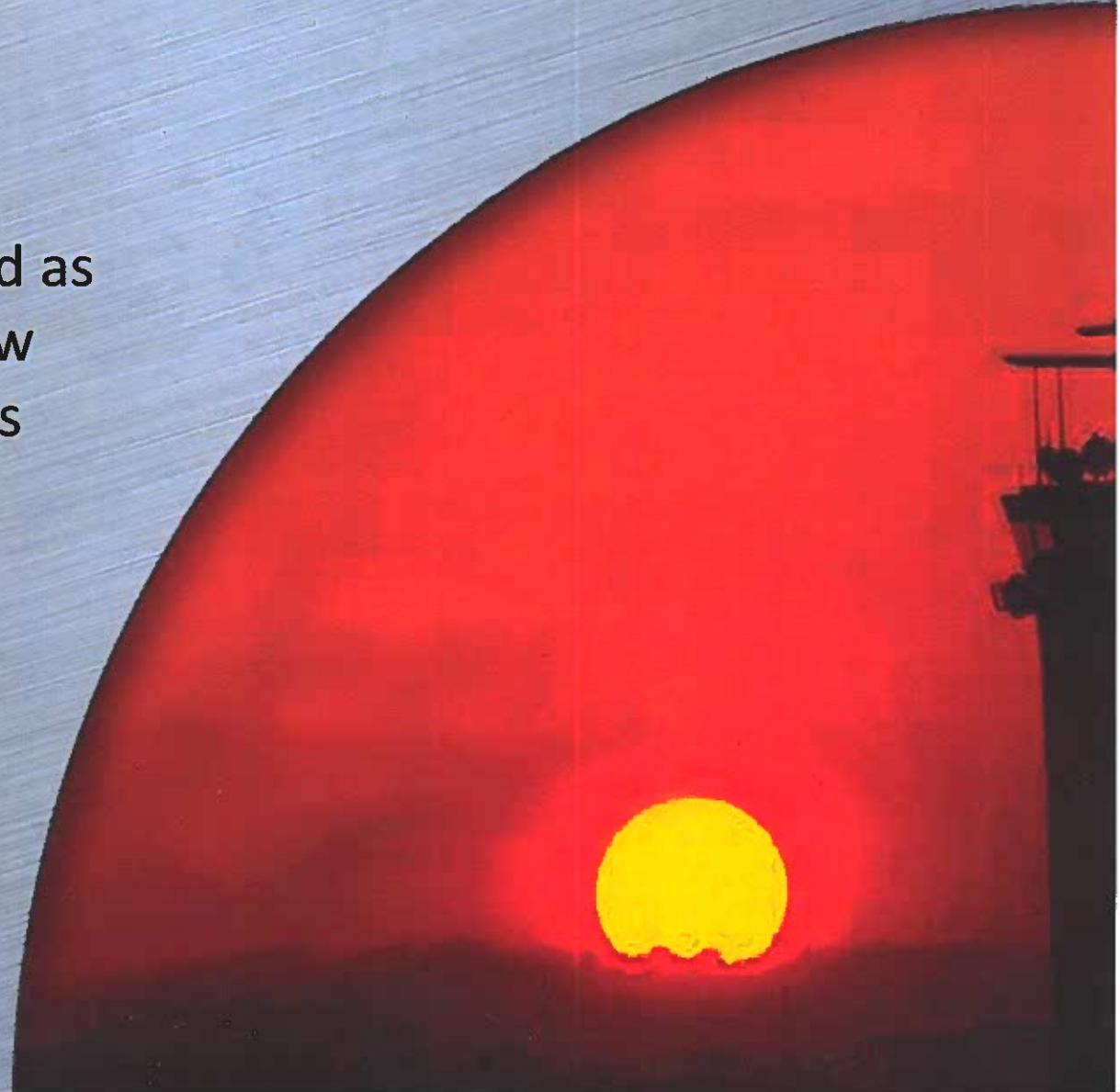
		✓	X	N/A
<b>Cab</b>	First Aid Kit			
	Fire Extinguisher			
	Warning Triangles			
	Seat Belts			
	WS/Windows			
	Wipers			
	Horn/Air Horn			
	Mirrors			
	Inspection Sticker			
	Stairs			
	Clean			
<b>Brakes</b>	Emergency Brake			
<b>Bed</b>	Ladder			
	Cover/Cap			
	Loose Cargo			
	Dump Bed Safety Bar			
	Bed Lock Lamp			
	Lift Cylinder & Pin			
	Tailgate Latch			
<b>Lamps</b>	Head/ Dimmer			
	Parking			
	Turn Signal			
	Four Way			
	Clearance Lamps			
	Tail Lamps			
	Reverse Lamps			
	License Plate Lamp			
<b>Air Brakes</b>	Air Pressure			
	Buzzer/Lamp			
	Tank Drain			
	Glad Hands/Hoses			

# Snow Mauler Plow Vehicle



## **Caution!**

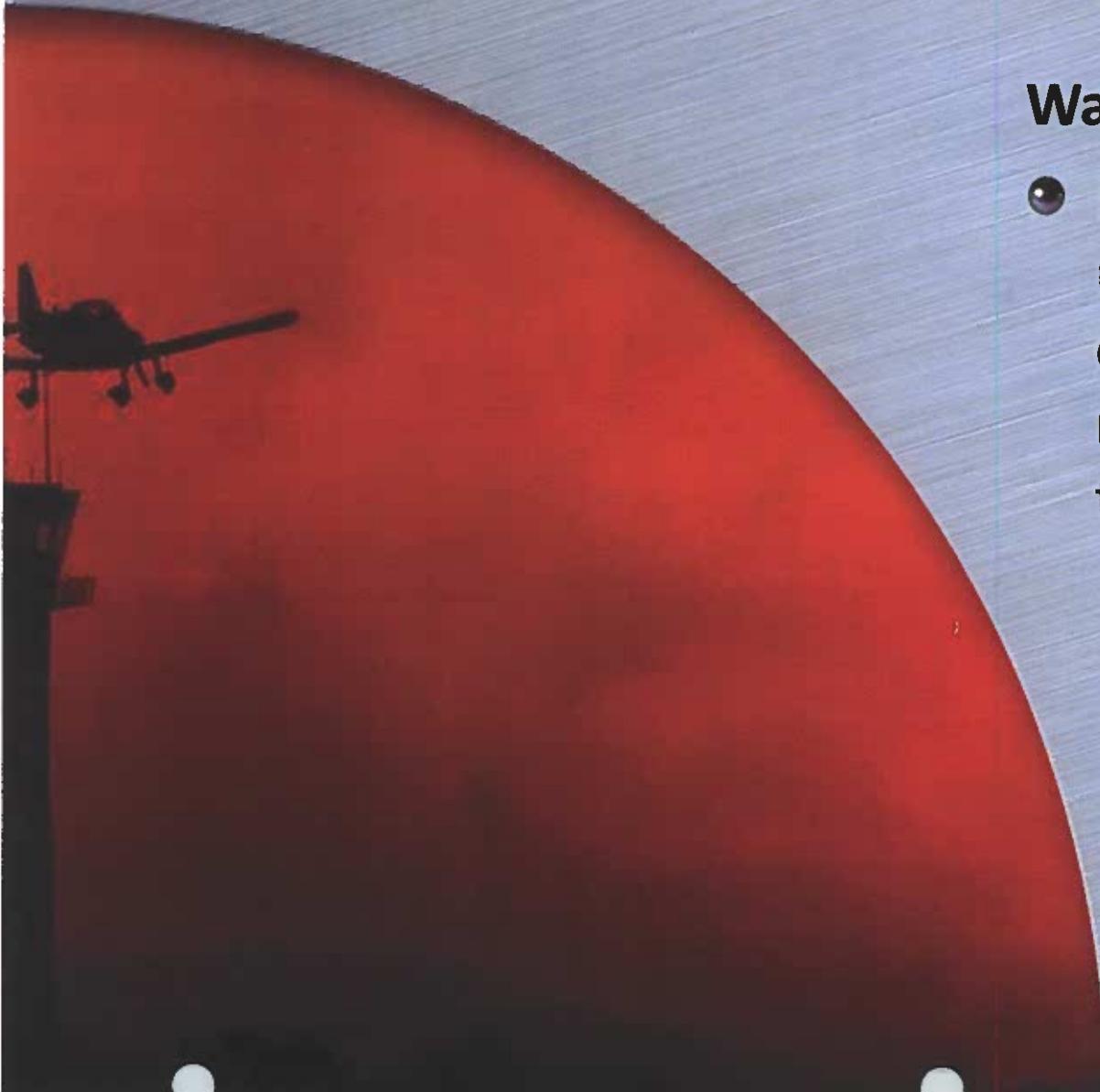
- The Information in this presentation is intended as an overview of the Snow Mauler PV 350/400, this information is not complete.



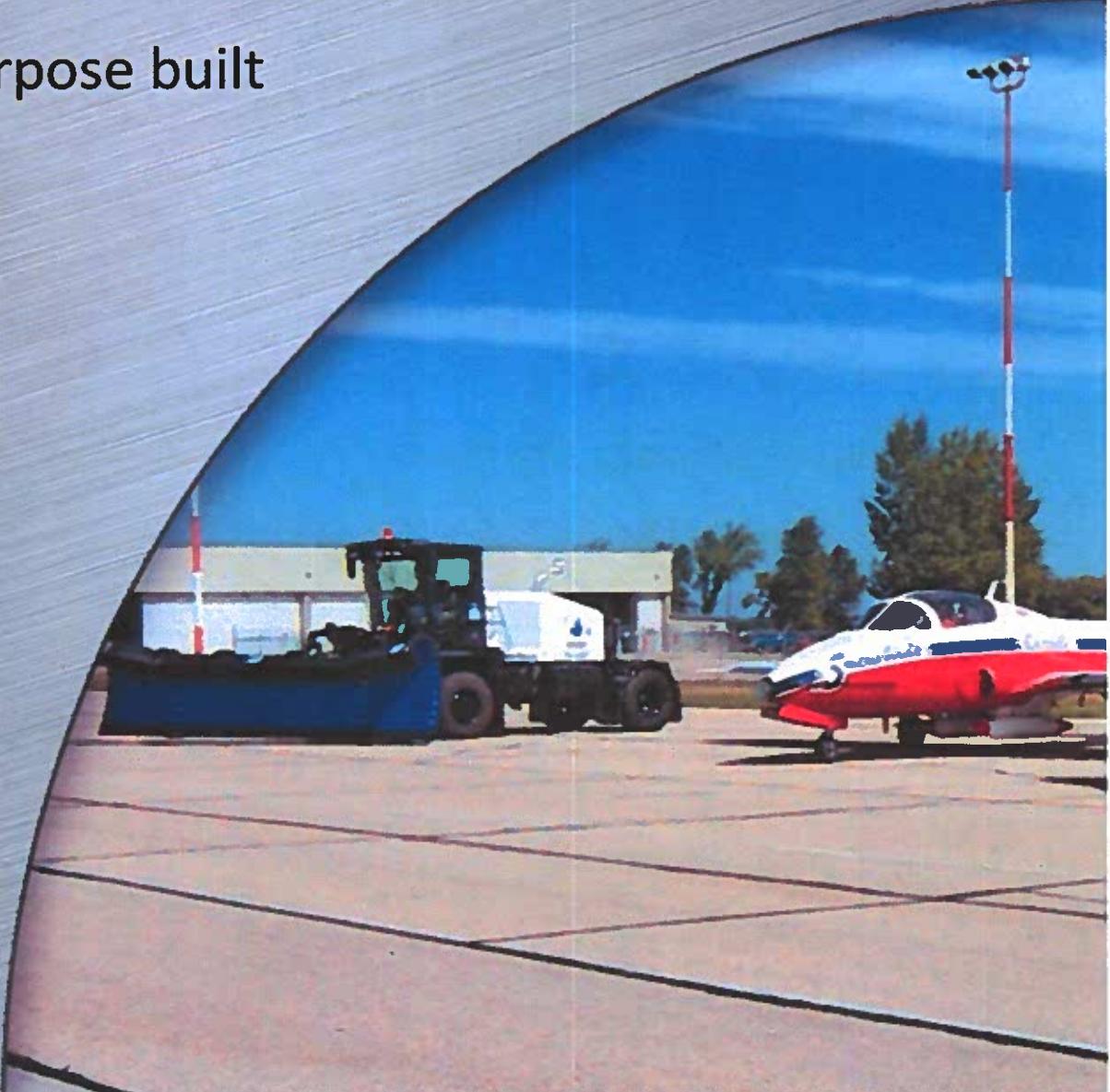
# Snow Mauler Orientation

## Warning!

- Be sure to read and fully understand the material covered in the operators manual before operating the vehicle!

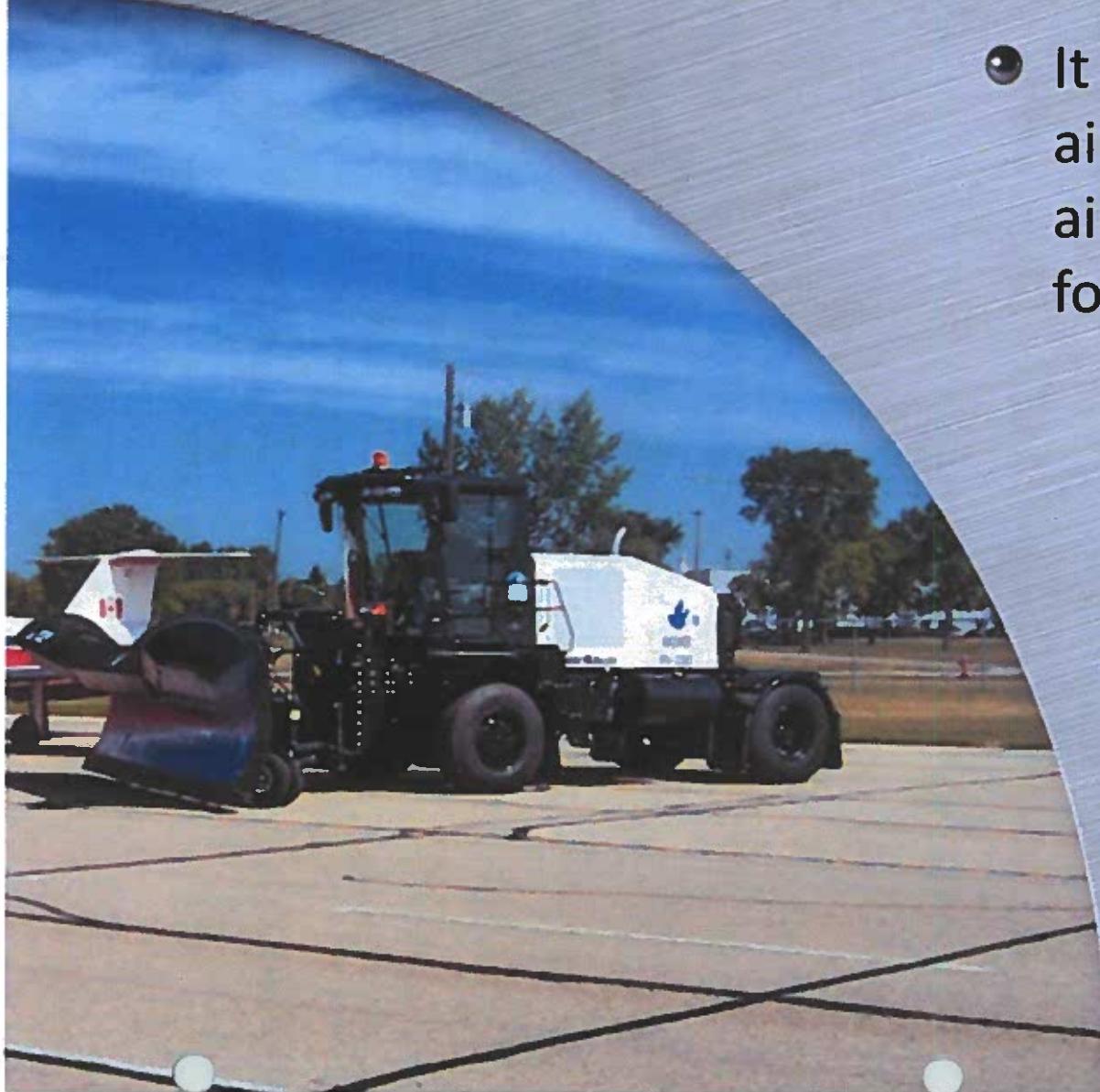


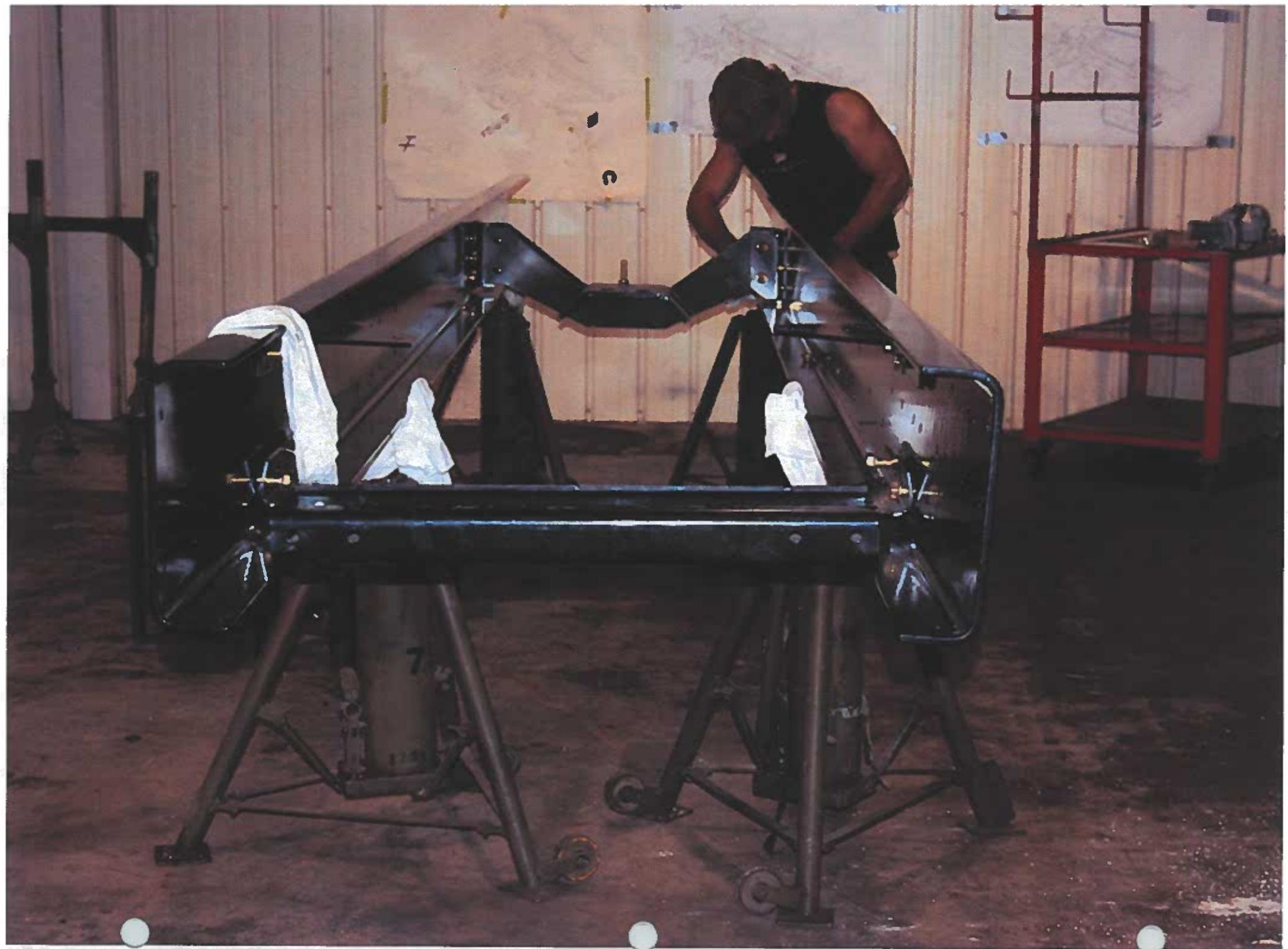
- This is an “off-road” purpose built snow plow vehicle.

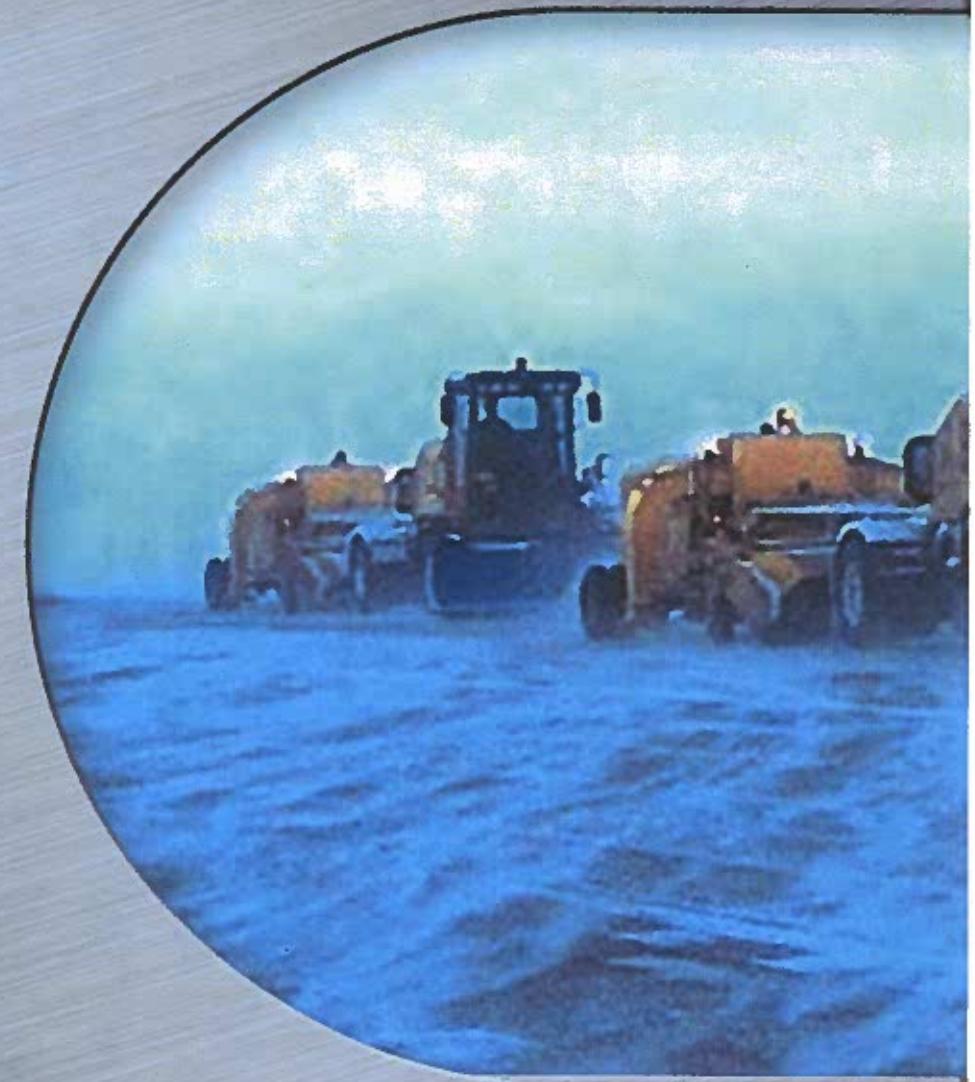


# Snow Mauler Orientation

- It is to be used on the hard airside surface areas of an airport and may not be used for any other purpose!







# Cab and Chassis



# Cab and Chassis

## Cab Position

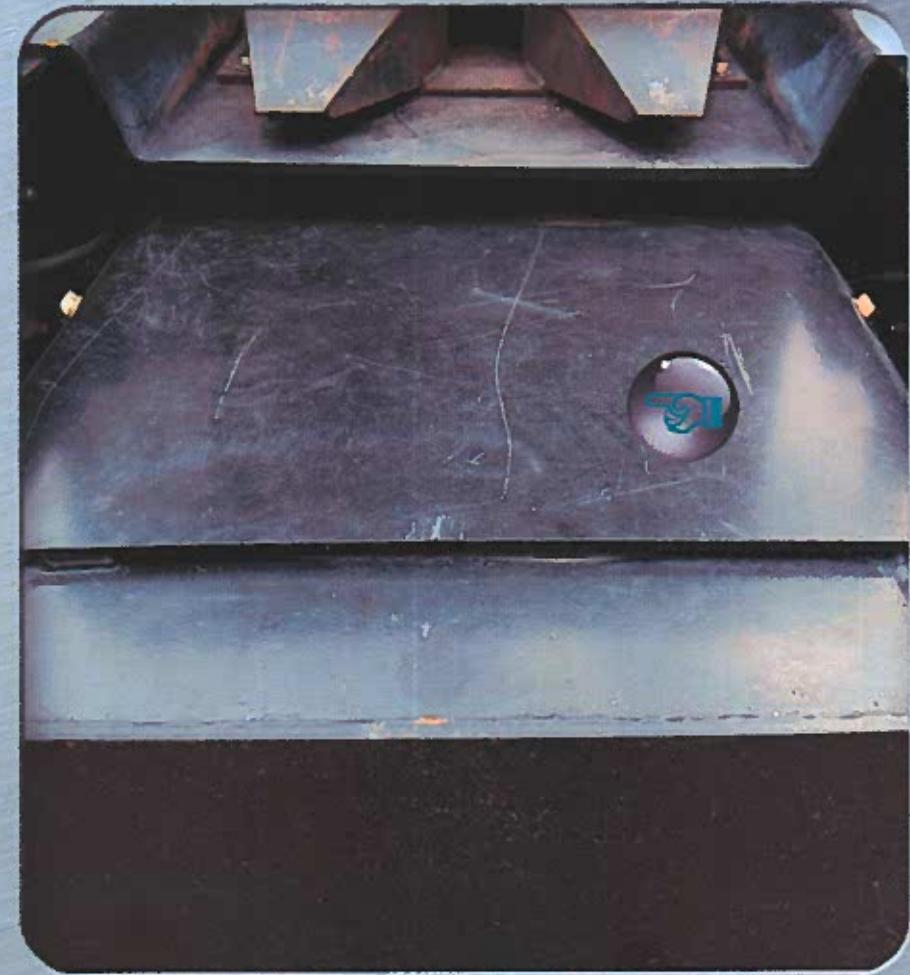
- The combination of the forward mounted cab on the chassis, along with a curved reversed slope windshield which extends from the cab floor to the cab roof.
- Along with the near central seating position provides impressive frontal and balanced left to right visibility.



# Cab and Chassis

## Ballast Container

- Is located on the rear end of the vehicle.
- Contains up to 5,000 lbs (2,267 Kg) of steel knock outs.



# Cab and Chassis



## Cab Glass

- Laminated safety glass glazing is used for the windshield.
- Tempered safety glass glazing is used for all other cab glass.

# Cab and Chassis



## John Deere 90 Soundguard Cab

- The cab is constantly being pressurized with air.
- The air ventilation passes through cabin air filters.
- This helps to provide superior noise and environmental protection along with seasonal comfort for the operator.

# Cab and Chassis



## Cab Entry

- Stairs and handrail provide easy and safe access into the cab.
- The ignition key also locks and unlocks the door.

# Cab and Chassis

## Cab Exit

- The inside door handle is part of the door pull assembly.
- To open the door from the inside, squeeze the handle grip.

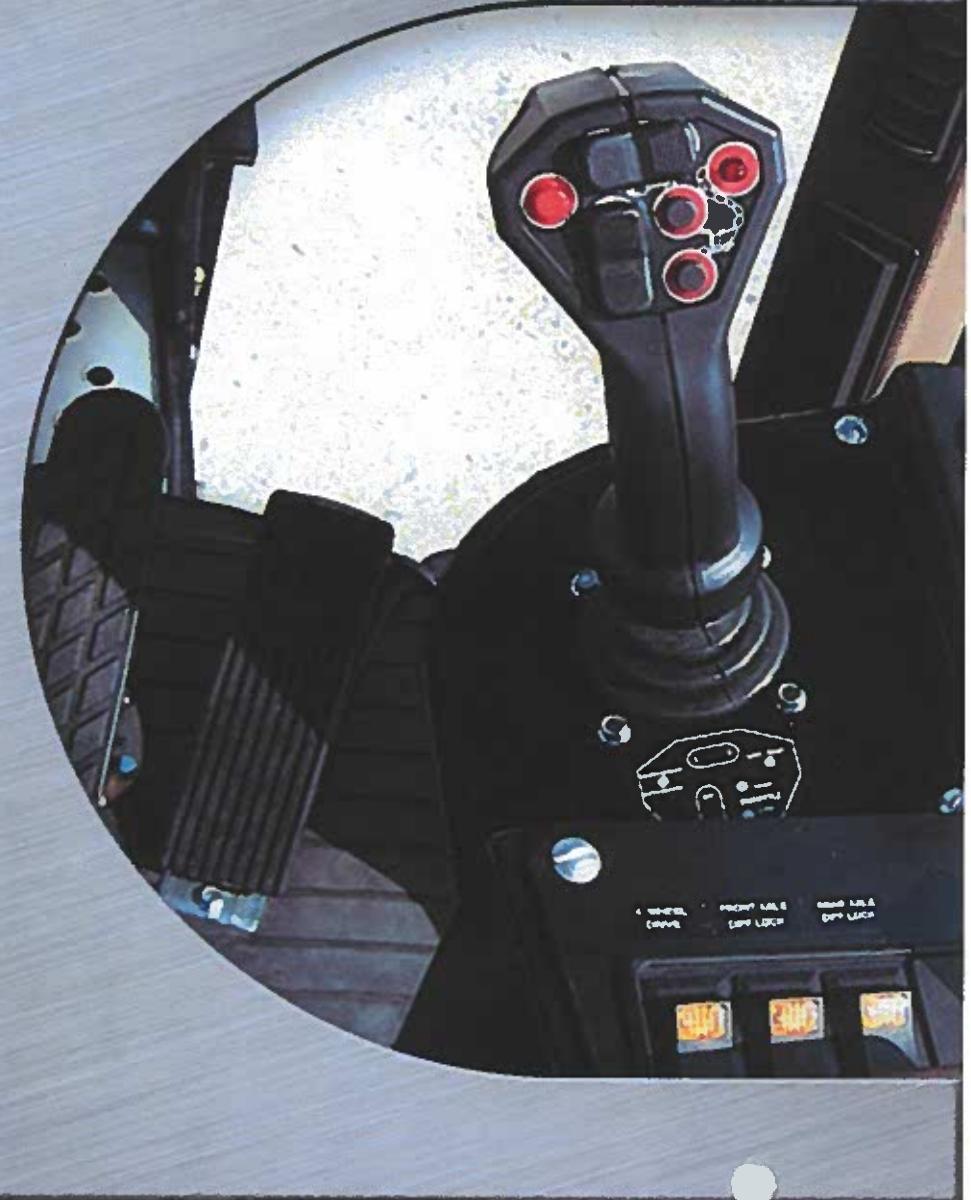


# Cab and Chassis

## Cab Emergency Exit

- Is located on the right hand side of cab, is integral with the right hand side - cab glass.
- Pull out the tab located behind the operators position to remove rubber rope.
- Continue pulling the rope until it is removed from around window.
- The window can now be pushed out.





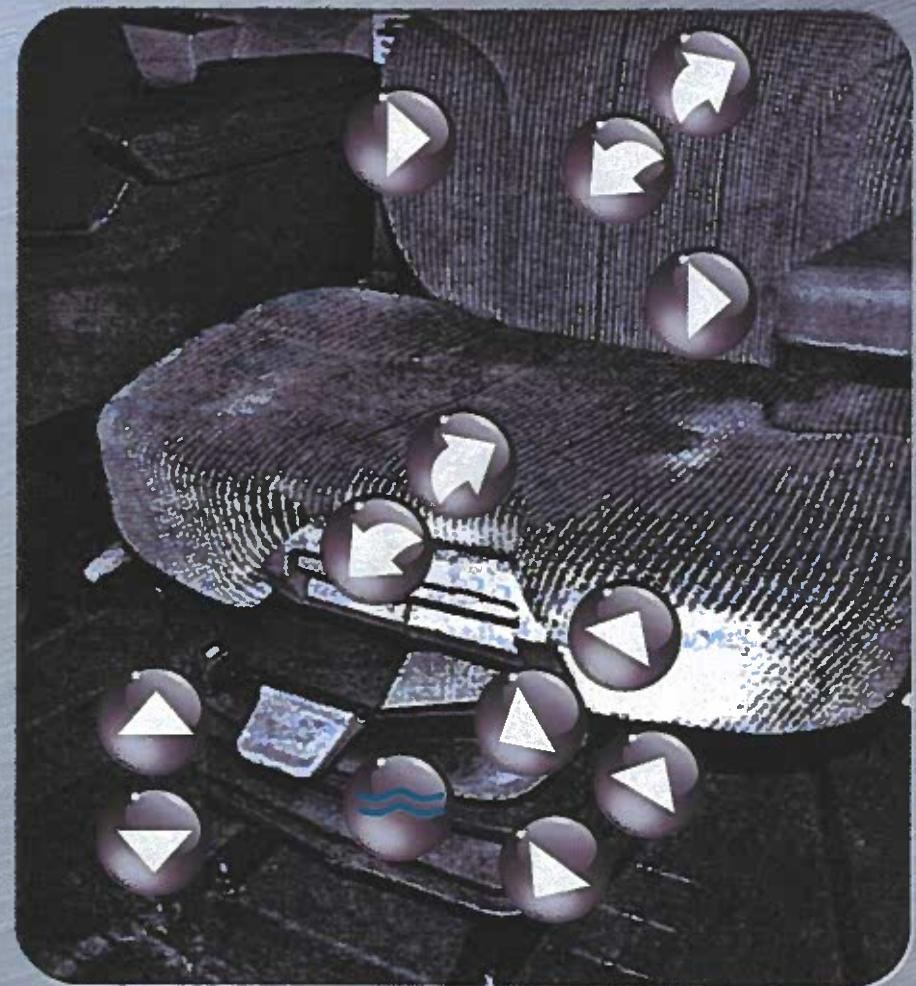
# Controls



# Controls – Seating

## Operator Seating

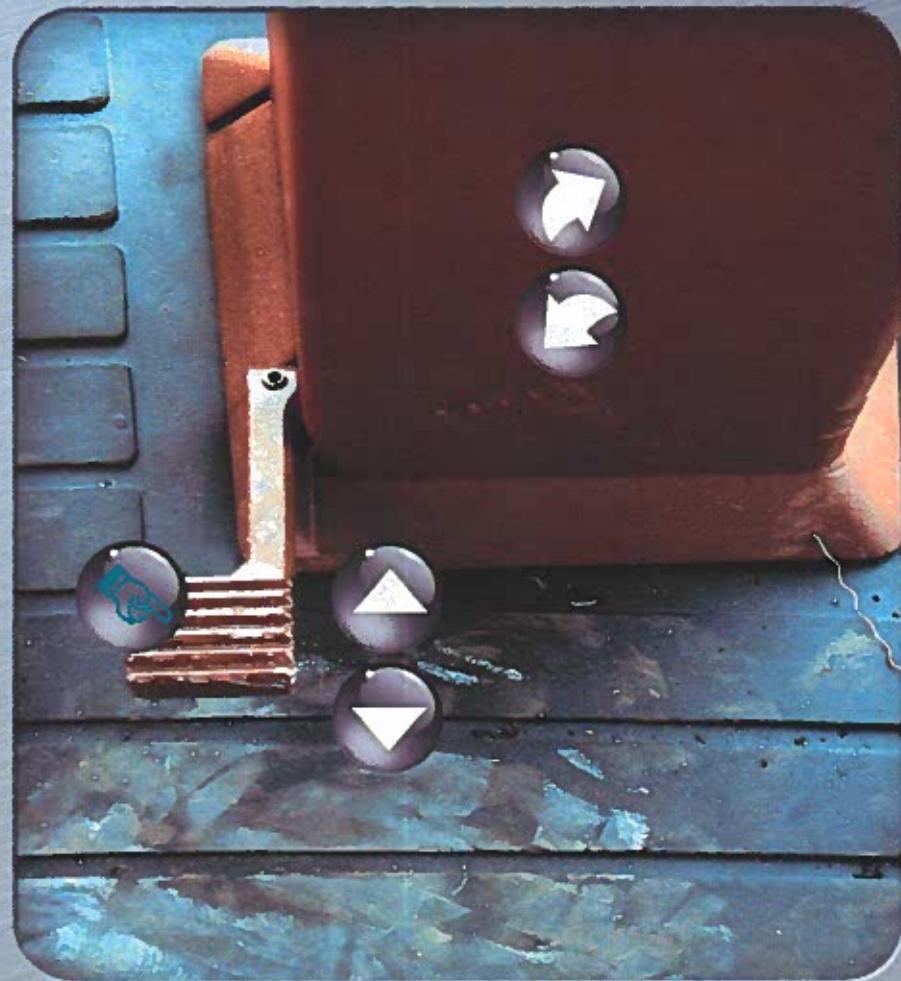
- Air suspension seat is fully adjustable.
- Fore/Aft adjustment.
- Height adjustment.
- Cushion dampening.
- Seat bottom tilt.
- Seat bottom extension.
- Seat back tilt.
- Lumbar support.
- Left-side armrest adjustment.



# Controls – Column

## Tilting Steering Column

- To tilt the steering column, press down on the pedal to unlock steering column.
- Then adjust the column into the desired position.
- Then release the pedal to lock the column into position.



# Controls – Column



## Telescoping Steering Wheel

- To telescope the steering wheel up or down.
- First loosen the center knob to unlock
- Adjust the steering wheel into position.
- Then tighten center knob.

# Controls – Ignition

## Ignition Switch

- This is a four position switch.
- #1 Off position
- #2 Accessories position
- #3 Run position
- #4 Start position



# Controls – Ignition

## Ignition Switch

- Bulb Test Function
- When the ignition key is rotated to the Start key position the bulb test function will occur.
- Check the warning light display for all the bulbs to illuminate.



# Controls – Murphy Gauge

## Starting Engine

- When the ignition key is rotated to the Run key position.
- Wait for both the Yellow Warning and the Red Shutdown lights on the display to go out before starting the engine.



# Controls – Murphy Gauge

## Starting Engine

- The display will also cycle through several screens during this time.
- Once completed continue to rotate the ignition switch to the Start key position to start the engine.



# Controls – Hi Idle

## Hi Idle Switch

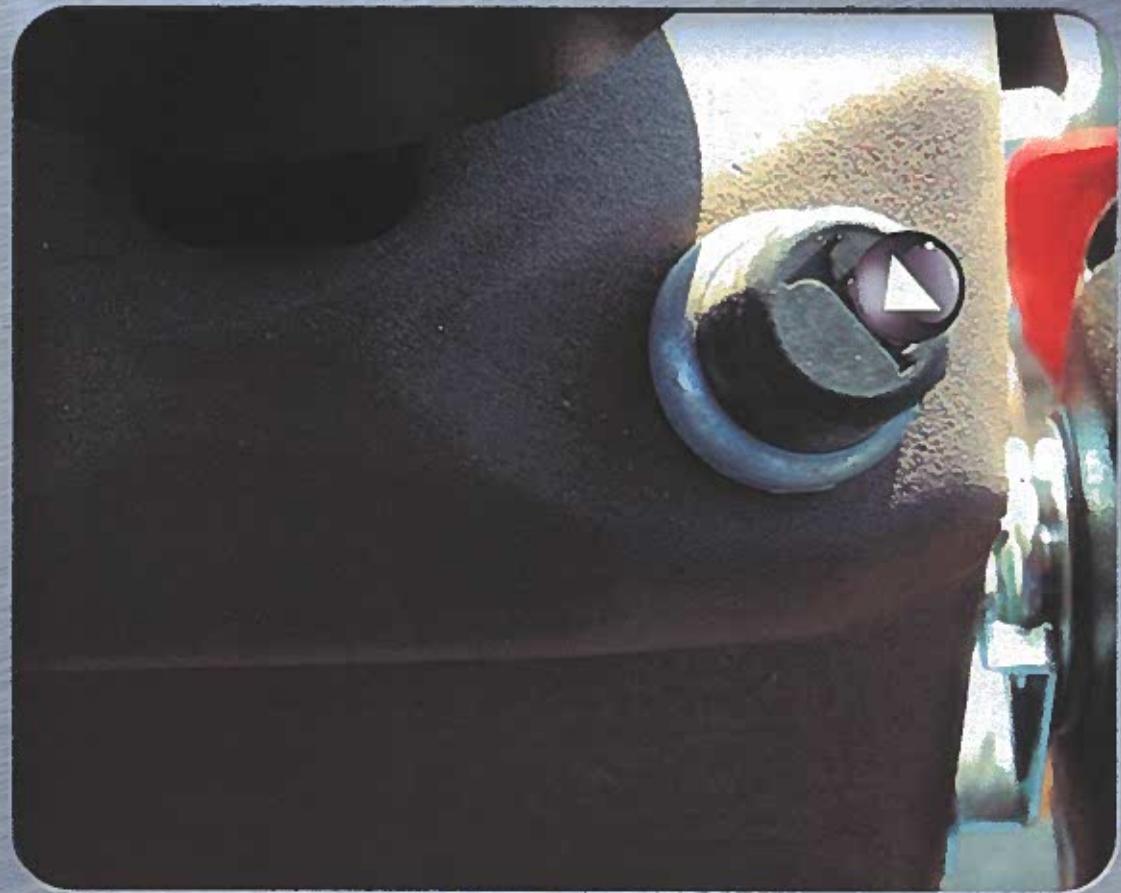
- This is a two position on/off switch.
- When activated will slowly increase the carrier engine idle speed to 1,200 RPM.
- This is used when the vehicle is parked idling for extended periods.
- Transmission must be in Neutral, Hi-Idle will stop when moved from Neutral.



# Controls – Horn

## Horn Switch

- This is a momentary on/off switch.
- Pressing the horn button will sound the horn.
- Horns are located on the bottom right front of the cab.



# Controls – Turn Signal



## Turn Signal Switch

- Is a three on/off/on position switch.
- When pushed ahead from center it will indicate a right turn, when pulled back from center it will indicate a left turn.
- Turn signals are not self canceling, must be manually returned to the neutral after a turn to stop the turn signals.

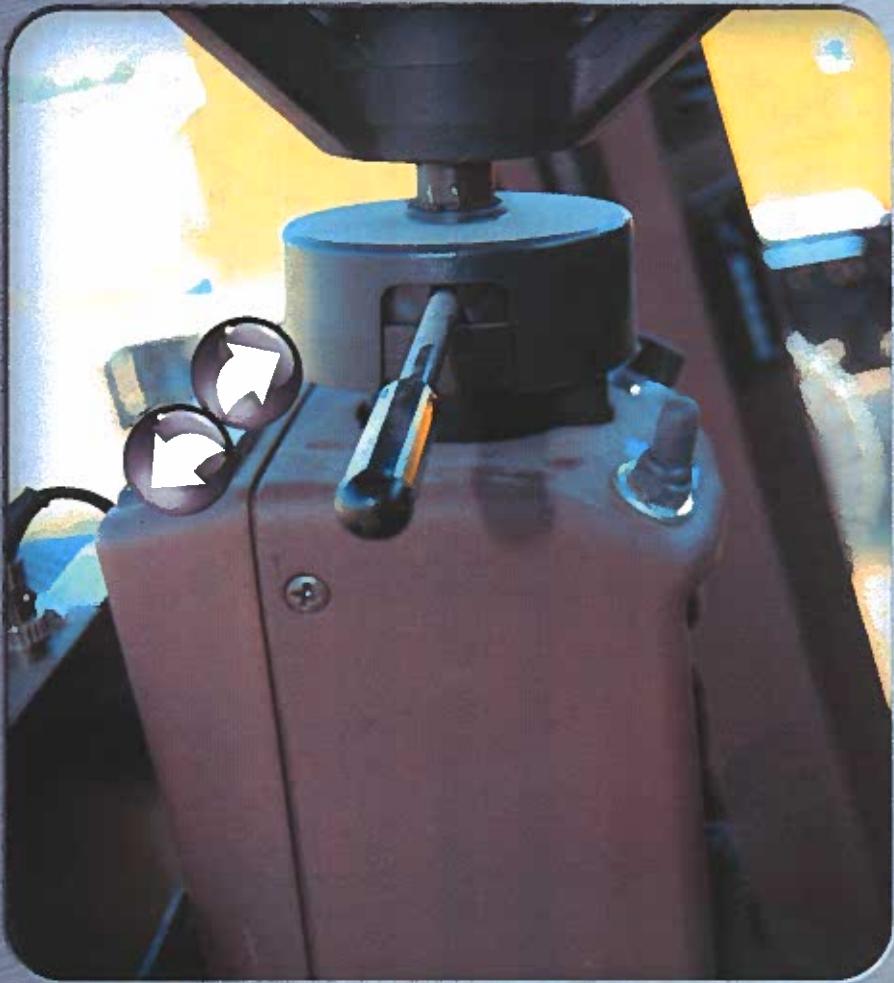
# Controls – Turn Signal



## Turn Signal Switch

- When a signal is activated the front and rear signal lights for that side will flash.
- However the front and rear signal lights for the opposite side will illuminate steadily.
- This indicates that the brakes are being applied, without any brake pedal application

# Controls – Turn Signal



## Turn Signal Switch

- The turn signal indicator light will glow steadily indicating the direction of the turn.

# Controls – Pedals

## Engine Throttle Pedal

- Depressing the pedal will control the engine and vehicle speed.
- Throttle by wire - control



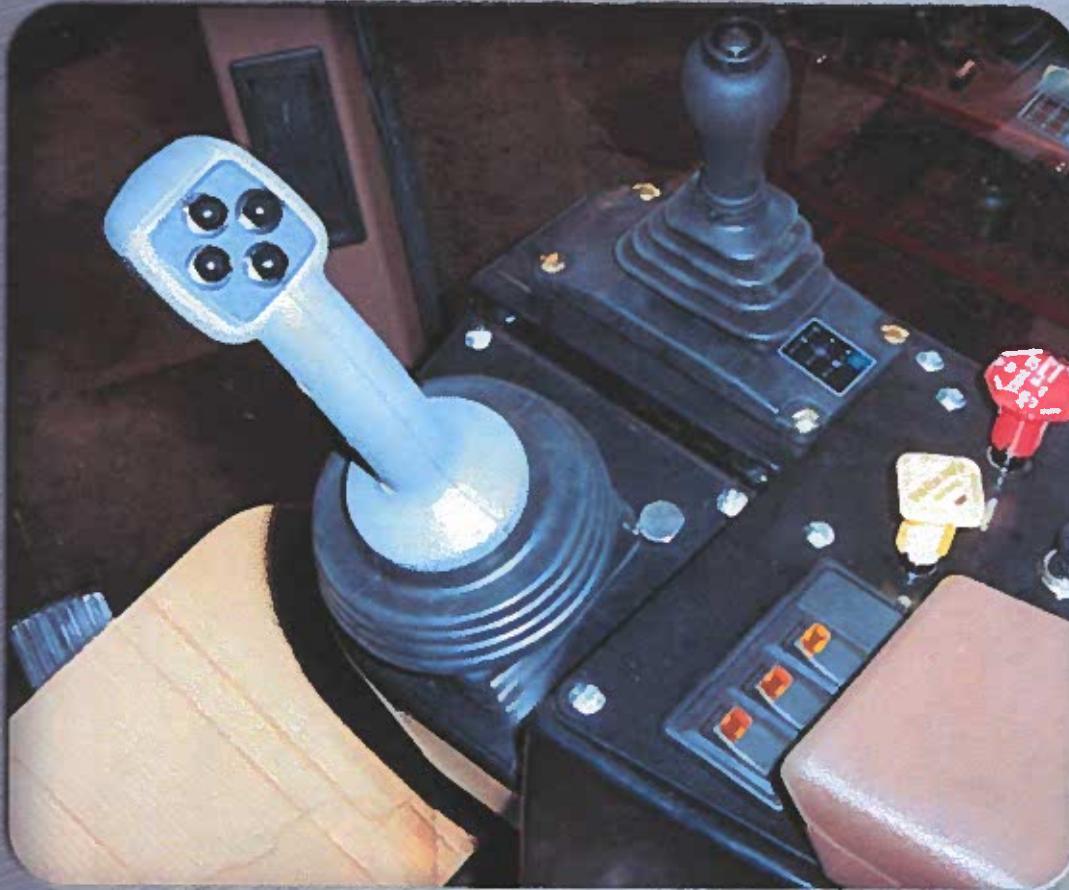
# Controls – Pedals

## Brake Pedal

- Depressing the pedal will activate the vehicle's brakes.
- The brake valve is a treadle-operated type brake valve with two separate supply and delivery circuits.



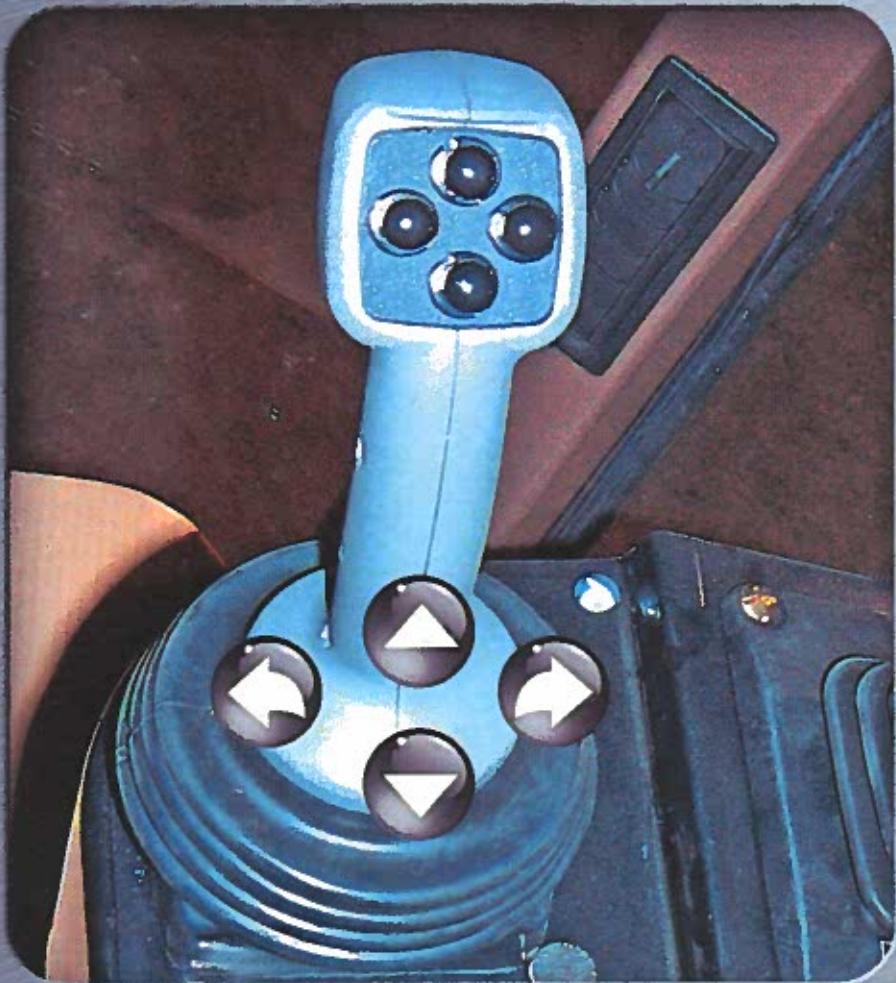
# Controls – Main Console



## Description

- This location provides centralized control of the vehicle and snowplow.
- Joystick provides one hand control to raise and lower the plow, the snowplow discharge direction.

# Controls – Joystick



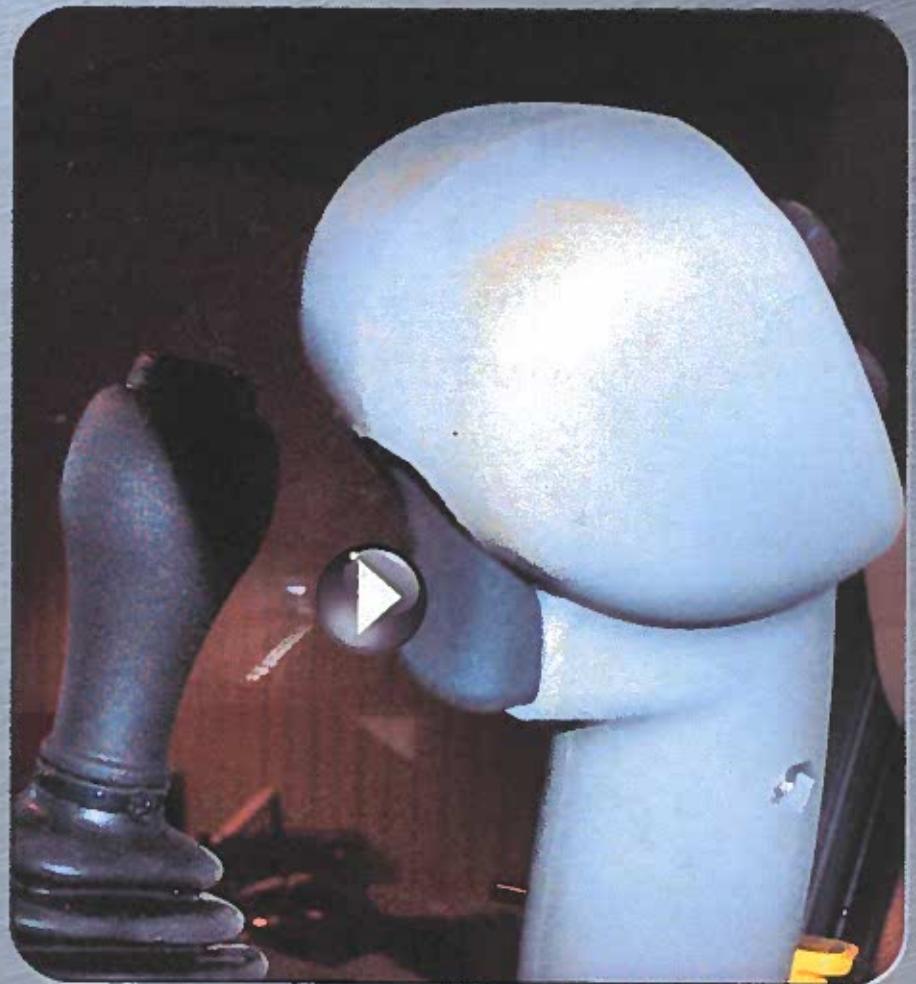
## Plow Functions

- Plow control is a four position on/off switch.
- Pull the handle back to raise the plow up and push the handle forward to lower the plow.
- Push the handle to the left to turn the plow to the left and push the handle to the right to turn the plow to the right.

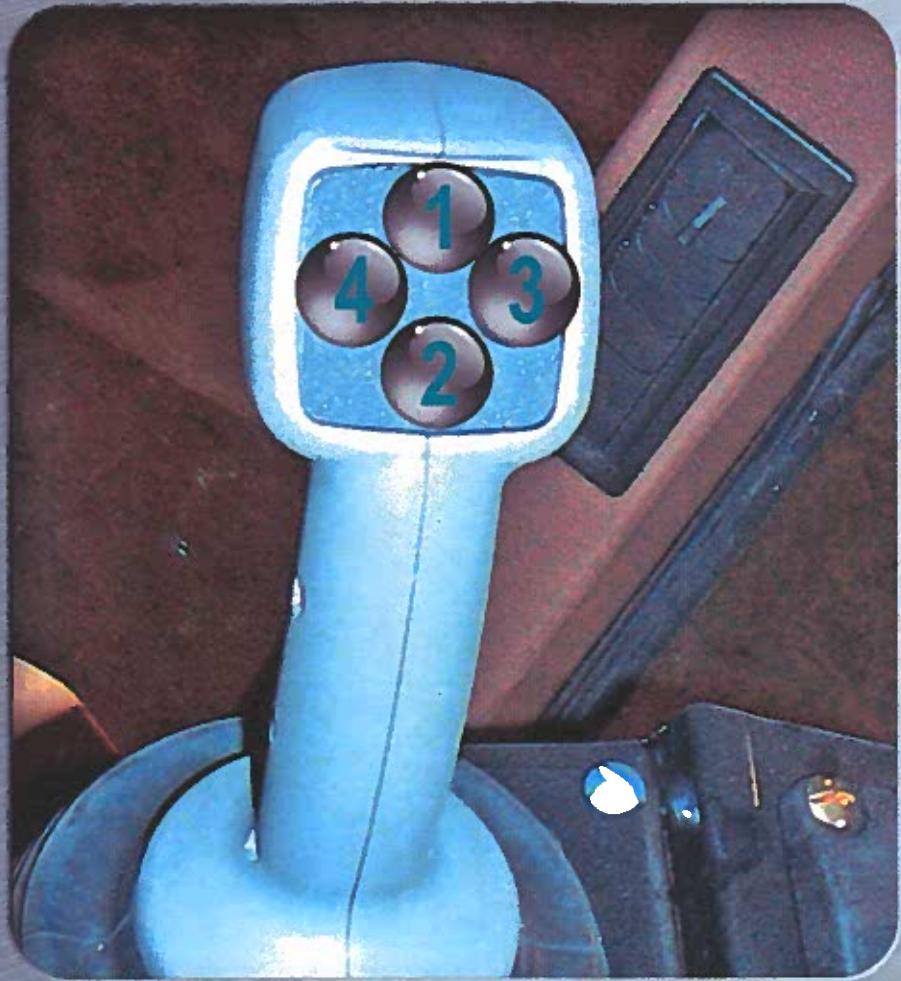
# Controls – Joystick

## Weight Transfer Switch

- Weight transfer switch is a two position on/off switch.
- Pressing the joystick button will actuate the weight transfer mode.
- Weight transfer will assist the vehicles' traction by lifting the plow a little.
- This transfer some of the weight from the plow wheels to the front drive tires.



# Controls – Joystick



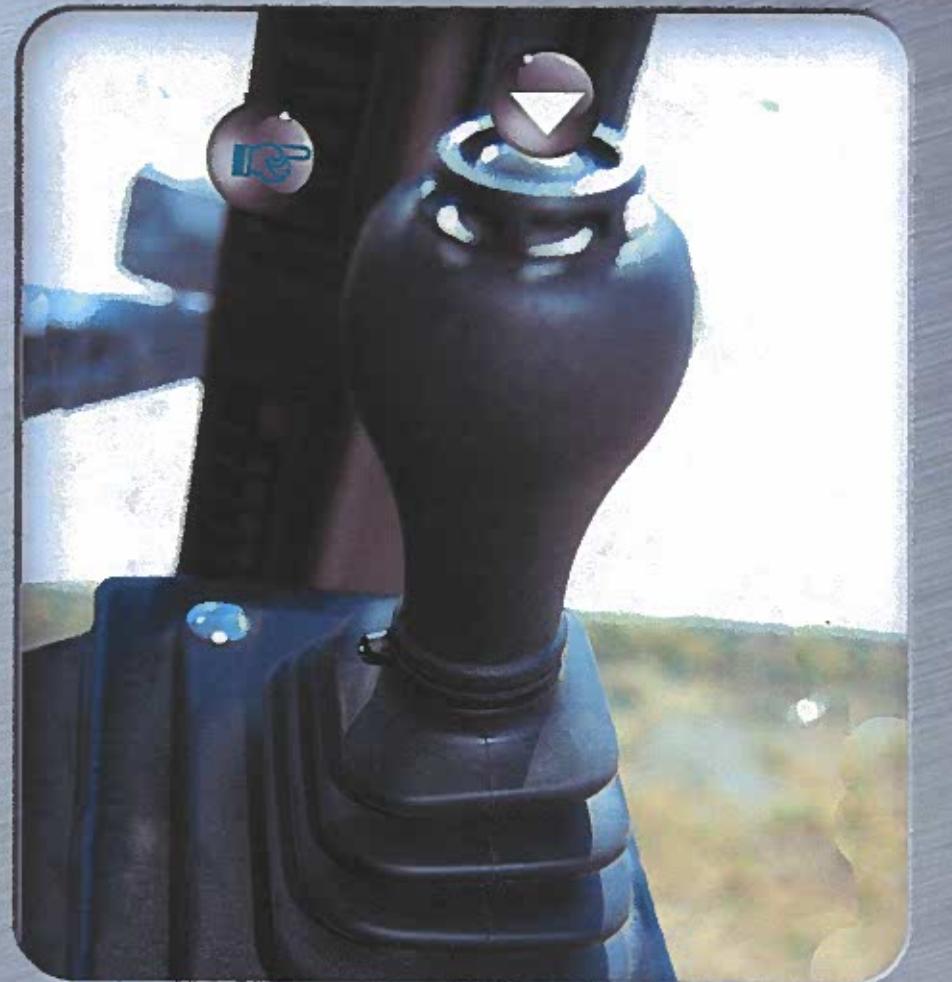
## Sweeper Functions

- Sweeper control is via four on/off switches.
- #1 Raises Broom
- #2 Lowers Broom
- #3 Turns Broom Right
- #4 Turns Broom Left

# Controls – ZF Transmission

## Function Button

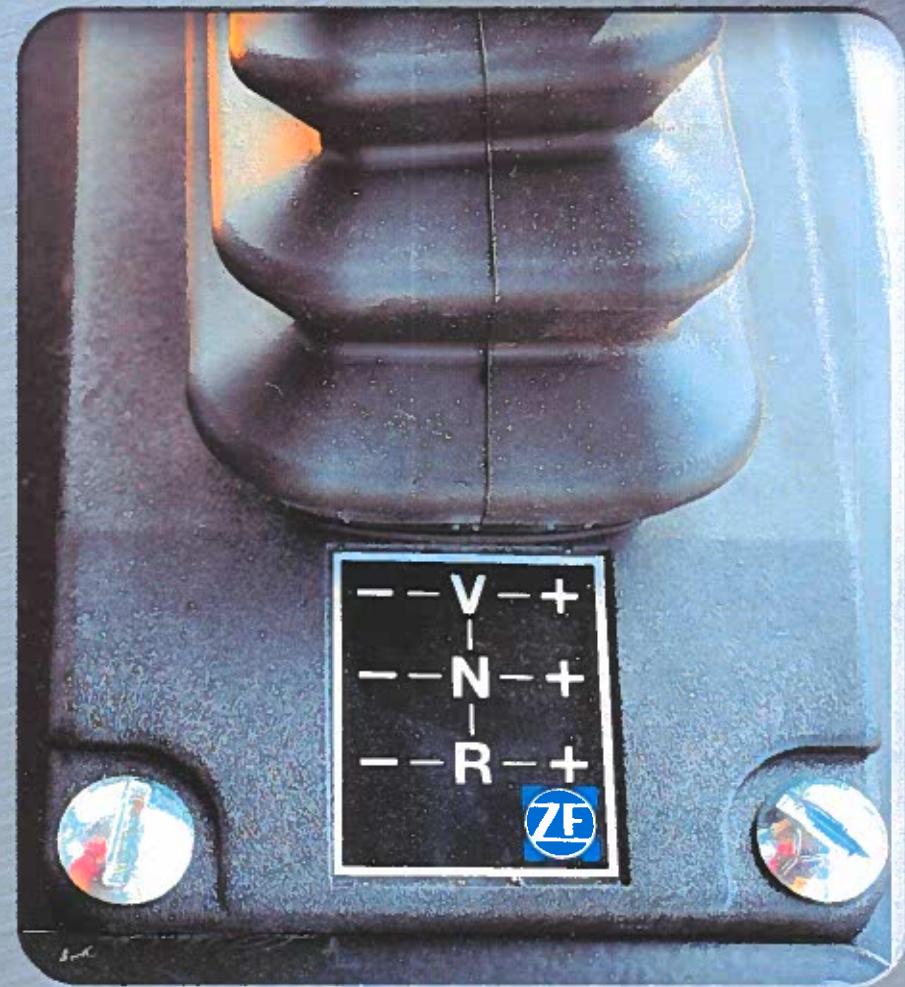
- Momentary on/off switch.
- Activating the button will select the automatic shifting mode from neutral.
- Failing to press the button before selecting a direction will prevent transmission engagement.



# Controls – ZF Shift Gates

## Description

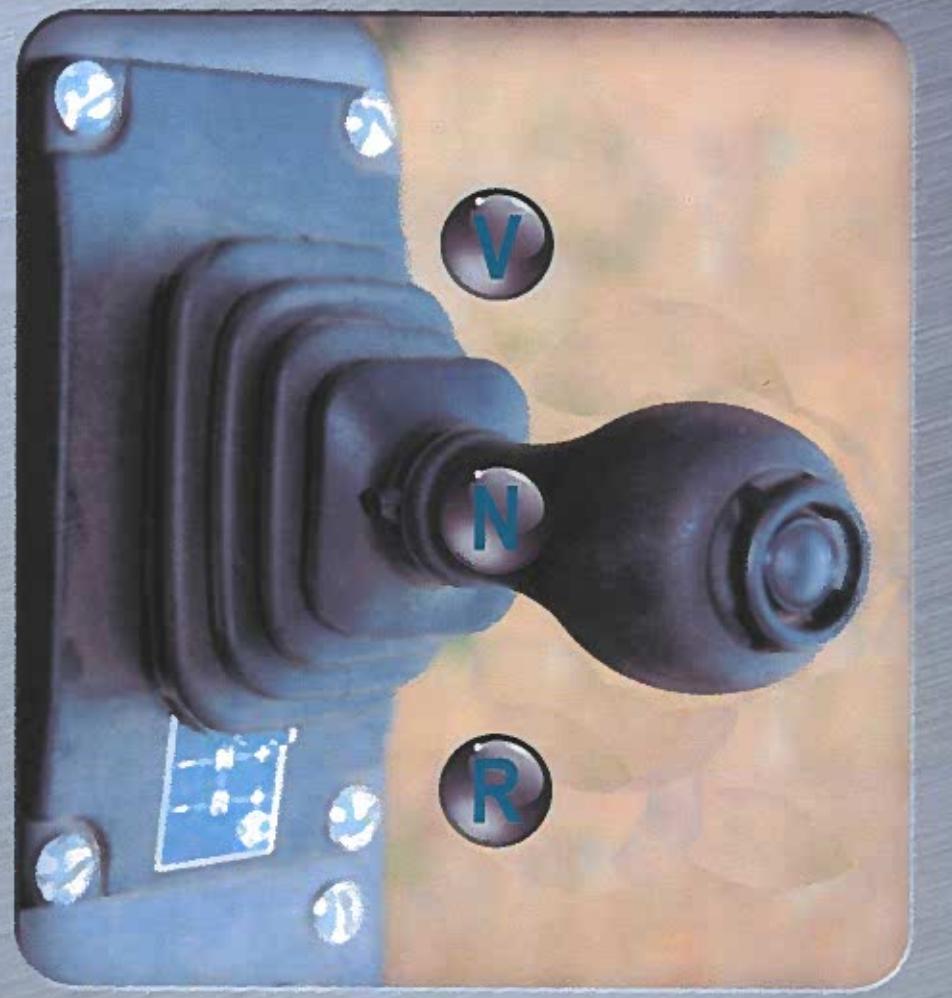
- The shifter gates allow for both directional and manual shift selection.
- V = Forward
- N = Neutral
- R = Reverse
- - = Downshift
- + = Up-shift



# Controls – ZF Direction

## Joystick Operation

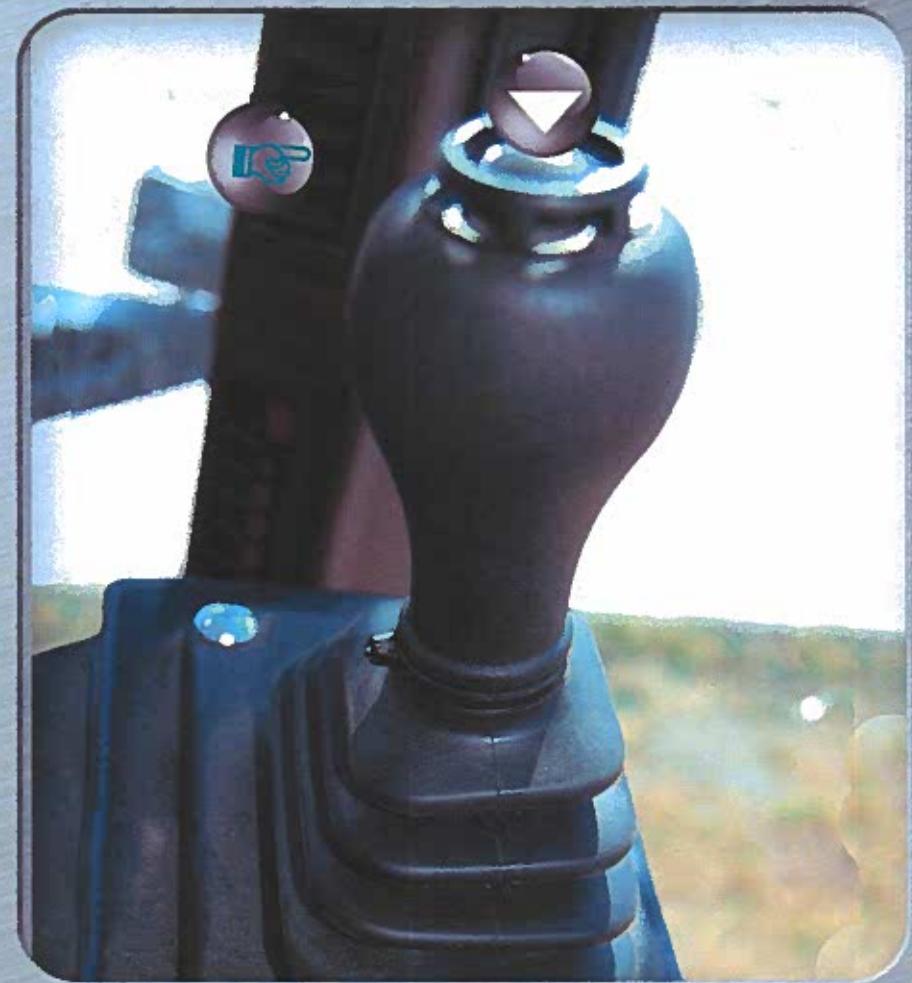
- Directional control is a three position F/N/R switch.
- The driving direction will be selected by the horizontal position of the controller lever.
- Pull the lever backward from neutral for the reverse direction.
- Push the lever ahead from neutral for the forward direction.



# Controls – ZF Auto Shifting

## Operation

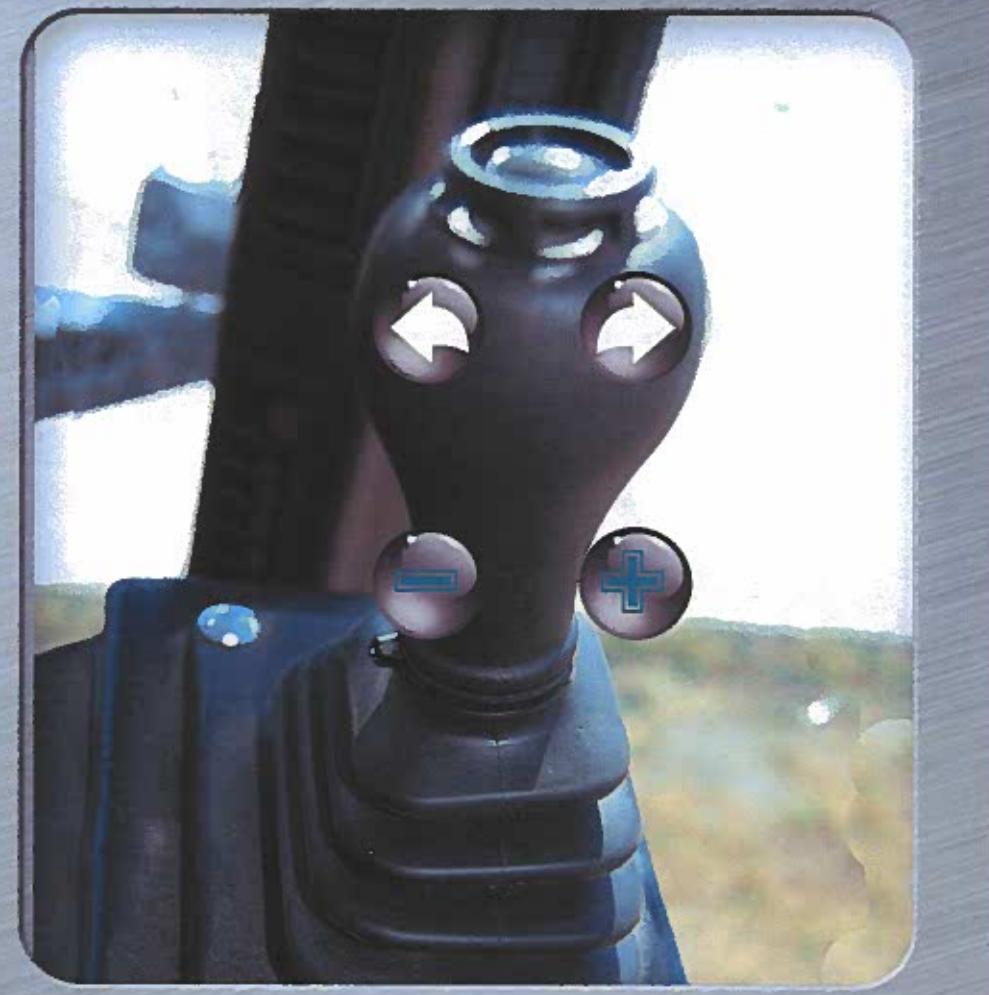
- By pressing the function button first while in Neutral and then selecting a direction, will select automatic shifting mode.
- Forward speeds are 2 to 6.
- Reverse speed is 1.



# Controls – ZF Power Shift

## Operation

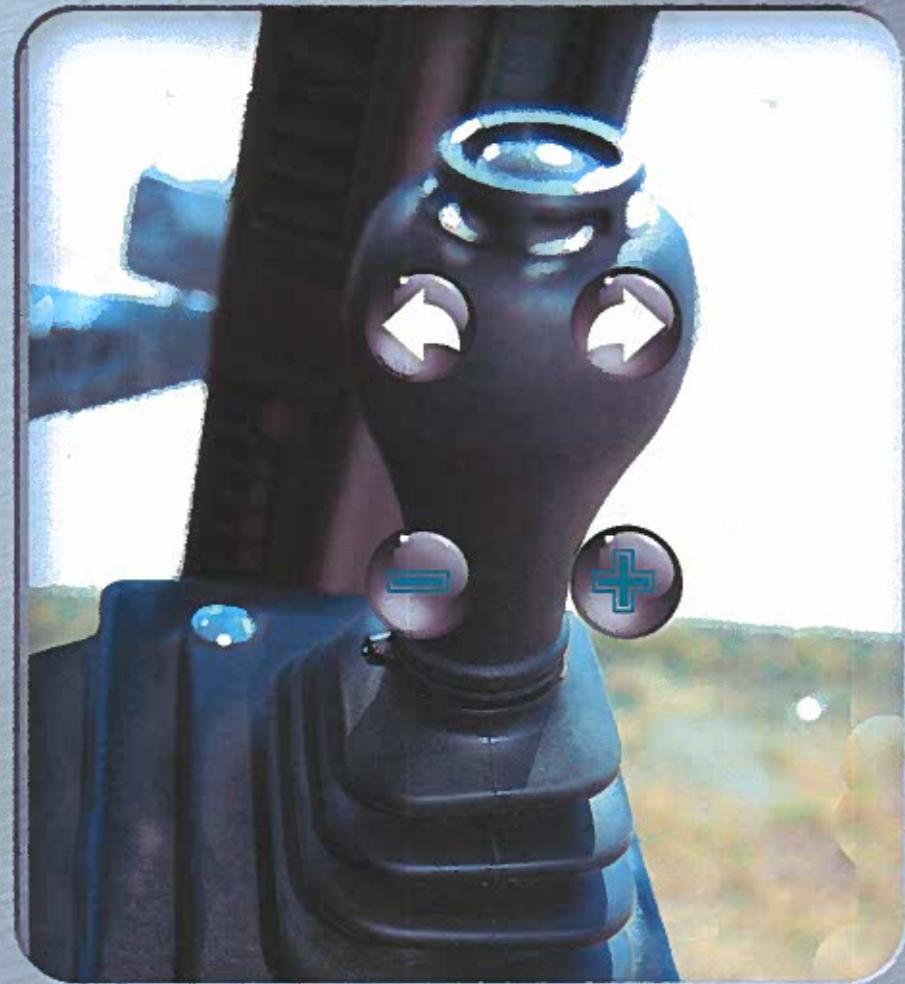
- To manually control the transmission shifting move the lever to the right (+) and returning the lever to center will up-shift a gear range.
- By moving the lever to the left (-) and returning the lever to center will downshift a gear range.



# Controls – ZF Power Shift

## Operation

- By cycling the lever again to the right (+) will shift the transmission into the next higher gear rang.
- By cycling the lever to the left (-), will shift the transmission into the next lower gear range.



# Controls – ZF Transmission

## Neutral Safety Switch

- Neutral safety switch will prevent the engine from starting if the transmission controller is not in the neutral position.
- Gear engagement out of Neutral is only possible when the torque converter turbine speed is below 1,200 rpm.
- Selecting Neutral position at higher vehicle speeds is not admissible. Either a suitable gear is to be shifted into immediately, or the vehicle must be stopped at once.
- Selecting a new driving direction will only be engaged when the vehicle speed has fallen to the software programmed speed.

# Controls – ZF Transmission

## Parking Precautions

- Transmission has no park position, when running the engine and the transmission is in Neutral, either the park or service brake must be applied to prevent the vehicle from rolling!

# Controls – ZF Transmission

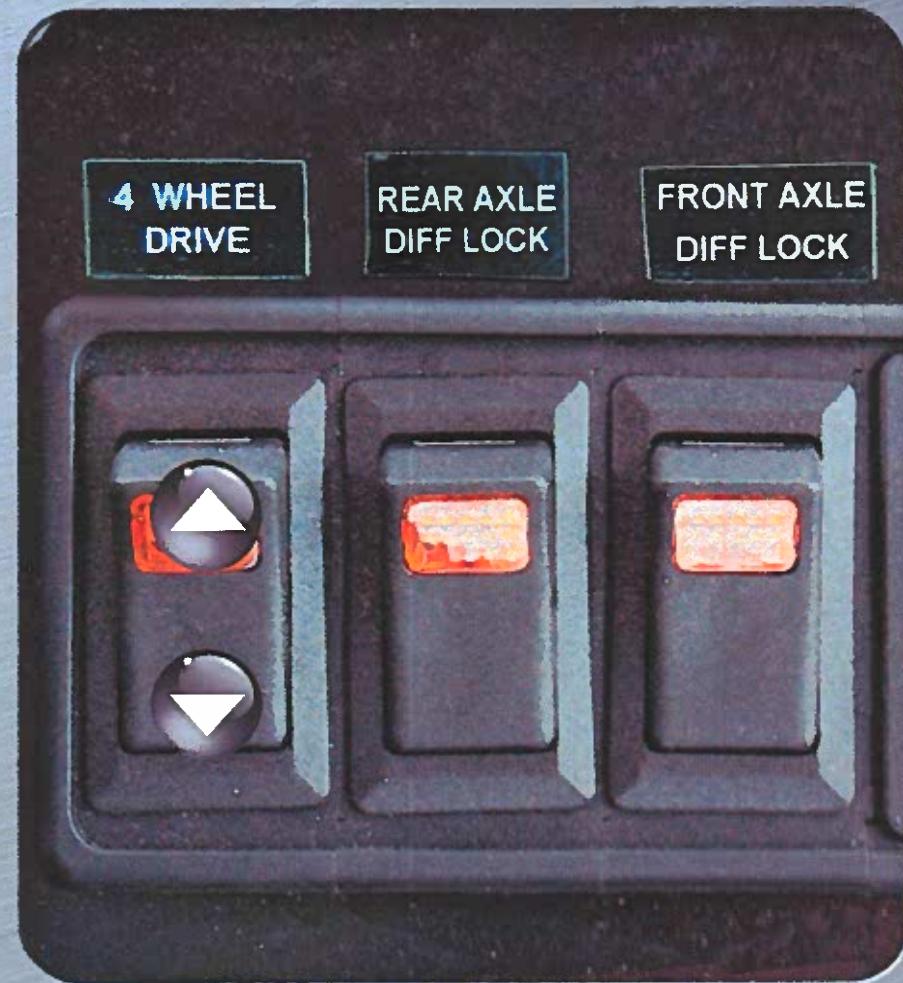
## Operating Precautions

- Transmission oil temperatures of less than 10° F (-12° C), will cause the \*\* symbol to be indicated on the ZF Display.
- This means the transmission must be warmed up before driving.
- The transmission control unit will signal the transmission to remain in Neutral, until the minimum oil temperature is reached.
- Run the vehicle in Neutral with the Hi-idle switch engaged.

# Controls – Drivetrain

## Inter-axle Interlock (4x4)

- This switch is a two position lighted on/off rocker switch.
- This is used to provide additional vehicle traction on unfavorable road surfaces.
- When activated, will lock the transfer case into 4 wheel drive mode.
- When deactivated, will unlock the transfer case.



# Controls – Drivetrain

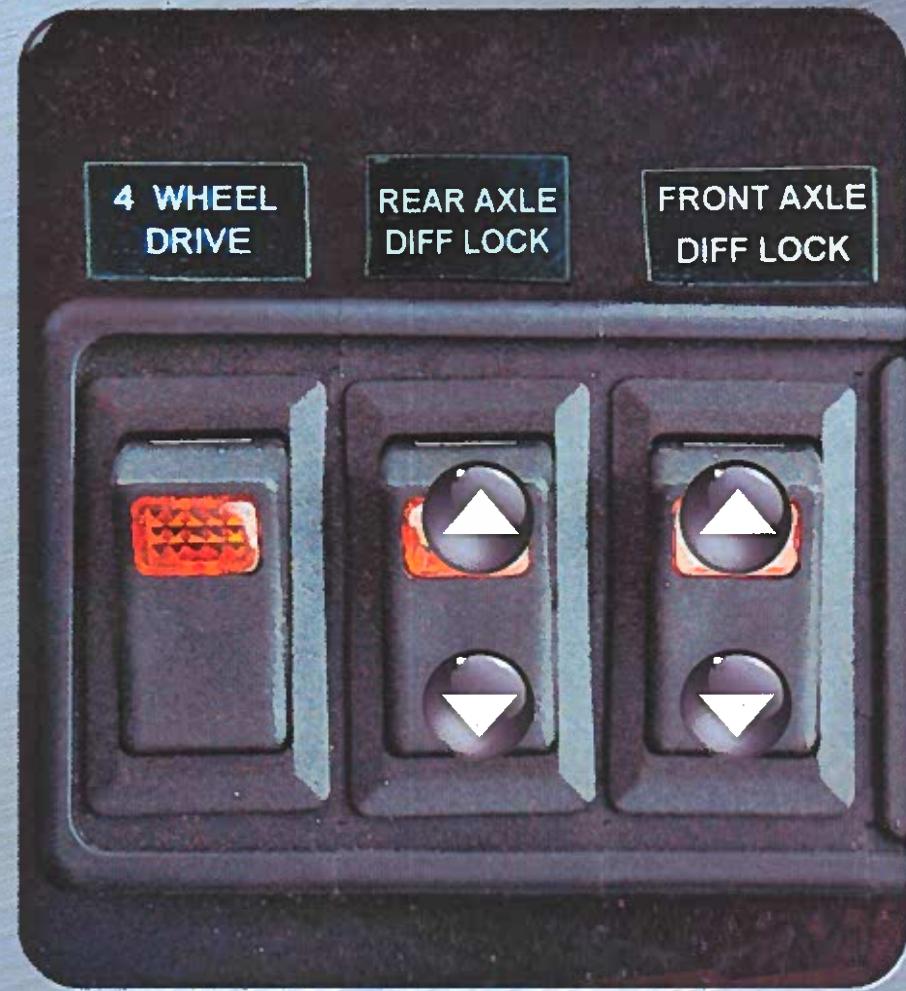
## Inter-axle Interlock Operation

- When activated the transfer case provides 4 wheel drive with a 50 - 50 torque split.
- When deactivated the transfer case provides 4 wheel drive with a 70 - 30 torque split.
- Can either be preselected or activated while driving.
- When selected the interlock will engage automatically if the vehicle speed is less than 3 mph (5 km/h), the transmission is unloaded, and there is no speed difference between the front and rear axles.

# Controls – Drivetrain

## Front/Rear Diff Axle Locks

- These switches are a two position lighted on/off rocker switch.
- This is used to provide additional vehicle traction on unfavorable road surfaces.
- When activated, a clutch collar in the drive axle completely locks the differential gearing maximizing traction to both wheels.



# Controls – Drivetrain

## Diff Axle Lock Operation

- When the axle lock is actuated, a clutch collar completely locks the differential case, gearing, and axle shafts together.
- Axle locks can either be preselected or activated while driving.
- Vehicle speed must be at a constant low speed, the front wheels should be pointed in a straight ahead position.
- Wheels cannot spinning, slipping, or losing traction.
- Relieve the torque on the gearing, to allow the lock to function freely.

# Controls – Drivetrain

## Diff Axle Lock Precautions

- Driveline lock-up and or axle bind will affect the steering and handling of your vehicle, always be aware of which mode of axle lock you have applied and drive accordingly.
- Do not use when traveling down steep grades or a potential loss of vehicle stability could result.
- When used, operate the vehicle speeds <25 mph (40 km/h).
- Unlock the axles as soon as the need has passed.
- When the front axle lock is engaged, the vehicle can experience understeer conditions.
- When the rear axle lock is engaged, the front axle off, the vehicle can experience oversteer conditions.

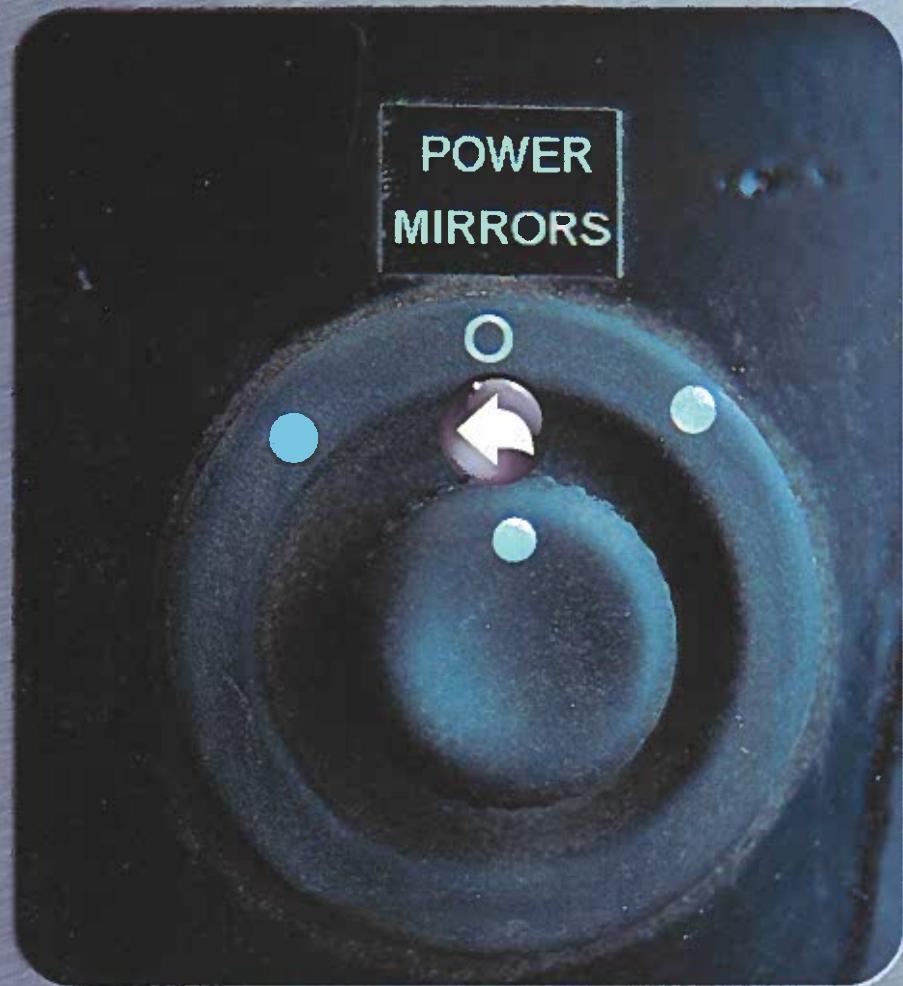
# Controls – Park Brake



## Parking Brake Valve

- The valve is a two position on/off valve.
- This is used to apply or release the park brake.
- Pull out the knob to apply the parking brake.
- Push in the knob down to release the parking brake.
- Activating the park brake will cause the transmission to shift into Neutral.

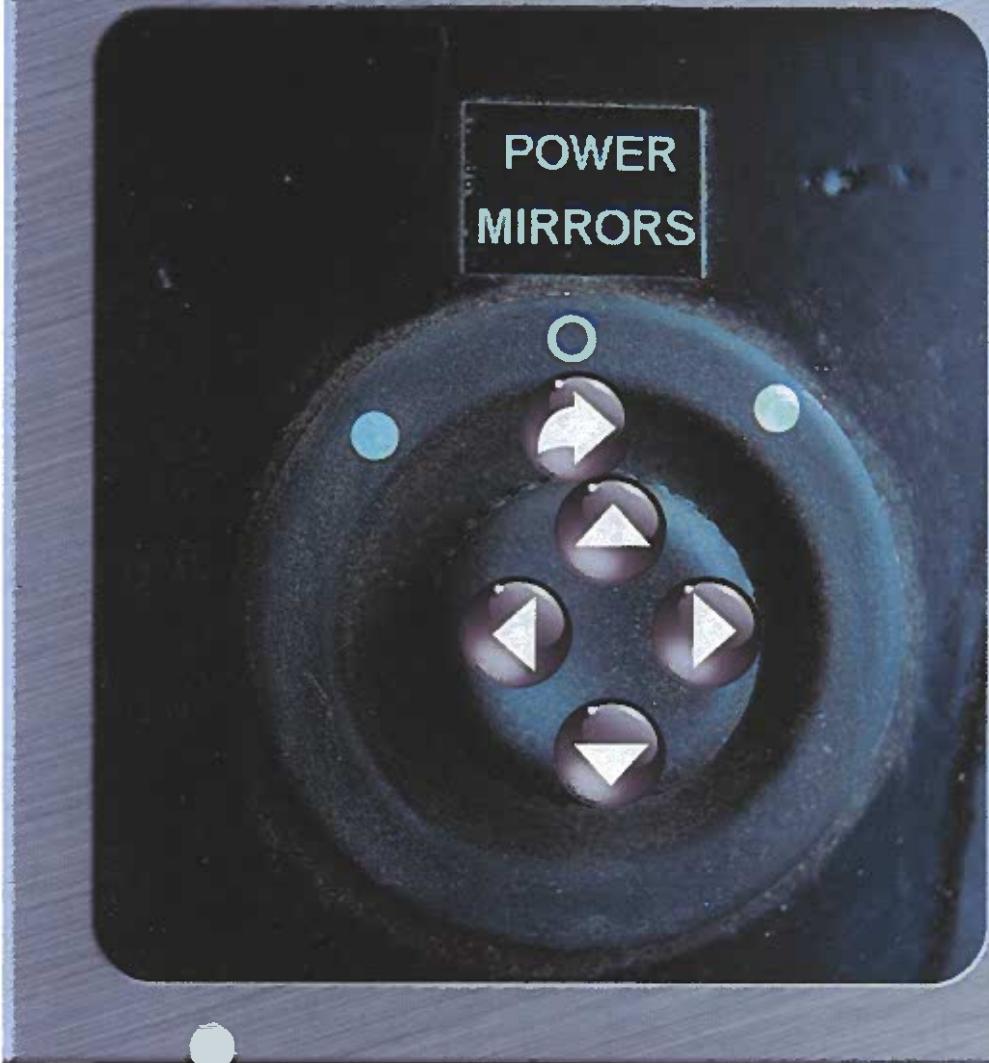
# Controls – Mirrors



## Power Mirror Switch

- Mirror selection is a three position L/N/R switch.
- By rotating the knob to the left, or to the right activates control of either the left or right side mirror.

# Controls – Mirrors



## Power Mirror Switch

- Mirror position control switch is a four position on/off switch.
- After selecting the mirror on either side, push the knob forward or backward to move the mirror head up or down, or push the knob to the left or right to move the mirror head in or out.

# Controls – Mirror Heat

## Mirror Heaters

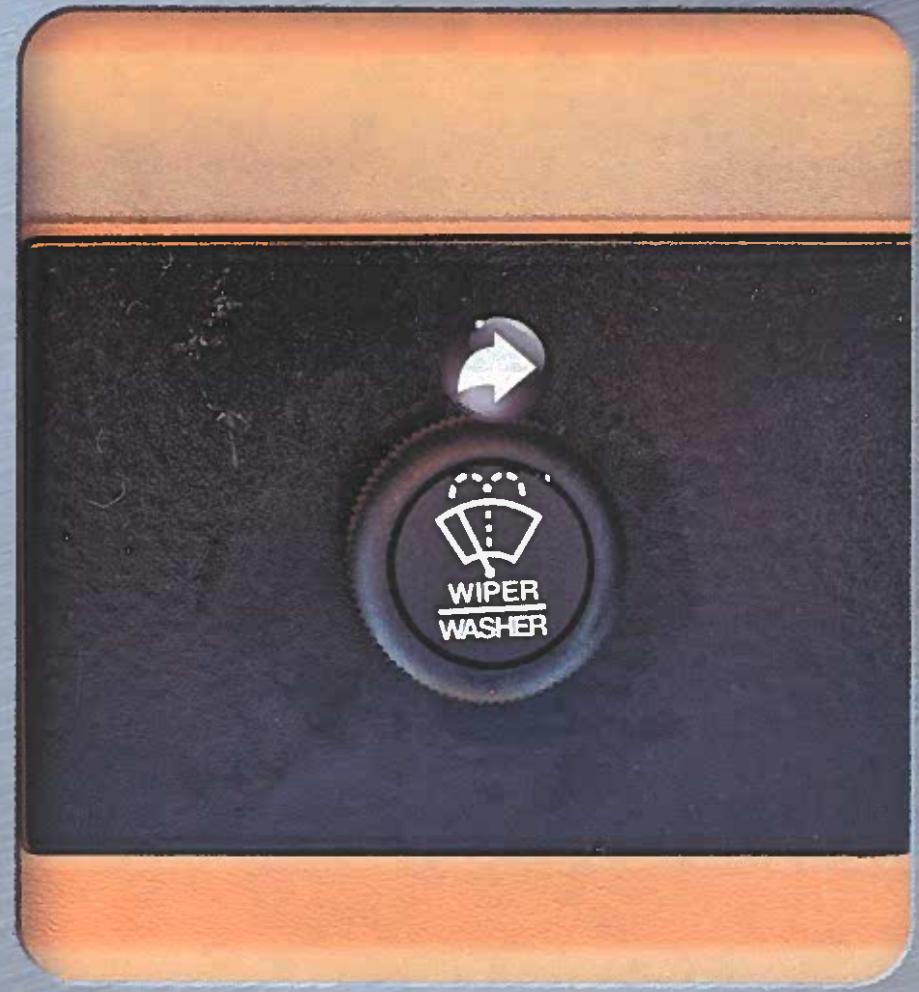
- Two position on/off rocker switch.
- When activated the outside mirrors are heated.
- This is to defrost any frost accumulation on the mirror glass.



# Controls – Wiper/Washer

## Front Wiper - Washer Switch

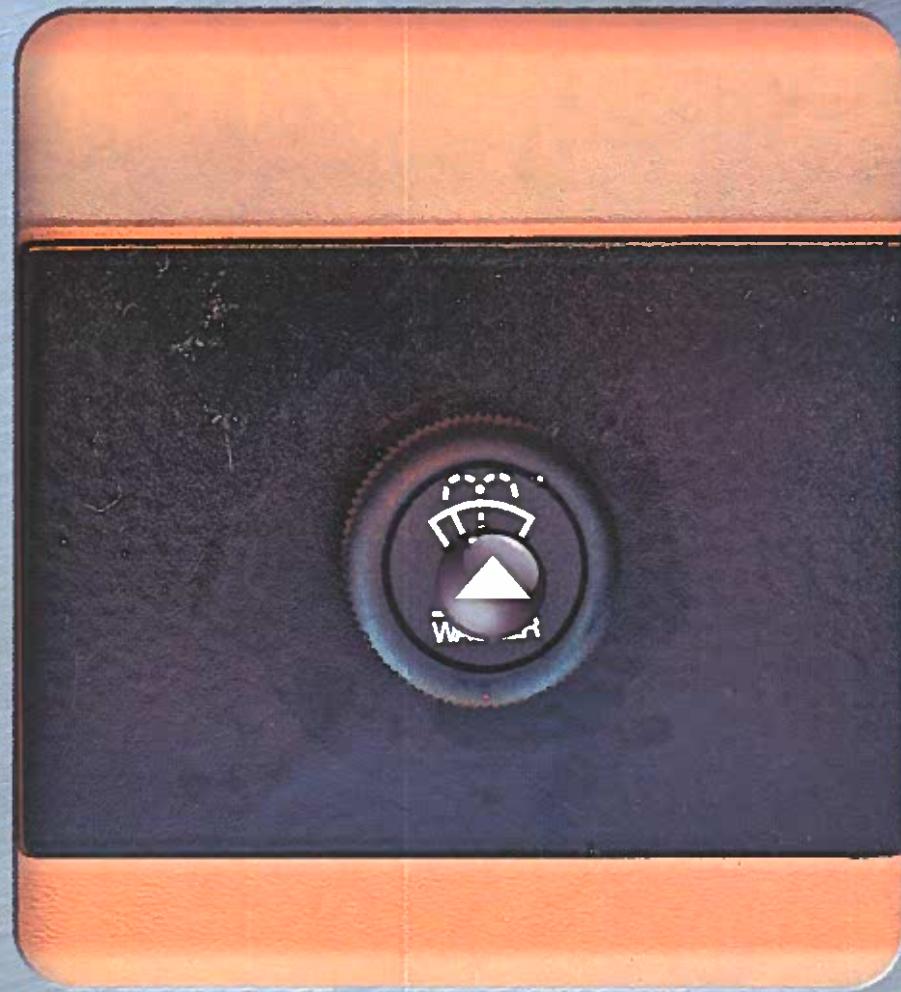
- Three position on/off rotary switch.
- When activated the wiper speeds are either variable, or slow and fast speeds by rotating the rotary switch.
- Wipers become active only when the vehicle park brake is released.



# Controls – Wiper/Washer

## Front Wiper - Washer Switch

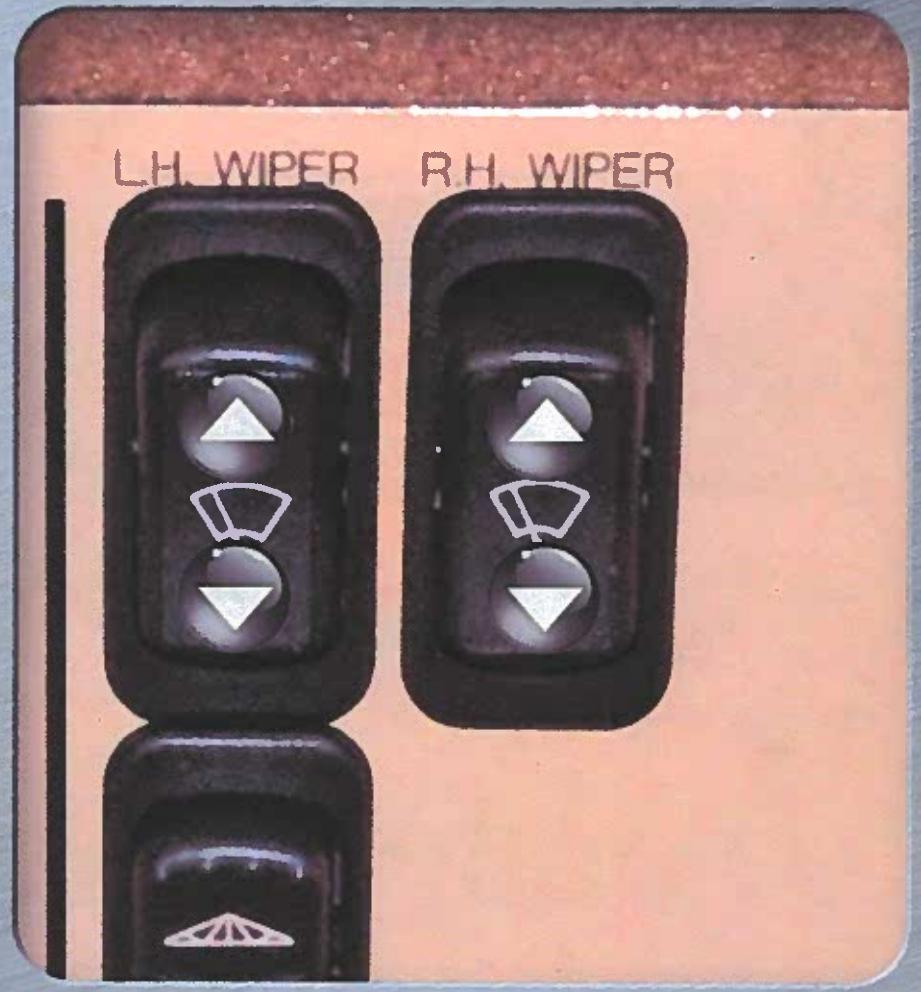
- Washer is a momentary on/off switch.
- Press and hold down the switch to activate the windshield washer system.



# Controls – Wiper/Washer

## Side Wipers - Washer Switch

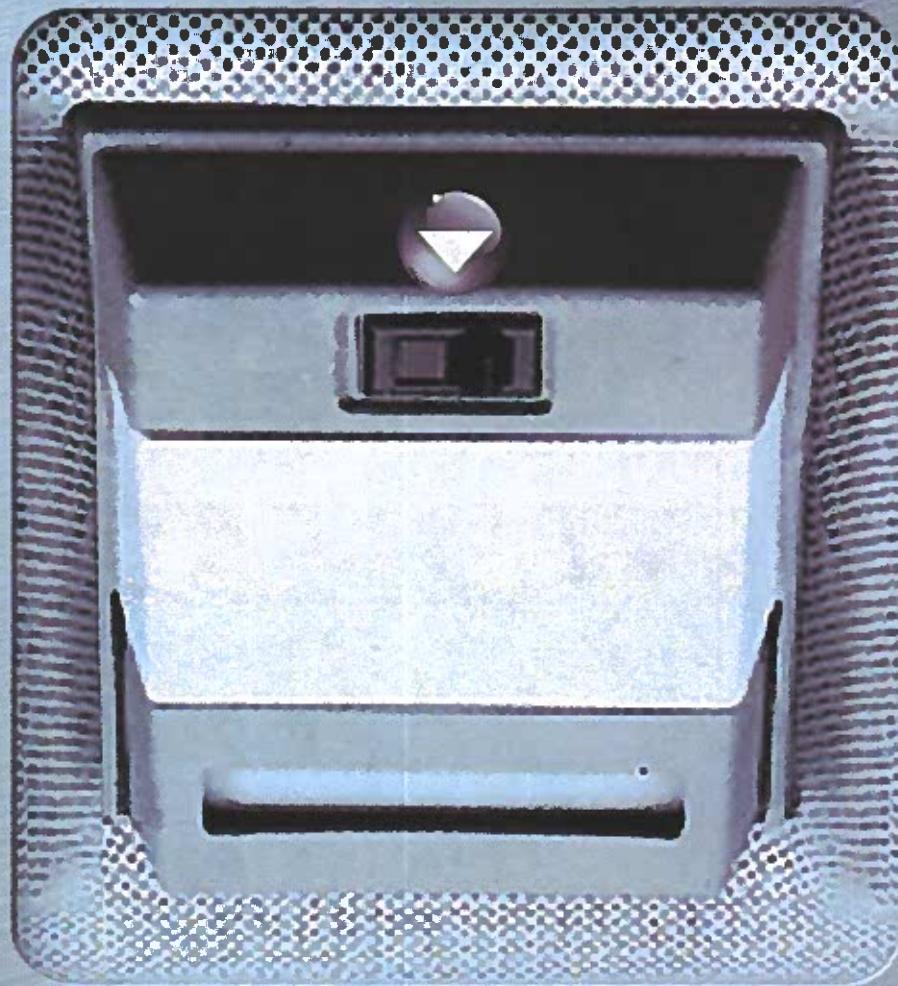
- Wiper switches are two position on/off rocker switch.
- Washer is a momentary on/off switch.
- Press and hold down the switch to activate the windshield washer system.
- Wiper speeds is slow.
- Wiper operation is always active.



# Controls – Interior Lights

## Dome Lamp Switch

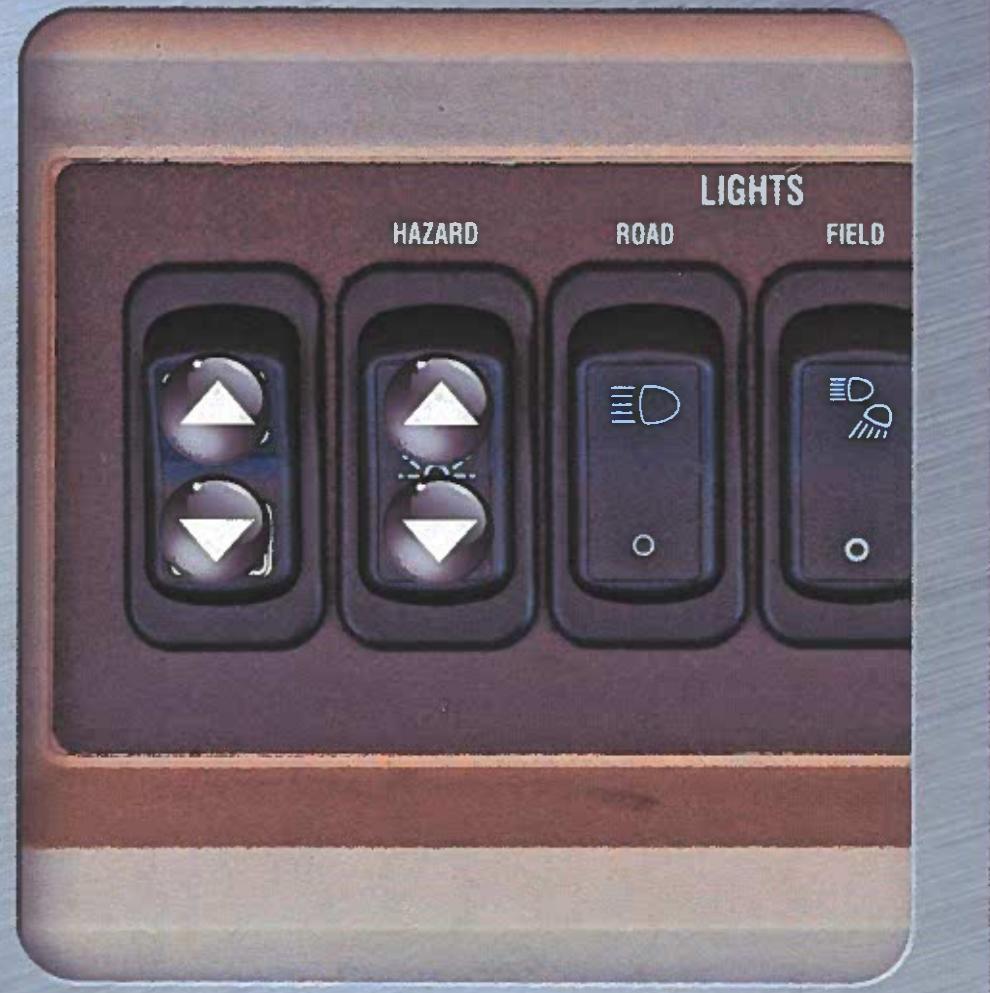
- Three position on/off/on sliding switch.
- When the switch is on the left, will cause the center console and armrest console light to illuminate.
- The center position, will turn off the interior lights.
- When the switch is on the right will cause the dome light to illuminate.



# Controls – Exterior Lights

## Beacon – Hazard Switch

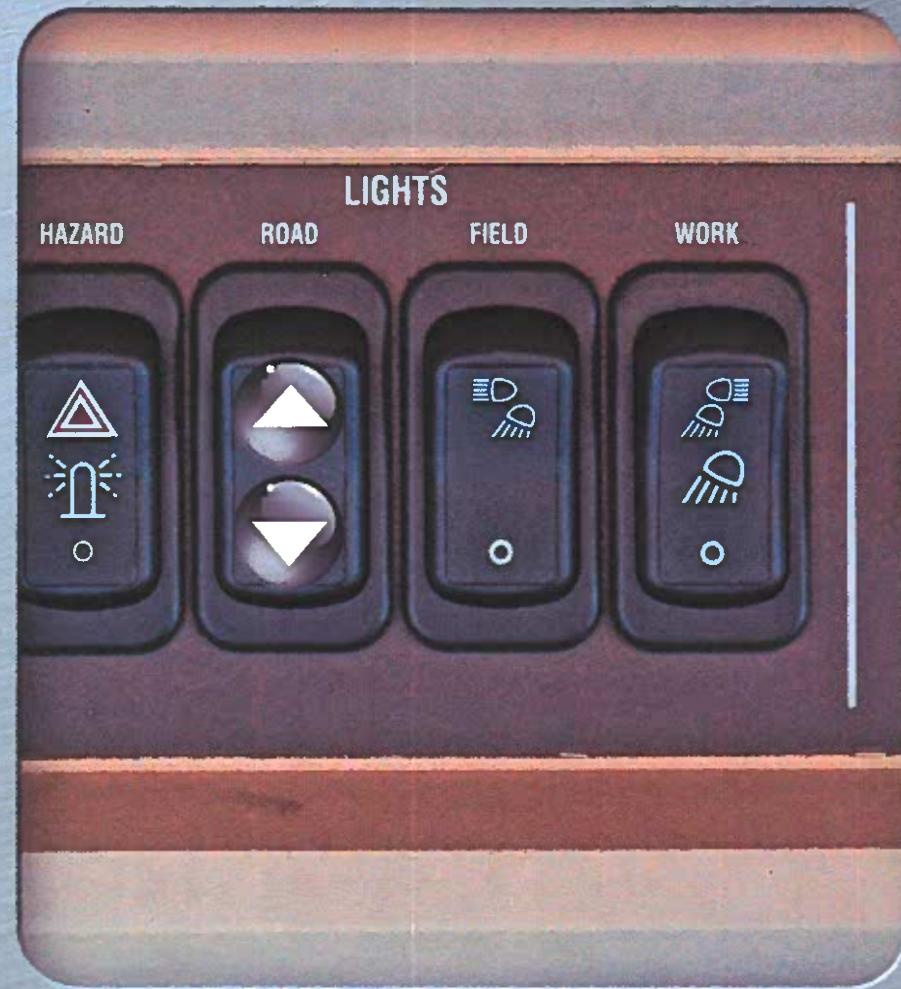
- Beacon and Hazard switches are two position on/off rocker switch.
- When activated the rotating beacon will illuminate.
- When activated the hazard flasher warning lights will illuminate.



# Controls – Exterior Lights

## Road Lights Switch

- Two position on/off rocker switch.
- When activated the two center, and the two outer cab mounted lights will illuminate.
- Also activates the 4 way hazard flashers.



# Controls – Exterior Lights

## Field Lights Switch

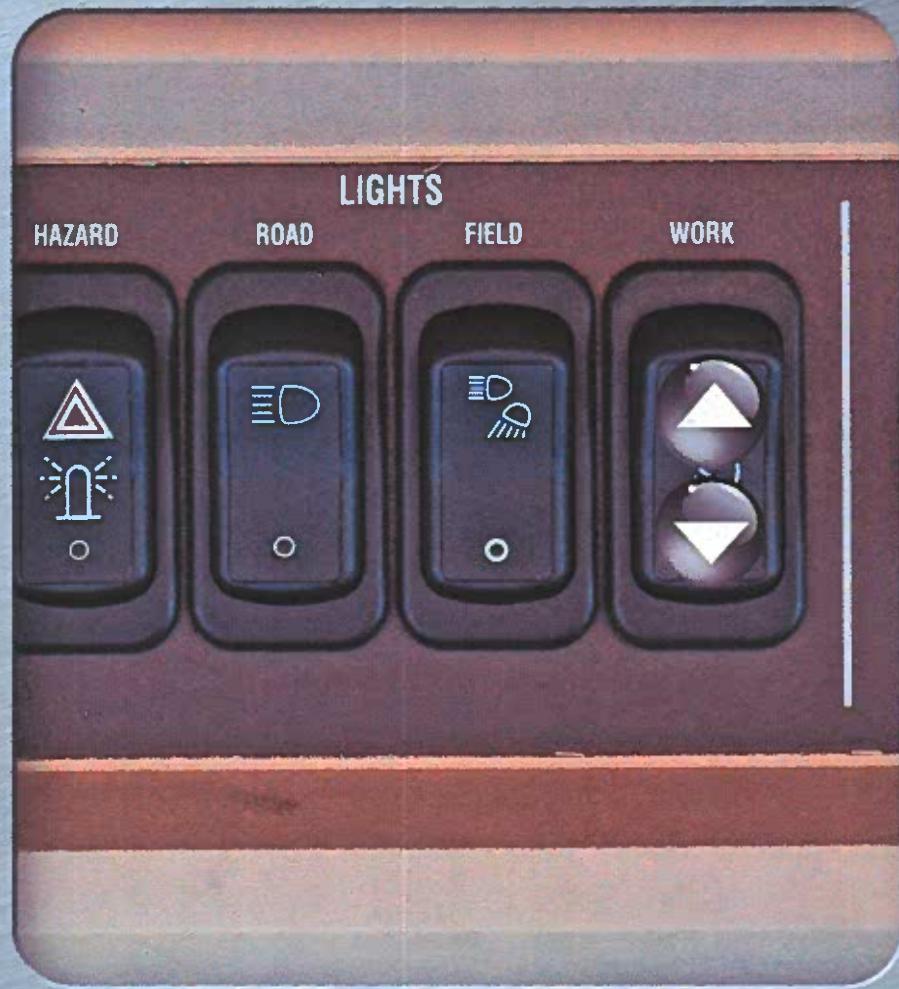
- Two position on/off rocker switch.
- When activated all 6 lights across the top of the cab will illuminate.
- The 4 way hazard flashers do not operate in this mode.



# Controls – Exterior Lights

## Work Lights Switch

- Three position off/on/on rocker switch.
- When activated the lights mounted on the plow frame will illuminate.
- Position 1 is low beam.
- Position 2 is high beam.



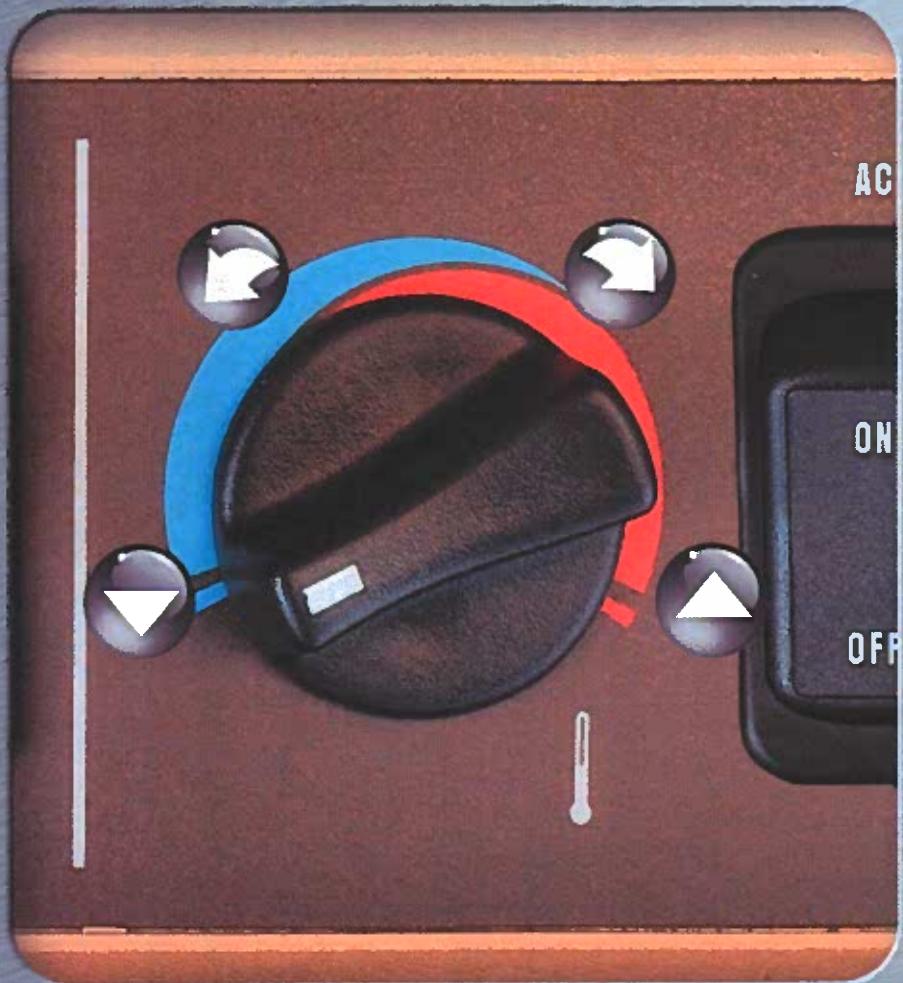
# Controls – Exterior Lights

## Light Positions

- #1 Road Lights
- #2 Field Lights
- #3 Work Lights



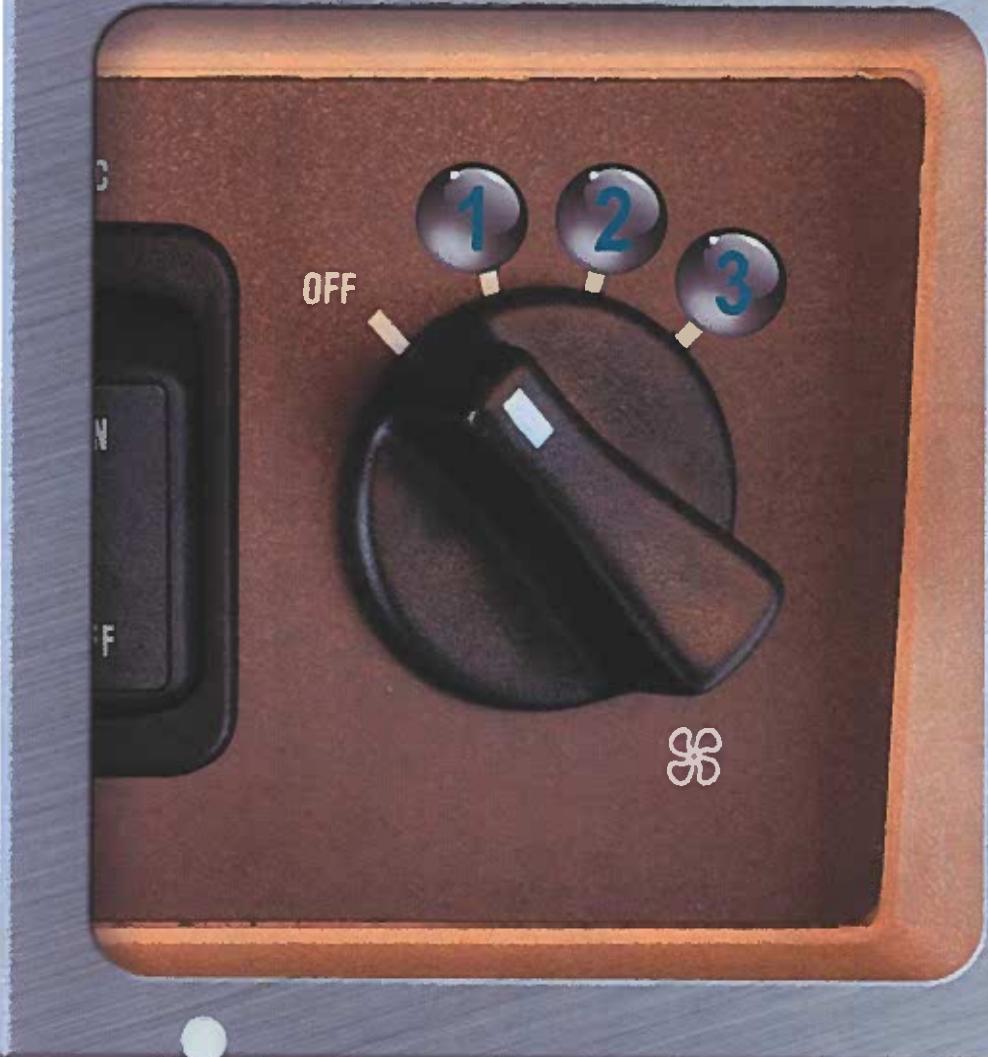
# Controls – HVAC



## Temperature Switch

- Variable position rotary switch.
- Controls the temperature of the cab interior.
- Blue range are cooler temperatures.
- Red range are warmer temperatures.

# Controls – HVAC



## Fan Speed Switch

- Re-circulating fan has a four position off/1/2/3 switch.
- The re-circulating fan has three speeds to control the amount of additional ventilation through the louvers.
- A pressurizing fan is also used and is constantly on.

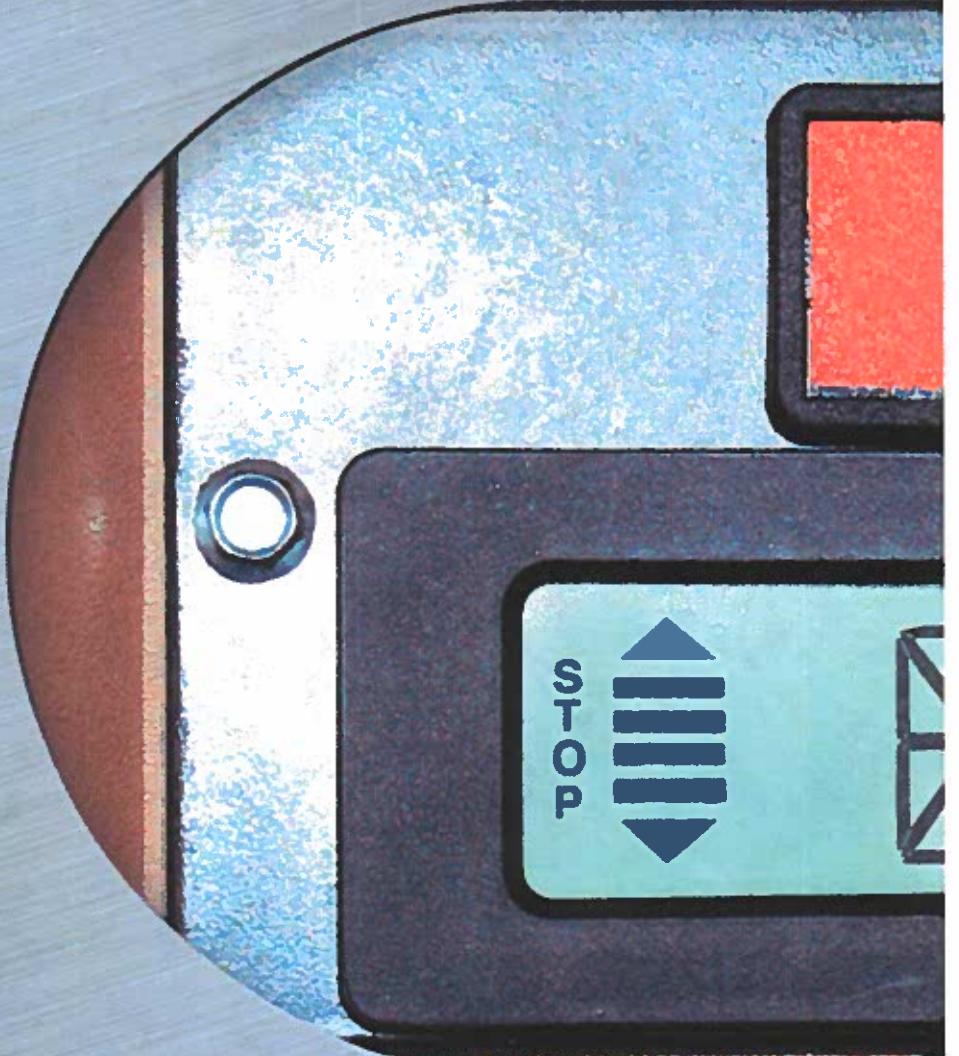
# Controls – HVAC



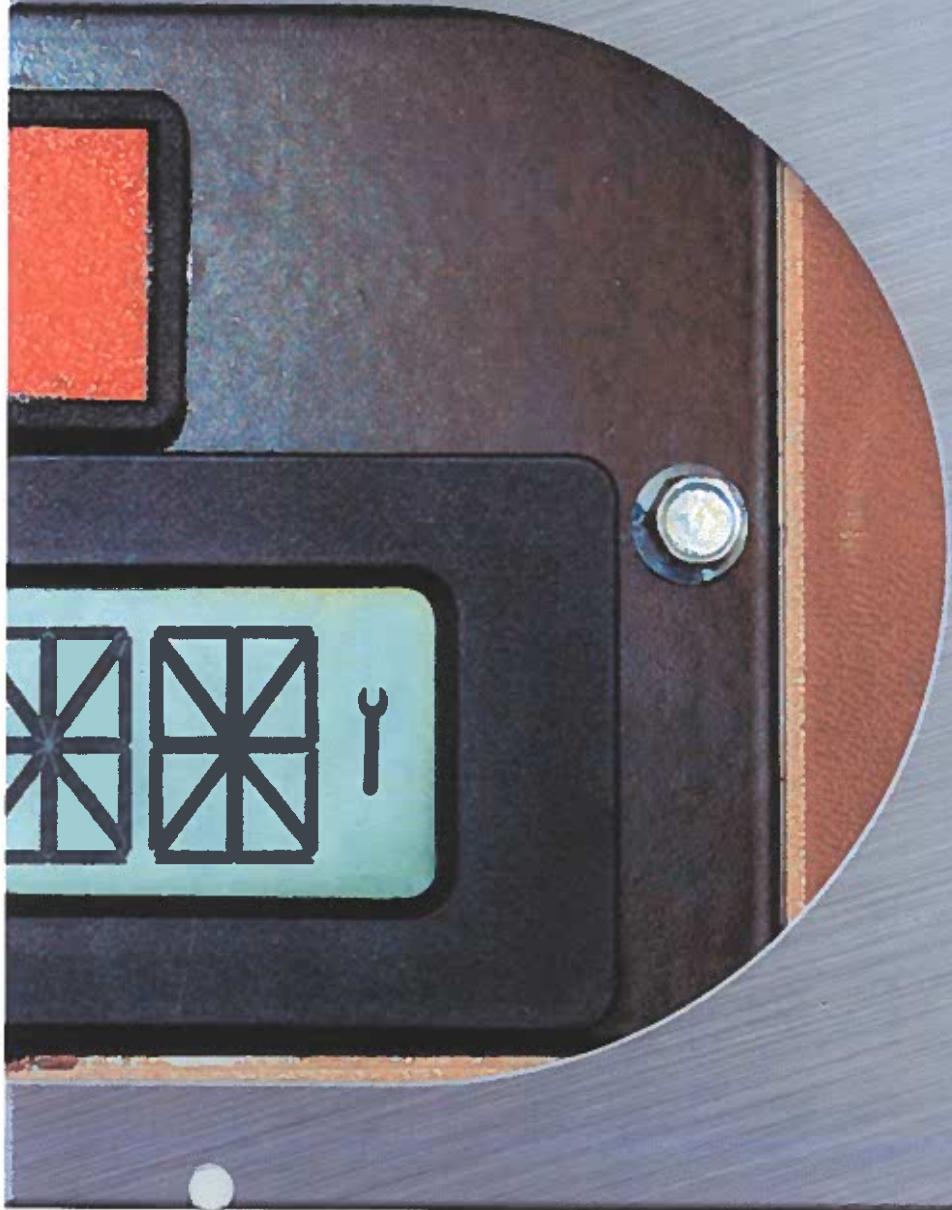
## AC Switch

- Two position on/off rocker switch.
- When activated the Air Conditioning system will be in operation.

STOP



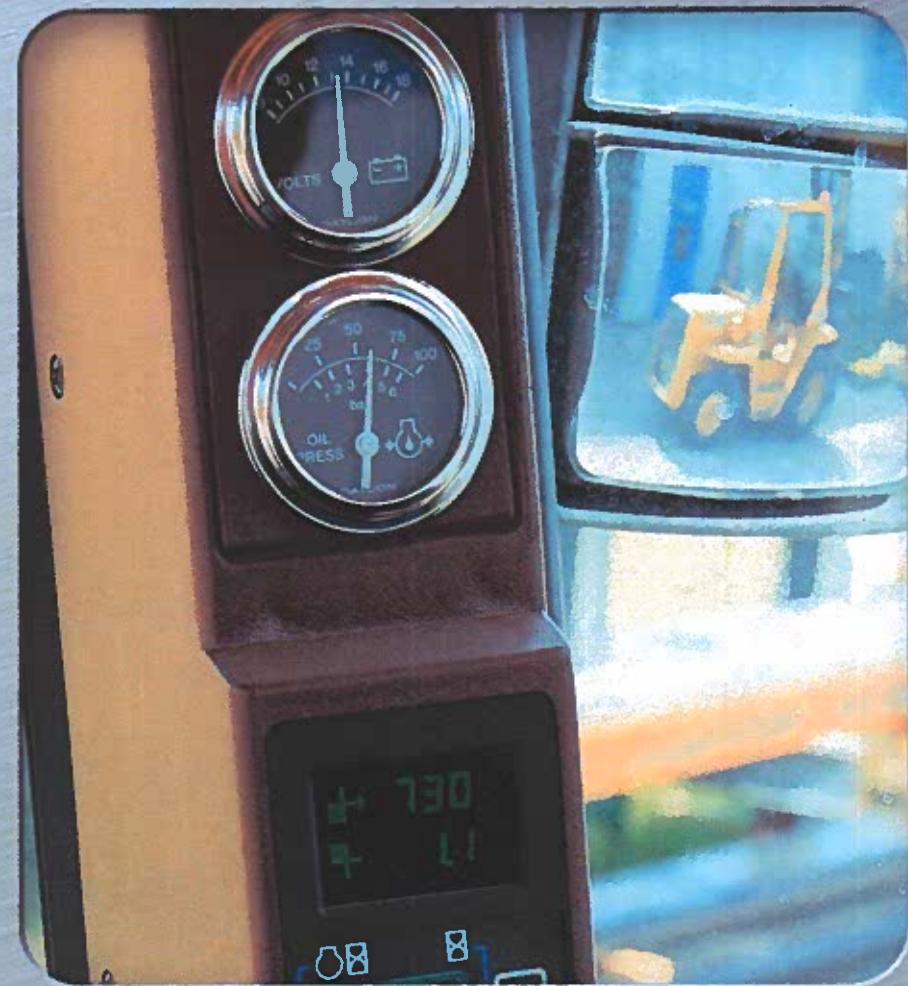
# Instrumentation



# Instrumentation

## Instrumentation

- Gauges are mounted on both the left hand and right hand windshield pillars and upper console.
- Being mounted at eye level helps to keep the vehicle operator's attention focused ahead.



# Instrumentation

## Warning Light Display

- Water Temperature indicates high engine water temperature. Activates at 210° F (98° C).
- Engine Stop indicates a fault code has been recorded by the ECM (Electronic Control Module) and the engine is not functioning normally.
- Air Filter Restriction indicates when the air filter needs replacing.



# Instrumentation

## Warning Light Display

- Hyd Oil Temperature indicates high hydraulic oil temperature. Activates at 180° F (82° C).
- Engine Warning indicates a fault code has been recorded by the ECM (Electronic Control Module).
- Hyd Filter Restriction indicates when the hydraulic filter needs replacing or service.



# Instrumentation

## Warning Light Display

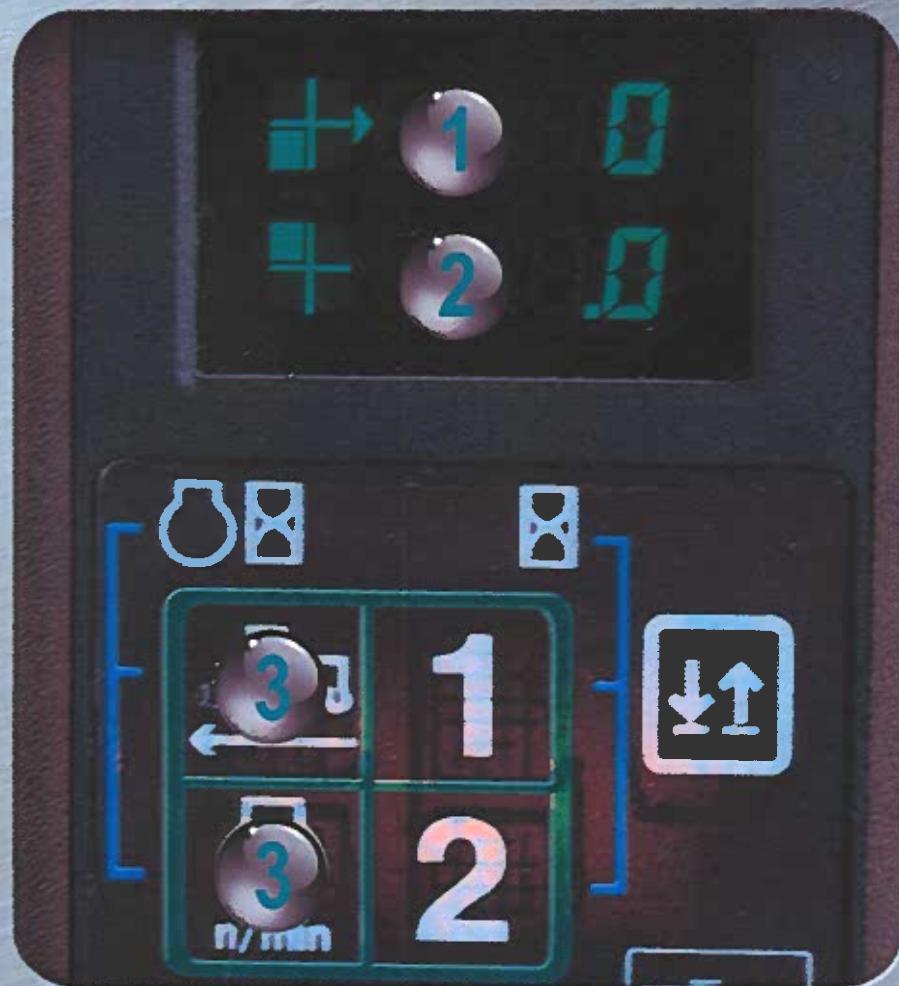
- Voltage indicates a fault has been detected with the vehicle's charging system. Activates when charging voltage is 12V or less.
- Engine Oil Pressure indicates that a loss of engine oil pressure is detected. Activates at 10 psi (0.6 bar) or less.
- Park Brake indicates when the parking brake is applied.



# Instrumentation

## Digital Display

- Displays the vehicle speed and engine rpm.
- #1 Pushing this key displays the electronic speedometer.
- #2 Pushing this key displays the engine tachometer.
- #3 Pushing both these keys together displays the hour meter reading. The hour meter displays only full hours.



# Instrumentation

## Digital Display

- Mode key allows the selection of either the speedometer reading, or the tachometer reading, or both.



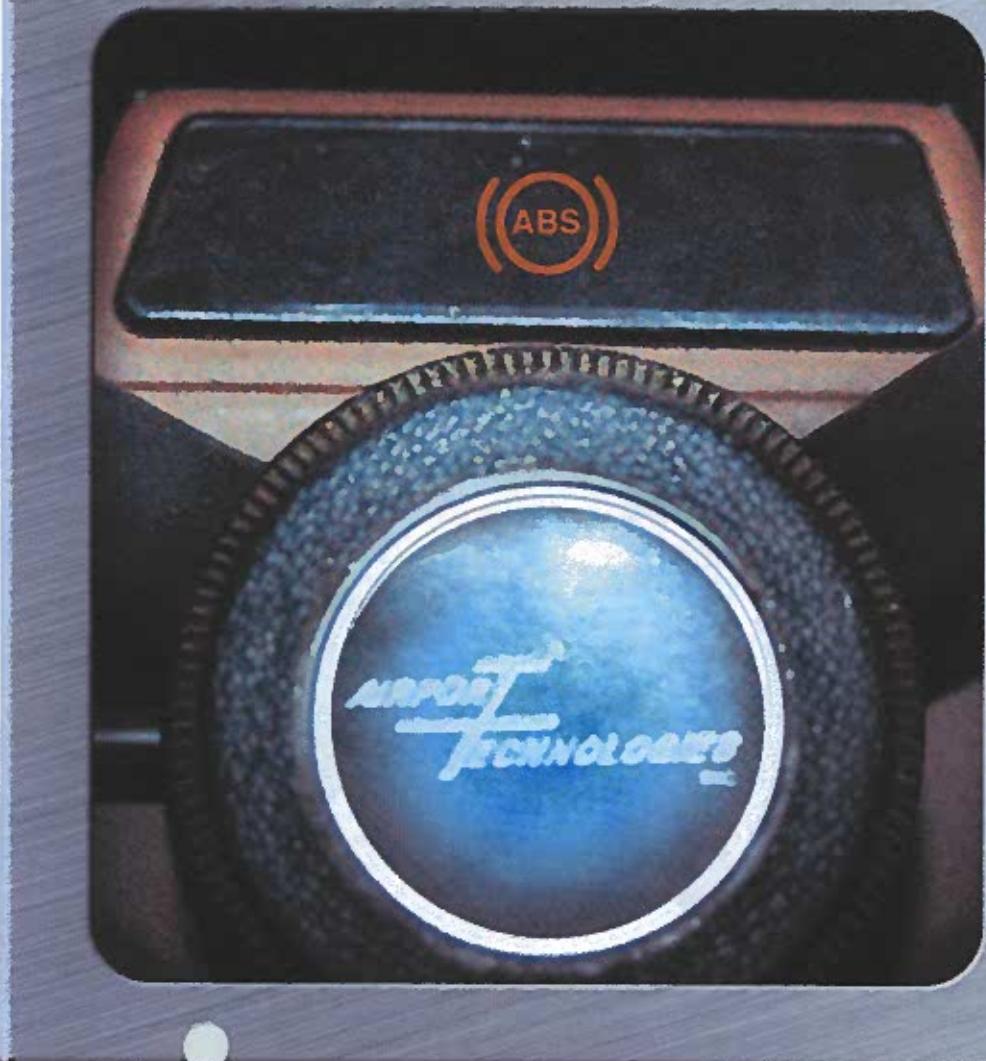
# Instrumentation



## ABS Warning Lamp

- This lamp will illuminate when a fault occurs with the Antilock Braking System.
- This lamp is also used to signal system status and fault codes.
- The diagnostic mode is active when the ignition switch is in the Run position.

# Instrumentation



## ABS Warning Lamp

- After 1.5 seconds from power up the lamp will blink once and then pause 1.5 seconds, then blink once again, then go out. This indicates the ABS system is OK.

# Instrumentation



## Water Temperature Gauge

- Indicates the engine operating temperature.
- Minimum is 160° F (70° C)
- Operating is 180 to 200° F (82 to 93° C).
- Maximum is 212° F (100° C).

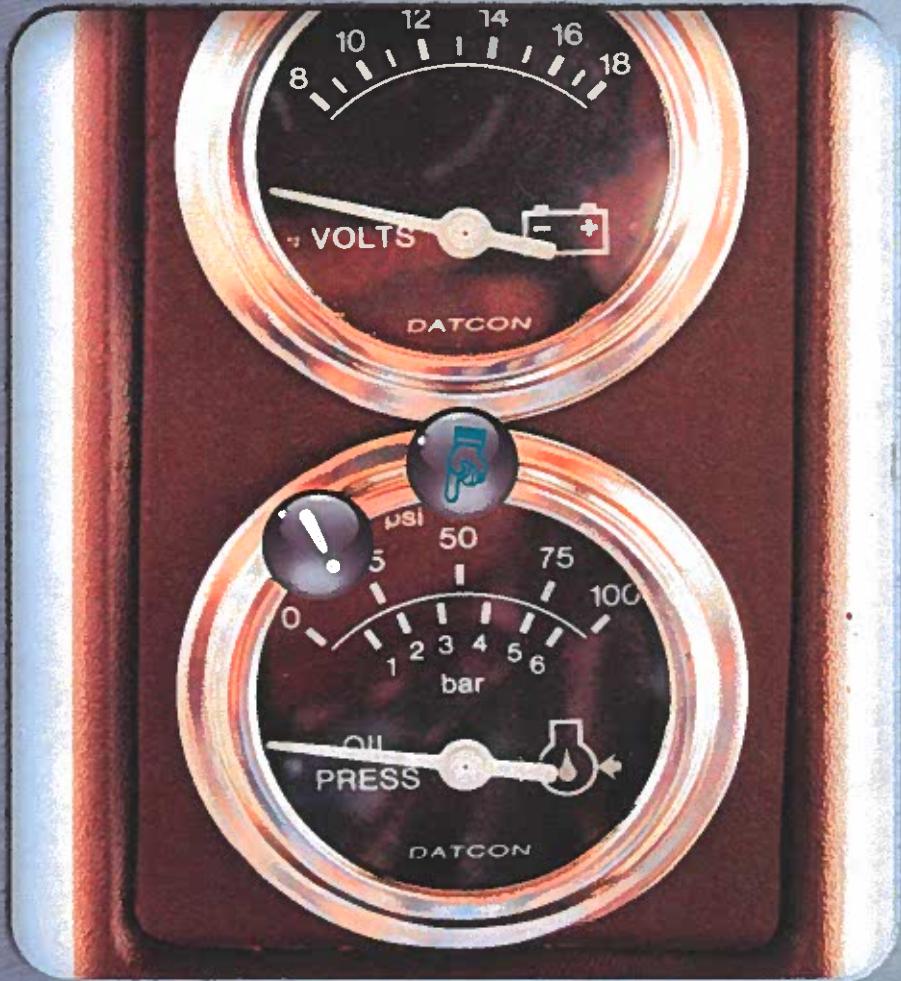
# Instrumentation



## Voltmeter Gauge

- Indicates the batteries state of charge.
- Dead is 12.2V or less
- Fair is 12.2V to 12.5V
- Good is 12.5V to 12.8V
- Charging rate is 13.2V to 14.5V

# Instrumentation



## Oil Pressure Gauge

- Indicates the amount of engine oil pressure.
- Minimum is 10psi (0.6 bar)
- Operating range is 30 to 65psi (2 to 4 bar)