Owner's Manual

Wilderness Renegade 300ZTR

Remote Access Vehicles Corp.
6769 W. Hwy 77
Pence, WI 54550

Owner's Manual

Remote Access Vehicles, Corp. (RAVCO)

Renegade 300 ZTR

⚠ WARNING

NO PERSON SHOULD OPERATE A RENEGADE 300 ZTR BEFORE READING THIS MANUAL THOROUGHLY. IF ANY PORTION OF THIS MANUAL IS NOT CLEARLY UNDERSTOOD, CONTACT YOUR LOCAL DEALER OR REMOTE ACCESS VEHICLES, CORP. IMMEDIATELY.

RENEGADE 300 ZTR

The information and suggestions you will find in this manual will enable you to obtain the safest performance, dependability, economy, and pleasure from your Renegade 300 ZTR. Read this manual carefully and immediately. You, and everyone who uses your Renegade 300 ZTR, should study the vehicle operating information thoroughly. Note the safety warnings and comply with them to help avoid injury to yourself or others.

Your local Remote Access Vehicles Corp (RAVCO) dealer should perform vehicle service. They are also the first point of contact for any replacement parts and aftermarket accessories. If no dealer is available to you, please contact us directly.

RAVCO reserves the right to make design and specification changes, additions, price changes, and improvements on its products without notice and without incurring obligation to install them on products already manufactured.

SERVICE PUBLICATIONS

Additional Owner's Manuals, as well as illustrated Parts Book and Service Manuals are available from RAVCO 6769 W Hwy 77 Pence, WI 54550. A minimum charge is made for these publications; prices are available on request. Always provide the VEHICLE SERIAL NUMBER when requesting publications.

SAFETY

The purpose of safety symbols is to attract your attention to possible dangers. The symbols and the explanations with them deserve your careful attention and understanding. Safety warnings, by themselves, do not eliminate any danger; the instructions or warnings they provide are not substitutes for proper accident prevention measures.

VEHICLE SPECIFICATIONS

Engine: Modified Generac @ 50 HP, air cooled 4-cycle OHVI V-Twin 990 cc industrial engine with overhead valves and 3,000-hour engine life.

Drive System: Twin Sauer/Danfoss hydrostatic transmission with gear reduction unit and completely enclosed drive system.

Capacities: Fuel tank: 11 gallons

Transmission: 13 quarts

Transmission Oil Specification: AWG 30 Hydraulic Oil

Electrical: 12-volt battery

120 AMP alternator

2 halogen headlights & 2 halogen reversing lights

1 taillight

12-volt power outlet & cigarette lighter

Weight: 1,640 lbs.

Capacity: 800 lbs.

Ground Pressure: Unloaded: .65 psi, with operator: .74 psi

With 2 persons and 200 lbs.: .89 psi

Dimensions: Length: 106"

Width: 62" Height: 72"

INTRODUCTION

Your RAVCO vehicle is the result of years of experience in designing and engineering vehicles for industry and pleasure. With proper care, your Renegade 300 ZTR will provide long, dependable service.

The Renegade 300 ZTR features one-piece rubber tracks with steel belt reinforcement and molded double drive lugs for maximum traction and minimum ground pressure, a low center of gravity for stability, and ample room for passengers and equipment. The single T-handle allows for zero-radius turns along with speed, direction and braking control when the engine is operating and clutch is engaged.

Power is supplied by a modified Generac 50 horsepower, air-cooled, V-Twin, 990 cc industrial engine with electric start. The engine is coupled with a transmission that features two Sauer/Danfoss hydrostatic drives that allow each track to be controlled independently.

MODEL IDENTIFICATION

Vehicle Identification Numbers:_____

REPLACEMENT PARTS

The RAVCO dealer network can supply service and replacement components. If no dealer is available, contact us directly.

WARRANTY SERVICE

Should your Renegade require service that appears to be under warranty, take it to your authorized RAVCO dealer. They will make the necessary repairs and return parts to the factory with a completed Warranty Request.

The following points should be followed when requesting a warranty repair:

1. An authorized RAVCO dealer MUST perform all warranty work.

2. Warranty service can be obtained from any authorized dealer, however, it is best to have the work performed by the dealer who originally sold the vehicle.

ITEMS NOT COVERED BY WARRANTY

Provisions of the warranty will not apply to:

1. Vehicles subjected to misuse, accident, neglect, alterations, or vehicles used for racing purposes.

2. Pickup and delivery of vehicle, mechanics' travel time, and removal of non-RAVCO accessories.

3. Used or secondhand vehicles. The warranty applies to the original purchaser only.

4. Damage to the tracks or suspension system due to excessive operation on hard, paved surfaces.

5. Damage due to impact, upset or towing.

OWNER'S RESPONSIBILITY

Normal maintenance service and replacement of service items are the responsibility of the owner and as such are not considered defects in material and workmanship within the terms of the warranty. Individual operating habits and usage contribute to the need for maintenance service.

To validate the warranty it is the owner's responsibility to:

1. Maintain all components in proper adjustment.

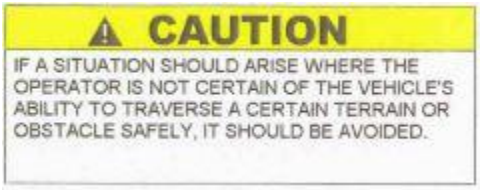
2. Have all recommended services performed as required.

Normal maintenance services are, but not limited to: Adjustments, tune-up and air cleaner service.

Service items not covered by warranty include, but are not limited to: Spark plugs, belts and oil filters.

OPERATION

The Renegade 300 ZTR is a vehicle that requires a great degree of care and judgment during operation. It should be kept in mind that while the Renegade is designed to operate in rough terrain, this same fact allows for the possibility of a hazardous condition developing at any time. Safe operation of the Renegade must be based upon the understanding of the vehicle's limitations, thorough knowledge of the controls and their functions, and the operator's good judgment and experience.



CONTROLS

Read this section carefully and try each control on your vehicle before attempting to operate it.

Engine Speed Control

The throttle lever is located on the left side of the control panel. The lever adjusts the speed of the engine. Pushing the lever forward will increase engine speed while pulling it back will decrease engine RPM.

Reverse Lockout

The lockout must be depressed before the T-handle can be moved to the REVERSE position. The reverse lockout is a spring-loaded mechanism that will automatically spring back once the T-handle moves back to the STOP position.

Choke

The choke is used during engine starting and warm-up. Moving the lever forward will turn the choke off, while pulling it back will turn it on, thus enriching the fuel supply to the engine.

Ignition Switch

The ignition switch will only operate with the proper key. The switch has three positions: OFF, ON, and START.

Clutch Switch

The clutch switch will engage or disengage the clutch between the engine and transmission. With the engine running, placing the switch in the ON position will engage the clutch and allow the vehicle to be operated by the T-handle. Turning the switch OFF releases hydraulic pressure in the transmission and the vehicle cannot be operated.

Reverse Lights Switch

The reverse light switch allows the operator to turn the rear halogen lights ON/OFF when the ignition switch is in the ON position.

Lighter

Your Renegade 300 ZTR is equipped with a standard 12-volt cigarette lighter. This lighter may be removed to provide an additional 12-volt power point for accessory items.

Power Point

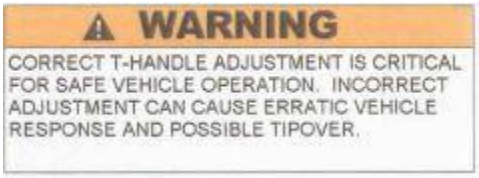
A 12-volt power point is located on the right side of the dash. The power point offers standard 12-volt power for accessory items.

Automatic Sprocket Lock

The lock is located directly behind the right drive sprocket. It disengages automatically when the hydraulic pressure reaches operating level, and engages when the hydraulic pressure drops.

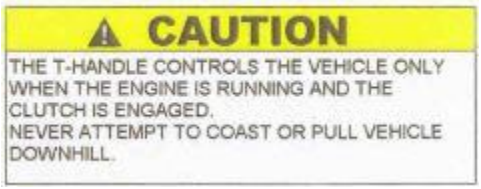
T-HANDLE

The vehicle will react directly in proportion to the movement of the T-handle; i.e. an erratic, jerking motion on the T-handle will provide that type of motion. Hold the T-handle lightly and move it slowly whenever possible.



STOP

This position prevents the movement of the vehicle when the engine is running AND the clutch is engaged. When operating, gradually return the T-handle to this position to provide a smooth stop.

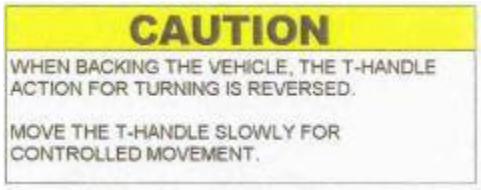


FORWARD

Moving the T-handle forward starts the vehicle moving forward. Twisting the T-handle causes the vehicle to turn. As the handle is advanced forward, the vehicle speed increases. Move the handle forward slowly to allow the engine time to respond. Thrusting the handle forward quickly will offer a situation similar to rapidly releasing the clutch of an automobile: power is demanded too quickly and the engine will stall. The terrain being traveled and vehicle load will determine how far the T-handle can be advanced. As the engine begins to lose RPM or "lug down", pull the T-handle back slowly until the engine returns to its original speed. This procedure simulates shifting to a lower gear in a conventional transmission. The vehicle speed is decreased and more power is supplied to the drive system. While the vehicle is being driven, the T-handle must be continually adjusted as the terrain changes. Always try to maintain a constant engine RPM. Allow the engine to "run freely", avoid overworking or "lugging" the engine. Depending on terrain conditions, (deep snow, marsh, etc.) it may not be possible to operate the vehicle with the T-handle fully advanced.

REVERSE

Depress the Reverse Lockout and pull the T-handle back slowly. Driving technique should be consistent with that used for forward motion. Move the handle slowly and allow the engine time to respond.



.

DRIVING THE VEHICLE

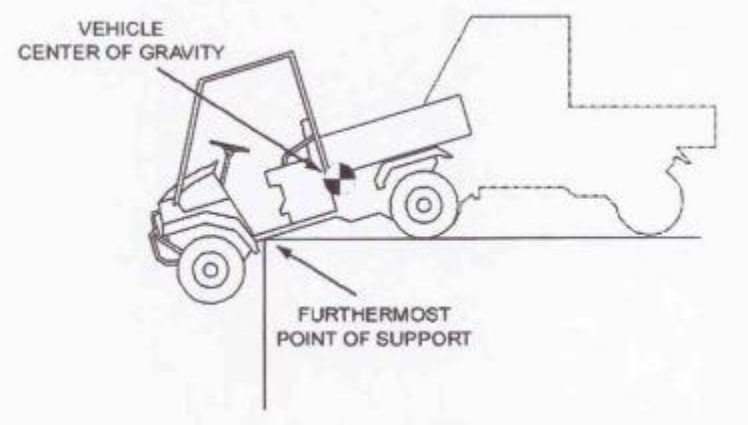
A tracked vehicle, by its very nature, requires the use of operating techniques and procedures that are unfamiliar to most people used to driving wheeled vehicles. This means that a person intending to operate this vehicle must allow ample time to become familiar with the controls and the characteristics of the machine.

Before attempting to drive on rough terrain, the operator should drive the vehicle on level, unobstructed terrain until he/she becomes acquainted with the Renegade's controls and particular handling characteristics. Be sure the use of each control is understood completely.

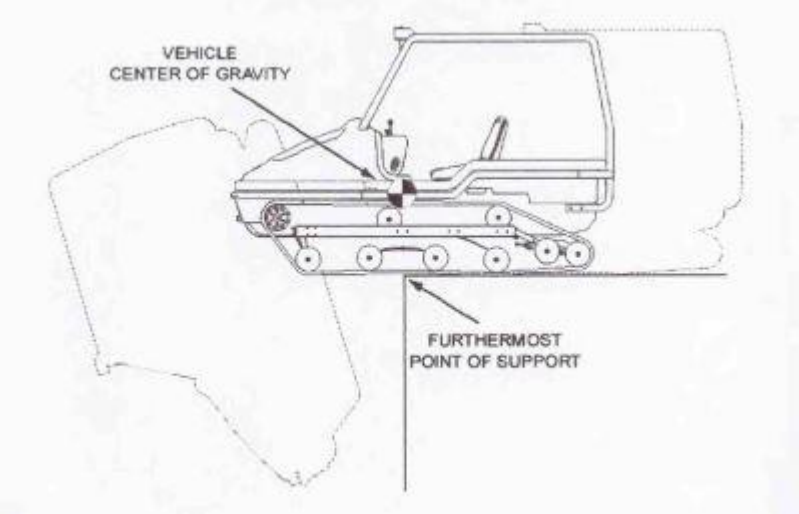
It is the purpose of this section to inform and instruct prospective Renegade operators in an effort to help them operate it safely. Read the owner's manual thoroughly before using the machine.

TRACKED VEHICLE CHARACTERISTICS

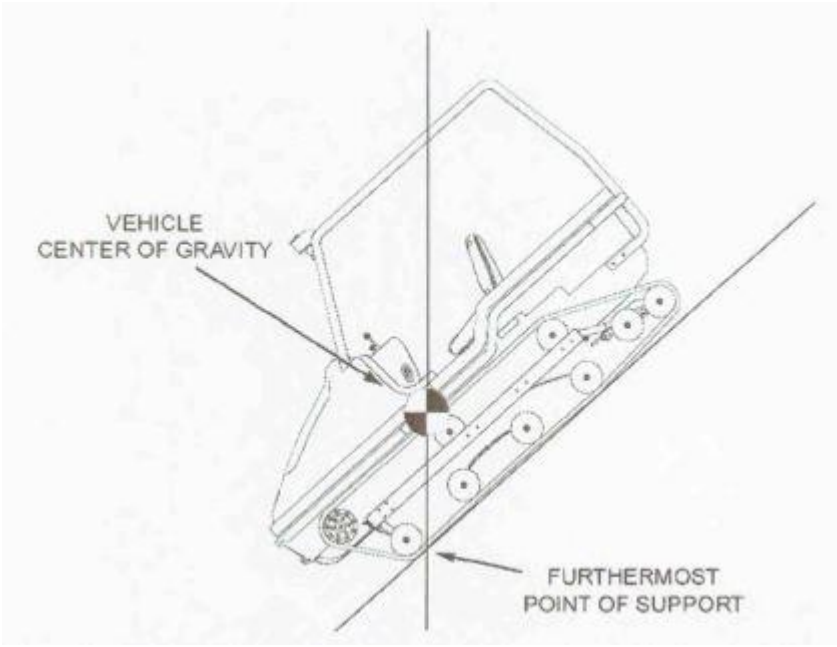
Tracked vehicles posses certain inherent features not found on standard four-wheeled vehicles. For instance, a standard vehicle will hit bottom when the wheels on either end are driven over a drop-off. In many cases this will stop the vehicle motion and give immediate warning.



A tracked vehicle, however, will continue on without any warning until its center of gravity passes across an imaginary line drawn straight up from the furthermost point of support with the ground. It will then drop SUDDENLY. (See illustration). THIS WILL HAPPEN EVEN AT THE VERY SLOWEST OF SPEEDS.

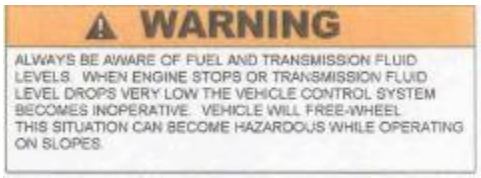


A tracked vehicle can climb or descend slopes so steep that the vehicle can tip over, forward OR backward before it loses traction. Tip-over occurs when the vehicle's center of gravity passes across an imaginary line drawn straight up from the furthermost point of support with the ground.



When the vehicle's center of gravity passes this point, the vehicles will tip over SUDDENLY.

THE FOLLOWING CONDITIONS REQUIRE SPECIAL CAUTION WHILE OPERATING THE VEHICLE.



1. UNFAMILIAR TERRAIN:

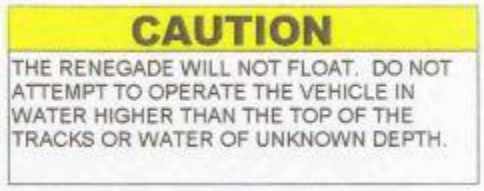
Snow, water, tall grass, etc., can hide dangerous obstacles. Caution must be taken when operating the vehicle in these conditions.

2. ICE:

Never attempt to cross a frozen body of water unless you are sure the ice will support the vehicle's weight. Be sure to allow for the extra weight of passengers and accessories.

3. WATER:

When operating in marsh areas, shallow streams, mud, etc., keep in mind the Renegade is NOT a boat and will not float.

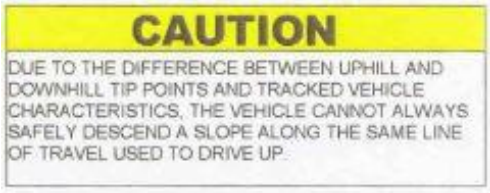


4. HILL CRESTS:

If you are unsure of the terrain on the other side, come to a complete stop and visually check the area before descending.

5. UP OR DOWNHILL TRAVEL:

Vehicle operation on slopes presents an obvious opportunity for the vehicle to tip over. This type of operation demands constant attention to changes in terrain and the ability to anticipate and avoid possible hazards. This ability can only be developed through careful study of the points noted in this section and a slow, planned effort on the operator's part to become proficient.



The most effective guard against hazards while operating on slopes, especially during downhill operation, is to keep the vehicle speed very slow. The Renegade's unique control system allows the very slowest of speeds. This feature gives the operator the ability to "creep" the machine when necessary. In some instances, it may be safer to descend a hill backwards depending on the location of the center of gravity, load, and accessories.

The design specifications of the Renegade 300 ZTR require that the vehicle have enough traction and power to climb extremely steep angles. Obviously, the steeper the slope, the greater the hazard of tipping over.

In some ways this can be compared to using an automobile for which the specifications show a maximum speed of 120 miles per hour. The car may be capable of that speed in the hands of professional driver on an ideal, closed course, but it would be extremely dangerous for the average driver to use anything approaching that maximum speed capability on a real-life road.

Just as the fast car has more speed capability than can safely be used under real road conditions, your Renegade has more climbing capability than can safely be used in real terrain conditions. For instance, the Renegade can climb a steeper hill than it can safely descend. A skilled operator may take advantage of the Renegade's ability to climb a steep slope, knowing that he must descend by a more moderate route or in reverse. The less cautious or less experienced operator, on the other hand, having climbed the hill might simply turn the vehicle around and attempt to descend by the same path - possibly with disastrous results.

In the example of the fast car, it is possible to provide a reasonable level of safety for the driver and others by setting a speed limit on the public roads - a speed far below the maximum speed of which the car is capable. In a similar approach to safe operation

owners should avoid using their Renegade vehicles on slopes steeper than some arbitrary limits (such as 70 degrees) well below the maximum slope which the Renegade is capable of climbing or descending under ideal conditions.

This approach, although good in principle, is practically impossible to practice. Setting a slope steepness limit that guarantees safe operation regardless of how the vehicle is used could cause a false sense of security and potentially dangerous situations. Because the Renegade is routinely exposed to a variety of operating hazards, many variables enter into any determination of what is safe usage.

Vehicle stability on a hill, for example, is determined not only by the general slope of the hill but also by terrain conditions (rocks, ditches, logs, drop-offs, etc.) and by the nature of the hill surface (gravel, sand, grass, snow, rock, etc.), the payload which the vehicle is carrying, the manner in which the payload is distributed within the vehicle, attachments and accessories which have been added to the vehicle, and so forth.

Similarly, driving technique and its effect on vehicle stability enters into the determination of what constitutes a safe slope. Excessive speed, sudden braking, and choice of path - all can be critical.

The following illustrations depict some situations in which the Renegade can be expected to tip over. Variations in speed, loading, terrain and vehicle condition must all be analyzed to determine whether or not a specific obstacle can be traversed. If in doubt, do not attempt.

UPHILL OPERATION

It is common to see a situation where natural erosion has caused the very top of a bank or hill to rise sharply. Always check for this condition before attempting to climb any such type terrain. The Renegade could climb up to a point at which it falls over backward.

It is also very important to check for this terrain condition before going down over the edge of a bank or drop-off.

The same situation can occur when an embedded object is pulled from the ground. The vehicle track may "grab" a rock or log. As the object emerges from the ground, rolling under the track, the vehicle could climb to the point at which it falls over backward.

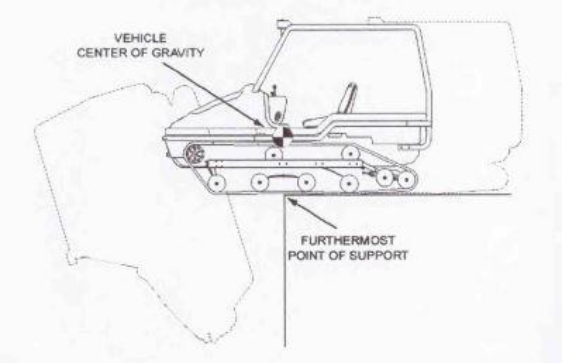
DOWNHILL OPERATION

If the Renegade is driven down a slope and the tracks are stopped suddenly, the vehicle's exceptional traction may cause it to tip over forward. Remember, when operating the T-handle, gradually return it to the STOP position to provide a smooth stop.

A tip-over situation can occur when the Renegade encounters an obstacle while traveling down a slope. Variations likely to occur in natural terrain, the approach to the obstacle, operator skill, and loading of the Renegade may increase the relative size of the obstacle or steepness of the slope, which could result in a tip-over.

6. DROP-OFFS:

Drop-offs small enough to be safely negotiated should be approached very slowly and should be attempted from a standstill.



⚠ WARNING

IF VEHICLE MOTION IS ABRUPTLY DECREASED OR STOPPED, (EXAMPLE: T-HANDLE MOVED TO STOP POSITION, ENGINE OR HYDRAULIC SYSTEM FAILURE) THE RENEGADE CAN TIP OVER FORWARD. THIS POSSIBILITY BECOMES GREATER AS THE VEHICLE SPEED INCREASES AND/OR DOWNSLOPE INCREASES

This illustration demonstrates a drop-off situation in which the Renegade can be expected to flip. Variations in natural terrain, the approach to the obstacle, operator skill,

⚠ WARNING

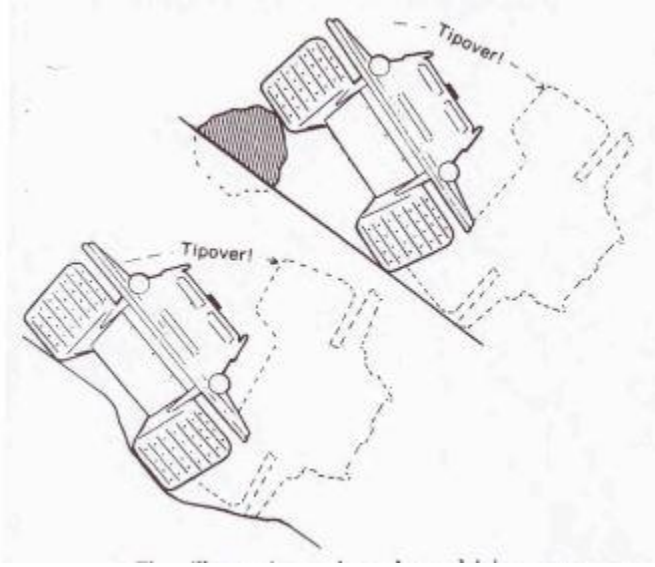
OPERATE THE RENEGADE WITH EXTREME CARE AT ALL TIMES AN ON ANY SLOPE. SLOPES STEEPER THAN 70° SHOULD BE REGARDED AS EXTREMELY HAZARDOUS.

and load distribution of the Renegade may increase the relative size of the drop-off or the steepness of the slope, which could cause a tip-over.

An important variable in determining if a given obstacle will cause the Renegade to tip over is the vertical distance between the last point of contact and the new point of support. Note that the new point of support can be on level ground, a downhill slope, or a steeper downhill slope. The apparent size of the obstacle or drop-off is not the same

as the drop it causes. Among the many other variables are the steepness of the slope, the size of the obstacle causing the drop, the shape of the last point of support, the load carried in the machine, initial speed, tightness of the track, traction, symmetry of the obstacle to the machine, and operator skill and judgment. **If in doubt, do not attempt.**

7. SIDEHILL OPERATION



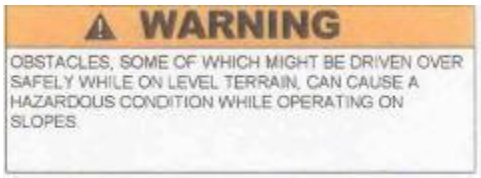
This illustration shows how driving over an obstacle with the uphill track or into a hole with the downhill track can cause the vehicle to tip over sideways. Slippery surfaces like snow, ice, frozen sand, and loose gravel can also be dangerous. It is possible to slide into a tree, rock, or off the edge of a cliff given the conditions.

8. SUDDEN STOPS:

Sudden stops should be avoided whenever possible. Always move the T-handle to the stop position slowly and bring the vehicle to a controlled stop.

9. OBSTACLES OR EXTREME CHANGES IN TERRAIN:

When driving up or down slopes, keep in mind that the extra angle needed to cross over an obstacle or extreme change in terrain could cause you to pass the vehicles tip-point. This situation also applies to side-hill operation.



10. BANKS & ERODED AREAS:

It is extremely common to see a situation where natural erosion has caused the very top of a bank or hill to rise sharply. Always check for this condition before attempting to climb any such type of terrain. It is also very important to check for this condition before going over the edge of a bank or drop-off.

11. OPERATION WITH "THROWN" TRACKS:

In the event that a portion of track slips off, it will most likely occur at the rear, with the track moving toward the body.

In this instance, it is usually possible to "drive" the track back into place. Move the vehicle forward slowly and make a gradual turn in the direction of the slipped track. (Right track off = right turn, left track off = left turn) IX) NOT back up, as this will usually cause the front of the track to run off.

12. PARKING THE VEHICLE

Your Renegade vehicle is equipped with a device known as a "Sprocket Lock". This sprocket lock engages automatically when hydraulic pressure drops and disengages when hydraulic pressure reaches operating condition. Engaging the clutch will increase hydraulic pressure in the system, therefore disengaging the sprocket lock. Always make sure the T-handle is in the STOP position prior to engaging the clutch.

If the Renegade is parked on a slope, pressure on the sprocket lock pin may prevent its disengagement when the clutch is engaged. If this occurs, simply move the machine

slightly upgrade to allow the drive sprocket teeth to back away from the pin. It will then release.

When parking on a slope, it is best to park the Renegade across, not up or down, the slope with the right (sprocket lock side) track on the uphill side. If the right track is not on the uphill side, the left track could turn after the hydraulic pressure drops, allowing the vehicle to move as illustrated.

STABILITY INFORMATION

Tests were conducted to determine the maximum suggested operating angles that the Renegade should encounter. The addition of accessory items, passengers, and payload will reduce the stability level of the machine and should be taken into consideration. Exceeding the suggested operating angles may cause the vehicle to tip over which could result in serious injury or death.

Uphill	Downhill	Side hill
50°	45°	45°

OPERATING SAFETY PRECAUTIONS

1. Allow passengers only in seats provided. (Maximum of 4 people)

2. Fasten seat belts while vehicle is in motion.

3. Keep hands and feet inside vehicle.

4. Never attempt to operate the vehicle from anywhere other than the driver's seat.

5. Avoid unnecessary sudden stops. Always return the T-handle to the top position slowly with light pressure.

6. Avoid quick turns, which may injure unsuspecting passengers.

7. Never leave machine while clutch is engaged. Turn off the machine when leaving the vehicle unattended.

8. Park sideways on slopes.

PRE-START CHECKLIST

Each time the Renegade 300 ZTR is to be used, the operator should walk around the vehicle to make a visual check to ensure all operating parts are in order.

1. Check fuel level. This is especially important if the vehicle is to be used in rough terrain or in remote areas.

2. Check transmission oil level. Low oil level or incorrect oil mixture may cause hydraulic system failure.

3. Check sprocket lock. When engine is not running, the pin should be extended to engage the drive sprocket teeth. All nuts and bolts should be in place and tight.

4. Check drive sprockets for wear, missing or bent teeth.

STARTING THE ENGINE

1. Place T-handle in STOP position.

2. If engine is cold, move choke to ON position.

3. Move throttle position to SLOW.

4. Make sure clutch is turned OFF.

5. Turn ignition switch to start position until engine starts, then release the key and it will return to the ON position.

6. If engine does not start immediately, adjust choke and/or throttle positions. Adjustments will depend on operator becoming familiar with starting a cold or warm engine.

7. Once started, allow engine to warm up at a moderate speed just above idle. As the engine warms up, move the choke to the OFF position.