

## Drivetrain

### Transmission

The transmission changes the gearing from the engine to the wheels. It allows the machine to move forward, run in neutral, or to move in reverse. It also allows the vehicle to move at a faster speed because it shifts into different gears allowing the engine to run at a lower rpm, yet spin the wheels faster. An engine can only spin a certain rpm before damage is done. Without being able to change gears, the speed at which the machine is traveling just before that point would be the maximum speed of the vehicle.

Shifting from forward to reverse or reverse to forward is inhibited in second, third and fourth gear.



### CAUTION

**Never shift the gear selector down without momentarily letting off the throttle pedal. Personal injury or severe damage to the drivetrain could result.**

This transmission is equipped with “full reversing”, which means that you have approximately the same speeds forward and reverse in all speed ranges.

### NOTICE

*Shifting from forward to reverse, or reverse to forward, does not require the brakes to be activated. However, it is still highly recommended to brake to a full stop when changing directions (e.g. Forward to Reverse). Drivelines are not strong enough to withstand the forces created when tons of vehicle and load are reversed suddenly.*

The transmission uses constant mesh gearing in all ranges, forward and reverse. All gears are engaged by means of hydraulically controlled multiple disc clutches, through the control valve actuated by the controller in the cab.



Figure 3-2-1 Transmission



Figure 3-2-2 Drivelines

## Drivelines

Drivelines transmit the engine torque (after being multiplied by the converter and transmission) to the drive axles.

## Differential

The differential is what converts the rotational energy from the engine into rotational energy that drives the wheels. In order to do this a series of gears is used to transfer the motion from being perpendicular to that of the wheels into motion that powers the wheels. These gears reduce the number of rotations from the driveline to the wheels, and allows the wheels on each side of the vehicle to spin at different rates necessary to make turns.

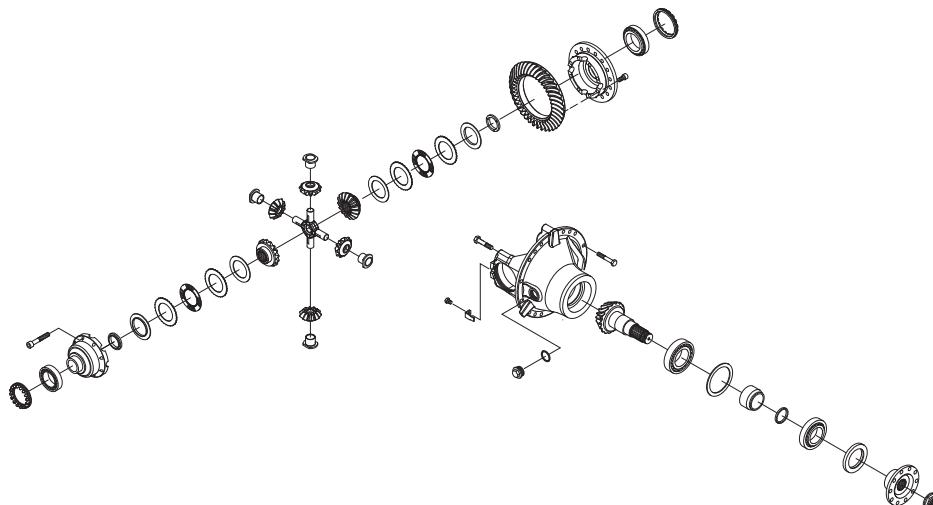


Figure 3-2-3 Differential

## Planetary

The planetary assembly is the final gearing reduction between the engine and the wheels. It is located at the end of the axles, mounting flush with the hub. The planetary has several planet gears which are driven by a sun gear attached to the axle shaft. The planet assembly is bolted to the hub causing it to spin much slower than the original input speed from the differential.

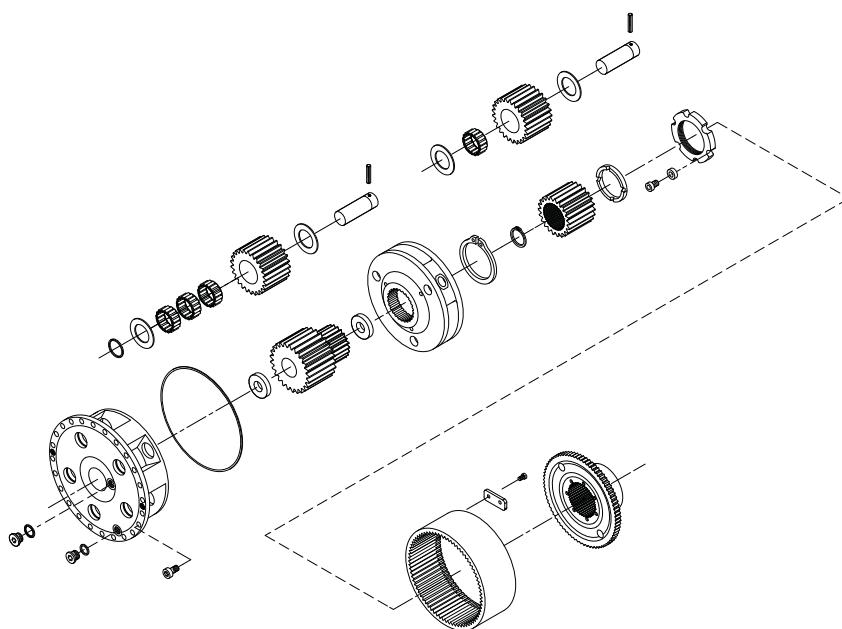


Figure 3-2-4 Planetary

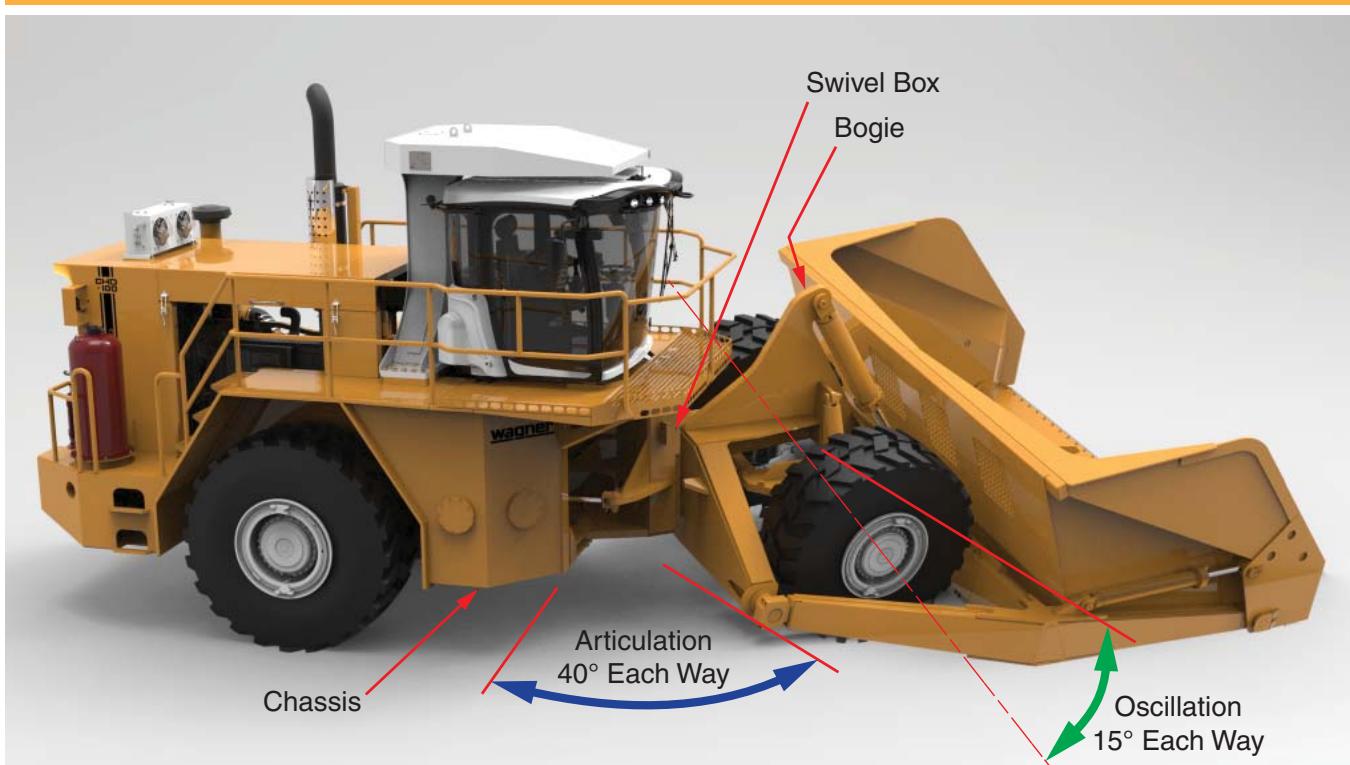


Figure 3-2-5 Chassis & Bogie

### Chassis & Bogie

The swivel box is hinged to the chassis, and allows the four wheel drive machine to turn. The swivel box pivots (articulates) when the hydraulic steering cylinders are actuated, causing the machine to turn. The bogie assembly tilts (oscillates) on the swivel up to 15°, improving traction and providing stability on uneven terrain.

### **WARNING**

**Crushing Hazard.** The operator cannot see personnel in the area around the bogie. Serious injury or death are possible if personnel are caught between the bogie and chassis.

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