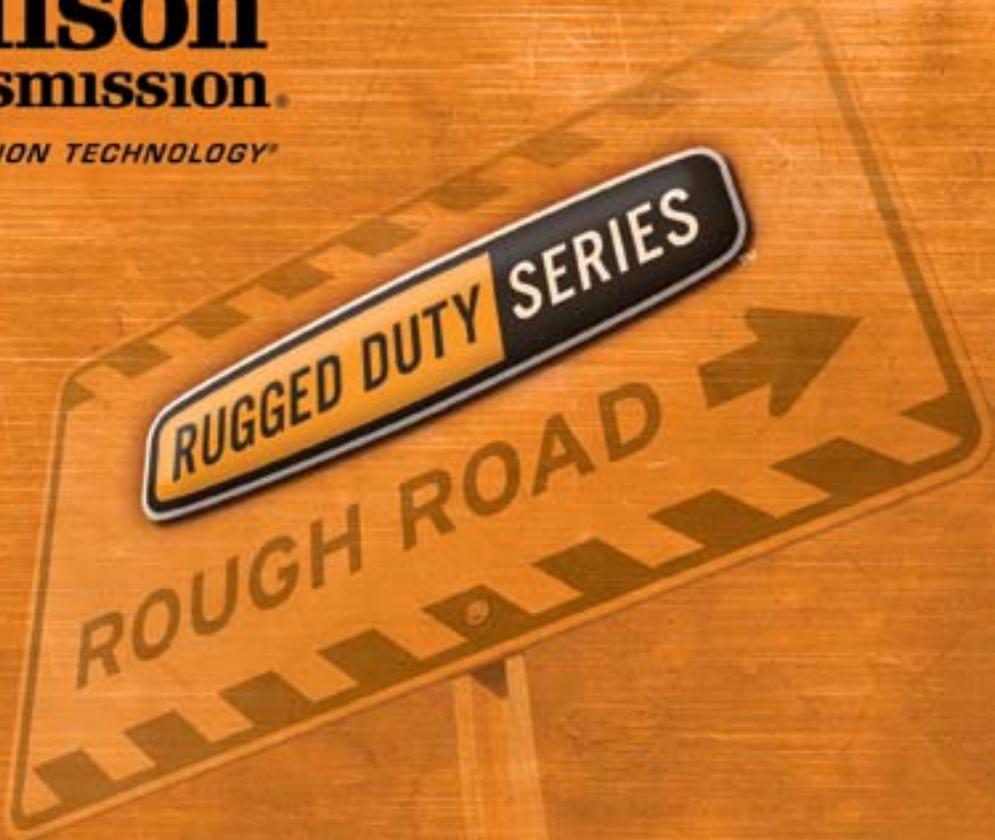
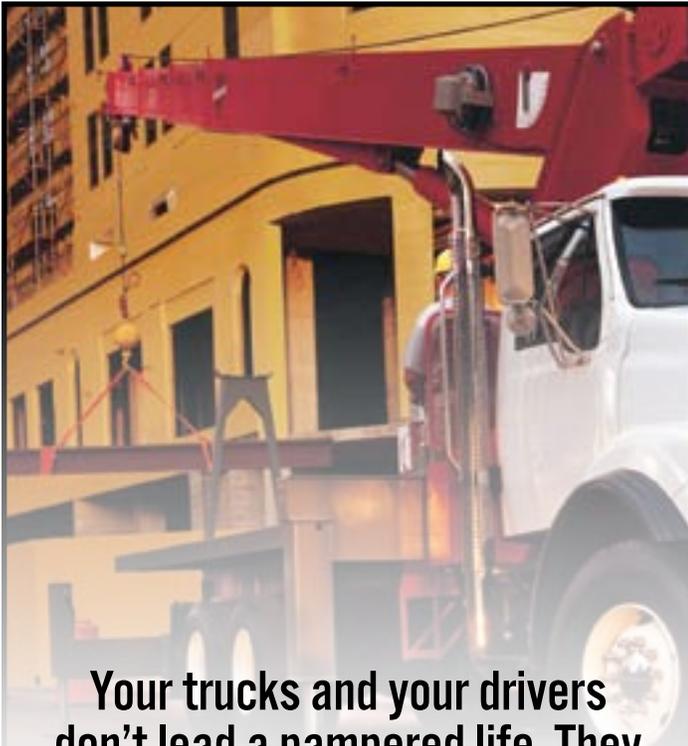




DRIVING TRANSMISSION TECHNOLOGY™





**Your trucks and your drivers don't lead a pampered life. They work hard in tough conditions, day in, day out. Their performance and productivity rise to a whole new level when you spec Allison Rugged Duty Series fully automatic transmissions.**

**Working harder and smarter.** Allison fully automatic transmissions fit operating requirements better than other transmissions because they've been engineered specifically for the way you work.

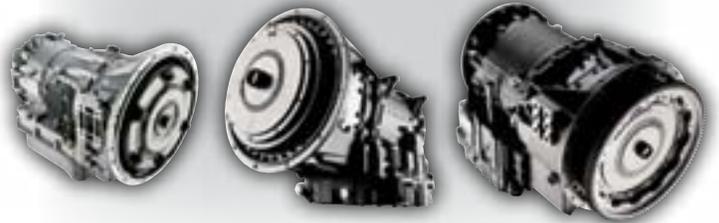


**On pavement,** seamless full-power shifts mean faster acceleration for shorter trip times. In traffic, there's no relentless shifting, as with manuals. No unpredictable and delayed shifting, as with automated manuals. And neither can compare to Allison's vehicle control on a grade.



**Off-road,** Allison Automatics provide smooth, effortless shifting and precise traction control. While manuals and automated manuals cause the drive wheels to hop, and do damage to the drivetrain, Allison Automatics achieve just the right amount of traction for load and ground conditions — dirt, mud, sand or gravel. They can take whatever you throw at them and still deliver.

ENGINE	hp (kW)	TORQUE	lb-ft (N • m)
	165–600 (123–447)		420–1850 (569–2508)
GVW	lbs (kg)		
	14,000–unlimited (6,350–unlimited)		



1000 RDS, 1350 RDS,  
2100 RDS, 2200 RDS,  
2300 RDS, 2350 RDS,  
2500 RDS, 2550 RDS

3000 RDS, 3500 RDS

4000 RDS, 4500 RDS,  
4700 RDS

### Proven reliability and durability.

Allison Transmission has built a reputation on our ability to build transmissions that last. That is why Allison Automatics are the preferred choice for on-/off-highway, rugged duty applications.



**Comprehensive coverage.** All Allison automatic transmission models offer comprehensive coverage with 100% parts and labor. Coverage may vary by model and by application. Contact your Allison representative for details.

Our extensive network of over 1,200 authorized Allison Distributors and Dealers in North America, along with over 1,500 worldwide, means convenient, factory-quality Allison Transmission service is always close at hand.

## Smart controls.

Allison Rugged Duty Series automatic transmissions have brains in addition to brawn. Electronic control packages provide precisely the performance features you need to get the job done — whatever it may be.



### Load-Based Shift Scheduling (LBSS)

To optimize fuel economy and maintain superior Allison Automatic performance, Allison LBSS automatically selects between Economy and Performance shift schedules based on the vehicle's actual payload and the grade on which it is operating. It has proven to increase fuel economy by up to 5%\*.

\*Results may vary depending on operating conditions.

### Prognostics

Calibrated to the vehicle's particular operating requirements, Allison prognostics monitor various operating parameters — oil level, oil life, filter life and transmission health — to determine and alert when service is due. This eliminates unnecessary oil and filter changes and provides maximum transmission protection.

### Reduced Engine Load at Stop (RELS)

With RELS, the transmission automatically reduces the load on the engine when the vehicle is at a full stop. This not only saves fuel, it reduces overall vehicle emissions.

### Shift Energy Management (SEM)

Provides better engine/transmission integration to optimize the entire driveline system. The result is faster, smoother, more consistent shift quality, increased powertrain durability, improved performance and an overall more efficient vehicle operation leading to greater fuel economy.

### PTO Enable

Commands how and when the PTO engages and monitors operating conditions to minimize potential damage and hazards.

### Auxiliary Function Range Inhibit

Helps avoid unwanted shifts out of Neutral and integrates with virtually any vocational vehicle component.

### Range Indicator

Provides a useable electric signal when the transmission shifts to a chosen range.

### Automatic Neutral

Improves safety, fuel efficiency and productivity. With Automatic Neutral on the Park Brake, the transmission electronic controls know when to command Neutral — automatically. No need for the driver to shift.

### Retarder Enable

Get the best braking possible through total transmission retarder/vehicle integration. Electronic controls precisely blend the transmission, retarder and service brakes for peak efficiency.

**RUGGED DUTY SERIES**

Additional electronic control packages are available. See your local Allison representative for the ones that fit your particular application.



**2nd Reverse\*\*** This new feature offers a second “deep reverse” in addition to the standard reverse to provide greater control and engine braking during operation on steep grades. 2nd Reverse will also enable more maneuverability when operating in confined spaces. When a vehicle is in 2nd Reverse, it will have a slow creep capability with high engine speeds. With a mechanical ratio of -17.12:1, it will have an effective torque converter multiplied ratio up to 32.5:1. 2nd Reverse provides overall better performance and enhanced applicability for a variety of applications.

\*\*Available on 4700 and 4800 RDS.

**Economy and performance modes.** Only Allison Transmission offers you a choice of operating modes to best suit your driving conditions and business needs. Allison Automatics offer primary and secondary shift schedules to enhance fuel savings or add more power.

In “economy” mode, the transmission shifts at lower engine speed to provide added fuel savings during operation.

In “performance” mode, the transmission upshifts at higher engine speed for quicker acceleration.



**Startability.** Startability is a vehicle’s capability to launch and pull a load. Simply put, it’s the ‘grunt’ or ‘get-up-and-go’ of a truck. Often only the 1st gear ratio is used to judge a vehicle’s startability. The truth is, one has to consider the engine torque at the required launch rpm and torque multiplication of the Allison torque converter. Manual and automated manual transmissions have to launch at very low engine rpm in order to prevent damage to the clutch. This means less torque, which is why they have very deep 1st gear ratios to help them overcome their clutch limitations. An Allison Automatic uses the full torque from the engine and multiplies it with the torque converter. Then, when the 1st gear ratio and rear axle ratio are factored in, the Allison provides greater startability.



**Shifting performance.** Not even the most expert driver can shift at the precise shift points to optimize vehicle performance under all road and load conditions. An Allison Automatic automatically makes the right shift at the right time to maximize vehicle performance and protect the driveline.

On a vehicle with a manual or automated manual transmission, there are seven to eight shifts per mile in an average cycle. The power interrupts that occur during these shift changes result in lower average wheel horsepower and a loss of 14-16 seconds every mile.

There are no power interrupts with Allison Automatics, just smooth, seamless full-power shifts. By making full use of the engine’s horsepower, an Allison Automatic may allow you to specify a smaller engine, saving you money in the long run. Plus, faster trips add up to more deliveries per day, which means increased incremental revenue from your vehicle.



**Life cycle value.** When you factor in all life cycle costs — vehicle purchase price, insurance, fuel, tires, preventive maintenance, component repair, driver wages, taxes, license, permits and retail resale value — along with the increased productivity, an Allison Automatic-equipped vehicle costs less per yard mile<sup>†</sup> to operate than a comparable competitively equipped vehicle.

<sup>†</sup>Results may vary depending on your operating conditions. See your local Allison representative to find the potential productivity gains for your particular business.



## Maintenance made easy.

Routine oil and filter changes are the only regular preventive maintenance required with an Allison Automatic. Easily accessible integral and spin-on oil filters reduce labor costs and valuable downtime. TranSynd<sup>®</sup> TES 295 transmission fluid greatly extends oil change intervals.



**Spec for the job.** While most vehicles are purchased for specific vocational use, they are not always spec'd to fit their particular operating conditions. For example, many on-/off-highway trucks are spec'd for duty on grades — yet fleet studies have shown that they spend a majority of their time getting to and from the job sites — on grades less than 2%. The result is often too much horsepower purchased for the operating ranges that trucks are in 90% of the time. Not only will Allison Automatics increase vehicle productivity, with their extended torque ranges and higher GVW capacities, they allow you to spec a wider array of engine options.

**Fuel efficient.** When it comes to fuel consumption, distance and time are part of the equation when calculating a vehicle's fuel efficiency. With full-power shifts, Allison Automatic-equipped vehicles not only accelerate faster, they get up to and work within the best duty-cycle speeds faster and more efficiently.



**Road safety.** Rollback is a concern for drivers of vehicles equipped with manuals and automated manuals because it can cause accidents and product/load damage. Since there is very little rollback on vehicles equipped with Allison Automatics, drivers don't have that concern.

**Torque converter.** Increased shifting performance, faster acceleration, greater operating flexibility and minimal rollback are all advantages attributed to the patented heavy-duty Allison torque converter. The torque converter's cushion effect reduces shock and strain on all driveline components.



**Information highway.** Visit [www.allisontransmission.com](http://www.allisontransmission.com) for a comprehensive library of informational brochures, including Mechanic's Tips, Operator's Manuals, Parts Catalogs, Troubleshooting Flyers and Service Manuals.

# Ratings and Specifications

## RATINGS

MODEL	RATIO	PARK PAWL	MAX INPUT POWER <sup>1</sup>	MAX INPUT TORQUE <sup>1</sup>	MAX INPUT TORQUE w/SEM OR TORQUE LIMITING <sup>1,2</sup>	MAX TURBINE TORQUE <sup>3</sup>	MAX GVW	MAX GCW
			hp (kW)	lb-ft (N • m)	lb-ft (N • m)	lb-ft (N • m)	lbs (kg)	lbs (kg)
1000 RDS	Close Ratio	Yes	340 <sup>4,7</sup> (254) <sup>4,7</sup>	575 (780)	660 <sup>4,7</sup> (895) <sup>4,7</sup>	950 <sup>4</sup> (1288) <sup>4</sup>	19,500 (8,845)	26,001 (11,800)
1350 RDS	Close Ratio	Yes	340 <sup>4,7</sup> (254) <sup>4,7</sup>	575 (780)	660 <sup>4,7</sup> (895) <sup>4,7</sup>	950 <sup>4</sup> (1288) <sup>4</sup>	19,500 (8,845)	30,000 (13,600)
2100 RDS	Close Ratio	No	340 <sup>4,7</sup> (254) <sup>4,7</sup>	575 (780)	660 <sup>4,7</sup> (895) <sup>4,7</sup>	950 <sup>4</sup> (1288) <sup>4</sup>	26,000 (11,800)	26,000 (11,800)
2200 RDS	Close Ratio	Yes	340 <sup>4,7</sup> (254) <sup>4,7</sup>	575 (780)	660 <sup>4,7</sup> (895) <sup>4,7</sup>	950 <sup>4</sup> (1288) <sup>4</sup>	26,000 (11,800)	26,001 (11,800)
2300 RDS <sup>5</sup>	Close Ratio	No	325 (242)	n/a	450 (610)	950 <sup>4</sup> (1288) <sup>4</sup>	33,000 (15,000)	33,000 (15,000)
2350 RDS <sup>7</sup>	Close Ratio	Yes	340 <sup>4</sup> (254) <sup>4</sup>	575 (780)	660 <sup>4</sup> (895) <sup>4</sup>	950 <sup>4</sup> (1288) <sup>4</sup>	30,000 (13,600)	30,000 (13,600)
<b>2500 RDS</b>								
- On-/Off- Highway	Wide Ratio	No	340 <sup>4,7</sup> (254) <sup>4,7</sup>	575 (780)	660 <sup>4,7</sup> (895) <sup>4,7</sup>	950 <sup>4</sup> (1288) <sup>4</sup>	33,000 (15,000)	33,000 (15,000)
- Refuse <sup>12</sup>	Wide Ratio	No	300 (224)	550 (746)	565 (766)	950 <sup>4</sup> (1288) <sup>4</sup>	24,200 (11,000)	24,200 (11,000)
2550 RDS <sup>7</sup>	Wide Ratio	Yes	340 <sup>4</sup> (254) <sup>4</sup>	575 (780)	660 <sup>4</sup> (895) <sup>4</sup>	950 <sup>4</sup> (1288) <sup>4</sup>	30,000 (13,600)	30,000 (13,600)
<b>3000 RDS</b>								
- On-/Off- Highway	Close Ratio	n/a	370 (276)	1100 (1491)	1250 <sup>6,7</sup> (1695) <sup>6,7</sup>	1600 (2169)	80,000 (36,288)	80,000 (36,288)
- On- Highway	Close Ratio	n/a	370 (276)	1100 (1491)	1250 <sup>6,7</sup> (1695) <sup>6,7</sup>	1600 (2169)	80,000 (36,288)	80,000 (36,288)
- Mixer	Close Ratio	n/a	370 (276)	1100 (1491)	1250 <sup>6,7</sup> (1695) <sup>6,7</sup>	1600 (2169)	62,000 (28,123)	—
- Refuse	Close Ratio	n/a	370 (276)	1100 (1491)	1250 <sup>6,7</sup> (1695) <sup>6,7</sup>	1600 (2169)	62,000 (28,123)	—
- Specialty PTO, HET	Close Ratio	n/a	370 (276)	1250 <sup>7</sup> (1695) <sup>7</sup>	n/a	1700 (2305)	—	—
<b>3500 RDS</b>								
- On-/Off- Highway	Wide Ratio	n/a	330 (246)	860 (1166)	1050 <sup>8</sup> (1424) <sup>8</sup>	1450 <sup>4</sup> (1966) <sup>4</sup>	80,000 (36,288)	80,000 (36,288)
- Mixer/Refuse	Wide Ratio	n/a	330 (246)	860 (1166)	n/a	1420 (1925)	60,000 (27,216)	—
- Specialty PTO	Wide Ratio	n/a	330 (246)	950 (1288)	1050 <sup>8</sup> (1424) <sup>8</sup>	1450 (1966)	—	—
- HET	Wide Ratio	n/a	330 (246)	985 (1335)	1050 <sup>8</sup> (1424) <sup>8</sup>	1450 (1966)	—	—
<b>4000 RDS</b>								
- On-/Off- Highway	Close Ratio	n/a	565 <sup>11</sup> (421) <sup>11</sup>	1770 (2400)	1850 <sup>10</sup> (2508) <sup>10</sup>	2600 (3525)	—	—
- Refuse	Close Ratio	n/a	500 (373)	1550 (2102)	n/a	2450 (3322)	—	—
- Specialty PTO	Close Ratio	n/a	565 <sup>11</sup> (421) <sup>11</sup>	1770 (2400)	n/a	2600 (3525)	—	—
- HET	Close Ratio	n/a	600 (447)	1850 (2508)	n/a	2600 (3525)	—	—
<b>4500 RDS</b>								
- On-/Off- Highway	Wide Ratio	n/a	565 <sup>11</sup> (421) <sup>11</sup>	1650 (2237)	1850 <sup>10</sup> (2508) <sup>10</sup>	2450 (3322)	—	—
- Refuse	Wide Ratio	n/a	500 (373)	1550 (2102)	n/a	2450 (3322)	—	—
- Specialty PTO	Wide Ratio	n/a	565 <sup>11</sup> (421) <sup>11</sup>	1650 (2237)	1770 <sup>8</sup> (2400) <sup>8</sup>	2600 (3525)	—	—
- HET	Wide Ratio	n/a	600 <sup>11</sup> (447) <sup>11</sup>	1650 (2237)	1850 <sup>8</sup> (2508) <sup>8</sup>	2600 (3525)	—	—
<b>4700 RDS</b>								
- On-/Off- Highway	Widest Ratio	n/a	565 <sup>11</sup> (421) <sup>11</sup>	1770 (2400)	1850 <sup>9</sup> (2508) <sup>9</sup>	2600 (3525)	—	—
- Refuse	Widest Ratio	n/a	500 (373)	1550 (2102)	n/a	2450 (3322)	—	—
- HET	Widest Ratio	n/a	600 (447)	1850 (2508)	n/a	2600 (3525)	—	—

1 Gross ratings as defined by ISO 1585 or SAE J1995. 2 SEM = engine controls with Shift Energy Management. 3 Turbine torque limit based on ISCAAN standard deductions. 4 SEM and torque limiting are required to obtain this rating. 5 Only available for VORTEC 8-1L gasoline powered engine applications. 6 Requires Allison Transmission engine-transmission combination approval. Only available in gears three through six. 7 Check with your OEM to ensure offerings. 8 Available in gears two through six. 9 Only available in gears four through seven. 10 Only available in gears three through six. 11 With and without torque limiting. 12 Not approved for landfill use.

## GEAR RATIOS - TORQUE CONVERTER MULTIPLICATION NOT INCLUDED

MODEL	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	REVERSE	2ND REVERSE
1000/1350/2100/ 2200/2300/2350 RDS	3.10:1	1.81:1	1.41:1	1.00:1	0.71:1	0.61:1 <sup>1</sup>	—	-4.49:1	—
2500/2550 RDS	3.51:1	1.90:1	1.44:1	1.00:1	0.74:1	0.64:1 <sup>1</sup>	—	-5.09:1	—
3000 RDS	3.49:1	1.86:1	1.41:1	1.00:1	0.75:1	0.65:1	—	-5.03:1	—
3500 RDS	4.59:1	2.25:1	1.54:1	1.00:1	0.75:1	0.65:1	—	-5.00:1	—
4000 RDS	3.51:1	1.91:1	1.43:1	1.00:1	0.74:1	0.64:1	—	-4.80:1	—
4500 RDS	4.70:1	2.21:1	1.53:1	1.00:1	0.76:1	0.67:1	—	-5.55:1	—
4700 RDS	7.63:1 <sup>*</sup>	3.51:1	1.91:1	1.43:1	1.00:1	0.74:1	0.64:1	-4.80:1	-17.12:1 <sup>2</sup>

\* Manually selected first gear. 1 Check with your OEM to ensure offerings. 2 SEM/LRTP or LRTP Only is required.

## ENGINE SPEEDS

MODEL	FULL LOAD GOVERNED SPEED Min-Max (rpm)
1000/1350 RDS	2200-4600 <sup>1</sup>
2100/2200/2300 RDS	2200-4600 <sup>1</sup>
2350 RDS	2200-4600 <sup>1</sup>
2500 RDS	2200-3200
2550 RDS	2200-3200
3000/3500 RDS	1950-2800
4000/4500/4700 RDS	1700-2300

1 Engines with full-load governed speed greater than 3800 rpm require Application Engineering review.

**OPTIONAL RETARDER PROVISION**  
 - INTEGRAL, HYDRAULIC TYPE

BASE MODEL	TORQUE CAPACITY lb-ft (N • m)	POWER CAPACITY hp (kW)
<b>3000 RDS</b>		
- High	1600 (2170)	600 (447)
- Medium	1300 (1760)	500 (373)
- Low	1100 (1490)	400 (298)
<b>4000' RDS</b>		
- High	2000 (2710)	600 (447)
- Medium	1600 (2170)	600 (447)
- Low	1300 (1760)	500 (373)

1 Only medium-capacity available on 4700 RDS.

**TORQUE CONVERTER SPECIFICATIONS**

BASE MODEL	TORQUE CONVERTER	NOMINAL STALL TORQUE
<b>1000 RDS</b>	TC-210	2.05
	TC-211	1.91
	TC-221	1.73
	TC-222	1.58
<b>2000 RDS</b>	TC-210	2.05
	TC-211	1.91
	TC-221	1.73
	TC-222	1.58
<b>3000 RDS</b>	TC-411	2.71
	TC-413	2.44
	TC-415	2.35
	TC-417	2.20
	TC-418	1.98
	TC-419	2.02
	TC-421	1.77
<b>4000 RDS</b>	TC-521	2.42
	TC-531	2.34
	TC-541	1.90
	TC-551	1.79
	TC-561	1.58

**STANDARD POWER TAKEOFF PROVISION - CONTINUOUS OPERATION**

BASE MODEL	MOUNTING PAD POSITIONS VIEWED FROM REAR	DRIVE GEAR RATING WITH ONE PTO lb-ft (N • m)	DRIVE GEAR RATING WITH TWO PTOs lb-ft (N • m)	DRIVE
<b>1000 RDS</b>	3 and 9 o'clock	250 (339)	200 <sup>2</sup> (271) <sup>2</sup>	Turbine
<b>2000 RDS</b>	3 and 9 o'clock	250 (339)	200 <sup>2</sup> (271) <sup>2</sup>	Turbine
<b>3000' RDS</b>	side/side 4 and 8 o'clock	485 (660)	685 <sup>3,4</sup> (930) <sup>3,4</sup>	Engine
	top/side 1 and 8 o'clock	485 (660)	685 <sup>3,4</sup> (930) <sup>3,4</sup>	Engine
<b>4000' RDS</b>	1 and 8 o'clock	685 (930)	1175 <sup>3,4</sup> (1595) <sup>3,4</sup>	Engine

1 PTO-delete option available. 2 Rating is per PTO. 3 Total on the drive gear. 4 Minimum 600 rpm idle speed required when dual PTOs are used simultaneously.

**PHYSICAL DESCRIPTION**

BASE MODEL		LENGTH <sup>1</sup> in (mm)	DEPTH <sup>2</sup> w/DEEP OIL PAN/SUMP in (mm)	DEPTH <sup>2</sup> w/SHALLOW OIL PAN/SUMP in (mm)	DRY WEIGHT lbs (kg)
<b>1000 RDS</b>	- SAE No. 3 mounting	28.01 (711.4)	11.22 (284.9)	10.71 (272.0)	330 (150)
	- SAE No. 2 mounting	28.39 (721.1)	11.22 (284.9)	10.71 (272.0)	330 (150)
<b>2000 RDS</b>	- SAE No. 3 mounting	28.01 (711.4)	11.22 (284.9)	10.71 (272.0)	330 (150)
	- SAE No. 2 mounting	28.39 (721.1)	11.22 (284.9)	10.71 (272.0)	330 (150)
<b>3000 RDS</b>	- Basic model	28.29 (718.6)	12.90 (327.8)	-	535 (243)
	- With PTO only	32.49 (825.4)	12.90 (327.8)	-	575 (261)
	- With retarder only	28.29 (718.6)	12.90 (327.8)	-	615 (279)
	- With PTO & retarder	32.49 (825.4)	12.90 (327.8)	-	655 (298)
<b>4000 RDS</b>	- Basic model	30.54 (775.8)	14.75 (374.7)	-	831 (377)
	- With PTO only	33.42 (848.8)	14.75 (374.7)	-	893 (405)
<b>4500 RDS</b>	- With retarder only	30.54 (775.8)	14.75 (374.7)	-	906 (411)
	- With PTO & retarder	33.42 (848.8)	14.75 (374.7)	-	968 (439)
	- Basic model	40.61 (1031.6)	14.88 (378.2)	-	1087 (493)
<b>4700 RDS</b>	- With PTO only	43.48 (1104.6)	14.88 (378.2)	-	1149 (521)
	- With retarder only	40.61 (1031.6)	14.88 (378.2)	-	1162 (527)
	- With PTO & retarder	43.48 (1104.6)	14.88 (378.2)	-	1224 (555)

1 Length measured from flywheel housing to end of output shaft. 2 Depth measured below transmission centerline.

**OIL SYSTEM**

BASE MODEL	CAPACITY <sup>1</sup> quarts (liters)	MAIN CIRCUIT FILTER	LUBE CIRCUIT FILTER	ELECTRONIC OIL LEVEL SENSOR (OLS)
<b>1000 RDS</b>		Spin-On Canister	-	-
- Standard Oil Sump	14.8 <sup>2</sup> (14) <sup>2</sup>			
<b>2000 RDS</b>		Spin-On Canister	-	-
- Standard Oil Sump	14.8 <sup>2</sup> (14) <sup>2</sup>			
<b>3000 RDS</b>		Integral	Integral	Standard
- Deep Oil Sump w/o PTO	29 <sup>2</sup> (27.4) <sup>2</sup>			
<b>4000/4500 RDS</b>		Integral	Integral	Standard
- Deep Oil Sump and PTO	51 <sup>2</sup> (48) <sup>2</sup>			
- Deep Oil Sump	48 <sup>2</sup> (45) <sup>2</sup>			
<b>4700 RDS</b>		Integral	Integral	Standard <sup>3</sup>
- Deep Oil Sump and PTO	54 <sup>2</sup> (51) <sup>2</sup>			
- Deep Oil Sump	51 <sup>2</sup> (48) <sup>2</sup>			

Recommended oil types for all models is Allison Approved TES 295 transmission fluid.

1 Transmission only. Does not include cooler, hoses or fittings. 2 Amount of oil necessary to fill a dry transmission. 3 4700 RDS retarder model must use 4-inch sump without OLS.

IDLE SPEED IN DRIVE Min-Max (rpm)	OUTPUT SHAFT SPEED rpm
500-820	5000
500-820	5000
500-820	5000
500-820	4500
500-820	4500
500-800	3600 <sup>2</sup>
500-800	-

2 Retarder-equipped models only.



## ALLISON BRAND PROMISE

The Allison Brand Promise is the automatic experience with an unrivaled combination of Quality, Reliability, Durability, Vocational Value, and Customer Service.