Allison Transmission®

Ask for the Allison

RUGGED DUTY SERIES

Ask your truck dealer for a complete listing of vehicle models featuring Allison Rugged Duty Series transmissions, or contact your Authorized Allison Distributor. For the representative close to you, visit **www.allisontransmission.com.**

DRIVING TRANSMISSION TECHNOLOGY™

Allison Transmission®

P.O. Box 894, Speed Code 462-470-PF3
Indianapolis, Indiana 46206-0894

Information or specifications subject to change without notice or obligation.

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ISO/QS 9000 and ISO 14001 Certified

JULY 2007

Your trucks and your drivers don't lead a pampered life. They work hard in tough conditions, day in, day out. They travel bad roads, back roads and to places that have no roads. Their performance and productivity rise to a whole new level when you spec Allison Rugged Duty Series automatic transmissions.

Working harder and smarter.

Allison Rugged Duty Series automatic transmissions fit specific operating requirements better than any other transmissions. 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.

You can spec a smaller engine and still get optimum performance in the vehicle's operating range. That can significantly reduce the vehicle purchase price as well as cost of ownership. Allison has engineered a transmission specifically for the way you work. They can take whatever you have to throw at them and still deliver.

RUGGED DUTY SERIES

ENGINE hp (kW)	TORQUE lb-ft (N • m)
300–600 (224–447)	550–1850 (746–2508)
GVW lbs (kg)	
19,500–unlimited (8,845–unlimited)	

Allison Transmission Fourth Generation Electronic Controls

Spec for the job. While most vehicles are purchased for specific operational requirements, they are not always spec'd to fit their operating conditions. For example, 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 too much horsepower purchased for the operating ranges that trucks are in 90% of the time.

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

3000 RDS, 3500 RDS

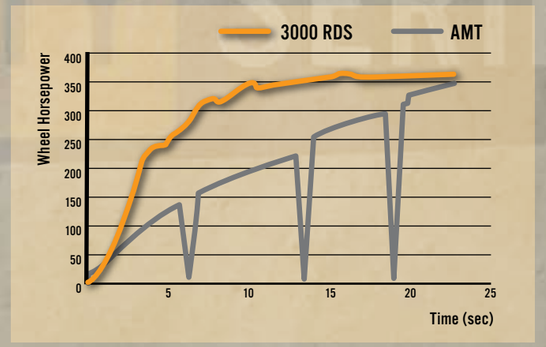
4000 RDS, 4500 RDS, 4700 RDS

Any vehicle that operates on-/off-highway and/or requires a PTO requires an Allison Rugged Duty Series transmission.

- Dump
- Concrete Mixer
- Utility
- Landscaping
- Snow Plow
- Tow
- Refuse Front/ Side/Rear Loader
- Refuse Roll On/Roll Off
- Agriculture
- Recycling
- Liquid Delivery

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* to operate than a comparable manual- or AMT-equipped vehicle.



Wheel horsepower vs. hood horsepower.

On a vehicle with a manual or automated manual transmission (AMT), the power interrupts that occur during shift changes diminish the engine's inertia energy and result in lower average wheel horsepower. Because the engine isn't working efficiently, it can't run at full load.

With an Allison Automatic, there's no power interrupt during shift changes. The inertia energy built up by the engine is maintained and this equates to higher wheel horsepower. As a result, you don't need as much engine horsepower to get the job done, and you save money in the long run.

The 2500 RDS is rated up to the maximum Class 7 weight range of 33,000 lbs GVW.

WEIGH STATION NEXT 10 MILES

Smooth operation. The 1000 RDS, 2100 RDS and 2200 RDS models feature high-density start and stop calibrations† providing improved shift operation, especially in congested traffic environments.

*Results may vary depending on your operating conditions. See your local Authorized Allison Dealer to find the potential productivity gains for your particular business.

†Calibrations are required for the 1000 RDS, 2100 RDS and 2200 RDS.

Check the RPMs. What the driver does and how the driver behaves are dependent on the equipment he's given to drive. It's physically impossible for a driver in a manual- or AMT-equipped vehicle to shift at optimum points and behave in such a way to optimize productivity. An Allison Automatic makes the decision for the driver and makes the right shift at the right time.

45 and under. Most on-/off-highway vehicles spend the majority of their time below 45 mph. And data shows that for every 10% of time spent below 45 mph, an Allison Automatic is nearly 1% more productive.*

If a driver spends 15% of the distance traveled at speeds below 45 mph, this equates to 34.7% of driving time. With an Allison Automatic, productivity would increase nearly 3.5%.*

Time well spent. A vehicle in an average cycle shifts seven to eight times per mile. With a manual or AMT, the driver loses 14-16 seconds every mile due to power interruptions to the wheels.

ADDITIONAL PRODUCTIVITY = ADDITIONAL REVENUE

Vocation	Additional Productivity Per Day	Average Revenue Per Stop	Additional Revenue Per Week	Additional Revenue Per Year
Construction Dump	One Stop	$55	$275	$13,200
Construction Mixer	One Stop	$250	$1,250	$60,000

[PER ALLISON-EQUIPPED TRUCK]

Allison Automatic performance translates to more stops per day, which means increased incremental revenue from your vehicle investment.

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

PTO ENABLE

PTO integration made simple using the transmission electronic controls. Commands how and when the PTO engages and monitors operating conditions to minimize potential damage and hazards.

AUXILIARY FUNCTION RANGE INHIBIT

It's like an extra set of eyes – making sure outriggers are up, buckets are stowed, doors are shut. Avoid unwanted shifts out of Neutral. Integrates with virtually any vocational vehicle component.

AUTOMATIC NEUTRAL

The transmission electronic controls know when to command Neutral – automatically. No need for the driver to shift. Automatic Neutral gets it done – on every job and at every stop. It's one less thing the driver has to do.

RANGE INDICATOR

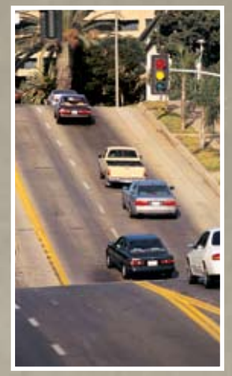
Choose the range. Create a reaction. Range Indicator provides a useable electric signal when the transmission shifts to a chosen range.

FOURTH LOCKUP PUMP MODE

Step-by-step operator inputs control split-shaft operation and automatically shift the transmission to fourth lockup for direct 1:1 drive from the engine.

Roll-back is a concern for drivers of vehicles equipped with manuals and automated manual transmissions (AMT), because it can cause accidents and product/load damage. Since there is very little roll-back on vehicles equipped with Allison Automatics, drivers don't have that concern.

In addition, there simply aren't as many distractions for the driver of an Allison Automatic-equipped vehicle. There's more time to do what's necessary. And what's necessary is being safe on the road.



Low maintenance costs. The single largest indirect cost of maintenance comes from downtime. 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™ synthetic transmission fluid helps extend oil change intervals up to 600% for most applications.

Torque Converter. The torque converter is the most obvious component that elevates an Allison Automatic above other transmissions. The heavy-duty Allison torque converter is at the heart of what makes an Allison Automatic the most effective, efficient and productive commercial transmission in the world. Increased shifting performance, faster acceleration, greater operating flexibility and minimal roll-back are all advantages that can be attributed to it. Its cushion effect reduces shock and strain on the entire driveline – including engine, universal joints, driveshafts and rear axle – prolonging the operating life of the components.

Comprehensive coverage. All Rugged Duty Series vocational models offer comprehensive coverage with 100% parts and labor. Coverage may vary by model and by application. Please contact your Authorized Allison Dealer for further details.

Information at your fingertips.
Visit **www.allisontransmission.com** for a comprehensive library of informational brochures, including Mechanic's Tips, Operator's Manuals, Parts Catalogs, Troubleshooting Flyers and Service Manuals. All are available for download.

* Results may vary depending on your operating conditions. See your local Authorized Allison Dealer to find the potential productivity gains for your particular business.

DRIVING TRANSMISSION TECHNOLOGY™ RUGGED DUTY SERIES

Ratings and Specifications

RUGGED DUTY SERIES

RATINGS

MODEL	RATIO	PARK PAWL	MAX INPUT POWER[1] hp (kW)	MAX INPUT TORQUE[1] lb-ft (N • m)	MAX INPUT TORQUE W/SEM, OR TORQUE LIMITING[1,2] lb-ft (N • m)	MAX TURBINE TORQUE[3] lb-ft (N • m)	MAX GVW lbs (kg)	MAX GCW lbs (kg)
1000 RDS	Close Ratio	Yes	340[4,7] (254)[4,7]	550 (746)	660[4,7,9] (895)[4,7,9]	850 (1152)	19,500 (8,845)	26,000 (11,800)
2100 RDS	Close Ratio	No	340[4,7] (254)[4,7]	550 (746)	660[4,7,9] (895)[4,7,9]	850 (1152)	26,000 (11,800)	26,000 (11,800)
2200 RDS	Close Ratio	Yes	340[4,7] (254)[4,7]	550 (746)	660[4,7,9] (895)[4,7,9]	850 (1152)	26,000 (11,800)	26,000 (11,800)
2300 RDS[5]	Close Ratio	No	325 (242)	n/a	450 (610)	850 (1152)	33,000 (15,000)	33,000 (15,000)
2350 RDS[7]	Close Ratio	Yes	340[4] (254)[4]	550 (746)	660[4,9] (895)[4,9]	850 (1152)	30,000 (13,600)	30,000 (13,600)
2500 RDS								
– On/Off Highway	Wide Ratio	No	340[4,7] (254)[4,7]	550 (746)	660[4,7,9] (895)[4,7,9]	850 (1152)	33,000 (15,000)	33,000 (15,000)
– Refuse	Wide Ratio	No	300 (224)	550 (746)	565 (766)	850 (1152)	24,200 (11,000)	24,200 (11,000)
2550 RDS[7]	Wide Ratio	Yes	340[4] (254)[4]	550 (746)	660[4,9] (895)[4,9]	850 (1152)	30,000 (13,600)	30,000 (13,600)
3000 RDS								
– On/Off Highway	Close Ratio	n/a	370 (276)	1100 (1491)	1250[6,7] (1695)[6,7]	1600 (2169)	80,000 (36,288)	80,000 (36,288)
– On Highway	Close Ratio	n/a	370 (276)	1100 (1491)	1250[6,7] (1695)[6,7]	1600 (2169)	80,000 (36,288)	80,000 (36,288)
– Mixer/Refuse	Close Ratio	n/a	370 (276)	1100 (1491)	1250[6,7] (1695)[6,7]	1600 (2169)	60,000 (28,123)	–
– Specialty PTO, HET	Close Ratio	n/a	370 (276)	1250[7] (1695)[7]	n/a	1700 (2305)	–	–
3500 RDS								
– On/Off Highway	Wide Ratio	n/a	300 (224)	860 (1166)	n/a	1420 (1925)	80,000 (36,288)	80,000 (36,288)
– Mixer/Refuse	Wide Ratio	n/a	300 (224)	860 (1166)	n/a	1420 (1925)	60,000 (27,216)	–
– HET	Wide Ratio	n/a	330 (246)	985 (1335)	n/a	1450 (1966)	–	–
– Specialty PTO	Wide Ratio	n/a	315 (235)	950 (1288)	n/a	1450 (1966)	–	–
4000 RDS								
– On/Off Highway	Close Ratio	n/a	550 (410)	1770 (2400)	n/a	2600 (3525)	–	–
– Refuse	Close Ratio	n/a	500 (373)	1550 (2102)	n/a	2450 (3322)	–	–
– Specialty PTO	Close Ratio	n/a	550 (410)	1770 (2400)	n/a	2600 (3525)	–	–
– HET	Close Ratio	n/a	600 (447)	1850 (2508)	n/a	2600 (3525)	–	–
4500 RDS								
– On/Off Highway	Wide Ratio	n/a	550 (410)	1650 (2237)	1770[8] (2400)[8]	2450 (3322)	–	–
– Refuse	Wide Ratio	n/a	500 (373)	1550 (2102)	n/a	2450 (3322)	–	–
– Specialty PTO	Wide Ratio	n/a	550 (410)	1650 (2237)	1770[8] (2400)[8]	2600 (3525)	–	–
– HET	Wide Ratio	n/a	600 (447)	1650 (2237)	1850[8] (2508)[8]	2600 (3525)	–	–
4700 RDS								
– On/Off Highway	Widest Ratio	n/a	550 (410)	1770 (2400)	n/a	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 3 through 6.

OPTIONAL RETARDER PROVISION – INTEGRAL, HYDRAULIC TYPE

BASE MODEL	TORQUE CAPACITY lb-ft (N • m)	POWER CAPACITY hp (kW)
3000		
– High	1600 (2170)	600 (447)
– Medium	1300 (1760)	500 (373)
– Low	1100 (1490)	400 (298)
4000[1]		
– 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
1000	TC-210	2.05
	TC-211	1.91
	TC-221	1.73
	TC-222	1.58
2000	TC-210	2.05
	TC-211	1.91
	TC-221	1.73
	TC-222	1.58
3000	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
4000	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
1000	3 and 9 o'clock	250 (339)	200[2] (271)[2]	Turbine
2000	3 and 9 o'clock	250 (339)	200[2] (271)[2]	Turbine
3000[1]	4 and 8 o'clock	485 (660)	685[3] (930)[3]	Engine
4000[1]	1 and 8 o'clock	685 (930)	1175[3] (1595)[3]	Engine

1 PTO-delete option available. 2 Rating is per PTO. 3 Total on the drive gear.

PHYSICAL DESCRIPTION

BASE MODEL		LENGTH[1] in (mm)	DEPTH[2] W/DEEP OIL PAN/SUMP in (mm)	DEPTH[2] W/SHALLOW OIL PAN/SUMP in (mm)	DRY WEIGHT lbs (kg)
1000	– 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)
2000	– 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)
3000	– Basic model	28.29 (718.6)	12.90 (327.8)	11.14 (283.1)	535 (243)
	– With PTO only	32.49 (825.4)	12.90 (327.8)	11.14 (283.1)	575 (261)
	– With retarder only	28.29 (718.6)	12.90 (327.8)	11.14 (283.1)	615 (279)
	– With PTO & retarder	32.49 (825.4)	12.90 (327.8)	11.14 (283.1)	655 (298)
4000 4500	– Basic model	30.54 (775.8)	14.75 (374.7)	13.17 (334.6)	831 (377)
	– With PTO only	33.42 (848.8)	14.75 (374.7)	13.17 (334.6)	893 (405)
	– With retarder only	30.54 (775.8)	14.75 (374.7)	13.17 (334.6)	906 (411)
	– With PTO & retarder	33.42 (848.8)	14.75 (374.7)	13.17 (334.6)	968 (439)
4700	– Basic model	40.61 (1031.6)	14.88 (378.2)	–	1087 (493)
	– 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[1] quarts (liters)	MAIN CIRCUIT FILTER	LUBE CIRCUIT FILTER	ELECTRONIC OIL LEVEL SENSOR (OLS)
1000		Spin-On Canister	–	–
– Deep Oil Pan	5.3[2] (5.0)[2]			
2000		Spin-On Canister	–	–
– Deep Oil Pan	5.3[2] (5.0)[2]			
3000		Integral	Integral	Standard
– Deep Oil Sump w/o PTO	29[3] (27.4)[3]			
4000/4500		Integral	Integral	Standard
– Deep Oil Sump and PTO	51[3] (48)[3]			
– Deep Oil Sump	48[3] (45)[3]			
4700		Integral	Integral	Standard[4]
– Deep Oil Sump and PTO	54[3] (51)[3]			
– Deep Oil Sump	51[3] (48)[3]			

Recommended oil types for all models are TranSynd™ / TES 295 approved.

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

GEAR RATIOS – TORQUE CONVERTER MULTIPLICATION NOT INCLUDED

MODEL	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	REVERSE
1000 RDS, 2100 RDS 2200 RDS, 2300 RDS	3.10:1	1.81:1	1.41:1	1.00:1	0.71:1	0.61:1[1]	–	-4.49:1
2350 RDS	3.10:1	1.81:1	1.41:1	1.00:1	0.71:1	0.61:1[1]	–	-4.49:1
2500 RDS	3.51:1	1.90:1	1.44:1	1.00:1	0.74:1	0.64:1[1]	–	-5.09:1
2550 RDS	3.51:1	1.90:1	1.44:1	1.00:1	0.74:1	0.64:1[1]	–	-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*	3.51:1	1.91:1	1.43:1	1.00:1	0.74:1	0.64:1	-4.80:1

* Manually selected first gear.
1 Check with your OEM to ensure offerings.

ENGINE SPEEDS

MODEL	FULL LOAD GOVERNED SPEED Min-Max (rpm)	IDLE SPEED IN DRIVE Min-Max (rpm)	OUTPUT SHAFT SPEED rpm
1000	2200-4600[1]	500-820	5000
2100/2200/2300	2200-4600[1]	500-820	5000
2350	2200-4600[1]	500-820	5000
2500	2200-3200	500-820	4500
2550	2200-3200	500-820	4500
3000/3500	2000-2800	500-800	3600[2]
4000/4500/4700	1700-2300	500-800	–

1 Engines with full load governed speed greater than 3800 rpm require Application Engineering review. 2 Retarder-equipped models only.