

Allison Transmission Bundled Report

Application	116-A347237-1
Iteration	1
Date	February 6, 2025 10:20:34
Units Of Measure	SI

The vehicle performance calculated by iSCAAN is an estimate for the specified vehicle and power train operating at standard engine conditions per SAE J1995 at 91 m (300 feet) altitude of 100 kPa barometric pressure and 25°C (77°F) inlet air temperature. Engine performance is significantly affected as operating altitude increases, therefore, Allison Transmission, Inc. does not represent and hereby disclaims that, under all conditions, the actual vehicle will achieve the simulated performance.

Application Profile

Application Name	Paul Actros 2532 - OM936 235kW 1300Nm - Refuse - i=5,222
Owner	Andreas Wolf @ DGS Mainz
SCAAN Analysis Type	Standard Vehicle Run
Optional Analysis Type	
Classification	Standard
Review Status	Not Submitted

Mission

End User	Unknown
Selected Vocation	Refuse / Recycling — Rear Loader - No Landfill — Straight Truck - No Snow Plow (40-30-12)

Platform

Vehicle Manufacturer	Daimler Trucks - Europe (Europe/ME/SA)
Vehicle Model	Actros 2532 L 6x2
Vehicle Configuration	Refuse Truck
Engine	Mercedes-Benz OM936LA (Diesel) -- 235kW@1800rpm 1300Nm@1200-1600rpm -- without SEM/LRTP (116-L014103-E, Rev B)
Transmission	3200 INTL Retarder (1-L007353-T, Rev E)
Transmission Rating	3200 INTL Retarder Refuse - Diesel Allison 6th Generation Controls without SEM/LRTP (1-L022095-R, Rev B)
Vehicle Parameters	Standard
Torque Converter	TC418 (1-L001252-TC, Rev B) - Recommended
Transmission Retarder	3000 Series High Capacity (1-L001294-TR, Rev A)
LRTP Status	

Allison Transmission Input Summary

Mission

End User	Unknown
Selected Vocation	Refuse / Recycling — Rear Loader - No Landfill — Straight Truck - No Snow Plow (40-30-12)

Platform

Vehicle Manufacturer	Daimler Trucks - Europe (Europe/ME/SA)
Vehicle Model	Actros 2532 L 6x2
Vehicle Configuration	Refuse Truck
User Expected Engine Load	0%

Platform - Area and Weight

Frontal Area	8.588 m²
Height / Width	3.435 m / 2.500 m
Standard Wind Resistance Coefficient	0.800 (no Deflector)
User Defined Wind Resistance Coefficient	0.800 (no Deflector)
Gross Vehicle Weight	26000 kg (no Trailer)
Weight On Drive Wheels	11500 kg (44.23%)

Platform - Tires

Number Of Tires	6 (Low Profile Radial (Metric))
Selected Tire	Continental Conti EcoPlus HD3 (315/70R22.5, 547) (1190-L021129-TI)
Tire Revolutions	340 revs/km
Tire Rolling Radius	0.468 m
Standard Surface	Smooth Concrete (SC Factor = 1.00)
Selected Surface	Smooth Concrete (SC Factor = 1.00)
Standard On-Road Traction Limit Coefficient	0.700
Standard Off-Road Traction Limit Coefficient	0.000
User Defined On-Road Traction Limit Coefficient	0.700
User Defined Off-Road Traction Limit Coefficient	0.000
Tire/Wheel Inertia (estimated)	44.8368 kg-m²

Accessory Losses (Power @ Governed Speed)

Accessory	Standard Loss (kW)	User Defined Loss (kW)
Fan (Clutch Fan)	36.2	36.2
Alternator / Generator	1.2	1.2
Air Compressor	1.6	1.6
Steering Pump	1.6	1.6
Air Conditioning	0.0	0.0
Implement Drive	0.0	0.0

Engine

Number of Power Packs	1
Engine	Mercedes-Benz OM936LA (Diesel) -- 235kW@1800rpm 1300Nm@1200-1600rpm -- without SEM/LRTP (116-L014103-E, Rev B)
Engine Controls Type	Electronic
Evaluate at Altitude	No
Certifications	Europe / Russia / EAEU Euro VI
Displacement	7.70 l
Peak Torque	1300.0 N-m
Peak Torque Speed	1400 rpm
Peak Power	235.0 kW
Peak Power Speed	1800 rpm
Governed Power	219.4 kW
Governed Speed	2400 rpm
Number Of Curves	1
Engine Curve Reference	
Cruise Velocity @ Speed	0.0 km/h @ 0 rpm
Engine Retarder	
Engine Inertia (estimated)	1.0843 kg-m²
Engine Idle Speed	600 rpm

Engine Curve - Standard Losses - Combined Low & High Curves (AC On Where Applicable)

Speed (rpm)	Gross Power (kW)	Gross Torque (N-m)	Net Power Fan On (kW)	Net Torque Fan On (N-m)	Net Power Fan Off (kW)	Net Torque Fan Off (N-m)	Point Identification
1000	118.0	1127.0	112.9	1077.9	115.5	1102.9	
1100	146.6	1273.0	140.5	1219.7	144.0	1250.0	
1200	163.4	1300.0	156.0	1241.8	160.6	1277.8	
1400	190.6	1300.0	180.3	1230.1	187.5	1279.2	Peak Torque
1600	217.8	1300.0	203.8	1216.1	214.5	1280.2	
1700	227.5	1278.0	211.2	1186.3	224.1	1258.6	
1800	235.0	1246.7	216.1	1146.6	231.4	1227.7	Peak Power
1900	236.4	1188.0	214.7	1079.0	232.7	1169.3	
2000	236.0	1127.0	211.2	1008.5	232.2	1108.6	
2100	236.0	1073.0	207.7	944.5	232.0	1054.9	
2200	234.5	1018.0	202.5	879.0	230.4	1000.2	
2300	227.6	945.0	191.5	795.0	223.4	927.4	
2400	219.4	873.0	178.8	711.4	215.0	855.6	Governed
2500	209.4	800.0	164.0	626.3	204.9	782.8	
2600	163.4	600.0	112.7	413.8	158.7	583.0	
2730	0.0	0.0	-58.1	-203.4	-4.8	-16.8	No Load Governed

Engine Curve - User Defined Losses - Combined Low & High Curves (AC On Where Applicable)

Speed (rpm)	Gross Power (kW)	Gross Torque (N-m)	Net Power Fan On (kW)	Net Torque Fan On (N-m)	Net Power Fan Off (kW)	Net Torque Fan Off (N-m)	Point Identification
1000	118.0	1127.0	112.9	1077.9	115.5	1102.9	
1100	146.6	1273.0	140.5	1219.7	144.0	1250.0	
1200	163.4	1300.0	156.0	1241.8	160.6	1277.8	
1400	190.6	1300.0	180.3	1230.1	187.5	1279.2	Peak Torque
1600	217.8	1300.0	203.8	1216.1	214.5	1280.2	
1700	227.5	1278.0	211.2	1186.3	224.1	1258.6	
1800	235.0	1246.7	216.1	1146.6	231.4	1227.7	Peak Power
1900	236.4	1188.0	214.7	1079.0	232.7	1169.3	
2000	236.0	1127.0	211.2	1008.5	232.2	1108.6	
2100	236.0	1073.0	207.7	944.5	232.0	1054.9	
2200	234.5	1018.0	202.5	879.0	230.4	1000.2	
2300	227.6	945.0	191.5	795.0	223.4	927.4	
2400	219.4	873.0	178.8	711.4	215.0	855.6	Governed
2500	209.4	800.0	164.0	626.3	204.9	782.8	
2600	163.4	600.0	112.7	413.8	158.7	583.0	
2730	0.0	0.0	-58.1	-203.4	-4.8	-16.8	No Load Governed

Transmission

Transmission Manufacturer	Allison Transmission
Transmission Family	3000 Series (1-L001243-TF, Rev AI)
Transmission	3200 INTL Retarder (1-L007353-T, Rev E)
Transmission Rating	3200 INTL Retarder Refuse - Diesel Allison 6th Generation Controls without SEM/LRTP (1-L022095-R, Rev B)
Torque Converter	TC418 (1-L001252-TC, Rev B) - Recommended
Transmission Retarder	3000 Series High Capacity (1-L001294-TR, Rev A)

Controls

Controls Release	Production Calibration (PC) for 3000 Series (1-L001194-CR, Rev F)
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Controls - Primary Gears (Shift Schedule)

DynActive	No
Speed Profile	Performance
Shift Speed & Strategy	2400 rpm S1 Performance
Equivalent DynActive Bias	0
Primary Mode: Gears	Low = 1, Start = 1, High = 6 (1-1-6)

Driveline

Transmission Output Torque Limit	No
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Driveline - Components

Component	Description	Ratio	Standard Efficiency (%)	User Defined Efficiency (%)
Propshaft -- One Piece -- Two Joint (1-L003521-DL)	Single	1.000	98.60	98.60
Axle -- On Hwy Single Red -- 6x2 (1-L003533-DL)	Single	5.222	97.00	97.00

Driveline - Overall Driveline Ratio

Description	Ratio	Standard Efficiency (%)	User Defined Efficiency (%)	N over V Ratio (rpm/kph)
Single	5.222	95.64	95.64	29.575

Allison Transmission Ratings and Guidelines Check

Note

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.
Results indicate the vehicle operating conditions at steady state (acceleration = 0).
The exclamation symbol indicates that Wheel Slip may occur.

Converter Rating And Guideline Checks

		Section Score - OK	
C01		Transmission / Converter Compatibility	
Overall Status		OK: Acceptable	
C02		Engine / Converter Compatibility	
Overall Status		OK: Acceptable	
C04		Engine Speed at Converter Stall	
Overall Status		Reference	
Actual		1956 rpm	
C05		Minimum Engine Speed	
Overall Status		OK: Acceptable	
Rating/Recommendation		1300 rpm (Min)	
Actual		1956 rpm	
Notes		Net peak torque speed (1200 rpm) + allowable variation (100 rpm).	
C07		Turbine Torque at Converter Stall	
Overall Status		OK: Acceptable	
Rating/Recommendation		2169.0 N-m (Max)	
Actual		2023.5 N-m	
C08		Converter Speed Ratio at Engine Governed Speed	
Overall Status		OK: Acceptable	
Rating/Recommendation		0.800 (Min)	
Actual		0.911	
C03		Converter Stall Torque Ratio	
Overall Status		Reference	
Actual		1.980	

Transmission Rating And Guideline Checks

✓ Section Score - OK		
T01	✓	Transmission / Vocation Compatibility
Overall Status		OK: Acceptable
T02	✓	Transmission / Engine Compatibility
Overall Status		OK: Acceptable
T17	✓	Transmission Permitted in End User/Chassis Mfg Locations
Overall Status		OK: Acceptable
T15	✓	Transmission Input Power (Gross)
Overall Status		OK: Acceptable
Rating/Recommendation		276.0 kW (Max)
Actual		236.4 kW
T14	✓	Transmission Input Torque (Gross)
Overall Status		OK: Acceptable
Rating/Recommendation		1491.0 N-m (Max)
Actual		1300.0 N-m
T03	✓	Transmission Input Speed
Overall Status		OK: Acceptable
Rating/Recommendation		1900 rpm / 2800 rpm
Actual		2400 rpm
T11	✓	Transmission Output Speed
Overall Status		OK: Acceptable
Rating/Recommendation		3600 rpm (Max)
Actual		3094 rpm
Notes		Check made in Range 6L at 65 mph

Vehicle Rating And Guideline Checks - Standard

✓ Section Score - OK		
V01	✓	Vehicle Weight
Overall Status	OK: Acceptable	
Rating/Recommendation	28500 kg (Max)	
Actual	26000 kg	
V21	📖	1st Range Converter Stall Gradeability
Overall Status	Reference	
Actual	30.12 %	
V13	📖	1st Range 70% Converter Efficiency Gradeability
Overall Status	Reference	
Actual	22.62 %	
V14	✓	1st Range 80% Converter Efficiency Gradeability
Overall Status	OK: Acceptable	
Rating/Recommendation	18.00 % (Min)	
Actual	19.44 %	
V17	📖	Maximum Geared Vehicle Speed at Engine Governed Speed
Overall Status	Reference	
Actual	124.5 km/h	
Notes	Check is in 6L Lockup.	
V18	✓	Maximum Speed on 0.5% Grade
Overall Status	OK: Acceptable	
Rating/Recommendation	104.6 km/h (Min)	
Actual	110.1 km/h	
Notes	At 2123.6 rpm Engine Speed, Range 6L.	
V43	📖	Heat Generated in 1st Range 70% Converter Efficiency
Overall Status	Reference	
Actual	68.17 kW	
Notes	At 2025.8 rpm Engine Speed.	
V44	📖	Heat Generated in 1st Range 80% Converter Efficiency
Overall Status	Reference	
Actual	47.79 kW	
Notes	At 2076.9 rpm Engine Speed.	

Allison Transmission
Vehicle Performance Summary

Note

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Full Throttle Automatic Upshifts (Gradeability)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio
On	Off	Standard Power Curve	Standard	5.222	1.000

Gradeability	Percent Grade	Vehicle Speed (km/h)	Gear Range	Match Point
Stall Gradeability	30.1	0.0	1C	Stall
Launch Gradeability	28.1	0.0	1C	
Low Speed Gradeability	19.4	11.2	1C	80 Percent
Maximum Speed on Grade	0.0	113.1	6L	Road Load
	0.3	109.3	6L	
	0.5	105.4	6L	
	1.0	95.8	5L	
	2.0	81.9	5L	
	3.0	67.5	4L	
	4.0	56.2	4L	
	5.0	47.9	3L	
	6.0	39.6	2L	
	7.0	36.4	2L	
	8.0	33.0	2L	
	9.0	24.2	2C	
	10.0	21.0	2C	

Full Throttle Automatic Upshifts (Acceleration)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio
On	Off	Standard Power Curve	Standard	5.222	1.000

Speed (km/h)	Time (sec)	Distance (m)
0 - 20 km/h	3.2	11
0 - 30 km/h	6.6	34
0 - 40 km/h	10.7	74
0 - 60 km/h	23.4	254
0 - 80 km/h	45.2	686
0 - 100 km/h	89.8	1824

Allison Transmission Vehicle Full Throttle Performance

Note

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Results indicate the vehicle operating conditions at steady state (acceleration = 0).
The exclamation symbol indicates that Wheel Slip may occur.

Full Throttle Automatic Upshifts (1C, 2C, 2L, 3L, 4L, 5L, 6L)

Engine Fan		Air Conditioning		Engine Power		Vehicle Parameters		Axle Ratio	Auxiliary Gearing Ratio	
On		Off		Standard Power Curve		Standard		5.222	1.000	
Gear Range	Vehicle Speed (km/h)	Engine Speed (rpm)	Output Speed (rpm)	Tractive Effort (kN)	Drawbar Pull (kN)	Wheel Power Available (kW)	Net Grade (%)	Transmission Heat Rejection (kW)	Match Point	
1C	0.0	1956	0	74.44	73.54	0.0	30.12	212.80		
1C	3.2	1971	95	70.45	69.53	63.0	28.34	146.41		
1C	6.4	1997	190	63.44	62.48	113.4	25.28	92.74		
1C	8.6	2026	253	57.23	56.24	136.1	22.62	68.04	70 Percent	
1C	9.7	2046	286	53.97	52.98	144.8	21.24	58.26		
1C	11.2	2077	330	49.66	48.65	153.9	19.44	47.68	80 Percent	
1C	12.9	2116	381	44.93	43.89	160.7	17.47	38.88		
1C	13.2	2123	389	44.17	43.13	161.4	17.16	37.80	85 Percent	
1C	16.1	2197	476	36.71	35.61	164.1	14.10	31.13		
1C	17.4	2231	516	33.38	32.26	161.8	12.75	29.93		
2C	17.4	2040	516	29.54	28.42	143.2	11.22	60.16		
2C	19.3	2060	571	27.96	26.80	150.0	10.57	52.32		
2C	22.5	2097	666	25.39	24.16	158.9	9.52	41.71		
2C	25.7	2137	762	22.91	21.61	163.8	8.51	34.48		
2C	29.0	2182	857	20.58	19.21	165.6	7.56	30.31		
2C	29.2	2184	863	20.44	19.06	165.7	7.50	30.13		
2L	29.2	1609	863	23.49	22.11	190.4	8.70	5.37		
2L	32.2	1774	952	22.35	20.89	199.9	8.22	5.91		
2L	35.4	1952	1047	20.08	18.53	197.5	7.29	6.38		
2L	38.6	2129	1142	17.76	16.11	190.5	6.33	7.01		
2L	41.8	2307	1238	15.06	13.30	175.0	5.22	7.66		
2L	42.2	2324	1247	14.76	13.00	172.9	5.11	7.61		
3L	42.2	1757	1247	17.01	15.25	199.3	5.99	5.65		
3L	45.1	1878	1333	15.96	14.10	199.8	5.54	6.09		
3L	48.3	2012	1428	14.56	12.58	195.3	4.94	6.66		
3L	51.5	2146	1523	13.25	11.15	189.6	4.38	7.10		
3L	54.7	2280	1618	11.70	9.47	177.9	3.72	7.68		
3L	55.8	2325	1650	11.14	8.86	172.6	3.48	7.84		
4L	55.8	1650	1650	12.52	10.25	194.1	4.02	4.59		
4L	57.9	1713	1713	12.30	9.93	197.9	3.90	4.92		
4L	61.2	1809	1809	11.86	9.35	201.4	3.67	5.38		
4L	64.4	1904	1904	11.16	8.50	199.5	3.34	5.91		
4L	67.6	1999	1999	10.43	7.62	195.9	2.99	6.47		
4L	70.8	2094	2094	9.77	6.80	192.2	2.67	7.00		
4L	74.0	2189	2189	9.09	5.96	187.0	2.34	7.58		
4L	77.2	2285	2285	8.25	4.94	176.9	1.94	8.16		
4L	78.6	2325	2325	7.88	4.50	172.1	1.76	8.39		
5L	78.6	1744	2325	8.96	5.57	195.6	2.19	8.86		
5L	80.5	1785	2380	8.82	5.33	197.1	2.09	9.27		
5L	83.7	1856	2475	8.46	4.78	196.6	1.88	9.77		
5L	86.9	1928	2570	8.05	4.19	194.4	1.64	10.45		
5L	90.1	1999	2665	7.64	3.58	191.3	1.40	11.27		
5L	93.3	2070	2761	7.26	2.99	188.3	1.17	11.85		
5L	96.6	2142	2856	6.88	2.40	184.6	0.94	12.58		
5L	99.8	2213	2951	6.47	1.78	179.5	0.70	13.42		
5L	103.0	2285	3046	5.98	1.06	171.2	0.42	14.20		
5L	104.9	2326	3101	5.70	0.65	166.0	0.25	14.63		
6L	104.9	2022	3101	6.41	1.36	186.7	0.53	15.23		
6L	106.2	2048	3141	6.29	1.14	185.5	0.45	15.55		
6L	109.4	2110	3237	6.00	0.61	182.3	0.24	16.53		
6L	112.7	2172	3332	5.70	0.08	178.5	0.03	17.37		
6L	115.9	2234	3427	5.36	-0.51	172.6	-0.20	18.24		
6L	119.1	2296	3522	4.99	-1.14	165.0	-0.45	19.36		
6L	122.3	2359	3617	4.61	-1.78	156.8	-0.70	20.17		
6L	124.5	2400	3681	4.36	-2.21	150.9	-0.87	21.06	Governed	
6L	125.5	2421	3713	4.24	-2.42	147.8	-0.95	21.26		
6L	128.7	2483	3808	3.86	-3.08	137.9	-1.21	22.37		
6L	132.0	2545	3903	3.08	-4.13	112.9	-1.62	22.95		
6L	135.2	2607	3998	2.03	-5.47	76.2	-2.15	24.02		
6L	138.4	2668	4092	0.00	-7.79	0.0	-3.06	22.94		

Full Throttle Manual 1st Hold - Lockup Apply (1C, 1L)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio
On	Off	Standard Power Curve	Standard	5.222	1.000

Gear Range	Vehicle Speed (km/h)	Engine Speed (rpm)	Output Speed (rpm)	Tractive Effort (kN)	Drawbar Pull (kN)	Wheel Power Available (kW)	Net Grade (%)	Transmission Heat Rejection (kW)	Match Point
1C	0.0	1956	0	74.44	73.54	0.0	30.12	212.80	
1C	3.2	1971	95	70.45	69.53	63.0	28.34	146.41	
1C	6.4	1997	190	63.44	62.48	113.4	25.28	92.74	
1C	8.6	2026	253	57.23	56.24	136.1	22.62	68.04	70 Percent
1C	9.7	2046	286	53.97	52.98	144.8	21.24	58.26	
1C	11.2	2077	330	49.66	48.65	153.9	19.44	47.68	80 Percent
1C	12.9	2116	381	44.93	43.89	160.7	17.47	38.88	
1C	13.2	2123	389	44.17	43.13	161.4	17.16	37.80	85 Percent
1C	15.1	2172	447	39.08	38.00	164.1	15.07	32.43	
1L	15.1	1559	447	43.79	42.71	183.8	16.99	6.71	
1L	16.1	1660	476	43.02	41.92	192.3	16.67	7.14	
1L	19.3	1992	571	36.19	35.03	194.1	13.87	8.54	
1L	22.5	2324	666	27.33	26.10	171.0	10.29	9.67	
1L	23.3	2400	688	24.96	23.72	161.4	9.35	10.08	Governed
1L	25.7	2656	762	4.26	2.97	30.5	1.16	7.80	
1L	26.0	2680	769	0.00	-1.30	0.0	-0.51	7.65	

Full Throttle Reverse Performance (R1C)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio
On	Off	Standard Power Curve	Standard	5.222	1.000

Gear Range	Vehicle Speed (km/h)	Engine Speed (rpm)	Output Speed (rpm)	Tractive Effort (kN)	Drawbar Pull (kN)	Wheel Power Available (kW)	Net Grade (%)	Transmission Heat Rejection (kW)	Match Point
R1C!	0.0	1956	0	104.64	103.75	0.0	44.55	212.80	
R1C!	3.2	1977	95	95.90	94.98	85.7	40.14	122.39	
R1C!	5.9	2026	176	80.81	79.86	133.3	32.98	70.93	70 Percent
R1C	6.4	2039	190	77.81	76.86	139.1	31.61	64.40	
R1C	7.7	2077	229	70.19	69.22	150.9	28.21	50.81	80 Percent
R1C	9.1	2123	270	62.47	61.48	158.3	24.85	40.98	85 Percent
R1C	9.7	2141	286	59.61	58.61	159.9	23.62	38.41	
R1C	12.9	2266	381	43.47	42.42	155.5	16.87	32.73	
R1C	14.7	2400	435	35.34	34.27	144.3	13.56	27.92	Governed
R1C	16.1	2538	476	26.87	25.78	120.1	10.16	18.74	
R1C	18.0	2681	532	0.01	-1.12	0.0	-0.44	5.73	

Allison Transmission
Vehicle Acceleration Performance

Note

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.
The symbol indicates that Wheel Slip may occur.
Initial conditions for this report are Service Brakes locked and Engine at Full Throttle.

Full Throttle Automatic Upshifts (1C, 2C, 2L, 3L, 4L, 5L, 6L)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio	Grade
On	Off	Standard Power Curve	Standard	5.222	1.000	0

Gear Range	Vehicle Speed (km/h)	Time (seconds)	Distance (m)	Acceleration Rate (m/sec²)	Engine Speed (rpm)	Tractive Effort (kN)	Drawbar Pull (kN)	Wheel Power Available (kW)	Transmission Heat Rejection (kW)
1C	3.2	0.3	0	2.588	1971	70.45	69.53	63.0	146.41
1C	6.4	0.7	1	2.311	1997	63.44	62.48	113.4	92.74
1C	9.7	1.1	2	1.948	2046	53.97	52.98	144.8	58.26
1C	12.9	1.6	3	1.610	2116	44.93	43.89	160.7	38.88
1C	16.1	2.3	6	1.305	2197	36.71	35.61	164.1	31.13
1C	17.4	2.6	7	1.177	2231	33.38	32.26	161.8	29.93
2C	19.3	3.1	10	1.012	2060	27.96	26.80	150.0	52.32
2C	22.5	4.0	15	0.912	2097	25.39	24.16	158.9	41.71
2C	25.7	5.0	22	0.816	2137	22.91	21.61	163.8	34.48
2C	29.0	6.2	31	0.725	2182	20.58	19.21	165.6	30.31
2C	29.2	6.3	32	0.720	2184	20.44	19.07	165.7	30.14
2L	32.2	7.3	41	0.773	1774	22.35	20.89	199.9	5.91
2L	35.4	8.6	52	0.687	1952	20.08	18.53	197.5	6.38
2L	38.6	10.0	67	0.597	2129	17.76	16.11	190.5	7.01
2L	41.8	11.6	85	0.494	2307	15.06	13.30	175.0	7.66
2L	42.2	11.8	87	0.482	2324	14.76	13.00	172.9	7.61
3L	45.1	13.3	105	0.529	1878	15.96	14.10	199.8	6.09
3L	48.3	15.0	128	0.472	2012	14.56	12.58	195.3	6.66
3L	51.5	17.1	156	0.419	2146	13.25	11.15	189.6	7.10
3L	54.7	19.4	190	0.357	2280	11.70	9.47	177.9	7.68
3L	55.8	20.2	204	0.332	2325	11.14	8.86	172.6	7.84
4L	57.9	21.8	228	0.376	1713	12.30	9.93	197.9	4.92
4L	61.2	24.3	269	0.354	1809	11.86	9.35	201.4	5.38
4L	64.4	26.9	315	0.322	1904	11.16	8.50	199.5	5.91
4L	67.6	29.9	369	0.289	1999	10.43	7.62	195.9	6.47
4L	70.8	33.1	432	0.258	2094	9.77	6.80	192.2	7.00
4L	74.0	36.9	507	0.226	2189	9.09	5.96	187.0	7.58
4L	77.2	41.2	599	0.188	2285	8.25	4.94	176.9	8.16
4L	78.6	43.3	645	0.171	2325	7.88	4.50	172.1	8.39
5L	80.5	45.8	700	0.203	1785	8.82	5.33	197.1	9.27
5L	83.7	50.5	806	0.182	1856	8.46	4.78	196.6	9.77
5L	86.9	55.8	931	0.160	1928	8.05	4.19	194.4	10.45
5L	90.1	61.8	1080	0.136	1999	7.64	3.58	191.3	11.27
5L	93.3	69.0	1264	0.114	2070	7.26	2.99	188.3	11.85
5L	96.6	77.8	1495	0.092	2142	6.88	2.40	184.6	12.58
5L	99.8	89.1	1804	0.068	2213	6.47	1.78	179.5	13.42
5L	103.0	106.1	2282	0.041	2285	5.98	1.06	171.2	14.20
5L	104.9	122.2	2749	0.025	2326	5.70	0.65	166.0	14.63
6L	106.2	130.3	2985	0.044	2048	6.29	1.14	185.5	15.55
6L	109.4	158.0	3815	0.024	2110	6.00	0.61	182.3	16.53
6L	112.7	249.3	6645	0.004	2172	5.70	0.08	178.5	17.37

Full Throttle Manual 1st Hold - Lockup Apply (1C, 1L)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio	Grade
On	Off	Standard Power Curve	Standard	5.222	1.000	0

Gear Range	Vehicle Speed (km/h)	Time (seconds)	Distance (m)	Acceleration Rate (m/sec ²)	Engine Speed (rpm)	Tractive Effort (kN)	Drawbar Pull (kN)	Wheel Power Available (kW)	Transmission Heat Rejection (kW)
1C	3.2	0.3	0	2.588	1971	70.45	69.53	63.0	146.41
1C	6.4	0.7	1	2.311	1997	63.44	62.48	113.4	92.74
1C	9.7	1.1	2	1.948	2046	53.97	52.98	144.8	58.26
1C	12.9	1.6	3	1.610	2116	44.93	43.89	160.7	38.88
1C	15.1	2.1	5	1.384	2172	39.08	38.00	164.1	32.43
1L	16.1	2.2	6	1.436	1660	43.02	41.92	192.3	7.14
1L	19.3	2.9	9	1.206	1992	36.19	35.03	194.1	8.54
1L	22.5	3.8	14	0.903	2324	27.33	26.10	171.0	9.67
1L	25.7	5.5	26	0.163	2656	4.26	2.97	30.5	7.80

Full Throttle Reverse Performance (R1C)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio	Grade
On	Off	Standard Power Curve	Standard	5.222	1.000	0

Gear Range	Vehicle Speed (km/h)	Time (seconds)	Distance (m)	Acceleration Rate (m/sec ²)	Engine Speed (rpm)	Tractive Effort (kN)	Drawbar Pull (kN)	Wheel Power Available (kW)	Transmission Heat Rejection (kW)
R1C!	3.2	0.2	0	3.398	1977	95.90	94.98	85.7	122.39
R1C	6.4	0.5	1	2.712	2039	77.81	76.86	139.1	64.40
R1C	9.7	0.9	1	2.049	2141	59.61	58.61	159.9	38.41
R1C	12.9	1.4	3	1.467	2266	43.47	42.42	155.5	32.73
R1C	16.1	2.2	6	0.875	2538	26.87	25.78	120.1	18.74

Allison Transmission Vehicle Closed Throttle Braking Performance

Note

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.
Results indicate the vehicle operating conditions at steady state (acceleration = 0).
The exclamation symbol indicates that Wheel Slip may occur.

Closed Throttle Downshifts, Standard Retarder (6L, 5L, 4L, 3L, 2L, 2C)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio
On	Off	Standard Power Curve	Standard	5.222	1.000

Engine Retarder = OFF & Transmission Retarder = OFF

Gear Range	Vehicle Speed (km/h)	Engine Speed (rpm)	Output Speed (rpm)	Equilibrium Grade (%)	Transmission Heat Rejection (kW)	Deceleration Rate (m/sec ²)	Wheel Power (kW)
6L	141.6	2730	4187	-4.59	27.26	-0.444	142.1
6L	138.4	2669	4093	-4.44	25.86	-0.429	135.0
6L	135.2	2607	3998	-4.28	24.48	-0.414	127.8
6L	132.0	2545	3903	-4.13	23.16	-0.399	120.8
6L	128.7	2483	3808	-3.97	21.89	-0.384	114.1
6L	125.5	2421	3713	-3.82	20.66	-0.370	107.5
6L	122.3	2359	3617	-3.68	19.51	-0.356	101.2
6L	119.1	2296	3522	-3.54	18.41	-0.342	95.2
6L	115.9	2234	3427	-3.40	17.35	-0.329	89.5
6L	112.7	2172	3332	-3.26	16.33	-0.315	83.9
6L	109.4	2110	3237	-3.13	15.36	-0.303	78.6
6L	106.2	2048	3141	-3.00	14.41	-0.290	73.5
6L	103.0	1986	3046	-2.87	13.50	-0.278	68.6
6L	99.8	1924	2951	-2.75	12.63	-0.266	63.9
6L	96.6	1862	2856	-2.63	11.81	-0.254	59.6
6L	93.3	1800	2761	-2.51	11.01	-0.243	55.5
6L	90.1	1738	2665	-2.40	10.25	-0.232	51.5
6L	86.9	1676	2570	-2.29	9.50	-0.222	47.8
6L	85.9	1657	2542	-2.26	9.29	-0.219	46.7
5L	85.9	1907	2542	-2.47	9.15	-0.239	59.3
5L	83.7	1856	2475	-2.39	8.67	-0.231	56.0
5L	80.5	1785	2380	-2.27	8.01	-0.220	51.6
5L	77.2	1713	2285	-2.16	7.39	-0.209	47.4
5L	74.0	1642	2189	-2.06	6.78	-0.199	43.4
5L	70.8	1571	2094	-1.96	6.25	-0.189	39.7
5L	67.6	1499	1999	-1.86	5.81	-0.180	36.3
5L	64.4	1428	1904	-1.77	5.40	-0.171	33.0
5L	62.6	1388	1850	-1.71	5.18	-0.166	31.3
4L	62.6	1850	1850	-2.19	5.65	-0.211	52.5
4L	61.2	1809	1809	-2.14	5.43	-0.206	50.1
4L	57.9	1713	1713	-2.02	4.96	-0.194	44.8
4L	54.7	1618	1618	-1.91	4.49	-0.183	39.9
4L	51.5	1523	1523	-1.80	4.16	-0.173	35.5
4L	48.3	1428	1428	-1.70	3.89	-0.163	31.4
4L	45.1	1333	1333	-1.60	3.60	-0.154	27.7
4L	43.0	1271	1271	-1.54	3.37	-0.148	25.4
3L	43.0	1791	1271	-2.30	4.85	-0.219	48.6
3L	41.8	1744	1238	-2.24	4.66	-0.214	46.0
3L	38.6	1610	1142	-2.08	4.12	-0.198	39.2
3L	35.4	1475	1047	-1.93	3.74	-0.184	33.1
3L	32.2	1341	952	-1.79	3.39	-0.171	27.8
3L	31.5	1312	931	-1.76	3.30	-0.168	26.6
2L	31.5	1735	931	-2.60	4.46	-0.245	45.4
2L	29.0	1597	857	-2.41	3.96	-0.227	38.4
2L	25.7	1420	762	-2.20	3.63	-0.207	30.8
2L	22.5	1242	666	-2.00	3.17	-0.188	24.2
2L	19.3	1065	571	-1.82	2.62	-0.171	18.7
2L	18.1	999	536	-1.76	2.41	-0.165	16.8
2C	18.1	600	536	-1.33	5.31	-0.125	11.3

Engine Retarder = OFF & Transmission Retarder = ON

Gear Range	Vehicle Speed (km/h)	Engine Speed (rpm)	Output Speed (rpm)	Equilibrium Grade (%)	Transmission Heat Rejection (kW)	Deceleration Rate (m/sec ²)	Wheel Power (kW)
6L	141.6	2730	4187	-9.29	474.83	-0.896	609.9
6L	138.4	2669	4093	-9.24	473.42	-0.891	602.8
6L	135.2	2607	3998	-9.20	472.04	-0.887	595.6
6L	132.0	2545	3903	-9.16	470.72	-0.884	588.6
6L	128.7	2483	3808	-9.14	469.45	-0.881	581.9
6L	125.5	2421	3713	-9.12	468.23	-0.879	575.3
6L	122.3	2359	3617	-9.11	467.07	-0.879	569.1
6L	119.1	2296	3522	-9.12	465.98	-0.879	563.0
6L	115.9	2234	3427	-9.13	464.92	-0.880	557.3

6L	112.7	2172	3332	-9.16	463.90	-0.883	551.7
6L	109.4	2110	3237	-9.20	462.92	-0.887	546.4
6L	106.2	2048	3141	-9.25	461.97	-0.892	541.3
6L	103.0	1986	3046	-9.32	461.06	-0.899	536.4
6L	99.8	1924	2951	-9.41	460.20	-0.907	531.7
6L	96.6	1862	2856	-9.51	459.37	-0.917	527.4
6L	93.3	1800	2761	-9.63	458.57	-0.928	523.3
6L	90.1	1738	2665	-9.78	457.81	-0.942	519.3
6L	86.9	1676	2570	-9.94	457.07	-0.958	515.6
6L	85.9	1657	2542	-10.00	456.85	-0.963	514.5
5L	85.9	1907	2542	-10.20	456.72	-0.981	527.1
5L	83.7	1856	2475	-10.33	456.23	-0.994	523.8
5L	80.5	1785	2380	-10.54	455.57	-1.013	519.4
5L	77.2	1713	2285	-10.78	454.95	-1.036	515.2
5L	74.0	1642	2189	-11.05	454.34	-1.062	511.2
5L	70.8	1571	2094	-11.36	453.81	-1.091	507.5
5L	67.6	1499	1999	-11.71	453.37	-1.124	504.1
5L	64.4	1428	1904	-11.76	437.99	-1.129	485.2
5L	62.6	1388	1850	-11.71	425.55	-1.125	470.7
4L	62.6	1850	1850	-12.20	426.02	-1.166	491.9
4L	61.2	1809	1809	-12.15	416.44	-1.160	479.7
4L	57.9	1713	1713	-12.03	394.41	-1.149	451.9
4L	54.7	1618	1618	-11.91	372.36	-1.138	424.5
4L	51.5	1523	1523	-11.80	350.46	-1.128	397.5
4L	48.3	1428	1428	-11.70	328.47	-1.118	370.7
4L	45.1	1333	1333	-11.59	306.45	-1.108	344.2
4L	43.0	1271	1271	-11.53	292.14	-1.102	327.2
3L	43.0	1791	1271	-12.31	293.61	-1.165	350.4
3L	41.8	1744	1238	-12.24	285.78	-1.159	339.8
3L	38.6	1610	1142	-12.08	263.52	-1.144	310.3
3L	35.4	1475	1047	-11.62	234.38	-1.101	274.2
3L	32.2	1341	952	-10.13	184.24	-0.962	216.8
3L	31.5	1312	931	-9.81	174.06	-0.931	205.1
2L	31.5	1735	931	-10.67	175.22	-0.998	223.9
2L	29.0	1597	857	-9.46	141.50	-0.886	182.2
2L	25.7	1420	762	-8.00	104.36	-0.750	136.1
2L	22.5	1242	666	-6.63	73.60	-0.622	97.9
2L	19.3	1065	571	-5.39	49.24	-0.506	67.4
2L	18.1	999	536	-4.98	41.88	-0.468	58.1
2C	18.1	600	536	-4.55	44.78	-0.428	52.6

Closed Throttle Manual 1st Hold - Lockup Release, without Retarder (1L, 1C)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio
On	Off	Standard Power Curve	Standard	5.222	1.000

Engine Retarder = OFF & Transmission Retarder = OFF

Gear Range	Vehicle Speed (km/h)	Engine Speed (rpm)	Output Speed (rpm)	Equilibrium Grade (%)	Transmission Heat Rejection (kW)	Deceleration Rate (m/sec ²)	Wheel Power (kW)
1L	26.5	2730	783	-7.21	11.09	-0.627	125.2
1L	25.7	2656	762	-6.99	10.63	-0.607	117.8
1L	22.5	2324	666	-5.95	8.70	-0.518	87.2
1L	19.3	1992	571	-5.00	6.97	-0.435	62.1
1L	16.1	1660	476	-4.19	5.41	-0.364	42.8
1L	12.9	1328	381	-3.49	4.19	-0.304	28.1
1L	9.7	996	286	-2.92	2.91	-0.254	17.3
1L	7.8	809	232	-2.65	2.22	-0.230	12.6
1C	7.8	600	232	-1.67	1.31	-0.146	7.2

Engine Retarder = OFF & Transmission Retarder = ON

Gear Range	Vehicle Speed (km/h)	Engine Speed (rpm)	Output Speed (rpm)	Equilibrium Grade (%)	Transmission Heat Rejection (kW)	Deceleration Rate (m/sec ²)	Wheel Power (kW)
1L	26.5	2730	783	-13.35	119.52	-1.156	238.5
1L	25.7	2656	762	-12.85	111.37	-1.113	223.1
1L	22.5	2324	666	-10.62	79.13	-0.922	160.8
1L	19.3	1992	571	-8.59	53.59	-0.747	110.8
1L	16.1	1660	476	-6.83	34.08	-0.595	72.7
1L	12.9	1328	381	-5.18	18.83	-0.452	43.4
1L	9.7	996	286	-3.79	8.57	-0.330	23.2
1L	7.8	809	232	-3.18	5.05	-0.277	15.5
1C	7.8	600	232	-2.20	4.14	-0.192	10.1