

Allison Transmission Bundled Report

Application	116-A347282-1
Iteration	1
Date	February 6, 2025 15:43:28
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 2533 - OM470 240kW 1700Nm - Refuse - i=4,300
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 2533 L 6x2
Vehicle Configuration	Refuse Truck
Engine	Mercedes Benz OM 470 -- 240kW at 1600 rpm, 1700 Nm at 1100rpm -- without SEM/LRTP (116-L020905-E, Rev A)
Transmission	4000 INTL Retarder (1-L007406-T, Rev E)
Transmission Rating	4000 INTL Retarder Refuse - Diesel Allison 6th Generation Controls without SEM/LRTP (1-L024333-R, Rev A)
Vehicle Parameters	Standard
Torque Converter	TC561 (1-L001260-TC, Rev B) - Acceptable
Transmission Retarder	4000 Series High Capacity (1-L004745-TR, Rev E)
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 2533 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)	26.1	26.1
Alternator / Generator	1.2	1.2
Air Compressor	1.4	1.4
Steering Pump	1.4	1.4
Air Conditioning	0.0	0.0
Implement Drive	0.0	0.0

Engine

Number of Power Packs	1
Engine	Mercedes Benz OM 470 -- 240kW at 1600 rpm, 1700 Nm at 1100rpm -- without SEM/LRTP (116-L020905-E, Rev A)
Engine Controls Type	Electronic
Evaluate at Altitude	No
Certifications	Europe / Russia / EAEU Euro VI
Displacement	10.70 l
Peak Torque	1700.0 N-m
Peak Torque Speed	1100 rpm
Peak Power	240.0 kW
Peak Power Speed	1600 rpm
Governed Power	240.0 kW
Governed Speed	1900 rpm
Number Of Curves	1
Engine Curve Reference	
Cruise Velocity @ Speed	0.0 km/h @ 0 rpm
Engine Retarder	
Engine Inertia (estimated)	2.2446 kg-m²
Engine Idle Speed	650 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
700	121.0	1650.0	117.4	1601.7	118.7	1619.5	
800	139.5	1665.0	135.2	1613.3	137.1	1636.5	
900	158.3	1680.0	153.0	1623.7	155.8	1653.1	
1000	178.0	1700.0	171.5	1638.0	175.3	1674.4	
1100	195.8	1700.0	187.9	1631.4	193.0	1675.4	Peak Torque
1200	213.6	1700.0	204.1	1623.9	210.6	1676.3	
1250	222.5	1700.0	212.0	1619.9	219.5	1676.6	
1300	228.7	1680.0	217.2	1595.6	225.6	1657.0	
1400	238.0	1623.4	224.3	1529.8	234.7	1601.0	
1500	239.0	1521.5	222.7	1417.9	235.6	1499.7	
1600	240.0	1432.4	220.8	1318.0	236.4	1411.0	Peak Power
1800	240.0	1273.2	213.9	1134.9	236.1	1252.7	
1900	240.0	1206.2	209.9	1054.8	236.0	1186.0	Governed
2000	180.0	859.4	145.4	694.2	175.8	839.5	
2200	0.0	0.0	-45.0	-195.3	-4.5	-19.4	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
700	121.0	1650.0	117.4	1601.7	118.7	1619.5	
800	139.5	1665.0	135.2	1613.3	137.1	1636.5	
900	158.3	1680.0	153.0	1623.7	155.8	1653.1	
1000	178.0	1700.0	171.5	1638.0	175.3	1674.4	
1100	195.8	1700.0	187.9	1631.4	193.0	1675.4	Peak Torque
1200	213.6	1700.0	204.1	1623.9	210.6	1676.3	
1250	222.5	1700.0	212.0	1619.9	219.5	1676.6	
1300	228.7	1680.0	217.2	1595.6	225.6	1657.0	
1400	238.0	1623.4	224.3	1529.8	234.7	1601.0	
1500	239.0	1521.5	222.7	1417.9	235.6	1499.7	
1600	240.0	1432.4	220.8	1318.0	236.4	1411.0	Peak Power
1800	240.0	1273.2	213.9	1134.9	236.1	1252.7	
1900	240.0	1206.2	209.9	1054.8	236.0	1186.0	Governed
2000	180.0	859.4	145.4	694.2	175.8	839.5	
2200	0.0	0.0	-45.0	-195.3	-4.5	-19.4	No Load Governed

Transmission

Transmission Manufacturer	Allison Transmission
Transmission Family	4000 Series (1-L001323-TF, Rev T)
Transmission	4000 INTL Retarder (1-L007406-T, Rev E)
Transmission Rating	4000 INTL Retarder Refuse - Diesel Allison 6th Generation Controls without SEM/LRTP (1-L024333-R, Rev A)
Torque Converter	TC561 (1-L001260-TC, Rev B) - Acceptable
Transmission Retarder	4000 Series High Capacity (1-L004745-TR, Rev E)

Controls

Controls Release	Production Calibration (PC) for 4000 Series (1-L007292-CR, Rev E)
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Controls - Primary Gears (Shift Schedule)

DynActive	No
Speed Profile	Performance
Shift Speed & Strategy	1900 rpm S1 Performance
Equivalent DynActive Bias	1
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	4.300	97.00	97.00

Driveline - Overall Driveline Ratio

Description	Ratio	Standard Efficiency (%)	User Defined Efficiency (%)	N over V Ratio (rpm/kph)
Single	4.300	95.64	95.64	24.354

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		1379 rpm	
C05		Minimum Engine Speed	
Overall Status		OK: Acceptable	
Rating/Recommendation		1100 rpm (Min)	
Actual		1379 rpm	
Notes		Net peak torque speed (1000 rpm) + allowable variation (100 rpm).	
C07		Turbine Torque at Converter Stall	
Overall Status		OK: Acceptable	
Rating/Recommendation		3322.0 N-m (Max)	
Actual		2387.5 N-m	
C08		Converter Speed Ratio at Engine Governed Speed	
Overall Status		OK: Acceptable	
Rating/Recommendation		0.800 (Min)	
Actual		0.910	
C03		Converter Stall Torque Ratio	
Overall Status		Reference	
Actual		1.578	

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		373.0 kW (Max)
Actual		240.0 kW
T14	✓	Transmission Input Torque (Gross)
Overall Status		OK: Acceptable
Rating/Recommendation		2102.0 N-m (Max)
Actual		1700.0 N-m
T03	✓	Transmission Input Speed
Overall Status		OK: Acceptable
Rating/Recommendation		1700 rpm / 2300 rpm
Actual		1900 rpm
T04	📖	Transmission Output Speed
Overall Status		Reference
Actual		2973 rpm
Notes		Check made in Range 6L at 1900 rpm Engine Governed Speed.

Vehicle Rating And Guideline Checks - Standard

✓ Section Score - OK		
V21		1st Range Converter Stall Gradeability
Overall Status		Reference
Actual		29.39 %
V13		1st Range 70% Converter Efficiency Gradeability
Overall Status		Reference
Actual		20.67 %
V14	✓	1st Range 80% Converter Efficiency Gradeability
Overall Status		OK: Acceptable
Rating/Recommendation		18.00 % (Min)
Actual		18.04 %
V17		Maximum Geared Vehicle Speed at Engine Governed Speed
Overall Status		Reference
Actual		122.1 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		109.1 km/h
Notes		At 1697.8 rpm Engine Speed, Range 6L.
V43		Heat Generated in 1st Range 70% Converter Efficiency
Overall Status		Reference
Actual		73.07 kW
Notes		At 1528.5 rpm Engine Speed.
V44		Heat Generated in 1st Range 80% Converter Efficiency
Overall Status		Reference
Actual		51.81 kW
Notes		At 1596.2 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	4.300	1.000

Gradeability	Percent Grade	Vehicle Speed (km/h)	Gear Range	Match Point
Stall Gradeability	29.4	0.0	1C	Stall
Launch Gradeability	27.4	0.0	1C	
Low Speed Gradeability	18.0	12.6	1C	80 Percent
Maximum Speed on Grade	0.0	113.5	6L	Road Load
	0.3	109.5	6L	
	0.5	105.5	6L	
	1.0	96.2	5L	
	2.0	81.8	5L	
	3.0	67.5	4L	
	4.0	58.0	4L	
	5.0	48.7	3L	
	6.0	43.2	3L	
	7.0	36.7	2L	
	8.0	33.5	2L	
	9.0	30.3	2L	
	10.0	21.1	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	4.300	1.000

Speed (km/h)	Time (sec)	Distance (m)
0 - 20 km/h	3.4	11
0 - 30 km/h	6.5	33
0 - 40 km/h	10.6	73
0 - 60 km/h	22.7	244
0 - 80 km/h	43.7	657
0 - 100 km/h	87.5	1773

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		4.300	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	1379	0	72.80	71.91	0.0	29.39	222.87		
1C	3.2	1407	78	67.94	67.02	60.7	27.24	160.72		
1C	6.4	1461	157	60.69	59.74	108.5	24.10	109.90		
1C	9.7	1526	235	52.88	51.89	141.8	20.79	73.96		
1C	9.8	1528	238	52.60	51.60	142.8	20.67	72.85	70 Percent	
1C	12.6	1596	306	46.32	45.28	161.8	18.04	51.77	80 Percent	
1C	12.9	1604	314	45.67	44.62	163.3	17.77	49.95		
1C	14.9	1661	362	41.18	40.11	170.2	15.93	40.81	85 Percent	
1C	16.1	1694	392	38.61	37.51	172.6	14.87	37.15		
1C	16.7	1711	406	37.31	36.21	172.8	14.35	36.36		
2C	16.7	1511	406	29.57	28.47	137.0	11.23	79.35		
2C	19.3	1546	470	27.74	26.58	148.8	10.48	66.30		
2C	22.5	1588	549	25.59	24.37	160.2	9.60	53.59		
2C	25.7	1635	627	23.49	22.19	168.0	8.74	43.98		
2C	27.4	1661	668	22.37	21.03	170.4	8.28	40.56		
2L	27.4	1273	668	25.94	24.61	197.7	9.70	7.79		
2L	29.0	1345	705	25.22	23.85	203.0	9.39	8.16		
2L	32.2	1494	784	22.84	21.39	204.3	8.42	9.26		
2L	35.4	1643	862	20.36	18.81	200.2	7.40	10.00		
2L	38.6	1793	941	18.02	16.37	193.3	6.43	12.04		
2L	39.3	1824	957	17.57	15.90	191.8	6.25	12.39		
3L	39.3	1368	957	18.80	17.13	205.2	6.74	7.39		
3L	41.8	1456	1019	17.73	15.98	206.1	6.28	7.90		
3L	45.1	1568	1097	16.24	14.38	203.3	5.65	8.85		
3L	48.3	1680	1176	14.90	12.92	199.8	5.07	9.16		
3L	51.5	1792	1254	13.58	11.48	194.3	4.51	11.03		
3L	52.4	1825	1277	13.23	11.10	192.8	4.36	11.39		
4L	52.4	1277	1277	13.36	11.23	194.6	4.41	11.33		
4L	54.7	1333	1333	13.07	10.84	198.6	4.25	11.83		
4L	57.9	1411	1411	12.58	10.21	202.4	4.01	12.48		
4L	61.2	1489	1489	11.79	9.28	200.3	3.64	13.51		
4L	64.4	1568	1568	11.09	8.44	198.3	3.31	14.11		
4L	67.6	1646	1646	10.44	7.63	196.1	3.00	14.24		
4L	70.8	1725	1725	9.82	6.85	193.2	2.69	14.50		
4L	74.0	1803	1803	9.21	6.07	189.4	2.38	15.77		
4L	74.9	1825	1825	9.06	5.87	188.6	2.30	15.76		
5L	74.9	1345	1825	9.41	6.22	195.8	2.44	15.68		
5L	77.2	1387	1881	9.23	5.92	198.0	2.32	16.34		
5L	80.5	1444	1960	8.85	5.36	197.7	2.10	16.87		
5L	83.7	1502	2038	8.43	4.75	195.9	1.86	17.85		
5L	86.9	1560	2116	8.04	4.18	194.2	1.64	18.56		
5L	90.1	1618	2195	7.67	3.61	192.0	1.41	19.46		
5L	93.3	1675	2273	7.32	3.05	189.7	1.20	19.85		
5L	96.6	1733	2352	6.97	2.49	186.8	0.98	20.91		
5L	99.8	1791	2430	6.61	1.92	183.3	0.75	22.63		
5L	101.7	1825	2476	6.42	1.60	181.4	0.63	23.29		
6L	101.7	1582	2476	6.69	1.87	189.0	0.73	23.54		
6L	103.0	1603	2508	6.57	1.65	188.1	0.65	24.09		
6L	106.2	1653	2587	6.31	1.16	186.0	0.45	24.51		
6L	109.4	1703	2665	6.04	0.65	183.5	0.26	25.44		
6L	112.7	1753	2744	5.77	0.14	180.4	0.05	26.90		
6L	115.9	1803	2822	5.50	-0.38	177.0	-0.15	28.78		
6L	119.1	1853	2900	5.26	-0.87	173.9	-0.34	29.92		
6L	122.1	1900	2973	5.03	-1.34	170.7	-0.53	31.41	Governed	
6L	122.3	1903	2979	4.96	-1.43	168.7	-0.56	31.36		
6L	125.5	1953	3057	3.94	-2.72	137.4	-1.07	31.74		
6L	128.7	2004	3135	2.90	-4.03	103.7	-1.58	33.56		
6L	132.0	2054	3214	1.64	-5.57	60.3	-2.18	31.29		
6L	135.2	2104	3292	0.39	-7.11	14.6	-2.79	31.37		
6L	136.2	2119	3317	0.00	-7.59	0.0	-2.98	31.87		

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	4.300	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	1379	0	72.80	71.91	0.0	29.39	222.87	
1C	3.2	1407	78	67.94	67.02	60.7	27.24	160.72	
1C	6.4	1461	157	60.69	59.74	108.5	24.10	109.90	
1C	9.7	1526	235	52.88	51.89	141.8	20.79	73.96	
1C	9.8	1528	238	52.60	51.60	142.8	20.67	72.85	70 Percent
1C	12.6	1596	306	46.32	45.28	161.8	18.04	51.77	80 Percent
1C	12.9	1604	314	45.67	44.62	163.3	17.77	49.95	
1C	13.3	1617	325	44.64	43.59	165.5	17.35	47.22	
1L	13.3	1141	325	48.36	47.31	179.3	18.88	7.05	
1L	16.1	1376	392	45.75	44.66	204.5	17.79	8.71	
1L	19.3	1651	470	37.25	36.09	199.8	14.30	10.17	
1L	22.2	1900	541	30.44	29.22	187.9	11.54	13.39	Governed
1L	22.5	1926	549	27.55	26.33	172.4	10.38	12.84	
1L	25.1	2142	610	0.00	-1.28	0.0	-0.50	10.50	

Full Throttle Reverse Performance (R1C)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio
On	Off	Standard Power Curve	Standard	4.300	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	1379	0	97.15	96.26	0.0	40.77	222.87	
R1C!	3.2	1425	78	87.56	86.64	78.3	36.13	142.09	
R1C	6.4	1506	157	73.69	72.74	131.8	29.76	84.87	
R1C	7.1	1528	174	70.62	69.66	140.2	28.40	75.61	70 Percent
R1C	9.2	1596	224	62.19	61.20	158.8	24.73	54.86	80 Percent
R1C	9.7	1613	235	60.36	59.37	161.9	23.94	51.10	
R1C	10.9	1661	265	55.33	54.31	167.2	21.80	43.99	85 Percent
R1C	12.9	1742	314	47.23	46.19	168.9	18.42	39.35	
R1C	14.8	1900	360	41.15	40.08	169.1	15.92	33.12	Governed
R1C	16.1	1993	392	27.19	26.10	121.6	10.29	22.61	
R1C	18.1	2144	440	0.00	-1.13	0.0	-0.44	8.75	

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	4.300	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	0.4	0	2.398	1407	67.94	67.02	60.7	160.72
1C	6.4	0.8	1	2.129	1461	60.69	59.74	108.5	109.90
1C	9.7	1.2	2	1.837	1526	52.88	51.89	141.8	73.96
1C	12.9	1.7	3	1.575	1604	45.67	44.62	163.3	49.95
1C	16.1	2.4	6	1.323	1694	38.61	37.51	172.6	37.15
1C	16.7	2.5	6	1.275	1711	37.31	36.21	172.8	36.36
2C	19.3	3.2	10	0.994	1546	27.74	26.58	148.8	66.30
2C	22.5	4.1	16	0.912	1588	25.59	24.37	160.2	53.59
2C	25.7	5.2	22	0.829	1635	23.49	22.19	168.0	43.98
2C	27.4	5.7	27	0.785	1661	22.37	21.03	170.4	40.56
2L	29.0	6.2	30	0.871	1345	25.22	23.85	203.0	8.16
2L	32.2	7.3	40	0.782	1494	22.84	21.39	204.3	9.26
2L	35.4	8.5	51	0.688	1643	20.36	18.81	200.2	10.00
2L	38.6	9.9	66	0.599	1793	18.02	16.37	193.3	12.04
2L	39.3	10.3	69	0.580	1824	17.57	15.90	191.8	12.39
3L	41.8	11.4	82	0.595	1456	17.73	15.98	206.1	7.90
3L	45.1	13.0	101	0.536	1568	16.24	14.38	203.3	8.85
3L	48.3	14.8	124	0.481	1680	14.90	12.92	199.8	9.16
3L	51.5	16.7	151	0.428	1792	13.58	11.48	194.3	11.03
3L	52.4	17.4	160	0.413	1825	13.23	11.10	192.8	11.39
4L	54.7	18.9	183	0.408	1333	13.07	10.84	198.6	11.83
4L	57.9	21.1	218	0.385	1411	12.58	10.21	202.4	12.48
4L	61.2	23.6	259	0.350	1489	11.79	9.28	200.3	13.51
4L	64.4	26.3	306	0.318	1568	11.09	8.44	198.3	14.11
4L	67.6	29.2	360	0.288	1646	10.44	7.63	196.1	14.24
4L	70.8	32.5	423	0.258	1725	9.82	6.85	193.2	14.50
4L	74.0	36.2	498	0.229	1803	9.21	6.07	189.4	15.77
4L	74.9	37.3	521	0.221	1825	9.06	5.87	188.6	15.76
5L	77.2	40.1	580	0.224	1387	9.23	5.92	198.0	16.34
5L	80.5	44.3	672	0.203	1444	8.85	5.36	197.7	16.87
5L	83.7	49.0	778	0.181	1502	8.43	4.75	195.9	17.85
5L	86.9	54.3	904	0.159	1560	8.04	4.18	194.2	18.56
5L	90.1	60.4	1054	0.137	1618	7.67	3.61	192.0	19.46
5L	93.3	67.5	1235	0.116	1675	7.32	3.05	189.7	19.85
5L	96.6	76.1	1461	0.095	1733	6.97	2.49	186.8	20.91
5L	99.8	86.9	1756	0.073	1791	6.61	1.92	183.3	22.63
5L	101.7	94.8	1978	0.061	1825	6.42	1.60	181.4	23.29
6L	103.0	100.3	2136	0.063	1603	6.57	1.65	188.1	24.09
6L	106.2	117.3	2629	0.044	1653	6.31	1.16	186.0	24.51
6L	109.4	144.1	3433	0.025	1703	6.04	0.65	183.5	25.44
6L	112.7	215.1	5632	0.006	1753	5.77	0.14	180.4	26.90

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	4.300	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	0.4	0	2.398	1407	67.94	67.02	60.7	160.72
1C	6.4	0.8	1	2.129	1461	60.69	59.74	108.5	109.90
1C	9.7	1.2	2	1.837	1526	52.88	51.89	141.8	73.96
1C	12.9	1.7	3	1.575	1604	45.67	44.62	163.3	49.95
1C	13.3	1.8	4	1.533	1617	44.64	43.59	165.5	47.22
1L	16.1	2.3	6	1.466	1376	45.75	44.66	204.5	8.71
1L	19.3	3.0	9	1.188	1651	37.25	36.09	199.8	10.17
1L	22.5	3.9	14	0.895	1926	27.55	26.33	172.4	12.84

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	4.300	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	0.3	0	2.984	1425	87.56	86.64	78.3	142.09
R1C	6.4	0.6	1	2.484	1506	73.69	72.74	131.8	84.87
R1C	9.7	1.0	1	1.997	1613	60.36	59.37	161.9	51.10
R1C	12.9	1.5	3	1.523	1742	47.23	46.19	168.9	39.35
R1C	16.1	2.3	6	0.859	1993	27.19	26.10	121.6	22.61

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	4.300	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	141.4	2200	3443	-4.54	39.50	-0.438	137.0
6L	138.4	2154	3371	-4.40	38.03	-0.424	131.0
6L	135.2	2104	3292	-4.25	36.47	-0.410	124.6
6L	132.0	2054	3214	-4.10	34.94	-0.396	118.4
6L	128.7	2004	3135	-3.95	33.42	-0.382	112.4
6L	125.5	1953	3057	-3.81	31.86	-0.368	106.4
6L	122.3	1903	2979	-3.67	30.36	-0.354	100.6
6L	119.1	1853	2900	-3.53	28.93	-0.341	95.1
6L	115.9	1803	2822	-3.40	27.55	-0.328	89.8
6L	112.7	1753	2744	-3.27	26.25	-0.316	84.7
6L	109.4	1703	2665	-3.14	25.02	-0.304	79.8
6L	106.2	1653	2587	-3.02	23.84	-0.292	75.2
6L	103.0	1603	2508	-2.90	22.69	-0.280	70.8
6L	99.8	1553	2430	-2.79	21.56	-0.269	66.7
6L	97.8	1521	2381	-2.72	20.87	-0.262	64.2
5L	97.8	1755	2381	-2.94	20.99	-0.283	79.3
5L	96.6	1733	2352	-2.89	20.58	-0.278	77.3
5L	93.3	1675	2273	-2.77	19.54	-0.267	72.2
5L	90.1	1618	2195	-2.65	18.53	-0.256	67.4
5L	86.9	1560	2116	-2.54	17.52	-0.245	62.9
5L	83.7	1502	2038	-2.43	16.54	-0.234	58.6
5L	80.5	1444	1960	-2.33	15.81	-0.225	54.9
5L	77.2	1387	1881	-2.24	15.05	-0.216	51.3
5L	74.0	1329	1803	-2.14	14.27	-0.206	47.8
5L	70.8	1271	1725	-2.05	13.48	-0.198	44.4
5L	69.8	1253	1700	-2.02	13.23	-0.195	43.3
4L	69.8	1700	1700	-2.55	15.24	-0.244	69.4
4L	67.6	1646	1646	-2.47	14.91	-0.236	65.4
4L	64.4	1568	1568	-2.36	14.33	-0.226	60.0
4L	61.2	1489	1489	-2.25	13.61	-0.216	54.9
4L	57.9	1411	1411	-2.14	12.59	-0.205	49.9
4L	54.7	1333	1333	-2.05	11.98	-0.196	45.6
4L	51.5	1254	1254	-1.95	11.11	-0.187	41.2
4L	48.3	1176	1176	-1.85	10.20	-0.178	36.9
4L	47.2	1150	1150	-1.82	9.89	-0.174	35.4
3L	47.2	1643	1150	-2.52	8.77	-0.239	58.8
3L	45.1	1568	1097	-2.41	8.07	-0.228	53.5
3L	41.8	1456	1019	-2.25	7.12	-0.213	46.4
3L	38.6	1344	941	-2.11	6.29	-0.200	40.1
3L	35.4	1232	862	-1.98	5.50	-0.187	34.4
3L	34.2	1192	834	-1.93	5.22	-0.183	32.4
2L	34.2	1590	834	-2.89	8.82	-0.268	55.5
2L	32.2	1494	784	-2.73	7.91	-0.254	49.2
2L	29.0	1345	705	-2.53	6.88	-0.235	40.8
2L	25.7	1195	627	-2.33	5.85	-0.216	33.2
2L	22.5	1046	549	-2.11	4.86	-0.196	26.1
2L	21.6	1001	525	-2.06	4.58	-0.191	24.2
2C	21.6	650	525	-1.74	8.40	-0.160	19.3

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	141.4	2200	3443	-9.24	487.05	-0.889	604.8
6L	138.4	2154	3371	-9.20	485.59	-0.885	598.8
6L	135.2	2104	3292	-9.17	484.03	-0.882	592.4
6L	132.0	2054	3214	-9.14	482.49	-0.879	586.2
6L	128.7	2004	3135	-9.12	480.98	-0.877	580.2
6L	125.5	1953	3057	-9.11	479.42	-0.876	574.2
6L	122.3	1903	2979	-9.11	477.92	-0.876	568.5
6L	119.1	1853	2900	-9.12	476.50	-0.877	562.9
6L	115.9	1803	2822	-9.14	475.13	-0.879	557.6
6L	112.7	1753	2744	-9.17	473.83	-0.882	552.5

6L	109.4	1703	2665	-9.22	472.60	-0.887	547.7
6L	106.2	1653	2587	-9.28	471.43	-0.893	543.1
6L	103.0	1603	2508	-9.35	470.29	-0.900	538.7
6L	99.8	1553	2430	-9.45	469.17	-0.909	534.6
6L	97.8	1521	2381	-9.52	468.48	-0.915	532.1
5L	97.8	1755	2381	-9.74	468.61	-0.935	547.2
5L	96.6	1733	2352	-9.77	468.20	-0.938	545.2
5L	93.3	1675	2273	-9.89	467.16	-0.949	540.1
5L	90.1	1618	2195	-10.03	466.16	-0.963	535.3
5L	86.9	1560	2116	-10.19	465.17	-0.978	530.8
5L	83.7	1502	2038	-10.38	464.20	-0.996	526.5
5L	80.5	1444	1960	-10.60	463.48	-1.017	522.8
5L	77.2	1387	1881	-10.85	462.73	-1.040	519.2
5L	74.0	1329	1803	-11.13	461.96	-1.067	515.7
5L	70.8	1271	1725	-11.45	461.19	-1.098	512.3
5L	69.8	1253	1700	-11.56	460.94	-1.108	511.3
4L	69.8	1700	1700	-12.10	462.95	-1.151	537.4
4L	67.6	1646	1646	-12.34	462.63	-1.173	533.4
4L	64.4	1568	1568	-12.67	459.72	-1.204	525.5
4L	61.2	1489	1489	-12.56	436.72	-1.194	497.1
4L	57.9	1411	1411	-12.45	413.44	-1.183	468.9
4L	54.7	1333	1333	-12.35	390.56	-1.174	441.3
4L	51.5	1254	1254	-12.25	367.42	-1.165	413.6
4L	48.3	1176	1176	-12.15	344.24	-1.156	386.0
4L	47.2	1150	1150	-12.12	336.60	-1.152	376.9
3L	47.2	1643	1150	-12.84	335.48	-1.205	400.3
3L	45.1	1568	1097	-12.72	319.84	-1.195	379.4
3L	41.8	1456	1019	-12.56	296.63	-1.180	349.0
3L	38.6	1344	941	-12.42	273.52	-1.167	319.5
3L	35.4	1232	862	-12.28	250.46	-1.154	290.4
3L	34.2	1192	834	-12.23	242.16	-1.149	280.0
2L	34.2	1590	834	-13.21	245.75	-1.216	303.2
2L	32.2	1494	784	-12.27	213.98	-1.131	264.6
2L	29.0	1345	705	-10.57	163.54	-0.976	204.5
2L	25.7	1195	627	-8.91	120.18	-0.825	152.7
2L	22.5	1046	549	-7.31	83.92	-0.677	108.7
2L	21.6	1001	525	-6.85	74.37	-0.635	97.2
2C	21.6	650	525	-6.53	78.19	-0.599	92.3

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

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio
On	Off	Standard Power Curve	Standard	4.300	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/sec²)	Wheel Power (kW)
1L	25.7	2200	627	-6.69	16.09	-0.557	112.5
1L	22.5	1926	549	-5.73	12.36	-0.477	83.7
1L	19.3	1651	470	-4.83	9.17	-0.402	59.8
1L	16.1	1376	392	-4.14	6.91	-0.345	42.3
1L	12.9	1101	314	-3.52	5.05	-0.293	28.3
1L	9.7	825	235	-3.09	3.60	-0.258	18.4
1L	9.5	811	231	-3.07	3.51	-0.256	18.0
1C	9.5	650	231	-2.37	2.62	-0.191	13.3

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/sec²)	Wheel Power (kW)
1L	25.7	2200	627	-13.34	130.26	-1.069	231.8
1L	22.5	1926	549	-10.97	91.42	-0.881	166.3
1L	19.3	1651	470	-8.74	60.03	-0.704	112.9
1L	16.1	1376	392	-6.87	36.50	-0.554	73.2
1L	12.9	1101	314	-5.08	18.64	-0.410	42.5
1L	9.7	825	235	-3.64	7.22	-0.294	22.2
1L	9.5	811	231	-3.58	6.77	-0.289	21.4
1C	9.5	650	231	-2.87	5.88	-0.232	16.7