

Allison Transmission
Bundled Report

Application	116-A347281-1
Iteration	1
Date	February 6, 2025 15:37:01
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=3,077
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	3.077	97.00	97.00

Driveline - Overall Driveline Ratio

Description	Ratio	Standard Efficiency (%)	User Defined Efficiency (%)	N over V Ratio (rpm/kph)
Single	3.077	95.64	95.64	17.427

Allison Transmission Ratings and Guidelines Check









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.







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 - XX		
V21		1st Range Converter Stall Gradeability
Overall Status	Reference	
Actual	20.50 %	
V13		1st Range 70% Converter Efficiency Gradeability
Overall Status	Reference	
Actual	14.50 %	
V14	!	1st Range 80% Converter Efficiency Gradeability
Overall Status	XX: Questionable - may not be acceptable	
Rating/Recommendation	18.00 % (Min)	
Actual	12.66 %	
V17		Maximum Geared Vehicle Speed at Engine Governed Speed
Overall Status	Reference	
Actual	170.6 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	110.9 km/h	
Notes	At 1424.3 rpm Engine Speed, Range 5L.	
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	3.077	1.000

Gradeability	Percent Grade	Vehicle Speed (km/h)	Gear Range	Match Point
Stall Gradeability	20.5	0.0	1C	Stall
Launch Gradeability	18.5	0.0	1C	
Low Speed Gradeability	12.7	17.6	1C	80 Percent
Maximum Speed on Grade	0.0	117.5	5L	Road Load
	0.3	113.0	5L	
	0.5	108.4	5L	
	1.0	97.9	4L	
	2.0	83.0	4L	
	3.0	68.3	3L	
	4.0	58.9	3L	
	5.0	49.1	2L	
	6.0	42.9	2L	
	7.0	29.0	2C	
	8.0	23.3	1C	
	9.0	23.3	1C	
	10.0	23.3	1C	

Full Throttle Automatic Upshifts (Acceleration)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio
On	Off	Standard Power Curve	Standard	3.077	1.000

Speed (km/h)	Time (sec)	Distance (m)
0 - 20 km/h	3.8	12
0 - 30 km/h	7.3	37
0 - 40 km/h	12.0	82
0 - 60 km/h	24.0	252
0 - 80 km/h	44.4	655
0 - 100 km/h	85.0	1688

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		3.077	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	52.09	51.20	0.0	20.50	222.87		
1C	6.4	1428	112	46.47	45.51	83.1	18.14	137.01		
1C	12.9	1515	224	38.60	37.55	138.0	14.89	78.15		
1C	13.7	1528	238	37.64	36.58	142.8	14.50	72.85	70 Percent	
1C	17.6	1596	306	33.14	32.02	161.8	12.66	51.77	80 Percent	
1C	19.3	1630	337	31.18	30.03	167.3	11.86	44.89		
1C	20.8	1661	362	29.47	28.28	170.2	11.16	40.81	85 Percent	
1C	23.3	1711	406	26.70	25.46	172.8	10.04	36.36		
2C	23.3	1511	406	21.16	19.92	137.0	7.84	79.35		
2C	25.7	1534	449	20.28	18.99	145.1	7.47	70.42		
2C	32.2	1595	561	18.08	16.62	161.7	6.53	51.93		
2C	38.3	1661	668	16.01	14.37	170.4	5.64	40.56		
2L	38.3	1273	668	18.56	16.92	197.7	6.65	7.79		
2L	38.6	1283	673	18.51	16.86	198.5	6.63	7.86		
2L	45.1	1497	785	16.31	14.45	204.2	5.68	9.31		
2L	51.5	1711	897	13.82	11.72	197.7	4.60	10.36		
2L	54.9	1824	957	12.58	10.34	191.8	4.06	12.39		
3L	54.9	1368	957	13.46	11.22	205.2	4.40	7.39		
3L	57.9	1443	1010	12.83	10.46	206.4	4.11	7.80		
3L	64.4	1603	1122	11.31	8.65	202.2	3.40	9.32		
3L	70.8	1763	1234	9.96	6.99	196.0	2.74	10.31		
3L	73.3	1825	1277	9.47	6.37	192.8	2.50	11.39		
4L	73.3	1277	1277	9.56	6.47	194.6	2.54	11.33		
4L	77.2	1346	1346	9.31	6.00	199.8	2.35	11.60		
4L	83.7	1458	1458	8.66	4.98	201.3	1.96	12.93		
4L	90.1	1571	1571	7.92	3.85	198.2	1.51	14.14		
4L	96.6	1683	1683	7.27	2.79	194.9	1.09	14.23		
4L	103.0	1795	1795	6.63	1.71	189.8	0.67	15.67		
4L	104.7	1825	1825	6.48	1.44	188.6	0.56	15.76		
5L	104.7	1345	1825	6.73	1.69	195.8	0.66	15.68		
5L	109.4	1406	1907	6.53	1.15	198.5	0.45	16.61		
5L	115.9	1488	2019	6.10	0.23	196.4	0.09	17.53		
5L	122.3	1571	2131	5.70	-0.69	193.8	-0.27	18.78		
5L	128.7	1654	2244	5.33	-1.60	190.7	-0.63	19.63		
5L	135.2	1736	2356	4.97	-2.53	186.7	-0.99	20.98		
5L	141.6	1819	2468	4.62	-3.47	181.7	-1.36	23.20		
5L	142.1	1825	2476	4.60	-3.54	181.4	-1.39	23.29		
6L	142.1	1582	2476	4.79	-3.34	189.0	-1.31	23.54		
6L	148.1	1649	2580	4.53	-4.18	186.2	-1.64	24.45		
6L	154.5	1720	2692	4.25	-5.10	182.5	-2.00	25.89		
6L	160.9	1792	2805	3.98	-6.04	177.7	-2.37	28.38		
6L	167.4	1864	2917	3.73	-6.98	173.2	-2.74	30.22		
6L	170.6	1900	2973	3.60	-7.46	170.7	-2.93	31.41	Governed	
6L	173.8	1936	3029	3.08	-8.34	148.8	-3.27	31.38		
6L	180.2	2007	3141	2.01	-10.16	100.6	-3.99	33.31		
6L	186.7	2079	3253	0.72	-12.21	37.6	-4.79	31.03		
6L	190.3	2119	3317	0.00	-13.38	0.0	-5.25	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		3.077	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	52.09	51.20	0.0	20.50	222.87		
1C	6.4	1428	112	46.47	45.51	83.1	18.14	137.01		
1C	12.9	1515	224	38.60	37.55	138.0	14.89	78.15		
1C	13.7	1528	238	37.64	36.58	142.8	14.50	72.85	70 Percent	
1C	17.6	1596	306	33.14	32.02	161.8	12.66	51.77	80 Percent	
1C	18.6	1617	325	31.95	30.80	165.5	12.17	47.22		
1L	18.6	1141	325	34.61	33.46	179.3	13.24	7.05		
1L	19.3	1181	337	34.53	33.37	185.2	13.20	7.37		
1L	25.7	1575	449	28.25	26.95	202.0	10.63	10.07		
1L	31.1	1900	541	21.78	20.35	187.9	8.01	13.39	Governed	
1L	32.2	1969	561	16.31	14.85	145.8	5.83	13.05		
1L	35.0	2142	610	0.00	-1.54	0.0	-0.60	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		3.077	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	69.52	68.62	0.0	27.95	222.87		
R1C	6.4	1458	112	58.50	57.54	104.6	23.17	114.04		
R1C	10.0	1528	174	50.53	49.53	140.2	19.80	75.61	70 Percent	
R1C	12.8	1596	224	44.51	43.46	158.8	17.30	54.86	80 Percent	
R1C	12.9	1597	224	44.45	43.41	159.0	17.28	54.70		
R1C	15.2	1661	265	39.59	38.51	167.2	15.28	43.99	85 Percent	
R1C	19.3	1807	337	31.42	30.27	168.6	11.95	37.40		
R1C	20.7	1900	360	29.45	28.26	169.1	11.15	33.12	Governed	
R1C	25.2	2144	440	0.00	-1.28	0.0	-0.50	8.75		

Allison Transmission
Vehicle Acceleration Performance

Note

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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)

Engine Fan	Air Conditioning	Engine Power	Vehicle Parameters	Axle Ratio	Auxiliary Gearing Ratio	Grade
On	Off	Standard Power Curve	Standard	3.077	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	6.4	1.0	1	1.679	1428	46.47	45.51	83.1	137.01
1C	12.9	2.2	4	1.381	1515	38.60	37.55	138.0	78.15
1C	19.3	3.6	11	1.101	1630	31.18	30.03	167.3	44.89
1C	23.3	4.7	17	0.932	1711	26.70	25.46	172.8	36.36
2C	25.7	5.6	23	0.718	1534	20.28	18.99	145.1	70.42
2C	32.2	8.3	45	0.628	1595	18.08	16.62	161.7	51.93
2C	38.3	11.2	74	0.542	1661	16.01	14.37	170.4	40.56
2L	38.6	11.4	75	0.629	1283	18.51	16.86	198.5	7.86
2L	45.1	14.4	110	0.540	1497	16.31	14.45	204.2	9.31
2L	51.5	18.1	160	0.438	1711	13.82	11.72	197.7	10.36
2L	54.9	20.4	194	0.386	1824	12.57	10.34	191.8	12.39
3L	57.9	22.5	227	0.395	1443	12.83	10.46	206.4	7.80
3L	64.4	27.5	312	0.327	1603	11.31	8.65	202.2	9.32
3L	70.8	33.6	426	0.264	1763	9.96	6.99	196.0	10.31
3L	73.3	36.3	481	0.240	1825	9.47	6.37	192.8	11.39
4L	77.2	41.0	579	0.228	1346	9.31	6.00	199.8	11.60
4L	83.7	49.5	770	0.189	1458	8.66	4.98	201.3	12.93
4L	90.1	60.3	1030	0.147	1571	7.92	3.85	198.2	14.14
4L	96.6	74.7	1404	0.106	1683	7.27	2.79	194.9	14.23
4L	103.0	96.0	1998	0.066	1795	6.63	1.71	189.8	15.67
4L	104.7	104.1	2230	0.055	1825	6.48	1.44	188.6	15.76
5L	109.4	128.6	2960	0.044	1406	6.53	1.15	198.5	16.61
5L	115.9	211.0	5558	0.009	1488	6.10	0.23	196.4	17.53

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	3.077	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	6.4	1.0	1	1.679	1428	46.47	45.51	83.1	137.01
1C	12.9	2.2	4	1.381	1515	38.60	37.55	138.0	78.15
1C	18.6	3.5	10	1.128	1617	31.95	30.80	165.5	47.22
1L	19.3	3.6	11	1.174	1181	34.53	33.37	185.2	7.37
1L	25.7	5.3	21	0.952	1575	28.25	26.95	202.0	10.07
1L	32.2	7.6	40	0.539	1969	16.31	14.85	145.8	13.05

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	3.077	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)
R1C	6.4	0.8	1	2.078	1458	58.50	57.54	104.6	114.04
R1C	12.9	1.8	3	1.556	1597	44.45	43.41	159.0	54.70
R1C	19.3	3.2	10	1.034	1807	31.42	30.27	168.6	37.40

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	3.077	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	197.6	2200	3443	-6.60	39.50	-0.638	137.0
6L	193.1	2151	3366	-6.35	37.93	-0.614	130.6
6L	186.7	2079	3253	-6.00	35.71	-0.581	121.5
6L	180.2	2007	3141	-5.66	33.53	-0.548	112.8
6L	173.8	1936	3029	-5.34	31.31	-0.517	104.3
6L	167.4	1864	2917	-5.02	29.22	-0.486	96.3
6L	160.9	1792	2805	-4.71	27.26	-0.456	88.6
6L	154.5	1720	2692	-4.42	25.44	-0.428	81.5
6L	148.1	1649	2580	-4.13	23.74	-0.400	74.8
6L	141.6	1577	2468	-3.86	22.11	-0.374	68.7
6L	136.6	1521	2381	-3.66	20.87	-0.354	64.2
5L	136.6	1755	2381	-3.81	20.99	-0.369	79.3
5L	135.2	1736	2356	-3.75	20.64	-0.363	77.6
5L	128.7	1654	2244	-3.49	19.15	-0.338	70.4
5L	122.3	1571	2131	-3.24	17.72	-0.314	63.7
5L	115.9	1488	2019	-3.01	16.32	-0.291	57.7
5L	109.4	1406	1907	-2.79	15.30	-0.270	52.4
5L	103.0	1323	1795	-2.58	14.19	-0.250	47.4
5L	97.5	1253	1700	-2.41	13.23	-0.233	43.3
4L	97.5	1700	1700	-2.79	15.24	-0.269	69.4
4L	96.6	1683	1683	-2.75	15.14	-0.266	68.1
4L	90.1	1571	1571	-2.54	14.35	-0.245	60.2
4L	83.7	1458	1458	-2.33	13.21	-0.225	52.9
4L	77.2	1346	1346	-2.14	11.77	-0.206	46.0
4L	70.8	1234	1234	-1.96	10.88	-0.190	40.1
4L	66.0	1150	1150	-1.83	9.89	-0.177	35.4
3L	66.0	1643	1150	-2.33	8.77	-0.224	58.8
3L	64.4	1603	1122	-2.27	8.39	-0.218	55.9
3L	57.9	1443	1010	-2.04	7.02	-0.196	45.6
3L	51.5	1282	897	-1.84	5.85	-0.176	36.9
3L	47.9	1192	834	-1.73	5.22	-0.166	32.4
2L	47.9	1590	834	-2.41	8.82	-0.229	55.5
2L	45.1	1497	785	-2.28	7.93	-0.216	49.4
2L	38.6	1283	673	-2.02	6.45	-0.192	37.6
2L	32.2	1069	561	-1.76	5.00	-0.167	27.1
2L	30.1	1001	525	-1.69	4.58	-0.160	24.2
2C	30.1	650	525	-1.46	8.40	-0.138	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	197.6	2200	3443	-9.97	487.05	-0.962	604.8
6L	193.1	2151	3366	-9.80	485.48	-0.946	598.4
6L	186.7	2079	3253	-9.57	483.26	-0.924	589.3
6L	180.2	2007	3141	-9.36	481.09	-0.904	580.6
6L	173.8	1936	3029	-9.17	478.88	-0.885	572.1
6L	167.4	1864	2917	-8.99	476.79	-0.868	564.1
6L	160.9	1792	2805	-8.84	474.84	-0.854	556.4
6L	154.5	1720	2692	-8.72	473.02	-0.842	549.3
6L	148.1	1649	2580	-8.62	471.33	-0.833	542.7
6L	141.6	1577	2468	-8.55	469.71	-0.826	536.5
6L	136.6	1521	2381	-8.52	468.48	-0.823	532.1
5L	136.6	1755	2381	-8.68	468.61	-0.838	547.2
5L	135.2	1736	2356	-8.67	468.26	-0.837	545.5
5L	128.7	1654	2244	-8.65	466.78	-0.835	538.2
5L	122.3	1571	2131	-8.68	465.36	-0.837	531.6
5L	115.9	1488	2019	-8.74	463.98	-0.844	525.6
5L	109.4	1406	1907	-8.86	462.98	-0.855	520.4
5L	103.0	1323	1795	-9.03	461.88	-0.871	515.4
5L	97.5	1253	1700	-9.22	460.94	-0.890	511.3
4L	97.5	1700	1700	-9.60	462.95	-0.923	537.4
4L	96.6	1683	1683	-9.64	462.85	-0.926	536.1

4L	90.1	1571	1571	-9.89	460.55	-0.950	526.6
4L	83.7	1458	1458	-9.68	427.53	-0.930	485.9
4L	77.2	1346	1346	-9.49	394.22	-0.912	445.7
4L	70.8	1234	1234	-9.31	361.46	-0.895	406.5
4L	66.0	1150	1150	-9.17	336.60	-0.882	376.9
3L	66.0	1643	1150	-9.68	335.48	-0.925	400.3
3L	64.4	1603	1122	-9.62	327.11	-0.919	389.0
3L	57.9	1443	1010	-9.39	293.86	-0.897	345.4
3L	51.5	1282	897	-9.18	260.82	-0.877	303.4
3L	47.9	1192	834	-9.07	242.16	-0.867	280.0
2L	47.9	1590	834	-9.76	245.75	-0.923	303.2
2L	45.1	1497	785	-9.09	214.96	-0.860	265.7
2L	38.6	1283	673	-7.32	144.78	-0.694	182.2
2L	32.2	1069	561	-5.62	89.10	-0.533	115.0
2L	30.1	1001	525	-5.11	74.37	-0.485	97.2
2C	30.1	650	525	-4.88	78.19	-0.461	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	3.077	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	36.0	2200	627	-5.04	16.09	-0.451	112.5
1L	32.2	1969	561	-4.44	13.00	-0.397	88.0
1L	25.7	1575	449	-3.49	8.48	-0.313	54.3
1L	19.3	1181	337	-2.81	5.57	-0.252	32.3
1L	13.3	811	231	-2.33	3.51	-0.209	18.0
1C	13.3	650	231	-1.83	2.62	-0.161	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/sec ²)	Wheel Power (kW)
1L	36.0	2200	627	-9.76	130.26	-0.856	231.8
1L	32.2	1969	561	-8.32	97.09	-0.730	175.9
1L	25.7	1575	449	-6.04	52.81	-0.531	100.7
1L	19.3	1181	337	-4.17	23.24	-0.367	50.7
1L	13.3	811	231	-2.69	6.77	-0.237	21.4
1C	13.3	650	231	-2.19	5.88	-0.193	16.7