

In 'FLAT OUT' No. 21 (Feb./Mar. '92) Peter Davies wrote an article about a Visa-engined Lomax that he had built utilising the four speed gearbox from an early 1015cc GS. This gearbox was selected because the ratios are higher than those of the Dyane/Ami or 2CV gearboxes, but still capable of being pulled by a tuned 602cc or 652cc Visa engine. This set me thinking, and I calculated the gearing table opposite to see what the road speed in various gears would be with the GS gearbox fitted. Bearing in mind that maximum power is developed at 5750rpm and torque at about 4200rpm, this gives a theoretical cruising speed of over 60mph!

TYRES 125 x 15 RADIAL

1015cc GS Gearbox

Gear	Ratio x Diff.	Ratio = Overall Ratio	MPH @ 1000rpm	MPH @ 2000rpm	MPH @ 3000rpm	MPH @ 4000rpm	MPH @ 5000rpm	MPH @ 6000rpm	MPH @ 7000rpm	MPH @ 8000rpm
1st	3.82 x	4.375 = 16.7125	4.0825	8.1650	12.2475	16.3301	20.4125	24.495	28.5775	32.6603
2nd	2.38 x	4.375 = 10.4125	7.6251	15.302	22.8753	30.5004	38.1255	45.7606	53.3757	61.0008
3rd	1.52 x	4.375 = 6.65	10.26	20.52	30.7802	41.0403	51.3004	61.5604	71.8205	82.0806
4th	1.12 x	4.375 = 4.9	13.9243	27.848	41.7731	55.6975	69.6219	83.5463	97.4707	111.3951

602cc Dyane and Ami 8 Gearbox

Gear	Ratio x Diff.	Ratio = Overall Ratio	MPH @ 1000rpm	MPH @ 2000rpm	MPH @ 3000rpm	MPH @ 4000rpm	MPH @ 5000rpm	MPH @ 6000rpm	MPH @ 7000rpm	MPH @ 8000rpm
1st	5.748 x	3.875 = 22.2735	3.0632	6.1265	9.1897	12.2530	15.3163	18.3795	21.4428	24.5060
2nd	2.934 x	3.875 = 11.36925	6.0012	12.0024	18.0037	24.0049	30.0061	36.0074	42.0086	48.0098
3rd	1.923 x	3.875 = 7.4516	9.1563	18.3127	27.4691	36.6254	45.7818	54.9382	64.0945	73.2509
4th	1.350 x	3.875 = 5.23125	13.0426	26.0853	39.1280	52.1707	65.2134	78.2560	91.2987	104.3414

602cc 2CV6 Gearbox

Gear	Ratio x Diff.	Ratio = Overall Ratio	MPH @ 1000rpm	MPH @ 2000rpm	MPH @ 3000rpm	MPH @ 4000rpm	MPH @ 5000rpm	MPH @ 6000rpm	MPH @ 7000rpm	MPH @ 8000rpm
1st	5.202 x	4.125 = 21.4582	3.1796	6.3592	9.5389	12.7185	15.8982	19.0778	22.2575	25.4371
2nd	2.656 x	4.125 = 10.956	6.2275	12.4551	18.6825	24.91	31.1375	37.365	43.5925	49.82
3rd	1.785 x	4.125 = 7.3631	9.2264	18.5328	27.7992	37.0656	46.3320	55.5984	64.8649	74.1313
4th	1.315 x	4.125 = 5.4243	12.5784	25.1569	37.7354	50.3139	62.8924	75.4709	88.0494	100.6279

652cc Visa Gearbox

Gear	Ratio	Diff. Ratio	Overall Ratio	MPH at 1,000 RPM	MPH at 2,000 RPM	MPH at 3,000 RPM	MPH at 4,000 RPM	MPH at 5,000 RPM	MPH at 6,000 RPM	MPH at 7,000 RPM	MPH at 8,000 RPM
1st	4.545	x 4.125 =	18.7254	3.6442	7.2884	10.9326	14.5768	18.221	21.8652	25.5094	29.1536
2nd	2.500	x 4.125 =	10.3125	6.6171	13.2342	19.8513	26.4684	33.0855	39.7026	46.3197	52.9368
3rd	1.642	x 4.125 =	6.7650	9.8959	19.7818	29.6877	39.5836	49.4795	59.3754	69.2713	79.1672
4th	1.147	x 4.125 =	4.703	14.5095	29.019	43.5285	58.038	72.5475	87.057	101.5665	116.076

652cc Visa Gearbox with 1015cc Diff. Fitted

Gear	Ratio	Diff. Ratio	Overall Ratio	MPH at 1,000 RPM	MPH at 2,000 RPM	MPH at 3,000 RPM	MPH at 4,000 RPM	MPH at 5,000 RPM	MPH at 6,000 RPM	MPH at 7,000 RPM	MPH at 8,000 RPM
1st	4.545	x 4.375 =	19.8844	3.4317	6.8634	10.2951	13.7268	17.1585	20.5902	24.0219	27.4536
2nd	2.500	x 4.375 =	10.9375	6.2390	12.4780	18.7170	24.956	31.195	37.434	43.673	49.912
3rd	1.642	x 4.375 =	7.1384	10.0870	20.174	30.261	40.348	50.435	60.522	70.609	80.696
4th	1.147	x 4.375 =	5.0181	13.5985	27.197	40.7955	54.394	69.9925	81.591	95.1895	108.788

I often get calls asking me how to calculate the road speed of cars with different gear ratios. I thought you might like this little article for 'Hints & Tips'.

Gear box and final drive ratios are quoted in the form of a number such as '3.1:1'. In the case of the final drive of the differential this means that the propeller shaft turns 3.1 time for every revolution of the road wheels. Similarly, for a gear in the gear box with a ratio of '2.8:1' the engine will turn 2.8 times for every prop-shaft revolution.

To calculate the final effect at the road wheels of this combination simply multiply the two ratios i.e. $2.8 \times 3.1 = 8.689$ (The overall gear ratio) the road wheels turn once for every 8.68 revs of the engine. An easy way to calculate the road speed in any gear is to use the formulae:-

$$\frac{\text{R.P.M.} \times \text{tyre circumference}}{\text{overall gear ratio} \times 1036}$$

The tyre circumference should be calculated using a measurement taken from the centre of the tyre to the ground, and it should be noted that this will be different from the measurement taken across the tyre with it under load.