**Rear Axles**

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| The two splines in the drive unit called pinion and crownwheel define the ratio on a rear axle. The number of splines on pinion and crownwheel and their relation to eachother sets the ratio. Take for example the ratio 4.1:1 in which the entering axle (pinion with the propeller shaft) has 10 splines and the exiting axle (crownwheel with drive shaft and rear wheels) has 41 splines. The pinion will then rotate 41/10 (=4.1) times for every round the wheels rotate. | http://www.volvoamazonpictures.se/powertrain/images/273129.jpg |

Both the rear axles and their ratios have varied with model years and editions. The rear axle ratios found on Volvo Amazon are 4.56:1, 4.55:1, 4.3:1 and 4.1:1\*. The first model years, with the B16 engine (1957 - 1961), have rear axles from ENV and Spicer (model 23) with the ratio 4.56:1. The cars were randomly fitted with rear axles of both brands without any apparent order, although the spare parts catalogue lists what chassis numbers got what brand. With the B18 engine (1962) the ratio is changed on cars without overdrive (both 121 and 122 S) to 4.1:1\* while cars with overdrive (122 S ordered with M41) keeps the ratio 4.56:1. The brands are still ENV\* and Spicer (now model 27); again the spare parts catalogue lists what chassis numbers were fitted with what axle. The rear axle mantle is changed on the ENV axis during model year 1964 to fit the drive units from the Spicer axle. The Spicer 27 rear axle (and later Spicer 30) was also manufactured by Hayes from late model year 1964. The American axle and driveshaft manufacturer Spicer Corp. was renamed to Dana Corp. in 1928 when the company relocated from New Jersey to Toledo, Ohio while many of the products kept the name Spicer for several decades. Spicer 27, 30, etc. are in other words identical with Dana 27, 30, etc.

When the Estate (P 220) is introduced during 1962 it comes with a rear axle from Salisbury with the ratio 4.55:1. Later during the manufacturing of the Estate (about 1965) Volvo starts buying rear axle drive units from one additional supplier, and this drive unit has the ratio 4.56:1. Both drive units are kept on stock under the same part number and are mounted randomly in the Salisbury axle latest up to and including model year 1968. The new Spicer 30 is mounted in the Estate during model year 1965 (from chassisnumber 26228) but only comes with the ratio 4.56:1. The practical difference between the ratios 4.55:1 and 4.56:1 is ofcourse limited, and Volvo has different data on what ratio the Estate had 1962 - 1968, for instance several sales brochures state 4.56:1 1962 - 1968 while mechanical shop literature state 4.55:1 1962 - 1967.

The Spicer 30 axle starts replacing the older Spicer 27 on the four door version (P 120) and two door version (P 130) from week 5 1966, still with the ratio 4.56:1 on cars with overdrive (some 122 S 1966 - 1967 and all 123 GT 1967 - 1968) and with 4.1:1 on all others. During model year 1967 (week 48 1966) Volvo starts mounting a their own version of Spicer 30 in the P 130 that they also produce themselves, mixed with Spicer and Hayes manufactured axles. This axle is called Volvo 1030, where 10 indicates Volvo, but is identical to Spicer 30 and Hayes when it comes to parts. The 1030 axle stuck around until the late 1980s on the 240- and 740-series (ofcourse with different suspension and brake equipment). With the model year 1969 the ratio is changed again in the Estate and on the few cars delivered with overdrive 1969 - 1970 (123 GT) when it is reduced to 4.3:1, the other cars keep 4.1:1 to the bitter end.

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| **Body** | **Model year** | **Edition** | **Engine** | **Gearbox** | **Rear axle** | **Ratio** |
| P 120 | 1957 - 1961 | 121, 122 S | B16 A, B16 B | H6, M4, M30, M31, M40, M41 | ENV, Spicer 23 | 4.56:1 |
|  | 1962 - 1965 \*\* | 121, 122 S | B18 A, B18 D | M30, M40, BW35 | ENV \*, Spicer 27, Hayes | 4.1:1 |
|  | 1962 - 1965 \*\* | 122 S | B18 D | M41 | ENV, Spicer 27, Hayes | 4.56:1 |
|  | 1966 | 121, 122 S | B18 A, B18 D | M30, M40, BW35 | Spicer 27, Spicer 30, Hayes | 4.1:1 |
|  | 1966 | 122 S | B18 D | M41 | Spicer 27, Spicer 30, Hayes | 4.56:1 |
|  | 1967 \*\*\* | 121, 122 S | B18 A, B18 D, B18 B | M30, M40, BW35 | Spicer 30, Hayes | 4.1:1 |
| P 130 | 1962 - 1965 | 121, 122 S | B18 A, B18 D | M30, M40, BW35 | ENV \*, Spicer 27, Hayes | 4.1:1 |
|  | 1962 - 1965 | 122 S | B18 D | M41 | ENV, Spicer 27, Hayes | 4.56:1 |
|  | 1966 \*\* | 121, 122 S | B18 A, B18 D | M30, M40, BW35 | ENV \*, Spicer 27, Spicer 30, Hayes | 4.1:1 |
|  | 1966 \*\* | 122 S | B18 D | M41 | ENV, Spicer 27, Spicer 30, Hayes | 4.56:1 |
|  | 1967 - 1968 \*\*\* | 121, 122 S | B18 A, B18 D, B18 B | M30, M40, BW35 | Spicer 30, Hayes, Volvo 1030 | 4.1:1 |
|  | 1967 - 1968 \*\*\* | 123 GT | B18 B | M41 | Spicer 30, Hayes, Volvo 1030 | 4.56:1 |
|  | 1969 - 1970 | 121, 122 S | B20 A, B20 B | M40 | Spicer 30, Hayes, Volvo 1030 | 4.1:1 |
|  | 1969 - 1970 | 123 GT | B20 B | M41 | Spicer 30, Hayes, Volvo 1030 | 4.3:1 |
| P 220 | 1962 - 1964 | 121, 122 S \*\*\*\* | B18 A, B18 D | M40 | Salisbury | 4.55:1 |
|  | 1965 - 1968 | 121, 122 S | B18 A, B18 D | M40, BW35 | Salisbury, Spicer 30 | 4.55:1, 4.56:1 |
|  | 1969 | 121, 122 S | B20 A, B20 B | M40 | Spicer 30 | 4.3:1 |

Simply put: P 120 with the B16 engine (1957 - 1961) has the rear axle ratio 4.56:1. P 120 and P 130 with the B18 engine (1962 - 1968) and overdrive transmission has the ratio 4.56:1 (including the 123 GT). P 120 and P 130 with the B18 or B20 (1962 - 1970) engines that do not have overdrive has the ratio 4.1:1. The few P 130 with the B20 engine and overdrive (only the 123 GT) produced 1969 - 1970 has the ratio 4.3:1. P 220 Estate 1962 - 1964 has the ratio 4.55:1. In 1965 - 1968 it's mixed 4.55:1 and 4.56:1. The last model year (1969) the P 220 gets the ratio 4.3:1.

Volvo Amazon was available with limited slip differential ("anti-spin") on the rear axle on all editions, but this was an option that the customer had to pay extra for. Volvo Amazon in Swedish Police edition has limited slip differential on all cars (P 120, P 130 and P 220). The 123 GT came with limited slip differential as standard equipment on some markets (not Sweden). See for instance [this specification](http://www.volvoamazonpictures.se/fredrik/Can_123_Specs.jpg) from a reseller in Canada (concerns 123 GT model year 1968 produced at the Halifax plant, type designation 133951P). Limited slip differential was sold as accessory by Volvo and can be retro-fitted.

\* The ENV axle with stated ratio 4.1:1 actually has 45/11 (i.e. 4.09:1) but has been rounded off to 4.1:1 by Volvo. This lacks practical meaning, just like the Salisbury axle's 4.56:1 or 4.55:1.
\*\* ENV was fitted in the P 120 up to chassis number 182155 (roughly half of model year 1965) and in the P 130 up to chassis number 149917 (early model year 1966).
\*\*\* The axles get a more stable attachment on the P 120 and P 130 from model year 1967 that does not fit on earlier model years.
\*\*\*\* P 220 in 122 S edition from model year 1963 (only on some markets, including USA).

Quelle: http://www.volvoamazonpictures.se/powertrain/powertrain.php