



MINI SPARES CENTRE LTD

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C-AEA527 DUAL VALVE SPRINGS FITTING INSTRUCTIONS.

This valve spring set has been developed to fit standard sized top caps, and cope with racing rpm and high valve lifts without crushing of up to 0.570" without modifications, when fitted to a cylinder head that has standard or near standard valve spring heights. However, where possible, it is always advantageous to correct and match the valve spring heights (measured from the spring seat in the head to the underside of the spring retainer cap), as these will vary, particularly where new valve seats are cut. The standard heights for pre-A+ heads are approximately 1.375" to 1.38" for small-bore types, 1.40" to 1.42" for large-bore types, and A+ heads 1.42" to 1.44" for small-bore types and 1.35"-1.37" for large-bore types. However, it must be stressed that these values are entirely dependant on the components used and machined condition of the head. Adjustments can be made by machining the spring seats, using shims of varying thickness or a mixture of both to achieve equalisation.

At 1.40" fitted height, these springs will give a seat load of approximately 82.08Lbf/in (80-90Lbf/in being preferred for race use). To calculate different loads for different height add/subtract 3.23Lbf/in per 0.010" difference - for either seat or valve lift at the tip values.

To calculate approximate seat load at 1.35" fitted length -

$$1.40" - 1.35" = 0.050"$$

$$0.050" \text{ divided by } 0.010" = 5$$

$$5 \times 3.23\text{Lbf/in} = 16.15\text{Lbf/in}$$

Therefore new seat load at 1.35" will be -

$$82.08\text{Lbf/in} + 16.15\text{Lbf/in} = 98.23\text{Lbf/in}$$

To calculate approximate load at the valve tip at any given valve lift - for example 0.500" -

$$0.500" \text{ divided by } 0.010" = 50$$

$$50 \times 3.23\text{Lbf/in} = 161.5\text{Lbf/in}$$

Therefore load at 0.500" valve lift, where fitted height is 1.40", will be -

$$161.5\text{Lbf/in} + 82.08\text{Lbf/in} = 243.58\text{Lbf/in}$$

Note: Valve lift value will obviously change with change in fitted height load, so make this calculation first. Rocker gear ratio will also alter over-all rate/load as seen by the cam/follower. To assess this, multiply valve tip load by actual rocker ratio - i.e. for 1.5 actual ratio with above 0.500" value - $1.5 \times 243.58\text{Lbf/in} = 365.37\text{Lbf/in}$.

It is ABSOLUTELY ESSENTIAL that the fitted height is NOT LESS than 1.42". This will give a seat pressure of approximately 75Lbf/in - the absolute minimum advised for race use.

