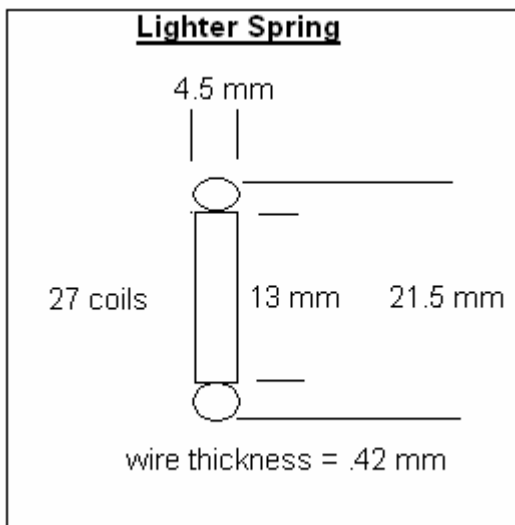
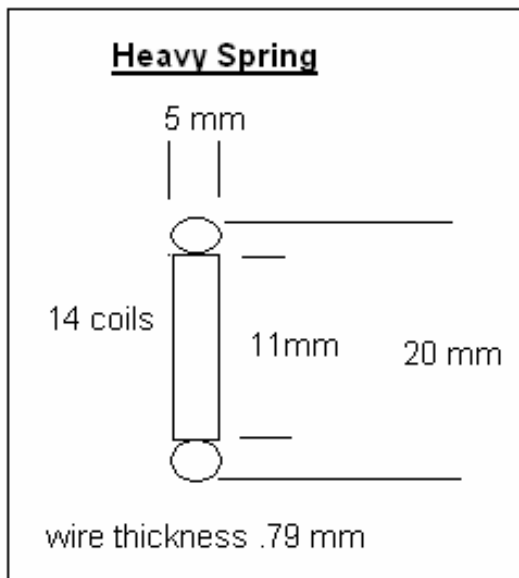


SPARK ADVANCE CALIBRATION

Bill Rogers

www.isettaofsc.homestead.com

For most of us, a simple cleaning and re-lubrication of the advance unit is all that is necessary. In some remote cases, the advance unit springs may become damaged and require replacement. The advance unit on the 600 uses two different springs. The spring located near the tension plate (the adjustable plate mounted just above one of the springs on the advance) is much stronger than the other spring located on the opposite side of the advance. The stronger spring is very close in dimensions and resistance to the spring used on the Isetta 300. Below are the dimensions of the stronger and weaker springs:



Prior to attempting any adjustments you should disassemble, clean and re-lubricate the unit with light-weight grease.

In the event you must substitute a non original spring for the advance unit, it will be necessary to calibrate the unit to some resemblance of its original specifications. The process described in this procedure will not duplicate the exact curve or tolerance specified by the factory, but it will provide you with good performance.

The specifications in this document are for the BMW 600 only and are not meant to be used on the Isetta 300. A very similar procedure can be obtained in the 2002 Minutia Volume 10 – Number 3 – Summer publication. In that publication, John Jensen outlines how this can be done for the Isetta 300 advance unit.

First you need some means to mount the advance unit so that the counter-weights and move freely. Since I had a number of advance units I needed to check, I decided to fabricate a bracket to hold the units. I made it from a scrap piece of 2" x 1/4" flat plate. I drilled three 1/4" diameter holes in the plate to hold the advance unit. The two holes at the top are 1 – 7/16" from center to center. The lower hole is exactly center of the upper holes and exactly 1 – 7/16" below the center line of the upper holes.



With the bracket mounted in a vice I bolted the advance unit to this bracket using (3) 6mm x 15mm cap screws.

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Now you need to make an arm for connecting either weights or a gauge to measure the resistance to movement. I used a 1 - 1/2" x 1/2" piece of wood 8" long. Measure the center of this piece very carefully and then measure in each direction away from the center exactly 13/16". Place two small finishing nails directly in the center of the board at these locations. See photo below:



On the opposite side of the board, 3" from the center, install another nail for the purpose of hanging weights or installing a spring gauge. (In the picture below, I only installed a nail for the purpose of a spring gauge. If you intend to use weights, place the nail on the other end of the board, exactly 3" out from the center. Also, the three holes spaced evenly in the board are not necessary - I put them there to hold the cap screws when I'm not using the calibration unit.)



Using an appropriate size hose clamp, clamp the board with the two finishing nails to the cam part of the advance. Be careful not to allow the wooden board to drag on the center of the advance which does not rotate.



Prior to tightening the clamp completely, make sure the advance is in the full retard position. Adjust the board so that it is at an 11 degree incline as show in the picture on the next page. Full advance on the unit is 22 degrees. This will allow mid-advance to occur with the board exactly level.

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Now either using weights (on the left) or a spring gauge (on the right as shown in this document), check the amount of weight it takes to move the board to the "level" or 1/2 advance position. This should be approximately 3 oz.



With the unit fully advanced it should require between 15 and 16 ozs of force.



If the unit is found to be out of calibration at the lower end try adjusting the lighter spring first. At the upper end the tension plate is the best adjustment to make. Once any adjustment is made, you should go back and check that the advance unit will return to the full retard position and that the other 2 positions are close to tolerance. I highly recommend you mark the unit prior to starting so that you can back out of any adjustment made if necessary. If you have only replaced one spring, I would suggest you not attempt to make any adjustments on the other springs adjustments unless it is absolutely necessary.

Again, with stock springs, this adjustment should not be necessary unless someone has damaged one or both springs. If you are substituting springs, the Isetta 300 spring will work well for the heavier spring. If the lighter spring is damaged, McMaster Carr does have a spring that is close, but I have never purchased one. For your information the part number in the McMaster Carr catalog is **9044K15**. This spring is a made of a little heavier wire and has the following specifications:

Material	Steel Music Wire
Ends	Full Twist Loop
Length Inside Ends	7/8"
Outside Diameter	.180"
Outside Diameter Tolerance	±.002"
Wire Diameter	.018" (600's is .016")
Load	1.522 lbs.
Deflection at Load	1.120"
Deflection at Load Tolerance	±7.5%
Rate	1.080 lbs./inch
Rate Tolerance	±5%
Initial Tension	.317 lbs.

I make no guarantees of the suitability of this spring for the advance unit's lighter spring.

The heavier spring can be obtained from most Isetta parts sources as the Isetta 300 spring.