



Fermilab

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Coil Size and Shimming of DSA Series Outer Coil ¹

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The coil size of 50mm short magnets are controlled by the key size and the bar size of the tooling. Since we had a little too large pressure in outer coil and too small pressure in inner coil, the change of the tooling parameter was made recently. The first change is due to the key size which was made between 1M-50-118 and 1M-50-119. The new key is 5 mil larger than previous one. Therefore, coils after 1M-50-119 is expected to be smaller by 5mil. The attached figure is the size distribution of these coils. The measured data are marked with using the last digit character of the coil number in the Figure. The change of the size is clearly seen in the figure. The second change was made by cutting the thickness of the tooling bar by 3 mil. This was made between 1M-50-220 and 1M-50-221. Although, the change in the coil size is not so clear for this modification. This could be because of the change of cable size which happened to take place at the same time with the change of the bar size. Since the current target oversize of the coils are 10 mil for inner coil and 0 mil for outer coil, we should like to change it again. The tooling bar was machined by another 7 mil *i.e.* 10 mil in total so that we can control the coil size by the change of the shim size underneath the tooling bar. The winding for next magnet (DSA326) should be performed with 4 mil shim.

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Outer Coils @ 12 ksi

