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KEY WORD: OPEN COIL SPRING/FORCE CHARACTERISTIC

PICHAN SUKCHAROEN : A COMPARATIVE STUDY OF FORCE CHARACTERISTICS OF OPEN COIL SPRINGS. THESIS ADVISOR : ASSI. PROF. RUCKPORN LAOSUTTIWONGS, THESIS Co-ADVISOR : NIRAMON CHAMNANNITIATT, 127 pp. ISBN 974-584-406-3

The purposes of this reserch were to study and compare open coil springs force productions, size of the springs were 0.010 x 0.030 inches when they were compressed 1/4, 1/3 and 1/2 of each original length 10, 15 and 20 mm. These springs were made from alloys containing elgiloy, chrome alloy, stainless steel and nitanium (nickle-titanium). Testing was performed on an universal testing machine using 0.018 inch round stainless steel arch wire.

The results were as follows :

1. The open coil springs size of 0.010 x 0.030 inches were made of alloys containing elgiloy, chrome alloy, stainless steel and nitanium at the length of 10, 15 and 20 mm. The force productions when the springs were compressed at 1/4, 1/3 and 1/2 of the initial length from each sample group were different. The more open coil springs were compressed, the more force productions were measured. Stainless steel spring gave the maximum force followed by chrome alloy spring and elgiloy spring. The minimum force was given by nitanium spring.

2. Statistically significant differences were noted at  $p < 0.05$  in all groups of alloys in this study at the length of 10, 15 and 20 mm. when the open coil spring were compressed at 1/4 and 1/3 of the initial length. There was no significant difference at  $p < 0.05$  in force productions for open coil spring made from stainless steel at the length of 15 and 20 mm. and nitanium at the length of 10 and 15 mm.

3. The relationship between the length of the open coil spring and the amount of measured force was the longer the spring, the higher the force except elgiloy spring of 15 and 20 mm.