

**Lavenone, 17/07/2017**

**To whom it may concern**

**RE: duration tests of spring-loaded roses**

Dear business relation,

We hereby inform you that the following spring-loaded roses are periodically subjected to **internal** tests to proof their resistance according to the **DIN EN 1906** standard.

- Oval roses 30x60 with right-left spring
- Round roses d.45x7 with right-left spring
- Round bulged roses d.47,5x11 with right-left spring
- Round roses d.45x9 with right-left spring
- Square roses q.45x45x10 with right-left spring
- Round roses d.50x5 with right or left spring
- Square roses q50x50x5 with right or left spring
- Round roses d.50x7 with right-left spring
- Square roses q50x50x7 with right-left spring
- Round roses d.50x10 with right-left spring
- Square roses q.50x50x10 with right-left spring
- Round roses d.52x10 with right-left spring

Below you find some testing parameters:

- rotation angle of the spring: 35°
- cycle time: 3 seconds

We perform our tests both with and without the application of lubricant. The use of lubricant is not excluded by the DIN standard and we know that the specialized testing laboratories apply it abundantly whilst testing handles. Our springs are always greased diffusely, but in mass and without excess, to avoid leakage of the lubricant.

We herewith declare that the springs used by us, under the above mentioned conditions, reach the intermediate reference of totally 200.000 cycles, without causing deformations to the spring itself and the plastic part. In 3% of the cases the reached target is between 100.000 and 200.000 cycles.

Best regards,

atp di f. garzoni



**atp di f. garzoni**  
I 25070 Lavenone (B)  
Via del Tram, 8  
p. Iva IT 00232730986  
c.f. GRZFN046T07E497L  
fax 0365 823054

X ATP  
*Sabina Marzetti*

info@atp.it