

30 August 2018



Since Carbinite Metal Coatings was started in 1997, approximately 43% of our business has consisted of workholding applications. Over 2/3 of our workholding orders are from long-term, repeat customers. While these numbers are significant, our existing and prospective customers are discerning. They want hard data that can back-up our claims that Carbinite's textured tungsten-carbide coating does increase the coefficient of friction, reducing or eliminating slippage of parts in workholding applications.

Carbinite is launching a new series of tests on workholding applications to give our customers this data. The first in our series of tests, the Collet Performance Test, has been completed and we are excited to share the results.

Application: Collets

Carbinite's founder and Chief Technical Officer, Rob Freyvogel, devised a test to determine the amount of torque required to cause steel and aluminum parts to slip in a standard, uncoated (smooth) collet versus identical collets coated with Carbinite. It is important that this test be under real-world conditions similar to how our customers use collets.

Testing Parameters

1

CNC

HAAS SL20

Draw Bar:
60 and 110 psi

2

Materials

4140 Steel

6061 T6
Aluminum

3

Measurement

AC Delco
Torque
Adaptor
ARM602-4

4

Collets

Lyndex
16C
Ø 7/8"

5

Carbinate

Grade W+
(emery grit 220)
Grade #2
(emery grit 100)

Procedure

Test 1: Set the CNC machine to 60 psi draw bar pressure for the light pressure test.

A: Install the smooth, uncoated collet.

B: Place the aluminum specimen and clamp.

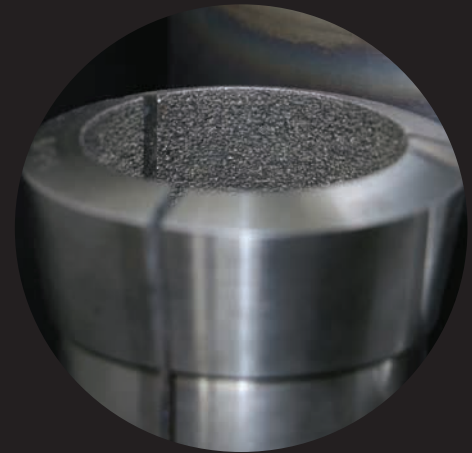
C: Record the amount of torque needed for the part to begin slipping (average of three readings).

D: Repeat the procedure using the steel specimen.

E: Install the collet coated with Carbinate W+ and repeat the procedure, using new steel and aluminum specimens to ensure accuracy.

F: Repeat the procedure using the collet coated with Carbinate #2.

Test 2: Change the CNC machine draw bar pressure to 110 psi for the moderate pressure test. Duplicate steps A-F.



Results

*Average of three torque readings needed to cause the part to slip.

Light Test - 60 psi Draw Bar Pressure



Moderate Test - 110 psi Draw Bar Pressure



Comparison

Aluminum Parts

W+
2.59X

#2
4.13X

60 psi

W+
2.05X

#2
3.01X

110 psi

Steel Parts

W+
3.07X

#2
4.49X

W+
2.45X

#2
4.03X

In comparison with a smooth collet, results show between **2.05X and 4.49 X** more torque is needed for a part to slip in a Carbinite coated collet.

Contact



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