PIRELLI LORE

Walter Erbach took rightful exception to the Pirelli Lore material presented in the Nov. '68 INAV. His arguments were basically that a single test result was used to support a general statement; this is a valid objection. He also objected on the basis of tests that he conducted in the past, but I could not accept the test procedure he used. I have decided that my test erred in that the motor was not allowed to rest a minimum of 24 hours (see Sept. '68 INAV) and no effort was made to determine the state of breakin of the motor (no followup made at zero slack). As it stands, the curves presented gave a very good picture of loss of torque due to motor fatigue (or failure to return to original length).

In a long series of tests, I have found the following to affect torque curves: winding technique, amount of rest the motor has, speed of unwinding, speed of reading torque (how long you wait at each point to read torque) amount of breakin the motor has, and amount of slack in the motor before winding.

This series was begun in an attempt to define several characteristics of pirelli, and point the way to more efficient usage of pirelli, since no one has ever admitted knowing these things with enough certainty to tell others about it. In order to overcome several shortcomings in test procedures, I have outlined a better test program. However, such a program would entail far too much investment of time for me to undertake it, since a single test of a single motor represents the better part of an hour. I will furnish motors to anyone who will test them as outlined and return the results for inclusion in future INAV reports. The test can be designed to offset the differences between individual torquemeters and operators, and will yield much significant information. Meanwhile, the information below represents (once again) only a single test motor in each case and indicates a trend rather than an absolute quantity.

One of the most pressing questions raised over pirelli is whether to break-in the motor or just fly it in (fly the model with new rubber and then increase turns and/or shorten the motor as it breaks in). The graphs below give clear evidence that pirelli improves with break-in. Fig. 1 comes from Bob Platt - it shows the first wind and the seventh on an 18" (new) loop of .071 pirelli. The motor was wound to the same torque level each time; about 15 minutes was required to take each torque curve and the motor was allowed to rest 30 minutes before the next wind. Torque was taken with 12" between hooks - which is why the average sustaining torque is lower on the 7th wind (over 7" of slack). The 7th wind had 15% more energy and 22% more turns than #1 wind; average torque was .124 in. oz. for #1 and .122 in. oz. for #7.

Fig. 2 shows winds #1 and #5 on a 15" (new) motor run on 15" hook spacing. Again, extra turns and energy are apparent - note that the average torque is the same, but that wind #5 has a flatter and longer cruise portion. 24 hours rest between winds was allowed, giving somewhat less slack than for Fig. 1.

Fig. 3 gives the best news of all! Taken from the same motor as Fig. 2, it compares wind #1 and wind #6 - but the motor was shortened to the original 15" length and run on 15" hook spacing. Not only does the motor accept 7% more turns at the same torque, but the average torque is 13% higher and the slope of the cruise portion is less.

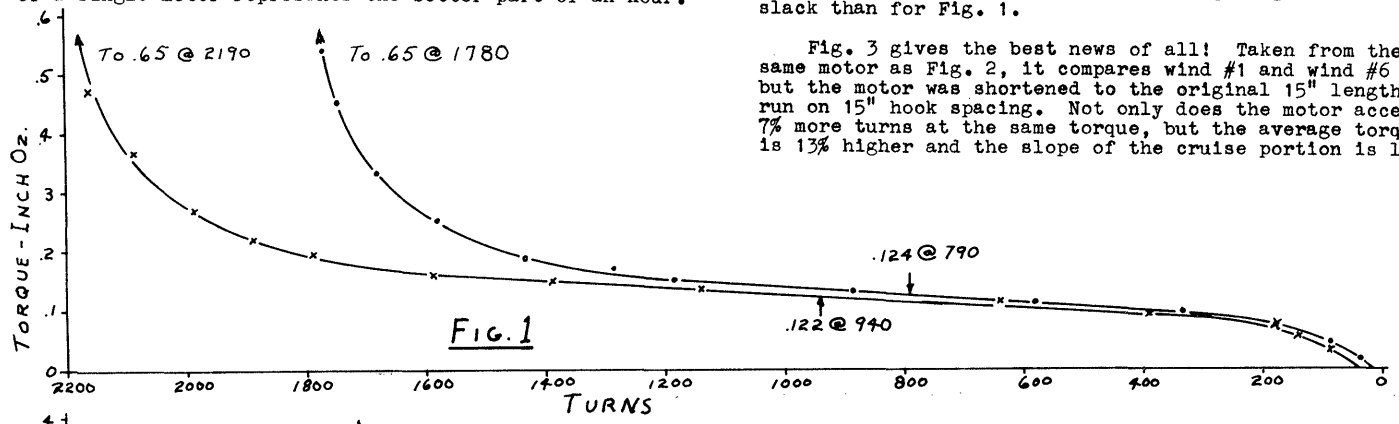

FIG. 1

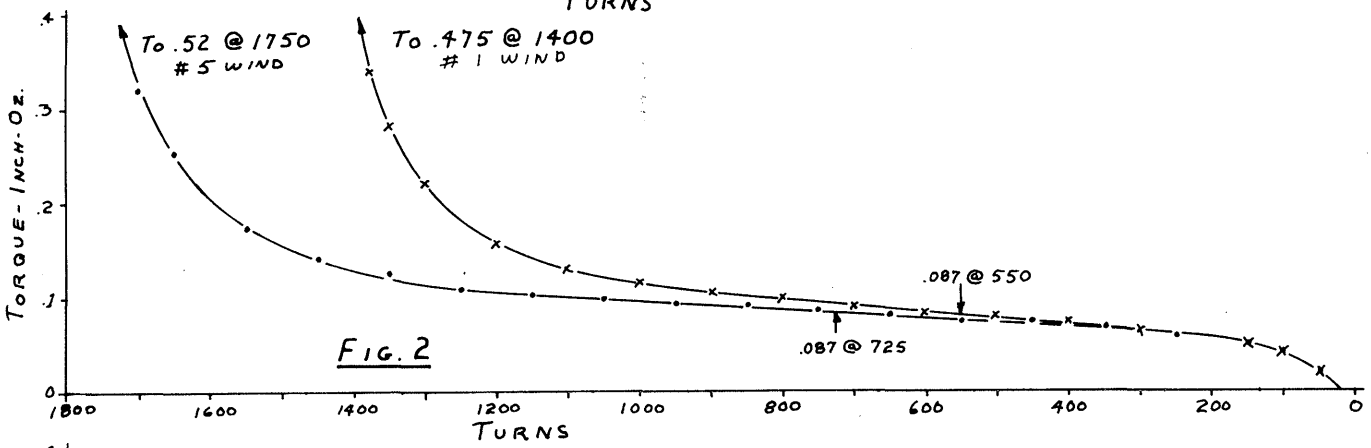

FIG. 2

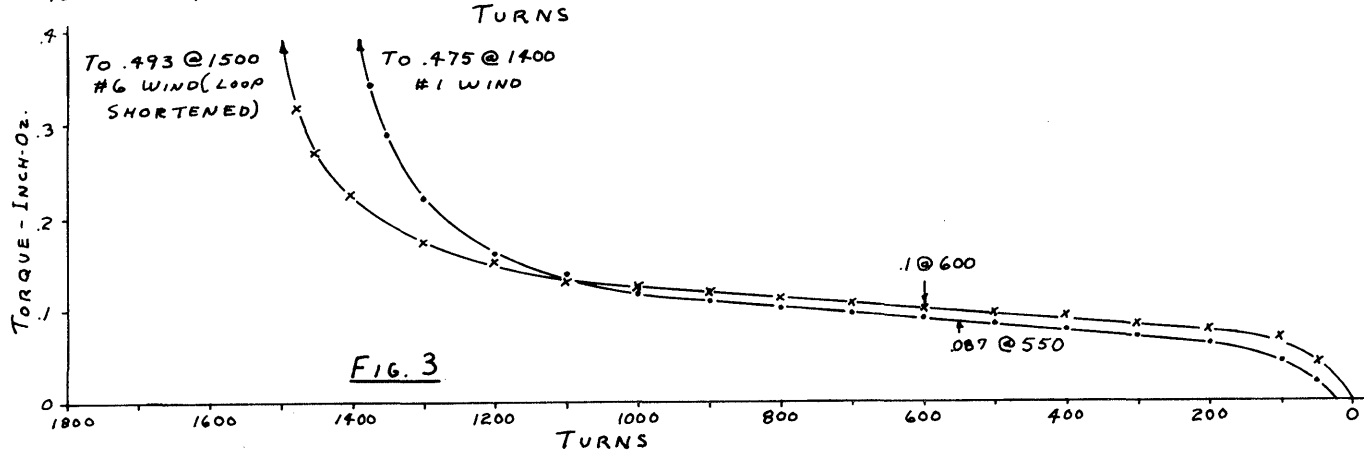

FIG. 3