Claims

1. Apparatus for fatigue or friction damping measurement testing a specimen (6) the apparatus comprising a body (2) having opposing arms (2a, 2b) defining between them a space for receiving the specimen, one of the opposing arms having a fixture (28) for securing the specimen, another of the opposing arms having a further fixture (12) for securing the specimen, the fixture and the further fixture being adjustable to increase or decrease the relative distance therebetween, wherein the body comprises an assigned vibration location to which excitation signals are applied during testing.

2. Apparatus according to claim 1, wherein the body is a single piece.

3. Apparatus according to claim 1 or claim 2, wherein the fixture comprises a slot (24) for receiving a portion of the specimen.

4. Apparatus according to any preceding claim, wherein the further fixture comprises a slot for receiving a portion of the specimen.

5. Apparatus according to claim 4, wherein the further fixture is mounted to its respective opposing arm by an actuator (10) which is adjustable to move the further fixture relative to its respective opposing arm.

6. Apparatus according to claim 5, wherein the actuator comprises a bolt having a thread which extends through the respective opposing arm and engages a complementary thread in a loading block, the loading block providing the further fixture.

7. Apparatus according to any preceding claim, wherein the assigned vibration location (15) comprises a hole having a screw thread for receiving an exciter.

8. Apparatus according to claim 7, comprising a plurality of vibration locations.

9. Apparatus according to claim 7, wherein the assigned vibration location is between the opposing arms.

10. Apparatus according to any preceding claim further comprising an exciter (20) engaged with the vibration location.

11. Apparatus according to claim 10, wherein the exciter comprises a tuned mass (18) and at least one piezoelectric element (20, 20b, 20c) to vibrate the tuned mass.

12. A method of testing a specimen in an apparatus as claimed in any preceding claim, the method comprising the step of securing a specimen to the apparatus and applying excitation signals to the assigned vibration location.

13. A method of testing according to claim 13, wherein a plurality of excitation signals are applied sequentially, at a plurality of different frequencies.

14. A method according to claim 12 or claim 13, further comprising the step of detecting the modal frequencies of the specimen.

15. A method according to any of claims 12 to 14, further comprising the step of recording the displacement of the specimen induced by the application of the excitation signals.

Claims

1. Apparatus for fatigue or friction damping measurement testing a specimen (6) the apparatus comprising a single piece body (2) having opposing arms (2a, 2b) defining between them a space for receiving the specimen, one of the opposing arms having a fixture (28) for securing the specimen, another of the opposing arms having a further fixture (12) for securing the specimen, the fixture and the further fixture being adjustable to increase or decrease the relative distance therebetween, wherein the body comprises an assigned vibration location to which excitation signals are applied during testing.

2. Apparatus according to claim 1, wherein the fixture comprises a slot (24) for receiving a portion of the specimen.

3. Apparatus according to any preceding claim, wherein the further fixture comprises a slot for receiving a portion of the specimen.

4. Apparatus according to claim 3, wherein the further fixture is mounted to its respective opposing arm by an actuator (10) which is adjustable to move the further fixture relative to its respective opposing arm.

5. Apparatus according to claim 4, wherein the actuator comprises a bolt having a thread which extends through the respective opposing arm and engages a complementary thread in a loading block, the loading block providing the further fixture.

6. Apparatus according to any preceding claim, wherein the assigned vibration location (15) comprises a hole having a screw thread for receiving an exciter.

7. Apparatus according to claim 6, comprising a plurality of vibration locations.

8. Apparatus according to claim 6, wherein the assigned vibration location is between the opposing arms.

9. Apparatus according to any preceding claim further comprising an exciter (20) engaged with the vibration location.

10. Apparatus according to claim 9, wherein the exciter comprises a tuned mass (18) and at least one piezoelectric element (20, 20b, 20c) to vibrate the tuned mass.

11. A method of testing a specimen in an apparatus as claimed in any preceding claim, the method comprising the step of securing a specimen to the apparatus and applying excitation signals to the assigned vibration location.

12. A method of testing according to claim 12, wherein a plurality of excitation signals are applied sequentially, at a plurality of different frequencies.

13. A method according to claim 11 or claim 12, further comprising the step of detecting the modal frequencies of the specimen.

14. A method according to any of claims 11 to 13, further comprising the step of recording the displacement of the specimen induced by the application of the excitation signals.