GLOBE™
BUSINESS FURNITURE, INC.

Quill Corporation
100 S. Schelter Rd.
Lincolnshire, IL 60069-9585

Dear Phil:

Maurice has asked that I respond to your letter of September 24, 1992 regarding Quill's requirements on quality standards. Our Engineering Department has reviewed these standards as they apply to Globe products.

First, B.I.F.M.A. standards have been used as a guideline in the past in determining a level of quality and safety of our products. Since these standards are voluntary and do not apply to all possible products or functions, we use them in conjunction with other criteria.

Due to the increased emphasis on product liability as well as basic quality, we are now requiring that all of our new products be subjected to full B.I.F.M.A. testing. In addition, we are on a program of reviewing all current products to determine their status.

All of Quill's products have been reviewed to determine their status regarding the B.I.F.M.A. standards. While there are some specific tests that certain products do not pass, 96% of the tests show full compliance. It is the opinion of our Engineering Department that none of the Quill products present any serious safety concerns as tested. Our conclusion is based upon the fact that the functional tests are in complete compliance. Maurice is prepared to review all test results with you to determine the proper course of action to be taken.

Secondly, all Quill packaging has been reviewed in detail over the past two years. While we continue to make improvements, we feel that Globe products meet the criteria outlined in your letter.

Thirdly, Maurice, as well as our Engineering and Quality people have reviewed all instruction sheets and made the appropriate changes, as needed. We continue to be open to feedback from our customers regarding further improvements.

We trust that the above addresses the points that you have raised. I can assure you that our Testing Department, which is the responsibility of our Director of Engineering, Brad Lee, has a good understanding of B.I.F.M.A. requirements, as published.

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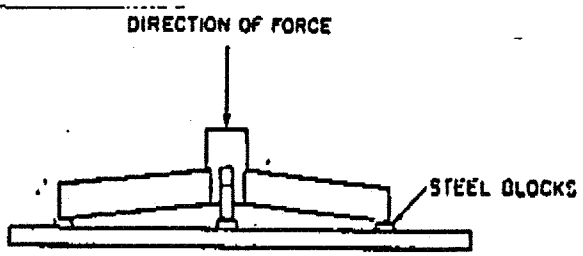

Figure 4
Base Test

8. Base Test (See Figure 4)

8.1 Type of Chair. The base test shall be performed on the following types of chairs:

Type I – Side Chair, Nonrotating, Nontilt, Fixed Back
(if with pedestal base)
Style A: with arms
Style B: without arms

Type II – Desk Chair, Rotary
Class 3 – Nontilt seat, fixed back
Style A: with arms
Style B: without arms
Class 5 – Tilt Seat, Fixed Back
Style A: with arms
Style B: without arms

Type III – Posture Chair, Rotary
Class 1 – Tilt seat and back
(synchronized seat and back)
Style A: with arms
Style B: without arms
Class 2 – Nontilt seat, back tilt
Style A: with arms
Style B: without arms

Type IV – Clerical Chair, Rotary
Class 1 – Tilt seat and back
(synchronized seat and back)
Style B: without arms
Class 2 – Nontilt seat, back tilt
Style B: without arms

Type V – Secretarial Chair, Rotary
Class 3 – Nontilt seat, fixed back
Style B: without arms
Class 4 – Nontilt seat, flex back
Style B: without arms

8.2 Purpose of Test. The purpose of this test is to evaluate the ability of a pedestal base to withstand stresses such as those caused by shock loads applied to the chair seat or those caused by dropping the chair to the floor.

8.3 Test Procedures. The following test procedures shall be used:

(1) Remove glides and casters from the base. (Caster sockets may remain in place.)

(2) Place the base on a test platform with blocks or supports under the base arms as shown in Figure 4 so as to allow for lateral movement as weight is applied.

(3) Apply a 2500 lbf (11 100 N) load for 1 minute and remove. Record findings in accordance with the acceptance level in 8.4.

(4) Reapply the 2500 lbf (11 100 N) load and maintain until deflection is reasonably stabilized. Record findings in accordance with the acceptance level in 8.4.

8.4 Acceptance Level. Structural breakage or loss of serviceability resulting from the first load application shall constitute failure.

No failure resulting from either load application that in any way would cause personal injury to the occupant shall be allowed.

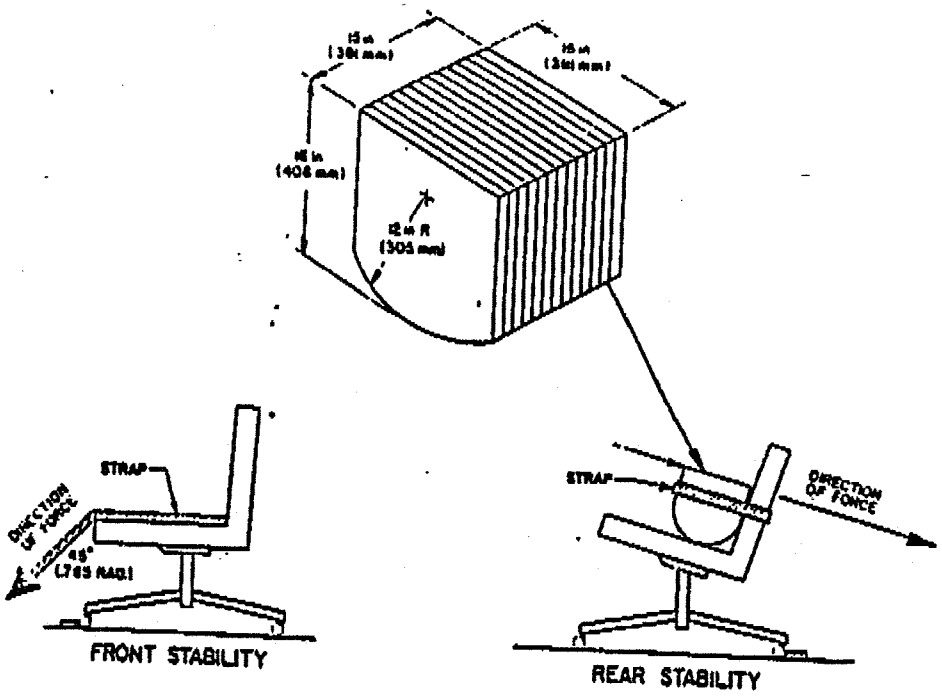

Figure 9
Stability Test

(4) Set up a bag of sand or shot, approximately 16 inches (406 mm) in diameter to free-fall to the center of the seat, as shown in Figure 8.

Height of drop:

2 inches (51 mm) above zero reference height taken with the test bag resting on seat

Bag weight:

Type I, II, III, IV. . . . . 125 pounds (57 kg)
Type V . . . . . 100 pounds (45 kg)

(5) Cycle machine for 100 000 cycles at a speed of 20 cycles per minute ± 2 cycles per minute (0.33 hertz ± 0.03 hertz). Record findings in accordance with acceptance level in 12.4.

12.4 Acceptance Level. Structural breakage or loss of serviceability, including stacking ability if applicable, shall constitute failure.

No failure shall be allowed that in any way would cause personal injury to the occupant.

13. Stability Test (See Figure 9)

13.1 Type of Chair. The stability test shall be performed on the following types of chairs:

Type I – Side Chair, Nonrotating, Nontilt, Fixed Back
Style A: with arms
Style B: without arms

Type II – Desk Chair, Rotary
Class 3 – Nontilt seat, fixed back
Style A: with arms
Style B: without arms
Class 5 – Tilt seat, fixed back
Style A: with arms
Style B: without arms

Type III – Posture Chair, Rotary
Class 1 – Tilt seat and back
(synchronized seat and back)
Style A: with arms
Style B: without arms
Class 2 – Nontilt seat, back tilt
Style A: with arms
Style B: without arms

Type IV – Clerical Chair, Rotary
Class 1 – Tilt seat and back
(synchronized seat and back)
Style B: without arms
Class 2 – Nontilt seat, back tilt
Style B: without arms

Type V – Secretarial Chair, Rotary
Class 3 – Nontilt seat, fixed back
Style B: without arms
Class 4 – Nontilt seat, flex back
Style B: without arms

13.2 Purpose of Test. The purpose of this test is to provide a procedure that will allow a comparative analysis of the stability of various chairs under relatively fixed conditions. Chair stability is related to personal sitting habits, chair style, use conditions, floor materials, and the kinds and sizes of casters or glides. These variables complicate the fixing of minimum requirements. Minimum acceptance levels have been established based on the chair type for rear stability and the chair weight for front stability.

13.3 Test Procedures for Measuring Rear Stability. The following test procedures shall be used:

(1) Place the chair on the test platform.

(2) On chairs with adjustable features, set all adjustments at the most unstable condition for rearward stability – that is, maximum height of seat or back, or both; minimum tension of chair control; rearmost seat or back position, or both; and, optionally, at the most unstable condition of casters.

(3) Place a 173-pound (79-kg) weight on the seat and strap it as shown in Figure 9. The 173-pound (79-kg) weight[3] is designed to place the center of gravity in approximately the same location as would occur if a 173-pound (79-kg) male sat in the chair. The exact materials used to construct the weight are not important, but their mass shall be distributed equally throughout the weight as if it were constructed of one homogeneous substance.

(4) Fix a block or obstruction 1 inch (25 mm) high on the platform against the rear support members such as glides, legs, or casters. On chairs that rotate, position the bases and casters, if any, to offer the least resistance to backward tipping of the chair.

(5) Apply a rearward force, either push or pull, in the plane of the top of the weight as shown in Figure 9.

(6) Apply the force until the total load is transferred to the rear support members. Record findings in accordance with appropriate acceptance level in 13.5.1.

13.4 Test Procedures for Measuring Front Stability. The following procedures shall be used to measure front stability:

(1) Record the weight of the chair.

(2) Place the chair on the test platform.

(3) On chairs with adjustable features, set all adjustments at the most unstable condition for forward stability – that is, maximum height of seat or back, or both; most forward position; and, optionally, at the most unstable condition of casters.

(4) Fix a block or obstruction 1 inch (25 mm) high on the platform against the front support members such as glides, legs, or casters. On chairs that rotate, the bases and casters, if any, are positioned to offer the least resistance to forward tipping of the chair.

(5) Apply a downward force at 45° (0.785 radian) to the test platform by attaching a strap, not to exceed 3 inches in width, over the front portion of the seat. (See Figure 9.)

(6) Apply the force until the total load is transferred to the front support members. Record findings in accordance with acceptance level in 13.5.2.

13.5 Acceptance Level

13.5.1 Rear Stability. The force determined in 13.3 shall not be less than the amount shown for each type of chair:

Type I	35 lbf (156 N)
Type II	20 lbf (89 N)
Type III	20 lbf (89 N)
Type IV	20 lbf (89 N)
Type V	30 lbf (133 N)

13.5.2 Front Stability. The force determined in 13.4 shall not be less than 40% of the total chair weight.

[3] The weight is described in: Damon, A.; Stoudt, H. W.; and McFarland, T. A. The human body in equipment design. Cambridge, MA: Harvard University Press; 1974.