Ford Motor Company

FORD LABORATORY TEST METHOD BN 026-01

GLASS RUN WEATHERSTRIP FRICTIONAL EFFORT

Application

This procedure is used to determine the frictional properties of glass and flocked weatherstrip used in glass run channels.

Apparatus Required

Electronic Testing Machine

Instron Model 7M or equivalent.

Source: Instron Engineering Corp.
2500 Washington
Canton, MA

Accessories for Above Equipment

Automatic Integrator - Catalog #A-80
Tensile Cell "C" - Catalog #A-3
Gage Length and Rapid Return Controls - Catalog #A-36

Door Glass Frame and Glass Run Buck Assembly

(See attached Drawing #1)

Glass

(See attached Drawing #4)

Pulley (2)

#75680 M62, Bakelite

Source: Central Scientific Co.

Window Channel (2)

The steel window channel is a 32 1/2 inch section of current production material used with the weatherstrip under test. Each channel is secured to the buck assembly by means of five countersunk flat head screws.

Cable

Standard wire cable 1/16 inch or 1/32 inch diameter, 60 inches long.

Date	Action	Revisions
2001 09 24	Revised	Editorial – no technical change A. Cockman
1992 07 13		

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Hook

16 gage wire shaped as a J hook.

Adaptor Mounting

Adaptor as per attached Drawing #3 is used to connect the pulley with the cell in the Instron.

Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Procedure

1. Condition the weatherstrip samples for 24 h at 65 +/- 2 % relative humidity and at a temperature of 70 +/- 2 °F. Specimens for the wet test must be soaked for 1 h in tap water at a temperature of 70 +/- 2 °F.

2. Set up "C" cell in Instron with pulley adaptor. At the universal joint shims are to be used to lock the assembly in place. (See attached Drawing #2.)

3. Balance and zero the Instron and integrator.

4. Calibrate the instrument and integrator following the directions in the instruction manual, then proceed as follows:

   (a) Clear the counters on the integrator and turn the integrator counter switches to the "On" position. Turn manual-automatic switch to "Automatic" position.

   (b) Set crosshead speed to 20 inches/minute by using proper gear combination as shown in gear selection chart for various crosshead speeds (see manual).

   (c) Set chart speed to 5 inches/minute by using proper gear combinations (see manual).

   (d) Set full scale load to 50 lb range.

   (e) Set buck assembly in center of Instron.

5. Determine the weight and integrator input value of the glass as follows:

   (a) Without any weatherstrip in the channels, connect up the glass in the buck so that it is suspended freely between the channels.

   (b) Push the "Down" button to start the crosshead in motion to raise the glass once.

   (c) Record the integrator input reading for the weight (W) of the glass.

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6. Disconnect the hook and cable and remove the glass from the buck assembly.

7. Install the flocked rubber weatherstrip samples in each channel run.

8. Insert the glass in the weatherstrips and slide the glass to the bottom of the channel runs. Hand cycle the glass up and down in the channel for four complete cycles (up and down = 1 cycle).

9. Reconnect cable and hook to glass.

10. Clear counters on the integrator.

11. Start the test by pushing the "Down" button and raise the glass once through a distance of 20 inches.

12. Read the counter on the integrator and record the input units (X) for the friction of the glass and weatherstrip.

13. Calculate and report the frictional effort as follows:

$$F = \frac{(S - W) \times L \times S}{5000}$$

Where:
F = Frictional effort in inch lbs
X = Input units (Step 12)
L = Full scale load in pounds (50 lbs)
S = Rate of crosshead travel (20 inches/minute)
W = Integrator Input Units (Step 5C)

Chemicals, materials, parts, and equipment referenced in this document must be used and handled properly. Each party is responsible for determining proper use and handling in its facilities.

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