

7.1 VOLUME DAMPERS

7.2 NOTES FOR FIGURES 7-4 AND 7-5

1. Unless otherwise permitted, dampers shall be provided with the general configuration, materials, and application limits indicated in Figures 7-4 and 7-5 and in related notes.
2. Damper hardware must be durable and installed properly.
3. Dampers must be stable under operating conditions. Round and rectangular damper blades must be stiffened by forming or other method if required for the duty.
4. All single blade dampers must have a locking device to hold the dampers in a fixed position without vibration.
5. Damper component penetration of ducts must be closed, in keeping with the sealing classification applicable for the pressure class. End bearings or other seals are required on 3 in. wg (750 Pa) static pressure class.
6. The installation of a damper in a lined duct must not damage the liner or cause liner erosion.

7.3 COMMENTARY

Designers must show all required air volume control devices on the contract drawings. Nothing in this document implies an obligation to provide volume control devices that are not on the contract drawings.

The ASHRAE *Terminology Handbook* chapter on testing, adjusting, and balancing defines ducts as follows: a main duct serves the system's major or entire fluid flow; a sub-main serves two or more branch mains; a branch main serves two or more terminals; a branch serves a single terminal. Illustrating dampers on contract drawings relieves contractors from interpreting damper requirements.

The damper designs illustrated in Figures 7-4 and 7-5 are for reduced volume control, not for positive shut off. Modified versions can be constructed for tight shut off.

OBD (opposed blade damper) devices installed with grilles and diffusers should not be relied on to take more than 1/4 to 1/2 closure without noise.

Single-blade or opposed-blade dampers are preferred over splitters.

Orifice plates or perforated metal with required pressure-drop characteristics may be used in lieu of dampers to set up permanent loss in duct runs.

Multiblade damper styles are normally parallel blade for two position operation; opposed blade for modulating position.

Dampers with blade lengths over 48 in. (1219 mm) are normally sectioned horizontally.

Motor operators for dampers should develop sufficient torque to operate properly. The motor supplier should select operators carefully. In certain cases, a fire damper may be used for flow rate control. If it serves a dual function, its operation as a fire damper must not be impaired. The installation must not develop noise or vibration.

Volume control devices that are capable of throttling flow over wide pressure differentials without generating noise are normally special procurement items. Low-pressure drop dampers should not be used for wide-pressure differentials.

Consult duct design texts and manufacturer's data for loss coefficients.

The designer must carefully evaluate pressure change in ducts and provide pressure relief measures where necessary. System status changes, as in smoke control mode or energy conservation use, impose different requirements for normally open, normally closed, and modulating dampers.



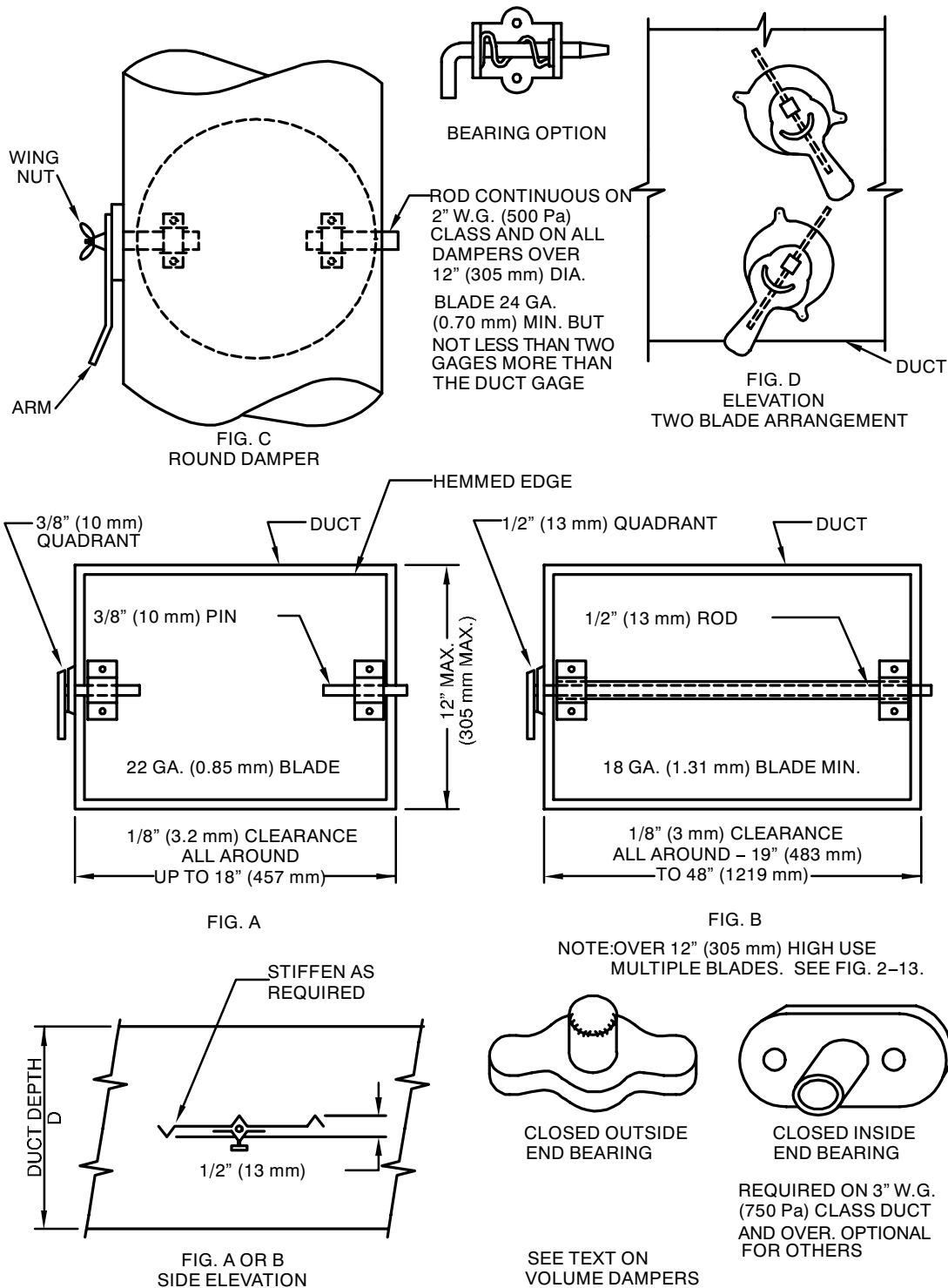


FIGURE 7-4 VOLUME DAMPERS – SINGLE BLADE TYPE

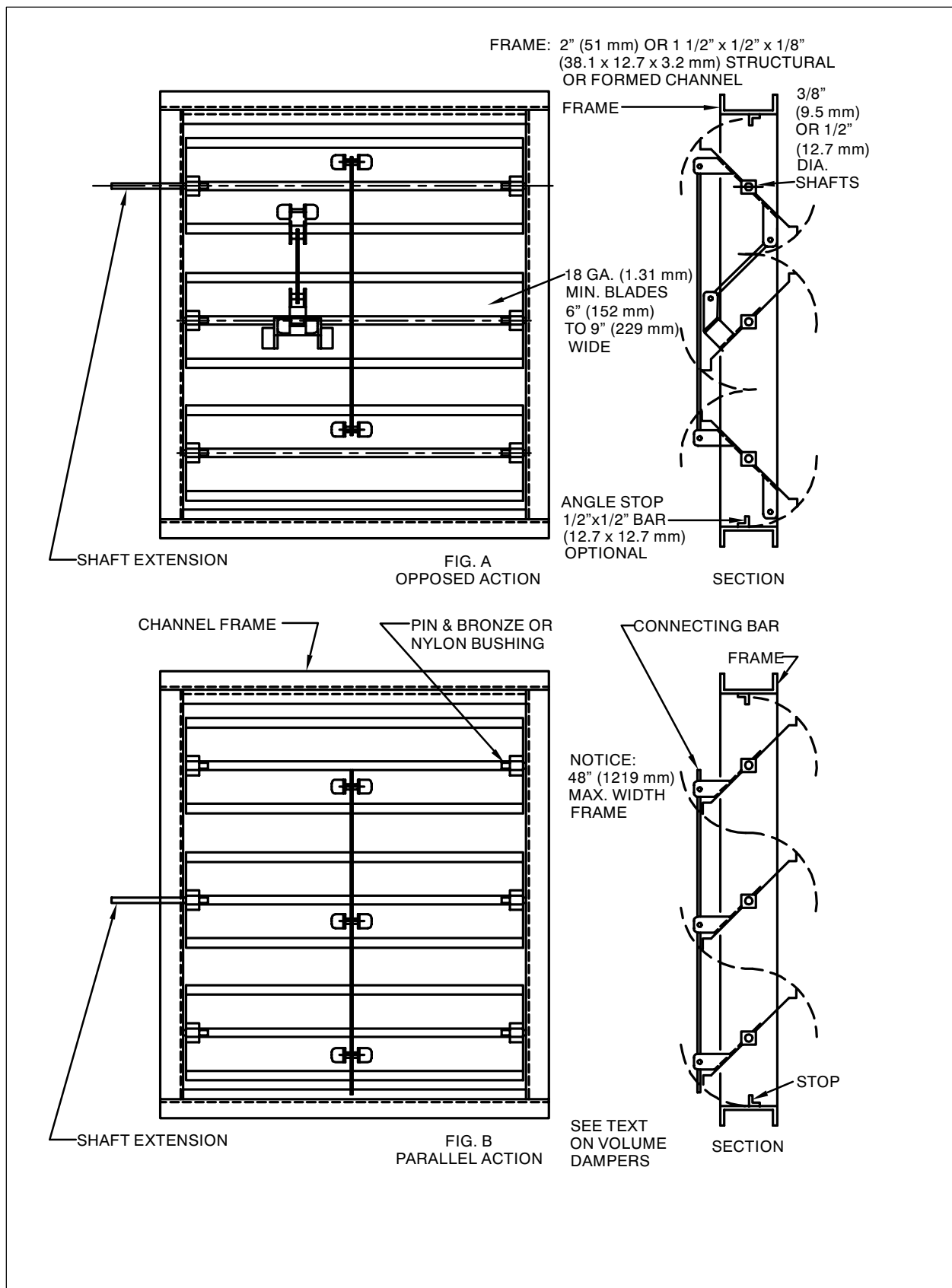


FIGURE 7-5 MULTIBLADE VOLUME DAMPERS