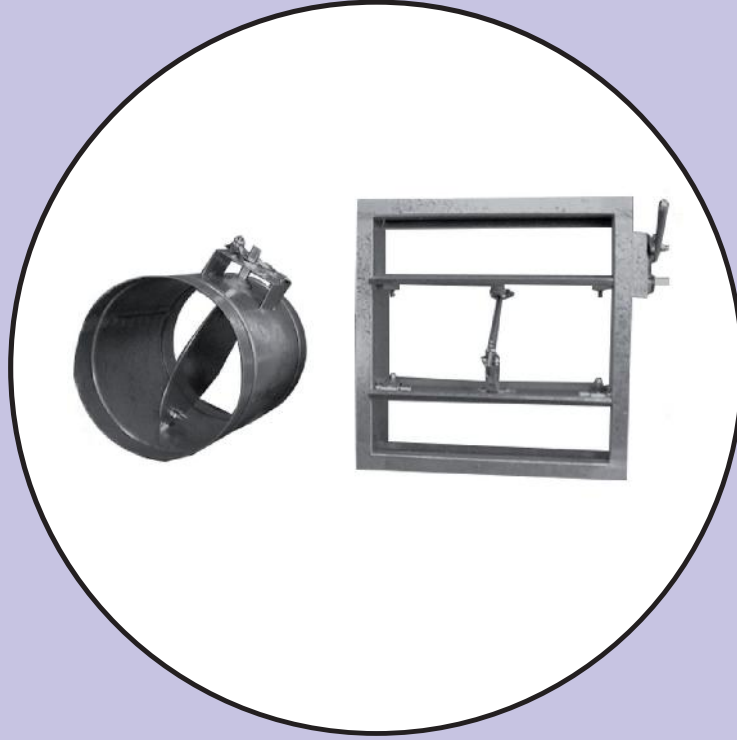


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شركة الخليج لفتحات التكييف المركزي

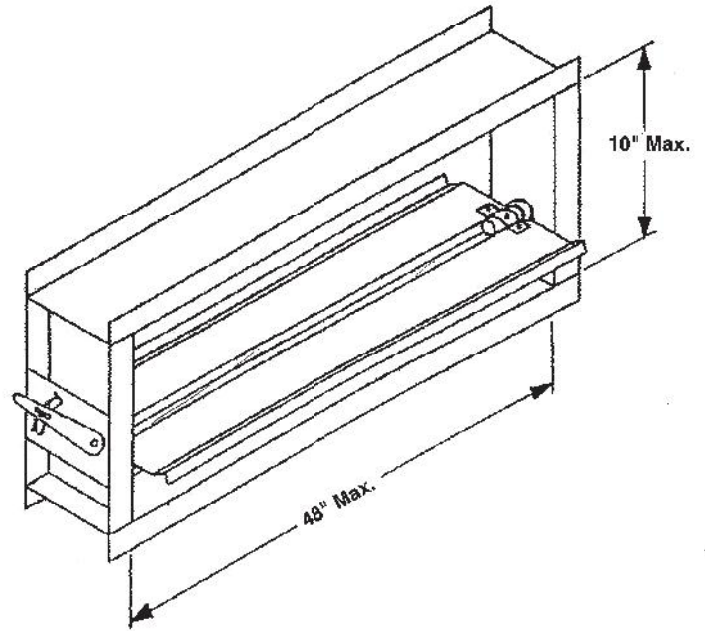
GULF GRILLES CO.



VOLUME DAMPERS

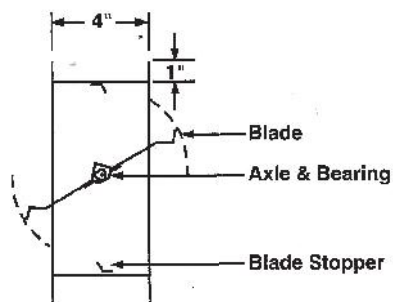
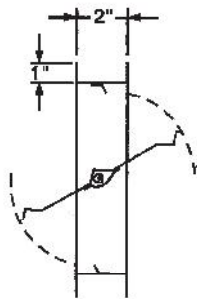
STANDARD MATERIALS AND CONSTRUCTION

- **Frame** : 4" x 1" x 16 gauge galvanized steel channel with welded corners.
- **Blades** : 16 gauge galvanized steel reinforced with 3 longitudinal "structurally designed Vees".
- **Axles** : ½" Ø plated steel.
- **Bushings** : Self oiling bronze bushings.
- **Control Shaft** : 6" long plated steel ½" round to ½" square.
- **Hand Quadrant** : For manual operation.
- **Finish** : Mill galvanized.



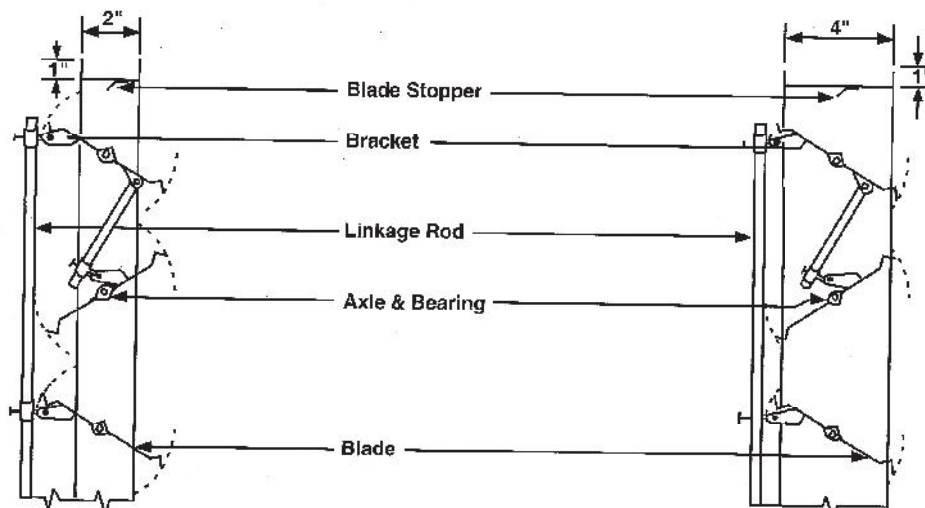
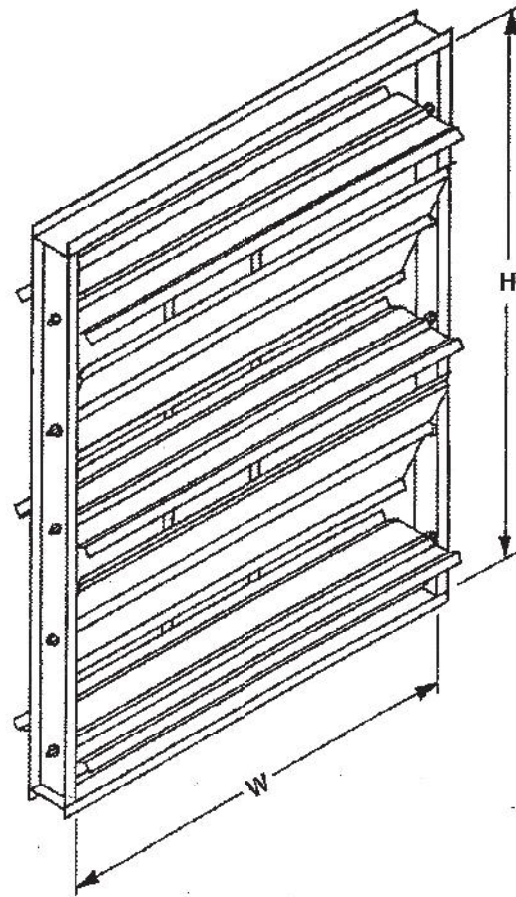
Notes:-

- Frame width & height increased on request.
- Stainless steel made is available on request (1.5 mm thick frame and blades).
- Single blade design is available for dampers with height up to 250 mm.
- Steel made with gears design available on request.



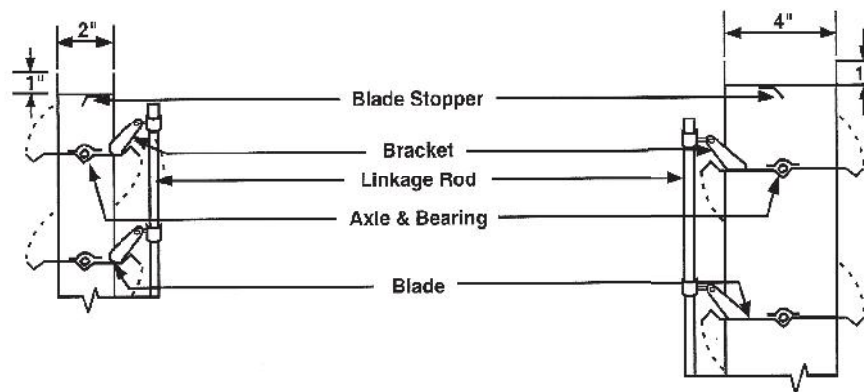
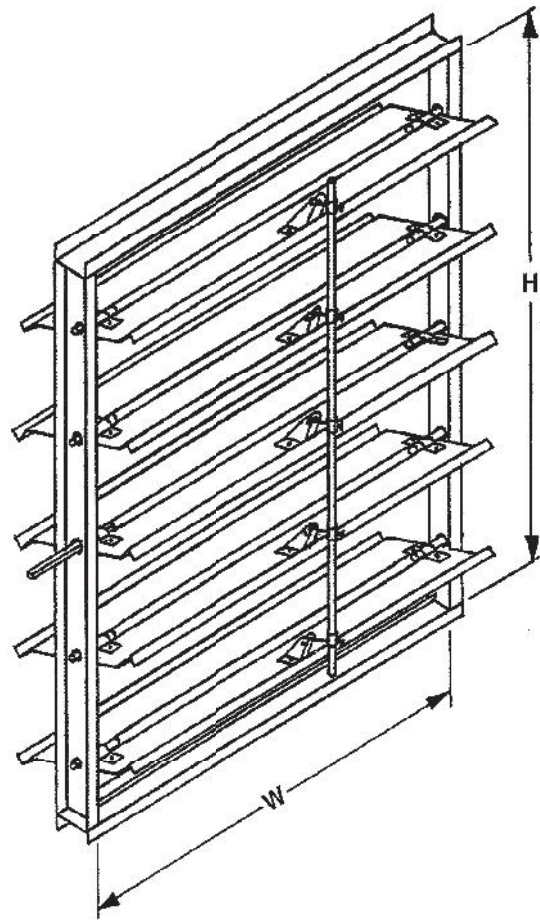
STANDARD MATERIALS AND
CONSTRUCTION

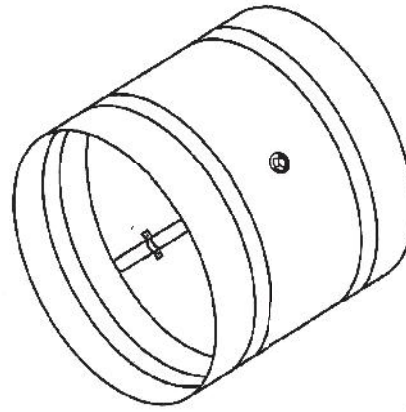
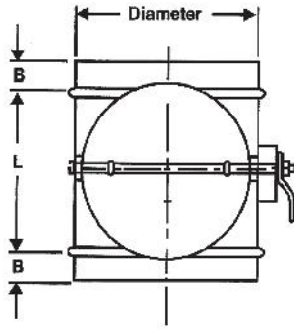
- **Frame** : 4" x 1" x 16 gauge galvanized steel channel with welded corners.
- **Blades** : 16 gauge galvanized steel reinforced with 3 longitudinal "structurally designed Vees".
- **Axles** : $\frac{1}{2}$ " \varnothing plated steel.
- **Bushings** : Self oiling bronze bushings.
- **Linkage** : Exposed in frame.
- **Control Shaft** : 6" long plated steel $\frac{1}{2}$ " round to $\frac{1}{2}$ " square.
- **Hand Quadrant**: For manual operation.
- **Finish** : Mill galvanized.
- **Sizes** : Minimum size : 6" x 6" (sizes 10" or less in height available as single blade model).
Maximum size : 48" x 72" (single section).



STANDARD MATERIALS AND CONSTRUCTION

- **Frame** : 4" x 1" x 1 gauge galvanized steel channel with welded corners.
- **Blades** : 16 gauge galvanized steel reinforced with 3 longitudinal "structurally designed Vees".
- **Axles** : 1/2" Ø plated steel.
- **Bushings** : Self oiling bronze bushings.
- **Linkage** : Exposed in frame.
- **Control Shaft** : 6" long plated steel 1/2" round to 1/2" square.
- **Hand Quadrant** : For manual operation.
- **Finish** : Mill galvanized.
- **Sizes** : Minimum size : 6" x 6" (sizes 10" or less in height available as single blade model).
Maximum size : 48" x 72" (single section).





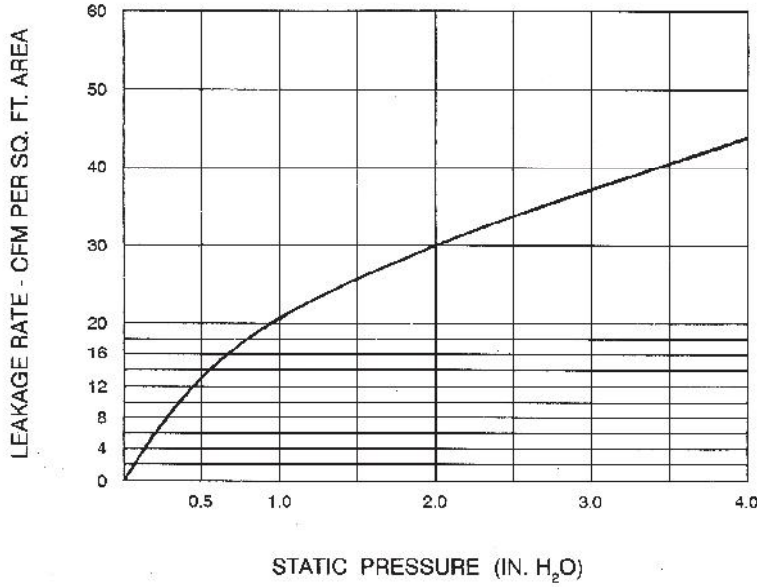
STANDARD MATERIALS AND CONSTRUCTION

- **Frame** : 16 gauge galvanized steel.
- **Blade** : 16 gauge galvanized steel.
- **Operation** : Hand quadrant for manual operation.
- **Axle** : ½" square bar 'U' bolted to blade.
- **Finish** : Mill galvanized.

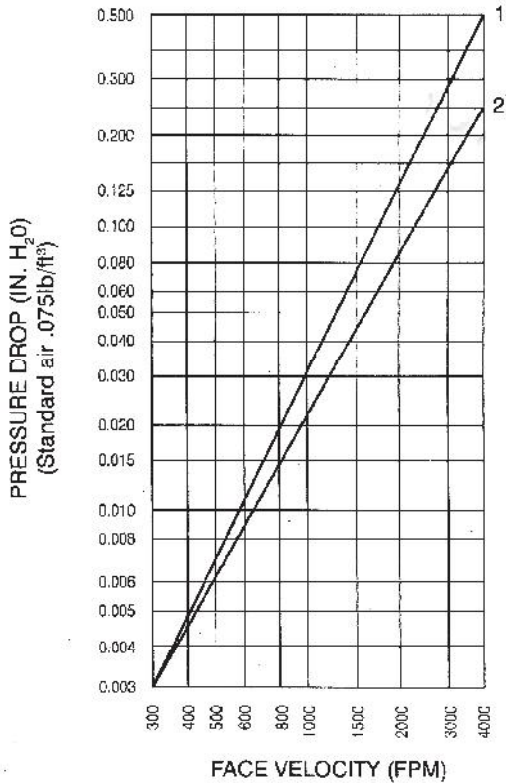
Diameter Range	L	B
0 - 9-7/8"	dia. + B	1-6/9"
9-7/8" - 23-5/8"	- do -	2"
23-5/8" - 35-7/16"	- do -	2-7/8"
35-7/16" - Up	- do -	4"

PERFORMANCE DATA

LEAKAGE CHART



PRESSURE DROP CHART



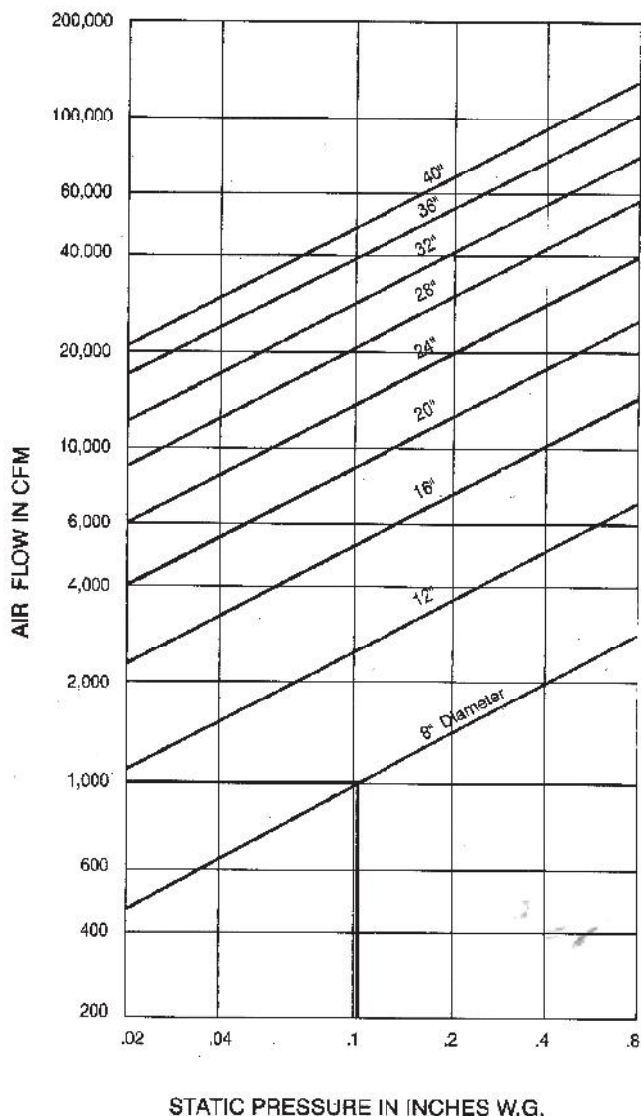
- 1. Volume control opposed blade.
- 2. Volume control parallel blade.

Pressure Drop Vs. Face Velocity with Damper in Full Open Position.

PERFORMANCE DATA

Model : VDR35 - HP & VDR35 - LP (Round Type)

STATIC PRESSURE DROP CHART



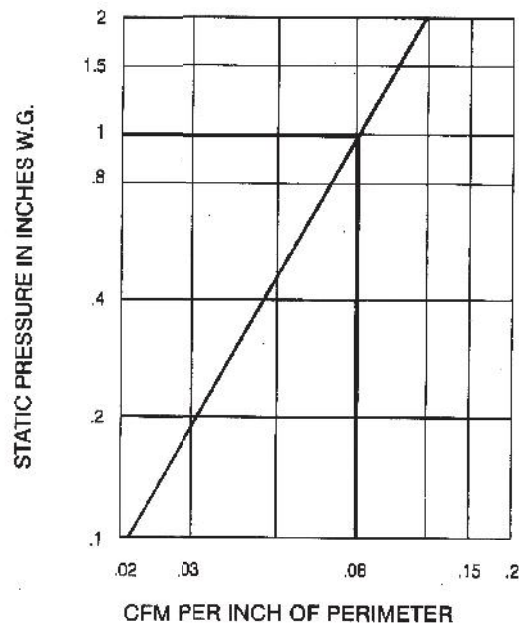
Determining Static Pressure Drop

To determine static pressure drop through an open damper, enter the damper pressure drop chart from the left side. Given the CFM of airflow through the damper, follow the CFM line to the diagonal line with the damper size required, then down to the static pressure drop of the unit.

Example :

The pressure drop of an 8" damper with 1000 CFM flow is 0.11 inches w.g.

LEAKAGE CHART



Determining Leakage

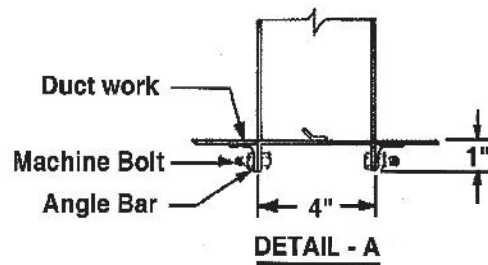
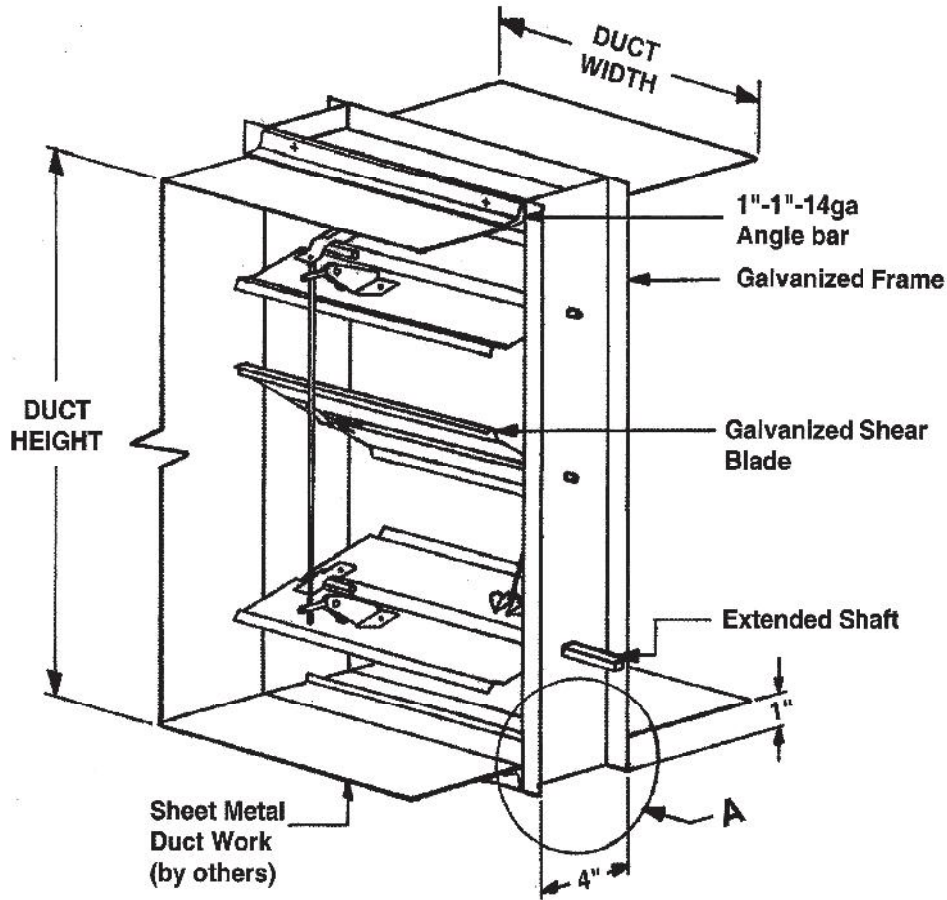
To determine damper leakage, enter damper Leakage chart from the right side. Given the static pressure the damper will encounter in closed position, move horizontally to the diagonal line, then go straight down the chart to CFM of leakage per inch of perimeter.

Example :

Damper operating 1" W.G. static pressure will leak 0.08 CFM per inch of perimeter. Total leakage on an 8" round will be $8 \times 3.14 \times 0.08$ CFM per inch perimeter = 2 CFM leakage.

Static Pressure and CFM are corrected to 0.075 lb./cu.ft. air density.

INSTALLATION DETAILS



SIEMENS 3 POSITION ACTUATORS (MOTORIZED VOLUME CONTROL DAMPERS)

GLB 336.1E

- With self-centering shaft adapter for shaft dia. 8..16 mm, square 6...12 mm, min.shaft length 30 mm
- With position indication and adjustable mechanical limit stop
- Button for disengaging the gear train to enable manual override
- With base model of steel, plastic housing and 0.9 mm connecting cable.

Attribute	Value
Torque	10.00 Nm
Air damper Area	1.50 m ²
Angular rotation	90 °
Positioning time	150 s
Degree of protection	IP54
Dimensions(WxHxD)	68x137x59.5 mm
Operating Voltage	AC 230 V
Power Consumption	2 VA
Positioning signal	3-position
Rated Output	2.00 VA
Auxiliary switch	2



GBB 336.1E

- With self-centering shaft adapter for shaft dia. 8..25.6 mm, square 6...18 mm, min.shaft length 20 mm
- With position indication and adjustable mechanical limit stop
- Button for disengaging the gear train to enable manual control
- With base model of steel, plastic housing and 0.9 mm connecting cable.

Attribute	Value
Torque	25.00 Nm
Air damper Area	4 m ²
Angular rotation	90 °
Positioning time	150 s
Degree of protection	IP54
Dimensions(WxHxD)	100x300x75 mm
Operating Voltage	AC 230 V
Power Consumption	5 VA/ 5 W
Positioning signal	3-position
Rated Output	5.00 VA
Auxiliary switch	2



SIEMENS 3 POSITION ACTUATORS (MOTORIZED VOLUME CONTROL DAMPERS)

GBB 136.1E

- With self-centering shaft adapter for shaft dia. 8..25.6 mm, square 6...18 mm, min.shaft length 20 mm
- With position indication and adjustable mechanical limit stop
- Button for disengaging the gear train to enable manual control
- With base model of steel, plastic housing and 0.9 mm connecting cable.

Attribute	Value
Torque	25.00 Nm
Air damper Area	4 m ²
Angular rotation	90°
Positioning time	150 s
Degree of protection	IP54
Dimensions(WxHxD)	100x300x75 mm
Operating Voltage	AC 24 V
Power Consumption	7 VA/ 7 W
Positioning signal	3-position
Rated Output	7.00 VA
Auxiliary switch	2



BELIMO Damper Actuators

(Volume control damper Non-Spring/Spring return)



Belimo offers wide range of actuators for volume control dampers for adjusting dampers in technical building installations. Actuators available with options to choose non-spring return control and emergency spring return control with different model series.

Features of products:

- Simple direct mounting on the damper shaft with a universal shaft clamp, supplied with an anti-rotation device to prevent the actuator from rotating.
- Non-Spring Actuator come with Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).
- Spring return actuator moves the damper to the operating position at the same time as tensioning the return spring. The damper is turned back to the safety position by spring energy when the supply voltage is interrupted.
- Adjustable angle of rotation with mechanical end stops.
- The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
- Actuators are maintenance free.
- Actuators Origin Switzerland and offered with standard 5 years Belimo warranty.

Belimo Models	Torque (Nm)
Non-Spring return models	
TM Series	2Nm
LM Series	5Nm
NM Series	10Nm
SM Series	20Nm
GM Series	40Nm
Spring return models	
TF Series	2.5Nm
LF Series	4Nm
NF Series	10Nm
SF Series	20Nm
EF Series	30Nm
GK Series	40Nm



For more information refer to the product technical datasheets which can found in our website www.belimo.eu and for further information refer back to us.