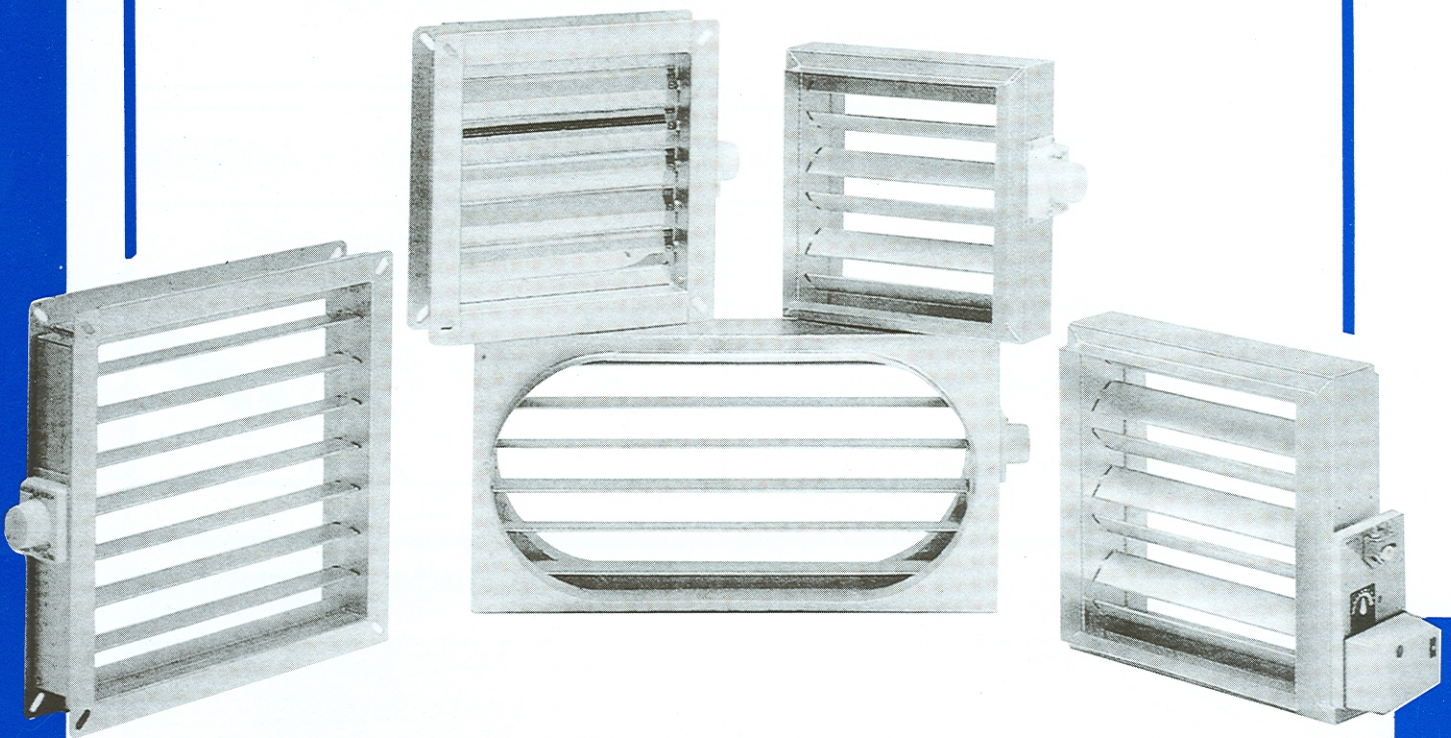


# GULF MECHANICAL ACOUSTIC MANUFACTURING COMPANY

## GMAMCO

### LS - VC SERIES BALANCE AND CONTROL DAMPERS



### *features*

- Multi-opposed blade operation
- Seven casing options
- Positive side-mounted, out of airflow drive
- Unique push control hand operator with position calibrations and lock
- Glass-filled nylon spindles and bushes
- Balance and control versions
- Airfoil blades
- Modules sizes 100mm - 1000mm and multi-module assemblies

### *approvals*

- Conforms to HVCA specification DW 142 classes A-B flange\* models
- Conforms to HVCA specification DW 142 class A-D spigot\* models
- Conforms to Eurovent classes A-C standard 2/2

\* casing leakage



# Introduction

## LS SERIES Balancing Damper

The LS Series Balancing Damper has been designed by Caradon Air Diffusion to balance/regulate air flow within ductwork systems and provides the installer with a choice of casing options to assist ease of installation. These options consist of four flange sizes and three spigot models, giving infinite sizing capability.

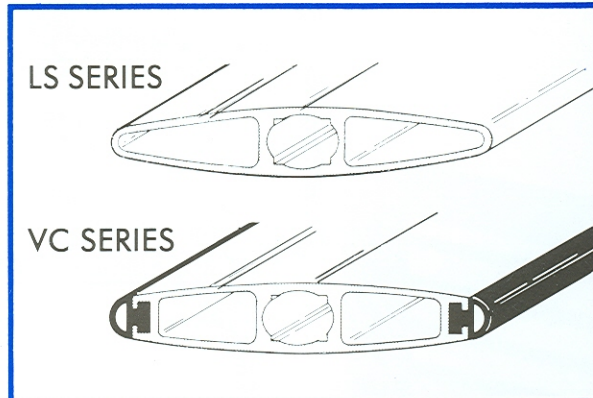
The unique handle designed by Caradon Air Diffusion includes as standard; fool-proof operation, ten position calibration, open/close indication and a locking screw.

The standard construction is galvanised coated mild steel casings with airfoil extruded aluminium blades. The bushes, spindles and drive gears are glass reinforced nylon for low friction and strength.

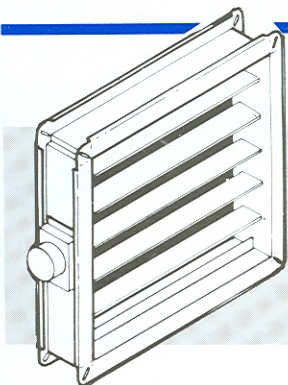
(See complete Specification Data on Page 3)

## VC SERIES Control Damper

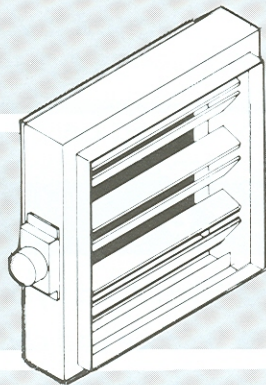
The VC Series Control Damper incorporates the features of its sister product, the LS Series Damper, but with the addition of blade edge seals, giving low-leakage characteristics through the blades; all manufactured in compliance to the companies quality control and quality assurance procedures.



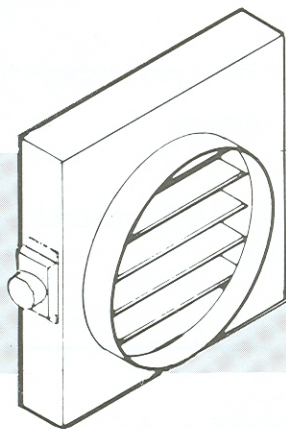
## Product Model Description



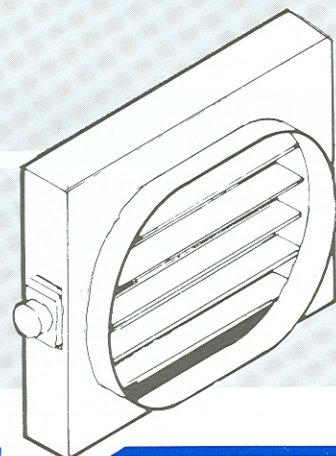
**Model LS - VC Type F**  
Low/Medium Velocity \*  
Rectangular / Square Flange  
Connection  
Horizontal or Vertical Mounting



**Model LS - VC Type S**  
Low/Medium Velocity \*  
Rectangular / Square Spigot  
Connection  
Horizontal or Vertical Mounting



**Model LS - VC Type C**  
Low/Medium Velocity \*  
Circular Spigot Connection  
Horizontal or Vertical Mounting



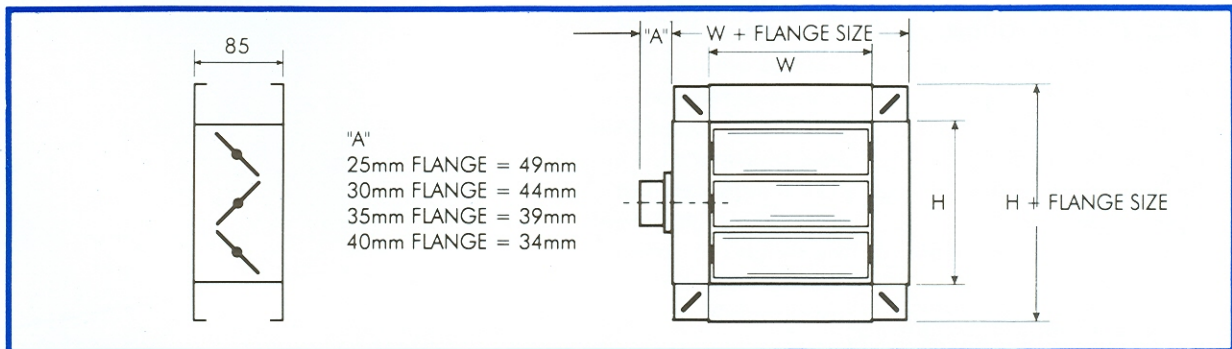
**Model LS - VC Type O**  
Low/Medium Velocity \*  
Flat Oval Spigot Connection  
Horizontal or Vertical Mounting

\*Subject to size/location of product within ductwork system.

# Dimensional Data

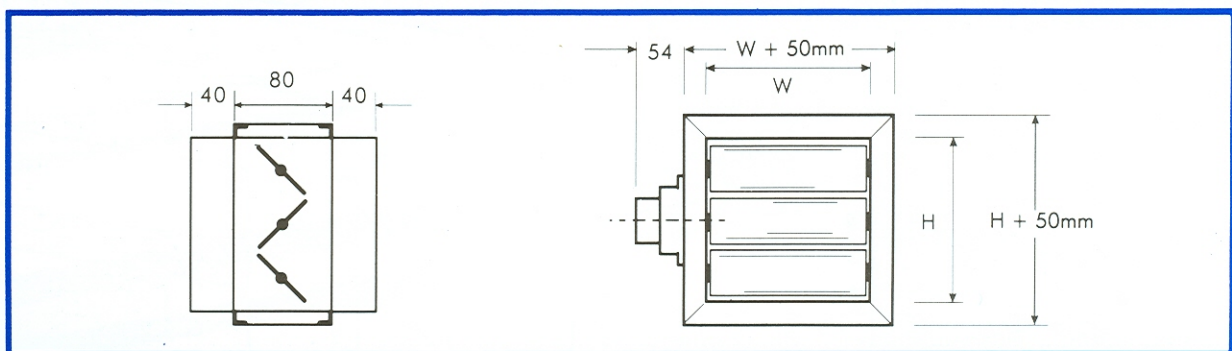
## Model LS or VC Type F

## Rectangular-Square Flange



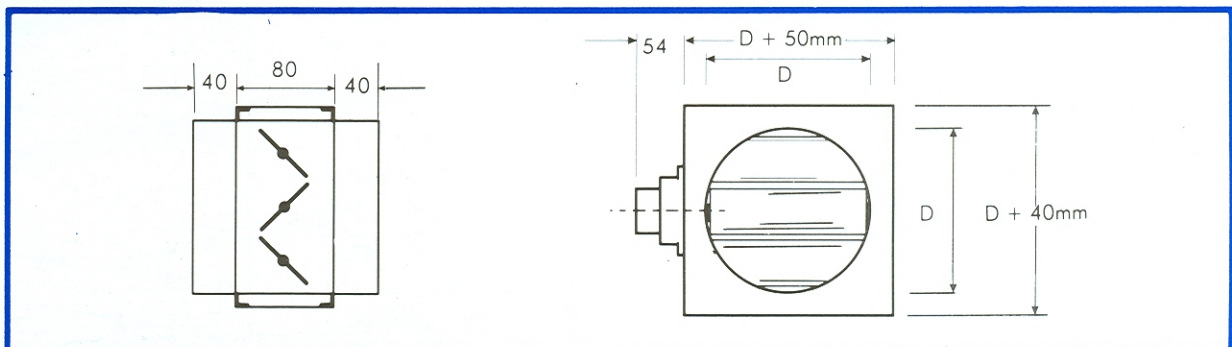
## Model LS or VC Type S

## Rectangular-Square Spigot



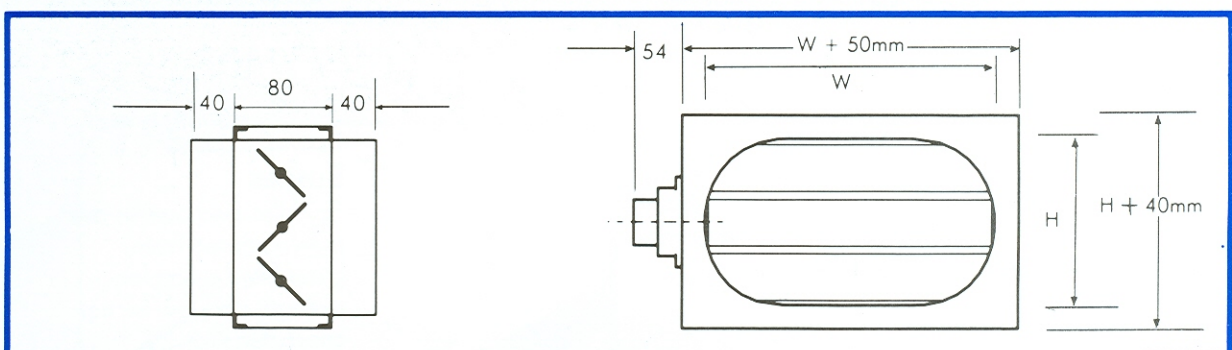
## Model LS or VC Type C

## Circular Spigot



## Model LS or VC Type O

## Flat Oval Spigot



**Please Note:**

1. All dimensions are in millimeters
2. Actual spigot dimensions will be nominal less 3mm  $\pm$  1mm
3. Minimum width and height dimension is 100mm, maximum width and height dimension is 1000mm
4. For sizes over 1000mm, multiple module units will be supplied
5. An actuator per module will be supplied

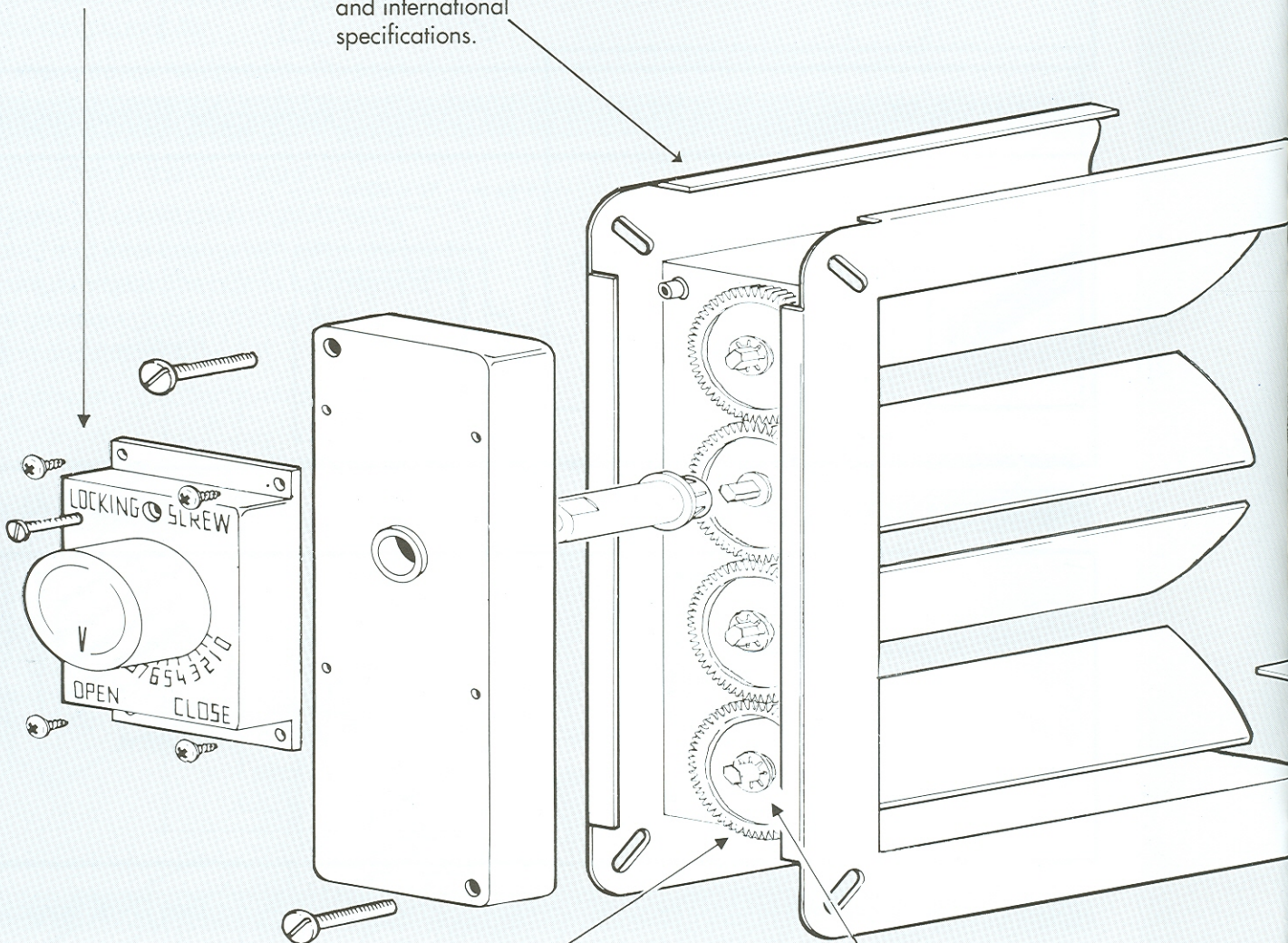
# Balance & Control Dampers

## Manual Operation

Manual operation is via a unique moulded push operation handle, which includes as standard 0-10 graduation and open/close indication, as well as a locking screw.

## Casings

Casings are manufactured from galvanised coated mild steel as standard. Four flange sizes are available so as to meet the dictates of national and international specifications.



## Drive

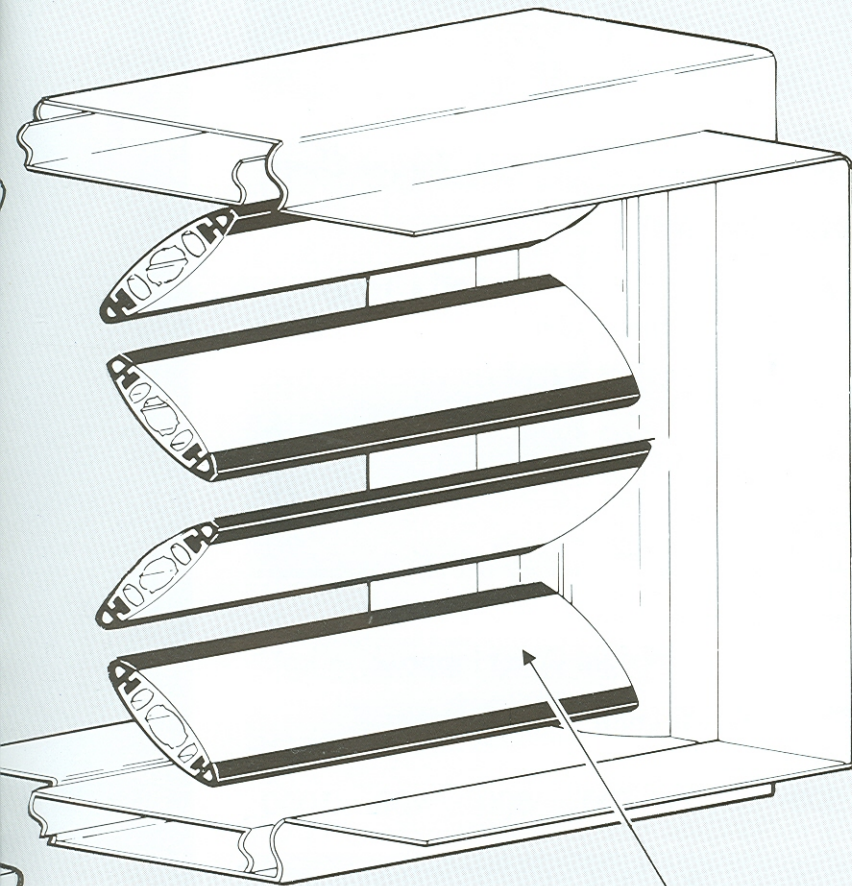
Drive is direct via large definition gears which are mounted out of the airflow.

## Spindles and Bushes

Spindles and bushes are manufactured from glass-filled nylon for strength and low-friction characteristics

## Material Specification

Casing	1.2mm (18 swg) galvanised mild steel to BS EN 10 142 1991, coating class FE P02b Z275 NA
Blade Channels	0.9mm (20 swg) galvanised mild steel to BS EN 10 142 1991, coating class FE P02b Z275 NA
Blades	Extruded airfoil profile aluminium to BS 1474, wall thickness 1.2mm (18swg)
Blade Seals	Dual hardness, FR grade PVC seal. Compression profile 0.75mm wall thickness (VC Series product only)
Blade Operation	Opposed blade rotation
Blade Sindle & Bush	Injection moulded nylon 66
Drive Gears	Injection moulded nylon 66 large definition teeth with sectionised location pitch
Drive Spindle & Bush	Injection moulded glass filled nylon 6
Control Handle	High impact styrene, with 0-10 calibrations from OPEN to CLOSE positions. An independent locking screw is included in the design to lock the blades at the commissioned position. Operation is achieved by depressing the spring handle to disengage the integral clutch.
Paint	All welds, seams and joints are sprayed with commercial grade zinc based aluminium paint.
Sealant	All seams and joints are sealed with sealant conforming to the dictates of DW 142
Operating Temperature	-10°C to + 80°C

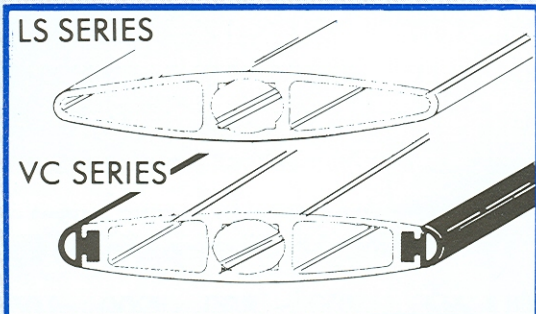


### Blades

Blades are manufactured from extruded aluminium with the option of two styles, plain for balancing, and sealed for control applications.

#### LS SERIES

#### VC SERIES



# Specifications

## LS SERIES Balancing Damper

## Torque Chart

Differential Pressure (Pa)	Damper Size (mm)					
	200 x 200		600 x 600		1000 x 1000	
	Nm	lbins	Nm	lbins	Nm	lbins
250	1.4	12	2.9	25	5.1	45
500	1.7	15	3.4	30	6.8	60
750	1.9	17	4.0	35	8.5	75
1000	2.3	20	5.1	45	10.2	90

## VC SERIES Control Damper

## Torque Chart

Differential Pressure (Pa)	Damper Size (mm)					
	200 x 200		600 x 600		1000 x 1000	
	Nm	lbins	Nm	lbins	Nm	lbins
250	1.4	12	2.9	25	5.1	45
500	1.7	15	3.4	30	6.8	60
750	1.9	17	4.0	35	8.5	75
1000	2.3	20	5.1	45	10.2	90

Please Note : The above data was measured in lb/ins, with Nm values calculated by multiplication. These measurements have been rounded "up or down" and are therefore approximate values only.

## LS - VC SERIES

## Weight Chart (approx. in kg)

Nominal Damper Size (mm)	Flange Model Width (mm)									
	100	200	300	400	500	600	700	800	900	1000
100	1	2	3	3	4	4	4	5	5	6
200	2	2	3	4	4	4	5	6	6	7
300	3	3	3	4	4	5	6	6	7	8
400	3	4	4	4	5	6	7	8	8	9
500	4	4	5	5	6	7	7	9	9	10
600	4	5	6	6	7	8	8	10	11	12
700	4	5	6	7	8	9	9	11	12	13
800	5	6	7	8	9	10	11	12	13	14
900	5	6	7	8	10	11	12	13	14	15
1000	6	7	8	9	10	12	13	14	15	16

FOR SPIGOT VERSIONS ADD 25% NOMINAL

Please Note : These values have been rounded "up or down" to whole values and are therefore illustrated for estimation purposes only.

## LS - VC SERIES

## Weight Chart (approx. in kg)

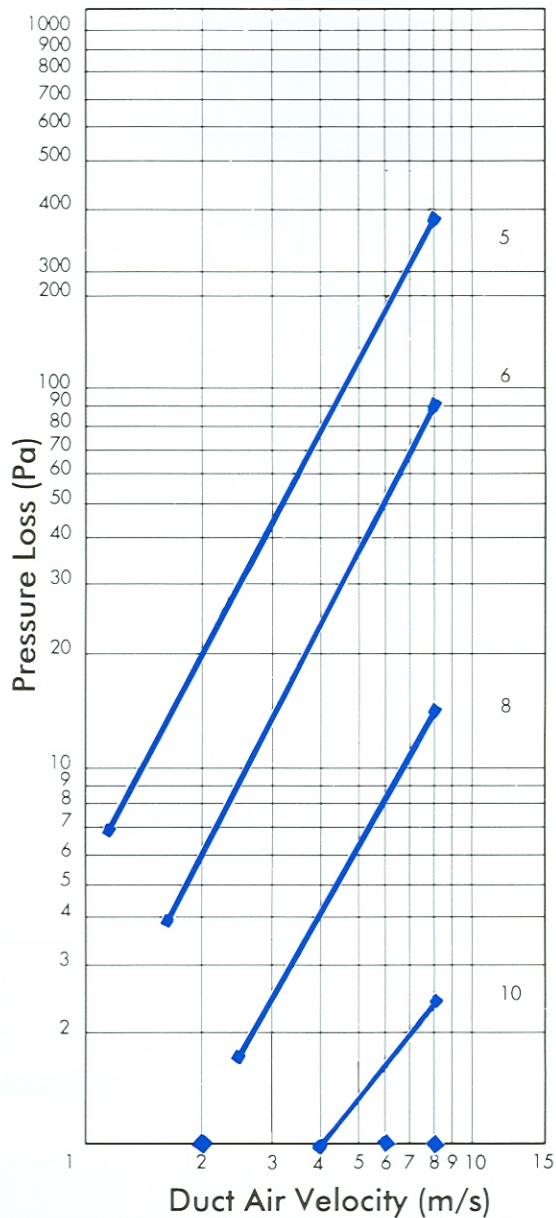
Nominal Damper Size (mm)	100	200	300	400	500	600	700	800	900	1000
	2	3	4	6	8	10	12	14	16	18

# Performance Characteristics

LS - VC SERIES

Pressure Drop/Velocity Graph

The pressure loss was measured across the blades from flange to flange of a 500mm square damper. This graph illustrates the mean pressure loss for both the LS Series balancing and VC Series control dampers.



**Position 5**  
45 degrees closed

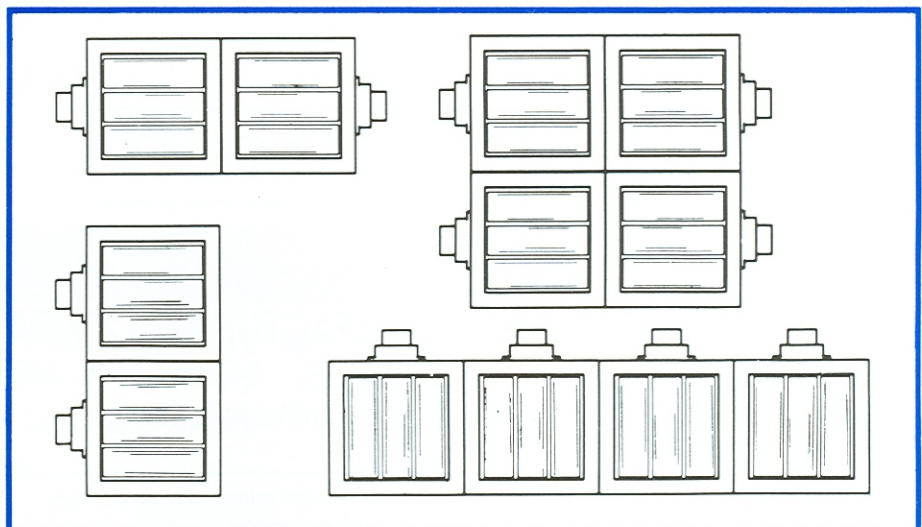
**Position 6**  
36 degrees closed

**Position 8**  
18 degrees closed

**Position 10**  
Fully open

## Multiple Assemblies

It may be necessary to manufacture multiple module units so as to supply the required dimension. The variants illustrated are a selection of what may be supplied. The 'four-in-line' units illustrated would be supplied with blades being vertically mounted and set in the desired position by the unique handle.



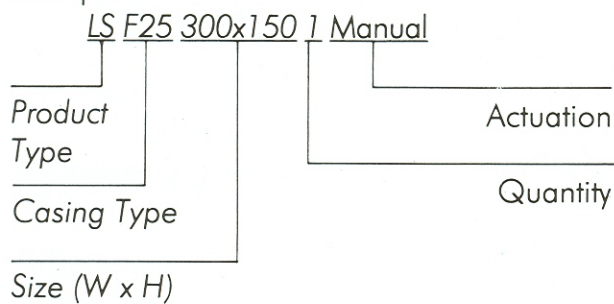
# LS - VC SERIES

## Balance and Control Dampers

LS or VS SERIES

Order Specifications

Example:



### Product Type

LS Balancing Damper  
OR  
VC Control Damper

### Casing Type

F25 25mm Flange  
F30 30mm Flange  
F35 35mm Flange  
F40 40mm Flange  
S Rectangular/Square Spigot  
C Circular Spigot  
O Flat Oval Spigot

### Product Range

GMAMCO / CARADON AIR DIFFUSION manufacture a complete range of Fire/Smoke and Control Dampers and associated equipment including Sand Trap Louvres, Access Doors, Plenum Boxes.

# GMAMCO

**GULF MECHANICAL  
ACOUSTIC MANUFACTURING COMPANY**

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The Company reserves the right of design change without notice.