



MANUAL BALANCING DAMPER

MODELS: 1810 PARALLEL BLADE 1820 OPPOSED BLADE

The Nailor 1800 Series Dampers are especially designed for manual balancing applications. They are suitable for use in the majority of commercial low to medium pressure and velocity HVAC systems.

They are designed and built to provide a cost effective and reliable damper for reduced volume control and not positive shut-off. They are not recommended for applications as an automatic control damper.

The 1800 Series includes many of the design features incorporated in the Nailor 1000 Series Control Dampers. These include a sturdy hat channel frame with die-formed corner gussets for reinforcement, a roll-formed vee groove blade design that maximizes strength and zero maintenance concealed linkage (out of the air stream) for reduced air turbulence.

Nailor's 1800 Series exceed the volume damper design recommendations in SMACNA "HVAC Duct Construction Standards - Metal and Flexible" and offer an economical manufactured product alternative to custom 'shop built' dampers.

STANDARD CONSTRUCTION:

Frame: 5" x 7/8" x 16 ga. (127 x 22 x 1.6) galvanized steel hat channel with die-formed corner gussets. Low profile (flat top and bottom) on dampers 10" (254) high and under.

Blades: 6" (152) wide on 5 1/2" (140) centers. 16 ga. (1.6) galv. steel vee groove design. Parallel or opposed action.

Linkage: Concealed type totally enclosed within the frame and out of the airstream. Plated steel.

Bearings: 1/2" (13) dia. Celcon®.

Axles: 1/2" (13) dia. plated steel double bolted to blades.

Drive Shaft: 6" (152) long x 1/2" (13) dia. double-bolted fixed drive shaft on each damper section. The drive shaft is easily removed if required.

Temperature Range: -50°F to +250°F (-46°C to +121°C).

Sizes (Duct W x H):

Minimum		Maximum	
Single Section		Single Section	Multiple Section
Single Blade (parallel) 6" x 4" (152 x 102)	Two Blades (parallel or opposed) 8" x 10" (203 x 254)	48" x 72" (1219 x 1829)	96" x 144" (2438 x 3658)

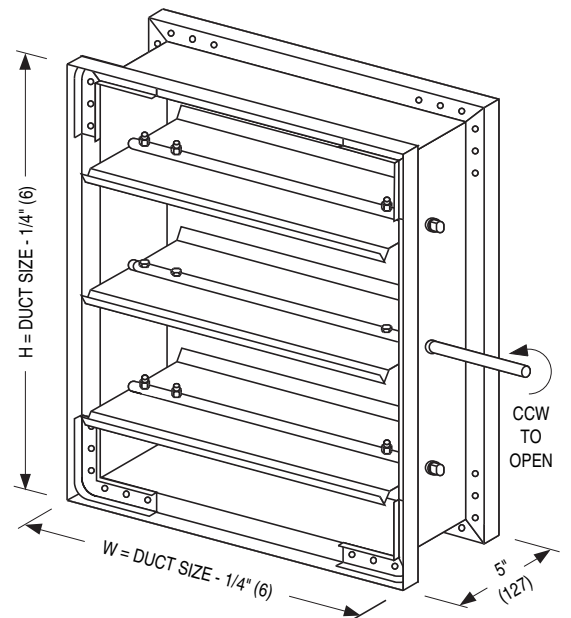
OPTIONS:

- BO** Oilite bearings
- 304** Stainless Steel construction
- DLO** Lock-on drive shaft
- HLQ** Hand-locking quadrant (one required per damper section)
- HL2** Hand-locking quadrant with 2" (51) stand-off bracket
- Other _____.

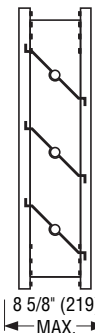
PERFORMANCE:

Dampers are designed to operate in a clean, dry environment. For proper operation, dampers must be installed without racking. The hand quadrant must be installed on the indicated drive blade.

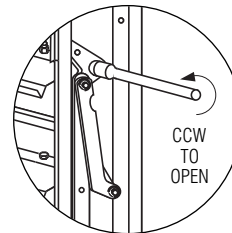
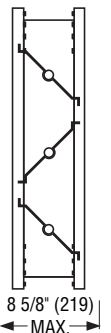
Models 1810/1820 - Maximum Performance Ratings	
Maximum Face Velocity	2000 fpm (10 m/s)
Maximum System Pressure	2.5 in. w.g. (625 Pa)



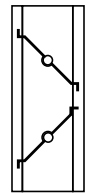
MODEL 1810 PARALLEL BLADE (optional)



MODEL 1820 OPPOSED BLADE (standard)



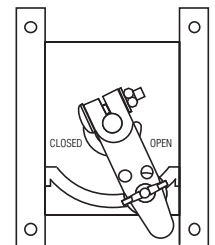
The low profile frame illustration is used to maximize free area on units 10" (254) high and under.



OPTIONAL LOCK-ON DRIVE SHAFT

OPTIONAL HAND-LOCKING QUADRANT

7/8" (22) stand-off



Dimensions are in inches (mm).

SCHEDULE TYPE:				
PROJECT:				
ENGINEER:	DATE	A SERIES	SUPERSEDES	DRAWING NO.
CONTRACTOR:	12 - 4 - 12	1800	10 - 1 - 10	1800-1



MANUAL BALANCING DAMPER

MODELS: 1810 PARALLEL BLADE 1820 OPPOSED BLADE

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STANDARD CONSTRUCTION:

- Frame:** 5" x 7/8" x 16 ga. (127 x 22 x 1.6) galvanized steel hat channel with die-formed corner gussets. Low profile (flat top and bottom) on dampers 10" (254) high and under.
- Blades:** 6" (152) wide on 5 1/2" (140) centers. 16 ga. (1.6) galv. steel vee groove design. Parallel or opposed action.
- Linkage:** Concealed type totally enclosed within the frame and out of the airstream. Plated steel.
- Bearings:** 1/2" (13) dia. Celcon®.
- Axles:** 1/2" (13) dia. plated steel double bolted to blades.
- Drive Shaft:** 6" (152) long x 1/2" (13) dia. lock-on drive shaft on each damper section.

Temperature Range: -50°F to +250°F (-46°C to +121°C).

Sizes (Duct W x H):

Minimum		Maximum	
Single Section		Single Section	Multiple Section
Single Blade (parallel) 6" x 4" (152 x 102)	Two Blades (parallel or opposed) 8" x 10" (203 x 254)	48" x 72" (1219 x 1829)	96" x 144" (2438 x 3658)

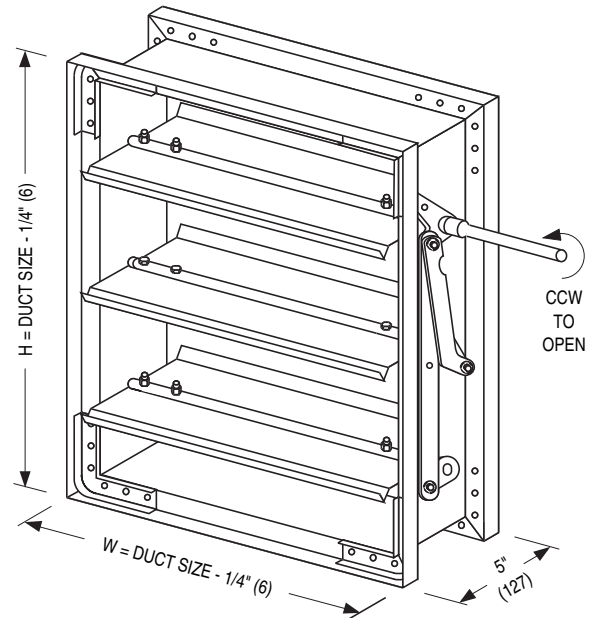
OPTIONS:

- BO** Oilite bearings
- 304** Stainless Steel construction
- HLQ** Hand-locking quadrant (one required per damper section)
- HL2** Hand-locking quadrant with 2" (51) stand-off bracket
- Other _____

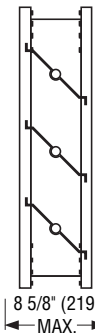
PERFORMANCE:

Dampers are designed to operate in a clean, dry environment. For proper operation, dampers must be installed without racking. The hand quadrant must be installed on the indicated drive blade.

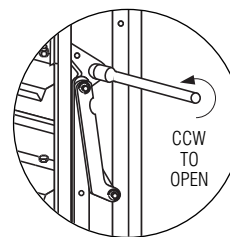
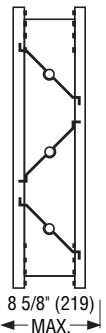
Models 1810/1820 - Maximum Performance Ratings	
Maximum Face Velocity	2000 fpm (10 m/s)
Maximum System Pressure	2.5 in. w.g. (625 Pa)



MODEL 1810 PARALLEL BLADE (optional)

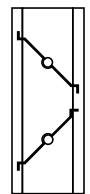


MODEL 1820 OPPOSED BLADE (standard)



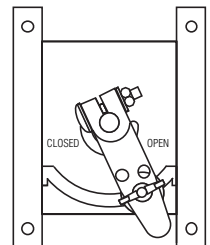
LOCK-ON DRIVE SHAFT

The low profile frame illustration is used to maximize free area on units 10" (254) high and under.



OPTIONAL HAND-LOCKING QUADRANT

7/8" (22) stand-off



Dimensions are in inches (mm).

SCHEDULE TYPE:
PROJECT:
ENGINEER:
CONTRACTOR:

DATE	C SERIES	SUPERSEDES	DRAWING NO.
12 - 4 - 12	1800	10 - 1 - 10	1800-1



MANUAL BALANCING DAMPER MODEL: 1870 SINGLE BLADE

The Model 1870 Manual Balancing Damper is an economical branch duct balancing damper designed for use in most metal and fibre ductboard HVAC systems. The low profile frame and sills allow maximum free area. The ribbed forms in the blade and frame are for extra strength.

STANDARD CONSTRUCTION:

- Frame:** 3" wide x 18 ga. (102 x 1.3) galvanized steel.
- Blade:** 20 ga. (1.0) galvanized steel up to 24" x 12" (610 x 305).
18 ga. (1.3) galvanized steel above 24" x 12" (610 x 305).
- Shaft:** 1/4" (6) square plated steel.
- Quadrant:** Plated steel with locking operator (shipped loose).
- Minimum Size:** 4" x 4" (102 x 102).
All units are manufactured 1/4" (6) under nominal size.
- Maximum Size:** 36" x 12" (914 x 305).
All units are manufactured 1/4" (6) under nominal size.

Temperature Range: -50°F to approximately 180°F (-45°C to 82°C).

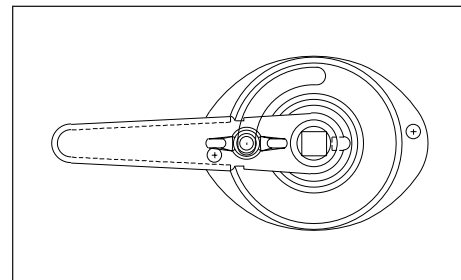
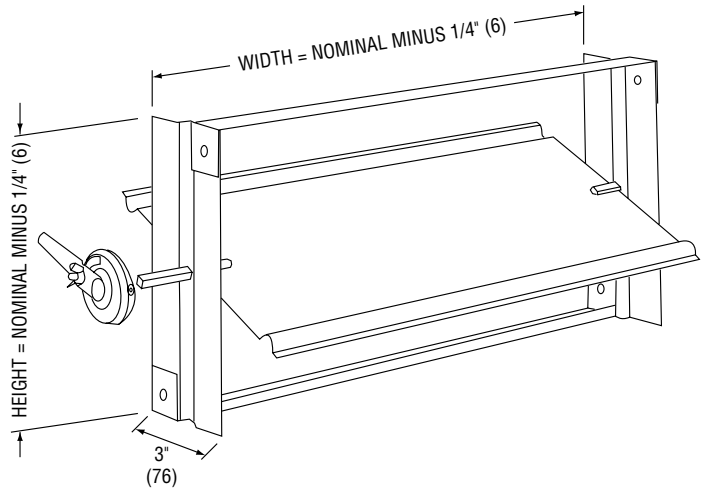
For larger units; refer to Models 1810 and 1820.

ACCESSORIES:

- 2" (51) stand-off bracket for hand quadrant (for externally insulated duct).

PERFORMANCE:

- Maximum System Pressure:** 2" w.g. (0.49 Kpa).
- Maximum Face Velocity:** 1500 fpm (7.6 m/s).



LOCKING QUADRANT

SCHEDULE TYPE:
PROJECT:
ENGINEER:
CONTRACTOR:

Dimensions are in inches (mm).

DATE	B SERIES	SUPERSEDES	DRAWING NO.
10 - 5 - 99RR	1800	6 - 97	1800-2



ROUND MANUAL BALANCING DAMPER STEEL MODEL: 1890

The Nailor Model 1890 is a manual balancing, butterfly damper which has been designed for all types of round ductwork applications and is suitable for use in the majority of low pressure and velocity commercial HVAC systems. The 1890 installs easily in round spiral ductwork.

The 1890 is supplied as standard with a hand locking quadrant. They are not intended to be used in applications as a positive shut-off or automatic control damper.

STANDARD CONSTRUCTION:

FRAME: 22 ga. (0.86) corrosion-resistant steel with stiffening beads up to 12" (305) dia. 20 ga. (0.91) over 12" (305) dia.

BLADE: 22 ga. (0.86) corrosion-resistant steel up to 12" (305) dia., 20 ga. (1.0) over 12" (305) dia.

DRIVE SHAFT/ AXLE:

1/4" (6) square plated steel.

AVAILABLE SIZES: 4" (102) through 20" (508) diameter in nominal 1" (25) increments.

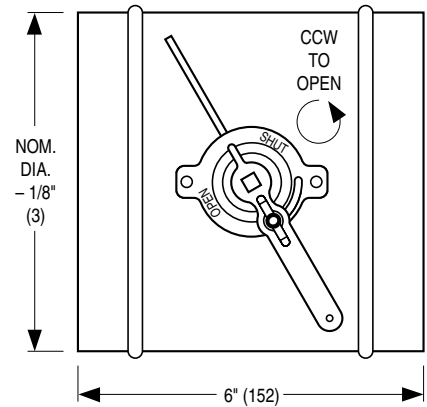
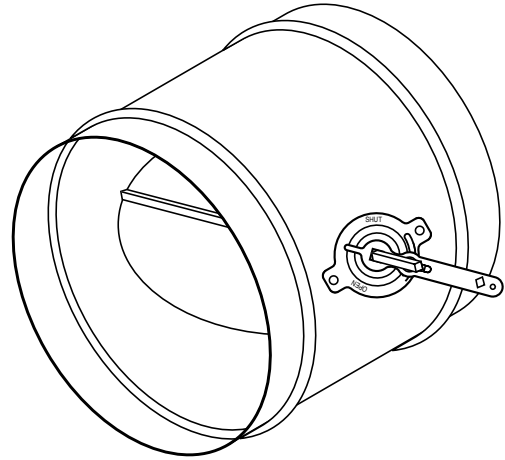
TEMPERATURE RANGE: -50°F to 250°F (-45°C to +121°C)

OPTIONS:

- SB** 2" (51) stand-off bracket for hand locking quadrant.
- BO** Oilite bearings.
- A38** 3/8" (9.5) square axle. No hand locking quadrant (control supplied by others).
- A38Q** 3/8" (9.5) square axle with matching hand locking quadrant.
- Special features _____ .

PERFORMANCE:

Dampers are designed to operate in a clean, dry environment.
Maximum System Pressure: 2" w.g. (500 Pa).
Maximum Face Velocity: 2000 fpm (10 m/s).



SCHEDULE TYPE:		Dimensions are in inches (mm).			
PROJECT:					
ENGINEER:	DATE	B SERIES	SUPERSEDES	DRAWING NO.	
CONTRACTOR:	9 - 29 - 10	1800	17 - 5 - 99RR	1800-3	



MANUAL BALANCING DAMPER STEEL • STANDARD PERFORMANCE MODELS: 1810 & 1820 WITH CR ROUND TRANSITIONS OPTION

The 1810CR/20CR Series are Nailor's manual balancing dampers in a low leakage casing with round transition collars and are suitable for use in the majority of commercial low to medium pressure and velocity HVAC systems at an economical cost. Model 1820 with opposed blade action is recommended for the majority of applications.

STANDARD CONSTRUCTION:

- Frame:** 5" x 7/8" x 16 ga. (127 x 22 x 1.6) galvanized steel hat channel with die-formed corner gussets. Low profile (flat top and bottom) on dampers 10" (254) high and under.
- Blades:** 6" (152) wide on 5 1/2" (140) centers. 16 ga. (1.6) galvanized steel vee groove design. Parallel or opposed action.
- Linkage:** Concealed type totally enclosed within the frame and out of the airstream. Plated steel.
- Bearings:** 1/2" (13) dia. Celcon®.
- Axles:** 1/2" (13) dia. plated steel double bolted to blades.
- Drive Shaft:** 6" (152) long x 1/2" (13) dia. rigid drive shaft.
- Casing:** Up to 36" x 36" (914 x 914) 20 ga. (1.0) galvanized steel.
36" x 36" (914 x 914) and up 18 ga. (1.31) galvanized steel.
Casing is tack-welded and caulked against leakage.

Temperature Range: -50°F to +250°F (-46°C to +121°C).

Sizes (Duct Dia.):

Minimum		Maximum	
Single Section		Single Section	Multiple Section
Single Blade 4" (102) dia.	Two Blades (parallel or opposed) 8" (203) dia.	46" (1168) dia.	n/a

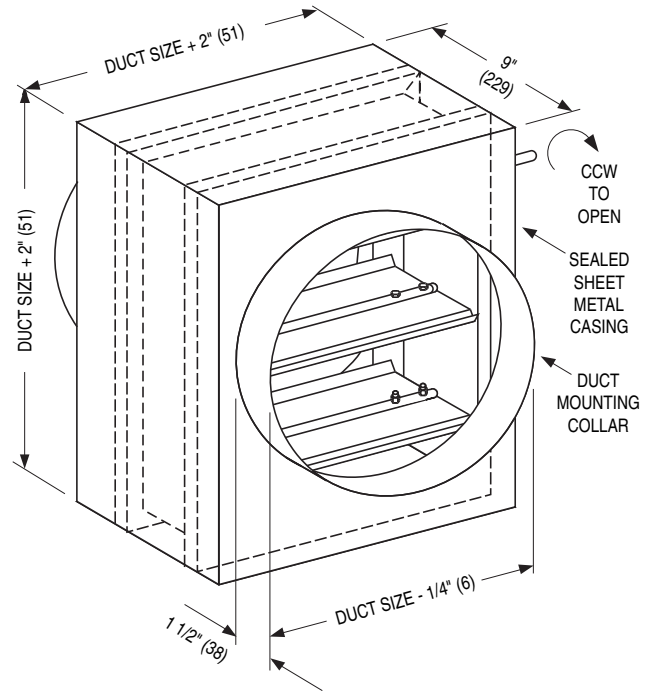
OPTIONS:

- BO** Oilite bearings
- 304** Stainless Steel construction
- HLQ** Hand-locking quadrant
- HL2** Hand-locking quadrant with 2" (51) stand-off bracket
- Other _____.

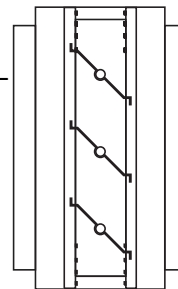
PERFORMANCE:

Dampers are designed to operate in a clean, dry environment. For proper operation, dampers must be installed without racking. The hand quadrant must be installed on the indicated drive blade.

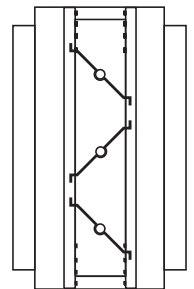
Models 1810/1820 with CR - Max. Performance Ratings	
Maximum Face Velocity	2000 fpm (10 m/s)
Maximum System Pressure	2.5 in. w.g. (625 Pa)



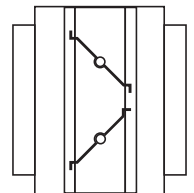
MODEL 1810CR
PARALLEL
BLADE



MODEL 1820CR
OPPOSED
BLADE



The low profile frame illustrated is used to maximize free area available on units 10" (254) high and under.



SCHEDULE TYPE:

PROJECT:

ENGINEER:

CONTRACTOR:

Dimensions are in inches (mm).

DATE

B SERIES

SUPERSEDES

DRAWING NO.

12 - 4 - 12

1800

1 - 8 - 07

1800-4



MANUAL BALANCING DAMPER

MODELS: 1810FDB PARALLEL BLADE 1820FDB OPPOSED BLADE

The Nailor 1800FDB Series Dampers are especially designed for manual balancing applications. They are suitable for use in the majority of commercial low to medium pressure and velocity HVAC systems.

They are designed and built to provide a cost effective and reliable damper for reduced volume control and not positive shut-off. They are not recommended for applications as an automatic control damper.

The 1800FDB Series incorporates a rugged flanged frame for direct fastening to flanged ductwork and features a roll-formed triple-vee blade design that maximizes strength, and zero maintenance concealed linkage (out of the air stream) for reduced air turbulence.

Nailor's 1800FDB Series exceed the volume damper design recommendations in SMACNA "HVAC Duct Construction Standards - Metal and Flexible" (1st edition 1985), and offer an economical manufactured product alternative to custom 'shop built' dampers.

STANDARD CONSTRUCTION:

- Frame:** 3 5/8" (92) deep with 1 1/2" (38) flange both sides, 16 ga. (1.6) galvanized steel. Welded construction.
- Blades:** 6" (152) wide on 5 1/2" (140) centers. 16 ga. (1.6) galvanized steel triple-vee design. Parallel or opposed action.
- Linkage:** Concealed type totally enclosed within the frame and out of the airstream. Plated steel.
- Bearings:** 1/2" (13) dia. celcon®.
- Axles:** 1/2" (13) dia. plated steel double bolted to blades.
- Drive Shaft:** 6" (152) long x 1/2" (13) dia. double-bolted removable drive shaft.
- Minimum Size:** Single blade (parallel): 6" x 4" (152 x 102).
Two blades (parallel or opposed): 6" x 10" (152 x 254).
- Maximum Size:** 46" x 70" (1168 x 1778).
Multiple section assemblies are not available.

Temperature Range: -50°F to 250°F (-45°C to 121°C)

OPTIONS:

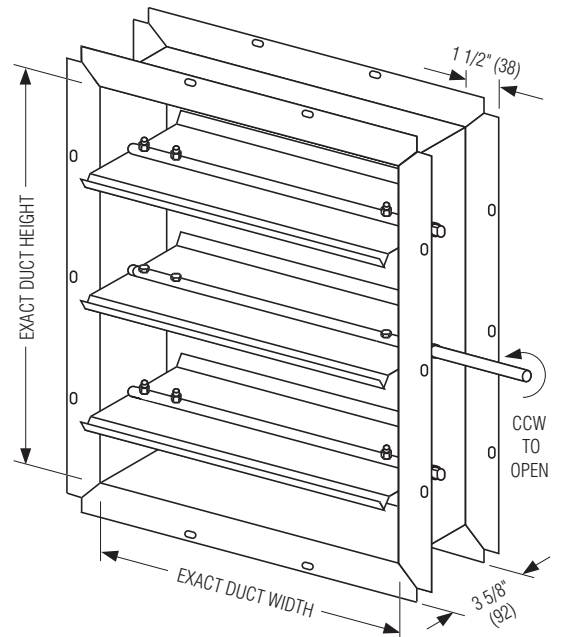
- HLF Hand-locking quadrant for use with 3 5/8" (92) deep flanged frame
- BO Oilite bearings
- 304 Stainless Steel construction
- DLO Lock-on drive shaft
- Other _____

PERFORMANCE:

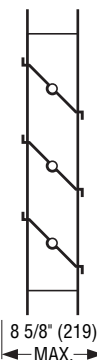
Dampers are designed to operate in a clean, dry environment. For proper operation, dampers must be installed without racking. The hand quadrant must be installed on the indicated drive blade.

Maximum System Pressure: 2.5" w.g. (625 pa).

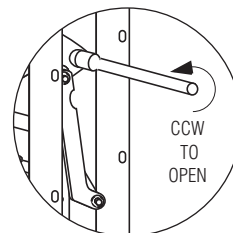
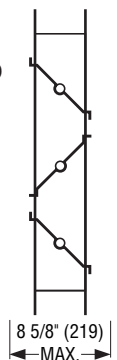
Maximum Face Velocity: 2000 fpm (10 m/s).



MODEL 1810FDB PARALLEL BLADE

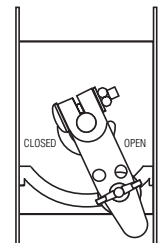


MODEL 1820FDB OPPOSED BLADE



OPTIONAL LOCK-ON DRIVE SHAFT

OPTIONAL HAND-LOCKING QUADRANT



Dimensions are in inches (mm).

SCHEDULE TYPE:				
PROJECT:				
ENGINEER:	DATE	B SERIES	SUPERSEDES	DRAWING NO.
CONTRACTOR:	2 - 9 - 07	1800	1 - 8 - 07(A)	1800FDB



HAND LOCKING QUADRANT
 FOR USE WITH MANUAL BALANCING AND AIR CONTROL DAMPERS
MODEL: CDQUAD (HLQ DAMPER ACCESSORY OPTION)

DESCRIPTION:

The Nailor CDQUAD/HLQ Hand Locking Quadrant is primarily designed for use with the Nailor Multi-Blade 1800 Series Manual Balancing Dampers, 1000, 1100 and 2000 Series Control Dampers.

It mounts directly over a 1/2" (13) dia. lock-on drive shaft or a rigid 1/2" (13) dia. drive shaft and is secured with a carriage bolt.

The CDQUAD is provided with pre-drilled mounting holes for convenient installation and the design ensures that the mounting screws do not interfere with any damper side linkage that may be hidden inside the damper frame channel.

MATERIAL:

16 ga. (1.6) galvanized steel 1" (25) stand-off mounting bracket.

Plated steel quadrant and hardware.

Celcon® bearings.

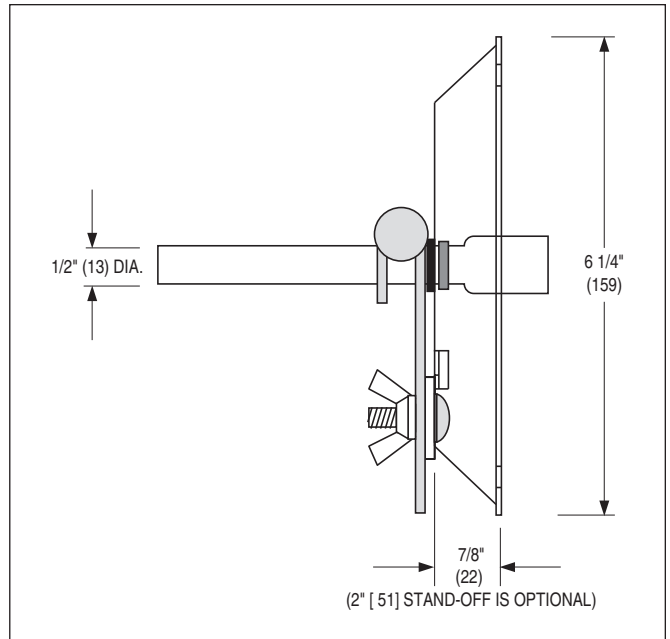
OPTIONS:

Accessory when ordered with damper:

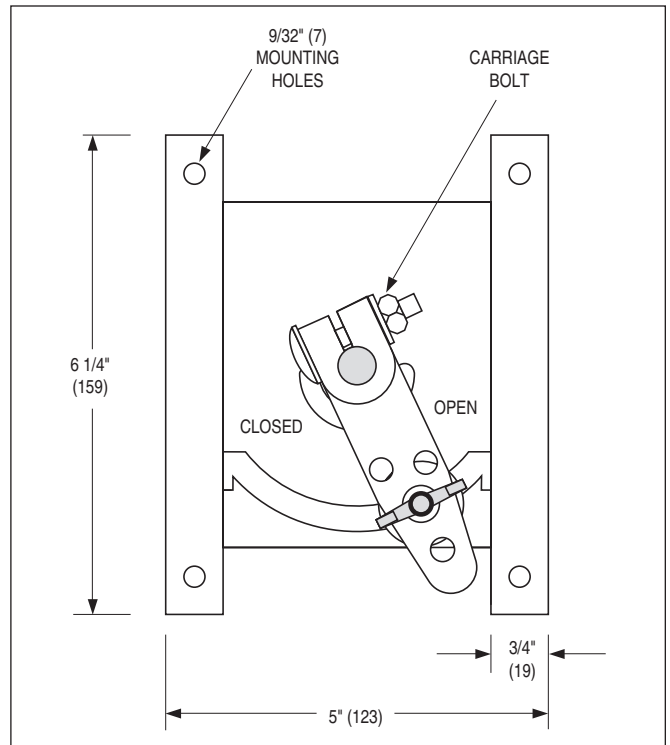
- HLQ2 Hand-locking Quadrant with 2" (51) stand-off bracket.

Order separately (by model number):

- CDQUAD NI CD Hand-locking Quadrant - 1/2" (13) dia. shaft.
- CDQUAD2 NI CD Hand-locking Quadrant - 1/2" (13) dia. shaft with 2" (51) stand-off bracket.
- CDQUADSS NI CD Hand-locking Quadrant - 1/2" (13) dia. shaft, Type 304 stainless steel.
- CDQUAD2SS NI CD Hand-locking Quadrant - 1/2" (13) dia. shaft with 2" (51) stand-off bracket, Type 304 stainless steel.



SIDE VIEW OF HAND QUADRANT

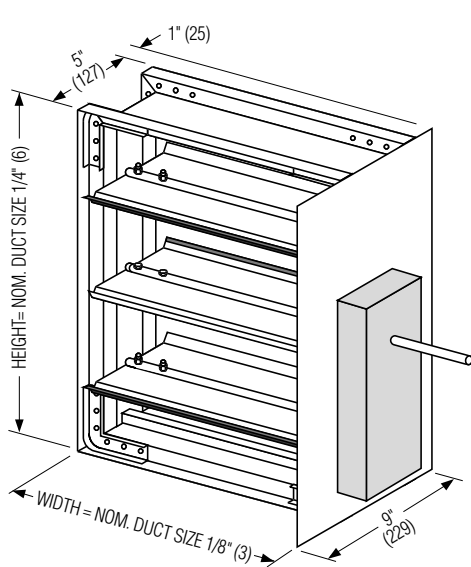


FACE VIEW OF HAND QUADRANT

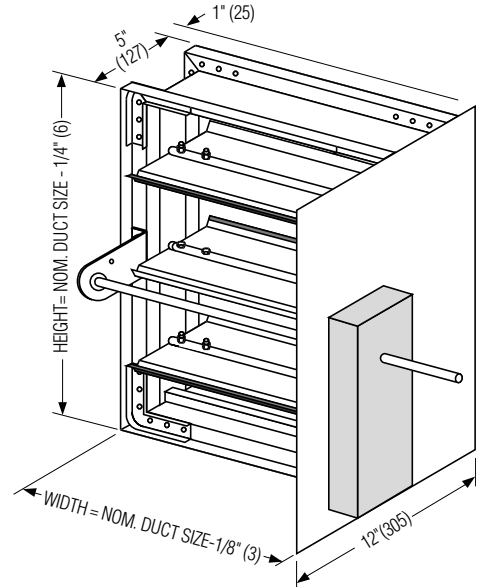
SCHEDULE TYPE:				
PROJECT:				
Dimensions are in inches (mm)				
ENGINEER:	DATE	B SERIES	SUPERSEDES	DRAWING NO.
CONTRACTOR:	12 - 1 - 23	1800	10 - 5 - 99RR	1800-QUAD



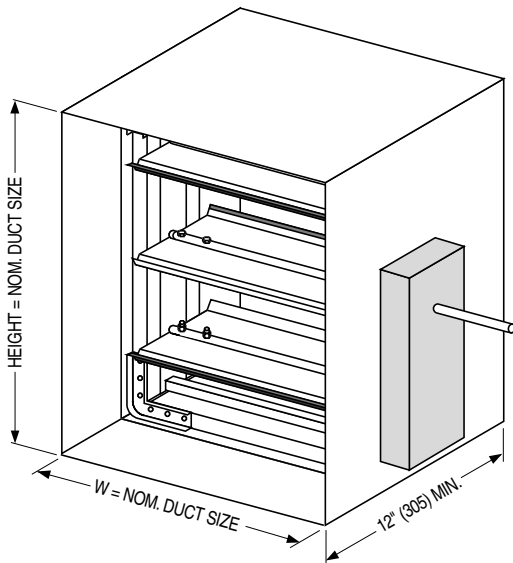
**SMP SIDE ACTUATOR MOUNTING PLATE
AND TYPE 'A' SLEEVE DETAIL
CONTROL & BALANCING DAMPERS
MODEL SERIES: 1000, 1100, 1800 & 2000**



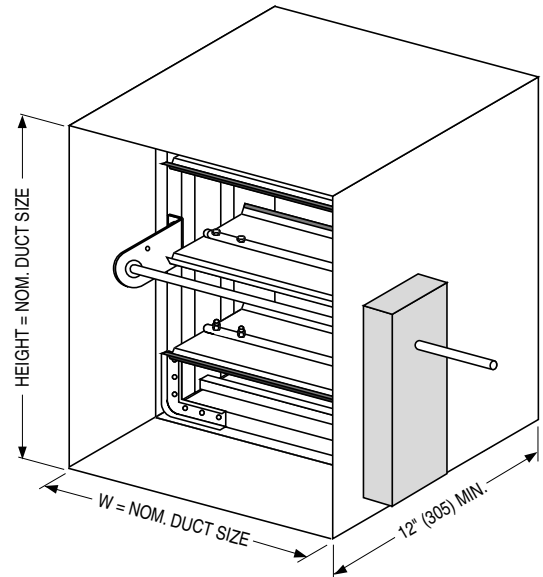
**SMP SIDE ACTUATOR MOUNTING PLATE
DIRECT DRIVE MODELS**



**SMP SIDE ACTUATOR MOUNTING PLATE
JACKSHAFT DRIVE MODELS**



**TYPE 'A' SLEEVE
DIRECT DRIVE MODELS**



**TYPE 'A' SLEEVE
JACKSHAFT DRIVE MODELS**

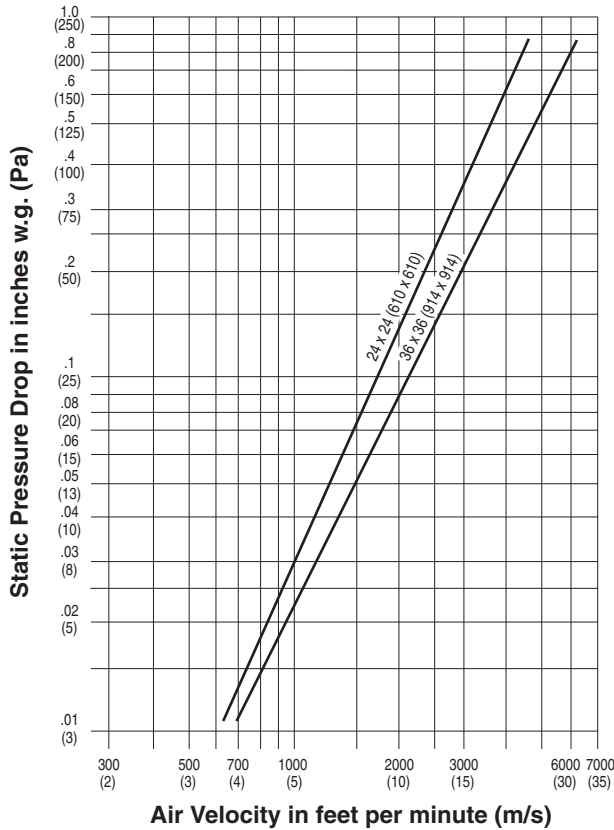
SCHEDULE TYPE:	
PROJECT:	
ENGINEER:	
CONTRACTOR:	

Dimensions are in inches (mm).

DATE	B SERIES	SUPERSEDES	DRAWING NO.
11 - 4 - 13	1000	NEW	SMP-SL-2

MODELS: 1810 AND 1820 MANUAL BALANCING DAMPERS

PRESSURE DROP (damper fully open):



Tested per AMCA standard 500-D, Fig. 5.3.

HOW TO ORDER OR TO SPECIFY

MODELS: 1810 AND 1820 - MANUAL BALANCING DAMPERS

EXAMPLE: 1810 - 24x24 - 304 - DLO - DR - BC - CR - HLQ

1. Models

- 1810 Steel, Vee Blade, Parallel
- 1820 Steel, Vee Blade, Opposed

2. Duct Size

Width x Height (inches [mm's])

3. Construction

- GLV Galvanized Steel (default)
- 304 Type 304 Stainless Steel

4. Drive Shaft Option

- DSR Rigid (default USA, International)
- DLO Lock-on Drive Shaft (default CAN)

5. Drive Location

- DR Right or Left Hand

6. Bearings

- BC Celcon (default)
- BO Oilite Bronze
- BS Stainless Steel

OPTIONS & ACCESSORIES:

7. Transition

- None (default)
- CR Round
- CO Oval

8. Hand Locking Quadrant

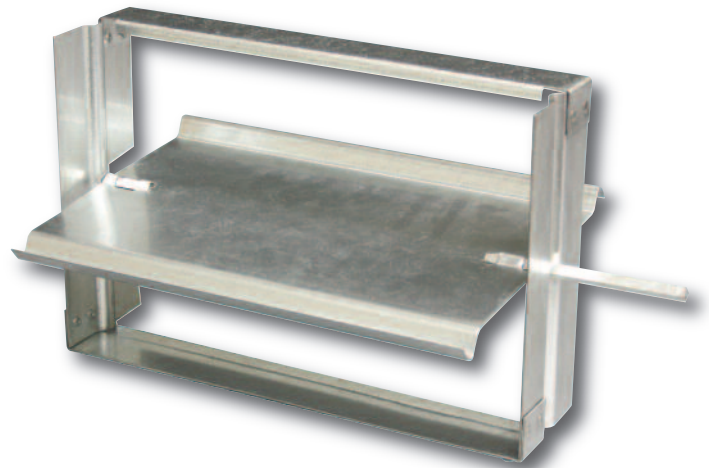
- None (default)
- HL2 Quadrant with 2" (51) Bracket
- HLQ Hand Locking Quadrant

SUGGESTED SPECIFICATION:

Provide and install, as shown on plans and/or schedules, manual balancing dampers as manufactured by Nailor Industries, Inc. which meet or exceed the following criteria: Frame shall be constructed of 16 ga. (1.6) galvanized steel hat channel with mitered corners and die-formed corner gussets for rigidity and structural strength equivalent to 13 ga. (2.4) channel type frames. Blades shall be of vee groove design, 16 ga. (1.6) galvanized steel, on maximum 6" (152) centers. Blade axes shall be 1/2" (13) dia. plated steel, double thru-bolted to blade at each end. Hex, square friction-fit or press-fit axes are not acceptable. Bearings shall be Celcon® molded synthetic type. Blade linkage shall be zero-maintenance, out of airstream and totally concealed within the frame. Provide each damper section with a hand locking quadrant for positive setting of blades at any position. Standard of acceptance shall be Nailor Industries (**specifier to select**) Model 1810 parallel blade or Model 1820 opposed blade manual balancing damper.

- FOR MANUAL BALANCING
- SINGLE BLADE
- GALVANIZED STEEL

Model:
1870 Single Blade



Model 1870

Model 1870 Manual Balancing Damper is a ruggedly built, economical branch duct balancing damper designed for manual balancing applications with rectangular ductwork. Model 1870 installs quickly and easily, becoming part of the ductwork saving time and money on installation costs. It offers an economical manufactured product alternative to custom 'shop built' dampers and meets the volume damper designs recommended by SMACNA. The low profile 18 ga. (1.3) frame and sills allow maximum free area and the ribbed forms in the blade and frame provides extra strength. A locking hand quadrant is provided with each damper for manual operation.

STANDARD CONSTRUCTION:

Frame: 3" wide x 18 ga. (76 wide x 1.3) galvanized steel.

Blades: 20 ga. (1.0) galvanized steel up to 24" x 12" (610 x 305).
 18 ga. (1.3) galvanized steel above 24" x 12" (610 x 305).

Shaft: 1/4" (6) square plated steel.

Quadrant: Plated steel with locking operator (shipped loose).

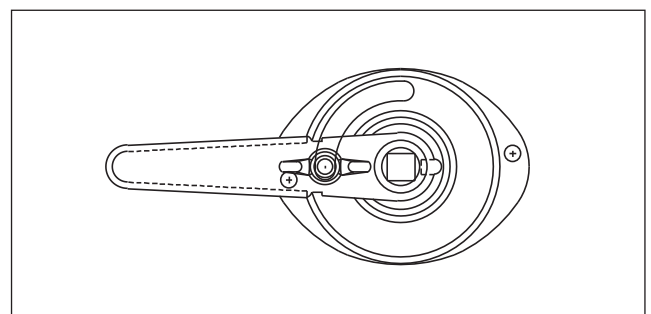
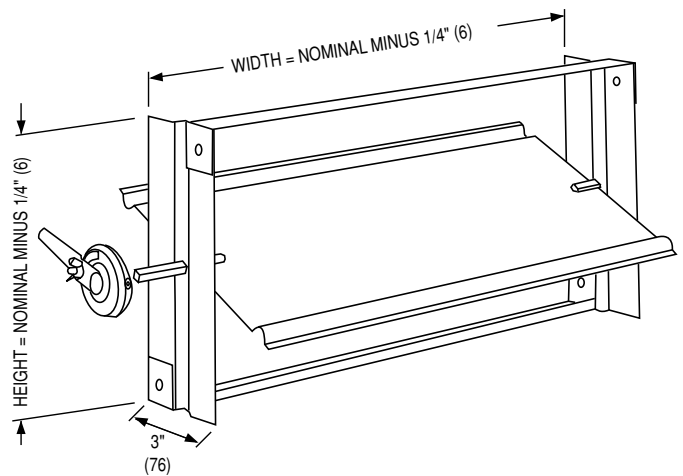
Model 1870 Sizes (Duct W x H):

Minimum	Maximum
Single Section	Single Section
4" x 4" (102 x 102).	36" x 12" (914 x 305).

Note: For larger sizes: refer to Models 1810 and 1820.

Temperature Range: -50°F to 180°F (-46°C to 82°C)

1870 Series - Maximum Performance Ratings	
Maximum Velocity	1500 fpm (7.6 m/s)
Maximum Pressure	2 in. w.g. (500 Pa)



LOCKING QUADRANT

- MANUAL BALANCING DAMPER
- FOR ROUND DUCT
- GALVANIZED STEEL

Model:

1890 Single Blade Balancing Damper



Model 1890

Model 1890 Manual Balancing Damper is a steel butterfly damper designed for all types of round ductwork balancing applications and is suitable for use in low pressure and velocity commercial HVAC systems. The 1890 installs quickly and easily and becomes part of the ductwork, saving time and money on installation costs and is an economical alternative to a "shop built" damper. The design features a sturdy corrosion resistant beaded casing ideal for round spiral ductwork connections and a corrosion resistant steel blade that can be locked in any position with the hand quadrant that is supplied as standard with the damper. A variety of options are available to meet specific requirements and applications.

STANDARD CONSTRUCTION:

Frame: 22 ga. (.86) corrosion-resistant steel with stiffening beads up to 12" (305) dia. 20 ga. (1.0) over 12" (305).

Blades: 22 ga. (.86) corrosion-resistant steel up to 12" (305) dia. 20 ga. (1.0) over 12" (305).

Drive Shaft/Axle: 1/4" (6) dia. plated steel bolted to blade.

Quadrant: Plated steel with locking operator (factory installed).

Model 1890 Sizes (Duct W x H):

Minimum	Maximum
Single Section	Single Section
4" (102) dia.	20" (508) dia.

Temperature Range: -50°F to 250°F (-46°C to +121°C)

1890 Series - Maximum Performance Ratings

Maximum Velocity	2000 fpm (10 m/s)
Maximum Pressure	2 in. w.g. (500 Pa)

