SUBMITTAL RECORD_____
JOB _____
LOCATION_____
SUBMITTED TO_____
SUBMITTAL PREPARED BY_____
APPROVED BY _____
DATE_____

Submittal Form BK - Multi-Blade Damper Kits

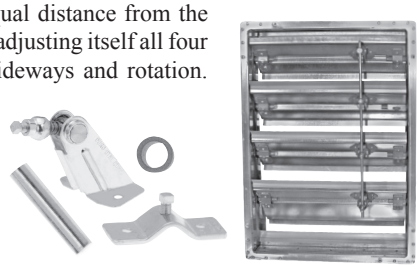
OPAX® BLADE KIT FOR OPPOSED ACTION DAMPERS

Opposed Action Dampers minimize turbulence and the control of the air is more linear. Neva-Bind, 4 way self-adjustability which Duro Dyne **"OPAX"** kits feature, automatically compensates for any construction inaccuracies as well as maintaining linear operation and critical dimensions between linkage points. "OPAX" provides opposed action of damper blades and holds the blades rigidly in position eliminating rattle or flutter. These linkage kits contain all the necessary hardware for two opposed action damper blades.

OPPOSED			
ITEM# / ***BULK#***	CODE / ***BULK CODE***	BEARING SIZE	QTY/***BULK QTY***
2003 / ***2039***	BKO3 / ***BBKO3***	7/16" ID.	50 sets / ***250 pcs (50 of ea)***
2004 / ***2040***	BKO4 / ***BBKO4***	1/2" ID.	50 sets / ***250 pcs (50 of ea)***

NEVA-BIND™ BLADE KIT FOR PARALLEL DAMPERS

Duro Dyne's **"NEVA-BIND"** Linkage Bracket will always align itself to assure smooth, non-binding operation even on the heaviest damper blades. Above, or at unequal distance from the blade axis, it is capable of adjusting itself all four ways, in-out, up-down, sideways and rotation. Each carton contains all necessary hardware for one blade of a parallel multi-blade damper.



PARALLEL			
ITEM# / ***BULK#***	CODE / ***BULK CODE***	BEARING SIZE	QTY/***BULK QTY***
2002 / ***2038***	BK2 / ***BBK2***	1/2" ID.	100 sets / ***400 pcs (100 of ea)***

DAMPER ASSEMBLY UTILIZING SHOP MATERIALS

A. MAKING THE FRAME

(Same for both parallel and opposed dampers)

1. Cut a piece of channel for the frame 1/4" less than the duct size, for clearance.
2. SIDE FRAME:
   a. Mark off 5/16" from each end.
   b. Divide the section inside these marks into as many parts as there are blades required.
   c. Mark for each pivot at the center of each blade section (b).
   d. Drill or punch a 5/8" hole at each pivot (c). Insert self-oiling bushings (tap fit).
3. Weld the sides and bottoms of the frames; be sure to keep them square.
4. On large frames weld on corner braces to keep the frame square. Place any braces on the side of the frame which will not interfere with blade movement. Attach top and bottom end stops, if required. Cement felt, if required, with insulation adhesive.

B. MAKING THE BLADES

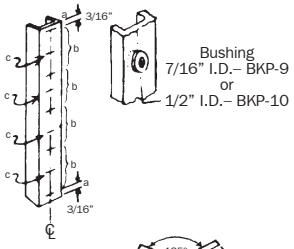
Same for both parallel and opposed dampers

1. Material:

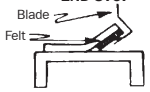
Gauge	Blade Width	Activating Brackets Required per blade
20	to 36"	1
16	to 48"	1 or 2
12	to 52"	2

2. CUT:
   a. "WIDTH" dimension 3/16" less than the inside of frame.
   b. "HEIGHT" dimension: Allow for approximately 7/8" "shrinkage" due to forming; approximately 1/4" blade overlap; approximately 3/16" end clearance to frame.
3. MARK:
   Mark the blades as shown and bend on the scribe lines.

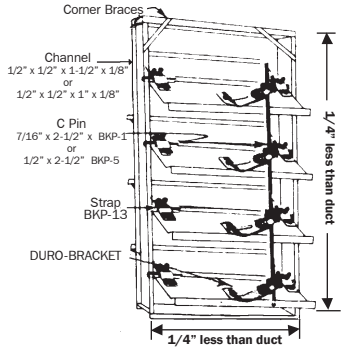
SIDE FRAME



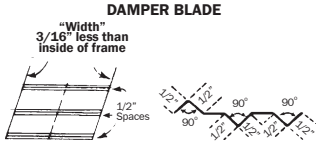
END STOP



PARALLEL DAMPER



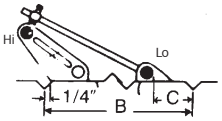
DAMPER BLADE



C. MOUNTING THE HARDWARE

"OPAX" HARDWARE

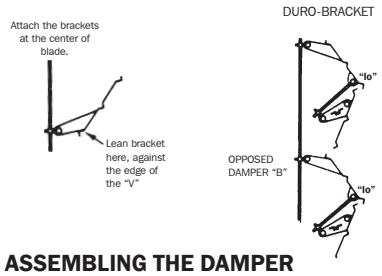
Attach the brackets as shown in drawing "B". (Always drive a "lo" blade, never a "hi" blade.)



Distance C from center of "V" in blade to center of mounting holes on LO bracket. (Scribe mark on bracket).

DImension "B"	Distance "C"
5"	1"
6"	1-3/16"
7"	1-1/4"
8"	1-5/16"
9"	1-3/8"
10"	1-3/8"
11"	1-7/16"
12"	1-1/2"

PARALLEL HARDWARE



D. ASSEMBLING THE DAMPER

1. Lay the damper frame flat on the bench.
2. Place the blades inside the frame in the approximate required position (correct overlap, etc.)
3. Place 2 bearing pins in each center blade groove.
4. Slide the pins under the straps (loosen the set-screws) and into the frame. Tighten the strap set-screws.
5. Attach all linkage rods.

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