



**The Finest Tools
For The Heating, Ventilating &
Air Conditioning Industry
Brought To You From**

**DURO
DYNE**

2001 Tool Catalog



About Duro Dyne

Established in 1952, Duro Dyne Corporation has evolved into the leading manufacturer of sheet metal accessories and equipment for the heating, ventilating, and air conditioning industry. Over the span of the last 48 years, **Duro Dyne** has expanded its plant locations, and now employs over 150 people.

Duro Dyne's extensive research and development program has introduced more new products and processes than any other company in our field. Such things as Flexible Duct Connector, as we know it today, as well as Vane Rail and Blade Kits for multi-blade dampers were originally developed and patented by **Duro Dyne Corporation**. Other products that have now become standards in the sheet metal fabrication field were developed by **Duro Dyne Corporation** as well. In the fastening field **Duro Dyne** introduced the concept of self drilling sheet metal screws. Quieturn Turning Vanes and Glasline Hardware for fiberglass duct systems all were originated by **Duro Dyne**.

Due to the increasing number of diverse items in our product line, **Duro Dyne** found it necessary to divide into the **Duro Dyne Supply Division, DuroZone Division, Machinery Division, Duro Dyne Tool Division, Mez Divisions**.

Our Supply Division continues to offer such familiar standards as Flexible Duct Connector, Insulation Fasteners, Screws and Rivets, Adhesives and Sealers, and Air Regulation Hardware. We continue to investigate new and improved solutions for improving shop and field production. Our Spec-Seal Regulators and Side Glide Damper System parts are the latest innovations from this Division.

The DuroZone Division has made dramatic breakthroughs in Zone Control System designs. **DuroZone** provides cost effective and versatile methods of Zoning for residential and light commercial installation. **DuroZone's** staff of "in-house" engineers is continually researching the latest technological breakthroughs assuring the best products for today as well as tomorrow's markets.

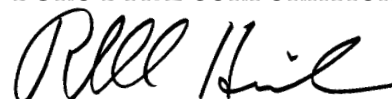
Duro Dyne's Machinery Division is most noteworthy for the tremendous contribution in the field of insulation fastening – from the first hand held Pinspotter to the FGMH Auto Shift Multi-Head Pinspotter System used by some of the largest contracting shops in the world today. In addition to the finest Pinspotting equipment, **Duro Dyne's Machinery Division** continues to manufacture the finest Insulation Cutting Equipment, Portable Spotwelders, Water Based Adhesive Application System and Turning Vane Fabricating Equipment. Quality and workmanship have always been of prime importance for the manufacture of our equipment.

The Duro Dyne Tool Division markets the finest quality hand tools for the sheet metal tradesman. In addition to such tools as snips, notchers, crimpers, and seamers, **Duro Dyne** stocks a full compliment of other tools specifically designed for the HVAC industry. **Duro Dyne** is constantly testing and evaluating new tools for possible addition into our already extensive hand tool line.

With Duro Dyne's marketing expertise and Mez's engineering skills, we have joined together bringing the finest 4-bolt duct connection system to market. The flange is available in three sizes – SMACNA F, J & K along with two different lengths – 12 & 20 foot. The corners have deep sealer pocket traps to retain the gaskets and embossed dimples to prevent over-tightening. These added features are only a few that help to make the difference in our 4-bolt connection product line.

Duro Dyne Corporation does not stop here, for we continue to probe areas in which we could be of greater service. We trust that you will call on us if you have any suggestions as to how we may serve you better.

DURO DYNE CORPORATION



Randall Hinden, President

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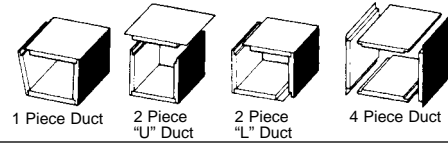
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Fiberglass Duct Basics

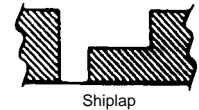
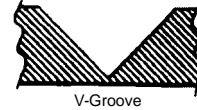
There are four basic ways to fabricate straight duct sections; 1 Piece Duct, 2 Piece "U" Duct, 2 Piece "L" Duct and 4 Piece Duct. Selection of the best method depends on the duct size, total stretch-out, labor and material optimization, and availability of left-over board after large 1 piece or 2 piece ducts have been fabricated.



There are two methods used to layout fiberglass duct sections; Centerline Method and Guide Edge Method. With the Centerline Method, lines are drawn on the duct board to locate the centerlines of the grooves which form the corner breaks and the closure flap. The inside dimensions of the duct, plus add-ons determine the location of

each centerline. (See the accompanying Stretch-Out Chart.) The Guide Edge Method uses a special squaring tool as a guide for cutting grooves. The inside dimensions of the duct determine how far the tool is moved after each cut.

There are two methods of preparing duct board for assembly into ductwork. The first is called the "Vee Groove Method" and is characterized by V shaped grooves cut lengthwise into the duct board to allow the board to be folded into a finished piece of duct. The other method is called the "Shiplap Method". This method utilizes a different groove configuration than the "Vee Groove" method and results in a piece of **ductwork of higher structural integrity.**



One Piece Stretch-Out Dimensions in Inches for 1" Duct Board*

When laying out a Straight duct section, an allowance is added to each inside duct dimension to compensate for the widths of corner breaks and closure flaps. The sum of these allowances is added to the inside

duct dimensions (twice the height plus twice the width) to determine "stretch-out" which is the total board length necessary to fabricate a straight duct section with the desired inside dimensions.

Width of Duct	Height of Duct																						
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
6	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76
7	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78
8	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80
9	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82
10	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84
11	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86
12	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88
13	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90
14	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92
15	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94
16	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96
17	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98
18	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100
19	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102
20	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104
21	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106
22	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108
23	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
24	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112
25	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114
26	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116
27	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118
28	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120
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32	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120				
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34	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120						
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41	102	104	106	108	110	112	114	116	118	120													
42	104	106	108	110	112	114	116	118	120														
43	106	108	110	112	114	116	118	120															
44	108	110	112	114	116	118	120																
45	110	112	114	116	118	120																	
46	112	114	116	118	120																		
47	114	116	118	120																			
48	116	118	120																				
49	118	120																					
50	120																						

*NOTE: This table assumes the total stretch-out (add-on) dimension is 8". If the process used results in a different stretch-out dimension, this table must be modified accordingly.

Shiplap Tool Kit for 1"

The "Shiplap Method" of fiberglass duct fabrication results in the strongest fiberglass duct construction. Easy to use, no scribing or marking is required. Simply reposition the index of the square along the edge of the previous cut and you are in position for the next cut. The kit consists of the four tools (#1, #2/4, #3, #5) required to cut the seams of 1" duct as well as a "Knife", "Cutsall", and "FabMaster Square" packed in a rugged carrying case. Square and #5 can be easily reversed for left-handed operation.



Item#	Description	Dimensions inches	Shelf Pack Wt. lb.	Shelf Pack
818060	Glassmaster Shiplap Tool Kit	49 x 11 x 4.25	12.5	1

Vee Tool Kit for 1"

The "Vee" Kit consists of the three tools (#1, Vee, #5) required to cut the seams of 1" duct as well as a "Knife", "Cutsall", and a "FabMaster Square" packed in a rugged carrying case. Square and tools are reversible for left-handed operation.



Item#	Description	Dimensions inches	Shelf Pack Wt. lb.	Shelf Pack
818062	Glassmaster Vee Tool Kit	49 x 11 x 4.25	11	1

Tools, Replacement Blades, Knives & Accessories

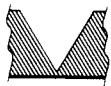
All numbered tools and the "Vee" tool have lightweight anodized aircraft aluminum bodies and hand sharpened, hardened spring steel blades. The square is made of anodized aluminum angle and channel; has built in pre-set angles of 90°, 75°, 68°, and 45°; and is operated with a thumbscrew and wire retainer. Cutsall is used for producing male and female "Shiplap" grooves. "Fab-Knife" is a general purpose cutting tool with a 3" blade. "Peeler Knife" is used for cutting foil and peeling fiberglass from foil.



Item#	Description	Dimensions inches	Shelf Pack Wt. lb.	Shelf Pack
818040	Glassmaster 1" #1 Hand Tool	8.25 x 6.5 x 5	1.00	1
818042	Glassmaster 1" #2/4 Hand Tool	8.25 x 6.5 x 5	0.98	1
818044	Glassmaster 1" #3 Hand Tool	8.25 x 6.5 x 5	0.96	1
818046	Glassmaster 1" #5 Hand Tool	8.25 x 6.5 x 5	1.44	1
818048	Glassmaster 1" #6 Hand Tool	8.25 x 6.5 x 5	0.91	1
818050	Glassmaster 1" Vee Hand Tool	8.25 x 6.5 x 5	0.90	1
818052	Glassmaster Fabrication Square (reverses for left hand operation)	52 x 2 x 2	3.50	1
818054	Glassmaster 1" Male/Female Cutsall	N/A	0.18	1
818056	Glassmaster Fab Knife	N/A	0.15	1
818058	Glassmaster Tool Case (shown in Shiplap & Vee Tool Kits above)	49 x 11 x 4.25	6.30	1
818064	Glassmaster 1" Peeler Knife	N/A	N/A	1
818066	Glassmaster 1" Hole Cutter	11 x 2 x 1.5	N/A	1
818068	Glassmaster 1" Replacement Blade #1	N/A	N/A	1
818069	Glassmaster 1" Replacement Blade #2/4	N/A	N/A	1
818070	Glassmaster 1" Replacement Blade #3	N/A	N/A	1
818071	Glassmaster 1" Replacement Blade #5	N/A	N/A	1
818072	Glassmaster 1" Replacement Blade #6	N/A	N/A	1
818073	Glassmaster 1" Replacement Blade #Vee	N/A	N/A	1



Cutting Profile for #1 Hand Tool



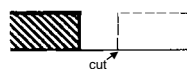
Cutting Profile for Vee Hand Tool



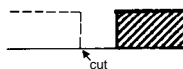
Cutting Profile for #3 Hand Tool



Cutting Profile for #2/4 Hand Tool



Blades for Right



Blades for Left

Cutting Profile for #5 Hand Tool



Cutting Profile for #6 Hand Tool

Shiplap Tool Kit for 1-1/2"



The "Shiplap Method" of fiberglass duct fabrication results in the strongest fiberglass duct construction. Easy to use, no scribing or marking is required. Simply reposition the index of the square along the edge of the previous cut and you are in position for the next cut. The kit consists of the four tools (#1, #2/4, #3, #5) required to cut the seams of 1-1/2" duct as well as a "Knife", "Cutsall", and "FabMaster Square" packed in a rugged carrying case. Square and #5 can be easily reversed for left-handed operation.

Item#	Description	Dimensions inches	Shelf Pack Wt. lb.	Shelf Pack
818082	1-1/2" Glassmaster Shiplap Tool Kit w/o square	49 x 11 x 4.25	9	1
818061	1-1/2" Glassmaster Shiplap Tool Kit with manual	49 x 11 x 4.25	12.5	1

Vee Tool Kit for 1-1/2"



The "Vee" Kit consists of the three tools (#1, Vee, #5) required to cut the seams of 1-1/2" duct as well as a "Knife", "Cutsall", and a "FabMaster Square" packed in a rugged carrying case. Square and tools are reversible for left-handed operation.

Item#	Description	Dimensions inches	Shelf Pack Wt. lb.	Shelf Pack
818084	1-1/2" Glassmaster Vee Tool Kit w/o square	49 x 11 x 4.25	7.5	1
818063	1-1/2" Glassmaster Vee Tool Kit with manual	49 x 11 x 4.25	11	1

Glassmaster® 1-1/2" Duct Board Cutting Tools



Item#	Description	Dimensions inches	Shelf Pack Wt. lb.	Shelf Pack
818041	Glassmaster 1-1/2" #1 Hand Tool	8-1/4 x 6-1/2 x 5	1.00	1
818043	Glassmaster 1-1/2" #2/4 Hand Tool	8-1/4 x 6-1/2 x 5	0.98	1
818045	Glassmaster 1-1/2" #3 Hand Tool	8-1/4 x 6-1/2 x 5	0.96	1
818047	Glassmaster 1-1/2" #5 Hand Tool	8-1/4 x 6-1/2 x 5	1.44	1
818049	Glassmaster 1-1/2" #6 Hand Tool	8-1/4 x 6-1/2 x 5	0.91	1
818056	Glassmaster Fabrication Knife	N/A	0.15	1
818052	Glassmaster Fabrication Square (reverses for left hand operation)	52 x 2 x 2	3.50	1
818067	Glassmaster 1-1/2" Hole Cutter	11 x 2 x 1-1/2	N/A	1
818055	Glassmaster 1-1/2" Male/Female Cutsall	N/A	0.18	1
818065	Glassmaster 1-1/2" Peeler Knife	N/A	N/A	1
818074	Glassmaster 1-1/2" Replacement Blade #1	N/A	N/A	1
818075	Glassmaster 1-1/2" Replacement Blade #2/4	N/A	N/A	1
818076	Glassmaster 1-1/2" Replacement Blade #3	N/A	N/A	1
818077	Glassmaster 1-1/2" Replacement Blade #5	N/A	N/A	1
818078	Glassmaster 1-1/2" Replacement Blade #6	N/A	N/A	1
818079	Glassmaster 1-1/2" Replacement Blade #Vee	N/A	N/A	1
818059	Glassmaster 1-1/2" Tool Case (shown in Shiplap & Vee Tool Kits above)	49 x 11 x 4-14	6.30	1
818051	Glassmaster 1-1/2" Vee Hand Tool	8-1/4 x 6-1/2 x 5	0.90	1

Double Edged Knife



Item#	Description	Dimensions inches	Shelf Pack Wt. lb.	Shelf Pack
818114	DEK-6 6" Double Edged Knife	11 x 4 x 1	0.32	1

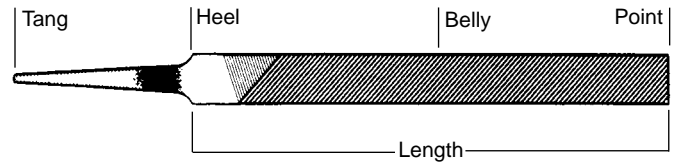
File and Rasp Facts

The following information is included to help you make the right choice of file to meet your particular requirements.

File Terminology:

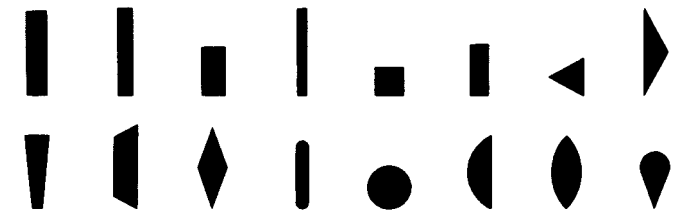
Length

Length is measured exclusive of tang, from point to heel. Desired stroke, length, type of material and its size will determine length required.



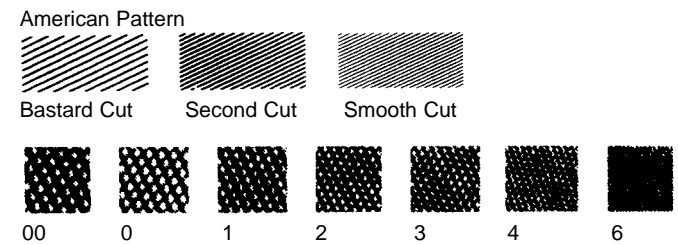
Shape

Area to be filed will determine specific cross section - round, square, knife, flat, etc - to be used



Coarseness

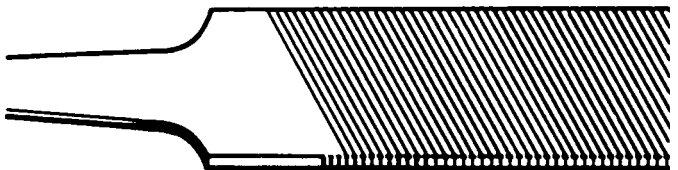
Work to be accomplished, roughing or finishing, will determine type of teeth and coarseness for each application. Most American pattern files are available with 3 grades of cut: bastard-cut, second-cut and smooth-cut. Swiss pattern files are available in seven cuts: 00, 0, 1, 2, 3, 4, 6. The degree of coarseness is greater in longer files, but differences between bastard, second cut and smooth are proportionate.



Kinds of Teeth:

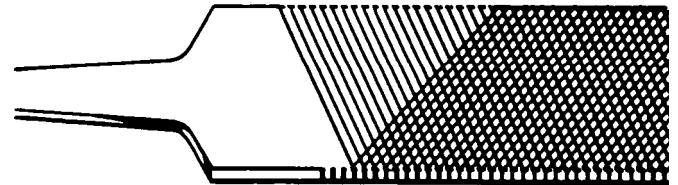
Single-cut

Single set of parallel, diagonal rows of teeth. Single-cut files are often used with light pressure to produce a smooth surface finish or to put a keen edge on knives, shears or saws.



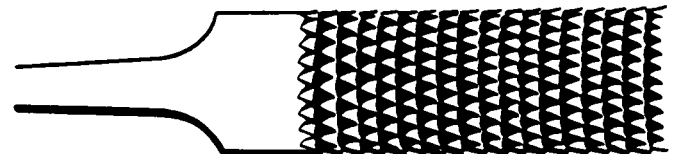
Double-cut

Two sets of diagonal rows of teeth. The second set of teeth is cut in the opposite diagonal direction and on top of the first set. The first set of teeth is known as the overcut while the second is called the upcut. The upcut is finer than the overcut. The double-cut file is used with heavier pressure than the single-cut and removes material faster from the workplace.



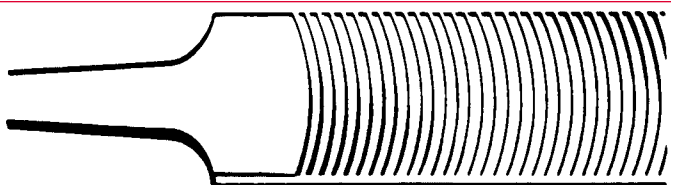
Rasp-cut

Series of individual teeth which are formed by a single-pointed tool. This produces a rough cut that is used primarily on wood, hooves, aluminum and lead.



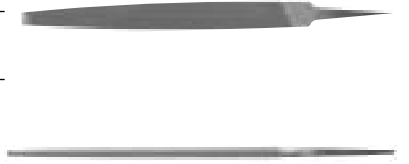
Curved-cut

Teeth are arranged in curved contours across the file face. The curved-cut file is normally used in automotive body shops for smoothing body panels.



Carded Files without Handles

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
844044	21825 - 6" Mill Bastard	1.31	6
844045	21832 - 8" Mill Bastard	2.06	6
844046	21839 - 10" Mill Bastard	3.50	6
844047	21842 - 12" Mill Bastard	5.06	6
844048	21846 - 6" Round Bastard	0.94	6
844052	21866 - 6" Slim Taper	1.31	6
844056	21862 - 8" Flat Bastard	2.44	6



Carded Files with Handles

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
844073	21687 - 6" Mill Bastard	1.13	6
844074	21694 - 8" Mill Bastard	2.00	6
844075	21701 - 10" Mill Bastard	3.88	6
844079	21729 - 6" Slim Taper	1.06	6



Handyman's Home File Pack

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
844101	22017 - 8" Mill Bastard, 6" Round Bastard, 8" 4-in-hand, 6" Slim taper, pouch	4.50	5



Handy File

A combination file, single-cut on one side for sharpening edged tools and smoothing metal surfaces, double-cut on other side for rapid removal of metal. One edge is "cut" and the other is "uncut." Convenient "hang up" hole. Length measured exclusive of handle.

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
844116	06601 - Combination Cut 8 x 31/32 x 11/64	5.63	6



Carded File Handle

A high impact plastic handle with interchangeable cushion inserts to fit the most popular files.

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
844135	21474 - Carded File Handle & Inserts	1.00	6



Flat Files

Flat files are used by machinists, machinery builders, ship and engine builders, repair men and others who require rapid removal of metal. They are rectangular in cross section and taper slightly towards point in width. Double-cut on both sides. Single-cut on both edges.

Item#	Description	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
840078	03665 - Bastard	10	3.59	6
840079	03764 - Bastard	12	5.63	6
840084	03599 - Second Cut	8	3.12	12
840091	03632 - Smooth	8	3.75	12
840093	03830 - Smooth	12	5.75	6



Half Round Files

Rounded on one side. Flat on the other. Used on concave and convex as well as flat surfaces. Backs on all half round bastard files are Double-cut. The backs of all half round second cut files longer than 6 inches are Double-cut, the 4 and 6 inch files are Single-cut. The backs of all half round smooth files are Single-cut. The flat sides of all flat round files are Double-cut.



Item#	Description	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
840100	04896 - Bastard	8	3.31	12
840101	04995 - Bastard	10	3.03	6
840115	04861 - Smooth	6	1.09	12
840118	05158 - Smooth	12	5.25	6

Knife Files

Knife files are knife blades section and used principally by tool and die makers on work having acute angles. All Double-cut on sides and Single-cut on sharp edge. Knife files are supplied with uncut backs.



Item#	Description	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
840150	06961 - Smooth	8	2.08	12

Mill Files

For sharpening mill or circular saws. Also for draw-filing and finishing metals. All sizes tapered slightly in width. Two square edges. Single-cut on sides and edges.



Item#	Description	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
840167	08354 - Bastard	6	1.03	12
840168	08497 - Bastard	8	2.75	12
840169	08642 - Bastard	10	5.07	12
840170	08737 - Bastard	12	4.53	6
840175	08529 - Second-cut	8	2.75	12

Cross Reference Chart For Hacksaw Blades

DURO DYNE	Description	Material	Dimensions L x W x T In Inches	Teeth Per Inch	LENNOX	MALCO	MILWAUKEE	USE
846106	62807-NF1024	Bi-Metal	10 x 1/2 x .025	24	20111-024HE 20141-V024HE 220151-S024HE	N/A	N/A	for cross section 1/16" through 1/4" such as pipe, angles, small drill rod
846109	62825-NF1218	Bi-Metal	12 x 1/2 x .025	18	20116-218HE 20144-V218HE 20154-S218HE	1218B	48-43-0610	for general shop use
846110	62825-NF1224	Bi-Metal	12 x 1/2 x .025	24	120117-224HE 20145-V224HE 20155-S224HE	224B	48-43-0620	for cross section 1/16" through 1/4" such as pipe, angles, small drill rod
846111	62837-NF1232	Bi-Metal	12 x 1/2 x .025	32	20118-232HE 20146-V232HE 20156-S232HE	1232B	48-43-0630	for cross section up to 1/16" such as light tubing, sheet metal, BX.

Hand Hacksaw Tooth Selector

Material	Teeth	Strokes Per Minute
Ferrous		
*BX	32	60
*Conduit, Rigid	24	60
Drill Rod	18-24	60
Iron, Cast	14	60
*Pipe	24	60
Rails	14	60
*Sheet Metal	24-32	60
Steel, Machinery	14-18	60
Steel, Tool	18-24	60
Structural Shapes, Heavy	18	60
Structural Shapes, Light	24	60
*Tubing, Light	32	60

Material	Teeth	Strokes Per Minute
Non-Ferrous		
Aluminum	14	60
Brass and Bronze	14-24	60
*Brass Tubing	24	60
Copper	14	60
Structural Shapes	14-24	60
Non-Metals		
Asbestos	14	60
Fiber	14	60
Slate	14	50

*Special shatterproof blades of coarser teeth than specified may be used with excellent results on thin sections.

Hand Hacksaw Blade Care and Servicing

Blade Breakage

1. Lack of tension. Tighten unit taut.
2. Too much tension. Loosen slightly.
3. Cutting in awkward position. Use flexible type blades.
4. Jamming in cut. Hold work securely—stock should fall free after cut.
5. In soft material teeth may be binding because they are too fine.

Pinhole Breakage

1. Too much tension. Loosen slightly.
2. Worn pins causing pressure on eyeholes. Replace pins.

Rounded Teeth - Premature Wear

1. Blade not cutting. Use slower stroke and apply heavier feed.
2. Dragging on return stroke. Lift saw.
3. Blade worn out. Replace.

Crooked Cutting

1. Too much pressure. Replace feed.
2. Blade out of alignment. Check frame and blade tension.
3. Blade worn out. Replace.

Tooth Breakage

1. Teeth too coarse. Keep three teeth in contact with the work.
2. Too much feed, teeth loading. Ease feed pressure.
3. Teeth too fine, clogging. Change to coarser tooth.
4. Starting out on sharp corner. Reposition work.

General Tooth Recommendations

14 Tooth: For cutting stock 1"/125,40mm or over in cross section. For soft materials where maximum chip clearance is needed.

18 Tooth: For general shop use, when same blade is used on several jobs.

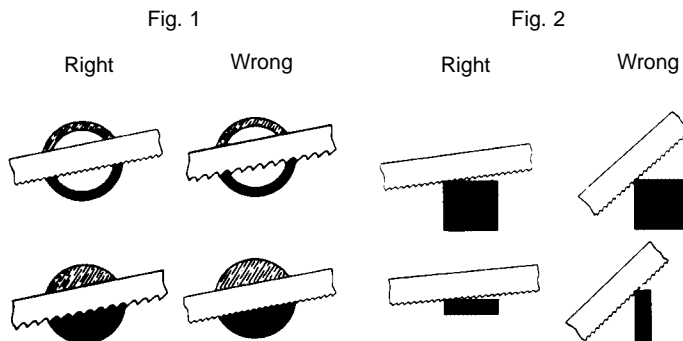
24 Tooth: For cross section 1/16"/1.58mm such as light tubing, sheet metal, BX. At least three teeth should be in contact with the work at all times.

Choose the Right Number of Teeth per inch

The sketches below (figure 1) show how coarseness of teeth affects blade efficiency. See maximum speeds recommended on the previous page. Speed varies according to material being cut and saw blades coarseness.

Starting the Cut

If possible, avoid starting the cut on a sharp corner. When unavoidable, begin with light pressure and use a steady forward stroke. As many teeth as possible should be in contact with the cutting area and at least three teeth must be engaged. Note cutting angles shown below (figure 2).



Solutions to Hacksaw Blade Problems

Blade Breakage

1. Dropping blade on work. Feed blade into work slowly.
2. Loose blade. Follow tension recommendations.
3. Excessive feed. Reduce pressure.
4. New blades used in old cut. Reverse stock.
5. Blade binds at end of cut. Allow loose pieces to fall away.

Pinhole Breakage

1. Dirty mounting plates. Clean blade holder to obtain snug fit.
2. Too much tension. Reduce blade tension.
3. Worn mounting plates and pins. Replace parts.

Stripped Teeth

1. Clogging. Too many teeth per inch; change to coarser tooth.
2. Shock. Teeth too coarse; change to finer tooth blade.
3. Blade entering work at a sharp edge. Reposition work to insure keeping three teeth in contact with work.
4. Excessive feed pressure. Reduce pressure.
5. Material unstable, not properly clamped. Secure properly.

Premature tooth wear

1. Blade reversed in saw. Teeth should be in same direction as cutting stroke.
2. Wrong blade for the job. Refer to tooth selector chart and blade descriptions on the previous page.
3. No cutting lubricant. Use lubricant on all materials except paper and cast iron.
4. Blade drags on return stroke. Make sure blade lifts for return stroke.
5. Too much heat generated by excessive speed. Reduce speed.
6. Excessive feed pressure. Moderate pressure produces longer tooth life.
7. Teeth just rubbing material. Due to insufficient feed. Increase feed.

Crooked Cutting

1. Worn blade. Replace
2. Loose blade. Check for correct tension.
3. Excessive pressure. Use correct rate of feed.
4. Material unstable. Clamp stock securely.
5. Frame out of alignment. Check and adjust tool.
6. Hard spots in material. Reverse stock and start new cut.

Cross Reference Chart For Reciprocating Saw Blades

DURO DYNE	Description	Material	Dimensions L x W x T In Inches	Teeth Per Inch	LENNOX	MALCO	MILWAUKEE	USE
848002	81108	Bi-Metal	3.5 x 5/16 x .035	18	20521-318RC 20522-S318RC	2MS18	48-00-1103 48-00-1102 48-01-1163	contours metal under 1/8" thick
848003	81109	Bi-Metal	4.0 x 3/4 x .035	14	20550-418R 20551-S418R	3TF14	48-00-1185 48-00-1181 48-01-1181 48-00-1171 48-00-1172	metal over 1/8" thick or fiberglass
848004	81111	Bi-Metal	4.0 x 3/4 x .035	18	20552-418R 20553-S418R 20527-B414R	3TF18	48-00-1183 48-01-1183	metal under 1/8" thick or pipe
848005	81113	Bi-Metal	4.0 x 3/4 x .035	24	20554-424R 20555-S424R 20528-B424R	3MC24	48-01-1185	metal pipe under 18 gage
848007	81115	Bi-Metal	6.0 x 3/4 x .035	6	20560-606R	N/A	48-01-1012 48-01-1011	wood, compositions
848008	81117	Bi-Metal	6.0 x 3/4 x .035	10	20562-5610R 20561-S610R 20539-B610R	4GT10 4KH8	48-01-5091 48-01-5092 48-00-1180 48-01-3090 48-01-3092 48-00-1064	nail embedded wood, compositions, plastics, non-ferrous metals
848009	81119	Bi-Metal	6.0 x 3/4 x .035	14	20564-614R 20565-S614R 20539-B610R	4FT14	48-00-1182 48-01-5182 48-01-1182 48-00-1179	metal over 1/8" thick or fiberglass
848010	81121	Bi-Metal	6.0 x 3/4 x .035	18	20566-618R 20567-S618R 20541-B614R	4FT18 4MC18	48-01-5184 48-00-1184 48-01-1184 48-00-2170	metal under 1/8" thick pipe
848011	81123	Bi-Metal	6.0 x 3/4 x .035	24	20568-624R 20569-S624R 20542-B624R	4MC24	48-01-5186 48-01-1186	metal pipe under 18 gage
848012	81131	Bi-Metal	6.0 x 3/4 x .050	6	20572-656R 20573-S656R 20543-B656R	4GT7 4KH6 4DL6	48-00-3031 48-00-3041 48-01-5031 48-01-5041 48-00-3035 48-01-3035 48-01-3031 48-01-3041	extra fast wood cutting or plaster board

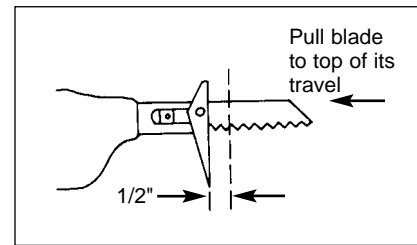
Cross Reference Chart For Reciprocating Saw Blades (continued)

DURO DYNE	Description	Material	Dimensions L x W x T In Inches	Teeth Per Inch	LENNOX	MALCO	MILWAUKEE	USE
848013	81141	High Carbon Steel	6.0 x 3/4 x .059	6	N/A	4KH7 2GS7 4HD6 4S6 3S6	48-00-1121 48-00-1151 48-00-1141 48-00-1041 48-00-1035 48-00-1131 48-00-1022 48-00-1012	nail embedded wood, compositions, plastics, non-ferrous metals
848014	81125	Bi-Metal	8.0 x 3/4 x .035	10	20580-810R 20581-S810R 20544-B810R	8MC10/9MC10	48-01-3093 48-01-5093	wood/nails composites
848015	81127	Bi-Metal	8.0 x 3/4 x .035	14	20580-810R 20551-S418R 20544-B810R	8MC10/9MC10	48-01-3093 48-00-5093 48-00-1400	metal over 1/8" thick pipe, stainless tube
848017	81140	Grit	8.0 x 3/4 x .042	-	20577-800RG 20588-S800RG	N/A	48-00-1420 48-01-1410	abrasives, cast iron, ceramic tiles
848018	81135	Bi-Metal	9.0 x 3/4 x .050	6	20582-956R 20587-S956R	8KH7	48-00-3036 48-01-5036 48-01-3036	extra fast wood cutting
848019	81136	Bi-Metal	9.0 x 3/4 x .050	14	N/A	N/A	N/A	large diameter pipe
848021	81137	Bi-Metal	12.0 x 3/4 x .050	6	20585-156R 20585-S156R 20546-B156R	12KH8	48-00-3037 48-01-3037	extra fast wood cutting
848022	81142	High Carbon Steel	12.0 x 3/4 x .050	6	N/A	12S6 12KH7	48-00-1042 48-00-1032	nail embedded wood, composition, plastics, non-ferrous metals
848024	81143	Bi-Metal	6.0 x 3/4 x .035	6	20570-636RP 20571-S636RP	4P6	48-00-1052 48-01-1052	plaster, drywall
848016	81129	Bi-Metal	8.0 x 3/4 x .035	18	20578-818R 20563-5818R	N/A	N/A	metal under 1/8" thick
848020	81130	Bi-Metal	12.0 x 3/4 x .035	18	N/A	N/A	N/A	metal under 1/8" thick
848023	81139	Bi-Metal	12.0 x 3/4 x .050	14	20583-110R 20584-S110R	N/A	48-01-3094 48-01-5094	large diameter pipe

Helpful Hints When Using Reciprocating Saw Blades

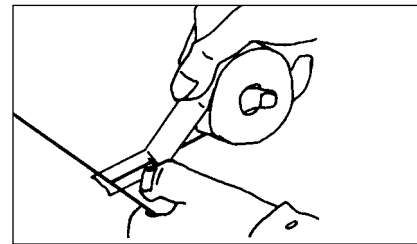
Removal Of Drywall

Pull the saw's drive to the fully extended position. Mark a cutline on the blade 1/2", (thickness of drywall), from the shoe. Cut the blade with a pair of Wiss snips at the mark, which was just made. Holding the shoe against the wall, cut large pieces of drywall out. The shortened blade passes over the studs without cutting into them.



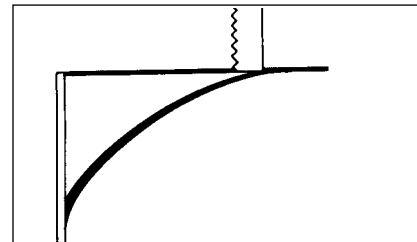
Protect Finished Wood From Splintering

Make sure the finished side of the wood is facing down. Since reciprocating saws cut on the back stroke, splinters will pull toward the unfinished side. Another method is to place transparent tape on the cut line. This will prevent chipping and splintering. When cutting thin metal, wood or plastics, it is good practice to sandwich the thin material between 2 pieces of wood.



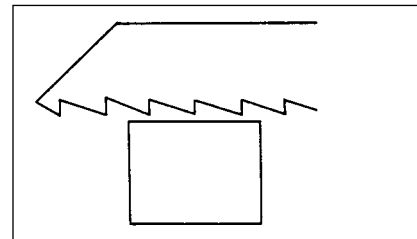
Cutting An Inside Corner

When reaching an inside corner, back your saw up and cut an arc to the next guideline. Then cut back toward corner. This leaves a clean corner.



Control Saw Bounce

If the saw tends to catch or bounce it is recommended to switch to a finer tooth saw blade.



Remember...

- Always wear eye and ear protection when working with any power tool.
- Disconnect power when checking or adjusting saw.
- Never wear loose clothing when working, which could get caught in blade.

No. 12P High Tension Hacksaw Frame

Rugged, lightweight frame built for professional tool users. It lets you take full advantage of the high tensile strength of Nicholson® Bi-Metaloy® hand hacksaw blades but is equally useful for all other type blades, too.

Use Nicholson® Bi-Metaloy® blades and achieve a remarkable improvement in cut-off performance – no blade twist, reduced binding, square cuts, better finish. Cuts faster through the toughest materials, and blades last longer. The secret is a screw-operated lever with folding handle for tensioning the blade up to 30,000 psi (ordinary frames may give you up to 15,000 psi maximum). The higher the tension reading, the greater the blade beam strength and cutting results. (Equipped with 12" Blade)



Item#	Description	Type	Blade inches	Shelf Pack Wt. lb.	Shelf Pack
846033	80965	High Tension Adjustable	12	2	1

No. 10 Hacksaw Frame

Hacksaw frame is corrosion proof, polished nickel with 3-3/8" throat, adjustable for 10" or 12" blades. Molded plastic handle. Blade holding bolts are adjustable to four positions. Rear bolt has wing nut for easy tensioning of blade. Each frame is individually packed and equipped with a 10" Nicholson blade.



Item#	Description	Type	Blade inches	Shelf Pack Wt. lb.	Shelf Pack
846038	80952	Adjustable	10	9.90	6

General Purpose Hacksaw Frame

Sturdy, bright nickel frame with 3-1/2" throat. Adjust for 10" or 12" blade in four positions. Blade holding bolt is equipped with large wing nut tightener. Assembled with 10" Nicholson blade. Adjust 90° for vertical or horizontal cuts.



Item#	Description	Type	Blade inches	Shelf Pack Wt. lb.	Shelf Pack
846044	80951	Adjustable	10	9.25	6



Bi-Metaloy® Hand Hacksaw Blades

Sturdy, bright nickel frame with 3-1/2" throat. Adjust for 10" or 12" blade in four positions. Blade holding bolt is equipped with large wing nut tightener. Assembled with 10" Nicholson blade. Adjust 90° for vertical or horizontal cuts.



Item#	Description	Length inches	Width inches	Gage inches	Teeth per inch	Shelf Pack Wt. 50 Carded (lb.)	Shelf Pack Wt. Boxed (lb.)
846106	62807 - NF-1024	10	1/2	.025	24	7.25	3.50
846109	62825 - NF-1218	12	1/2	.025	18	7.25	4.25
846110	62831 - NF-1224	12	1/2	.025	24	7.25	4.25
846111	62837 - NF-1232	12	1/2	.025	32	7.25	4.25

Reciprocating Blades (5 per pouch)

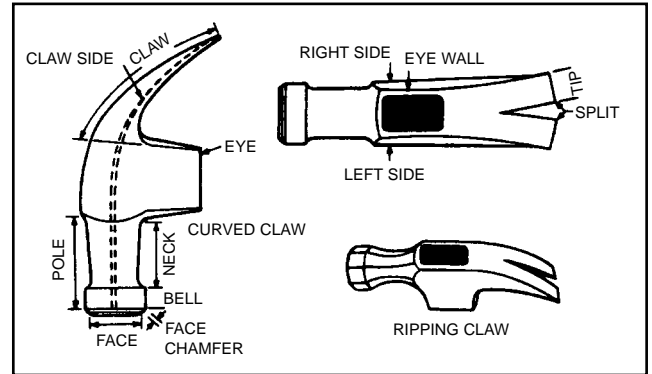
	Item#	Description	Size/Teeth/Type Used	Shelf Pack Wt. lb.	Shelf Pack
 	848002	81108-	3-1/2" x 5/16" x .035"/18 TPI/BM Metal over 1/8"	0.06	1 Pouch
	848003	81109-	4" x 3/4" x .035"/14 TPI/BM Metal over 1/8"	0.11	1 Pouch
	848004	81111-	4" x 3/4" x .035"/18 TPI/BM Metal over 1/8"	0.11	1 Pouch
	848005	81113-	4" x 3/4" x .035"/24 TPI/BM Metal over 1/8"	0.11	1 Pouch
	848007	81115-	6" x 3/4" x .035"/6 TPI/BM Wood/Nails	0.20	1 Pouch
	848008	81117-	6" x 3/4" x .035"/10 TPI/BM Wood/Nails	0.21	1 Pouch
	848009	81119-	6" x 3/4" x .035"/14 TPI/BM Wood/Nails	0.21	1 Pouch
	848010	81121-	6" x 3/4" x .035"/18 TPI/BM Wood/Nails	0.21	1 Pouch
	848011	81123-	6" x 3/4" x .035"/24 TPI/BM Wood/Nails	0.21	1 Pouch
	848014	81125-	8" x 3/4" x .035"/10 TPI/BM Metal over 1/8"	0.29	1 Pouch
	848015	81127-	8" x 3/4" x .035"/14 TPI/BM Metal over 1/8"	0.28	1 Pouch
	848012	81131	6" x 3/4" x .050"/6 TPI/BM Wood/Nails	0.20	1 Pouch
	848018	81135-	9" x 3/4" x .050"/6 TPI/BM Metal over 1/8"	0.36	1 Pouch
	848019	81136-	9" x 3/4" x .050"/14 TPI/BM Metal over 1/8"	0.45	1 Pouch
	848021	81137-	12" x 3/4" x .050"/6 TPI/BM Wood/Nails	0.52	1 Pouch
	848023	81139-	12" x 3/4" x .050"/14 TPI/BM Wood/Nails	0.52	1 Pouch
	848013	81141-	6" x 3/4" x .050"/6 TPI/HCS Wood/Nails	0.20	1 Pouch
	848022	81142-	12" x 3/4" x .050"/6 TPI/HCS Wood/Nails	0.49	1 Pouch
	848017	81140-	8" x 3/4" x .042" Grit, Cast Iron, Tie, Abrasives	0.10	1 Pouch
	848024	81143-	6" x 3/4" x .035"/6 TPI/BM Plaster/Drywall	0.20	1 Pouch

BM = Bi-Metal — HCS = High Carbon Steel

Nail Hammers

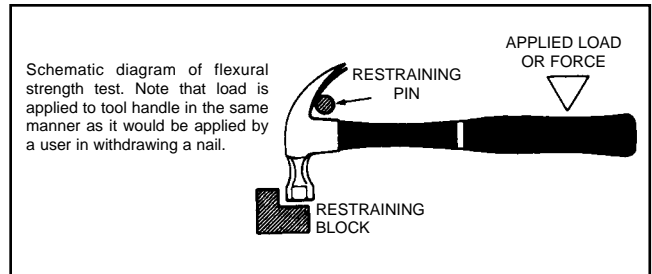
- Face radius and chamfer are designed to provide a hard striking face.
- Mid-section is resilient yet extra strong.
- Claws are tough, sturdy, edges are beveled, with uniform taper and bite.

Nail hammers are made in two patterns; curved claw and ripping (straight) claw. The face is slightly crowned with the edges beveled, although certain heavy-duty patterns may have checkered faces designed to reduce glancing blows and flying nails. Handles may be wood, solid steel or fiberglass. Solid steel and fiberglass are generally furnished with rubber-type grips.



Handles

For many good reasons, the traditional choice of material for a striking tool handles is North American Red Hickory. It looks good and it naturally feels good. The continuous fibers of this fine stock give great resilience and strength while minimizing impact shock. But man made materials have their advantages too. Fiberglass can't rust, rot or corrode, and despite its light weight, it has astonishing strength. Tests on a Tinius-Olsen testing machine have shown that with more than 450 lbs. of applied load, a fiberglass handle won't break. The latest material, used in hammers, is solid steel. The head will never come off and the hammer is well balanced to give extra power with less fatigue.



Safety Tips

Nail Hammers and Hatchets are for driving and pulling common nails. Ball Pein Hammers are intended to drive against the softer head of a chisel and for general machinists' use. Any face can be made to chip if struck against another striking tool or hard surface. This will damage the tool, possibly resulting in eye or other injury. Replace immediately if chipping or mushrooming occurs.

Hand tools are made in various types and sizes, degrees of hardness and different configurations for specific purposes. They should be carefully selected and used only for their intended purpose. Proper use of most types involve certain basic rules.

- Protect your eyes - always wear safety goggles.
- Strike squarely - avoid glancing blows.
- Always use a tool of suitable size and weight for the job.
- The striking face of a hammer should be approximately 3/8" larger in diameter than the struck face of a chisel, punch, etc.
- Replace immediately upon chipping or mushrooming.
- Never use a tool with a loose or damaged handle.
- Never use a grinding wheel for redressing a cutting edge or a struck face - use a file or whetstone - redress to original shape and contour.
- Never use a hammer or maul or axe to strike another hammer or maul or axe.
- Never redress a striking face.
- Never use a tool with a dull cutting edge.



Ball Pein Hammer - Fiberglass

Rust resistant black forged head with polished poles and peins. Professional fiberglass handle attached to head with Permabond® process. Comfortable black cushion grip.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
833002	11-427	17	13	7.2	4



Ball Pein Hammer - Hickory Handle

Black ground head. Polished peins. Select quality hickory handle. Strong hickory handle attached to head with Permabond® process.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
834005	11-498	16	12-3/4	7.8	6



Blacksmith Hand Hammer

Quality steel forgings. Hardened and tempered. Proper weight distribution concentrated behind striking face for added power. Black enamel finish. Hickory handle wood wedged for easy replacement.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
836042	11-524	40	14	19.2	6



Fiberglass Hammers - Premium

High luster, full polished finish on head. Octagon shaped neck and bell. Factory balanced. Sturdy fiberglass handle with black cushion grip, and Permabond® handle attachment.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Face	Shelf Pack
830001	11-400 - Curved Claw	20	13-1/2	8.0	Octagon	4
830007	11-414 - Ripping Claw	22	13-1/2	8.8	Bell	4



Fiberglass Hammers - Regular

Polished head, bell and striking face. Round neck and bell. Black molded cushion grip on super strength fiberglass handles. Permabond® handle attachment.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Face	Shelf Pack
830014	11-405 - Curved Claw	20	13-1/2	6.4	Bell	4
830020	11-418 - Ripping Claw	20	13-1/2	7.6	Bell	4



Economy

Black head painted with tough baked black enamel finish. Polished round bell and striking face. Hickory handle. Permabond® head to handle attachment.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Face	Shelf Pack
830041	11-460 Curved Claw	16	13	9.0	Polished Bell	6
830001	11-463 Ripping Claw	16	13	9.0	Polished Bell	6

Solid Steel Hammers

For the professional who prefers the rugged strength of solid steel hammers. Built for strength and designed for comfort. Well balanced to give extra power with less fatigue. Full polished head that will never come off. Oval shaped neck and bell. Cushion grip for positive hold and red handle for easy identification.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Face	Shelf Pack
831013	11-393 Ripping Claw	16	13	7.2	Rough	4
831014	11-394 Ripping Claw	20	13-1/2	8.0	Rough	4



Hand Drilling Hammer

Black forged head. Hickory handle. Wood wedged for easy replacement. Known as stone cutters hammer. Recommended for striking cold chisels, brick chisels, punches and star drills.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
836047	11-649	48	10-3/4	19.2	6



Action Bar

Forged carbon steel. Beveled nail slots at both ends. Blue enamel finish. Used to pry, lift, pull, scrape and shape.

Item#	Description	Bar Size inches x inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
836062	11-889	1-3/8 x 1/4	13-1/2	6.0	4



Steel Tinner's Hammer

Available in one convenient size; 18 ounce. This hammer is made of one piece polished solid steel with an industrial strength rubber grip fastened securely in place.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
838396	DDTH-18 - Rubber Grip	18	11-3/4	1.90	1

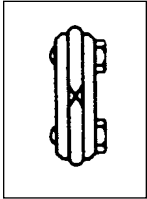


Heavy Duty Cutters

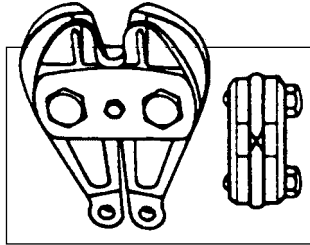
How To Choose The Correct Cutter

1. Match the jaw design to the material and job.

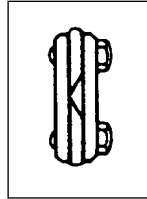
ALL PURPOSE JAWS
Slightly rounded cutting edges broaden cutting applications.



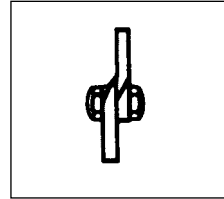
HEAVY DUTY STRAPS
Keep cutting edges aligned under the most demanding applications.



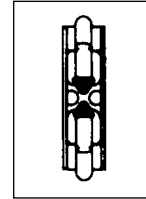
CLIPPER CUT JAWS
For smooth flush cuts, close to workpiece.



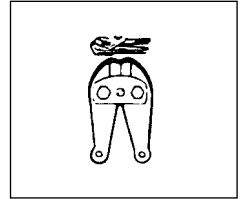
SHEER TYPE JAWS
Cut coarse or fine cable with medium distortion of strands.



SHORT NOSED JAWS
For hard alloy chain and padlock hasps.



ANGULAR STYLE JAWS
Cutting edges offset 30° for finish cutting. Keeps hands clear of work.



2. Size of material to be cut.

Capacities of all hand operated cutters are shown opposite each catalog listing.
Do not exceed listed capacities.

3. Hardness of material to be cut.

Maximum hardness rating of materials to be cut is shown under each tool listing.

4. Will few or many cuts be made in a day?

5. Is your application an occasional cut, or is it a fast, continuous industrial production application?
Choose the cutter to fit the job.

HARD METALS:

Up to Brinell 400, Rockwell C31

MEDIUM HARD METALS:

Up to Brinell 300, Rockwell C31

SOFT METALS:

Up to Brinell 200, Rockwell C15
Many materials are made in varying degrees of hardness.

For Safer, Easier Cutting: Wear Safety Glasses & Gloves At All Times.

1. It is less strenuous, when heavy cutting is involved, to hold one handle of the tool on the ground with foot pressure. This permits most of the cutting force to be applied to the upper handle, making the cutting position less awkward and employing the added factor of body weight. This allows more power to be transferred to the cutting edges.

2. Use the right cutting tool for the type, size and hardness of the metal you are cutting. (Check the catalog specs.). Remember that the hardness of the stock being cut is as important as its size. Don't take a full cut on a material when hardness is unknown. Test first with a slow pressure to see if material is being cut. The size of the metal you are cutting is not as important as its hardness. Do not exceed cutter capacity marked on the jaw of tool or rated in catalog.

3. Keep cutter jaw at right angles to the pieces being cut. Cutting diagonally may twist jaws out of line or chip cutting edges. Don't twist or pry the tool while cutting.

4. Warn those in your area when you intend to use a cutter. Protect your fellow workers from flying metal, too. Remember that metal flies when cut. The harder the metal, the farther it will fly. One way to prevent injury from flying metal is to wrap a burlap bag, wiping cloth or rag around the cutting jaws so metal pieces cannot fly.

5. Keep your cutting tools in good repair. Maintain the original jaw bevel angles when sharpening. Keep jaw bolts tight and oiled at all times.

6. Remove oil or grease from your hands, from tools and from the floor and area where you will be working., Wear safety shoes.

Pocket Wire Rope Cable Cutter

This top quality pocket-size cutter is perfectly designed to cut up to 1/8" wire rope cable, piano wire or aircraft cable. Plastisol handles with black oxide, rust preventative finish. Shear-cut blades and spring actions jaws that automatically open.



Item#	Description	Weight lb.	Overall Length inches	Cable cap inches
894075	0690TN	1	7-1/2	1/8

Other Heavy Duty Cutters Available Upon Request.

Snips Selection Chart

	Metainmaster M-1R, M-2R & M-3R		HM41V	Tinner's Snips A & V Series			Metainmaster M-5R		Metainmaster Special Series M1R-S1 &M2R-S1	Industrial Snips W Series
	M-6R & M-7R			NPC-3	BXN					
Do-it-Yourself	•	•	•	•	•	•				
Roofer	•	•							•	
Mechanic	•	•	•						•	
Autobody Worker	•	•							•	
Plumber	•	•							•	
Heating & Cooling Specialist	•	•	•						•	
Electrician	•	•		•			•		•	
Vocational Teacher	•	•	•	•			•		•	
Maintenance Worker	•	•		•					•	
SNIPS FOR SPECIAL JOBS										
Notching & Nibbling Heavy Stock							•		•	
Cutting Curves	•	•						•		
Double Cut Snips			•							
Cutting Titanium Inconel, Inconel X, & Stainless Steel								•		

Galvanized Steel Sheet Gage Numbers Unit Weights & Thickness

Galvanized Gage No.	Ounces Per Foot	Pounds Per Square Foot	Pounds Per Square Inch	Thickness Equipment For Galvanized Gage No.	
				in Inches	in Millimeters
8	112.5	7.03125	0.048828	0.1681	4.270
9	102.5	6.40625	0.044488	.1532	3.891
10	92.5	5.78125	0.040148	.1382	3.510
11	82.5	5.15625	0.035807	.1233	3.132
12	72.5	4.53125	0.031467	.1084	2.753
13	62.5	3.90625	0.027127	.0934	2.753
14	52.5	3.28125	0.022786	.0785	1.994
15	47.5	2.96875	0.020616	.0710	1.803
16	42.5	2.65625	0.018446	.0635	1.613
17	38.5	2.40625	0.016710	.0575	1.461
18	34.5	2.15625	0.014974	.0516	1.311
19	30.5	1.90625	0.013238	.0456	1.158
20	26.5	1.65625	0.011502	.0396	1.006
21	24.5	1.53125	0.010634	.0366	.9296
22	22.5	1.40625	.0097656	.0336	.8534
23	20.5	1.28125	.0088976	.0306	.7772
24	18.5	1.15625	.0080295	.0276	.7010
25	16.5	1.03125	.0071615	.0247	.6274
26	14.5	.90625	.0062934	.0217	.5512
27	13.5	.84375	.0058594	.0202	.5131
28	12.5	.78125	.0054253	.0187	.4750
29	11.5	.71875	.0049913	.0172	.4369
30	10.5	.65625	.0045573	.0157	.3988
31	9.5	.59375	.0041233	.0142	.3607
32	9.0	.56250	.0039062	.0134	.3404

3-Blade Hand Crimper

Ideal for repairs in the field. Matt black finish and red plastisol grips. Compound action. For crimping up to 22 and 24 gage sheet metal.



Item#	Description	Throat Dept inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
822002	HC-3V	1-1/4	9-1/4	2.63	3

5-Blade Hand Crimper

Ideal for joining sheet metal pipes of the same size. Can be corrugated, round or square. Great for repairs in the field. Matt black finish and red plastisol grips. Compound action. For crimping up to 22 and 24 gage.



Item#	Description	Throat Dept inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
822006	HC-5V	1-1/4	9-1/4	3.00	3

Hand Seamer

Higher leverage compound action handles for easy metal bending and flattening. Produces a permanent tight fitting seam. 1/4" incremental depth marks on jaw. Matt black finish and red plastisol grips. Recommended up to 18 gage.



Item#	Description	Jaw Depth inches	Jaw Width Inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
822014	HS-1V	1/4 – 1-1/4	3-1/4	8-3/4	4.31	3

Offset Hand Seamer

Higher leverage offset, compound action handles for easy metal bending and flattening. Produces a permanent tight fitting seam. 1/4" incremental depth marks on jaw. Matt black finish and red plastisol grips. Recommended up to 18 gage.



Item#	Description	Jaw Depth inches	Jaw Width Inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
822021	HS-2	1/4 – 1-1/4	3-1/4	8-3/4	8.63	3

Hand Notcher

Higher leverage compound action handles for fast and easy cutting. Produces true 30° V shaped cut in sheet metal. Clean notching without slippage. Matt black finish and red plastisol grips.



Item#	Description	Jaw Depth inches	Cutting Angle	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
822010	HN-1V	13/16	30°	8-1/2	3.00	3

Metalmaster® Compound Action Snips



The non-slip serrated jaws of Wiss Metalmaster snips are made of extra tough and wear-resistant special molybdenum steel to provide the extra service demanded by the compound lever action and to withstand the severe strain of cutting heavy stock or tight curves. The handles are formed of special high strength steel and have a margin of strength far above the limit of the hand power that can be exerted.

Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
820001	M-1R - cuts left from tight curves to straight-red grips	9-3/4	1-3/8	18 Gage Steel - 0.049"	5.25	6
820004	M-2R - cuts right from tight curves to straight-red grips	9-3/4	1-3/8	18 Gage Steel - 0.049"	5.25	6
820007	M-3R - cuts straight (or wide curves left or right in light stock). Accomplishes most metal cutting requirements of the home craftsman. - yellow grips	9-3/4	1-1/2	18 Gage Steel - 0.049"	5.25	6

Metalmaster® Compound Action Bulldog Snips



M-5R for notching or trimming extra heavy stock.

Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
820018	M-5R - Red Grips curves to straight-red grips	9-1/4	7/8	18 Gage Steel - 0.65"	4.38	6

Metalmaster® Offset Snips



Offset blades keep material away from hands, allows straight or circle cuts to be made easily. Color coded handles for easy blade identification, red grip circle left, green grips circle right.

Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
820010	M-6R - Red Grips circle left	9-1/4	1-1/4	18 Gage Steel - 0.049"	5.25	6
820011	M-7R - Green Grips circle right	9-1/4	1-1/4	18 Gage Steel - 0.049"	5.25	6

Metalmaster® Special Series Snips



Metalmaster special series snips are specially hardened for unusual industrial requirements such as cutting today's space age metals, like inconel, stainless steel and titanium.

Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
820014	M1R-S1 - Cuts left - Blue Grips	9-3/4	1-3/8	18 Gage Steel - 0.049"	84	6
820015	M2R-S1 - Cuts right - Blue Grips	9-3/4	1-3/8	18 Gage Steel - 0.049"	84	6

Multimaster® Compound Action Snips



Combines the long cut of a Tinner's snip with the strength of compound action. Good for cutting plastic, sheet metal aluminum, vinyl siding, screening and many other materials.

Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
820021	M300	10-1/2	3-1/8	20 Gage Steel - 0.035"	6	6

Light Metal Cutting Snips - Solid Steel

J7S solid forged light metal snips are compact, handy snips popular in the electronics and appliance industries. Polished straight blades. Black handles.



Item#	Description	Overall Length inches	Length of cut inches	Shelf Pack Wt. lb.	Shelf Pack
824004	J7S - Straight Blades	7	1-1/4	1.75	6

HVAC Compound Action Pipe & Duct Snips

HM-41V cuts straight, curves and any combination. The **HM-41V** is formed of high carbon tool steel. The handles are formed of special high strength and have a margin of strength far above the limit of the hand power that can be exerted.

HM-41V is widely used in the heating and air conditioning industry as a pipe and duct snip. It is popular for cutting many rigid non-metallic sheet materials such as fiberglass panels, decorative plastic kitchen laminates*, synthetic shingles, flooring materials and lots more.

Wiss **HM-41V** features a patented ball-bearing jaw action that automatically adjusts blade clearance for squarer, clearer cuts. Cuts 11/64" wide strip and curls it away from hands. Matt black finish and cushion grip red handles. *When cutting laminates, the finished surface should be on the side of the center blade to avoid excessive cracking.



Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
822018	HM-41V	9-1/4	9/16	20 Gage Steel - 0.035"	2.31	6

Straight Pattern Snips

Straight pattern snips are primarily for straight cuts, although they will cut wide curves when trimming light stock. The inside edge of the blade face is flat and tends to guide the tool along a straight line. The most traditional of tinner's snips is still widely used in the plumbing, heating, air conditioning and roofing trades, as well as being a nearly universal home and handyman's tool. Cushion grip red handles for comfort and better grip.



Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
821004	A-10	11	2-1/2	21 Gage Steel - 0.032"	7.50	6
821005	A-9	12-1/2	3	20 Gage Steel - 0.035"	10.50	6

Duckbill Combination Pattern Snips

Duckbill pattern snips feature the advantage of cutting moderately tight curves to the left or right in light stock as well as cutting straight. Duckbill snips are very popular with the home craftsman and with the professional artisans for light duty metal cutting because of their great versatility. Cushion grip red handles for comfort and better grip.



Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
821010	V-19	13	3	21 Gage Steel - 0.032"	10.50	6

Bulldog Pattern Snips

Bulldog snips provide greater cutting power for notching, nibbling and chopping heavy stock. Cushion grip red handles for comfort and better grip.



Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
821019	W-5	16-1/2	2-1/2	16 Gage Steel - 0.065"	3.63	1

Straight Pattern Snips

Straight pattern snips are primarily for straight cuts although they will cut wide curves when trimming light gage stock. The inside face of the blade is flat which tends to guide the tool along a straight cut. Cushion grip red handles for comfort and better grip.



Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
821016	W-7	14-1/2	4	16 Gage Steel - 0.065"	3.63	1
821015	W-8	13-1/2	3-1/2	19 Gage Steel - 0.42"	2.38	1

Offset Pattern Snips

Offset handles keep material away from hands for easier cutting and safety. Cushion grip red handles for comfort and better grip.



Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
821025	W-7B	14-1/4	4	18 Gage Steel - 0.049"	2.63	1

Repair Parts for Snips & Industrial Cutting Tools



Item#	Description	Shelf Pack
825010	P422 - Replacement Bolt & Nut for W-5, W-7, W-8 (00470763)	10
825015	P400 - Replacement Bolt & Nut for all Metalmaster Snips (00470764)	10
825024	P406 - Replacement Spring (M1/3/5/7R)	10
825025	P407 - Replacement Spring (M2/6R)	10

WK-8V Knife - Retractable Blade

A popular all purpose retractable knife for D.I.Y., professional and industrial use. Easy run slide can use all Wiss RWK replacement blades. Four blade positions including retracted.



Item#	Description	Shelf Pack	Case Qty.	Skid
823001	WK-8V	12	48	1728

WK-9V Heavy Duty Knife - Fixed Blade

Heavy duty, fixed blade knife for industrial and professional use. Uses all Wiss RWK replacement blades.



Item#	Description	Shelf Pack	Case Qty.	Skid
823011	WK-9V	12	48	1728

RWK-14 Replacement Blade - Rapid-Change™ Heavy Duty .025" Carded, Wrapped, Bulk, Dispenser

Most popular heavy duty blade for industrial, professional and D.I.Y. applications. Also fits WK-8 and WK-9 knives.



Item#	Description	Shelf Pack	Case Qty.	6 Case Qty.
823038	RWK-14V - Blade - Carded	20 Cards - (100 Blades)	400 Cards - (2000 Blades)	2400 Cards - (12,000 Blades)
823041	RWK-14D - Blades in dispenser	Dispenser - (100 Blades)	20 Dispensers - (2000 Blades)	120 Dispensers - (12,000 Blades)

Heavy Duty Industrial Shears - INLAID® Blades

Hot drop-forged. Polished blades. Patented SET-EASY® pivot. Black handles.



Item#	Description	Overall Length inches	Length of Cut inches	Shelf Pack Wt. lb.	Shelf Pack
823068	20	10-1/4	4-3/4	4.38	6
823069	22	10-1/2	6-1/8	6.75	6
823076	22W	12-1/4	6-1/8	7.75	6

Carpet, Upholstery and Fabric Shears (knife-edge) - INLAID® Blades

Hot drop-forged. Polished blades. Patented SET-EASY® pivot. Black handles.



Item#	Description	Overall Length inches	Length of Cut inches	Shelf Pack Wt. lb.	Shelf Pack
824080	1226	12-1/4	6-1/8	6.50	6

Metal Edge Turning Tool

Extruded high strength aluminum tool for turning flanges on 24 through 30 gage mild steel. Each Met tool will turn either 3/8", 1/2", 3/4" and 1" flanges when using the Met-R tool. Lightweight and will not rust.



Item#	Description	Overall Length inches	Mild Steel Capacity	Flange Formed	Shelf Pack Wt. lb.	Shelf Pack
818104	MET-8	8	24-30 gage	3/8", 1/2"	0.39	1
818106	MET-12	12	24-30 gage	3/8", 1/2"	0.56	1
818108	MET-18	18	24-30 gage	3/8", 1/2"	0.64	1
818111	MET-24	24	24-30 gage	3/8", 1/2"	0.73	1
818105	MET-8R w/rule	8	24-30 gage	3/4", 1"	0.43	1
818107	MET-12R w/rule	12	24-30 gage	3/4", 1"	0.60	1
818109	MET-18R w/rule	18	24-30 gage	3/4", 1"	0.68	1

Conversion of Metric Units of Measure Into Unified Equivalents

To Convert From	Into	Multiply by
Millimeters (mm)	Inches (in.)	0.039370
Centimeters (cm)	Inches (in.)	0.39370
Square centimeters (cm ²)	Square inches (in ²)	0.15500
Cubic centimeters (cm ³)	Cubic inches (in ³)	0.061024
Grams (g)	Ounces (avdp) (oz)	0.35274
Kilograms (kg)	Pounds (avdp) (lb)	2.2046
Metric tons (t)	Short tons (2000 lb)	1.1023
Kilograms (kg)	Long tons (2240 lb)	.0009842
Kilograms per square millimeter (kg/mm ²)	Pounds per square inch (psi)	1422.32
Meter - Kilograms (m - kg)	Inch - pound (in - lb)	86.796
Meter - kilograms (m - kg)	Foot - pounds (ft - lb)	7.233
Gram - centimeter (g - cm)	Ounce - inches (oz - in)	0.013887

U4I9HA

Conversion of Unified Units of Measure Into Metric Equivalents

To Convert From	Into	Multiply by
Inches (in.)	Millimeters (mm)	25.4 (exactly)
Inches (in.)	Centimeters (cm)	30.48 (exactly)
Square inches (in ²)	Square centimeters (cm ²)	6.4516
Cubic inches (in ³)	Cubic centimeters (cm ³)	16.3871
Ounces (avdp) (oz)	Grams (g)	28.3495
Pounds (avdp) (lb)	Kilograms (kg)	0.45359237 (exactly)
Short tons (2000 lb)	Kilograms (kg)	907.185
Short tons (2000 lb)	Metric tons (t)	0.907185
Long tons (2240 lb)	Kilograms (kg)	1016.05
Pounds per square inch (psi)	Kilograms per square millimeter (kg/mm ²)	0.00070307
Inch - pound (in - lb)	Meter - Kilograms (m - kg)	0.011521
Foot - pounds (ft - lb)	Meter - kilograms (m - kg)	0.138255
Foot - pounds (ft - lb)	Centimeter - dynes (cm - dy)	1.35582 x 10 ⁷
Ounce - inches (oz - in)	Gram - centimeter (g - cm)	72.008

Series 1000 Power Tapes

Improved high-visibility blaze orange label and black ergonomic grip case. Comfortable, rounded high impact case. Easy to read blade. Top-positioned toggle lock for sure control. Virtually unbreakable end hook. Rubber shock absorber cushions blade return. Also available in high visibility style. Removable belt clip.



Item#	Description	W x L inches x feet	Blade Style	Shelf Pack Wt. lb.	Shelf Pack
810060	1010	1/2 x 10	A1	1.8	6
810061	1012	1/2 x 12	A1	1.9	6
810062	1312	3/4 x 12	A2	2.4	6
810063	1316	3/4 x 16	A2	2.9	6
810064	1325	3/4 x 25	A2	4.3	6
810066	1425	1 x 25	A5	5.4	6
810067	1430	1 x 30	A5	6.3	6

Series 2000 Power Return Tapes

The series 2000 has a unique case designed to fit perfectly in the hand. The toggle lock is positioned ideally for convenient operation and holds the blade securely in any position. Lightweight, high strength chrome finished case. Removable belt clip.



Item#	Description	W x L inches x feet	Blade Style	Shelf Pack Wt. lb.	Shelf Pack
810006	2210	1/2 x 10	A1	1.8	6
810008	2212	1/2 x 12	A1	1.9	6
810002	2312	3/4 x 12	A2	2.4	6
810003	2316	3/4 x 16	A2	3.1	6
810004	2325	3/4 x 25	A2	4.6	6
810001	2125	1 x 25	A5	5.9	6
810005	2130	1 x 30	A5	6.6	6
810010	2133	1 x 33	A5	7.3	6

Hi-Viz Power Tape

High-visibility blaze orange case. Positive toggle lock holds blade securely at any length for accurate measurements. Built in shock absorber cushions blade return. Compensating end hook for inside and outside measurements. Removable belt clip.



Item#	Description	W x L inches x feet	Blade Style	Shelf Pack Wt. lb.	Shelf Pack
810037	HV116	1 x 16	A5	4.0	6
810068	HV1425	1 x 25	A5	5.6	6

Executive® Diameter

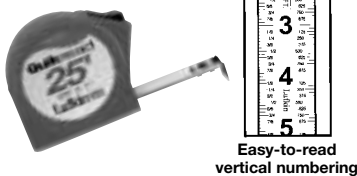
High-visibility blaze orange case. Positive toggle lock holds blade securely at any length for accurate measurements. Built in shock absorber cushions blade return. Compensating end hook for inside and outside measurements. Removable belt clip.



Item#	Description	W x L inches x feet	Blade Style	Shelf Pack Wt. lb.	Shelf Pack
810123	W606PD	1/4 x 6	A19	.052	6

QuikRead Power Return Tapes

The QuikRead tapes are specially designed for ease of readability with graduations printed in fractions & decimal equivalents. Lightweight, highly visible blue case has rounded edges for improved hand comfort.



Easy-to-read
vertical numbering

Item#	Description	W x L inches x feet	Blade Style	Shelf Pack Wt. lb.	Shelf Pack
810169	QR1316	3/4 x 16	N/A	2.78	6
810170	QR1425	1 x 25	N/A	6.00	6

Pee Wee®

Yellow clad. High strength matt-black case. Power retraction operation. Pocket size, 1/4" flexible blade.

Item#	Description	W x L inches x feet	Blade Style	Shelf Pack Wt. lb.	Shelf Pack
810111	W6110	1/4 x 10	A16	.072	6



Hi-Viz® Speedwinder

A revolutionary new design concept that enables the user to extend, measure and rewind in less time than conventional long steel tape. Yellow clad tape line with easy-to-read bold back markings, protected by an abrasive resistant coating, stands up against rugged measuring. Impact-resistant, attractive, self-standing case.

Item#	Description	W x L inches x feet	Blade Style	Shelf Pack Wt. lb.	Shelf Pack
811023	HYT100	3/8 x 100	B1	8.2	6



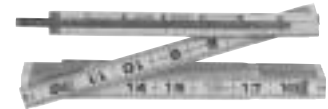
Red End® Extension

This is a 6 foot Spring Joint Natural Color Wood Rule with graduated slide that extends up to a full 6 inches. The slide runs under friction in a T slot and has a stop at each end so slide will not fall out. Marked both sides and both edges to 1/16ths of an inch, 16 inch stud centers in red, regular outside markings, no matter how the rule is unfolded an extension is ready for use on the section.

X46F has flat inside markings, numbering begins on the inside of the rule.

HX46 has hook; zero falls at the inside of the hook, for distance measuring.

Item#	Description	W x L inches x feet	Shelf Pack Wt. lb.	Shelf Pack
812001	X46	5/8 x 6	2.27	6
812004	X46F	5/8 x 6	2.28	6
812003	X48	5/8 x 8	2.95	6



Red End®

White rule marked both sides, both edges to 1/16ths; 16 inch stud centers in red. Regular outside reading. **066F** and **068F** has inside of rule; measurement is close to work.

Item#	Description	W x L inches x feet	Shelf Pack Wt. lb.	Shelf Pack
812009	066	5/8 x 6	1.68	6
812010	066F	5/8 x 6	1.64	6
812012	068F	5/8 x 8	2.27	6

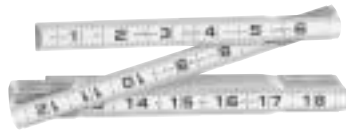


Red End® - Two Way®

For measuring left to right and right to left. Flat, inside markings lie close to the work. Marked both sides, both edges in feet, inches and 1/16ths.

Item#	Description	W x L inches x feet	Shelf Pack Wt. lb.	Shelf Pack
812016	966	5/8 x 6	1.70	6





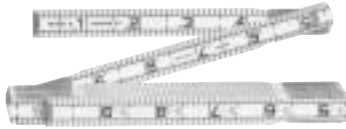
Home Shop Universal

White rule ends are finished and sealed. Spring joints and end caps are brass-plated steel. Consecutive inches to 1/16ths on both edges and sides.

460 has regular markings; numbering is on outside of rule.

460F has flat markings; numbering is on inside of rule.

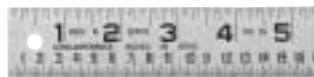
Item#	Description	W x L inches x feet	Shelf Pack Wt. lb.	Shelf Pack
812039	460F	5/8 x 6	1.7	6



Red End Engineer's

Graduated in feet, 1/10ths and 1/100ths feet. Regular outside markings in feet, inches and 1/16ths. Red foot figures. Decimal points on engineer's scale prevent reading errors.

Item#	Description	W x L inches x feet	Shelf Pack Wt. lb.	Shelf Pack
812021	066D	5/8 x 6	1.7	6



Tinner's Steel Circumference Rules

Tempered medium-weight steel; hole in one end for hanging. Deeply etched, permanent markings are black-filled for easy reading. Special graduations on **95-3'** model, one side, upper edge, marked consecutive inches to 1/16ths, lower edge, marked up to 113 circumference inches to 1/8ths, on **95-4'** model, one side, upper edge, marked consecutive inches to 1/16ths, lower edge, marked up to 150 circumference inches to 1/8ths. Reverse side of both models has formulas for calculating circumference diameter, area, etc., and size tables for laying out measures and cans.

Item#	Description	T x W x L inches x inches x feet	Shelf Pack Wt. lb.	Shelf Pack
813026	95-3	1/16 x 1-1/4 x 3	.76	1
813027	95-4	1/16 x 1-1/4 x 4	1.04	1

One-Piece Steel Rules



Tempered steel rule, bold markings, deeply etched and permanent, are black-filled for easy reading. Large graduations, marked both sides, both edges. Upper edge in 1/8ths, lower edge in 16ths. Opposite sides measure from opposite ends.

Item#	Description	T x W x L inches x inches x feet	Shelf Pack Wt. lb.	Shelf Pack
813013	62-3	1/16 x 1-1/4 x 3	.76	1

School Shop Steel Rules



Medium weight, tempered steel rules. Hole in one end for hanging. Deeply etched, permanent markings are black filled for easy reading. Large graduations, marked upper edge both sides, one side 1/8ths, other side 1/16ths. Opposite measure from opposite ends.

Item#	Description	T x W x L inches x inches x feet	Shelf Pack Wt. lb.	Shelf Pack
813006	60-24	1/32 x 3/4 x 2	.84	6

Steel Blacksmith's Rule

This 2 foot, 2-fold rule is made of tempered steel, 3/4" wide. 1/32" thick. Deeply etched black markings are legible and permanent. Riveted joints have large side washers and a stop, bringing rule to a firm stop when opened straight. The lower edge on one side graduated to 1/16ths of an inch, upper edge on other side to 1/8ths, lower edge 75 circumference inches to 1/8ths for covering diameters directly to circumference measurements.



Item#	Description	T x W x L inches x inches x feet	Shelf Pack Wt. lb.	Shelf Pack
813001	86	1/32 x 3/4 x 2	1.85	12

Circular Steel Gage

A heavy steel circular gage for determining steel thickness from 0 through 36 gage. Manufactured with zinc plated hardened steel. Comes with it's own protective storage case.



Item#	Description	Diameter inches	Shelf Pack Wt. lb.	Shelf Pack
818015	323W	3-3/8	0.18	1

Stainless Steel Circumference Rule

Stainless steel .060" thick with black etched numbering and markings spaced for 1/16" scale. Circumference equivalents are shown on the face and tables on the back. Produced from 301 stainless steel.



Item#	Description	T x W x L inches x inches x feet	Shelf Pack Wt. lb.	Shelf Pack
818019	DDCR-4	1/16 x 1-1/4 x 4	1.04	1

Dividers

Heavy duty, plated steel dividers for scribing circles. Available in two sizes for circles up to 36" or 48". Easily removable tips can be sharpened or replaced. Legs angled inward to allow the points to come very close together for small measurements and allows for a substantial working angle to a surface. Clamp holds legs rigidly against each other without slippage when tightened.



Item#	Description	L x W inches x inches	Shelf Pack Wt. lb.	Shelf Pack
818014	DDIV18 18" Divider	18 x 1/2	.41	1
818013	DDIV24 24" Divider	24 x 1/2	.44	1
818023	DDRP1R Replacement Points	N/A	N/A	1

Edge Scribe

Stainless steel edge scribe for simple and easy marking of metal sheets. Attached magnet helps keep the tool within reach. Marks 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", and 1".



Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
10015	DDX Stainless Steel Magnetic Edge Scribe	1.5	20

ISO METRIC AND UNIFIED SCREW THREAD DESIGNATIONS

Unified screw threads are designated by nominal size and number of threads per inch. As an example, 3/4 - 10 UNC is a standard Unified screw thread having a nominal size of 3/4 inches and 10 threads per inch. To convert a Unified screw thread designation to an ISO Metric screw thread designation multiply nominal size by 25.4 and multiply the reciprocal of threads per inch by 25.4 to determine basic diameter in millimeters and pitch in millimeters. By so doing, 3/4 - 10 UNC converted to ISO Metric becomes M 19.05 x 25.4.

ISO Metric screw threads are designated by basic diameter and thread pitch. As an example, M 8 x 1 is a standard ISO Metric screw thread having a basic diameter of 8 millimeters and a thread pitch of 1 millimeter. To convert an ISO Metric screw thread designation to a Unified (American) designation divide the basic diameter by 25.4 and multiply the reciprocal of the pitch by 25.4 to determine nominal size in inches and threads per inch. By doing so, M 8 x 1 becomes 0.315-25.4 UNS.

Standard Unified Thread Series*

Present Unified Thread Nominal Size - Diameter

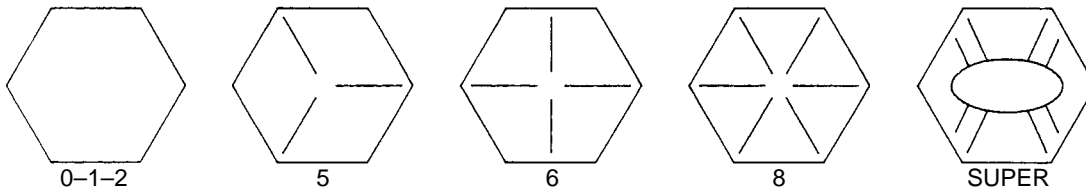
Decimal Size	Number or Fractional Size	Metric
0.060	0	1.52
0.073	1	1.85
0.086	2	2.18
0.099	3	2.51
0.112	4	2.84
0.125	5	3.17
0.138	6	3.50
0.164	8	4.16
0.190	10	4.83
0.216	12	5.49
0.250	1/4	6.35
0.3125	5/16	7.94
0.375	3/8	9.52
0.4375	7/16	11.11
0.500	1/2	12.70
0.5625	9/16	14.29
0.625	5/8	15.87
0.6875	11/16	17.46
0.750	3/4	19.05
0.8125	13/16	20.64
0.875	7/8	22.22
0.9375	15/16	23.81
1.000	1	25.40
1.0625	1-11/16	26.99
1.125	1-1/8	28.57
1.1875	1-3/16	30.16
1.250	1-1/4	31.75
1.3125	15/16	33.34
1.375	1-3/8	34.92
1.4375	1-7/16	36.51
1.500	1-1/2	38.10
1.5625	1-9/16	39.69
1.625	1-5/8	41.27
1.6875	1-11/16	42.86
1.750	1-3/4	44.45
2.000	2	50.80
2.250	2-1/4	57.15
2.500	2-1/2	63.50
2.750	2-3/4	69.85
3.000	3	76.20
3.250	3-1/4	82.55
3.500	3-1/2	88.90
3.750	3-3/4	95.25
4.000	4	101.60

*Adapted from ANS B1.1-1960.

CThe values listed as metric equivalents of decimal inch values have been given to assist user in selecting the closest metric size to be found in the table, Metric Screw Threads. Adherence to diameter preference is recommended, if feasible.

Torque Wrench Chart Bolts

Grade Marking



Bolt Diameter	Thread Pitch	Foot Pounds				
		0-1-2	5	6	8	Super
1/4"	20	5.5	9.7	11.0	11.5	13.0
	28	6.0	11.0	12.0	13.0	15.0
5/16"	18	10.0	18.0	20.0	21.0	24.0
	24	11.4	20.0	23.0	24.0	27.5
3/8"	16	21.7	39.0	43.0	45.0	52.0
	24	24.5	44.0	49.0	51.0	59.0
7/16"	14	32.4	58.0	65.0	67.0	78.0
	20	38.4	69.0	77.0	80.0	92.0
1/2"	13	43.5	87.0	97.0	102.0	116.0
	20	54.6	103.0	115.0	121.0	138.0
9/16"	12	57.5	111.0	123.0	129.0	147.0
	18	68.0	131.0	146.0	153.0	175.0
5/8"	11	86.0	173.0	192.0	201.0	230.0
	18	102.0	200.0	224.0	235.0	269.0
3/4"	10	152.0	290.0	324.0	336.0	389.0
	18	182.0	345.0	384.0	403.0	461.0
7/8"	9	222.0	500.0	555.0	583.0	666.0
	14	261.0	585.0	653.0	685.0	784.0
1"	8	307.0	690.0	769.0	807.0	923.0
	14	370.0	830.0	925.0	967.0	1111.0

Note: Specifications contained in this chart are correct to the best of our knowledge. Refer to the exact specifications as given by original equipment manufacturer.

Adjustable Wrench & Wide Capacity Adjustable Wrenches, Black Phosphate Finish

Wide capacity jaws open 25% wider than conventional wrenches. The ergonomic wider handle increases comfort and reduces fatigue. A tension spring under the knurled adjustment knob stabilizes the jaw and prevents opening from changing. The hex jaw design gives a tighter fit with less slippage. Made of heat treated forged alloy steel for increased toughness and durability.



Item#	Description	Overall Length inches	Max. Jaw Opening inches	Shelf Pack Wt. lb.	Shelf Pack
800090	AT14C	4	1/2	1.02	6
800093	AT16CX	6	15/16	1.83	6
800096	AT18CVX	8	1-1/8	3.34	6
800099	AT110CVX	10	1-15/16	7.68	6
800102	AT112CVX	12	1-1/2	9.36	6

Adjustable Wrench & Wide Capacity Adjustable Wrenches, Chrome Finish

Wide capacity jaws open 25% wider than conventional wrenches. The ergonomic wider handle increases comfort and reduces fatigue. A tension spring under the knurled adjustment knob stabilizes the jaw and prevents opening from changing. The hex jaw design gives a tighter fit with less slippage. Made of heat treated forged alloy steel for increased toughness and durability.



Item#	Description	Overall Length inches	Max. Jaw Opening inches	Shelf Pack Wt. lb.	Shelf Pack
800033	AC14CV	4	1/2	1.32	6
800037	AC16CVX	6	15/16	1.95	6
800040	AC18CVX	8	1-1/8	3.45	6
800043	AC110CVX	10	1-15/16	8.22	6
800046	AC112CVX	12	1-1/2	10.20	6

Sliding Jaw Adjustable Wrenches

General purpose adjustable wrench with sliding jaw. Drop forged from special analysis tool steel, precision machined and chrome plated.



Item#	*Description	Overall Length inches	Max. Jaw Opening inches	Shelf Pack Wt. lb.	Shelf Pack
881014	C79H	9	2-3/4	0.88	6
881015	C711H	11	3	1.50	6

**"H" denotes skin pack.

Reversible Ratchet Wrenches

Fully reversible ratchet wrench for refrigeration and air conditioning work. Four clearly marked socket sizes - 3/16" and 1/4" on one end, 3/16" and 3/8" on the other. Handles refrigeration packing gland nuts, valve stem sockets and beam-clamp installations. Quick flip lever reverses instantly. Rugged, compact construction with smooth edges for comfortable use. Polished chrome finish.



Item#	*Description	Overall Length inches	Socket Size inches	Shelf Pack Wt. lb.	Shelf Pack
881021	RS2H	5-1/4	3/16, 1/4, 5/16, 3/8	1.66	1

**"H" denotes skin pack.



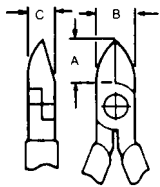
Hex Key Sets

The 9 pc. fold up key set contains two types of wrenches; the six smaller sizes, (5/64, 3/32, 7/64, 1/8, 9/64 and 5/32, have chamfered ends, while the three larger sizes, (3/16, 7/32, and 1/4), are ball points. The ball points allow angled entry up to 25°.

All hex keys are manufactured from industrial quality hardened steel. This sturdy unit is designed with a strong, but lightweight, high visibility, ergonomically designed hardened plastic case for comfort and longevity.

The 12 pc. L-wrench design is packaged in a patented Bondhex™ key case that will lock your wrenches in place. Simply slip wrenches into their individually marked slots and twist to lock securely in place. The sizes range from .050 to 5/16". The short side of the L-wrench is designed with a chamfered end while the long side has a ball point for those hard to reach places. The ball points allow entry up to 25°. All wrenches are manufactured from industrial hardened steel.

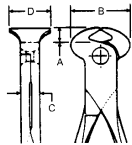
Item#	Description	Socket Size inches	Shelf Pack Wt. lb.	Shelf Pack
818100	FKS-9	5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4	8 oz.	1
818102	BLX-12	.050 - 5/16	9 oz.	1



Diagonal Cutting Pliers

Designed for cutting heavy wire. Long lasting cutting edges. Non-slip red, cushion handle designed for comfortable grip.

Item#	Description	Overall Length inches	Nose Length A inches	Nose Width B inches	Maximum Thickness C inches	Shelf Pack Wt. lb.	Shelf Pack
804210	933-7CV	7	1	29/32	15/32	3.00	6
804212	933-7SV	7	1	29/32	15/32	3.00	6
804211	933-6CV	6	18/16	13/16	7/16	2.28	6
804059	542-7CV	7	25/32	1-7/32	15/32	3.36	6
804064	542-8CV	8	1	29/32	15/32	3.00	6



End Cutting Nippers

Width of blades, clearance in throat, leverage ratio of handles to blades, size of rivet and angle of cutting edges have been carefully designed to produce a top quality tool. Non-slip red, cushion grip handle.

GG014 is strong, lightweight design for demanding construction use. Develops high leverage to cut large diameter nails and wire. Drop forged from high quality steel with heat-treated and tempered handles and jaws. Hardened and honed cutting edges. Black finish with polished head.

Item#	Description	Overall Length inches	Nose Length A inches	Nose Width B inches	Maximum Thickness C inches	Cutter Length D inches	Shelf Pack Wt. lb.	Shelf Pack
804341	72-8CV	8-1/4	3/8	1-3/4	17/32	1-3/16	6.00	6
804346	72-9CV	9-1/4	13/32	1-7/8	19/32	1-1/4	6.36	6
881109	GG014	14	23/32	2-21/32	41/64	7/8	12.00	6

Long Slim Nose Pliers with Plastic Handles

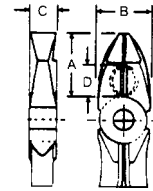
777-6CV is designed for looping, bending and gripping small wires and parts. Slender jaws reach into tight spaces. Jaws have fine serrations for positive, non-slip gripping and pulling.



Item#	Description	Overall Length inches	Nose Length A inches	Nose Width B inches	Maximum Thickness C inches	Cutter Length D inches	Shelf Pack Wt. lb.	Shelf Pack
804135	777-6CV	6	1-7/8	43/64	3/8	1/8	2.27	6

Lineman's Pliers & Side Cutting Pliers with Cushion Grip Handles

Designed especially to meet the requirements of linemen. Cuts many gages of wire. For general purpose wire cutting with insulation crusher. All pliers shown below, have New England Head. 2050-91V is a high leverage plier with high dielectric handles.

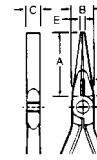


Item#	Description	Overall Length inches	Nose Length A inches	Nose Width B inches	Maximum Thickness C inches	Cutter Length D inches	Shelf Pack Wt. lb.	Shelf Pack
804254	50-7CV	7-1/4	1-9/32	1-1/8	1/2	5/8	3.72	6
804251	2150-8CV	8-1/2	1-7/16	1-3/16	5/8	3/4	5.64	6
804285	2050-9CV	9-1/4	1-9/16	1-9/32	5/8	13/16	1.19	6
804277	2050-91V	9-1/4	1-9/16	1-9/32	5/8	13/16	1.19	6



Long Chain Nose Pliers

Long nose reaches into tight places. Forged alloy tool steel. Fine serrated jaws. Keen cutters. Non-slip red cushion grip handles.



Item#	Description	Nose Overall Length inches	Nose Length A inches	Maximum Width B inches	Cutter Thickness C inches	Point Length D inches	Shelf Dimensions E Inches	Shelf Pack Wt. lb.	Shelf Pack
804072	654-6CV	6-5/8	1-7/16	11/16	3/8	1/2	3/32	2.28	6
804079	654-7CV	7-1/2	2-21/32	3/4	3/8	1/2	5/32 x 3/32	2.64	6



Slip Joint Pliers with Cushion Grip

Cee Tee Co.® Combination. Drop-forged steel, hardened and tempered. Bright plated finish. Machined gripping teeth. Built-in wire cutter. Non-slip red cushion grip handles.

Item#	Description	Overall Length inches	Max. Jaw Opening inches	Shelf Pack Wt. lb.	Shelf Pack
803004	H26CV	6-1/2	1	3.0	6
803009	H28CV	8	1	3.6	6



Tongue & Groove Straight Jaw Pliers-Black Phosphate Finish

Versatile utility pliers ideal for objects of all shapes. Drop forged and machined and then hardened, tempered, and polished to assure a precision fit between both halves; assuring no chance of halves jumping out of grooves. Long, high leverage, non-slip red cushion grip handles have textured grips for comfort and safety.

Item#	Description	Overall Length inches	Max. Jaw Opening inches	No. of jaw positions	Shelf Pack Wt. lb.	Shelf Pack
802030	RT27CV	7	1-1/8	4	2.64	6
802033	RT210CV	10	1-1/2	5	5.64	6
802036	RT212CV	12	2-3/8	6	11.22	6
802039	RT214CV	14	3-1/4	8	12.78	3
802042	RT216CV	17	4-1/4	10	21.75	3



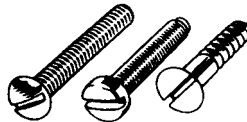
Choosing the Correct Screwdriver

Phillips type screws



Flat oval head screw size	Round head screw size	Flat oval binding head screw size	Round fillister head screw size	Truss brazier button head screw size	Flat, round oval, stove binding head screw size	Recommended Screwdriver (Phillips) Point size	Recommended Screwdriver Shaft Size inches
0,1	0,1	0,1	0,1	–	–	0	1/8
2,3,4	2,3,4	2,3,4	2,3,4	2,3,4,5	2,3,4,	1	3/16
5,6,7, 8,9	5,6,7, 8,9,10	5,6,8, 10	5,6,8, 10	6,8,10,	5,6,7, 8,10	2	1/4
10,12, 14,16	12,14, 16	12,1/4"	12,1/4" 5/16"	12,1/4"	12,1/4	3	5/16
18,20, 24	18,20, 24	5/16",3/8", 7/16",1/2"	3/8",7/16"	5/16",3/8", 7/16",1/2"	–	4	3/8

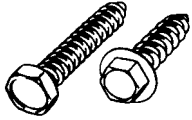
Slotted screws



Screw size	Recommended Screwdriver Tip size (inches)
0	3/32
1	3/32
2	1/8
3	5/32
4	3/16
5	3/16
6	1/4
7	1/4
8	5/16
9	5/16
10	5/16
12	3/8
14	3/8
16	7/16

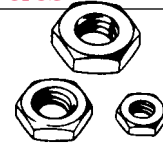
Choosing the Correct Nutdriver

Hex head screws



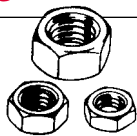
Screw size	Screw diameter (inches)	Normal Nutdriver Hex opening (inches)
1	.073	1/8
2	.086	1/8
3	.099	3/16
4	.112	3/16
5	.125	3/16
6	.138	1/4
7	.151	1/4
8	.164	1/4
10	.190	5/16
12	.216	5/16
1/4"	.250	3/8
5/16	.312	1/2
3/8"	.375	9/16

Hex machine screw nuts



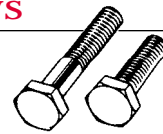
Nut size	For Screw diameter	Normal Nutdriver Hex opening (inches)
0	.060	5/32
1	.073	5/32
2	.086	3/16
3	.099	3/16
4	.112	1/4
5	.125	5/16
6	.138	5/16
8	.164	11/32
10	.190	3/8
12	.216	7/16
1/4"	.250	7/16
5/16	.312	9/16
3/8"	.375	5/8

Hex nuts



Nut size (inches)	Normal Nutdriver Hex opening (inches)
1/4	7/16
5/16	1/2
3/8	9/16
7/16	11/16
1/2	3/4

Hex head bolts & hex head cap screws



Nut size	Normal Nutdriver Hex opening (inches)
1/4	7/16
5/16	1/2
3/8	9/16
7/16	5/8
1/2	3/4

Crescent Screwdrivers

The Crescent screwdrivers shown below all have the following features.

Features	Benefits
Patented concave blade on slotted style	Fits slotted screws more accurately with greater contact area for virtually no cam-out
Wider Tip	Allows even damaged heads to be turned easily
New alloy steel Phillips blade	Extends blade life and provides a better fit
Vapor blasted tips on all styles	Eliminate chipping
Oversized butyrate molded handle	Extra torque with maximum comfort

Mechanic's Round Shaft Screwdrivers

Molded oversize butyrate plastic handles make for extra torque with maximum comfort. Blades made of tough, long lasting chrome vanadium alloy steel. Precision ground. All tips are sand blasted to prevent chipping of the plating.



Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
806236	SDF44V	4	1/4	8-1/8	1.30	6
806237	SDF46V	6	5/16	10-1/2	2.20	6

Cushion Grip Mechanic's Round Shaft Screwdrivers

Cushion grip handle sleeves are made of genuine PVC over tenite butyrate cores and have patented interlocking non-slip grip. Oversize handles assure better grip and more turning power. Heavy duty chrome vanadium alloy steel blades have precision crossground flats and tips. All tips are sand blasted to prevent chipping of the plating.



Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
805002	2143-3V	3	1/4	6-3/4	1.62	6
805005	2143-4V	4	1/4	8-3/8	1.68	6
805008	2143-6V	6	5/16	11	2.40	6
805011	2143-8V	8	3/8	13-1/2	3.60	6

Cushion Grip Mechanic's Square Shaft Screwdrivers



Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
805022	2343-4V	4	1/4	8-3/8	1.68	6
805025	2343-6V	6	5/16	11	1.80	6
805028	2343-8V	8	3/8	13-1/2	4.10	6

Mechanic's Square Screwdrivers



Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
806241	SDFS56V	6	5/16	10-1/2	6.40	6
806243	SDFS88V	8	3/8	12	3.60	6

Cushion Grip Electrician's Round Shaft Screwdrivers



Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
805035	2142-4V	4	1/4	8-3/8	1.80	6
805038	2142-6V	6	1/4	10-3/8	2.00	6
805041	2243-3V	3	3/16	6-3/4	1.08	6
805044	2243-4V	4	3/16	7-3/4	1.20	6
805047	2243-6V	6	3/16	9-3/4	1.30	6
805050	2243-8V	8	3/16	11-3/4	1.40	6
805053	2243-10V	10	3/16	13-3/4	1.50	6



Electrician's Round Shaft Screwdrivers

Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
806231	SDF33V	4	3/16	7-5/8	0.80	6
806232	SDF36V	6	3/16	9-5/8	1.00	6



Stubby Square Shaft Screwdriver

2343-1-1/4V has a cushion grip.

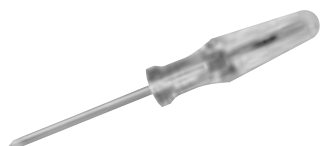
Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
805068	2343-1-1/4V	1-1/4	1/4	3-1/8	0.75	6



Cushion Grip Round Shaft Phillips Screwdrivers



Item#	Description	Point Size	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
805073	2501V	No. 1	3	3/16	6-3/4	1.08	6
805076	2502V	No. 2	4	1/4	8-3/8	1.80	6
805079	2503V	No. 3	6	5/16	11	2.70	6
805087	2522V-Stubby	No. 2	1-1/4	1/4	3-1/8	0.75	6



Round Shaft Phillips Screwdrivers

Item#	Description	Point Size	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
806246	SDFP33V	No. 1	3	3/16	6-5/8	0.80	6
806249	SDFP44V	No. 2	4	1/4	8-3/8	2.00	6



Cushion Grip Nutdrivers-Full Hollow Shaft Inch Sizes, Color Coded Handles

Item#	Description	Color Code	Hex Dia. inches	Depth of hole inches	Shaft Length inches	Handle Size	Shelf Pack
808008	CN8HSV	Red	1/4	5	3-1/8	1-1/8 x 3-5/8	6
808014	CN10HSV	Amber	5/16	5	3-1/8	1-1/8 x 3-5/8	6

Pocket Clip Style-Round Shaft Screwdriver



Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack
87011	R181	2	1/8	4-1/4	12

Round Shaft Screwdrivers

Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack
87021	R184V	4	1/8	6-5/8	6
87024	R186V	6	1/8	8-5/8	6



Extra Long-Phillips Round Shaft Screwdriver



Item#	Description	Point Size	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack
870163	X1020	2	10	1/4	14-1/8	6

Full Hollow Shaft Inch Sizes, Color Coded Handles Nutdrivers



Item#	Description	Color Code	Hex Dia. inches	Depth of hole inches	Shaft Length inches	Overall Length inches	Shelf Pack
870036	HS8V	Red	1/4	7	4-1/2	7-1/4	6
870042	HS10V	Amber	5/16	7	4-1/2	7-1/4	6
870048	HS12V	Blue	3/8	7	4-1/2	7-1/4	6
870051	HS14V	Brown	7/16	7	4-1/2	7-1/4	6

Drilled Shaft Nutdriver



Item#	Description	Color Code	Hex Dia. inches	Depth of hole inches	Shaft Length inches	Overall Length inches	Shelf Pack
871020	12V	Blue	3/8	1-1/8	3	6-1/8	6

Extra Long-Full Hollow Shaft Nutdrivers Inch Sizes, Color Coded Handles



Item#	Description	Color Code	Hex Dia. inches	Depth of hole inches	Shaft Length inches	Overall Length inches	Shelf Pack
870063	L8V	Red	1/4	9-3/4	6	10-1/8	6
870066	L10V	Amber	5/16	9-3/4	6	10-1/8	6

Magnetic Nutdrivers (Various Lengths)



Exclusive with Xcelite, 1/4" and 5/16" magnetic fixed handle nutdrivers offer the ultimate in convenience for assembly and service operations involving hex fasteners. The Alnico permanent magnet inserted in socket holds fasteners firmly for easy, one hand driving or for retrieving on removal. A unique Xcelite development effectively insulates magnet. All nutdriver sockets have been specially treated and hardened for use with self-tapping screws. Comfortable contoured handle provides adequate torque for one-hand driving.

Item#	Description	Color Code	Hex Dia. inches	Shaft Length inches	Overall Length inches	Shelf Pack
871091	8MV	Red	1/4	3	6-1/8	6
871094	10MV	Amber	5/16	3	6-1/8	6
871097	L8MV	Red	1/4	6	10-1/8	6
871100	L10MV	Amber	5/16	6	10-1/8	6

No. 25 Handle for Reversible Round Shaft Blade



Blades snap in and out easily and are held firmly in perfect alignment by a patented spring lock.

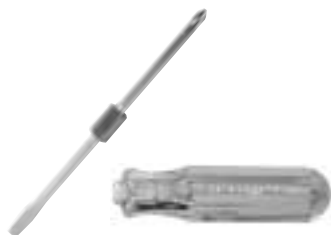
Item#	Description	inches	Shelf Pack
870292	No. 25	1-1/8 x 4-1/8	6

Reversible Round Shaft Blades (use with No. 25 Handle)



Item#	Description	Size of Tip inches	Shaft Length inches	Shelf Pack
870295	RB1 - No. 1 Phillips & 3/16" slotted	3/16	6-1/4	6
870296	RB2 - No. 2 Phillips & 1/4" slotted	1/4	6-1/4	6
870297	RB3 - No. 3 Phillips & 5/16" slotted	5/16	6-1/4	6

Combination Reversible Round Shaft Blades & Handles



Item#	Description	Item Description	Overall Length inches	Shelf Pack
870301	CR1V	No. 25 Handle & RB1 Blade	7-1/4	6
870304	CR2V	No. 25 Handle & RB2 Blade	7-1/4	6

600 4-Way Pocket Tool



An extremely versatile time saver. Double-ended handle serves as two sizes of nutdrivers (7/16" and 1/4"), while special reversible SB1 blade fits slotted or Phillips head screws.

Item#	Description	Item Description	Shelf Pack
870308	600V	4-Way Pocket Tool	6

More-Than-One Screwdrivers

Extra handy self-storing standard shaft screwdrivers. Convert in seconds to the most often needed tips. The **FSD-1V** & **CMB4CDP** contain 3/16" & 1/4" slotted tips and #1 & #2 Phillips style tips. The **CMB6CDP** contain 3/16" & 9/32" slotted, #1 & #2 Phillips & 1/4" & 5/16" nutdrivers. The **CMB6TCDP** contain 3/16", 9/32 & 1/4" slotted & #1, #2 & #3 Phillips. The **CMB8CDP** contains 3/16" & 9/32" slotted, #1 & #2 Phillips, #1 & #2 square socket & T15 & T20 torx.

Item#	Description	Item Description	Shelf Pack
870312	FSD-1V	Four-in-one screwdriver complete	6
806200	CMB4CDP	Four-in-one screwdriver complete*	12
806204	CMB6CDP	Six-in-one screwdriver complete*	12
806212	CMB6TCDP	Six-in-one "T"driver complete*	12
806208	CMB8CDP	Eight-in-one screwdriver complete*	12

*Must be ordered in shelf pack form.



Crescent Screwdriver Set

Set of six popular sized screwdrivers all with cushion grip ergonomic designed handles. Available in a convenient reuseable plastic roll pouch. Are suitable for any job requirement.

Item#	Description	Item Description	Shelf Pack
809394	SDD-6	6 Piece Screwdriver Set 1 each of: SDDP44 – 2 Pt. x 4 SDD36 – 3/16 x 6 SDD33 – 3/16 x 3 SDD44 – 1/4 x 4 SDD48 – 1/4 x 6 SDDP34 – 1 Pt. x 4	



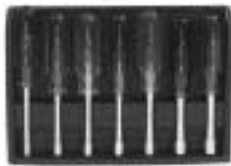
Xcelite Screwdriver & Nutdriver Set (Inch Sizes)

Overall length of screwdrivers and nutdrivers is 3-1/2".

Item#	Description	Item Description	Shelf Pack
878052	PS130V	Complete Set - Carded Contains 1 each of: P1 (#1 Phillips tip round shaft screwdriver - Brown), P2 (#2 Phillips tip round shaft screwdriver - Amber), P181 (1/8" tip round shaft screwdriver - Red), P3161 (3/16" tip round shaft screwdriver - Orange), P141 (1/4" tip round shaft screwdriver - Amber), P6 (3/16" nutdriver - Black), P8 (1/4" nutdriver - Red), P10 (5/16" nutdriver - Amber), P11 (11/32" nutdriver - Green), P12 (3/8" nutdriver - Blue), TA-2 black torque amplifier handle, folding molded plastic case.	3



Crescent® Xcelite®



Nutdriver Sets

147TB contains seven color coded hollow shaft nutdrivers from 1/4" to 1/2" in a molded plastic; tray size of nutdrivers is 7-1/4" long with 4-1/2" shaft and 7" hole.

177 contains seven color coded hollow shaft nutdriver from 3/16" to 1/2" in a soft plastic pouch; all nutdrivers are 7-1/4" long with 4-1/2" shaft and 7" hole except HS6 which is 6-1/4" long with 4" shaft and 6" hole.

Item#	Description	Item Description	Shelf Pack
878034	147TB –	Contains 1 each hollow shaft nutdriver of: HS8 (1/4"), HS9 (9/32"), HS10 (5/16"), HS11(11/32"), HS12 (3/8"), HS14 (7/16") HS16 (1/2"), molded plastic tray.	1
878038	177 –	Contains 1 each hollow shaft nutdriver of: HS6 (3/16"), HS8 (1/4"), HS10 (5/16"), HS11(11/32"), HS12 (3/8"), HS14 (7/16") HS16 (1/2"), plastic pouch.	1

Drill Screw™ Chucks

Duro Dyne chucks are made of hardened steel and utilize a permanent magnet to keep screws firmly in place. The hex shank is designed to fit most drill motors and screw "guns". **DCL-14** is utilized with screws having a 1/4" head. **DCL-516** is utilized with screws having a 5/16" head.



Item#	Description	Shaft Length inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack (Minimum)
16008	DCL14	1	2-5/8	.25	2
16009	DCL516	1	2-5/8	.25	2
Bulk Pack					
16012	DCL14B	1	2-5/8	13-3/4	100
16013	DCL516B	1	2-5/8	15	100

Scratch Awls



Item#	Description	Shaft Length inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
807002	2245V-Cushion Grip	3-7/8	7-5/8	1.30	6
807005	73V-Wood Handle	3-7/8	6-5/8	1.25	6
10014	Duro Dyne Scratch Awl	3	5	0.1	1

Trammel Point Tool

The hardened replaceable tips, designed for longer life, are held in with an allen screw. The high tension locking spring, with cushioned finger grips, holds the adjustable trammel rods firmly in position.



Item#	Description	Minimum Radius inches	Maximum Radius inches	Shelf Pack Wt. lb.	Shelf Pack
818112	DTP-18	2	23	0.5	1

Hole Cutter

12" diameter hole cutter will cut light gage metal aluminum, plastics and formica. It has an easy read scale from 2" to 12"



Item#	Description	Minimum Diameter inches	Maximum Diameter inches	Shelf Pack Wt. lb.	Shelf Pack
818116	DDHC12	2	12	1	1

Hole Cutter Replacement Bit

Replacement bit is a three fluted cutting bit. This mill style bit is designed to cut from the side. The bit comes with the drill attachment rod and a safety cap.

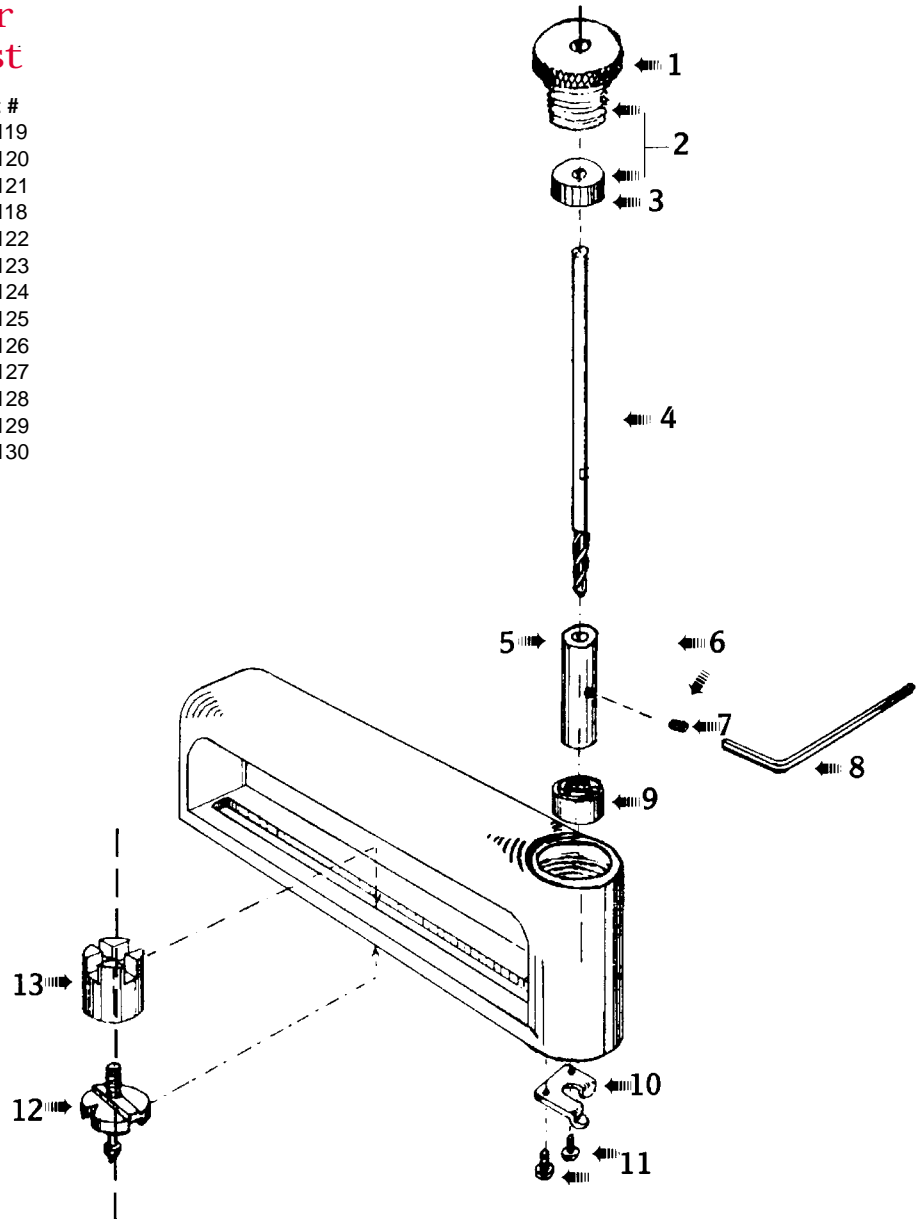


Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818118	DDHC12-RB	2 oz.	6

Multi-Cut Hole Cutter Replacement Part List

Description	Part #
1 Cap, w/o Bearing	818119
2 Cap, w/ Bearing	818120
3 Top Bearing	818121
4 Standard Bit for DDHC-12	818118
5 Spacer	818122
6 Spacer w/ Set Screw	818123
7 Set Screw for Spacer	818124
8 Allen Wrench	818125
9 Bottom Bearing	818126
10 Foot Guide	818127
11 Screws for Foot Guide (set)	818128
12 Pivot Pin	818129
13 Pivot Pin Nut	818130

Assembly: Simply Assemble the Parts as Shown on the Parts List.



Select the Best Torch for the Job

Oxygen Propane Torch										
High Performance Torch										
Basic Torch										
Light Charcoal	Soft Solder Copper Tubing	Remove Paint/Putty	Thaw Pipes	Loosen Nuts	Silver Solder Stainless, Brass, Copper	Braze Light Weight Steel	Soft Solder Copper Tubing	Braze Toys, Garden Tools, etc.	Fusion Weld with 1/16 Steel Rod	Cut Steel and Iron – up to 3/8"

For higher temperatures, (better performance and time savings), use **Propylene** instead of **Propane** in a Basic Torch or a High Performance Torch. **Propylene** will add about 300° to the flame temperature.

Safety Precautions

1. Read and follow operating instructions and familiarize yourself with the torch before lighting or using. Do not try to operate before reading instructions.
2. Keep torch out of reach of children and anyone who has not read instructions.
3. Disconnect cylinder when not in use.
4. Never attempt to modify the torch construction and never use unapproved accessories or fuels.
5. Treat the torch as you would any fine tool or instrument. Do not drop or otherwise abuse.
6. Do not use a leaking, damaged, or malfunctioning torch. Check all joints and couplings periodically to insure against loose connections with valve open, without lighting, test all connections with soapy water. If bubbles appear, gas is leaking and torch must be repaired. Never use a flame to check leaks. Make this test in a well ventilated and spark-free area.
7. When brazing, always wear goggles having an Ansi Z.87 shade #4 or #5 protective lens.
8. Work only in well ventilated areas and avoid the fumes from fluxes and all metal heating operations. Be especially careful to avoid fumes from cadmium plating and galvanized metal—remove these coatings in the area to be heated by filing or sanding prior to heating.
9. Avoid contact of flux with skin or eyes.
10. Always place your work on firebrick. If you are not sure if it is firebrick, do not use it. Ordinary brick and concrete can explode when subjected to high temperatures. Do not work on wood or metal surfaces.
11. Always handle metal and brazing rods with tongs or pliers. Metal can be extremely hot even though it is not red.
12. Never use the torch on or near combustibles. Be especially careful around motor vehicles or any gasoline-fired products and beware of hidden fuel lines and tanks.
13. Never attempt to repair or heat a gasoline tank, a chemical drum, an aerosol can, a compressed gas container or any can that held flammable liquid or gas or any chemical. Heating these is extremely dangerous, especially after they have been “**emptied**”.
14. When thawing pipes, be very careful not to overheat surrounding materials. Use heat shield.
15. Always have a fire extinguisher and a bucket of water near the torch and work area. Do not place them in the flame path or in a location where you could not reach them should a fire break out.
16. When torch is connected to cylinder, always set cylinder on a flat, level surface to avoid accidental tipover. Make sure torch is cool before tightening or removing burner head, or before installing or removing accessories.
17. Torch fuels are extremely flammable. The contents are under pressure keep out of reach of children. Operate only in well ventilated areas. Do not store in room used for habitation. Do not puncture or incinerate cylinder or throw in fire. Do not expose to heat or store at temperature above 120°F(49°C). Avoid prolonged exposure to sunlight.

IMPORTANT!

When fuel cylinder is empty, discard in safe place. Federal Law prohibits transportation if refilled.

Torch Fuel Comparison Chart

Property	Fuel Type		
	Propane	Propylene	MAPP*
Duro Dyne Part#	818271	818272	818248
Duro Dyne Description	TU9	PY9	MG9
Availability	Excellent	Excellent	One Source in North America
Contents	90% Propane 5% Propylene 2.5% N-Butane 2.5% Non-Hazardous Materials	3% Propane 97% Propylene	44% MAPP 56% other LP gases including propylene
Cold Temperature Operation	30° F	15° F	32° F
Burning Characteristics	Clean	Clean	Impurities tend to clog torch over time
Incompatibility (Materials to Avoid)	Chlorine & Strong Oxidizers	Oxides of Nitrogen (NO ₂ ,N ₂ O ₄ ,N ₂ O)	Natural rubber, copper alloys above 65% copper, silver, mercury halogens, acid, metallic sodium potassium, potassium permanganate
Calculated Flame Temperature in Pure Oxygen	5000° F	5295° F	5301° F

* Methyl Acetylene Propadiene Stabilized

For High temperature Applications Choose Propylene Instead of MAPP

Propylene:

- Burns Cleaner
- Does Not Clog the Torch Orifice
- Emits Less Odor
- Operates at Lower Outside Temperatures
- Is Less Expensive
- Has Virtually the Same Flame Temperature

High Performance Professional Torches

Quick Fire™ Self-Igniting Torch Head and Kit

The new Turner Quick Fire™ Self-Igniting Torch is easy to use. No matches, no sparklighters, just a simple press of the piezo ignitor button gives instant flame for brazing, soldering or thawing. The high performance adjustable pressure regulator allows higher temperatures than conventional torches and because of the simple and efficient easy on/easy off valve, fuel is very economical.

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818260	TU0839T - Quick Fire™ Self-igniting Propane Torch Head Only; Blister Pack	5.3	6
818261	TU839YKC - Quick Fire Self-igniting High Performance Torch Kit with High Temperature Fuel (Propylene)	16	6



Solid Brass 2 Piece Propane Torch Kit

Includes solid brass UL listed valve and burner assembly and 14.1 oz propane fuel cylinder and operating instructions.

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818265	TU100K	29.5	12



7 Piece Propane Torch Kit-Brass

Ideal kit for the professional tradesman. General purpose propane torch kit includes solid brass UL listed precision fuel valve and burner assembly with pencil point tip, standard brush flame tip, flame spreading tip, sparklighter replacement flints, and 14.1 oz. propane fuel cylinder. Packed in rugged plastic box.

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818266	TU400K	23	6



Torch Heads

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818268	TU200T - Pencil Point Burner Assembly - Brass	3.8	6
818269	TU300T - Heavy Duty Brush Flame Assembly	3.8	6



Propane Fuel Cylinder

The 14.1 oz. tall cylinder fits any standard propane torch, camping lantern, stove or other propane appliance. Disposable steel cylinder meets DOT 39 specifications. Sold in shelf pack form only.

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818271	TU9	23.6	12





High Temperature Fuel Cylinder

Propylene is ideal for soft soldering, silver soldering and brazing. Consistent high temperature burning speeds up torch work and lets you tackle bigger heating jobs which are impossible with propane. Propylene has virtually the same flame temperature as methyl acetylene propadiene (MAPP) stabilized gas (less than 0.1% difference, or 6°F). The 14.1 oz. propylene disposable cylinder may be used with all torches that consumes methyl acetylene propadiene stabilized gas and many that use propane. Sold in shelf pack form only.

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818272	PY9	23.6	12



Halide Leak Detector Kit

For refrigeration and air conditioning repair. Kit includes leak detector assembly, search tube, operating instructions and 14.1 oz. propane fuel cylinder packed in chipboard carton.

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818232	TX12A	23.6	6



Halide Leak Detector Kit with Plastic Box

Complete kit packed in rugged plastic box. Includes leak detector assembly, search tube, two replacement Halide reactor plates, operating instructions and 14.1 oz. propane fuel cylinder.

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818231	TX12MA	23.6	6



Halide Leak Detector Assembly & Search Tube

Fits standard 14.1 oz. propane fuel cylinder. Cylinder not included

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818233	TX13A	11.9	12



Halide Leak Detector Accessory

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
818234	TX6088 Reactor Plate Assembly for Halide Leak Detector	.26	2

Wire Numbers and Sizes

No. AWG	Stranding*	Diameter (inches)
40	Solid	0.0031
38	Solid	0.0040
36	Solid	0.0050
34	Solid	0.0063
32	Solid	0.0080
30	Solid	0.0100
28	Solid	0.0126
26	Solid	0.0159
24	Solid	0.0201
22	Solid	0.0253
20	Solid	0.0320
18	Solid	0.0403
16	Solid	0.0508
14	Solid	0.0641
12	Solid	0.0808
10	Solid	0.1019
8	Solid	0.1285

*Stranded wire diameter varies depending upon the number of strands; the more strands for a given gage, the larger the diameter.

Soldering Safety Precautions

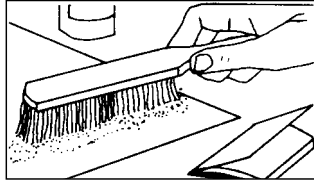
Your soldering iron complies with all the relevant safety regulations in the USA. Nevertheless, like all electrical appliances, it must be handled with proper care. Never forget too, that the operating tip will reach high temperatures. Follow these simple safety rules at all times, and you will never have any problems.

1. Keep your soldering gun well away from flammable material.
2. To avoid burns, always assume the tip is hot.
3. Be sure the hot metal tip does not come into contact with the electrical power cord.
4. Before making any adjustment—removing or replacing a tip, etc., make sure the gun is unplugged and cool.
5. If equipped with a trigger switch, release the trigger whenever the tip is not in contact with the work.
NEVER, EVER TAPE BACK THE TRIGGER.
6. Do not hold work in our hand if you can possibly avoid it. Use a vise, clamp or pliers.
7. Do not dip the tip into any liquid.
8. Many materials give off unpleasant fumes when heated, so always work in a well ventilated room.
9. Clean the tip by wiping it, when hot, across a damp sponge or cloth placed on a non-flammable surface, **NOT** held in the hand.
10. After use, disconnect the soldering gun, allow the tip to cool completely, and store the tool in a safe place (out of reach of children).
11. **Safety goggles are recommended to prevent hot materials from entering eyes.**

Helpful Hints When Soldering

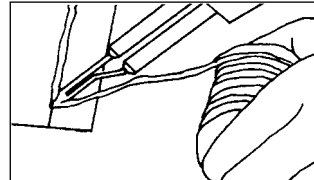
Keep Work Clean!

Before soldering, remove rust or paint with a wire brush or emery paper. Remove dirt or grease with the right solvent. Wipe work over with solvent after soldering, too. It helps prevent corrosion.

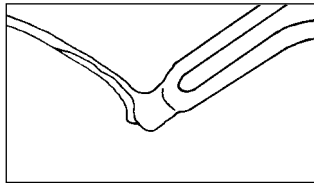


Choose the Right Solder!

40/60 is recommended for most work, but remember that aluminum, and some other metals, need special formulations.



Make Sure the Tip is Tinned!



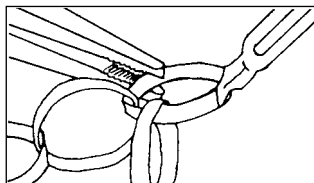
Use the Right Flux!

Never use acid flux for electrical work. Never dip the tip in a container of flux: apply flux to the work, not to the tool. This table will help you choose:

Base Material or Applied Finish	Rosin Core Solder	Acid Core Solder
Hot Tin Dip (tin cans)	x	x
Hot Solder Dip	x	x
Electro Tin 0.0005"	x	x
Electro Tin 0.0002"	x	x
Silver Plate	x	x
Cadmium Plate	x	x
Nickel Plate		x
Galvanized Steel		x
Copper	x	x
Brass	x	x

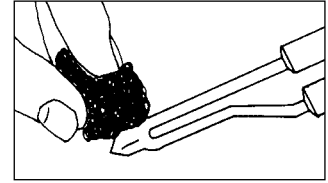
Be Extra Careful If You Use the Soldering Iron for Fine Work!

Remember that high tip temperature! Use the lower temperature option and hold the work in pliers, so as to provide a heat sink.

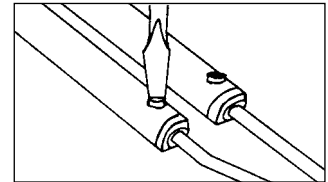


Keep All Work Tips Clean!

Wiping on a silicone sponge will prolong the working life of the tips. But, with use, deposits are bound to build up. As soon as any tip appears to be dirty, clean it by rubbing lightly with steel wool or fine emery cloth. **Never use a file!** After cleaning in this way, the tip will require re-tinning.



Also, make sure the fastening screws, that hold the work tips in place, are kept tight at all times. They can loosen during use due to the alternate heating and cooling to which they are subjected. If the tool has not been used for some time, a film of oxide may form on the surfaces of these screws. If this happens, just loosen the screws a quarter turn and then retighten.



Proper Soldering:

Apply the flat face of the adequately heated soldering iron directly against the assembly and simultaneously apply the cored solder strand at the exact point of iron contracts.

The Correct Method of Using Cored Solder



The Incorrect Method of Using Cored Solder

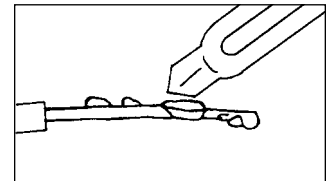


Re-Tinning the Tip:

Your Weller soldering gun needs very little in the way of care and maintenance to keep it in first-class condition. Occasionally, the soldering tip needs re-tinning. It's easy to do, this way:

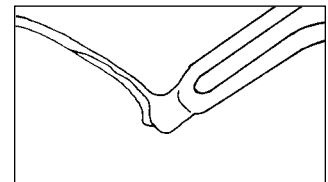
WHEN TO DO IT

If the solder doesn't cling to the work tip and instead of flowing smoothly, rolls off in small globules, it's a sure sign the tip needs re-tinning.



HOW TO DO IT

Depress the trigger and apply solder to the tip until it starts to melt. Keep the tip in contact with the solder. After 3 or 4 seconds, release the trigger, but continue to apply solder until the tip cools. Then wipe off excess. The tip should now be thoroughly tinned. If it is not, repeat the procedure.

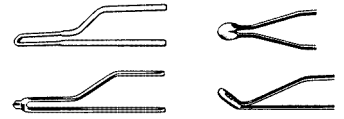


Professional D550 PK Kit & Gun with Replacement Tips for D550 Guns

8-piece heavy duty soldering kit featuring the versatile Weller model **D550** soldering gun with tin plated heavy copper tip. Kit also includes 1 sealing tip, 1 cutting tip, flux brush, soldering aid tool, coil of 40/60 rosin-core solder and sturdy plastic carrying case plus soldering hints booklet. UL listed. Full color informative packaging. Gun heats up in 6 seconds.



Item#	Description	Voltage	Wattage	Cycles Hz.	Shelf Pack Wt. lb.	Shelf Pack
866009	D550PK	120	260/200	50/60	13	3
861005	7250 - Tip only - 2 per card for Soldering Gun #D550					6 cards



SP175 Iron (175 watt)

12-1/2" long. Extra heavy duty iron for demanding jobs like sheet metal work. Includes soldering iron rest. 5/8" diameter long-life iron plated tip develops 900° F.

Item#	Description	Voltage	Wattage	Cycles Hz.	Shelf Pack Wt. lb.	Shelf Pack
862019	SP175	120	175	50/60	4	3



Wire Stripper/Cutter/Electrical Pliers

Wire cutting & stripping edges conveniently located in front of pivot to allow use in tight places. Needle nose pliers add wire pulling and bending capabilities. Cushion grip handles provide maximum leverage.

Item#	Description	Overall Length inches	Shelf Pack
881120	WS15H	6	6
875033	105SCGV	6	6
"S" Automatic Spring Open Handles			



Crescent Wire Crimper/Cutter

Five in one tool, wire stripper, wire cutter, bolt cutter, plier and crimper for 20 to 10 AWG wire. Plier nose permits wire pulling and looping. Cuts bolts through #10. Crimps insulated and non-insulated solderless terminals.

Item#	Description	Overall Length inches	Shelf Pack
881121	WS19H	8	6
875026	104CGV	8-1/4	6



Electrician's Knife

Both a knife and a screwdriver. Screwdriver blade has a sharp edge for scraping insulation. Carded

Item#	Description	Shelf Pack
875048	K22V	6



Metric Conversion Chart

M = Millimeters, DE = Decimal Equivalents, F = Factorial, DN = Drill Number

"M"	"DE"	"F"	"DN"	"M"	"DE"	"F"	"DN"	"M"	"DE"	"F"	"DN"	"M"	"DE"	"F"	"DN"	"M"	"DE"	"F"
.1	.0039			1.751	.0689			—	.1570		22	6.8	.2677			10.72	.4219	27/64
.15	.0059			—	.0700		50	4.0	.1575			6.9	.2716			11.0	.4330	
.2	.0079			1.8	.0709			—	.1590		21	—	.2720		I	11.11	.4375	7/16
.25	.0098			1.85	.0728			—	.1610		20	7.0	.2756			11.5	.4528	
.3	.0118			—	.0730		49	4.1	.1614			—	.2770		J	11.51	.4531	29/64
—	.0135		80	1.9	.0748			4.2	.1654			7.1	.2795			11.91	.4687	15/32
.35	.0138			—	.0760		48	—	.1660		19	—	.2811		K	12.0	.4724	
—	.0145		79	1.95	.0767			4.25	.1673			7.14	.2812	9/32	—	12.30	.4843	31/64
.39	.0156	1/64	—	1.98	.0781	5/64	—	4.3	.1693			7.2	.2835			12.5	.4921	
.4	.0157			—	.0785		47	—	.1695		18	7.25	.2854			12.7	.5000	1/2
—	.0160		78	2.0	.0787			4.37	.1719	11/64	—	7.3	.2874			13.0	.5118	
.45	.0177			2.05	.0807			—	.1730		17	—	.2900		L	13.10	.5156	33/64
—	.0180		77	—	.0810		46	4.4	.1732			7.4	.2913			13.49	.5312	17/32
.5	.0197			—	.0820		45	—	.1770		16	—	.2950		M	13.5	.5315	
—	.0200		76	2.1	.0827			4.5	.1771			7.5	.2953			13.89	.5469	35/64
—	.0210		75	2.15	.0846			—	.1800		15	7.54	.2968	19/64	—	14.0	.5512	
.55	.0217			—	.0860		44	4.6	.1811			7.6	.2992			14.29	.5625	9/16
—	.0225		74	2.2	.0866			—	.1820		14	—	.3020		N	14.5	.5709	
.6	.0236			2.25	.0885			4.7	.1850		13	7.7	.3031			14.68	.5781	37/64
—	.0240		73	—	.0890		43	4.75	.1870			7.75	.3051			15.0	.5906	
—	.0250		72	2.3	.0905			4.76	.1875	3/16	—	7.8	.3071			15.08	.5937	19/32
.65	.0256			2.35	.0925			4.8	.1890		12	7.9	.3110			15.48	.6094	19/64
—	.0260		71	—	.0935		42	—	.1910		11	7.94	.3125	5/16	—	15.51	.6102	
—	.0280		70	2.38	.0937	3/32	—	4.9	.1929			8.0	.3150			15.88	.6250	5/8
.7	.0276			2.4	.0945			—	.1935		10	—	.3160		O	16.0	.6299	
—	.0292		69	—	.0960		41	—	.1960		9	8.1	.3189			16.27	.6406	41/64
.75	.0295			2.45	.0964			5.0	.1968			8.2	.3228			16.5	.6496	
—	.0310		68	—	.0980		40	—	.1990		8	—	.3230		P	16.67	.6562	21/32
.79	.0312	1/32	—	2.5	.0984			5.1	.2008			8.25	.3248			17.0	.6693	
.8	.0315			—	.0995		39	—	.2010		7	8.3	.3268			17.06	.6719	43/64
—	.0320		67	—	.10151		38	5.16	.2031	13/64	—	8.33	.3281		—	17.46	.6875	11/16
—	.0330		66	2.6	.1024			—	.2040		6	8.4	.3307			17.5	.6890	
.85	.0335			—	.1040		37	5.2	.2047			—	.3320		Q	17.86	.7031	45/64
—	.0350		65	2.7	.1063			—	.2055		5	8.5	.3346			18.0	.7087	
.9	.0354			—	.1065		36	5.25	.2067			8.6	.3386			18.26	.7187	23/32
—	.0360		64	2.75	.1082			5.3	.2086			—	.3390		R	18.5	.7283	
—	.0370		63	2.78	.1093	7/64	—	—	.2090		4	8.7	.3425			18.65	.7344	47/64
.95	.0374			—	.1100		35	5.4	.2126			8.73	.3437	11/32	—	19.0	.7480	
—	.0380		62	2.8	.1102			—	.2130		3	8.75	.3445			19.05	.7500	3/4
—	.0390		61	—	.1110		34	5.5	.2165			8.8	.3465			19.45	.7656	49/64
1.0	.0394			—	.1130		33	5.56	.2187	7/32	—	—	.3480		S	19.5	.7677	
—	.0400		60	2.9	.1141			5.6	.2205			8.9	.3504			19.84	.7812	25/32
—	.0410		59	—	.1160		32	—	.2210		2	9.0	.3543			20.0	.7874	
1.05	.0413			3.0	.1181			5.7	.2244			—	.3580		T	20.24	.7969	51/64
—	.0420		58	—	.1200		31	5.75	.2263			9.1	.3583			20.5	.8071	
—	.0430		57	3.1	.1220			—	.2280		1	9.13	.3594	23/64	—	20.64	.8125	13/16
1.1	.0433			3.181	.1250	1/8	—	5.8	.2283			9.2	.3672			21.0	.8268	
1.15	.0452			3.2	.1260			5.9	.2323			9.25	.3641			21.03	.8281	53/64
—	.0465		56	3.25	.1279			—	.2340		A	9.3	.3661			21.43	.8437	27/32
1.19	.0469	3/64	—	—	.1285		30	5.95	.2344		—	—	.3680		U	21.5	.8465	
1.2	.0472			3.3	.1299			6.0	.2362			9.4	.3701			21.83	.8594	55/64
1.25	.0492			3.4	.1338			—	.2380		B	9.5	.3740			22.0	.8661	
1.3	.0512			—	.1360		29	6.1	.2401			9.53	.3750	3/8	—	22.23	.8750	7/8
—	.0520		55	3.5	.1378			—	.2420		C	—	.3770		V	22.5	.8858	
1.35	.0531			—	.1405		28	6.2	.2441			9.6	.3780			22.62	.8906	57/64
—	.0550		54	3.57	.1406		—	6.25	.2460		D	9.7	.3819			23.0	.9055	
1.4	.0551			3.6	.1417			6.3	.2480			9.75	.3838			23.02	.9062	29/32
1.45	.0570			—	.1440		27	6.35	.2500	1/4	E	9.8	.3858			23.42	.9219	59/64
1.5	.0591			3.7	.1457			6.4	.2520			—	.3860		W	23.5	.9252	
—	.0595		53	—	.1470		26	6.5	.2559			9.9	.3898			23.81	.9375	15/16
1.55	.0610			3.75	.1476			—	.2570		F	9.92	.3906	25/64	—	24.0	.9449	
1.59	.0625	1/16	—	—	.1495		25	6.6	.2598			10.0	.3937			24.21	.9531	61/64
1.6	.0629			3.8	.1496			—	.2610		G	—	.3970		X	24.5	.9646	
—	.0635		52	—	.1520		24	6.7	.2638			—	.4040		Y	24.61	.9687	31/32
1.65	.0649			3/9	.1535			6.75	.2657	17/64	—	10.32	.4062	13/32	—	25.0	.9843	
1.7	.0669			—	.1540		23	6.75	.2657			—	.4130		Z	25.03	.9844	63/64
—	.0670		51	3.95	.1562	5/32	—	—	.2660		H	10.51	.4134			25.4	1.000	1

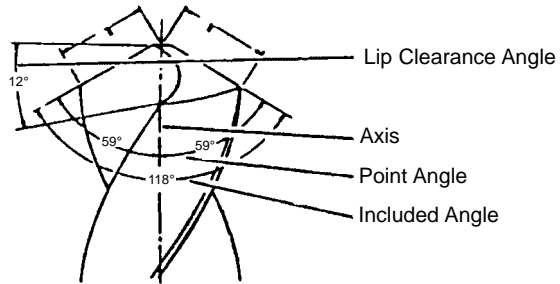
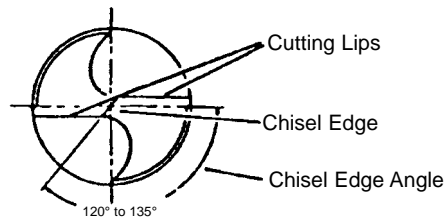
Grinding Twist Drills

Most drill troubles arise from inaccurate pointing. Drill pointing should be varied depending upon the materials to be drilled, but for general use, drills leave the factory sharpened to a 59° point angle (118° included angle), 9° - 15° clearance angle and with a chisel edge angle of from 120° to 135°

Since most operators do not have the skill required for good hand pointing, the use of standard drill pointing machines is highly recommended. Drills are machine pointed at the factory to 118° angle to insure a correct and uniform point angle, equal cutting lips and correct chisel edge angle.

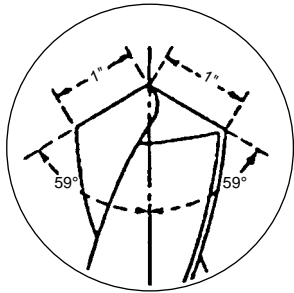
The point angle of a twist drill is the angle made by the cutting lip and the axis of the drill. For general purpose drilling a point angle of 59° (118° included angle) is recommended. The point angle may vary somewhat, one way or the other, but the variation should be uniform in both cutting lips. A twist drill point grinding gage should be used for checking the point angle of both cutting lips.

CAUTION: When high speed drills are sharpened by dry grinding, care should be exercised to prevent overheating. If the drill does get too hot, do not cool in water, but let cool by itself in air. Sudden cooling of high speed steel in water or other cooling mediums will usually produce grinding checks, which may result in chipping of the cutting lips or breaking of the drill point.



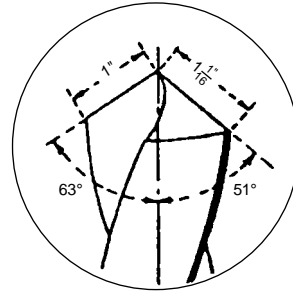
CUTTING LIPS

The cutting lips must be of equal length. Even though the point angle is equal on both sides, if the cutting lips are not equal in length the chisel edge will not be centered, and the drill will cut oversize. A scale should be used to check the lengths of the cutting lips.



RIGHT

Correctly ground lips have the same angle to the axis of the drill and are of equal length. An accurate hole will be produced with this point

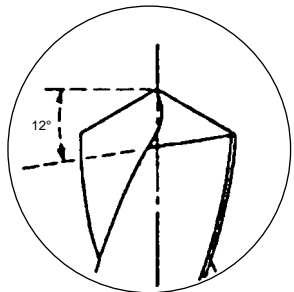


WRONG

Unequal lip lengths produce oversized holes. Unequal lip angles place most of the cutting on one lip and point dulls faster.

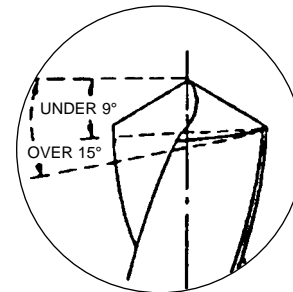
LIP CLEARANCE

Sufficient clearance behind the cutting lips must be provided so that the cutting edges can enter the work. Usually 9° to 15° lip clearance is sufficient for average work if the point is ground with the proper angle and the proper clearance but without the proper contour back of the cutting edges, the cutting lip will be weakened.



RIGHT

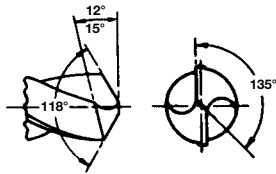
A point with proper lip clearance permits the drill to cut freely. The cutting lip is sufficiently supported to prevent excessive dulling or chipping.



WRONG

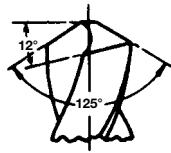
Too much clearance (over 15°) will cause cutting lips to break down. Insufficient clearance (under 9°) requires excess feed pressure, causes drill to split up the web.

Suggested Tip Configurations



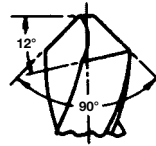
Typical commercial drill bit or average class of work.

Point
118° included angle
12° to 15° lip clearance



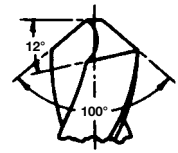
Alloy Steel, Monel Metal, Stainless Steel, Heat Treated Steels, Drop Forgings (Automobile Connecting Rods) Brinell Hardness No. 240

Point
125° included angle
10° to 12° lip clearance



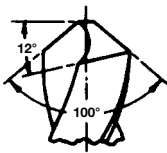
Soft and Medium Cast Iron, Aluminum, Marble Slate, Plastics, Wood, Hard Rubber, Bakelite, Fibre.

Point
90° to 130° included angle
12° lip clearance
Flat cutting lip for marble



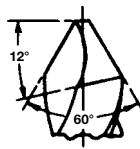
Copper, Soft and Medium Hard Brass.

Point
100° to 118° included angle
12° to 15° lip clearance



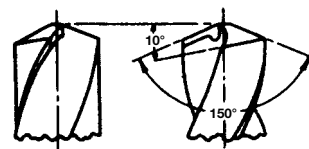
Magnesium Alloys

Point
60° to 118° included angle
15° lip clearance
Slightly flat face of cutting lips reducing rake angle to 5°



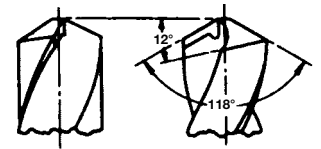
Wood, Rubber, Bakelite, Fibre, Aluminum, Die Castings, Plastics

Point
60° included angle
12° to 15° lip clearance



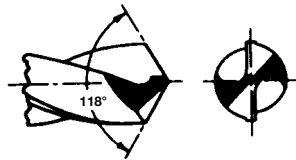
Steel 7% to 13% Manganese, Tough Alloy Steels, Armor Plate and hard materials.

Point
150° included angle
7° to 10° lip clearance
Slightly flat face of cutting tips



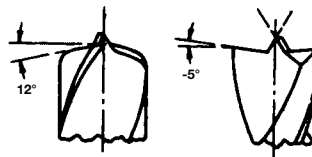
Brass, Soft Bronze

Point
118° included angle
12° to 15° lip clearance
Slightly flat face of cutting lips



Crankshafts, Deep Holes in Soft Steel, Hard Steel, Cast Iron, Nickel and Manganese Alloys.

Point
118° included angle
Chisel Point
9° lip clearance



Thin Sheet Metal, Copper, Fibre, Plastics, Wood.

Point
-5° to +12° included angles
For drills over 1/4" diameter make angle of bit point to suit work

Drill Speed Chart*

*For High Speed Drill Bits Only

Drill Diameter in inches	Softwood	Hardwood	Plastic Rubber	Cast Iron	Soft Metals	Mild Steel	Hard Steel
1/16	3100	3100	3100	3100	3100	3100	3100
1/8	3100	3100	3100	3100	3100	2340	1720
3/16	3100	3100	3100	2340	3100	1720	1100
1/4	2340	2340	2340	1720	2340	1100	1100
5/16	2340	2340	2340	1100	2340	1100	620
3/8	1720	1720	1720	1100	2340	620	620
7/16	1100	1100	1100	1100	2340		
1/2	1100	1100	1100	620	1720		

Drill Bits

Duro Dyne Drill Bits have a 135° split point which starts quickly without walking, and cuts quickly. Specially hardened high vanadium steel makes the bit harder and longer lasting than many others on the market. A heavy web makes the bit more flexible to minimize breakage.

Items#	Description	Size	Decimal Size	Overall Length in inches +/- 1/8	Shelf Pack Wt. lb.	Shelf Pack (minimum)
24001	TD-41	#41	.0960	1-13/16	.25	10
24002	TD-7/64	7/64	.1093	1-13/16	.25	10
24003	TD-31	#31	.1200	1-7/8	.25	10
24004	TD-1/8	1/8	.1250	1-7/8	.25	10
24005	TD-30	#30	.1285	1-15/16	.25	10
24006	TD-9/64	9/64	.1405	1-15/16	.25	10
24007	TD-5/32	5/32	.1562	2-1/16	.25	10
24008	TD-20	#20	.1610	2-1/8	.25	10
24009	TD-11/64	11/64	.1719	2-1/8	.25	10
24010	TD-3/16	3/16	.1875	2-3/16	.25	10
24011	TD-11	#11	.1910	2-1/4	.25	10
24012	TD-7/32	7/32	.2187	2-3/8	.25	10
24013	TD-1/4	1/4	.2500	2-1/2	.25	10
24014	TD-9/32	9/32	.2812	2-11/16	.25	10
24017	TDB-41	#41	.0960	1-13/16	.25	10
24018	TDB-7/64	7/64	.1093	1-13/16	1	100
24019	TDB-31	#31	.1200	1-7/8	1	100
24020	TDB-1/8	1/8	.1250	1-7/8	1	100
24021	TDB-30	#30	.1285	1-15/16	1	100
24022	TDB-9/64	9/64	.1405	1-15/16	1	100
24023	TDB-5/32	5/32	.1562	2-1/16	1	100
24024	TDB-20	#20	.1610	2-1/8	1	100
24025	TDB-11/64	11/64	.1719	2-1/8	1	100
24026	TDB-3/16	3/16	.1875	2-3/16	1	100
24027	TDB-11	#11	.1910	2-1/4	1	100
24028	TDB-7/32	7/32	.2187	2-3/8	1	100
24029	TDB-1/4	1/4	.2500	2-1/2	1	100
24030	TDB-9/32	9/32	.2812	2-11/16	1	100



Twin End Drill Bits

Twin end bits have all the features listed above. Available in two popular sizes, twin end bits give you a spare bit just for a few cents more than a normal bit costs.

Items#	Description	Size	Decimal Size	Overall Length in inches +/- 1/8	Shelf Pack Wt. lb.	Shelf Pack (minimum)
24015	TED-1/8	1/8	.1250	2	.25	10
24016	TED-30	#30	.1285	2	.25	10
24031	TEDB-1/8	1/8	.1250	2	1	100
24032	TEDB-30	#30	.1285	2	1	100



Super Saber Screws

Self piercing screws for light to medium gage materials, the **Super Saber** Point offers one-step fastening. Its time-saving performance is related to the Saber-sharp piercing point with a "fine-cut" machine thread, which pierces the metal upon contact. Once pierced, the thread propels the screw through metal rapidly and almost without effort. **Super Saber** Screws are formed from steel, heat treated and zinc plated. Colors, additional types of packaging and special sizes available upon request. **Speed Data:** Drill speeds from 1800 to 2500RPM are recommended.



Item#	Description	Approx. Ctn. Dim. in. x in. x in.	Shelf Pack Wt. lb.	Shelf Pack (minimum)
14165	SAC 6 x 3/8"	9 x 4 x 3	3	1M
14166	SAC 7 x 1/2"	9 x 4 x 3	4	1M
14167	SAC 8 x 1/2"	9 x 4 x 3	4	1M
14168	SAC 8 x 3/4"	9 x 4 x 3	5	1M
14193	SAC 8 x 1"	9 x 5 x 3	6	1M
14172	SAC 8 x 1-1/2"	11 x 8 x 6	7	1M
14173	SAC 8 x 2"	11 x 8 x 6	10	1M
14169	SAC 10 x 1/2"	9 x 4 x 3	4	1M
14170	SAC 10 x 3/4"	9 x 4 x 3	5	1M
14171	SAC 10 x 1"	9 x 4 x 3	6	1M
Super Saber Point™ Screws 250 Pack				
14305	SAQ 8 x 1-1/2"	9 x 4 x 3	5	250
14306	SAQ 8 x 2"	9 x 4 x 3	6	250
Super Saber Point™ Screws 500 Pack				
14322	SAF 8 x 1/2"	9 x 4 x 3	5	500
14324	SAF 8 x 1"	9 x 4 x 3	6	500
14222	SAF 8 x 1-1/2"	9 x 4 x 3	5	500
14221	SAF 8 x 2"	9 x 4 x 3	6	500
14158	SAT 6 x 3/8"	4 x 4 x 3	2	1M
14159	SAT 7 x 1/2"	4 x 4 x 3	3	1M
14160	SAT 8 x 1/2"	4 x 4 x 5	4	1M
14161	SAT 8 x 3/4"	4 x 4 x 5	5	1M
14174	SAT 8 x 1"	4 x 4 x 5	6	1M
14175	SAT 8 x 1-1/2"	10 x 5 x 6	7	1M
14176	SAT 8 x 2"	10 x 5 x 6	10	1M
14162	SAT 10 x 1/2"	4 x 4 x 5	4	1M
14163	SAT 10 x 3/4"	5 x 5 x 6	5	1M
14164	SAT 10 x 1"	5 x 5 x 6	6	1M
15153	SAP 6 x 3/8"	7 x 7 x 8	10	5M
15154	SAP 7 x 1/2"	7 x 7 x 8	15	5M
15155	SAP 8 x 1/2"	7 x 7 x 8	20	5M
15156	SAP 8 x 3/4"	7 x 7 x 8	20	4M
15167	SAP 8 x 1"	7 x 7 x 8	18	3M
15168	SAP 8 x 1-1/2"	7 x 7 x 8	21	3M
15169	SAP 8 x 2"	7 x 7 x 8	30	3M
15157	SAP 10 x 1/2"	7 x 7 x 8	16	4M
15158	SAP 10 x 3/4"	7 x 7 x 8	15	3M
15170	SAP 10 x 1"	7 x 7 x 8	18	3M

*SAC - 10 boxes of 100, SAQ - 1 pail of 250, SAT - 1 pail of 1000, SAP - 1 bucket from 3000 to 5000.

Pro Point Screws

Self drilling screws, with a precision formed drill point. **Pro-Point** Screws are designed to fasten heavy gage metals. These screws assure accurately sized holes for maximum holding power, eliminating the need for hole preparation and frequent alignment problems encountered in parts assembly. **Pro Points** are formed from steel, heat treated and zinc plated. Additional types of packaging are available upon request. **Speed Data:** Drill speeds from 1800 to 2500RPM are recommended. #8 and #10 screws can be installed up to 3600RPM.



Item#	Description	Approx. Ctn. Dim. in. x in. x in.	Shelf Pack Wt. lb.	Shelf Pack (minimum)
14177	PPC 8 x 1/2"	9 x 4 x 3	4	1M
14178	PPC 8 x 5/8"	9 x 4 x 3	4	1M
14179	PPC 8 x 3/4"	9 x 4 x 3	5	1M
14180	PPC 10 x 1/2"	9 x 4 x 3	4	1M
14181	PPC 10 x 5/8"	9 x 4 x 3	5	1M
14182	PPC 10 x 3/4"	9 x 5 x 3	5	1M
14183	PPC 10 x 1"	9 x 5 x 3	6	1M
14184	PPC 12 x 3/4"	9 x 5 x 3	7	1M
Pro Point™ Screws 500 Pack				
14340	PPF 8 x 1/2"	9 x 4 x 3	4	500
14342	PPF 8 x 3/4"	9 x 4 x 3	4	500
14343	PPF 10 x 1/2"	9 x 4 x 3	5	500
14145	PPF 10 x 3/4"	9 x 4 x 3	4	500
14146	PPF 10 x 1"	9 x 4 x 3	5	500
14185	PPT 8 x 1/2"	4 x 4 x 5	4	1M
14186	PPT 8 x 4/8"	4 x 4 x 5	4	1M
14187	PPT 8 x 3/4"	4 x 4 x 5	5	1M
14188	PPT 10 x 1/2"	4 x 4 x 5	4	1M
14189	PPT 10 x 5/8"	4 x 4 x 5	4	1M
14190	PPT 10 x 3/4"	5 x 5 x 6	5	1M
14191	PPT 10 x 1"	5 x 5 x 6	6	1M
14192	PPT 12 x 3/4"	5 x 5 x 6	7	1M
15159	PPP 8 x 1/2"	7 x 7 x 8	20	5M
15160	PPP 8 x 5/8"	7 x 7 x 8	20	5M
15161	PPP 8 x 3/4"	7 x 7 x 8	20	4M
15162	PPP 10 x 1/2"	7 x 7 x 8	16	4M
15163	PPP 10 x 5/8"	7 x 7 x 8	12	3M
15164	PPP 10 x 3/4"	7 x 7 x 8	15	3M
15166	PPP 10 x 1"	7 x 7 x 8	18	3M
15175	PPP 12 x 3/4"	7 x 7 x 8	21	3M

*PPC - 10 boxes of 100, PPF - 1 pail of 500, PPT - 1 pail of 1000, PPP - 1 bucket from 3000 to 5000.



Total Thickness to be drilled

Screw Length for Pro Points

Drill point length must exceed total thickness of material to be fastened including gaps. Thread length must also exceed combined material thickness.

Item Size	Chuck or Driver Size	Drill Point Size	Max. Drill Capability		Max. Material Grip	
			Dec.	Ga.	inches	Dec.
8 x 1/2"	1/4"	2	.100	12	1/4	.2605
8 x 5/8"	1/4"	2	.100	12	3/8	.3855
8 x 3/4"	1/4"	2	.100	12	1/2	.5105
10 x 1/2"	5/16"	2	.110	11	15/64	.2344
10 x 5/8"	5/16"	3	.175	7	9/32	.2812
10 x 3/4"	5/16"	3	.175	7	13/32	.4603
10 x 1"	5/16"	3	.175	7	21/32	.6503
12 x 3/4"	5/16"	3	.210	5	23/64	.3741

Pin Rivets

Pin Rivets are strong, hollow rivets assembled onto a solid pin, manufactured to strict quality control standards, and available in wide range of sizes and styles to provide the proper rivet for every type of application. **Pin Rivets** are inserted and set from the same side, they are particularly practical where there is no access to the reverse side of the work. All **Duro Dyne** rivets meet IFI 114 specifications.

To determine the description of the rivet - select the appropriate letter or number code under each numbered heading (1-5) at the right. Add "B" to the code to denote bulk packaging. Other sizes, head styles, and rivet finishings, not shown next page, available upon request.

1 Rivet Material	2 Pin Material	3 Rivet Diameter	4 Maximum Grip	5 Rivet Head Style
S=Steel	S=Steel	3=3/32"	1=1/16"	D=Dome
A=Aluminum	A=Aluminum	4=1/8"	2=1/8"	C=Countersunk
C=Copper	C=Copper	5=5/32"	3=3/16"	LF=Large Flange
X=Stainless Steel	(Coated Steel)	6=3/16"	4=1/4"	
	X=Stainless Steel	8=1/4"	5=5/16"	
			6=3/8"	
			8=1/2"	
			10=5/8"	

Pin Rivets continued on next page.

Pin Rivets (continued)

Item#	Description	Approx. Ctn. Dim. in. x in. x in.	Shelf Pack Wt. lb.	Shelf Pack (minimum)
Steel Rivet Steel Pin				
23001	SS41D	4 x 4 x 5	3	1M
23002	SS42D	4 x 4 x 5	3	1M
23003	SS43D	4 x 4 x 5	3	1M
23004	SS44D	4 x 4 x 5	3	1M
23005	SS46D	4 x 4 x 5	4	1M
23006	SS52D	5 x 5 x 6	5	1M
23007	SS54D	5 x 5 x 6	5	1M
23008	SS56D	5 x 5 x 6	6	1M
23009	SS62D	5 x 5 x 6	6	1M
23010	SS64D	5 x 5 x 6	7	1M
23011	SS66D	5 x 5 x 6	9	1M
23012	SS68D	5 x 5 x 6	10	1M
29001	SS41D-B	9 x 9 x 9	28	10M
29002	SS42D-B	9 x 9 x 9	28	10M
29003	SS43D-B	9 x 9 x 9	28	10M
29004	SS44D-B	9 x 9 x 9	28	10M
29005	SS46D-B	9 x 9 x 9	29	10M
29006	SS52D-B	9 x 9 x 9	47	8M
29007	SS54D-B	9 x 9 x 9	47	8M
29008	SS56D-B	9 x 9 x 9	48	8M
29009	SS62D-B	9 x 9 x 9	30	5M
29010	SS64D-B	9 x 9 x 9	31	5M
29011	SS66D-B	9 x 9 x 9	40	5M
29012	SS68D-B	9 x 9 x 9	48	5M
Stainless Rivet Stainless Pin				
23013	XX42D	4 x 4 x 5	3	1M
23014	XX44D	4 x 4 x 5	3	1M
29013	XX42D-B	9 x 9 x 9	28	10M
29014	XX44D-B	9 x 9 x 9	28	10M
Stainless Rivet Steel Pin				
23015	XS42D	4 x 4 x 5	3	1M
23016	XS44D	4 x 4 x 5	3	1M
29015	XS42D-B	9 x 9 x 9	28	10M
29016	XS44D-B	9 x 9 x 9	28	10M
Aluminum Rivet Steel Pin				
23027	AS32D	4 x 4 x 5	1	1M
23028	AS34D	4 x 4 x 5	1	1M
23029	AS41D	4 x 4 x 5	2	1M
23030	AS42D	4 x 4 x 5	2	1M
23031	AS43D	4 x 4 x 5	2	1M
23032	AS44D	4 x 4 x 5	2	1M
23033	AS45D	4 x 4 x 5	3	1M
23034	AS46D	4 x 4 x 5	3	1M
23035	AS52D	5 x 5 x 6	3	1M
23036	AS53D	5 x 5 x 6	4	1M
23037	AS54D	5 x 5 x 6	4	1M
23038	AS56D	5 x 5 x 6	5	1M
23039	AS62D	5 x 5 x 6	6	1M
23041	AS64D	5 x 5 x 6	6	1M
23042	AS66D	5 x 5 x 6	7	1M
23043	AS68D	5 x 5 x 6	7	1M
23044	AS610D	5 x 5 x 6	8	1M
29027	AS32D-B	9 x 9 x 9	18	10M
29028	AS34D-B	9 x 9 x 9	18	10M
29029	AS41D-B	9 x 9 x 9	20	10M
29030	AS42D-B	9 x 9 x 9	20	10M
29031	AS43D-B	9 x 9 x 9	20	10M
29032	AS44D-B	9 x 9 x 9	20	10M
29033	AS45D-B	9 x 9 x 9	28	10M
29034	AS46D-B	9 x 9 x 9	28	10M
29035	AS52D-B	9 x 9 x 9	28	8M



Pin Rivets continued on next page.

Pin Rivets (continued)

Item#	Description	Approx. Ctn. Dim. in. x in. x in.	Shelf Pack Wt. lb.	Shelf Pack (minimum)
Aluminum Rivet Steel Pin (continued)				
23036	AS53D-B	9 x 9 x 9	32	8M
23037	AS54D-B	9 x 9 x 9	32	8M
29038	AS56D-B	9 x 9 x 9	34	8M
29039	AS62D-B	9 x 9 x 9	30	5M
29041	AS64D-B	9 x 9 x 9	30	5M
29042	AS66D-B	9 x 9 x 9	35	5M
29043	AS68D-B	9 x 9 x 9	36	5M
29044	AS610D-B	9 x 9 x 9	40	2M
Copper Plated Rivet Pin				
23050	CC42D	4 x 4 x 5	3	1M
23051	CC44D	4 x 4 x 5	3	1M
29050	CC42D-B	9 x 9 x 9	28	10M
29051	CC44D-B	9 x 9 x 9	28	10M
Aluminum Rivet Aluminum Pin				
23057	AA32D	4 x 4 x 5	1	1M
23058	AA34D	4 x 4 x 5	1	1M
23059	AA41D	4 x 4 x 5	1	1M
23060	AA42D	4 x 4 x 5	1	1M
23061	AA43D	4 x 4 x 5	1	1M
23062	AA44D	4 x 4 x 5	1	1M
23063	AA45D	4 x 4 x 5	1	1M
23064	AA46D	4 x 4 x 5	1	1M
23065	AA52D	5 x 5 x 6	2	1M
23066	AA53D	5 x 5 x 6	2	1M
23067	AA54D	5 x 5 x 6	2	1M
23068	AA56D	5 x 5 x 6	2	1M
23069	AA62D	5 x 5 x 6	3	1M
23071	AA64D	5 x 5 x 6	3	1M
23072	AA66D	5 x 5 x 6	3	1M
23073	AA68D	5 x 5 x 6	4	1M
23074	AA610D	5 x 5 x 6	4	1M
29057	AA32D-B	9 x 9 x 9	5	10M
29058	AA34D-B	9 x 9 x 9	5	10M
29059	AA41D-B	9 x 9 x 9	10	10M
29060	AA42D-B	9 x 9 x 9	10	10M
29061	AA43D-B	9 x 9 x 9	10	10M
29062	AA44D-B	9 x 9 x 9	10	10M
29063	AA45D-B	9 x 9 x 9	10	10M
29064	AA46D-B	9 x 9 x 9	10	10M
29065	AA52D-B	9 x 9 x 9	16	8M
29066	AA54D-B	9 x 9 x 9	16	8M
29067	AA56D-B	9 x 9 x 9	16	8M
29068	AA62D-B	9 x 9 x 9	15	5M
29070	AA64D-B	9 x 9 x 9	15	5M
29071	AA66D-B	9 x 9 x 9	15	5M
29072	AA68D-B	9 x 9 x 9	20	5M
29073	AA610D-B	9 x 9 x 9	20	2M



Rivet Gun

Designed for 1/8", 5/32", 3/16" diameter rivets. Releases pin from installed rivets using front of tool. Tool is made of cast aluminum with plastic handle grips for comfort.

Item#	Description	Approx. Ctn. Dim. in. x in. x in.	Shelf Pack Wt. lb.	Shelf Pack
22030	PR-5 for Rivet dia. 1/8", 5/32", 3/16"	9 x 5 x 2	2	1





Rivet Gun Assortment

Includes one **PR-5 Rivet Gun** 50 **AS44LF**, 50 **SS42D**, 50 **SS44D**, 50 **AS42D**, 50 **BP125** back-up washers, 1 **TD-30** drill bit packed in a compartmented plastic case.

Item#	Description	Approx. Ctn. Dim. in. x in. x in.	Shelf Pack Wt. lb.	Shelf Pack (minimum)
22031	PRK-5 (Gun & 200 Asst. Rivets 50 back-up washers, - BP125 #30 "Super T" Drill Bit)	11 x 7 x 2	5	1



Dyn-O-Ties

Use **Dyn-O-Ties** to secure flexible duct connections. Five nylon and one stainless steel sizes are available. The nylon ties are made of nylon 66 V2 which is self-extinguishing and fungus inert. The stainless steel ties are made of 430 stainless steel .020" thick and 3-1/8" wide.

Item#	Description	Maximum Diameter inches	Packaging	Shelf Pack Wt. lb.	Shelf Pack (minimum)
Nylon					
8151	DN-22	6	20 pkgs. of 25 per ctn. (500)	13	500
8307	DN-33	9	20 pkgs. of 25 per ctn. (500)	23	500
8262	DNX-60 Extendo-Tie	18	20 pkgs. of 25 per ctn. (500)	44	500
8264	DN-45	12	20 pkgs. of 25 per ctn. (500)	30	500
8252	DNC-22	6	5 pkgs. of 100 per ctn. (500)	13	500
8308	DNC-33	9	5 pkgs. of 100 per ctn. (500)	23	500
8253	DNF-22	6	1 pkg. of 500 per ctn. (500)	13	500
8309	DNF-33	9	1 pkg. of 500 per ctn. (500)	23	500
Stainless Steel					
8269	DT-34	9	20 pkgs. of 25 per ctn. (500)	40	500



Dyn-O-Tie Installation Tool

This **DIT-2** gun is commonly used to install most makes of nylon duct ties. For nylon ties tighten the tie with the gun until proper tension is reached and then squeeze the secondary handle to clip off this excess tie material. For stainless steel ties, use the **DIT-1SS**, tension the tie in the tool (with the nose piece adapter installed). To maintain tension, before removing the tool from the stainless steel tie bend the tie up 90°. Then remove the tool, flatten the excess and fold the locking finger over the flattened excess.

Item#	Description	Overall Length inches	Shelf Pack
8229	DIT-2	1	1
8263	DIT-1SS (for stainless only)	1.13	1



Mini Dyne-O-Ties

Made of nylon, these ties are perfect for bundling wires. The ties are natural in color and packed 5 - 100 packs to a carton. Carton dimensions for **DNC-8.5** are 6" x 6" x 15". Carton dimensions for **DNC-14.5** are 15" x 6-1/4" x 6-1/4".

Item#	Description	Overall Length inches	Width inches	Maximum Bundle Diameter inches	Minimum Loop Tensile lb.	Shelf Pack Weight lb.	Shelf Pack (minimum)
8378	DNC-8.5	8.5	.130	2	40	1.23	500
8383	DNC-14.5	14.5	.187	3	50	4.05	500

Portable Spotwelder

Portable for easy movement to the work. Depressing the lever hands lowers the upper arm to contact the material and activates the built in solid state timer. Three models available. The **TSP-1** is designed for 110 volts; the **TSP-2** and the **TBW** are designed for 220 volts. The **TSP-1** and **TSP-2** will weld a maximum total thickness of up to 1/8" mild steel or stainless and up to two pieces of 18 gage galvanized steel. The **TBW** has two power settings. LOW power has the same capacity limits as the **TSP-2** while HIGH has a maximum total thickness of 1/4" for mild steel or stainless and two pieces of 12 gage galvanized steel. (Arms and Tips not included. See below.).



Item#	Description	Voltage Required	Line Fuse Required (Amps)	Shelf Pack Wt. lb.	Shelf Pack
9200	TSP-1	110	25	35	1
9201	TSP-2	220	15	34	1
9201	TBW	220	30	40	1

Spotwelder Stand

Sturdy metal stand raises the spotwelder to a height of 34". Lever handle of spotwelder is depressed to activate the welder by the foot pedal linkage of the stand. This frees both hands to handle the material.



Item#	Description	For Use With	Shelf Pack Wt. lb.	Shelf Pack
9203	ST-2	TSP-1, TSP-2, TBW	25	1

Standard Arms with Tips

5/8" diameter copper arms with standard **MT-3** tips. Available in 6 popular size and style combinations.

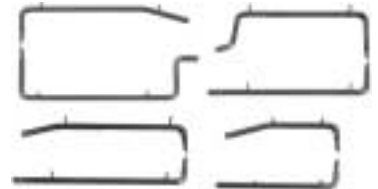
Item#	Description	Nominal Dimension in inches				Shelf Pack Wt. lb.	Shelf Pack
		A	B	C	D		
9012	S1	2	2-1/8	2-1/8	6-1/4	2	1
9013	S2	7-5/8	2-1/8	2-1/8	12-3/8	3	1
9014	S3	14-3/4	2-1/8	2-1/8	18-3/4	4	1
9015	A1	7-1/2	4-7/8	2-3/8	9-3/8	2	1
9016	A2	15	5	2-7/8	17-1/2	3	1
9017	A3	17-3/4	3	5	20	4	1



Water Cooled Arms with Tips

5/8" outside diameter (3/8" inside diameter) copper arms with standard **MT-1** tips. Lower and upper arms both have 1/4" outside diameter (1/8" inside diameter) brass inlet and outlet tubes for connection to water circulation source for cooling arms, tips and welder. Water cooled arms and tips increase duty cycle as well as extending the life of the welder, arms, and tips. Available in 4 popular size and style combinations.

Item#	Description	Nominal Dimension in inches				Shelf Pack Wt. lb.	Shelf Pack
		A	B	C	D		
9022	S2W	7-5/8	2-1/8	2-1/8	12-3/8	3	1
9023	S3W	14-3/4	2-1/8	2-1/8	18-3/4	4	1
9026	A2W	15	5	2-7/8	17-12	3	1
9027	A3W	17-3/4	3	5	20	4	1



Replacement Tips



MT-1 and **MT-2** are both designed for use with all **Duro Dyne** water cooled arms and the **GDW-4** Duct Welder, and are taper (Morse #1) fitted into the arms. **MT-3** tips are designed for use with all standard arms and are threaded (3/8 x 24) into the arms. **MT-4** tips are taper (Morse #1) tips for use with the **GDW-4** Duct Welder with offset arms.

Item#	Description	For Use With	Shelf Pack Wt. lb.	Shelf Pack
9019	MT-1	Water Cooled Arms/GDW-4	.025	1 Pair
9020	MT-2	Water Cooled Arms/GDW-4	.025	1 Pair
9018	MT-3	Standard Arms	.025	1 Pair
9025	MT-4	GDW-4 w/Offset Arms	.025	1 Pair



Magnetic Materials Handler

This lightweight magnetic materials handler, with five pounds of holding power, has a magnetic handle release. Designed for easy one-hand operation.

Item#	Description	Dimensions inches	Shelf Pack Wt. lb.	Shelf Pack
22003	Mighty Mag	9 x 5 x 2	2.48	1



Torpedo Level

Designed for use by professionals or home craftsmen, this level has a full length, "V" groove magnet which secures and self aligns the level on pipe or conduit. It has three plastic vials for horizontal, vertical and 45°. The horizontal vial has an additional top viewing slot. End caps protect against accidental bumps and drops.

Item#	Description	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
818110	DDL-9M	9	.33	1



New Improved Tubing Cutters

With three size available, these high quality tubing cutters should fill all your needs. For those hard to reach places, our **DDTC-22 Mini Tubing Cutter** can accommodate copper tubing from 1/8" to 7/8". The **DDTC-32 Tubing Cutter** can adjust from 1/8" up to 1-1/8". For the large diameter cutting jobs, the **DDTC-42 Tubing Cutter** will serve 1/4" to 5/8". All of the tubing cutters utilize the same size cutting wheel. The **DDTC-32** and **DDTC-42** come with a built-in reamer and extra cutting wheel.

Item#	Description	Dimensions inches	Shelf Pack Wt. lb.	Shelf Pack
818092	DDTC-22 Mini Tubing Cutter	1/8 to 7/8	.24	1
818094	DDTC-32 Tubing Cutter	1/8 to 1-1/8	.51	1
818096	DDTC-42 Tubing Cutter	1/4 to 1-5/8	.63	1

Deluxe Style Tool Boxes

These tool boxes have a convenient recessed handle and twin rust resistant plated metal lid latches. The textured finish will not rust or chip. The inner tray holds small tools which allows for room below for power hand tools, it is made of water tight construction, with heavy duty hinge pins. There is a built-in hasp for maximum security. The 24" model is yours **FREE** with the purchase of **The Deluxe Starter Set** (item# 818025).



Item#	Description	L x W x H in. x in. x in.	Shelf Pack Wt. lb.	Shelf Pack
818002	19" Hip Proof Tool Box	19 x 8-1/2 x 10	3.9	1
818012	24" Deluxe Style Tool Box	24 x 8-1/2 x 10	4.9	1

16" Handy Tote

This lightweight tote measures 4-1/2" high x 10-3/4" wide, Available in grey.



Item#	Description	L x W x H in. x in. x in.	Shelf Pack Wt. lb.	Shelf Pack
818001	16" Handy Tote	16 x 10-3/4 x 4-1/2	1.73	1

Deluxe Starter Set

This starter set includes all of the hand tools necessary for both the sheet metal craftsman as well as the apprentice.



Item#	Description	L x W x H in. x in. x in.	Shelf Pack Wt. lb.	Shelf Pack
818025	Deluxe Starter Set	24 x 8-1/2 x 10	20	1
Includes:				
820001	M1R - Wiss Metalmaster Aviation Snips - Cuts left - 18 gage capacity			1
820004	M2R - Wiss Metalmaster Aviation Snips - Cuts right - 18 gage capacity			1
820007	M3R - Wiss Metalmaster Snips - Cuts Straight - 18 gage capacity			1
820018	M5R - Wiss Metalmaster Snips - Bulldog - for notching or trimming - 16 gage capacity			1
822018	HM41V - Wiss Metalmaster Aviation Snips - for pipe & duct, & non-metallic sheet material - 20 gage capacity			1
821025	W7B - Wiss Tinner's Snips - Inlaid Offset Pattern - 18 gage capacity			1
822002	HC3V - Wiss 3-Blade Crimper			1
822010	HN1V - Wiss Notcher			1
822014	HS1V - Wiss Hand Seamer			1
823001	WK8V - Wiss Retractable Blade (4 positions)			1
823038	RWK14V - Wiss Heavy Duty (.025") Replacement Blades - Pkg. of 5			1
810003	2316 - Lufkin 3/4" x 16' Chrome Power Return Metal Blade Tape w/Blade Cushion			1
812039	460F - Lufkin 6' Folding Wood Rule - Economy Inside Read			1
801052	B7CV - Crescent 7" curved Locking Plier w/wire cutter			1
803009	H28CV - Crescent 8" Cee Tee Co® combination slip joint pliers w/cushion grip			1
805047	2243-6V - Crescent 6" round shaft w/3/16" blade cushion grip screwdriver			1
805005	2143-4V - Crescent 4" round shaft w/1/4" blade cushion grip screwdriver			1
805008	2143-6V - Crescent 6" round shaft w/5/16" blade cushion grip screwdriver			1
805076	2502V - Crescent 4" round shaft #2 Phillips cushion grip screwdriver			1
806235	SDF41V - Crescent 1-1/4" stubby screwdriver			1
807005	73V - Crescent 3-7/8" scratch awl - wood handle			1
10015	DDX - Duro Dyne stainless steel magnetic edge scribe			1
834005	11498 - Plumb Ball Pein Hammer - 16 oz. w/hickory handle			1
836030	11533 - 16 oz. Tinner's Hammer w/hickory handle			1
871097	L8MV - Xcelite 6" shaft Nutdriver for 1/4" hex head screws			1
16008	DCL14 - Duro Dyne hex shank Drill Chuck - 2-5/8" long - for 1/4" hex head screws			2
16009	DCL516 - Duro Dyne hex shank Drill Chuck - 2-5/8" long - for 5/16" hex head screws			2
818012	PLUS A FREE 24" DELUXE STYLE TOOL BOX			1

Duro Dyne National Corporation
Farmingdale, NY 11735
Phone: 631-249-9000
Fax: 631-249-8346

Duro Dyne East Division
Farmingdale, NY 11735
Phone: 631-249-9000
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Duro Dyne Midwest Division
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Phone: 513-870-6000
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Santa Fe Springs, CA 90670
Phone: 562-926-1774
Fax: 562-926-5778

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Farmingdale, NY 11735
Phone: 631-249-9000
Fax: 631-249-8346

www.durodyne.com E-mail: durodyne@durodyne.com



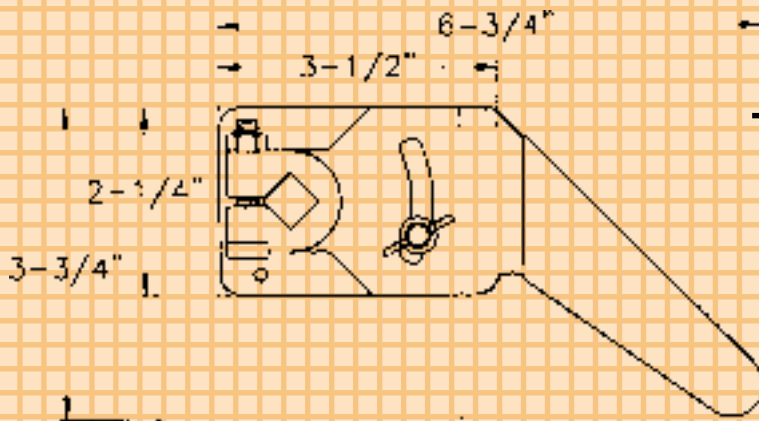
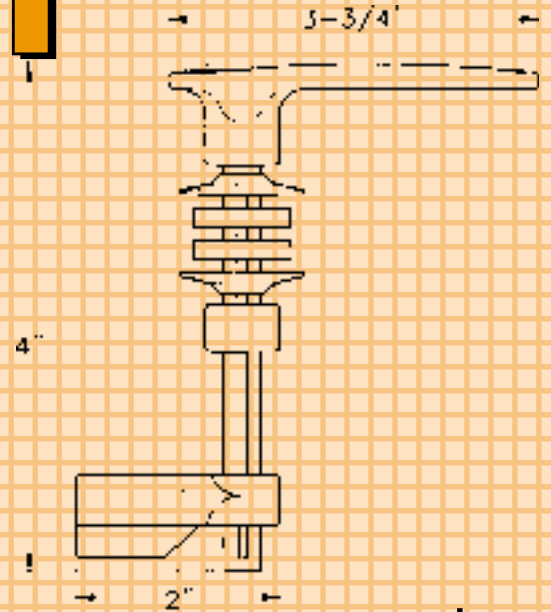
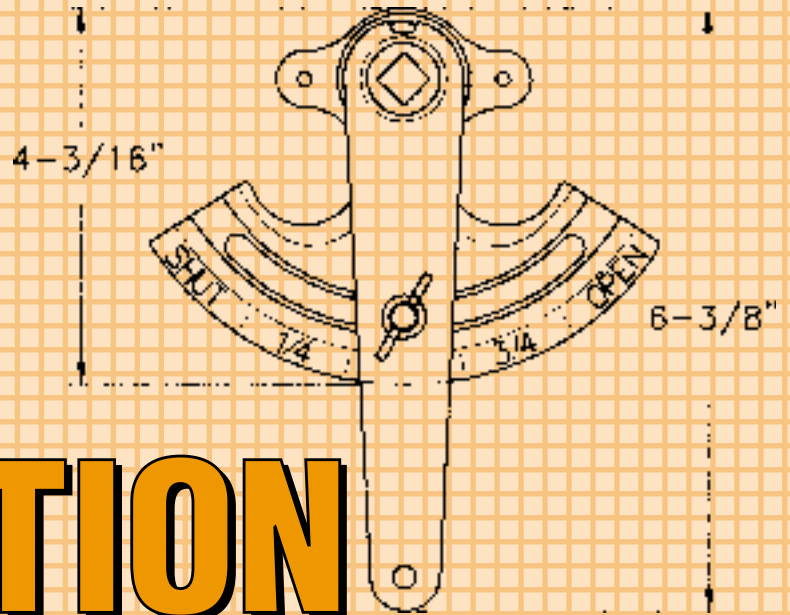
MACHINERY DIVISION

The Greatest Name In
Sheet Metal Necessities



AIR REGULATION CONTROL EQUIPMENT

- BLADE KITS
- ACCESS DOORS & HARDWARE
- REGULATORS, QUADRANTS
- DAMPER HARDWARE
- DUCT STRAPS
- GASKETING



DURO DYNE EAST CORP.
Farmingdale, NY 11735

DURO DYNE MIDWEST
Fairfield, OH 45011

DURO DYNE WEST
Santa Fe Springs, CA 90670

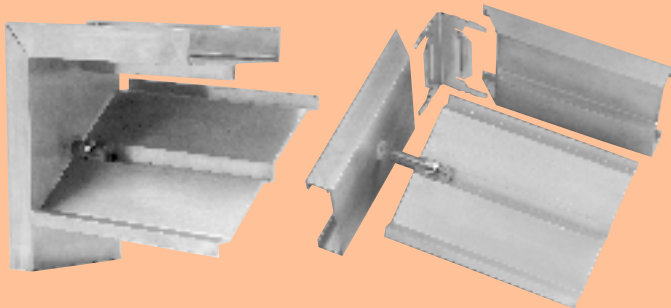
DURO DYNE INTERNATIONAL
Farmingdale, NY 11735

Exclusively from Duro Dyne!

SIDE-GLIDE™ SYSTEM

Duro Dyne has long been a pioneer in Damper Hardware components. Now **Duro Dyne** engineering has resulted in a break through concept for an easy and economical method for Multiblade Damper fabrication.

Frames, Blades & Corners



Duro Dyne has designed and developed an innovative assembly system of prefabricated frames, blades and corners. The additional components compliment the Side Glide rail and bracket linkage system. The frames, manufactured from extruded aluminum, consist of two distinct parts: a side configuration and a top/bottom piece with a built in blade stop. The blades, also manufactured from extruded aluminum, are 6" and 9-3/4" wide, and by incorporating the innovative top/bottom frame design, only two type of blades are ever required. The "hammer in" corners insert easily and are self-locking.

With **Duro Dyne's** latest innovation, material handling and fabrication is minimal. There is no longer the need to worry about excessive labor and material costs associated with the manufacturing of dampers. As an added feature, only the most basic tools are required.

KEY FEATURES

Frames, Blades & Corners:

- Quick and easy assembly, no excessive drilling or metal forming required.
- Frames and Blades are manufactured from corrosion resistant extruded aluminum. Frames and Blades are lightweight, yet strong!
- Frames utilize the integration of blade stops, thus requiring the need for only two types of blades.
- Corners are zinc coated, rigid, self-locking and are easily installed.

Blade Linkage



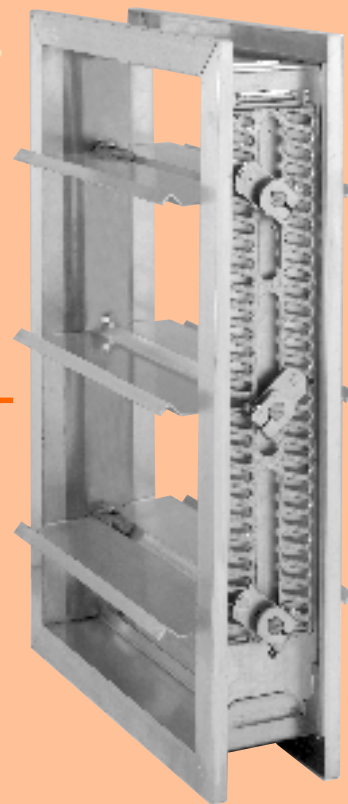
Side damper linkage has many variations. Gears, chain and linkage rods are all typical methods of coordinating blade movement and each method has its own inherent disadvantages, such as cost, being difficult to assemble or adjust and the customization of parts.

With **Duro Dyne's** new patented Side-Glide™ hardware damper blade linkage and adjustment become simple. Consisting of one standard linkage rail per damper and one linkage bracket per blade, assembly and adjustment are easy. It makes no difference whether you are making parallel or opposed blade dampers or varying the size of the blades; the rail and brackets are always the same.

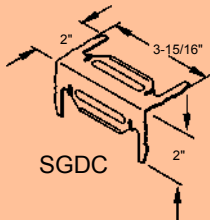
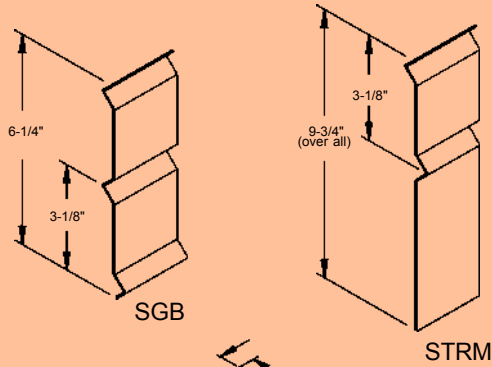
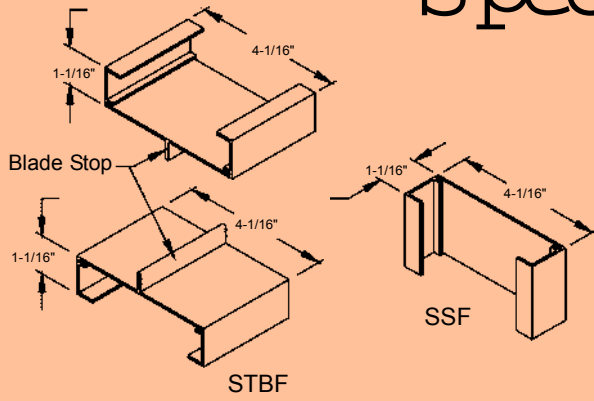
KEY FEATURES

Blade Linkage:

- Assemble damper linkage in seconds.
- Fewer moving parts-less noise and adjustment.
- Mix blade sizes on damper without special preparation.
- Works with parallel or opposed blades.
- Blades can be as small as 3".
- Linkage bracket fits 1/2" round, 7/16" hex or 3/8" square rod.
- Rail available in 4' and 6' lengths.
- Patents pending.

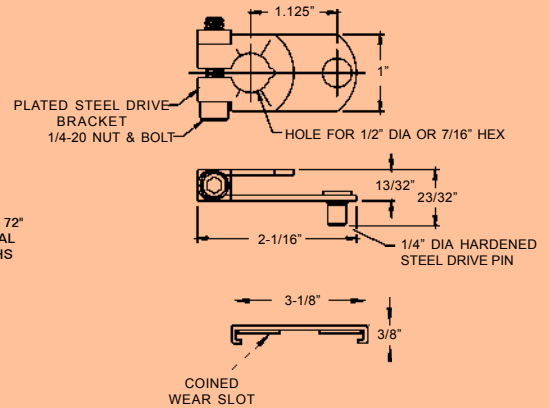
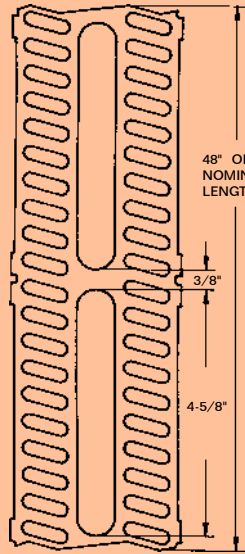


Specifications

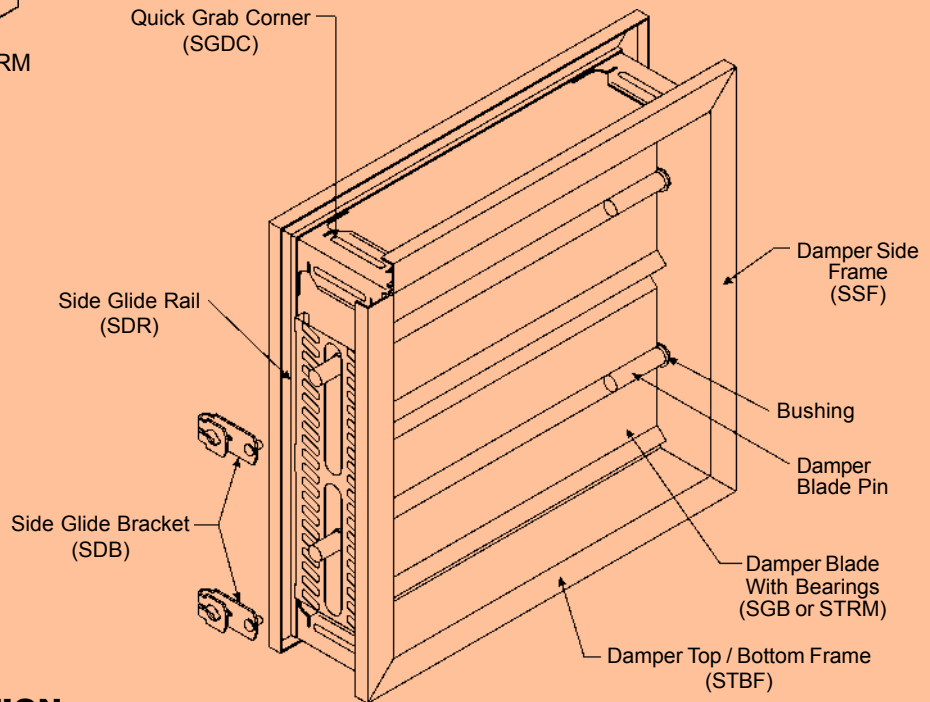


Frame: Type 6063 T5 Extruded Aluminum
 Blade: Type 6063 T5 Extruded Aluminum
 Corner: 16 Gauge Cold Rolled Steel
 Zinc Plated.

Complete System Passes:
 ASTM B-117 (Corrosion Resistance)
 MIL-STD-810C (Corrosion Resistance)



Linkage Rail Material: 18 gauge galvanized steel
 Linkage Bracket Material: Minimum 18 gauge zinc plated cold rolled steel
 Linkage Bracket Pin: Zinc plated case hardened steel
 Damper Frame Requirements: Minimum depth-7/8\"/>



ORDERING INFORMATION

Item#	Model	Description	Packaging
Frames, Blades & Corners			
2121	STBF-6	Top/Bottom Damper Frame (6')	10 lengths per carton
2122	STBF-10	Top/Bottom Damper Frame (10')	10 lengths per carton
2123	SSF-6	Side Damper Frame (6')	10 lengths per carton
2124	SSF-10	Side Damper Frame (10')	10 lengths per carton
2125	SGB-6	6" Damper Blade (6' length)	10 lengths per carton
2126	SGB-10	6" Damper Blade (10' length)	10 lengths per carton
2127	SGDC	Quick Grab Damper Corner	100 per carton
2128	STRM-6	9-3/4" Trim Blade (6' length)	10 lengths per carton
2129	STRM-10	9-3/4" Trim Blade (10' length)	10 lengths per carton
Linkage System			
2116	SDB	Linkage Bracket	100 per carton
2117	SDR-4	Linkage Rail-4 Foot	10 lengths per carton
2118	SDR-6	Linkage Rail-6 Foot	10 lengths per carton

Multi-Blade Damper Hardware

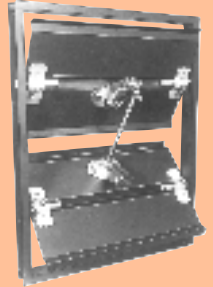
NEVA-BIND™ DURO BLADE KIT FOR PARALLEL DAMPERS

Duro Dyne's exclusively patented "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, side-ways and rotation. Each carton contains all necessary hardware for one blade of a multi-blade damper.



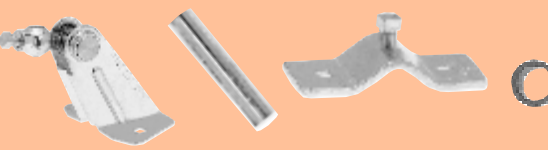
Opposed Action Dampers minimize turbulence and the control of the air is more linear. Exclusive Neva-Bind, 4 way self-adjustability which Duro Dyne "OPAX" kits feature, automatically compensate for any construction inaccuracies and maintains linear operation. The critical dimensions between linkage points are also maintained during operation. "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.

OPAX® BLADE KIT FOR OPPOSED ACTION DAMPERS



Item#	Model	Bearing Size
2001	BK-1	7/16"
2002	BK-2	1/2"

Item#	Model	Bearing Size
2003	BKO-3	7/16"
2004	BKO-4	1/2"



MULTI-BLADE DAMPER PARTS

(All Steel Parts Zinc or Cadmium Plated)
ALL PACKED 100 PER CARTON UNLESS NOTED

Blade Brackets

Item#	Model	Rod Size
2005	BKP-814	1/4"
2006	BKP-856	5/16"
2007	BKP-838	3/8"



BKP-814
BKP-856
BKP-838

Standard Bracket as supplied in BK-1 and BK-2 Parallel Kits.



BKP-22

Item #2008 – Model BKP-22 – High Bracket as supplied in Opax Blade Kits BKO-3 and BKO-4

Item #2011 – Model BKP-25 – High Bracket (not Neva-Bind) with Brass Pivot & Steel Set Screw (Not Shown)



BKP-23
BKP-24 (No Rod)

Item #2009 – Model BKP-23 – Lo Bracket and Linkage Rod as supplied in Opax Blade Kits.

Item #2010 – Model BKP-24 – Lo Bracket – No Rod.

Straps



BKP-13

Item #2016 – Model BKP-13 – Strap and set screws.



BKP-71

Item #2025 – Model BKP-71 – Self-aligning strap "V" groove does not deform blade.

Rod Clips



KP-25
KP-26
KP-27

Item #8053 – Model KP-25 – 3/8" Damper Rod Clips (U-Bolts)

Item #8054 – Model KP-26 – 1/2" Damper Rod Clips (U-Bolts)

Item #8055 – Model KP-27 – 5/8" Damper Rod Clips (U-Bolts)

Bushings



Item #2012 – Model BKP-9 – Bronze Bushings 7/16" dia. ID. as supplied in BK-1 Parallel Blade Kits and BKO-3 Opax Kits.

Item #2013 – Model BKP-10 – Bronze Bushings 1/2" dia. ID. as supplied in BK-2 Parallel Blade Kits and BKO-4 Opax Kits.

Item #2240 – Model BKP-80 – Plastic Bushing 1/4" dia. ID.

Item #2241 – Model BKP-81 – Plastic Bushing 1/4" sq. ID.

Item #2242 – Model BKP-82 – Plastic Bushing 3/8" dia. ID.

Item #2243 – Model BKP-83 – Plastic Bushing 3/8" sq. ID.

Item #2079 – Model BKP-64 – Plastic Bushing 1/2" dia. ID.

Item #2244 – Model BKP-84 – Plastic Bushing 1/2" sq. ID.

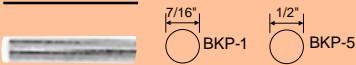


BKP-30

Item #2014 – Model BKP-14 – Ball Bearing Bushing 7/16" ID.

Item #2015 – Model BKP-30 – Ball Bearing Bushing 1/2" ID.

Cut Rods



Item #2017 – Model No. BKP-1 – 7/16" diameter rod, 2-1/2" long. (100 Per Ctn.)

Item #2019 – Model No. BKP-5 – 1/2" diameter rod, 2-1/2" long. (100 Per Ctn.)

Item #2018 – Model No. BKP-2 – 7/16" diameter rod, 6" long. (100 Per Ctn.)

Item #2020 – Model No. BKP-6 – 1/2" diameter rod, 6" long. (100 Per Ctn.)



Item #2076 – Model No. BKP-11 – 1/2" diameter rod, 6" long, milled and drilled. (50 per Ctn.)

Item #2022 – Model No. BKP-4 – 7/16" diameter. to 1/2" square, 6" long. (50 Per Ctn.)



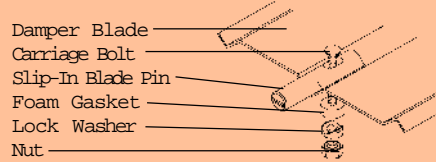
Item #2023 – Model No. BKP-7 – 1/2" diameter to 1/2" square, 6" long. (50 Per Ctn.)

Item #2024 – Model No. BKP-70 – 7/16" diameter to 3/8" square, 6" long. (50 Per Ctn.)

Slide Pins

With Duro Dyne's complete line of Damper Slide Pins (10 in all), nearly every configuration requirement can be satisfied. Duro Dyne's Damper Slide Blade Pin selection provides a low cost alternative to damper hardware such as straps, set screws and solid pins. Installation is as easy as 1-2-3.

1. Punch hole in Damper Blade
2. Position Pin on Blade
3. Lock in position by tightening 1/4" hex nut after sliding pin into damper bushing.



Item #2094 – Model No. DBP-1A – 7/16" diameter and 1/2" diameter slide pin, 5/8" Length.



RDBP



SDBP



HDBP

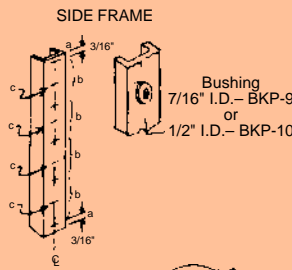
Item#	Model	Pin Size	Item#	Model	Pin Size	Item#	Model	Pin Size
2221	RDBP-100A	1/2" Round Pin 1" Long	2215	SDBP-100A	3/8" Sq. Pin 1" Long	2218	HDBP-100A	7/16" Hex Pin 1" Long
2222	RDBP-150A	1/2" Round Pin 1 1/2" Long	2216	SDBP-150A	3/8" Sq. Pin 1 1/2" Long	2219	HDBP-150A	7/16" Hex Pin 1 1/2" Long
2223	RDBP-200A	1/2" Round Pin 2" Long	2217	SDBP-200A	3/8" Sq. Pin 2" Long	2220	HDBP-200A	7/16" Hex Pin 2" Long

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. Cover felt, if required, with insulation adhesive.

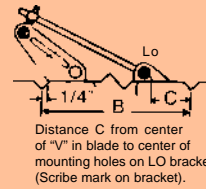


C. MOUNTING THE HARDWARE

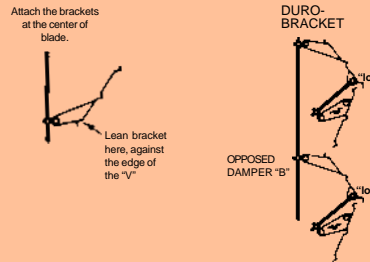
"OPAX" HARDWARE

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

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



B. MAKING THE BLADES

Same for both parallel and opposed dampers

1. Material:

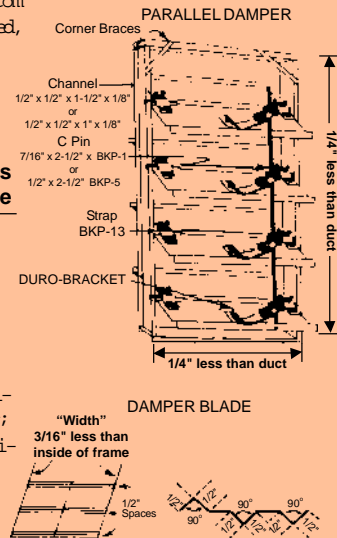
Gauge	Blade Width	Activating Brackets Required per blade
20	to 36"	1
16	to 48"	1 or 2
12	to 52"	2

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.



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.

Specline® Damper Regulators

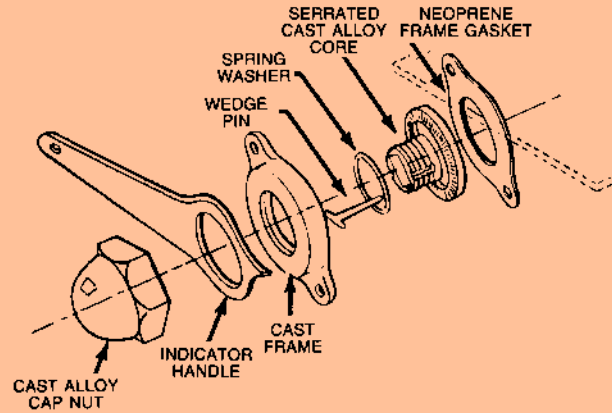
MINIMUM LEAKAGE DAMPER REGULATORS

Specline Regulators are designed for minimum leakage applications. Each regulator is comprised of a frame, an indicator handle, a serrated cast alloy core and a cast alloy nut. Serrations on the cast alloy core mesh with serrations in the frame to firmly lock the regulator in position. A spring washer situated between the core and the cast frame allows for smooth non-binding adjustment. A wedge pin is used to eliminate rattle and take up slack between regulator and damper shaft.

All SR and SRH type regulators include a cast alloy nut and a neoprene frame gasket.

All SRHS, SRS and SRST type regulators utilize a stamped regulator frame.

The SRHS and SRS include a neoprene frame gasket.

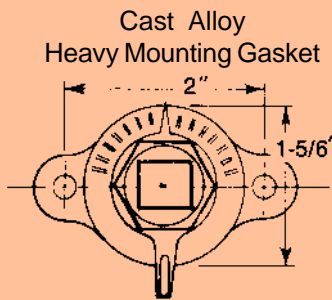


INDICATOR STYLE REGULATOR SET WITH HEX NUT AND ACORN NUT

Regulator Height 5/8"



SRH-Series



Regulator Height 1-3/8"



SR-Series

Packed 10 Per Carton

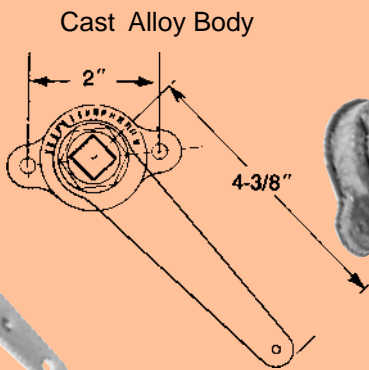
Item#	Model	Shaft Size
8010	SRH-240	1/4" Hex Nut
8012	SRH-280	3/8" Hex Nut
8014	SRH-220	1/2" Hex Nut
Item#	Model	Shaft Size
8001	SR-140	1/4" Acorn Nut
8003	SR-380	3/8" Acorn Nut
8005	SR-120	1/2" Acorn Nut

HANDLE REGULATOR SET WITH HEX NUT AND ACORN NUT

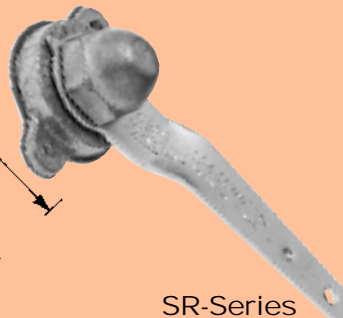
Regulator Height 5/8"



SRH-Series



Regulator Height 1-3/8"



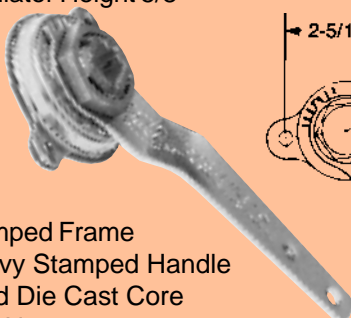
SR-Series

Packed 10 Per Carton

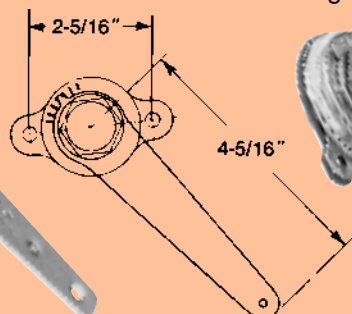
Item#	Model	Shaft Size
8011	SRH-248	1/4" Hex Nut
8013	SRH-288	3/8" Hex Nut
8015	SRH-228	1/2" Hex Nut
Item#	Model	Shaft Size
8002	SR-148	1/4" Acorn Nut
8004	SR-388	3/8" Acorn Nut
8006	SR-128	1/2" Acorn Nut

HANDLE STYLE (STAMPED) REGULATOR SET WITH HEX NUT & ACORN NUT

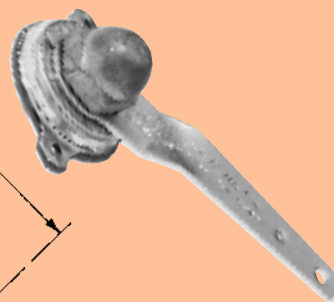
Regulator Height 5/8"



SRHS-Series



Regulator Height 1-3/8"



SRS-Series

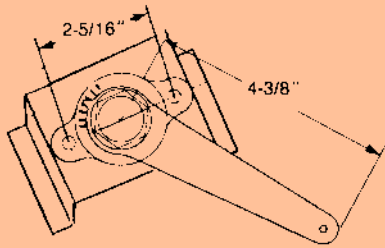
Packed 10 Per Carton

Item#	Model	Shaft Size
8016	SRHS-148	1/4" Hex Nut
8017	SRHS-388	3/8" Hex Nut
8018	SRHS-128	1/2" Hex Nut
Item#	Model	Shaft Size
8022	SRS-148	1/4" Acorn Nut
8023	SRS-388	3/8" Acorn Nut
8024	SRS-128	1/2" Acorn Nut

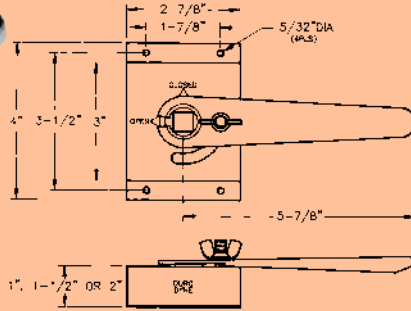
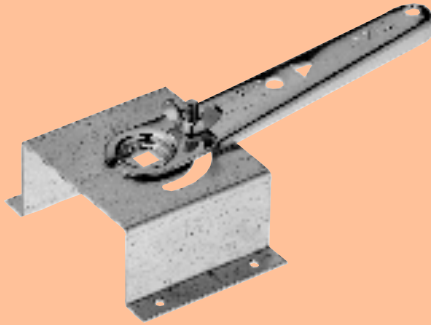
- Stamped Frame
- Heavy Stamped Handle
- Solid Die Cast Core
- Hex Nut

ELEVATED REGULATOR SETS FOR INSULATED DUCTS WITH HEX NUT

Packed 10 Per Carton



Item	Model	Handle Code	Stand Height
8184	SRST 1-148 w/SRHS-148	1/4"	1"
8318	SRST 1-1/2-148 w/SRHS-148	1/4"	1-1/2"
8196	SRST 2-148 w/SRHS-148	1/4"	2"
8019	SRST 1-388 w/SRHS-388	3/8"	1"
8020	SRST 1-1/2-388 w/SRHS-388	3/8"	1-1/2"
8021	SRST 2-388 w/SRHS-388	3/8"	2"
8208	SRST 1-128 w/SRHS-128	1/2"	1"
8384	SRST 1-1/2-128 w/SRHS-128	1/2"	1-1/2"
8177	SRST 2-128 w/SRHS-128	1/2"	2"



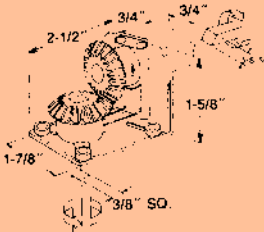
Item#	Model	Handle Code	Stand Height
7201	ESO-14-100	1/4"	1"
7203	ESO-14-150	1/4"	1-1/2"
7205	ESO-14-200	1/4"	2"
7207	ESO-38-100	3/8"	1"
7209	ESO-38-150	3/8"	1-1/2"
7211	ESO-38-200	3/8"	2"
7213	ESO-12-100	1/2"	1"
7215	ESO-12-150	1/2"	1-1/2"
7217	ESO-12-200	1/2"	2"

Also Available for Round Duct and with Seals.

90° ANGLE DRIVE DIE CAST MITRE GEAR ASSEMBLY



Will accommodate 3/8" square rod from duct

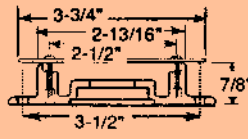
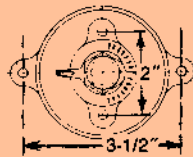
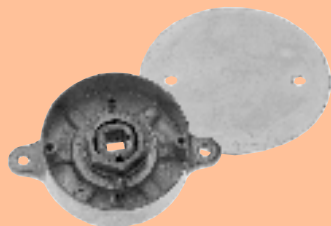


Packed 5 Per Carton

Item#	Model	Description
8135	AD-38	Mitre Gear Assembly

CONCEALED STYLE REGULATOR SET WITH HEX NUT

Attractive Cast Alloy Corrosion Resistant Plated Cover



Packed 5 Per Carton

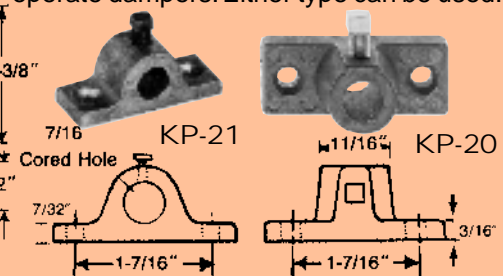
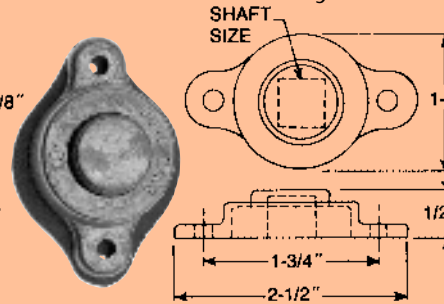
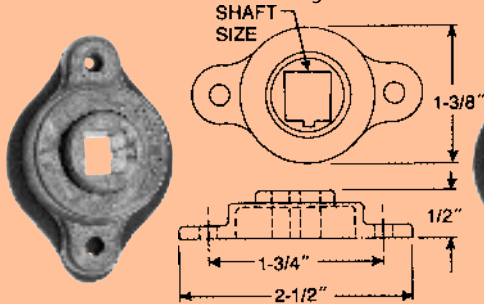
Item#	Model	Shaft Size
8007	SRC-140	1/4"
8008	SRC-380	3/8"
8009	SRC-120	1/2"

SPECLINE PARTS AND ACCESSORIES

Open End Bearing
Cast Alloy

Closed End Bearing
Cast Alloy

Damper And Deflector Castings
Control of 3/8" round rod where used to operate dampers. Either type can be used.



Item#	Model	Shaft Size
8025	SB-114	1/4"
8027	SB-138	3/8"
8029	SB-112	1/2"

Packed 25 per carton

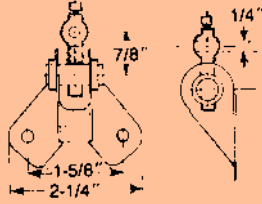
Item#	Model	Shaft Size
8026	SB-314	1/4"
8028	SB-338	3/8"
8030	SB-312	1/2"

Packed 25 per carton

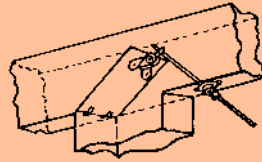
Item#	Model	Description
8037	KP-20	Damper Casting
8038	KP-21	Deflector Casting

Packed 100 per carton

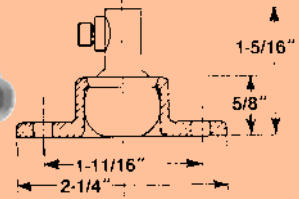
**Splitter Damper Bracket
Steel Bracket, Brass Pivot**



Splitter Damper Hardware



**Ball Joint Damper Casting
Cast Alloy**



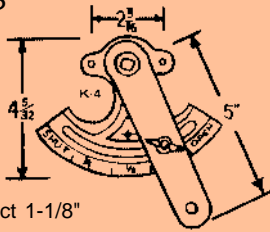
Item#	Model	Shaft Size
8034	SRP-40	1/4"
8035	SRP-50	5/16"
Packed 25 per carton		

Typical Application Using Ball Joint and Damper Bracket

Item#	Model	Shaft Size
8032	SRP-14	1/4"
8033	SRP-516	5/16"
Packed 25 per carton		

Quadline Damper Quadrants

SETS AND PARTS

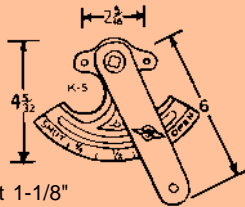
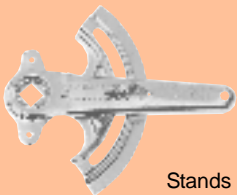


Stands Off Duct 1-1/8"

**3/8" QUADRANT SETS
(for dampers up to 20")**

These heavy gauge Plated Steel quadrants are designed with excellent handle action as well as quick wing nut adjustment and locking of the damper. The frame is marked to show the exact position of the damper. For use on square or round ducts.

Item#	8050	8051	8049	8059
Model	KS-38	KS-385	KS-385L	K-4
Set Consists Of:	K-4 quadrant; KP-9R round end bearing; KP-9S square end bearing	K-4 quadrant; KP-7 spring loc bearing; KP-9S long square end bearing	K-4 quadrant; KP-7L long spring loc bearing; KP-9L long square end bearing	3/8" quadrant only (100 per Carton)
Packed 1 Set Per Carton				

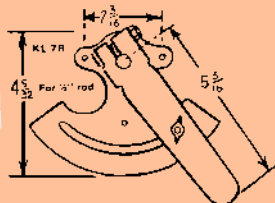
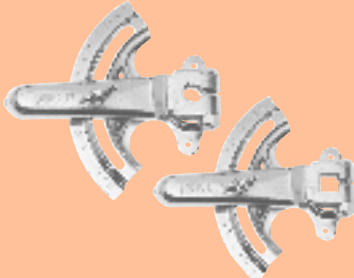


Stands Off Duct 1-1/8"

**1/2" QUADRANT SETS
(for dampers up to 30")**

These heavy gauge Plated Steel quadrants are designed with excellent handle action as well as quick wing nut adjustment and locking of the damper. The frame is marked to show the exact position of the damper. For use on square or round ducts.

Item#	8052	8060
Model	KS-12	K-5
Set Consists Of:	K-5 quadrant; KP-10R round end bearing; KP-10S square end bearing	1/2" quadrant only (100 per Carton)
Packed 1 Set Per Carton		



Stands Off Duct 1-3/16"

**1/2" SHAFT LOC QUADRANT SETS
(for dampers up to 30")**

"Shaft Loc" Quadrants are stamped of heavy gauge steel and clearly indicate the position of the damper.

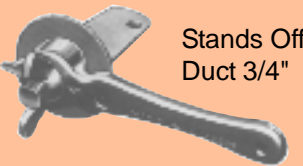
The quadrant handle (available for either 1/2" square or round shafts) is unique in that it locks the shaft of the damper to it by means of a powerful friction holding device strong enough to cut into the damper shaft eliminating damper rattle. The shaft is easily locked with 1/2" open end wrench. For use on square or round ducts.

Item#	8063	8064
Model	KL-7	KL-7R
Shaft Description	1/2" square Shaft loc quadrant	1/2" round Shaft loc quadrant

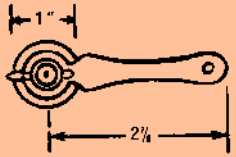
Packed 100 Per Carton

Stampline Regulators

FOR CONTROLLING SMALL DAMPERS



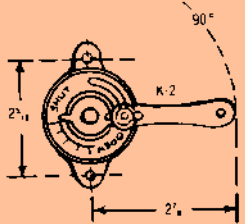
Stands Off
Duct 3/4"



1/4" "JIFFY" REGULATOR SETS (for dampers up to 10")

These efficient, low cost, heavy gauge, plated steel regulators install in a "jiffy" by slipping the washer and handle over the threaded square end bearing. The wing nut locks the damper in position. The position of the handle shows the position of the damper in the duct. For use on round or square ducts.

Item#	8039	8046	8102	8220
Model	KS-7	KS-7L	JB-1	JB-1L
Set Consists Of:	KP5 1/4" threaded bearing, handle; KP-6 spring loc bearing, bevelled wingnut & washer	KP5L 1/4" long threaded bearing, handle; KP-6L long spring loc bearing, bevelled wingnut & washer	KP5 1/4" threaded bearing, handle; 5/16-18 wingnut & washer (100 per Carton)	KP5L 1/4" long threaded bearing, handle; 5/16-18 wingnut & washer (100 per Carton)
Packed 10 per Carton 10 Cartons per Box				

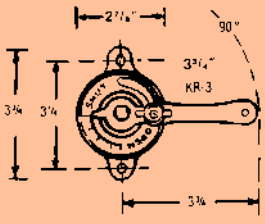
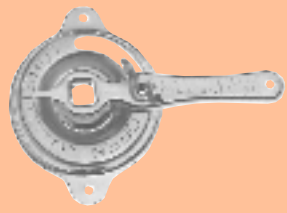


1/4" DIAL REGULATOR SETS AND BEARINGS (for dampers up to 10")

These heavy gauge plated steel regulators are among the most popular on the market. They minimize air leakage and reduce rattle. A wing nut locks the damper in position, yet permits quick readjustment. The dial shows the damper position at a glance. The regulator mounts easily on round or square ducts.

Item#	8040	8041	8047	8056
Model	KS-14	KS-145	KS-145L	K-2
Set Consists Of:	K-2 regulator; KP-8S square end bearing; KP-8R round end bearing	K-2 regulator; KP-6 spring loc bearing; KP-8S square end bearing	K-2 regulator; KP-6L long spring loc bearing; KP-8L long square end bearing	1/4" regulator only (100 per Carton)
Packed 10 per Carton 10 Cartons per Box				

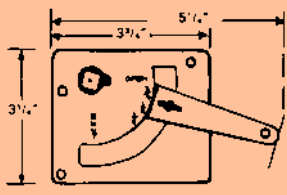
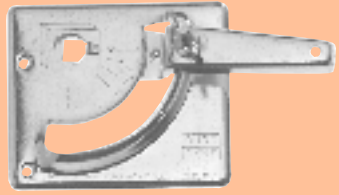
FOR CONTROLLING LARGER DAMPERS



3/8" DIAL REGULATOR SETS AND END BEARINGS (for dampers up to 20")

The following sets and parts are the same as the 1/4" size shown above except designed for larger dampers. The 3/8" bearings and regulator are suitable to use on round as well as square duct. Clear markings on the regulator indicate the damper position which can be locked securely by a wing nut.

Item#	8044	8045	8045	8058
Model	KSR-19	KSR-195	KSR-195L	KR-3
Set Consists Of:	KR-3 regulator; KP-9R round end bearing; KP-9S square end bearing	KR-3 regulator; KP-7 spring loc bearing; KP-9S square end bearing	KR-3 regulator; KP-7L long spring loc bearing; KP-9L long square end bearing	3/8" dial regulator only (100 per Carton)
Packed 1 Set Per Carton				



3/8" "WEDGE LOC" REGULATOR SETS (for dampers up to 20")

This attractive rectangular regulator features exclusive "Wedge Loc" action which firmly locks the bearing to the regulator handle when the damper is set - prevents rattling. Heavy construction, minimum air leakage and easy adjustability make this ideal for large dampers in round or square ducts.

Item#	8042	8043	8048	8042
Model	KS-19	KS-195	KS-195L	K-3
Set Consists Of:	K-3 regulator; KP-9R round end bearing; KP-9S square end bearing	K-3 regulator; KP-7 spring loc bearing; KP-9S square end bearing	K-3 regulator; KP-7L long spring loc bearing; KP-9L long square end bearing	3/8" wedge loc regulator only (100 per Carton)
Packed 1 Set Per Carton				

End Bearings

(PACKED 100 PER CARTON)

Spring Loc

KP6 # 8065
Dim. 1/4" x 2-3/16"

KP6L # 8241
Dim. 1/4" x 3-1/4"

KP7 # 8066
Dim. 3/8" x 2-3/4"

KP7L # 8242
Dim. 3/8" x 3-3/4"

Round

KP5 # 8075
Threaded Jiffy Bearing
Dim. 1/4" x 1/2"

KP8R # 8067
Dim. 1/4" x 9/16"

KP9R # 8070
Dim. 3/8" x 1"

KP10R # 8073
Dim. 1/2" x 1"

KP10RL # 8180
Dim. 1/2" x 2-1/4"

1/4" Square

KP5L # 8076
Long Threaded Jiffy Bearing
Dim. 1/4" x 2"

KP8S # 8068
Dim. 1/4" x 7/8"

KP8L # 8069
Dim. 1/4" x 2"

KP8XL # 8077
Dim. 1/4" x 2-1/2"

3/8" Square

KP9S # 8071
Dim. 3/8" x 1-1/8"

KP9L # 8072
Dim. 3/8" x 2-1/2"

KP9XL # 8247
Dim. 3/8" x 2-7/8"

1/2" Square

KP10S # 8074
Dim. 1/2" x 1-1/4"

KP10L # 8179
Dim. 1/2" x 2-1/4"

Spec-Seal™

DAMPER REGULATOR

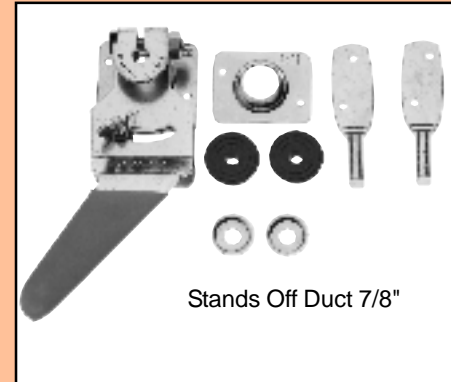
The Spec-Seal Regulator utilizes a special rubber seal for applications up to 500°F constant temperature. It eliminates leakage and rattle even at many times the pressure found in high pressure systems. The handle's unique design utilizes a highly-visible orange plastic cover showing the damper position. This unit, made of heavy-gauge, zinc-plated steel, is made in four styles to accommodate 3/8" and 1/2" round or square bearing shafts. It is also available in stainless steel for use with 1/2" square bearing shafts.

Item#	Model	Bearing Type
8153	AL-38	3/8 Square
8154	AL-38R	3/8 Round
8158	AL-38L	3/8 Square Long
8150	AL-12	1/2 Square
8152	AL-12R	1/2 Round
8157	AL-12L	1/2 Square Long
8301	AL-12SS	1/2 Stainless Square

Quantity per carton: 10 sets

Each Set Consists of:

- Regulator
- End Bearing Support
- 2 Rubber Seals
- 2 Metal Washers
- 2 End Bearings



Quad Seal™

SELF FORMING SILICONE GASKET

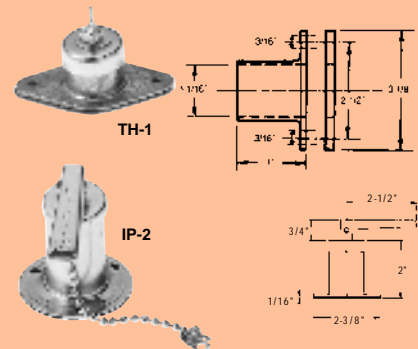
Quad Seal works in conjunction with Spec-Seal hardware, flexible duct connector, air regulators, quadrants, test-ports, screws or any other applications requiring an airtight gasket seal. Quad Seal is 100% RTV Silicone Rubber and has a continuous temperature rating from -60°F to 500°F. Its automatic dispensing system eliminates mess and minimizes waste.



Item#	Model	Quantity per carton
8159	QS-85	12

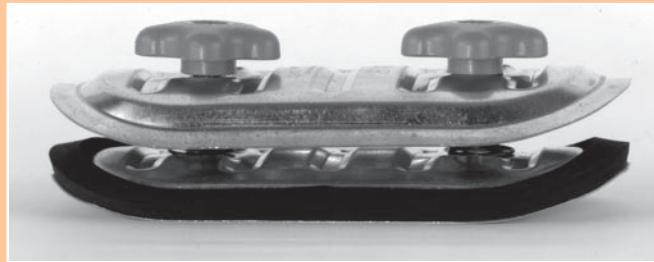
Instrument Test Port

The Instrument Test Port has a heavy duty cast zinc alloy construction with a heavy gauge zinc plated cap. Its Neoprene Expansion Plug can withstand up to 180°F and has resisted pressures up to 90 psi when installed. The TH-1 accommodates 1" of insulating materials and has an inside diameter of 1-1/16". The IP-2 accommodates 2" of insulation material and has an inside diameter of 1-1/8". Both are designed for high velocity systems. A flat neoprene mounting gasket is supplied. However, for maximum protection against leakage, we recommend using Quad Seal (left).



Item#	Model	Quantity per ctn.
8036	TH-1	25
8398	IP-2	25

Access Doors



Features:

- Bonded Neoprene Gasket on the inside plate prevents leakage.
- Conical Springs between the two plates provide for easy installation.
- High Impact Plastic Knobs are designed to avoid stripping and allow a tool-free operation.
- Cutting template for the duct-opening insures a proper hole size.

Suggested Specification

Service openings shall be provided in ducts adjacent to each fire door, fire damper, smoke damper, and smoke detector. Horizontal ducts and plenums shall be provided with service openings to facilitate cleaning the duct of accumulations of dust and combustible materials. Service openings shall be placed at approximately 20 foot intervals along the duct and at the base of each vertical riser. Service openings shall be sized _____ x _____ and shall incorporate access doors coded _____ as manufactured by Duro Dyne Corporation or MEZ INDUSTRIES.

Uninsulated for Round Duct

Item#	Model	Door Size	Duct Size*
21101	MRADU48-7	4 x 8	6" to 7"
21103	MRADU48-11	4 x 8	8" to 11"
21104	MRADU48-14	4 x 8	12" to 14"
21110	MRADU812-14	8 x 12	12" to 14"
21112	MRADU812-18	8 x 12	15" to 18"
21114	MRADU812-22	8 x 12	19" to 22"
21117	MRADU1216-18	12 x 16	16" to 18"
21120	MRADU1216-24	12 x 16	20" to 24"

Insulated for Round Duct

Item#	Model	Door Size	Duct Size*
21135	MRADI48-7	4 x 8	6" to 7"
21137	MRADI48-11	4 x 8	8" to 11"
21138	MRADI48-14	4 x 8	12" to 14"
21144	MRADI812-14	8 x 12	12" to 14"
21146	MRADI812-18	8 x 12	15" to 18"
21148	MRADI812-22	8 x 12	19" to 22"
21151	MRADI1216-18	12 x 16	16" to 18"
21154	MRADI1216-24	12 x 16	20" to 24"

Uninsulated Flat Doors for Rectangle Duct

Item#	Model	Door Size	Duct Size*
21170	MFADU48	4 x 8	N/A
21171	MFADU812	8 x 12	N/A
21172	MFADU1216	12 x 16	N/A

Insulated Flat Doors for Rectangle Duct

Item#	Model	Door Size	Duct Size*
21177	MFADI48	4 x 8	N/A
21178	MFADI812	8 x 12	N/A
21179	MFADI1216	12 x 16	N/A

*Other sizes available upon request.

Standard Access Doors

Rugged Quality Construction Designed For Fast Secure Installation Without Using Tools!

IAD Access Doors

The IAD Door has been designed to create an airtight seal utilizing a moisture, oil and grease resistant neoprene gasketing between the door to the frame and the frame to the duct. The door panel is constructed out of 24 gauge galvanized steel and filled with a 1" 1-1/2 lb. fiberglass insulation (K factor .26+.03@75°F). The frame is 24 gauge galvanized steel with punched steel tabs along each side, which locks the frame into the ductwork. Smaller frame corner tabs make installation easy. Double camlock latches are used on doors 14" and larger (12" and smaller have one camlock). Special models and sizes can be fabricated with multiple walls of steel or see-through panels or Cam-Lock only style.



Item#	Model
8320	IAD 6" x 6"
8168	IAD 8" X 8"
8169	IAD 10" X 10"
8170	IAD 12" X 12"
8171	IAD 14" X 10"
8167	IAD 14" X 14"
8172	IAD 16" X 16"
8173	IAD 18" X 18"
8174	IAD 20" X 20"
8175	IAD 24" X 24"

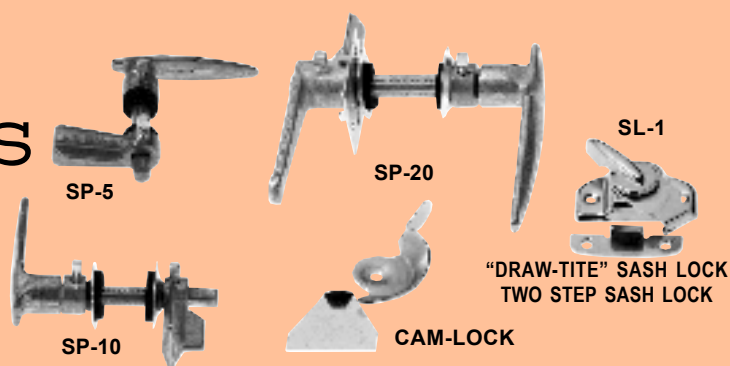
Packed 10 Per Carton;
(Item# 8172 thru 8175 packed 5 per carton)

Standard Sizes:

(Installation Note: All holes should be cut 1-1/8" smaller than the door.)

Access Doors Locking Devices

Item#	Model	Shaft Size	Qty. Per Ctn.
8015	SP-5	1/4" dia.	25
8106	SP-10	3/8" dia.	10
8107	SP-20	1/2" dia.	10
8138	CAM-LOCK	-	100
8108	SL-1	-	100



"DRAW-TITE" SASH LOCK
TWO STEP SASH LOCK

Reddi-Stick Gasketing

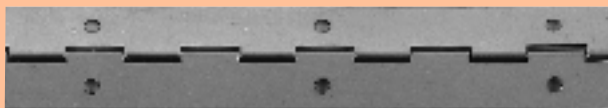
GASKETING COMPARISON CHART



	VINYL FOAM (PVC)	URETHANE	NEOPRENE	SPONGE RUBBER
Color	Light Gray	Charcoal Gray	Black	Black
Type	Close Cell	Open Cell	Close Cell	Open Cell
Density	8 lbs./cu.ft.	2 lbs./cu.ft.	4-5.5 lbs./cu.ft.	2-5 lbs./cu.ft.
Water Absorption by % Weight	Low	High	Low	High
Temp. Range (Constant)	- 40 - 180°	- 30 - 275°	- 20 - 175°	- 20 - 150°
Temp. Range (Intermit.)	- 40 - 200°	- 30 - 300°	- 20 - 225°	- 20 - 175°
Ultimate Tensile Strength (Typical Properties) PSI	30 PSI	13 - 50 PSI	90 PSI	60 - 90 PSI
Elongation (Typical Properties) %	150%	175%	150%	150%
K Factor	0.24 - 0.28	0.22 - 0.23	0.26	0.24 - 0.28
Flame Resistance	-	UL94HF1	UL94HF1	-
U.L. Test #	-	UL94HF1	UL94HF1	-
ASTM Desig.	D-1667	D-1564 D-1056-73	D-1056-68	-
Adhesive	Direct-Coated Adhesive	Bonded Adhesive Film	Bonded Adhesive Film	Bonded Adhesive Film
General Information	Non-Disintegrating; Good Weatherability; High-Pressure Seal; Fungi Resistant.	Low-Pressure Seal; Unaffected by Grease, Mildew, Fungus, Aromatic Oils; Low-Heat Transfer.	Non-Disintegrating; Excellent Weatherability; High-Pressure Seal; Unaffected by Grease, Mildew, Ozone, Gasoline Vapor Proof, Waterproof.	Excellent Memory Low-Pressure Seal.

VINYL FOAM (PVC)				URETHANE				NEOPRENE				SPONGE RUBBER			
Item#	Model	Length	Thickness	Item#	Model	Length	Thickness	Item#	Model	Length	Thickness	Item#	Model	Length	Thickness
			x Width				x Width				x Width				x Width
8123	PVC 18-12	50'/RL	1/8" x 1/2"	8126	UF 3-12	50'/RL	3/16" x 1/2"	8129	BN 18-12	50'/RL	1/8" x 1/2"	8132	SD 18-12	50'/RL	1/8" x 1/2"
8124	PVC 14-34	50'/RL	1/4" x 3/4"	8127	UF 14-34	50'/RL	1/4" x 3/4"	8130	BN 14-34	50'/RL	1/4" x 3/4"	8133	SD 14-34	50'/RL	1/4" x 3/4"
8125	PVC 38-34	25'/RL	3/8" x 3/4"	8128	LF 38-34	25'/RL	3/8" x 3/4"	8131	BN 38-34	25'/RL	3/8" x 3/4"	8134	SD 38-34	25'/RL	3/8" x 3/4"
								8261	BN 316-34	50'/RL	3/16" x 3/4"				

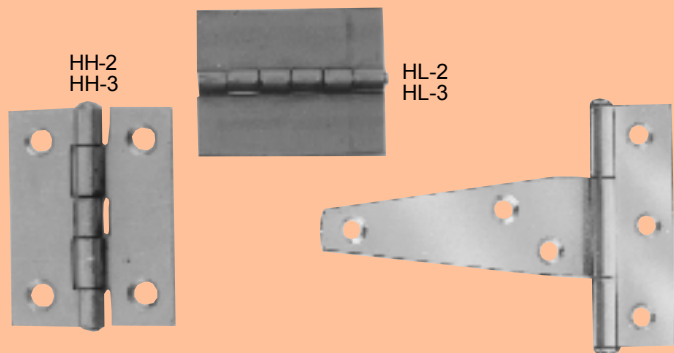
Piano Hinges



Item#	Model	Size	Description
8117	HP-116	1-1/16" x 3'	Piano hinge,
8118	HP-112	1-1/2" x 3'	no holes,
8119	HP-23	2" x 3'	plain steel
Qty. per ctn. 25 - Special sizes available upon request			

Item#	Model	Size	Description
8120	HPH-116	1-1/16" x 3'	Piano hinge, with holes,
8121	HPH-112	1-1/2" x 3'	zinc plated
Qty. per ctn. 25 - Special sizes available upon request			

Butt Hinges / 'T' Hinges



Item#	Model	Size	Description	Finish
8109	HH-2	2" x 1 9/16"	Light, narrow butt	Zinc
8110	HH-3	3" X 2"	hinge, fast pin,	plated
w/ screw holes.				
8111	HL-2	2" x 1 9/16"	Light narrow butt	
8112	HL-3	3" x 2"	hinge, fast pin,	Steel
w/out screw holes.				
8115	HT-3	3"	Light 'T' hinge	Zinc
8116	HT-5	5"	fast pin	plated
Qty. per ctn. 25 - Special sizes available upon request				

Fire Damper Hardware



All fusible links classified by Underwriter's Laboratories, Inc. and Factory Mutual Laboratories

Item#	Model	Description	Dim. A	Dim. B
2032	FLS-39	temperature rating 165° 10 pound load	1"	1-1/2"
2033	FL-43	temperature rating 165° 30 pound load	1-3/4"	2-9/16"
2034	FL-41	temperature rating 212° 30 pound load	1-3/4"	2-9/16"
2035	FL-42	temperature rating 386° 30 pound load	1-3/4"	2-9/16"
Packed 100 per carton				

Hanging Strap

Duro Dyne provides 3 types of Hanging Strap fabrics which are waterproof, grease, oil & acid resistant, and have low smoke & flame development.



Vinyl Duro Strap
Item#: 10190
Size: 1.5" x 200"
Flame Spread: 12
Smoke Development: 38
Tensile Strength: Warp-70 lbs./In. Fill-70 lbs./In
Heat Resistance: 200° F
Tear Strength: Warp- 8 lbs./In, Fill-11 lbs./In
Thread Count: 28 x 14
Fabric: Black vinyl coated polyester fill
Total Fabric Thickness: .022" Approx.
Quantity per carton: 10 rolls

EZ Strap
Item#: 10182
Size: 1.5" x 300"
Flame Spread: 10
Smoke Development: 27
Tensile Strength: 310 lbs.
Heat Resistance: 180° F
Tear Strength: 125 lbs.
Thread Count: 28 x 14
Fabric: Proprietary plastic
Total Fabric Thickness: .020" Approx.
Quantity per carton: 10 rolls

Woven Econo Strap
Item#: 10192
Size: 1.75" x 300"
Flame Spread: 5
Smoke Development: 20
Tensile Strength: Warp-850 lbs./In., Fill-360 lbs./In.
Heat Resistance: 330° F
Thread Count: 850 x 360
Fabric: Grey woven polypropylene
Total Fabric Thickness: .025" Approx.
Quantity per carton: 24 rolls

Dyn-O-Ties®

Whenever your job calls for securing round flexible duct to outlets, pipes or fittings, you can do the job better, faster, and at a lower cost using **DYN-O-TIES™**, flexible duct ties.

No tapes, no screws, no clamps. Position the flexible duct and slip a **DYN-O-TIE** around the flexible duct over the joint. Draw the **DYN-O-TIE** tight with our ratchet action hand tool. A push with the thumb completes the job by clipping off the excess nylon tab for the neatest and most secure connection you could want.

For those jobs requiring steel connections, Duro Dyne has designed a new stainless steel **DYN-O-TIE**. The same basic installation process applies when using the **DIT-1SS** installation tool.

DYN-O-TIES, when properly installed, provide secure, self-extinguishing joints when connecting certain types of flexible duct listed by Underwriters Laboratories Inc., class 1.

Item#	Model	Type	Length	Max. Dia.	Pkg.	Pkg./Ctn
8251	DN-22	Nylon	22	6"	25	20
8252	DNC-22	Nylon	22	6"	100	5
8253	DNF-22	Nylon	22	6"	500	1
8307	DN-33	Nylon	33	9"	25	20
8308	DNC-33	Nylon	33	9"	100	5
8309	DNF-33	Nylon	45	9"	500	1
8269	DT-34	Stainless	33	9"	25	20
8264	DN-45	Nylon	45	14"	25	20
8262	DNX-60	Nylon	60	18"	25	20

All materials shipped in master cartons of 500 pieces.



Nylon: Nylon 6/6 V2 - available in four sizes. Self-extinguishing. Fungus inert. Normal service temperature range: - 40° F to 185° F.

Test Results*: Nylon -275 lbs.



Stainless Steel: 430 stainless steel .020" x .3125 x 34" long.

Test Results*: Stainless Steel - 500 lbs.

***Test Method:** Tie is secured at both ends forming a loop. A weight is suspended from the bottom of loop to determine tensile strength of **DYN-O-TIE** strap.

Mini Dyn-O-Ties®

Made of molded natural color 6/6 nylon, these ties are perfect for bundling wires. The ties are designed to meet ASTM D638 for tensile strength and ASTM D789 for melting point. Not for use with DIT-2.

Item#	8378	8383
Model	DNC-8.5	DNC-14.5
Overall Length inches	8.5	14.5
Width inches	.130	.187
Bundle Diameter inches	1/16 - 2	1/16 - 3
Minimum Loop Tensile	40	50
Tensile Strength	11.2	11.2
Melting Point	491° F	491° F
UL Flammability	94V-2	94V-2

Packed 5 - 100 packs to a carton.

Dyn-O-Tie® Gun

INSTALLATION TOOL

The DIT-2 gun is light weight and commonly used to install most makes of nylon duct ties.

The DIT-1SS gun with a specially designed nose piece is designed to install Duro Dyne type DT-34 stainless steel duct ties.

Item#	Model	Description
8229	DIT-2	For use w/nylon
8263	DIT-1SS	For use w/stainless



DIT-2



DIT-1SS

Duro Dyne The Greatest Name In Sheet Metal Necessities



**DURO
DYNE**

Duro Dyne East Division, Farmingdale, NY 631-249-9000 Fax: 631-249-8346

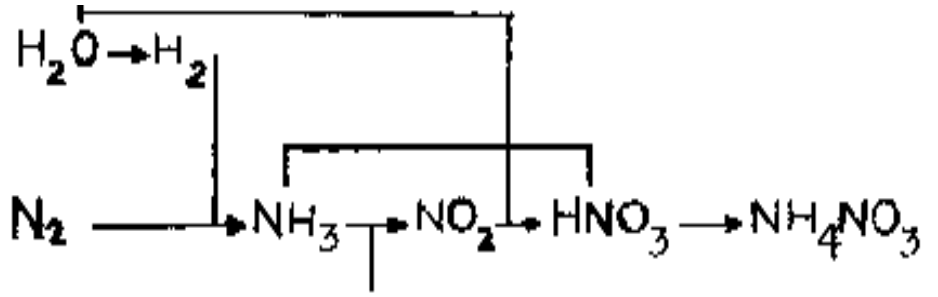
Duro Dyne Midwest Division, Fairfield, OH 513-870-6000 Fax: 513-870-6005

Duro Dyne West Division, Santa Fe Springs, CA 562-926-1774 Fax: 562-926-5778

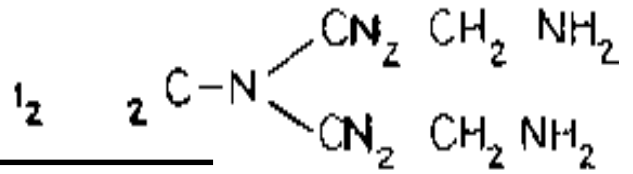
Duro Dyne Canada, Lachine, Quebec, Canada 514-422-9760 Fax: 514-636-0328

www.durodyne.com E-mail: durodyne@durodyne.com

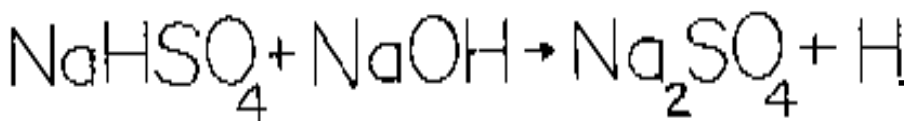
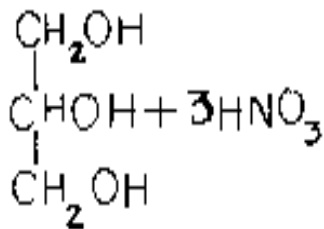
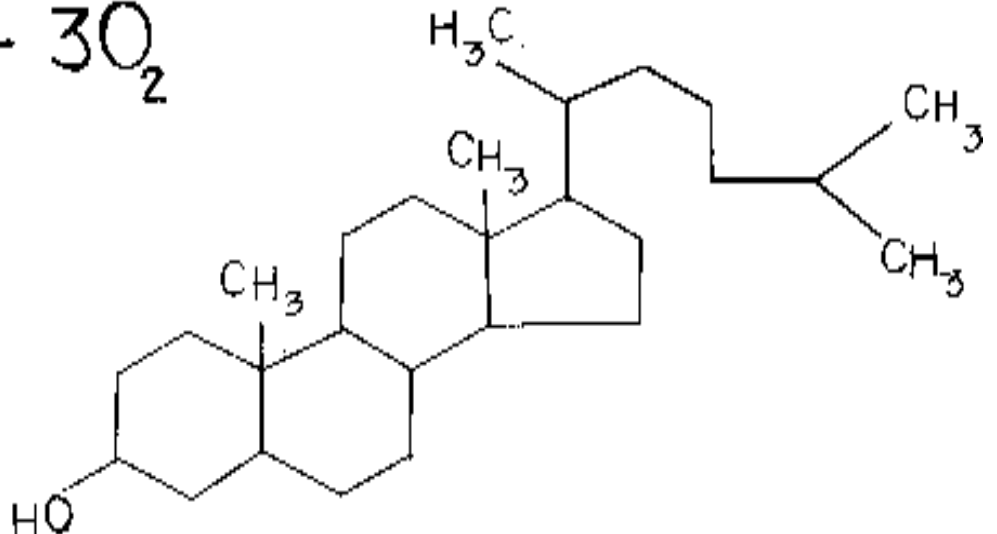
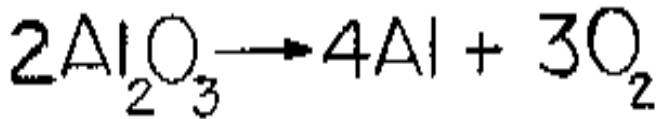
**DURO
DYNE**



INSULATION ADHESIVES



DUCT SEALERS



DURO DYNE EAST CORP.
Farmingdale, NY 11735

DURO DYNE MIDWEST
Fairfield, OH 45011

DURO DYNE WEST
Santa Fe Springs, CA 90670

DURO DYNE INTERNATIONAL
Farmingdale, NY 11735

Water Base Insulation Adhesives and Duct Sealers

WIT UL Classified File# R5286

Suggested Use: Adhesive for bonding insulation material to sheet metal.

Product Features: Water based, good wet tack, non-flammable when wet.

WSA UL Classified File# R5286

Suggested Use: Adhesive for bonding insulation material to metal.

Product Features: Water based, good wet tack, non-flammable when wet.

SSG UL Classified File# R5286

Suggested Use: Adhesive for bonding insulation material to metal.

Product Features: Water based, non-flammable when wet, designed for spray use. Contains no solvents, yet tacks fast.

WDS UL Classified File# R5286

Suggested Use: Recommended for sealing joints in low, medium & high velocity air handling system.

Product Features: Water based, fibrated, indoor/outdoor, fire resistive, remains flexible, highly water resistant, low water vapor permeance.

DWN UL Classified File# R5286

Suggested Use: Recommended for sealing joints in low, medium & high velocity air handling system.

Product Features: Water based, non-fibrated, fire resistive, permanently flexible, thixotropic consistency allows easy application.

Typical Properties

Type: Resin Emulsion
Solids: 57 ± 2%
Weight: 9.8 lbs./gal.
Color: White
Odor: Bland
Viscosity: 1600-1800 CPS. Typical at 1800. Brookfield LVF #4 Spindle, 6 RPM @ 25°C
Flammability: Non-Flammable
Effect of Freezing: No damage - 1 Cycle
Storage Life: 6 months at 70°F
Clean With: Warm Water/Detergent
Method of Application: Designed for use with spray equipment or Duro Dyne Roto Bonder. As a general practice, it is advisable that liquid products be stirred prior to use.

Typical Properties

Type: Resin Emulsion
Solids: 57 ± 2%
Weight: 9.8 lbs./gal.
Color: Dark Grey
Odor: Bland
Viscosity: 1600-1800 CPS. Typical at 1800. Brookfield LVF #4 Spindle, 6 RPM @ 25°C
Flammability: Non-Flammable
Effect of Freezing: No damage - 1 Cycle
Storage Life: 6 Months at 70°F
Clean With: Warm Water/Detergent
Method of Application: Designed for use with spray equipment or Duro Dyne Roto Bonder. As a general practice, it is advisable that liquid products be stirred prior to use.

Typical Properties

Type: Ethylene Vinyl Acetate Emulsion
Solids: 69 ± 2%
Weight: 10.0 lbs./gal.
Color: Cream White
Odor: Bland
Viscosity: 1400 CPS #7 Brookfield LVF @ 6 RPM 25°C
Flammability: Non-Flammable
Effect of Freezing: Keep from freezing
Storage Life: 6 months at 70°F
Clean With: Warm Water/Detergent
Method of Application: Designed for use with spray equipment only. For best results use Duro Dyne's Super Spray Fast Application system. As a general practice, it is advisable that liquid products be stirred prior to use.

Typical Properties

Type: Vinyl Acrylic
Solids: 69 ± 2%
Weight: 11.6 ± .2 lbs./gal.
Color: Grey
Odor: Bland/Wet; None Dry
Viscosity: 130,000-160,000 CPS #7 Brookfield @ 20 RPM @ 77°F
Flammability: Non-Flammable
Effect of Freezing: No damage - 1 cycle
Storage Life: 6 months at 70°F
Clean With: Warm Water/wet; Chlorinated solvent/ dry
Method of Application: Brush, trowel, putty knife or caulking gun. It is advisable that liquid products be stirred prior to use.

Typical Properties

Type: Vinyl Acrylic
Solids: 70 ± 2%
Weight: 11.5 ± .2 lbs./gal.
Color: Grey
Odor: Bland/Wet; None Dry
Viscosity: 130,000-180,000 CPS #7 Brookfield @ 20 RPM @ 77°F
Flammability: Non-Flammable
Effect of Freezing: No damage - 1 cycle
Storage Life: 6 months at 70°F
Clean With: Warm Water/wet; Chlorinated solvent/ dry
Method of Application: Brush, trowel, putty knife or caulking gun. It is advisable that liquid products be stirred prior to use.

Water Based Ordering Information

Description	1 Gallon Pail	5 Gallon Pail	55 Gallon Drum	Cartridge
WIT	WIT-1 Item# 5056	WIT-5 Item# 5057	WIT-55 Item# 5058	N/A
WSA	N/A	WSA-5 Item# 5036	WSA-55 Item# 5037	N/A
SSG	N/A	SSG-5 Item# 5035	N/A	N/A
WDS	WDS-1 Item# 5040	WDS-5 Item# 5041	N/A	WDS-C Item# 5042
DWN	DWN-1 Item# 5043	N/A	N/A	N/A
DDS-181	DDS1-181 Item# 5011	N/A	N/A	DDS181-C Item# 5010
SAS	SAS-1 Item# 5030	N/A	N/A	SAS-C Item# 5031

Solvent Insulation Adhesive & Duct Sealers

DDS-181

UL Classified File # R5286
Suggested Use: Recommended for sealing joints in air handling systems.
Product Features: Meets UL181A-M and UL181B-M, Excellent weather & U.V. resistance.

Typical Properties

Type: Vinyl Acetate
Solids: 69 ± 2%
Weight: 11.6 ± .2 lbs. gal.
Color: Grey
Odor: Mild/Wet; Bland/Dry
Viscosity: 140,000 - 180,000 CPS #7 Brookfield @ 20 RPM 70°F
Flammability: Non-Flammable
Effect of Freezing: No damage - 3 Cycle
Storage Life: 6 Months at 70°F
Clean With: Water/ Detergent
Method of Application: Brush, trowel, putty knife, or caulking gun. As a general practice, it is advisable that liquid products be stirred prior to use.

SAS

Suggested Use: Recommended for sealing joints in air handling systems.
Product Features: Water based, non-flammable, flexible & paintable.

Typical Properties

Type: Siliconized Acrylic
Solids: 81.0 ± 1%
Weight: 13.2 ± .2 lbs./gal.
Color: Grey
Odor: Mild
Viscosity: 320,000 ± 50,000 CPS T-Bar, Spindle TC-93, 20 RPM @ 77°F
Flammability: Non-Flammable
Effect of Freezing: 3 Cycles
Storage Life: 1 year at 70°F
Clean With: Warm Water/Detergent
Method of Application: Brush, trowel, putty knife or caulking gun. As a general practice, it is advisable that liquid products be stirred prior to use.

RPG UL Classified File# R5286

Suggested Use: Adhesive for bonding insulation material to sheet metal.

Product Features: Excellent tack and quick grab, for use with liner up to 3# density

Typical Properties

Type: Synthetic Elastomer Rubber
Solids: 30% ± 2%
Weight: 6.4 ± .5 lbs. per gal.
Color: Red
Odor: Mild
Viscosity: 2000-3500 CPS. # 3 Spindle @ 20 RPM @ 77°F
Flammability: Flammable
Effect of Freezing: None
Storage Life: 6 Months at 70°F
Thin With: Do Not Thin
Clean With: Chlorinated Solvent or Xylol
Method of Application: Spray, brush, or roller. As a general practice, it is advisable that liquid products be stirred prior to use.

SGD UL Classified File# R5286

Suggested Use: Recommended for sealing joints in high pressure indoor air handling systems.

Product Features: Solvent based, indoor use, oil resistant, tough, flexible, use with or without reinforcing tapes.

Typical Properties

Type: Elastomer Rubber
Solids: 70% ± 2%
Weight: 7.3 lbs. ± .5 lbs. per gal.
Color: Grey
Odor: Mild
Viscosity: 250,000-300,000 CPS. #7 Brookfield @ 10 RPM @ 70°F
Flammability: Flammable
Effect of Freezing: None
Storage Life: 6 Months at 70°F
Clean With: Mineral Spirits, Hexane, Toluene
Method of Application: Brush, Trowel or power extrusion

DLS

Suggested Use: Solvent based formula for use in Pumpurr® Automatic Gun set-ups on pittsburgh lock-forming equipment.

Product Features: Non-sag, permanently flexible, long term durability, non-staining.

Typical Properties

Type: Virgin Butyl Rubber
Solids: 75% Approximate
Weight: 10 lbs. per gal.
Color: White
Odor: Naptha
Flammability: Flammable
Storage Life: 6 Months at 70°F
Clean With: Alcohol/Acetone
Method of Application: Automatic Dispensing System Pumpurr - PP46-2.

Solvent Based Ordering Information

Description	1 Gallon Pail	5 Gallon Pail	55 Gallon Drum	Cartridge
RPG	RPG-1 Item# 5047	RPG-5 Item# 5048	RPG-55 Item# 5049	N/A
SGD	SGD-1 Item# 5044	SGD-5 Item# 5045	N/A	SGD-C Item# 5046
DLS	N/A	DLS-5 Item# 5067	N/A	N/A

Aerosol Adhesive

ASA

Aerosol

Suggested Use: Adhesive for bonding insulation material to sheet metal.

Product Features:

Convenient spray can, fast tacking, non-flammable.

Typical Properties

Type: Solvent Cement

Solids: 25

Weight Per Gal.: 10.4 lbs.

Color: Amber

Odor: None

Viscosity: 1960 CPS.

Flammability: Adhesive - Non-flammable

Propellent - Flammable

Effect of Freezing: No damage

Storage Life: 6 Months at 70°F

Suggested Surface Preparation:

Surfaces must be clean and dry, free of dust, dirt, grease, oil and other foreign material.

Method of Application: Aerosol Spray

Item#	Description
5015	ASA-12 cans per case

Adhesive Applying Systems

Mini Sprayfast™

Suggested Use: Application System for applying water based adhesives.

Product Features: A compact and lightweight (9 lbs.), yet versatile spray system incorporating a self priming pump. It is able to work with all size containers of water based adhesives quickly, easily and with minimal overspray.

Item#	Description
39047	Mini Sprayfast

Super Sprayfast™

Suggested Use: Application System for applying water based adhesives.

Product Features: A new improved spray system incorporating an acetal / teflon diaphragm pump, circulating system and surge tank to provide quick, easy and continuous spray with minimal overspray.

Item#	Description
5150	Super Sprayfast System for use with 5 gallon pail of adhesive.
5155	Super Sprayfast System for use with 55 gallon drum of adhesive.



Pumpurr®

Suggested Use: Application System for applying sealers.

Product Features:

Quiet operation.
Easy installation.
Simple to operate.
Low maintenance.

Item#	Description
5076	PP 46-2 (2 guns)

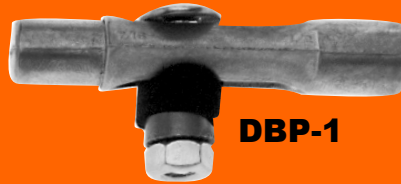
Duro Dyne National Corp., Route 110, Farmingdale, NY 11735
Duro Dyne East Corp., Route 110, Farmingdale, NY 11735
Duro Dyne West Corp., 15005 Marquardt Ave. Santa Fe Springs, CA 90670
Duro Dyne Midwest Corp., 3825 Symmes Rd., Fairfield, OH 45011
Duro Dyne Canada Inc., Lachine, Quebec H8T1B3
Duro Dyne International Division, Farmingdale, NY 11735

Phone: 631-249-9000 **Fax: 631-249-8346**
Phone: 631-249-9000 Fax: 631-249-8346
Phone: 562-926-1774 Fax: 562-926-5778
Phone: 513-870-6000 Fax: 513-870-6005
Phone: 514-422-9760 Fax: 514-636-0328
Phone: 631-249-9000 Fax: 631-249-8346

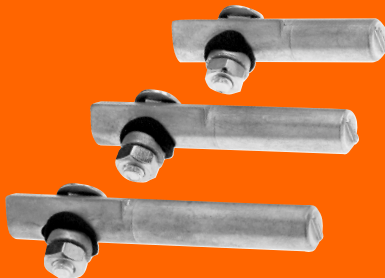


Damper Slide Blade Pins

9 New Styles



DBP-1



RDBP



RSBP



HDBP

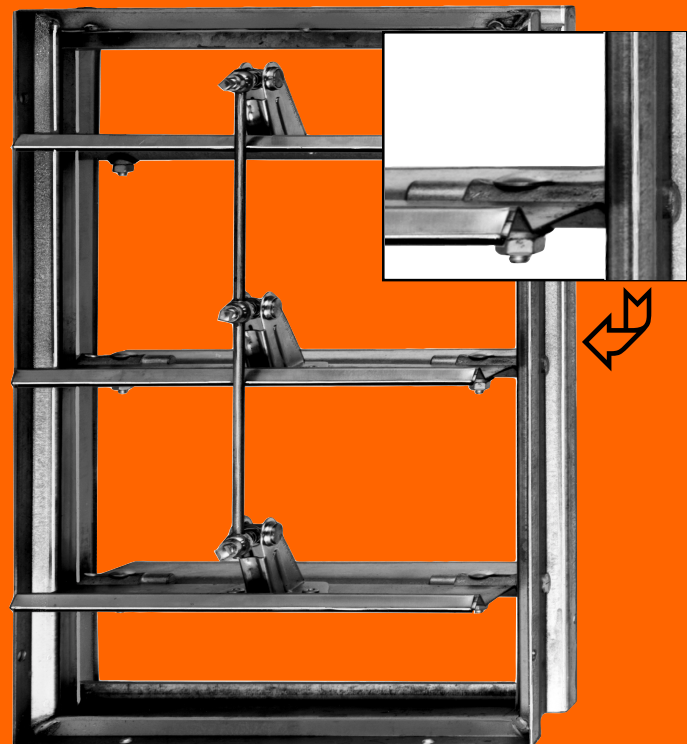
With Duro Dyne's complete line of Damper Slide Pins, 10 in all, nearly every configuration requirement can be satisfied. Duro Dyne's new Damper Slide Blade Pin selection provides a low cost alternative to damper hardware such as straps, set screws and solid pins. Installation is as easy as 1-2-3.

1. Punch hole in Damper Blade
2. Position Pin on Blade
3. Lock in position by tightening 1/4" Hex Nut after sliding pin into damper bushing.

FEATURES

- Manufactured using resistant zinc die cast material
- Available in 3/8" square, 7/16" hex & 1/2" round
- Square, hex & round are available in 1", 1 1/2" and 2" shaft lengths
- DBP-1 has 1/2" and 7/16" round ends
- Available in complete assemblies

Assemblies include: Bolt, Lock Washer, Hex Nut and Neoprene Washer. Pin is available separately.





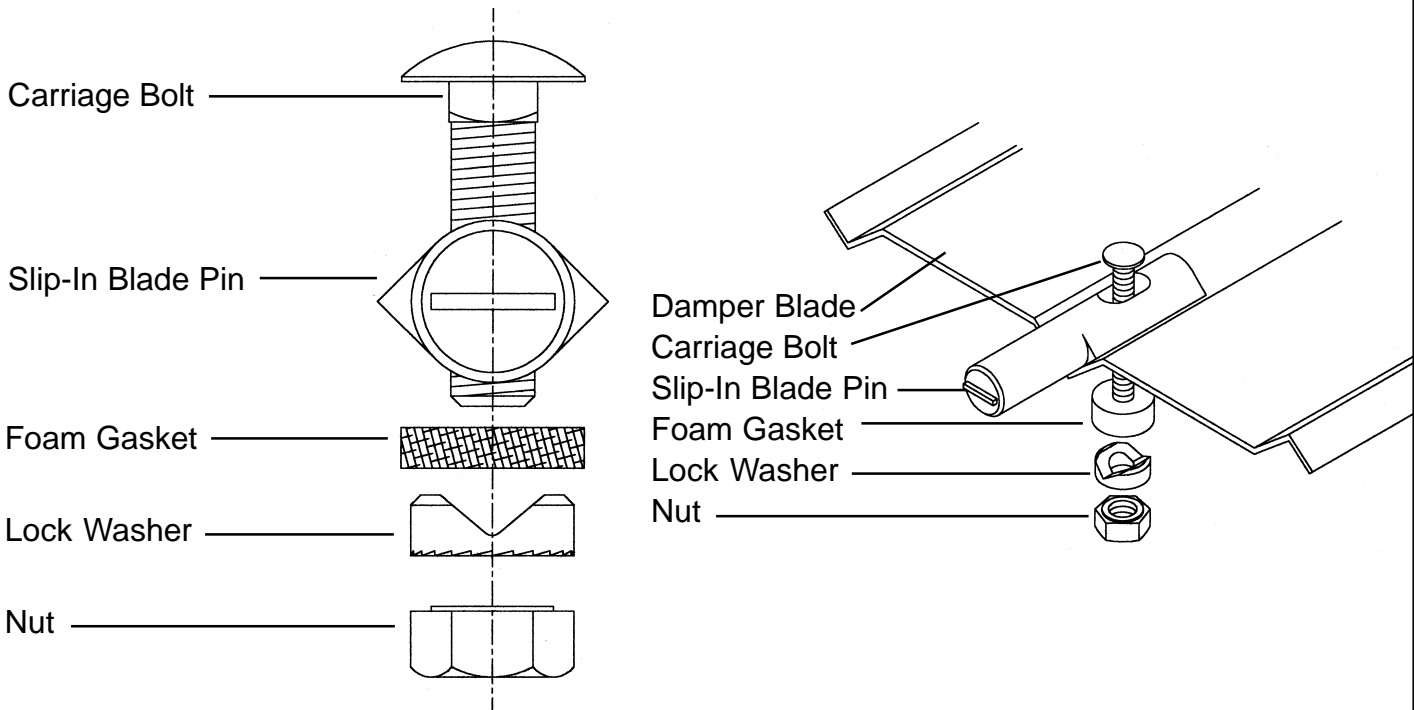
Ordering Information For Damper Slide Blade Pins

Complete Assembly (Includes: Bolt, Lock Washer, Hex Nut and Neoprene Washer)

Part#	Description
2215	SDBP-100A 3/8" Sq. Pin 1" Long
2216	SDBP-150A 3/8" Sq. Pin 1 1/2" Long
2217	SDBP-200A 3/8" Sq. Pin 2" Long
2218	HDBP-100A 7/16" Hex Pin 1" Long
2219	HDBP-150A 7/16" Hex Pin 1 1/2" Long
2220	HDBP-200A 7/16" Hex Pin 2" Long
2221	RDBP-100A 1/2" Round Pin 1" Long
2222	RDBP-150A 1/2" Round Pin 1 1/2" Long
2223	RDBP-200A 1/2" Round Pin 2" Long
2094	DBP-1 Side Pin 1/2+7/16 O.D.

Pin Only (No Mounting Hardware)

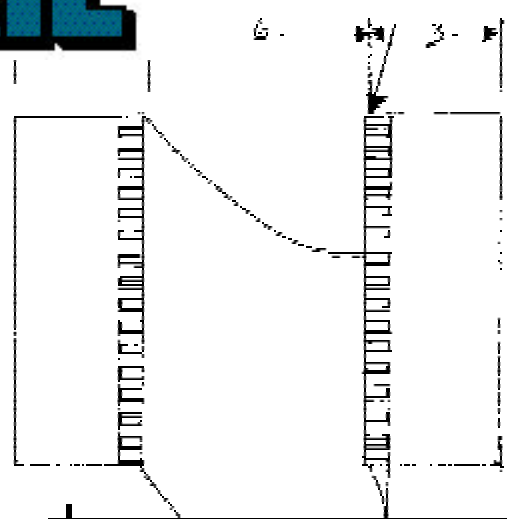
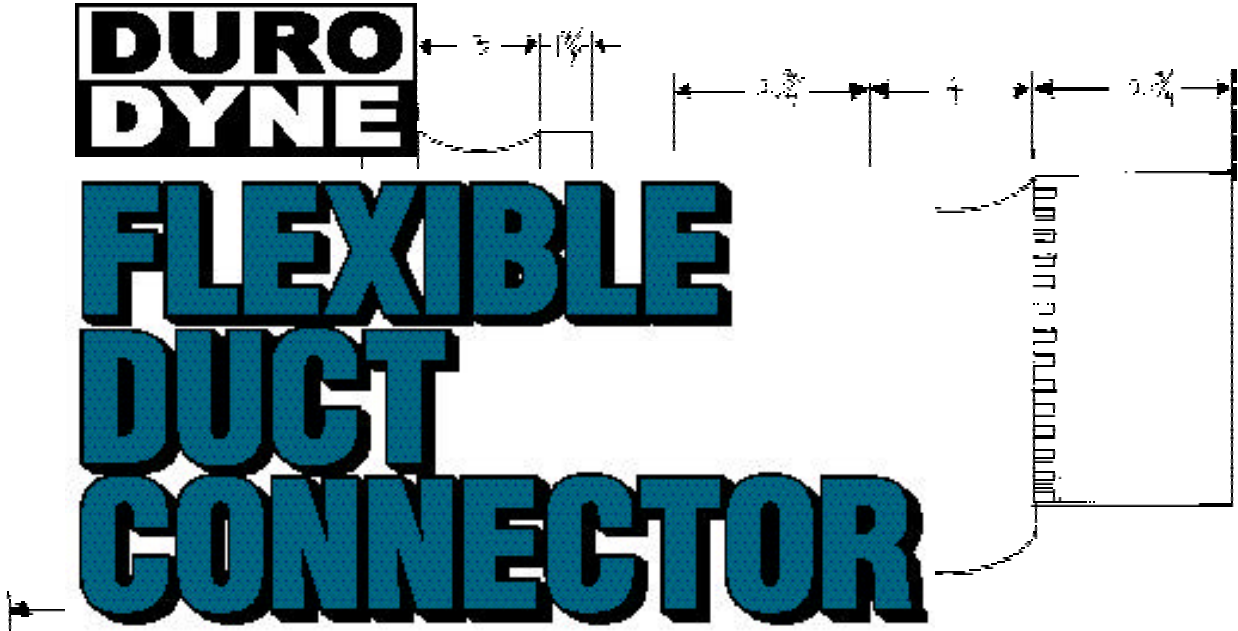
Part#	Description
2224	SDBP-100 3/8" Sq. Pin 1" Long
2225	SDBP-150 3/8" Sq. Pin 1 1/2" Long
2226	SDBP-200 3/8" Sq. Pin 2" Long
2227	HDBP-100 7/16" Hex Pin 1" Long
2228	HDBP-150 7/16" Hex Pin 1 1/2" Long
2229	HDBP-200 7/16" Hex Pin 2" Long
2230	RDBP-100 1/2" Round Pin 1" Long
2231	RDBP-150 1/2" Round Pin 1 1/2" Long
2232	RDBP-200 1/2" Round Pin 2" Long
2089	DBP-1 Side Pin 1/2+7/16 O.D.



**DURO
DYNE**

**FLEXIBLE
DUCT
CONNECTOR**

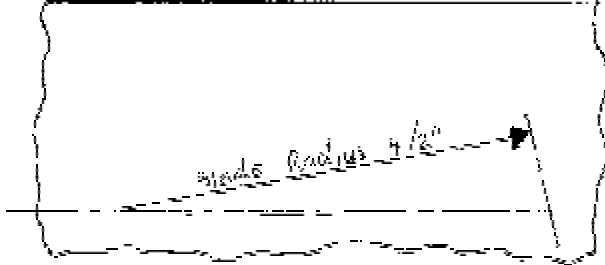
VANE RAIL®



Distance Vane extends into smaller duct from edge of Duro Dyne Rail

Ratio of large duct to smaller duct

3:1
1.25:1
1:1
0.75:1
0.5:1



DURO DYNE EAST CORP.
Bay Shore, NY 11706
DURO DYNE MIDWEST
Fairfield, OH 45011
DURO DYNE WEST
Santa Fe Springs, CA 90670
DURO DYNE INTERNATIONAL
Bay Shore, NY 11706

Pre-Assembled

Flexible Duct Connector

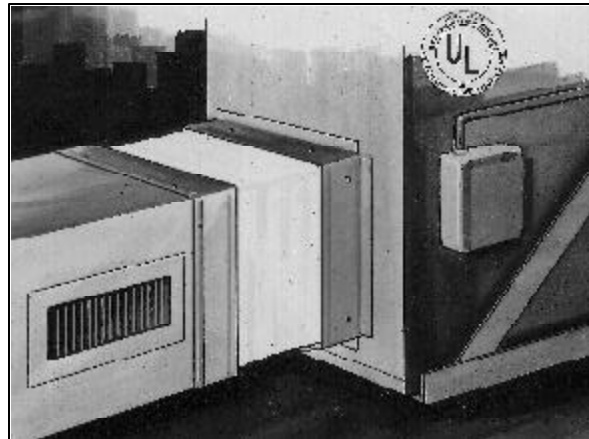
Eliminates Duct System Noises and Vibrations

All air duct installations for heating, cooling or ventilation are attached to mechanical equipment containing a fan or blower. Vibrations, noises and rattles resulting from operation of the fan or blower are transmitted into the metal ducts which carry the noises throughout the system.

dispensed from the carton, ready to complete fabrication faster, more efficiently, and more economically than any conventional method.

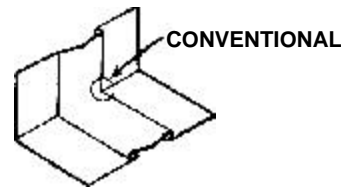
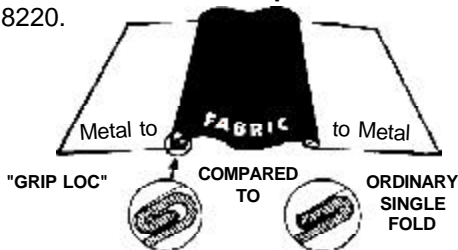
In order to isolate the vibration and noises to the source, an air-tight flexible joint, consisting of a fabric which is secured to sheet metal on both sides, must be inserted between the equipment and the ductwork. This flexible joint is called a "Flexible Duct Connector."

To meet every type of installation requirement, whether it be for factory, institution, office or home; Duro Dyne offers the widest variety of flexible duct connector fabrics (U.L. Classified) and sizes - pre-assembled with the sheet metal permanently secured to the fabric by means of exclusive seam locks. Duro Dyne Flexible Duct Connectors are



"Grip Loc"

The double-lock gripping fingers of metal-to-fabrics add tremendously to holding power, compared with conventional singlefold method. Grip Loc is **available on Metal-Fab and Super Metal-Fab**. Pat. No. 3128220.



"Guard Loc"

Another Duro Dyne exclusive. - Shielded with metal on both sides at the seam, Guard Loc forms a tough metal-to-fabric bond. Forming in brake is simpler, and Guard Loc prevents tears in fabric because of unique metal-shielded seams. **Available in Econ-O-Fab, Junior and Insulflex Connector.**

Duct Fabrics

(For SPECIFICATIONS please refer to FABRICS on page 3).

Glasseal	Width	Length	Neoprene	Width	Length	Thermafab	Width	Length
#10044 DGL- 6	6"	100 ft.	#10043 DFN - 6	6"	100 ft.	#10045 DFT - 6	6"	100 ft.
#10052 DGL- 10	10"	100 ft.	#10051 DFN - 10	10"	100 ft.	#10053 DFT - 10	10"	100 ft.

Excelon	Width	Length	Durolon	Width	Length	Canvas, other fabrics & sizes available as special order.
#10161 DBX - 6	6"	100 ft.	#10042 DFD - 6	6"	100 ft.	
#10162 DBX - 10	10"	100 ft.	#10050 DFD - 10	10"	100 ft.	

Fabrics

ITEM	DESCRIPTION	SPECIFICATIONS	FEATURES
<p>Glasseal (====)</p> <p>#10004 MGL Metalfab #10016 MF6G Super Metalfab #10036 EGL Econofab #10029 JGL Junior</p>	<p>Color: Grey & Black Base Fabric: Woven Fiberglass Coating: Vinyl</p>	<p>Weight: 12 oz./sq. yd. Tensile Strength: 90lbs. x 90 lbs. Tear Strength: 8 lbs. x 9lbs. Low Temp: -40°F High Temp: Constant: 180°F Intermittent: 200°F</p>	<ul style="list-style-type: none"> • Good, low cost • Resistant to acids & chemical fumes • Resistant to grease & alkalis • Unaffected by mildew
<p>Excelon (====)</p> <p>#10159 MBX Metalfab #10263 MSPX Metalfab #10160 MB6X Super Metalfab #10265 MSP6X Super Metalfab #10171 EBX Econofab #10169 JBX Junior #10210 MBX TDC/TDF 4x4x4 #10264 MSPX TDC/TDF 4x4x4 #10214 MBX TDC/TDF 4x6x4</p>	<p>Color: Black or Spec Chek Orange Base Fabric: Woven Nylon/Polyester Blend Coating: Vinyl</p>	<p>Weight: Commercial Grade - 22 oz./sq. yd. Residential Grade- 15 oz./sq. yd. Tensile Strength: 240lbs.x220 lbs. Tear Strength: 100 lbs.x100 lbs. Low Temp: -40°F High Temp: Constant: 180°F Intermittent: 200°F</p>	<ul style="list-style-type: none"> • Excellent water resistance • Excellent tear strength • Excellent all purpose fabric • Unaffected by mildew
<p>Neoprene (====) (Standard Grade)</p> <p>#10105 MLN Metalfab #10148 ML6N Super Metalfab #10035 EFN Econofab #10028 JRN Junior</p>	<p>Color: Black Base Fabric: Woven Fiberglass Coating: Neoprene</p>	<p>Weight: 22 oz./sq. yd. Tensile Strength: 500lbs.x500 lbs. Tear Strength: 13 lbs. x 13lbs. Low Temp: -40°F High Temp: Constant: 200°F Intermittent: 220°F</p>	<ul style="list-style-type: none"> • Extremely resistant to alkalis & gasoline • Excellent on systems exposed to toxic fumes • Good general purpose fabric • Unaffected by mildew
<p>Neoprene (====) (Specification Grade)</p> <p>#10003 MFN Metalfab #10012 MF6N Super Metalfab #10211 MFN TDC/TDF 4x4x4 #10246 MFN TDC/TDF 4x6x4</p>	<p>Color: Black Base Fabric: Woven Fiberglass Coating: Neoprene</p>	<p>Weight: 30 oz./sq. yd. Tensile Strength: 500lbs.x500 lbs. Tear Strength: 13 lbs. x 13lbs. Low Temp: -40°F High Temp: Constant: 200°F Intermittent: 220°F</p>	<ul style="list-style-type: none"> • Extremely resistant to alkalis & gasoline • Excellent on systems exposed to toxic fumes • Good general purpose fabric • Unaffected by mildew
<p>Durolon (====)</p> <p>#10002 MFD Metalfab #10011 MF6D Super Metalfab #10034 EFD Econofab #10027 JRD Junior #10237 MFD TDC/TDF 4x4x4 #10245 MFD TDC/TDF 4x6x4</p>	<p>Color: White Base Fabric: Woven Fiberglass Coating: Hypalon</p>	<p>Weight: 24 oz./sq. yd. Tensile Strength: 250lbs.x275 lbs. Tear Strength: 13 lbs. x 13lbs. Low Temp: -40°F High Temp: Constant: 250°F Intermittent: 275°F</p>	<ul style="list-style-type: none"> • Excellent ozone resistance • Excellent resistance to weathering • Best overall acid resistance • Recommended for rooftop applications • Unaffected by mildew
<p>Thermafab (====)</p> <p>#10005 MFT Metalfab #10013 MF6T Super Metalfab #10037 EFT Econofab #10030 JRT Junior</p>	<p>Color: Grey Base Fabric: Woven Fiberglass Coating: Silicon Rubber</p>	<p>Weight: 17 oz./sq. yd. Tensile Strength: 200lbs.x250 lbs. Tear Strength: 50 lbs. x 40lbs. Low Temp: -65°F High Temp: Constant: 500°F Intermittent: 600°F</p>	<ul style="list-style-type: none"> • Excellent high temp. resistance • Excellent low temp. resistance • Excellent chemical resistance • Extremely low smoke emission • Excellent ozone resistance • Excellent resistance to weathering • Unaffected by mildew

Industrial/Commercial Applications

Metal Fab

Metal Fab is constructed of material which meets the requirements of heavy commercial systems. This factory fabricated flexible duct connection will provide for normal vibration "swing" in large duct systems without "short circuiting" the effectiveness of the flexible duct connector.

Super Metal Fab

Super Metal Fab is constructed of material to provide for special commercial duct systems. Very large equipment can cause excessive vibration; to compensate for this a wider fabric is used to eliminate the transmission of vibration to the duct.

TDC/TDF Connector

TDC/TDF Connector has ample material for roll forming a connecting flange on both sides of the flexible connection. This product is designed to be compatible with both TDC (Lockformer) and TDF (Engel) roll forming flange-fabricating machines.

Insulflex

Advanced Insulflex insulated flexible duct connector completes the "insulated" in insulated duct work. Insulflex, featuring an "R" value of 4.2 with thick insulation, is a non-porous, double layered product that eliminates air leakage.

Specifications

Gauge: 24 Galvanized
Dimensions: 3" metal - 3" fabric - 3" metal
Fabrics Supplied: Durolon, Excelon, Dynaflex, Neoprene, Glasseal, Thermafab
Seam: "Grip Loc"

Specifications

Gauge: 24 Galvanized
Dimensions: 3" metal - 6" fabric - 3" metal
Fabrics Supplied: Durolon, Excelon, Dynaflex, Neoprene, Glasseal, Thermafab
Seam: "Grip Loc"

Specifications

Gauge: 24 Galvanized
Dimensions: 4" metal - 4" fabric - 4" metal
Fabrics Supplied: Durolon, Excelon, Dynaflex, Neoprene, Glasseal, Thermafab
Seam: "Grip Loc"
Also Available : 4" metal -6" fabric -4" metal

Specifications

Gauge: 24 Galvanized
Fabric: Woven polyester with black vinyl coating and a temperature range of 180°F to -40°F
Dimensions: 3" metal -4" fabric -3" metal
Seam: "Guard Loc"
Tensile Strength: 70 lbs. x 70 lbs.
Tear Strength: 8 lbs. x 11 lbs.
Weight: (2 Thicknesses) 9 oz./sq. yd. ea. thickness

Residential/Light Commercial Applications

Econofab

For light commercial or larger residential systems.

Junior Connector

For residential systems.

- All Duro Dyne Fabrics are designed to meet UL 214.
- All Duro Dyne Fabrics are designed to meet NFPA 90A & 90B.
- All Duro Dyne Fabrics are airtight and waterproof.

Specifications

Gauge: 28 Galvanized
Dimensions: 2 3/4" metal - 4" fabric - 2 3/4" metal
Fabrics Supplied: Durolon, Excelon, Neoprene, Glasseal, Thermafab
Seam: "Guard Loc"

Specifications

Gauge: 28 Galvanized
Dimensions: 1 3/4" metal - 3" fabric - 1 3/4" metal
Fabrics Supplied: Durolon, Excelon, Dynaflex, Neoprene, Glasseal, Thermafab
Seam: "Guard Loc"

- All Duro Dyne Flexible Duct Connector utilize 24 or 28 gauge galvanized steel meeting ASTM-A-525 G60.
- Standard roll length - 100 ft.

Fabricating A Flexible Connection

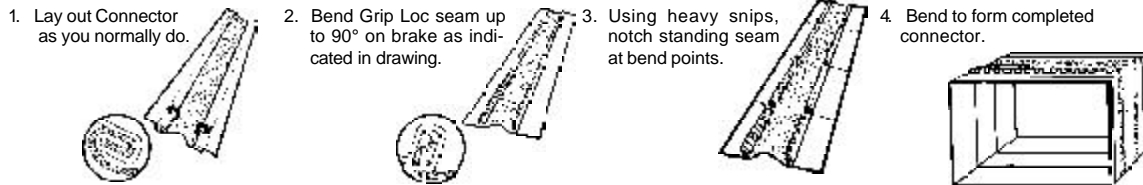
How to Stiffen Flexible Connector

When installing large size flexible connectors in a duct system, some type of stiffening agent is usually required to keep the unit relatively rigid. Some contractors use angle

iron, while in many cases a bar slip connection is used to achieve this result. Now it is possible to save valuable time and material by forming Duro Dyne's Grip Loc Seam found on

Metal Fab and Super Metal Fab, to rigidize the connector over long sections. Here is how it is done: This simple method of stiffening the sides of Duro

Dyne Flexible Connector can eliminate the costly addition of angle iron used to perform this job. **Note:** The stiffening method illustrated here is recommended only with Duro Dyne Grip Loc Connector.



TO DO THIS:

1. Cut through center of lock as indicated. Cut 1" to 1 1/2" deep to allow sufficient lap.

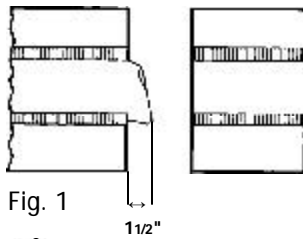


Fig. 1

2. From edge of connector, cut away metal as indicated. Metal falls away exposing fabric ready for seaming.

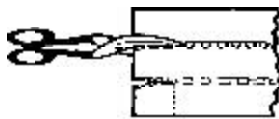


Fig. 2

3. You have two options to finish your joint.
A. FCA
B. Duro Stapler with Quad Seal

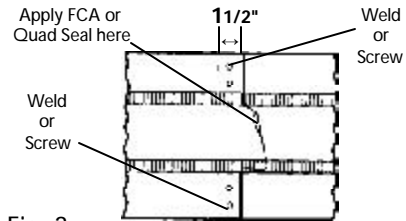


Fig. 3



3A. Apply one or two lines of FCA, sparingly, on fabric, under tongue. Press tongue down on adhesive. Rub gently and hold for 10 seconds. For use with Excelon, Neoprene, Durolon and Glasseal. (Fig. 3A)

FCA Adhesive
1 oz. bottles
Item# 5090



3B. Put a liberal amount of Quad Seal between the two fabric flaps & press the two pieces together to allow the Quad Seal to spread out. Roll the flap ends together & staple the seal (going through both pieces of fabric & the Quad Seal). Allow a minimum of 24 hours curing time before flexing the connection. For use with Excelon, Neoprene, Durolon, Dynaflex, Thermafab and Glasseal. (Fig. 3B)

4. For an airtight connection, apply duct sealer over metal joint. Refer to Duro Dyne's Adhesive Duct Sealer Catalog for further information on a suitable Duct Sealer.

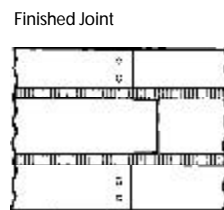


Fig. 4

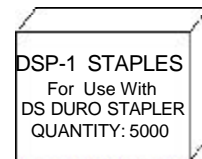
Duro Stapler and Staples

Duro Dyne's Flexible Connectors are preassembled metal-to-fabric which eliminates this difficult, time consuming shop operation. After forming the metal, the overlap can be riveted, screwed or spot welded.

Fabric seam is quickly closed using the handy **Duro Stapler**. The result is a sturdily constructed, low cost flexible connector which meets engineering specifications. See **Fabricating A Flexible Connection** above.



ITEM# 10065

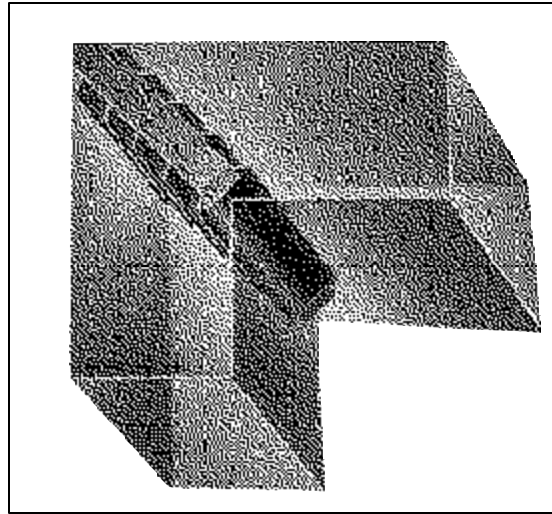


DSP-1 STAPLES
For Use With
DS DURO STAPLER
QUANTITY: 5000

ITEM# 10059

Vane Rail

Duro Dyne Vane Rail, made up of 24 gauge galvanized steel, is precision-stamped and slotted assuring uniform spacing of vanes, and the fastest, easiest, most economical construction of vane assemblies. Duro Dyne Vane Rail is specially embossed adding strength and sturdiness to the finished section, eliminating rattling. Vane Rail can be used to make quality turning vanes for any size elbow including change of size elbows.



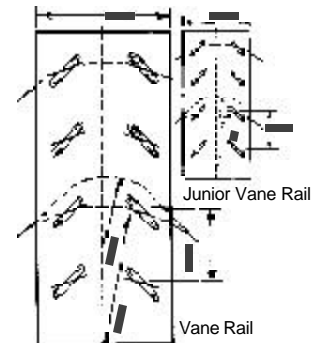
system, therefore air turning vane assemblies are used to guide air evenly around such turns. With today's high labor costs, it is expensive for shops to produce their own air turning assemblies. That is why Duro Dyne Vane Rail is a major contribution to sheet metal shops that require efficient, yet inexpensive air turning assemblies. With Duro Vane Rail, which is a pre-fab side rail, layout time is eliminated. Vanes can be sheared

Air travelling throughout a duct is slowed up when it reaches a right turn angle. This "slow-up" is detrimental to the efficiency of the duct

from scrap metal without tab cutting, and quickly assembled to rails with only one blow of a ball peen hammer.

Specifications and Ordering

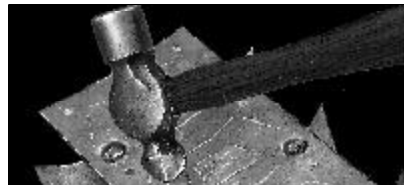
Item#	Code:	Description:
4002	VR-2	Vane Rail - 100 ft. Continuous Coils
4003	JVR-2	Junior Vane Rail - Two 100 ft. Continuous Coils (Easily Dispensed Together or Singulargly)



Fabricating Air Turning Vanes



Shear and form vanes as indicated. Position vanes in Vane Rail slot. Slots force vanes to take correct curve.



Secure the protruding vane with ball peen hammer.



Extra deep depression in Vane Rail allow for superior gripping action. Vane assembly is then fastened in elbow.

Duro Dyne National Corp., 81 Spence St., Bay Shore, NY 11706
 Duro Dyne East Corp., 81 Spence St. Bay Shore, NY 11706
 Duro Dyne West Corp., 15005 Marquardt Ave. Santa Fe Springs, CA 90670
 Duro Dyne Midwest Corp., 3825 Symmes Rd., Fairfield, OH 45011
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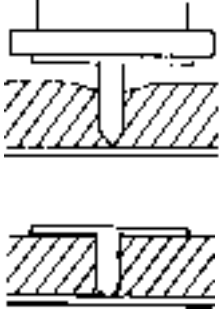
The Source For

INSULATION FASTENERS

WELD TYPE

RIB PIN® (CP) ECONO POINT (FTC)

Econo Point weld pins consist of a lathe cut pointed nail to assure uniform precise points and washer assembly. Only Duro Dyne Rib Pins have a dished washer, ribs for faster cooling and lathe cut points to assure uniform precise points. Both are used with MFPT, PBFS-14, FG1, and RH and FGMH pinspotters.



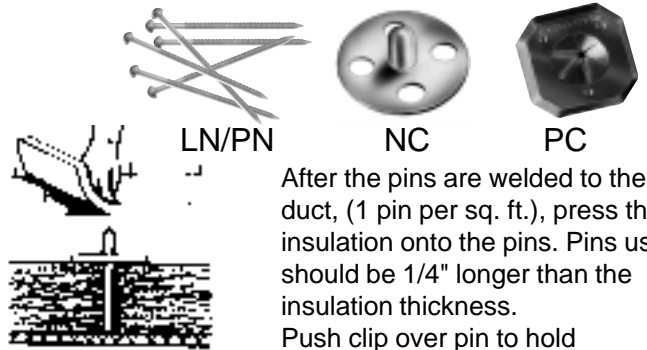
The needle sharp point enables the operator of the machine to easily push the weld pin through the insulation into firm electrical contact with the metal duct. Welding current is supplied by activating the weld transformers. Current flowing through the pin's point of contact creates instantaneous welds of extremely high strength.



Rib Pins available in 1/2", 3/4", 1", 1 1/2", 2", & 2 1/8" lengths. FTC available in 1/2", 3/4", 1"

SPOTTER PIN PN & LN

The spotter pin is welded to the sheet metal and the insulation is impaled over the nails. It is held in place with the addition of either metal or nylon washers. PC (metal) and NC (nylon) washers are used with PN's. LC (metal) and NC-2 (nylon) for LN's. Pins can be installed with DYN-O-LITE, LF, MFPT and PBFS-14 Pinspotters.



After the pins are welded to the duct, (1 pin per sq. ft.), press the insulation onto the pins. Pins used should be 1/4" longer than the insulation thickness. Push clip over pin to hold insulation firmly in place.

LN Pins available in 3/4", 1 1/2", 2 1/2", 3 1/2", 4 1/2" 5 1/2".
PN Pins available in 3/4", 1 1/4", 2", 2 1/2".

Gold Seal Pins

Self Sealing Pin (SSP)

Gold Seal Pins hold the duct liner in place and seal the hole. Heat activated gold adhesive on the underside of the washer secures the pin to the liner facing during the welding process!

- Adhesive coating insulates the underside of the washer to allow welding on foil faced insulation.
- Dished Gold Seal Pins also feature dished washers and lathe-cut points to insure consistent penetration of duct liner.
- Gold Seal Pins are designed for use with FG-1, RH and FGMH Multihead pinspotters.
- Gold Seal Pins available in 1/2", 3/4", 1" and 2" lengths.

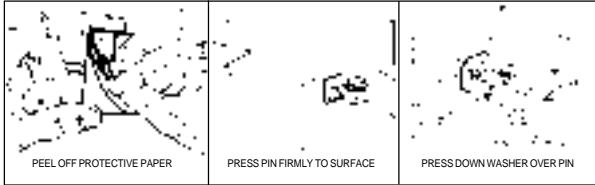


MECHANICAL TYPE

DYNASTICK®

SELF ADHESIVE INSULATION HANGER

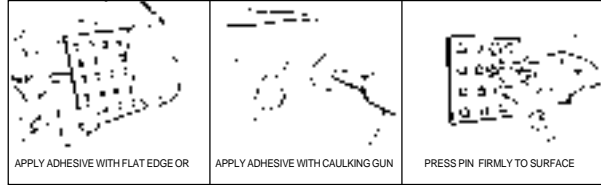
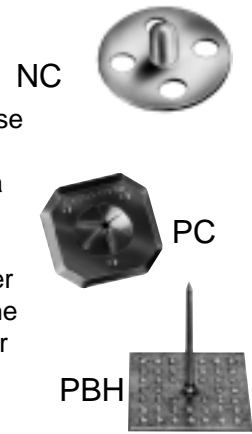
An insulation hanger with a self-stick base. Just peel the release paper from the hanger base and firmly press the base to the duct surface. Impale the insulation over the hanger nail and slip on the locking washer. Self-stick hangers adhere to clean metal surfaces and withstand temperatures of up to 175°F.



DYNASTICK®

INSULATION HANGER

Perforated base hangers for use with super strength mastic. Simply place a small amount of mastic on a perforated base and firmly press hanger against the duct surface. Impale the insulation over the hanger nail and slip on a locking washer. The mastic adheres to concrete, metal or wood surfaces and withstands constant temperatures up to 180°F.; intermittent up to 250°F.



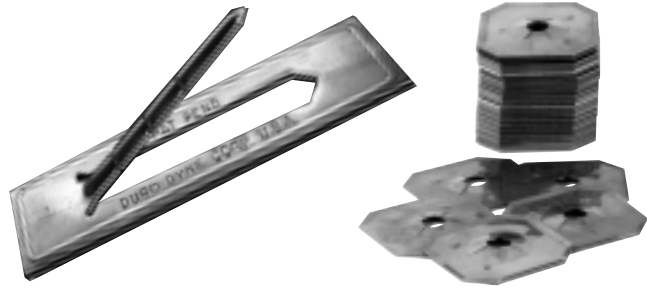
FLIPSTIX®

SELF ADHESIVE INSULATION HANGER WITH THE UNIQUE "ONE PIECE" DESIGN

Patent #5,325,964

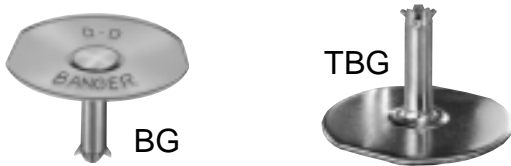
A unique insulation hanger with a self stick base. One fastener can be used for insulation up to 2" thick. Optional extension extends use for up to 6" thick insulation or wrap. It is the only fastener available in galvanized, aluminum and stainless steel.

Insulation can be secured simply by bending the tip of the extended pin or using supplied washers. Flipstix can be used on any clean metal or painted surface and will withstand temperatures of up to 175°F.

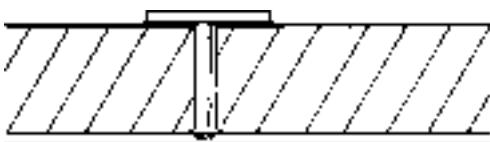


TRIPOD®

AND STANDARD BANGER IMPACT DRIVEN FASTENERS



Easy to install - place the liner over the sheet metal and drive the banger through the insulation. Upon impact, the jaws (three on Tripod for added stability, two on Standard Banger), of the fastener penetrate the metal and lock securely within the thickness of the metal itself. (Always place a hardened steel block behind the sheet metal at the point of impact). Bangers can be installed with model DHH Double Headed Hammer or AB-5 Automatic Banger Setter.



AB-5

AUTOMATIC BANGER SETTER

Item #27016

For use with 1/2" to 1 1/2" Tripod or Standard Bangers



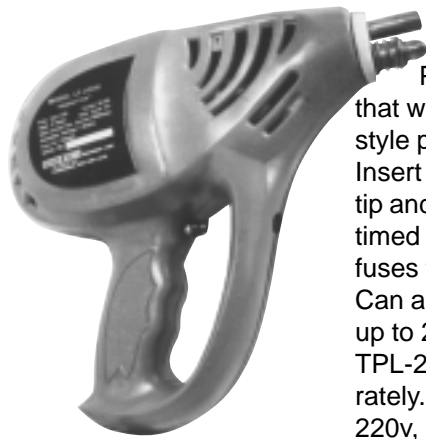
Installs Banger Type Fasteners (Tripod & Standard) in Ductwork 26 to 16 gauge. Requires 110 Volt, 50 to 60 hz; fuse for 15 Amps. A source of 85 P.S.I. air is required. The footswitch is depressed, and the machine inserts a fastener through the insulation and into the steel.

WELD MACHINES

LF

110 Volt - Item# 27013

HAND HELD PINSPOTTER 220 Volt - Item# 27014



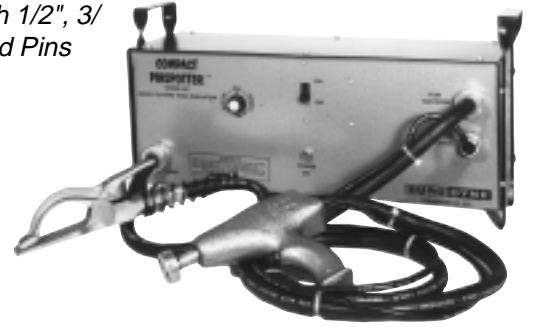
Portable unit (9 lbs.) that welds 14 gauge PN style pins up to 22 gauge. Insert PN Pin into magnetic tip and depress trigger. A timed burst of electricity fuses the pin to the steel. Can also weld LN style pins up to 2 1/2" with the use of a TPL-2 tip purchased separately. Available in 110v & 220v, 50 to 60hz; fuse for 15 amps.

MFPT

Item #27113

COMPACT PINSPOTTER

For use with 1/2", 3/4" & 1" Weld Pins



Welds SSP, CP, FTC, PN or LN type fastener to ductwork up to 24 Gauge. Requires 220 Volt, 50 to 60 hz; fuse for 30 Amps. Place a CP pin on the magnetic tip. Insert the pin through the insulation, give the pin a 1/4 twist, and depress the trigger switch. For LN type fasteners use a TPL-2 Tip. For PN type fasteners use a TP-2 Tip.

PBFS-14

Item #27371

HEAVY DUTY PINSPOTTER

For use with 1/2" to 2" Weld Pins



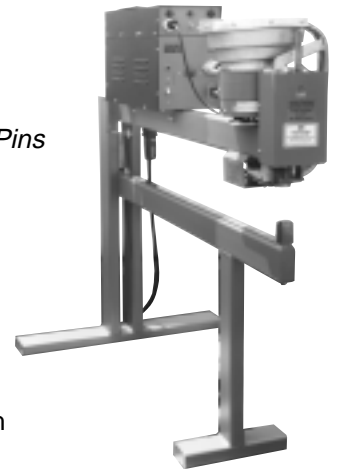
Welds SSP, CP, FTC, PN or LN type fasteners to ductwork up to 18 gauge. Requires 220 Volt, 50 to 60 hz; fuse for 60 Amps. Place a pin on the magnetic tip, insert the pin through the insulation, give the pin a 1/4 twist and depress the trigger switch. For LN type fasteners use a TPL-2 Tip. For PN type fasteners use a TP-2 Tip.

FG-1

Item #17299

AUTOMATIC BULK FEED PINSPOTTER WITH FIVE FOOT THROAT

For use with 1/2" to 2" Weld Pins



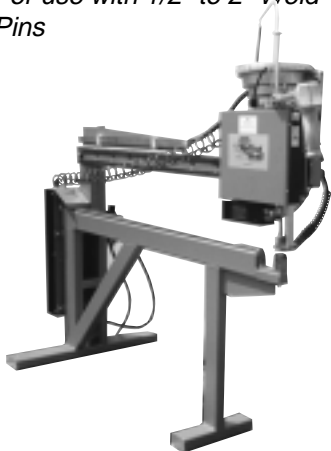
Welds SSP, CP & FTC type fasteners to ductwork up to 16 gauge. Requires 220v, 50 to 60hz; fuse for 30amps. Source of 85 P.S.I. air required. Footswitch actuated, fasteners are inserted through the insulation and welded in place.

RH

Item #17398

ROLLING HEAD AUTOMATIC PINSPOTTER

For use with 1/2" to 2" Weld Pins



Welds SSP, CP & FTC type fasteners to ductwork up to 16 gauge. Requires 220v, 50 to 60hz. fuse for 30 amps. Source of 85 P.S.I. required. Position fastener over insulation and depress trigger switch. Machine inserts the fastener through insulation and welds it to the steel.

TSP/TBW

PORTABLE SPOTWELDERS

TSP-110 Volt - Item #9200
TSP-220 Volt - Item #9201
TBW-220 Volt - Item #9202



Model TSP is available as either 110v or 220v, 50 to 60hz. welder with a capacity of up to .10" galvanized steel combined.

Model TBW uses 220v, 50 to 60hz. with a capacity of up to .21" galvanized steel combined. An optional stand and water cooled arms with tips are available for all units.

INSULATION CUTTERS

LS

LINER SIZER

For use with 1/2" to 2" Liner

Item #28075



Manual insulation cutter slits fiberglass insulation to length and width. Operator feeds the insulation with a crank handle to the desired length. An adjustable slitter blade automatically cuts to desired width. The operator then pulls the crosscut blade across the machine and removes the sized insulation.

PLS

AUTOMATIC INSULATION CUTTER

L to R Flow - Item #39075

R to L Flow - Item #39251

For use with 1/2" - 2" liner



For accurate cutting of fiberglass insulation. Electric eye controls fully automatic "run-out" and cutting of insulation. Requires 110v power; fuse for 15 amps. A source of air is required. Must specify flow when ordered.

ADHESIVE APPLICATORS

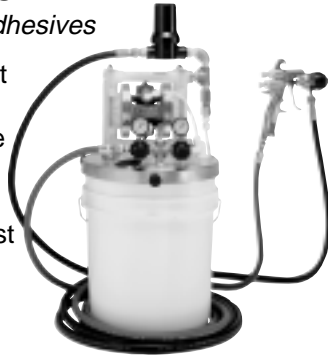
SUPER SPRAYFAST

5 gallon system - Item #5150
55 gallon system - Item #5155

ADHESIVE APPLICATOR

For use with WIT & WSA Adhesives

The new Super Sprayfast is an air powered adhesive spray system designed for use with 5 gallon or 55 gallon containers of water based adhesives. The Super Sprayfast incorporates an Acetal / Teflon diaphragm pump, circulating system and surge tank. Requires 60-70 PSI



MINI SPRAYFAST

Item #39241

ADHESIVE APPLICATOR

For use with WIT & WSA Adhesives



A low cost versatile air powered adhesive spray system. Can be used with all size containers of Duro Dyne water based adhesives. Lightweight and compact, with a self priming pump. Requires 80 PSI air at 15-24 cfm.

GBAC

L to R Flow - Item #39171

R to L Flow - Item #39250

ADHESIVE APPLICATOR

For use with WSA & WIT Adhesive

Applies Duro Dyne WIT or WSA water base adhesive to insulation in preparation for application to sheet metal. Requires 110v; fuse for 15 amps. A source of air is required. Must specify flow when ordered.



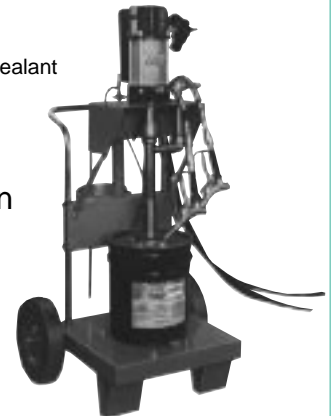
Pumpurr

Item #5076

Duct Sealing System #PP46-2

For use with DLS Duct Lock Sealant

A portable air powered application system for applying duct sealer in Pittsburgh and Snaplock Seams. Features two guns with 25' of hose.



DURO DYNE EAST
130 ROUTE 110
FARMINGDALE, NY 11735
516-249-9000
FAX: 516-249-8346

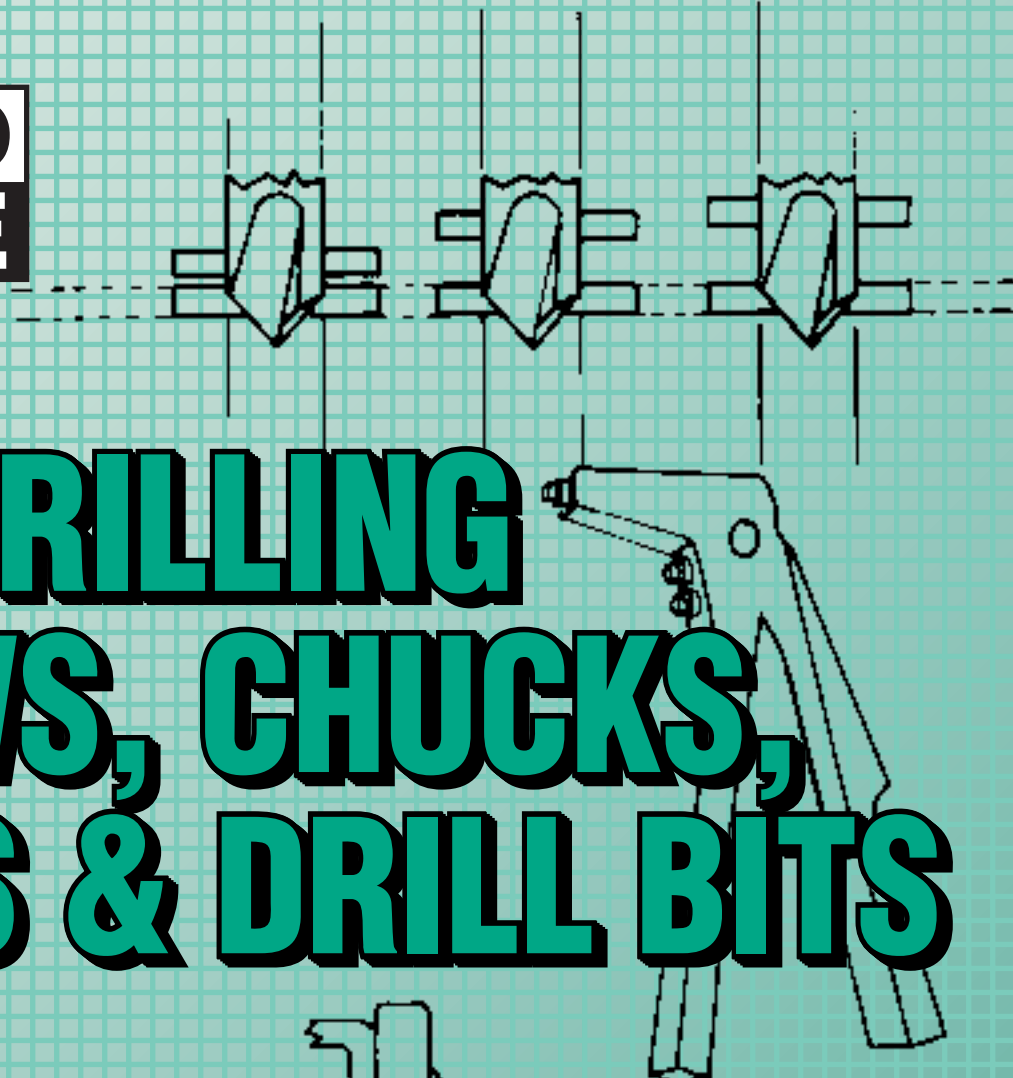
DURO DYNE MIDWEST
3825 SYMMES RD.
FAIRFIELD, OHIO 45011
513-870-6000
FAX: 513-870-6005

DURO DYNE WEST
15005 MARQUARDT AVE
SANTA FE SPRINGS, CA 90670
562-926-1774
FAX: 562-926-5778

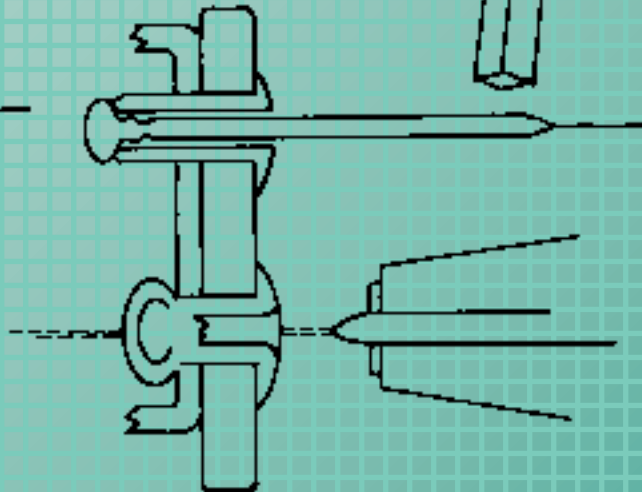
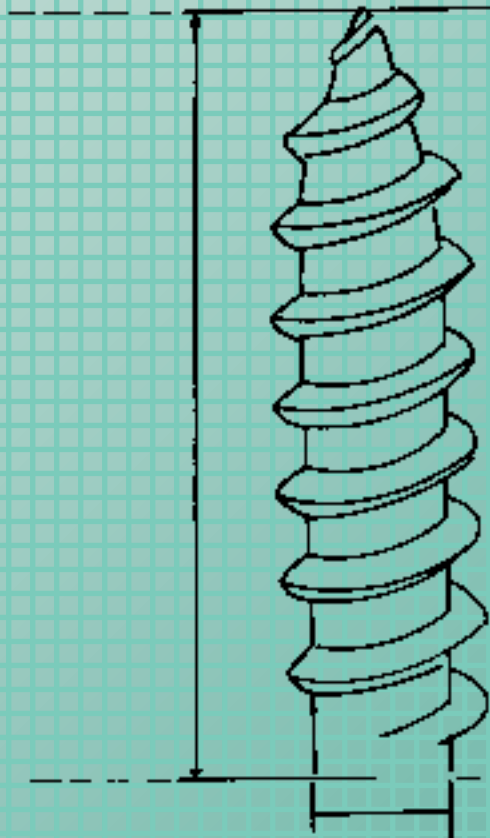
DURO DYNE CANADA
LACHINE, QUEBEC
H8T 1B3
514-422-9760
FAX: 514-636-0328



**DURO
DYNE**



**SELF DRILLING
SCREWS, CHUCKS,
RIVETS & DRILL BITS**



DURO DYNE EAST CORP.
Farmingdale, NY 11735

DURO DYNE MIDWEST
Fairfield, OH 45011

DURO DYNE WEST
Santa Fe Springs, CA 90670

DURO DYNE INTERNATIONAL
Farmingdale, NY 11735

Super Sabers®

Self Piercing Screws For Light To Medium Gauge

Designed for light-to medium-gauge materials, the Super Saber Point offers one-step fastening. Its time saving performance is related to the saber-sharp piercing point with a "fine-cut" machine thread, which pierces the metal upon contact. Once pierced, the thread propels the screw through metal rapidly and almost without effort.



* All Standard Saber Screws are 1/4" Head

ITEM SIZE	HUNDRED PACK (SAC) ITEM#	TWO-FIFTY PACK (SAQ) ITEM#	FIVE-HUNDRED PACK (SAF) ITEM#	THOUSAND PACK (SAT) ITEM#	BUCKET PACK (SAP) ITEM#	QUANTITY PER BUCKET*	BULK PACK (SAB) ITEM#	QUANTITY PER BULK
6X3/8	14165	14300	14320	14158	15153	5M	15108	20M
7X1/2	14166	14301	14321	14159	15154	5M	15109	17M
8X1/2	14167	14302	14322	14160	15155	5M	15110	14M
8X3/4	14168	14303	14323	14161	15156	4M	15111	10M
8X1	14193	14304	14324	14174	15167	3M	15124	7M
8X1-1/2	14172	14305	14222	14175	15168	3M	15125	4M
8X2	14173	14306	14221	14176	15169	3M	15126	3M
10X1/2	14169	14307	14327	14162	15157	4M	15112	10M
10X3/4	14170	14308	14328	14163	15158	3M	15113	7M
10X1	14171	14309	14329	14164	15170	3M	15114	6M

SPECIAL 5/16" HEAD SABER SCREWS	
ITEM SIZE	CODE & ITEM #
10x3/4-5/16 Head	SAB 15177

SPECIAL PAINTED SABER SCREWS		
ITEM SIZE	CODE & ITEM #	COLOR
8x2	SAC 15180	White

PRO POINTS®

Self Drilling Screws For Heavy Gauge

Pro-Point Screws, with a precision formed drill point, are designed to fasten heavy gauge metals. These screws assure accurately sized holes for maximum holding power, eliminating the need for hole preparation and frequent alignment problems encountered in parts assembly.



ITEM SIZE	DRIVER SIZE	DRILL PT. SIZE	MAX. DRILL CAPABILITY DEC.	MAX. DRILL CAPABILITY GA.	MAX. MATL GRIP IN.	HUNDRED PACK (PPC) ITEM#	FIVE-HUNDRED PACK (PPF) ITEM#	THOUSAND PACK (PPT) ITEM#	BUCKET PACK (PPP) ITEM#	BUCKET PACK (PPP) QTY.	BULK PACK (PPB) ITEM#	BULK PACK (PPB) QTY.
8X1/2	1/4	2	.100	12	1/4	.2605 14177	14340	14185	15159	5M	15127	10M
8X5/8	1/4	2	.100	12	3/8	.3855 14178	14341	14186	15160	5M	15128	10M
8X3/4	1/4	2	.100	12	1/2	.5105 14179	14342	14187	15161	4M	15129	10M
10X1/2	5/16	2	.110	11	15/64	.2344 14180	14343	14188	15162	4M	15130	8M
10X5/8	5/16	3	.175	7	9/32	.2813 14181	14344	14189	15163	3M	15131	5M
10X3/4	5/16	3	.175	7	13/32	.4603 14182	14345	14190	15164	3M	15132	5M
10X1	5/16	3	.175	7	21/32	.6503 14183	14346	14191	15166	3M	15133	5M
12X3/4	5/16	3	.210	5	23/64	.3741 14184	14347	14192	15175	3M	15134	5M

*Speed Data: Drill speeds from 1800 to 2500 are recommended. #8 and #10 screws can be installed up to 3600 rpm.*Screws also available in other packaged quantities

Screw Installation

Electric Drill

Use 1/4" capacity low torque drill with speed from 1800-2500 RPM.



Drill Chuck

Duro Dyne 1/4" and 5/16" socket sizes are designed with a heavy-duty magnet to hold screws securely in position and are able to withstand impact of usage without undue wear.

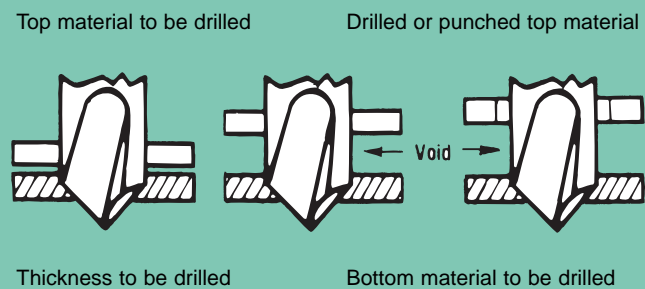
Screw Length for Super Sabers

Must be sufficient to engage multiple layers of metal being fastened. With two pieces of light-gage metal, unsupported back piece may push away under pressure. Screw length must be long enough to engage back piece.

Screw Length for Pro Points

Drill point length must exceed total thickness of material to be fastened including gaps. Thread length must also exceed combined material thickness.

Drill Point Length Must Exceed Total Thickness

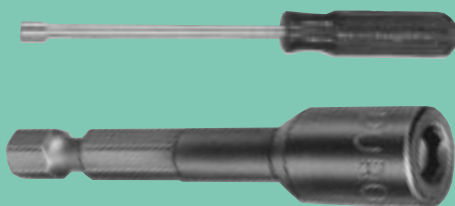


Technique

Set screw in chuck, press point firmly against metal, and start drill. As screw bites into metal, release trigger to allow drill momentum to seat screw without stripping. Heavier gages of metal require greater pressure.

Drill Screw Chucks & Drivers

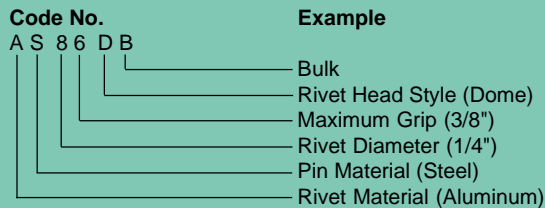
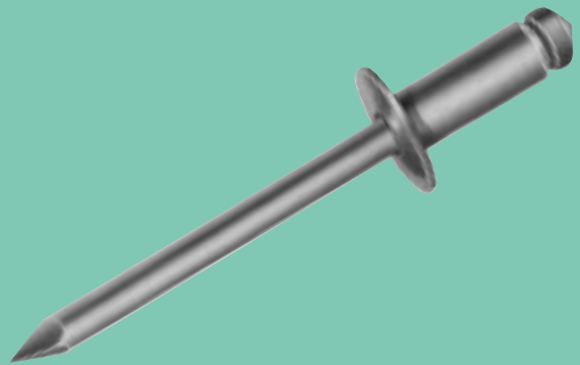
Super hard, yet shock resistant, Duro Dyne Chucks and Xcelite Nutdriver outperform all others. A strong, permanent magnet holds screw firmly in position. Precision hex hole resists reaming effect of screw head during extended usage.



ITEM #	CODE	FOR SCREW HEAD SIZE	OVERALL LENGTH
16008	DCL-14	1/4"	2 5/8"
16009	DCL-516	5/16"	2 5/8"
871097	L8MV	1/4"	10 1/8"
871100	L10MV	5/16"	10 1/8"

Pin Rivets™

Pin Rivets are strong, hollow rivets assembled onto a solid mandrel, manufactured to strict quality control standards, and available in a wide range of sizes and styles to provide the proper rivet for every type of application. Pin Rivets are inserted and set from the same side, they are particularly practical where there is no access to the reverse side of the work.



PART 1	PART 2	PART 3	PART 4	PART 5 & 6
Rivet Material	Pin Material	Rivet Diam. (in 32nds of an inch)	Maximum Grip (in 16ths of an inch)	Rivet Head Style
S=Steel	S=Steel	3 = 3/32"	1 = 1/16"	D=Dome
A=Aluminum	A=Aluminum	4 = 1/8"	2 = 1/8"	C=Countersunk
C=Copper	C=Copper (coated steel)	5 = 5/32"	3 = 3/16"	LF=Large Flange
X=Stainless Steel	X=Stainless Steel	6 = 3/16"	4 = 1/4"	B=Bulk
		8 = 1/4"	5 = 5/16"	
			6 = 3/8"	
			8 = 1/2"	
			10 = 5/8"	

ITEM#	BULK PACK DESCRIPTION	QTY.
STEEL BODY / STEEL MANDREL		
29001	SS41DB	10M
29002	SS42DB	10M
29003	SS43DB	10M
29004	SS44DB	10M
29005	SS46DB	10M
29006	SS52DB	8M
29007	SS54DB	8M
29008	SS56DB	8M
29009	SS62DB	5M
29010	SS64DB	5M
29011	SS66DB	5M
29012	SS68DB	5M
ALUMINUM RIVET/STEEL PIN		
29027	AS32DB	10M
29028	AS34DB	10M
29029	AS41DB	10M
29030	AS42DB	10M
29031	AS43DB	10M
29032	AS44DB	10M
29033	AS45DB	10M
29034	AS46DB	10M
29035	AS52DB	8M
29036	AS53DB	8M
29037	AS54DB	8M
29038	AS56DB	8M
29039	AS62DB	5M
29041	AS64DB	5M
29042	AS66DB	5M
29043	AS68DB	5M
29044	AS610DB	5M
29021	AS42CB	10M
29022	AS43CB	10M
29023	AS44CB	10M
29054	AS66LFB	5M
29055	AS68LFB	5M
29056	AS610LFB	5M

ITEM#	BULK PACK DESCRIPTION	QTY.
STAINLESS BODY / STAINLESS MANDREL		
29013	XX42DB	10M
29014	XX44DB	10M
STAINLESS RIVET / STEEL PIN		
29015	XS42DB	10M
29016	XS44DB	10M
COPPER PLATED RIVET & PIN		
29050	CC42DB	10M
29051	CC44DB	10M
ALUMINUM RIVET/ALUMINUM PIN		
29057	AA32DB	10M
29058	AA34DB	10M
29059	AA41DB	10M
29060	AA42DB	10M
29061	AA43DB	10M
29062	AA44DB	10M
29063	AA45DB	10M
29064	AA46DB	10M
29065	AA52DB	8M
29066	AA54DB	8M
29067	AA56DB	8M
29068	AA62DB	5M
29070	AA64DB	5M
29071	AA66DB	5M
29072	AA68DB	5M
29073	AA610DB	5M
29074	AA42CB	10M
29075	AA43CB	10M
29076	AA44CB	10M
29084	AA66LFB	5M
28085	AA68LFB	5M
29086	AA610LFB	5M

* Rivets are also available in thousand packs.

Ratchet Action Riveter

Duro Dyne's Ratchet Action Riveter features:

- A handle opening-which you can set for a comfortable grip and maximum power.
- Ejects broken stems from the front.

The Ratchet Action Riveter is used for setting all popular diameter blend rivets. You need only to select and insert the proper nozzle to accomodate the rivet.



PRK-4 Kit



PR-4 Gun

Item#	Model#	Description	For Rivet Dia.
22001	PR-4	Ratchet-Action Gun	1/8", 5/32", 3/16"
22002	PRK-4	Contains: PR-4 Gun, 200 asst., popular rivets, 50 back-up washers, #30 "Super T" Drill Bit.	1/8", 5/32", 3/16"

Drill Bits

Hot Rolled Forged



- ✓ **Fast Cutting - Fast Starting**
135° split point starts hole where you place it. Drill does not "walk" or mar metal or waste time.
- ✓ **Long Wearing - Extra Hard**
High Vanadium steels-specially hardened-make "Super T" Drill Bits harder and longer wearing than others.
- ✓ **Heavy Web Reduces Breakage**
Web is the portion which is solid steel from point to shank. "Super- T" has heavier web than ordinary bits. This means more flexibility, less breakage.
- ✓ **Extra Strength - Less Snapping**
Roll forging allows bits to withstand stress of torsional twisting. This happens whenever a drill bit binds. Result: Less snapping!



ITEM #	MODEL #	SIZE	OVERALL LENGTH
24031	TEDB 1/8	1/8	2 INCHES
24032	TEDB #30	#30	2 INCHES

DRILL BIT SIZE SELECTION CHART

SIZE	DECIMAL EQUIV.	PACKED 10 PER POUCH		PACKAGED 100 PER BOX	
		ITEM #	DESC.	ITEM #	DESC.
#41	.0960	24001	TD-41	24017	TDB-41
7/64	.1093	24002	TD-7/64	24018	TDB-7/64
#31	.1200	24003	TD-31	24019	TDB-31
1/8	.1250	24004	TD-1/8	24020	TDB-1/8
#30	.1285	24005	TD-30	24021	TDB-30
9/64	.1405	24006	TD-9/64	24022	TDB-9/64
5/32	.1562	24007	TD-5/32	24023	TDB-5/32
#20	.1610	24008	TD-20	24024	TDB-20
11/64	.1719	24009	TD-11/64	24025	TDB-11/64
3/16	.1875	24010	TD-3/16	24026	TDB-3/16
#11	.1910	24011	TD-11	24027	TDB-11
7/32	.2187	24012	TD-7/32	24028	TDB-7/32
1/4	.2500	24013	TD-1/4	24029	TDB-1/4
9/32	.2811	24014	TD-9/32	24030	TDB-9/32

Duro Dyne National Corp., Route 110, Farmingdale, NY 11735

Duro Dyne East Corp., Route 110, Farmingdale, NY 11735

Duro Dyne West Corp., 15005 Marquardt Ave. Santa Fe Springs, CA 90670

Duro Dyne Midwest Corp., 3825 Symmes Rd., Fairfield, OH 45011

Duro Dyne Canada Inc., Lachine, Quebec H8T1B3

Duro Dyne International Division, Farmingdale, NY 11735

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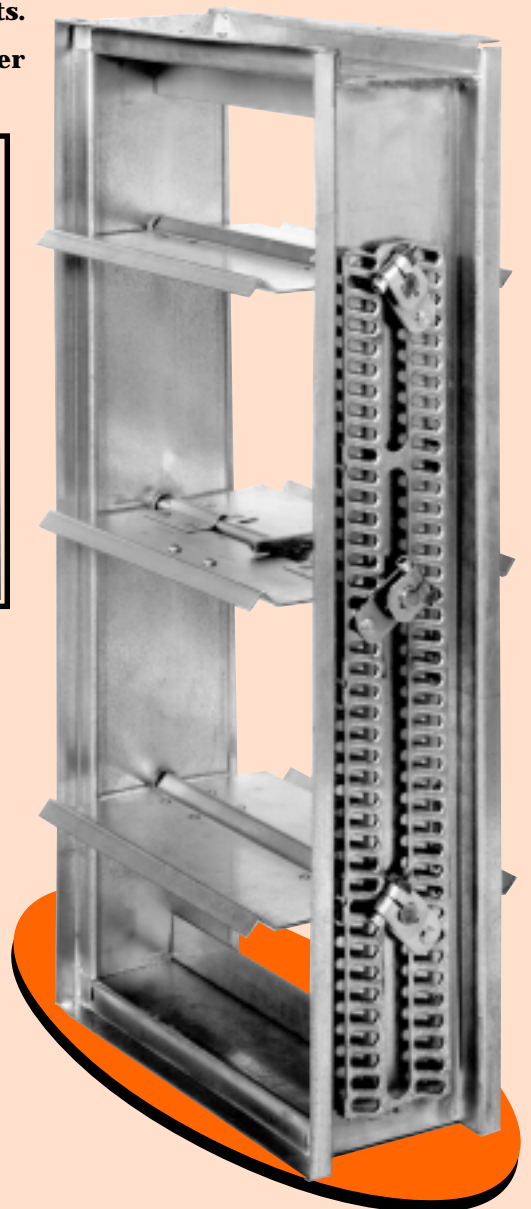
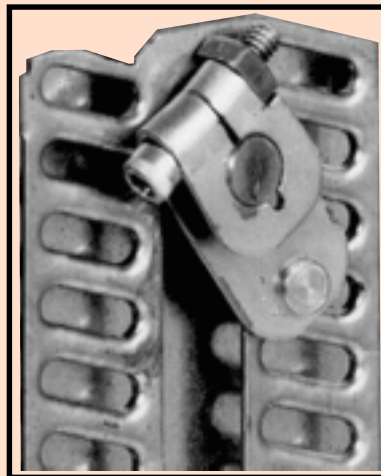
SIDE-GLIDETM SYSTEM

Exclusively from Duro Dyne!

Duro Dyne has long been a pioneer in damper hardware. Parallel and opposed hardware sets featuring exclusive self aligning "Neva Bind" brackets, have been the preferred linkage for smooth reliable operation. Now Duro Dyne engineering has resulted in a breakthrough concept for side damper linkage.

Side damper linkage has many variations. Gears, chain and linkage rods are all typical methods of coordinating blade movement and each method has its own inherent disadvantages, such as cost, being difficult to assemble or adjust and the customization of parts.

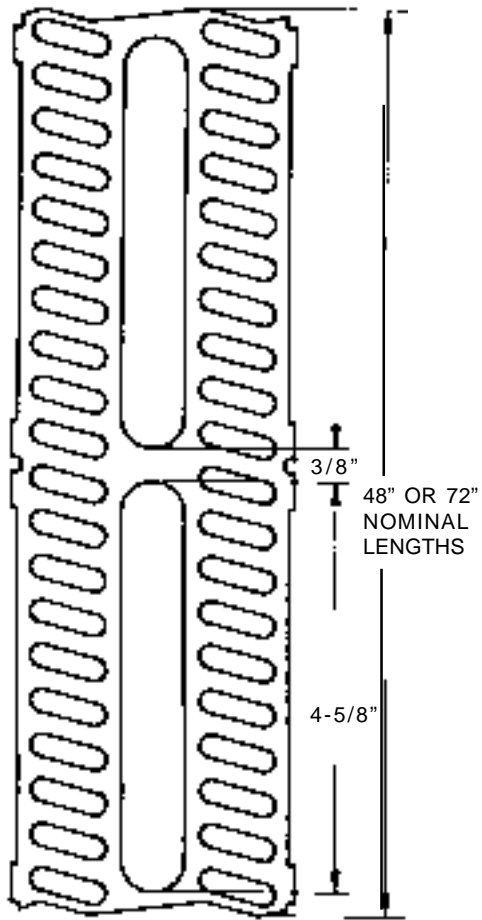
With Duro Dyne's new patented Side-GlideTM hardware damper blade linkage and adjustment becomes simple. Consisting of one standard linkage rail per damper and one linkage bracket per blade, assembly and adjustment is easy. It makes no difference whether you are making parallel or opposed blade dampers or varying the size of the blades; the rail and brackets are always the same.



KEY FEATURES

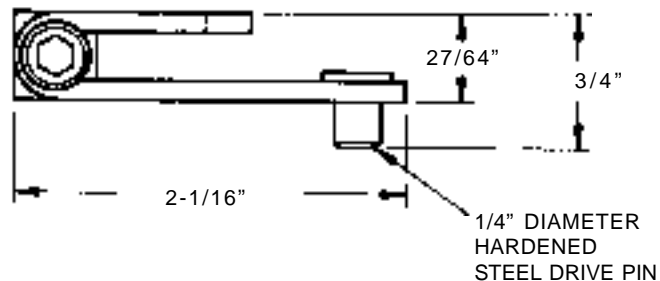
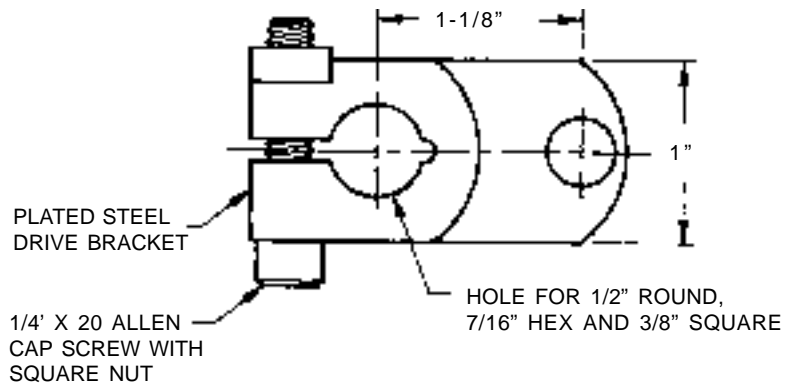
- Assemble damper linkage in seconds
- Fewer moving parts-less noise and adjustment
- Mix blade sizes on damper without special preparation
- Works with parallel or opposed blades
- Blades can be as small as 3"
- Fits 1/2" round, 7/16" hex or 3/8" square rod
- Rail available in 4' and 6' lengths
- Patents pending

LINKAGE RAIL



COINED WEAR SLOT

LINKAGE BRACKET



SPECIFICATIONS

Linkage Rail Material: 18 gage galvanized steel

Linkage Bracket Material: Minimum 18 gauge zinc plated cold rolled steel

Linkage Bracket Pin: Zinc plated case hardened steel

Damper Frame Requirements: Minimum depth-7/8" Minimum width-3-3/8"

ORDERING INFORMATION

PART#	CODE	DESCRIPTION	PACKAGING
2116	SDB	Linkage Bracket	100 per carton
2117	SDR-4	Linkage Rail-4 Foot	10 lengths per cartons
2118	SDR-6	Linkage Rail-6 Foot	10 lengths per cartons



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DuroZone Designed For Comfort



Zoning for Comfort Has Always Made Sense.

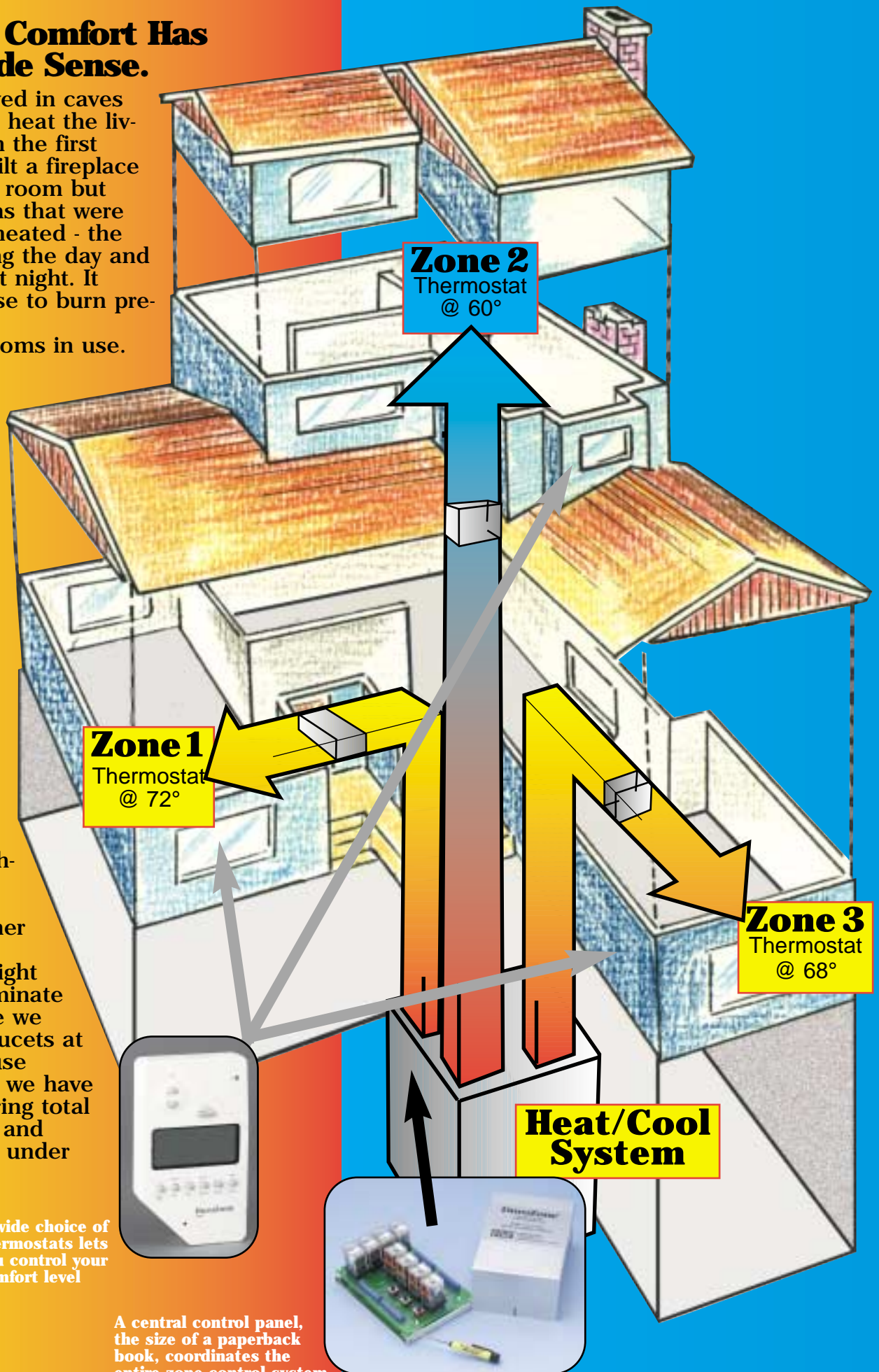
When people lived in caves fire was used to heat the living space. When the first houses were built a fireplace was put in each room but only those rooms that were occupied were heated - the living area during the day and the bedrooms at night. It made good sense to burn precious wood to heat only the rooms in use.

As heating systems became more sophisticated this simple concept was forgotten. One heat source in the building controlled by one sensor (thermostat) became the standard for system design. The inefficiency of this is obvious; a single thermostat can not maintain a constant temperature throughout a building.

We zone the other systems in our buildings...like light switches to illuminate the space where we are...we have faucets at each place we use water...and now we have **DuroZone** to bring total air conditioning and heating comfort under our control.

A wide choice of thermostats lets you control your comfort level

A central control panel, the size of a paperback book, coordinates the entire zone control system



Zoning Means Comfort

As the sun beats down on any one side of a building, the rooms on that side are warmed. The opposite is true on the side exposed to wind and shade. Simply... control means comfort.

With **DuroZone** temperature in those areas are maintained at the settings of your choice!

Control Means Savings

By heating or cooling only the areas you need or are using - you save energy and that means money! Depending upon the size and utilization of the building, savings can range from 10 to 30%. For a homeowner this could amount to \$200 to \$300. For a building owner this could be in the thousands.



How It's Done

DuroZone puts a separate thermostat in different areas of the home or building. In a home this may be the bedrooms, living/rec areas and kitchen/dining areas. In an commercial building individual offices and conference rooms may be zoned. Each thermostat controls a damper which directs the warm or cool air where and when you want it.

New Home or Older Home?

New construction with a **DuroZone** system has virtually no effect on its completion date and typically adds less than 1% to overall cost.

Retrofit jobs allow you to be a Comfort Specialist instead of just another heating and air conditioning contractor.



What is zoning and why is it needed?

W

hen you enter your home in the evening and you reach over to turn on the lights, do all the lights in your entire home come on? No! That would be ridiculous. The lights for that room, and that room only, come on. Can you imagine the expense of running all the lights in the house just to have light in one area of your home? You would have to run downstairs to turn out the lights when you're ready for bed. Not only would this be inconvenient, expensive, and uncomfortable, but it is unnecessary with today's technology. The lights in your home are zoned. This zoning allows you to receive the comfort, reliability, economy, and control that best suit your needs.

If not having zoning for the lights in your home would be ridiculous, why would you accept an unzoned heating or cooling system? If you have a forced air heating system, and it is unzoned, the whole house is heated or cooled when the single thermostat calls. Each time you desire comfort, you pay to run the equipment for the whole home. Consider the time it takes for the comfort you desire to reach you, while the areas that did not require conditioning are being over heated or over cooled. You have paid to create an uncomfortable environment in an area of your home.

With zoning, the only area to receive the condition you desire is the area you chose. It is not a case of how much you are willing to pay for zoning. It is a question of how much you are willing to pay for that which you do not want. Without zoning, each time your equipment comes on, you are paying to condition areas that do not need it.

Zoning with **DuroZone** will bring to your home "Comfort beyond your expectations" by directing comfort directly to the areas needed.

Zoning with **DuroZone** will bring control to your home by giving each area zoned its own comfort environment.

Zoning with **DuroZone** will bring reliability to your home heating and cooling system, as you experience the right temperature at the right time in all zoned areas: "Comfort how you need it, when you need it."

Zoning with **DuroZone** will bring economy to your home heating and cooling system by using less fuel and electricity as it focuses conditioning only where it is needed. Your home equipment will require less service and will last longer due to the diminished demand upon it.

What makes DuroZone so different from other zone systems ?

A

t **DuroZone** we have taken the time to produce zoning equipment that is easy to understand, easy to install, and easy to service. Some of our value added features are:

- NEOPRENE GASKETING ON RECTANGULAR DAMPERS FOR A PRECISE FIT •
 - DAMPER CLIP TECHNOLOGY FOR SAFE, FAST INSTALLATION •
 - SNAP ON/OFF MOTORS FOR EASY INSTALLATION AND SERVICE •
 - SOLID ALUMINUM RECTANGULAR DAMPER CONSTRUCTION REQUIRING NO CHANNELS OR SUPPORTS •
- DESIGN CAPABILITIES OF UP TO 800 SQ. IN. • FAN PROTECTION •
 - INTERCHANGEABLE CONTROL PANEL RELAYS •

To prove our faith in the product we manufacture we offer the longest warranty in the business - three years. This is a "no hassle" warranty which fully covers all **DuroZone** products. With **DuroZone** you can now offer your customer the best and most reliable zoning product available.

RECTANGULAR DAMPER SIZING CHART

First number indicates nominal CFM @ 800 FPM Second number indicates maximum CFM @ 1200 FPM

“A”	FACE PLATE “B” DIMENSION									
	6”	8”	10”	12”	14”	16”	18”	20”	22”	24”
6”		245 (370)	310 (460)	370 (550)	420 (615)	470 (700)	520 (780)	570 (860)	620 (940)	670 (1000)
8”	245 (370)	340 (5160)	420 (610)	500 (740)	570 (860)	620 (960)	720 (1070)	780 (1170)	860 (1280)	920 (1400)
10”	310 (460)	420 (610)	520 (780)	620 (920)	720 (1070)	800 (1200)	900 (1350)	1000 (1500)	1100 (1650)	1180 (1780)
12”	370 (550)	500 (740)	620 (920)	750 (1125)	860 (1300)	980 (1470)	1100 (1650)	1200 (1800)	1325 (2000)	1430 (2150)
14”	420 (615)	570 (860)	720 (1070)	860 (1300)	1000 (1500)	1150 (1750)	1300 (1950)	1430 (2150)		
16”	470 (700)	620 (960)	800 (1200)	980 (1470)	1150 (1750)	1330 (2000)	1480 (2200)			
18”	520 (780)	720 (1070)	900 (1350)	1100 (1650)	1300 (1950)	1480 (2200)				
20”	570 (860)	780 (1170)	1000 (1500)	1200 (1800)	1430 (2150)					
22”	620 (940)	860 (1280)	1100 (1650)	1325 (2000)						
24”	670 (1000)	920 (1400)	1180 (1780)	1430 (2150)						

ROUND DAMPER SIZING CHART

Item #	Code:	Nom. Dia.	Nom. CFM (800 fpm)	Max. CFM (1200 fpm)
35038	RD-5	5 Inches	115	160
35039	RD-6	6 Inches	155	235
35040	RD-7	7 Inches	210	320
35041	RD-8	8 Inches	275	415
35042	RD-9	9 Inches	350	525
35043	RD-10	10 Inches	440	650
35044	RD-11	11 Inches	525	780
35045	RD-12	12 Inches	610	940
35046	RD-13	13 Inches	740	1100
35047	RD-14	14 Inches	850	1275
35057	RD-16	16 Inches	1100	1650
35058	RD-18	18 Inches	1400	2100

RECTANGULAR PRESSURE RELIEF DAMPERS

Item #	Description:	Bypass @ 1200 FPM
35063	DD 12 x 8	700 CFM
35064	DD 18 x 8	1100 CFM
35068	DD 20 x 10	1600 CFM
35069	DD 20 x 12	1900 CFM

ROUND PRESSURE RELIEF DAMPERS

Item #	Description:	Bypass @ 1200 FPM
35070	DDRD-8	400 CFM
35071	DDRD-10	650 CFM
35072	DDRD-12	950 CFM
35073	DDRD-14	1300 CFM
35074	DDRD-16	1700 CFM

Planning and installation

D

uroZone offers two distinct zoning systems:

SMZ Zone Control System and ComfortMax Comfort System.

The SMZ 2, 3, and 4 systems use a primary thermostat for Zone One that has a subbase which designates the mode of operation (Heating or Cooling). This thermostat also controls constant fan operation. All SMZ panels have switches so you can determine whether a zone participates in constant fan mode or not. The additional zones require only a three wire thermostat with R,W, and Y terminals.

The SMZ is also available in a “first come, first served” auto-changeover design called SMZ-AC. The SMZ-AC is a three zone system and is compatible with virtually any thermostat currently on the market.

ComfortMax is a proprietary communicating thermostat based Zoning system. This system is a state-of-the-art, multifunction, heat pump compatible, zone intelligent system. Each zone can control the mode of operation (Heating/Cooling), along with functions such as auto-changeover and multi-staging.

Design considerations

D

Designing a zone system for a new installation is slightly different than designing a zone system for a retrofit or existing structure, but the guidelines are no more difficult to apply than those for existing duct layout and design. A little common sense and preparation will resolve most problems before they occur.

While zoning can offer considerable savings in energy and equipment function costs, the main goal in zoning a home or structure is to provide greater comfort to the home owner or occupants than is achieved through a single thermostat system. When designing a new system, the following considerations should be addressed.

What are the different areas of occupancy or usage?

Establishing areas of load or occupancy allows the installer to focus or “ZONE” conditioning where people gather at different times of the day or night.

For example: The living room, dining room, and kitchen are usually occupied during the day. The bedrooms are occupied in the evening. With two zones this format not only allows for maximum comfort by matching areas of conditioning with structure occupancy, but it also establishes definite usage patterns effectively shutting down or lowering the demand for conditioning in areas of low occupancy creating energy savings. This format also maximizes the performance of setback thermostats.

Are there any areas that cause abnormal loads?

Great rooms, glass walls, cathedral ceilings, hot tub enclosures, etc. These features can put abnormal strain on the comfort system. Be sure when creating your zones and sizing your equipment and duct work, you have a handle on the usage and loads created by such additions. Depending upon the application, it could be more beneficial to put in two smaller systems and zone them, instead of putting four or five zones on a larger system.



SMZ-SW Zone Control Panel



- **Low Cost**
- **Easy Wiring**
- **Compact Design**
- **Easy Installation**
- **Subbase Controlled**
- **Available for 2, 3 or 4 Zone Systems**

DuroZone's SMZ-SW Panels provide contractors with a simple, low-cost zoning system for 2, 3, or 4 zones. SMZ-SW Panels allow for the use of a switchable subbase (which must have B&O terminals) in zone 1 to act as the system's master switch for heat, cool, and fan. Moving the fan switch on the zone 1 thermostat subbase to "on", will activate the fan to enhance air circulation.

All SMZ Zone Systems are equipped with individual zone damper control switches. These switches will allow a zone damper to remain in either open or closed position when the system board is at rest. By setting the switches, the installer or home owner can choose the position of his system's dampers; to inhibit migration of air into spaces

Features



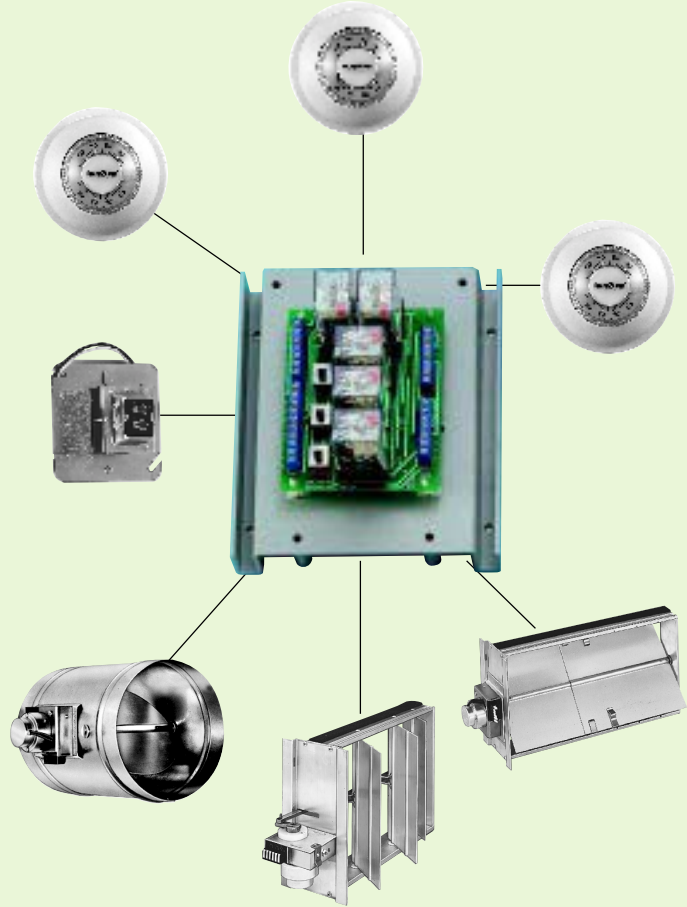
The SMZ-SW controls up to 4 zones. See the ordering information below.

Easy Wiring

The terminal strips are mounted along the edges of the panel for easy wiring accessibility. The SMZ-SW is a 24 volt low amperage system. A 40 VA transformer will operate up to 4 zone dampers.

Subbase Controlled

The selection of equipment is Set by the Zone 1 Subbase heat/cool and fan switches.



Easy Installation

A screwdriver for the terminals is included with the panel. Self-adhesive backing is included for quick mounting. The compact design measures 7¹/₈" x 6¹/₈" x 3¹/₂".

ORDERING INFORMATION

ITEM #	MODEL	DESCRIPTION
35226	SMZ2SW	2 Zone Panel
35227	SMZ3SW	3 Zone Panel
35228	SMZ4SW	4 Zone Panel
35052	3WT	Thermostat.
35214	MSSB	Subbase
35180	DRS	Round Thermostat
35181	DRSMS	Round Zone 1 Sub-base.

NOTE: If not using a DuroZone 3WT thermostat (35052), with the MSSB Subbase (35214), or DRS(35180) with DRSMS subbase (35181), the end user must provide a switchable heat/cool thermostat with B & O terminals for use in Zone 1. Thermostats such as Honeywell's T87F/Q539A are compatible.

DuroZone®

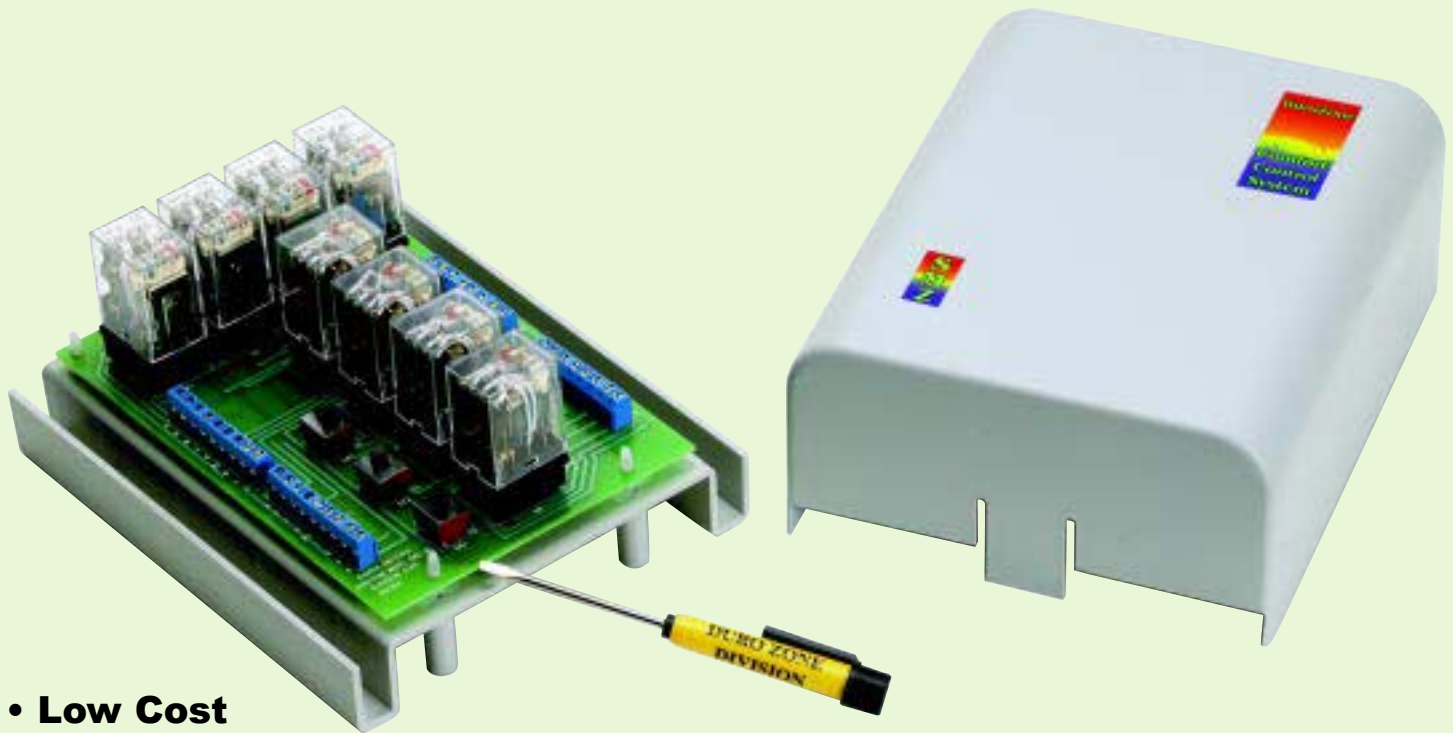
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 BE035405

DuroZone[®]

MULTILINE[®]

SMZ-AC Auto Changeover Zone Control Panel and Systems



- **Low Cost**
- **Easy Installation**
- **Controls Up To 3 Zones**
- **First call - First Serve Priority**
- **Easy Wiring - B And O No Longer Needed**
- **Switches Automatically Between Heating And Cooling**

DuroZone's SMZ-AC Panels provide contractors with a simple, low-cost auto changeover system for 2 or 3 zones. SMZ-AC Panels are designed for conventional heat/cooling systems and can be adapted to single stage heat pump system. Virtually all thermostats with R,W,Y, and G terminals are compatible with SMZ-AC Panels (G is required on zone 1 only). The SMZ-AC Panel utilizes a "First Call - First Serve" Protocol for determining which system (heating or cooling) is activated. While in one mode the opposite mode is locked out but can be activated after satisfaction of the prior call.

DuroZone SMZ-AC Panels are also available in "Turn-Key" packages that include the Panel, Thermostats, and Transformer necessary for a fast and simple installation. All the contractor needs to add are the appropriate dampers. SMZ-AC packages are available in two and three zones and with setback or non setback thermostats.

SMZ-AC Zone Systems

SMZ-AC 2 Zone System

consist of:

- 1 SMZ-AC Panel
- 1 PT-40 Transformer
- 2 DR Round Thermostat
- 1 DRSMS Subbase
- 1 DRSHCS Subbase

For 3 zone add 1 additional
DR Thermostat and DRSHCS Subbase



SMZ-AC 2 Zone Setback System

consist of:

- 1 SMZ-AC Panel
- 1 PT-40 Transformer
- 2 Digital Setback Thermostat

For 3 zone add 1 additional
Digital Setback Thermostat



ORDERING INFORMATION

ITEM #	MODEL	DESCRIPTION
35229	SMZAC	3 Zone Auto Changeover Panel
35181	DRSMS	Round Zone 1 Subbase
35182	DRSHCS	Round Heat/Cool Subbase
35191	DT3	Digital Setback Thermostat
35271	S2AP	SMZAC 2 Zone Package
35272	S3AP	SMZAC 3 Zone Package
35273	S2ASP	SMZAC 2 Zone Setback Package
35274	S3ASP	SMZAC 3 Zone Setback Package

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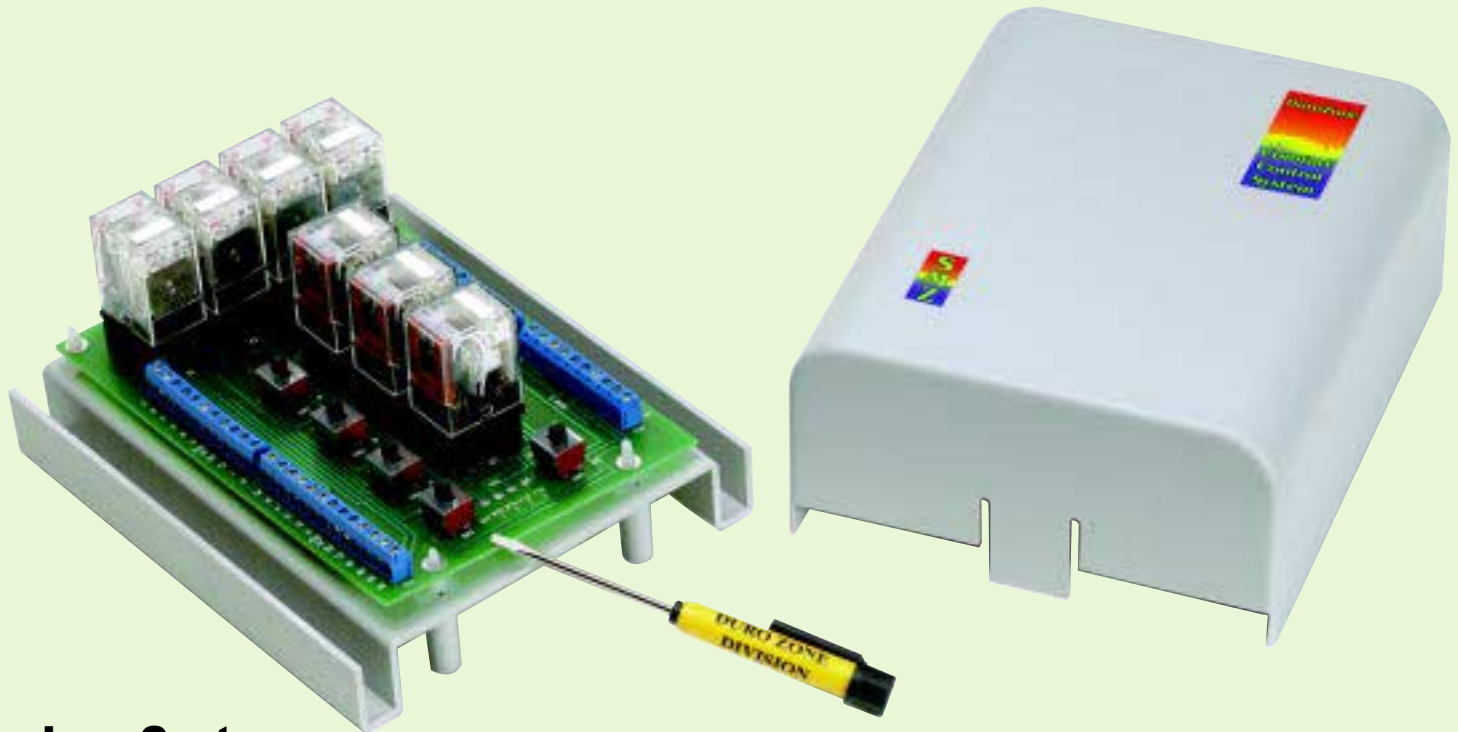
Printed in USA 07/2001

BE035400



SMZ-HP

Zone Control Panel For Heat Pumps



- **Low Cost**
- **Easy Wiring**
- **Compact Design**
- **Easy Installation**
- **Subbase Controlled**
- **Controls Up To 2 Or 3 Zones**
- **Supports Two Stage Compressors**

DuroZone's SMZ-HP Panels allow the contractor a low cost zoning system for heat pumps. The SMZ-HP can control up to three zones on a single unit. The switchable subbase in Zone 1 acts as the master switch for heat/cool/emergency heat and fan. When all zones are satisfied all zone dampers will be open to allow air circulation. Moving the fan switch on the Zone 1 thermostat subbase to "on" will activate the fan to enhance air circulation.

DuroZone's SMZ-HP panel has Y1 and Y2 terminals to allow operation of heat pumps with 2 stage compressors and will operate changeover valves activated in either the heat or cool mode.

Features



Easy Wiring

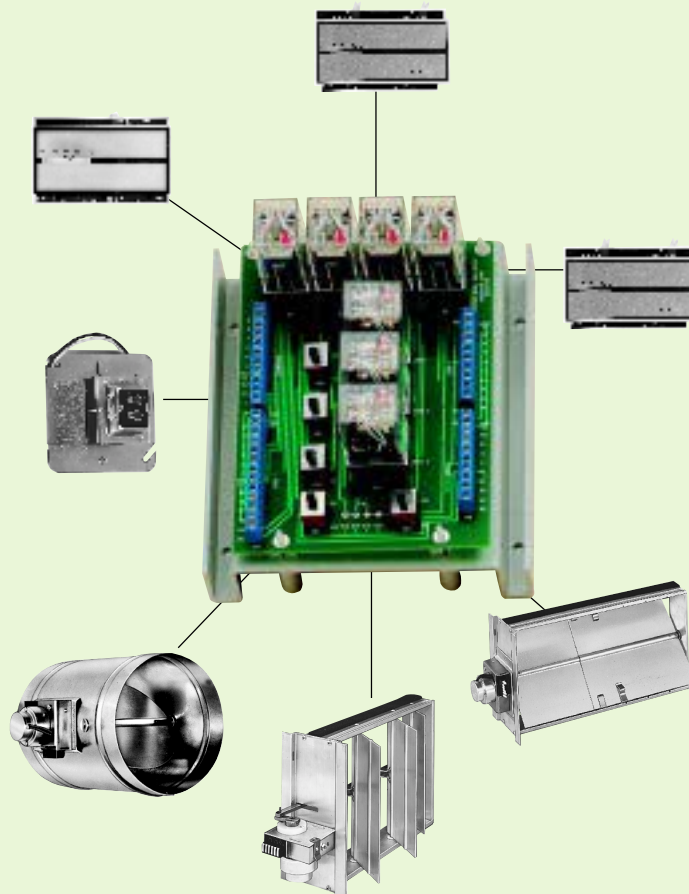
The terminal strips are mounted along the edges of the panel for easy wiring accessibility. The SMZ-HP is a 24 volt low amperage system. A 40 VA transformer will operate up to 4 zone dampers.



Easy Installation

A screwdriver for the terminals is included with each panel. Self-adhesive backing is included for quick mounting. The compact design measures 7¹/₈" x 6¹/₈" x 3¹/₂".

The SMZ-HP controls up to 3 zone systems. See the ordering information below.



ORDERING INFORMATION

ITEM #	MODEL	DESCRIPTION
35217	SMZHPSW	3 Zone Heat Pump Panel
35176	DZHPT	SMZHP Zone 1 Thermostat
35177	DZDBT	Dual Bulb 2 Stage Thermostat

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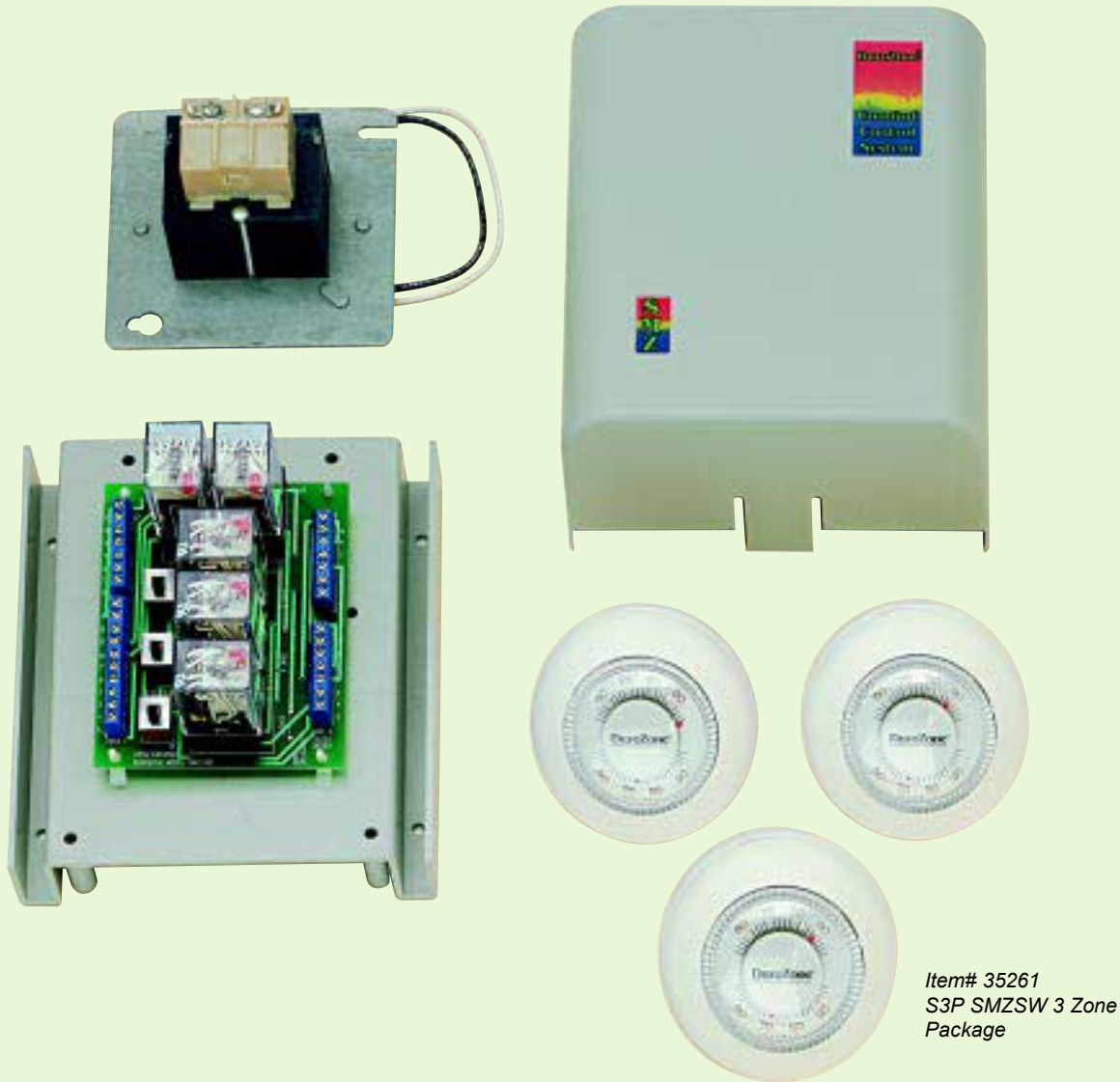
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DuroZone[®]

**HVAC products of tomorrow...
developed today.**

**DURO
DYNE[®]**

a division of
The Greatest Name in Sheet Metal Necessities.
corporation.



Item# 35261
S3P SMZSW 3 Zone
Package

SMZ Zone Control Packages

Putting together a zone control system is now easier than ever.

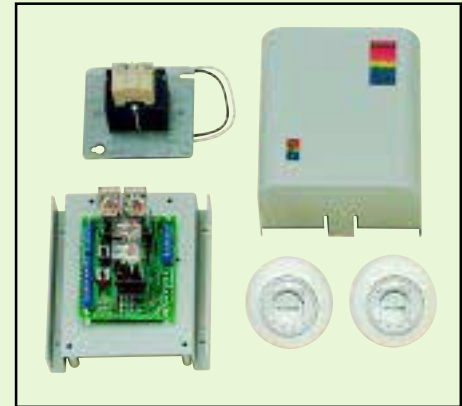
SMZ Zone Control Packages provide, in one convenient box, all the controls (less dampers) necessary to install a two or three zone SMZ system. Each box contains an SMZ control panel, a 24 volt 40va transformer, and the necessary thermostats for each zone. SMZ Zone Control Packages come in several configurations to address most two and three zone situations both for conventional Heating/Cooling Systems and for Heat Pumps.

Conventional Heating/Cooling Systems

35260 S2P SMZ 2 Zone Package

consists of:

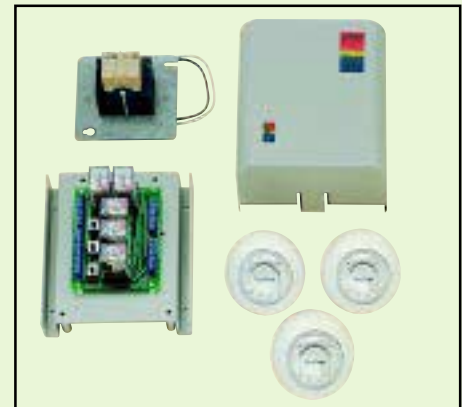
- 1 each #35226 SMZ2SW 2 Zone Panel
- 1 each #35054 PT40 Transformer
- 2 each #35187 DR Round Thermostat
- 1 each #35181 DRSMS Zone 1 Subbase
- 1 each #35183 DRS3WP 3 Wire Wallplate



35261 S3P SMZ 3 Zone Package

consists of:

- 1 each #35227 SMZ3SW 3 Zone Panel
- 1 each #35054 PT40 Transformer
- 3 each #35187 DR Round Thermostat
- 1 each #35181 DRSMS Zone 1 Subbase
- 2 each #35183 DRS3WP 3 Wire Wallplate



35262 S2SP SMZ 2 Zone Setback Package

consists of:

- 1 each #35226 SMZ2SW 2 Zone Panel
- 1 each #35054 PT40 Transformer
- 2 each #35191 DT3 Setback Thermostat



35263 S3SP SMZ 3 Zone Setback Package

consists of:

- 1 each #35227 SMZ3SW 3 Zone Panel
- 1 each #35054 PT40 Transformer
- 3 each #35191 DT3 Setback Thermostat



Conventional Heating/Cooling Systems

35269

S4P SMZ 4 Zone Package

consists of:

- 1 each #35228 SMZ4SW 4 Zone Panel
- 1 each #35054 PT40 Transformer
- 4 each #35187 DR Round Thermostat
- 1 each #35181 DRSMS Zone 1 Subbase
- 3 each #35183 DRS3WP 3 Wire Wallplate



35270

S4SP SMZ 4 Zone Setback Package

consists of:

- 1 each #35228 SMZ4SW 4 Zone Panel
- 1 each #35054 PT40 Transformer
- 4 each #35191 DT3 Setback Thermostat

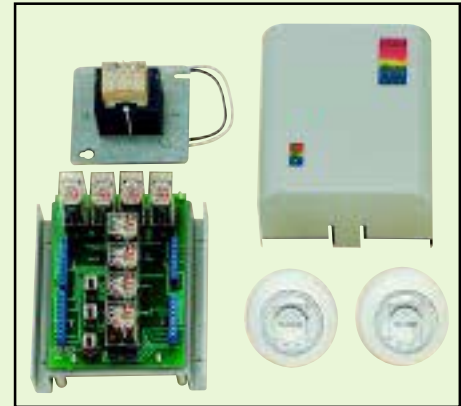


Auto Changeover Systems

35271 **S2AP SMZ AC 2 Zone Package**

consists of:

- 1 each #35229 SMZAC Zone Panel
- 1 each #35054 PT40 Transformer
- 2 each #35187 DR Round Thermostat
- 1 each #35181 DRSMS Zone 1 Subbase
- 1 each #35182 DRSHCS Round H/C Subbase



35272 **S3AP SMZ AC 3 Zone Package**

consists of:

- 1 each #35229 SMZAC Zone Panel
- 1 each #35054 PT40 Transformer
- 3 each #35187 DR Round Thermostat
- 2 each #35181 DRSMS Zone 1 Subbase
- 1 each #35182 DRSHCS Round H/C Subbase



35273 **S2AP SMZ AC 2 Zone Setback Package**

consists of:

- 1 each #35229 SMZAC 2 Zone Panel
- 1 each #35054 PT40 Transformer
- 2 each #35191 DT3 Setback Thermostat



35274 **S3AP SMZ AC 3 Zone Setback Package**

consists of:

- 1 each #35229 SMZAC 3 Zone Panel
- 1 each #35054 PT40 Transformer
- 3 each #35191 DT3 Setback Thermostat



Heat Pump Systems

□ 35264

S2HP SMZHP 2 Zone Package

consists of:

- 1 each #35217 SMZHPSW 2 Zone Heat Pump Panel
- 1 each #35054 PT40 Transformer
- 1 each #35176 DZHPT Zone 1 Heat Pump Thermostat
- 1 each #35177 DZDBT Dual Bulb Thermostat

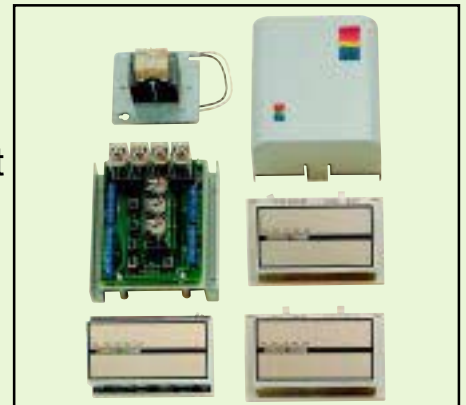


□ 35265

S3HP SMZHP 3 Zone Package

consists of:

- 1 each #35217 SMZHPSW 3 Zone Heat Pump Panel
- 1 each #35054 PT40 Transformer
- 1 each #35176 DZHPT Zone 1 Heat Pump Thermostat
- 2 each #35177 DZDBT Dual Bulb Thermostat

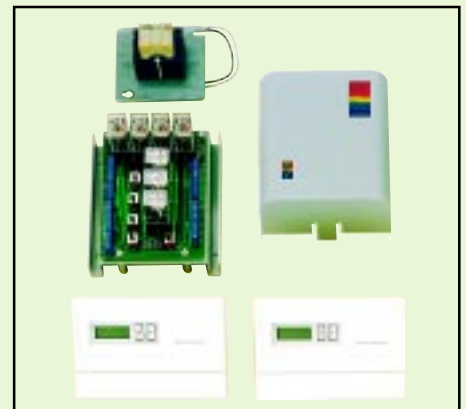


□ 35266

S2HSP SMZHP 2 Zone Setback Package

consists of:

- 1 each #35217 SMZHPSW 2 Zone Heat Pump Panel
- 1 each #35054 PT40 Transformer
- 2 each #35192 DTAC Autochangeover Thermostat

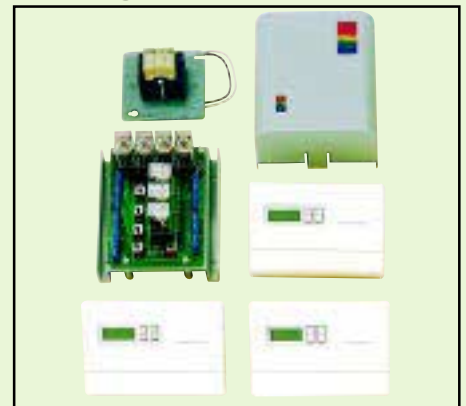


□ 35267

S3HSP SMZHP 3 Zone Setback Package

consists of:

- 1 each #35217 SMZHPSW 3 Zone Heat Pump Panel
- 1 each #35054 PT40 Transformer
- 3 each #35192 DTAC Autochangeover Thermostat



SMZ Zone Control Packages Easy Quote

Quantity	Item#	Description	Price
			(from DuroZone Trade Price Catalog)
	35260	S2P SMZ 2 Zone Package	
	35261	S3P SMZ 3 Zone Package	
	35262	S2SP SMZ 2 Zone Setback Package	
	35263	S3SP SMZ 3 Zone Setback Package	
	35264	S2HP SMZHP 2 Zone Package	
	35265	S3HP SMZHP 3 Zone Package	
	35266	S2HSP SMZHP 2 Zone Setback Package	
	35267	S3HSP SMZHP 3 Zone Setback Package	
	35269	S4P SMZ 4 Zone Package	
	35270	S4SP SMZ 4 Zone Setback Package	
	35271	S2AP SMZ AC 2 Zone Package	
	35272	S3AP SMZ AC 3 Zone Package	
	35273	S2ASP SMZ AC 2 Zone Setback Package	
	35274	S3ASP SMZ AC 3 Zone Setback Package	
		Damper RD-	
		Damper RD-	
		Damper RD-	
		Damper MB- x _____	
		Damper MB- x _____	
		Damper MB- x _____	
		Damper MS-	
		Damper MS-	
		Damper MS-	
		Pressure Relief Damper-	

P.O.# _____

Total

to: _____
(Distributor)

Ship to: _____
(Contractor)



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BE035406

DuroZone[®]

-MULTILINE[®]

Into the Twenty-First Century with DuroZone's new

ComfortMax Zone Control System



Features:

5+1+1 Programming

2 stage cool - 2 stage heat capable for conventional systems

Fossil fuel backup capable with heat pumps

2 stage cool - 4 stage heat capable for heat pumps

Auto changeover with master thermostat monitoring and override function

Easy universal system programming at master thermostat

Remote sensor capable

Large digital display

The ComfortMax Zone Control System is a full function, communicating thermostat, "turn key" system for light commercial and medium to high end housing. The ComfortMax System incorporates such features as Master thermostat zone monitoring and override, economy mode, 5+1+1 setback, manual or auto changeover, and simple system programming of conventional or heat pump systems.

ComfortMax Components

CMT COMFORTMAX MASTER THERMOSTAT

The ComfortMax system has a “Master” thermostat that can override the individual zone thermostats. The CMT Master thermostat can monitor, change and lockout changes in any or all zones. All equipment selection is done at the CMT thermostat. Like all ComfortMax thermostats a remote bulb sensor can be used so the thermostat can be placed in a less conspicuous location. The CMT features Fan control , 5+1+1 programming, emergency heat, and unoccupied economy mode setting of up to 10 days.



CZT COMFORTMAX ZONE THERMOSTAT

Each CZT thermostat features 5+1+1 programming Heat, Cool and Auto changeover modes. Remote bulb capability, Economy mode and constant fan participation are all standard features. CZT thermostats can display in Fahrenheit or Celsius and 24 hour or 12 hour clock format.



CCB COMFORTMAX CONTROL BOARD

The ComfortMax system utilizes a “Home Base” control board to centralize all wiring. The CCB can handle up to three zones. The CCB features easily identifiable terminals for all wiring, a fuse for circuit protection, and an indicator light to verify system communication. A fault indicator can be wired to the panel. Also, an outdoor temperature sensor can be connected to the panel to monitor outside temperature at the master thermostat.



CEB-2 2 ZONE EXPANSION BOARD

The CEB-2 allows two additional zones to be added to the ComfortMax system for a total of 5 zones. Use the CEB-2 with the CCB for four and five zone systems. All wiring is the same as for the CCB.



CEB-4 4 ZONE EXPANSION BOARD

The CEB-4 allows four additional zones to be added to the ComfortMax system for a total of seven zones. Use the CEB-4 with the CCB for six and seven zone systems. All wiring is the same as for the CCB.



Typical System Hookup

CCB ComfortMax Control Board

2 stage cooling
 4 stage heating (heat pump)
 or
 2 stage cooling
 2 stage heating (conventional)

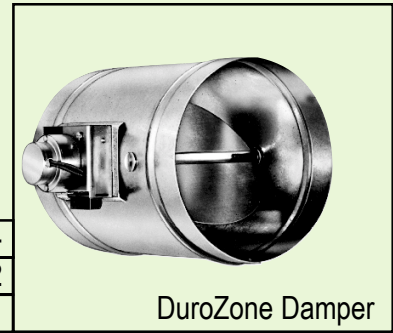
Duro Dyne Transformer

24
VAC

To CEB2 or CEB4



Zone 3



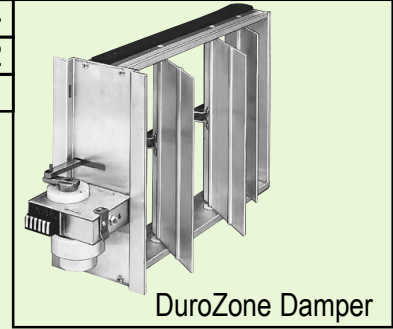
4
2
1

DuroZone Damper

CZT Zone
Thermostat

7
8
A
B

Zone 2



4
2
1

DuroZone Damper

CZT Zone
Thermostat

7
8
A
B

System's sensor
(fault indication)

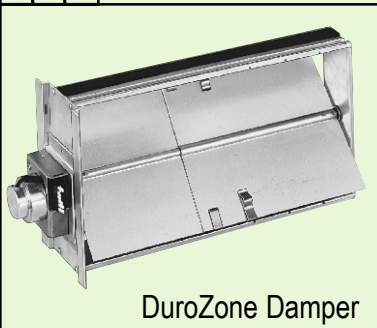
Outside
temperature
sensor

B A 8 7



CMT Master
Thermostat

1 2 4 Zone 1



DuroZone Damper

Ordering Information

ComfortMax Systems are sold as complete 2 or 3 zone packages. Additional zone thermostats and expansion panels can be ordered to configure the system up to seven zones. Because of the communicating nature of the ComfortMax System, only ComfortMax thermostats can be used with the system.

35290 CMS-2 COMFORTMAX 2 ZONE SYSTEM

Consists of:



Item # Model Description

1 each	35280	CMT	COMFORTMAX MASTER THERMOSTAT
1 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD

35291 CMS-3 COMFORTMAX 3 ZONE SYSTEM

Consists of:



Item # Model Description

1 each	35280	CMT	COMFORTMAX MASTER THERMOSTAT
2 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD

35292 CMS-4 COMFORTMAX 4 ZONE SYSTEM

Consists of:



Item # Model Description

1 each	35280	CMTs	COMFORTMAX MASTER THERMOSTAT
3 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD
1each	35283	CEB2	COMFORTMAX 2 ZONE EXPANSION BOARD

Ordering Information

35293 CMS-5 COMFORTMAX 5 ZONE SYSTEM

Consists of:

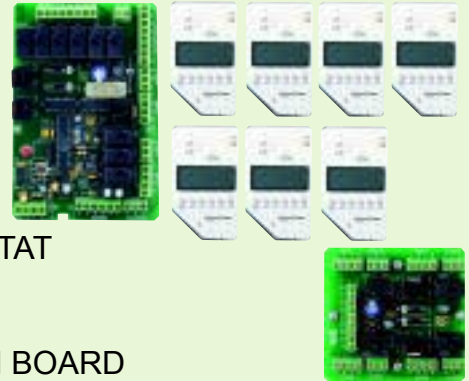
	Item #	Model	Description
1 each	35280	CMT	COMFORTMAX MASTER THERMOSTAT
4 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD
1 each	35283	CEB2	COMFORTMAX 2 ZONE EXPANSION BOARD



35294 CMS-6 COMFORTMAX 6 ZONE SYSTEM

Consists of:

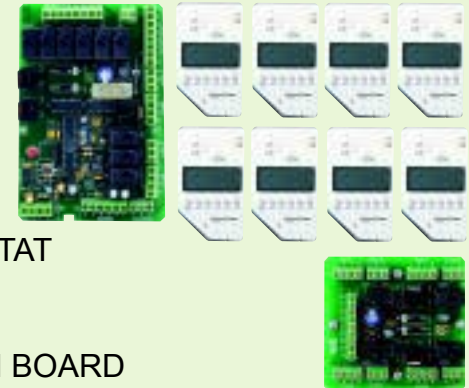
	Item #	Model	Description
1 each	35280	CMT	COMFORTMAX MASTER THERMOSTAT
5 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD
1 each	35284	CEB4	COMFORTMAX 4 ZONE EXPANSION BOARD



35295 CMS-7 COMFORTMAX 7 ZONE SYSTEM

Consists of:

	Item #	Model	Description
1 each	35280	CMT	COMFORTMAX MASTER THERMOSTAT
6 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD
1 each	35284	CEB4	COMFORTMAX 4 ZONE EXPANSION BOARD



Sold Individually

	Item #	Model	Description
	35280	CMT	COMFORTMAX MASTER THERMOSTAT
	35281	CZT	COMFORTMAX ZONE THERMOSTAT
	35282	CCB	COMFORTMAX CONTROL BOARD
	35283	CEB2	COMFORTMAX 2 ZONE EXPANSION BOARD
	35284	CEB4	COMFORTMAX 4 ZONE EXPANSION BOARD

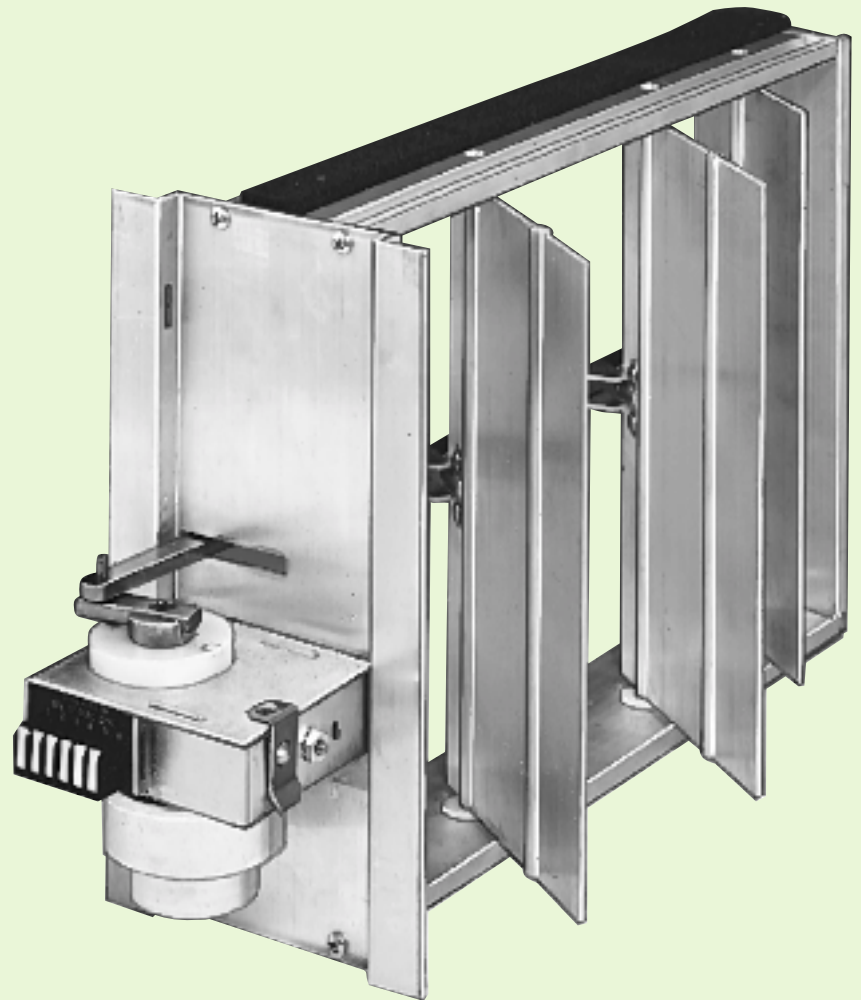
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 Farmingdale, New York 11735
 Phone: 631-249-9000 • Fax: 631-249-8346

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 BE035412



MB Damper **Multi-Blade Zone Damper**



Durable Extruded Aluminum Construction

Frame and blades of extruded aluminum combine minimum weight with maximum strength for a damper of unsurpassed durability.

High-Torque Motor

Motor will work with all existing 24-volt thermostats. High-torque means reliable, trouble-free service for many years.

Low-Leakage, Parallel-Blade Design

Insures smooth operation and efficient sealing for maximum control of air flow.

Quick Installation & Wiring

Damper attaches to the duct by use of a new clip. No screws or screwdriver are required. Easy wiring.

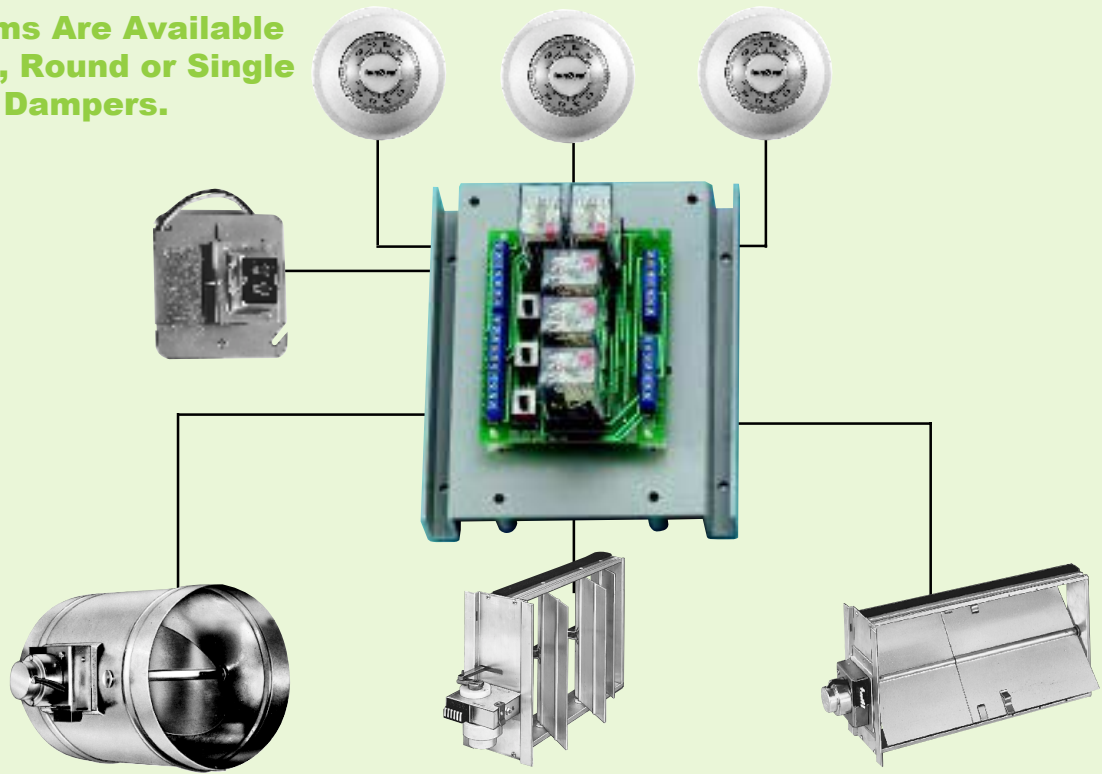
Neoprene Gasketing

Minimizes leakage and reduces metal-to-metal rattle.

Three Year Limited Warranty

Damper motor guaranteed for three years after installation.

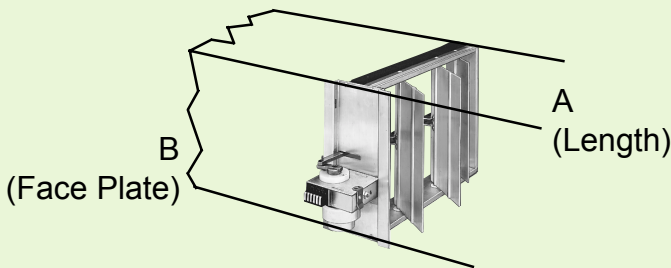
DuroZone Systems Are Available With Multi-Blade, Round or Single Blade Multi-Size Dampers.



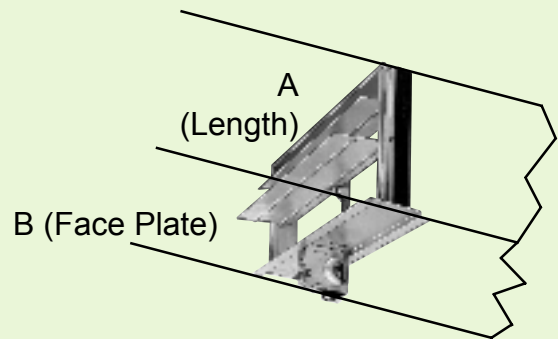
Round Damper

Multi-Blade Damper

Multi-Size Damper



Standard Damper



Bottom Mount Damper

B - FACE PLATE DIMENSION - MOTOR SIDE

	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
6"		37109	37119	37129	37139	37149	37159	37169	37179	37189
8"	37100	37110	37120	37130	37140	37150	37160	37170	37180	37190
10"	37101	37111	37121	37131	37141	37151	37161	37171	37181	37191
12"	37102	37112	37122	37132	37142	37152	37162	37172	37182	37192
14"	37103	37113	37123	37133	37143	37153	37163	37173		
16"	37104	37114	37124	37134	37144	37154	37164			
18"	37105	37115	37125	37135	37145	37155				
20"	37106	37116	37126	37136	37146					
22"	37107	37117	37127	37137						
24"	37108	37118	37128	37138						

LARGER SIZED OR SPECIAL SIZED DAMPERS AVAILABLE UPON REQUEST

Note: For Fresh-Air Dampers, Simply Change The First Two Digits In The Item Code From 37 to 38

DuroZone®

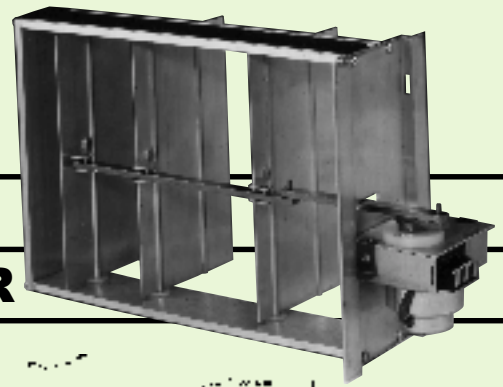
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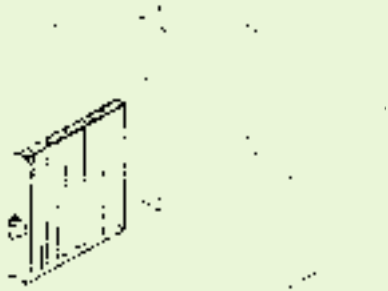
DuroZone®

INSTALLATION INSTRUCTIONS

MB SERIES MULTI BLADE DAMPER



INSTALLATION



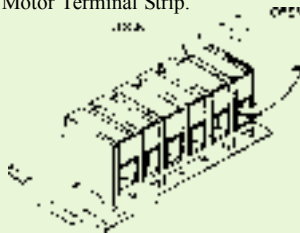
1. Cut 3 3/8" wide slot into side of sheet metal duct.
2. Slide damper into duct work.



3. Slide Quick Clip Fasteners outward to secure damper.

MOTOR TERMINALS

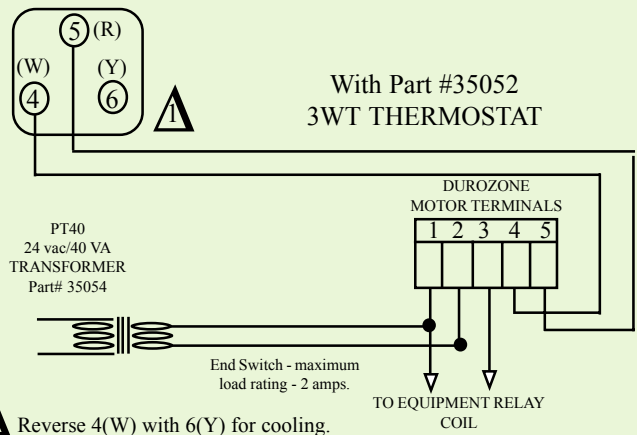
1. Trim 1/4" off the end of the Control Wiring.
2. Flip the white tab up on the Damper Motor Terminal Strip.
3. Insert the trimmed Control Wire.
4. Flip the white tab down.



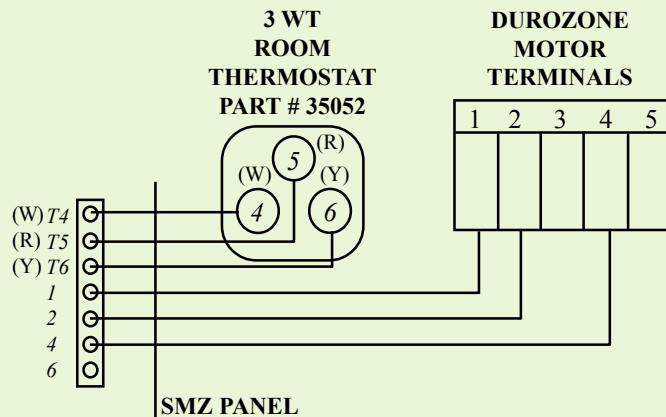
MOTOR TERMINAL IDENTIFICATION

- Terminals 1 & 2:** 24 volt input.
- Terminals 4 & 5:** Thermostat Connections - Closing 4 & 5 will open damper. Opening 4 & 5 will close damper.
- Terminal 3:** End switch - Connecting an equipment relay across 1 & 3 of damper motor will activate relay when damper is open.

3WT ROOM THERMOSTAT

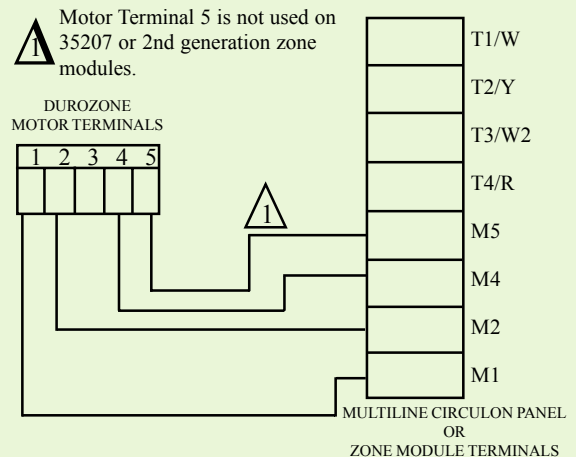


With Part# 35217/35226/35227/35228/35229



With Part# 35200/35207

Multiline Multizone 8 Circulon Panel/Multizone 8-SBC or Zone Modules



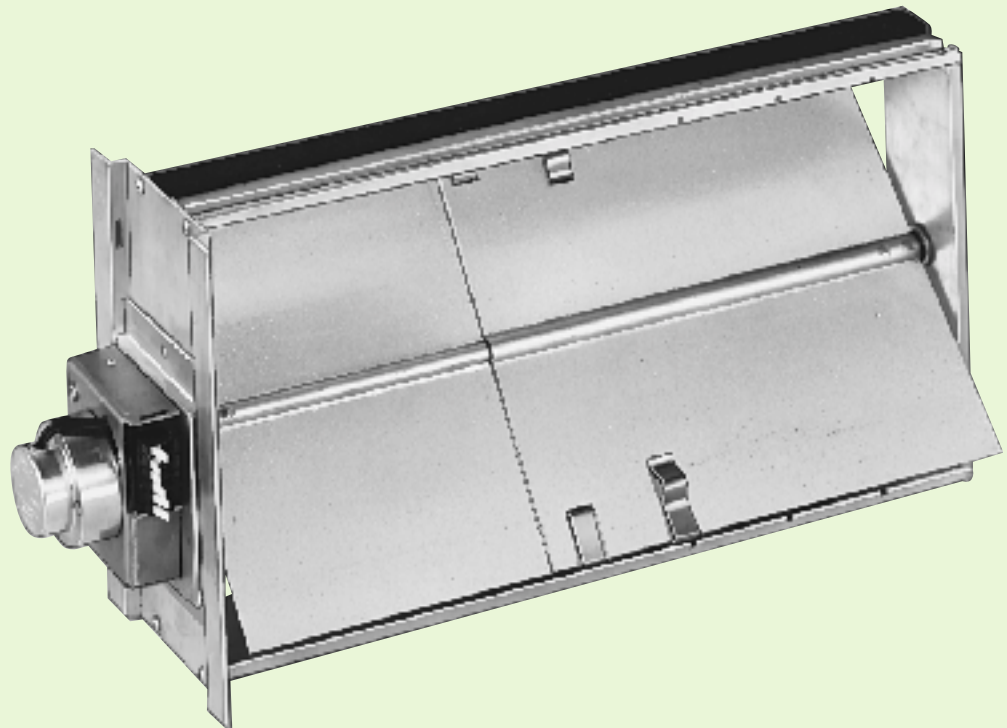
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 Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.



MS Damper **Multi-Size Zone Damper**



Durable Aluminum Construction

Extruded frame and formed blade combine minimum weight with maximum strength for a damper of unsurpassed durability.

High-Torque Motor

Motor will work with all existing 24-volt thermostats. High-torque means reliable, trouble-free service for many years.

Adjustable Aluminum Blades

Interlocking blades adjust in 2 inch increments.

Multiple Sizes

Eight Damper Sizes cover 30 of the most common size requirements.

Quick Installation & Wiring

Damper attaches to the duct by use of a new clip. No screws or screwdriver are required. Easy wiring.

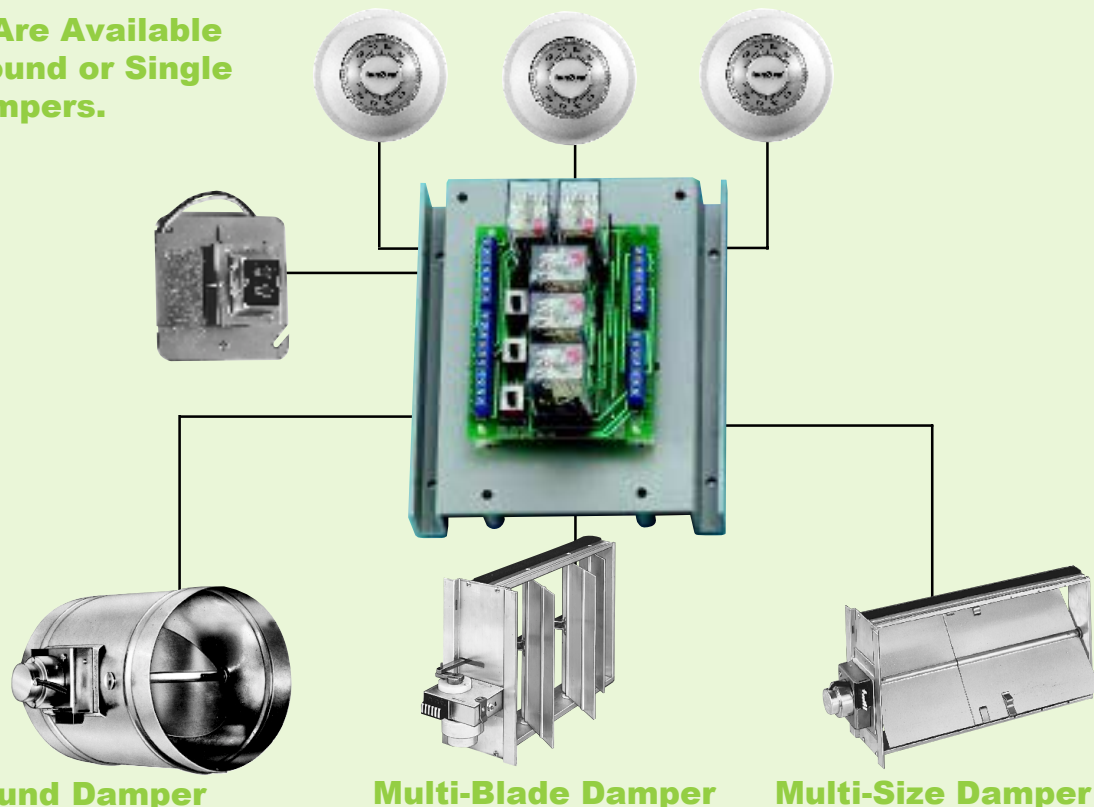
Neoprene Gasketing

Minimizes leakage and reduces metal-to-metal rattle.

Three Year Limited Warranty

Damper motor guaranteed for three years after installation.

DuroZone Systems Are Available With Multi-Blade, Round or Single Blade Multi-Size Dampers.



Round Damper

Multi-Blade Damper

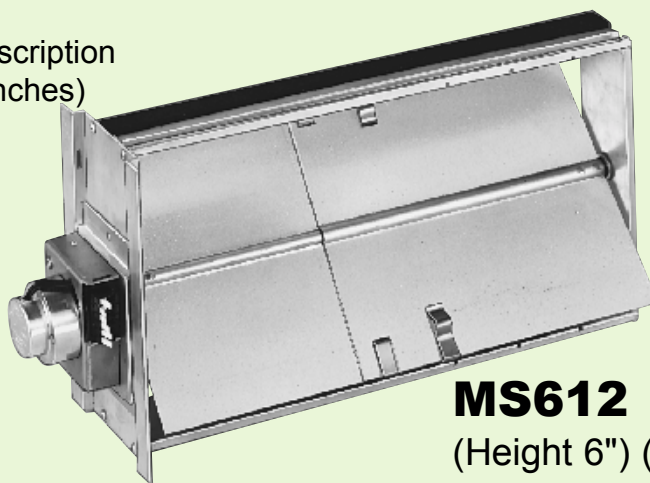
Multi-Size Damper

WIDTH

(The last 2 digits of Product Description denote the maximum width in inches)

DUCT HEIGHT

(Available In 6", 8", 10", 12")



MS612

(Height 6") (12" Maximum Width)

Series MS Dampers Are Available For 6", 8", 10", & 12" Duct Heights.
The Width Is Adjustable in 2" Increments.

Item#	Model	Duct Height	Minimum Width	Maximum Width	Approx. Weight
37200	MS612	6"	8"	12"	4lb.
37201	MS620	6"	14"	20"	5lb.
37202	MS816	8"	10"	16"	5lb.
37203	MS824	8"	18"	24"	6lb.
37204	MS1016	10"	10"	16"	5lb.
37205	MS1024	10"	18"	24"	7lb.
37206	MS1216	12"	12"	16"	6lb.
37207	MS1224	12"	18"	24"	7lb.

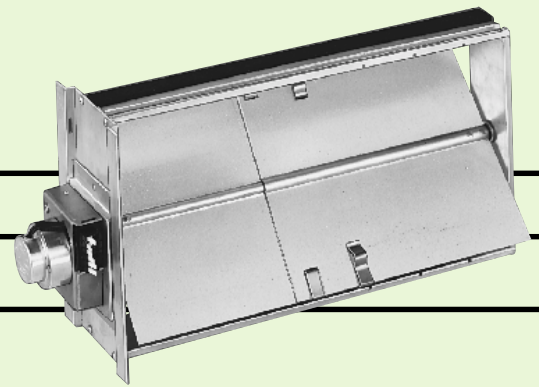
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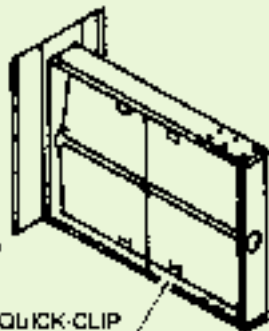
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INSTALLATION INSTRUCTIONS MS SERIES MULTI SIZE DAMPER

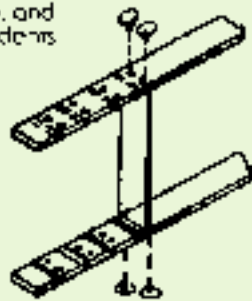


SHIPPED COMPLETE WITH DAMPER OPERATOR AND DAMPER HARDWARE.

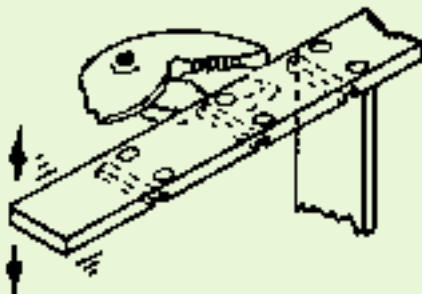
1. Determine duct size and size of damper required.



2. Remove four (4) screws from frame end.
3. Adjust damper blade to desired size, and position Quick Clip Fasteners in indent on blades to secure blade halves.

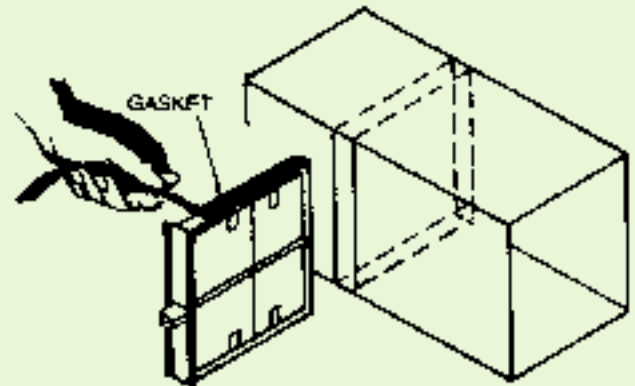


4. Replace same four (4) screws as in Step 2. Tighten completely.
5. With pliers, snap off excess frame or score mark bending downward first, then upward.

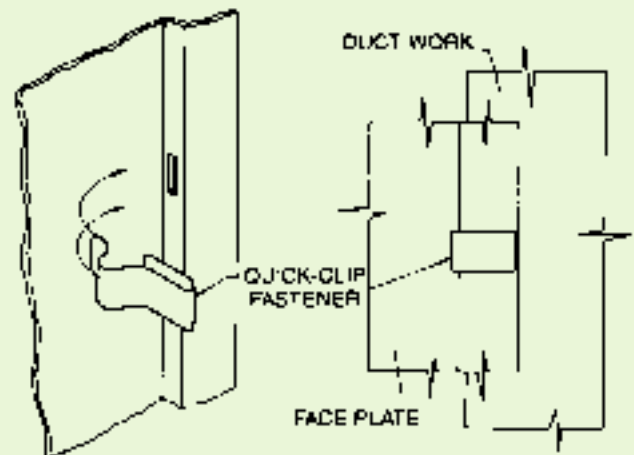


CAUTION
Do not bend too far initially or the frame could be damaged.

6. Fit Neoprene weather strip (included) to size before installing damper. (Do not cover blade pivot or end opposite motor.)



7. At selected damper location, cut a 1 3/8 inch-wide slot in side of duct.
8. Slide damper into position in duct.
9. Slide Quick Clip Fasteners outward to secure damper.



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 Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:
 • 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

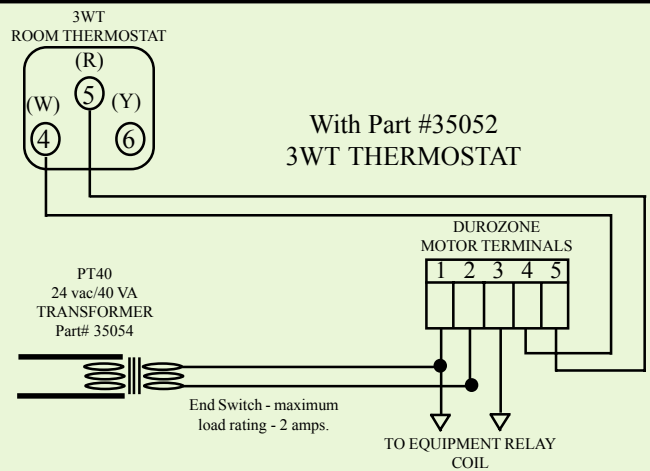
MOTOR TERMINALS

1. Trim 1/4" off the end of the Control Wiring.
2. Flip the white tab up on the Damper Motor Terminal Strip.
3. Insert the trimmed Control Wire.
4. Flip the white tab down.

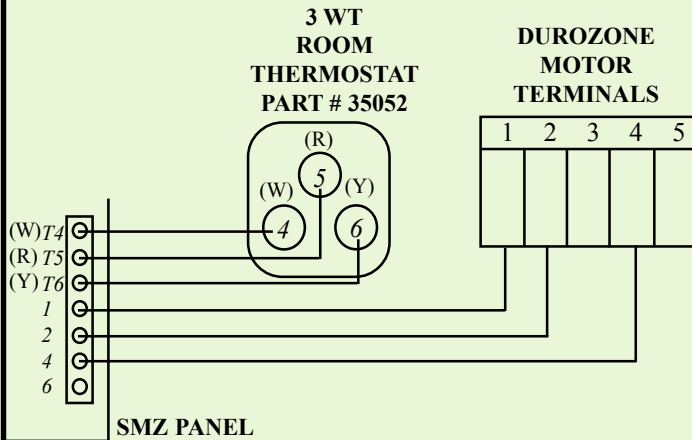


MOTOR TERMINAL IDENTIFICATION

- Terminals 1 & 2:** 24 volt input.
- Terminals 4 & 5:** Thermostat Connections - Closing 4 & 5 will open damper. Opening 4 & 5 will close damper.
- Terminal 3:** End switch - Connecting an equipment relay across 1 & 3 of damper motor will activate relay when damper is open.

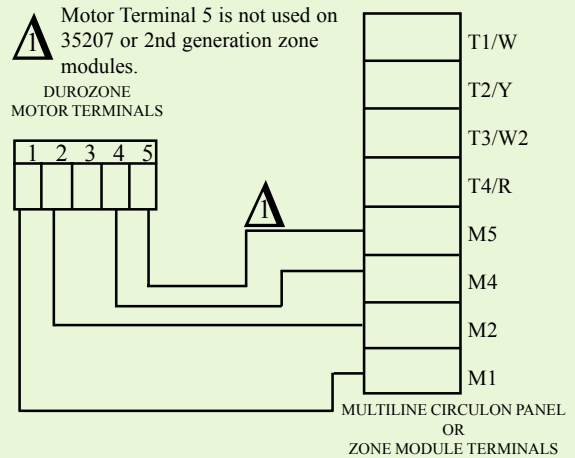


With Part# 35217/35226/35227/35228/35229



With Part# 35200/35207

Multiline Multizone 8 Circulon Panel/Multizone 8-SBC or Zone Modules



ITEM#	CODE	DUCT HEIGHT	MINIMUM WIDTH	MAXIMUM WIDTH
37200	MS612	6"	8"	12"
37201	MS620	6"	14"	20"
37202	MS816	8"	10"	16"
37203	MS824	8"	18"	24"
37204	MS1016	10"	10"	16"
37205	MS1024	10"	18"	24"
37206	MS1216	12"	12"	16"
37207	MS1224	12"	18"	24"

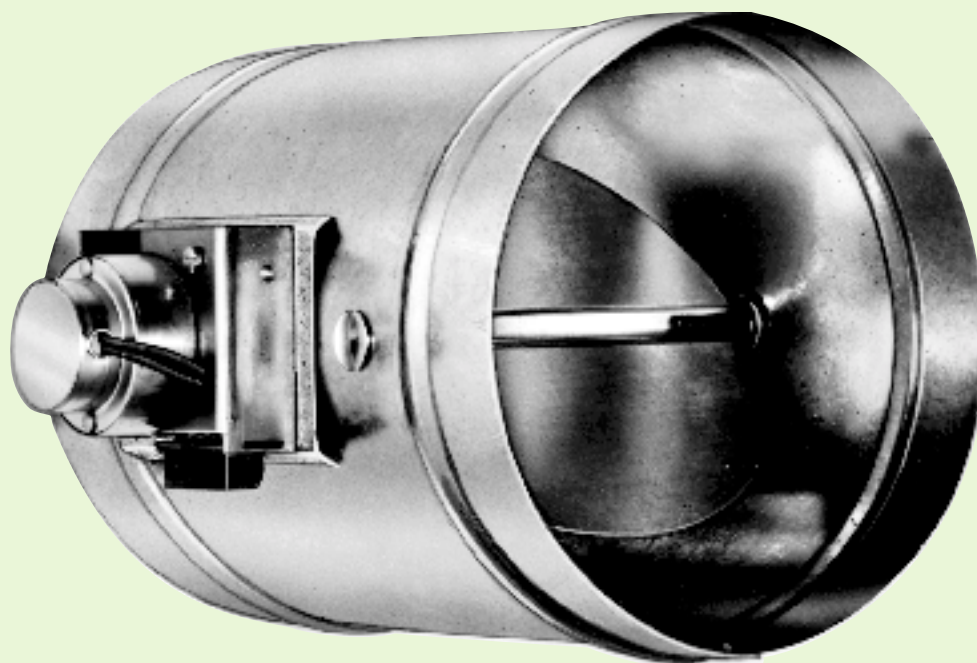
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 Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers)
- 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.



RD Damper **Round Zone Damper**



Durable Galvanized Steel Construction

Housing and blade made of galvanized steel with reinforcing beads for maximum durability.

High-Torque Motor

Motor will work with all existing 24-volt thermostats. High-torque means reliable, trouble-free service for many years.

Low-Leakage, Single-Blade Design

Insures smooth operation and efficient sealing for maximum control of air flow.

Quick Installation & Wiring

Damper attaches to the duct by use of nylon ties or screws. Easy wiring, no screwdriver required.

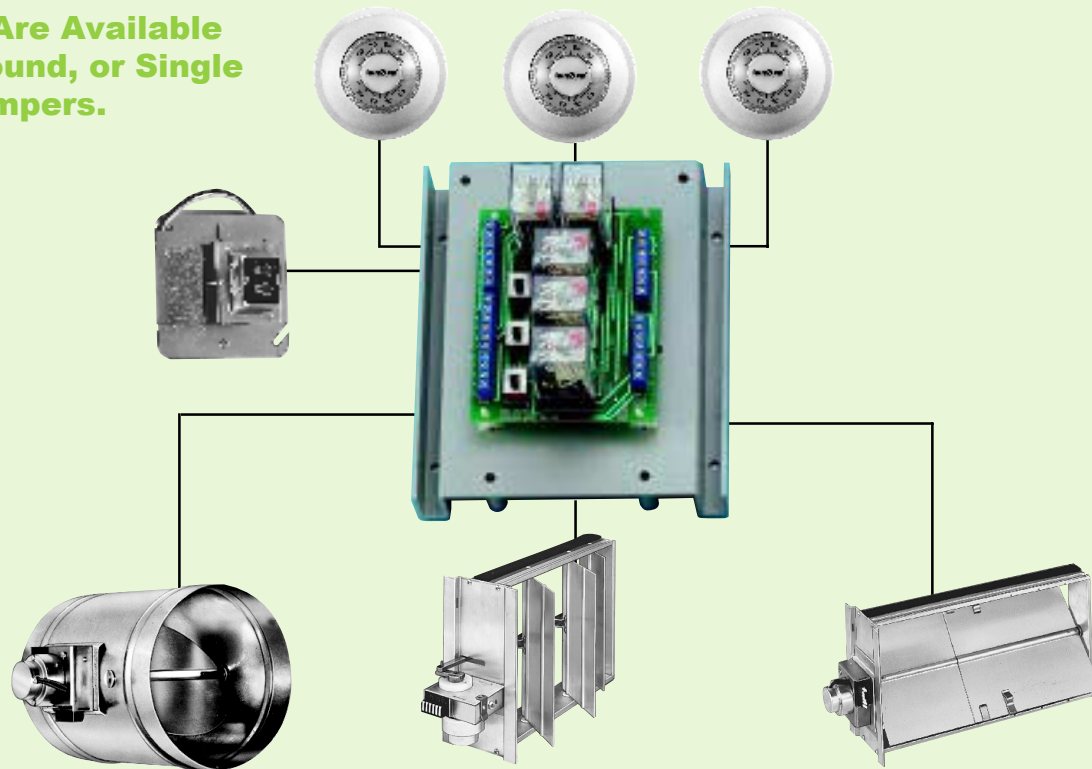
Round Housing

Designed for use with flexible ducting or round duct.

Three Year Limited Warranty

Damper motor guaranteed for three years after installation.

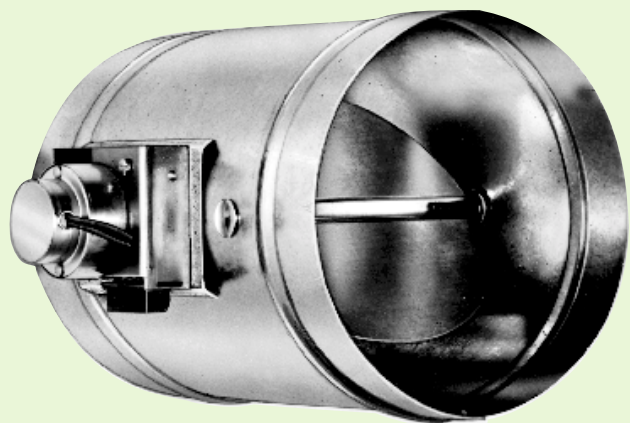
DuroZone Systems Are Available With Multi-Blade, Round, or Single Blade Multi-Size Dampers.



Round Damper

Multi-Blade Damper

Multi-Size Damper



Round Style (RD) Series Dampers.

Item #	Model	Approximate Diameter	Approximate Length Of Housing	Gauge Of Steel (For Housing)
35038	RD5	5"	9"	24
35039	RD6	6"	9"	24
35040	RD7	7"	9"	24
35041	RD8	8"	9"	24
35042	RD9	9"	11"	22
35043	RD10	10"	11"	22
35044	RD11	11"	11"	22
35045	RD12	12"	14"	22
35046	RD13	13"	14"	22
35047	RD14	14"	14"	22
35057	RD16	16"	16"	22
35058	RD18	18"	19"	22

NOTE: For Fresh-Air Dampers, Simply Change The First Two Digits of the Item# From 35 to 38

DuroZone®

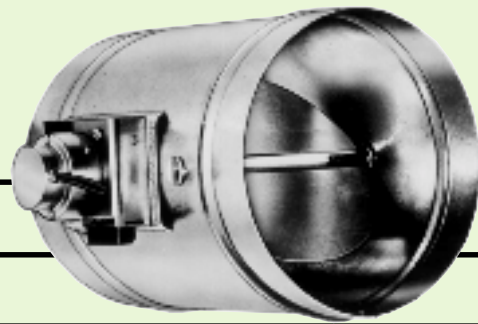
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INSTALLATION INSTRUCTIONS

RD SERIES ROUND DAMPER



INSTALLATION

In flexible round duct

Slip the duct over the ends of the DuroZone section & strap it into place.



In rigid round duct

Slip the duct over the DuroZone section & screw it into place.



MOTOR TERMINALS

1. Trim 1/4" off the end of the Control Wiring.
2. Flip the white tab up on the Damper Motor Terminal Strip.
3. Insert the trimmed Control Wire.
4. Flip the white tab down.



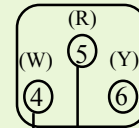
MOTOR TERMINAL IDENTIFICATION

Terminals 1 & 2: 24 volt input.

Terminals 4 & 5: Thermostat Connections - Closing 4 & 5 will open damper. Opening 4 & 5 will close damper.

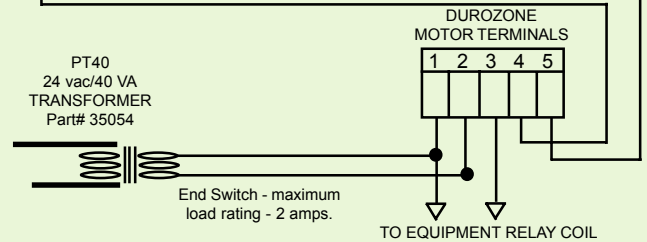
Terminal 3: End switch - Connecting an equipment relay across 1 & 3 of damper motor will activate relay when damper is open.

3WT
ROOM THERMOSTAT



With Part #35052
3WT THERMOSTAT

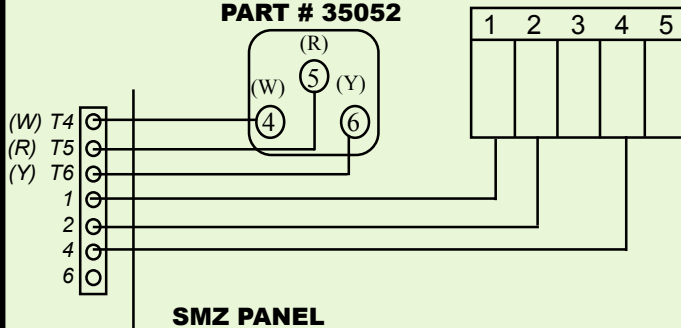
PT40
24 vac/40 VA
TRANSFORMER
Part# 35054



With Part# 35217/35226/35227/35228/35229

3 WT
ROOM
THERMOSTAT
PART # 35052

DUROZONE
MOTOR
TERMINALS



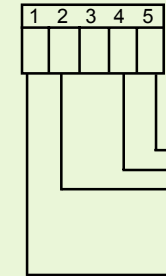
SMZ PANEL

With All

Multiline Multizone 8 Circulon Panel/Multizone 8-SBC or Zone Modules

⚠ Motor Terminal 5 is not used on 35207 or 2nd generation zone modules.

DUROZONE
MOTOR TERMINALS



MULTILINE CIRCULON PANEL
OR
ZONE MODULE TERMINALS

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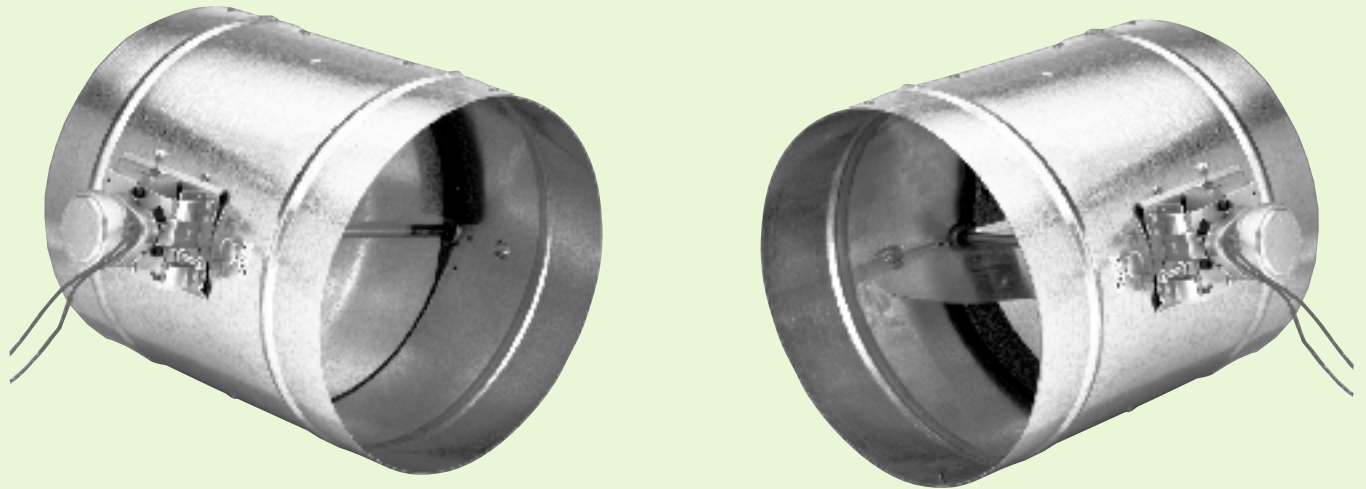
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ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers)
- 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.



SPRD Damper Round Spring Return Damper



Durable Galvanized Steel Construction

Housing and blade made of galvanized steel with reinforcing beads for maximum durability.

Multiple Styles

Available in both 24 volt (SPRD024) and 110 volt (SPRD110). Reversible high torque motor that can mount on either side of the housing for spring open or spring close operation.

Low Leakage, Single-Blade Design

Insures smooth operation and efficient sealing for maximum control of air flow.

Quick Installation & Wiring

Damper attaches to duct by use of nylon ties (supplied) or screws. Easy wiring, no screwdriver required.

Adjustable Stop

Allows air flow adjustment by limiting amount of opening.

Three Year Limited Warranty

Damper motor guaranteed for three years after installation.

SPRD024 & SPRD110

Round Spring Return Dampers

DuroZone Spring-Return Round Dampers come in sizes 5 to 12 inches in diameter. A powerful spring closes or opens the damper blade. The damper blade will remain open or closed, as long as power is supplied to the motor. When closed, the blade stops against a vinyl nitrile gasket for a near-airtight seal. Dampers are shipped with 4 locking Dyn-O-Ties for flexible duct installations.



Ordering Information



Spring Return Damper 24 Volt SPRD024 (Spring Return) Round Dampers

ITEM#	MODEL	DIAMETER
37046	SPRD024-5	5 inches
37047	SPRD024-6	6 inches
37048	SPRD024-7	7 inches
37049	SPRD024-8	8 inches
37050	SPRD024-9	9 inches
37051	SPRD024-10	10 inches
37052	SPRD024-11	11 inches
37053	SPRD024-12	12 inches

Spring Return Damper 110 Volt SPRD110 (Spring Return) Round Dampers

ITEM#	MODEL	DIAMETER
37076	SPRD110-5	5 inches
37077	SPRD110-6	6 inches
37078	SPRD110-7	7 inches
37079	SPRD110-8	8 inches
37080	SPRD110-9	9 inches
37081	SPRD110-10	10 inches
37082	SPRD110-11	11 inches
37083	SPRD110-12	12 inches

DuroZone[®]

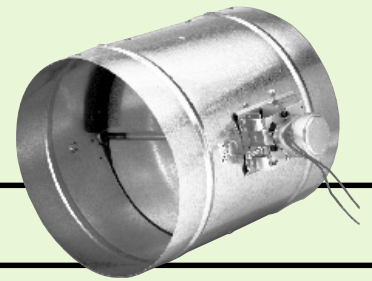
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INSTALLATION INSTRUCTIONS

SPRD024 SPRING RETURN DAMPER (24 volt)

DuroZone SPRD024 Spring Return Dampers can be configured for either Spring Open or Spring Closed operation. A mounting plate, with quick release clips is attached to both sides of the damper. The Spring Closed side is identified S.C. and the Spring Open side is identified S.O. All SPRD024 dampers are shipped in the Spring Closed (S.C.) position. To change to Spring Open (S.O.) operation, simply unclip motor from damper housing, open damper blade and then clip the motor on the Spring Open (S.O.) side mounting bracket.

MOTOR LEAD IDENTIFICATION



Blue leads: 24 volt input AC Only



- IMPORTANT -

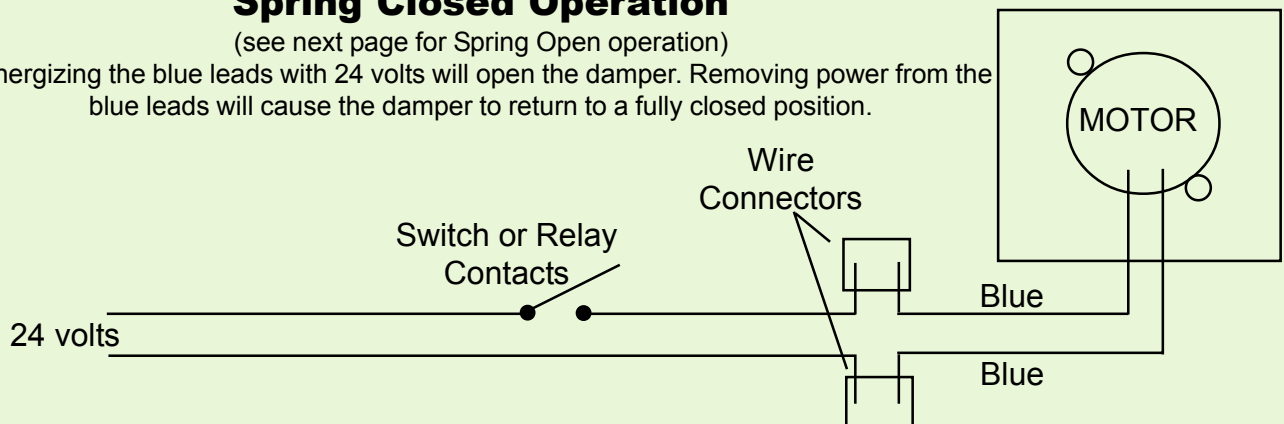
This motor is designed for use with 24 VAC power source.
All DuroZone Spring Return Dampers are Listed with Underwriters Laboratories (UL); File# 2C54
& Canadian Standard Association (CSA); File# LR78550.

- WIRE ACCORDING TO LOCAL CODE -

Spring Closed Operation

(see next page for Spring Open operation)

Energizing the blue leads with 24 volts will open the damper. Removing power from the blue leads will cause the damper to return to a fully closed position.



SPRD024 dampers are equipped with a Flow Adjustment Screw to limit the opening of the blade, thus limiting air flow. The Adjustment Screw is factory set to the full (open) position. This screw and locknut is located between the two mounting clips.

To adjust:

1. Loosen the adjustment screw locknut.
2. Turn the adjustment screw clockwise to desired setting.
3. Tighten the adjustment screw locknut.
4. Subsequent adjustments can be made by turning the adjustment screw clockwise to decrease air flow or counterclockwise to increase air flow. A second screw, located on the side of the damper motor, allows limited adjustment of the closing of the damper. Adjustment is the same as above.

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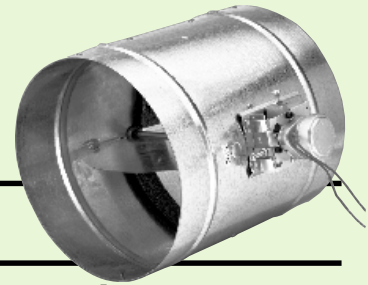
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ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty
- Controlled bypass
- Maintenance free operation
- Quick install mounting clips (except Round Dampers)
- 100% factory testing
- Screwless terminals
- Custom dampers and special controls are available on request.

DuroZone®

INSTALLATION INSTRUCTIONS



SPRD024 SPRING RETURN DAMPER (24 volt)

DuroZone SPRD024 Spring Return Dampers can be configured for either Spring Open or Spring Closed operation. A mounting plate, with quick release clips is attached to both sides of the damper. The Spring Closed side is identified S.C. and the Spring Open side is identified S.O. All SPRD024 dampers are shipped in the Spring Closed (S.C.) position. To change to Spring Open (S.O.) operation, simply unclip motor from damper housing, open damper blade and then clip the motor on the Spring Open (S.O.) side mounting bracket.

MOTOR LEAD IDENTIFICATION



Blue leads: 24 volt input AC Only



- IMPORTANT -

This motor is designed for use with 24 Volt VAC power source.

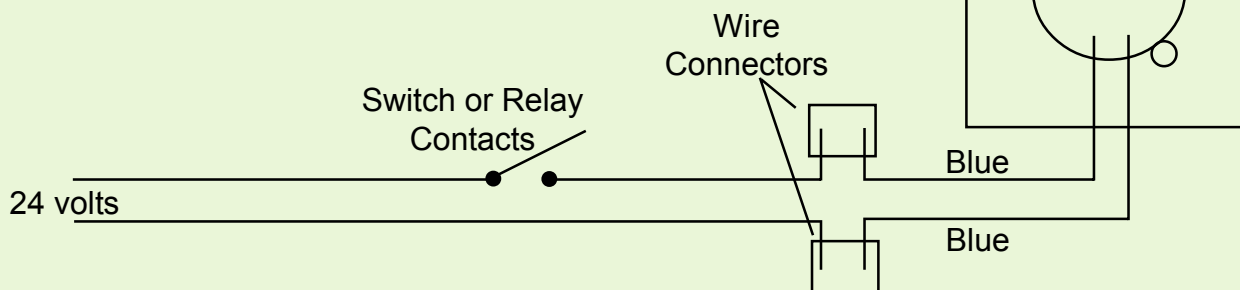
All DuroZone Spring Return Dampers are Listed with Underwriters Laboratories (UL); File# 2C54 & Canadian Standard Association (CSA); File# LR78550.

- WIRE ACCORDING TO LOCAL CODE -

Spring Open Operation

(see previous page for Spring Closed operation)

Energizing the blue leads with 24 volts will close the damper. Removing power from the blue leads will cause the damper to return to a fully open position.



SPRD024 dampers are equipped with a Flow Adjustment Screw to limit the closing of the blade, thus limiting air flow. The Adjustment Screw is factory set to the full (open) position. This screw and locknut is located between the two mounting clips.

To adjust:

1. Loosen the adjustment screw locknut.
2. Turn the adjustment screw clockwise to desired setting.
3. Tighten the adjustment screw locknut.
4. Subsequent adjustments can be made by turning the adjustment screw clockwise to decrease air flow or counterclockwise to increase air flow. A second screw, located on the side of the damper motor, allows limited adjustment of the open position of the damper. Adjustment is the same as above.

Duro Dyne East • Farmingdale, NY 11735 • Phone: 631-249-9000 • Fax: 631-249-8346
Duro Dyne Midwest • Fairfield, OH 45011 • Phone: 513-870-6000 • Fax: 513-870-6005
Duro Dyne West • Santa Fe Springs, CA 90670 • Phone: 562-926-1774 • Fax: 562-926-5778
Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers)
- 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

DuroZone®

INSTALLATION INSTRUCTIONS



SPRD110 SPRING RETURN DAMPER (110 volt)

DuroZone SPRD110 Spring Return Dampers can be configured for either Spring Open or Spring Closed operation. A mounting plate, with quick release clips is attached to both sides of the damper. The Spring Closed side is identified S.C. and the Spring Open side is identified S.O. All SPRD110 dampers are shipped in the Spring Closed (S.C.) position. To change to Spring Open (S.O.) operation, simply unclip motor from damper housing, open damper blade and then clip the motor on the Spring Open (S.O.) side mounting bracket.

MOTOR LEAD IDENTIFICATION

Black and White leads: 110 volt input (Black = hot / White = common) Green lead: Ground

- IMPORTANT -



This motor is designed for use with 110 - 120 VAC power source.
All DuroZone Spring Return Dampers are Listed with UnderWriters Laboratories (UL); File# 2C54
& Canadian Standard Association (CSA); File# LR78550.

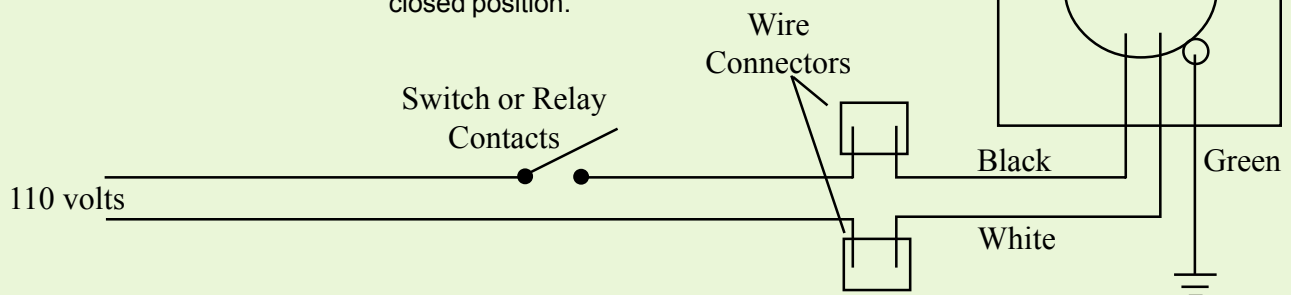


- WIRE ACCORDING TO LOCAL CODE -

Spring Closed Operation

(see next page for Spring Open operation)

Energizing the black and white leads with 110 volts will open the damper. Removing power from the black and white leads will cause the damper to return to a fully closed position.



SPRD110 dampers are equipped with a Flow Adjustment Screw to limit the opening of the blade, thus limiting air flow. The Adjustment Screw is factory set to the full (open) position.

To adjust:

1. Loosen the adjustment screw locknut.
2. Turn the adjustment screw clockwise to desired setting.
3. Tighten the adjustment screw locknut.
4. Subsequent adjustments can be made by turning the adjustment screw clockwise to decrease air flow or counterclockwise to increase air flow. A second screw, located on the side of the damper motor, allows limited adjustment of the closing of the damper. Adjustment is the same as above.

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Duro Dyne West • Santa Fe Springs, CA 90670 • Phone: 562-926-1774 • Fax: 562-926-5778

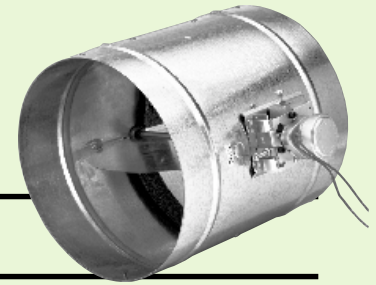
Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers)
- 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

DuroZone®

INSTALLATION INSTRUCTIONS



SPRD110 SPRING RETURN DAMPER (110 volt)

DuroZone SPRD110 Spring Return Dampers can be configured for either Spring Open or Spring Closed operation. A mounting plate, with quick release clips is attached to both sides of the damper. The Spring Closed side is identified S.C. and the Spring Open side is identified S.O. All SPRD110 dampers are shipped in the Spring Closed (S.C.) position. To change to Spring Open (S.O.) operation, simply unclip motor from damper housing, open damper blade and then clip the motor on the Spring Open (S.O.) side mounting bracket.

MOTOR LEAD IDENTIFICATION

Black and White leads: 110 volt input (Black = hot / White = common) Green lead: Ground



- IMPORTANT -

This motor is designed for use with 110 - 120 VAC power source.

All DuroZone Spring Return Dampers are Listed with UnderWriters Laboratories (UL); File# 2C54 & Canadian Standard Association (CSA); File# LR78550.

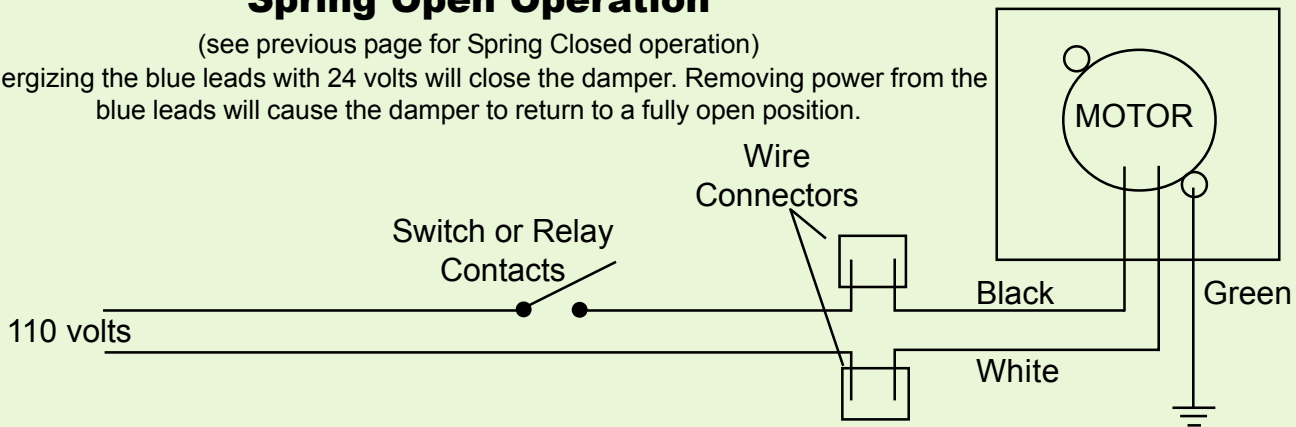


- WIRE ACCORDING TO LOCAL CODE -

Spring Open Operation

(see previous page for Spring Closed operation)

Energizing the blue leads with 24 volts will close the damper. Removing power from the blue leads will cause the damper to return to a fully open position.



SPRD110 dampers are equipped with a Flow Adjustment Screw to limit the opening of the blade, thus limiting air flow. The Adjustment Screw is factory set to the full (open) position.

To adjust:

1. Loosen the adjustment screw locknut.
2. Turn the adjustment screw clockwise to desired setting.
3. Tighten the adjustment screw locknut.
4. Subsequent adjustments can be made by turning the adjustment screw clockwise to decrease air flow or counterclockwise to increase air flow. A second screw, located on the side of the damper motor, allows limited adjustment of the open position of the damper. Adjustment is the same as above.

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Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers)
- 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

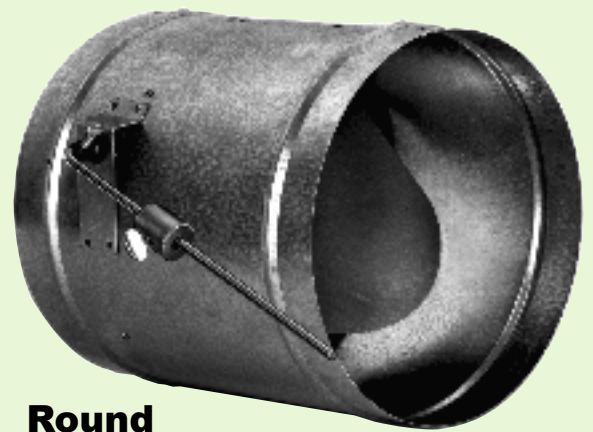


Pressure Relief Dampers

"Dumper Dampers"



**Rectangular
Pressure Relief
Dampers**



**Round
Pressure Relief
Dampers**

DuroZone Pressure Relief Dampers are used to relieve duct systems of pressure build up created, as zones are satisfied and zone dampers travel to a closed position. The DuroZone Pressure Relief Dampers do this in a simple and reliable fashion; based on barometric/static pressure in the duct system.

A weighted arm is attached to a damper blade. This weight is set to keep the damper closed when the system is off or all zones are calling. When pressure builds up in the duct system due to satisfied zones, the pressure opens the damper blade and "bypasses" to an unconditioned area or back to the return air duct.

DuroZone Pressure Relief Dampers are available in both rectangular and round configurations.

Rectangular Pressure Relief Dampers

- Plated Steel Counterbalance Rod & Weight
- Sintered Bronze Oil Impregnated Bushings
- Thumb Screws For Easy Adjustment
- Extruded Aluminum Frame
- Aluminum Blade
- Hardware & Brackets For Either Flush Or In Line Mounting

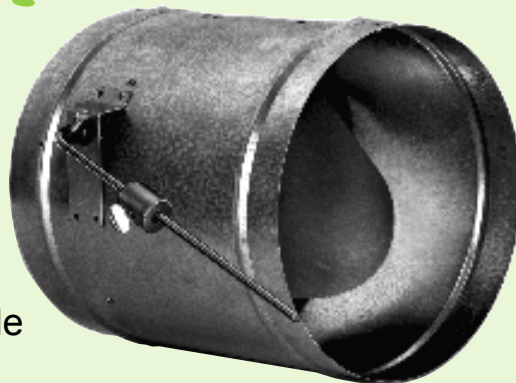


Ordering Information

ITEM#	MODEL	BYPASS AT 1200 FPM
35063	DD 12x8	700 CFM
35064	DD 18x8	1100 CFM
35068	DD 20x20	1600 CFM
35069	DD 20x12	1900 CFM

Round Pressure Relief Dampers

- Plated Steel Counterbalance Rod & Weight
- Sintered Bronze Oil Impregnated Bushings
- Thumb Screws For Easy Adjustment
- Galvanized Steel Construction
- Ability To Mount Counterbalance Rod On Either Side



Ordering Information

ITEM#	MODEL	BYPASS AT 1200 FPM
35070	DDRD-8	400 CFM
35071	DDRD-10	650 CFM
35072	DDRD-12	950 CFM
35073	DDRD-14	1300 CFM
35074	DDRD-16	1700 CFM

DuroZone[®]

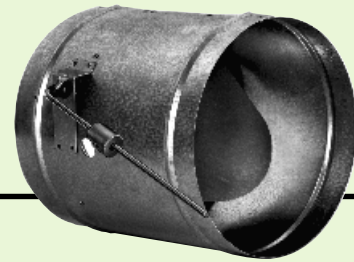
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Farmingdale, New York 11735

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DuroZone[®]



INSTALLATION INSTRUCTIONS

ROUND PRESSURE RELIEF DAMPERS (DUMPER DAMPERS)

DuroZone Pressure Relief Dampers are used to automatically relieve Duct Systems of the pressure build up created, as zones are satisfied and dampers travel to a closed position. The Duro Zone Pressure Relief Damper provides a simple and reliable means for accomplishing this.

One common practice is the passing of "Dumped" air from the supply duct to the return duct. Should you elect this method of bypass, the connection from the supply should attach to the return duct a minimum of 10 feet away from the blower. This will allow sufficient mixing of the air streams to prevent too cold or too hot air passing over the heat exchanger or air conditioning coil. Dampers are available in standard sizes. Proper size is to be determined by the installer based on standard practice for duct sizing. The dampers can be doubled up where a discharge in excess of standard sizes is required. You will find that sizing is not critical.

ROUND PRESSURE RELIEF DAMPERS

Special care should be exercised when using Round Pressure Relief Dampers.

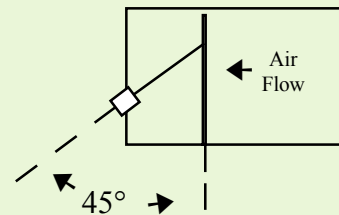
1-The Damper should be fully supported wherever it is mounted. It should not be just suspended between two pieces of Flexible Ducting.

2-The pivot axis of the counterbalance arm and weight must be parallel with the ground. Failure to do so may prevent the damper from fully closing.

Setting The Damper For Operation

1-Install the counterbalance rod by slipping the short end into the 1/4" hole in the end bearing. Set the rod angled approximately 45° above the plane of the damper blade. Lock the rod into position with the thumb screw in the damper bearing.

2-Slip the counterweight to the top of the rod and tighten the thumb screw by hand to temporarily fasten the counterweight.



3-Set all thermostats so that all zones call for heat. Relocate the pressure relief damper counterweight to a point which keeps damper closed without flutter.

4-Reset the thermostats to the desired system settings. When less than all zones call, the pressure relief damper should open to relieve excess pressure. When all zones call, the pressure relief damper should be closed.

NOTE: The Pressure Relief Damper adjustments are sufficient to take care of most conditions encountered. In rare cases it may be necessary to add or reduce weight. To add weight, slide several 1/4" washers onto the rod above the weight. You may want to reduce weight by cutting off a section of the counterbalance rod.

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Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

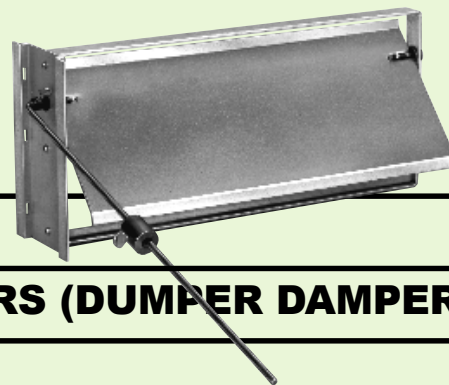
ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers)
- 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

DuroZone[®]

INSTALLATION INSTRUCTIONS

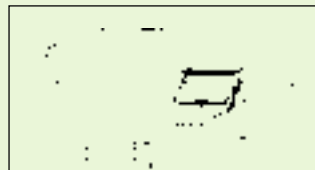
RECTANGULAR PRESSURE RELIEF DAMPERS (DUMPER DAMPERS)



TWO COMMON METHODS OF DISCHARGING AIR

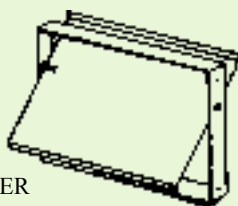


Mount the damper flush on the side of the duct and discharge air into the equipment room.



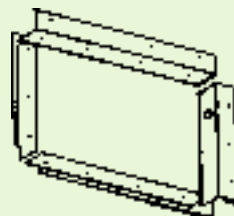
Install a take off in the side of the duct to direct "dumped air" to some specific area. The damper is installed through a 3 3/8" slot cut into the ductwork.

DUROZONE DUMPER DAMPERS INCLUDE:

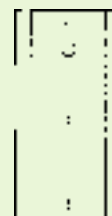


DAMPER

COUNTERBALANCE
ROD AND WEIGHT



4 FLANGES FOR
FLUSH MOUNTING



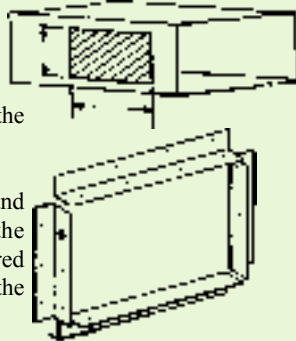
FACE PLATE FOR
"IN LINE" MOUNTING

NOTE: Use necessary installation screws provided. For in line screws you must use #6x3/8" sheet metal screws to mount the plate to the duct. Longer screws will interfere with proper damper operation.

INSTALLATION - FLUSH MOUNT:

1. Cut a hole in the duct the same size as the damper ordered.

2. Slip the flanges on the damper frame and secure the flanges to the duct using the screws provided. Keep the damper centered on the hole to prevent interfering with the damper operation.



SETTING DAMPER FOR OPERATION

1-Install the counterbalance rod by slipping the short end into the 1/4" hole in the end bearing. Set the rod angled approximately 45° above the plane of the damper blade. Lock the rod into position with the thumb screw in the damper bearing.

2-Slip the counterweight to the top of the rod and tighten the thumb screw by hand to temporarily fasten the counterweight.

3-Set all thermostats so that all zones call for heat. Relocate the pressure relief damper counterweight to a point which keeps damper closed without flutter.

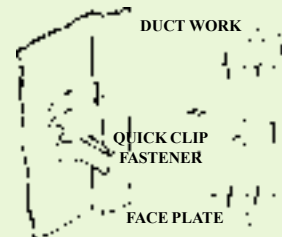
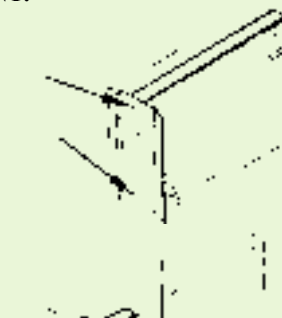
4-Reset the thermostats to the desired system settings. When less than all zones call, the pressure relief damper should open to relieve excess pressure. When all zones call, the pressure relief damper should be closed.

INSTALLATION - IN-LINE MOUNT:

1. Mount the face plate on the damper by means of the screws supplied. Be sure that the bearing extending through the face plate clears the hole in the face plate.

2. Cut a 3-3/8" slot in the discharge duct. Be careful to cut the slot on the correct side of the duct so the damper will open away from the main duct. This is important as the damper swings open in one direction only.

3. Slide the Quick Clip fasteners outward to secure damper.



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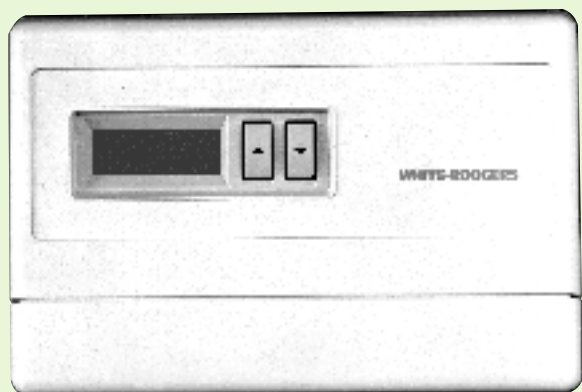
ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers)
- 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

DuroZone[®]

-MULTINE[®]-

Thermostats



The best Zone Control System in the world is useless without reliable thermostats. DuroZone offers a full line of thermostats specifically tested for operation with DuroZone control panels and dampers. All DuroZone thermostats feature standard terminal identification for easy hookup to any DuroZone control panel.

HEATING/COOLING ZONE THERMOSTATS

3WT Three Wire Thermostat

Item# 35052



3 wire SPDT thermostat.
Hermetically sealed, reed switch construction.
Use on Zones 2 and above on SMZ Panels.
Use with MSSB (#35214) for Zone 1.
Terminals: R, W, Y.

MSSB Switching Subbase

Item# 35214



6 wire subbase with Heat - Off - Cool & Fan Auto - On switches.
For use with 3WT thermostat. 3WT & MSSB combination used
for system control of SMZ panels on Zone 1.
Terminals: R, W, Y, G, B, O.

DRS Round Thermostat

Item# 35180



Honeywell T87F style thermostat. 3 wire SPDT mercury bulb.
DuroZone logo printed on face.
Terminals: R, W, Y.
Use on Zones 2 and above on SMZ Panels.
Use with DRSMS (#35181) for Zone 1.
Supplied with 3 wire wallplate.

DRSMS Round Zone 1 Subbase

Item# 35181



6 wire subbase with Heat - Off - Cool & Fan Auto - On switches.
For use with DRS thermostat. DRS & DRSMS combination used
for system control of SMZ panels on Zone 1.
Terminals: R, Y, W, G, B, O.

DT-4 Digital Thermostat

Item# 35190



Non programmable battery powered.
Terminals: R, W, Y, G, B, O.
Use on SMZ Panels.

DT-3 Digital Set Back Thermostat

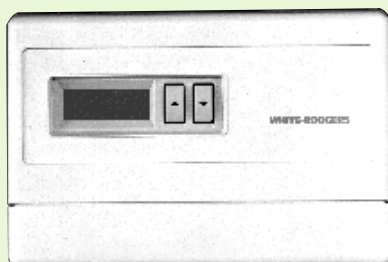
Item# 35191



5+1+1 programmable battery powered
Terminals: R, W, Y, G, B, O.
Use on SMZ Panels.

Set Back Thermostat

Item# 35173



Electronic clock thermostat. Heat - Off - Cool & Fan
Auto - On switches. Battery powered. 24 volts not
needed at thermostat. 5 + 1 + 1 programming.
Terminals: R, W, Y, G, B, O. Use on all SMZ Panels.

DT-AC Auto Changeover Thermostat

Item# 35192



5 + 2 programming. Auto Changeover
Electronic clock thermostat. Heat - Off - Cool & Fan Auto - On
switches. Battery powered. 24 volts not needed at thermostat.
Terminals: R, W, Y, G, B, O. Use on all SMZ Panels.

HEAT PUMP ZONING THERMOSTATS

Zone 1 Heat Pump Set Back Thermostat
Item# 35174



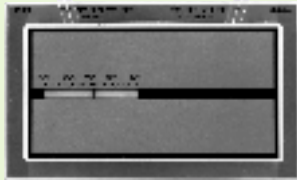
Electronic clock thermostat. 2 stage heat, 1 stage cool. 5 + 1 + 1 programming. Emergency Heat - Heat - Off - Cool and Fan Auto - On switches. 24 volt powered. Terminals: R, C, W1, W2, Y, G, B, O, E, L, P. Use on Zone 1 of SMZ-HP Panels.

Zone 1 Heat Pump Thermostat
Item# 35176



2 stage heat, 1 stage cool. Emergency Heat - Heat - Off - Cool and Fan Auto - On switches. Terminals: R, W1, W2, Y, G, B, O, E. Use on Zone 1 of SMZ-HP Panels.

Dual Bulb Thermostat Item# 35177



2 stage heat, 2 stage cool thermostat. No switching. Terminals: Rc, Rh, Y1, Y2, W1, W2. Use on Zone 2 and up on SMZ-HP Panels.

DT-AC Auto Changeover Thermostat
Item# 35192



5 + 2 programming. Auto Changeover Electronic clock thermostat. Heat - Off - Cool & Fan Auto - On switches. Battery powered. 24 volts not needed at thermostat. Terminals: R, W, Y, G, B, O. Use on all SMZ Panels.

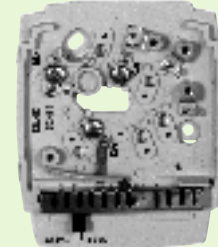
ACCESSORY THERMOSTATS

Wall Thermostat with Subbase
Item# 35061



Convenient combination of 3WT thermostat and SB-1 subbase. Allows for control of damper for both heating & cooling situations. *Not for use with Zone systems. Terminals: R, W, Y.

SB-1 Subbase
Item# 35056



3 wire subbase with Heat/Cool switch. For use with 3WT thermostat. When set for "Heat", damper will open on temperature fall. When set for "Cool", damper will open on temperature rise. *Not for use with Zone systems. Terminals: R, W, Y.

DRSHCS
Round Heat/Cool Subbase
Item# 35182



3 wire subbase with Heat/Cool switch for use with DRS thermostat. When set for "Heat", damper will open on temperature fall. When set for "Cool", damper will open on temperature rise. *Not for use with Zone systems. Terminals: R, W, Y.

Remote Bulb Thermostat
Item# 35172



SPDT remote bulb thermostat for sensing temperature changes. Use for auto changeover to switch system from heating to cooling. Terminals: R, W, Y.

DRS3WP
Round 3 Wire Wallplate
Item# 35183



Replacement 3 wire wallplate for DRS. Adds Y terminal to DRS to allow control of heating & cooling. Terminals: R, W, Y.

APPLICATION CHART

DESCRIPTION	SMZ ZONE 1	SMZ ZONE 2+	SMZ-ZHP ZONE 1	SMZ-ZHP ZONE 2+	SMZ-AC
35052 3WT Three Wire Thermostat	X w/35214	X			X
35061 3TSB Wall Thermostat with Subbase	Not for use with zone systems.				
35056 SB-1 Subbase	Not for use with zone systems.				
35172 Outdoor Thermostat					
35214 MSSB Switching Subbase	X w/35052				X w/35052
35173 Set Back Thermostat	X	X			X
35174 Zone 1 Heat Pump Set Back Thermostat			X		
35176 Zone 1 Heat Pump Thermostat			X		
35177 Dual Bulb Thermostat				X	
35190 DT-4 Digital Thermostat	X	X			X
35191 DT-3 Digital Set Back Thermostat	X	X			X
35180 DRS Round Thermostat	X w/35181	X			X w/35181
35181 DRSMS Round Zone 1 Subbase	X w/35180				X w/35180
35182 DRSHCS Round Heat/Cool Subbase	Not for use with zone systems.				
35183 DRS3WP Round 3 wire Wallplate		X w/35180			
35192 DTAC Auto Changeover Thermostat	X	X	X	X	X

DuroZone[®]

MULTILINE[®]

DT-3

Electronic Programmable Thermostat

TYPICAL APPLICATIONS

ALL ZONES: SMZ-2SW, SMZ-3SW, SMZ-4SW, SMZ-AC

PREPROGRAMMED

Energy Saving 5-1-1 Schedule
Four Time Periods Per Day

BATTERY OPERATED

Allows Maximum System Compatibility
Two "AA" (LR6) Batteries Included

EASY INSTALLATION

Separate Base Plate To Aid Installation
Detailed Wiring Diagrams And Instructions

ADJUSTABLE TEMPERATURE SWINGS

Cycle Rate Adjustment For Maximum Comfort
Temperature Differential User Adjustable

ENERGY USAGE MONITOR

Keeps Track Of Actual Operational Time
Separately Stores Running Totals For Today, Yesterday,
This Week, Last Week, And Two Weeks

HOLD MODE OPERATION

Allows For Manual Operation
May Be Used For Vacation Setback

TEMPORARY OVERRIDE

Changes Set Temperature Until Next Time Period

COMFORT OVERRIDE

Changes Set Temperature A Set Amount Of Time

FILTER CHANGE REMINDER

Adjustable Change Time From 1 to 999 Hours
Can Be Reset Back To Zero At Any Time

LOW BATTERY INDICATOR

Display Changes To Show Low Battery Condition
45 Seconds Power Hold While Changing Batteries

INFORMATIVE DISPLAY

Time And Temperature Constantly Displayed
Shows Program Period And Set Temperature
Heat And Cool Indicators Light When Unit Is On



ELECTRICAL LOAD LIMIT

1.0 Amps At 24 VAC

COMPRESSOR PROTECTION DELAY

4 Minutes

TEMPERATURE DISPLAY

Selectable Celsius Or Fahrenheit

TIME DISPLAY

Selectable 12 Or 24 Hour

HEATING UNIT SWITCH

E - Fan Controlled By Thermostat
G - Fan Controlled By Heating Unit

SYSTEM SWITCH

3 Position (COOL - OFF - HEAT)

FAN SWITCH

2 Position (ON- AUTO)

TERMINALS

RC, RH, W, Y, G, B, O

PROGRAMMING RESOLUTION

10 Minute Steps (Factory Option 5 Min.)

PROGRAMMING PERIODS

Monday - Friday: 4 Periods Per Day
Saturday: 4 Periods Per Day
Sunday: 4 Periods Per Day

ORDERING INFORMATION

ITEM#	MODEL	DESCRIPTION
35191	DT-3	Digital Setback Thermostat

DuroZone[®]

A Division of Duro Dyne Corporation.
Farmingdale, New York 11735

Phone: 631-249-9000 • Fax: 631-249-8346

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DuroZone[®]

MULTILINE[®]

DT-4

Electronic Programmable Thermostat

TYPICAL APPLICATIONS

GAS FURNACE - *Standing Pilot*
GAS FURNACE - *Electronic Ignition*
GAS FIRE BOILER
GAS FIRED MILLIVOLT SYSTEM
OIL FIRED BOILER
OIL FIRED FURNACE
ELECTRIC FORCED AIR FURNACE
ELECTRIC AIR CONDITIONER
GAS AIR CONDITIONER
SINGLE STAGE HEAT PUMP
SINGLE TRANSFORMER SYSTEMS
DUAL TRANSFORMER SYSTEMS

LOW BATTERY INDICATOR

Display Changes To Show Low Battery Condition
45 Seconds Power Hold While Changing Batteries

INFORMATIVE DISPLAY

Both Set And Room Temperatures Displayed
Heat And Cool Indicators Light When Unit Is On

EASY INSTALLATION

Separate Base Plate To Aid Installation
Detailed Wiring Diagrams And Instructions

BATTERY OPERATED

Allows Maximum System Compatibility
Two "AA" (LR6) Batteries Included

MINIMAL TEMPERATURE SWINGS

Temperature Differential Optional

PHYSICAL DIMENSIONS

3 1/2" (89mm) x 5 1/2" (143mm) x 1 1/4" (36mm)

ELECTRICAL LOAD LIMIT

1.0 Amps At 24 VAC

COMPRESSOR PROTECTION DELAY

3 Minutes

TEMPERATURE DISPLAY

Selectable Celsius Or Fahrenheit



DISPLAY RANGE

32° to 99° F $\pm 2^\circ$ F
0° to 37° C $\pm 1^\circ$ C

CONTROL RANGE

40° to 95° F
5° to 35° C

TEMPERATURE ADJUSTMENT

1° Steps

TEMPERATURE DIFFERENTIAL FAHRENHEIT

Preset = 2° : 1° Above, 1° Below Setpoint

TEMPERATURE DIFFERENTIAL CELSIUS

Preset = 1° : 0.5° Above, 0.5° Below Setpoint

HEATING UNIT SWITCH

E - Fan Controlled By Thermostat
G - Fan Controlled By Heating Unit

SYSTEM SWITCH

3 Position (COOL - OFF - HEAT)

FAN SWITCH

2 Position (ON- AUTO)

SAMPLING RESOLUTION

1 Minute Interval

ORDERING INFORMATION

ITEM#	MODEL	DESCRIPTION
35190	DT-4	Digital Thermostat

DuroZone[®]

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Farmingdale, New York 11735

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DT-AC

Digital Multi-Stage Thermostat

The DT-AC Series Multi-Stage (two stage heat and two stage cool) thermostats with Automatic Changeover offer a unique dual power option. If common (neutral) is available, attach it to terminal C to power the thermostat. If common is not available, the thermostat will use the AA batteries for power. No need to pull a new wire! The thermostat features contemporary styling and Classic White coloring to blend with any room decor.

TYPICAL APPLICATIONS

ALL ZONES: SMZ-2SW, SMZ-3SW, SMZ-4SW, SMZ-AC

FEATURES

- Dual Power Option: Thermostat may be powered using system hot and common from 24 volt transformer, or battery powered (no common required).
- 5+2 Day programming.
- Simultaneous heating and cooling program storage eliminates the need to reprogram each season.
- Time and temperature settings are pre-programmed and easy to change.
- LCD displays setpoint temperature continuously and alternately shows actual time and temperature.
- Automatic changeover.
- Temporary temperature override until next program period.
- Hold temperature button allows manual program override for an indefinite period without changing programming.
- Keypad lockout.
- Selectable °F/°C display.
- Adjustable anticipation.
- Five-minute compressor short cycle protection.
- Temperature display recalibration feature allows user to modify room temperature display to suit individual needs.
- Program reset button.

SPECIFICATIONS

Electrical Rating: 20 to 30 VAC (50/60 Hz) or D.C. 0.05 to 1.5 Amps (load per terminal) 1.5 Amps max. total load (all terminals combined)

Terminals: R, C, G, W, W2, Y, Y2, O, B

ORDERING INFORMATION

ITEM# MODEL DESCRIPTION

35192 DT-AC Digital Multi-Stage Thermostat



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Farmingdale, New York 11735

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DuroZone®

INSTALLATION INSTRUCTIONS

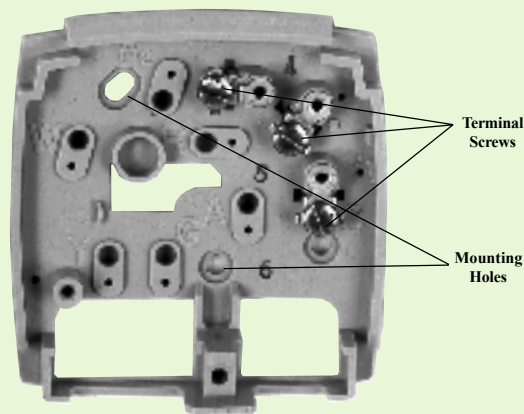


3WT THREE WIRE THERMOSTAT and SB-1 SUBBASE

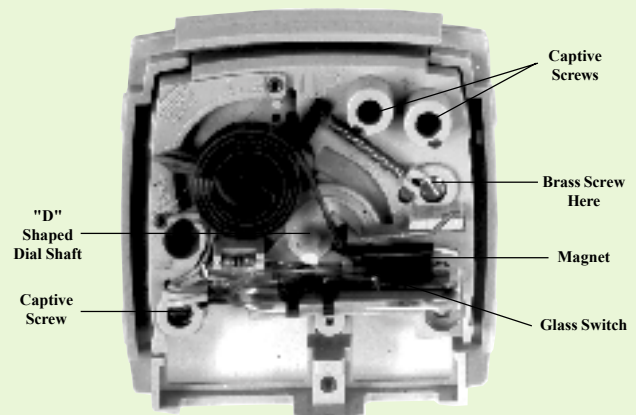
General Description: A wall mounted, low voltage, room temperature controller designed for use with Duro Zone Damper Systems.

Features: Magnetically operated, hermetically sealed electronic switch insures a long service life, unaffected by moisture and dust. Does not require leveling.

Specifications: Model 3WT 3 wire (SPDT) fixed anticipation. Low voltage 30 V.A.C., 1.5 amp. maximum. Setting range 55-85° F. Thermometer range 44-96° F. Dimensions 3-1/4" wide, 3-5/8" high, 1-1/2" deep. Mounting direct wall or pre-mounting plate (supplied).



Thermostat back plate - Fig. 1



Thermostat body (front view) Fig. 2

LOCATION:

When selecting the thermostat location, consideration must be given to the following:

1. **Locate approximately 5 feet above the floor** in a location accessible for wiring and setting.
2. **Locate on an inside wall.**
3. **Do NOT** locate where influenced by abnormal heat such as: in sunlight, close to a radio, TV, lamps, over registers on radiators, or over internal wall heat.
4. **Do NOT** locate where influenced by abnormal cold such as: on an outside wall or wall separating an unheated room, in drafts from stairwell or doors, close to windows.
5. **Do NOT** locate where air circulation is poor such as: behind open doors, in corners or alcoves, over or close to furniture.

INSTALLATION: See Wiring Diagram

1. Remove the cover (friction fit) from the thermostat body by gripping at the top and the bottom and lifting from the back plate; use extreme care not to damage working parts.
2. Remove the back plate from the thermostat body by loosening the captive screws (See Fig. 2).
3. Pull approximately 3 inches of wire through the wall and thread the wire through the center of the back plate (Fig. 1).
4. Mount the back plate on the wall using the mounting holes.
5. Connect the wires to the applicable terminal screws (See the schematic diagrams on the next page).
6. Push the excess wire back into the wall and mount the thermostat body on the back plate with the captive screws.
7. Replace the thermostat cover being careful to align the "D" shaped dial shaft with the matching shaped hole in the hub of the setting dial, then press the cover carefully on the

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Duro Dyne Midwest • Fairfield, OH 45011 • Phone: 513-870-6000 • Fax: 513-870-6005
Duro Dyne West • Santa Fe Springs, CA 90670 • Phone: 562-926-1774 • Fax: 562-926-5778
Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers)
- 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

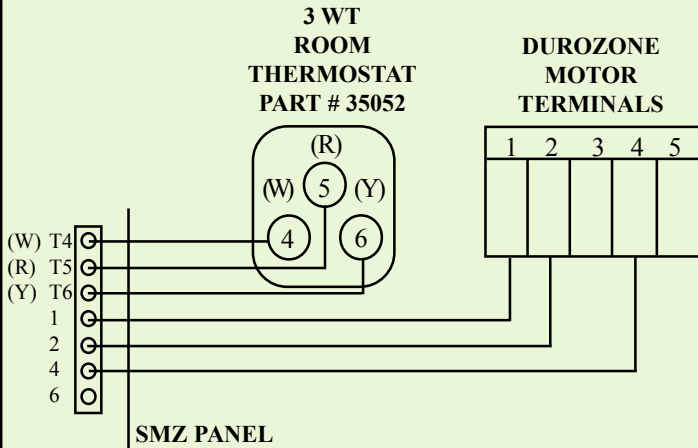
SB-1 SUBBASE USE TO CONVERT 3WT THERMOSTAT TO HEATING/COOLING THERMOSTAT. (3TSB)



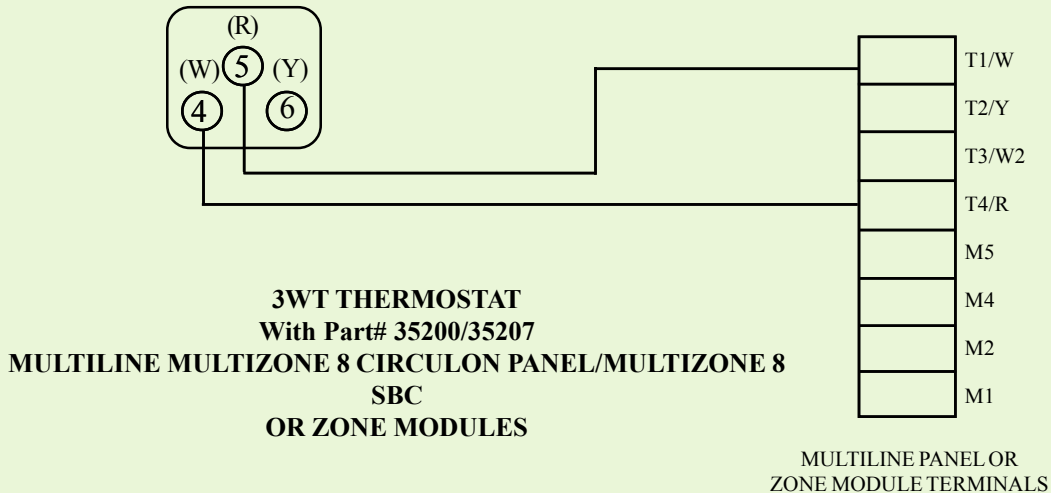
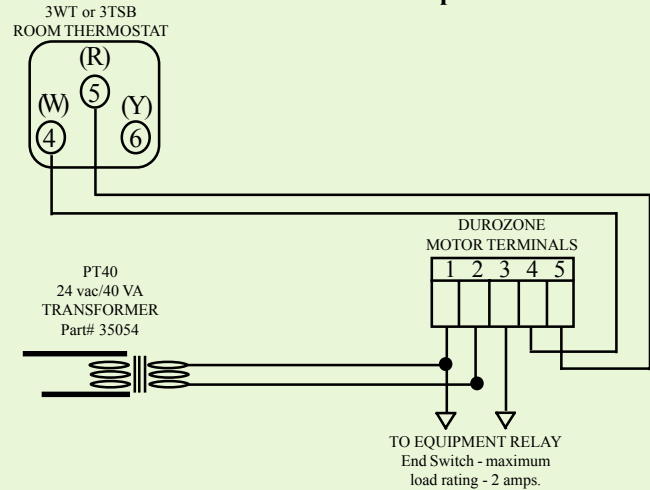
INSTALLATION:

1. Locate the thermostat as indicated on the previous page side of the instructions.
2. Pull approx. 3" of each of the 3 wires through the center of the subbase.
3. Mount the (SB-1) Subbase on the wall using the mounting holes.
4. Connect the wires to the applicable terminal screws 4 (W), 5 (R), and/or 6 (Y).
5. Remove the cover carefully from the thermostat body.
6. Unscrew the captive screws and discard the back plate.
7. Mount the body of the thermostat to the (SB-1) subbase using the captive screws. This will automatically make the correct connections for the heating and cooling cycles.
8. Replace the cover carefully. Replace the thermostat cover being careful to align "D" shaped dial shaft with the matching shaped hole in the hub of setting dial, then press the cover carefully on the thermostat body.

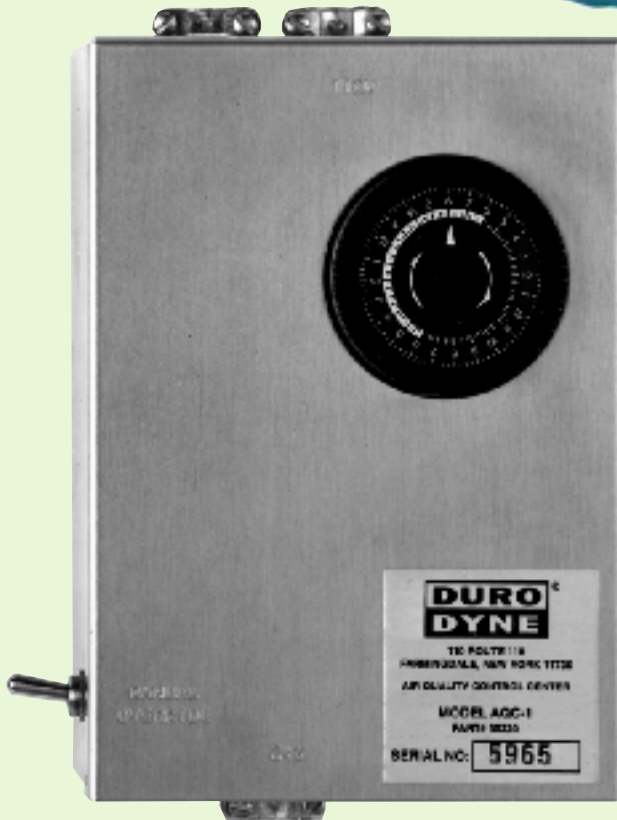
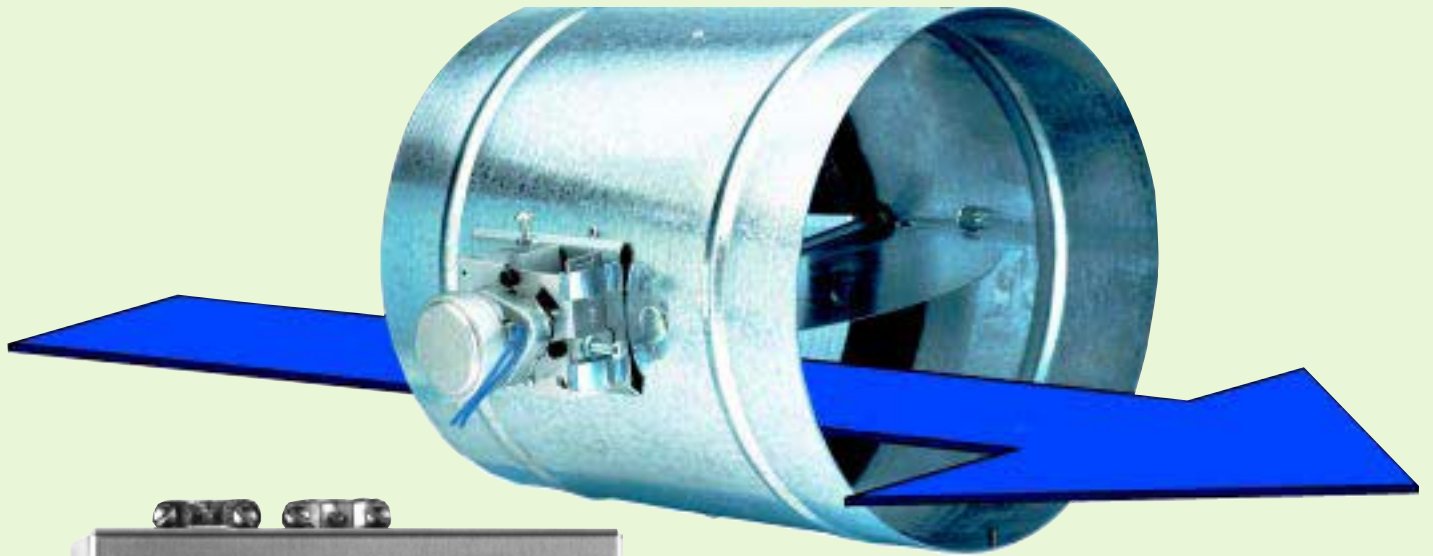
3WT Thermostat with SMZ Control Panels Part# 35226/35227/35228



3WT Thermostat or 3 TSB Thermostat with DuroZone Zone Dampers



The **DuroZone**[®] *Dyna-Fresh*[®] **Air Quality Control System**



CONSTANT ENERGY CONSERVATION emphasis and local building code changes over the past several years have resulted in efforts to make buildings and homes more weather tight and draft free. While these efforts have been successful, eliminating outside air leakage has created another potential problem: air quality of the interior atmosphere.

Many state and local governments have become concerned that the relatively stagnant indoor air is showing increasing levels of carbon monoxide and carbon dioxide. Some states have required periodic introduction of outdoor air into the indoor environment. The **Dyna-Fresh®** Air Quality Control Center coupled with a Model SRRD or SPRD Spring Return Damper was designed for this purpose.

**SPRD/SRRD
SPRING RETURN DAMPERS**
Available in 24 volt and 110 volt models
Sizes from 5 to 12 inch diameter
Low leakage gasket design
UL and CSA Listed

**Dyna-Fresh®
Item# 35220
AQC AIR QUALITY
CONTROL CENTER**
24 Hour clock timer
Simple compact design
Manual over-ride switch
Compatible with 24 or 110 volt
Spring Return Damper
UL and CSA Listed

UL LISTED 2C30

1. Fresh air is drawn in from the outside and mixed with return air to be distributed by the air handling equipment.
2. The **Dyna-Fresh®** AQC Control Panel coordinates the blower, exhaust fan, and damper to introduce fresh air and remove stale air at user selectable 15 minute intervals.
3. Stale air is exhausted by the independent exhaust fan.

CONTROL CENTER

The **Dyna-Fresh**® AQC has a programmable (in 15 minute intervals) 24 hour timer which is wired to control a DuroZone Spring Return Damper (110 volt or 24 volt), an exhaust fan, and the air handler fan. Once the timer has been programmed a call from the **Dyna-Fresh**® AQC for fresh air will:

- **Open the Spring Return Damper to allow fresh air into the return duct.**
- **Turn on the air handler fan to distribute the fresh air into the home.**
- **Activate an exhaust fan to remove the stale air in the home or office.**

Dyna-Fresh®

AQC Air Quality Control Center

Item# 35220

- **Listed to UL and CSA Standards for Safety**

- **24 Hour Clock Timer**



- **Programmable in 15 Minute Intervals**



- **Controls Either a 24 Volt or 110 Volt Damper**

- **Eliminates the Need for a Low Voltage Transformer to Power the Fresh Air Damper**

- **Installs Quickly**

- **Compact Design**

- **Manual Over-ride Switch for Continuous Fresh Air**

SPRD DAMPERS

LISTED BY UNDERWRITERS LABORATORIES

DURABLE STEEL CONSTRUCTION

Housing and blade made of galvanized steel with reinforcing beads for maximum durability.

REVERSIBLE HIGH TORQUE, SPRING RETURN MOTOR

Motor opens when powered, closes when deactivated.

LOW LEAKAGE GASKET DESIGN

Vinyl Nitrile Gasket abutting the damper blade ensures minimal leakage.

QUICK INSTALLATION & WIRING

Damper attaches to duct by use of nylon ties or screws. Easy wiring: strip the motor leads and splice them to power.

TWO POWER OPTIONS AVAILABLE

Low voltage 24 volt powered dampers are available as well as 110 volt units.

ROUND HOUSING

Designed for use with flexible ducting or round duct.

ADJUSTABLE STOP

Allows air flow adjustment by limiting amount of opening.

THREE YEAR LIMITED WARRANTY

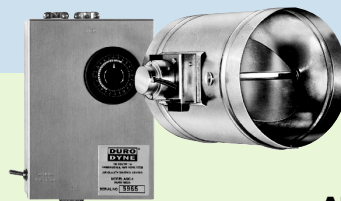
Damper Motor Guaranteed for Three Years After Installation.

ITEM#	MODEL	APPROXIMATE DIAMETER	APPROXIMATE LENGTH OF HOUSING	GAUGE OF STEEL (FOR HOUSING)
37046	SPRD024-5 <small>24 VOLT</small>	5"	9"	24
37047	SPRD024-6 <small>24 VOLT</small>	6"	9"	24
37048	SPRD024-7 <small>24 VOLT</small>	7"	9"	24
37049	SPRD024-8 <small>24 VOLT</small>	8"	9"	24
37050	SPRD024-9 <small>24 VOLT</small>	9"	11"	22
37051	SPRD024-10 <small>24 VOLT</small>	10"	11"	22
37052	SPRD024-11 <small>24 VOLT</small>	11"	11"	22
37053	SPRD024-12 <small>24 VOLT</small>	12"	14"	22

UL
LISTED
2C54

**ORDERING INFORMATION FOR SPRD
24 VOLT SPRING RETURN DAMPER**

**SPRD024
SERIES**



**SPRD110
SERIES**

ITEM#	MODEL	APPROXIMATE DIAMETER	APPROXIMATE LENGTH OF HOUSING	GAUGE OF STEEL (FOR HOUSING)
37076	SPRD110-5 <small>110 VOLT</small>	5"	9"	24
37077	SPRD110-6 <small>110 VOLT</small>	6"	9"	24
37078	SPRD110-7 <small>110 VOLT</small>	7"	9"	24
37079	SPRD110-8 <small>110 VOLT</small>	8"	9"	24
37080	SPRD110-9 <small>110 VOLT</small>	9"	11"	22
37081	SPRD110-10 <small>110 VOLT</small>	10"	11"	22
37082	SPRD110-11 <small>110 VOLT</small>	11"	11"	22
37083	SPRD110-12 <small>110 VOLT</small>	12"	14"	22

UL
LISTED
2C54

**ORDERING INFORMATION FOR SPRD
110 VOLT SPRING RETURN DAMPER**

DuroZone

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Farmingdale, New York 11735
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DuroZone®



35220/35221 AQC *Dyna-Fresh*®

USE

The DuroZone *Dyna-Fresh*® Air Quality Control Center was designed to periodically introduce outdoor air into the indoor environment. A programmable (in 15 minute intervals) 24 hour timer allows flexibility in customizing fresh air intake to various seasonal and geographical conditions.

APPLICATION

The DuroZone *Dyna-Fresh*® was designed for use with DuroZone 24 volt Spring Return Dampers - Series SPRD or 110 Volt spring return dampers - SRRD Series. The *Dyna-Fresh*® meets the requirements for fresh air intake as outlined by the Washington State Energy Code.

OPERATION

The *Dyna-Fresh*® is supplied with both a user programmable timer and a manual over-ride switch. To set the timer, simply rotate the dial in a clockwise manner lining up the current time with the white arrow.

To set an "ON" cycle, gently push the appropriate black indicator towards the center of the timer. A small click will be heard and felt to confirm a positive setting. Every "ON" setting will keep the circuit energized for a period of fifteen minutes.

When the *Dyna-Fresh*® is put into an "ON" state, either by the timer setting or the manual over-ride switch, the following occurs:

- 1) 24 volts is sent to terminals D1 and D4 - opening a spring return damper.
- 2) 110 volts is sent to terminals F1 and F2 - activating an exhaust or whole house fan.
- 3) R makes to G1 - activating the equipment fan.
- 4) G1 to G2 is broken - disabling the possibility of a backfeed through the thermostat turning on the compressor.
- 5) C makes to NO and breaks from NC.

INSTALLATION

The *Dyna-Fresh*® should be located in a convenient location where access to the timer mechanism and manual over-ride switch is not impaired. The *Dyna-Fresh*® cabinet has two keyhole slots at the top to facilitate mounting.

WIRING

Wire the *Dyna-Fresh*® as follows:

110 volt 60hz supply to L1 and L2.

Whole house Fan to F1 and F2.

(Maximum contact rating = 16 amps @ 120VAC)

24 volt DuroZone Spring Return Damper (SPRD), to D1 and D4.

R on the *Dyna-Fresh*® to R on the equipment.

G1 on the *Dyna-Fresh*® to G on the equipment.

G2 on the *Dyna-Fresh*® to G on the thermostat.

Wire all other equipment as per normal installation.

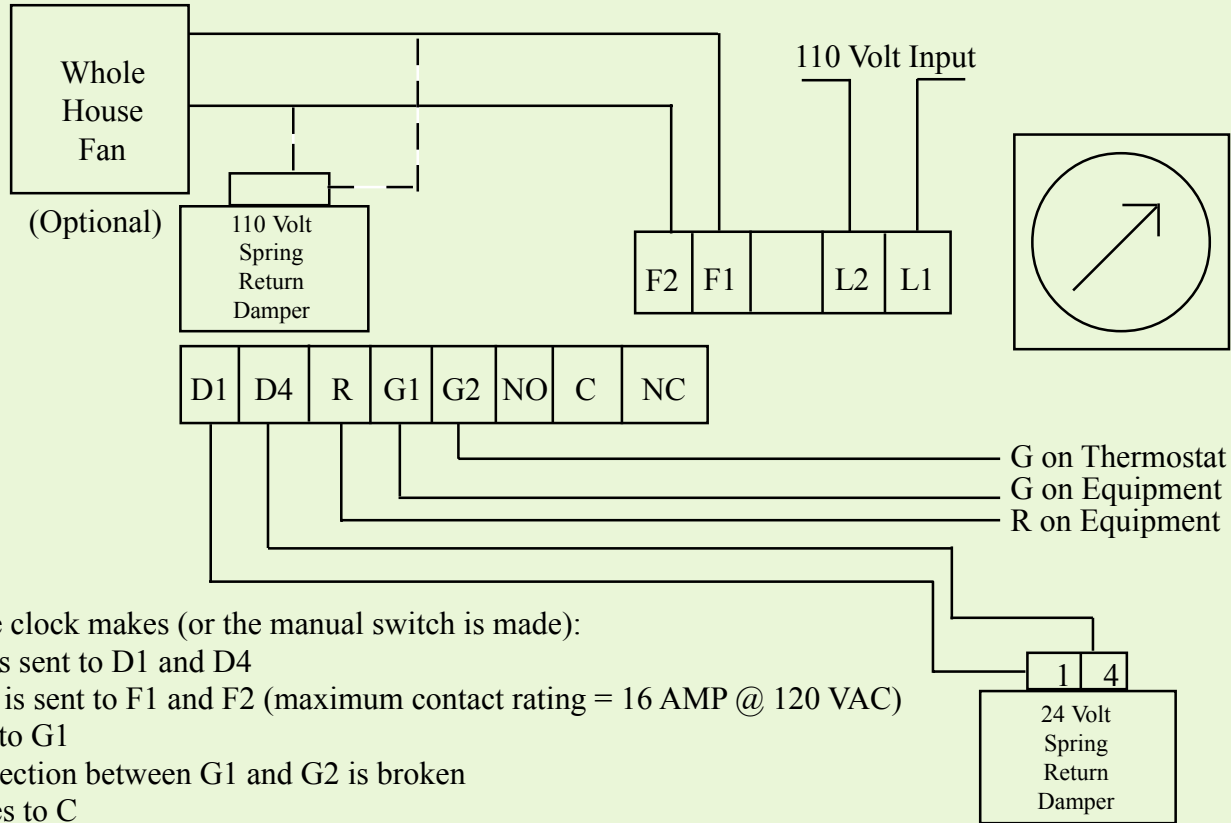
If using a 110 volt Spring Return Damper, such as DuroZone's Series SRRD, wire the damper to F1 and F2 in conjunction with the exhaust or whole house fan.

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Dyna-Fresh® AIR QUALITY CONTROL CENTER



When the clock makes (or the manual switch is made):

24 volts is sent to D1 and D4

110 volts is sent to F1 and F2 (maximum contact rating = 16 AMP @ 120 VAC)

R makes to G1

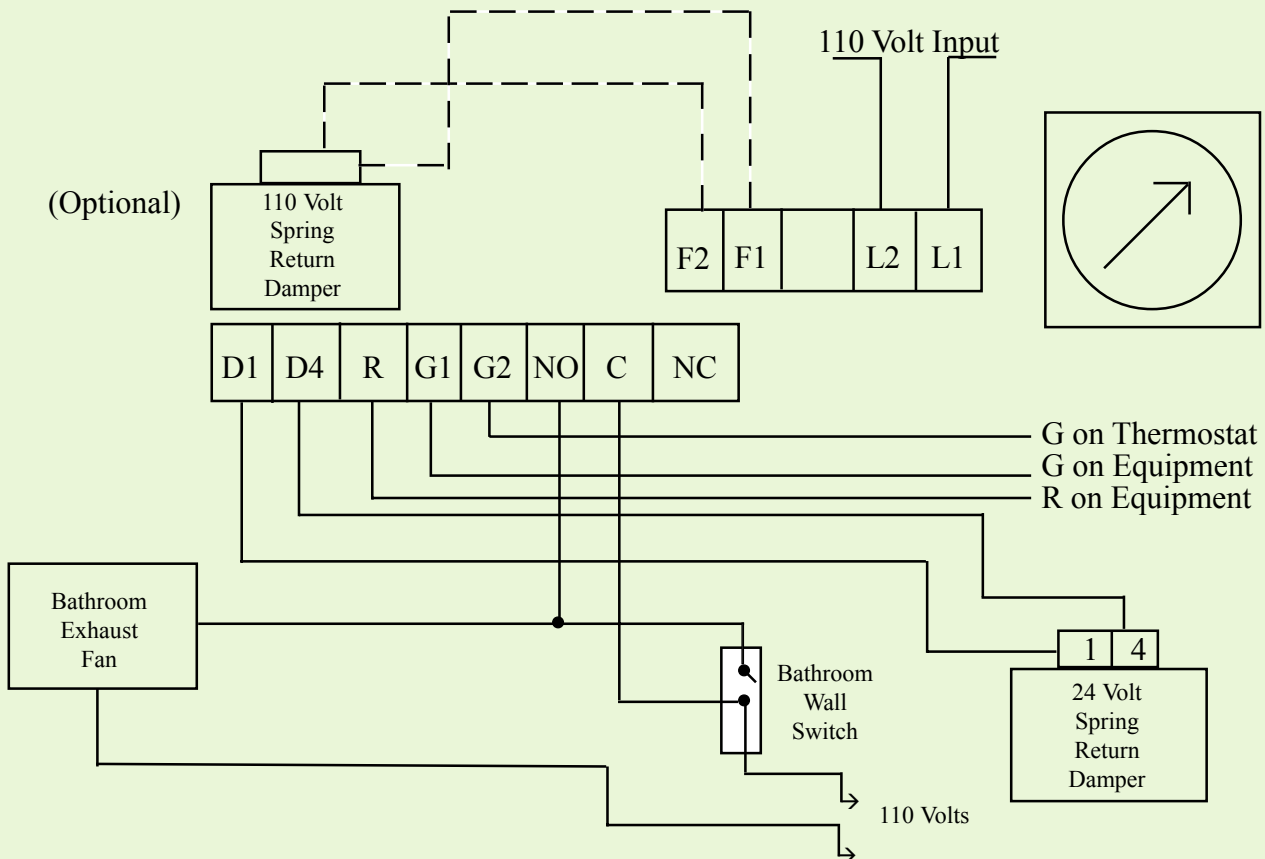
The connection between G1 and G2 is broken

NO makes to C

When using 110 volt damper, wire the motor to F1 and F2 with whole house fan (if used), and leave D1 and D4 blank.

Internal 24 volt transformer is fused on primary and secondary sides.

Dyna-Fresh® ALTERNATIVE WIRING USING EXISTING BATHROOM FAN TO EXHAUST STALE AIR



DuroZone[®]

MULTILINE[®]



EC-1 & EC-2 Fresh Air Intake & Economizer Control Centers



- **Allows use of “Free Air” for cooling**
- **Simple centralized wiring**
- **Integrated 24 volt transformer**
- **Simplified wiring**
- **Plug-in relays**

Many large commercial buildings have A/C units which utilize an economizer circuit to use fresh air to satisfy cooling requirements. Basically what happens is this:

An Enthalpy Control (a sensor of both humidity and temperature) senses that outside conditions are conducive to cooling. Upon a call for cooling, the Economizer locks out the compressor and the air handler draws fresh air from outside to cool the building. Dampers are installed in the fresh air intake and the return air duct to control the flow of air.

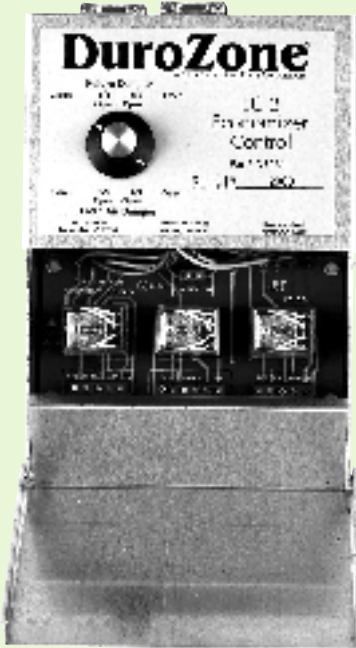
The EC-1 and EC-2 now allow the economies of “Free Cooling” technology for commercial buildings to be installed in residential and light commercial construction.

EC-1

The EC-1 is used in conjunction with two Duro Zone zone dampers and an Enthalpy control.

At rest, (outside conditions not conducive for cooling), the return air damper will be open, the fresh air damper will be closed, and the compressor will function normally.

When correct Enthalpy is attained, (outside conditions conducive for cooling), the EC-1 will close the return air damper and open the fresh air damper. At the same time the compressor will shut down, but the fan will continue to run, drawing fresh air from outside to satisfy the cooling demand.



EC-2

The EC-2 is used in conjunction with two Duro Zone fresh air 4 position dampers and an Enthalpy control. The EC-2 incorporates a 4 position rotary switch to allow mixing of the outside air with return air.

At rest, (outside conditions not conducive for cooling), the return air damper and fresh air damper will be in the position indicated on the switch, the compressor will function normally.

When correct Enthalpy is attained, (outside conditions conducive for cooling), the return air damper and the fresh air damper will change positions. At the same time, the compressor will shut down, but the fan will continue to run, drawing fresh air from the outside to satisfy the cooling demand.

ORDERING INFORMATION

ITEM #	MODEL	DESCRIPTION
#35230:	EC-1	Economizer Control - Two position Controller
#35231:	EC-2	Economizer Control - Four position Controller
#35170:	DZEC	Enthalpy Control

DuroZone[®]

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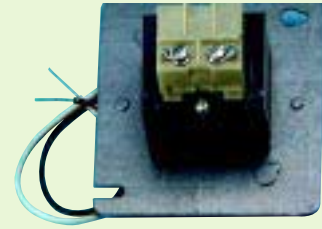
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Accessories

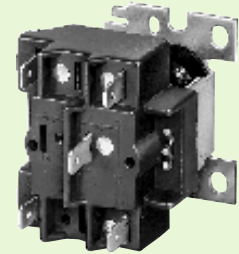
35054 PT40 Plate Mounted Transformer

The DuroZone PT40 Plate Mounted Transformer is a full power 120 volt input, 24 volt output, 40va rated step down transformer. Easily installs on a typical 4 x 4 electrical box. One PT40 transformer can operate up to 4 DuroZone dampers.



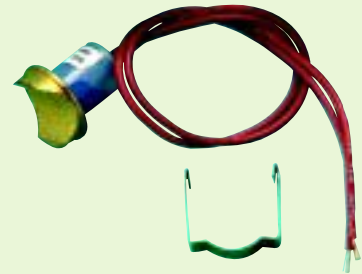
35055 RR1 Relay

The DuroZone RR1 Relay is a 24 volt single pole, double throw, multi-purpose relay. Typically used for applications when isolation or protection of circuits is desired. When more than one relay is required use 35233 DRP2 Universal Relay Pack.



35059 FPS Freeze Protection Sensor

The DuroZone FPS Freeze Protection Sensor is a low cost control designed to be put on the suction line outside the evaporator coil. At a preset temperature it will break the circuit to the compressor relay (Y) preventing a freeze-up. The FPS can be used with any of the DuroZone control systems.



35062 DS11 Remote Damper Switch

The DuroZone DS11 remote Damper Switch is a remote, wall mounted switch for manually opening and closing standard DuroZone dampers. Generally used for special applications for ventilation control. Installs in a standard 2 x 4 electrical switch box.



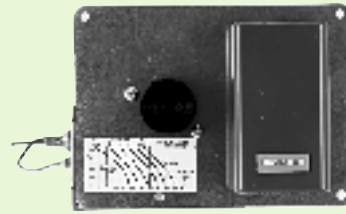
35066 MPS4 Multi-Position Switch (formally FAS-4)

The DuroZone MPS4 switch is a remote, wall-mounted switch for manual control of DuroZone 4 position dampers - models MPRD, MPMS and MPMB. Easy to install, this 4 position switch allows the dwelling occupant greater comfort and flexibility in controlling air into the space. Typically used for fresh air intake purposes. Installs in a standard 2 x 4 electrical switch box.



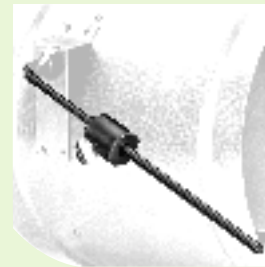
35170 DZEC Enthalpy Control

The DuroZone DZEC Enthalpy Control senses temperature and humidity and closes a set of contacts at a user determined level. The DZEC is typically used with the DuroZone EC-1 and EC-2 Economizer Panels.



35075 DDW Pressure Relief Damper Weight/Arm

The DuroZone DDW replacement arm & weight for DuroZone Pressure Relief Dampers can be used to add more weight to the Damper Arm for higher pressure settings.



37199 DZDBF Duct Board Damper Frames

The DuroZone DZDBF Duct Board Damper Frames allow easy mounting of standard DuroZone dampers into the Duct Board with no tools. It consists of two pieces which clip onto the edge of a slot cut into the duct board. Order the damper for the inside dimension of the duct.



35215 TDT1 Time Delay Timer

The DuroZone TDT1 Timer is a Delay on make for energizing 2nd stage heating or cooling without the need of a 2 stage thermostat. The time setting is adjustable from 1 to 8 minutes. It operates with voltages from 19 to 240 AC.



35233 DRP-2 Universal Relay Pack

The DuroZone DRP-2 Universal Relay Pack consists of two 24 volt 4PDT Plug-In Relays mounted on a circuit board. The circuit board has convenient terminal strips to make wiring easy and it is enclosed in a plastic enclosure for protection. The DRP-1 can be used in a variety of situations and applications where two or more isolation relays are needed.



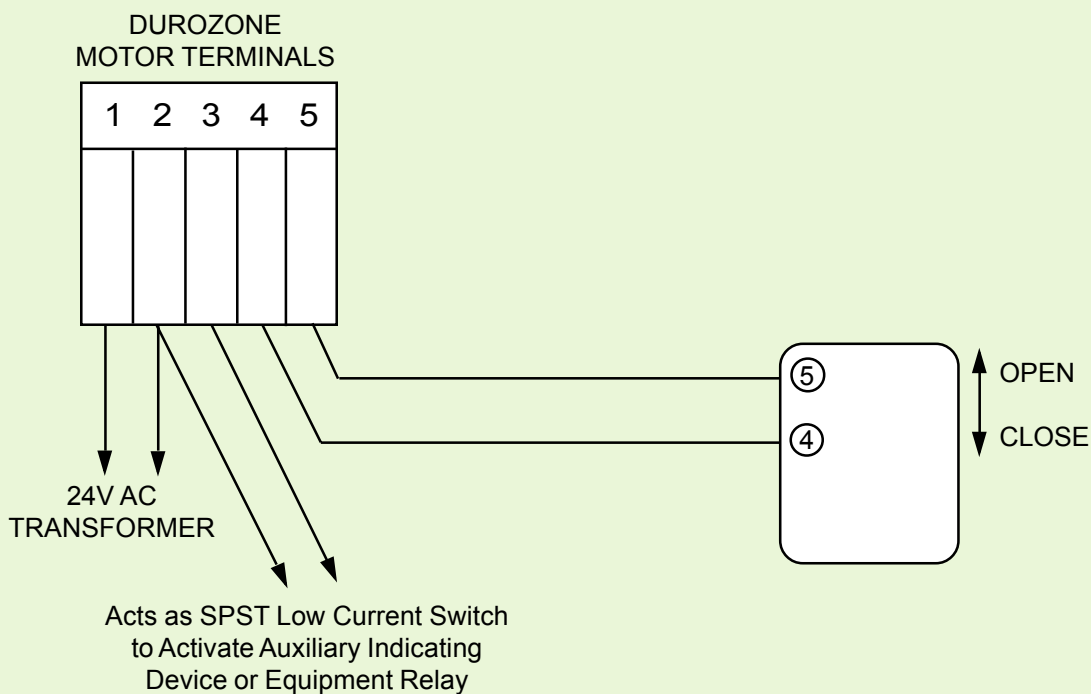
DuroZone[®]

INSTALLATION INSTRUCTIONS

DS-11 SWITCH



This is a wall mounted SPDT toggle used for remote opening and closing of a **DuroZone Damper** where Switch operation rather than thermostat control is desired.



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Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

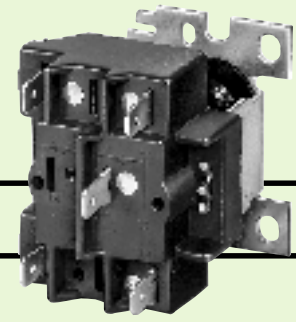
ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty
- Controlled bypass
- Maintenance free operation
- Quick install mounting clips (except Round Dampers)
- 100% factory testing
- Screwless terminals
- Custom dampers and special controls are available on request.

DuroZone®

INSTALLATION INSTRUCTIONS

RR-1 RELAY

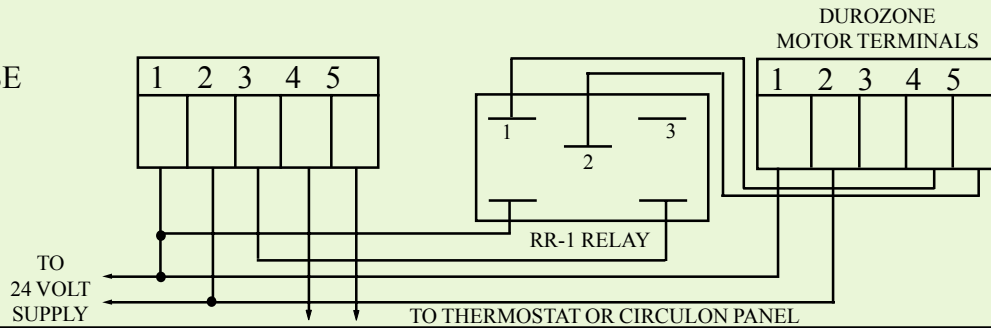


DuroZone's RR-1 Relay is a 24-volt, single pole, double throw (SPDT) Relay. Numbered Terminals make connections easy, and all RR-1 Relay contacts are housed in a plastic enclosure to afford maximum protection from dirt and other contaminants. The two most popular uses for the RR-1 Relay is for wiring two DuroZone dampers out of phase with each other and for end switch protection. The RR-1 Relay may also be used to interface two-wire thermostats with DuroZone's Heat/Cool Panel (formally Circulon Series II). These diagrams are outlined below.

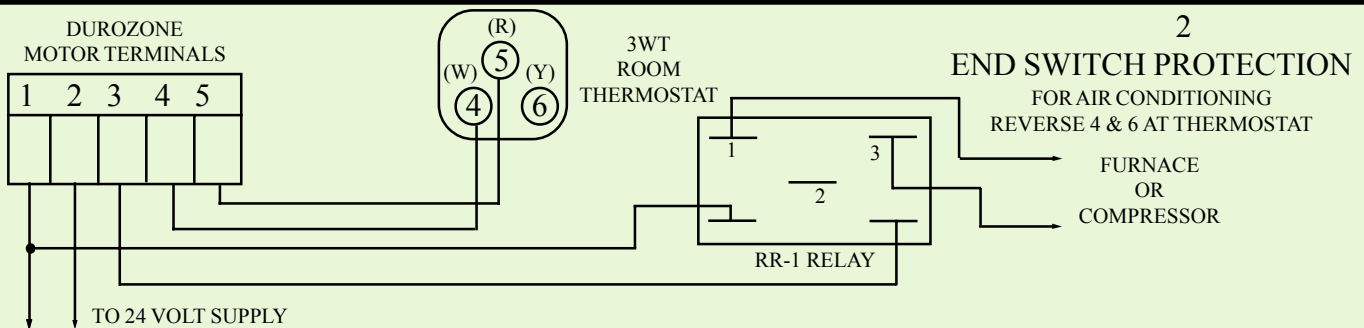
TERMINAL IDENTIFICATION

Unmarked	Terminals Relay Coil
Terminal 3:	Normally-Open Contact(NO)
Terminal 1:	Common (C)
Terminal 2:	Normally-Closed Contact (NC)

1 2 DAMPERS OUT OF PHASE

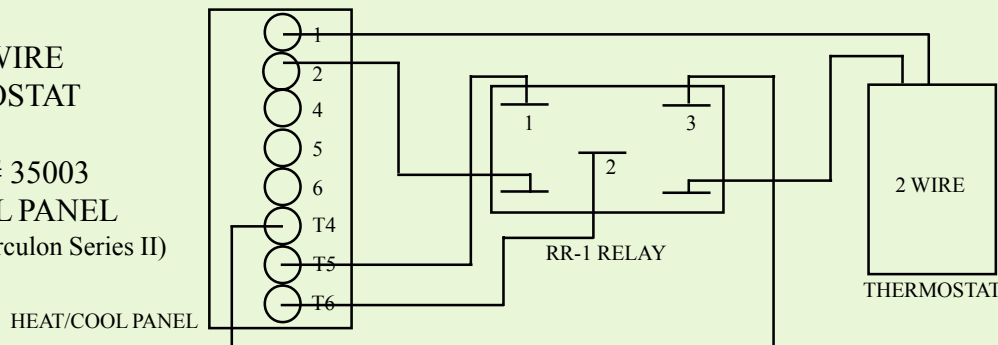


2 END SWITCH PROTECTION



3 THE 2 WIRE THERMOSTAT

With Part# 35003
HEAT/COOL PANEL
(Formerly called Circulon Series II)



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 Duro Dyne Midwest • Fairfield, OH 45011 • Phone: 513-870-6000 • Fax: 513-870-6005
 Duro Dyne West • Santa Fe Springs, CA 90670 • Phone: 562-926-1774 • Fax: 562-926-5778
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ALL DuroZone DAMPERS FEATURE:

- 3 year limited warranty
- Controlled bypass
- Maintenance free operation
- Quick install mounting clips (except Round Dampers)
- 100% factory testing
- Screwless terminals
- Custom dampers and special controls are available on request.

DuroZone[®]

M-4000 DIGITAL HVAC ANALYZER

One hand-held, easy-to-use instrument can be used to measure :

**BTU,
AIR VELOCITY,
TEMPERATURE,
CFM, AND
HUMIDITY.**

**BATCH it with the
M-4000 HVAC Analyzer!**

The M-4000 measures the humidity, temperature, and air velocity (with inputted inlet/outlet dimensions) and analyzes this information to calculate CFM and BTU's. Custom designed solid state circuitry ensures high accuracy.

Batch together all of the functions and features, and the HVAC analyzer adds up to a fantastic investment.

The M-4000 helps contractors and engineers make intelligent decisions on balancing and/or maintaining HVAC systems.

- **Hand-held, lightweight, simple to use**
- **Quick response <5 seconds**
- **Digital-quick, easy readings**
- **Low cost!**



Applications:

The M-4000 series is a full, five function instrument which measures room conditions and the performance of HVAC equipment - heaters, blowers, furnaces, air conditioners, fume hoods, clean rooms, etc.

Contractors, quality assurance staff, operating engineers, and building inspectors now have an easy-to-use instrument which will quickly evaluate system design and equipment performance.

The M-4000 can be used for a wide range of applications, from simple temperature, humidity, and air velocity readings to complex multi-outlet computations of BTU's, system balancing, or total outlet/output calculations.

Best of all, the HVAC Analyzer is extremely easy to use when compared to most air velocity and CFM instruments.

The M-4000 is a hand-held instrument and eliminates the need for cumbersome hoods or carrying multiple measurement instruments.

It comes with a high impact plastic carrying case and a Limited One Year Warranty.

Specifications:

Instrument case:	High impact plastic
Display:	Large easy to read LCD (4 digit 3/4" h)
Touch Pad:	Large push buttons
Operating Voltage:	9 V DC (alkaline battery 9 volts)
Battery Life:	Approx. 8 hours continuous use
Temperature Range:	32° F to 149° F (0° C to 65° C)
Temp. Accuracy:	+/- 2° F
Temp. Response Time:	5 Seconds
Humidity Range:	10% to 95%
Humidity Accuracy:	+/- 3%
Humidity Response Time:	10 Seconds
Air Velocity Range:	1.0 to 49 ft/sec.
Air Velocity Accuracy:	+/- 3% or +/- 1 digit
Velocity Response Time:	Instantaneous
Weight:	15 Ounces (430 G)
Dimensions:	
Digital Instrument:	8"x3.5"x2" (20.3x8.9x5 cm)
Probe (Sensor):	6.75"x3"x2" (17.1x7.6x5 cm)

Ordering Information

Part#	Model	Description	Features	Dimensions
35268	M-4000	Batch Analyzer	Measures BTU / Air Velocity / Temp. / CFM / Humidity	14"x3-1/4"x12-1/2"

DuroZone[®]

A Division of Duro Dyne Corporation.
Farmingdale, New York 11735

Phone: 631-249-9000 • Fax: 631-249-8346

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BE035268

“How do I size my Ductwork?”

T

his is probably the number one question asked of contractors when discussing zoning. There are no hard and fast rules regarding this. There is no magic formula that always works. What we can provide are some guidelines - “rules of thumb” and alert you to some common pitfalls.

Objective: Maintain constant airflow through the HVAC when only one zone calls and still provide sufficient airflow if all zones call.

On Two and Three zone systems, adequate airflow can be maintained by sizing the trunk line to each zone to handle 60 to 70% of the available cfm. If you then run five 6 inch takeoffs from these trunks, adequate airflow is maintained. Below is a simple chart to guide you for systems of 800 to 2000 cfm.

When designed this way, a by-pass damper may not be necessary but it never hurts to have one, so we recommend installing one if only for future alterations and/or balancing purposes.

On systems of four or more zones the 60% rule will not work. For systems of this configuration lay out your duct work as if it was not zoned. Now, increase each trunk to handle 20% more of your designed cfm. For example, if you determine that Zone One would require 500 cfm under normal conditions, install a trunk duct capable of 600 cfm. Repeat this for each zone.

On systems of four zones or more a by-pass damper is almost always required. The by-pass damper should be sized to “dump” the difference between the total available cfm and the smallest zone.

The biggest pitfall in designing four or more zones is not keeping all the zones approximately the same size. Try to avoid having one zone of 100 cfm and another of 600 cfm. Try to keep all zones within 20% to 30% of each other. If this is unavoidable, install adequate by-pass or consider splitting the system into two smaller zoned systems.

System CFM	Trunk Duct	Branch Duct
800	12 x 8 or 12” round	5 - 6” round
1000	14 x 8 or 12” round	5 - 6” round
1200	16 x 8 or 12” round	5 - 6” round
1400	18 x 8 or 14” round	5 - 7” round
1600	20 x 8 or 14” round	5 - 7” round

What do I do with by-passed air?

T

he by-passed air can be ducted into non-critical temperature areas such as entry ways, basements, recreation rooms, cathedral ceilings, etc. Do not by-pass this air into attics or crawl spaces as this may cause a negative pressure situation and/or condensation in the house.

Ideally the air should be ducted back into the HVAC system through the return air. If this is done, the air should be ducted into the return duct as far as possible from the air handler to allow adequate mixing of the airstreams. If space does not allow this, controls such as an anti-freezeup control (FRP) should be installed to protect the equipment.

Remember The Four C's:

COMFORT

Rooms are kept at the temperature you want - when you want.

CONSERVATION

Realize energy savings up to 30%.

CONTROL

Heating and cooling controlled like lighting and plumbing.

CASH

Zoning saves money as well as adding resale value.

Contact the HVAC Distributor
below and request a quote

Comfort Beyond Your
Expectations



DuroZone[®]

Comfort Beyond Your Expectations

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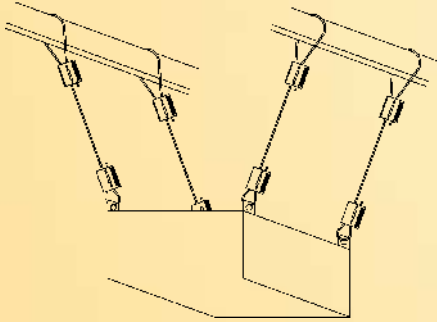
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Email: durodyne@durodyne.com

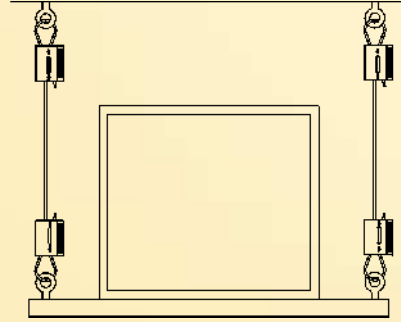
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BB035402

THE DYNA-TITE CL23 CABLE LOCK AND WIRE ROPE CAN BE USED FOR SUSPENSION IN A VARIETY OF WAYS TO ACCOMMODATE MOST MECHANICAL & HVAC CONSTRUCTION APPLICATIONS.

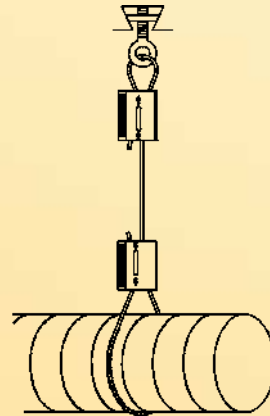
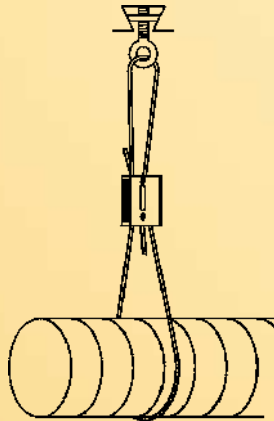
UNIT HANGING



RECTANGULAR DUCT WORK



SPIRAL DUCT WORK



KEY USER BENEFITS

- Its time saving qualities have been shown to reduce installation by up to 6 times compared to traditional threaded rod.
- It provides a fast, strong and lightweight solution to the task of hanging Mechanical and HVAC Systems.
- It allows the installer to position the hangers vertically or at an angle to the suspended object.
- Dyna-Tite System is lightweight and easy to carry, and combines these qualities with the inherent strength of high tensile wire rope.
- Its light weight improves safety on the job. Carrying the product on the job site is easy and, in aerial situations reduces accident risk caused by falling materials.

THE DYNA-TITE CL23 CABLE LOCK

A cut-away section showing the internal components

STAINLESS STEEL SPRINGS

The springs, one in each channel, are manufactured of type 302 S26 stainless steel.

LOCKING WEDGES

One oil impregnated sintered steel locking wedge is seated in each channel. Every locking wedge incorporates a release pin for easy adjustment after installation.

ZINC HOUSING

Zamac 5 combines major anti-corrosion properties with strength and consistent manufacturing quality.

SERRATED TEETH

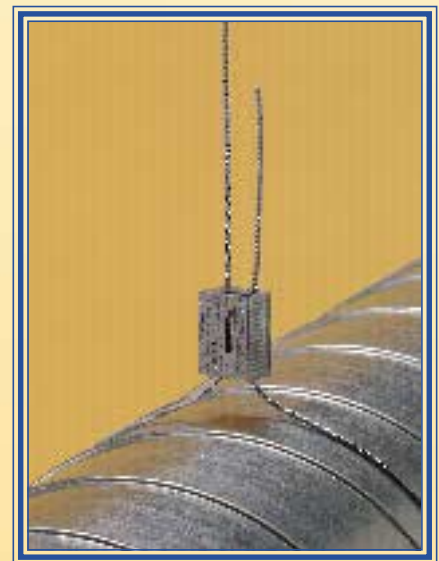
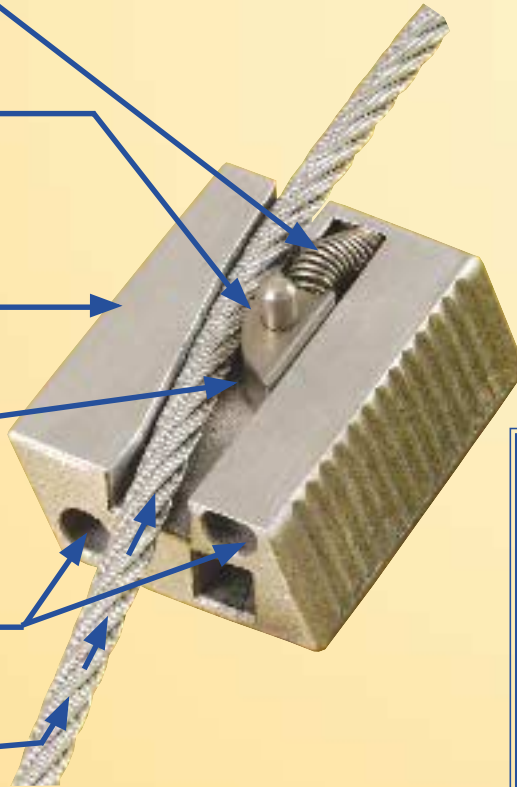
Each wedge makes contact with the rope using serrated teeth. These press onto the wire rope and spread the load across the length of the wedge, maximizing the grip strength.

THROUGH HOLE

Two "through holes" allow fast and secure hanging with only one Cable Lock.

WIRE ROPE ENTRY

The wire rope is pushed into the Dyna-Tite CL23 channel.



The principle element of all Dyna-Tite duct hanging assemblies is the Dyna-Tite Cable Lock, which is not only used to terminate the cable but is also the means by which the object height can be adjusted.

WIRE ROPE SPECIFICATION

CARBON STEEL, GALVANIZED

Galvanized steel wire rope, supplied by Duro Dyne is manufactured to exacting standards and statistically tested to verify the breaking strength. Duro Dyne recommends only using wire rope supplied by Duro Dyne. The chart below outlines the specifications.

WIRE ROPE SIZE	TOLERANCE	ROPE CONSTRUCTION
1/8	+0.014 / -.007	7x7
3/16	+0.018 / -.009	7x19

IMPORTANT:

Dyna-Tite Cable Lock and wire rope each have working load limits which may not be equal. Always use the lower of the two working load limits. Wire rope is not included with Dyna-Tite Cable Lock

GENERAL ASSEMBLY AND ADJUSTMENTS IN 4 EASY STEPS

STEP 1

Thread the wire rope into the "through hole" in CL23.

STEP 2

Pass the wire rope "tail" through (or around) the anchor point (Eyehook, Beam, or Purlin)

STEP 3

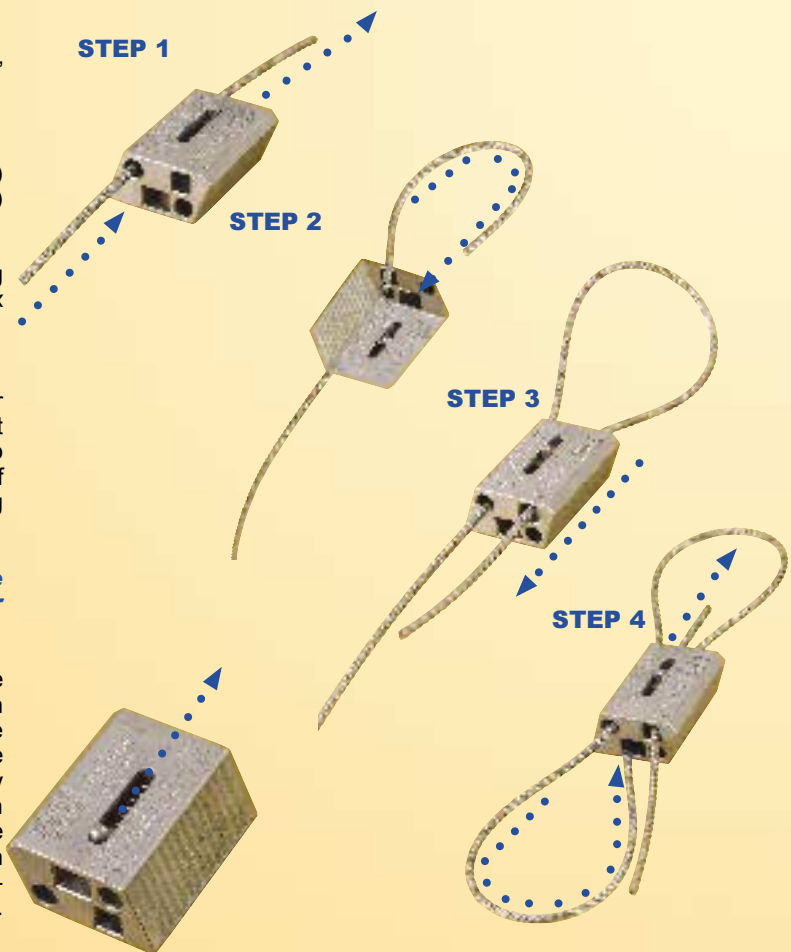
Push the wire rope tail into one locking channel in the CL23 and pull at least six inches of the wire rope through.

STEP 4

Pass the other wire rope end through (or around) the bracket or fixture on the object to be suspended. Return the wire rope to the CL23 and push at least six inches of wire rope through to remaining locking channel.

Prior to the load being applied, the wire rope can be adjusted in either direction.

With the load off the wire rope and the CL23 Cable Lock, push the release pin in the direction of the arrow on the Cable Lock. This will release the locking wedge and allow the wire rope to be moved freely in either direction. (After a load has been applied it may be necessary to pull the cable slightly to disengage the teeth on the wedge). Be sure the load is fully supported before attempting an adjustment.



HELPFUL HINT

To facilitate height adjustment, install the object low and adjust it upwards to the desired level.

RECOMMENDATIONS AND PRECAUTIONS:

- **DO NOT EXCEED THE WORKING LOAD LIMIT (WLL) OF THE PRODUCT** Each product is load rated and incorporates a minimum safety factor of 5:1. This WLL takes into account the specification criteria of the Dyna-Tite CL23 Cable Lock and the wire rope.
- **DO NOT USE ON COATED WIRE ROPE** It is important to maintain the metal to metal contact between the locking wedges in the Dyna-Tite CL23 and the wire rope.
- **DO NOT APPLY PAINT OR OTHER COATING** to any part of the assembly as these may impair the free movement of the locking wedges inside the Dyna-Tite CL23 Cable Lock.
- **DO NOT APPLY LUBRICANT** to any part of the assembly as this will alter the surface nature of the wire rope and attract dirt and debris.
- **DO NOT USE FOR LIFTING (UNDER HOOK SLINGS)**. This product is designed for static load applications only.
- **KEEP THE PRODUCT CLEAN AND FREE FROM DIRT** Any dirt should be removed from the product prior to assembly.
- **INSPECT PERIODICALLY** Upon inspection, discard and replace if worn, distorted, or damaged.
- **REMOVE DAMAGED WIRE ENDS** using a designated pair of wire rope cutters prior to inserting into the Dyna-Tite CL23 Cable Lock.

DYNA-TITE CL23 CABLE LOCK LOAD RANGE LIMITS

DYNA-TITE SYSTEM

- Dyna-Tite CL23 Cable Locks are sold 100 to a carton. Each carton contains 10 boxes of 10 CL23 Cable Locks.
- Wire Rope is supplied in spools. The 1/8 inch comes in 250 and 500 foot spools. The 3/16 wire rope is supplied in 125 and 250 foot spools.
- The Maximum Load Range for each size incorporates a design safety factor of 5:1. The CL23 and Wire rope combination should be sized for the job so that the projected load falls within the appropriate working load limit (WLL).



Size	Load Range
With 1/8 wire rope	250 lb (114 kg)
With 3/16 wire rope	640 lb (291 kg)

Part #	Code	Description	Box Qty	Carton Qty
30350	CL23	Cable Lock	10	100
30204	WC4	1/8 Wire Rope		1 - 500 foot spool
30206	WC6	3/16 Wire Rope		1 - 250 foot spool
30205	WC45	1/8 Wire Rope		1 - 250 foot spool
30207	WC65	3/16 Wire Rope		1 - 125 foot spool

ACCESSORIES



Part # Description
894075 0690TN Cable Cutter

- Storage Catch
- 3/16" Cutting Capacity
- Spring Loaded For Ease Of Use
- 5" Long Handles For High Leverage
- Hardened Steel Blades For Durability
- Vinyl Coated Handles For Comfortable, Non-Slip Grip



Part # Description
30220 DDG3W Eye Bolt & Nut
(3/8"-16 x 2-1/2")

GOOD PRACTICE:

When cutting wire cable it is important to use a recognized wire cable cutter such as the Duro Dyne cutter detailed here. This will ensure that the form of the rope is maintained prior to insertion in the Dyna-Tite.



FLEXIBLE DUCT CONNECTOR DISPENSER

Conveniently dispenses connector anywhere in the shop

Flexible duct connector is generally packaged in two foot by two foot cartons of one hundred feet. Depending upon the specific type, its weight ranges between thirty five and eighty five pounds. Due to size and weight, movement, uncoiling, and laying out material is of ten awkward at best. The Duro Dyne Connector Dispenser can relieve many of the difficulties associated with the handling of flexible connector.

Duro Dyne's Model FDCC-2 keeps up to three rolls of flexible duct connector or vane rail within easy reach, anywhere in the shop. Full swivel casters make movement around the shop possible, and ball bearing rollers quickly dispense connector with a simple pull. A foot actuated brake locks the FDCC-2 in place when dispensing the connector. The shear attachment cuts the duct connector accurately and effortlessly.



See the reverse side for complete information on Duro Dyne's Flexible Duct Connector Dispenser Shear.
Item# 43010 - FDCCS-10



Item# 43002 - FDCC-2 with shear

Dispenser Features:

- Handles all common configurations of Duro Dyne Flexible Duct Connector
- Wheels lock to prevent dispenser from moving
- 360° casters for easy maneuverability around the shop

- Capable for up to 3 rolls of Duro Dyne Flexible Connector or Vane Rail
- Ball bearing rollers for effortless dispensing
- Shear attachment
Dimensions: 35 1/2" high to table
40" wide
56" long



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514-422-9760
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FLEXIBLE DUCT CONNECTOR SHEAR

Save time and ease worker fatigue

Cutting flexible duct connector and making straight cuts in light gauge steel can be difficult and tedious with hand shears or snips. The FDCCS-10 significantly speeds up this operation and eases worker fatigue.

To use, simply insert the material, (up to 18 gauge), into the 10" clear throat and pull the handle down. Hardened steel blades cut quickly, cleanly and effortlessly.

The FDCCS-10 can be mounted to any workbench by passing bolts or lag screws through the pre-drilled holes in the feet of the shear.

For safety, the FDCCS-10 has a safety pin to lock the shear in the open position and hold the 30" long handle upright and out of the way.



See the reverse side for complete information on Duro Dyne's Flexible Duct Connector Dispenser.

Item# 43002 - FDCC-2 with shear

Handle length: 30"

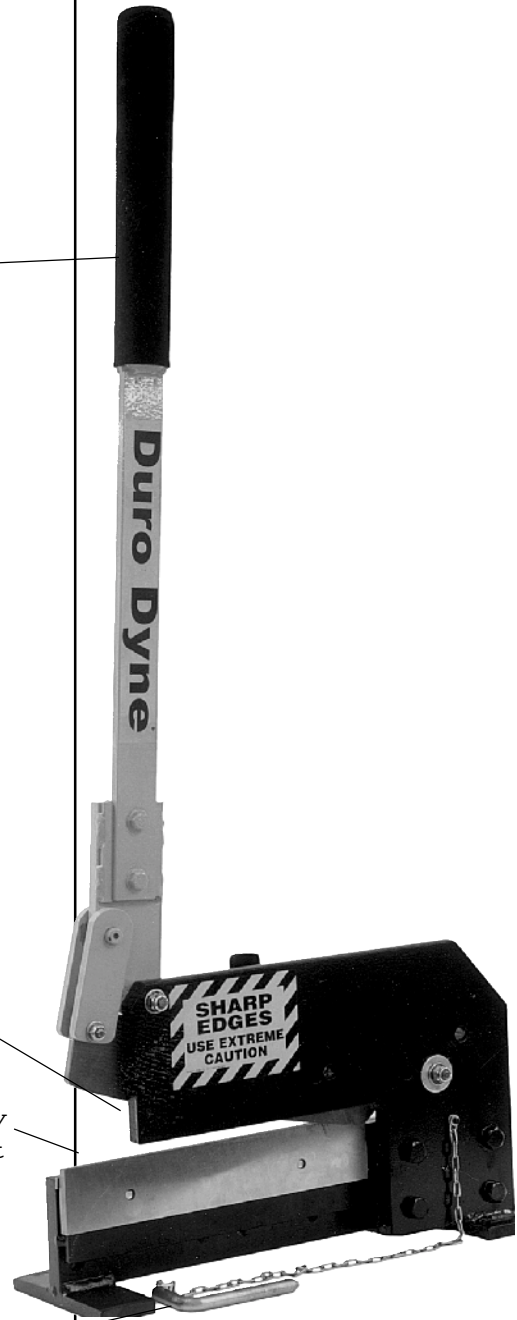
Capacity: 18 gauge

Height
(not including handle): 11"

Throat depth: 10 inches

Tool steel blades are easily removable for replacement or sharpening

Safety Pin to secure shear when not in use



Item# 43010 - FDCCS-10



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**DURO
DYNE**

**® INTRODUCING
FG MACH I & II**

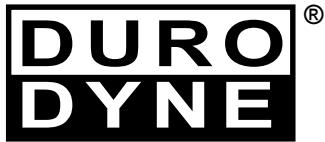


- **Two variations - standard 20 gauge capacity (FG Mach I) and hi-power 18 gauge capacity with 2 inch pins (FG Mach II).**
- **Hi/Lo Switch - one flip of the switch adjusts for gauge thickness and or voltage variances.**
- **Digital function display.**
- **One adjustment controls weld and dwell times.**
- **Sleek streamlined frame design with 5 foot throat.**
- **Feed track proximity sensor - for quiet operation.**
- **Digital weld setting indicator.**
- **Manual pin feed switch.**
- **Easy to access component case.**
- **Circuit breaker protection for the vibrator feed.**
- **Weld cycle indicator.**

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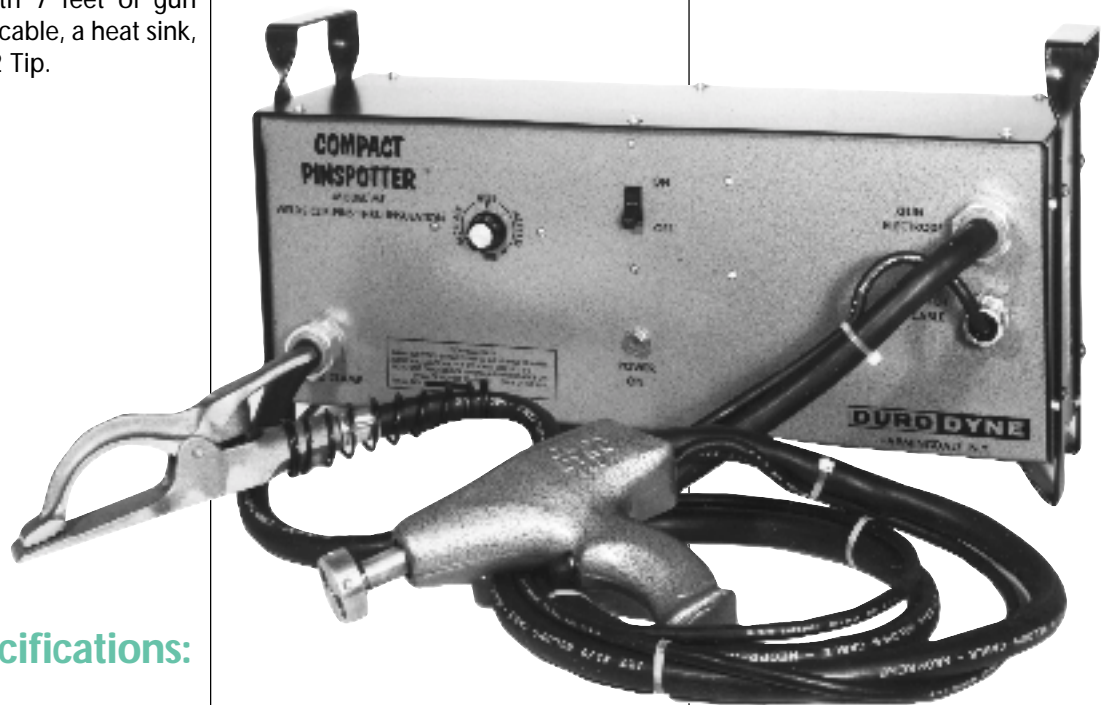


MFPT COMPACT PINSPOTTER

Low Cost Through Insulation Pinspotter with Solid State Timer

Duro Dyne's Model MFPT "Compact" Pinspotter is ideal for medium production pinspotting on 24 gauge and lighter galvanized steel with the use of CP, SSP, BDEP or FTC style weld pins.

Weighing only 75 lbs., the MFPT is truly "Compact". It's overall size of 22" wide x 12" high x 8" deep makes it easily transported from job to job. The unit comes complete with 7 feet of gun cable, 30" of ground cable, a heat sink, a TP-8 Tip and a TP-2 Tip.



Item# 27113

Electrical Specifications:

- 220 Volts - Single Phase
- 50/60 HZ
- 30 AMP Fuse required



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FAX: 631-249-8346

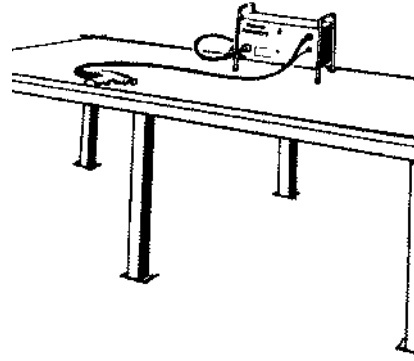
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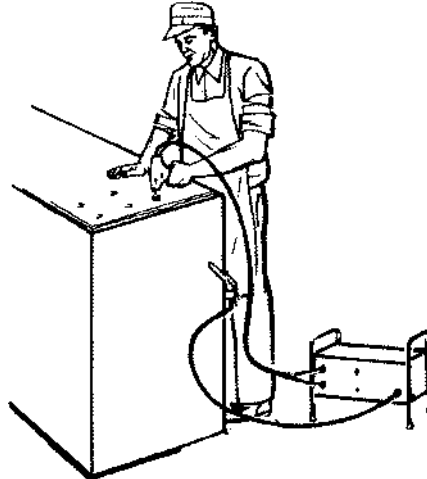
THE MFPT AS A BENCH TOOL

To use your work bench as a welding table, set the MFPT alongside the work bench. Cover the bench top with a copper sheet (.025) which acts as a permanent ground when duct rests on the bench top. Weld pins quickly weld every time. No burn marks or wasted pins due to misfires.



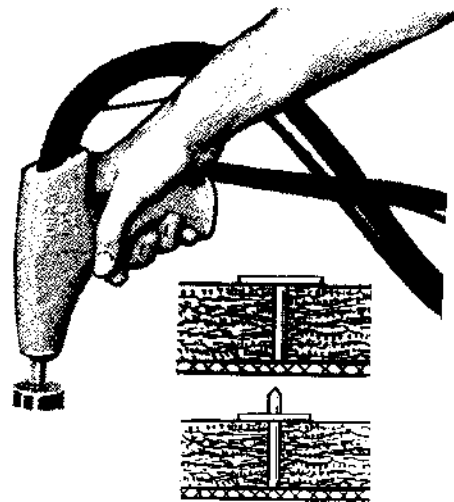
BRING THE MFPT TO THE WORK

- When duct is too large to put on a bench, snap the ground clamp onto the duct and secure the insulation quickly by welding weld pins inside or outside of the duct as required.
- Eliminate the heat mark on the duct by using the simple "heat sink" on the opposite side of weld.



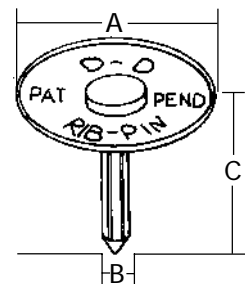
USE THE MFPT AS A CONVENTIONAL PINSPOTTER

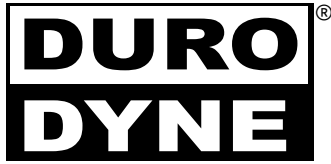
The MFPT Pinspotter can easily be used as a conventional pinspotter, (such as Duro Dyne's LF), by simply changing the gun welding tip. The weld pin tip is a tapered tip and can be tapped out of the gun assembly and replaced with the hollow tip (code TP-2, supplied). In this configuration a nail shaped weld pin is inserted into the tip, which is then pressed against the metal. A short burst, by depressing the trigger, will weld the pin in position. Insulation is then applied over the pin, and is secured by means of a washer (Spotter Clip), as illustrated.



RIB PIN SPECIFICATIONS

CODE NO.	CP-12	CP-34	CP-100	CP-150	CP-200
Insulation Thickness	1/2"	1"	1"	1 1/2"	2"
Dimension "A"	1"	1"	1"	1"	1"
Dimension "B"	.150	.150	.150	.150	.150
Dimension "C"	.4"	.6"	.9"	1.4"	1.9"





MODEL FG-1 AUTOMATIC PINSPOTTER

**Bulk feed type
pinspotter.
Fast, trouble-free,
reliable performance.**



Item# 17299-5' Throat

Extensive experience and research with welding techniques and equipment resulted in the development of Duro Dyne's Pinspotter line - from the hand held LF to the fully automatic RH.

Recognizing the need for a reliable, stationary automatic Pinspotter, Duro Dyne Corporation sought to develop a "hopper" fed fixed position fastening unit, incorporating the inherent fastening strength of a welding system. The result is our model FG-1 fixed position Pinspotter.

Automatic Bulk Feeding System

The FG-1 utilizes an easily accessible vibratory parts feeder capable of holding approximately one thousand 1" weld pin fasteners. An air actuated sensing device automatically loads weld pin into the tracking system as needed.

Reliability

The model FG-1 Pinspotter is not only fast, but quiet - no hammering. Most important, the installed clip holds stronger than any other commonly used fastener for "when you weld, it's held."

Fastening Time Minimized

Simply press the footswitch, and in a fraction of a second, a weld pin pressed through the liner and welded to the metal sheet. After the welding tip retracts another weld pin is instantly fed into position under the welding tip.

Proven Reliability

The FG-1 utilizes the same solid state components as are in our model RH Pinspotter. Duro Dyne distributors and sales engineers are available throughout the country to provide continuing service.

Superior Holding Power of a Weld Fastener

Only through welding can the fastener become united with the metal. Fastener failure during fabrication, transport and installation is eliminated.

Meets SMACNA Specifications

The welded fastener fully meets specifications for such fastening as outlined in the SMACNA manual pertaining to the insulation of ducts.

Fastens Two Inch Liner

The FG-1 is capable of automatically feeding and fastening 1 1/2" long weld pins through 2" liner.



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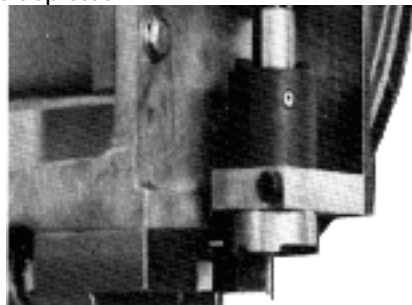
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Features of the FG-1 Pinspottter



Hoppers

A special design vibratory parts feeder holds approximately 1000 1" weld pins. Weld pins are automatically fed into the tracking system as the track supply is depleted.

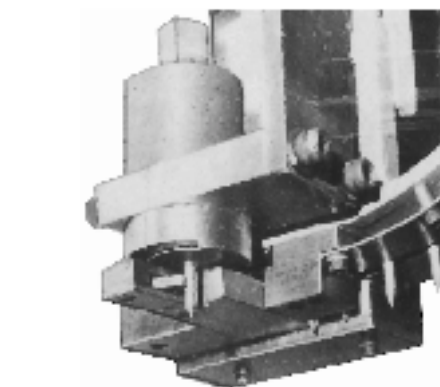


Pin and Tip

Weld pins are magnetically held by the upper electrode ready to be pressed through the insulation and welded to the duct in a fraction of a second.

Superior Holding

The welded fastener is unsurpassed in holding power because it becomes part of the material it is welded to. In tests by an independent testing laboratory, welded fasteners samples exhibited a holding strength averaging three times that of the nail type fasteners under controlled conditions.



Feeding Track

A tested gate design feeding track insures jamless feeding of weld pins. Double feeding (the feeding of two fasteners at once), which causes costly fastener waste is eliminated.



Component Tray

Solid state pneumatic head design provides extremely reliable operation with a minimum of components. Repairs, should they be required, are performed by modular component replacement. 24 volt circuitry provides for safe maintenance and ease of operation.



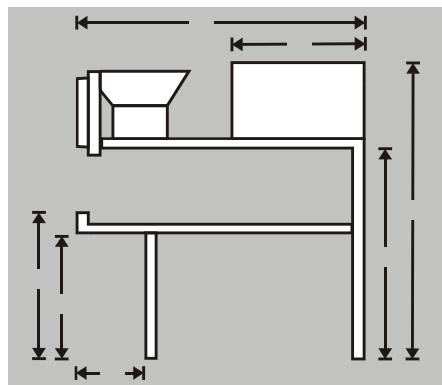
Operation

The operator depresses the footswitch, a weld pins penetrates the duct liner and is welded to the duct work. After the welding tip retracts, a new Weld Pins is automatically positioned under the welding head; awaiting the operator's signal to reactivate the cycle.

As Weld pins are fed from the storage track to the weld tip, an air operated sensor activates the vibratory parts feeder to replenish the fasteners in the storage track. As with all Duro Dyne welded fasteners, the holding power of an installed clip is superior to that of any other commonly used fastener.

Also available for difficult to work areas is a remote hand gun and ground cable set which connects to fittings on the FG-1 frame and power pack. Just place a clip on the magnetic welding tip, insert the pin through the liner, twist the gun slightly and pull the trigger.

Technical Specifications



Air Requirements

The automatic head is supplied with an air filter assembly which includes an on-off switch. The input pressure required to operate air head is 80 PSI.

Electrical Specifications

Input voltage 220V 60HZ single phase. The FG-1 unit should be located close to the power source, to minimize voltage drop from source to unit. Sufficiently heavy 3 wire cable (usually 3 wire #8 conduit) is to be used. Fuse for 30 amps.

Item#	Clip Pin	Approx. Clip Size	For Liner Size	Quantity
26033	CP-12	1/2"	1/2"	1M
26028	CPB-12	1/2"	1/2"	10M
26024	CP-34	3/4"	1"	1M
26029	CPB-34	3/4"	1"	5M
26025	CP-100	1"	1" Heavy Density	1M
26030	CPB-100	1"	1" Heavy Density	5M
26026	CP-150	1 1/2"	2"	1M
26031	CPB-150	1 1/2"	2"	3M
26027	CP-200	2"	2"	1M
26038	CPB-200	2"	2"	3M

CP-200, CPB-200 can be hand loaded and welded with FG-1.

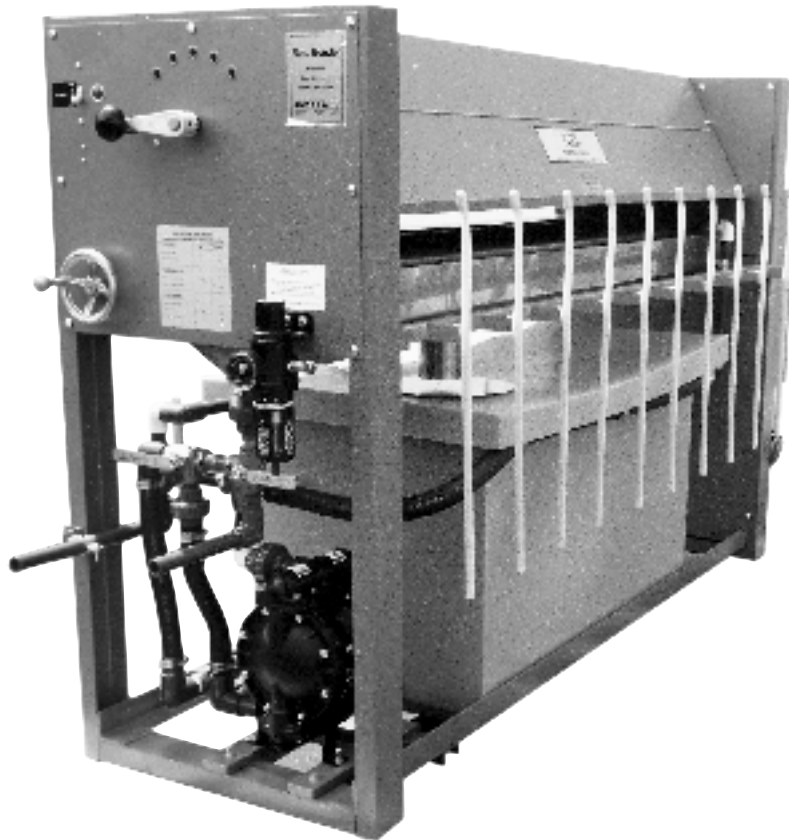


MODEL GBAC ROTO BINDER

A roll coating application system featuring high production rates, minimal maintenance, and operator safety

Duro Dyne was the first company to introduce an adhesive designed strictly for fastening insulation to steel. Since that time Duro Dyne has continued to incorporate the latest technological advances in its adhesive line. As the need for a low cost non-flammable adhesive grew, Duro Dyne pioneered the introduction of a quality water based adhesive which is both economical and

safe to apply. The technological development makes possible low cost, high production roller application of adhesive. To realize the fullest production potential of water based adhesive, Duro Dyne designed the Roto Bonder; a production machine which rapidly applies adhesive to insulation prior to bonding to metal.



Fast

The GBAC is capable of coating fiberglass duct liner at the rate of 52' per minute. Using a standard roll of material - 5' wide, the GBAC coats over 250 square feet of liner per minute.

Versatile

GBAC's are quickly adjusted to accept liner ranging for 1/2 to 2 inch thickness.

Reliable

Using the highest quality components, the Roto Bonder is built to withstand the rigors of high production shop usage.

Easy to Use

The Roto Bonder pumps adhesive from a drum into a built-in storage tank. A circulating system maintains proper adhesive level. Simply turn on the power and feed the liner material into the GBAC. There is no over spray or dangerous solvent fumes.

Fast Cleanup

The GBAC cleans with plain water in minutes. All parts are easily accessible to the operator.

High Production

The GBAC works with existing Insulation Sizing machines and can be used in conjunction with an Automatic Pinspotter for a low cost high efficiency production line.

Service

Duro Dyne distributors and sales engineers are available throughout the country to provide continuing service.



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Roto Bonder

The Roto Bonder is a machine designed specifically for the purpose of roller coating one side of duct liner with adhesive prior to joining to the metal section of the duct. Insulation up to 60" wide can be evenly coated at a rate of 52' per minute. Either Duro Dyne's WSA or WIT adhesive can be used. Both are water base non-flammable adhesive and are available in 55 gallon drums or 5 gallon pails.

The Roto Bonder contains a trough through which the lower of two rollers rotates. The lower roller picks up adhesive, the thickness of which is controlled accurately by an adjustable metering bar. The Roto Bonder accepts insulation thickness of 1/2 to 2 inches.

Operation

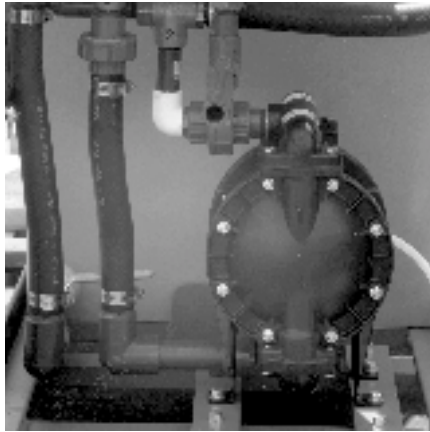
Turn the multi port valve so that adhesive flows from the 60 gallon storage tank into the trough. Re-set the valve to circulate the adhesive from the tank to the trough and feed pre-cut liner material into the machine. In seconds, adhesive coated fiberglass exits automatically across the exit fingers.

At the end of the work day, pump adhesive from the trough to the storage tank. To clean the rolls, metering bar and exit rack, sponge them with water. Cover the adhesive remaining in the tank with a thin film of water and replace the tank cover.

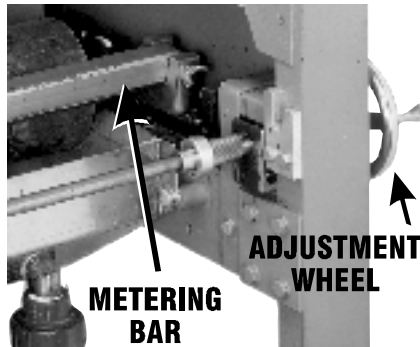
By eliminating spraying, there is no longer any hazard of fire and dangerous fumes. No venting of fumes is necessary. Clean-up is fast and easy.

When the Roto Bonder is used in conjunction with a Liner Sizing machine and Pinspotter, it is possible for one man to perform the entire operation of adhering and pinning liner to duct sections.

Features



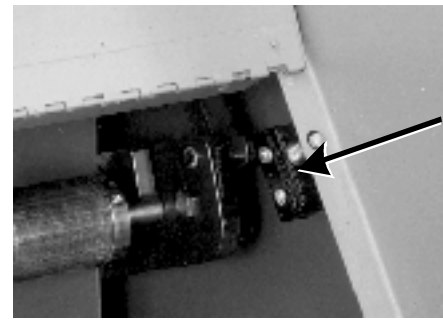
A heavy duty low maintenance air operated pump.



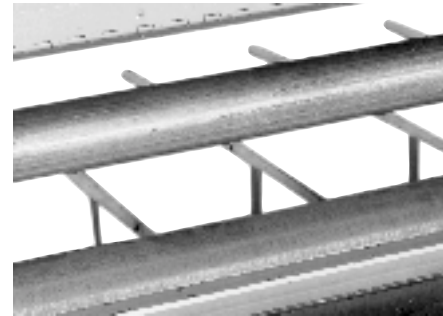
A metering bar accurately controls adhesive application.



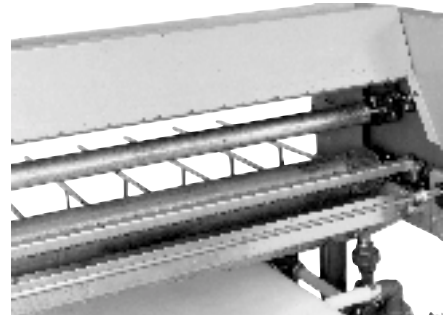
Easy access multi-port ball valves control adhesive flow.



Safety guards are designed for maximum safety and practical shop use.



The cleanup position leaves sufficient space between the upper roll and the adhesive roll to allow for easy cleanup without endangering the operator.



A stainless steel trough provides dependable rustproof service.



A 60 gallon covered storage tank is built into the Roto Bonder.

Specifications

GBAC Code No. 39171 left to right flow

GBAC Code No. 39250 right to left flow

Motor - 1/3 horsepower motor.

Pump - air operated diaphragm type

Insulation Thickness - machine adjustable to coat insulation from 1/2" to 2" thick

Liner Width - from 12" to 60" wide

Liner Length - from 12"

Speed of Application - approximately 52' per minute

Adhesive - Duro Dyne WIT or WSA

IMPORTANT: Flow direction is determined with operator standing at control side of machine.



MODEL LS DUCT LINER SIZER

The LS is a production engineered liner sizer that is designed with today's technology to help you size and cut insulation more efficiently than ever thought possible with a hand operated machine.

Increases Productivity

The LS allows you to both slit and cut insulation efficiently and accurately. By rotating a crank handle, the liner is quickly fed through the machine. This handle has a direct chain drive for easy operation. Also, Duro Dyne has built into the LS a quick release handle that allows the operator to remove or reposition the uncut material using one or both hands.

Self Adjusting

Automatically, the LS accommodates material that varies in thickness

from 1/2" to 2". No time consuming manual adjustments are necessary. Just feed in the liner. You are ready for production.

Easily Adaptable to Shop Layout

Cross cutting insulation can be done from either side due to a swivel mounted 36" long handle. The LS crank handle can be converted easily for operation from either side.

Reliability

The LS is manufactured by skilled mechanics, utilizing the latest production techniques. Each unit has been rigorously tested prior to packaging and shipment in order to insure trouble-free operation. Duro Dyne distributors and sales engineers are available throughout the country to provide continuing service.

Operation

The liner easily feeds through rollers by rotating a hand crank operable on either side of machine. A slitting blade provides accurate clean cuts of desired widths.

Cross cutting is provided by a transverse rotary cutting blade which the operator draws across the liner from either side of machine. The handle rotates 360° to swing out of the way when not in use.

The machine head can be mounted and used on your own table or can be used with the supplied Duro Dyne frame. This frame not only supports the head but also can accommodate one roll of insulation, (up to 60" wide and 40" in diameter), that can be preloaded onto the built-in reel for continuous, productive operation.

Capacity

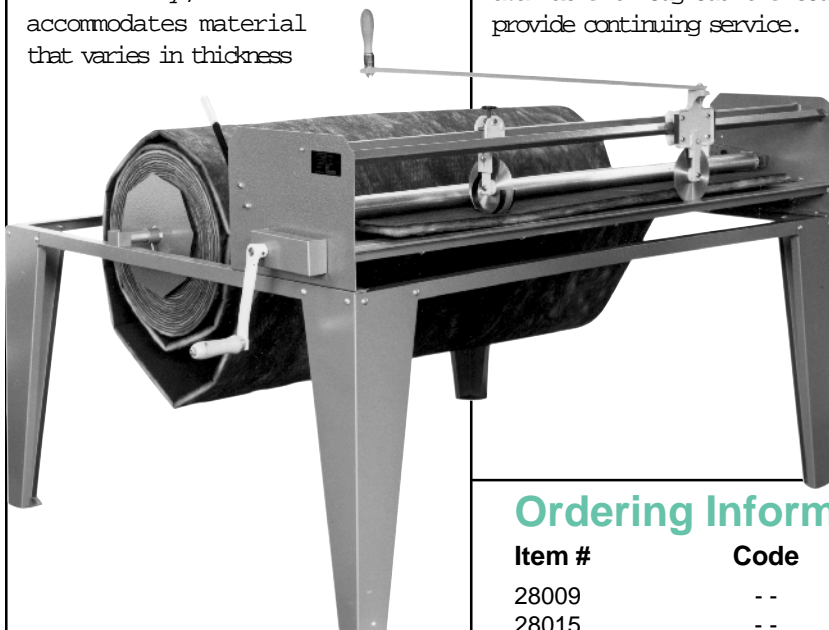
Roll Width	Up to 60"
Roll Diameter	Up to 40"
Liner Thickness	1/2" through 2"
Liner Density	Up to 3 lbs. density
Slitters	Up to 5

Specifications

LS-5; 62 1/2" Long, 82" Wide, 52" High
Blades 6" Diameter Carbon Steel
Exit Table Not Supplied

Shipping Weight

280 lbs. Approx.



Machine is complete as shown except for exit table and guides which can be built to fit your shops needs.

Ordering Information

Item #	Code	Description
28009	--	Replacement Blade Only
28015	--	LS Slitting Assembly, Complete
28075	LS-5	Cutter Complete

The LS is shipped knocked down. It is easily assembled into a sturdy unit built for production work.



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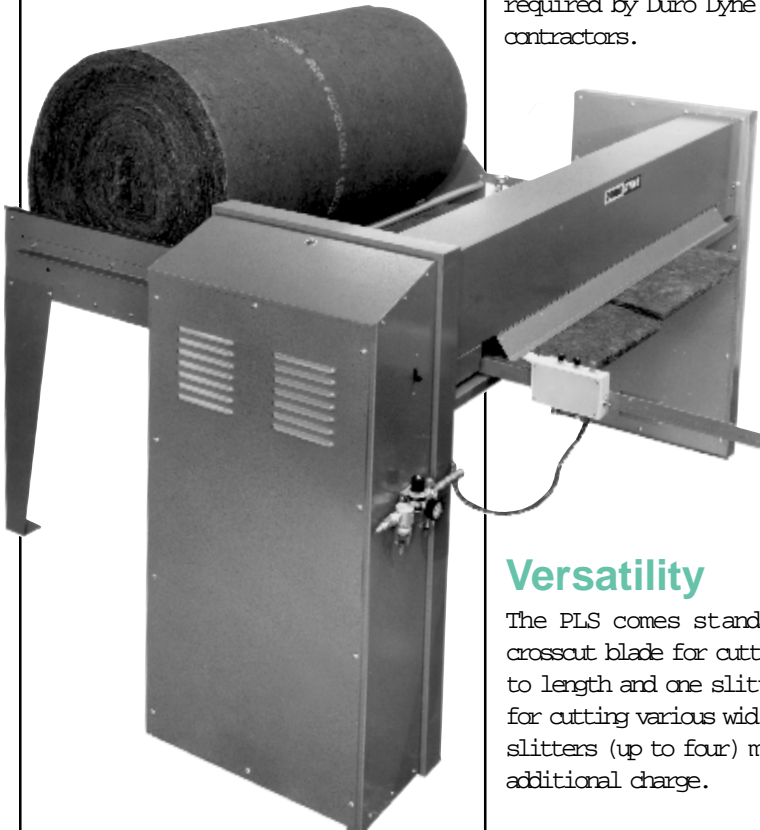
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BC028075



MODEL PLS AUTOMATIC LINER SIZER

Fast, accurate automatic duct liner cutter.



ITEM #39075
(Left to right flow)
ITEM #39251
(Right to left flow)

Since introducing the Model LS manually operated insulation cutter, Duro Dyne recognized a growing demand for a motor driven automatic insulation cutting machine which would stand up to heavy shop usage without sacrificing quality or accuracy. The Model PLS is the result of an intensive development program to provide an automatic insulation cutter which would meet the high standards required by Duro Dyne as well as the contractors.

Versatility

The PLS comes standard with one crosscut blade for cutting insulation to length and one slitting assembly for cutting various widths. Additional slitters (up to four) may be ordered at additional charge.

Insulation from 1/2" to 2" thick is easily accommodated.

Accuracy

The PLS is built to maintain a tolerance of + or - 1/4" of length desired as well as slitting accurately to desired widths.

Ease of Adjustment

The Settings for both width and length are made easily and quickly by the mechanic. All machine functions are controlled by 3 push buttons and one toggle switch. Material handling is minimized.

High Production

PLS will slit material at the rate of 40 linear feet per minute. Where material is to be cut to length as well, a full roll of insulation can be sized in less than 5 minutes.

Reliability

Duro Dyne's experience with manual insulation cutters provides the technical know-how for producing a powered machine which will perform to the high standards required. Many PLS insulation cutters are already providing contractors with efficient trouble free production in shops throughout the country.

Safety

The PLS is designed with operator safety in mind. Guards and interlock switches minimize the possibility of accidents caused through operator error.

Service

Duro Dyne, through its regional offices, sales engineers and select distributor organizations, assures you of assistance when required. Our service department technicians are available to help you keep your machine operating in top condition at all times.



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PLS FEATURES

Durable 6" rotary blades for cross cut and slitter.

An Insulation cradle designed to keep liner square.

Micro switch interlocks on all guards for safety.

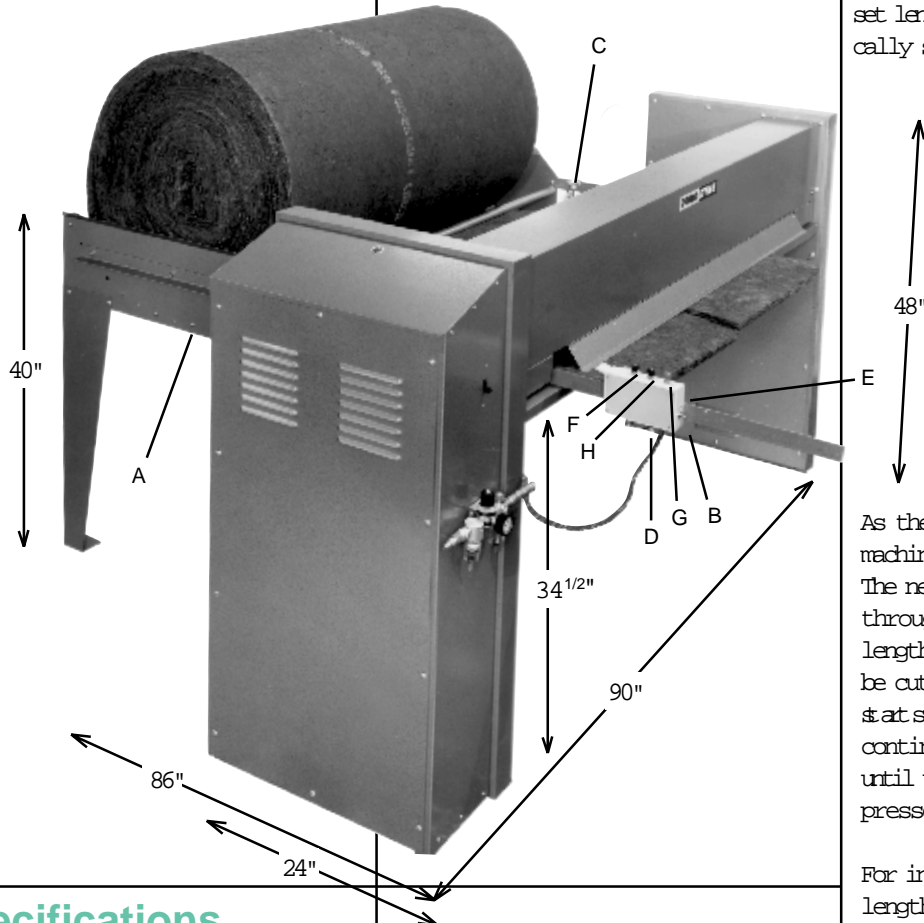
Reliable pneumatic controls for pinch roller and cross cut.

Proven 24-volt components for all control circuits

Operation

Place a roll of liner material on the cradle (A) and feed the leading edge of the liner between the pinch roller and the feed roller. To cut multiple pieces of the same dimensions set mode selector switch (B) to "automatic". Set the PLS for the desired length and width dimensions. To set the width, loosen knob on the slitter assembly (C) and the slide slitter

assembly to proper position, retighten the knob. (A metal scale has been installed to ease the width selection.) To set the length, loosen the knob (D) and slide the control unit (E) along the guide to the desired length, retighten the knob (E). The guide has been equipped with a well calibrated metal scale. Press the run button (F), the insulation will advance through the rotary knife slitters until it reaches the pre-set length. The liner is then automatically stopped and crosscut to length.



As the cut liner is removed from the machine, it automatically rests. The next piece is slit as it advances through the machine toward the length sensor where it will stop and be cut to length. Removal of the liner starts the next cycle. The machine continues in this mode of operation until the "Stop" button (G) is pressed.

For individual pieces of varying lengths, set the mode selector switch (B) to "Manual". Position the slitter to the desired width and set the length. Press the "Run" button (F) and the material will feed through the slitter into the length sensor and stop. Press the "Cut" button (H) and the material is cut to length and can be removed.

Specifications

- Cradle accommodates liner roll up to 60" width, 40" diameter
- Oil bath reducer with 25 to 1 ratio
- 1/3 horsepower motor
- 66" long; 1-1/2" diameter automatic tensioning cable cylinder for cross cut blade.

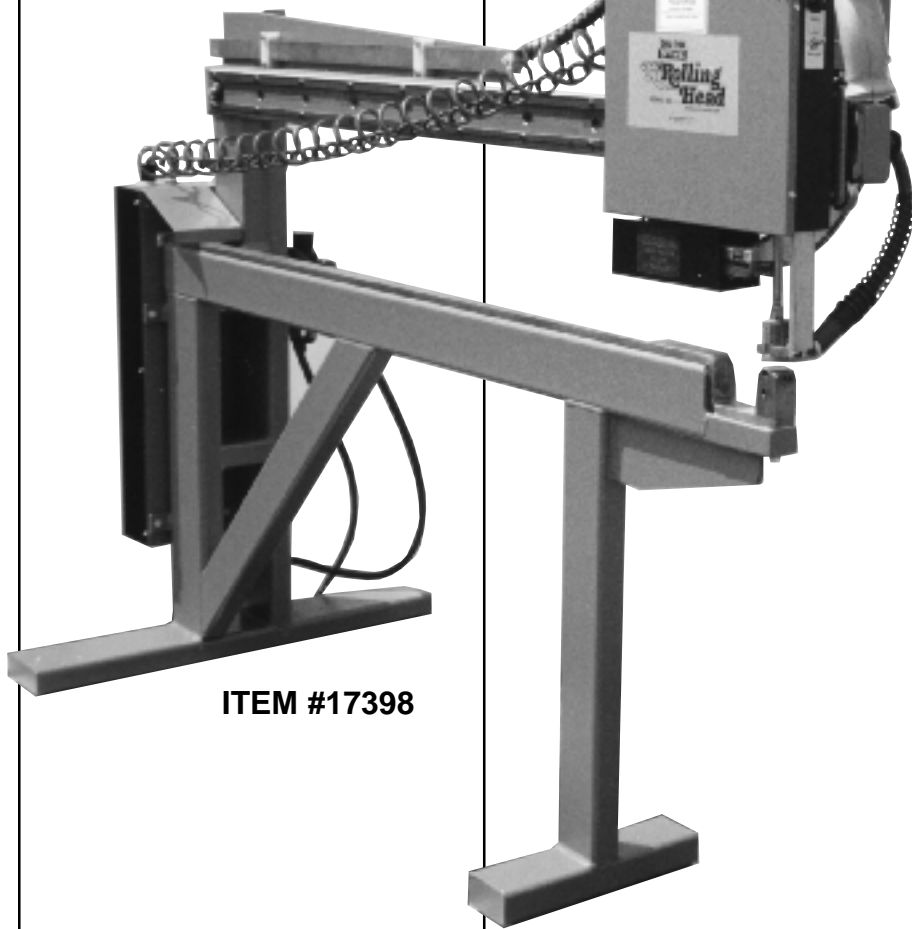
- 1 crosscut assembly, 1 slitter assembly
- Electrical requirements: 110 volt, 15 AMP
- Air requirements: 80 P.S.I.



MODEL RH ROLLING HEAD PINSPOTTER

Duro Dyne has been the leader in Insulation Fastening equipment for many years. Our engineers constantly strive to offer the sheet metal contractor the most efficient pinspotting equipment that current technology can provide.

The culmination of this engineering effort is the Model RH Pinspotter. Combining proven components with a moving head, Duro Dyne has produced the most reliable, labor saving, single-station fastening equipment available to date.



ITEM #17398



Features

Extra clearance between weld tip and ground bar allows easy handling of all thicknesses of liner up to 2". The standard vibrator bowl is capable of feeding fasteners from 1/2" to 1 1/2" in length at production line speed.



Precision polished and hardened tracks combined with ground bearings, assure trouble free easy movement. Solid state components proven under rigorous shop usage, control pneumatic and weld circuitry. Few adjustments are required. Solid state component controls are conveniently located. A quick load storage track and vibratory parts feeder keep



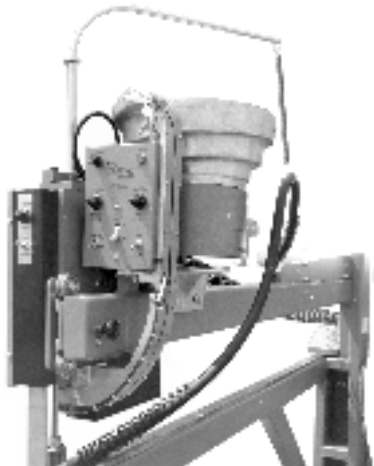
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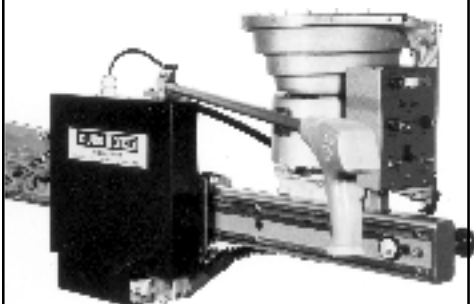
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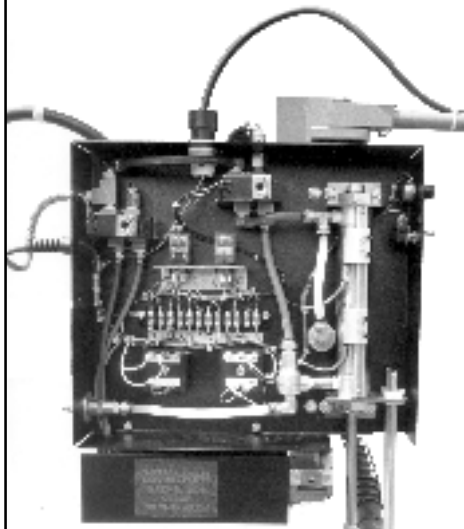
fasteners "at the ready" at all times. To reload the movable track simply move the rolling trolley to the open end of the machine. At the instant the two tracks align, the moving track is reloaded.



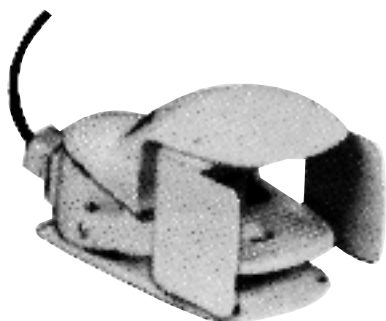
The welding tip glides back and forth along the RH frame eliminating excessive material handling inherent with stationary fastening machines. The five foot throat allows the placement of pins 1½" from each end of a five foot sheet without moving the metal! To convert the RH for fittings, draw the welding tip to the open end of the frame. Slide the quick release pin into position locking the weld tip over the fittings mandril. Remove the handle and connect the foot switch.



Low voltage (24 volt) electro-pneumatic circuitry with careful consideration of parts location allows safe and easy access to the rolling assembly components. A pneumatic brake cylinder locks the rolling assembly in position during the weld cycle to ensure a quality weld.



A foot switch frees the operator's hands for the handling of small fittings and odd shapes. It has a protective covering to minimize the accidental actuation of the machine.



Item #
27025



Options

Roller feed tables adjoining the RH Pinspotter enable work to be easily positioned by the operator, in many cases, with just one hand. Work is speeded up and operator fatigue minimized. Tables are not supplied but ball rollers are available.

An optional remote hand gun and ground cable for hard to work shapes is available.

Item #
17281



Specifications

Air Requirements

The RH Pinspotter is supplied with an air-filter assembly which includes an on-off switch. The input pressure required to operate the pneumatic head is 85 PSI. (4 CFM)

Electrical Specifications

An input voltage of 220V 60HZ single-phase is required. The RH unit should be located close to the power source, to minimize voltage drop from the source to the unit. Sufficiently heavy 3 wire capable (usually 3 wire #8 conduit) is to be used. Fuse the machine for 30 amps

Throat Size

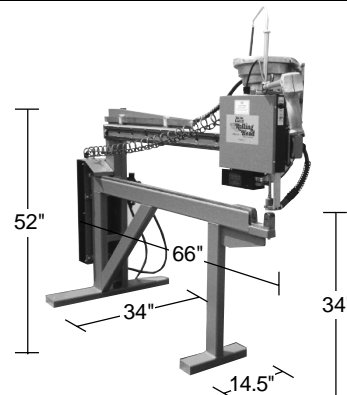
A 69" throat allows fasteners to be placed up to 1½" from edge of work without repositioning it.

Rib Pin™ Capacity

The vibrator bowl holds approximately 1,000 1" fasteners. Fasteners of ½" to 1½" in length may be fed automatically.

The RH Pinspotter utilizes Rib Pin™ fasteners. This fastener is resistance welded to the ductwork securely attaching the fiberglass insulation. The welded fastener is unsurpassed in holding power because it becomes part of the material it is welded to. In tests by an independent testing laboratory, welded clip pin samples exhibited a holding strength averaging three times that of the nail type fasteners under controlled test conditions.

ITEM #	RIB PIN	Approx. Clip Size	For Liner Size	Quant.
26023	CP-12	1/2"	1/2"	1,000
26028	CPB-12	1/2"	1/2"	5,000
26024	CP-34	3/4"	1"	1,000
26029	CPB-34	3/4"	1"	5,000
26025	CP-100	1"	1" Heavy Density	1,000
26030	CPB-100	1"	1" Heavy Density	5,000
26026	CP-150	1 1/2"	2"	1,000
26031	CPB-150	1 1/2"	2"	3,000
26027	CP-200	2"	2"	1,000
26038	CPB-200	2"	2"	3,000



DURO DYNE®

PORTABLE SPOT WELDER

Duro Dyne has been manufacturing resistance welding equipment for well over 30 years. Its portable spot welders have been in operation in thousands of plants from coast to coast, providing consistent quality spot welding in production environments. Their efficient design provides welding power comparable to many stationary welders much larger in size and costing many times the price. Incorporated into each unit is a light weight solid state timer which ensures consistent welds by eliminating the need for operator judgement. Completely portable, the unit can be *easily* moved.

Operation is simple; a lever handle is depressed, as the handle moves downward the welding tips close against the material to be welded. Upon closure the lever handle contacts a "microswitch." A timed burst of current far in excess of 1000 amperes passes through the metal, heating it to its melting point. Under constant pressure from the arms, the metal fuses together. In most cases, the complete welding process takes a fraction of a second. An optional sheet metal stand with a foot pedal activator is available to free the operator's hands for handling materials. For heavy production usage optional water cooled arms and tips are recommended.

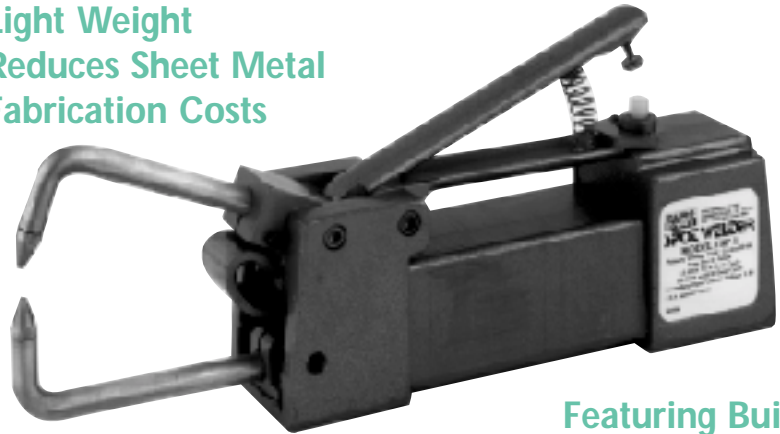
Tips on Use of Spot Welders

1. Welding Galvanized Metals

Because galvanize coating is a relatively poor conductor of electricity, galvanized steel does not weld as readily as uncoated steel.

The following procedure is recommended for welding galvanized steel:

- Low Cost
- Light Weight
- Reduces Sheet Metal Fabrication Costs



Featuring Built-in Solid State Timer

A. As soon as current is applied, tilt the work so that tips can "bite" into the coating. This will start the weld.

B. Keep switch "on" until the built-in timer times out. The weld will then be complete. In cases of metal that is rusty or heavily scaled, cleaning is necessary before welding.

2. Minimizing Burns When Welding

Here is a suggestion on how to minimize burn marks on stainless steel: Place a piece of copper about 1" square over the side of the metal where you do not want a burn mark to appear. Weld the stainless steel through the copper and any burn will be negligible. For production welding, you may accomplish the same thing by grinding the tip which rests on the finished surface as broad as possible. File the other tip to a fine point and you can perform consistent welds on stainless with negligible burn.

3. Getting The Most From Your Welder

To get the most out of your welder it is necessary that the input power is as high as possible. It is, therefore recommended

that the welder be connected directly to, or as close to your fuse box as possible. If an extension cord is needed, be sure to use at least #12 cable for the best results.

4. Welding Two Pieces of Wire Together

The Portable Spotwelder will weld two pieces of round wire together. The diameters of the wires which you can weld greatly exceed the thickness capacity listed for the machines. For best results, it is suggested that contour slots be filed into the tips so that they act as a holding jig when welding the wire.

5. Versatility

Since welders are basically heat producing devices there are many uses for the units which you never thought possible. It is excellent for heating small metal parts cherry red for hardening. If the thickness of the piece to be hardened, (or annealed), is greater, you may have to re-bend the arms slightly.

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Lachine, Quebec, Canada H8T 1B3
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FAX: 514-636-0328

Quickly Converts to Stationary Unit with Stand

A sturdy sheet metal stand is available which enables you to operate your Portable Spotwelder just as you would operate a stationary unit. Press the foot pedal and the arms clamp together and perform the weld. Release the foot pedal when the weld is complete. This allows the operator two free hands for handling material. The welder

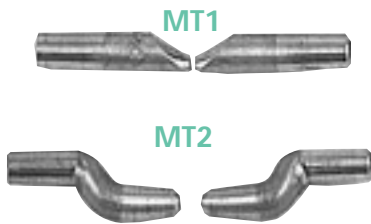
Standard Model No. ST2
Code No. 9203

slips onto the stand and locks in position. It can easily be removed and operated on a bench when needed.



Welder Arms & Tips

Water Cooled Tips



Standard Tips



S1
S2
S3

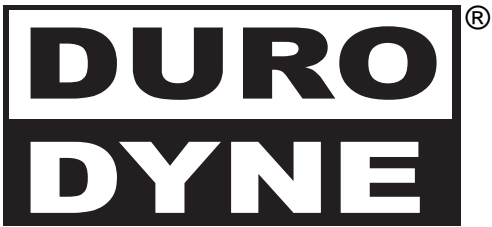
A1
A2



STANDARD			WATER COOLED			STANDARD			WATER COOLED		
Length	Desc.	Item#	Length	Desc.	Item#	Length	Desc.	Item#	Length	Desc.	Item#
6"	S-1	9012	12"	S-2-W	9022	6"	A-1	9015	15"	A-2-W	9026
12"	S-2	9013	18"	S-3-W	9023	15"	A-2	9016	18"	A-3-W	9027
18"	S-3	9014				18"	A-3	9017			

Specifications

CAPACITY	ITEM#	MODEL#	DESCRIPTION	VOLTAGE	KVA AT DUTY CYCLE	
Welds mild or S.S. to 1/8" (combined thickness); galvanized up to two pieces of 18 gauge.	9200	TSP-1	Welder with built-in solid state timer, less arms & tips, includes 10' of line cord.	110V A.C. (50-60 cycle) 25 amp fuse	2.5	7.5%
	9201	TSP-2		220V A.C. (50-60 cycle) 15 amp fuse	2.5	7.5%
HI position: Welds mild or S.S to 1/4" (combined thickness); galvanized to two pieces of 12 gauge. Caution: Model TBW is too powerful to weld light gauges without burning unless the timer is used in LO position. LO position characteristics and capacity are same as Model TSP-2.	9200	TBW (HILO)	Welder with built-in solid state timer, less arms & tips, includes 10' of line cord.	220V A.C. (50-60 cycle) 15 amp fuse	5.0	7.5%
					2.0	50%



PV1 Perfect Vaner

Single Wall Turning Vane Assembly Machine

For many years it was believed that “double-wall” turning vanes offered better performance than “single-wall” turning vanes. More recently, testing has shown “single-wall” turning vanes to be more efficient than “double-wall” turning vanes as well as requiring less material than “double-wall” turning vanes. The Duro Dyne PV1 makes it possible for any shop to produce the preferred “single-wall” turning vanes economically.

INNOVATIVE: Simplicity of design and operation are the basis for the PV1’s appeal. The unique and innovative spring steel forming sheet eliminates the need for expensive forming dies or rollers.

VERSATILE: The PV1 is capable of producing “single-wall” turning vanes out of standard 20 or 22 gage galvanized steel up to 36” in length. The PV1 can also form “single-wall” turning vanes out of 1/16” Aluminum. The PV1 can be bench mounted when used without the provided leg set or freestanding when used with the provided leg set.

EASY OPERATION: 1. Simply insert a flat sheet of 20 or 22 gage galvanized steel 7 1/16” wide and up to 36” long between the roller and the spring steel. 2. Pull down the cushion gripped handle. 3. Return the handle to the original starting position and pull out the completed “single-wall” turning vane.



RELIABLE AND STRONG: The PV1 uses few moving parts and no pneumatic or electric components. The unit is comprised of high strength steel with permanently lubricated bronze bushings. It is virtually maintenance free.

ORDERING INFORMATION:

Part #	Description
43005	PV1 Perfect Vaner <i>Leg Set Shipped Unassembled</i>

Patented

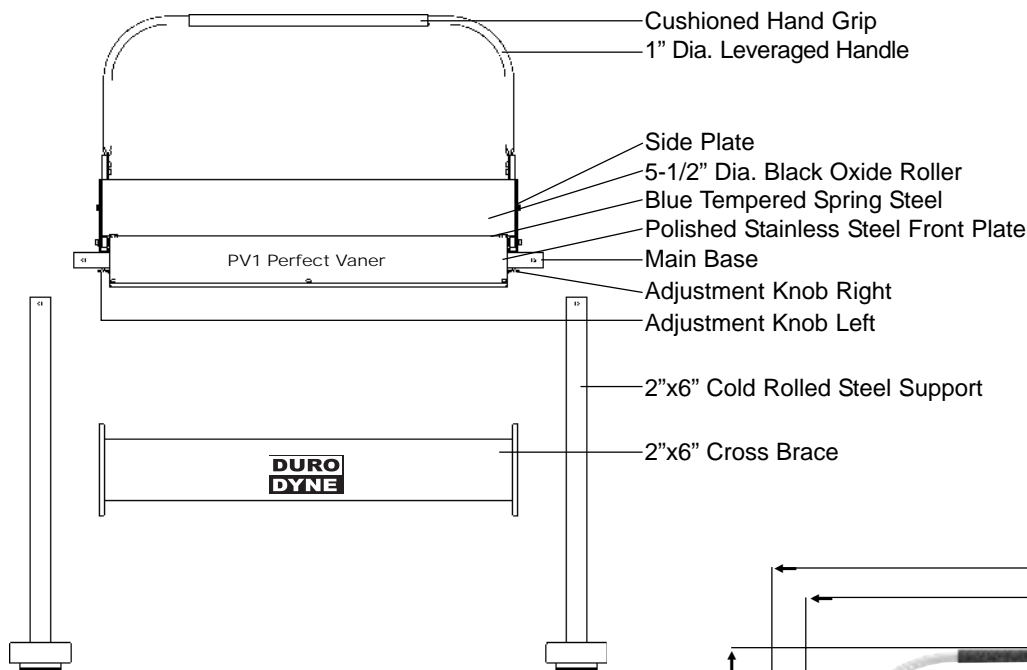
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OPERATION:

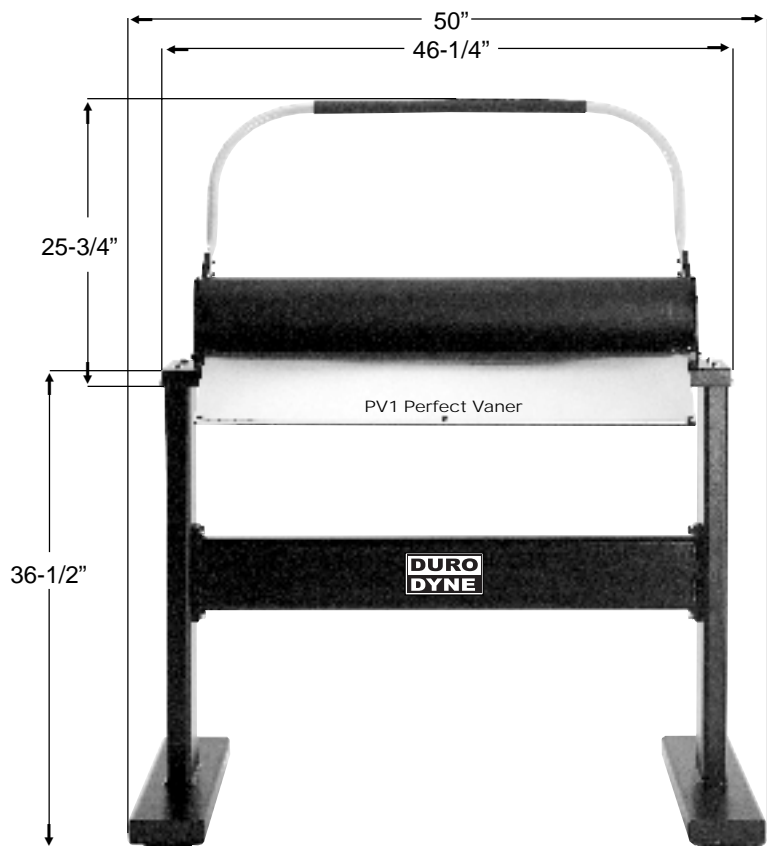
1. Begin with a strip of 20 or 22 gage galvanized steel 7 1/16" wide up to 36" in length.
2. Insert the galvanized strip in between the spring steel and the large roller. Adjust the 2 knobs located under the main base until material is snug but can be slid in or out of the machine.
3. Starting with the handle in the full upright position, pull down the handle until the galvanized steel strip is hidden from view. Return the handle to the original upright position.
4. Remove the finished turning vane.
5. Repeat the process for additional turning vanes. (Further adjustment is not required unless the gage of the material of the turning vane or the thickness changes.)

LOCATION OF FEATURES:



SPECIFICATIONS:

Electrical Requirements:	NONE
Air Requirements:	NONE
Approximate Weight (w/ Leg Set):	265 lbs.
Turning Vane Size (finished)	4-1/2" Radius
Turning Angle (Nominal):	90 Degrees
Turning Vane Thickness:	20 or 22 gage
Turning Vane Width When Flat:	7-1/16"
Turning Vane Length:	Up to 36"
Turning Vane Type:	Single-Wall



* Use only with Duro Dyne Type VR2

**DURO
DYNE**

**® INTRODUCING
RH MACH II**



- **Digital function display.**
- **One adjustment controls weld and dwell times.**
- **Sleek streamlined frame design with 5 foot throat.**
- **Feed track proximity sensor - for quiet operation.**
- **Posi-feed weld pin track release system.**
- **New custom designed high performance weld transformer.**
- **18 gauge capacity with 2 inch pins.**
- **Digital weld setting indicator.**
- **Manual pin feed switch.**
- **Circuit breaker protection for the vibrator feed.**
- **Weld cycle indicator.**
- **Flexlink wire harness and air line guide.**

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CATALOG V-04.1

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