DURO DYNE®

Tool Division

Tool Catalog

ABOUT DURO DYNE

Established in 1952, Duro Dyne Corporation has evolved into the leading manufacturer of sheet metal necessities and equipment for the heating, ventilating, and air conditioning industry. Over the span of the last 55 years, Duro Dyne has expanded its plant locations and now employs over 200 people.

Duro Dyne's extensive research and development program has introduced more new products and processes than any other company in our field. Duro Dyne Corporation is best known for its products that revolutionized the meaning of duct construction, as it is known today. Prefabricated Flexible Connector, Damper Hardware, Insulation Fastening equipment and fasteners, Sheet Metal Screws, as well as Adhesives and Sealers are the foundation upon which we continue to build our product mix.

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, along with Dyn-O-Mate and Dyna-Tite 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 innovative solutions for improving shop and field production. Our Universal Regulator, Insulflex Flexible Connector, and Target and Slope style weld pins 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 Spot Welders, Water Based Adhesive Application System and Turning Vane Fabricating Equipment. Some of our latest innovations include new, automatic Mach Pinspotters, as well as the manual MF-12 and PBF-510. 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.

Duro Dyne's marketing expertise and Dyn-O-Mate's engineered designs combine to bring the finest 4-bolt duct connection system to the market. Turning Vane and Rail, TDC/TDF Corners, as well as slips, drives and cleats.

The Dyna-Tite Division brings the HVAC Industry an innovative hanging system that eliminates the costly need for threaded rod. Wire Rope used in conjunction with Duro Dyne's patented Cable Locks make hanging ductwork or equipment a huge time saving operation.

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

THE GREATEST NAME IN SHEET METAL NECESSITIES

TABLE OF CONTENTS

ACCESSORY TOOLS

Dividers

Heavy duty plated steel legs are angled inward to allow the points to come very close together for small measurements and allow for a substantial working angle to the material's surface. The thumb screw clamp holds legs rigidly against each other without slippage when tightened.Easily removable tips can be sharpened or replaced. Dividers are available in two sizes for scribing circles up to 36" or 48".

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

Duct Stretcher - Offset

It is used to pull duct together from either direction with a single hand. The offset design eliminates knuckle contact with the duct. Adjustable wheels allow for varying distances. It has a non-slip handle grip.

Item #	Description	L x W inches x inches	Shelf Pack Wt. lb.	Shelf Pack
818140	ODS15	15 x 1/2	2.50	1

Scratch Awls

A large handle provides ample surface area for contact or grip.

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
010014	Duro Dyne Scratch Awl	3	5	0.1	1

Trammel Point Tool

The hardened replaceable tips, designed for longer life, are held in position by a socket head 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
818113	DTP-18RP			.08	1

Circular Steel Gage

A circular gage is made of heavy steel and is used for determining steel thickness from 0 through 36 gage. Manufactured with zinc plated hardened steel. It 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

Edge Scribe

The stainless steel edge scribe provides a simple and easy marking of metal sheets. An attached magnet helps keep the tool within reach. It marks dimensions of 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

DRILL BITS

Super T Bits

Duro Dyne Drill Bits have a 135˚ split point which starts and cuts quickly without walking. 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.

Item #	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	1	100
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 include all the features listed for our Super T Drill Bits. They are available in two popular sizes. Twin end bits give you a spare bit for just a few cents more than a basic bit costs.

Item #	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

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 the proper tension is reached and then squeeze the secondary handle to clip off the excess tie material.

For Duro Dyne 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

FILES

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 in width towards the point. They are double-cut on both sides and single-cut on both edges.

Item#	Description	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
840079	03764 - Bastard	12	5.63	6

Half Round Files

Rounded on one side and flat on the other, they are used on concave and convex as well as flat surfaces. The 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	04896N - Bastard	8	3.31	12

Knife Files

Knife files are used principally by tool and die makers on work having acute angles. All sides are double-cut and the sharp edges are single-cut. 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

Mill files are used for sharpening mill or circular saws as well as for draw-filing and finishing metals. All sizes are tapered slightly in width and have two square edges. They are single-cut on the sides and the edges.

Item#	Description	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
840168	08497 - Bastard	8	2.75	12
840169	08642 - Bastard	10	5.07	12

Carded Mill Files without Handles

Files are the same style as above, but individually packaged on a card.

Item#	Description	Shelf Pack Wt. lb.	Shelf Pack
844044	21825 - 6" Mill Bastard	1.31	6
844046	21839 - 10" Mill Bastard	3.50	6

HACKSAW FRAMES & BLADES

General Purpose Hacksaw Frame

This is a sturdy, bright nickel frame with 3-1/2" throat. It can be adjusted for 10" or 12" blades in four positions. The blade holding bolt is equipped with a large wing nut tightener. It is assembled with a 10" Nicholson blade and can be adjusted 90 degrees for vertical or horizontal cuts.

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

No. 10 Hacksaw Frame

This hacksaw frame is corrosion proof, polished nickel with a 3-3/8" throat and is adjustable for 10" or 12" blades. The handle is molded plastic. The blade holding bolts are adjustable to four positions. The rear bolt has wing nut for easy tensioning of the blade. Each frame is assembled with a 10" Nicholson blade.

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

No. 12P High Tension Hacksaw Frame

This is a 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 can be used with 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. Equipped with Bi-Metaloy® blades, this hacksaw cuts faster through the toughest materials, and the blades last longer. The secret is a screw-operated lever with a 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 setting, the greater the blade beam strength and cutting results. The frame is assembled with a 12" Blade.

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

Mini-Hacksaw

This is an ergonomic handle which gets into small places, making difficult cutting jobs easy. It uses a standard size hacksaw blade.

Item#	Description	Inches	Shelf Pack Wt. lb.	Shelf Pack
846053	80968 Little Nic Hacksaw	10	1.40	6

Bi-Metaloy® Hand Hacksaw Blades

Blades have a molybdenum alloy tool steel edge with a tough, flexible high carbon steel backing. They last twice as long as high speed steel and up to 10 times longer than carbon steel. They can be operated 20% to 50% faster. Additional features are high tooth hardness and shock resistance.

Item#	Description	Length inches	Width inches	Gage inches	Teeth per inch	Shelf Pack Wt. 50 Carded (lb.)	Shelf Pack Wt. Boxed (lb.)
846102	62826-NF-1218	12	1/2	.025	18	7.25	4.25
846103	62832-NF-1224	12	1/2	.025	24	7.25	4.25
846104	62839-NF-1232	12	1/2	.025	32	7.25	4.25

HAMMERS

Solid Steel Hammers

They are built for strength and designed for comfort. The hammers are well balanced to give extra power with less fatigue. The head is full polished and will never come off. The neck and bell are oval shaped. It is cushion gripped with a red handle for positive hold and easy identification.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Face	Shelf Pack
831020	SS16R - Ripping Claw	16	13	7.2	Rough	4

Fiberglass Hammers - Regular

These hammers have a polished head, bell and striking face. The neck and bell are round. A black molded cushion grip is fitted on the super strength fiberglass handles. The handle is attached to the head utilizing Permabond®.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Face	Shelf Pack
830020	11418 - Ripping Claw	20	13-1/2	7.6	Bell	4

Hammer

This hammer has a polished round head and an octagon neck. The handle is a solid fiberglass core covered with molded nylon to resist breakage. It is factory balanced and has Permabond® attachment of the handle to the head.

Item#	Description	Head Wt. oz.	Overall Length inches	Shelf Pack Wt. lb.	Face	Shelf Pack
830020	11654 - Curved Claw	16	13	9.6	Polished	6

Steel Tinner's Hammer

It is available in one convenient weight. This 18 ounce 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.	Face	Shelf Pack
838396	DDTH-18 - Rubber Grip	18	11-3/4	1.90	Polished	1

HOLE CUTTER & REPLACEMENT PARTS

Hole Cutter

The hole cutter will cut holes in light gage metal, aluminum, plastics and Formica up to a maximum hole diameter of 12". 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

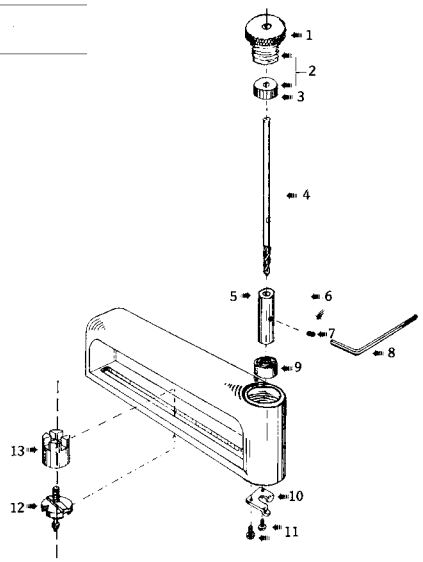
Hole Cutter Replacement Bit

The 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

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.

3-Blade Hand Crimper

An ideal tool for repairs in the field, it has a matte black finish with red Plastisol grips. It is a compound action tool for crimping up to 22 and 24 gauge sheet metal.

Item#	Description	Throat Depth 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

An ideal tool for joining sheet metal pipes of the same size. The pipes can be corrugated, round or square. It is great for repairs in the field. It has a matte black finish with red plastisol grips. It is a compound action tool for crimping up to 22 and 24 gage.

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

Hand Notcher

The notcher has high leverage compound action handles for fast and easy cutting. It produces a true 30˚ V-shaped cut in sheet metal. The tool features clean notching without slippage. It has a matte black finish with 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

Hand Seamer

The seamer has high leverage compound action handles for easy metal bending and flattening. It produces a permanent tight fitting seam. The jaw has 1/4" incremental depth marks. The tool has a matte black finish with red plastisol grips. It is recommended for use on steel 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

The seamer has high leverage, offset, compound action handles for easy metal bending and flattening. It produces a permanent tight fitting seam. The jaw has 1/4" incremental depth marks. The tool has a matte black finish with red plastisol grips. It is recommended for use on steel up to 18 gage.

Item#	Description	Jaw Depth inches	Overall Jaw Width Inches	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

6” Seamer

The seamer has compound action handles and produces a permanent, tight fitting seam. High quality steel maintains better edges and lasts longer. It has corrosion resistant plating. The throat depth is 1-1/4”. The tool has a lever action jaw lock. The handles have yellow comfort grips with hand stops. The jaw surfaces are serrated for a secure grip.

Item#	Description	Jaw Depth inches	Overall Jaw Width Inches	Length inches	Shelf Pack Wt. lb.	Shelf Pack
818145	DDHS6	1/4 - 1-1/4	6	9	11.5	1

Replacement Spring

The spring is used on all Wiss HVAC Tools.

Item#	Description	Shelf Pack
822024	P4113-908N	10

KNIVES & REPLACEMENT BLADES

Electricians Fold Up Knife

Both a knife and a screwdriver, the screwdriver blade has a sharp edge for scraping insulation. The knife blade has a spear style point.

Item#	Description	Shelf Pack
875048	K22V Electricians Knife	6

WK-8V Knife - Retractable Blade

A popular all purpose retractable knife for home, professional and industrial use. The easy run slide can use all Wiss RWK replacement blades. It has four blade positions including retracted.

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

Double Edged Knife

Knife is handy for cutting fiberglass insulation, duct board and flex duct walls and insulating jackets.

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

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

This is the most popular heavy duty blade for industrial, professional and home applications. It 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)

LEVEL

Torpedo Level

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

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

MAGNETIC MATERIALS HANDLER

This lightweight magnetic materials handler, with five pounds of holding power, has a "T" handle release. It is 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

METAL EDGE TURNERS

This is an extruded high strength aluminum tool for turning flanges on 24 through 30 gage mild steel. Each WMET tool will turn a 3/8" or a 1" flange. It is lightweight and will not rust.

Item#	Description	Overall Length inches	Mild Steel Capacity	Flange Formed	Shelf Pack Wt. lb.	Shelf Pack
818136	WMET8	8	24-30 gauge	3/8", 1"	.41	1
818137	WMET12	12	24-30 gauge	3/8", 1"	.58	1
818134	WMET18	18	24-30 gauge	3/8", 1"	.66	1
818135	WMET24	24	24-30 gauge	3/8", 1"	.75	1

NUTDRIVERS

Magnetic Nutdrivers (Various Lengths)

1/4" and 5/16" magnetic nutdrivers offer the ultimate in convenience for assembly and service operations involving hex fasteners. The Alnico permanent magnet inserted in the socket holds fasteners firmly for easy, one hand driving or for retrieving on removal. All nutdriver sockets have been specially treated and hardened for use with self-tapping screws. A 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
871097	L8MV	Red	1/4	6	10-1/8	6
871100	L10MV	Amber	5/16	6	10-1/8	6

Full Hollow Shaft - Inch Sizes, Color Coded Handles Nutdrivers

These nutdrivers have a precision-machined, cold drawn, case hardened socket with a bright finish. The grip is molded plastic.

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

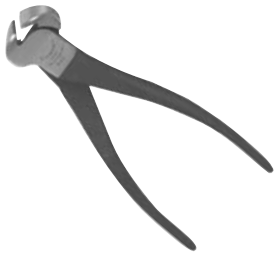
Nutdriver Set

The 147TB contains seven color coded hollow shaft nutdrivers from 1/4" to 1/2" in a molded plastic tray. The nutdrivers are 7-1/4" long with 4-1/2" shaft and 7" 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

PLIERS

End Cutting Nippers



The width of the blades, the throat clearance, the leverage ratio of handles to blades, the size of the rivet and the angle of the cutting edges have all been carefully designed to produce a top quality tool. It has a non-slip red, cushion grip handle.

GG014HN is a strong, lightweight design for demanding construction use. It develops high leverage to cut large diameter nails and wire. It is drop forged from high quality steel with heat-treated and tempered handles and jaws. It features hardened and honed cutting edges and a black finish with a 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
804336	72-7CVN	7-1/4	3/8	1-9/16	17/32	1-3/16	4.50	6
804341	72-8CVN	8-1/4	3/8	1-3/4	17/32	1-3/16	6.00	6
804346	72-9CVN	9-1/4	13/32	1-7/8	19/32	1-1/4	6.36	6
881109	GG014HN	14	23/32	2-21/32	41/64	7/8	12.00	5
881106	GG08HN	8	43/64	2-1/8	9/16	51/64	4.13	5

Locking Pliers & Clamps With Chrome Finish*

Locking pliers have a unique jaw tooth design that improves gripping and turning ability. The compound action ensures a powerful non-slip locking grip. The one hand release lever is quick and convenient. The screw machined ferrule provides accurate adjustments.

*Straight Jaw Locking Pliers

Item#	Description	Overall Length inches	Max. Jaw Opening inches	Shelf Pack Wt. lb.	Shelf Pack
818300	DDSJP10	10-5/8	2	1.50	1
818302	DDSJP7	7-1/8	1-5/8	1.00	1
818304	DDSJP5	5-1/2	1-1/4	.50	1

*Curved Jaw Locking Pliers

Item#	Description	Overall Length inches	Max. Jaw Opening inches	Shelf Pack Wt. lb.	Shelf Pack
818307	DDCJP10	10-5/8	2	1.50	1
818309	DDCJP7	7-1/8	1-5/8	1.00	1
818311	DDCJP5	5-1/2	1-1/4	.50	1

*Long Nose Locking Plier

Item#	Description	Overall Length inches	Max. Jaw Opening inches	Shelf Pack Wt. lb.	Shelf Pack
818314	DDLJP6	6-9/16	2-1/8	.60	1

*C-Clamp Locking Plier

Item#	Description	Overall Length inches	Max. Jaw Opening inches	Shelf Pack Wt. lb.	Shelf Pack
818317	DDCCP11	11	3-1/2	2.00	1
818319	DDCP6	6	2	.70	1

*Locking Seamer

Item#	Description	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
818322	DDLS8	8	1.15	1

Tongue & Groove Straight Jaw Pliers

These are versatile utility pliers ideal for objects of all shapes. They are drop forged and machined. Then they are hardened, tempered, and polished to assure a precision fit between both halves; eliminating any chance of the halves jumping out of the 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
802004	R27CV	7	1-5/16	6	2.94	6
802009	R210CV	10	1-13/16	6	5.94	6
802014	R212CV	12	3	8	10.38	6
802019	R220CV	10	2-1/4	8	6.24	6
802026	R410CV	10	1-13/16	6	5.70	6
802020	R216CV	16	4-1/2	10	9.39	3

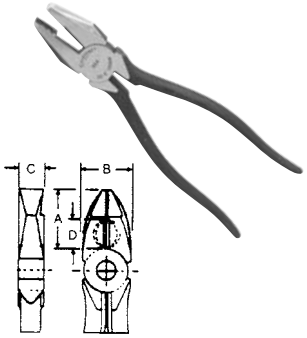
Diagonal Cutting Pliers

Designed for cutting heavy wire, wear resistant cutting edges ensure a long life. A non-slip red, cushioned grip is designed for comfort.

Item#	Description	Overall Length inches	Nose Length A inches	Nose Width B inches	Maximum Thickness C inches	Shelf Pack Wt. lb.	Shelf Pack
804211	933-6CVN	6	13/16	3/4	7/16	2.28	6
804210	933-7CVN	7	1	29/32	15/32	3.00	6
804059	542-7CVN	7	25/32	1-7/32	15/32	3.36	6
804064	542-8CVN	8	25/32	1-7/32	15-32	4.50	6

Lineman's Pliers with Cushion Grip Handles

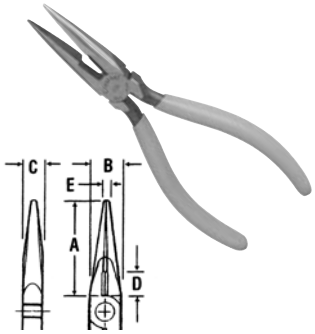
Designed especially to meet the requirements of linemen, this plier cuts many gages of wire. The plier can be used for general purpose wire cutting and includes an insulation crusher. All pliers shown below have a New England Head.



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

Long Chain Nose Side Cutting Pliers

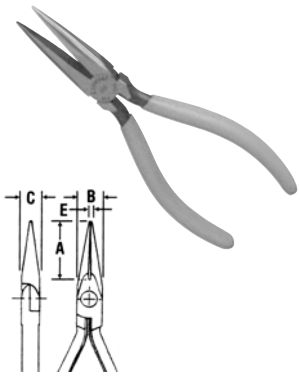
This long nose plier is capable of reaching into tight places. Made of forged alloy tool steel, the plier has fine serrated jaws with an integral cutter. Non-slip red cushion grip handles provide comfort during use.



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

Long Chain Nose Pliers

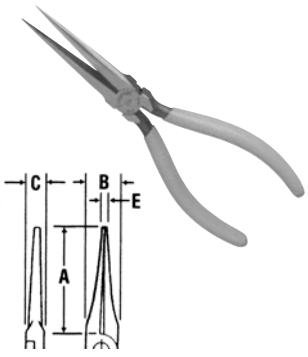
The long chain nose has serrated jaws and is a great tool for making loops. It is designed for work in confined areas. Red, non-slip, cushion handle grips provide comfort during use. It is made of forged alloy tool steel and is individually tested for strength.



Item#	Description	Overall Length inches	Nose Length A inches	Nose Width B inches	Maximum Thickness C inches	Point Dimensions E Inches	Shelf Pack Wt. lb.	Shelf Pack
804094	1033-6CVN	6-5/8	1-7/8	11/16	3/8	3/32	2.22	6
804099	1033-7CVN	7-1/2	2-21/32	3/4	3/8	5/32 x 3/32	2.64	6

Long Needle Nose Pliers

These pliers are designed for work in tight, narrow areas. These are made of forged alloy tool steel and have excellent gripping ability. Each plier is individually tested. Red, non-slip, cushion grip handles provide comfort during use.



Item#	Description	Overall Length inches	Nose Length A inches	Nose Width B inches	Maximum Thickness C inches	Point Dimensions E Inches	Shelf Pack Wt. lb.	Shelf Pack
804135	777-6CVN	6-1/2	2-1/16	11/16	11/32	1/8 x 3/32	1.50	2
804141	777-7CVN	7-15/32	2-11/16	11/16	21/64	5/32 x 3/32	2.40	6

Slip Joint Pliers

This combination plier is made of drop-forged steel, hardened and tempered. It has machined gripping teeth and a bright plated finish. A built-in wire cutter is included.

Item#	Description	Overall Length inches	Max. Jaw Opening inches	Shelf Pack Wt. lb.	Shelf Pack
803009	H28V	8	1	3.6	6

RECIPROCATING SAW BLADES

Blades fit all reciprocating saws using a universal 1/2" shank. They are bi-metal construction for long life and rugged use. This alloy steel features excellent flexibility. The teeth are hardened, giving the blades a high-speed cutting edge, long life and durability. Thicker than most blades, teeth stay sharper longer, resisting over heating and embrittlement.

Item#	Description	Size/Teeth/Type Used	Quantity/Pack
818155	DD075	6"/10 TPI/General Purpose	5
818156	DD059	6"/14 TPI/Metal Cutting	5
818157	DD057	6"/18 TPI/Metal Cutting	5
818158	DD058	6"/24 TPI/Metal Cutting	5
818159	DD065	6"/6 TPI/Wood w/ Nails	5
818163	DD060	8"/18 TPI/Metal Cutting	5
818164	DD066	9"/6 TPI/Wood w/ Nails	5
818165	DD086	8"/10-14 TPI/Heavy Duty	2
818166	DD067	12"/6 TPI/Wood w/ Nails	5
818169	DD088	6"/6 TPI/Plaster & Drywall	2

RIVET GUN

Designed for 1/8", 5/32", 3/16" diameter rivets. The pin from installed rivets is released through the front of the tool. The tool is made of cast aluminum alloy 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

The assortment includes one PR-5 Rivet Gun, 50 AS44LF, 50 SS42D, 50 SS44D, 50 AS42D, 50 BP125 back-up washers, and 1 TD-30 drill bit; all 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

SCREWDRIVERS

Electrician's Round Shaft Screwdrivers

An ergonomic, molded plastic handle provides high torque with maximum comfort. The tool steel shaft is strong and durable and finished with corrosion resistant zinc plating. Screwdriver is packaged on a card.

Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
805110	SDD36V	6	3/16	9-5/8	1.00	6

Mechanic's Round Shaft Screwdrivers

An ergonomic, molded plastic handle provides high torque with maximum comfort. The tool steel shaft is strong and durable and finished with corrosion resistant zinc plating. Screwdriver is packaged on a card.

Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
805106	SDD56V	6	5/16	10-1/2	5.80	6

Mechanic's Square Screwdrivers

An ergonomic, molded plastic handle provides high torque with maximum comfort. The tool steel shaft is strong and durable and finished with corrosion resistant zinc plating. Screwdriver is packaged on a card.

Item#	Description	Shaft Length inches	Size of Tip inches	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
805124	SDDS56V	6	5/16	10-1/2	6.40	6
805123	SDDS44V	4	1/4	8-3/4	4.80	6

Phillips Screwdriver

An ergonomic, high efficiency, high torque handle with cushioned rubber grip for comfort and slippage control. Bright zinc plated blade to prevent corrosion.

Item#	Description	Shaft Length inches	Size	Overall Length inches	Shelf Pack Wt. lb.	Shelf Pack
805115	SDDP44V	4	#2	8-7/8	2.20	3

Crescent Screwdriver Set

This is a set of six popular sized screwdrivers, all with cushion grip ergonomic designed handles.

Item#	Description	Item Description		Shelf Pack
809394	SDD-6	6 Piece Screwdriver Set 1 each of:		12
		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	

No. 25 Handle for Reversible Round Shaft Blade

Blades snap in and out easily and are held firmly in 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)

Each shaft has one slotted tip and one Phillips tip.

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

Six-In-One Screwdriver

This extra handy, self-storing, hand tool converts in seconds to the most often needed screwdrivers. The CMB6CDP converts into any of the following: 3/16" & 9/32" slotted, #1 & #2 Phillips & 1/4" & 5/16" nutdriver.

Item#	Description	Item Description	Shelf Pack
806204	CMB6CDP	Six-In-One screwdriver complete*	12

*Must be ordered in shelf pack form.

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)
16018	DC14	1	1-3/4	1	10
16019	DC516	1	1-3/4	1	10
16008	DCL14	1	2-5/8	1.50	10
16009	DCL516	1	2-5/8	1.50	10
16015	DCXL14	1	6	1.00	1
16016	DCXL516	1	6	1.00	1
Bulk Pack					
16021	DC14B	1	1-3/4	15	100
16022	DC516B	1	1-3/4	15	100
16012	DCL14B	1	2-5/8	13-3/4	100
16013	DCL516B	1	2-5/8	15	100
16024	DCXL14B	1	6	22	100
16025	DCXL516B	1	6	22	100

Metalmaster® Compound Action Snips

The non-slip serrated jaws of Wiss Metalmaster snips are made of tough, wear-resistant molybdenum steel to provide the durability 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 amount of hand pressure that can be applied.

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® Special Series Snips

Metalmaster special series snips utilize a hardening process designed 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

Metalmaster® Compound Action Bulldog Snips

This snip is designed 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 the material being cut away from hands and allow straight or circle cuts to be made easily. The handles are color coded for easy blade identification; red grips 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

90˚ Snips

The 90˚ angle of the blade allows for overhead cutting. The handle is produced from high tensile strength alloy steel which exceeds the amount of hand pressure that can be applied. A handy hang-up hole is built into the handle. The handles are spring-action for fast, effortless feed of metal. The non-slip, serrated jaw is produced from tough molybdenum steel and allows for compound lever action.

Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
820012	M8R - Red	8-7/8	1-1/4	18 Gage Steel - 0.049"	36	6
820013	M9R - Green	8-7/8	1-1/4	18 Gage Steel - 0.049"	36	6

Multimaster® Compound Action Snips

The snip combines the long cut of a Tinner's snip with the strength of a compound action snip. It is suitable 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

Aluminum Snip

It makes straight and curved cuts on light gauge steel, vinyl siding, gutters and rubber. The 3 1/2" blades are drop forged for longer life and are rust resistant.

Item#	Description	Overall Length inches	Length of cut inches	Recommended max. capacity low carbon cold rolled steel	Shelf Pack Wt. lb.	Shelf Pack
818132	HR12	12"	3	22 Gage Steel	1	1
818133	HR14	14"	3	22 Gage Steel	1.10	1

HVAC Compound Action Pipe & Duct Snips

The HM-41V can make straight cuts, curved cuts or any combination of the two. The cutting jaws are formed of high carbon tool steel. The handles are formed of special high strength steel and have a margin of strength far above the amount of hand power that can be applied. The 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. The Wiss HM-41V features a patented ball-bearing jaw action that automatically adjusts the blade clearance for squarer, cleaner cuts. It cuts a 11/64" wide strip and curls it away from the operator's hands. This snip has a matte 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

Light Metal Cutting Snips - Solid Steel

The solid forged, light metal snips are compact and popular in the electronics and appliance industries. It has polished straight blades and black handles.

Item#	Description	Overall Length inches	Length of cut inches	Shelf Pack Wt. lb.	Shelf Pack
824002	J7S - Straight Blades	7	1-1/4	1.75	6

Bulldog Pattern Snips

Bulldog snips provide greater cutting power for notching, nibbling and chopping heavy stock. Cushion grip red handles provide 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-5N	16-1/2	2-1/2	16 Gage Steel - 0.065"	3.63	1

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 both home craftsman and professional artisans for light duty metal cutting because of their great versatility. Cushion grip red handles provide 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-19N	13	3	21 Gage Steel	13.44	6
821009	V-10N	10 1/4	2 1/4	23 Gage Steel	9.50	6

Straight Pattern Snips

Straight pattern snips are primarily for straight cuts although they can 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 provide 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-7N	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 the material away from the operator's hands for safe, easy cutting. Cushion grip red handles provide 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-7BWN	14-1/4	4	18 Gage Steel - 0.049"	2.63	1

Straight Pattern Snips

Straight pattern snips are primarily used to make 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. While the most traditional of tinner's snips, it 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. Cushioned red handles provide 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
821005	A-9N	12-1/2	3	20 Gage Steel	13.44	6
821004	A-10N	11	2-1/2	21 Gage Steel	10.50	6
821003	A-11N	9-3/4"	2-1/4	23 Gage Steel	9.94	6
821002	A-12N	8-1/4"	2	23 Gage Steel	7.06	6
821001	A-13N	7"	1-3/4	23 Gage Steel	5.50	6

Heavy Duty Industrial Shears - INLAID® Blades

The black handled snip has hot drop-forged and polished blades with the patented SET-EASY® pivot.

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
824080	1226	12-1/4	6-1/8	6.5	6
824069	22	10-1/2	6-1/8	6.75	6

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
825019	P404 - Replacement Latch (M1R/M3R/M5R/M7R)	10
825020	P405 - Replacement Latch (M2R/M6R)	10
818141	HR12RB - 12" Replacement Blade Kit for 12 inch Aluminum Snip	1
818142	HR14RB - 14" Replacement Blade Kit for 14 inch Aluminum Snip	1

SOLDERING PRODUCTS

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

The 8-piece heavy duty soldering kit features the versatile Weller model D550 soldering gun with a tin plated heavy copper tip. The kit also includes 1 sealing tip, 1 cutting tip, a flux brush, a soldering aid tool, a coil of 40/60 rosin-core solder and a sturdy plastic carrying case with a soldering hints booklet. The UL Listed 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

SP175 Iron (175 watt)

The 12-1/2" long, extra heavy duty iron is designed for use on demanding jobs like sheet metal work. The 5/8" diameter, long-life iron plated tip develops 900˚ F and the package includes a soldering iron rest.

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

Soldering Tip

The 5/8" diameter tip is iron plated with a chisel point.

Item#	Description	Shelf Pack
863055	MTG40 - 5/8" Replacement Tip for SP175 Soldering Iron	1

SPOTWELDERS

Spotwelder Stand

The sturdy metal stand raises the spotwelder to a height of 34". The foot pedal linkage of the stand depresses the spotwelder's lever handle to activate the welder. This frees both of the operator's hands to position the material.

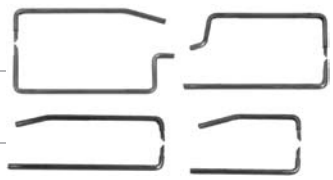
Item#	Description	For Use With	Shelf Pack Wt. lb.	Shelf Pack
9203	ST-2	TSP-1, TSP-2, TBW	25	1

Portable Spotwelder

The small size allows for easy movement of the unit to the work. Depressing the lever handle lowers the upper arm to contact the material and activates the built in solid state timer. Three models are 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 steel 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 steel and two pieces of 12 gage galvanized steel. (Arms and Tips are 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

Standard Arms with Tips



Arms are 5/8" diameter solid copper with standard MT-3 threaded tips. Standard arms are available in 6 popular size and style combinations.

Item#	Description	Nominal Dimension in inches A	B	C	D	Shelf Pack Wt. lb.	Shelf Pack
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

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

		Nominal Dimension in inches				Shelf Pack Wt.	Shelf
Item#	Description	A	B	C	D	lb.	Pack
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

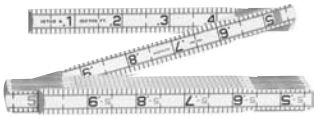
Replacement Tips

MT-1 and MT-2 are both designed for use with all Duro Dyne water cooled arms and the GDW-4 Duct Welder. MT-1 and MT-2 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

TAPES & RULES

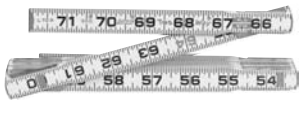
Red End®



The rule is white and marked on both sides, both edges to 1/16ths. 16 inch stud centers are marked in red. The 066 is regular outside reading. The 066F is inside reading, keeping the measurement 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

Red End® - Two Way®



This rule is for measuring left to right and right to left. Flat, inside markings lie close to the work. It is 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

Red End® Extension

This is a 6 foot spring joint natural color wood rule with a 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 the slide will not fall out. The rule is marked on both sides and both edges to 1/16ths of an inch with 16 inch stud centers in red and regular outside markings. No matter how the rule is unfolded an extension is ready for use.

Item#	Description	W x L inches x feet	Shelf Pack Wt. lb.	Shelf Pack
812003	X48	5/8 x 8	2.95	6

One-Piece Steel Rule

It is deeply etched and easily read with permanent black bold markings. The rule has large graduations marked on both the sides and the edges. Upper edge graduations are in 1/8ths. The markings on the lower edge are in 1/16ths. Opposite sides measure from opposite ends.

Item#	Description	W x L inches x feet	Shelf Pack Wt. lb.	Shelf Pack
813012	62-3ft	1-1/4 x 3	.76	1
813013	62-4ft	1-1/4 x 4	1.02	1

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 the rule to straight when fully opened. The lower edge on one side is graduated to 1/16ths of an inch. On the other side, the upper edge is graduated to 1/8ths, and the lower edge is 75 circumference inches to 1/8ths for converting circumference measurements to diameters.

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

Tinner's Steel Circumference Rules

The rule is tempered medium-weight steel with a 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 is marked consecutive inches to 1/16ths, while the lower edge is marked up to 113 circumference inches to 1/8ths. On the 95-4' model, on one side the upper edge is marked consecutive inches to 1/16ths, while the lower edge is marked up to 150 circumference inches to 1/8ths. The reverse side of both models has formulas for calculating circumference, diameter, area, etc., and size tables for laying out measures.

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

Stainless Steel Circumference Rule

The rule is stainless steel .060" thick with black etched numbering and markings spaced for a 1/16" scale. Circumference equivalents are shown on the face and in tables on the back.

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

700 Series Magnetic End Hook

The magnetic end hook is a time saver for HVAC installers, framers and all contractors where metal beams or nails are used. It is great for one-man operations. Powerful, dual magnets hold the tip firmly in position and can also serve as a pick-up tool. It has a non-slip molded rubber grip and the steel reinforced end hook along with the clear coated blade ensure long life.

Item#	Description	W x L inches x feet	Blade Style	Shelf Pack Wt. lb.	Shelf Pack
810171	L725MAG	1 x 25	A5	8.72	8

Series 1000 Power Tapes

Tapes have an improved high-visibility blaze orange label and a black ergonomic grip case made of high impact plastic. The top-positioned toggle lock provides sure control and a rubber shock absorber cushions the easy to read blade return. The tapes have a removable belt clip and a virtually unbreakable end hook.

Item#	Description	W x L inches x feet	Blade Style	Shelf Pack Wt. lb.	Shelf Pack
810160	HV1010	1/2 x 10	A1	1.8	6
810161	HV1012	1/2 x 12	A1	1.9	6
810162	HV1312	3/4 x 12	A2	2.4	6
810163	HV1316	3/4 x 16	A2	2.9	6
810164	HV1325	3/4 x 25	A2	4.3	6

Series 2000 Power Return Tapes

The series 2000 has a unique case designed to fit perfectly in one's hand. The toggle lock is positioned ideally for convenient operation and holds the blade securely in any position. The high strength chrome colored case is lightweight and includes a removable belt clip.

Item#	Description	W x L inches x feet	Blade Style	Shelf Pack Wt. lb.	Shelf Pack
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

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. The yellow clad tape has easy-to-read bold back markings and is protected by an abrasive resistant coating stand up against rugged measuring. The attractive self-standing case is impact resistant.

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

QuikRead Power Return Tapes

QuikRead tapes are specially designed for ease of readability with graduations printed in fractions and decimal equivalents. The 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

TOOL BOXES

Deluxe Style Tool Box

These tool boxes have a convenient recessed handle and twin rust resistant plated metal lid latches. The textured finish box will not rust or chip. The inner tray holds small tools which frees room below for power hand tools. It is made of water tight construction and has 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

Deluxe Starter Set

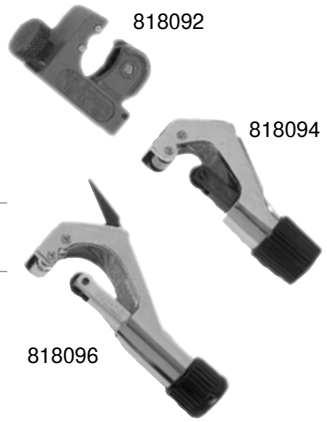
This starter set includes all of the hand tools necessary for both the sheet metal craftsman as well as the apprentice.

Item#	Description	L x W x H in. x in. x in.	Shelf Pack Wt. lb.	Shelf Pack
818025	Deluxe Starter Set	19 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	W7BWN - 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	HV2316 - Lufkin 3/4" x 16' Chrome Power Return Metal Blade Tape w/Blade Cushion			1
812009	066 - Lufkin 6' Folding Wood Rule - Economy Inside Read			1
818309	DDCJP7 - Crescent 7" curved Locking Plier w/wire cutter			1
803009	H28V - Crescent 8" Cee Tee Co® combination slip joint pliers w/cushion grip			1
805110	SDD36V - Crescent 6" round shaft w/3/16" blade cushion grip screwdriver			1
805106	SDD56V - Crescent 6" round shaft w/5/16" blade cushion grip screwdriver			1
805115	SDDP44V - Crescent 4" round shaft #2 Phillips cushion grip screwdriver			1
807005	73 - 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
838396	DDTH18 - 18 oz. Tinner's Hammer			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
818002	PLUS A FREE 19" DELUXE STYLE TOOL BOX			1

TUBE CUTTER

Tubing Cutters

With three sizes available, these high quality tubing cutters should meet all your needs. For those hard to reach places, the 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 a replacement 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

WIRE STRIPPERS & CUTTERS

Crescent Wire Crimper/Cutter

This five-in-one tool is a wire stripper, a wire cutter, a bolt cutter, a plier and a crimper for 20 to 10 AWG wire. The plier nose permits wire pulling and looping. It can cuts bolts through #10. It crimps insulated and non-insulated solderless terminals.

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

Wire Stripper/Cutter/Electrical Pliers

The wire cutting and stripping edges are conveniently located in front of the pivot to allow use in tight places. Cushion grip handles provide maximum leverage.

Item#	Description	Overall Length inches	Shelf Pack
881120	WS15H	6	6

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. It has plastisol handles and exposed metal surfaces are coated with a rust preventative finish. The spring action shear-cut blades automatically open when handle pressure is removed.

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

WRENCHES

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 the size of the opening from changing. The hex jaw design gives a tighter fit with less slippage. It is 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	AC16CV	6	15/16	1.95	6
800040	AC18CV	8	1-1/8	3.45	6
800043	AC110CV	10	1-15/16	8.22	6
800046	AC112CV	12	1-1/2	10.20	6

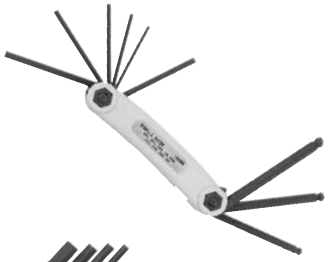
Sliding Jaw Adjustable Wrenches

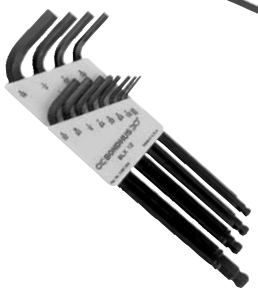
This is a general purpose adjustable wrench with a sliding jaw. It is drop forged from special tool steel; then precision machined and chrome plated.

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.

Hex Key Sets



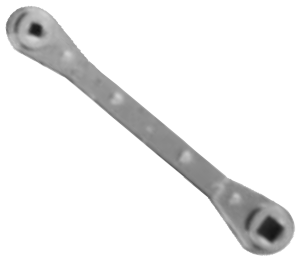


The 9 pc. fold up key set contains two types of wrenches; the six smaller sizes, (5/64, 3/32, 7/64, 1/8, 9/64 and 5/32, have chamfered ends, while the three larger sizes, (3/16, 7/32, and 1/4), are ball points. The ball points allow angled entry up to 25˚. All hex keys are manufactured from industrial 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 piece L-wrench design is packaged in a key case that will lock the wrenches in place. Simply slip wrenches into their individually marked slots and twist to lock them 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 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

Reversible Ratchet Wrenches



This is a fully reversible ratchet wrench for refrigeration and air conditioning work. It has four clearly marked socket sizes - 3/16" and 1/4" on one end, 3/16" and 3/8" on the other. It handles refrigeration packing gland nuts, valve stem sockets and beam-clamp installations. A quick flip lever reverses instantly. It features rugged, compact construction with smooth edges for comfortable use. It is finished in polished chrome.

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.

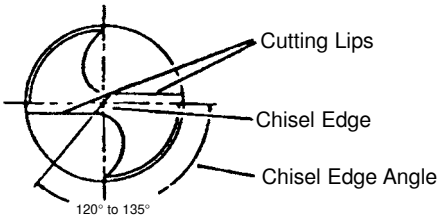
Grinding Twist Drills

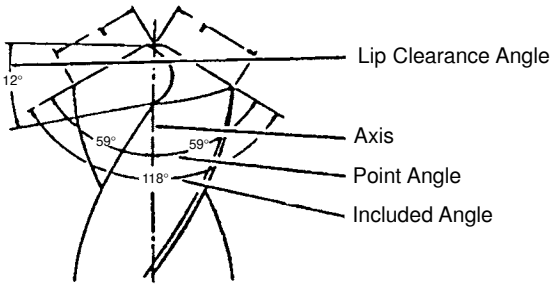
Most drill troubles arise from inaccurate pointing. Drill pointing should be varied depending upon the materials to be drilled, but for general use, drills leave the factory sharpened to a 59° point angle (118° included angle), 9° - 15° clearance angle and with a chisel edge angle of from 120° to 135°

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.

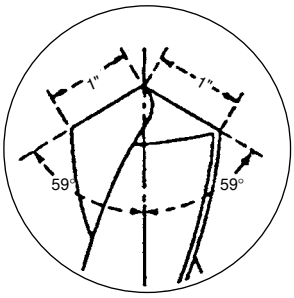
The point angle of a twist drill is the angle made by the cutting lip and the axis of the drill. For general purpose drilling a point angle of 59° (118° included angle) is recommended. The point angle may vary somewhat, one way or the other, but the variation should be uniform in both cutting lips. A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

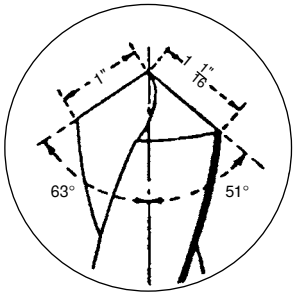




CUTTING LIPS
The cutting lips must be of equal length. Even though the point angle is equal on both sides, if the cutting lips are not equal in length the chisel edge will not be centered, and the drill will cut oversize. A scale should be used to check the lengths of the cutting lips.

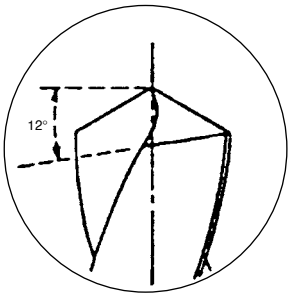


RIGHT
Correctly ground lips have the same angle to the axis of the drill and are of equal length. An accurate hole will be produced with this point

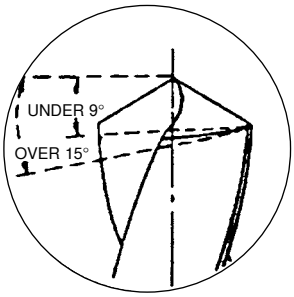


WRONG
Unequal lip lengths produce oversized holes. Unequal lip angles place most of the cutting on one lip and point dulls faster.

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.

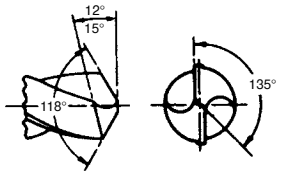


RIGHT
A point with proper lip clearance permits the drill to cut freely. The cutting lip is sufficiently supported to prevent excessive dulling or chipping.



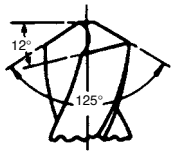
WRONG
Too much clearance (over 15°) will cause cutting lips to break down. Insufficient clearance (under 9°) requires excess feed pressure, causes drill to split up the web.

Suggested Tip Configurations



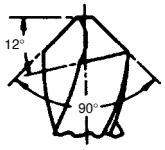
Typical commercial drill bit or average class of work.

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



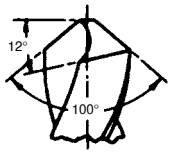
Alloy Steel, Monel Metal, Stainless Steel, Heat Treated Steels, Drop Forgings (Automobile Connecting Rods) Brinell Hardness No. 240

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



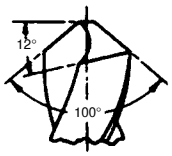
Soft and Medium Cast Iron, Aluminum, Marble Slate, Plastics, Wood, Hard Rubber, Bakelite, Fibre.

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



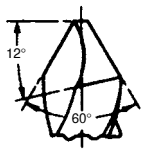
Copper, Soft and Medium Hard Brass.

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



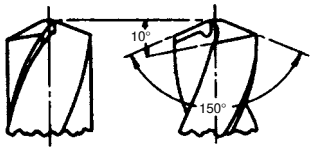
Magnesium Alloys

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



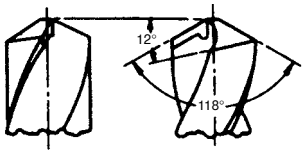
Wood, Rubber, Bakelite, Fibre, Aluminum, Die Castings, Plastics

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



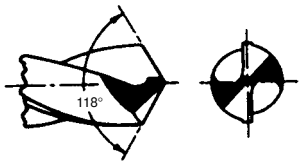
Steel 7% to 13% Manganese, Tough Alloy Steels, Armor Plate and hard materials.

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



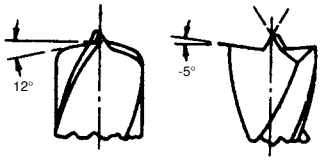
Brass, Soft Bronze

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		

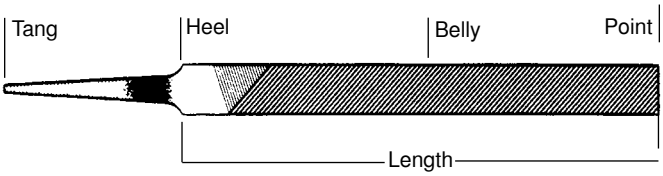
File and Rasp Facts

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

File Terminology:

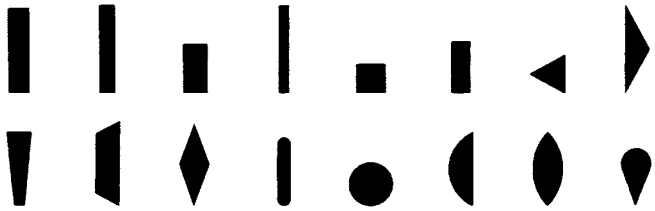
Length

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



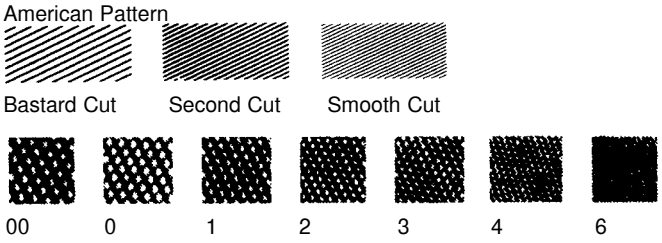
Shape

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



Coarseness

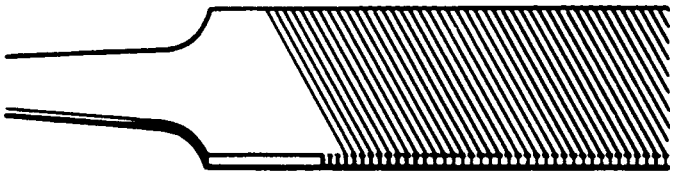
Work to be accomplished, roughing or finishing, will determine type of teeth and coarseness for each application. Most American pattern files are available with 3 grades of cut: bastard-cut, second-cut and smooth- cut. Swiss pattern files are available in seven cuts: 00, 0, 1, 2, 3, 4, 6. The degree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



Kinds of Teeth:

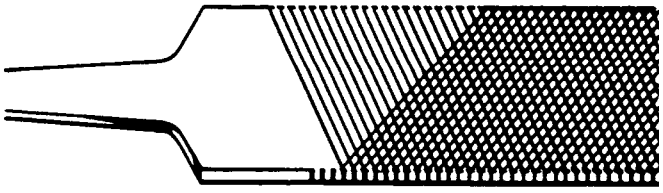
Single-cut

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.



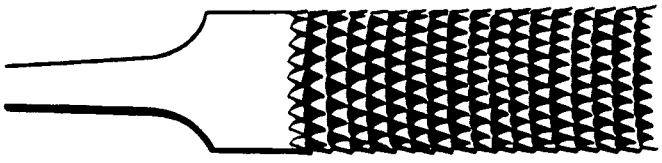
Double-cut

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.



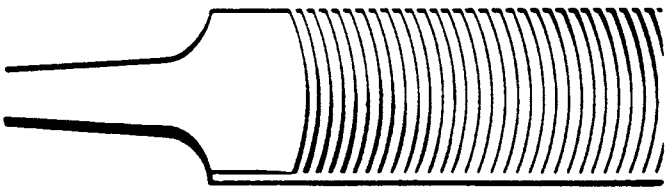
Rasp-cut

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.



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.

Hacksaw Information

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 at right (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 at right (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.

Fig. 1

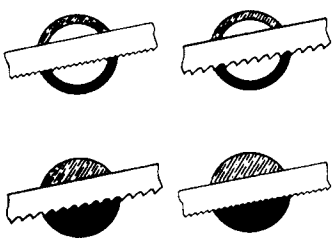
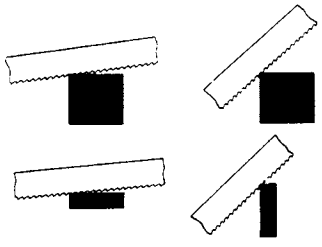


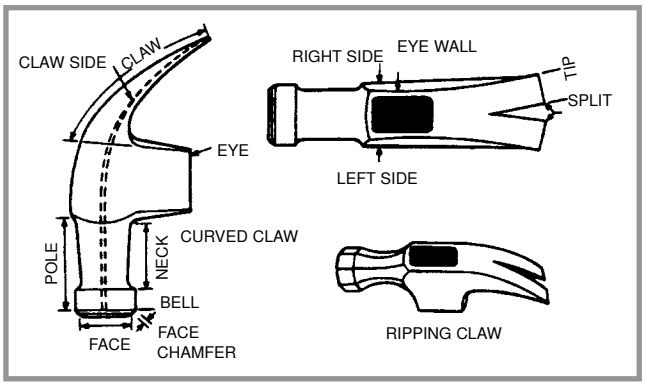
Fig. 2



Nail Hammers

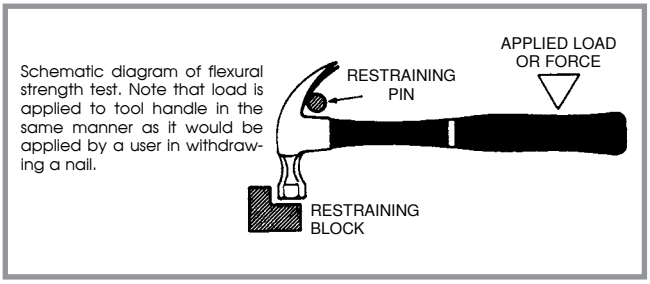
- Face radius and chamfer are designed to provide a hard striking face.
- Mid-section is resilient yet extra strong.
- Claws are tough, sturdy, edges are beveled, with uniform taper and bite.

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

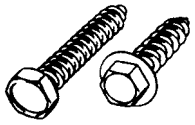
Nail Hammers and Hatchets are for driving and pulling common nails. Ball Pein Hammers are intended to drive against the softer head of a chisel and for general machinists' use. Any face can be made to chip if struck against another striking tool or hard surface. This will damage the tool, possibly resulting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

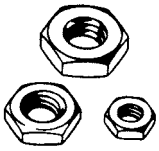
Choosing the Correct Nutdriver

Hex head screws



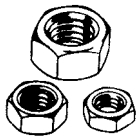
Screw Size	Screw Diameter (inches)	Normal Nutdriver Hex Opening (inches)
1	.073	1/8
2	.086	1/8
3	.099	3/16
4	.112	3/16
5	.125	3/16
6	.138	1/4
7	.151	1/4
8	.164	1/4
10	.190	5/16
12	.216	5/16
1/4"	.250	3/8
5/16"	.312	1/2
3/8"	.375	9/16

Hex machine screw nuts



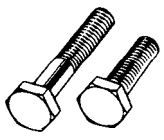
Nut Size	For Screw Diameter	Normal Nutdriver Hex Opening (inches)
0	.060	5/32
1	.073	5/32
2	.086	3/16
3	.099	3/16
4	.112	1/4
5	.125	5/16
6	.138	5/16
8	.164	11/32
10	.190	3/8
12	.216	7/16
1/4"	.250	7/16
5/16"	.312	9/16
3/8"	.375	5/8

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 (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

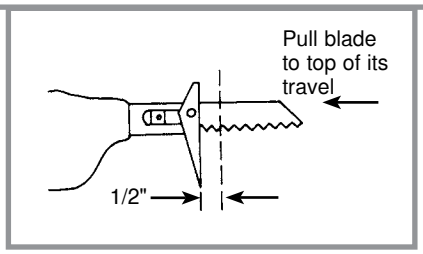
Cross Reference Chart For Reciprocating Saw Blades

DURO DYNE	Description	Material	Dimensions L x W x T In Inches	Teeth Per Inch	LENNOX	MALCO	MILWAUKEE	Use
818155	DD075	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
818156	DD059	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
818157	DD057	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 pipe under 1/8" thick
818158	DD058	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
818159	DD065	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
818165	DD086	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/nail composites
818164	DD066	Bi-Metal	9.0 x 3/4 x .050	6	20582-956R 20587-S956R	8KH7	48-00-3036 48-01-5036	extra fast wood cutting
818166	DD067	Bi-Metal	12.0 x 3/4 x .050	6	20585-156R 20585-S156R 20546-B156R	12KH8	48-01-3036 48-00-3037 48-01-3037	extra fast wood cutting
818163	DD060	Bi-Metal	8.0 x 3/4 x .035	18	20578-818R 20563-5818R	N/A	N/A	metal under 1/8" thick

Helpful Hints When Using Reciprocating Saw Blades

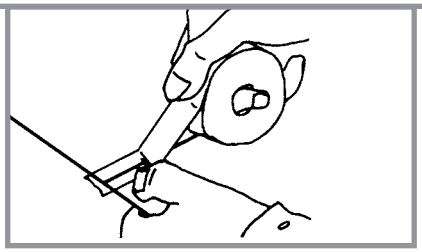
Removal Of Drywall

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.



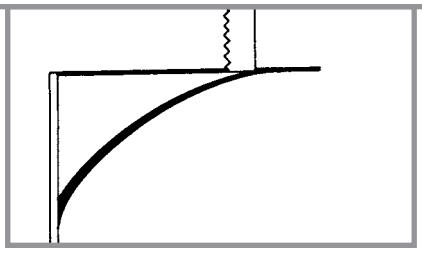
Protect Finished Wood From Splintering

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.



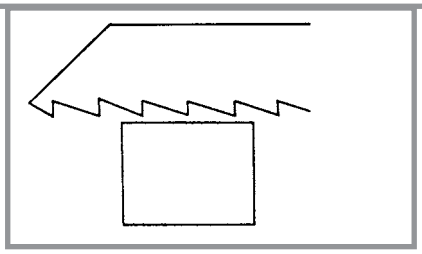
Cutting An Inside Corner

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.

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 (Inches)	Number or Fractional Size (Inches)	Metric Equivalentc
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.**

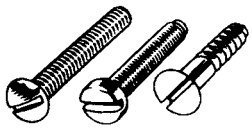
CThe values listed as metric equivalents of decimal inch values have been given to assist user in selecting the closest metric size to be found in the table, Metric Screw Threads. Adherence to diameter preference is recommended, if feasible.

Choosing the Correct Screwdriver

Phillips type screws

Wood Screw		*Machine Screw*		*Sheet Metal Screw*			
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
18	7/16

Snips Selection Chart

	Metainmaster M-1R, M-2R & M-3R	M-6R & M-7R	HM41V	Tinner's Snips A & V Series	NPC-3	BXN	Metainmaster M-5R	Metainmaster Special Series M1R-S1 &M2R-S1	Industrial Snips W Series
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	.048828	.1681	4.270
9	102.5	6.40625	.044488	.1532	3.891
10	92.5	5.78125	.040148	.1382	3.510
11	82.5	5.15625	.035801	.1233	3.132
12	72.5	4.53125	.031467	.1084	2.753
13	62.5	3.90625	.027127	.0934	2.753
14	52.5	3.28125	.022786	.0785	1.994
15	47.5	2.96875	.020616	.0710	1.803
16	42.5	2.65625	.018446	.0635	1.613
17	38.5	2.40625	.016710	.0575	1.461
18	34.5	2.15625	.014974	.0516	1.311
19	30.5	1.90625	.013238	.0456	1.158
20	26.5	1.65625	.011502	.0396	1.006
21	24.5	1.53125	.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

Soldering Information

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	00.080
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

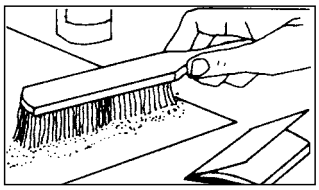
Your soldering iron complies with all the relevant safety regulations in the USA. Nevertheless, like all electrical appliances, it must be handled with proper care. Never forget too, that the operating tip will reach high temperatures. Follow these simple safety rules at all times, and you will never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

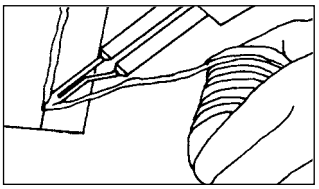
Helpful Hints When Soldering

Keep Work Clean!



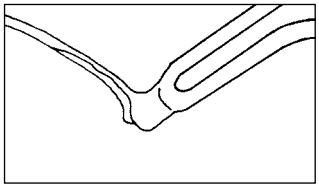
Before soldering, remove rust or paint with a wire brush or emery paper. Remove dirt or grease with the right solvent Wipe work over with solvent after soldering, too. It helps prevent corrosion.

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!

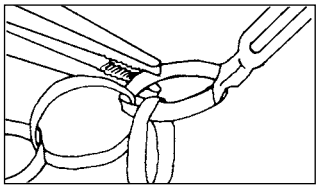


Use the Right Flux!

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:

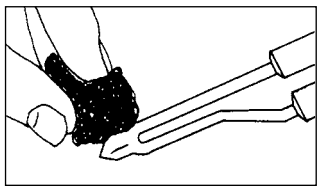
Base Material or Applied Finish	Rosin Core Solder	Acid Core Solder
Hot Tin Dip (tin cans)	x	x
Hot Solder Dip	x	x
Electro Tin 0.0005"	x	x
Electro Tin 0.0002"	x	x
Silver Plate	x	x
Cadmium Plate	x	x
Nickel Plate		x
Galvanized Steel		x
Copper	x	x
Brass	x	x

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



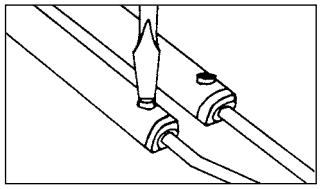
Remember that high tip temperature! Use the lower temperature option and hold the work in pliers, so as to provide a heat sink.

Keep All Work Tips Clean!



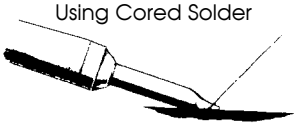
Wiping on a silicone sponge will prolong the working life of the tips. But, with use, deposits are bound to build up. As soon as any tip appears to be dirty, clean it by rubbing lightly with steel wool or fine emery cloth. Never use a file! After cleaning in this way, the tip will require re-tinning.

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.

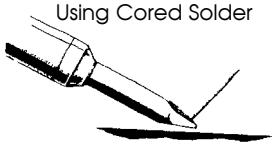


Proper Soldering:

The Correct Method of Using Cored Solder



The Incorrect Method of Using Cored Solder

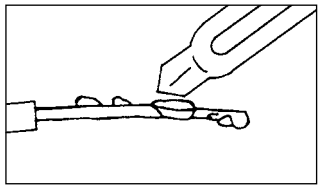


Apply the flat face of the adequately heated soldering iron directly against the assembly and simultaneously apply the cored solder strand at the exact point of iron contracts.

Re-Tinning the Tip:

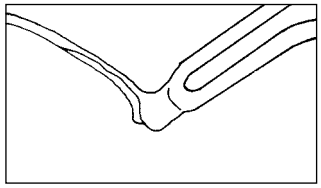
Your Weller soldering gun needs very little in the way of care and maintenance to keep it in first-class condition. Occasionally, the soldering tip needs re-tinning. It's easy to do, this way:

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.

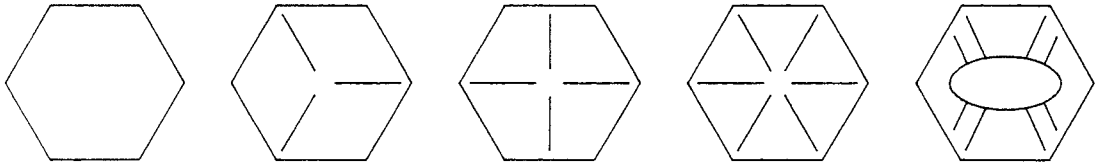
HOW TO DO IT



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 timed if it is not, repeat the procedure.

Torque Wrench Chart
Bolts

Grade Marking



0–1–2 5 6 8 SUPER

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

Conversion of Metric Units of Measure Into Unified Equivalents

To Convert From	Into	Mulitply 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 - Pound (ft - lb)	7.233
Gram - centimeter (g - cm)	Ounce - Inches (oz - in)	0.013887

Conversion of Unified Units of Measure Into Metric Equivalents

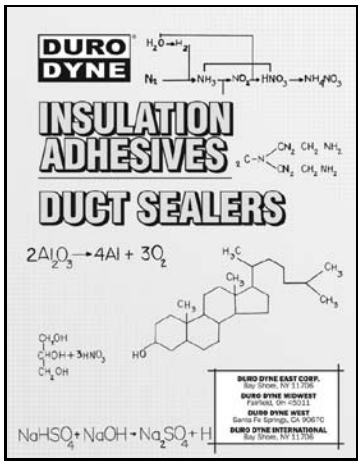
To Convert From	Into	Mulitply By
Inches (in)	Millimeters (mm)	25.4 (exactly)
Inches (in)	Centimeters (cm)	30.48 (exactly)
Square Inches (in^2)	Square Centimeters (cm^2)	6.4516
Cubic Inches (in^3)	Cubic Centimeters (cm^3)	16.3871
Ounces (avdp) (oz)	Grams (g)	28.3495
Pounds (avdp) (lb)	Kilograms (kg)	0.45359237 (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 - Pound (ft - lb)	Meter - kilograms (m - kg)	0.138255
Foot - Pound (ft - lb)	Centimeter - dynes (cm - dy)	1.35582×10^7
Ounce - Inches (oz - in)	Gram - centimeter (g - cm)	72.008

Metric Conversion Chart

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

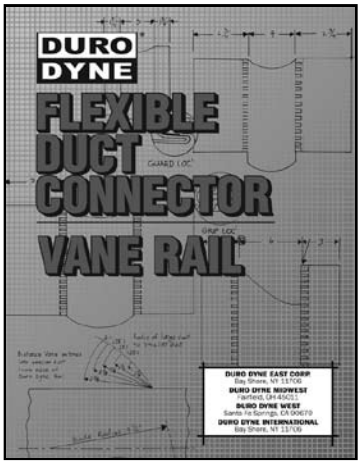
"M"	"DE"	"F"	"DN"	"M"	"DE"	"F"	"DN"	"M"	"DE"	"F"	"DN"	"M"	"DE"	"F"	"DN"	"M"	"DE"	"F"
.1	.0039			1.751	.0689			—	.1570		22	6.8	.2677			10.72	.4219	27/64
.15	.0059			—	.0700		50	4.0	.1575			6.9	.2716			11.0	.4330	
.2	.0079			1.8	.0709			—	.1590		21	—	.2720		I	11.11	.4375	7/16
.25	.0098			1.85	.0728			—	.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	—	—	.34i80		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	.38.38			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

Ask your Duro Dyne Representative for more information on the full line of products in the Duro Dyne Supply Division.

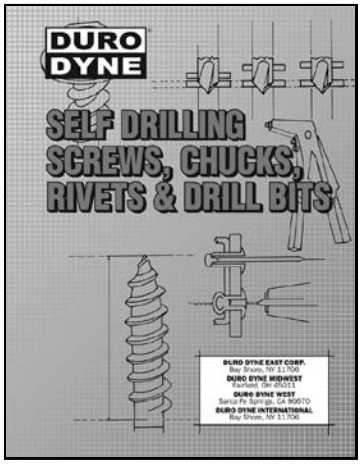


Insulation Adhesives and Duct Sealers

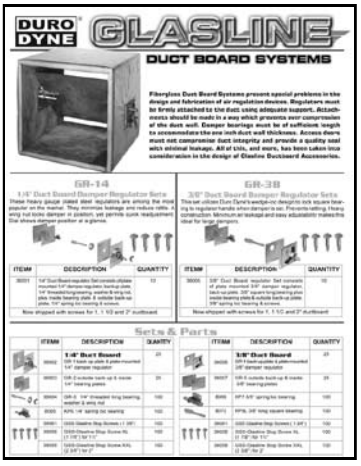
Air Regulation Control Equipment



Flexible Duct Connector and Vane Rail



Self Drilling Screws, Chucks, Rivets and Drill Bits



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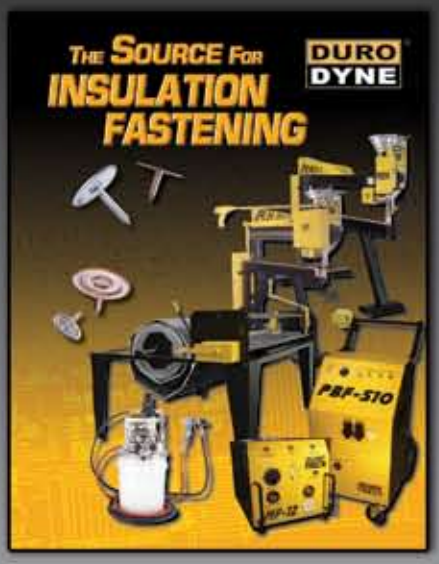

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