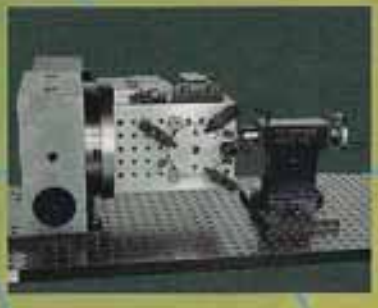
FIXTURING STEVENS MODULAR FIXTURING

STEVENS MODULAR FIXTURING STEVENS

STEVENS MODULAR

MODULAR FIXTURING



STEVENS
ENGINEERING, INC.

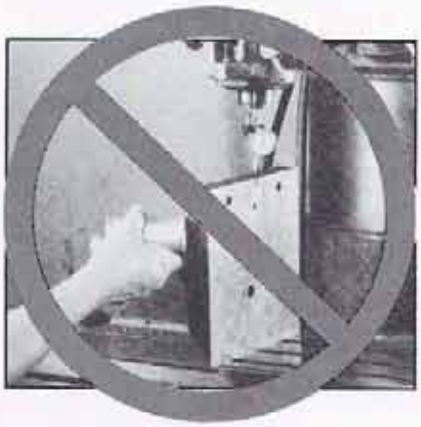
VOLUME 20

STEVENS MODULAR FIXTURING
Introduction

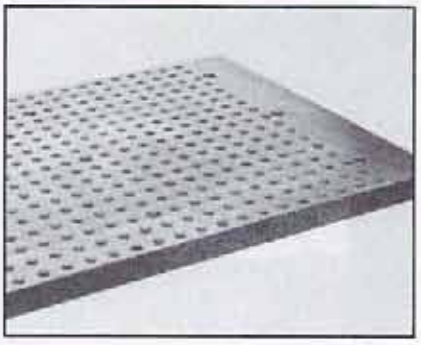
Dramatically reduces setup costs and fixturing expense.

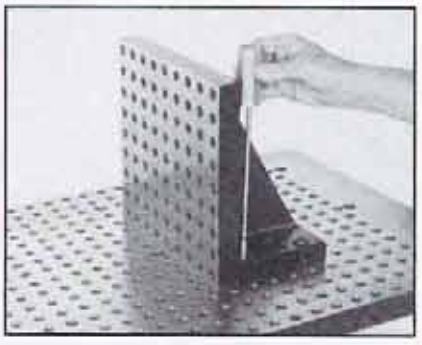
The illustrations at right shows how this simple building block approach makes mill setups quick, precise, and repeatable.

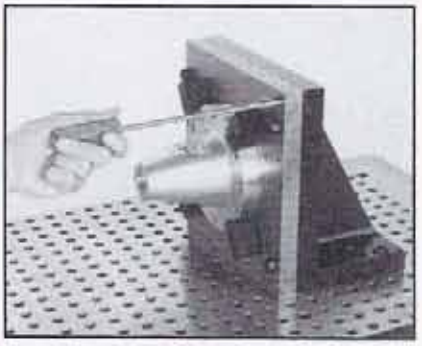
Fixturing with Conventional Tooling



Fixturing with Stevens
(alignment is automatic)







- ACCURACY Sets industry standards for highest accuracy and repeatability. Pull dowels inserted into jig-bored and bushed holes accurately position and align components, eliminating the need to indicate or probe. See pages 6 and 7 for system tolerances.

- TWO SIZES Standard Duty System uses 1/2" dowels and 1/2-13 cap screws; threaded holes are on 1.25" centers, bushing span is based on 5" centers .

Heavy Duty System uses 3/4" dowels and 3/4-10 cap screws; threaded holes are on 2" centers, bushing span is based on 8" centers.

- VERSATILE Standard grid pattern ideal for either dedicated fixtures or all-modular setups.

- CAD SETUPS Design and validate workpiece fixturing using your CAD or CAD/CAM system and the Stevens CAD Library. See page 12.

- RETURN ON INVESTMENT Page 7 shows in dollar terms exactly how Stevens Modular Fixturing will benefit your operation.

All STEVENS MODULAR FIXTURING is manufactured in the U.S.A. with American labor and American materials.

TABLE OF CONTENTS

INTRODUCTION

PRIMARY TABLE FIXTURING

PART NUMBER INDEX

For Subplate part numbers, consult the Subplate Selector on pgs. 18 & 19.
For detailed listings of Column and 2-Sided Angle Plate part numbers, consult pgs. 22, 23 & 25.

SYSTEM ACCURACY

Stevens Modular Fixturing is built to the highest standards for accuracy. SIP and DIXI jig-boring machines, operating in a temperature controlled area, are used to produce exceedingly accurate hole patterns. Frequent calibration of these machines and other inspection equipment assures consistent accuracy.

Prior to finish boring and final inspection, modular components are placed in the environmentally controlled area until they reach the ambient temperature of 68°F. This assures exact correspondence between measurement standards and the finished product.

Q: How accurate does modular tooling need to be?

A: Modular fixturing must allow for interchangeable assembly of tooling components while eliminating the need to indicate for alignment during setup. This requires that tooling tolerances be 5-10 times better than allowable workpiece locating tolerances.

Modular fixturing must have a precisely controlled clearance between dowels and bushings. This clearance must be large enough to accommodate bushing concentricity and position tolerances as well as bushing/dowel diameter tolerances. At the same time, the clearance must be tight enough to properly align fixtures, angle plates, and other components which are doweled in location.

ACCURACY OF GRID

Bushings (All locating holes are bushed)
- Inside Diameter +/- .000050"
- Concentricity .0001" TIR

Dowel Pin Diameter +/- .000050"

Span	30" span	45" span	60" span
Jig-Bored Hole Position	.00015	.00025	.00035
Bushing Concentricity (1/2 TIR)	.00005	.00005	.00005
Bushed Hole Centerline Accuracy =	+/-.0002	+/-.0003	+/-.0004

Clearance Between Dowels and Bushings
minimum .0004" • maximum .0006"
Accommodates span, concentricity, and diameter tolerances to assure 100% interchangeable assembly.

ACCURACY OF SURFACES

Parallelism of Qualified Surfaces (Subplates, Columns, etc.)	.0005" / 40"
Perpendicularity of Qualified Surfaces (Angle Plates, Columns, etc.)	.0005" / 12"

SYSTEM ACCURACY

Stevens Modular Fixturing is carefully designed and manufactured so users will achieve accurate position and alignment of fixtures and workpieces. The confidence that components are located accurately allows users to eliminate indicating or probing routines when doing setups.

Before purchasing fixturing or making fixturing in-house, the result of accumulated fixturing tolerances on the performance of the fixturing should be considered. A fixturing system which does not allow for interchangeable assembly or which does not eliminate the need to indicate or probe setups is unlikely to offer maximum productivity.

COMPARISON OF STEVENS MODULAR FIXTURING TOLERANCES VERSUS TYPICAL INDUSTRY RANGE

	Stevens Modular Fixturing	Typical Industry Range For Modular Fixturing
(a) Eccentricity of bushings used in Subplates, Fixturing Plates, and accessories.	.0001" max (all locating holes bushed)	0003" - .0004" (some accessories not bushed)
(b) Bored hole location (+/- over 30" span in x and y relative to a perfect grid).	.00015"	0003" - .001"
(c) Design clearance between pins and locating holes/bushings (this number must be twice the bored hole location accuracy plus the bushing eccentricity to assure interchangeable assembly).	.0004"	0007" - .0012"
(d) ID tolerance of bushings used in Subplates, Fixturing Plates, and accessories.	+/- .000050" (all locating holes bushed)	+/- .0002" - .0005" (some accessories not bushed)
(e) Pin diameter tolerance.	+/- .000050"	+/- .0001 " (dowel pins) +/- .0002" - .0003" (T- pins & precision shoulder screws)

For more information on modular fixturing accuracy and its affect on your machining operations, contact our Technical Assistance Department.

MATERIAL SPECIFICATIONS

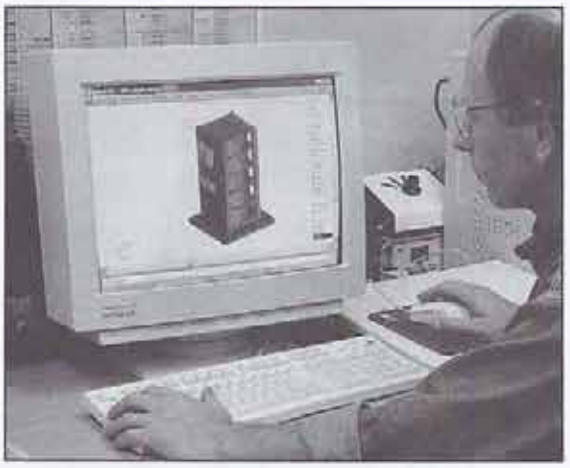
Stevens Modular Fixturing is manufactured using the finest U.S. materials. It is designed to stand up to hard production use.

- No gray iron is used in Stevens Modular Fixturing. Steel and ductile iron are used to give greater rigidity and better thread strength.
- All clamping accessories, small and medium size Angle Plates, Utility Blocks, Vee Blocks, and all other locating components are made from hardened alloy steel or hardened ductile iron.
- Dowels and bushings are hardened to 60 Rc. All locating holes in primary components and accessories are bushed.
- Subplates, 2-Sided Angle Plates, and 4-Sided Columns are made from steel for maximum thread strength.
- Careful furnace stress relieving is done on Subplates, Columns, and other components to ensure long term dimensional stability.
- Critically stressed components are 100% magniflux inspected.

ENGINEERING SUPPORT

APPLICATION ASSISTANCE / FIXTURING SERVICES

- Stevens will recommend a fixturing package suited to your specific types of workpieces.
- Stevens will fixture one or more of your workpieces with modular setup components in order to jump-start your transition to the modular approach.



Stevens personnel are available to offer help in applying modular fixturing to your application.

ON-SITE TRAINING

- CAD-based training is available for users doing modular fixturing on CAD.
- Conventional training is available for users planning and building modular setups on the factory floor.

CUSTOMIZED MODULAR FIXTURING

At times, you may require modular fixturing items other than those listed in this catalog. Stevens Engineering will make modifications to our standard items or design specials to satisfy your requirements. Our factory is well equipped to handle all your modular fixturing needs.

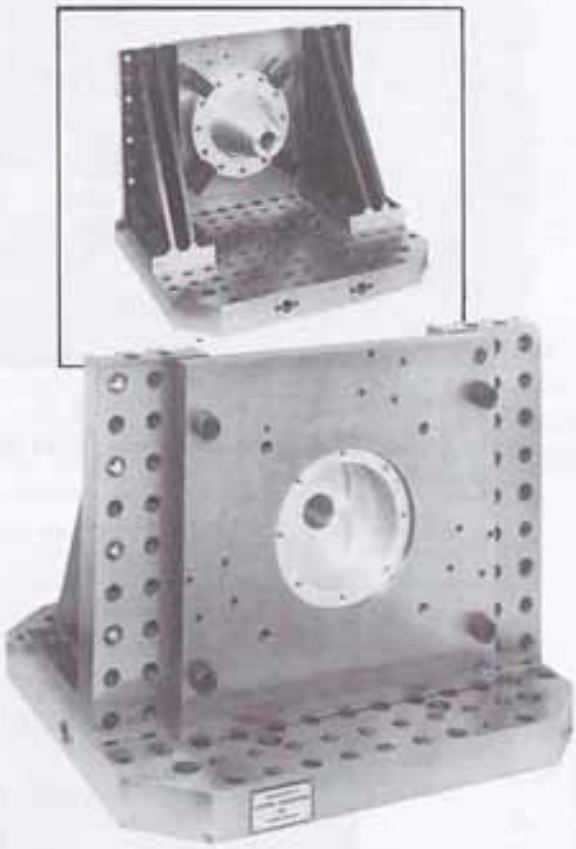
CUSTOM SIZES AVAILABLE

When you see this symbol at the left on a product page, it indicates Stevens ability to make custom sizes. Call us to discuss your requirements or fill out the form inside the back cover and fax or mail to us.

STEVENS WEB SITE

Additional technical information not found in this catalog including a more complete Subplate Selector and the Stevens CAD Library can be found on our Internet World Wide Web Site at **www.stevenseng.com**. Watch this site also for continuously updated product changes and new product developments.

TWO WAYS TO GO

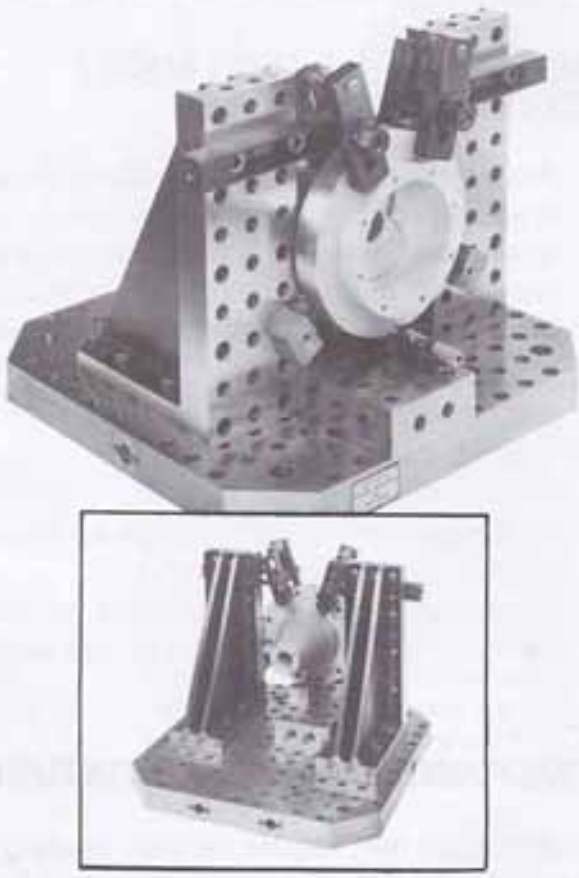


1 CUT SETUP TIME BY USING DEDICATED FIXTURES ON MODULAR COMPONENTS

This setup can be made in 5 minutes or less using a 10070-4 Tooling Plate made into a dedicated fixture, mounted on two 20080 Angle Plates located on a Subplate.

This approach should be considered under the following conditions:

1. Repeat runs of the part to be machined are frequent.
2. Toolroom facilities for designing and building dedicated fixtures are readily available.
3. Storage space for additional dedicated fixtures is available.



2 CUT FIXTURING COSTS BY SETTING UP WITH REUSABLE SETUP COMPONENTS

This setup of the same part shown on the left is done entirely with reusable setup components. No dedicated holding fixture is needed.

This approach should be considered under the following conditions:

1. The part to be machined is prototype or preproduction and may be run infrequently, if ever again.
2. Workpiece design changes are likely, making dedicated fixture obsolete.
3. Requirement for fixturing is immediate; no time to build dedicated fixture.

...Either way, Stevens can fill your needs with a wide assortment of modular fixturing components.

TWO DIFFERENT WAYS STEVENS MODULAR FIXTURING PAYS OFF

1 REDUCTIONS IN SETUP TIME USING DEDICATED FIXTURES ON STEVENS MODULAR COMPONENTS

$$\text{PAYOUT} = \frac{\text{INVESTMENT IN MODULAR FIXTURING}}{\text{SAVINGS IN SETUP COST}}$$

Setups like the one shown on the left side of the opposite page can be done in .1 hours or less using Stevens Modular Fixturing. The same setup using conventional techniques on a T-slotted table or pallet would require 3.8 hours.

Payout =

$$\frac{\text{Total Investment}}{\text{Savings}} = \frac{\$3{,}776.00}{(3.8 - .1) \times \$45.00 \text{ hr}}$$

= 22.67 setups

This means that if average savings per setup approximate $167.00, the investment in Stevens Modular Fixturing would be paid for after about 23 setups. If you change setups once a week, the investment will be paid for in less than 6 months.

Note: Stevens will jig bore and bush your dedicated fixtures to fit Stevens Primary Table Tooling, on a contract basis.

2 ELIMINATION OF TOOLING EXPENSE USING SETUP COMPONENTS ON STEVENS PRIMARY TABLE TOOLING

$$\text{PAYOUT} = \frac{\text{INVESTMENT IN MODULAR FIXTURING}}{\text{NET SAVINGS IN FIXTURING EXPENSE}}$$

In determining net savings in fixturing expense, you will need to make certain estimates based on your own experience. For example, the setup shown on the opposite page would require a fixture costing about $1,800. However, the net savings in fixturing expense will be $1,800 minus the cost of setting up with modular setup components. The setup shown on the right side of the opposite page would require about 3.6 hours to design and build initially.
(Repeat setups would require about .3 hours)

Net savings in fixturing expense
= $1,800 - (3.6 hrs. x $45.00)
= $1,674.00

The actual cost of the modular components used in this setup is $5,234. An assortment of modular fixturing with setup components offering reasonable flexibility in setting up parts in this size range would approximate $13,800. Accordingly, we calculate the payout as follows:

$$\text{PAYOUT} = \frac{\text{INVESTMENT IN MODULAR FIXTURING}}{\text{NET SAVINGS IN FIXTURING EXPENSE}}$$

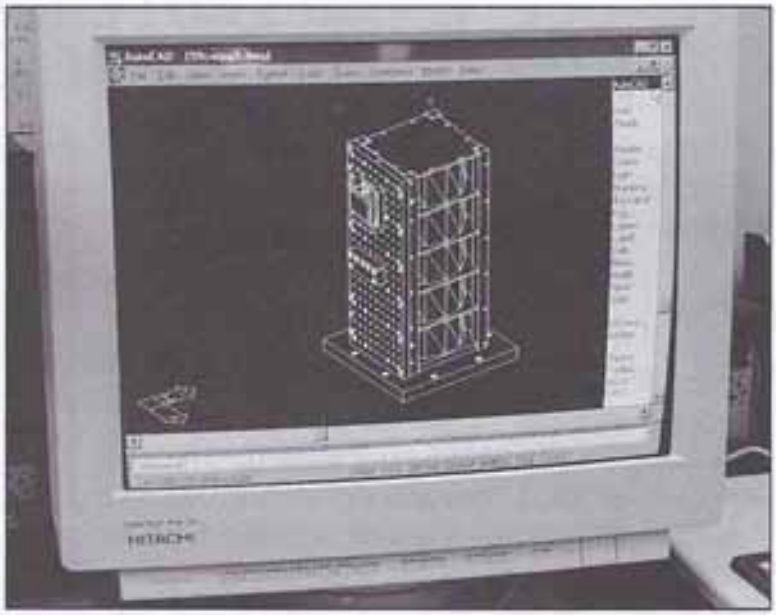
$$= \frac{13{,}800}{1{,}674} = 8.24 \text{ fixtures}$$

This means that for setups of this type a Stevens Modular Fixturing package will pay for itself by eliminating the need for building slightly more than 8 dedicated fixtures.

Payout time will depend on how many fixtures are normally made in a specific time span.

COMPUTER AIDED FIXTURE DESIGN

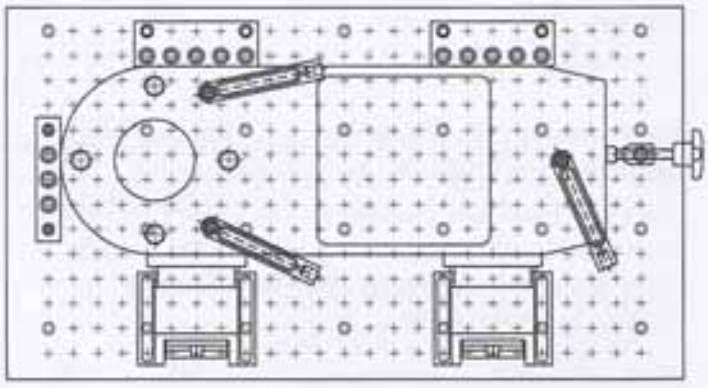
Design and validate workpiece fixturing using your CAD or CAD/CAM system and the Stevens CAD Library.



BENEFITS

- Reduces fixture design time.
- Makes documentation of setups easier, reducing repeat setup time.
- Use with CAM systems to verify cutter path clearances.
- Allows for off-line programming of offsets, further reducing machine setup time.
- Use with tool management systems to manage usage and storage of modular fixturing components.

The 2-D modular setup to the right was completed in about 1 hour with the Stevens CAD Library. An AutoCAD LISP routine was used to automatically generate the bill of materials which can be integrated with a tooling component usage and storage system.



STEVENS MODULAR TOOLING SETUP 6641

ITEM	P/N	DESCRIPTION	BIN	STOCK	USAGE
1	10152	ADJ REST PAD	2B18	12	3
2	10159	SIDE CLAMP	2C3	12	1
3	10226-6	SHIM .050	2N9	12	3
4	10226-7	SHIM .100	2N19	20	3
5	10292-4	SPH REST PAD	2N20	20	3
6	20075-1	EDGE LOC BAR	2P1	2	1
7	20112	MODULAR VISE	3B6	2	2
8	36306	KNOB CL SCREW	4Q9	10	1

CAD LIBRARY ORDERING INFORMATION

- CD-ROM. **(P/N 10402)**. $75.00. The CAD Library includes 2-D and 3-D drawings in DXF, Auto-CAD and IGES formats. Available free with any fixturing order over $100.00.
- DOWNLOAD FREE. Individual drawings or the complete CAD Library may be downloaded in AUTO-CAD, DXF or IGES formats from Stevens website www.stevenseng.com.

STEPS IN BUILDING A MODULAR FIXTURE WITH STEVENS SETUP COMPONENTS

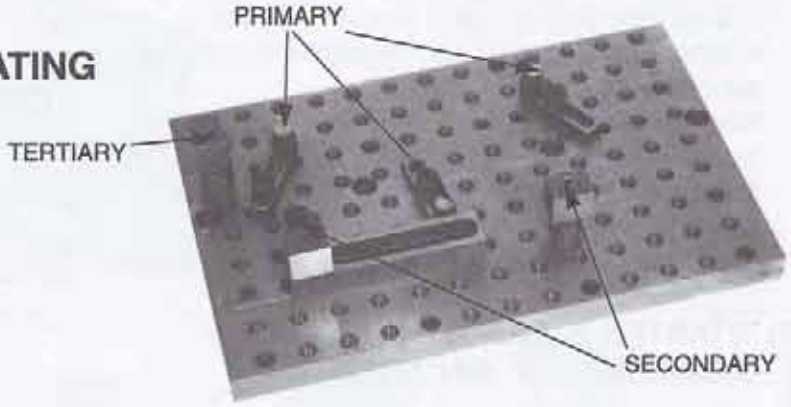
Using Stevens Setup Components to build a fixture involves the same basic steps that are used to design conventional fixturing. Setups can be designed (1) on CAD, (2) in a setup staging area, or (3) at the machine.

STEP 1 - DETERMINE WORKPIECE LOCATING DATUMS

- 6 independent locating points required to fully constrain workpiece in x, y, and z.
- On many workpieces, it is convenient to categorize locating points into:
  - **Primary** (3 datums defining a plane).
  - **Secondary** (2 datums oriented perpendicularly to primary plane).
  - **Tertiary** (1 datum oriented perpendicularly to both primary and secondary location).

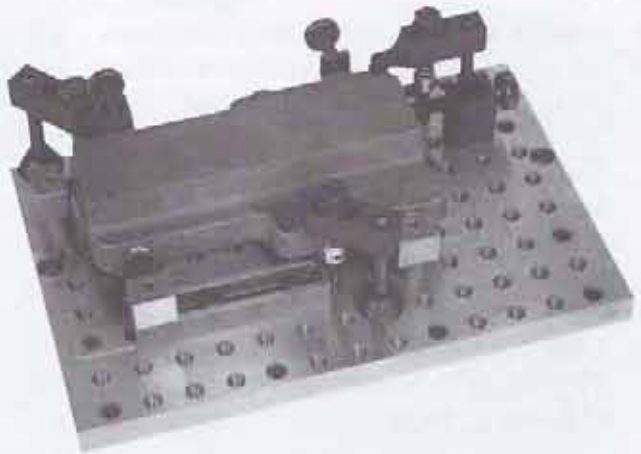
STEP 2 - SELECT MODULAR LOCATING COMPONENTS

- To eliminate indicating or probing requirements, use the built-in accuracy of the qualified surfaces and bushing locations of Stevens Setup Components.



STEP 3 - SELECT CLAMPING COMPONENTS

- Clamps should directly oppose locators.
- Check for spindle tooling clearances when positioning clamps.



GETTING STARTED

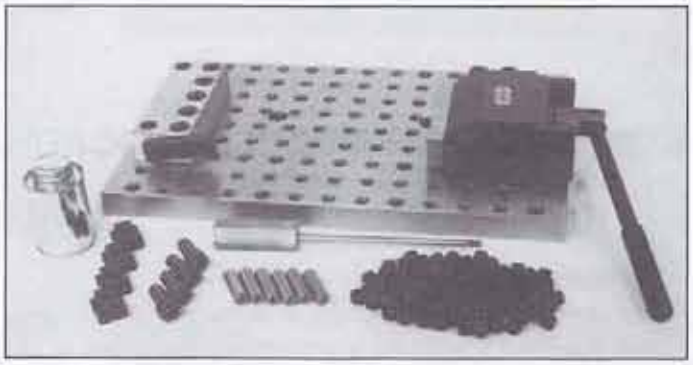
SELECTING PRIMARY TABLE TOOLING

Stevens accessories are designed to mount on Stevens Primary Table Tooling (i.e. Subplates, Columns, Silo Columns, and 2-Sided Angle Plates.) Primary Table Tooling mounts directly to your machine on a semi-permanent basis and provides a consistent and accurate grid pattern for other modular accessories.

The first step in getting into modular fixturing is selecting Primary Table Tooling (i.e. Subplates, Silo Columns, 4-Sided Columns and 2-Sided Angle Plates.) A Stevens applications engineer or authorized dealer can help develop an approach that is right for you.

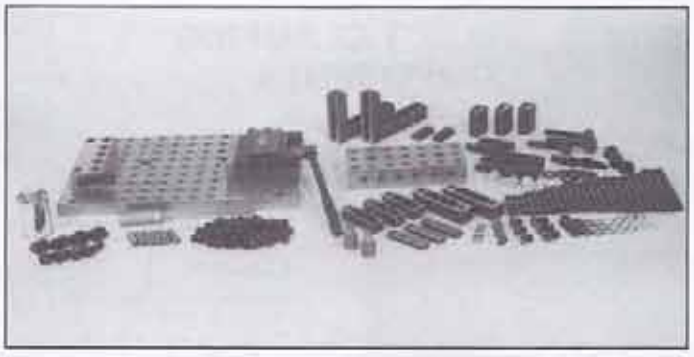
HERE ARE THREE OPTIONS FOR GETTING STARTED

1) SUBPLATE & VISE PACKAGE P/N 20162



Starter Subplate (pg. 17)
A larger subplate which is matched to your machine table may be substituted for the starter subplate shown.
Modular Vise (pg. 32-34)
Installation Kit (pg. 74)
Pull Dowels (pg. 72)
Extractor (pg. 72)
Chip Plugs for threaded holes (pg. 73)

2) STARTER PACKAGE - SUBPLATE & ACCESSORIES P/N 20163



- Ideal for small vertical milling machines.
- Get the same modular tooling benefits as those enjoyed on larger CNC machines.

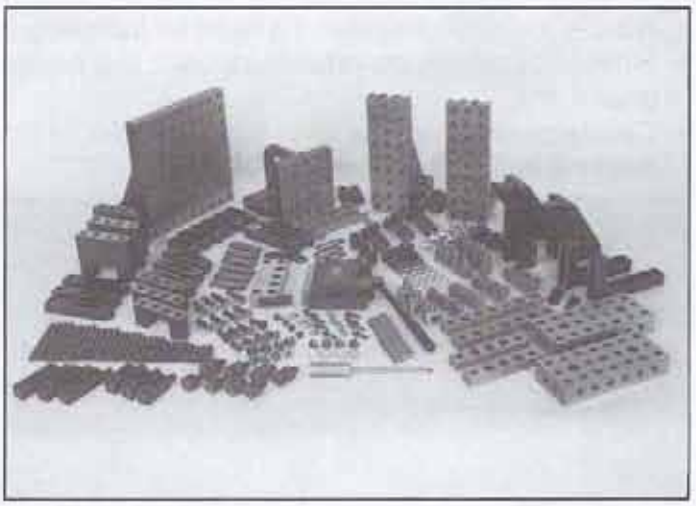
Starter Subplate (pg. 17)
Modular Vise (pg. 32-34)
Setup Component Assortment
Installation Kit (pg. 74)
Pull Dowels (pg. 72)
Extractor (pg. 72)
Chip Plugs for threaded holes (pg. 73)
Stevens CAD Library (as req'd pg. 12)

GETTING STARTED *continued*

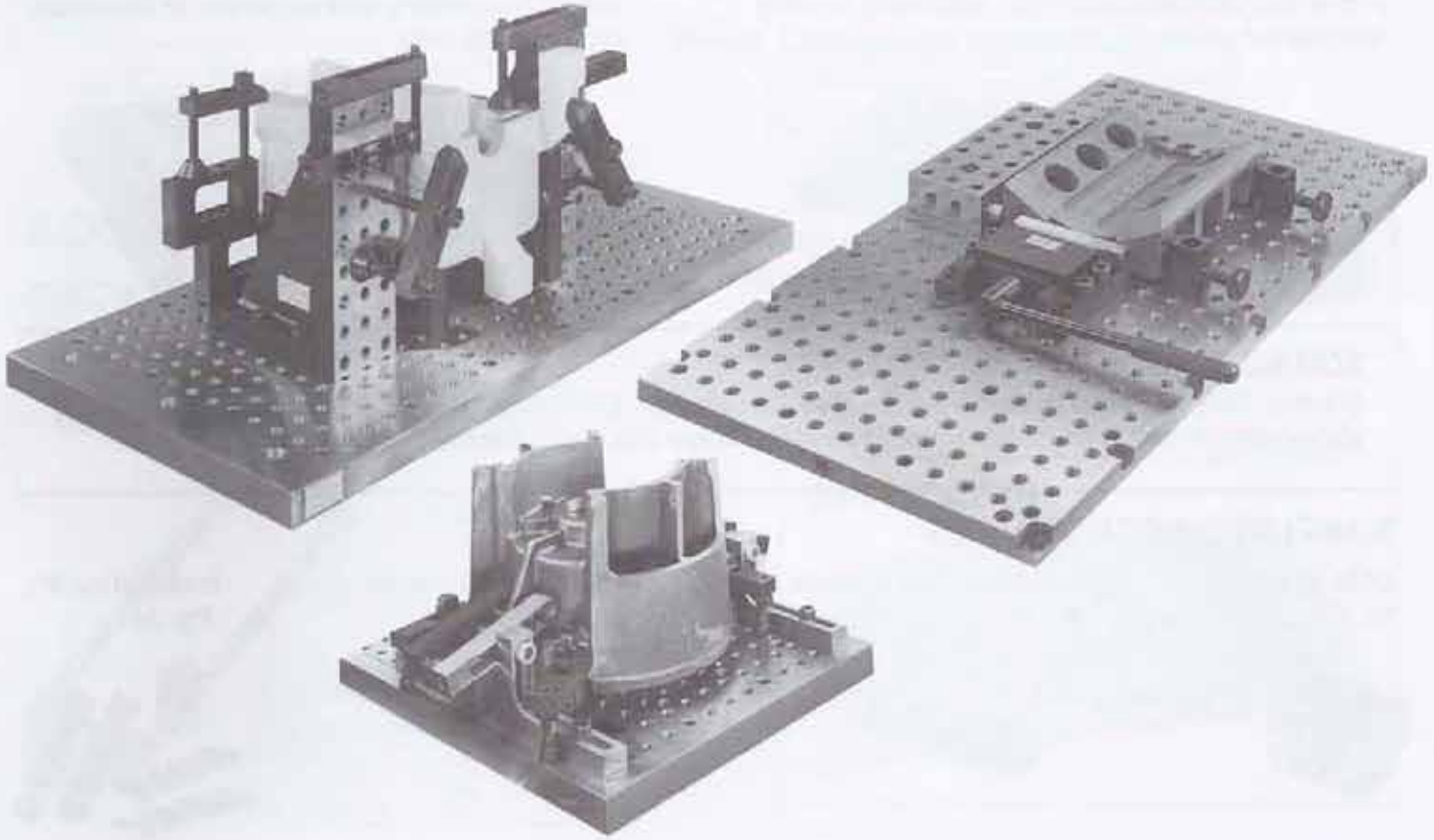
3) SETUP COMPONENT PACKAGE P/N 20146

USE ON VERTICAL OR HORIZONTAL MILLS WITH STEVENS PRIMARY TABLE TOOLING

- For users requiring fixturing for prototype or low-volume production parts.
- Ideal for tool rooms which must respond to immediate fixturing requirements.
- Includes the most popular and versatile Stevens Setup Components.
- Use with Stevens Primary Table Tooling (not included, see pages 16-28).
- Suitable for fixturing parts of various shapes and sizes.
- Stevens CAD Library for Computer Aided Fixture Design (as req'd pg. 12).



THE FIXTURES BELOW WERE BUILT USING THE SETUP COMPONENT PACKAGE



SUBPLATES

- Stevens Subplates set the industry standard for accuracy and versatility. Save 15 minutes to 2 hours on every fixture setup. Subplates pay for themselves in 20-50 setups.
- Jig-bored bushed holes and threaded holes form the basic Stevens pattern for mounting modular accessories.
- Subplate is permanently aligned to machine axes and becomes an accurate reference for machine setups. Accuracy of grid eliminates the need for indicating or probing.
- Stevens Subplates are precision ground to a parallelism of .0005" per 40". Accuracy of grid is detailed on page 6 and 7.
- Counterbored clearance holes to fit the T-slot or threaded hole pattern on any make and model of milling machine are included.

ORDERING

- Over 300 shapes and sizes of subplates are available to fit virtually any make or model of milling machine. Specify the make and model of machine when ordering subplates.
- Select **Standard Duty** or **Heavy Duty:**

	Standard	Heavy
	1/2-13 threads on 1.25" centers	3/4-10 threads on 2" centers
	1/2" bushings on 5" centers	3/4" bushings on 8" centers
	1.4" subplate thickness	1.65" subplate thickness

Vertical Spindle Mills

Subplate alignment to the machine axes is generally done with an indicator in the machine spindle by referencing two Subplate bushings. Additional locating features for positioning Subplates are available if desired.

Horizontal Spindle Mills

Subplate locating features (pg. 21) to match machine pallet locators are recommended to simplify positioning and alignment of Subplates on horizontal mills.

EDM Machines

Stevens Subplates and accessories are ideal for ram-type EDM machines. Stevens Chip Plugs (pg. 73) are recommended to keep debris out of threaded holes and bushed holes in Subplate.

SUBPLATE ACCESSORIES

Chip Plugs
pg. 73

Precision Pull Dowels
pg. 72

Pull Dowel Extractor
pg. 72

Installation Kit
Pg. 74

Starter Subplate P/N 175110-1
Ideal for knee mills with small workpieces. May be easily moved from one machine to another. Starter Subplates may be exchanged at any time for a larger Subplate which is matched to your machine table. Setups on Starter Subplates are shown on pages 13, 32, and 49.

Project Subplates
Used to build setups using modular setup components in an area separate from the machining operation. They may then be quickly and accurately mounted onto primary table tooling at any time.

Project Subplates are available in various sizes including Silo Subplates (pg. 24, 25) and Project Subplates for 2-sided Angle Plates (pg. 27).

SUBPLATE OPTIONS

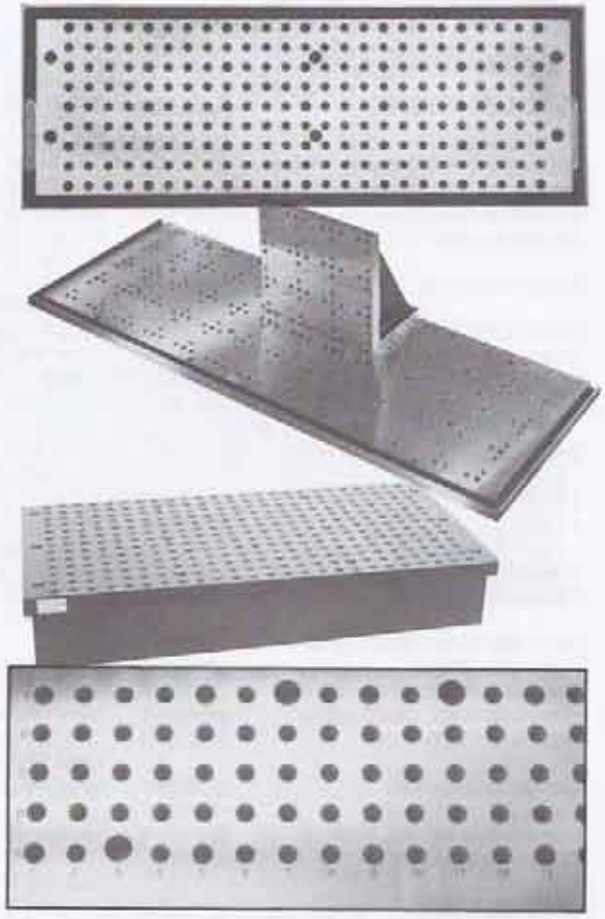
COOLANT RETURN TROUGH is recommended on knee type mills using flood coolant. Trough allows for return of coolant to the sump. Chip filter screens are included.

'C' SERIES PATTERN is a lower cost alternative to the basic pattern because of fewer threaded holes. This pattern is used for quick mounting of dedicated fixtures, project plates, and some accessories. It is not suitable for building fixtures with setup components.

RISER SUBPLATES are used on machines used mainly for flat, low-profile work that needs to be raised closer to the spindle nose. Riser section may be integral with Subplate or may be removable if Subplate is also to be used in its standard thickness.

ALPHANUMERIC ADDRESS MARKING is available as an option on all Stevens Subplates. Deep-etched letters and numbers facilitate documenting location of locators and clamps for future duplication of setups.

MATCH GRINDING Multiple Subplates used on machines with pallet changers should be ordered match ground unless machine control is capable of storing pallet offsets independently.



SUBPLATE SELECTOR

When ordering Subplates, include the make, model, age, table size, and table travel of the machine to be used.

How to specify Subplate part numbers: (Example P/N HDC394162FP)

HD C 394 162 F P

SERIES
"BLANK" - STANDARD DUTY (1/2 - 13)
HD - HEAVY DUTY (3/4 - 10)

"BLANK" - STANDARD PATTERN
C - C SERIES PATTERN (PG. 17)

LENGTH (EXAMPLE 39.4")

WIDTH (EXAMPLE 16.2")

OPTIONS
A - EDGE LOCATING (PG. 21)
B - TWO LOCATING BUSHINGS (PG. 21)
C - THREE FIXTURE KEYS (PG. 21)
D - MATCHED GRINDING (PG. 17)
E - CENTER LOCATOR & FIXTURE KEY (PG. 21)
F - ALPHA NUMERIC MARKING (PG. 17)
G - CENTER LOCATOR ONLY (PG. 21)
K - INSTALLATION KIT (PG. 74)
P - CHIP PLUGS FOR TH'D HOLES (PG. 73)
Q - CHIP PLUGS FOR BUSHED HOLES (PG. 73)
R - RISER SUBPLATE (PG. 17)
S - SPECIAL FEATURES (Use Worksheet on PG. 75)
T - COOLANT TROUGH (PG. 17)

CUSTOM SIZES AVAILABLE — **UP TO 120" LONG x 50" WIDE**

HORIZONTAL SPINDLE MILLS

Popular Subplate sizes are shown - contact Stevens for other sizes.

HORIZONTAL DESCRIPTION	PART NO.
Cincinnati Maxim HMC - 400EP	157157G-1
Cincinnati HPC-500XT, Maxim 500, T-10	197197C-1
Cincinnati HPC-630XT, Maxim 630, T-20	248248C-1
Cincinnati Magnum 800, T-30 Pallet	315315C-1
Cincinnati Magnum 1000	394394C-1
Compumill HMC-410	161161A-2
Daewoo DMH-400	157157A-4
Daewoo ACE-H50S, DMH-500	197197A-5
Daewoo ACE-H63	248248A-5
Daewoo ACE-H80	315315A-4
Enshu JE60	157157A-1
G & L Ram 500	197197A-6
G & L Ram 630	248248A-6
Haas HS1RP	160160-1
Haas HS2RP	200200-1
Hitachi Seiki HA400, HC400, HG400	160160A-1
Hitachi Seiki VM400H	177177A-1
Hitachi Seiki HC500, HG500, HS500	200200A-1
Hitachi Seiki HB630, HG630, HS630	250250A-1
Hitachi Seiki HB800, HG800	315315A-1
Kitamura Mycenter H400	157157A-1
Kitamura Mycenter H500	197197A-1
Kitamura Mycenter H600, H630	248248A-1
Kitamura Mycenter H800	315315A-1
Makino A55, MC40	157157A-1
Makino A66, MC65	197197A-1
Makino A77, MC86, MC100	248248A-1
Makino A99, MC1210, MC1213, MC1510, MC1513	315315A-1
Matsuura ES450, MAM-500HF, MC-400H, MC-450H	118118A-1
Matsuura MAM-600HF	157157A-3
Matsuura MC-600H	177177A-2
Matsuura MAM-700HF, MC-700H	197197A-3
Matsuura MC-900H	248248A-3
Mazak HTC-400	157157A-1
Mazak FH480, H-400, HTC4000, HQC40	157157A-1
Mazak H-500, ULTRA550, FH580, FH5800, FF610, H-12, H-15A, H-15J	197197A-1
Mazak H-630, ULTRA650, FH680, H-15B, HV-630	248248A-1
Mazak FH880, H-800, H-20, H-22, H-25N	315315A-2
Mazak H-1000, H-25	394394A-1
Mitsubishi M-H4A	157157A-1
Mitsubishi M-H5A, M-H50C, M-H50E, M-H500, HMC-500	197197A-4
Mitsubishi M-H60C, M-H60E, HMC-600	248248A-4
Mitsubishi M-H8C, M-H80E, HMC-601	315315A-5
Mitsui Seiki HU40A, HR3A, HR3B, HT3A	157157A-1
Mitsui Seiki HU50A, HT4A	197197A-1
Mitsui Seiki HU63, HJ63, HS5A, HR5A, HR5B	248248A-1
Mitsui Seiki HU80A	315315A-1
Mitsui Seiki HS6A	394394A-4
Mori Seiki SH-40, SH-400, MH-40	157157A-2
Mori Seiki SH-50, SH-500, MH-50, MH-500	197197A-2
Mori Seiki MH-630, SH-630, MH-63	248248A-2
Mori Seiki MH-80	315315A-3
Mori Seiki MH-1000	394394A-2
Niigata SPN40, EN40B	157157A-1
Niigata SPN50, EN50A, HN50B	197197A-1
Niigata SPN63, HN3A	248248A-1
Niigata SPN80, HN80A	315315A-1
Niigata HN100A	394394A-3
OKK HM4, HM40, MCH-450, PCH-400	157157A-1
OKK MCH-550, 560	197197A-1
OKK HM60, MCH-630	248248A-1
OKK HM80, MCH-800 (Pallet)	315315A-1
OKK MCH-1000 (Pallet)	394394A-6
Okuma & Howa Millac 4H, 40H	157157A-1
Okuma & Howa Millac 5H, 50H	197197A-1
Okuma & Howa Millac 630H	248248A-1
Okuma MX-40HA, MA-40HA, MC-400H	157157A-1
Okuma MC-5H, MC-50H, MX-50HB	197197A-1
Okuma MC-6H, MX-60HB	248248A-1
Okuma MC-800H	315315A-1
Okuma MC-1000H	394394A-7
Quantum H410	161161A-1
Toshiba BMC-4B	157157A-1
Toshiba BMC-5B, 50E, 500, BMC-500, BMC-50E, BMC-5	197197A-1
Toshiba BMC-6B, 6C, 63E	248248A-7
Toshiba BMC-8B, 80E, 800	315315A-5
Toshiba BMC-100E	394394A-8
Toyoda FA400	157157A-1
Toyoda FH45, FHN40	177177A-1
Toyoda FH50, FHN50	197197A-1
Toyoda FA550, FH55	216216A-1
Toyoda FA630, FHN60, FH60	248248A-1
Toyoda FA800, FHN80T	315315A-1
Tsugami MA3, FMA3	118118E-1
Tsugami MA5	177177E-1

SUBPLATE SELECTOR

VERTICAL SPINDLE MILLS

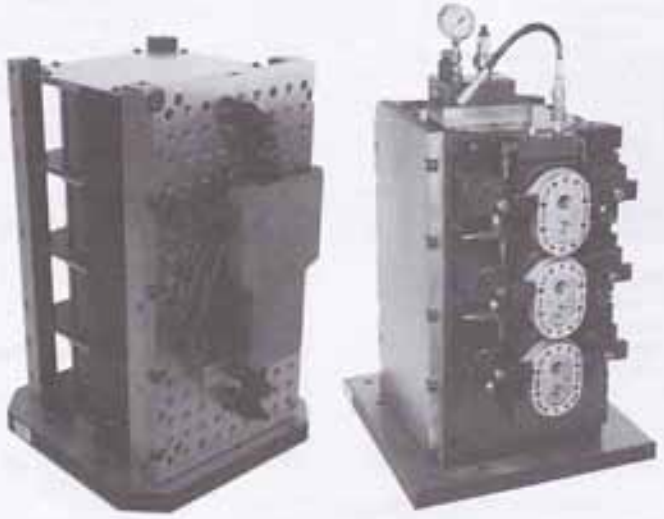
Popular Subplate sizes are shown - contact Stevens for other sizes.

HORIZONTAL DESCRIPTION	PART NO.
Bridgeport Torq-Cut 22, TC1, TC2, Discovery 300SX, 308SX	330140-1
Bridgeport Series 1 CNC	340140-1
Bridgeport Explorer X26	360125-1
Bridgeport Torq-Cut 30, TC3	360140-2
Bridgeport Series 1	360142T-1
Bridgeport TC4	360180-2
Bridgeport Series 2 CNC	380142-1
Bridgeport VMC 760/800	394197-1
Bridgeport VMC 1000/1020/1030	453197-1
Bridgeport Series 2	460142T-1
Brother TC-211, TC-215	212112-1
Brother TC-221, TC-225	240130-1
Cincinnati Sabre 500 (Since 93)	256212-1
Cincinnati Arrow 500	275204-1
Cincinnati Sabre 750 (Since 93)	340212-1
Cincinnati Arrow 750	374204-1
Cincinnati Arrow 1000, Sabre 1000, Lancer 1000	440212-1
Cincinnati Lancer 1250	540262-1
Cincinnati Arrow 1250, Sabre 1250	540300-1
Cincinnati Sabre 1500	639300-1
Cincinnati Sabre 2000	840300-1
Daewoo DMV-400	256177-1
Daewoo DMV-500	402197-1
Fadal VMC 5, 10, 15, 20	294162-1
Fadal VMC 15XT	380162-1
Fadal 4020 Pallet Changer	390190-1
Fadal VMC 2216, 3016, 40	394162-1
Fadal 3020	405212-1
Fadal VMC 4020	477212-1
Fadal VMC 5020	567212-1
Fadal VMC 6030	625300-1
Fadal VMC 8030	825300-1
Fanuc Robodrill T10, T14 (Pallet Changer)	197146-1
Fanuc Robodrill T10, T14	256153-1
Femco FV-30	400180-1
Femco FV-40	512215-2
Femco FV-60	748287-1
Haas VF-0, VF-1, VF-E	262140-1
Haas VF-2, VF-OE	360140-1
Haas VF-3 (Pallet Changer)	400190-1
Haas VF-3	480180-1
Haas VF-4	520180-1
Haas VF-5	520230-1
Haas VF-6	640280-1
Haas VF-8	640300-1
Haas VF-7	840280-1
Haas VF-9	840360-1
Haas VF-10, VF-11	1200280-1
Hardinge VMC 700	400190-2
Hitachi Seiki VM-40 (Single Table, Before 98)	300162-1
Hitachi Seiki VM-40 (Single Table, Since 98)	355162-5
Hitachi Seiki VK-45	440191-1
Hitachi Seiki VS50	440200-1
Hurco BMC 2416	300160-1
Hurco Hawk 5M	360142-1
Hurco BMC 30M, BMC 3017 HTM	401157-1
Hurco BMC-40 SLV Spirit, BMC-40M	472197-1
Hurco Hawk 30SSM	520180T-1
Hurco BMC-50, 40/50, 50/50	669276-1
Kitamura Mycenter-2X Pallet	197118-1
Kitamura Mycenter-2 Pallet	236150-1
Kitamura Mycenter-1A	270120-1
Kitamura Mycenter-2A	300140-1
Kitamura Mycenter-1, 1B, 2X	310140-1
Kitamura Mycenter-3X Pallet	323161-1
Kitamura Mycenter-2B	340140-2
Kitamura Mycenter-2, 3X	355162-4
Kitamura Mycenter-3A, 3J	360180-1
Kitamura Mycenter-3 Pallet	394165-1
Kitamura Mycenter-4A	450200-1
Kitamura Mycenter-4 Pallet, Mycenter-5 Pallet	472197-2
Kitamura Mycenter 4, 5	550220-1
Kitamura Mycenter 6, 7X	669256-1
Leadwell MCV 610CR	303197-1
Leadwell MC-1000V, MCV-1000CR	472197-3
Makino KE-55	315162-1
Makino FNC60	315177-1
Makino FNC74	355174-1
Matsuura MC-500V (Pallet)	200150-1
Matsuura RA-1, RA2	235149S-1
Matsuura MC-760V (Pallet)	250162-1
Matsuura MC-510V	300150-1
Matsuura RA-3	315165S-1
Matsuura MC-500V, VS, 560V	340150-1
Matsuura MC-600V	355162-6
Matsuura RA-4	392192S-1
Matsuura MC-710V	440142-1
Matsuura MC-760V	452162-1
Matsuura MC-800VG	452200-1
Matsuura MC-800V (Before 96)	460180-1
Matsuura MC-1000VS	472197-4
Matsuura MC-1500V	669300-1
Mazak V-414, VTC-41, VQC-15, VTC-16A, AJV-18	355162-1
Mazak VQC-20/40 & 50, AJV-25	490216-1
Mazak AJV-32/404 & 405	490262-1
Mazak V-515	512215-3
Mazak VTC-200B	570260-1
Mazak VTC-16B, VTC-41M	575162-1
Mazak VTC-20B	575212-1
Mazak AJV-32/604 & 605	685256-1
Mazak AJV-35/60	685295-1
Mazak VTC-41L	787162-1
Mazak VTC-20C	787212-1
Mazak VTC-30C	787312-1
Mazak AJV-35/80	882295-1
Milltronics Partner 1 (VM16)	400120-1
Milltronics Partner 6 (std)	400162-1
Mitsubishi M-V4B	355162-2
Mitsubishi M-V5B	394201-1
Mitsubishi M-V60C	551236-1
Mitsubishi M-V70C	650276-1
Miyano TSVC37	189142-1
Miyano TSV-33, TSV-21	200087-1
Miyano MSV-21	200100-1
Miyano TSV-35, TSV-25	240150-1
Miyano KSV-31	276134-1
Miyano KSV-35	355162-3
Miyano MSV-41	433205-1
Monarch VMC-45 (Pallet)	420180-1
Monarch VMC-45	420185-1
Monarch VMC-75 (Pallet)	490200-1
Monarch VMC-75	490215-1
Monarch VMC-150 (60.5" X 30")	605300-1
Monarch VMC-150 (84.5" X 30")	8453000-1
Mori Seiki Frontier, F-M1, MV-40A, MV-40E	355177-1
Mori Seiki SV-400	355197-1
Mori Seiki MV JR	360162-1
Mori Seiki F-M2, MV-40	433177-1
Mori Seiki SV-50, SV-500	433236-1
Mori Seiki MV-45 (Since 90)	472181-1
Mori Seiki SV-500B	520236-1
Mori Seiki MV-50, MV-55	550220-2
Mori Seiki MV-65	669256-3
OKK PCV-40	280162-1
OKK VM5	413220-1
OKK PCV-55	480220-1
OKK MCV-500, 520, MCV-550	512215-1
OKK MCV 650	630256-1
OKK MCV680	669256-2
Okuma & Howa Millac 438V	315111-1
Okuma & Howa Millac 511V	500218-1
Okuma & Howa Millac 4VA, 43V	510162-1
Okuma & Howa Millac 611V	551258-1
Okuma & Howa Millac 611VL	709258-1
Okuma & Howa Millac 852V	866335-1
Okuma MX-45VB	300181-1
Okuma MC-4VA, 4VAE, 40VA	394162-2
Okuma MX-45 VAE/VBE	394181-1
Okuma Cadet 4020, ES4020, Crown V4018	480200-1
Okuma MC-5VA, MC-50VA	512200-1
Okuma MX-55 VA/VB	512220-1
Okuma MC-6V, MC-60VA	602248-1
Toyoda FV45	400200-1
Toyoda FV65	560260-1
Tree VMC 500	315197-1
Tree Journ. 210, 220, 300, 310, 320, 325, 330, 2UVR	360142T-2
Tree VMC 750	394197-2
Tree VMC 1050, VMC 1060	500228-1
Tree VMC 1260	570240-1
YCI Supermax MAX1 Rebel	330165-1
YCI Supermax MAX1	360142-2
YCI Supermax MAX3 Rebel	374157-1
YCI Supermax MAX4	472236-1

Approximate Subplate weight (lbs.) = Length (inches) x Width (inches) x .4

HORIZONTAL MILLS

- Bases of Stevens Primary Tooling are matched to the pallet or machine table where they are to be used.
- Counterbored hold-down holes are furnished to match pallet T-slots or threaded holes.
- Base locating options (following page) are recommended.
- Precision ground faces on primary tooling gives repeatable location on any face, eliminating probing or indicating requirements during setup.
  Flatness .0003"/12"
  Perpendicularity .0005"/12"
  Grid Accuracy (see pg. 6 and 7)

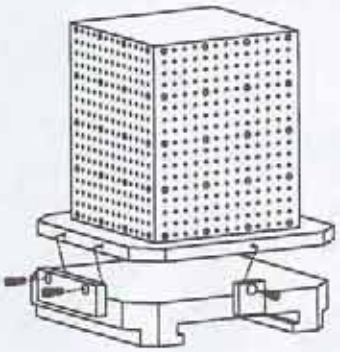


STEEL – USED FOR ALL STEVENS PRIMARY FIXTURING

- All Stevens Primary Tooling — Subplates, 4-Sided Columns, Silo Columns, and 2-Sided Angle Plates, are made from steel having an elastic modulus twice that of cast iron. The result is a far more rigid workholder with less deflection under a given cutting pressure.
- Higher thread strength of steel vs cast iron eliminates thread pull-out problems associated with cast iron.
- The use of steel and the stiffer closed design of Stevens Columns result in less dead weight versus equivalent cast iron structures. This means:
  1. Higher payloads per pallet.
  2. Less wear and tear on the machine and pallet changer.
- Long-term dimensional stability is assured by two-stage furnace stress relieving.

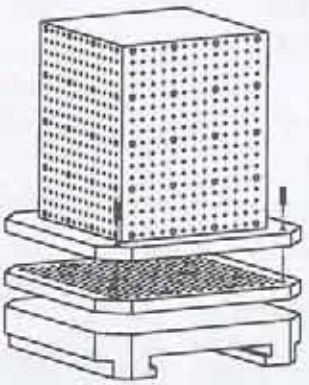
LOCATING OPTIONS

1. EDGE LOCATION - Option A
Two qualified edges contact edge locator plates on the machine pallet. Cap screws passed through holes in the edge locator plates and into threaded holes in the base of the fixture pull the fixture into precise alignment and position.



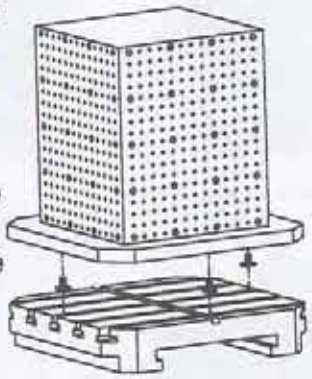
2. TWO BUSHINGS - Option B
Two Stevens Precision Bushings (pg. 73) match bushing locations on a Stevens Subplate permanently mounted on the machine table or pallet. Two Stevens Precision Pull Dowels inserted through these bushings into corresponding bushings in the Subplate below quickly assure correct position and alignment.

The Subplate may have its own locating features to match the machine pallet.

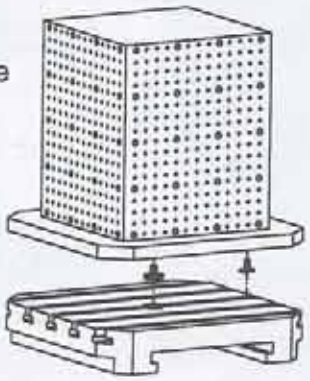


3. THREE FIXTURE KEYS - Option C
Three removable fixture keys mount into bushings on the underside of the base. Machines which have 2 precision perpendicular slots use this option.

Expanding collet on fixture keys locks into Stevens bushed hole using Allen wrench. Keys may be oriented with a straight edge prior to setting fixturing on pallet.

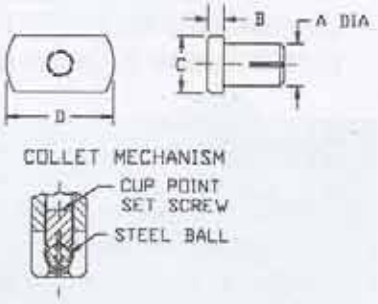


4. CENTER LOCATOR AND KEY - Option E
A removable center locator and fixture key mount into bushings on the underside of the base. Machines which have an accurate center bore and one precision slot use this option.
Expanding collet on center locators locks into Stevens bushed hole using Allen Wrench.



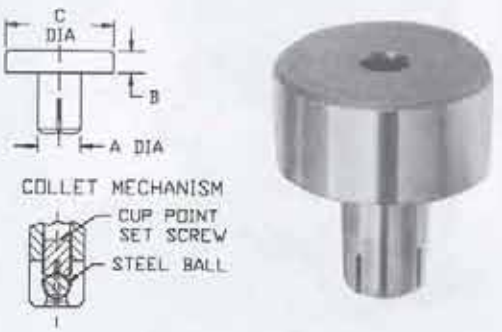
5. CENTER LOCATOR ONLY
Option G

Why Use Locating Options?
Precise locating of Stevens Fixturing is required to gain the benefits of its built-in accuracy. Because of the necessity for simultaneously centering and aligning table tooling on horizontal mills, Stevens recommends locating features with Subplates, 4-Sided Columns, Silo Columns and 2-Sided Angle Plates.



PRECISION FIXTURE KEYS

PART NO.	A	B	C+0/-.000	D	HEX KEY
20088	.5009	.185	SPECIFY	1.25	1/8
HD20088	.7504	.300	SPECIFY	2.00	3/16

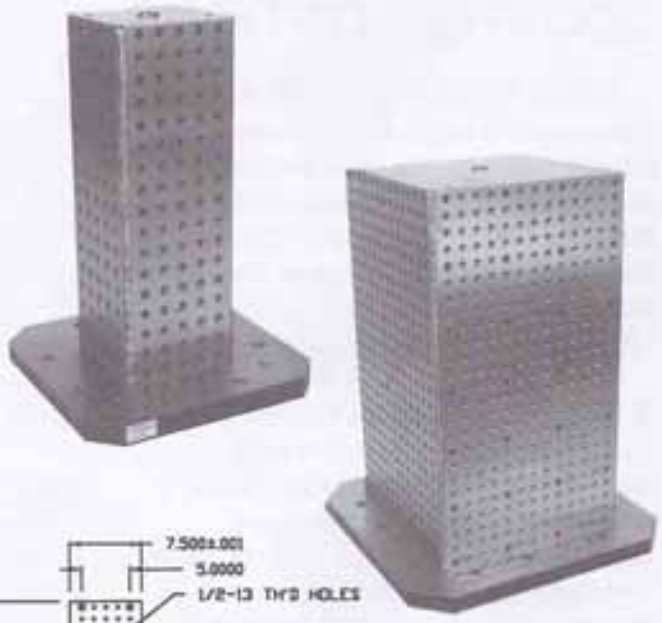


CENTER LOCATORS

PART NO.	A	B	C+0/-.0002	HEX KEY
20124-1	.5009	SPECIFY	SPECIFY	1/8
HD20124-1	.7504	SPECIFY	SPECIFY	3/16

4-SIDED COLUMNS

PRECISION GROUND WITH STEVENS GRID

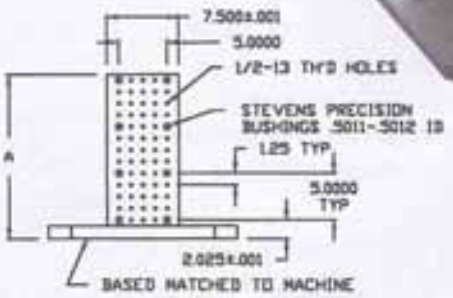


FEATURES

- Precision ground surfaces and Standard grid pattern allow use of Stevens accessories.
- Steel construction (see discussion pg. 20).
- All holes blind, eliminating entry of coolant and chips into interior.
- Fully stress relieved for long-term dimensional stability.
- Accurate precision ground faces give repeatable setup location on any face, eliminating probing or indicating requirements:

Flatness	.0003/12"
Perpendicularity	.0005"/12"
Grid Accuracy	(see pg. 6 and 7)

- Counterbored hold-down holes are furnished to match pallet T-slots or threaded holes.



PART NO.	A
075075127	12.7
075075177	17.7
075075227	22.7

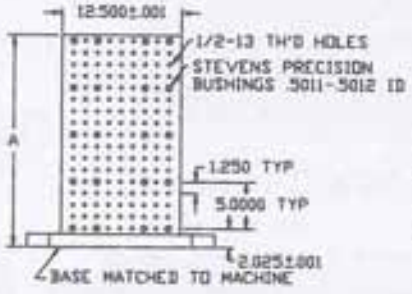
ORDERING

- Specify make and model of machine when ordering Columns; base is matched to the pallet or machine table where Column is used.
- Select base locating option (pg. 21) for locating Column on your machine.

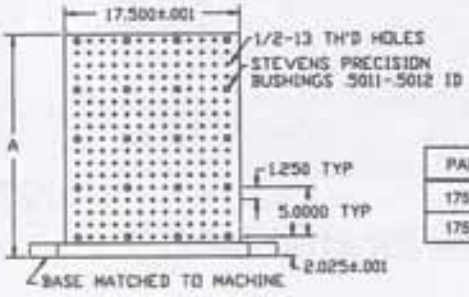
CUSTOM SIZES AVAILABLE — **UP TO 40" SQUARE x 60" HIGH**

APPLICATIONS

Stevens Columns offer flexibility and repeatability for setup changes. A dedicated fixture made from Stevens Tooling Plates (pg. 29) is shown on left . A Modular Vise (pg. 32) setup is shown on right.



PART NO.	A
125125227	22.7
125125327	32.7



PART NO.	A
175175227	22.7
175175327	32.7

4-SIDED COLUMNS

- *SEMI-FINISHED PLAIN*
- *PRECISION MILLED PLAIN*
- *PRECISION MILLED WITH STEVENS GRID*

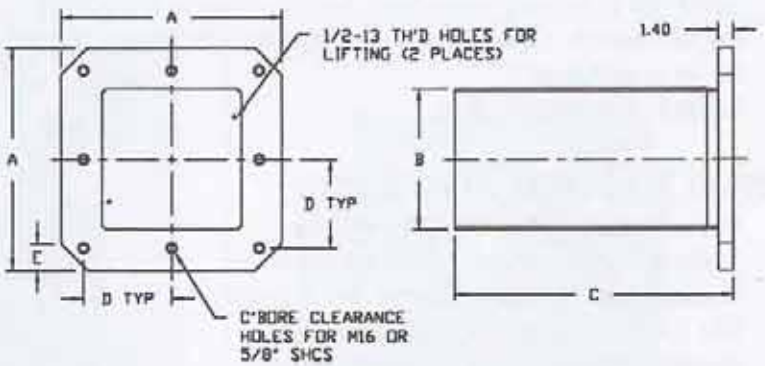
FEATURES

- Closed construction stiffens structure and eliminates entry of coolant and chips into interior.
- Steel gives greater rigidity and thread strength than cast iron (see pg. 20).
- Fully stress relieved for long-term stability.
- Locating options recommended (See page 21).

ORDERING

- Verify that the base mounting holes will fit your machine.
- Select base locating option (pg. 21) if desired.

CUSTOM SIZES AVAILABLE — **UP TO 40" SQUARE x 60" HIGH**



PART NO.	A	B	C	D	E	WEIGHT (LBS.)
0750752008P	15.75	7.65	20.0	6.300	2.00	320
075075200PP	15.75	7.500 +/- .001	20.0	6.300	2.00	310
075075200	15.75	7.500 +/-.001	20.0	6.300	2.00	310
1001002008P	15.75	10.15	20.0	6.300	2.00	400
100100200PP	15.75	10.000 +/-.001	20.0	6.300	2.00	385
1251252508P	19.70	12.65	25.0	7.874	2.38	640
125125250PP	19.70	12.500 +/-.001	25.0	7.874	2.38	620
125125250	19.70	12.500 +/-.001	25.0	7.874	2.38	620
1751752508P	24.80	17.65	25.0	9.843	2.75	930
175175250PP	24.80	17.500 +/-.001	25.0	9.843	2.75	905
175175250	24.80	17.500 +/-.001	25.0	9.843	2.75	905

SEMI-FINISHED PLAIN (SP)

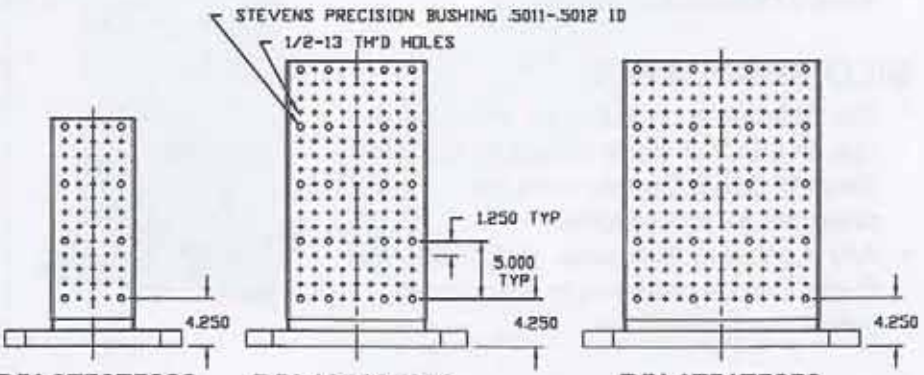
- Stock left on faces for the user who plans to machine faces to achieve desired perpendicularity.
- Bottom of base is machined flat .0005/12".

PRECISION MILLED PLAIN (PP)

- Faces and base machined flat and perpendicular .0005/12".

PRECISION MILLED WITH STEVENS GRID

- Milled faces give accurate setup location on any face at a lower cost than precision ground columns.
- Flatness .0005/12".
- Perpendicularity .0005/12".
- Grid accuracy (see pages 6 & 7).

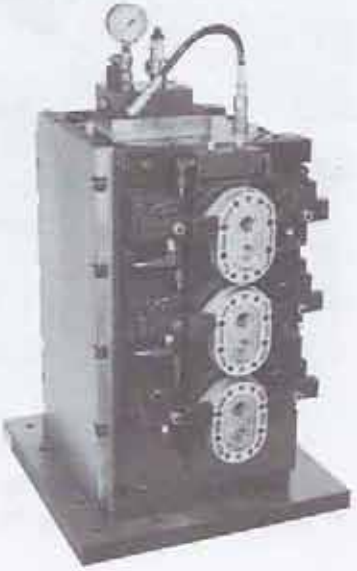


P/N 075075200 **P/N 125125250** **P/N 175175250**

SILO™ COLUMNS*

- Either Subplates or Tooling Plates may be accurately and repeatably mounted on any of four faces of Silo Columns, allowing greater flexibility than conventional tombstones.
- Silo approach minimizes the number of Columns and machine pallets required to maintain steady production flow on horizontal machining centers.
- Excellent repeat accuracy of location of Subplates and Tooling Plates eliminates need for probing or indicating, further reducing setup time.
- Design optimized for stiffness; dead weight of cast iron structures is eliminated.
- Fully stress relieved for long-term dimensional stability.
- Solid top bulkhead (standard) keeps chips and coolant out of interior. Open access to interior with removable cover is optional.
- Edge Location included.

SILO TOOLING PLATES



- Permanent fixtures made from Silo Tooling Plates can be easily and quickly doweled and screwed to the Silo Column.
- Silo Columns are ideal for hydraulic clamping fixtures when ordered with optional top cover. Hydraulic components such as accumulators and intensifiers may be mounted inside the Column. Hydraulic lines can be run through the wall or optional top cover.
- Select steel or aluminum Tooling Plates. Steel Tooling Plates are precision ground, free machining, and provide greater durability. Aluminum Tooling Plates reduce weight and cost and use Stevens Span-Comp™ Bushings (pg. 73) to assure repeatability of location.

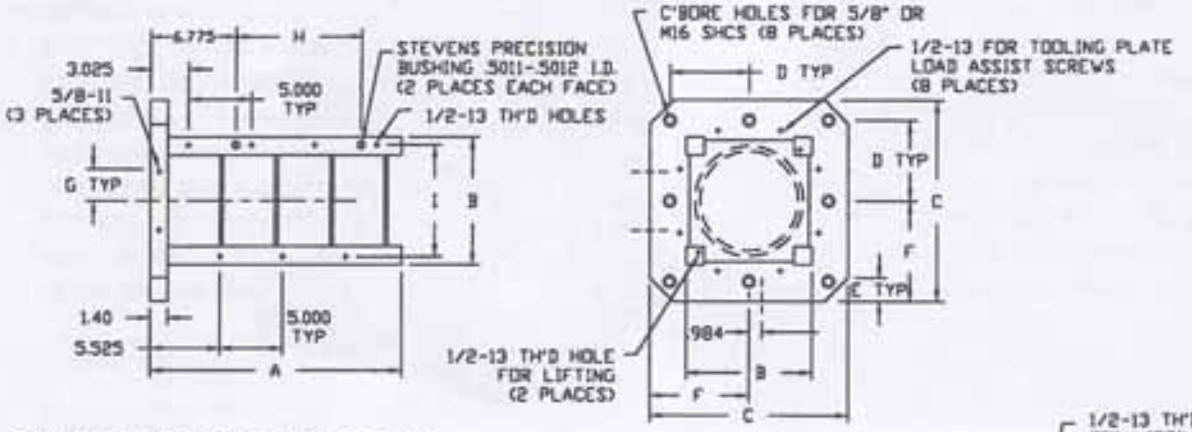
SILO SUBPLATES

- Silo Subplates can be used to build set-ups on a bench away from the machine. Stevens Setup Components are designed for this purpose.
- Any number of Subplates or Tooling Plates can be prepared in advance of actual machining time.

** Patent #355,200*

SILO COLUMNS

PART NO.	A	B	C	D	E	F	G	H	I	WEIGHT LBS.
100100200SC	20	10.000+/-.001	15.75	6.300	2.00	7.8740+/-.001	2.165	10.0000	8.750	210
120120250SC	25	12.000+/-.001	19.70	7.874	2.38	9.8425+/-.001	2.953	15.0000	11.250	340
170170300SC	30	17.000+/-.001	24.80	9.843	2.75	12.4016+/-.001	3.937	20.0000	16.250	655



CUSTOM SIZES AVAILABLE

UP TO 40" SQUARE x 60" HIGH

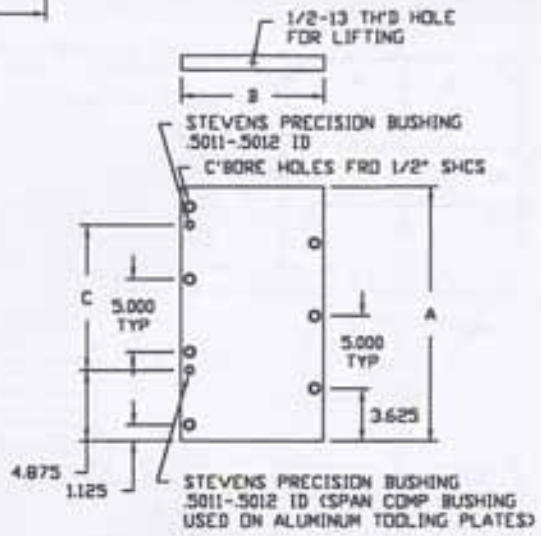
SILO TOOLING PLATES

Silo Tooling Plates - Steel

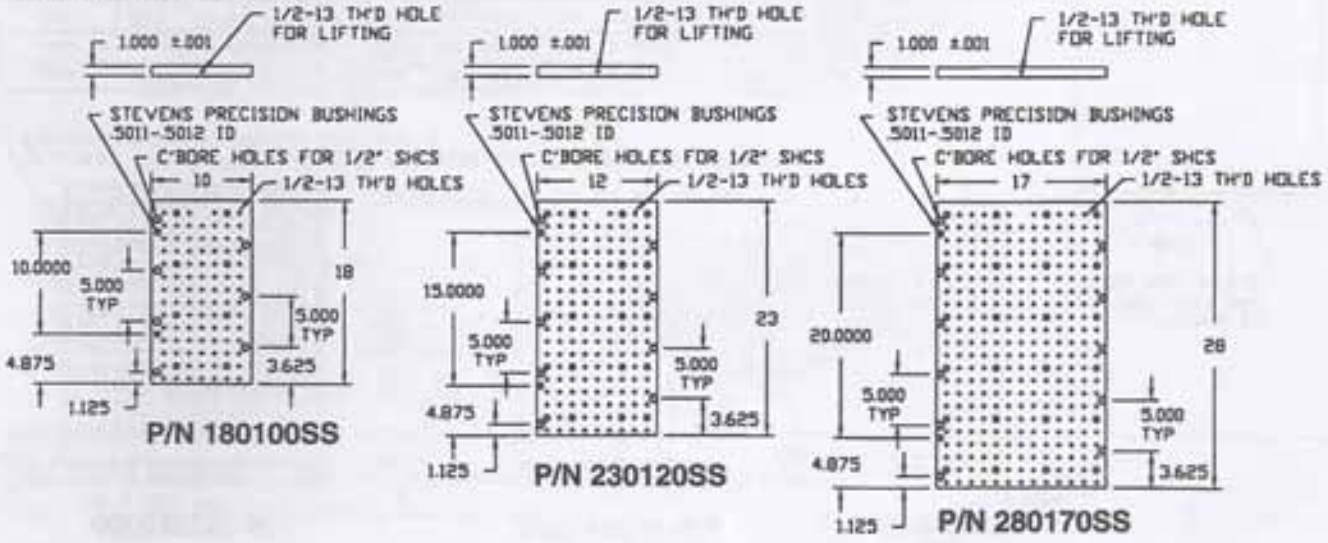
PART NO.	THICKNESS	A	B	C	USED WITH	WEIGHT LBS.
180100STP	1.000+/-.001	18	10	10.0000	100100200SC	50
230120STP	1.000+/-.001	23	12	15.0000	120120250SC	78
280170STP	1.000+/-.001	28	17	20.0000	170170300SC	134

Silo Tooling Plates - Aluminum

PART NO.	THICKNESS	A	B	C	USED WITH	WEIGHT LBS.
180100STPA1	1.00+/-.005	18	10	10.0000	100100200SC	18
180100STPA2	1.50+/-.005	18	10	10.0000	100100200SC	27
230120STPA1	1.00+/-.005	23	12	15.0000	120120250SC	27
230120STPA2	1.50+/-.005	23	12	15.0000	120120250SC	41
280170STPA1	1.00+/-.005	28	17	20.0000	170170300SC	48
280170STPA2	1.50+/-.005	28	17	20.0000	170170300SC	71



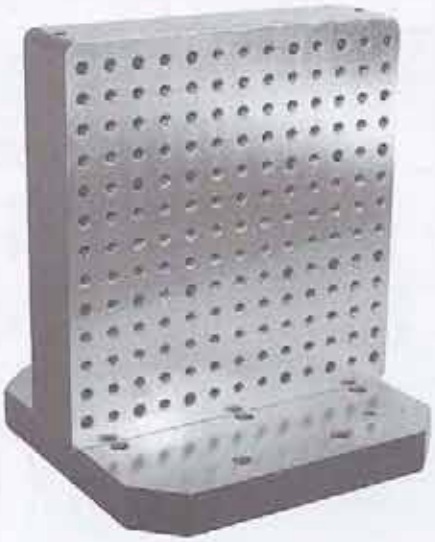
SILO SUBPLATES



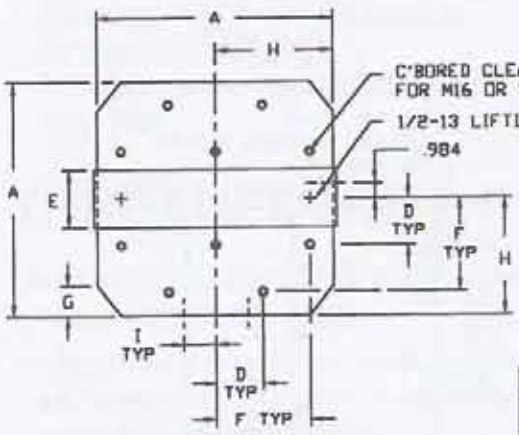
2-SIDED ANGLE PLATES

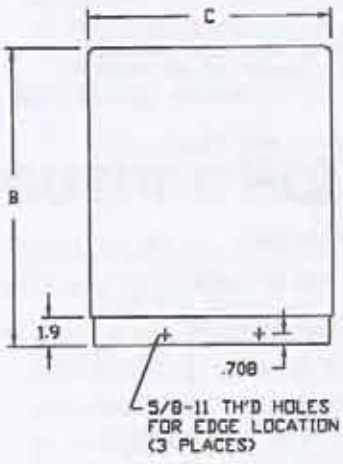
FEATURES

- Stiffness of Stevens 2-Sided Angle Plates far exceeds that of equivalent cast iron structures.
- Accurate precision ground faces and base provide repeatable setup location.
  Flatness .0003/12"
  Perpendicularity .0005"/12"
  Grid Accuracy (see pg. 6 and 7)
- Base hold-down holes are included. Call Stevens for other base configurations.
- Base edge locating features included.



CUSTOM SIZES AVAILABLE — **UP TO 50" WIDE x 60" HIGH**



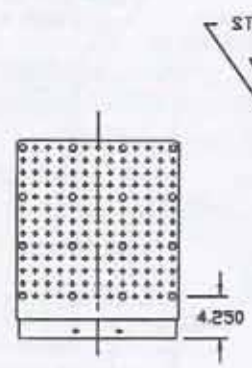


PRECISION GROUND WITH STEVENS GRID

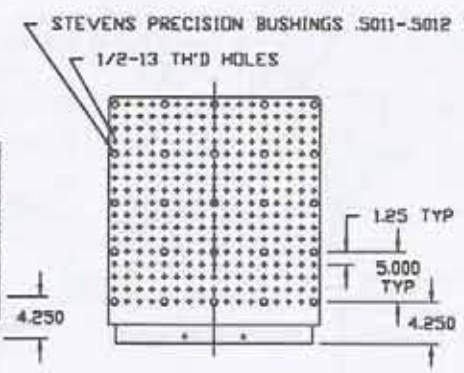
PART NO.	A	B	C	D	E	F	G	H	I	WEIGHT LBS.
162039200	15.75	20.0	16.2	3.150	3.900+/-.001	6.300	2.00	7.8740+/-.001	2.165	450
212044250	19.70	25.0	21.2	3.937	4.400+/-.001	7.874	2.36	9.8425+/-.001	2.953	805
262049300	24.60	30.0	26.2	4.921	4.850+/-.001	9.843	2.75	12.4016+/-.001	3.937	1215

PRECISION GROUND PLAIN

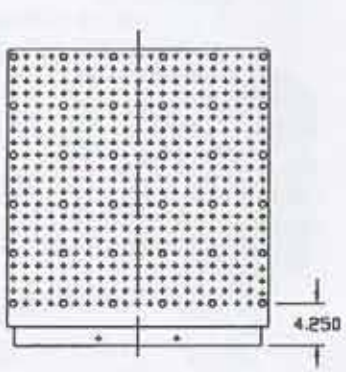
PART NO.	A	B	C	D	E	F	G	H	I	WEIGHT LBS.
162039200PGP	15.75	20.0	16.2	3.150	3.900+/-.001	6.300	2.00	7.8740+/-.001	2.165	455
212044250PGP	19.70	25.0	21.2	3.937	4.400+/-.001	7.874	2.36	9.8425+/-.001	2.953	815
262049300PGP	24.60	30.0	26.2	4.921	4.850+/-.001	9.843	2.75	12.4016+/-.001	3.937	1235



P/N 162039200



P/N 212044250

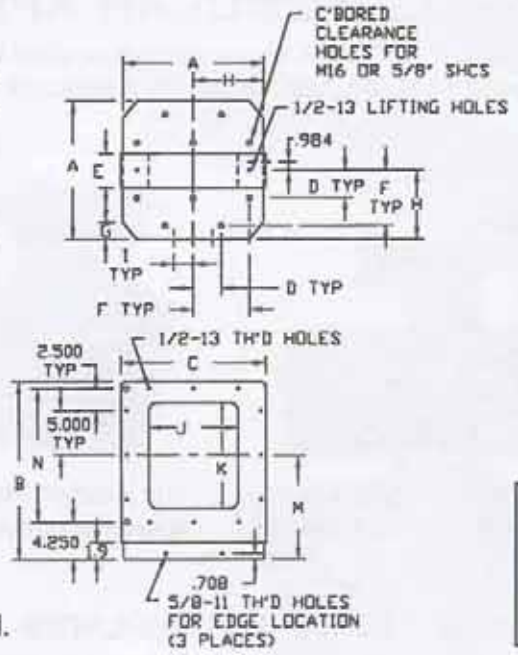


P/N 262049300

2-SIDED WINDOW ANGLE PLATES

FEATURES

- Opening provides access so spindle can reach the back of the workpiece.
- Project Subplates or Tooling Plates repeatably mount to both faces.
- Stiffness of Stevens 2-Sided Angle Plates far exceeds that of equivalent cast iron structures.
- Accurate precision ground faces and base provide repeatable setup location.
  - Flatness .0003/12"
  - Perpendicularity .0005"/12"
  - Grid Accuracy (see pg. 6 & 7)
- Base hold-down holes are included. Call Stevens for other base configurations.
- Base edge locating features included.

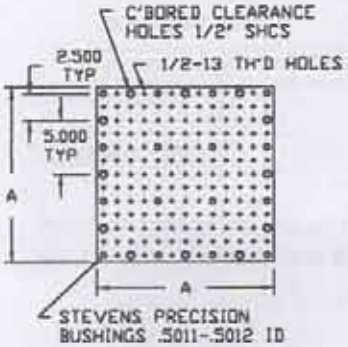


CUSTOM SIZES AVAILABLE — **UP TO 50" WIDE x 60" HIGH**

PART NO.	A	B	C	D	E	F	G	H	I	J	K	M	N	WEIGHT LBS.
162039200W	15.75	20.0	16.2	3.150	3.900+/-.001	6.300	2.00	7.8740+/-.001	2.165	10.0	12.0	11.750	15.0000	325
212044250W	19.70	25.0	21.2	3.937	4.400+/-.001	7.874	2.38	9.4425+/-.001	2.953	14.0	16.0	14.250	20.0000	540
262049300W	24.80	30.0	26.2	4.921	4.850+/-.001	9.843	2.75	12.4016+/-.001	3.937	18.0	20.0	16.750	25.0000	740

PROJECT SUBPLATES

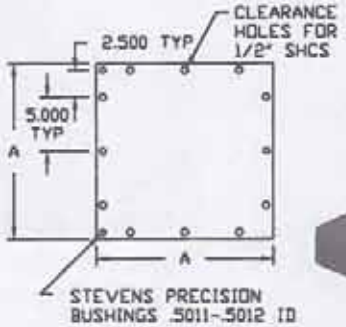
- Mount onto 2-Sided Window Angle Plates.



PART NO.	A	THICKNESS	USED WITH
20167-1	16.2	1.000+/-.001	162039200W
20167-2	21.2	1.375+/-.001	212044250W
20167-3	26.2	1.375+/-.001	262049300W

TOOLING PLATES

- Mount onto 2-Sided Window Angle Plates.
- Aluminum Tooling Plates use Stevens Span-Comp Bushings (pg 73) for repeatable mounting.

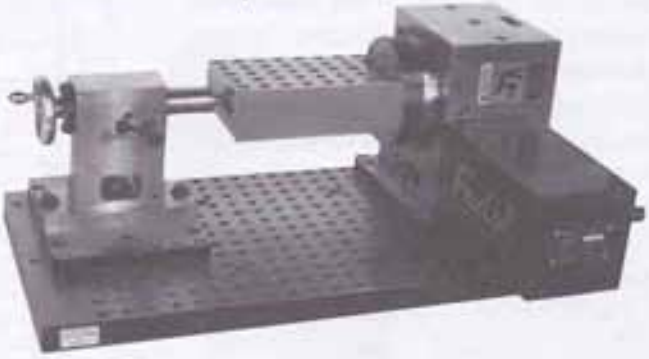


PART NO.	A	MATERIAL	THICKNESS	USED WITH
20171-1	16.2	Steel	1.000+/-.001	162039200W
20171-2	16.2	Aluminum	1.500+/-.005	212044250W
20171-4	21.2	Steel	1.375+/-.001	262049300W
20171-5	21.2	Aluminum	1.500+/-.001	162039200W
20171-6	26.2	Steel	1.375+/-.005	212044250W
20171-7	26.2	Aluminum	1.500+/-.001	262049300W

IMPROVE YOUR 4TH AXIS PRODUCTIVITY WITH THE STEVENS MODULAR APPROACH

Stevens 4th axis accessories include 4-Sided Columns with standard hole pattern, Plain Columns, 2-Sided Angle Plates, and standard pattern Subplates to fit headstock faceplates.

Stevens 4-Sided Column with Stevens Modular Vise is shown above mounted on Haas headstock and tailstock.



The 2-Sided Plate (shown above) is advantageous for larger workpieces requiring greater swing clearance.

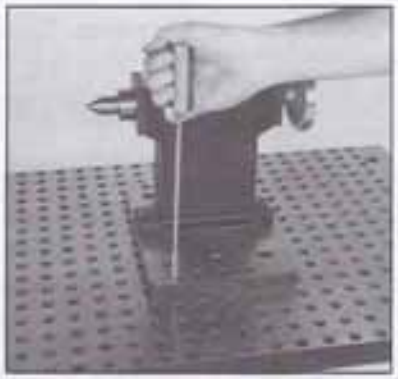
ADAPT YOUR 4TH AXIS UNITS TO STEVENS SUBPLATES

4th axis headstock and tailstock units can be quickly mounted or removed from Stevens Subplates with these adapter plates. Once the unit is installed on the adapter plate, insertion of pull dowels, as shown, assures precise alignment of the headstock and/or tailstock with the machine axes. Installation of 4th axis units on adapter plates can be done in your toolroom or by Stevens at our factory.

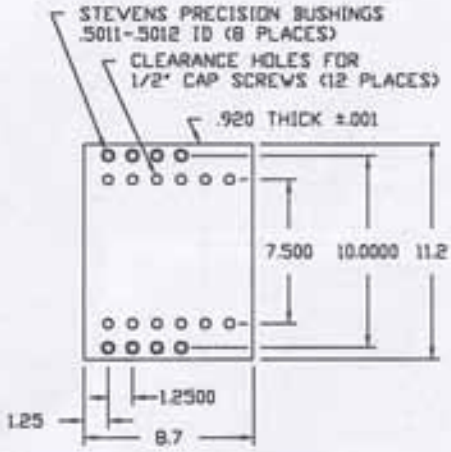
ORDERING

- A Stevens applications engineer or authorized dealer can offer assistance.
- The make and model of 4th axis unit should be specified when ordering accessories.

Standard Stevens Tooling Plates can generally be used as headstock adapters. See pages 29 and 30 for stock Tooling Plate sizes.



Tailstocks mounted on P/N 20145-1 Tailstock Adapter may be positioned on the subplate at increments of 1.25".



P/N 20145-1 TAILSTOCK ADAPTER

STEEL TOOLING PLATES

Designed for use in making permanent or temporary holding fixtures which can quickly and repeatably be mounted on Stevens Primary Tooling.

- Available from stock for quick fixture turnaround.
- Made from stress relieved free-machining steel.
- Precision ground:
  parallelism .0005"
  thickness .920+/-.001
- Jig-bored and bushed locating holes to mount on any Stevens Primary Fixturing.

SEE ALSO:

Silo Tooling Plates (pg. 25) are designed to mount on Stevens Silo Columns.

2-Sided Window Angle Plates use 20171 Tooling Plates (pg. 26).

CUSTOM SIZES AVAILABLE

APPLICATIONS

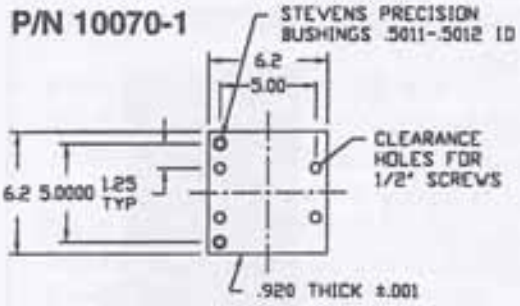
This brake caliper fixture made with Stevens Tooling Plate will quickly dowel to the primary table tooling.

A bridge fixture uses Stevens Tooling Plates and parallels which pin together for quick alignment to machine axes.

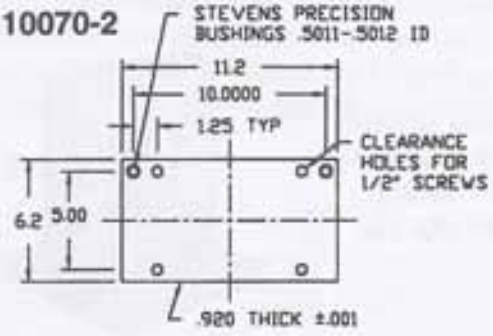
Stevens Tooling Plates are ideal for mounting chucks or collet fixtures to primary table tooling.

STEEL TOOLING PLATES

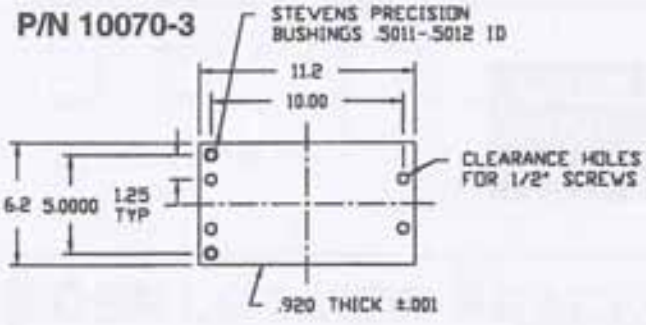
P/N 10070-1



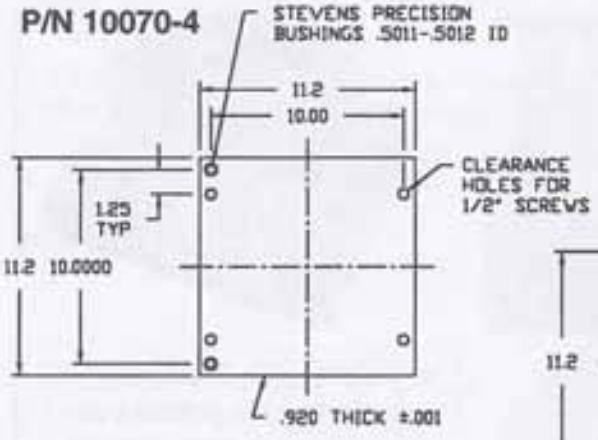
P/N 10070-2



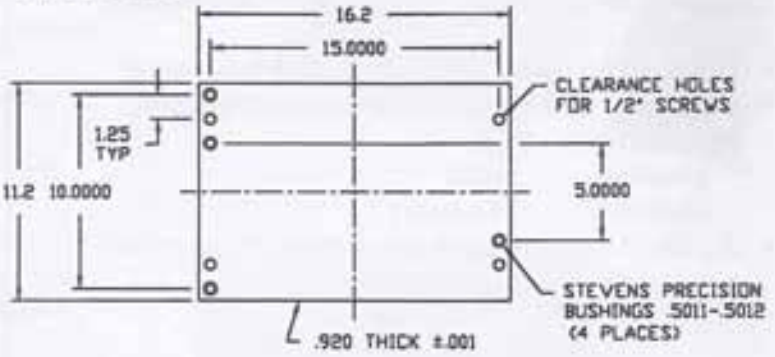
P/N 10070-3



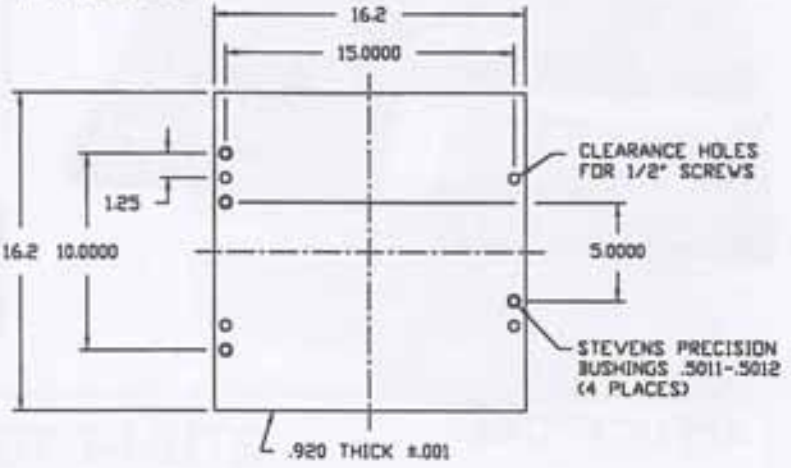
P/N 10070-4



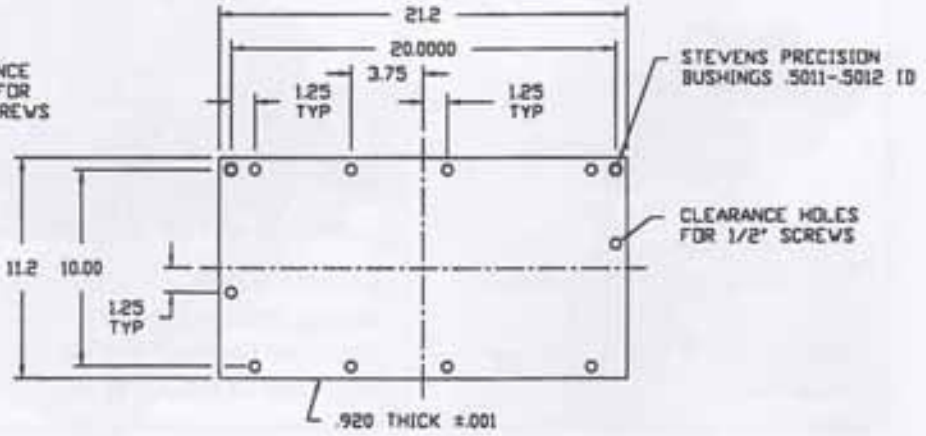
P/N 10070-5



P/N 10070-6

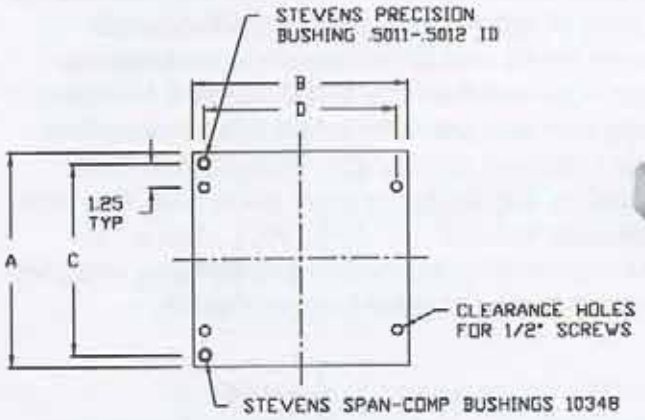


P/N 10070-7



ALUMINUM TOOLING PLATES

- Designed for use in making permanent or temporary holding fixtures which can quickly and repeatably be mounted on Stevens Primary Tooling.
- Aluminum Tooling Plates are controlled on thickness to +/-.005" and provide an economical approach to building dedicated fixtures.
- Aluminum Tooling Plates use one standard bushing and one Span-Comp Bushing (pg. 73) to provide precise position and repeatability when mounted to Stevens Primary Tooling. Span-Comp Bushings precisely locate Tooling Plates while allowing for greater thermal expansion of aluminum relative to steel.



PART NO.	A	B	C	D	THICKNESS
20172-1	11.2	11.2	10.0000	10.0	1.00+/-.005
20172-2	11.2	11.2	10.0000	10.0	1.50+/-.005
20172-3	16.2	11.2	15.0000	10.0	1.00+/-.005
20172-4	16.2	11.2	15.0000	10.0	1.50+/-.005
20172-5	11.2	16.2	10.0000	15.0	1.00+/-.005
20172-6	11.2	16.2	10.0000	15.0	1.50+/-.005
20172-7	16.2	16.2	15.0000	15.0	1.00+/-.005
20172-8	16.2	16.2	15.0000	15.0	1.50+/-.005
20172-9	21.2	11.2	20.0000	10.0	1.00+/-.005
20172-10	21.2	11.2	20.0000	10.0	1.50+/-.005
20172-11	21.2	16.2	20.0000	15.0	1.00+/-.005
20172-12	21.2	16.2	20.0000	15.0	1.50+/-.005
20172-13	26.2	16.2	25.0000	15.0	1.50+/-.005

CUSTOM SIZES AVAILABLE

VISES AND VISE ACCESSORIES

COMPACT TWO PIECE DESIGN FOR MOUNTING ON STEVENS PRIMARY TABLE TOOLING

- Fixed and Movable Jaws are two separate assemblies, allowing them to be separated by any interval (limited only by the size of the primary Tooling on which they are mounted).
- Two pull dowels accurately position the Fixed Jaw, orienting it parallel with any machine axis. The jaw face and the left end of the jaw are qualified with respect to bushed hole locations.
- An adjustable work stop is supplied with the vise.
- Vise is made from hardened alloy steels and is designed to hold the workpiece solidly under heavy cuts.
- Job-proven in heavy production environments.

SERIES 625 MODULAR VISE

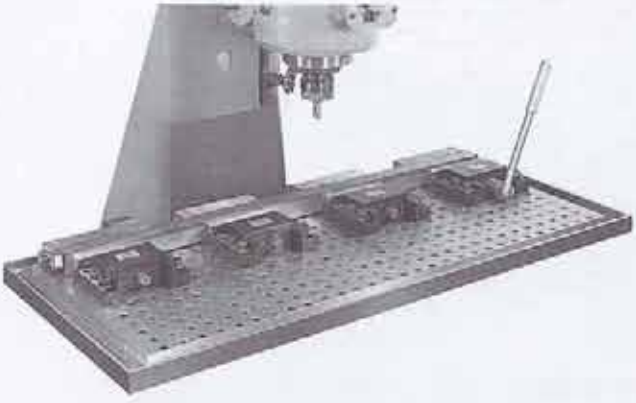
Modular Vise mounted on Stevens Subplate allows holding of large workpieces. New Series 625 shown above and dimensioned on the following page is doweled directly to the subplate to reduce setup time and precisely locate it (serrated index plate has been eliminated). Movable jaw travel, guided by two hardened steel guide bars, has been increased to 1-1/2" (2-1/4" for HD). The acme screw controlling the motion is completely enclosed to avoid chip and coolant contamination.

DESIGN FEATURES

- Pull-down feature of Movable Jaw prevents the work-piece from rising when it is clamped.
- Compact design facilitates use where space is limited; vise uses short stroke lead screw and guide bars to achieve compactness .
- Movable Jaw does not rely on friction to prevent back-off; thrust is taken by two pull dowels and four cap screws.

APPLICATIONS

Vises mounted on Stevens Columns provide repeat accuracy on all four faces. (Previous model 501 shown)



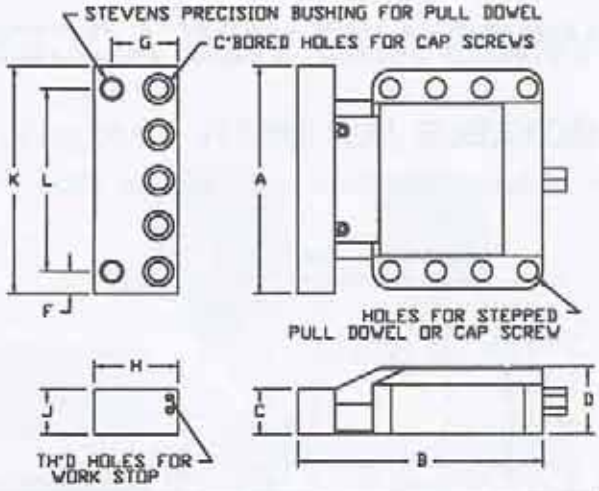
Multiple vises are automatically aligned when mounted on Stevens Subplates. (Previous model 501 shown)

Additional applications shown on pg. 15 & 38.

MODULAR VISES - Series 625

(includes Movable and Fixed Jaws)

P/N 20187 (includes 20189 & 20111)
P/N HD20187 (incl. HD20189 & HD20111)



MOVABLE JAWS

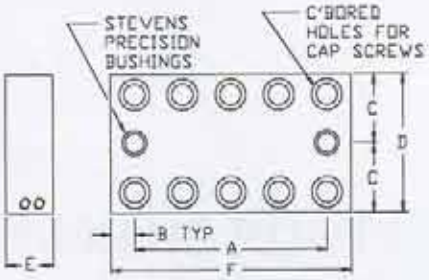
PART NO.	SCREW	A	B	C	D
20189	½-13	6.25	5.32-6.82	1.2	1.6
HD20189	¾-10	10.0	8.38-10.69	2.0	2.6

FIXED JAWS

PART NO.	BUSHINGS	SCREW	F	G	H	J	K	L
20111	.5011	½-13	.6250	1.775	2.2	1.2	6.24	5.000
HD20111	.7506	¾-10	1.000	2.840	3.6	2.0	10.0	8.000

DUPLEX JAWS

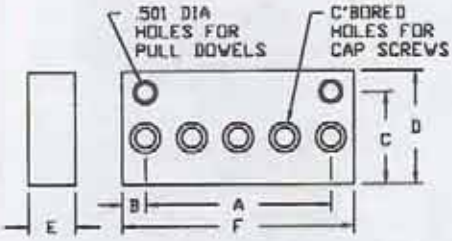
A Duplex Jaw can be used in combination with two Movable Jaws to setup two independent clamping stations.



PART NO.	BUSHINGS	SCREWS	A	B	C	D	E	F
20113	.5011	1/2-13	5.0000	.6250	1.7750	3.5500	1.25	6.2500
HD20113	.7506	3/4-10	8.0000	1.0000	2.8400	5.6800	2.00	10.0000

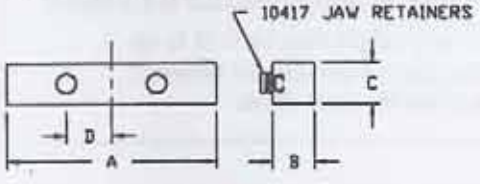
SOFT FIXED JAWS

Soft jaws made from free-machining steel allow you to customize jaw design for specific workpieces.



PART NO.	BUSHINGS	SCREWS	A	B	C	D	E	F
10237	.5011	1/2-13	5.0000	.62	2.525	3.00	1.25	6.25
HD10237	.7506	3/4-10	8.0000	1.00	3.84	4.61	2.00	10.00

SOFT MOVABLE JAW PLATES

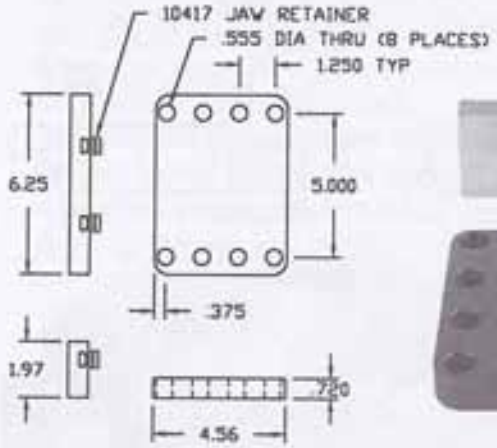


PART NO.	MOUNTS TO	A	B	C	D
10433	20189	6.25	1.25	1.25	1.35
HD10433	HD20189	10.00	2.00	2.00	2.25

VISES AND VISE ACCESSORIES

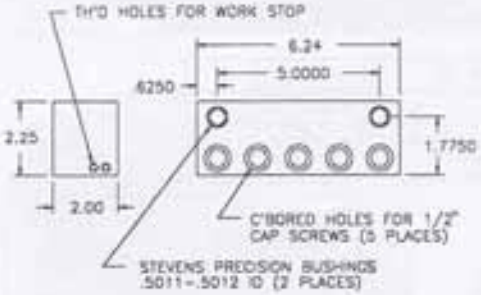
MOVABLE JAW RISER P/N 20190

- Includes Riser Base and Riser Jaw Plate.

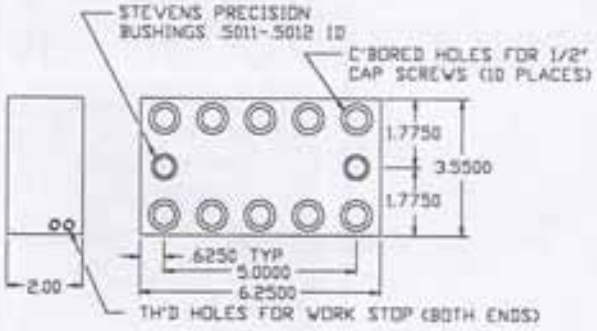


Movable Jaw Risers and High Profile Fixed Jaws are used with 20189 Movable Jaw (pg. 33).

HIGH PROFILE FIXED JAW P/N 20111HP



HIGH PROFILE DUPLEX JAW P/N 20113HP



The High Profile Duplex Jaw can be used in combination with two Movable Jaws (pg. 33) and two Movable Jaw Risers to setup two independent clamping stations.

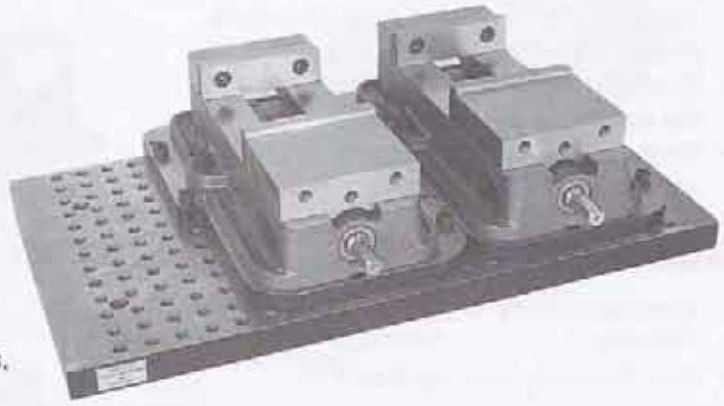
SPECIAL VISE RISERS

The design of the Stevens Modular Vise makes it ideal for special modular applications.

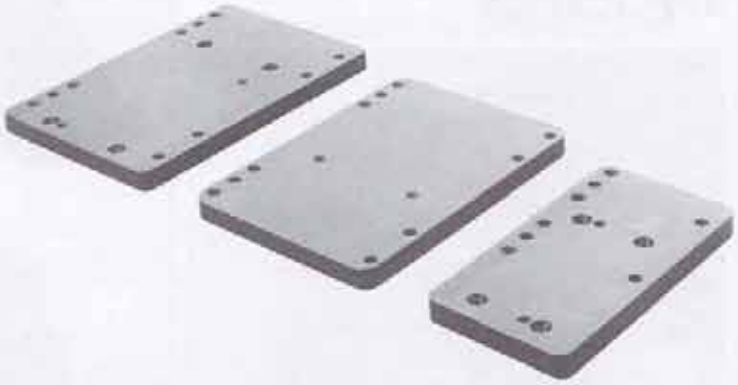
Risers of any height may be built to accommodate large workpieces between the Fixed and Movable Jaws.

ADAPTERS FOR CONVENTIONAL VISES

QUICK, ACCURATE AND REPEATABLE VISE SETUPS ARE EASY WITH VISES MOUNTED ON STEVENS ADAPTERS



- Stevens pull dowels inserted through bushings in the adapter into bushed holes in the primary component below aligns the fixed jaw by machine axis.
- With multiple vise setups, fixed jaw locations will lie in the same plane using Stevens Vise Adapters.
- Stevens Vise Adapters are precision ground to a uniform height (.920+/-.001)
- 1/2-13 X 1-1/2 long socket cap screws secure the adapter on the primary component below.



VISE ADAPTERS ARE AVAILABLE FOR –

Kurt D30	P/N 10136
Kurt D40	P/N 10137
Kurt D50	P/N 10316
Kurt D60	P/N 10374
Kurt D675	P/N 10374
Kurt D688	P/N 10458
Kurt DU68	P/N 10458
Kurt D80	P/N 10198
Kurt 3600V	P/N 10288
Kurt 3610V	P/N 10288
Kurt PT400	P/N 10227
Kurt PT600	P/N 10165
Kurt PT800	P/N 10167
Kurt DL400	P/N 10341
Kurt DL600	P/N 10457
Kurt DL640	P/N 10457
Kurt DLU6	P/N 10457
Chick QL4 or BL4	P/N 10454
Chick QL6 or BL6	P/N 10287
Chick MQL 1540	P/N 10430
Chick MQL 1550	P/N 10384
Chick MQL 1030	P/N 10455
Chick MQL 1040	P/N 10456
Toolex RWS 4002	P/N 10454
Toolex RWS 6002	P/N 10287

CUSTOM SIZES AVAILABLE

MOUNTING

Mounting vises on Stevens adapters may be done at either your facility or ours. The procedure involves carefully aligning the fixed jaw block on the vise with the bushing pattern on the adapter and doweling the vise to the adapter. Charges for mounting at our plant are shown in the price list.

STEVENS MODULAR FIXTURING
Angle Plates

FEATURES

- Base pattern of Stevens Angle Plates consists of bushed holes and clearance holes for pull dowels and cap screws.
- Bushing locations are qualified relative to the vertical face and bottom face.
- Material: Ductile iron or steel; Angle Plates smaller than 12" in height are hardened.

ACCURACY

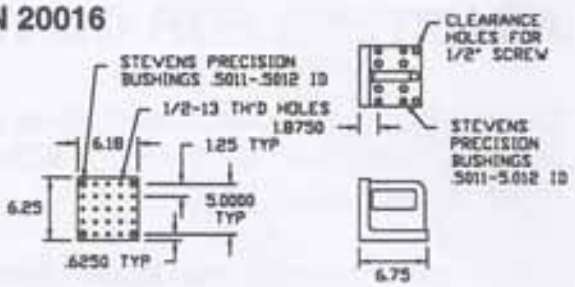
- Perpendicularity .0005"/12"
- Flatness .0003"/12"
- Grid Accuracy (see pg. 6 and 7)

APPLICATION

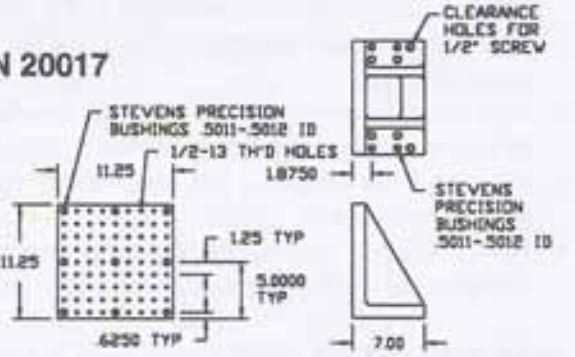
Faces of multiple Angle Plates will lie in the same plane when mounted on a Stevens Subplate.

CUSTOM SIZES AVAILABLE UP TO 50" WIDE x 60" HIGH

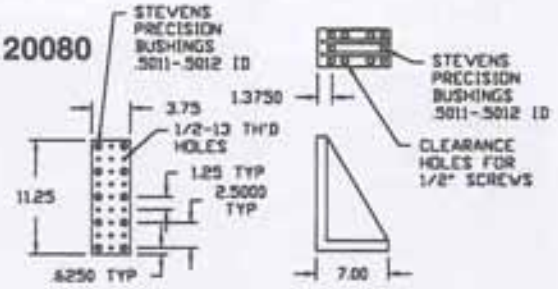
P/N 20016



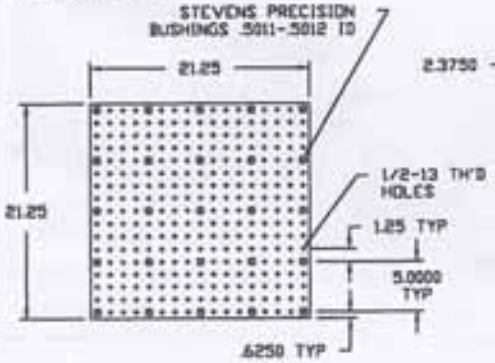
P/N 20017



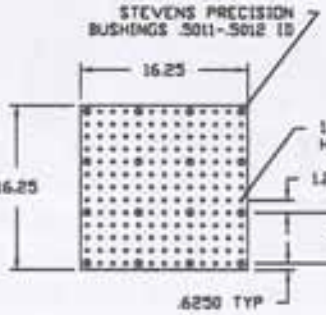
P/N 20080



P/N 20195



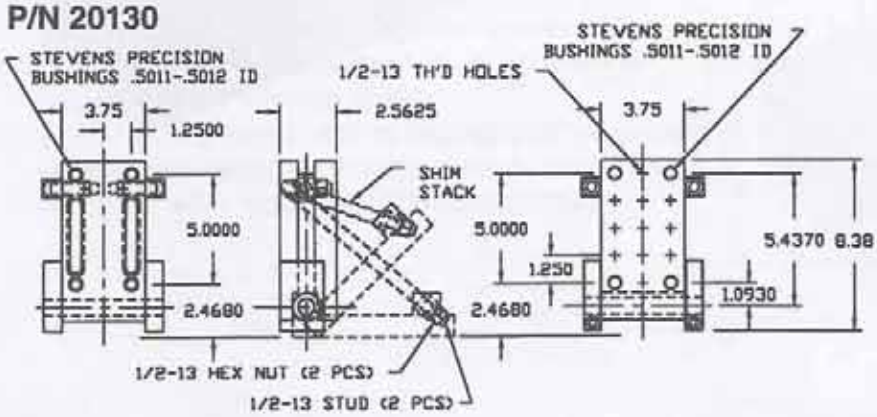
P/N 20053



ADJUSTABLE ANGLE PLATES

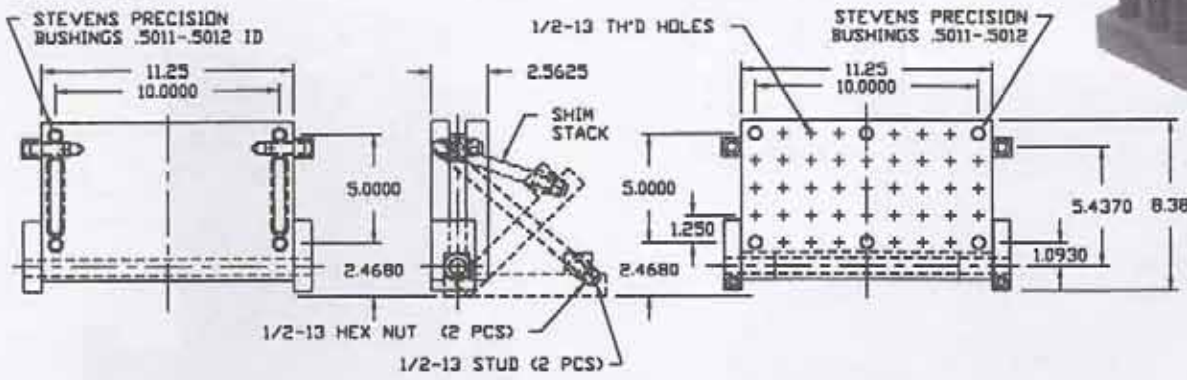
- Any angle from 0 to 90 can be set using Shims (pg. 60) and studs, both of which are furnished with each unit.
- Tabulation sheet shows shim stack required for setting any angle.
- Stevens pattern in base and on face allows use with other Stevens accessories.
- Compound angles may be achieved by stacking Adjustable Angle Plates.

P/N 20130

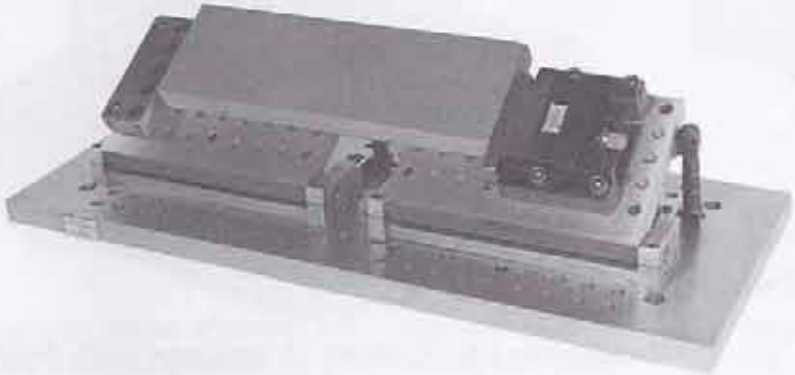


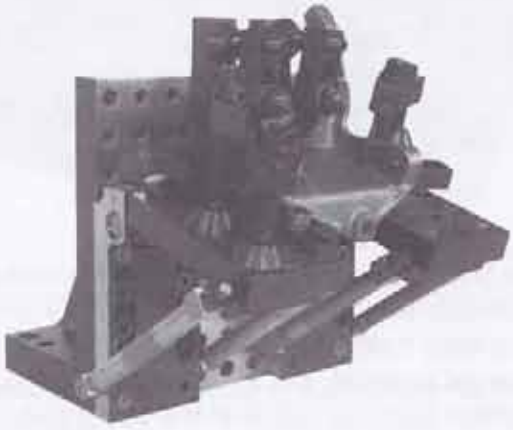
Shim and stud sets included with Adjustable Angle Plate

P/N 20168

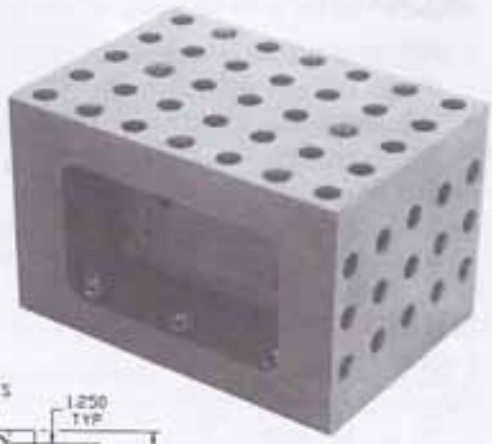


APPLICATIONS



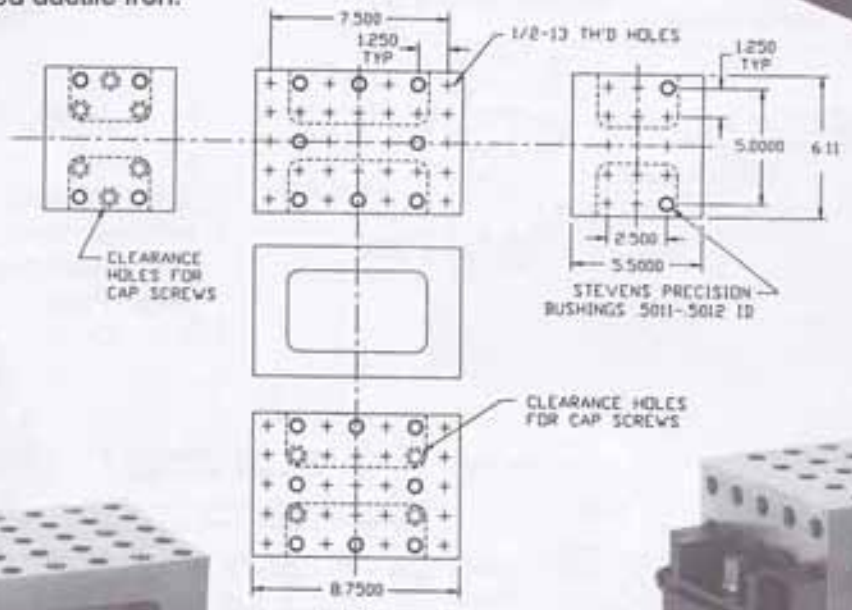


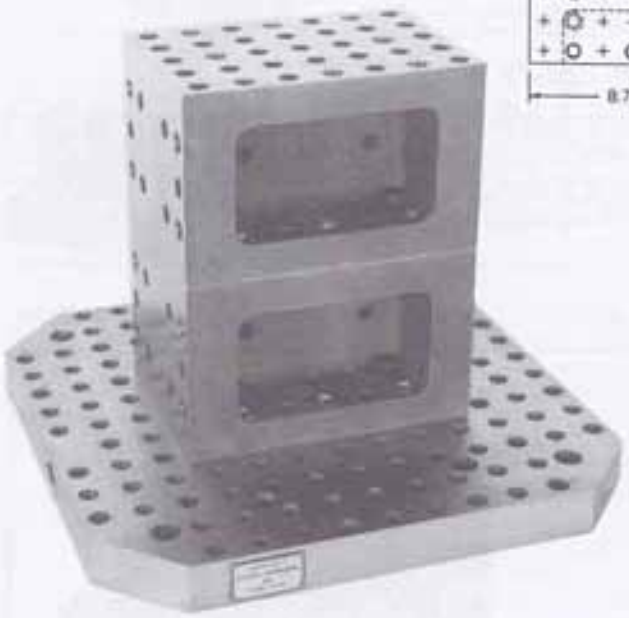
LARGE UTILITY BLOCKS P/N 20160



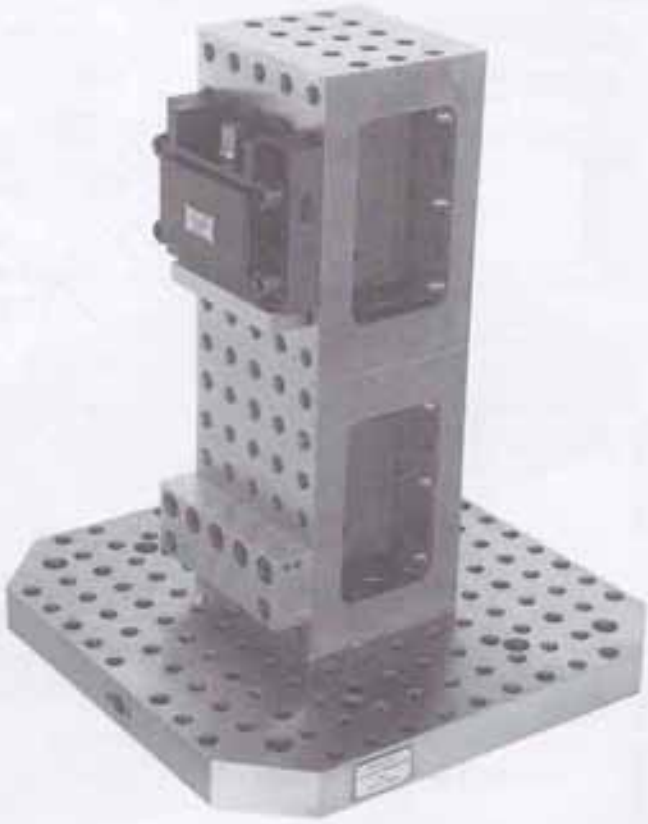
USED TO ESTABLISH QUALIFIED SURFACES FOR MODULAR SETUPS

- May be screwed and doweled to other Stevens components, mounting on either of two surfaces.
- Height and length are qualified; perpendicularity of faces allows Utility Blocks to be used as angle plates. They may also be used as parallels.
- Material: Hardened ductile iron.





Two Utility Blocks may be stacked to create larger structures as shown. Bushing locations are accurately held relative to qualified edges. When doweled together, this means that adjoining qualified surfaces will lie in the same plane.

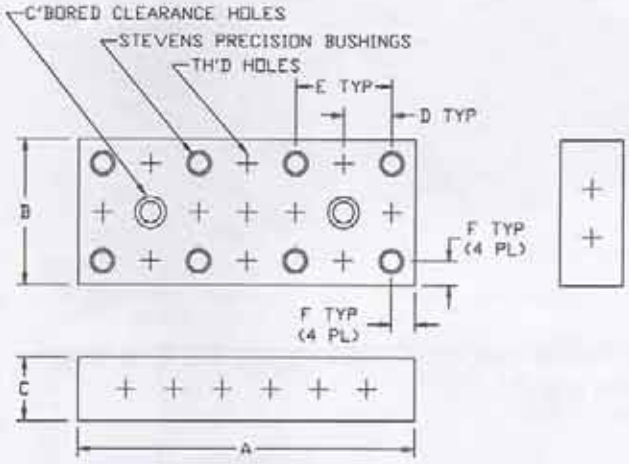


Modular Vise pg. 32, shown on two Large Utility Blocks

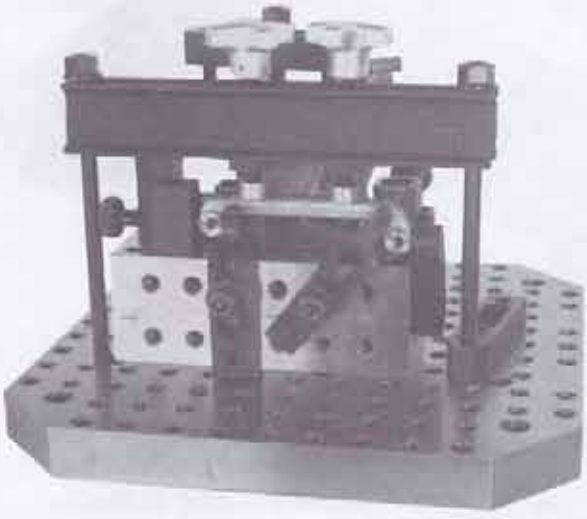
SMALL UTILITY BLOCKS

USED TO ESTABLISH QUALIFIED SURFACES FOR MODULAR SETUPS

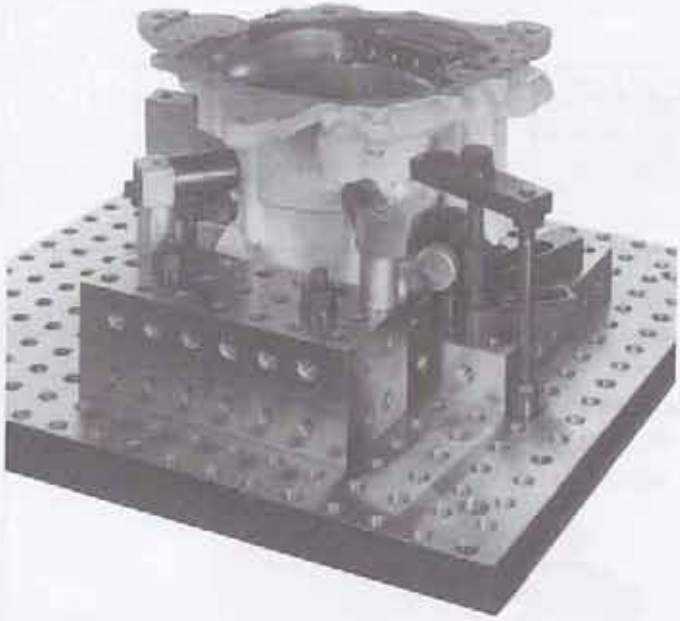
- All 6 surfaces are qualified, ground flat, parallel, and perpendicular to adjacent surfaces.
- Location of bushed holes is held accurately with respect to edges.
- All 8 bushings are pass-thru bushings, allowing stacking. Doweling them together assures that bushing true position is maintained and that all edges will stay in same plane.
- Pass-thru bushings have spring retainer, preventing dowels from dropping through unless pushed through.
- Material: Alloy steel, case hardened to 60Rc.



PART NO.	THREADS	BUSHINGS	A	B	C	D	E	F
20066	1/2-13	.5011	8.7500	3.7500	1.6250	1.250	2.5000	.6250
HD20066	3/4-10	.7506	14.0000	6.0000	2.6000	2.000	4.0000	1.0000



Qualified edges of Small Utility Block are used here to establish secondary and tertiary locations.



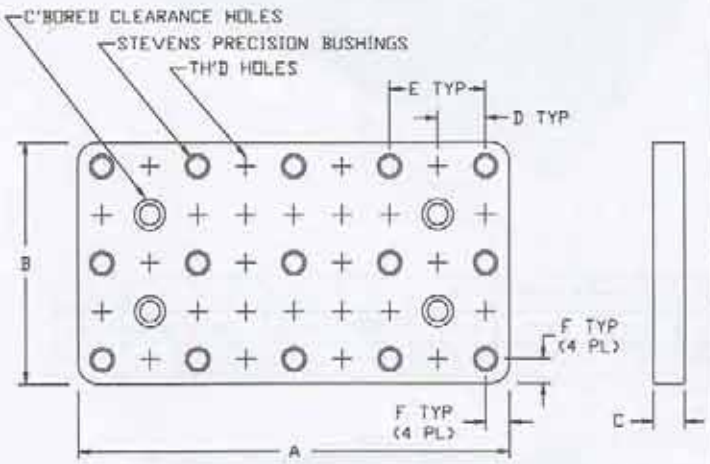
Bushings on top of Small Utility Block are used here to position Flat Edge Locators.

Additional applications are shown on pg. 10, 15, 44, 53, 56 & 66.

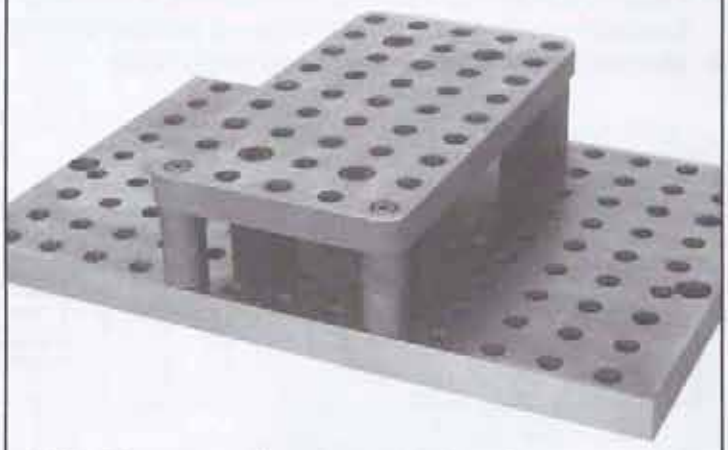
UTILITY PLATES

USED AS A QUALIFIED SURFACE FOR BUILDING MODULAR SETUPS

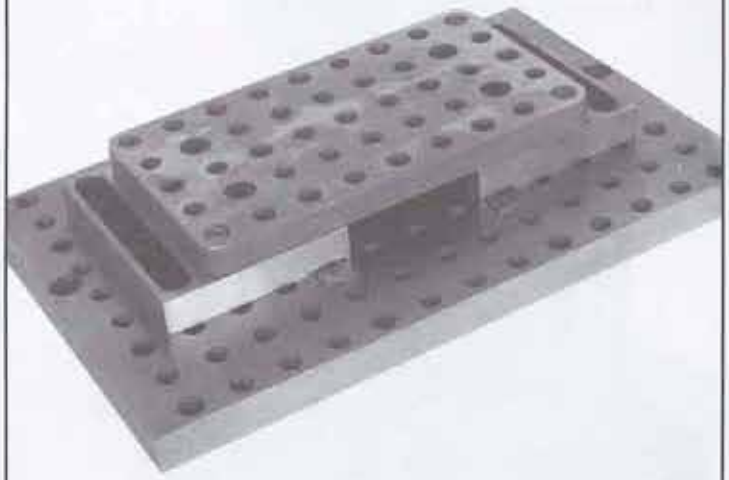
- Utility Plates screw and dowel to other components which have a Stevens pattern.
- Useful on setups where a higher density of bushings is required.
- Thickness is precisely qualified.
- Material: Alloy steel, case hardened to 60 Rc.



PART NO.	THREADS	BUSHINGS	A	B	C	D	E	F
20142	1/2-13	.5011	11.2	6.2	.8125	1.250	2.5000	0.6
HD20142	3/4-10	.7506	18.0	10.0	1.3000	2.000	4.0000	1.0



Utility Plates may be elevated using Stevens height locators (pg. 51-53).



When mounted on two Utility Slides (pg. 41), the Utility Plate becomes a versatile sliding platform which maintains its alignment.

Additional applications are shown on pg. 43, 53 & 68.

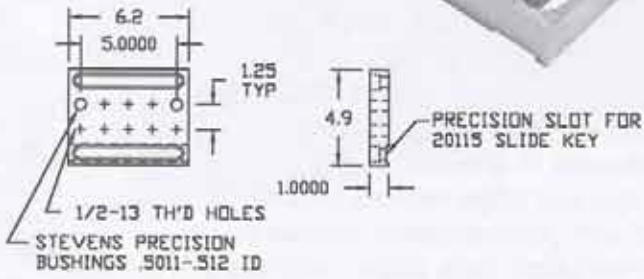
Related Items:

Project Subplates (pg. 17) are available in various sizes when a larger setup surface is required.

UTILITY SLIDES

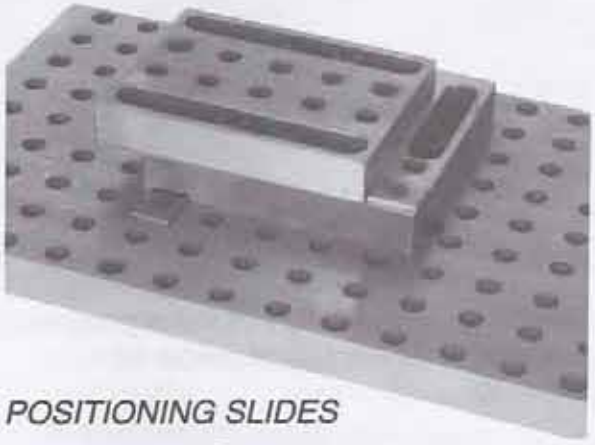
FOR INTERMEDIATE POSITIONING OF LOCATORS

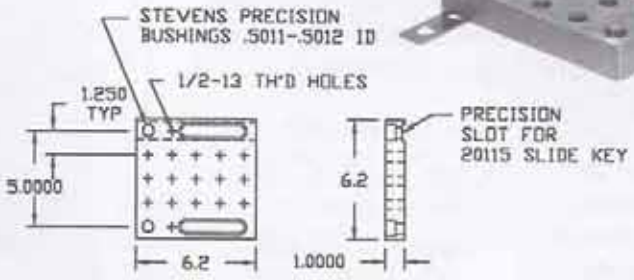
- Utility Slides allow accurate positioning of locators at any location between bushed holes.
- Alignment of bushings with grid pattern is maintained with the use of 20115 Slide Key (included) which pins into grid pattern and engages precision ground slot in underside of Utility Slides.
- Utility Blocks (pg. 39), Vee Blocks (pg. 44), and other locators may be doweled to the top surface of Utility Slides.
- Height is precisely qualified.
- Material: Alloy steel, case hardened to 60 Rc.



Lateral positioning of locating elements relative to other locators is the primary purpose of the **20175** Utility Slides.

UTILITY SLIDES MAY BE STACKED TO ACHIEVE 2-AXIS POSITIONING





Longitudinal positioning of locating elements relative to other locators is the primary purpose of the **20133** Utility Slides.

POSITIONING SLIDES

Slides may be accurately positioned at previously established locations using gage blocks or calipers and Round Edge Locators (pg. 50) as shown. The Stevens CAD Library (pg. 12) can be used with your CAD/ CAM system to help determine setup location.

APPLICATIONS

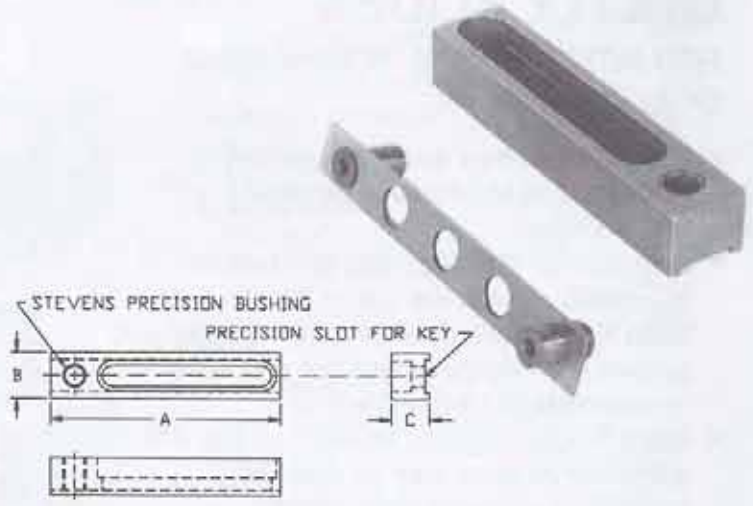
This setup uses Utility Slides to permit adjustment of Vee Blocks to accommodate work piece casting variations. Programming is also simplified because casting bores can be centered on machine pallet. (Also see Adj. Vee Block pg. 45 to allow height adjustment).

Additional applications shown on pg. 40 & 45.

BUSHED HOLE SLIDES

FOR INTERMEDIATE POSITIONING OF LOCATORS

- Bushed Hole Slides allow accurate positioning of locators at any location along a single axis of travel.
- Position of bushed hole with respect to grid pattern is maintained with the use of 20115 or HD20115 Slide Key (included) which pins into grid pattern and engages precision ground slot in underside of Stevens Slides.
- Locating pins and edge locators may be positioned with great accuracy relative to machine zero using gage blocks or calipers as shown on page 41.
- Height is precisely qualified.
- Material: Alloy steel, case hardened to 60 Rc.



PART NO.	BUSHING	CLEARANCE SLOT	A	B	C
20174	.5011	FOR 1/2" SCREWS	6.0	1.2	1.0000
HD20174	.7506	FOR 3/4" SCREWS	9.6	1.9	1.6000

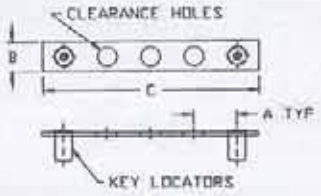
Bushed Hole Slides are particularly useful in positioning round or diamond pins to locate workpieces for secondary operations.

This workpiece is located using Stevens Slides and Edge Locators.

Additional applications shown on pg. 13 & 47.

SLIDE KEYS

- Slide Key is included with all Stevens Slides.
- Key Plate has qualified edges which engage precision ground slots in underside of Stevens Slides.
- Two Key Locators (included) pin into Stevens bushing pattern to accurately align Key Plate.



- Material: Hardened alloy steel.

PART NO.	KEY LOCATORS	A	B	C
20115	.5009 DIA	1.25	.8750	6.25
HD20115	.7504 DIA	2.00	1.2000	10.00

MOUNTING OR REMOVING SLIDE KEY

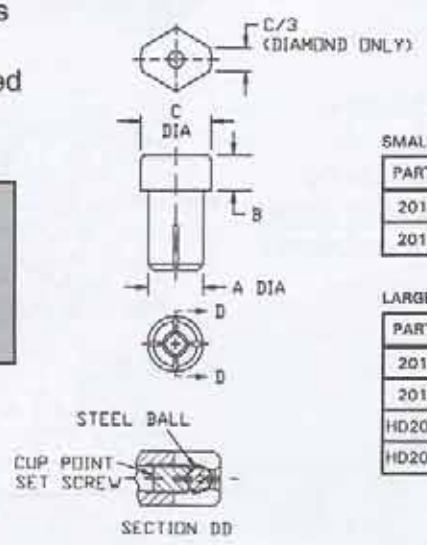
Hold Key Plate flat against mounting surface and use extractor (pg. 72) to insert or remove Key Locators.

LOCATING PINS

USED ON 2ND OPERATION FIXTURES TO LOCATE ON PREVIOUSLY MACHINED HOLES

- Available with round or diamond heads.
- Expanding collet locks into Stevens bushed hole using Allen wrench.
- Material: Alloy steel, case hardened to 60Rc.

ORDERING
Specify "B" and "C" dimensions. Specify .0002" minimum tolerance span on "C" dimension.



SMALL HEAD DIAMETERS

PART NO.	A	HEAD TYPE	B (RANGE)	C (RANGE)	HEX KEY
20128-1	.5009	ROUND	.10-.50	.1875-.500	1/16
20128-2	.5009	DIAMOND	.10 -50	.1875-.500	1/16

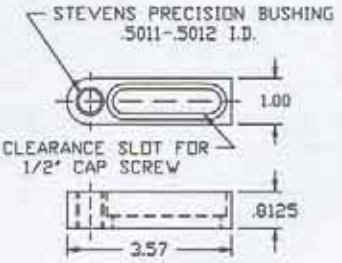
LARGE HEAD DIAMETERS

PART NO.	A	HEAD TYPE	B (RANGE)	C (RANGE)	HEX KEY
20124-1	.5009	ROUND	.10-.62	.500-1.312	1/8
20124-2	.5009	DIAMOND	.10 -62	.500-1.312	1/8
HD20124-1	.7504	ROUND	.10-1.00	.750-2.000	3/16
HD20124-2	.7504	DIAMOND	.10-1.00	.750-2.000	3/16

BUSHING POSITIONER P/N 20177

USED FOR POSITIONING PINS AND OTHER LOCATORS IN OPEN SETUPS

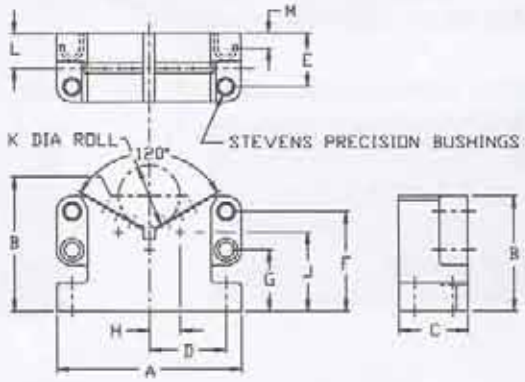
- Stevens Precision Bushing may be positioned anywhere.
- Ideal for locating parts for inspection and light machining operations.
- Used to establish pickup locations instead of drilling and boring construction holes.
- Thickness is qualified, allowing its use as a height locator as well as a bushed hole locator.
- Material: Alloy steel, case hardened to 60Rc.



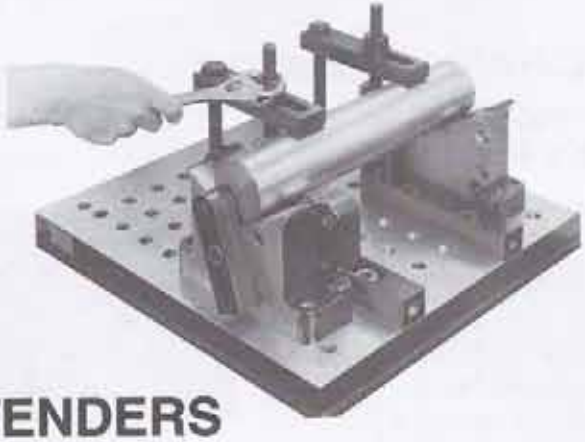
VEE BLOCKS

USED TO POSITION ROUND OR IRREGULAR WORKPIECES IN EITHER VERTICAL OR HORIZONTAL ORIENTATION

- Mounts on any standard Stevens pattern with pull dowels and hex head screws.
- Height and centerline are precisely qualified relative to mounting bushings.
- Slots on 120 deg. surfaces accept Extenders (shown below) or serrated grippers (pg. 46).
- Centerline height adjustment can be made by using Shims (pg. 60) or Risers (pg. 52, 53) under the Vee Block or using Extenders (shown below).
- Capacity: 20065 8" dia.
  HD20065 12.5" dia.
- Material:
  20065 Hardened ductile iron
  HD20065 Case hardened alloy steel



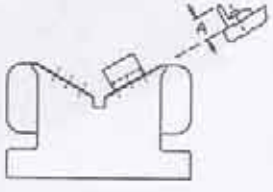
PART NO.	BUSHINGS	CLEARANCE HOLES	A	B	C	D	E	F	G	H	J	K	L	M
20065	.5011	FOR 1/2" SCREWS	6.0	3.7500	2.250	2.8000	1.7500	3.2500	2.000	1.000	2.575	2.0000	1.125	.500
HD20065	.7506	FOR 3/4" SCREWS	9.6	6.0000	3.600	4.0000	2.8000	5.2000	3.200	1.600	4.120	3.2000	1.800	.800



VEE BLOCK EXTENDERS

USED WITH VEE BLOCKS TO REACH AROUND CAST BOSSES AND RIBS

- Also used to raise centerline height of workpiece.
- Material: Steel, case hardened to 60Rc.



PART NO.	A
10151-1	.5000
10151-2	.6250
10151-3	.7500
10151-4	.8750
10151-5	1.0000
10151-6	1.1250
10151-7	1.2500
10151-8	1.3750

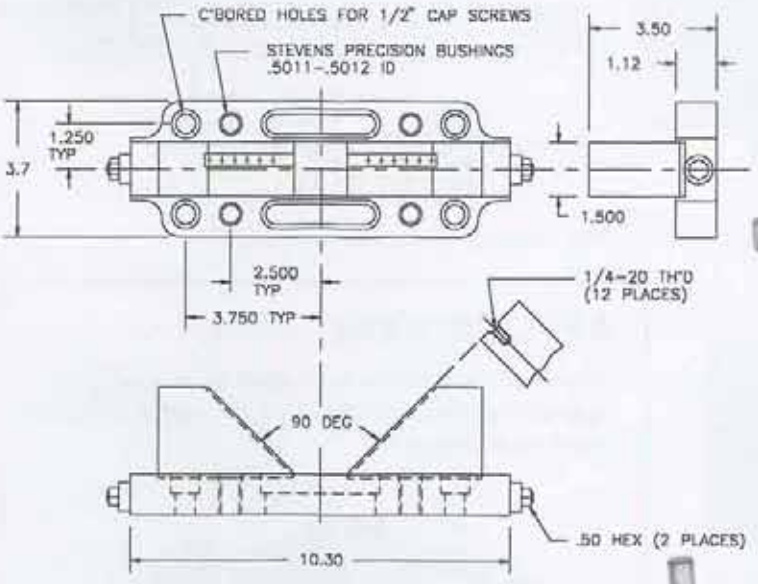
PART NO.	A
HD10151-1	.7500
HD10151-3	1.0000
HD10151-5	1.2500
HD10151-7	1.5000

Additional application of Extenders is shown on pg. 45.

ADJUSTABLE VEE BLOCKS P/N 20129

USED FOR INFINITELY VARIABLE CENTERLINE HEIGHT ADJUSTMENT

- Mounts on any standard Stevens pattern with pull dowels and cap screws.
- Right and left hand lead screws mounted on a common shaft move the two half vees either together or apart as the shaft is rotated.
- Vertical centerline position of the workpiece remains constant, while the horizontal centerline is raised or lowered.
- Diameter capacity: 10.5"
- Material: Contact surfaces are alloy steel, case hardened to 60Rc.

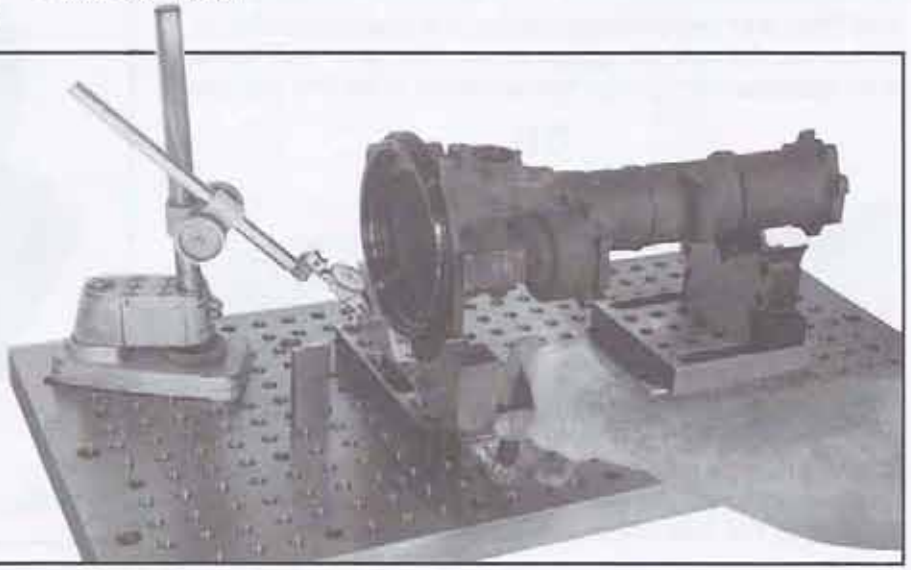


Vee Block Extenders (pg. 44) may be used where access to the O.D. is limited by cast bosses or ribs.

APPLICATION

The Adjustable Vee Block may be used in combination with 20065 Vee Block (pg. 44).

Shown here is a procedure for leveling a workpiece with different outside diameters on each end.

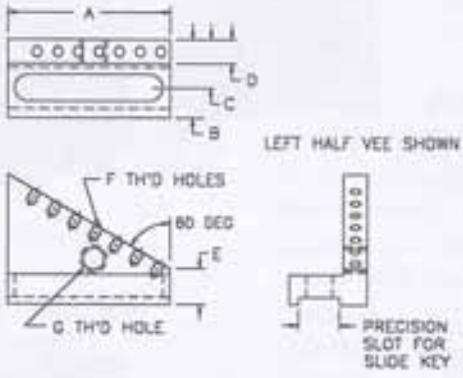


VEE SETS

USED IN PAIRS AS A FULLY ADJUSTABLE VEE LOCATOR, INCLUDES RIGHT AND LEFT HALF VEES TOGETHER WITH A STEVENS SLIDE KEY (PG. 42) WHICH FITS PRECISION SLOT IN UNDERSIDE OF VEE SETS

120 DEG VEE SETS

- Contact surfaces have threaded holes for mounting serrated grippers, if needed.
- Material: Alloy steel, case hardened to 60 Rc.



PART NO.	A	B	C	D	E	F	G
20178	3.4	1.6	1.000	.50	.7500	10-32	1/2-13
HD20178	5.4	2.6	1.600	.80	1.2000	1/4-20	3/4-10

Serrated Grippers

- Hardened tool steel grippers can be mounted on the contact surfaces of the 120 Degree Vee Sets.

PART NO.	H	J
10315	.50	.500
HD10315	.75	.500

SETUP PROCEDURE FOR VEE SETS

Half Vees may be positioned relative to a bushing location by setting the distance with gauge blocks. The other Half Vee is then positioned with gauge blocks relative to the first Half Vee.

OR

Calipers may be used to position Vee Sets relative to a bushing location. Alternatively, calipers may be used to document the location of Vee Sets which were previously positioned.

APPLICATIONS

The workpiece below is located for secondary operations using Stevens Vee Sets on previously machined flanges.

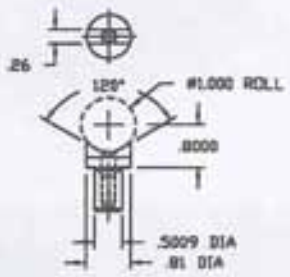
Additional application shown on pg. 66

VEE LOCATORS

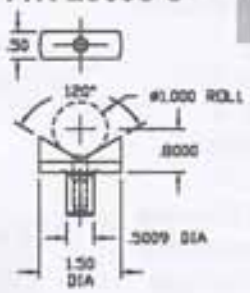
USED FOR LOCATING SMALLER DIA. WORKPIECES

- Height is precisely qualified, vee surfaces are ground central with stem centerline.

P/N 20098-1

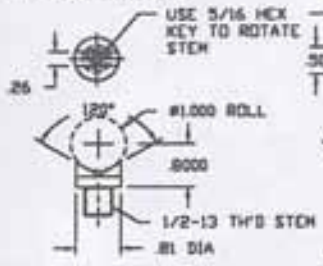


P/N 20098-3

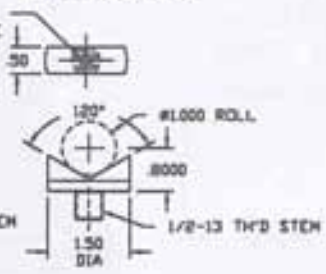


Bushing type locators use an expanding collet feature to lock into Stevens bushings.

P/N 20098-2



P/N 20098-4

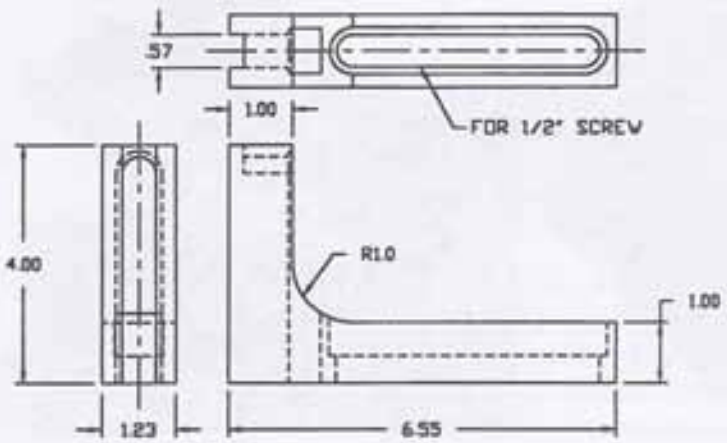


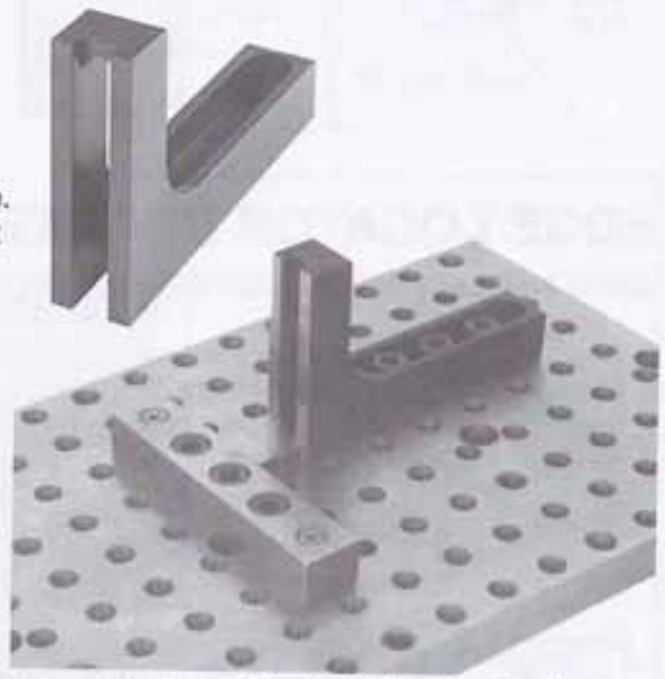
Threaded type have an independently rotatable stem coupled to the Vee Locator to thread into a tapped hole.

EDGE LOCATOR BRACKETS

USED FOR FLEXIBLE POSITIONING OF A WIDE VARIETY OF LOCATORS

- Vertical slot on front face allows positioning of locators such as Rest Pads (pg. 55-60) and Vee Locators above.
- Clamps may also be mounted on Edge Locator Bracket using the Bracket T-Nut.
- Perpendicularity: .0005"
- Material: Alloy steel, case hardened to 60Rc.

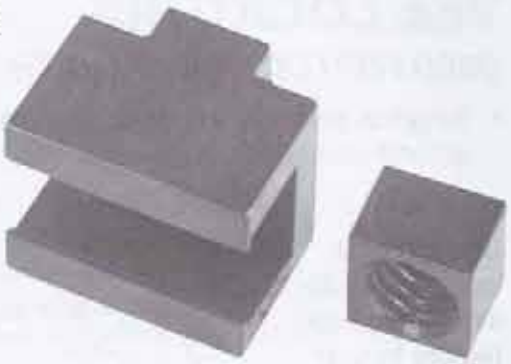




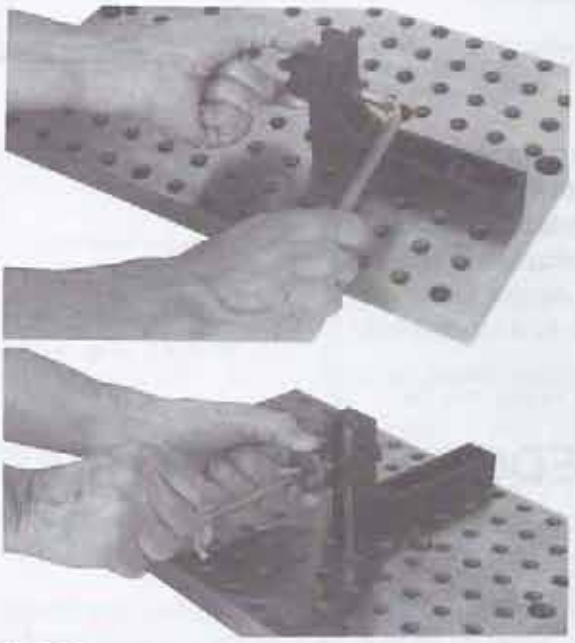
The vertical face of the Edge Locator Bracket may be positioned with great accuracy relative to bushing locations using gage blocks or calipers and the Edge Locator Bar (pg. 49).

EDGE LOCATOR BRACKET SLIDES

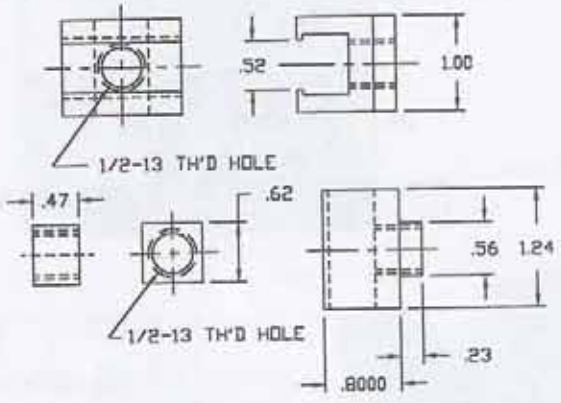
USED FOR LATERAL AND VERTICAL POSITIONING OF LOCATORS ON EDGE LOCATOR BRACKET



- 2-piece assembly consists of a Slide Nut and a Slide Body which fits the vertical slot on the Edge Locator Bracket.
- Vertical position is fixed using a cap screw.
- Horizontal position of the locator is fixed by moving the slide nut laterally until the desired position is reached, then inserting and tightening the locator in the threaded hole in the Slide Nut.
- .8000 dimension is closely qualified, allowing Stevens Rest Pads and other locators to be set at known locations relative to the face of the Edge Locator Bracket.
- Material: Alloy steel, case hardened to 60Rc.



P/N 20123

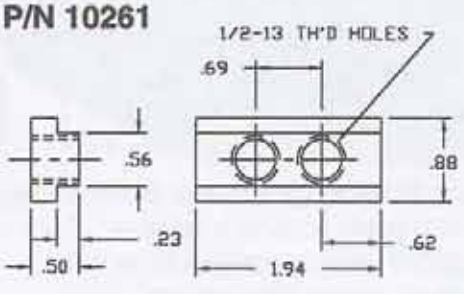


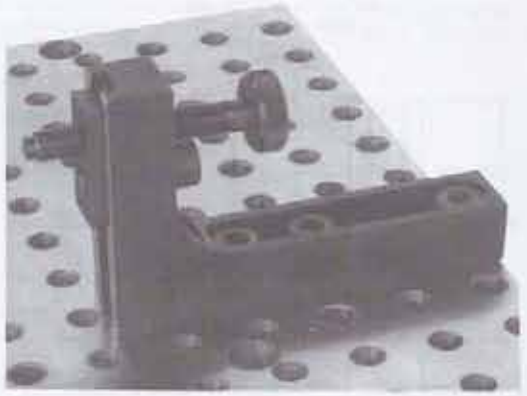
EDGE LOCATOR BRACKET T-NUTS

USED WITH EDGE LOCATOR BRACKET FOR CLAMPING

- One of the two threaded holes is used to fasten the Bracket T-nut at the desired height using a cap screw; the other hole is used to mount a clamp screw (pg. 69).
- Material: Hardened alloy steel

P/N 10261

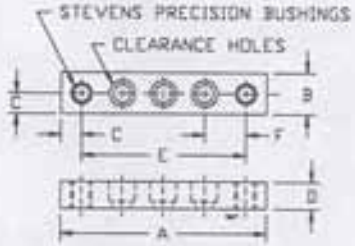




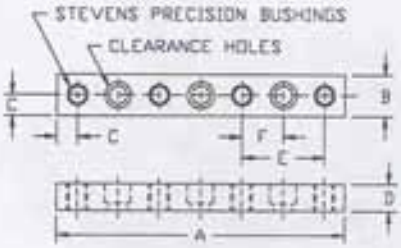
EDGE LOCATOR BARS

USED AS A PRECISE EDGE LOCATOR WHEN GREATER CONTACT LENGTH IS NEEDED

- Side edge and end are qualified with respect to bushing centerline.
- Height is qualified, allowing use of edge locator bars as precision parallels.
- Material: Alloy steel, case hardened to 60Rc.



PART NO.	BUSHINGS	CLEARANCE HOLES	A	B	C	D	E	F
20176-1	.5011	FOR 1/2" SCREWS	6.25	1.25	.6250	.8125	5.0000	1.25
HD20176-1	.7506	FOR 3/4" SCREWS	10.00	2.00	1.0000	1.3000	8.0000	2.00

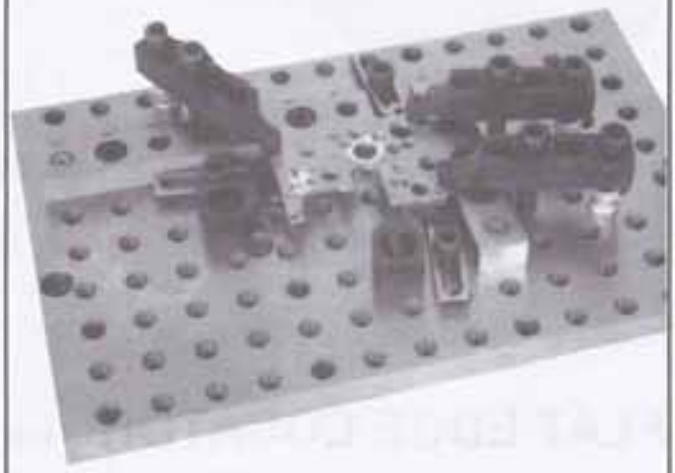


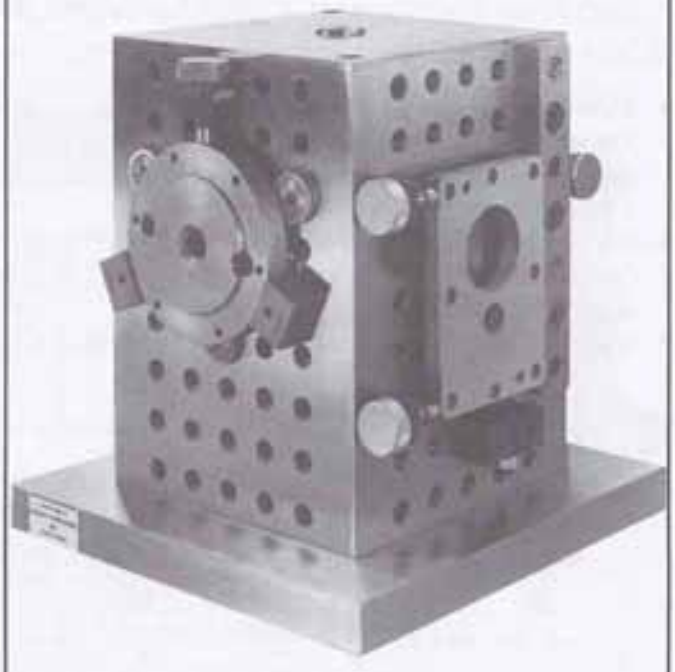
PART NO.	BUSHINGS	CLEARANCE HOLES	A	B	C	D	E	F
20176-2	.5011	FOR 1/2" SCREWS	8.75	1.25	.6250	.8125	2.5000	1.25
HD20176-2	.7506	FOR 3/4" SCREWS	14.00	2.00	1.0000	1.3000	4.0000	2.00

OTHER EDGE LOCATING COMPONENTS:

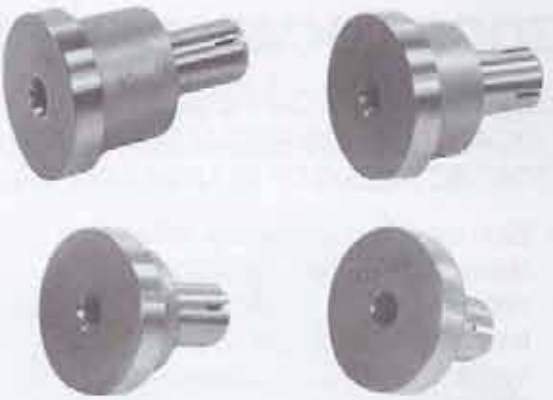
- Utility Blocks (pgs. 38 & 39)
- Angle Plates (pg. 36)

APPLICATIONS



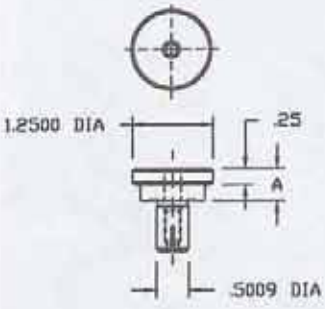


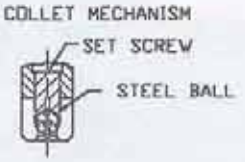
ROUND EDGE LOCATORS



USED FOR ACCURATE AND REPEATABLE LOCATION OF WORKPIECE EDGES

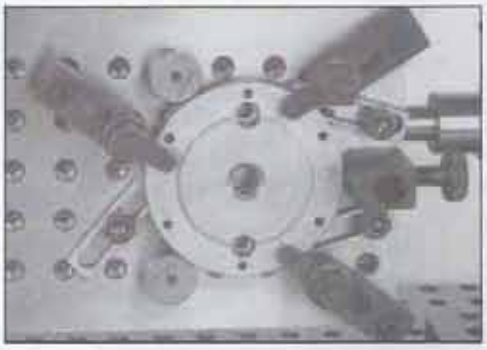
- Fits Stevens bushed holes.
- Unique locking device secures the edge locator firmly in place using an Allen wrench. To remove, loosen with Allen wrench and use extractor (pg. 72).
- Dimension from centerline to point of tangency is the same as the centerline to edge dimension for all other edge locators and Utility Blocks.
- Material: Alloy steel, case hardened to 60Rc.





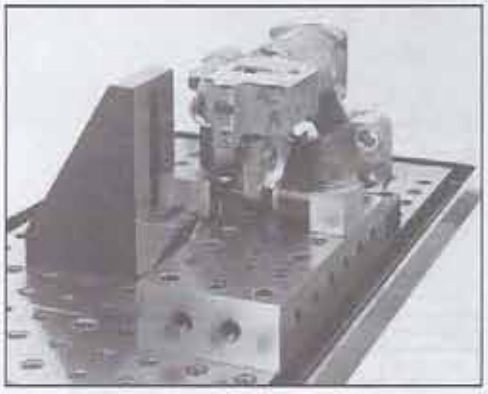
PART NO.	A
20076-1	.25
20076-2	.50
20076-3	.75
20076-4	1.0

Additional applications are shown on pg. 41 & 42.



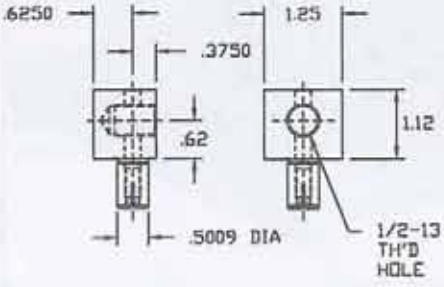
Round Edge Locators may be used in pairs as a vee block.

FLAT EDGE LOCATOR P/N 20077



USED FOR ADDITIONAL FLEXIBILITY IN EDGE LOCATION

- 2 vertical reference surfaces are used for accurate edge location.
- Threaded hole in one face allows use of Rest Pads and Shims (pg. 55-60) to build up rest surfaces to any desired distance from a bushed hole location.
- Uses locking collet mechanism to mount into Stevens bushed holes. Extractor (pg. 72) can be used for removal after loosening collet with Allen wrench.
- Material: Alloy steel, case hardened to 60Rc.

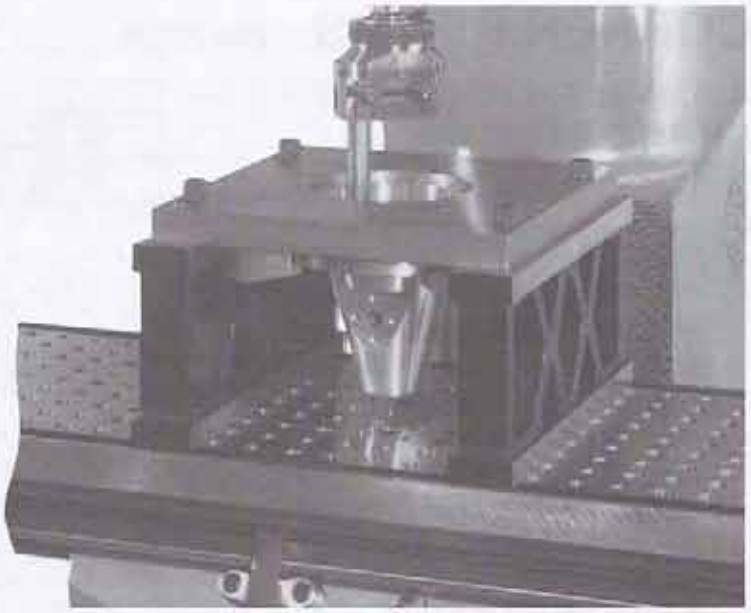


Additional applications are shown on pg. 13, 39, 42 & 49.

PARALLELS

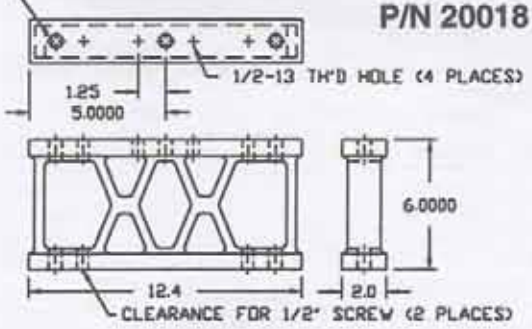
AN ACCURATE AND QUICK WAY TO BUILD AN ELEVATED SETUP

- Screws and dowels to any Stevens pattern.
- Bushings on top surface of parallels will maintain alignment and position with primary grid pattern, eliminating the need to indicate or probe elevated fixturing.
- Hardened and ground to precise height, flatness, and parallelism.
- May be stacked for additional height.
- Material: Hardened ductile iron.



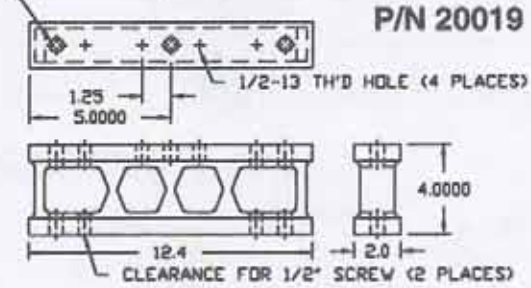
STEVENS PRECISION BUSHING .5011-.5012 ID
(3 PLACES TOP, 2 PLACES BOTTOM)

P/N 20018



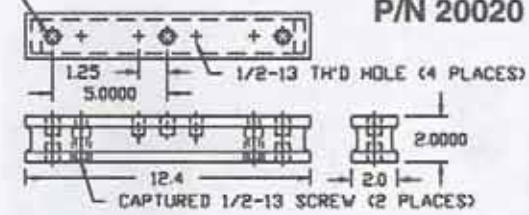
STEVENS PRECISION BUSHING .5011-.5012 ID
(3 PLACES TOP, 2 PLACES BOTTOM)

P/N 20019



STEVENS PRECISION BUSHING .5011-.5012 ID
(3 PLACES TOP, 2 PLACES BOTTOM)

P/N 20020

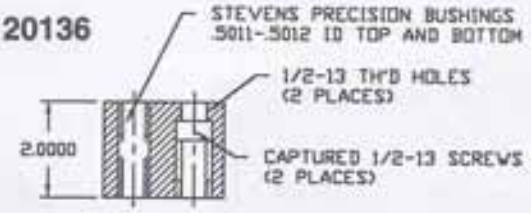


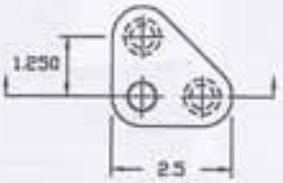
Related Items: Edge Locator Bars (pg. 49) and Utility Blocks (pgs. 38 & 39) can be used as height locators.

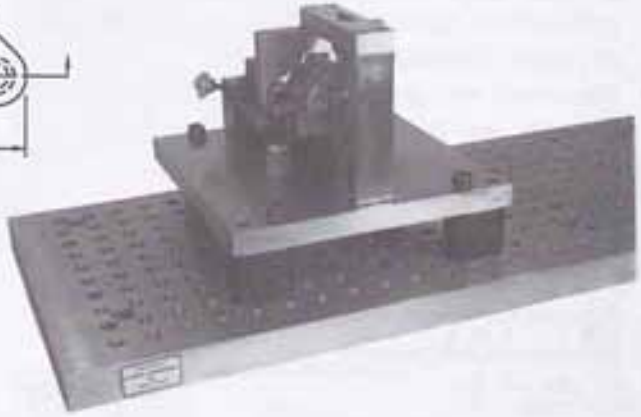
CORNER RISERS P/N 20136

A COMPACT ALTERNATIVE TO PARALLELS TO ELEVATE A MOUNTING SURFACE

- Screws and dowels to any Stevens pattern.
- To locate Corner Riser, insert a dowel pin through the top bushing, past a retaining ring, and into a bushing location in the subplate below.
- Two captured screws secure the Corner Riser, and are tightened by inserting an Allen wrench through the threaded holes on top.
- Qualified height, may be stacked for additional height.
- Material: Hardened ductile iron or alloy steel.



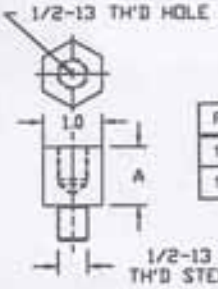




THREADED HOLE RISERS

USED FOR ELEVATING A THREADED HOLE / REST SURFACE

- Height from shoulder to top is qualified; may be used as a rest pad or in combination with other rest pads and shims.
- Male thread on lower end fits threaded holes in Stevens pattern.



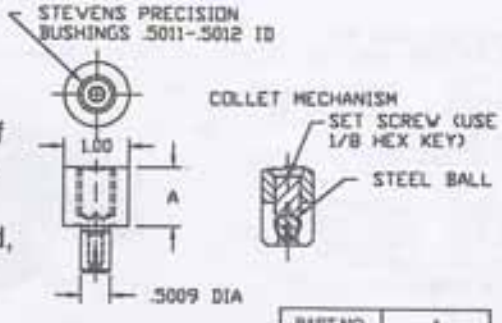
PART NO.	A
10171-1	1.0000
10171-2	1.5000

Applications shown on pg. 43 & 56.

BUSHED HOLE RISERS

USED FOR ELEVATING A BUSHED HOLE / REST SURFACE

- Stem locks into bushings in Stevens pattern; concentricity between the bushing in the top of the riser and the stem is held closely, so there is no significant loss in location accuracy.
- Height from shoulder to top surface is qualified, bushed hole risers may be stacked for additional height.
- Material: Alloy steel, case hardened to 60Rc.



PART NO.	A
20069-1	1.0000
20069-2	1.5000

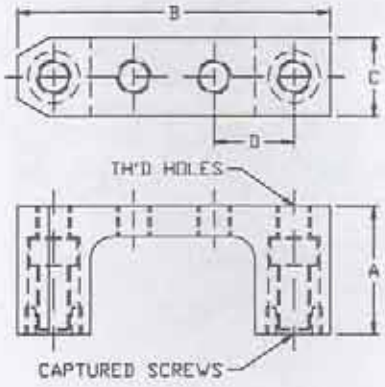
Applications shown on pg. 13, 40, & 47.

RISERS

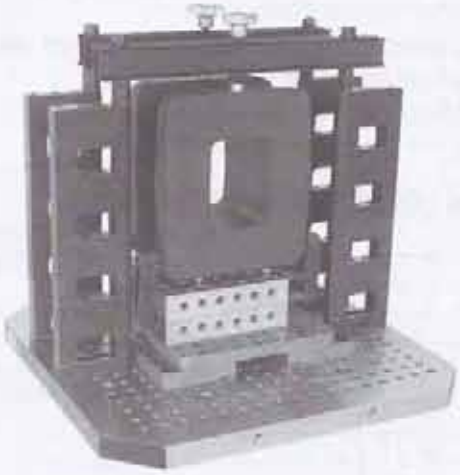
VERSATILE HEIGHT LOCATORS FOR ELEVATING EITHER REST PADS OR CLAMPING ASSEMBLIES

- Screws to any Stevens pattern.
- Two captured screws secure the riser, and are tightened by inserting an Allen wrench through the threaded holes on top.
- Qualified height, may be stacked for additional height.
- Material: Alloy steel, case hardened to 60Rc.

PART NO.	A	B	C	D	THREADS	HEX KEY
20097-1	2.0000	4.9	1.2	1.250	1/2-13	3/8
20097-2	4.0000	4.9	1.2	1.250	1/2-13	3/8
HD20097-1	3.2000	7.8	1.9	2.000	3/4-10	1/2
HD20097-2	6.4000	7.8	1.9	2.000	3/4-10	1/2



APPLICATIONS



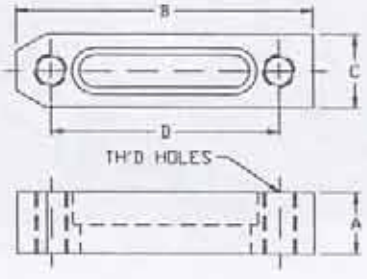
Additional applications shown on pg. 15 & 56.

RISER BASES

USED FOR POSITIONING RISERS OR OTHER ACCESSORIES

- Slot enables positioning anywhere needed.
- Qualified height
- May also be used as Adjustable Rest Pad Base (see pg. 61).
- Material: Alloy steel, case hardened to 60Rc.

Additional applications shown on pg. 54 & 57.

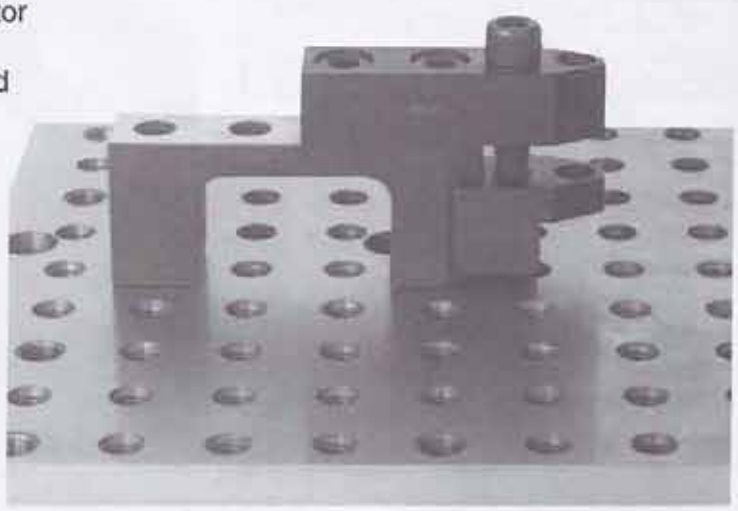


PART NO.	A	B	C	D	THREADS
10191	1.0000	4.9	1.2	3.750	1/2-13
HD10191	1.6000	7.8	1.9	6.000	3/4-10

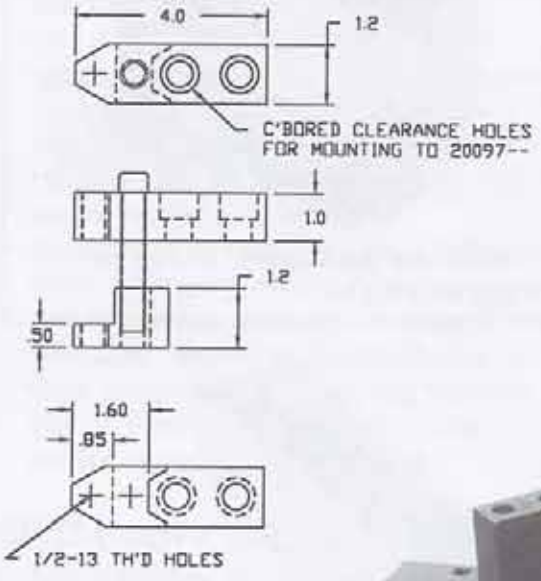
UPTHRUST LOCATORS P/N 20141

USED FOR LOCATING ON THE UPPER SURFACE OF A WORKPIECE WHILE CLAMPING

- Ideal for flanged workpieces.
- Used in combination with Risers and Riser Bases (pg. 53, not included). Clamp Slide rides up and down nose of Riser stack.
- Height of Upthrust Locator is qualified when mounted on Risers and Riser Bases.
- Both the Top Locator (screwed to the top of the Riser) and the Clamp Slide have threaded holes to accept various Rest Pads (pg. 55-60).
- Longer cap screws or studs with flange nuts can be used to increase the distance between Top Locator and Clamp Slide.
- Clamp Slide is threaded thru and may be inverted when required.
- Material: Hardened alloy steel.



P/N 20141 USED WITH 20097



REST PADS – STEVENS OFFERS A FLEXIBLE, REPEATABLE APPROACH

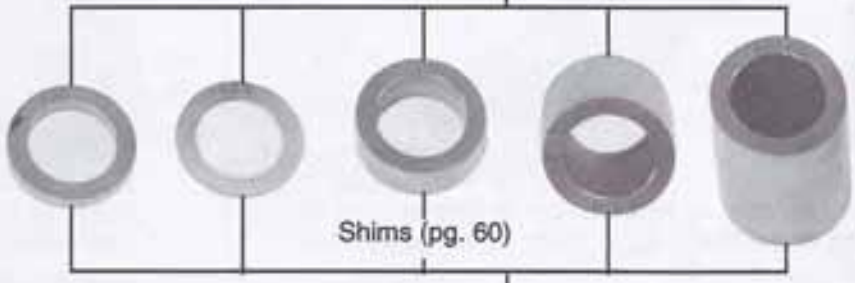
- Rest heights in .001" increments with Stevens Shims
- Repeat setups locate precisely and repeatably
- Wide choice of Rest Pad types to match workpiece requirements
- No tedious leveling of jack screws
- Ideally suited to CAD fixture design

USING REST PADS

1. Select a Rest Pad type to match size and type of workpiece. Some Rest Pad types require Rest Pad Bases (pg. 56).

2. Select an Adjustable Rest Pad Base if adjustable location is required.

3. Determine shim stack to achieve desired workpiece rest height (multiple of .001").

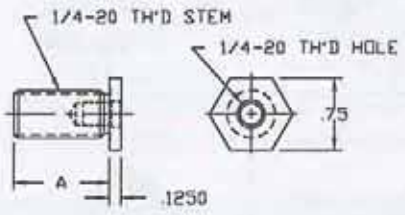


4. Assemble Rest Pad, Base and Shims. Resulting overall height is qualified.

REST PAD BASES

USED TO ESTABLISH HEIGHT LOCATIONS EITHER INDIVIDUALLY OR IN COMBINATION WITH OTHER ACCESSORIES.

- 6 different shank lengths enables accurate setting of any height rest surface when used with Stevens Shims.
- Threaded hole on top receives Stevens Rest Pads and Toggle Rest Pads in various shapes and sizes.
- Height from shoulder to top surface (.1250 dimension) is precisely qualified.
- Material: Alloy steel, case hardened to 60Rc.



PART NO.	A
10222-1	.35
10222-2	.61
10222-3	1.00
10222-4	1.37
10222-5	1.74
10222-6	2.11

Rest pad bases may be used as secondary or tertiary locators by mounting against other qualified edges: Utility Blocks (pgs. 38 & 39) or Angle Plates (pgs. 36 & 37).

Rest Pad Bases are used in combination with Shims (pg. 60) to establish desired qualified heights.

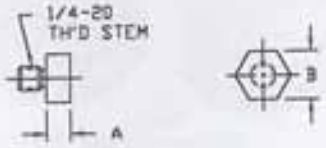
Greater qualified rest heights can be achieved by mounting Rest Pad Bases on Risers (pg. 53) or Threaded Hole Risers (pg. 52).

Threaded hole in top of Rest Pad Bases allow use of smaller or specialized Rest Pads.

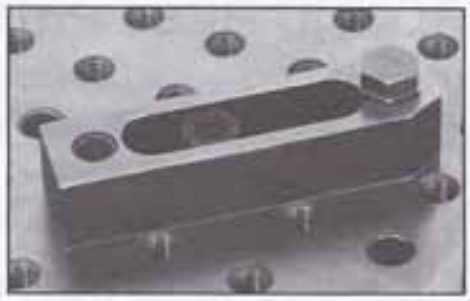
HEX REST PADS

USED IN COMBINATION WITH REST PAD BASES TO ESTABLISH HEIGHT LOCATION

- Height from shoulder to top surface is precisely qualified.
- Material: Alloy steel, case hardened to 60Rc.



PART NO.	A	B
10224-1	.2500	.50
10223-1	.1250	.68
10223-2	.2500	.68

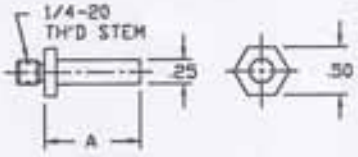


Hex Rest Pad used with Rest Pad Base (pg. 56) and Riser Base (pg. 53) make a movable height locator.

FLAT POINT REST PADS

USED IN COMBINATION WITH REST PAD BASES TO ESTABLISH HEIGHT LOCATION

- Height from shoulder to top surface is precisely qualified.
- Useful where workpiece tooling points are small or have difficult access.
- Material: Alloy steel, case hardened to 60Rc.

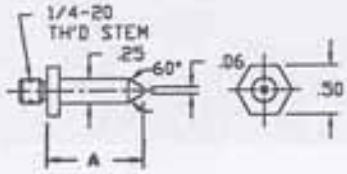


PART NO.	A
10224-2	.5000
10224-3	1.000

CONE POINT REST PADS

USED IN COMBINATION WITH REST PAD BASES TO ESTABLISH HEIGHT LOCATION

- Point has ground flat which contacts a small area on the workpiece.
- Height from shoulder to top surface is precisely qualified.
- Material: Alloy steel, case hardened to 60Rc.



PART NO.	A
10224-4	.5000
10224-5	1.000

ROUND REST PADS

USED TO ESTABLISH HEIGHT LOCATION WHERE LARGE CONTACT SURFACES ARE REQUIRED

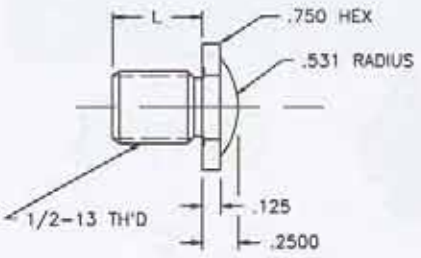
- Various heights available, accurately sized for precise height location.
- Flat head cap screws or socket head cap screws are used to secure Round Rest Pads.
- Any desired height is possible when used with large diameter Shims (pg. 60).
- Material: Alloy steel, case hardened to 60Rc.

PART NO.	A	B	CLEARANCE HOLE FOR
10148-1	.3125	1.25	1/2" FLAT HEAD SCREW
10148-2	.3750	1.25	1/2" FLAT HEAD SCREW
10148-3	.5000	1.25	1/2" FLAT HEAD SCREW
10148-4	.6250	1.25	1/2" SOCKET HEAD SCREW
10148-5	.7500	1.25	1/2" SOCKET HEAD SCREW
10148-6	1.0000	1.25	1/2" SOCKET HEAD SCREW
HD10148-1	.5000	2.00	3/4" FLAT HEAD SCREW
HD10148-2	.5625	2.00	3/4" FLAT HEAD SCREW
HD10148-3	.6875	2.00	3/4" FLAT HEAD SCREW
HD10148-4	.8125	2.00	3/4" FLAT HEAD SCREW

SPHERICAL REST PADS

USED TO LOCATE ON ROUGH, UNEVEN SURFACES AS ON CASTINGS AND FORGINGS.

- Spherical surface ideal for workpieces with rough texture; workpiece will not hang-up on Rest Pad edges when loading.
- Height from shoulder to top surface is qualified.
- 6 different stem lengths are available for setting any height when used with Shims (pg. 60).
- Material: Alloy steel, case hardened to 60Rc.



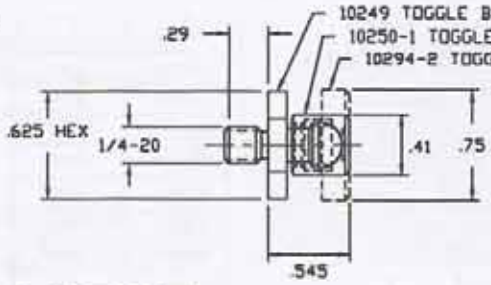
PART NO.	L
10292-1	.35
10292-2	.60
10292-3	1.00
10292-4	1.37
10292-5	1.74
10292-6	2.11

TOGGLE REST PADS – SMALL

USED TO LOCATE ON ANGULAR SURFACES OR IRREGULAR CAST SURFACES

- The combination of a Toggle Pad with a Toggle Base makes an accurate height locator capable of pivoting to accommodate angular surfaces. Height from flange shoulder to top surface is controlled.
- Used with Rest Pads Bases (pg. 56) and Shims (pg. 60) to establish any required height. Pads are precision ground.

Toggle Pads Toggle Base Assembled



GROUND TOGGLE PADS

PART NO.	USED WITH
10250-1	10249
10250-2	10249

TOGGLE BASE

PART NO.
10249

TOGGLE REST PADS – LARGE

USED WITH LARGER WORKPIECES FOR THE SAME PURPOSE AS ABOVE

- Various lengths of Toggle Bases are available and may be used in combination with Shims (pg. 60) to establish any required height. Choose either precision ground or serrated carbide pads.

GROUND TOGGLE PADS

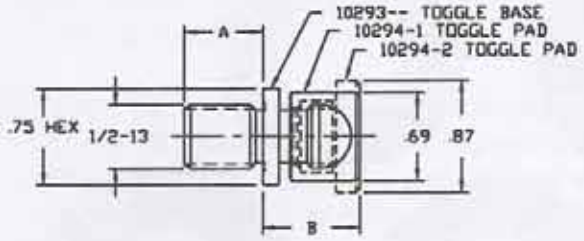
PART NO.	B	USED WITH
10294-1	.750	10293--
10294-2	.750	10293--

SERRATED CARBIDE TOGGLE PADS

PART NO.	B	USED WITH
10294-1S	.875	10293--

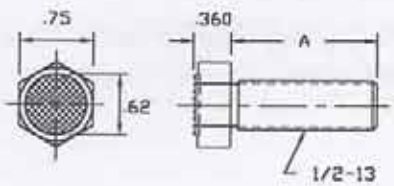
TOGGLE BASES

PART NO.	A
10293-1	.35
10293-2	.60
10293-3	1.0
10293-4	1.3
10293-5	1.7
10293-6	2.1



SERRATED REST PADS

- Serrated contact surface prevents workpiece movement.
- Used with shims (pg. 60) to establish any required height.

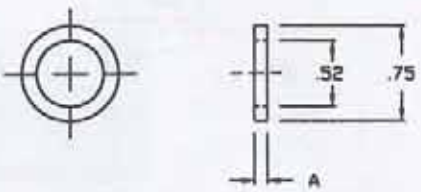


PART NO.	A
20196-1	.5
20196-2	1.0
20196-3	1.5

SHIMS

USED FOR PRECISE HEIGHT POSITIONING IN COMBINATION WITH OTHER COMPONENTS

- Accurately sized thicknesses permit stacking to any desired height in .001" increments.
- Each Shim has its thickness etched on its surface for quick identification.



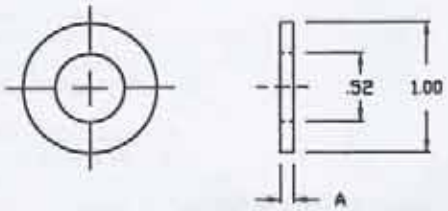
PART NO.	A
10226-1	.0020
10226-2	.0050
10226-3	.0100
10226-4	.0250
10226-5	.0500
10226-6	.1000
10226-7	.2500
10226-8	.5000
10226-9	1.0000
10226-10	2.0000

Applications shown on pg. 56.

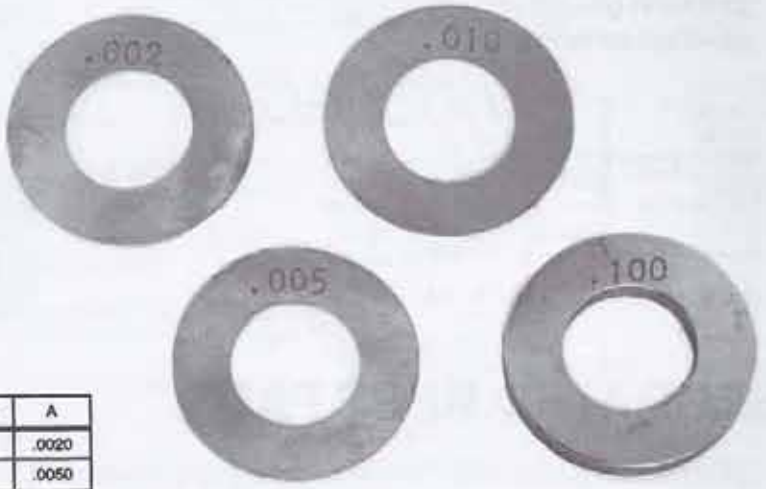
SHIMS -
(LARGE OUTSIDE DIAMETER)

USED FOR PRECISE HEIGHT POSITIONING WITH ROUND REST PADS (PG. 58) AND OTHER COMPONENTS

- Accurately sized thicknesses permit stacking in .001" increments.
- Each Shim has its thickness etched on its surface for quick identification.



PART NO.	A
10150-1	.0020
10150-2	.0050
10150-3	.0100
10150-4	.0250
10150-5	.0500
10150-6	.1000



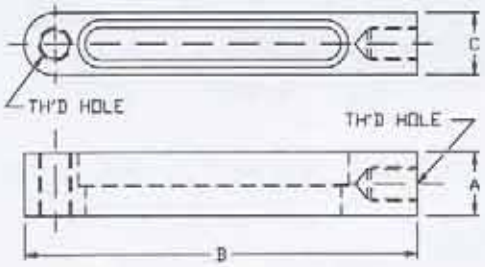
Round Rest Pads (pg. 58) may be used where thicknesses greater than .100" are required.

ADJUSTABLE REST PAD BASES

USED AS QUALIFIED REST SURFACE WHICH MAY BE POSITIONED IN ANY DESIRED LOCATION

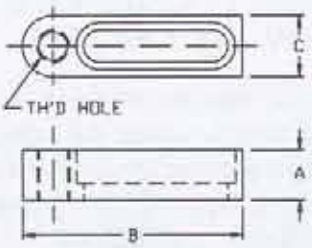
- Provides a way of flexibly positioning other Rest Pads to any desired location.
- Provides a way of positioning a threaded hole where needed.
- Material: Alloy steel, case hardened to 60Rc.

Applications shown on pg. 15 & 44.



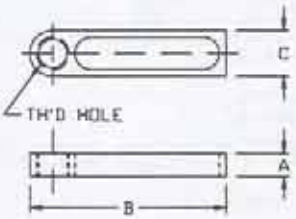
PART NO.	THREADS	SLOT	A	B	C
10152	1/2-13	FOR 1/2" SCREW	1.0000	6.39	1.00
HD10152	3/4-10	FOR 3/4" SCREW	1.6000	10.21	1.60

Applications shown on pg. 55 & 59.



PART NO.	THREAD	SLOT	A	B	C
10153-1	1/2-13	FOR 1/2" SCREW	.8125	3.57	1.00
HD10153-1	3/4-10	FOR 3/4" SCREW	1.3000	5.71	1.60

Applications shown on pg. 49, 50 & 59.

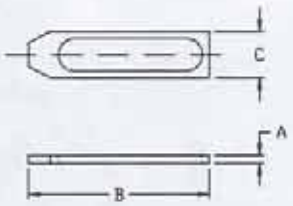


PART NO.	THREAD	SLOT	A	B	C
10153-2	1/2-13	FOR 1/2" SCREW	.3750	3.18	.76
HD10153-2	3/4-10	FOR 3/4" SCREW	.8000	5.08	1.21

ADJUSTABLE REST PADS

USED AS A LOW PROFILE HEIGHT LOCATOR

- May be positioned and oriented as required to provide a hardened, qualified rest surface.
- Material: Alloy steel, case hardened to 60Rc.



PART NO.	SLOT	A	B	C
10248	FOR 1/2" SCREW	.1250	2.93	.75
HD10248	FOR 3/4" SCREW	.2000	4.69	1.20

Related Items:
Riser Bases (pg. 53) may also be used to position Rest Pads.

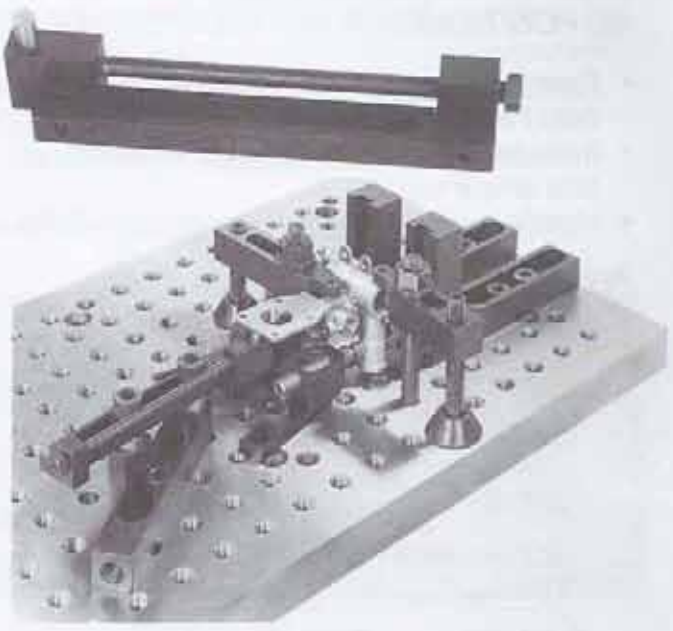
APPLICATION

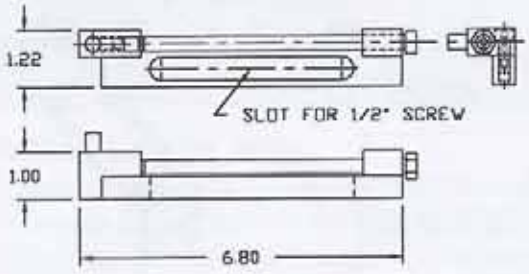
LOCKING WORK SUPPORT

P/N 20104

USED TO SUPPORT WORKPIECES IN PLACES WHERE CUTTING FORCES COULD CAUSE DEFLECTION, VIBRATION, AND CHATTER

- Will support up to 1,500 lbs; plunger stroke is .44".
- The plunger is positioned directly under the point needing support. Light spring pressure brings the plunger in contact with the workpiece. The plunger is clamped using a wrench on the clamp rod.
- Unique locking mechanism improves load-bearing capacity.
- The work support may be elevated using other components. When elevated, the end containing the plunger should be fully supported.
- Material: Hardened alloy steel.





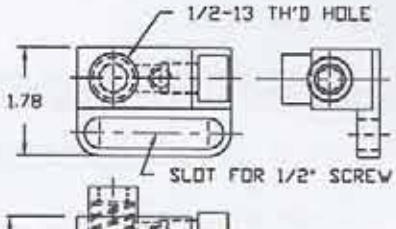
LOCKING WORK SUPPORT

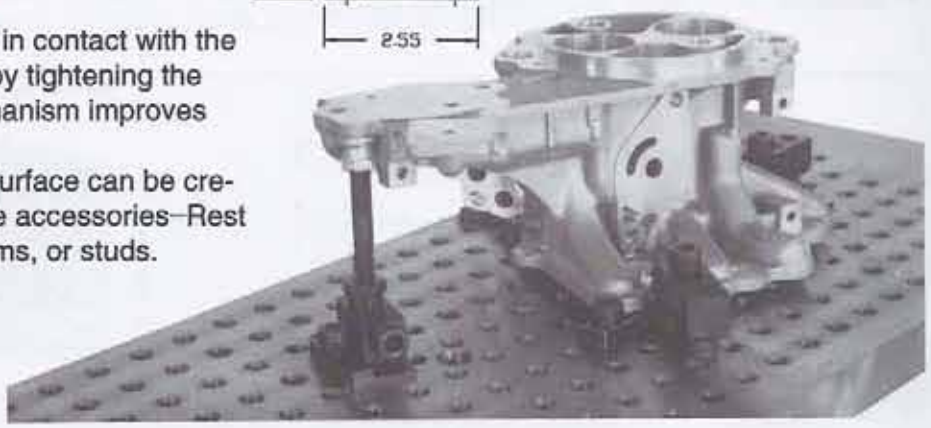
(WITH TH'D HOLE IN PLUNGER)

P/N 20161

USED IN COMBINATION WITH REST PADS AND OTHER COMPONENTS TO RESIST DEFLECTION OF WORKPIECES UNDER CUTTING PRESSURE

- Will support up to 1,500 lbs; plunger stroke is .44".
- The plunger is positioned directly under the point where support is needed.
- Spring pressure brings the plunger in contact with the workpiece. The plunger is locked by tightening the clamp screw. Unique locking mechanism improves load-bearing capacity.
- Virtually any height or size of rest surface can be created by using the range of available accessories–Rest Pad Bases, Toggle Rest Pads, Shims, or studs.
- Material: Hardened alloy steel.

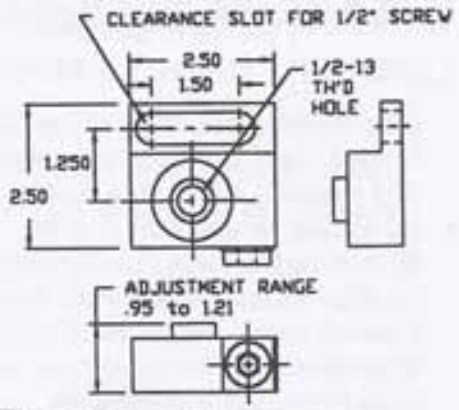




MICRO JACK P/N 20191

COMPACT, LOW-PROFILE JACK USED FOR LEVELING HEAVY WORKPIECES

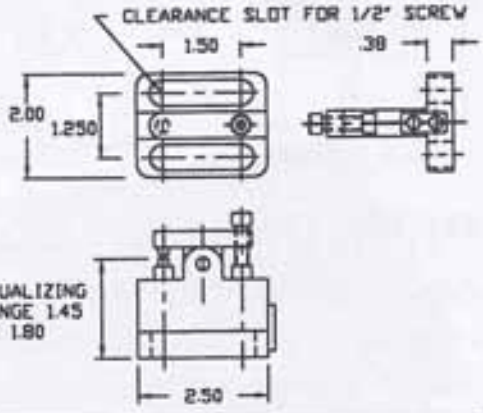
- The worm and worm gear lifting mechanism allows extremely fine height adjustment. Loads up to 5,000 pounds are easily lifted.
- Total stroke of the plunger is .250 inches. A threaded hole in the top of the plunger allows addition of any combination of Stevens rest pads, toggle pads, and risers. See pages 53-59, 61 & 62.
- Often used in combination with three rest pads to provide a solid four-point support for a casting that would wobble on 4 fixed height rest pads. It can be adjusted for each casting as it is set up for machining.



EQUALIZER CLAMP P/N 20188

GRIPS PARTS FIRMLY WITHOUT DEFLECTION

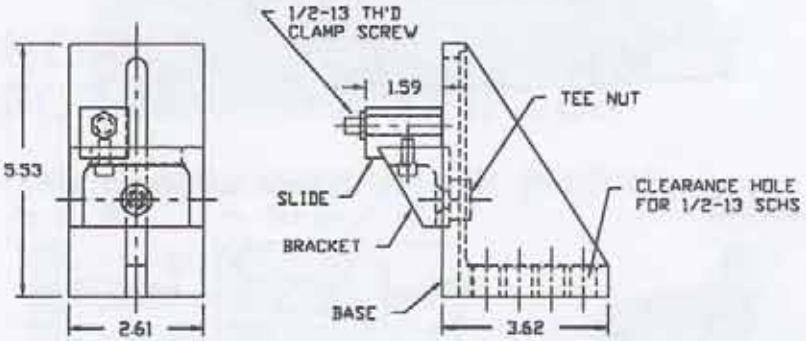
- This totally non-influencing clamp automatically equalizes the pressure on each side of the workpiece as the clamping force is increased.
- Thin, easily deflected workpieces can be held firmly so they remain in their original location during machining.
- Equalizer Clamps can hold parts in positions away from the locating points. This can eliminate the need to clamp directly over rest pads.
- The Equalizer Clamp works best on Stevens grid pattern primary tooling where tapped holes are available to hold the clamp anywhere it is needed. It can also be fastened to table "T" slots or utilize tapped holes in a tooling plate or dedicated fixture.
- Higher profile rocker arms are available for clamping larger cross-section workpieces. Workpieces up to 2" thickness can be held in this way.



3 AXIS SIDE CLAMPS P/N 20070

USED FOR LATERAL CLAMPING

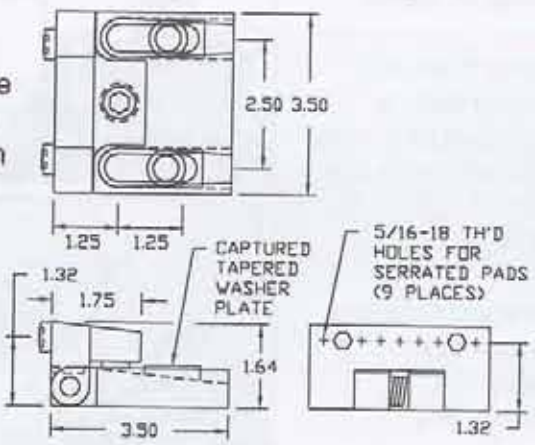
- Side-to-side positioning of the Clamp Screw is done by moving the Slide Block sideways on the Slide Bracket and securing it when the desired location is reached.
- Up-and-down positioning of the Clamp Screw is done by moving the Slide Bracket vertically until the desired position is reached and then securing it in place.
- Fore-aft positioning of the 3 Axis Side Clamp in small increments is possible with the closely-spaced clearance hole pattern in the base. The length of movement in the Clamp Screw overlaps these increments, allowing unlimited range of clamping action.
- Material: Hardened alloy steel and ductile iron.

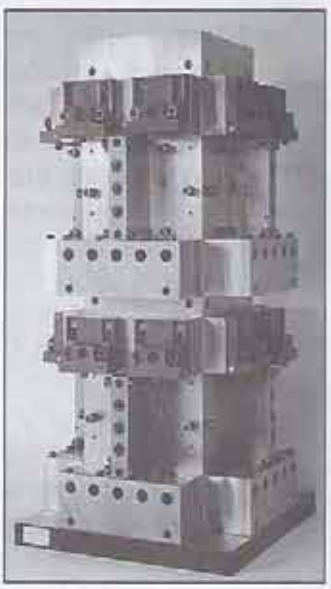


PIVOTING SIDE CLAMP P/N 20193

USED FOR LATERAL CLAMPING

- The action of this clamp directs a powerful clamping force forward and slightly downward.
- The workpiece is held securely and prevented from lifting away from its locators. Either serrated grippers (P/N 10452), or smooth toggle pads (P/N 10453) can be placed in any of the tapped holes in the nose of the clamp.
- The 6 degree ramp angle on hold down slots prevents the clamp from backing away from the work. Cap screws shoulder squarely on special washer plates which are captured in the slots.
- The clamp is positioned close to the workpiece using cap screws into tapped holes. The clamp is quickly activated and released using an allen wrench.

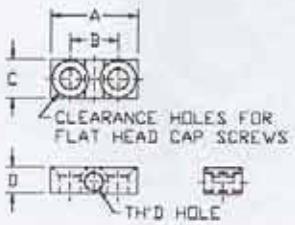




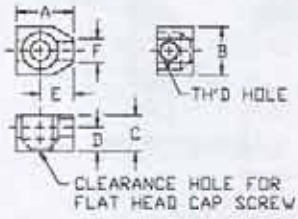
SIDE CLAMPS

USED IN COMBINATION WITH CLAMP SCREWS (PG. 67)

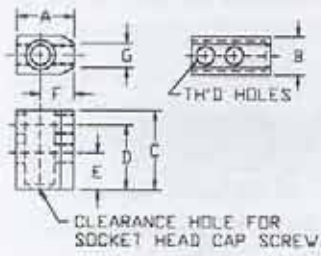
- Tooling Washers (pg. 71), Round Rest Pads (pg. 58), or Shims (pg. 60) may be used to increase height of Side Clamps.
- Material: Hardened alloy steel



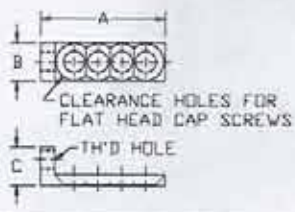
PART NO.	TH'D HOLE	CLEARANCE HOLE	A	B	C	D
10157	1/2-13	FOR 1/2" FHCS	2.25	1.25	1.0	.69
HD10157	3/4-10	FOR 3/4" FHCS	3.60	2.00	1.6	1.10

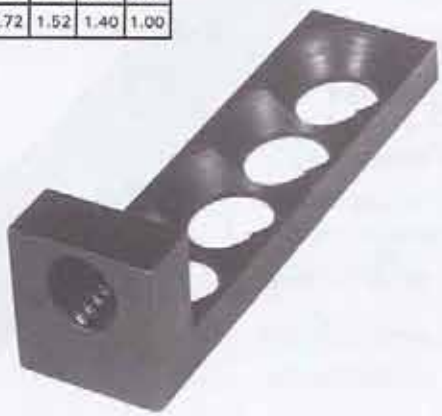


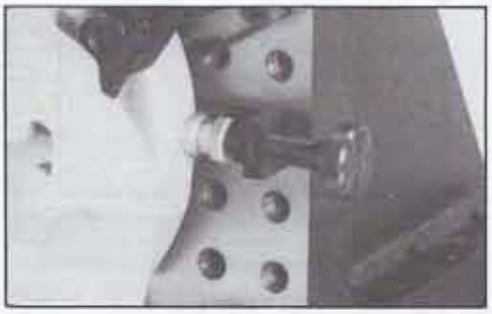
PART NO.	TH'D HOLE	CLEARANCE HOLE	A	B	C	D	E	F
10158	1/2-13	FOR 1/2" FHCS	1.5	1.25	.94	.63	.86	.62
HD10158	3/4-10	FOR 3/4" FHCS	2.4	2.00	1.50	1.00	1.40	1.00



PART NO.	TH'D HOLE	CLEARANCE HOLE	A	B	C	D	E	F	G
10159	1/2-13	FOR 1/2" SHCS	1.5	1.0	2.05	1.70	.95	.88	.62
HD10159	3/4-10	FOR 3/4" SHCS	2.4	1.6	3.28	2.72	1.52	1.40	1.00



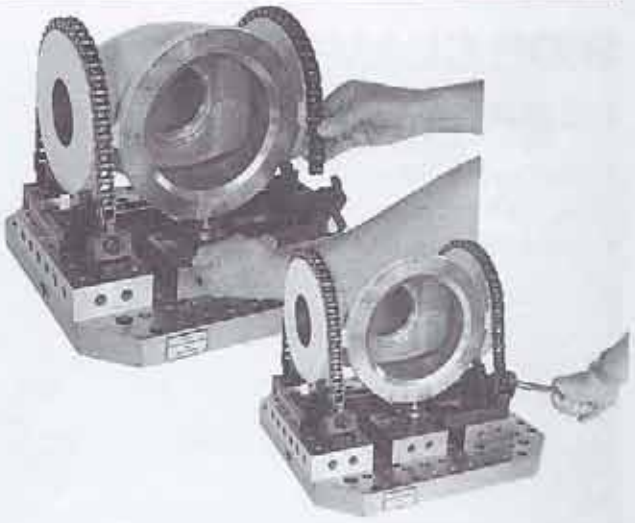




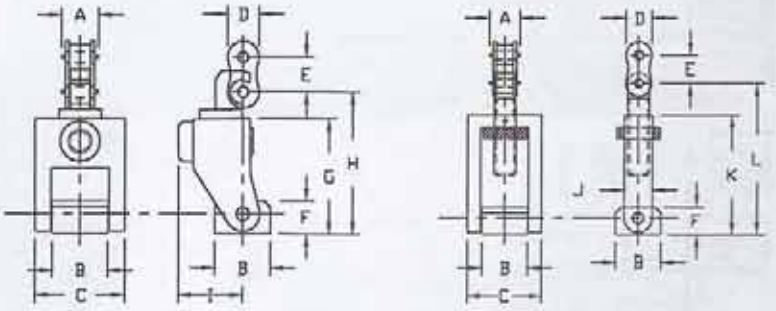
PART NO.	TH'D HOLE	CLEARANCE HOLE	A	B	C
10184	1/2-13	FOR 1/2" FHCS	3.26	1.0	1.0
HD10184	3/4-10	FOR 3/4" FHCS	5.22	1.6	1.6

CHAIN CLAMPS*

- Each standard duty kit (clamping force up to 6,000 lbs.) P/N 20149 includes a cam-locking hook assembly P/N 20150, a take-up unit P/N 20151 for adjusting chain tension, and a chain set P/N 20152. HD prefix for same part numbers denotes the Heavy Duty version with a clamping force up to 10,000 lbs.
- A half turn with a standard allen wrench (shown at right) operates the cam-locking hook assembly.
- Any length of chain can be quickly assembled for various workpiece diameters.
- 1/2" socket head cap screws (3/4" for HD) are used for mounting each end of the Chain Clamp to a Subplate or T-slotted table.
- Material: Hardened alloy steel



** Patent #5,775,660*



PART NO.	CHAIN	LENGTH	A	B	C	D	E	F	G	H	I	J	K	L
20149	#50	40"	.810	1.05	1.68	.58	.62	.62	2.15	2.50-2.70	1.18	.76	2.73	3.05-4.30
HD20149	#80	64"	1.28	1.75	2.50	.95	1.00	1.00	3.25	3.70-3.95	2.35	1.13	4.02	4.50-5.50

CHAIN CLAMP SHOES

- Plastic shoes snap into chain to protect finished surfaces.
- Five pieces per package.

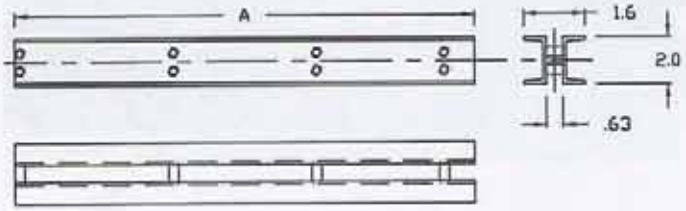
PART NO.	WORKS WITH P/N
10421	20149
HD10421	HD20149

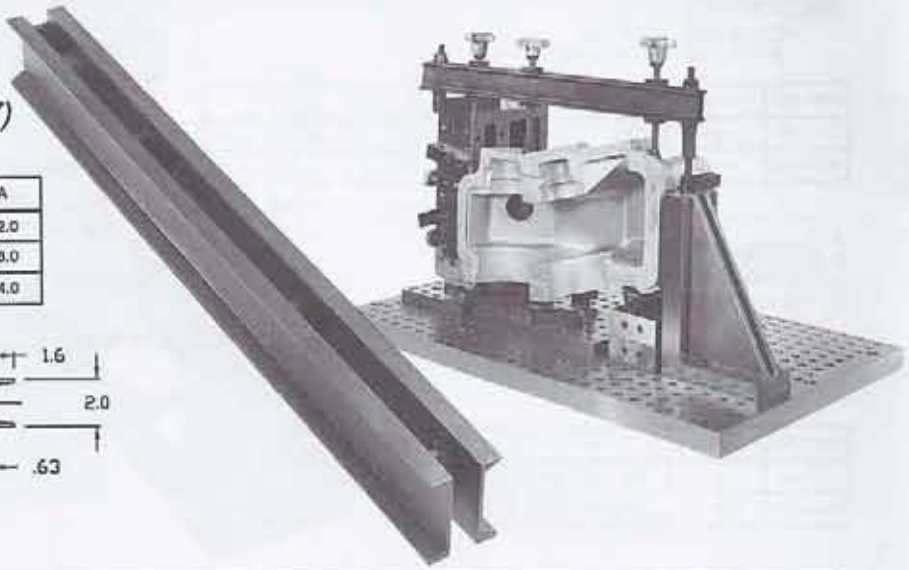
BEAM CLAMPS

USED WITH CLAMP SCREWS (pg. 67)

- T-nuts fit into Beam Clamp allowing clamp screws to be easily positioned (T-nut included).
- Material: 1020 steel

PART NO.	A
10160-1	12.0
10160-2	18.0
10160-3	24.0



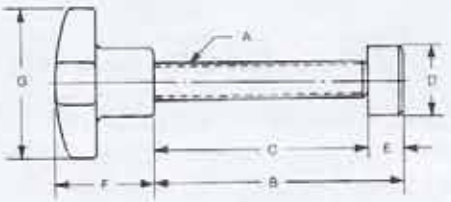


HAND KNOB CLAMP SCREWS

USED WITH BEAM CLAMPS (pg. 66) OR SIDE CLAMPS (pg. 65)

- For solid clamping of irregular surfaces while the swivel shoe prevents marring of polished surfaces.
- To remove pad for installation, pull and turn counter-clockwise.
- Material:
  Stem – Stressproof
  Pad – Hardened alloy steel
  Head – Cast iron

PART NO.	A	B	C	D	E	F	G
36304	1/2-13	2 1/8	1 21/32	13/16	15/32	1 1/2	2 1/2
36305	1/2-13	2 3/4	2 9/32	13/16	15/32	1 1/2	2 1/2
36306	1/2-13	3 3/8	2 29/32	13/16	15/32	1 1/2	2 1/2
36310	3/4-10	4 7/8	4 11/32	1 1/8	19/32	2	3



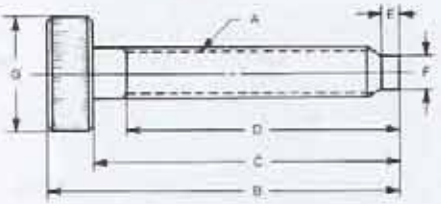
THUMB CLAMP SCREWS

USED WITH SIDE CLAMPS (pg. 65)

- The half-dog point protects the threads in case of opening.
- Material: Stressproof

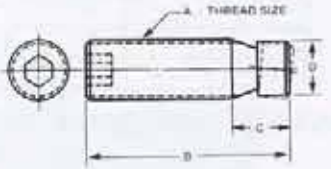
PART NO.	A	B	C	D	E	F	G
43913	1/2-13	2 15/16	2 1/2	2 1/8	1/8	11/32	1 1/4
43914*	1/2-13	3 7/16	3	2 5/8	1/8	11/32	1 1/4
43915*	1/2-13	3 15/16	3 1/2	3 1/8	1/8	11/32	1 1/4

*CONFORMS TO TCMA



SOCKET CLAMP SCREWS

USED WITH SIDE CLAMPS (pg. 65)



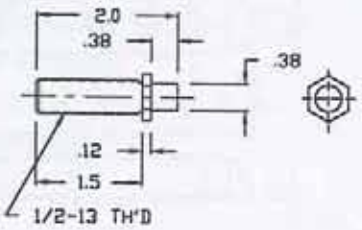
- Screws may be inserted without removing pads.
- Material: Hardened alloy steel

PART NO.	A	B	C	D	HEX KEY
33307	1/2-13	1	7/16	.400	1/4
33308	1/2-13	2	7/16	.400	1/4

CONFORMS TO TCMA

HEX CLAMP SCREWS P/N 10182

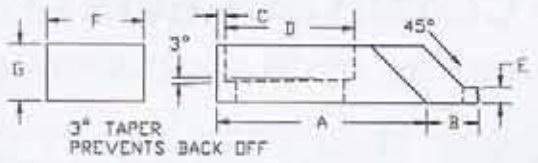
USED WITH SIDE CLAMPS (pg. 65)

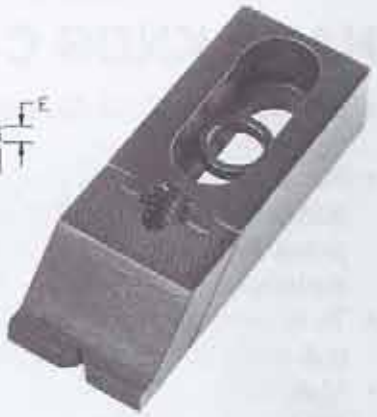


- Material: Hardened alloy steel

TOE CLAMPS

- Powerful, low profile clamps that grip on the side of the work leaving the top surface open.
- A special washer, to prevent damage by the cap screw is included with each clamp.

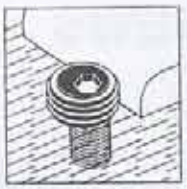




PART NO.	A	B	C	D	E	F	G
46926	3 1/4	13/16	1/8	2	1/4	1 1/2	7/8
46927	4 11/16	13/16	1/2	2 3/4	1/4	1 1/2	7/8
46928	6 5/8	13/16	1	3 3/4	1/4	1 1/2	7/8

MITEE-BITE CLAMPS

Mitee-Bite Clamps are made up of two simple components: 1) a hardened steel socket cap screw with an offset head and 2) a clamp washer. Select hexagonal brass washer or hardened knife edge washer.

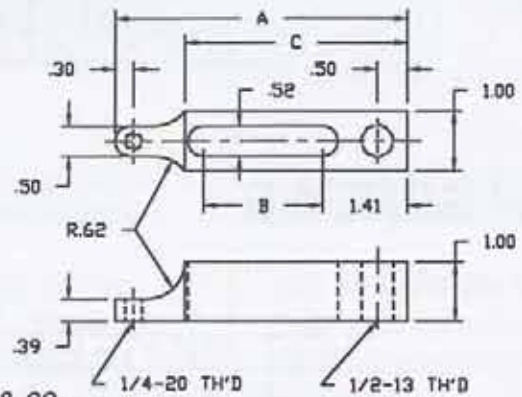


DESCRIPTION	PART NO.	THREAD	THREAD LENGTH	TOTAL MOVEMENT	HEX KEY
CAM-ACTION SCREW	10372	1/2-13	5/8	.100	1/4
BRASS WASHERS	10588				
KNIFE EDGE WASHERS	12588				

Mitee-Bite Clamps are shown with Adjustable Rest Pad Bases (pg. 61) and Round Edge Locators (pg. 50).

NARROW NOSE CLAMPS

- Designed for clamping on surfaces where access is limited.
- Threaded hole in nose accepts Toggle Pads (pg. 59).
- Used with Adjustable Clamp Heels (pg. 70).
- Material: Hardened alloy steel

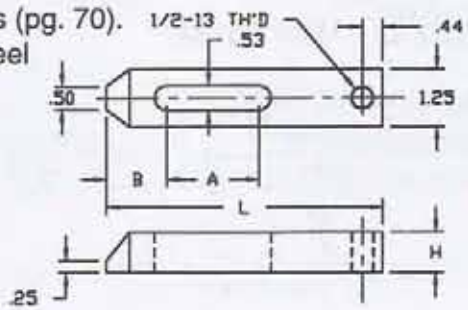


PART NO.	A	B	C
10251-1	3.80	.98	2.65
10251-2	4.82	1.08	3.65

Applications shown on pg. 13, 37, 50 & 62.

TAPER NOSE CLAMPS

- Used with Adjustable Clamp Heels (pg. 70).
- Material: Case hardened 1018 steel

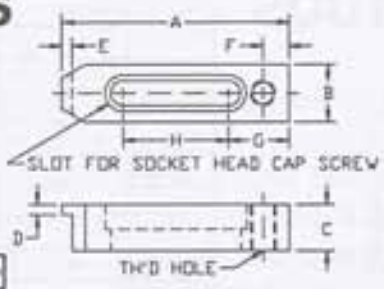


PART NO.	A	B	H	L
47124	.50	1.06	.63	3.50
47125	1.25	1.19	.75	4.50
47126	2.00	1.81	.88	6.00

Applications shown on pg. 15 & 40.

LOW PROFILE CLAMPS

- Ideal for clamping plate stock.
- Low profile improves clearance for spindle fixturing while machining.
- Material: Hardened alloy steel



PART NO.	A	B	C	D	E	F	G	H	SLOT	THREAD
10354	4.9	1.2	1.0	.20	.21	.46	1.32	2.25	FOR 1/2" SHCS	1/2-13
HD10354	7.8	1.9	1.6	.32	.33	.74	1.90	4.00	FOR 3/4" SHCS	3/4-10

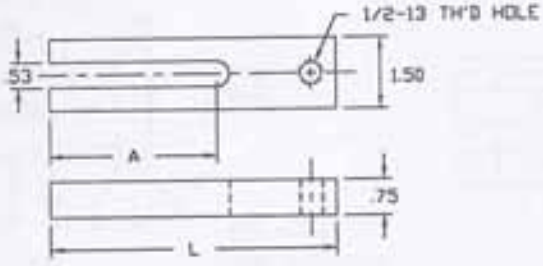
PIVOTING CLAMPS

- Automatically compensates for clamping height changes within specified range.
- One-piece unit, no parts to get lost.
- Brass heel plate protects primary table tooling.
- Material: Hardened forged steel

PART NO.	BOLT SIZE	CLAMP RANGE	W	T	L	X
19101	1/2	0 - 2	1 3/4	1 1/2	4 1/4	2 1/2
19103	3/4	0 - 2 3/4	2 1/2	1 3/4	6 1/4	3 3/4

FORKED CLAMPS

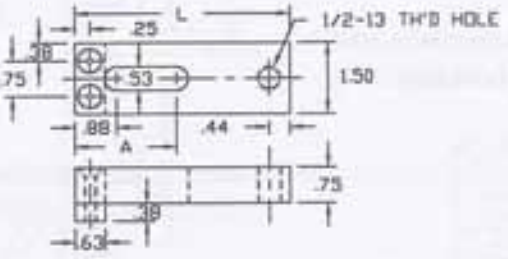
- Used with Adjustable Clamp Heels (pg. 70)
- Material: Case hardened 1018 steel



PART NO.	A	L
47021	2.50	4
47022	3.50	6

PADDED NOSE CLAMPS

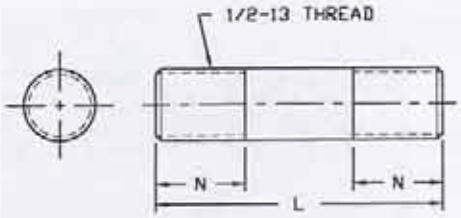
- Used with Adjustable Clamp Heels (pg. 70)
- Material: Case hardened 1018 steel



PART NO.	A	L
36917	1.25	4.50
36918	2.00	6.00

ALLOY STEEL STUDS

- Material: Stressproof



PART NO.	THREAD	L	N
*38321	1/2-13	2	5/8
*38322	1/2-13	2 1/2	7/8
*38323	1/2-13	3	1 1/8
*38324	1/2-13	3 1/2	1 3/8
*38325	1/2-13	4	1 1/2
*38326	1/2-13	4 1/2	1 1/2
*38327	1/2-13	5	1 1/2
*38328	1/2-13	5 1/2	1 1/2
*38329	1/2-13	6	1 1/2
38331	1/2-13	7	1 1/2
38333	1/2-13	8	1 1/2
38334	1/2-13	9	1 1/2
38335	1/2-13	10	1 1/2
38336	1/2-13	12	1 1/2

*CONFORMS TO TCMA

CLAMP SUPPORTS

- Includes washer, spring, and shaft collar.

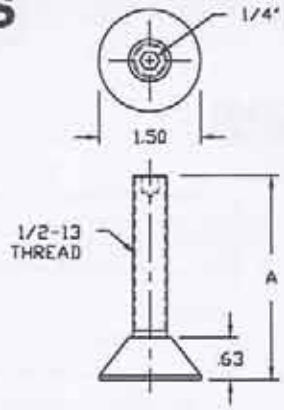
PART NO.	USE WITH	HEX KEY
20148	1/2" STUD	1/8
HD20148	3/4" STUD	5/32

ADJUSTABLE CLAMP HEELS

USED WITH STRAP TYPE CLAMPS (pg. 68, 69)

- Material: Stud – Stressproof
  Pad – Ledloy

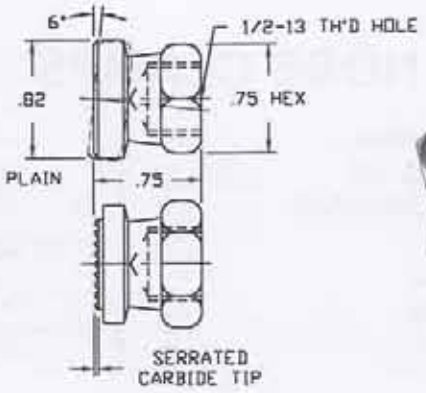
PART NO.	A
47201	3
47202	4
47203	5



TOGGLE PADS

- Plain and serrated carbide tipped toggle pads provide multiple point contact to compensate for surface roughness and out-of-roundness.
- Points will imbed themselves in the workpiece which assures positive gripping, eliminates possible radial load on workpiece.
- Material: Hardened alloy steel or carbide.

PART NO. PLAIN	PART NO. SERRATED
43505	43705



FLANGE NUTS

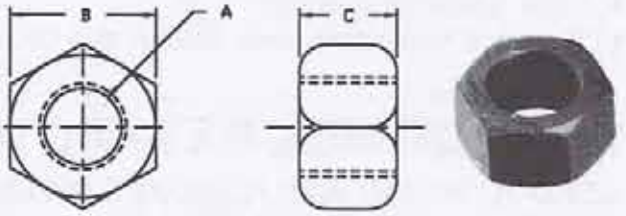
- Material:
  Case hardened
  Ledloy

PART NO.	A	B	C	D	E
19906	1/2-13	11/16	7/8	1 1/8	5/32
19908	3/4-10	1	1 1/4	1 5/8	1/4

CONFORMS TO TCMA

GRADE 8 HEX NUTS

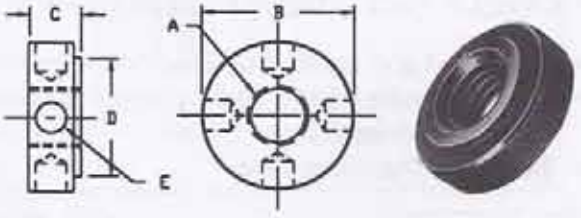
PART NO.	A	B	C
20714	1/2-13	3/4	7/16
20717	3/4-10	1 1/8	41/64



KNURLED LOCK NUTS

- Material:
  Case hardened
  Ledloy

PART NO.	A	B	C	D	E
28102	1/2-13	1 1/4	7/16	1	"F"
28104	3/4-10	1 3/4	9/16	1 1/2	"O"

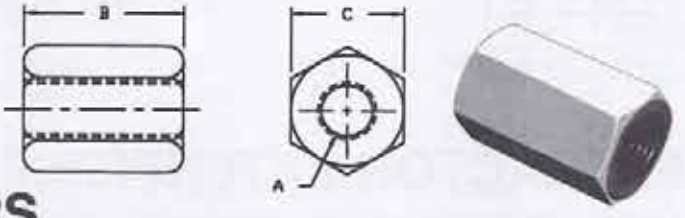


COUPLING NUTS

- Material:
  Case hardened
  Ledloy

PART NO.	A	B	C
18712	1/2-13	1 1/4	7/8
18714	3/4-10	1 7/8	1 1/4

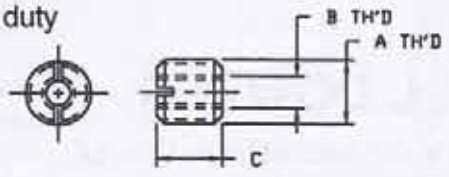
CONFORMS TO TCMA



THREADED HOLE ADAPTERS

- Screwdriver slot for insertion and removal.
- The 10169 adapter allows use of components with 1/4-20 male threads in standard 1/2-13 holes.
- The HD10169 adapter allows use of standard duty setup components with 1/2-13 threads on the heavy duty system which has 3/4-10 threads.
- Material: Ledloy

PART NO.	A	B	C
10169	1/2-13	1/4-20	.51
HD10169	3/4-10	1/2-13	.76

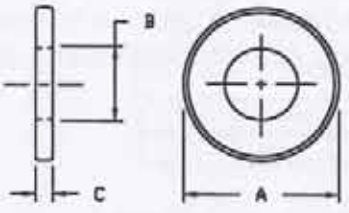


TOOLING WASHERS

- Material:
  Case hardened
  1010 steel
- Parallelism: .005

PART NO.	A	B	C	BOLT SIZE
31905	1 1/8	17/32	1/8	1/2
31907	1 5/8	25/32	5/32	3/4

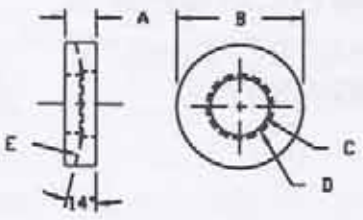
CONFORMS TO TCMA



SELF ALIGNING WASHERS (TWO PIECE)

- Material:
  Case hardened
  1018 steel

PART NO.	A	B	C	D	E	BOLT SIZE
41105	9/32	1 1/8	17/32	19/32	2	1/2
41107	13/32	1 5/8	25/32	27/32	2 1/2	3/4



PRECISION PULL DOWELS

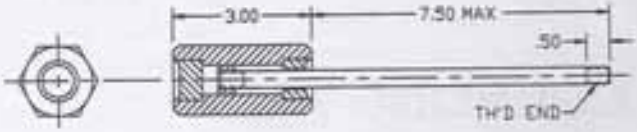
USED TO LOCATE ACCESSORIES ON STEVENS PRIMARY TABLE TOOLING

PART NO.	DIAMETER	TH'D HOLE	LENGTH
10062	.5006-.5007	1/4-20	1.66
HD10062	.7501-.7502	3/8-16	2.57

- Ground to diameter tolerance of +/- .000050"
- Case hardened to 60Rc.
- Threaded hole in both ends accepts Pull Dowel Extractor.

PULL DOWEL EXTRACTORS

USED TO INSERT AND REMOVE STEVENS PULL DOWELS AND OTHER COMPONENTS



- Threaded end enters threaded holes on Pull Dowel.
- Sliding handle allows tapping action for easy Pull Dowel removal or insertion.
- Material: Stainless steel

PART NO.	TH'D END
20027	1/4-20
HD20027	3/8-16

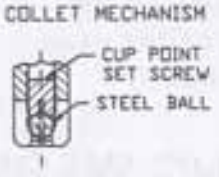
EXTRACTOR EXTENSIONS

USED WITH CERTAIN ACCESSORIES WHICH REQUIRE LONG REACH ACCESS TO PULL DOWELS

PART NO.	THREADS	LENGTH
10190	¼-20	8.40

LOCKING PULL DOWELS

USED WHERE GRAVITY OR VIBRATION COULD CAUSE PULL DOWELS TO FALL OUT



- Locking collet mechanism secures dowel in bushing using an Allen wrench.
- Spanner Wrench prevents rotation while locking collet with Allen wrench.

PART NO.	DIAMETER	TH'D HOLE	HEX KEY	LENGTH
20114	.5006-.5007	¼-20	1/8	1.86

SPANNER WRENCHES

USED WITH LOCKING PULL DOWELS TO HOLD WHILE TIGHTENING

PART NO.	USED WITH
10185	20114

PRECISION BUSHINGS

USED IN STEVENS FIXTURING AND IN FIXTURES WHICH MUST BE COMPATIBLE WITH STEVENS FIXTURING.

- Ground to I.D. tolerance of +/- .000050", concentricity .0001" TIR.
- Case hardened to 60Rc.

INSTALLING BUSHINGS
For bushing hole preparation, bore to diameter and depth specifications. Bushings should be retained in place with Loctite 609 or equivalent. Bored hole location tolerance should be held to +/- .00015" (.0003" span tolerance) for satisfactory results.

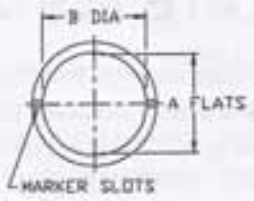
PART NO.	I.D.	O.D.	LENGTH
10063	.5011-.5012	.6249-.6251	.81
HD10063	.7506-.7507	.9373-.9375	1.29

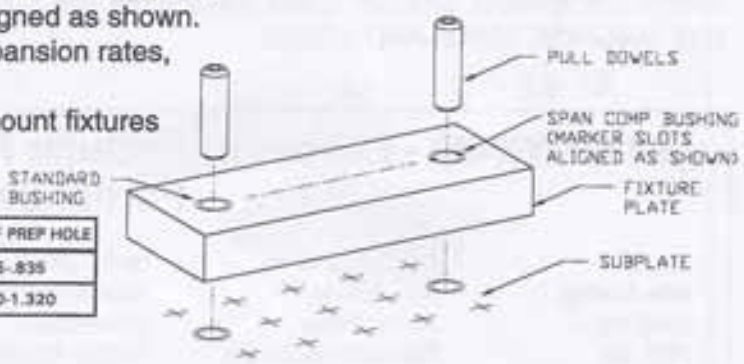
DIA OF PREP HOLE	DEPTH OF PREP HOLE
.6252-.6255	.825-.835
.9378-.9382	1.300-1.320

See also: Precision Pull Dowels (pg. 72)

SPAN-COMP™ BUSHINGS

- Inside diameter is elongated to permit doweling a fixture to any Stevens pattern. Bushing location errors up to +/- .005" are possible without diminishing accuracy.
- When building or adapting a fixture, use one standard bushing and one Span Comp Bushing with the marker slots aligned as shown.
- Materials such as aluminum with high thermal expansion rates, can be used with steel table fixturing.
- Eliminates any requirement for diamond pins to mount fixtures onto primary table fixturing.





PART NO.	A	B	O.D.	LENGTH
10348	.5011-.5012	.51	.6249-.6251	.81
HD10348	.7506-.7507	.76	.9373-.9375	1.29

DIA OF PREP HOLE	DEPTH OF PREP HOLE
.6252-.6255	.825-.835
.9378-.9382	1.300-1.320

See also: Precision Pull Dowels (pg. 72)

CHIP PLUGS – THREADED HOLE

- Keeps chips and dirt out of unused threaded holes, making tooling easier to work with.
- Screwdriver slot won't pack with chips like socket set screws.
- Material: Mild steel with black oxide coating

PART NO.	THREAD	LENGTH
10126	1/2-13	.50
HD10126	3/4-10	.75

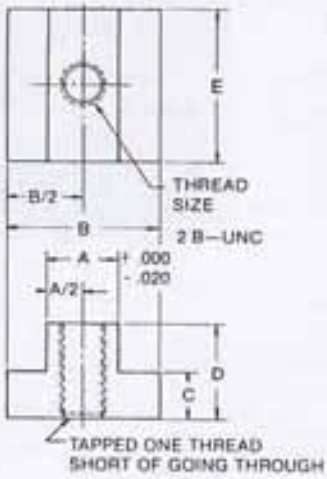
CHIP PLUGS – BUSHED HOLE

- Three piece assembly: brass body, Viton o-ring, and a slotted set screw.
- Insert with thumb pressure. To remove, screw the slotted set screw down out of the way and use the Pull Dowel Extractor (pg. 72) to pull out the Chip Plug.

PART NO.	DIAMETER	LENGTH
20139	.50	.76
HD20139	.75	1.20

"T" SLOT NUTS

- Material: Hardened alloy steel



PART NO.	THREAD	T-SLOT WIDTH A	B	C	D	E
*43302**	3/8-16	7/16	11/16	7/32	1/2	7/8
*43303**	3/8-16	1/2	7/8	9/32	1/2	7/8
43301	3/8-16	9/16	7/8	1/4	1/2	7/8
*43305**	1/2-13	9/16	7/8	11/32	5/8	1 1/8
*43306	1/2-13	5/8	1	11/32	5/8	1 1/8
*43304	1/2-13	11/16	1 1/8	7/16	3/4	1 1/4
*43308**	5/8-11	11/16	1 1/8	7/16	3/4	1 1/4
*43309	5/8-11	3/4	1 1/4	15/32	3/4	1 1/4
*43307	5/8-11	13/16	1 1/4	9/16	1	1 1/2
*43311**	3/4-10	13/16	1 1/4	9/16	1	1 1/2
43312	3/4-10	7/8	1 1/2	9/16	1	1 1/2
*43310	3/4-10	1 1/16	1 5/8	11/16	1 1/4	2

*CONFORMS TO TCMA
**NOT HARDENED.

SUBPLATE INSTALLATION KITS

- Installation Kits include the hardware required to mount your Stevens Subplate onto your machine table.
- Rust inhibiting fluid is included for use between the subplate and machine table.

WHEN ORDERING, SPECIFY THE SUBPLATE AND THE MACHINE MAKE AND MODEL.

STEVENS - Leader in Modular Fixturing For Over Two Decades
Partial User List

Alcoa
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American Cyanamid
Asea Brown Boveri
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Caterpillar
Cincinnati Machines
Coca Cola
Corning Inc.

Dale Earnhardt Inc.
Delta Airlines
Deming Pump
Disposable Waste Sys.
Draper Laboratories
Dresser Industries

Eastman Kodak Co.
E. I. DuPont Co.

Fermi National Lab.
Fisher Controls Co.
Ford Motor Co.
Frito Lay

Gates Rubber
General Electric Co.
General Mills, Inc.
General Motors
Goodyear Tire & Rubber
Gould Pumps, Inc.
G.T.E.

Harley Davidson
Hewlett-Packard Co.
Howmedica
Hughes Aircraft

IBM Corp.
Ingersoll Milling Mach.
Ingersoll-Rand Co.
IT&T Corp.

J. I. Case Co.
John Deere
Joy Mining

LeBlond Makino
Leggett & Platt
Lockheed Corp.
Lucent Technologies

Master Lock Co.
Merck & Co.
Mercury Marine

Monarch Cortland
Monsanto Corporation
Motorola, Inc.

Nat'l Bureau of St'ds
Nike
Northrup Grumman
Northwest Airlines
Norton

Osteonics

Parker Hannifin
Phelps Dodge
Physical Electronics
Pratt & Whitney Aircraft
Procunier Safety Chuck

Remington Arms
R. J. Reynolds
Rockwell International

Saginaw Steering Gear
Schlage Lock
Siemens Corp.
Solar Turbines
Sundstrand Aviation

Trane
Tyee Aircraft

United Defense
University of Utah
U.S. Navy

Victor Fluid Power

Westinghouse Electric
Whirlpool Corp.

Xerox Corporation

Zimmer Corp.

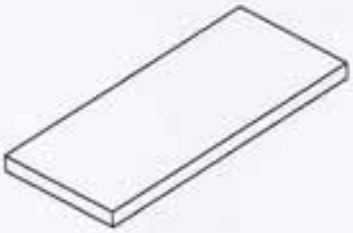
REQUEST FOR QUOTE - CUSTOM SIZES

Name: _____ Phone: _____

Company: _____ Fax: _____

Machine (Make/Model): _____

SUBPLATES



Length: _____ (up to 120") Width: _____ (up to 50")

Thickness: ❍ 1.4" ❍ Other: _____

Grid Pattern: ❍ Stevens 1/2" Series (1.25" centers)
❍ Stevens 3/4" Series (2" centers)
❍ None (Mounting Holes Only)
❍ Other: _____

Grind: ❍ Stevens Grind .0005"/40"
❍ Blanchard Grind .003"/40"

Material: ❍ Steel ❍ Aluminum

Quantity Required: _____

4-SIDED COLUMN

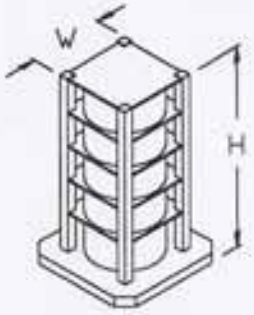
Style: ❍ Conventional ❍ Silo

O/A Height (H): _____ (up to 60") Width (W): _____ (up to 40")

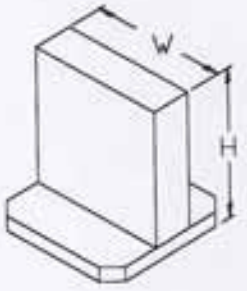
Faces: ❍ Standard Stevens Pattern
❍ Precision Ground with no holes
❍ Precision Milled with no holes
❍ Unfinished (Customer to Machine Faces)
❍ Other: _____

Quantity Required: _____

SILO COLUMN



2-SIDED ANGLE PLATE



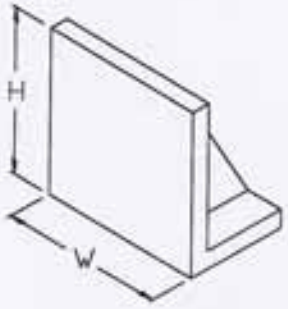
Style: ❍ Angle Plate
❍ 2-Sided Angle Plate
❍ 2-Sided Window Angle Plate

O/A Height (H): _____ (up to 60") Width (W): _____ (up to 50")

Faces: ❍ Standard Stevens Pattern
❍ Precision Ground with no holes
❍ Blanchard Ground with no holes
❍ Other: _____

Quantity Required: _____

ANGLE PLATE



FAX OR MAIL TO STEVENS ENGINEERING AT THE ADDRESS ON THE BACK OF COVER.