

# Whistler®

## MODULAR HARD DIES

ZERO POINT

GAGE

NOTCH 70816-19

.892 SQ

PUSHER

GAGE

SIDE NOTCH 70816-25

.193 X .578 RECT

MULTIPLE 70816-15

.193 X .578 RECT

.703 DIA

SIDE NOTCH 70816-25

PUSHER

SIDE NOTCH 70816-28

1.107 SQ

.193 X .578 RECT

GAGE

PUSHER

.414 DIA

*Magna Die*®  
REORDER GUIDE

# IDENTIFY YOUR SYSTEM

## ORIGINAL MAGNA DIE ROUNDS



UP TO .250" (6.3mm)  
THICK MILD STEEL  
ROUND TOOLS  
POSITIONED MATCHED  
MACHINED TEMPLATES  
ACCORDING TO USER  
HOLE PATTERNS

## ORIGINAL MAGNA DIE SHAPES



UP TO .250" (6.3mm)  
THICK MILD STEEL  
SHAPED TOOLS WITH  
FLAT KEYS OR SLOT  
KEYS AND RETAINERS  
WITH (2) LOCATORS  
FOR ORIENTATION IN  
(2) TEMPLATE HOLES

## MAGNA DIE 2000 ROUNDS and SHAPES



UP TO .250" (6.3mm)  
THICK MILD STEEL  
SHAPED TOOLS WITH  
PIN KEYS AND ROUND  
RETAINERS FOR  
ORIENTATION IN SINGLE  
ROUND HOLE WITH KEY  
SLOT

## MAGNA DIE HEAVY DUTY ROUNDS and SHAPES



UP TO .500" (12.7 mm)  
THICK MILD STEEL  
USES STANDARD  
MAGNA DIE RETAINERS  
WITH PUNCHES,  
BUSHINGS AND  
STRIPPERS DESIGNED  
FOR HEAVIER  
MATERIALS

## STANDARD

PUNCH DIMENSIONS		
Series	Outside Diameter	Length
50	.500" (12.7 mm)	3.34" (84.8 mm)
75	.750" (19.05 mm)	3.34" (84.8 mm)
100	1.000" (25.4 mm)	3.34" (84.8 mm)
150	1.500" (38.1 mm)	3.34" (84.8 mm)
225	2.250" (57.15 mm)	3.34" (84.8 mm)
300	3.000" (76.2 mm)	3.34" (84.8 mm)
400	4.000" (101.6 mm)	3.00" (76.2 mm)

BUSHING DIMENSIONS		
Series	Outside Diameter	Length
50	.875" (22.23 mm)	1.12" (28.6 mm)
75	1.500" (38.1 mm)	1.12" (28.6 mm)
100	1.750" (44.45 mm)	1.12" (28.6 mm)
150	2.250" (57.15 mm)	1.12" (28.6 mm)
225	3.000" (76.2 mm)	1.12" (28.6 mm)
300	4.000" (101.6 mm)	1.12" (28.6 mm)
400	5.750" (146.05 mm)	1.12" (28.6 mm)

## HEAVY DUTY

PUNCH DIMENSIONS		
Series	Outside Head Dia.	O.A. Length
100	1.000" (25.4 mm)	4.75" (120.6 mm)
150	1.500" (38.1 mm)	4.75" (120.6 mm)
225	2.250" (57.15 mm)	4.75" (120.6 mm)
300	3.000" (76.2 mm)	4.75" (120.6 mm)
400	4.000" (101.6 mm)	4.41" (112 mm)

BUSHING DIMENSIONS		
Series	Outside Diameter	Length
100	1.750" (44.45 mm)	1.12" (28.6 mm)
150	2.250" (57.15 mm)	1.12" (28.6 mm)
225	3.000" (76.2 mm)	1.12" (28.6 mm)
300	4.000" (101.6 mm)	1.12" (28.6 mm)
400	5.750" (146.05 mm)	1.12" (28.6 mm)

1-800-828-1010 (US or Canada) or 716-542-4141 FAX 716-542-4226

www.sbwhistler.com

© S.B. Whistler & Sons, Inc. 1997

# Magna Die® Systems

## TABLE OF CONTENTS

### Common Components

Templates.....	3
Die Sets.....	4
Retainers.....	5

### STANDARD

Original and MAGNA DIE 2000

Basic Components.....	7
Punches.....	8
Die Bushings.....	8
Strippers.....	9
Technical and Dimensional Data.....	10

### HEAVY DUTY

for over 1/4" (6.35mm)

Basic Components.....	11
Punches.....	12
Die Bushings.....	12
Strippers.....	13
Technical and Dimensional Data.....	14

### Accessories / Technical Data

Accessories.....	15
Special Shapes.....	17
Press Data.....	18
Order Form.....	20

### ORDERING INFORMATION

To order, simply use the reproducible **Order Form** found on **page 20** of this catalog. By completing your company information once, copies can be made for use each time you need to place an order. If you have multiple shipping destinations, create a master form for each shipping location. Using this method will save time and insure that materials are delivered to your proper location.

### YOUR COMMENTS

At **Whistler**, we know the Customer is the most important part of our business. We solicit your comments about service, product quality, packaging, shipping and invoicing. We welcome your product application questions. Please tell us how we're doing for YOU. All requests and comments are reviewed to help us maintain the high quality of service you expect and deserve from **Whistler**.

# MAGNA DIE - Templates

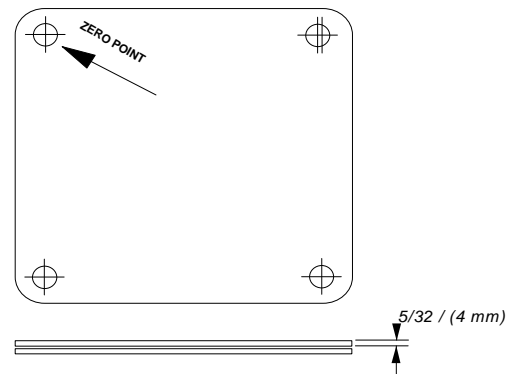
In the manufacture of each Master Set, one of the template locator posts for each template position is offset .125" / 3.2 mm. To doubly insure correct positioning in the Master Set, all blank templates have one of the corner locator holes stamped "ZERO POINT". This is also stamped on the punch and die shoes on the Master Set near the locator post for this hole, which normally is the left rear post. This "ZERO" is established when the Master Set is manufactured.

## BLANK TEMPLATES

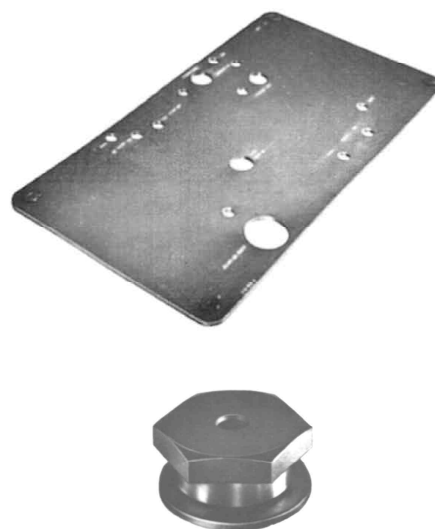
Supplied with locator holes to suit the appropriate Master Set, blank templates are manufactured from high quality 5/32" / 4 mm hot rolled steel which is stretched to achieve superior rigidity over the entire length of the blank sheet stock. This stretching process provides the flattest possible stock. With this process the material provided will remain flat during use and normal handling. Use of other materials is highly discouraged and voids warranties.

## ORDERING

One punch template and one die template are considered as making one set. Templates can also be supplied without corner holes or in sizes not shown below.



SIZE	SERIAL NO.	ORDERING DESCRIPTION
12" x 19" (305 mm x 483 mm)	DS-98370	TEMPLATE SET 12 X 19
18" x 18" (457 mm x 457 mm)	DS-67166	TEMPLATE SET 18 X 18
18" x 24" (457 mm x 610 mm)	DS-65924	TEMPLATE SET 18 X 24
20 1/4" x 18" (514 mm x 457 mm)	DS-93117	TEMPLATE SET 20 1/4 X 18
24" x 24" (610 mm x 610 mm)	DS-67805	TEMPLATE SET 24 X 24
24" x 30" (610 mm x 762 mm)	DS-66693	TEMPLATE SET 24 X 30
24" x 31" (610 mm x 787 mm)	DS-C13582	TEMPLATE SET 24 X 31
30" x 24" (762 mm x 610 mm)	DS-73069	TEMPLATE SET 30 X 24
42" x 30" (1067 mm x 762 mm)	DS-C22415	TEMPLATE SET 42 X 30
48" x 25" (1219 mm x 635 mm)	DS-93118	TEMPLATE SET 48 X 25



**MTCP-50 TEMPLATE CLAMP PLUG**  
Template clamp plugs are used to align prebored blank templates for machining of subject hole patterns.

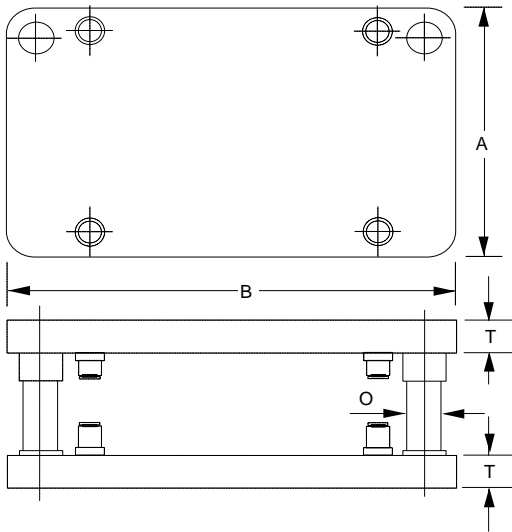
## ORDERING NOTES

1. To order blank template sets, refer to the Master "DS" serial number found on the ID tag at the front of each Master Set. Include the Master "DS" serial number and required overall template size, with your order. Several blank template sizes are available for immediate shipment from stock. Non-stock sizes can usually be shipped within one to two weeks.
2. To order custom-machined template sets, your detailed subject drawings are needed in addition to the Master serial number and overall template size. Upon receipt, our quotation department will reply with price and delivery information before proceeding. Final template drawings for custom-machined sets will be sent for customer verification and approval prior to release for manufacture. Shipment can generally be made two to four weeks after receipt of approvals.

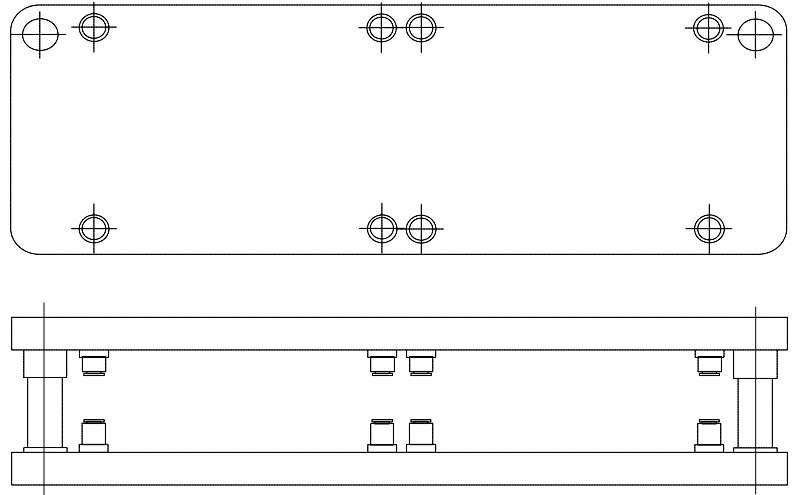
# MAGNA DIE - Master Sets

To withstand the demands of Modular Dies, all Whistler Master Sets are precision manufactured from high carbon steel plate. All Master Sets are designed for high compressive load strength and offer excellent resistance to abrasion. Close tolerances for flatness and parallelism insure tool alignment and long life.

## SINGLE STATION MASTER SET



## MULTIPLE STATION MASTER SET



### STYLE 450

### 2 GUIDE PINS

CATALOG NUMBER	DIE AREA	A	B	T	O
M 1214-4 DS	12" x 14" (305 mm x 356 mm)	12" (305 mm)	19" (483 mm)	1.5" (38 mm)	1.250" (31.75 mm)
M 1818-4 DS	18" x 18" (457 mm x 457 mm)	18" (457 mm)	27" (686 mm)	2" (50 mm)	1.750" (44.45 mm)
M 1824-4 DS	18" x 24" (457 mm x 610 mm)	18" (457 mm)	33" (838 mm)	2" (50 mm)	1.750" (44.45 mm)

CATALOG NUMBERS LISTED ARE GENERALLY AVAILABLE FROM STOCK.

## ORDERING NOTES

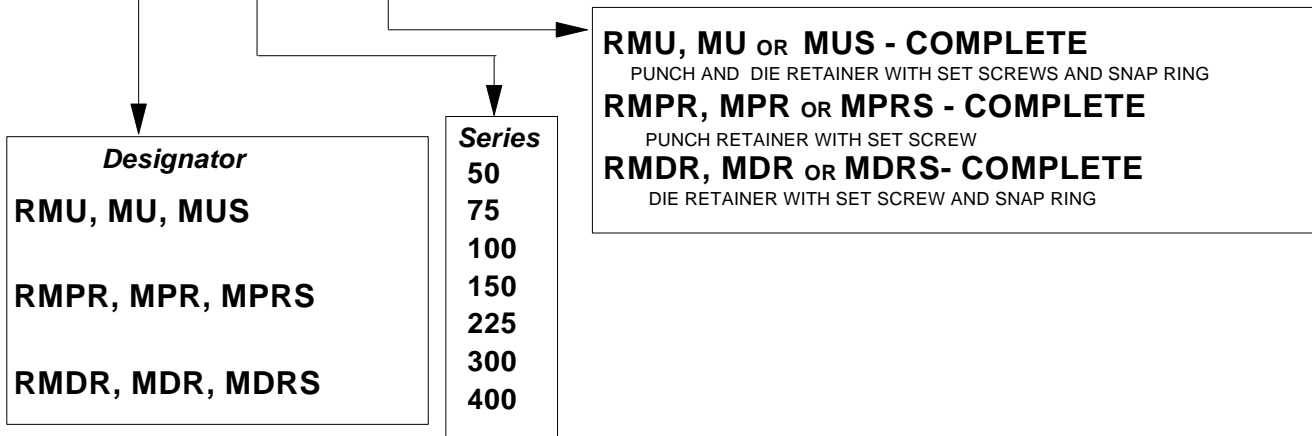
- All non-stock Master Sets are made to suit your specific press. Inquiries must include your complete press data - copy and use the form found on page 18.
- Final size of non-stock Master Sets is best determined by the factory after review of your specific application and press data. To insure proper final size, include detailed subject drawings with your Master Set inquiry.
- Master Set prices do not include press attachment features, such as tapped holes, counterbored holes, clamping flanges etc. These features are quoted on special request.
- Stop blocks, or bottoming blocks, are generally recommended for use with hydraulic press applications. These features are not included in Master Set prices and are quoted on special request.
- Conventional press brakes can be fitted with support angles for punching use. Refer to required press brake data on page 18 when inquiring about punching applications with press brakes.

# MAGNA DIE - Retainers

All punch and die retainers are made from ductile iron castings or AISI-4140 steel, machined, heat treated, then precision finished to insure parallelism and squareness between punches and dies. With proper care, use and maintenance, Whistler retainers are designed to provide many years of outstanding service

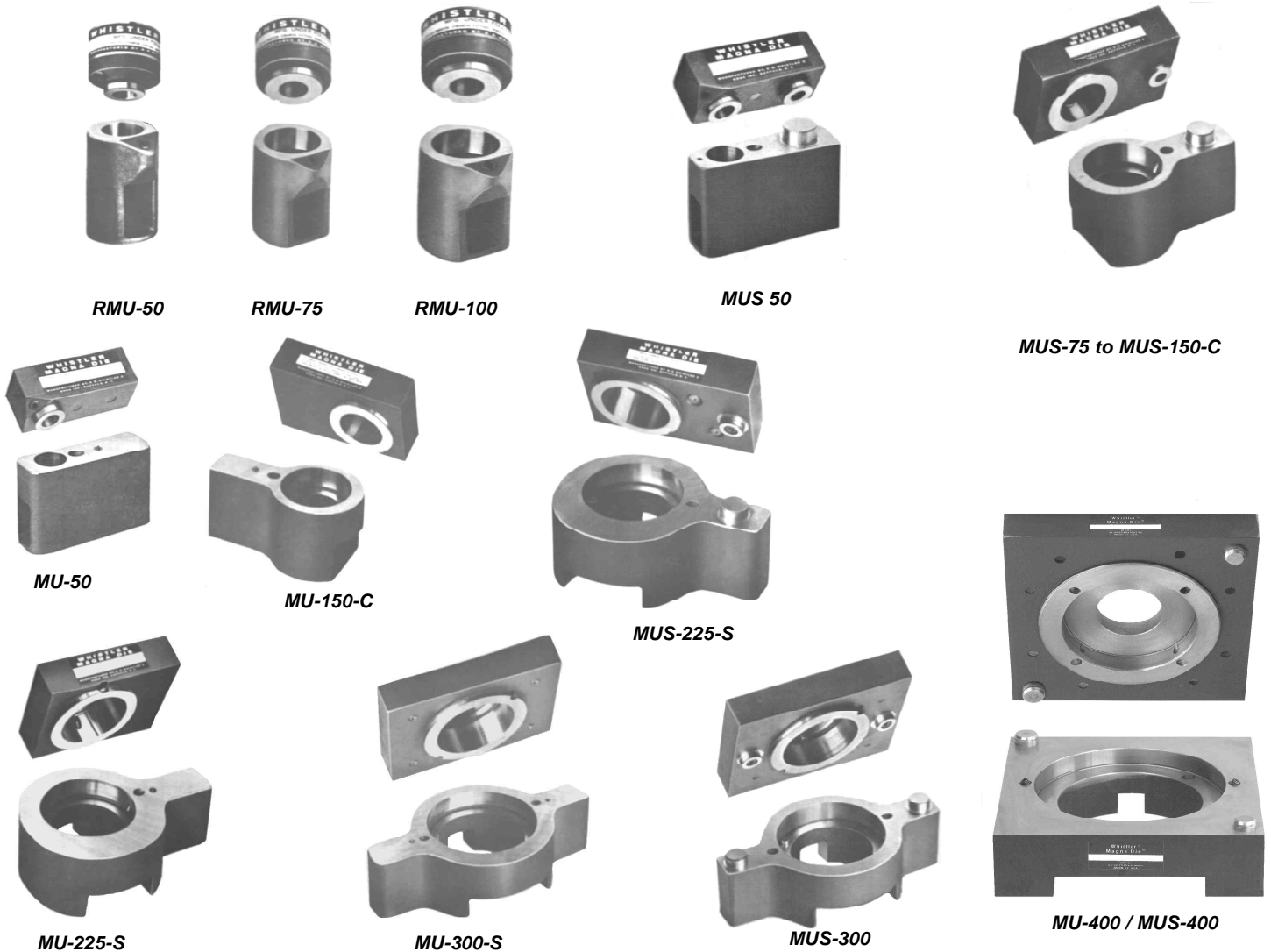
Example: Retainers

## RMU 100 COMP



Original MAGNA DIE ROUNDS, HEAVY DUTY ROUNDS and MAGNA DIE 2000 SHAPES

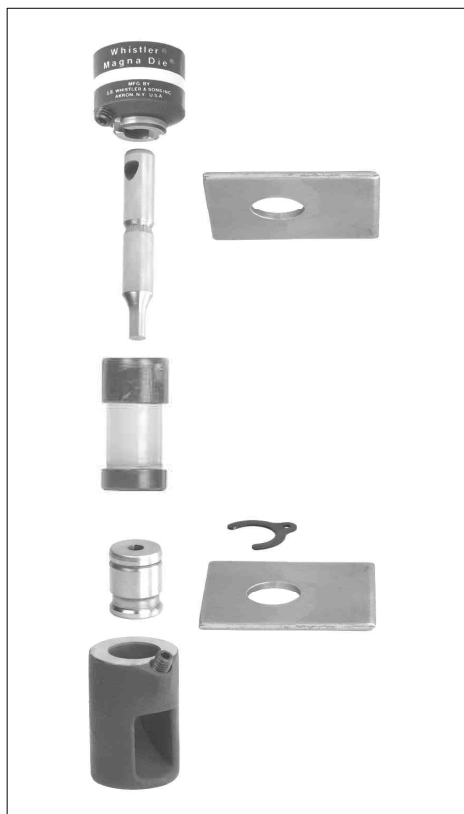
Original MAGNA DIE and HEAVY DUTY SHAPES





# STANDARD Series

## BASIC COMPONENTS



**PUNCH RETAINERS:** SERIES - 50 75 100 150 225 300 400  
RMPR, MPR (original and MAGNA DIE 2000) or MPRS (flat/slot keyed).

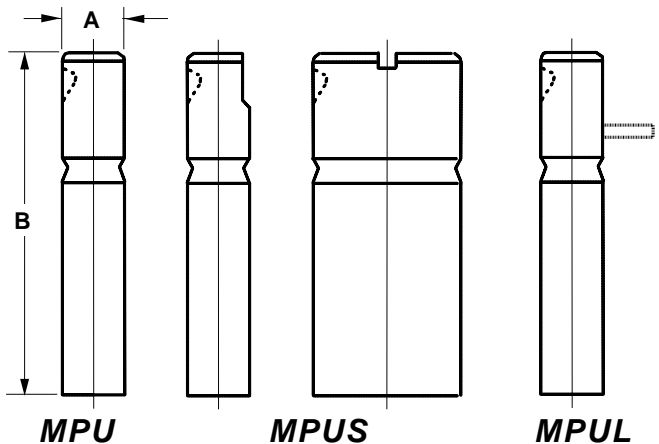
**PUNCHES:** SERIES - 50 75 100 150 225 300 400  
MPU or MPUS (flat/slot keyed) and MPUL (pin keyed).

**STRIPPERS:** SERIES - 50 75 100 150 225 300 400  
Up to .125" (3.2 mm) max mat'l thickness use PMS and MS.  
From .125" to .25" (6.4 mm) max mat'l thickness use PMSX and MSX.

**DIE BUSHINGS:** SERIES - 50 75 100 150 225 300 400  
MDBU or MDBUS (flat/slot keyed) and MDBUL (pin keyed).

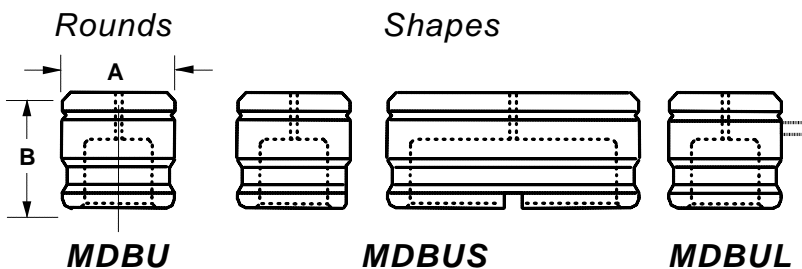
**DIE RETAINERS:** SERIES - 50 75 100 150 225 300 400  
RMDR, MDR (original and MAGNA DIE 2000) or MDRS (flat/slot keyed).

### Punch Profiles



CATALOG NUMBER	A	B
MPU-50, MPUS-50, MPUL-50	.500" (12.7 mm)	3.34" (84.8 mm)
MPU-75, MPUS-75, MPUL-75	.750" (19.05 mm)	3.34" (84.8 mm)
MPU-100, MPUS-100, MPUL-100	1.000" (25.4 mm)	3.34" (84.8 mm)
MPU-150, MPUS-150, MPUL-150	1.500" (38.1 mm)	3.34" (84.8 mm)
MPU-225, MPUS-225, MPUL-225	2.250" (57.15 mm)	3.34" (84.8 mm)
MPU-300, MPUS-300, MPUL-300	3.000" (76.2 mm)	3.34" (84.8 mm)
MPU-400, MPUS-400	4.000" (101.6 mm)	3.00" (76.2 mm)

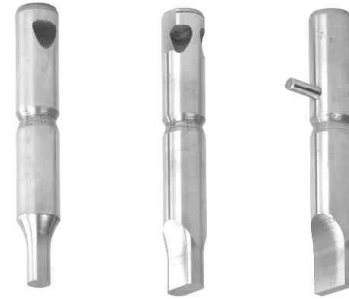
### Bushing Profiles



CATALOG NUMBER	A	B
MDBU-50, MDBUS-50, MDBUL-50	.875" (22.22 mm)	1.12" (28.6 mm)
MDBU-75, MDBUS-75, MDBUL-75	1.500" (38.1 mm)	1.12" (28.6 mm)
MDBU-100, MDBUS-100, MDBUL-100	1.750" (44.45 mm)	1.12" (28.6 mm)
MDBU-150, MDBUS-150, MDBUL-150	2.250" (57.15 mm)	1.12" (28.6 mm)
MDBU-225, MDBUS-225, MDBUL-225	3.000" (76.2 mm)	1.12" (28.6 mm)
MDBU-300, MDBUS-300, MDBUL-300	4.000" (101.6 mm)	1.12" (28.6 mm)
MDBU-400, MDBUS-400,	5.750" (146.05 mm)	1.12" (28.6 mm)

# STANDARD Series - Punches and Die Bushings

Example: Punches



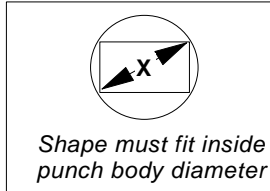
**MPUS 50 OVAL .187 X .500**

**Designator**  
**MPU**  
**MPUS**  
 Flat/slot  
 keyed  
**MPUL**  
 Pin  
 keyed

**Shape**  
**RD** ROUND  
**OVAL** OVAL  
**SQ** SQUARE  
**RECT** RECTANGLE  
**CUSTOM** SEE PG 17

Size	Ordering Information	Example
	ROUND - hole size to be punched	<b>.250</b> (6.35 mm)
	OVAL - hole size to be punched	<b>.187 X .500</b> (4.74 x 12.7 mm)
	SQUARE - hole size to be punched	<b>.281</b> (7.14 mm)
	RECTANGLE - hole size to be punched	<b>.093 X .375</b> (2.36 x 9.52 mm)

Series	Max Point Dia.
<b>50</b>	.500" (12.7 mm)
<b>75</b>	.750" (19.05 mm)
<b>100</b>	1.000" (25.4 mm)
<b>150</b>	1.500" (38.1 mm)
<b>225</b>	2.250" (57.15 mm)
<b>300</b>	3.000" (76.2 mm)
<b>400</b>	4.000" (101.6 mm)



**Calculating MAXIMUM Square or Rectangle**

$$X = \sqrt{A^2 + B^2}$$

X is calculated using the following formula. This must be done in order to determine the proper punch series.

ie:  $\sqrt{.187^2 + .500^2}$   
**Result .533** which must be placed in a **Series 75**

Example: Dies

**MDBUS 50 OVAL .192 X .505**



**Designator**  
**MDBU**  
**MDBUS**  
 Flat/slot  
 keyed  
**MDBUL**  
 Pin  
 keyed

**Shape**  
**RD** ROUND  
**OVAL** OVAL  
**SQ** SQUARE  
**RECT** RECTANGLE  
**CUSTOM** SEE PG 17

Size	Ordering Information	Example
	ROUND - add clearance	<b>.255</b> (6.48 mm)
	OVAL - add clearance	<b>.192 X .505</b> (4.88 x 12.83 mm)
	SQUARE - add clearance	<b>.291</b> (7.39 mm)
	RECTANGLE - add clearance	<b>.098 X .380</b> (2.49 x 9.65 mm)

Series	Maximum Hole Dia.
<b>50</b>	.525" (13.33 mm)
<b>75</b>	.775" (19.68 mm)
<b>100</b>	1.025" (26.04mm)
<b>150</b>	1.525" (38.74 mm)
<b>225</b>	2.275" (57.79 mm)
<b>300</b>	3.025" (76.84 mm)
<b>400</b>	4.025" (102.24 mm)

## Calculating DIE CLEARANCE

Die clearance is related to the type and thickness of the material being punched. For mild steel (AISI 1010/1020) we recommend a total of 10% of material thickness (5% each side) added to punch size for punching up to .25" (6.35 mm) thick material. Clearance should be doubled for thicker materials, or for Stainless Steels. Use a total of 8% for light gage softer materials, like aluminum or copper. Example: To punch a .500" (12.7 mm) diameter hole in 11 gage (.120") mild steel, the die size will be .512" (13 mm). (10% x .120 = .012 + .500 = .512).

# STANDARD Series - Strippers

Strippers for the 1/8" / 3 mm capacity "Standard" **Whistler** are furnished in (2) styles: steel capped polyurethane series 'PMS' and vanadium steel spring series 'MS'. Series 'PMS' is best for medium to high volume punching. Series 'MS' is recommended when only partial support of the stripper will be provided by the work piece material and for automated punching from coil. Strippers for the 1/4" / 6.35 mm capacity "Standard" **Whistler** are also furnished in (2) styles: steel capped polyurethane series 'PMSX' (through the '150' series only) and vanadium steel spring series 'MSX'. Series 'MSX' is recommended when only partial support of the stripper will be provided by the work piece material.



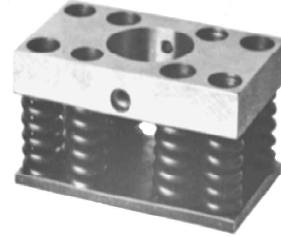
**PMS**



**MS**



**PMSX**



**MSX**

Example: Strippers

**PMS 50 RECT .16 X .28**

**Designator**  
PMS  
MS  
PMSX  
MSX

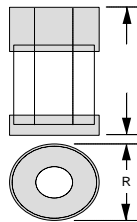
Series	Punch Body Dia
50	.500" (12.7 mm)
75	.750" (19.05 mm)
100	1.000" (25.4 mm)
150	1.500" (38.1 mm)
225	2.250" (57.15 mm)
300	3.000" (76.2 mm)
400	4.000" (101.6 mm)

Size	Ordering Information
ROUND	SPECIFY punch with .03" (.08 mm) added
OVAL	SPECIFY punch with .03" (.08 mm) added to each
SQUARE	SPECIFY punch with .03" (.08 mm) added to each
RECTANGLE	SPECIFY punch with .03" (.08 mm) added to each
CUSTOM	SEE PG 17

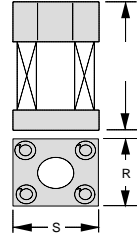
Shape	
SD	SPOT DRILLED for drilling to size in your facility
RD	ROUND
OVAL	OVAL
SQ	SQUARE
RECT	RECTANGLE
CUSTOM	SEE PG 17

CATALOG NUMBER	R	S
PMS-50	1.18" (30 mm)	
PMS-75	1.63" (41.3 mm)	
PMS-100	2.00" (50.8 mm)	
PMS-150	2.75" (69.9 mm)	
PMS-225	4.00" (101.6 mm)	
PMS-300	4.62" (117.3 mm)	
MS-50	1.18" (30 mm)	1.43" (36.51 mm)
MS-75	2.00" (50.8 mm)	2.00" (50.8 mm)
MS-100	2.12" (53.8 mm)	2.12" (53.8 mm)
MS-150	2.50" (63.5 mm)	2.50" (63.5 mm)
MS-225	4.00" (101.6 mm)	
MS-300	4.75" (120.7 mm)	

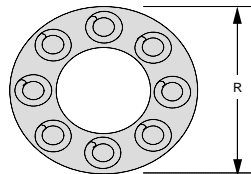
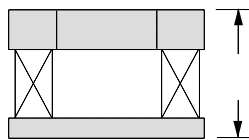
PMS, PMSX



MS, MSX



MS, MSX



CATALOG NUMBER	R	S
PMSX-50	1.37" (34.9 mm)	
PMSX-75	2.25" (57.1 mm)	
PMSX-100	2.75" (69.8 mm)	
PMSX-150	3.37" (85.7 mm)	
MSX-50	1.25" (31.7 mm)	3.00" (76.2 mm)
MS-75-X	2.00" (50.8 mm)	2.00" (50.8 mm)
MS-100-X	2.25" (57.1 mm)	3.87" (98.4 mm)
MS-150-X	2.50" (63.5 mm)	4.25" (107.9 mm)
MS-225-X	4.00" (101.6 mm)	
MS-300-X	4.75" (120.6 mm)	
MS-400-X	5.75" (146 mm)	

## CAUTION

**Whistler MAGNA DIE** operates at 6.35" (161.3 mm) shut height. Over compression will cause fracturing and premature failure of spring and polyurethane strippers.

# STANDARD Series - Technical Data

## MATERIALS & MANUFACTURING REFERENCES

### Punches and Dies -

All **Whistler** standard punches and die bushings are made from AISI-A2 tool steel to provide superior life with thousands of holes punched between sharpenings. Other punch and die materials are available on request.

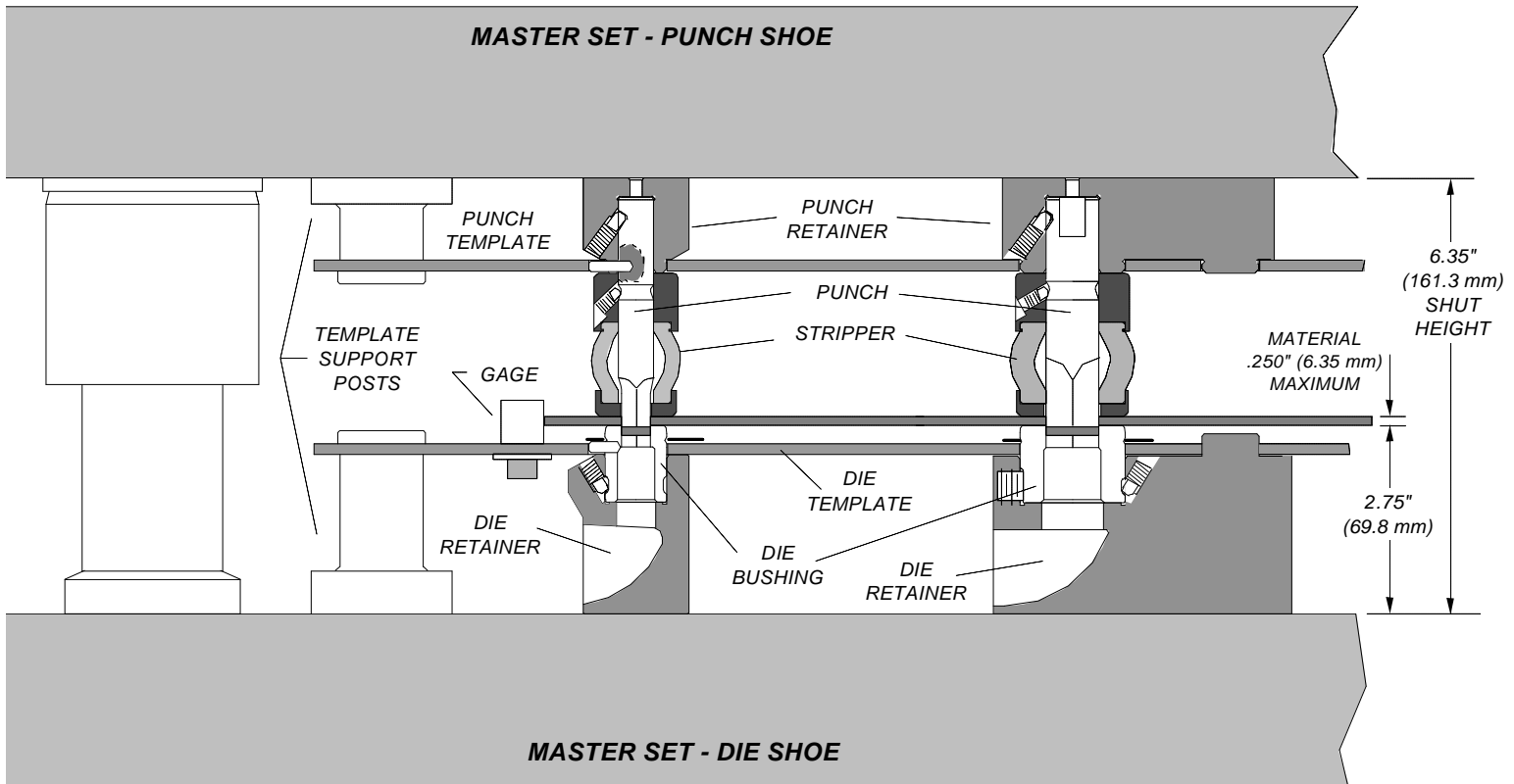
### Retainers -

All punch and die retainers are made from ductile iron castings or AISI-4140 steel, machined, heat treated, then precision finished to insure parallelism and squareness between punches and dies. With proper care, use and maintenance, **Whistler** retainers are designed to provide many years of outstanding service.

### Die Sets -

To withstand the demands of Modular Dies, all **Whistler** Master Sets are precision manufactured from heat treated high carbon steel plate. All Master Sets are designed for high compressive load strength and offer excellent resistance to abrasion. Close tolerances for flatness and parallelism insure tool alignment and long life.

1. Standard shut height is 6.35" (161.3 mm) between working faces of Master Set.
2. It is important to insure that all stripper faces are fully supported by the work piece at bottom of stroke. Lack of support can cause tipping or cocking of the stripper and possible resultant damage and/or injury. Strippers that cannot be fully supported by the work piece (edge notching, for example) must be counterbalanced by attaching a balance pad of the same thickness as the work piece, to the top surface of the bush. Adhesives can be used for this purpose. **NOTE THE PRESS MUST NOT BE DRY CYCLED WITHOUT A WORK PIECE WHEN A BALANCE PAD IS BEING USED.**
3. Magnetic attraction is achieved through the use of permanent magnet assemblies located in the top of each punch retainer. For optimum magnetic attraction and holding power it is essential that all magnet surfaces be maintained in a clean and smooth condition, free of dirt, slugs and metal particles. Improper maintenance can result in tipping or cocking of the punch retainer, possibly shearing punch and die components and reducing expected tool life.



# HEAVY DUTY Series

## BASIC COMPONENTS



**PUNCH RETAINERS:** SERIES - 100 150 225 300 400  
RMPR, MPR or MPRS (flat/slot keyed)

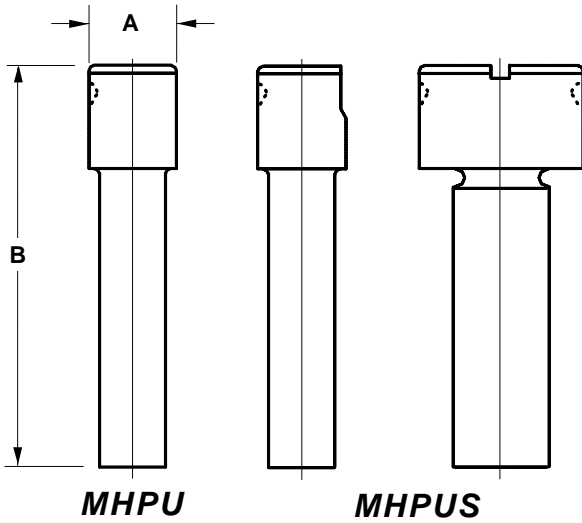
**PUNCHES:** SERIES - 100 150 225 300 400  
MHPU or MHPUS (flat/slot keyed)

**STRIPPERS:** SERIES - 100 150 225 300 400  
HS (100 Series Only - .375" / 9.5 mm max capacity) or HPS

**DIE BUSHINGS:** SERIES -100 150 225 300 400  
MHDBU or MHDBUS (flat/slot keyed)

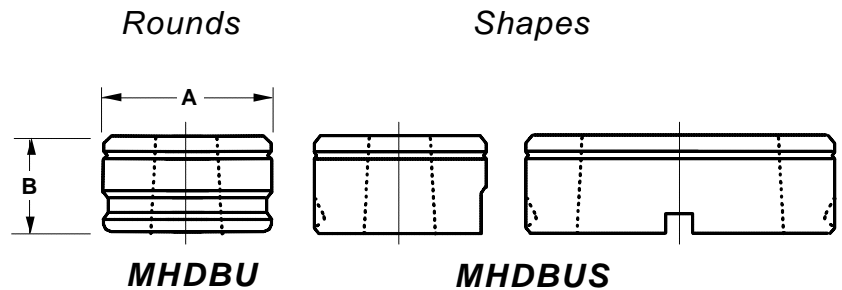
**DIE RETAINERS:** SERIES - 100 150 225 300 400  
RMDR, MDR or MDRS (flat/slot keyed)

### Punch Profiles



CATALOG NUMBER	A	B	MAXIMUM PUNCH DIA.
MHPU-100 MHPUS-100	1.000" (25.4 mm)	4.75" (120.6 mm)	.750" (19.05 mm)
MHPU-150 MHPUS-150	1.500" (38.1 mm)	4.75" (120.6 mm)	1.000" (25.4 mm)
MHPU-225 MHPUS-225	2.250" (57.15 mm)	4.75" (120.6 mm)	1.500" (38.1 mm)
MHPU-300 MHPUS-300	3.000" (76.2 mm)	4.75" (120.6 mm)	2.250" (57.15 mm)
MHPU-400 MHPUS-400	4.000" (101.6 mm)	4.41" (120 mm)	3.000" (76.2 mm)

### Bushing Profiles



CATALOG NUMBER	A	B
MHDBU-100 MHDBUS-100	1.750" (44.45 mm)	1.12" (28.6 mm)
MHDBU-150 MHDBUS-150	2.250" (57.15 mm)	1.12" (28.6 mm)
MHDBU-225 MHDBUS-225	3.000" (76.2 mm)	1.12" (28.6 mm)
MHDBU-300 MHDBUS-300	4.000" (101.6 mm)	1.12" (28.6 mm)
MHDBU-400 MHDBUS-400	5.750" (146.05 mm)	1.12" (28.6 mm)

# HEAVY DUTY Series - Punches and Die Bushings

Example: Punches

**MHPUS 100 OVAL .500 X .750**



**MHPU**

**MHPUS (Keyed)**

**Designator**  
**MHPU**  
**MHPUS**  
 Flat/slot  
 keyed

**Shape**  
 RD ROUND  
 OVAL OVAL  
 SQ SQUARE  
 RECT RECTANGLE  
 CUSTOM SEE PG 17

Size	Ordering Information	Example
	ROUND - hole to be punched	<b>.750</b> (19.05 mm)
	OVAL - hole to be punched	<b>.500 x .750</b> (12.7 x 19.05 mm)
	SQUARE - hole to be punched	<b>.500</b> (12.7 mm)
	RECTANGLE - hole to be punched	<b>.375 x .625</b> (9.52 x 15.88 mm)

Series	Max Punch Dia.
100	.750" (19.05 mm)
150	1.000" (25.4 mm)
225	1.500" (38.1 mm)
300	2.250" (57.15 mm)
400	3.000" (76.2 mm)

**Calculating MAXIMUM Square or Rectangle**

$$X = \sqrt{A^2 + B^2}$$

*X is calculated using the above formula. This must be done in order to determine the proper punch series.*

ie:  $\sqrt{.375^2 + .625^2}$

**Result .729** which must be placed in a **Series 100**

Shape must fit inside punch body diameter

Example: Dies

**MHDBUS 100 OVAL .575 X .825**



**MHDBU**

**MHDBUS (Keyed)**

**Designator**  
**MHDBU**  
**MHDBUS**  
 Flat/slot  
 keyed

**Shape**  
 RD ROUND  
 OVAL OVAL  
 SQ SQUARE  
 RECT RECTANGLE  
 CUSTOM SEE PG 17

Size	Ordering Information	Example
	ROUND - add clearance	<b>.825</b> (20.95 mm)
	OVAL - add clearance	<b>.600 x .850</b> (15.24 x 21.59 mm)
	SQUARE - add clearance	<b>.575</b> (14.6 mm)
	RECTANGLE - add clearance	<b>.475 x .725</b> (12.06 x 18.41 mm)

Series	Maximum Die Opening
100	.850" (21.59 mm)
150	1.150" (29.21 mm)
225	1.625" (41.28 mm)
300	2.375" (60.32 mm)
400	3.125" (79.38 mm)

## Calculating DIE CLEARANCE

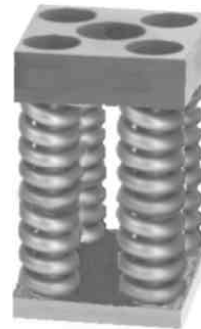
Die clearance is related to the type and thickness of the material being punched. For mild steel (AISI 1010/1020) we recommend a total of 20% of material thickness (10% each side) added to punch size when punching over .25" (6.35 mm) thick material. Clearance can be increased for thicker materials or for Stainless Steels, up to as much as 30%. Example: To punch a .750" (19 mm) diameter hole in .50" (12.7 mm) thick mild steel, the die size will be .850" (21.6 mm). (20% x .500 = .100 + .750 = .850).

# HEAVY DUTY Series - Strippers

Except for the '100' series, Heavy Duty strippers are furnished in high strength polyurethane only. The '100' series strippers are also furnished with optional vanadium steel springs for close centers. All strippers feature steel end caps, pre-opened to suit the maximum punch size. They do not require any machining to suit punch points - one size fits all.



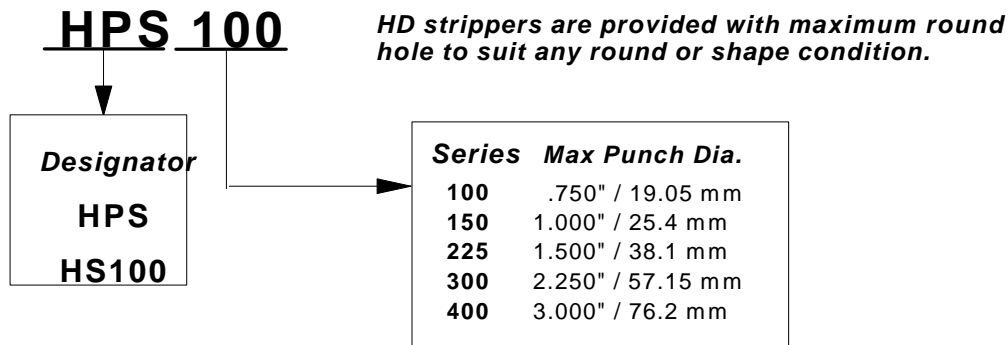
**HPS**



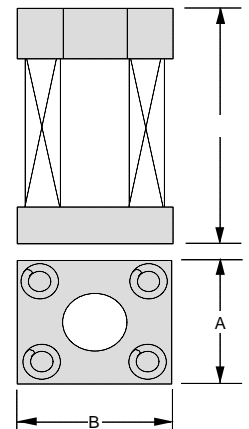
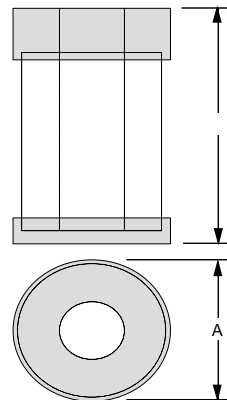
**HS (100 Series only)**

(for .375" / 9.5 mm thick material max)

Example: Strippers



CATALOG NUMBER	A	B	D
HS-100	2.00" (50.8 mm)	2.00" (50.8 mm)	3.63" (92.2 mm)
HPS-100	2.25" (57.2 mm)		3.83" (97.2 mm)
HPS-150	2.75" (69.9 mm)		3.83" (97.2 mm)
HPS-225	3.37" (85.7 mm)		3.83" (97.2 mm)
HPS-300	4.44" (112.8 mm)		3.83" (97.2 mm)
HPS-400	4.62" (117.5 mm)		3.75" (95.2 mm)



**CAUTION**  
 Whistler 'H' Heavy Duty operates at 7.85" (199.4 mm) shut height. Over compression will cause fracturing and premature failure of spring and polyurethane strippers.

# HEAVY DUTY Series - Technical Data

## MATERIALS & MANUFACTURING REFERENCES

### Punches and Dies -

All **Whistler** Heavy duty punches and die bushings are made from AISI-S7 shock tool steel to provide superior tool life under heavy loads with thousands of holes punched between sharpenings.

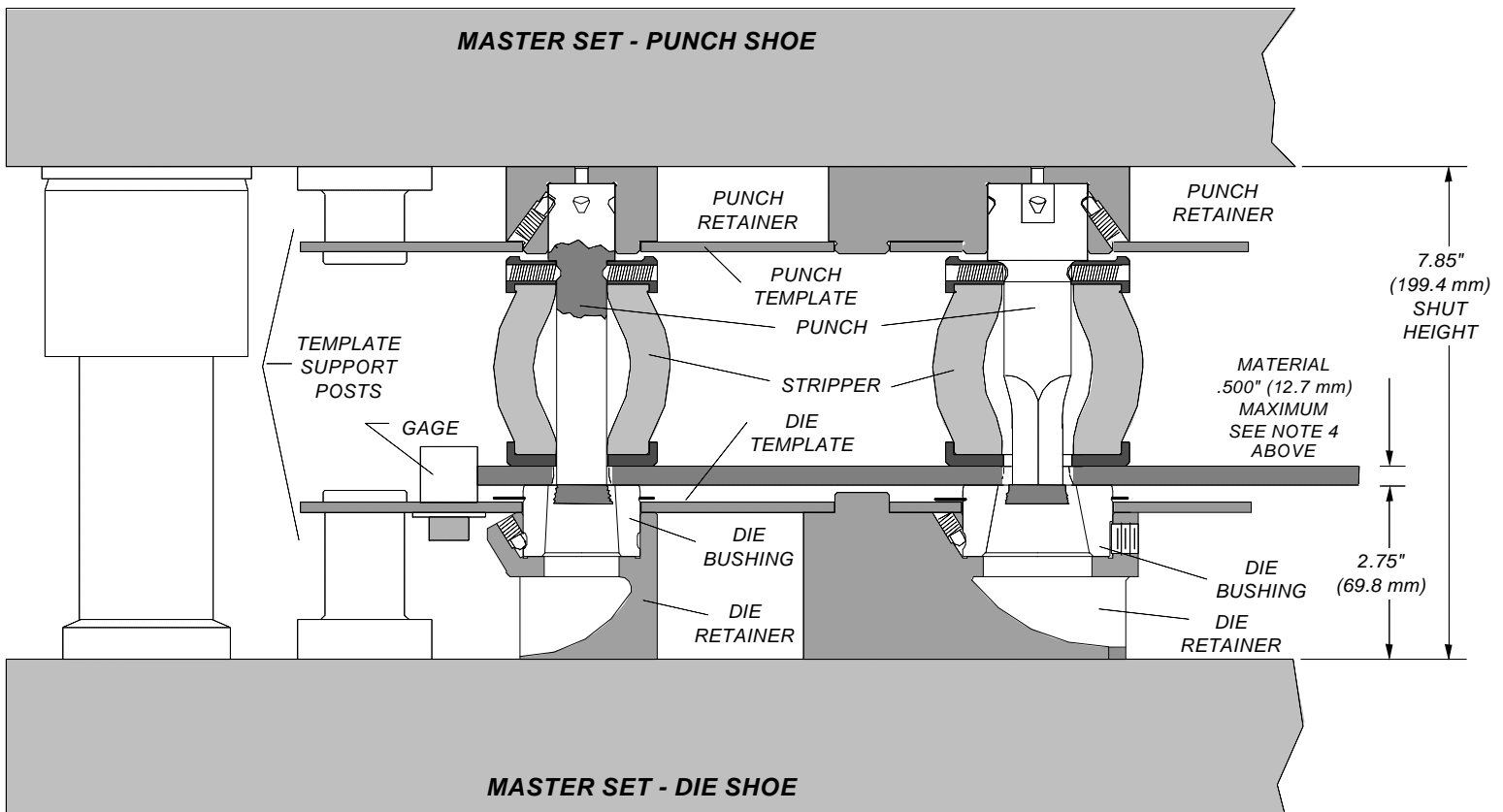
### Retainers -

All punch and die retainers are made from ductile iron castings or AISI-4140 steel, machined, heat treated, then precision finished to insure parallelism and squareness between punches and dies. With proper care, use and maintenance, **Whistler** retainers are designed to provide many years of outstanding service.

### Die Sets -

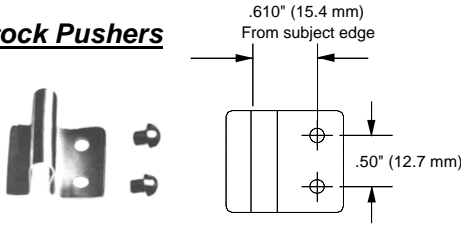
To withstand the demands of Modular Dies, all **Whistler** Master Sets are precision manufactured from heat treated high carbon steel plate. All Master Sets are designed for high compressive load strength and offer excellent resistance to abrasion. Close tolerances for flatness and parallelism insure tool alignment and long life.

1. Heavy Duty shut height is 7.85" (199.4 mm) between working faces of Master Set.
2. At 7.85" (199.4 mm) shut height, the punch cutting edge will be approximately .06" (1.5 mm) above the top surface of the die bushing. **THE PUNCH DOES NOT ENTER THE DIE.** The 7.85" (199.4 mm) shut height should be maintained as long as possible, even after sharpening, to minimize over compression of and possible damage to the stripper units. As tools are sharpened, the .06" (1.5 mm) gap at shut height can increase to as much as .200" (5 mm) or more depending on the application, without the need to readjust the press.
3. With Heavy Duty punching, it is very important to insure that all stripper faces are fully supported by the work piece at bottom of stroke. Lack of support can cause tipping or cocking of the stripper and possible resultant damage and / or injury. Strippers that cannot be fully supported by the work piece (edge notching, for example) must be counterbalanced by attaching a balance pad of the same thickness as the work piece, to the top surface of the bush. Adhesives can be used for this purpose. **THE PRESS MUST NOT BE DRY CYCLED WITHOUT A WORK PIECE WHEN A BALANCE PAD IS BEING USED.**
4. Heavy Duty Series **100** is rated for punching maximum .500" (12.7 mm) thick mild steel. Heavy Duty Series **150** is rated for punching maximum .625" (15.9 mm) thick mild steel, although under some conditions subject to **Whistler** review, .750" (19.05 mm) thick mild steel can be punched. Heavy Duty Series **225, 300** and **400** are rated for punching maximum .625" (15.9 mm) thick mild steel.



# MAGNA DIE - Accessories

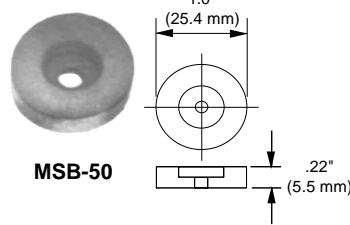
## Stock Pushers



**MSGA-50**

Stock pushers are used to force the material towards the gages. Normally (3) are used. Supplied with self tapping screws, drill .140" (3.5 mm) dia holes for mounting.

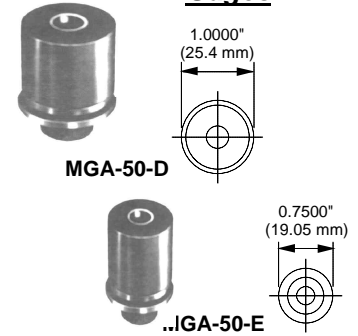
## Support Button



**MSB-50**

These buttons are used to support the work piece in areas not supported by die bushings. Supplied with self tapping screw, drill .140" (3.5 mm) dia hole for mounting.

## Gages

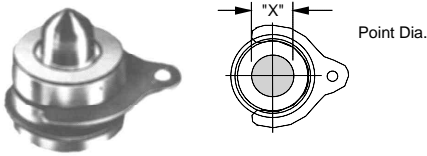


**MGA-50-D**

**.IGA-50-E**

Gages are used to locate the outside edges of the work piece. Normally (3) are used. Refer to page 6 for template hole bore dimensions.

## Pilots



**MPG-50 x (Specify Dia)**

Pilots are used to locate subject on secondary punching operations. Locates from previously punched holes. Normally ordered .001" (.025 mm) under punch size.

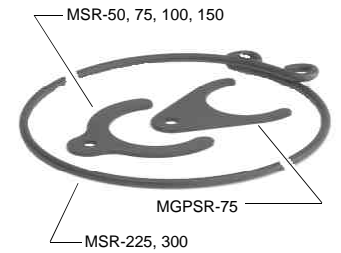
## Template Clamp Screw



**TCS-50**

Template clamp screws are used in sets of (8) to secure each corner of the punch and die templates to the Master Set support post.

## Snap Rings



Snap rings are used to secure the die retainers into the template. They fit into the upper groove on the die bushings after insertion into the template.

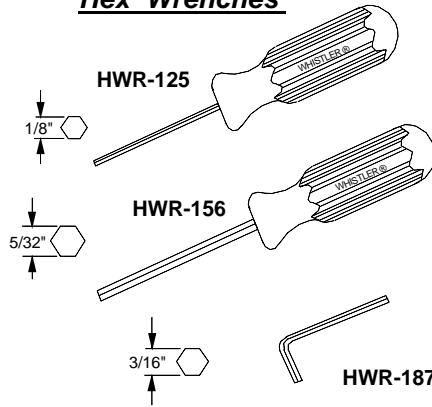
## Auxiliary Template Support

**AMTS-50**



Designed to support large punch templates with few holes, where template weight may prevent the punch retainer magnets from seating properly.

## Hex Wrenches



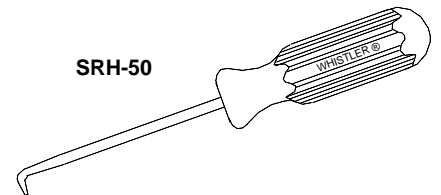
**HWR-125**

**HWR-156**

**HWR-187**

Smaller wrench fits all stripper set screws. Larger fits all punch and die set screws. Angled fits template clamp screws.

## Snap Ring Hook



**SRH-50**

Snap ring hook is used to aid installation and removal of the die retainer snap rings.

## Set Screws



Description	Used On
<b>SSP-50</b>	Punch Retainers
<b>SSD-50</b>	Die Retainers
<b>MSSA-50</b>	Poly Strippers
<b>MSSA-50</b>	Spring Strippers
<b>SSSA-50</b>	HS, HPS-100
<b>HSS-150</b>	HPS-150 to 400

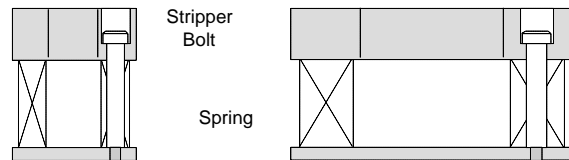
## Template Clamp Plug

**MTCP-50**



Template clamp plugs are used to align prebored blank templates when boring retainer location holes.

## Stripper Components



Stripper	Stripper Bolt	Spring
<b>MS-50</b>	SSBO-50	SP-50
<b>MS-75 to MS-100</b>	SBO-75	SP-75
<b>MS-150</b>	SBO-75	SP-150
<b>MS-225 to MS-400</b>	SBO-75	SP-75
<b>MSX-50</b>	SSBO-50	SP-50
<b>MSX-75 to MSX-400</b>	SBO-75	SP-150

# MAGNA DIE - Accessories

Original Magna Die and Magna Die 2000 tools are easily automated for fast, higher volume production from coil fed materials. To accommodate coil, use the coil control accessories illustrated below. These include stock lifters, pneumatic crowders, roller gages and guides. All coil control accessories are designed for fast attachment to die templates. Coil control accessories are not designed to overcome deficiencies in coil material quality such as camber or residual coil curvature.

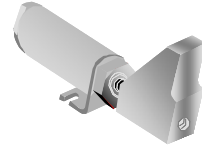
## Lifters

SLA-50



Lifters are used to raise work piece above the die bushings. Uses standard MSR-75 snap ring to secure into template. Designed to fit in 1.5" (38.1 mm) dia bored hole.

## Air Crowd

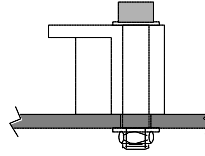


ACA-50

Crowders are designed to position the work piece against the roller gages just prior to punching.

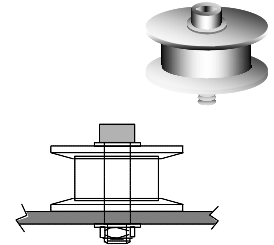
## Hook Guide

HSGA-50



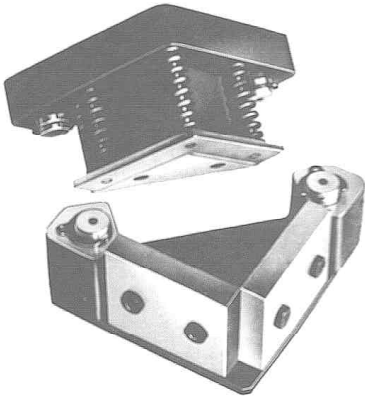
Guides are used to contain vertical movement of the coil material during advancement.

## Roller Gages

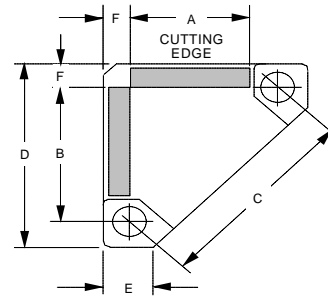


Roller gages are used to provide a non-marring surface for the coil to run against. Designed to use standard .500" dia stripper bolt to secure into template.

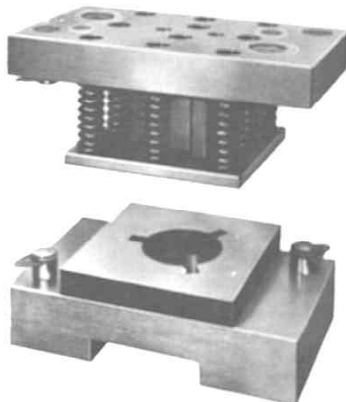
## Corner Notch (Standard series only)



**MCND 33R2**  
**MCND 66R2**  
FOR 1/4" (6.3 mm) MAX



CATALOG NUMBER	A	B	C	D	E	F
<b>MCND 33R2</b>	3.250" (82.55 mm)	4.000" (101.6 mm)	5.6568" (143.68 mm)	5.75" (146.05 mm)	1.09" (27 mm)	1" (25.4 mm)
<b>MCND 66R2</b>	6.250" (158.75 mm)	7.000" (177.8 mm)	9.8995" (251.44 mm)	8.75" (222.25 mm)	1.12" (28.5 mm)	1" (25.4 mm)



## Sub Press Dies




Sub Press Dies are used to save operations by punching features or groups of features having overall sizes that exceed the capacity of standard punch and die retainers. Sub Press punch and die sections are template-positioned to work in conjunction with standard system retainers. Punch sections are designed with integral strippers. Virtually any size opening or cluster group can be punched with Sub Press Dies.



# Technical Data - Special Shapes

## PUS 50 C001 DIA WITH (1) FLAT

Special punches and dies can be supplied in nearly any shape or combination of shapes to pierce, notch, extrude, countersink, emboss, etc. Shown here are some typical examples of these applications. Send us a fully dimensioned print of your own special requirement for our recommendation and quotation.

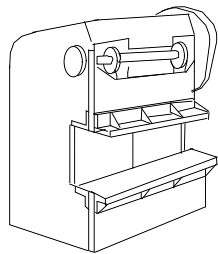
1		13		26		40		60		73		88		100		112		124	
2		14		27		41		61		76		89		101		113		125	
3		15		28		42		62		77		90		102		114		126	
4		16		29		43		63		78		91		103		115		127	
5		17		30		44		64		79		92		104		116		128	
6		18		31		48		65		80		93		105		117		129	
7		19		32		49		66		81		94		106		118		130	
8		20		34		55		67		82		95		107		119		132	
9		21		35		56		68		83		96		108		120		133	
10		22		37		57		70		84		97		109		121		134	
11		24		38		58		71		85		98		110		122		135	
12		25		39		59		72		87		99		111		123			

# Press Data Sheet

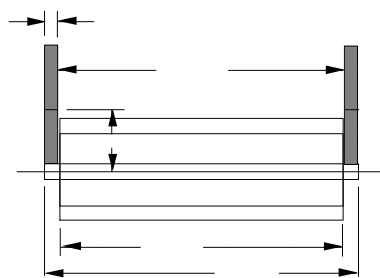
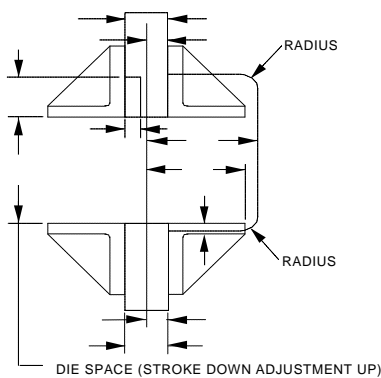
Fill in all related press information and return this form with your die set request.

*Whistler*®

S.B. WHISTLER & SONS, INC.

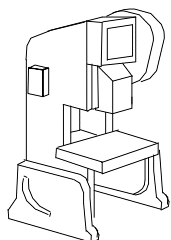


## PRESS BRAKE

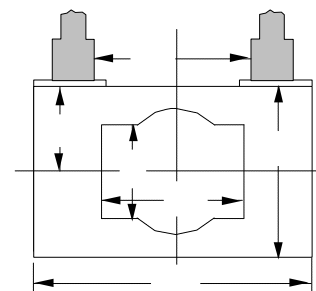
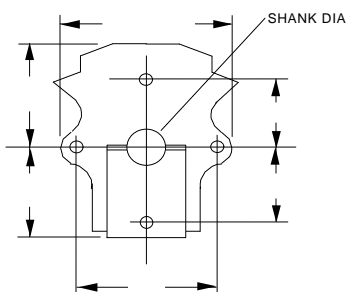
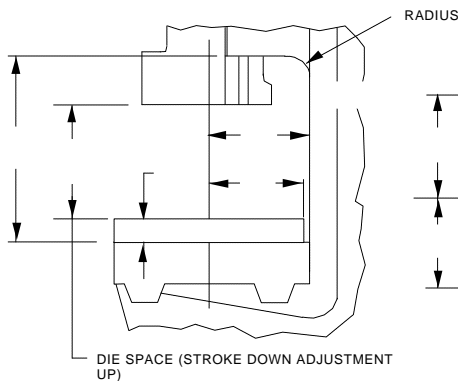


NAME & SERIAL NO. \_\_\_\_\_ TONNAGE \_\_\_\_\_

STROKE OF RAM \_\_\_\_\_  
ADJ. OF RAM \_\_\_\_\_

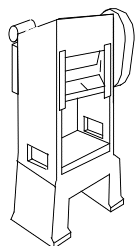


## INCLINABLE PRESS

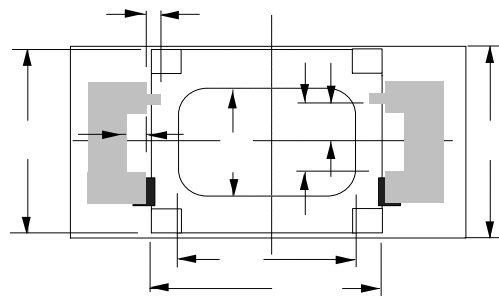
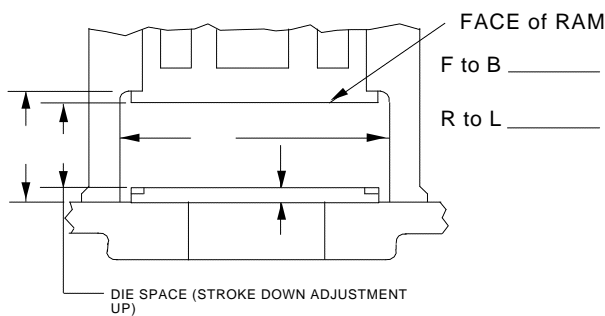


NAME & SERIAL NO. \_\_\_\_\_ TONNAGE \_\_\_\_\_

STROKE OF RAM \_\_\_\_\_  
ADJ. OF RAM \_\_\_\_\_  
SIZE OF HOLE IN BOLSTER \_\_\_\_\_

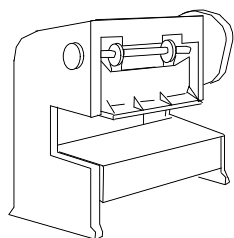


## STRAIGHT SIDE PRESS

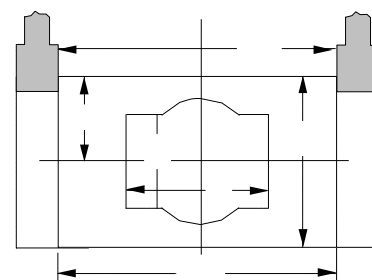
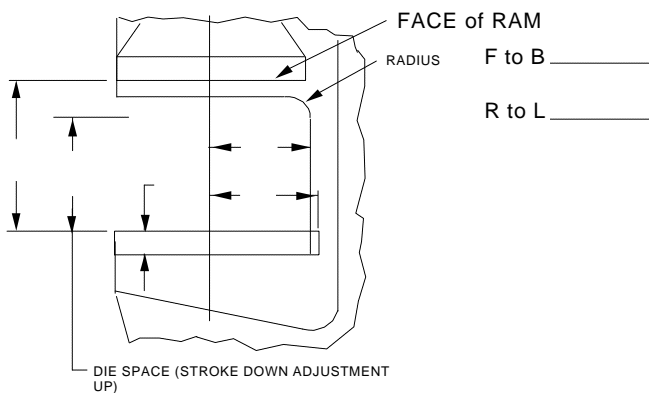


NAME & SERIAL NO. \_\_\_\_\_ TONNAGE \_\_\_\_\_

STROKE OF RAM \_\_\_\_\_  
ADJ. OF RAM \_\_\_\_\_  
SIZE OF HOLE IN BOLSTER \_\_\_\_\_



## DOUBLE OR SINGLE CRANK GAP PRESS



NAME & SERIAL NO. \_\_\_\_\_ TONNAGE \_\_\_\_\_

STROKE OF RAM \_\_\_\_\_  
ADJ. OF RAM \_\_\_\_\_  
SIZE OF HOLE IN BOLSTER \_\_\_\_\_

# Technical Data - Calculating Punching Tonnage

To calculate punching tonnages use the following shear strength value chart with either the Inch or Metric formulas. To ensure safe operation, it is recommended that any questionable tonnage conditions be reviewed thoroughly with your press manufacturer.

## Shear Strength Values

MATERIAL	TONS PER SQ INCH	METRIC TONS PER SQ CM
Aluminum 1100-0 3003-0,6061-0	5.0	0.71
Aluminum 2024-0 3004-H36, 5052-H32	10.0	1.41
Brass & Aluminum 2025-T6, 6152-T6	17.5	2.46
Mild Steel & Bronze	27.5	3.87
Stainless Steel	55.0	7.74

### Formula - Inches

Linear inches X Material thickness in inches X Tons per square inch = Tonnage Required

### Formula - Metric

Linear centimeters X Material thickness in centimeters X Metric tons per square centimeters = Metric Tonnage Required

*NOTE: Add an additional 10% for stripping pressure (multiply by 1.1).*

---

**EXAMPLE: How many tons are required to punch fifteen 0.375" (9.52 mm) diameter hole in 16 gage 0.06" (1.52 mm) mild steel ?**

### Inch

Using the formula of Circumference = 3.1416 X Diameter, determine the linear inches of one 0.375" diameter hole (0.375 X 3.1416 = 1.178"). Multiply by 15 to calculate total linear inches (15 X 1.178 = 17.672"). Select the proper Shear Strength value from the above chart (Mild Steel = 27.5 tons per square inch) and calculate the total tonnage using the below formula.

$$17.672" \times 0.06" \times 27.5 = 29.2 \text{ Total Tons}$$

Add 10% for Stripping pressure

$$29.2 \times 1.1 = 32.1 \text{ Tons}$$

### Metric

Using the formula of Circumference = 3.1416 X Diameter, determine the linear centimeters of one 9.52 mm diameter hole (9.52 X 3.1416 = 29.91 mm, or 2.99 cm). Multiply by 15 to calculate total linear centimeters (15 X 2.99 = 44.85 cm). Select the proper Shear Strength value from the above chart (Mild Steel = 3.87 metric tons per square centimeters) and calculate the total tonnage using the below formula.

$$44.85 \text{ cm} \times .152 \text{ cm} \times 3.87 = 26.38 \text{ Metric Tons}$$

Add 10% for Stripping pressure

$$26.38 \times 1.1 = 29.0 \text{ Metric Tons}$$





## GENERAL INFORMATION

**PRICES:** All prices are quoted Ex Works and are subject to change without notice. All orders are accepted subject to approval of our credit department.

**ORDERS:** Catalog parts should be ordered in accordance with the descriptions in this reorder guide.

**SHIPMENT:** Shipments will be made via common carrier of our determination unless otherwise stated on your order.

**CANCELLATIONS:** In the event an order is canceled, a cancellation charge will be made to cover all engineering, labor, material and overhead.

**RETURNED MATERIALS:** A restocking charge is applied to all parts returned for credit, to cover inspection and restocking in original condition. All return shipments must be sent with transportation charges prepaid. *Written permission* and shipping instructions must be obtained before the return of any material. Parts made to order are not returnable for credit.

**CHARGES:** An extra charge will be made for reproducible tracings, prints and other specific technical data of special tooling when required by the customer.

**WARRANTY:** *Whistler* warrants that its products are free from defects in workmanship and materials under normal use and service for a period of six months from date of shipment, provided such goods are used in accordance with factory supplied instructions. *Whistler* makes no warranty with respect to any product not of its own design, such product to carry only the warranty of the manufacturer. This statement concludes the entire warranty.

**ALL DATA HEREIN IS SUBJECT TO CHANGE WITHOUT NOTICE.**

*S.B. Whistler & Sons, Inc. offers complete engineering and design services to provide industry with standard and special tools and dies for more efficient and economical production.*

*Phone, write or fax for more information regarding your sheet metal stamping or fabricating requirements, with no obligation to purchase.*