



# HTS

## TECHNOLOGIES

A Heritage of Quality in Internal Elastomeric Swaging

PRODUCT CATALOG



*Hydraulic Tube Swaging • Formerly Ward & Garrison*

## A HERITAGE OF QUALITY IN ELASTOMERIC SWAGING

HTS Technologies has strived for nearly 30 years to bring the highest standards of quality and precision to the Internal Elastomeric Swage Tooling and Equipment field. Founded in 1972 by George Ward and formally known as Ward & Garrison (as specified in Boeing Process Spec BACS5001-4), HTS Technologies is the single source for Ward & Garrison products. HTS Technologies has consistently built a solid reputation by offering the highest quality in tooling and equipment by using advanced technology that is tested repeatedly for reliability and endurance . . . all at a reasonable price. With an eye and a determination for satisfied customers throughout the world, HTS Technologies has a continued focus in bringing products to the marketplace that meet or exceed customer expectations and industry standards.

We at HTS Technologies understand that integrity is vital to performance. To that end, our products--designed for hydraulic, pneumatic, fuel or other critical fluid applications--are unmatched in quality. This level of quality is achieved through continued innovation, expert technical support, and a strong customer focus. We are confident that our products and services are simply the best in the Internal Elastomeric Swage Tooling and Equipment field.

## OUR EXPERIENCE IN INTERNAL ELASTOMERIC SWAGING IS UNMATCHED

HTS Technologies has an unmatched legacy for helping customers solve their production problems safely, efficiently and profitably. This legacy started many years ago with Boeing in helping them develop precision swage tools and equipment for all internal elastomeric swage applications. With the innovation of this unique scissor design that utilizes computerized controls and superior hydraulics, HTS Technologies can offer a simple solution for a fast, proficient and reliable swaging process critical for high pressure hydraulic systems in both commercial and military applications.

Our engineering department has extensive experience and swage industry knowledge. Our experience is built on three generations that continue to innovate and optimize our existing products and services. We are competent, capable and ready to design any hydraulic or high-pressure pneumatic applications that will satisfy specific customers' requests, however extensive.

## SATISFACTION GUARANTEED

Building strong relationships with our customers is very important. We do this through high customer service in all facets of our business. We provide attentive service to supply you with all of your needs, whether it is product information, troubleshooting, or placing an order.

We offer multiple ways for you to order from us. You can simply go to our website at [www.htstechnologies.com](http://www.htstechnologies.com) to order all of your tooling or swaging needs. Or, we are happy to work with you over the phone to place your order. Either way, your order will be shipped to you quickly and accurately.

***Still have questions? We are happy to answer them! Give us a call at 816-796-1500.***

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## SEMI-AUTOMATIC POWER SWAGE MACHINES

Production ready semi-automatic swagers use a hydraulically actuated drawbolt with an elastomeric expander to hydrostatically form the tube outward into machined grooves within the fitting. The fitting is held by metal split dies during the swaging process. Semi-automatic power swagers can elastomerically swage fittings to tubing within 10 seconds.

The semi-automatic power machines are best for high volume tube assembly production using tube materials such as 21-6-9, 304 and 321 CRES, 6061-T6 aluminum and CP titanium with standard wall thickness. The machines are housed on sturdy mobile carts complete with tool storage for easy quick tool access and reliability. Please contact us for more information and specifications.

### Model# WG-PTS-100-04-12

Computer-controlled, hydraulic/power unit equipped with a precision head capable of swaging .250" through .750 O.D. tubing.

### Model# WG-PTS-200-12-40

Computer-controlled, hydraulic/power unit equipped with a precision head capable of swaging .750" through 2.50" O.D. tubing.

### Model# WG-PTS-400-04-40

Computer-controlled, hydraulic/power unit equipped with dual precision heads capable of swaging .250" through 2.50" O.D. tubing.

## POWER SWAGER TOOLING

Tools required to operate the Semi-Automatic Power swagers must be ordered specific for the tubing outside diameter.

## PART CODES

### Split Dies

#### Beeding Split Die

WG-PTS-100-BSDA  
WG-PTS-200-BSDA

#### Sleeve Split Die

WG-PTS-100-SSDA  
WG-PTS-200-SSDA

#### Union Split Die

WG-PTS-100-USDA  
WG-PTS-200-USDA



### Adapters

WG-PTS-100-A  
WG-PTS-200-A

### Anvils

WG-PTS-100-AV  
WG-PTS-200-AV



*When ordering, write out part number by specifying: Part code + Tube OD*

## PORTABLE SWAGE MACHINES

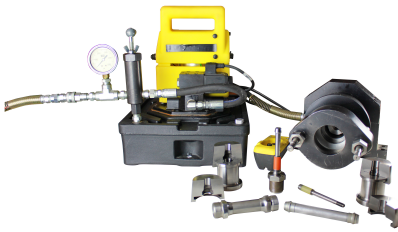


Bench top type construction hand or foot portable swagers equipped with hydraulic power pump offers quick, easy to operate and precise tube assembly. Our portable machines are best used for low-to-medium production runs and repair jobs using industry standard tube and tube wall thickness.

The portable swagers come with stand, gauge, and hose assembly. Electric pump and storage box is also available. Please contact us for more information and specifications.

### Model# WG-HTS-050

Equipped with a hydraulic hand or foot pump power unit and is capable of swaging .250" through .500" tubing.



### Model# WG-HTS-075

Equipped with a hydraulic hand or foot pump power unit and is capable of swaging .625" through 1.500" tubing.

## PORTABLE SWAGER TOOLING

Tools required to operate the portable swagers must be ordered specific for the tubing outside diameter.

## PART CODES

### Beeding Split Die

WG-HTS-050-BSDA  
WG-HTS-075-BSDA

### Sleeve Split Die

WG-HTS-050-SSDA  
WG-HTS-075-SSDA



### Union Split Die

WG-HTS-050-USDA  
WG-HTS-075-USDA

### Adapters

WG-HTS-050-A  
WG-HTS-075-A



### Anvils

WG-HTS-050-AV  
WG-HTS-075-AV



*When ordering, write out part number by specifying: Part code + Tube OD*



## INTERNAL SWAGE TOOLING

### PART CODES

#### Expanders

WG-PTS-E



#### Drawbolts

WG-PTS-DB



#### Bushings

WG-PTS-B



*Note: no "L" or "S" designation necessary*

#### Split Rings

WG-PTS-SR



*Note: no "L" or "S" designation necessary*

*When ordering, write out part number by specifying:*

*Part code + Tube OD + Tube Wall Thickness + "L" or "S" for long or short swage*

## HTS ALSO OFFERS AN AFTERMARKET LINE OF TOOLING

In addition to our exclusive line of HTS "Ward & Garrison" tooling, we also produce and offer an aftermarket line. When ordering from the HTS "Aftermarket" line, append a "G" to your base part number. Contact us for more information about our line of aftermarket external tooling, too.

#### Expanders



#### Drawbolts



#### Bushings



#### Split Rings



## ORDERING INFORMATION

### Swager Tooling Part Number Example

WG - PTS - 100 - AV - 06

WG	<i>description for WG??</i>
PTS	Indicates Power (PTS) or Hand (HTS) Tube Swager
100	Indicates Tube Swager series number. In this example, tooling fit Series 100
AV	Indicates type of tooling. This example is an Anvil (Note: Add "G" after this code if ordering from the Aftermarket line)
06	Tube OD

### Internal Tooling Part Number Example

WG - PTS - DB - 06020L

WG	<i>description for WG??</i>
PTS	Indicates Power (PTS) or Hand (HTS) Tube Swager
DB	Indicates type of tooling. This example is a Drawbolt. (Note: Add "G" after this code if ordering from the Aftermarket line)
06	Tube OD
020	Tube wall thickness (expressed as .020 inches, etc.)
L	Swage length designation, if applicable

### Standard Delivery

Tooling orders are delivered 4 – 6 weeks after order is placed with us.

Delivery of Semi-automatic Tube Swaging Units takes approximately 12 – 16 weeks.

Portable Tube Swaging Units are delivered in approximately 8 – 12 weeks.

### Warranty Information

HTS Technologies warrants machines and tooling to be free from defects in all parts and labor for three months from the date of formal acceptance.

### Custom Work

Have a special project? We offer engineering design, fabrication and support expertise in a range of industries from knowledgeable engineers, design experts, and experienced machinists who consistently deliver quality results. Try us for your next support equipment need.

### Tube OD Legend

Tube OD Size No.	04	05	06	08	10	12	16	20	24
Dimension: inches	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1 1/4"	1 1/2"

## CAN WE HELP? GIVE US A CALL AT 816-796-1500.

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