Case Studies & News from E.H. Wachs

E.H. WACHS® A Division of ITW
Superior Equipment. Complete Support.™

APPLICATION REPORT

# Good Things Come in Small Packages
# E.H. Wachs Ultra Compact Split Frames

Volume 1 ▸ Issue 2

**Figure 1** - Machining Rising Valve Stems for Safety Sensors

## The Project

As part of a safety system upgrade to automatically monitor the position of critical valves in its power plants (figure 1), Exelon required a miniature split frame to machine down a portion of the valve stem threads so a sensor strip could be mounted. At Newport News Shipbuilding this same split frame technology proved ideal (figure 2) for onsite machining in pipe racks and tube sheets.


**Figure 2** - Onsite Machining in Pipe Racks and Tube Sheets

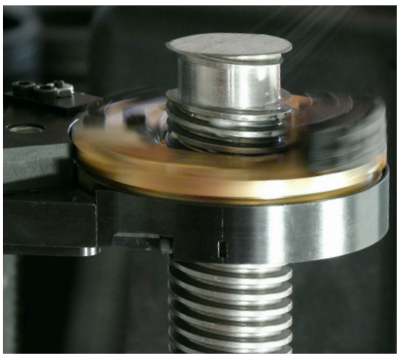

**Figure 3** - Removing Threads for Smooth Mounting Surface

## The Challenge

The sensors Exelon installed required machining a smooth mounting surface (figure 3) on threaded 1.250" (31.75mm) and 1.625" (41.28mm) valve stems. With very tight clearances between the valve stem and valve housing, traditional split frames were either too large radially or too thick axially to fit. On ships, particularly submarines, the operating envelope to cut, face or bevel in pipe racks or tube sheets is minimal. In both industries critical systems and safety are involved, so the final machining must be flawless.

## The Solution

E.H. Wachs experience in onsite machining with split frames has led to the Ultra Compact Split Frame, our newest and smallest line (figure 4). Built with jewel-like precision the UCSF proves that good things come in small packages. Specially designed to accommodate minimal axial and radial clearances, they include low clearance self centering collets for ease of setup.

For ships the specification called for an overall height not to exceed 1.75" (44.45mm), including the chipless cutting tool slide (figure 5). Special compact air motors with variable angle mounting were included to maximize the operating versatility in these tight spaces. UCSF capacities range from .25" (6.35mm) up to 2" (50.8mm) outside diameters.

**Figure 4** - Pneumatic UCSF (Ultra Compact Split Frame)

## The Technology

E.H. Wachs is the innovator in advanced split frame technology, and the UCSF demonstrates our expertise in applying this technology to challenging applications. Lathe machining yields precision cuts and weld preps not available with other methods. E.H. Wachs offers the most complete lineup of split frames, in your choice of drives, for virtually every pipe, tube or vessel made:

- **UCSF** from .25" to 2" (6.35 to 50.8mm)
- **SDSF** from 1" to 6" (25.4 to 152.4mm)
- **LCSF** from 2" to 48" (50.8 to 1220mm)
- **HDSF** from 12" to 96" (305 to 2438mm)

Every Wachs split frames utilizes our safe, cold cutting method that preserves the metallurgical properties of the base material and avoids torching, a vital consideration anywhere hydrocarbons are present. Give us a call with your challenge, big or small, and learn more about our Superior Equipment. Complete Support™.

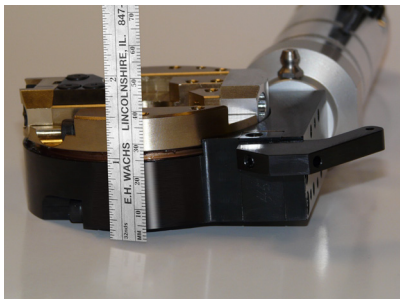


**Figure 5** - Shipboard UCSF Maximum Height 1.75" (44.45mm)

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## Executive Summary

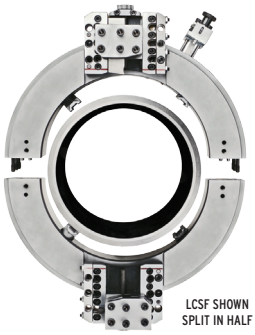
E.H. Wachs, in response to a need by Exelon and Newport News Shipbuilding for a device to machine in tight quarters, built a series of miniature split frames that "split" in half for mounting around the O.D. of inline pipe and tubes. These Ultra Compact Split Frames are designed with small (radial) diameters and a very low (axial) height to machine valve stems in power plants and for onsite machining of pipe racks and tube sheets.

We had to think small for these applications...but as a Division of ITW we're used to thinking big. In addition to our standard weld prep machines tools, Wachs offers custom solutions to specific applications like yours. They range from modifications to our standard machines to complex, fully customized software and hardware integrated systems.

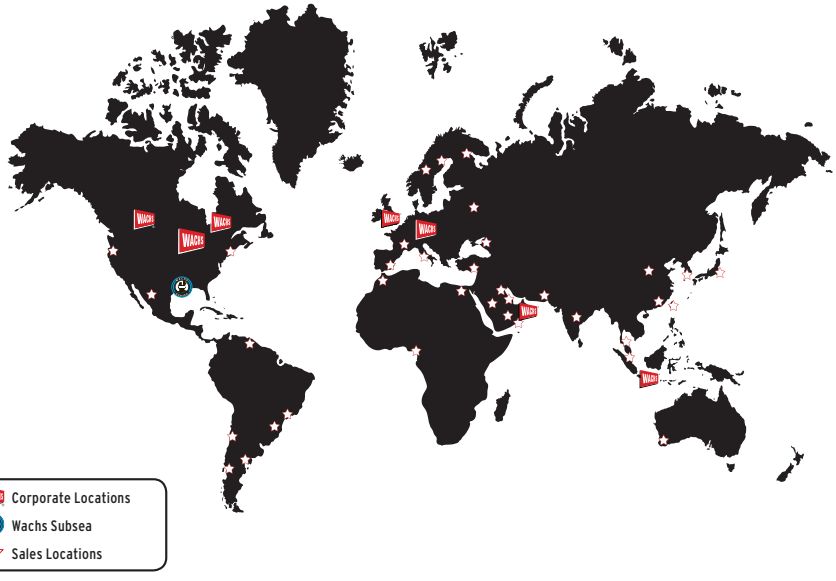
**We don't just think in terms of machine tools, we think in terms of solutions. Talk to one of our product specialists today and let us know what your special machining challenge is. At E.H. Wachs we have the engineering expertise and manufacturing capability to deliver a solution that works, on time and on budget.**

## E.H. Wachs® Industrial Division

- Industrial Pipe Cutting and Beveling Machine Tools
- Portable Weld Prep Machine Tools, Sales and Rentals
- Split Frames, Guillotine® Pipe Saws, Trav-L-Cutter®
- End Prep Machines, Flange Facers, Hydraulic Power Units
- Onsite Technicians, Factory Training, Engineered Products



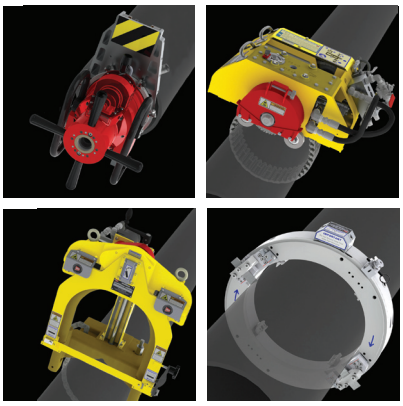
LCSF SHOWN SPLIT IN HALF




## Quality & Innovation Since 1883

E.H. Wachs® has a long history of quality manufacturing and product innovation, dating back to 1883. Today our Industrial division builds the finest portable, cold cutting weld prep machine tools including I.D. and O.D. mounted pipe cutters and bevelers, flange facers, the Trav-L-Cutter® and Guillotine® pipe saws, boiler tube bevelers and handheld valve turners/exercisers.

Our products are renowned for their engineering excellence, precision manufacturing and rugged reliability. They're sold and serviced worldwide through our international dealer network and Wachs Sales and Service Centers located in Illinois, Texas, Canada, the UK, Singapore, Germany and the UAE.



**Clockwise:** EP 424 Speed Prep • Trav-L-Cutter® Guillotine® Pipe Saw • LCSF Low Clearance Split Frame

## Contact Us

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