

## APPLICATION REPORT

# Out with the Old, In with the New Weld Excavation, Crown & Socket Weld Removal

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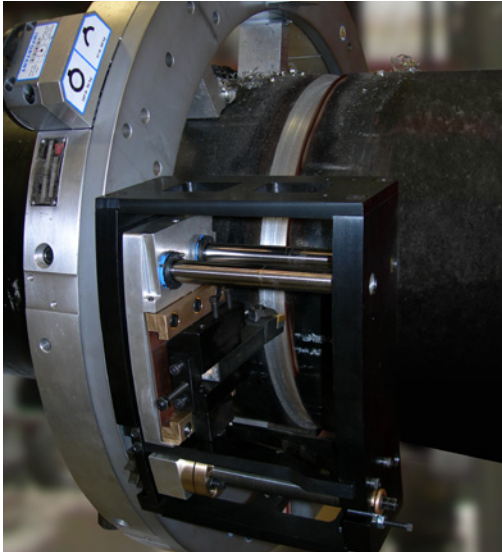


Figure 1 - Flawed or failed weld filler may require removal or "excavation"

## The Project

Various failures can occur in welds during construction or maintenance of critical piping systems, prompting the removal or "excavation" of the filler weld material down to the root pass (figure 1). This operation is indicated when destructive cutting and replacement is undesirable, and where the original connection must be maintained (figure 2). In power generation and other industries weld crowns may require machining to meet in service inspection regulations or surface finish and profile requirements (figure 3). Likewise when sockets are involved and no sacrifice to the pipe or sockets is desired, the weld must be removed to separate the socket from the pipe (figure 4).

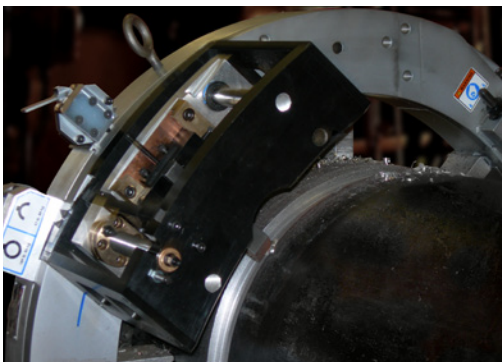


Figure 2 - Proper weld excavation preserves the original weld root

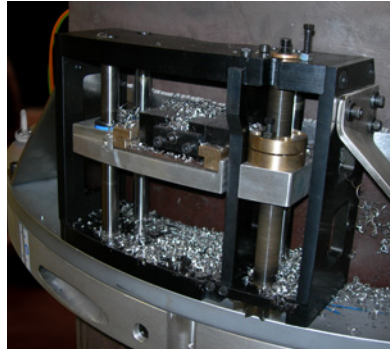


Figure 3 - Crown removal module tooling advances axially

## The Challenge

Many factors can contribute to weld failure. Lack of adhesion, flaws, cracks, inclusions or the wrong weld filler may all indicate replacement is needed. The difficulty is to precisely machine away all the weld material without disturbing the critical root pass, and ending with a well finished surface for the new weld. On crown removal and socket weld removal overcoming challenges such as restricted operating clearances and component part preservation is the difference between success and failure.

## The Solution

E.H. Wachs offers multiple solutions to get the weld out. For weld excavation on small diameter pipe and tube from 1" through 6" (25.4 - 152.4mm) O.D. our SDSF split frames are ideally suited. They're also the basis of our Socket Weld Removal kits, available in both axial (figure 5) and radial versions to accommodate most clearance issues.

- ▶ LCSF Weld Excavation Modules
- ▶ SDSF & LCSF Crown Removal Modules
- ▶ SDSF Axial & Radial Socket Weld Kits

For larger diameter pipes (up to 48" or 1220mm) our multipurpose LCSF low clearance split frames can be configured with weld excavation modules, crown removal modules and the entire range of Wachs split frame accessories that make the LCSF the industry's most complete machining system.



Figure 4 - Small split frames are used for socket weld removal

## The Technology

E.H. Wachs split frame technology is the most advanced in the industry. As the innovator in field portable machines tools, every Wachs pipe cutting and beveling machine utilizes a cold cutting method that avoids the risks associated with torching, a vital consideration anywhere hydrocarbons are present. Our machines reduce the need for Hot Work Permits, saving valuable time and preventing the creation of an undesirable HAZ (Heat Affected Zone).

Wachs split frames are highly versatile, as the same machine used for weld filler, crown or socket weld removal can be used for cutting, beveling, single pointing, counterboring and more when properly configured. In addition to our O.D. mounted split frames and I.D. mounted end prep machines Wachs offers a complete range of accessories, tooling and power supplies to handle the most challenging machining applications.

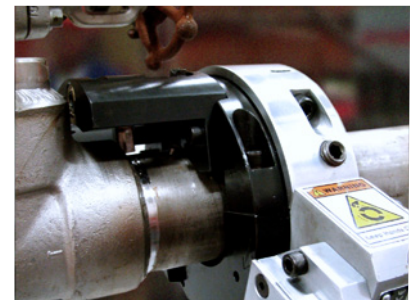


Figure 5 - Socket weld kits precisely remove weld filler

### Executive Summary

When destructive cutting is not an option during replacement of a failed weld, weld excavation is used to remove (or “excavate”) the weld filler material. This procedure machines down to the weld root and creates a prepped surface ready for re-welding, maintaining the original connection. Weld crown removal is an axial machining process that removes the raised weld crown, and is used to meet inspection regulations or surface and profile requirements.

E.H. Wachs Socket Weld Removal kits can successfully remove the weld material preserving the socket and the pipe or tube where a non destructive method of repair is needed.

Look to E.H. Wachs for machine tools to successfully rehabilitate critical piping systems using non destructive machining methods. To learn which of our products is right for your weld removal application, talk to one of our product specialists today about our Superior Equipment. Complete Support™.



Machine tools for weld filler removal

### 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 weld prep machine tools including I.D. mounted end prep and O.D. mounted split frame pipe cutters and bevelers, flange facers, the Trav-L-Cutter®, Guillotine® pipe saws, boiler tube bevelers and handheld valve operators.

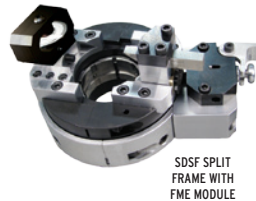
Our products are renowned for their engineering excellence, precision manufacturing and rugged reliability. They're sold and serviced worldwide through our international dealer network and Wachs Sales and Service Centers located in Illinois, Louisiana, Texas, Canada, the UK, Germany, Singapore and the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

### Gulf States Service & Rental Center - Gonzales, Louisiana

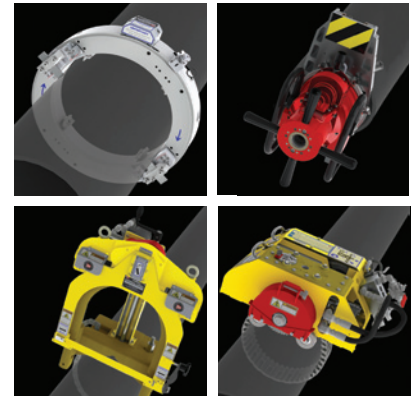
Our newest Service and Rental Center in Gonzales, LA, is stocked with the entire range of E.H. Wachs machine tools and accessories available for rent, plus a large selection of tooling and spares. This center is designed to serve the needs of the oil refining and production industries centered in the Gulf States, as well as power generation facilities in the southeastern area of the United States.

### E.H. Wachs® Industrial Division

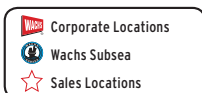
- ▶ Industrial Pipe Cutting and Beveling Machine Tools
- ▶ Portable Weld Prep Machine Tools, Sales and Rentals
- ▶ Split Frames, Guillotine® Pipe Saws, Trav-L-Cutter®
- ▶ End Prep Machines, Flange Facers, Hydraulic Power Units
- ▶ Onsite Technicians, Factory Training, Engineered Products



SDSF SPLIT FRAME WITH FME MODULE



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



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