

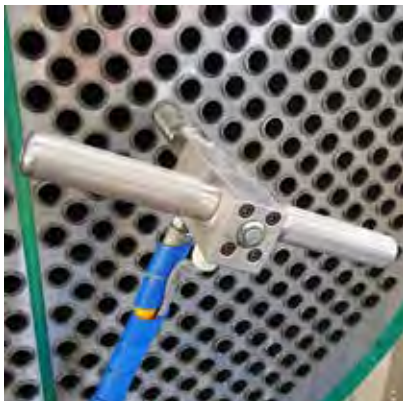
Hydraulic Expansion Equipment



EV-HS72 Evolution Hydraulic Expansion System

The Evolution system brings new technologies and ease of operation to hydraulic expansion as never seen before. Featuring stainless steel construction in a compact console. Employing a color touchscreen interface, digital & analog readouts, and a remote tablet. Our system can overcome the most difficult alloys out there with up to a 72k psi capability. Our small form factor makes the system easy to de-ploy and maneuver in congested shop environments (less than 100 kg). A full color touchscreen provides intuitive controls along with a full library of documents and videos. Directly from the machine an operator can access drawings, how to videos, and answers to common FAQ's. This additional functionality allows even new operators to quickly become proficient at machine operation and provide answers to technical questions.

EGI Help Solution's Evolution Bladder tooling makes the EV-HS72 the easiest system on the market to deploy. Gone are the days of hunting for segment pieces on the ground and re-banding with expensive assembly tools. Eliminated are the days of having a drawer full of different O-rings sizes for one job. The Evolution tooling line is also compatible with most hydraulic systems on the market. The tool is fully assembled from one end eliminating unnecessary components along with a metal to metal cone fitting for seal on the primary end of the shaft. Fixed or adjustable collars are available in a size range covering most common tube sizes. Tools are configured based on ID tube dimensions and sold in 1/2 millimeter increments ranging from 9.5mm-44.50mm diameters. Custom applications are possible, please consult with factory.



Stainless Steel mandrel holder with integral LED indicator/operator button



Stainless Steel console with interior lighting with room for power cord and mandrel holder storage



Remote Display tablet allows for convenient monitoring of system operation

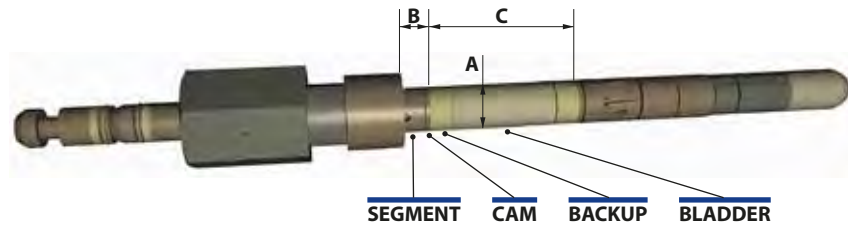
Evolution Hydraulic Tooling

The Evolution line of hydraulic expansion tooling employs some unique design elements simplifying and reducing the overall cost of hydraulic expansion.

- The Bladder design eliminates the need for multiple O-ring sizes along with difficult insertion of the tool into tubes.
- The Band-less segments eliminate the need to purchase expensive banding tools along with the cumbersome time consuming process of re-banding segments.
- Single cam design eliminates the need to position the segment within the confines of the tube sheet allowing the expansion zone to be tailored right up to the face of the tube sheet.
- Our greater expansion range allows for us to size all jobs to the nearest 1/2 mm increment eliminating the need for custom 1/4 mm increment sizes.
- Our tools feature a metal to metal sealing joint eliminating secondary "O-ring joints" and leak paths associated with other tooling brands
- The evolution tooling line also features single end assembly. When changing a bladder or other components all components are slid onto the shaft from the secondary end. Bladder change times are similar to changing a set of rolls in a mechanical expander.

Sample mandrel assembly part number: HLP-MA1550-10-60

- A 1550** Actual tube ID minus 1/4-1/2 mm (round down to nearest 1/2 mm increment)
- B -10** Primary extension (distance from face of tubesheet to begin expansion zone)
- C -60** Expansion zone length



EV-SS30 Evolution Hydraulic Sleeving System

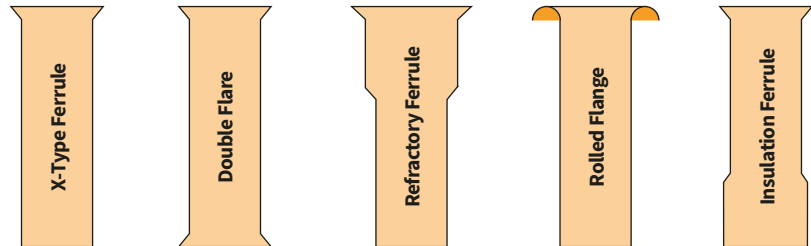
The EV-SS30 unique computer controlled expansion process controls both volume and pressure delivering a sleeve installation that will not come loose, provides optimum heat transfer characteristics, conforms to irregularly shaped tubes from erosion, and won't disturb the original factory tube expansion. Robust stainless steel construction with quality components, remote tablet, and report generation capabilities provide years of service in the harshest of environments. Our process provides the most residual stress between the sleeve and parent tube providing the most sealing power to bring failed tubes back into service.

Sleeve & Liners provide a viable repair option for common problems like inlet erosion, corrosion issues. They also have a variety of other applications such as sacrificial barriers installed in new units, galvanic anodes that provide necessary elements for some processes, as a way to stagger heat load into a unit to overcome undersized tube sheet designs.

EGI HELP Solutions manufactures sleeves & liners in a variety of design formats and materials. We supply them in a full range of alloys from duplex, cupro nickel, carbon, Inconel, etc. Tube sleeving restores new life to tubes with a new layer of skin. Typical installations occur in the first 12-24" of the tube inlet where some 90% of heat exchanger failures take place. Additionally, depending on the nature of the failures, the sleeves can be made from an upgraded alloy to provide an additional measure of protection. Parameters must be carefully considered when employing a sleeving repair, our experienced staff have the skills to navigate these challenges. Full length liners are another solution that provide a "bridge" from Tube sheet face to Tube sheet face. A full length liner can bring severed tubes back online, secure failed tubes eliminating fretting and damage to adjacent tubes while running. A hydraulically expanded liner provides intimate contact throughout the full length of the parent tube maintaining heat transfer properties. Liners can also be seal welded to the face of the sheet providing another level of sealing in some applications.



Typical Sleeve Formats



Evolution Tru-Torq plugs

The Evolution Tru-Torq plugs provide superior sealing without causing tube damage or causing ovalisation of the tube sheet hole. Employing a cam and wedge design, tough nut plugs can withstand pressures up to 6,000 PSI (maximum operating pressure and temperature are dependent on size and material of plug) . They are easily installed with only a torque wrench and end wrench. Evolution plugs can be manufactured from virtually any material specified. These plugs are an effective solution to your plugging needs providing quick headache free installation.



| PLUG PART# | Expansion Range [mm] | | Expansion range [inch] | | TUBE OD AND WALL RANGE | | | | | | | |
|------------------|----------------------|-------|------------------------|-------|------------------------|-------|-------|-------|-------|--------|--------|--------|
| | Min | Max | Min | Max | 1/2" | 5/8" | 3/4" | 7/8" | 1" | 1-1/8" | 1-1/4" | 1-1/2" |
| HLP-EP3944-XXX | 9,91 | 11,18 | 0,390 | 0,440 | 18-20 | 12-13 | | | | | | |
| HLP-EP4348-XXX | 10,92 | 12,19 | 0,430 | 0,480 | 22-24 | 14 | | | | | | |
| HLP-EP4752-XXX | 11,94 | 14,48 | 0,470 | 0,570 | | 15-17 | 10-11 | | | | | |
| HLP-EP5158-XXX | 12,95 | 14,73 | 0,510 | 0,580 | | 18-20 | 12-13 | 8 | | | | |
| HLP-EP5764-XXX | 14,48 | 16,26 | 0,570 | 0,640 | | 22-24 | 14-17 | 10-11 | | | | |
| HLP-EP6370-XXX | 16,00 | 17,78 | 0,630 | 0,700 | | | 18-24 | 12-13 | 8 | | | |
| HLP-EP6976-XXX | 17,53 | 19,30 | 0,690 | 0,760 | | | | 14-16 | 10-11 | | | |
| HLP-EP7582-XXX | 19,05 | 20,83 | 0,750 | 0,820 | | | | 17-20 | 12-13 | 8 | | |
| HLP-EP8188-XXX | 20,57 | 22,35 | 0,810 | 0,880 | | | | 22-24 | 14-16 | 10-11 | | |
| HLP-EP8794-XXX | 22,10 | 23,88 | 0,870 | 0,940 | | | | | 17-20 | 12-13 | 8 | |
| HLP-EP9310-XXX | 23,62 | 25,40 | 0,930 | 1,000 | | | | | 22-24 | 14-16 | 10 | |
| HLP-EP99106-XXX | 25,15 | 26,92 | 0,990 | 1,060 | | | | | | 17-19 | 11-13 | |
| HLP-EP105120-XXX | 26,67 | 3,05 | 1,050 | 0,120 | | | | | | 20-24 | 14-16 | |
| HLP-EP111118-XXX | 28,19 | 29,97 | 1,110 | 1,180 | | | | | | | 17-19 | 8 |
| HLP-EP117124-XXX | 29,72 | 31,50 | 1,170 | 1,240 | | | | | | | 20-24 | 10 |
| HLP-EP123130-XXX | 31,24 | 28,70 | 1,230 | 1,130 | | | | | | | | 11-12 |
| HLP-EP129136-XXX | 32,77 | 34,54 | 1,290 | 1,360 | | | | | | | | 13-14 |
| HLP-EP135142-XXX | 34,29 | 36,07 | 1,350 | 1,420 | | | | | | | | 15-18 |
| HLP-EP141148-XXX | 35,81 | 37,59 | 1,410 | 1,480 | | | | | | | | 19-24 |

Where XXX is material designator.

