Mechanical Rebar Splice Solutions
ABOUT US

BAR-US, Corp. is a global design, manufacturing and service company of engineered splice solutions for the heavy construction industry. BAR-US mechanical reinforcing bar couplers, anchorage, structural products, precast connectors and similar value-added engineered splice systems offer a variety of solutions to meet the challenges of heavy construction.

Bar-US production follows the guidelines established by our Quality Assurance Program and we certified by an ISO 9001 Quality Management Systems accredited agency. Our certification was granted because quality and accountability are two major pillars in our production process. All of our materials, documents and processes are carefully filed for traceability and a tracing code is printed on each product we produce.

BAR-US also manufactures rebar splicing solutions locally to avoid long lead times, transportation and customs issues, and the expenses of manufacturing abroad.

DESIGN

Our Research and Development team is comprised of skilled Mechanical, Civil and Industrial Engineers. These dedicated professionals specialize in rebar splice solutions for challenging construction projects. In addition to the products in our catalogs, we can custom design special mechanical connectors and a variety of other engineered steel products to fit the needs of each project. For large-scale projects, we also offer solutions for your rebar splice design problems.

SERVICE

BAR-US assists our customers throughout the entire production process: from concept and design to the installation at the job site. Our aim is to provide the most applicable and economical design solutions for mechanical couplers.

Along with our design and manufacturing abilities, we also offer an extensive array of related services, such as rebar upsetting and threading, at your job site. In addition, our equipment and technicians are available for the duration of the project so that you don’t need to purchase any equipment or hire extra technicians.
BENEFITS of MECHANICAL SPLICING

Why a Mechanical Splice?

Due to the growing technical challenges faced in today’s construction industry, traditional methods for connecting rebar, such as lapping or welding, is no longer the best method to connect rebar. More and more construction codes are specifying a mechanical coupler because it provides better structural integrity while minimizing costs. Some of the benefits of using a BAR-US mechanical coupler include:

- More reliable and more structural integrity than lap splices because they no longer rely on the concrete for load transfer
- Lowers the risk of rock and air pockets by reducing rebar congestion
- Efficient and easy design options result in smaller and stronger columns with the maximum amount of useful area
- Avoids drilling and/or cutting forms, especially in crane, elevator openings, and stairwells
- Installs easily and quickly
- Reduces the amount of rebar, which reduces the labor and crane time – improving the construction schedule
- No lapping length necessary – reduces inventory which lowers cost
- Better splice inspection – lowers quality control costs
- Allows for same line splicing – no staggered splices
- Minimizes rebar waste
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BAR-US COUPLERS provide optimum solutions for future extensions.

Stress - Strain Diagram

More and more engineers are specifying mechanical rebar connections over lap splices. They have found that mechanical connections provide reliability and consistency that can not be found in lap splicing.

Stress (ksi) | Strain % (in. per in.)
---|---
0 | 0
20 | 0.005
40 | 0.010
60 | 0.015
80 | 0.020
100 | 0.025

MECHANICAL SPLICE DESIGN VALUE | Lap Splice Design Value
Due to the growing technical challenges faced in today’s construction industry, traditional methods for connecting rebar, such as lapping or welding, is no longer the best method to connect rebar. Mechanical couplers are an effective method of connecting rebar which provides better structural integrity while minimizing costs.

The Bar-us range of reinforcing bar couplers is the most comprehensive available and includes SimGrip parallel threaded, Griplock swage and Jawws shear bolt mechanical couplers. All Bar-us products requires use of Bar-us equipments and accessories to ensure that they will consistently perform and produce related test requirements.

**SimGrip® System**

Upset Parallel Thread System Mechanical Coupler

BAR-US SimGrip® System is a mechanical coupler comprised of a steel sleeve which is internally threaded with a single right hand thread. The ends of bars are upset and threaded. The SimGrip® family of upset parallel thread mechanical couplers requires a BAR-US cold upset press and a tangential rebar threading machine.

**griplock® System**

Cold Swage System Mechanical Coupler

The Griplock® System coupler is swaged onto the reinforcing bar’s ribs to produce a mechanical interlock. Rebars are swaged onto the coupler. Griplock® Cold Swage System Mechanical Couplers are a fast, economic and easy way to splice deformed reinforcing bars. The Griplock® family of cold swage mechanical couplers requires a BAR-US cold swage, bench and/or portable press.

**griplock®-SL System**

GripLock® SL is a sleeve-type coupler that slips over the ends of deformed reinforcing bars and swaged with a Bar-us portable press to produce a mechanical interlock between the deformed rebar profile and the sleeve coupler.

**Anchor-Nut®**

The parallel threaded Anchor-Nut provides an alternative method of creating a simpler and more effective rebar end anchorage than the traditional hooked rebar within the concrete.

**Jawws® System**

Shear Screw Mechanical Coupler

Jawws® Shear Screw Mechanical Couplers are comprised of a high quality steel body which is installed on a reinforcing bar with TC Bolts. Because the TC Bolts are screwed into the coupler, the studs in the coupler provide a mechanical interlock between the reinforcing bar and the coupler’s inner wall. This is an improved interlock mechanism by creating a stronger interlock in a sleeve sleeve body. Jawws® Shear Screw Mechanical Couplers can be installed using an impact wrench provided by BAR-US.
TYPICAL APPLICATIONS

- Wall-to-slab connection,
- Wall-to-precast beam connection,
- Column construction,
- Repair and retrofit applications,
- Precast element-to-precast element connection,
- Closing of access openings,
- Rebar cage prefabrication,
- Bar end terminations.

Stairwell Application with Formwork Adapter

Steel to Concrete Connection Application with SimGrip WDCv

Wall to Slab Connection Application with Anchor Nut and SimGrip LT

Rebar Ending Application with Anchor Nut

Column Application with SimGrip LT

Foundation Application with Anchor Nut
Openings to be closed in Top Down Construction – Shangri-La Hotel Project

BEFORE

AFTER

Core, column, beam connections in a highrise project.

Closing of openings in Top Down Construction – Shangri-La Hotel Project
BAR-US designs and manufactures heavy duty customized machines like upset presses, bench and portable swaging presses, and threading machines for use with our mechanical couplers.

All Bar-us equipment are designed for both shop and outdoor field use. Our equipment is heavy duty and built to the highest quality standards to ensure that they will consistently perform and produce superior results for your large scale and mega size projects.

All of our equipment are CE certified, which means you can be confident that our equipment comply with all relevant essential requirements related to safety, health, and environmental protection.

Contact Bar-us for assistance to decide best equipment with your application.

GripLock Bench and Portable swaging equipments are easy to use and may be leased or purchased. Splicing manuals provided with equipment explain step-by-step installation and safety information. Equipment must be used in accordance with manuals, lease agreements, manufacturer’s directions and all safety instructions.

Swaging dies are stamped and color coded to match the coupling sleeves.

Bar-us Bench type Cold Swaging Press
Model EGE B1240

BAR-US Swaging Equipments for Griplock System Mechanical Couplers

BAR-US Cold Upset Press.
Model MKK-48PLC controlled heavy duty hydraulic press.

BAR-US SimGrip® Equipment
BAR-US SimGrip® Equipment is usually located on the rebar supplier’s premises and the couplers are supplied pre-fixed to the threaded bar ends.

For large projects where bar end preparation can be carried out onsite, equipment can be made available for hire.

The BAR-US method enlarges the rebar ends using a BAR-US cold forging press. This method proves a larger diameter of rebar for threading. Rebar ends enlarged and threaded by BAR-US have no loss of cross-sectional areas.


Rebar end is cut threaded by BAR-US bench threading machine, designed and manufactured for this purpose.
Under the BAR-US Quality Assurance Program, codes are stamped on all of our mechanical couplers. These codes allow the couplers to be traced back to the original lot of steel and the mill which produced it. Certified Material Test Reports (CMTR) are archived for future use as required.

Full-Tension splice, bar break under tensile tests.

The BAR-US mechanical couplers are designed to exceed 125% of the specified yield strength in the US when used with Grade 60 rebars. Bar Break performance for all standard rebars (Q12 - Q58).

BAR-US Mechanical Couplers are designed to comply with:

<table>
<thead>
<tr>
<th>Nominal Bar Size Dia. mm</th>
<th>Yield Stress (N/mm²)</th>
<th>Ultimate Stress (N/mm²)</th>
<th>Elongation %</th>
<th>Failure Mode</th>
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<tr>
<td>16</td>
<td>531</td>
<td>587</td>
<td>18</td>
<td>Bar Break</td>
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<td>17</td>
<td>Bar Break</td>
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</tbody>
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