

# Zap Screwlok®



 **BarSplice**  
PRODUCTS INC.  
A SUBSIDIARY OF FC INDUSTRIES, INC.

# ZAP SCREWLOK

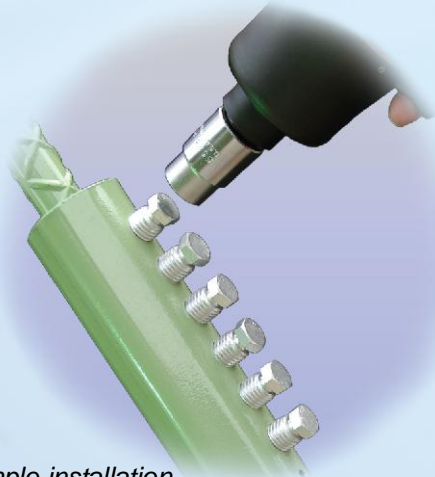
## MECHANICAL SPLICES

### SHEAR SCREW & WEDGE COUPLING SLEEVES



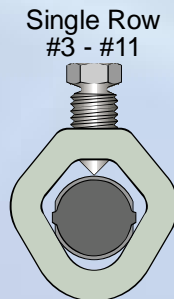
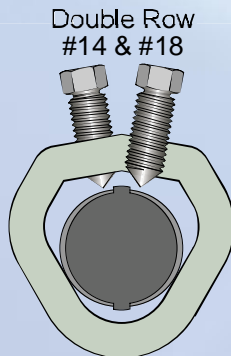
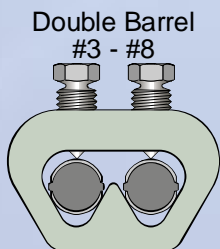
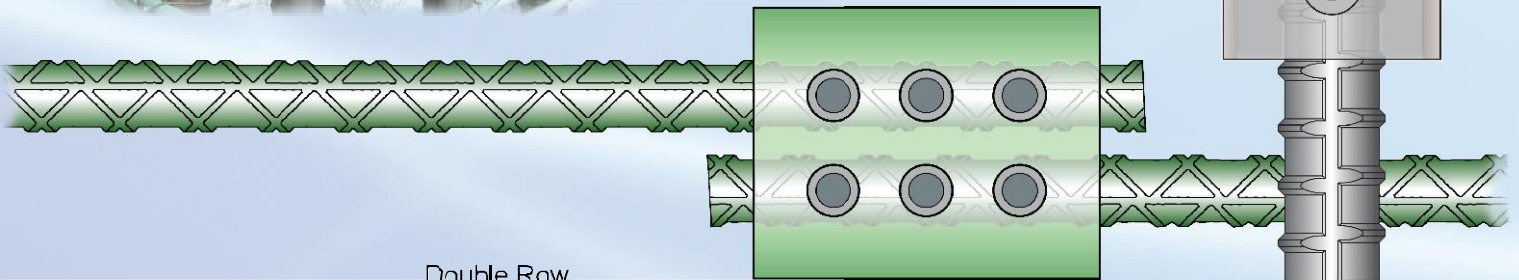
#### APPLICATIONS

- ✓ Retrofit or repair existing structures
- ✓ Eliminate expensive rebar-welds
- ✓ Extend deck steel to widen bridges
- ✓ Highway patch and repair projects
- ✓ Connect bars across closure pours
- ✓ Reinforced concrete piles and columns
- ✓ High rise buildings
- ✓ Safety related structures

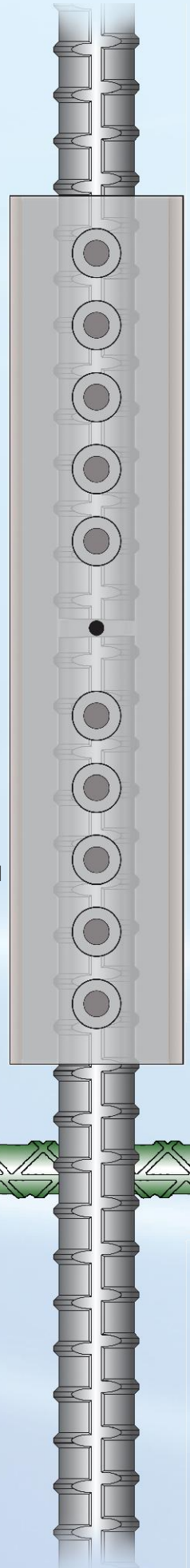


#### Simple installation...

Depending upon the size, assemble manually with socket wrench or for quickest installation, use a standard air impact wrench. By following the instructions supplied with your order, tighten the screws until the heads twist off at a prescribed value. The force from the screws causes the rebar deformations to interlock within the coupler. The screws embed themselves into the rebar surface. This dual mechanical action results in a full positive connection for transferring tension or compression force from bar-to-bar.



Force from the screws causes rebar deformations to interlock within the coupler wedge. At the same time, the screws embed themselves into the rebar surface and then the heads TWIST OFF.



# ZAP SCREWLOK® — field splice options for your projects

## ZAP SCREWLOK TYPE 2 SERIES

### SHEAR SCREW AND WEDGE MECHANICAL SPLICE COUPLING SLEEVE



- **TYPE 2 SPLICE** – ACI 318 Chapter 21 and International Building Code. ICC ES Evaluation Report ESR-3517. Exceeds specified tensile strength ASTM A706 / A615 Grade 60 black deformed bars.
- **NUCLEAR SAFETY RELATED SPLICE** – ASME Section III, Division 2 Boiler & Pressure Vessel Code Case N-791 (Shear Screw and Sleeve Splice).
- **SEISMIC LOADING** – Withstands plastic strain excursions to 5 x rebar yield strain value and stress reversals in accordance with ICC Acceptance Criteria AC-133.
- **NEW CONSTRUCTION or RENOVATION / REPAIR** – Suited for butt-splicing bars new-to-new or new-to-old. Tested with Grades 30, 33, 40 and 50, square and round, to 1.25  $f_y$ .
- **GRADE 75 BARS\*** – Exceeds 125% x specified yield black ASTM A615 Grade 75 and capable of developing 100,000 psi, the specified tensile strength of Grade 75.
- **CALTRANS "SERVICE" APPROVED** – Meets slip test CT670 & capable of exceeding 80,000 psi, the specified tensile strength of black deformed bars ASTM A706. Not classified as Caltrans "Ultimate".
- **CONVENIENCE** – Field installed – No specialized installation equipment – No special bar end preparation or thread cutting – Easy visual inspection. For bars #3 – 18 (Dia.10 – 57 mm).
- **DOT PROJECTS** – Capacity to exceed 125% x specified yield, 135% x specified yield and 150% x specified yield, ASTM A615 Grade 60 black deformed bars.

\* Zap Screwlok Type 2 series is not suitable for use with ASTM A1035 Grade 100/120 MMFX bars or "Dual-Certified" Grade 75/100, Grade 80/100 bars or any variation thereof. Contact BPI for Zap Screwlok 'FX' series.

## ZAP SCREWLOK EPOXY SERIES

### SHEAR SCREW AND WEDGE MECHANICAL SPLICE COUPLING SLEEVE



- **AASHTO and DOT PROJECTS** – Exceeds 125% x specified yield ( $f_y$ ) per AASHTO *Standard Specifications for Highway Bridges* (17<sup>th</sup> Ed). Also exceeds 135% x  $f_y$  Grade 60 bar (81,000 psi).
- **PURPOSE** – For butt-splicing epoxy coated bars that comply with AASHTO specifications and the coating requirements of ASTM A775 Grade 60.
- **APPLICATIONS** – Widely used on bridge decks, and parking garages susceptible to salt induced damage. Other adverse conditions include wastewater treatment and chemical plants.
- **CYCLIC LOADING** – Qualified to DOT protocols including 100 cycles 5%  $f_y$  to 90%  $f_y$  in tension and 10,000 cycles stress reversal from 25,000 psi tension to 25,000 psi in compression.
- **HIGH FATIGUE STRENGTH** – Pre-qualified to '18 ksi' stress-range by testing for more than 1-million cycles of load.
- **CONVENIENCE** – Field installed – No specialized installation equipment – No special bar end preparation or thread cutting – Easy visual inspection.

## ZAP SCREWLOK 'SL' SERIES

### SHEAR SCREW AND WEDGE MECHANICAL SPLICE COUPLING SLEEVE



- **ACI 318 Chapter 12 FULL MECHANICAL SPLICE** – Develops in tension or compression, as required, at least 1.25  $f_y$  of the bar, ASTM A615 black deformed Grade 60.
- **COMMERCIAL APPLICATIONS** – In accordance with Building Code Requirements for Structural Concrete, product is used in columns, beams, walls, mats, tanks, condominiums.
- **SUPERIOR TO ALL TENSION LAP SPLICES** – Strength is independent of surrounding concrete and cover. Takes up less space than rebar lap. Replaces lap splice classes A, B or C.
- **COMPACT DESIGN** – Shorter than Type 2 series – fewer screws – less room needed – faster installation time – ideal for hard-to-reach places.
- **FOR STANDARD REINFORCING BARS** – ASTM A615, ASTM A996 and equal black deformed bars – capable of exceeding 125% x specified yield,  $f_y$ , and 130% x  $f_y$  Grades 40, 50 and 60.
- **CONVENIENCE** – Field installed – No specialized installation equipment – No special bar end preparation or thread cutting – Easy visual inspection. For bars #3 – 18 (Dia.10 – 57 mm).

## ZAP SCREWLOK TRANSITIONS

### SHEAR SCREW AND WEDGE MECHANICAL SPLICE COUPLING SLEEVE



- **PURPOSE** – For butt-splicing bars of different sizes, such as 14-to-11, 6-to-5 and so on – or for connecting bars of different configurations such as 1"-square-to-#9.
- **APPLICATIONS** – Columns, Walls, Piers, Caissons, Parking Garages, High Rise Buildings – usually vertical bars.
- **SIMPLE DESIGN** – One piece device with converging sides for wedging of different bar sizes – Made from seamless shaped tubing with no welds – Includes center stop.
- **TYPE 2 SPLICE** – ACI 318 Chapter 21 Seismic Design and International Building Code. Develops specified tensile strength of black *smaller* bars ASTM A706 or A615.
- **SEISMIC LOADING** – Withstands plastic strain excursions to 5 x rebar yield strain value and stress reversals in accordance with ICC Acceptance Criteria AC-133.
- **CONVENIENCE** – Field installed – No specialized installation equipment – No special bar end preparation or thread cutting – Easy visual inspection.
- **DOT PROJECTS** – Capacity to exceed 125% x specified yield,  $f_y$ , 135% x  $f_y$  and 150% x  $f_y$ , ASTM A615 Grade 60 black deformed smaller bar. Also exceeds 135% x  $f_y$ , ASTM A775 epoxy Grade 60 bar.

# ZAP SCREWLOK® — more solutions and applications

## ZAP STRUCTURAL CONNECTORS

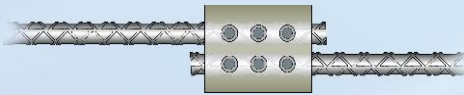
### SHEAR SCREW AND WEDGE WELDABLE CONNECTOR



- **STRENGTH RATING** – Has capacity to exceed a minimum joint strength of 75,000 psi measured in the rebar; equal to 125% x specified yield, Grade 60.
- **COMPATIBILITY** – For use with black ASTM A615 or A706 Grade 60. Has capacity to exceed 1.25 x specified yield in all cases.
- **VERSATILITY** – For attachment of reinforcing bars to plates, structural steel shapes or for creating headed anchorage. Shop or field weldable, before or after bar placement.
- **CERTIFIED LOW CARBON STEEL** – Meets low carbon chemistry AISI Grade 1018 and/or 1026. Mill certified analysis for each heat lot of steel available.
- **WELDING BEVELS** – For full penetration, provided for greater strength, convenience and quality assurance.
- **LESS WELD STRESS** – Compared to direct butt welds because outside diameter of structural connector is larger than the reinforcing bar, so the weld area is disposed over greater length.

## DOUBLE BARREL ZAP SCREWLOK

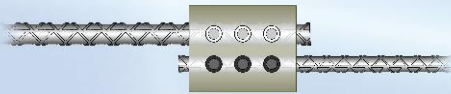
### SHEAR SCREW AND DOUBLE WEDGE MECHANICAL LAP SPLICE



- **MECHANICAL LAP SPLICE** – ACI 318 Chapter 12 – Confirming in-air tests exceed 125% x specified yield,  $f_y$ , with capacity to develop over 150% x  $f_y$ , ASTM A615 black deformed Grade 60 bar.
- **APPLICATIONS** – In accordance with Building Code Requirements for Structural Concrete, used to widen bridges, slab repair, to connect hoop bars and in piles to terminate spirals.
- **SUPERIOR TO ALL TENSION LAP SPLICES** – Eliminates hard-to-predict nature of lap splices – especially long epoxy bar laps – Positive connection instead of reliance on concrete.
- **COMPACT DESIGN** – Shorter than mechanical butt-splices and significantly shorter than lap splices – less room needed – ideal for many repair applications and construction joints.
- **DOT PROJECTS and COATED BARS** – Exceeds 135% x specified yield, Grade 60 when installed directly over black ASTM A615 bars, epoxy coated ASTM A775 bars or galvanized ASTM A767 bars.
- **CONVENIENCE** – Field installed – No specialized installation equipment – No special bar end preparation or thread cutting – Easy visual inspection. For bars #3 – 8 (Dia.10 – 25 mm).

## DOUBLE BARREL ZAP TRANSITION

### SHEAR SCREW AND DOUBLE WEDGE MECHANICAL LAP SPLICE



- **PURPOSE** – For mechanical lap splicing bars of different sizes, such as 8-to-7, 5-to-4 and so on – or for connecting bars of different types such as old to new.
- **APPLICATIONS** – Bridge widening, slab repair, hoop bars, closure pours – use in accordance with Building Code Requirements for Structural Concrete.
- **SIMPLE DESIGN** – One piece device with converging sides for splicing of different bar sizes – manufactured as ductile casting with no welds.
- **FOR STANDARD REINFORCING BARS** – ASTM A615, ASTM A706, ASTM A996, ASTM A775 or ASTM A767 bars and equivalent deformed bars.
- **PERFORMANCE** – Capacity to exceed 125% x specified yield,  $f_y$ , 135% x  $f_y$  and 150% x  $f_y$ , ASTM A615 Grade 60 black deformed bars. Also exceeds 135% x  $f_y$ , ASTM A775 / A767 Grade 60 bar.
- **CONVENIENCE** – Field installed – No specialized installation equipment – No special bar end preparation or thread cutting – Easy visual inspection.

## \*\* HOW TO SPECIFY ZAP SCREWLOK® SPLICES and CONNECTORS

|  | By Name:  | By Generic Description:  |
|--|---|--|
| <b>BAR-TO-BAR</b><br><i>mechanical butt splice</i> | Zap Screwlok® Type 2 Series<br>or Epoxy Series or 'SL' Series<br>by BarSplice Products, Inc., Dayton OH | <b>Mechanical butt splices shall be the tension-compression shear screw and wedge coupling sleeve type, with smooth converging sides and cone-pointed hex-head screws, to develop a strength in the bar equal to [state strength requirement].</b> |
| <b>BAR-TO-BAR</b><br><i>mechanical lap splice</i>  | Double Barrel Zap Screwlok®<br>by BarSplice Products, Inc., Dayton OH                                   | <b>Mechanical lap splices shall be the shear screw &amp; double wedge coupling sleeve type, with converging sides and cone-pointed hex-head screws opposite the wedges.</b>  |
| <b>BAR-TO-STRUCTURAL</b><br><b>STEEL</b>           | Zap Screwlok® Structural Connectors<br>by BarSplice Products, Inc., Dayton OH                           | <b>Bar-to-structural steel connections shall be the shear screw and wedge weldable connector type with smooth converging sides, cone-pointed hex-head screws and weld bevels inclined 30-degrees to the rebar axis.</b>                            |

\*\* Include flange requirements, if any, bar size(s), bar type and grade. Include statement: "Parts shall be manufactured to the quality requirements of ISO 9001."

**Field splicing of reinforcing bars by the Zap Screwlok method is most popular because of the systems simplicity, cost effectiveness and adaptability. Instructions provided with splices explain step-by-step installation and safety information.**

While the information contained in this document is believed to be accurate at the time of publication, BPI reserves the right to make changes, design modifications, corrections and other revisions as it sees fit, without notice. All products described herein are supplied in accordance with BPI's standard Terms and Conditions of Sale. This document is of a promotional nature only. Aspects of structural design, evaluation of product fitness for use, suitability or similar attributes are the responsibility of others.



MEMBER

BarSplice Products, Inc., 4900 Webster Street, Dayton OH 45414, USA  
 ●Tel: (937) 275-8700 ●Fax: (937) 275-9566 ●E-mail: bar@barsplice.com

Copyright © 2013, Barsplice Products, Inc., "BPI". All rights reserved.



MEMBER

REV.H 11/04/2013