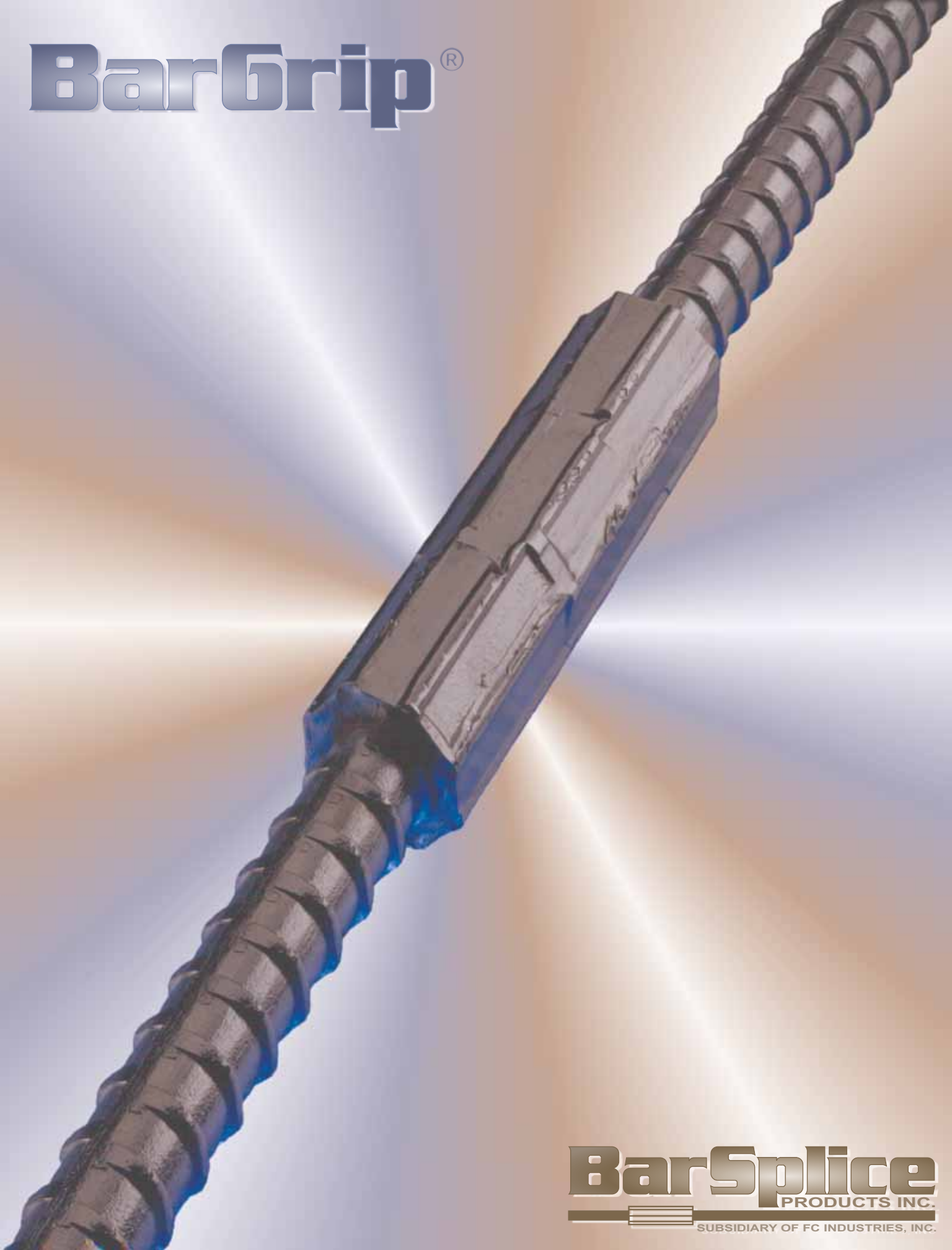


BarGrip®

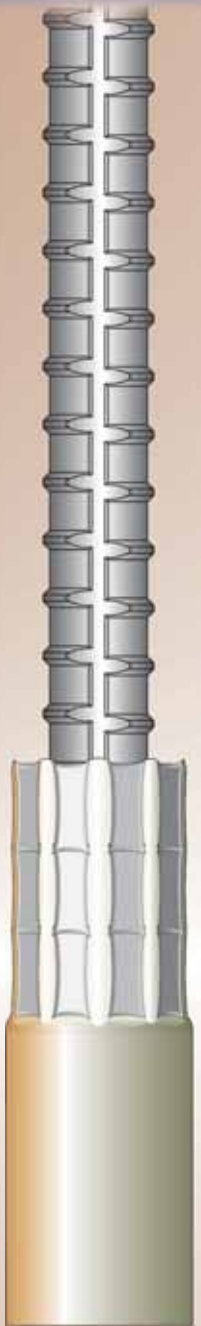


BarSplice
PRODUCTS INC.
SUBSIDIARY OF FC INDUSTRIES, INC.

BPI-GRIP™ SYSTEM — cold swaged splices and equipment



- POSITIVE mechanical interlock
- POWERFUL range of hydraulic presses
- SPLICES for all bar sizes US and International
- CHOICES for Type 1 Type 2 or higher
- BLACK or GALVANIZED or Epoxy Coated Bars
- NEW CONSTRUCTION repair or retrofit
- FIELD or SHOP-FIELD installation
- SHEARED or flame or saw cut bars
- TRUE CONTINUITY and load path where you need it



BPI-Grip cold-swaged coupling sleeves consist of seamless steel sleeves that slip over the ends of reinforcing bars. They are deformed onto the reinforcing bar profile to produce mechanical interlock.

Bar sizes No. 3 through 18 (Dia.10 – 57mm) can be spliced by this method including bars of different sizes. BPI-Grip coupling sleeves are available for use with reinforcing bars that comply to ASTM A 615, ASTM A 706, ASTM A 996, or equal.

Epoxy-coated steel reinforcing bars that comply to ASTM A 775 can be spliced by suitable cold-swaged steel coupling sleeves without shielding or removing the epoxy coating from the bar.

Hot-dipped galvanized cold-swaged steel coupling sleeves can be ordered for mechanically splicing zinc-coated (galvanized) steel bars that comply to ASTM A 767.

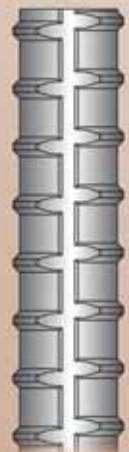
The cold-swaged splicing method is suitable for new construction, field repair applications, and the splicing of older types of reinforcing bars, provided such bars have suitable deformations for mechanical interlock.

No special bar end preparation is required so ends can be sheared, sawed, or flame cut; however, a bar-end check is recommended. Bars can be connected from any orientation because special positioning of the press around the bar is not required. In the structure, linear alignment is preserved across the splice by using reinforcing bars with straight ends and securing the loose continuation bar in the desired position at the time of swaging.

INSTALLATION

The reinforcing bar is marked and inserted halfway into the sleeve. A hydraulic press fitted with a removable two-piece die set is used for field installation. The die set deforms the first half of the coupling sleeve in a radial direction onto the reinforcing bar in a series of overlapping pressings. The coupling sleeve is slipped over the bar in-situ and the remaining unswaged portion of the sleeve is swaged. Field-type presses, including dies, weigh between 20 and 230 lb (9 and 105 kg) and can be supported for use in any orientation.

Bench presses with adjustable stops and insertion gauges are available for shop use. These machines efficiently half-swage a coupling sleeve onto the end of a reinforcing bar before shipping. Adapter kits allow the field presses to be used in the same way.



BARGRIP — STANDARD TYPE 1 SERIES

COLD-SWAGED STEEL COUPLING SLEEVE

- **FOR STANDARD REINFORCING BARS** – ASTM A 706, ASTM A 615, ASTM A 996 and equal black deformed bars – exceeds 125% x specified yield, f_y , Grades 40, 50 and 60.
- **ACI 318 Chapter 12 FULL MECHANICAL SPLICE** – BarGrip develops in tension or compression, as required, at least 1.25 f_y of the bar.
- **SUPERIOR TO ALL TENSION LAP SPLICES** – BarGrip strength is independent of surrounding concrete and cover. Takes up less space. Replaces lap splice classes A, B or C.
- **TYPE 1 SPLICE** – ACI 318 Chapter 21 and International Building Code. ICC ES Legacy Report ER-3848. Complies with AASHTO "Standard Specifications for Highway Bridges".
- **COMMERCIAL APPLICATIONS** – In accordance with Building Code Requirements for Structural Concrete, BarGrip is used in columns, beams, walls, mats, tanks, parking garages.
- **DOT PROJECTS** – Bridges, piers, caissons, deck steel and highway ramps - where specifications are 125% x specified yield uncoated ASTM A 706 or A 615 Grades 40 - 60.



BARGRIP XL — NUCLEAR / TYPE 2 SERIES

COLD-SWAGED STEEL COUPLING SLEEVE

- **NUCLEAR SAFETY RELATED** – ASME Section III, Division 2 – Swaged splices with a tensile strength = 90,000 psi (150% x specified yield) used with ASTM A 615 Grade 60.
- **TYPE 2 SPLICE** – ACI 318 Chapter 21 Seismic Design and International Building Code. BarGrip XL develops specified tensile strength of black deformed bars ASTM A 706 or A 615.
- **CALTRANS SERVICE and CALTRANS ULTIMATE** – BarGrip XL meets slip test 670 and capable of developing the actual ultimate strength of black deformed bars ASTM A 706.
- **SEISMIC LOADING** – BarGrip XL withstands plastic strain excursions to 5 x rebar yield strain value and stress reversals in accordance with ICC Acceptance Criteria AC-133.
- **DYNAMIC LOADING** – Structures designed to resist the effects of accidental explosions; capable of developing the dynamic yield stress of Grade 60 reinforcing in 10-15 milliseconds.
- **HIGH STRENGTH BARS and COATED BARS** – 133% f_y black ASTM A 615 Grade 75. 125% f_y Grade 80. 135% f_y Grade 60 epoxy coated ASTM A 775 or galvanized ASTM A 767.



BARGRIP UXL — EPOXY BAR / TYPE 2 SERIES

COLD-SWAGED STEEL COUPLING SLEEVE

- **UTAH DOT SPECIAL PROVISIONS** – Capable of developing in tension 175 percent of specified yield strength of deformed epoxy coated bars conforming to ASTM A775 Grade 60.
- **PERFORMANCE and ASSURANCE** – Meets or exceeds the performance attributes of BarGrip XL. Inherently provides added level of assurance under more severe conditions.
- **SPECIALTY SPLICE and SPECIALTY APPLICATIONS** – Used to mechanical splice bars that have substantial spaces between the bar ends – up to 2-inch gaps often possible.
- **OLD REINFORCEMENT** – The additional insertion captures more deformations and provides greater interlock with rebars that do not conform to current ASTM specifications.
- **ADVERSE CONDITIONS** – Higher tolerance to field contamination, concrete spatter, corroded rebars or undersize and missing deformations.
- **PROBLEM SOLVER** – Highly ductile steel, adaptable splicing system for special details, weldable to structural steel and similar.

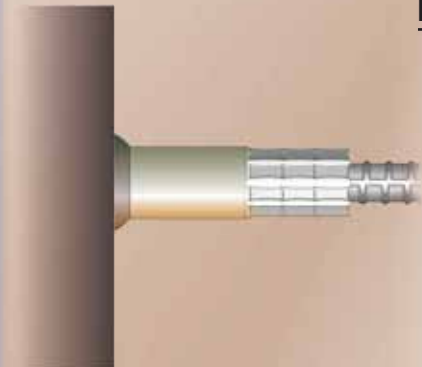


BARGRIP STRUCTURAL CONNECTOR

COLD-SWAGED STEEL COUPLING SLEEVE

- **FULL STRENGTH** – ASME Section III, Division 2 = minimum joint strength 75,000 psi with average tensile strength 90,000 psi (150% x specified yield) used with ASTM A 615 Grade 60.*
- **COMPATIBILITY** – Cold swage to black ASTM A 615 or epoxy coated ASTM A775 Grade 60 or galvanized ASTM A 767 Grade 60. Capacity to exceed 1.25 f_y in all cases.
- **VERSATILITY** – For attachment of reinforcing bars to liner plates, structural steel shapes or for creating headed anchorage. Shop or field weldable, before or after bar placement.
- **CERTIFIED LOW CARBON STEEL** – Conforms to CC-2310(c) material requirements of ASME Section III, Division 2. Meets chemistry AISI Grade 1018 and ASTM A 36.
- **WELDING BEVELS** – For full penetration, provided for greater strength, convenience and quality assurance. Suited to E7018 electrode.
- **LESS WELD STRESS** – Compared direct butt welds because outside diameter of structural connector is larger than the reinforcing bar so the weld area is disposed over greater length.

*Welder qualification, weld procedure, integrity and strength are the responsibility of others.



BPI-GRIP™ SYSTEM — reasons and advantages

Cold swaging technology for mechanical splicing of reinforcing bars is one of the most established, developed, and refined splicing methods worldwide. Key to cold swaging success is its **simplicity, low cost** and **adaptability**.

There is **no loss of reinforcing bar cross-sectional area** at the splice location so the BPI-Grip system is a natural choice when considering the objectives of **seismic design, blast resistance** and **safety related nuclear** applications.

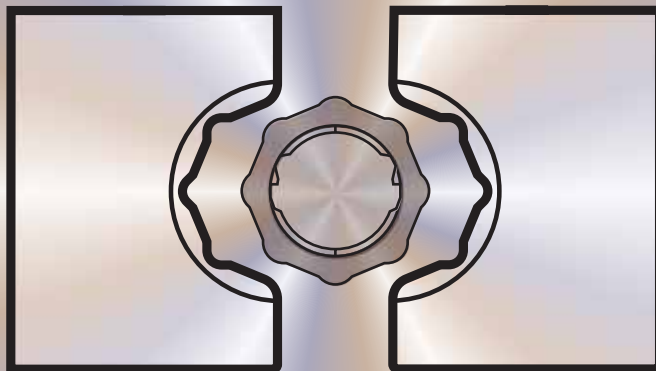
- *Lap splices are not recommended in locations where inelastic yielding could occur because such splices are not reliable under conditions of cyclic loading into the inelastic range.*

Mechanical interlock with reinforcing bar deformations, lugs or protrusions is the basis of swaged splice strength. The “slip test” values of swaged mechanical splices are minimal due to the tight conformation of coupling sleeves to the profile of the bar. Best of all, **true structural continuity** can be established in reinforcing systems because swaged splice strengths, unlike lap splices, are not dependent upon the compressive strength or cover requirements of the surrounding concrete.

- *In comparison to manual arc welding, cold swaged splices are faster to install, require a lower skill level, do not require a chemistry determination of the reinforcing bar being spliced, do not require bar pre-heat or post-heat and do not require radiographic examinations.*

BPI-Grip swaging equipment is easy to use and may be leased or purchased. Splicing manuals provided with equipment explain step-by-step installation and safety information.

Swaging dies are stamped and color coded to match the coupling sleeves. Swaging pressure is factory preset and equipment is automated to release from the splice after each swaging 'bite' or pressing.



See dimensional data for clearance requirements for presses.

** HOW TO SPECIFY BARGRIP® SPLICES and CONNECTORS

	By Name:	By Generic Description:
BAR-TO-BAR	BarGrip® or BarGrip® XL or BarGrip® UXL mechanical splices by BarSplice Products, Inc., Dayton OH	Reinforcing bar mechanical splices shall be the tension-compression cold-swaged sleeve type, which shall be installed by octagonal dies to achieve... (include strength or code requirements).
BAR-TO-HEAD	Taper Threaded DoughNUT™ by BarSplice Products, Inc., Dayton OH	Mechanical Reinforcing Bar Anchorages shall be the cold-swaged taper-threaded coupler type, which shall be assembled with 5A _s or 10A _s Heads (Specify Head Size).
BAR-TO-STRUCTURAL STEEL	BarGrip® Structural Connectors by BarSplice Products, Inc., Dayton OH	Bar-to-structural steel connections shall be the cold-swaged weldable connector type, with weld bevels at one end inclined 30-degrees to the rebar axis, and pressed to the reinforcing bar at the other end by octagonal dies.

** 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."

*** For information on **BAR-TO-HEAD** connections, see **GRIP-TWIST® TAPER THREADED DoughNUT™ - COLD SWAGED HEADED ANCHORAGE WITH TAPER THREADS** and/or **BPI-Grip™ TERMINATIONS** for special applications, such as **NUCLEAR** projects

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