



REINFORCEMENT SPLICING WITHOUT WELDING



Made in Ukraine

СПРУТ-УКРАЇНА
з'єднання сталевих арматур



SAVE MATERIAL AND LABOR



Buildings

25%



Shopping
malls

20%



Bridges

15%

FINISH CONSTRUCTION 3-5X FASTER

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Механическая стыковка арматуры • Reinforcement bars splicing
Betonstahl Verbindung • Empalmes para acero de refuerzo
Amarrage mécanique des acier d'armature • انبلا دي ح زابضق ليصوت

Reinforcing any concrete construction, connecting reinforcement bars end-to-end, with mechanically compressed couplers, produces the maximum structural integrity while saving construction costs and reducing build time. Once coupled, the two rebar rods act as a continuous single piece of reinforcement, distributing stress evenly along the frame. This provides improved calculated tensile strength and durability during regular temperature-induced expansion and compression over the life of the building, as well as increased resistance to seismic disturbances or other external stresses.

The mechanical compression of the couplers with portable hydraulic equipment offers simple installation and a superior result. The end-to-end coupling of the connected rods also increases the effectiveness of the rebar's stay-put features and lengthens the reinforcement's operational life - all while reducing total project costs in both materials and labor. The high tensile breaking strength of the resulting coupled joint far surpasses that of overlapping joints and provides full force transfer under stress.

Reinforcement bars splicing by the mechanical compression is an all-round method of reinforcement bars coupling that is used when it's necessary to create durable full-strength joint and adds to the long-term structural integrity.



Advantages of splicing with a mechanical press

- Faster pace of bar splicing and frame construction
- Increased stability and uniformity of connections
- Easy way to monitor joints
- Higher-load impact resistance in case of industrial occurrences or acts of nature
- An environmentally-friendly alternative to welding
- The simple compression process can be performed by any worker after training - no highly skilled labor required



Using mechanically compressed couplers

- Completely replaces welded rebar connections
- Accelerates pace of construction - easily scalable for big projects
- Increases reinforcement case speed erection
- Increases flexibility in design solutions
- Eliminates bar overrun in column construction
- Reduces coefficient of reinforcement thus saving rebars
- Saves costs throughout the construction process, from design to completion



Specialists are aware that defect level of welded joints equals 10-30% from total amount of joints - in case mechanical splicing defects are almost eliminated.

Cost Efficiency

Simple: No specialized worker training or qualification required
Fast: Two workers with one equipment unit can produce 50-100 splices per shift
Versatile: Install horizontally or vertically with the same equipment
Economical: Significant savings in material, labor and construction time.

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Installation advantages

- Fast and easy process - 3-8 minutes for each compression, with no prior preparation of rebar needed
- Increased rebar options, with high-diameter cross-sections (D32, D36, D40, etc.)
- As little as 2 compressions needed for installation (up to 7, depending on coupler diameter)
- Testing of completed connections is performed in place by measuring the elongation of the coupler after compression
- Reduces the rebar concentration needed for concrete reinforcement
- Coupled connections have the same strength as the surrounding rebar, guaranteeing a stable and reliable frame under stresses
- Mechanical joints can be applied to bars of any length and diameter in any spatial altitude
- Official estimates of the functional performance of coupled reinforcement bars allow for their use in reinforced-concrete constructions of "enhanced responsibility": e.g., mass-transportation infrastructure projects or residential high-rises in earthquake zones.
- For any reinforced-concrete project, engineers may simply follow the same structural requirements outlined for welded splices, and expect increased strength and reliability over the life of the building.

Strength and Durability

Overlap reinforcement splices, whether welded or tied, lack the strength and stability of end-to-end coupling. They lose their durability over time and can be separated under dynamic loads. But rebar coupled end-to-end with Sprut-Ukraine couplers act with the same strength and stability as a continuous piece of

Reinforcement bars joined with Hardman couplers act as a single piece! Even in cases of the complete destruction of the concrete protective layer, the structural integrity of the reinforcement can be seen to remain.

rebar. Their operational strength is in fact greater than the concrete which surrounds them.

This provides a maximum level of construction strength during shock waves, earthquakes, and other impacts and stresses.

Coupling reinforcement bars without overlap outperforms all other splicing methods for stability and shock resistance, and optimizes building strength without the need for increased reinforcement ratio. The evaluation of the functional characteristics of our splices (regardless of the steel grade and diameter of the reinforcement) is 5 points according to Appendix 2 of DSTU B V.2.6-169: 2011. The connections meet the requirements of the Ukrainian and European reference documentation (EN 1992-1-1: 2011), including for earthquake-resistant construction.

Reinforced concrete engineering and construction with Hardman couplers conforms all modern construction rules and requirements for earthquake-proof building construction.

Advantages

For the Owner



- **Accurate Ordering:** Reinforcement coupled without overlap makes precise estimation and ordering possible. Eliminates overruns.
- **Fast Completion:** Scale up with more equipment sets and build 3 floors a month.
- **Overall Efficiency:** With reduced expenses of both materials and labor, our customers have reported total-project expense reductions of up to 40%. Documentation is provided

For the Drafter



- The rebar connections produced by this method is described on the basis of Technical Requirements for coupling methods. Copies of Technical requirements can be downloaded on our website. ("Documentation")
- **Effective reinforcement area:** The effective area of the reinforcement in the structure can be increased (and reinforcement oversaturation eliminated) with the use of large-diameter rebars, spliced with the same coupler-and-compression method.
- **Connection strength:** The couplers are pressed at a pressure of 700 bar, and the cylindrical coupler is transformed into a hexagon. A layer-by-layer cut of a test connection demonstrates how tightly the coupler grasps the reinforcement bars' cross ribs.
- **A better way to plan:** End-to-end coupling is the emerging choice in concrete-construction projects across the world. Bring the right expertise and tangible benefits to your next job.

For the Builder

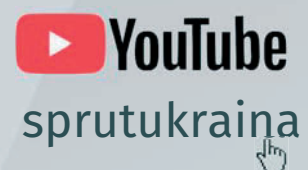
- **Cost Savings:** Eliminating reinforcement-bar overlap with end-to-end coupling saves material and smooth workflow.
- **Training and Support:** We train your workers on-site to use our equipment (usually a single shift), and guarantee the uninterrupted operation of all our equipment sets.
- **Immediate Quality Control:** Completed splices can be checked instantly by measuring coupler elongation after compression.
- **A better way to build:** Customers always prefer construction companies that implement progressive methods of construction



For the Customer

- **Reliability:** Construction gets finished on schedule - or before.
- **Strength:** Even with the complete destruction of the surrounding concrete, reinforcement bars coupled end-to-end maintain full tensile strength - and remain intact.
- **Safety:** The superior strength of the connections offers maximum safety in extreme circumstances, providing an overall structural resilience impossible with lashed or welded reinforcement.

Watch our video



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Rebar splicing without welding!



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Precise estimates and orders reduce waste and cost overruns



Fast and easy installation keeps consumption predictable



Reduces reinforcement-cage costs by up to 30%



More metal-saving method than overlap splicing and cheaper than welding



Concentricity error as with overlapping joint is absent, strength uniformity is guaranteed



Strength of connection meets 5-point rating (Appendix 2 DSTU B V.2.6-169: 2011)



100% service support + we provide equipment and train workers



Easy method to monitor joint quality



Replacing overlap and welded splices with end-to-end coupling can reduce overall project costs by up to 40 %.



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The facilities built according to the technology by Sprut-Ukraine Company



The Carnegie Center

Kiev,
Construction completed
in 2012



Hospital «Hipolito Unanue»

Tacna, Peru
Construction completed
in 2019



«Senje» HPP

Senje, Equatorial Guinea
Under construction



Residential complex «Altair»

Odessa,
Construction completed
in 2015



New terminal of «Lviv» Airport

Lviv,
Construction completed
in 2012



Shopping center «River Mall»

Kiev,
Construction completed
in 2018.



BC Toronto-Kiev

Kiev,
Construction completed
in 2014



Shopping center «Nikolsky»

Kharkov
Construction completed
in 2017.



Residential complex «Comfort park»

Chernivtsi
Construction completed
in 2017.

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Rebar coupler connections implemented in the world



Saudi Arabia.
The highest tower in the world. 1008 m. Building is under construction.



Thailand, Bangkok.
The highest tower. 77 floors, 334 m. Building completed in 2016

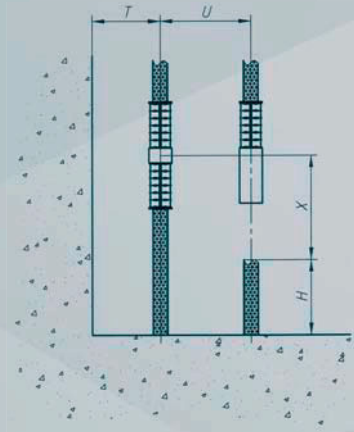


Kiev, Ukraine.
The highest building. 168 m, 47 floors. Building completed in 2012.

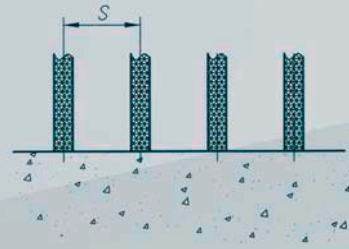
Reference table of technological requirements for the crimping press

№	Bar joint height above the floor level. H, mm min.	Distance between bars (side view) S, mm min.	Distance from bar to vertical wall T, mm min.	Elevation difference of nearby joints	Distance between bars (front view)
10	130	70	160	230	107
12	135	72	161	240	109
14	140	74	162	250	111
16	135	76	163	270	113
18	140	78	164	270	115
20	150	79	165	290	117
22	165	81	166	315	119
25	175	83	168	335	123
28	190	86	170	358	126
32	205	90	172	390	130
36	220	95	175	428	135
40	230	100	180	460	142

Side view

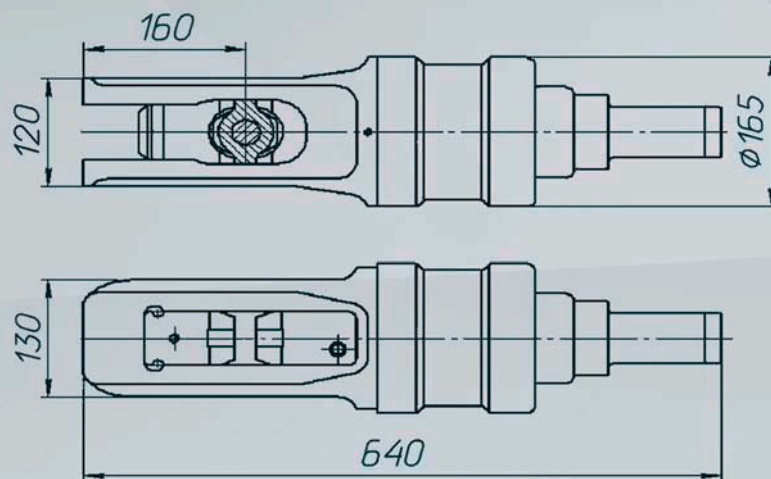


Front view



By designing reinforced concrete constructions with the use of compressing connections, same constructive requirements are taken as with the reinforcement connected by tub welding or steel strap-lap.

Mechanical press dimensions



Qualification tests of coupler connections are held in Research and Development Establishments of building constructions according to requirements ISO 15835-1 and ISO 15835-2. Qualification tests results are provided upon request.

Conventional symbol for reinforcement bars splicing by compressed couplers with conditional diameter of 20 mm indicated in technical and project documentation:

MZO SPRUT - 20 TY Y 2.8-45.2-3564181.1-001: 2008 (ukr. rev.)



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