

CITY OF LOS ANGELES

CALIFORNIA

BOARD OF
BUILDING AND SAFETY
COMMISSIONERS

VAN AMBATIELOS
PRESIDENT

E. FELICIA BRANNON
VICE PRESIDENT

JOSELYN GEAGA-ROSENTHAL
GEORGE HOVAGUIMIAN
JAVIER NUNEZ



ERIC GARCETTI
MAYOR

DEPARTMENT OF
BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012

FRANK M. BUSH
GENERAL MANAGER
SUPERINTENDENT OF BUILDING

OSAMA YOUNAN, P.E.
EXECUTIVE OFFICER

ERICO International Corporation
34600 Solon Road
Solon, OH 44139

Attn: Ward Judson
(440) 528-3788

Local Representative:
CMC Rebar & Cable
15050 Santa Ana Ave.
Fontana, CA 92337
Phone: (909) 873-3060

RESEARCH REPORT: RR 24507
(CSI# 03210)

BASED UPON IAPMO EVALUATION SERVICES
REPORT NO. 0129

REEVALUATION DUE:
DATE: August 1, 2019
Issued Date: March 1, 2018
Code: 2017 LABC

GENERAL APPROVAL – Technical Modification- LENTON® Reinforcing Steel Couplers, LENTON® FORM SAVER Assemblies, LENTON® LOCK and LENTON® INTERLOK.

DETAILS

The above assemblies and/or products are approved when in compliance with the use, description, design, installation, conditions of use, and identification of Evaluation Report No. 0129, dated February 2009, revised November 09, 2017, of the IAPMO Evaluation Services. The report, in its entirety, is attached and made part of this general approval subject to the following conditions:

The parts of Evaluation Report No. 0129 marked with an asterisk have been deleted or revised by the Los Angeles City Building Department from this approval.

The approval is subject to the following conditions:

1. Continuous inspection by Deputy Inspectors shall be provided during installations of the couplers per Chapter 17 of the 2017 Los Angeles Building Code.

In addition to the normal duties, the Deputy Inspector shall:

- a) Verify the hardware and equipment.
- b) Verify the cleaning and condition of the bars in accordance with the specifications and the requirements herein.

RR 24507
Page 1 of 3

- c) Verify the installation procedures in accordance with the specifications and the requirements herein.
2. Splices to be installed shall be selected at the job site by the Registered Deputy Inspector or the Building Inspector and shall be tested by a Los Angeles City approved testing agency. The tests shall be conducted on each different reinforcing bar size and the frequency of tests shall be as follows:

1 out of the first 10 splices
1 out of the next 90 splices
1 out of the next 100 splices

Splices shall develop in tension or compression, as required, at least 125 percent of the specified yield strength of the bar. In addition, splices identified as Type 2 shall develop 100 percent of the specified tensile strength, f_u , of the reinforcing bar.

3. If failure of the tested splice should occur prior to obtaining 125-percent of specified yield strength, then 25-percent of all couplers shall be tested.

If failure of the tested splice occurs with testing of the 25-percent requirement, as stated above, then all couplers shall be rejected.

4. The fabricator, in processing steel for the LENTON® couplers and LENTON® FORM SAVER (ASTM 576 grade designation AISI C1117) through his works, shall maintain identity of the material and shall maintain suitable procedures and records attesting that the specified grade has been furnished in conformity with the applicable UBC Standard. The ASTM or other specification designation shall be included near the erection mark on each shipping assembly or important construction component over any shop coat of paint prior to shipment from the fabricator's plant. The fabricator's identification mark system shall be established and on record prior to fabrication.

Steel which is not readily identifiable as to grade from marking and test records shall be tested to determine conformity to such standard. The fabricator shall, when requested, furnish an affidavit of compliance with such standard. Test data shall be provided upon request.

5. Only qualified operators completely familiar with the installation procedures and specifications shall perform the splicing.
6. Except as specified herein, installation of the splices shall be in accordance with the manufacturer's specifications. A copy of the specifications shall be provided at the job site and be made available to all Deputy Inspectors on the job.
7. Splice locations shall be fully detailed on the plans.

DISCUSSION

The technical modification is to recognize LENTON INTERLOK® HY15LM grout and additional sizes for LENTON INTERLOK couplers – LK series as part of this general approval.

This report is in compliance with the 2017 City of Los Angeles Building Code.

The approval is based on load test in accordance with ICC-ES Acceptant Criteria for Mechanical Connector Systems for Steel Reinforcing Bars (AC133), dated October 2015.

The testing facility at ERICO meets ICC-ES AC 85 requirements for laboratory facilities as certified by Stork-Herron Testing Laboratories Inc.

This general approval will remain effective provided the Evaluation Report is maintained valid and unrevised with the issuing organization. Any revision to the report must be submitted to this Department for review with appropriate fee to continue the approval of the revised report.

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this Department has determined that all conditions of this Approval have been met in the project in which it is to be used.

QUAN NGHIEM, Chief
Engineering Research Section
201 N. Figueroa St., Room 880
Los Angeles, CA 90012
Phone- 213-202-9812
Fax- 213-202-9943

EB
RR24507
TLB1800028
R02/12/18
1901.2

Attachment: IAPMO Report No. 0129 (19 Pages)



Originally Issued: 02/02/2009

Revised: 11/09/2017

Valid Through: 02/28/2019

EVALUATION SUBJECT: LENTON Mechanical Splice System for Steel Reinforcing Bars In Concrete

REPORT HOLDER:
ERICO International Corporation
34600 Solon Road
Solon, Ohio 44139
800 248-2677
www.erico.com
mugalde@erico.com
sjohnson@erico.com

DIVISION: 03 – CONCRETE
Section: 03210 – Reinforced Steel

1.0 SCOPE OF EVALUATION

1.1 Compliance to the following codes & regulations

- * • 2015, 2012, 2009, 2006 ~~and 2003~~ International Building Code (IBC®)
- * • 2015, 2012, 2009, ~~2006 and 2003~~ International Residential Code (IRC®)

1.2 Compliance to the following standards

- Building Code Requirements for Structural Concrete (ACI 318-14, -11, -08, -05, -02)

1.3 Properties assessed:

- Structural

2.0 PRODUCT USES

LENTON mechanical couplers for splicing deformed steel reinforcing bars (rebar) transfer tension and compression forces in reinforced concrete structural members. The LENTON system complies with the requirements of the IBC and ACI 318 Sections 12.14.3 and 21.1.6 (ACI 318-14 Sections 25.5.7 and 18.2.7), for use as tension and compression mechanical splices for deformed steel reinforcing bar (rebar). The LENTON system complies with both Type 1 and Type 2 mechanical splice requirements in accordance with ACI 318 Section 21.1.6.1 (ACI 318-14 Section 18.2.7.1) as shown in [Tables 1](#) to [13](#) of this report and consisting of:

- LENTON standard couplers (A2 T& A12), LENTON transition couplers (A2 & A12), LENTON FORM SAVER (SA), LENTON position couplers (P9 & P8) couplers for ASTM A615 Grades 60, 75, and 80 bars; or ASTM A706 Grades 60 and 80 bars.

- LENTON FORM SAVER (FS) couplers for ASTM A615 Grades 60 and 75 bars; or ASTM A706 Grade 60 bars.
- LENTON LOCK (B1) couplers for ASTM A615 Grades 60 and 75 bars; or ASTM A706 Grade 60 bars.
- LENTON LOCK (S1) couplers for ASTM A615 Grade 60 or ASTM A706 Grade 60 bars.
- LENTON INTERLOK (LK) for ASTM A615 Grade 60, 75, and 80 bars; or ASTM A706 Grade 60 and 80 bars.
- LENTON weldable half couplers (C2 & C3J) for ASTM A706 Grade 60 or A615 Grade 60 bars.

3.0 PRODUCT DESCRIPTION

3.1 General

LENTON system consists of taper threaded rebar splicing and bolted rebar splicing and is designed for use in reinforced concrete construction. LENTON taper threaded system utilizes a 6-degree tapered thread with a varying thread pitch of 1.25 mm, 2.0 mm, or 3.5 mm depending on the reinforcement size. LENTON couplers are available in seven styles: LENTON standard (A2 & A12), LENTON transition (A2 & A12), LENTON FORM SAVER (SA & FS), LENTON position (P9 & P8), LENTON LOCK (B1 & S1), LENTON INTERLOK (LK) and LENTON weldable half coupler (C2 & C3J). LENTON couplers are designed to mechanically butt splice No. 4, 0.5-inch-diameter (12 mm) through No. 18, 2.25-inch-diameter (57 mm) deformed reinforcing steel bars.

All grades of rebar may be epoxy coated in accordance with ASTM A775 or A934 when utilizing LENTON taper threaded or bolted couplers. In addition, all grades of rebar may be galvanized in accordance to ASTM A767 when utilizing LENTON taper threaded connections. The coatings shall be applied before the bars are threaded.

All styles, excluding the LENTON LOCK coupler types, have interior tapered threads for joining the reinforcement. For the LENTON threaded coupler types, threads on the rebar are right-handed and tapered to match the accompanying coupler. Before shipping from the rebar fabrication shop, threaded bar ends shall be protected.

3.2 Components

3.2.1 Couplers: The couplers' descriptions and illustrations are listed in [Tables 1](#) to [13](#) of this report.

The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provisions of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with IBC Section 104.11. This document shall only be reproduced in its entirety.





3.2.2 Grout:

3.2.2.1: LENTON INTERLOK HY10L Grout: HY10L grout is a dry, cementitious material, packaged in 50.8-pound (23 kg) bags. Batches of grout shall be mixed in accordance with ERICO installation instructions. The amount of water shall be 0.7 to 0.8 gallons (2.7 to 3.0 L) per bag. The correct amount of water to be added to the grout is predetermined by field-testing the flow of trial batches of grout mixtures with a 2-inch-diameter (51 mm), 4-inch-tall (102 mm) cylinder and a LENTON INTERLOK flow template to obtain a flow of 5 to 6 inches (127 to 152 mm). Where flows exceed 6½ inches (165 mm), the trial batch shall be discarded, and a new trial batch shall be prepared. The minimum compressive strength shall be 8,500 psi (58.6 MPa) at 28 days. Compressive strength tests shall be conducted in accordance with ASTM C942 on 2-inch (51 mm) cube specimens cured at 72°F (22°C). The shelf life of LENTON INTERLOK HY10L Grout is 12 months from the manufacturing date printed on the bag when stored indoors in a cool, dry environment.

3.2.2.2 LENTON INTERLOK HY15LM Grout: HY15LM grout is a dry, cementitious material, packaged in 50-pound (22.7 kg) bags. Batches of grout shall be mixed in accordance with ERICO installation instructions. The amount of water shall be 0.7 to 0.78 gallons (2.7 to 2.95 L) per bag. For optimum pumping conditions, the correct amount of water to be added to the grout is predetermined by field-testing the flow of trial batches of grout mixtures with a 2-inch-diameter (51 mm), 4-inch-tall (102 mm) cylinder and a LENTON INTERLOK flow template. For ease of pumping, the desired flow is 7 to 12 inches (178 to 305 mm). The minimum compressive strength shall be 7,500 psi (51.7 MPa) for Grade 60 bars or 9,000 psi (62 MPa) for Grade 75 and 80 bars at 28 days. Compressive strength tests shall be conducted in accordance with ASTM C942 on 2-inch (51 mm) cube specimens cured at 70°F (21°C). The shelf life of LENTON INTERLOK HY15LM Grout is 12 months from the manufacturing date printed on the bag when stored indoors in a cool, dry environment.

4.0 INSTALLATION

4.1 General

LENTON couplers shall be installed in accordance with the applicable code, this evaluation report and ERICO installation instructions. Where conflicts occur, the more restrictive shall govern. Installation instructions are supplied with the product and/or are available on the ERICO web site (www.erico.com). Splice locations shall be detailed on the plans approved by the building official. Minimum concrete cover shall be in accordance with applicable codes and measured from the outer surface of

the connecting device or as defined by the registered design professional. Type 2 mechanical splices are permitted in any location within a member as allowed by the IBC, IRC, and ACI 318 in all seismic design categories.

4.1.1 Specially prepared ends of rebar shall be prepared in either the ERICO facility or the facility of a fabricator approved by the building official and ERICO as required in accordance with 2015 IBC Section 1704.2.5.1, 2012 IBC Section 1704.2.5.2, or 2009 IBC Section 1704.2.2.

The fabricator shall demonstrate the following items to the satisfaction of the building official for each LENTON coupler series and steel reinforcing bar size:

- A) The fabricator prepares the ends of the steel reinforcing bar as required by Erico in a manner consistent with the qualifying test specimens. A description of the method of preparing the rebar ends is found at www.erico.com.
- B) For Type 2 splices, connections of each steel reinforcing bar using the fabricator-prepared steel reinforcing bars, tested in static tension, shall develop 100 percent of the specified tensile strength (f_u) of the steel reinforcing bar and 125 percent of the specified yield strength (f_y) of the reinforcing bar for use under the IBC and IRC. This requirement may be demonstrated in test report(s) submitted to the code official.
- C) For Type 1 splices, connections of each steel reinforcing bar using fabricator-prepared steel reinforcing bars, tested in static tension, shall develop at least 125 percent of the specified yield strength (f_y) of the steel reinforcing bars. This requirement may be demonstrated in test report(s) submitted to the code official.

4.2 LENTON Standard Coupler (A2 & A12) (illustrated below)



LENTON standard coupler is used to join bars where at least one rebar end is able to rotate freely. For field installation of the LENTON standard coupler, the thread protector is removed from the threaded rebar end, which is

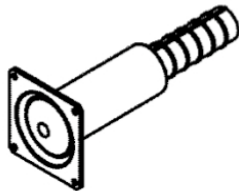
inspected for cleanliness and damage. In some cases, the coupler is fastened to the rebar at the fabrication facility to protect the threads. A wired brush should be used to remove rust and adhered concrete from the threads. Coupler is then screwed onto the threaded end of the rebar to be spliced and tightened by hand. The second rebar is then inserted into the coupler and rotated until hand-tight. Connection is then tightened per ERICO's instructions.

4.3 LENTON Transition Coupler (A2 & A12) (illustrated below)



LENTON transition coupler is similar to the LENTON standard coupler except the coupler is designed to connect rebars of different sizes. Installation for LENTON transition couplers is the same as that for LENTON standard couplers as described in Section 4.2 of this report.

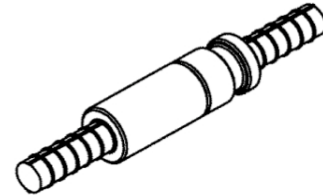
4.4 LENTON FORM SAVER Coupler (SA & FS) (illustrated below)



LENTON FORM SAVER coupler is the same in terms of form and function as the LENTON standard coupler, except that the SA or FS coupler type has a non-structural form mounting plate attached to the end of the coupler. Mounting plate simply provides a method of securing the SA or FS coupler type and attached bar to form work. An internal thread protector is installed to protect the LENTON FORM SAVER coupler's internal threads. LENTON FORM SAVER FS coupler type is secured to the rebar by a friction forging process, whereby the ASTM A615 rebar is attached to the coupler by forcing the components together while the coupler is revolving at a specific rate of speed. The other end of the LENTON FORM SAVER FS coupler type accepts rebar with LENTON tapered threads. Unlike the FS coupler type, the LENTON FORM SAVER SA coupler type accepts rebar with LENTON tapered threads at each end. As with the FS coupler type, the SA coupler type has a mounting plate that is attached to one

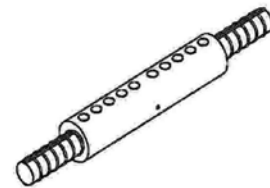
end of the coupler. To install the LENTON FORM SAVER (SA or FS) coupler assembly, the mounting plate is used to position and secure the coupler types on the formwork. Upon completion of the concrete pour and removal of the formwork where the SA or FS coupler type is attached, the protectors are removed from both the rebar and the coupler. Taper threaded male rebar of the proper size is then screwed into the exposed end of the LENTON FORM SAVER SA or FS coupler type. Connection is then tightened per ERICO's instructions. Note: For identification purposes, the face of the LENTON FORM SAVER SA or FS coupler type mounting plate, which is exposed when the formwork is removed, has LENTON coupler bar-size information stamped on the surface.

4.5 LENTON Position Coupler (P9 & P8) (illustrated below)



LENTON position coupler is used to join curved or bent bars as well as straight bars that shall be held in a predetermined position during the joining process. Coupler may also be used where neither bar is free to rotate. All LENTON position couplers are manufactured to allow the coupler to rotate. Connection is tightened per ERICO's instructions. In addition, LENTON position couplers are designed to accommodate rebar of different sizes.

4.6 LENTON LOCK Coupler (B1) (illustrated below):



LENTON LOCK coupler is used to connect two bars mechanically. One or both rebars are inserted into the coupler in a predetermined position and the bolts are tightened in accordance with ERICO's instructions. As long as the torque values are achieved, the bolt heads are not required to shear off. Unsheared bolt heads may be cut off if concrete cover is an issue. Refer to ERICO's instructions for details. In addition to connecting the same bar size to the same bar size, the LENTON LOCK coupler may also be used to:



Originally Issued: 02/02/2009

Revised: 11/09/2017

Valid Through: 02/28/2019

- Connect same size bar to same size bar where both bars are one size smaller than the size identified on the coupler.
- Transition from the bar size identified on the coupler to the next smaller bar size.
- Transition from the bar size identified on the LL25B1 and LL32B1 couplers to two steps smaller bar size.

Installation procedures are the same as those described above.

4.7 LENTON LOCK Coupler (S1) (illustrated below):

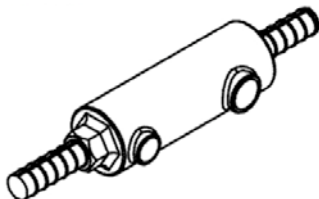


LENTON LOCK coupler is used to connect two bars mechanically. One or both rebars are inserted into the coupler in a predetermined position and the bolts are tightened in accordance with the manufacturer's instructions. As long as the torque values are achieved, the bolt heads are not required to shear off. Unsheared bolt heads may be cut off if concrete cover is an issue. Refer to ERICO's instructions for details. In addition to connecting the same bar size to the same bar size, the LENTON LOCK coupler may also be used to:

- Connect same size bar to same size bar where both bars are one size smaller than the size identified on the coupler, and
- Transition from the bar size identified on the coupler to the next smaller bar size.
- Transition from the bar size identified on the LL25S1 and LL32S1 couplers to two steps smaller bar size.

Installation procedures are the same as those described above.

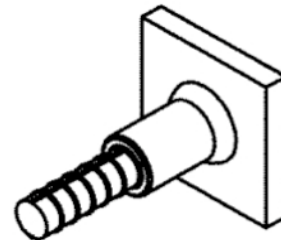
4.8 LENTON INTERLOK (LK) (illustrated below):



LENTON INTERLOK coupler is cylindrical, with one end threaded to receive LENTON tapered threaded rebar and the opposite end machined with internal annular ridges that

are spaced approximately 1 inch (25.4 mm) on center. LENTON INTERLOK coupler shall be installed in accordance with the applicable code, the evaluation report and ERICO installation instructions. The system consists of a coupler and grout from ERICO. The available grouts are HY10L and HY15LM. The threaded end of the coupler is machined with a LENTON taper thread. A matching LENTON tapered threaded piece of rebar is inserted into this end of the LENTON INTERLOK coupler and rotated until hand-tight. This portion of the connection is then tightened per ERICO's instructions. The opposite end of the sleeve is open to receive the reinforcing steel of the adjoining precast structural member or projecting dowel. Pouring or pumping grout into the sleeve subsequently completes the connection. Temperatures during grouting shall range between 32°F and 100°F (0°C and 38°C). Grout shall be mixed with water quantities determined from trial batches in accordance with Section 3.2.2 of this report. All oil, dirt, moisture, and other debris shall be removed from the coupler and other areas to be grouted. Mixed grout shall be either poured or pumped into the LENTON INTERLOK coupler. All spaces within the coupler shall be fully grouted. All spliced joints shall be adequately braced and supported to prevent movement of the rebar within the coupler. Braces are left in place for at least 24 hours, until the grout has attained a minimum compressive strength of 3,000 psi (20.7 MPa). Compression tests consist of 2-inch (51 mm) cubes tested in accordance with ASTM C109.

4.9 LENTON Weldable Half Coupler (C2 & C3J) (illustrated below):



LENTON weldable half coupler provides a mechanical means of connecting rebar to structural steel plates and shapes. Coupler is manufactured from weldable grades of material. One end of the coupler is machined with a LENTON taper thread and the opposite side is prepared for welding. Weld shall be designed by a licensed design professional in accordance with American Welding Society (AWS) standards. Connection is then tightened per the manufacturer's instructions.

5.0 CONDITIONS OF USE

LENTON mechanical couplers described in this report comply with, or are suitable alternatives to what is specified



Originally Issued: 02/02/2009

Revised: 11/09/2017

Valid Through: 02/28/2019

in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Couplers shall be installed in accordance with the applicable code, the manufacturer's instructions and this report. Where conflict occur, the more restrictive governs.

5.2 Splice locations shall comply with applicable code requirements and be noted on plans approved by the building official.

5.3 Where required, special inspection shall be provided in accordance with Chapter 17 of the IBC®. Duties of the special inspector include verifying:

- Grade and size of rebar.
- Coupler identification.
- Position of the couplers.
- Installation of the couplers to the rebar.

5.4 The threaded rebar used with LENTON mechanical splice couplers shall be fabricated by Erico or an approved fabricator complying with Section 4.1.1 of this report.

5.5 LENTON mechanical couplers may be used on epoxy-coated or galvanized bars as long as the coating or galvanizing process is conducted prior to rebar threading. All threads of the coupler and rebar are to be free of rust, adhered concrete, epoxy and galvanizing coating, and all debris at the time of coupling.

5.6 Under the 2015 IBC, for structures regulated by Chapter 18 of ACI 318-14 (as required by 2015 IBC Section 1905.1), to splice deformed reinforcing bars resisting earthquake-induced flexure, axial force, or both, in special moment frames, special structural walls, and all components of special structural walls including coupling beams and wall piers, with the LENTON mechanical splice systems, mill certificates of reinforcing bars must be submitted to the code official as evidence that the steel reinforcing bars comply with ACI 318-14 Section 20.2.2.5.

5.7 Under the 2012 IBC, for structures regulated by Chapter 21 of ACI 318-11 (as required by 2012 IBC Section 1905.1), to splice deformed reinforcing bars resisting earthquake-induced flexure, axial force, or both, in special moment frames, special structural walls, and all components of special structural walls including coupling beams and wall piers, with the LENTON mechanical connector systems, mill certificates of reinforcing bars shall be submitted to the code official as evidence that the steel reinforcing bars comply with ACI 318-11 Section 21.1.5.2.

5.8 Under the 2009 IBC, for structures regulated by Chapter 21 of ACI 318-08 (as required by 2009 IBC Section 1908.1),

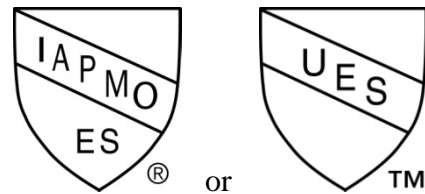
to splice deformed reinforcing bars resisting earthquake-induced flexural and axial forces in frame members, structural walls and coupling beams, with the LENTON mechanical connector systems, mill certificates of reinforcing bars shall be submitted to the code official as evidence that the steel reinforcing bars comply with ACI 318-08 Section 21.1.5.2.

6.0 EVIDENCE SUBMITTED

Data submitted in accordance with the ICC-ES Acceptance Criteria for Mechanical Connector Systems for Steel Reinforcing Bars (AC133), approved October 2015.

7.0 IDENTIFICATION

All couplers and splices are packaged with a label bearing the manufacturer's name (ERICO International Corporation), address, model and size, and the IAPMO Uniform ES Mark of Conformity and the Evaluation Report Number (ER-0129) to identify the products recognized in this report. Each LENTON coupler is permanently stamped/labeled with the catalog number, size, heat number, Type 2 designation (except LENTON® LOCK S1), and the name "LENTON."



IAPMO UES ER #0129

Brian Gerber, P.E., S.E.
Vice President, Technical Operations
Uniform Evaluation Service

Richard Beck, PE, CBO, MCP
Vice President, Uniform Evaluation Service

GP Russ Chaney
CEO, The IAPMO Group

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org

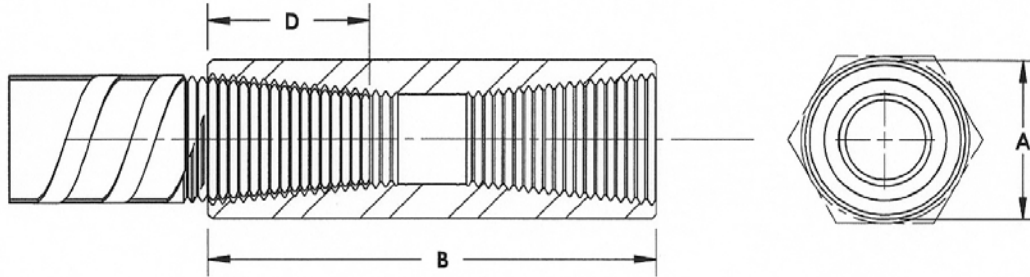


Table 1: LENTON® System Specification

Series	Part Number Suffix	Material Grade	Rebar	Rebar Sizes	Code Compliance	Section
LENTON Standard Coupler	A2, A12	American Iron and Steel Institute (AISI)1117/1141	ASTM® A706 Grades 60 and 80; A615 Grades 60, 75, and 80	4 through 18	IBC®, IRC®, TYPE I + II	4.2
LENTON Transition Coupler	A2, A12	AISI 1117/1141	ASTM A706 Grades 60 and 80; A615 Grades 60, 75, and 80	4 through 18	IBC, IRC, TYPE I + II	4.3
LENTON FORM SAVER	SA	AISI 1117/1141 (or equivalent)	ASTM A706 Grades 60 and 80; A615 Grades 60, 75, and 80	4 through 11	IBC, IRC, TYPE I + II	4.4
	FS	AISI 1117 (or equivalent)	ASTM A706 Grade 60; A615 Grades 60 and 75	4 through 7	IBC, IRC TYPE I + II	
LENTON Position Coupler	P9, P8	AISI 1141 (or equivalent)	ASTM A706 Grades 60 and 80; A615 Grades 60, 75, and 80	5 through 18	IBC, IRC TYPE I + II	4.5
LENTON LOCK	B1	AISI 4118/4120 (or equivalent)	ASTM A706 Grade 60; A615 Grades 60 and 75	4 through 18	IBC, IRC TYPE I + II	4.6
	S1	AISI 4118/4120 (or equivalent)	ASTM A706 Grade 60	4 through 18	IBC, IRC TYPE I + II	4.7
	S1	AISI 4118/4120 (or equivalent)	ASTM A615 Grade 60	4 through 18	IBC, IRC TYPE I	4.7
LENTON INTERLOK	LK with HY10L	ASTM A536 (or equivalent)	ASTM A706 Grade 60; A615 Grade 60	6 through 14	IBC, IRC TYPE I + II	4.8
	LK with HY15LM	ASTM A536 (or equivalent)	ASTM A706 Grades 60 and 80; A615 Grades 60, 75, and 80	5 through 18	IBC, IRC TYPE I + II	4.8
LENTON Weldable Half Coupler	C2, C3J	AISI 1018/1030/1035 (or equivalent)	ASTM A706 Grade 60; A615 Grade 60	4 through 18	IBC, IRC TYPE I + II	4.9



LENTON® Standard Couplers - A2/A12 Series



A = Diameter
 B = Length of Coupler
 D = Bar Engagement

Table 2: LENTON Standard Couplers – A2 Series

Reinforcement Bar Designation				Part Number	"A"		"B"		"D"	
No.	Metric (mm)	Canadian	Soft Metric		in	mm	in	mm	in	mm
4	12	10M	13	EL12A2*	11/16	17	1-5/8	41	9/16	14
5	16	15M	16	EL16A2*	7/8	22	2-3/16	56	7/8	22
6	20	20M	19	EL20A2*	1-1/16	27	2-13/16	71	1-1/8	29
7	22	–	22	EL22A2*	1-3/16	30	3-5/32	80	1-1/4	32
8	25	25M	25	EL25A2	1-3/8	35	3-11/32	85	1-3/8	35
9	28	30M	29	EL28A2	1-1/2	38	3-19/32	91	1-1/2	38
10	32	–	32	EL32A2	1-3/4	44	3-25/32	96	1-9/16	40
11	36	35M	36	EL36A2	1-7/8	48	3-31/32	101	1-11/16	43
–	38	–	38	EL38A2	2.0	50.8	4.13	104.9	1.75	44.5
–	40	–	–	EL40A2	2-3/16	52	4-15/16	125	2-3/16	56
14	43	45M	43	EL43TA2	2-1/4	57	5-1/4	133	2-1/8	56
–	50	–	–	EL50TA2	2-9/16	64	6-13/32	163	2-3/4	70
18	57	55M	57	EL57TA2	3	76	6-1/2	164	2-3/4	71

*Uses hexagonal material (measured across the flats); others use round material.



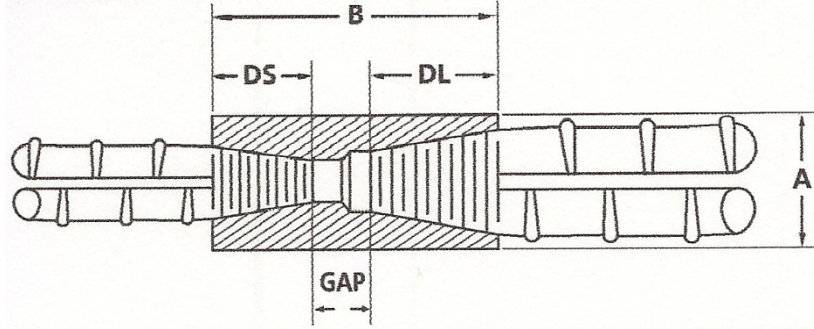
Table 3: LENTON Standard Couplers – A12 Series

Reinforcement Bar Designation		Part Number	“A” mm	“B” mm	“D” mm
No.	Metric (mm)				
–	10	EL10A12*	17	48	18
4	12	EL12A12*	17	49	18
–	14	EL14A12*	22	55	21
5	16	EL16A12*	22	61	24
–	18	EL18A12*	27	71	29
6	20	EL20A12*	27	88	36
7	22	EL22A12*	33	91	38
8	25	EL25A12	33	96	41
9	28	EL28A12	37	101	43
–	30	EL30A12	37	121	53
10	32	EL32A12	42	107	46
–	34	EL34A12	41	128	56
11	36	EL36A12	46	121	53
–	38	EL38A12	52	124	54
–	40	EL40A12	52	131	58
14	43	EL43TA12	58	155	68
–	50	EL50TA12	64	163	71
18	57	EL57TA12	75	189	84

*Uses hexagonal material (measured across the flats); others use round material.



LENTON Transition Couplers - A2/A12 Series



A = Diameter
 B = Length of Coupler
 DL = Large Bar Engagement
 DS = Small Bar Engagement

Table 4: LENTON Transition Couplers – A2 Series

Reinforcement Bar Designation	Part Number	"A" in	"B" in	"DL" in	"DS" in
No.					
4 to 5	EL1612A2*	7/8	2-5/15	7/8	9/16
5 to 6	EL2016A2*	1-1/16	3	1-1/8	7/8
6 to 7	EL2220A2*	1-3/16	3-13/32	1-1/4	1-1/8
7 to 8	EL2522A2	1-3/8	3-11/16	1-3/8	1-1/4
8 to 9	EL2825A2	1-1/2	3-29/32	1-1/2	1-3/8
9 to 10	EL3228A2	1-3/4	4-1/8	1-9/16	1-1/2
10 to 11	EL3632A2	1-7/8	4-5/16	1-11/16	1-9/16
11 to 14	EL43T36A2	2-1/4	4-21/32	2-1/8	1-11/16
11 to 18	EL57T36A2	3	5-11/16	2-3/4	1-11/16
14 to 18	EL57T43A2	3	6-5/16	2-3/4	2-1/8

*Uses hexagonal material (measured across the flats); others use round material.



Originally Issued: 02/02/2009

Revised: 11/09/2017

Valid Through:02/28/2019

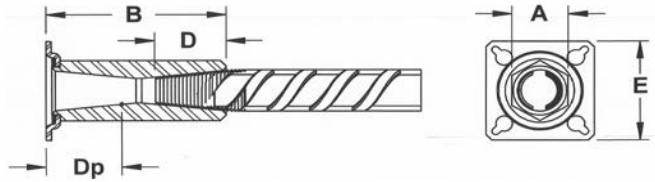
Table 5: LENTON Transition Couplers – A12 Series

Reinforcement Bar Designation	Part Number	“A” in	“B” in	“DL” in	“DS” in
No.					
4 to 5	EL1612A12*	7/8	2-13/32	15/16	3/4
5 to 6	EL2016A12*	1-1/16	3-5/32	1-3/8	15/16
6 to 7	EL2220A12*	1-3/16	3-3/4	1-7/16	1-3/8
7 to 8	EL2522A12	1-3/8	3-15/16	1-9/16	1-7/16
8 to 9	EL2825A12	1-1/2	4-1/8	1-5/8	1-9/16
9 to 10	EL3228A12	1-3/4	4-11/32	1-3/4	1-5/8
10 to 11	EL3632A12	1-7/8	4-23/32	2-1/16	1-3/4
11 to 14	EL43T36A12	2-1/4	5-13/16	2-5/8	2-1/16
11 to 18	EL57T36A12	3	6-9/16	3-1/8	2-1/16
14 to 18	EL57T43TA12	3	7-1/4	3-1/8	2-5/8

*Uses hexagonal material (measured across the flats); others use round material.



LENTON FORM SAVER Couplers – SA Series



- A = Diameter
- B = Length of Coupler Body
- D = Bar Engagement Non-Mounting Plate Side
- Dp = Bar Engagement Mounting Plate Side
- E = Length of Mounting Plate

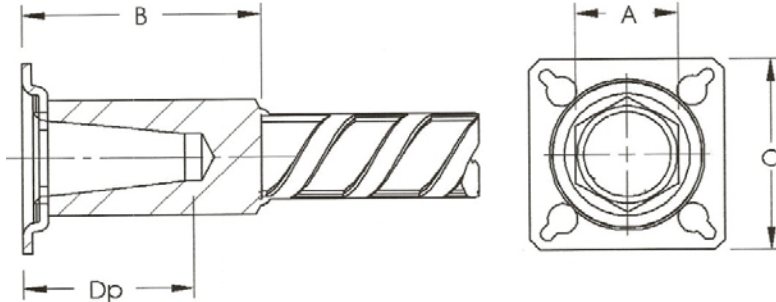
Table 6: LENTON FORM SAVER Couplers – SA Series

Reinforcement Bar Designation		Part No.	"A"		"B"		"D"		"Dp"		"E"	
No.	Metric (mm)		in	mm	in	mm	in	mm	in	mm	in	mm
4	12	EL12SA*	11/16	17	1-15/16	49	9/16	14	7/8	22	2-1/4	57
5	16	EL16SA*	7/8	22	2-1/2	64	7/8	22	1-3/16	30	2-1/4	57
6	20	EL20SA*	1-1/16	27	3-1/8	79	1-1/8	29	1-7/16	37	2-1/4	57
7	22	EL22SA*	1-3/16	30	3-15/32	88	1-1/4	32	1-9/16	40	2-1/4	57
8	25	EL25SA	1-3/8	35	3-21/32	93	1-3/8	35	1-11/16	43	2-1/4	57
9	28	EL28SA	1-1/2	38	3-29/32	99	1-1/2	38	1-13/16	46	2-1/2	63
10	32	EL32SA	1-3/4	44	4-3/32	104	1-9/16	40	1-7/8	48	2-1/2	63
11	36	EL36SA	1-7/8	48	4-9/32	109	1-11/16	43	2	51	2-1/2	63

*Uses hexagonal material (measured across the flats); others use round material.



LENTON FORM SAVER Couplers – FS Series



A = Diameter

B = Length of Coupler

C = Length and Width of Mounting Plate

Dp = Bar Engagement

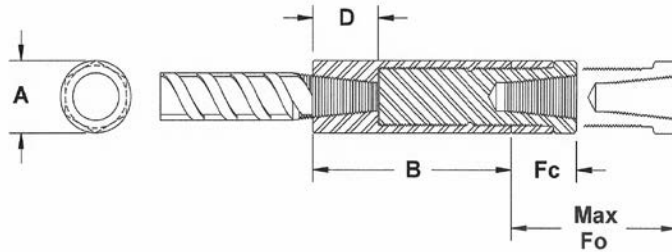
Table 7: LENTON FORM SAVER Couplers – FS Series

Reinforcement Bar Designation		Part No.	"A"		"B"		"C"		"Dp"	
No.	Metric (mm)		in	mm	in	mm	in	mm	in	mm
4	12	ELC12FS2*	7/8	22	1-13/16	46	2-1/4	57	7/8	22
5	16	ELC16FS2*	7/8	22	2-1/16	52	2-1/4	57	1-3/16	30
6	20	ELC20FS2*	1-1/16	27	2-9/16	65	2-1/4	57	1-7/16	36
7	22	ELC22FS2*	1-3/16	30	2-13/16	71	2-1/4	57	1-9/16	39

*Uses hexagonal material (measured across the flats); others use round material.



LENTON Position Couplers – P9 Series



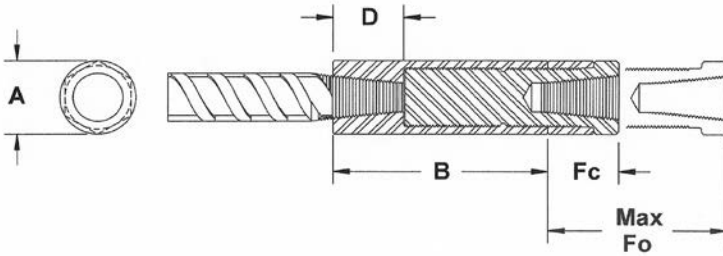
A = Diameter
 B = Length of Coupler Body
 D = Bar Engagement
 Fc = Connector Closed Position
 Max. Fo = Connector Fully Open Position

Table 8: LENTON Position Couplers – P9 Series

Reinforcement Bar Designation		Part No.	"A"		"B"		"D"		"Fc"		"Max. Fo"	
No.	Metric (mm)		in	mm	in	mm	in	mm	in	mm	in	mm
6	20	EL20P9	1-13/16	46	2-3/4	70	1-1/8	29	1-5/8	41	2-1/8	54
7	22	EL22P9	1-13/16	46	3-1/16	78	1-1/4	32	1-5/8	41	2-1/8	54
8	25	EL25P9	1-13/16	46	3-3/8	86	1-3/8	35	1-5/8	41	2-1/8	54
9	28	EL28P9	2-1/2	64	3-9/16	90	1-1/2	38	1-5/8	41	2-1/8	54
10	32	EL32P9	2-1/2	64	3-13/16	97	1-9/16	40	1-5/8	41	2-1/8	54
11	36	EL36P9	2-1/2	64	4-3/16	98	1-11/16	43	1-5/8	41	2-1/8	54
14	43	EL43TP 9	3	76	5	127	2-1/8	54	3-13/16	97	4-5/8	117
18	57	EL57TP 9	4	95	6-1/8	156	2-3/4	70	4-3/8	111	5-13/16	148



LENTON Position Couplers – P8 Series



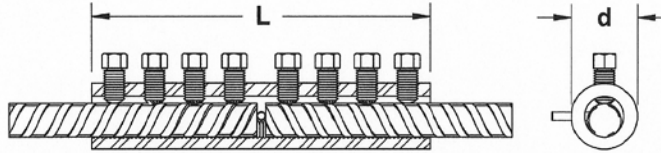
- A = Diameter
- B = Length of Coupler Body
- D = Bar Engagement
- Fc = Connector Closed Position
- Max. Fo = Connector Fully Open Position

Table 9: LENTON Position Couplers – P8 Series

Reinforcement Bar Designation		Part No.	"A"		"B"		"D"		"Fc"		"Max. Fo"	
No.	Metric (mm)		in	mm	in	mm	in	mm	in	mm	in	mm
5	16	EL16P8	1-13/16	46	4-7/16	113	7/8	22	1-1/2	38	2-9/16	65
6	20	EL20P8	1-13/16	46	4-7/16	113	1-1/8	29	1-9/16	39	2-9/16	65
7	22	EL22P8	1-13/16	46	4-15/16	125	1-1/4	32	1-1/2	38	2-3/4	70
8	25	EL25P8	1-13/16	46	5-5/16	135	1-3/8	35	1-1/2	38	2-13/16	72
9	28	EL28P8	2-1/2	64	5-5/8	143	1-1/2	38	1-1/2	38	2-15/16	75
10	32	EL32P8	2-1/2	64	6	152	1-9/16	40	1-1/2	38	3-1/16	78
11	36	EL36P8	2-1/2	64	6-7/16	164	1-11/16	43	1-9/16	39	3-3/8	85



LENTON LOCK Couplers – B1 Series



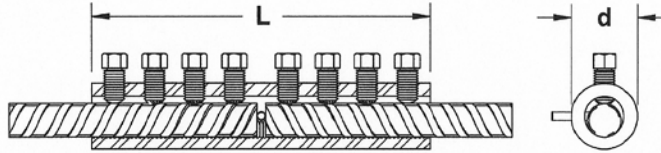
L = Coupler Length
d = Outside Diameter

Table 10: LENTON LOCK Couplers – B1 Series

Reinforcement Bar Designation		Part No	“L” Length		“d” Outside Diameter		Inside Diameter		Number of Bolts
No.	Metric (mm)		in	mm	in	mm	in	mm	
–	10	LL12B1	5	127	1.1	29	0.6	15	6
4	12	LL12B1	5	127	1.1	29	0.6	15	6
–	14	LL16B1	6.3	159	1.4	35	0.7	19	6
5	16	LL16B1	6.3	159	1.4	35	0.7	19	6
–	18	LL20B1	7.5	191	1.7	44	0.9	24	8
6	20	LL20B1	7.5	191	1.7	44	0.9	24	8
7	22	LL22B1	8.7	222	1.9	48	1.1	28	8
8	25	LL25B1	10	254	2.1	54	1.2	30	8
9	28	LL28B1	11.3	287	2.4	60	1.3	34	10
–	30	LL28B1	11.3	287	2.4	60	1.3	34	10
10	32	LL32B1	12.7	323	2.6	65	1.5	38	8
–	34	LL36B1	14.1	358	2.8	72	1.7	43	10
11	36	LL36B1	14.1	358	2.8	72	1.7	43	10
–	38	LL40B1	15.7	400	3.1	80	1.9	47	12
–	40	LL40B1	15.7	400	3.1	80	1.9	47	12
14	43	LL43B1	20.6	523	3.5	89	2.1	53	14
--	50	LL50B1	23.3	593	4.0	102	2.4	60	16
18	57	LL57B1	26.1	662	4.5	117	2.6	67	18



LENTON LOCK Couplers – S1 Series



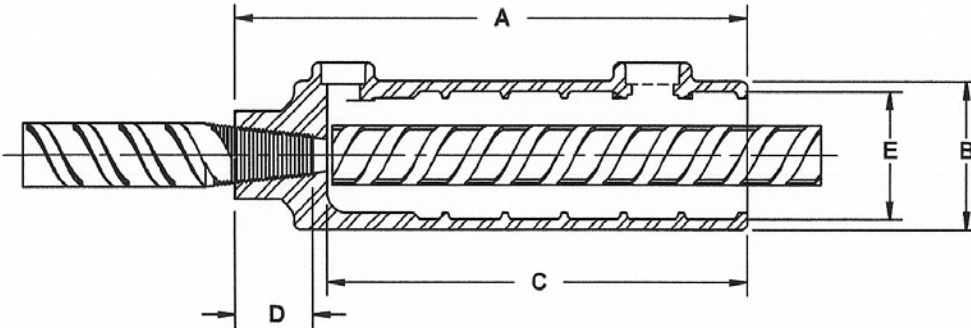
L = Coupler Length
d = Outside Diameter

Table 11: LENTON LOCK Couplers – S1 Series

Reinforcement Bar Designation		Part No	"L" Length		"d" Outside Diameter		Inside Diameter		Number of Bolts
No.	Metric (mm)		in	mm	in	mm	in	mm	
–	10	LL12S1	3.9	99	1.1	29	0.6	15	4
4	12	LL12S1	3.9	99	1.1	29	0.6	15	4
–	14	LL16S1	4.3	109	1.4	35	0.7	19	4
5	16	LL16S1	4.3	109	1.4	35	0.7	19	4
–	18	LL20S1	6.0	153	1.7	44	0.9	24	6
6	20	LL20S1	6.0	153	1.7	44	0.9	24	6
7	22	LL22S1	6.8	173	1.9	48	1.1	28	6
8	25	LL25S1	6.8	173	2.1	54	1.2	30	6
9	28	LL28S1	6.8	173	2.4	60	1.3	34	6
–	30	LL28S1	6.8	173	2.4	60	1.3	34	6
10	32	LL32S1	8.7	220	2.6	65	1.5	38	6
–	34	LL36S1	11.3	286	2.8	72	1.7	43	8
11	36	LL36S1	11.3	286	2.8	72	1.7	43	8
–	38	LL40S1	13.9	352	3.1	80	1.9	47	10
–	40	LL40S1	13.9	352	3.1	80	1.9	47	10
14	43	LL43S1	16.5	418	3.5	89	2.1	53	12
--	50	LL57S1	22.5	572	4.5	114	2.6	67	14
18	57	LL57S1	22.5	572	4.5	114	2.6	67	14



LENTON INTERLOK Couplers – LK Series



- A = Length
- B = Outside Diameter
- C = Grouted Max. Bar Embedment
- D = Threaded Bar Engagement
- E = Inside Diameter

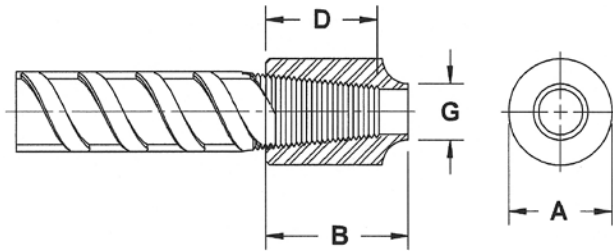


Table 12: LENTON INTERLOK Couplers – LK Series

Reinforce-ment Bar Designation		Part No.	“A”		“B”		“C”		“D”		“E”	
No.	Metric (mm)		in	mm	in	mm	in	mm	in	mm	in	mm
5	16	LK5	7.81	198.4	2.56	65.1	6.13	155.5	0.86	21.8	2.13	54
5	16	LK16	7.91	200.9	2.31	58.7	6.62	168.2	1.190	30.22	1.88	47.6
6	20	LK6	7-5/8	195	2-7/16	62	6-1/8	156	1-1/8	29	1-7/8	48
6	20	LK20	8.79	223.3	2.44	61.9	7.0	177.8	1.691	42.95	2.0	50.8
7	22	LK7	7-5/8	195	2-7/16	62	6-1/8	156	1-1/4	32	1-7/8	48
7	22	LK22	8.89	225.8	2.56	65.1	7.01	178	1.784	45.32	2.13	54
8	25	LK8	8-5/8	219	2-5/8	67	7	178	1-3/8	35	2	51
8	25	LK25	8.98	228.1	2.69	68.3	7	177.8	1.884	47.86	2.25	57.2
9	28	LK9	9-3/4	248	2-3/4	70	8	203	1-1/2	38	2-1/8	54
9	28	LK28	10.07	255.8	2.81	71.4	8	203.2	1.970	50.04	2.38	60.3
10	32	LK10	10-13/16	275	2-15/16	75	9	229	1-9/16	40	2-5/16	59
10	32	LK32	11.2	284.5	3.0	76.2	9	228.6	2.100	53.34	2.56	65.1
11	36	LK11	12	295	3-1/8	79	9-7/8	251	1-11/16	43	2-7/16	62
11	36	LK36	12.34	313.4	3.19	81.0	9.88	251	2.364	53	2.69	68.3
–	40	LKT14 SP	15	381	3-11/16	94	12-3/4	324	2-1/8	56	2-3/4	70
14	43	LKT14	15	381	3-11/16	94	12-3/4	324	2-1/8	54	2-3/4	70
14	43	LKT43	15.94	404.9	3.69	93.7	12.75	323.8	3.093	60.03	3.06	77.8
–	50	LKT18 SP	20-5/16	508	4-1/2	114	17	432	2-3/4	71	3-1/4	83
18	57	LKT18	20-5/16	508	4-1/2	114	17	432	2-3/4	72	3-1/4	83
18	57	LKT57	20.87	530.1	4.5	114.3	17	432	3.767	95.69	3.56	90.5



LENTON Weldable Half Couplers – C2 and C3J Series



A = Coupler Diameter
 B = Length of Coupler
 D = Bar Engagement
 G = Small Diameter

Table 13: LENTON Weldable Half Couplers – C2 and C3J Series

Reinforcement Bar Designation		Part No.	"A"		"B"		"D"		"G"	
No.	Metric (mm)		in	mm	in	mm	in	mm	in	mm
4	12	EL12C2	3/4	19	1-3/16	30	9/16	14	7/16	11
5	16	EL16C2	1	25	1-3/8	35	7/8	22	9/16	14
6	20	EL20C3J	1-1/4	32	2-5/32	55	1-1/8	29	7/8	22
7	22	EL22C3J	1-1/4	32	2-13/32	61	1-1/4	32	3/4	19
8	25	EL25C3J	1-9/16	40	2-17/32	64	1-3/8	35	1	25
9	28	EL28C3J	1-9/16	40	2-11/16	68	1-1/2	38	15/16	24
10	32	EL32C3J	2	51	2-7/8	73	1-9/16	40	15/16	24
11	36	EL36C3J	2	51	2-31/32	75	1-11/16	43	1-1/8	29
14	43	EL43TC3J	2-3/8	60	3-3/4	96	2-1/8	54	1-13/32	36
18	57	EL57TC3J	3-1/8	79	4-1/2	114	2-3/4	71	1-3/4	44