nVent

LENTON

CONNECT AND PROTECT

The Difference of a Few Turns: Saving Time and Labor on a High-Profile Construction Project

Anyone who has watched a new building go up in their neighborhood knows construction can be a time-consuming process. With this in mind, it's easy to imagine the complexity of building a large, high-tech manufacturing facility on a tight deadline.

This is the challenge one of nVent's European customers faced. Midland Steel Reinforcement Supplies, a cut and bend reinforcement manufacturer in Ireland and the United Kingdom, was tasked with supporting a new facility construction on a tight timeline, with little room for error.

LABOR-SAVING SOLUTIONS

In precast and prefab construction processes (see "Modular Construction" below) workers build sections of buildings—either rebar cages or entire poured concrete sections—in a controlled factory environment, saving significant time by increasing the quality and speed of construction by limiting site setbacks or inclement weather delays. However, once built, precast and prefab sections of buildings must be connected at the site quickly, efficiently and providing full load transfer between the elements to ensure the integrity of the finished structure.

Midland Steel supplied reinforcement for the entire construction project, including loose rebar and prefabricated cages for both the job site and the precast facility. Midland Steel needed to ensure workers could assemble precast and prefabricated sections quickly, easily and reliably, and looked to nVent to provide a connecting solution.

Normally, when rebar fits together, workers tighten the connection between bars by rotating each end into a coupler, similar to tightening a screw. However, in prefabricated and precast construction, bars may already be set into structures weighing many tons; therefore, workers need to be able to tighten the connections without rotating the bars. In this case nVent LENTON position or Interlok couplers can be used to connect rebar.

ESSENTIAL CONNECTIONS

To meet the demands of this challenging project, nVent provided Midland Steel a wide range of **standard couplers, position couplers** and **mechanical anchors**: nVent LENTON A12N, P13LN, P14LN, D14N and D16N variant couplers. These products all share two important features: self-alignment and a minimal number of turns required for installation.

While standard coupling systems typically need 10-12 turns to install, nVent LENTON couplers only require approximately 4.5 turns. Although a few extra turns on a single coupler may not seem like a lot of additional effort, Midland Steel's customer installed over 30,000 coupler connections on the facility job site. Overall, the prefabrication process combined with the coupler technology of nVent LENTON products helped Midland Steel eliminate approximately 150,000 extra bar and coupler rotations and decreased onsite labor time by 80 percent.

Additionally, using **nVent LENTON taper threaded** couplers helps to prevent cross-threading, which can result in misaligned rebar and coupler connections. When a worker starts to rotate the bars or couplers to form connections between pieces of rebar, the nVent LENTON taper thread automatically draws the pieces into the correct alignment, making construction quicker and easier while greatly reducing error. For large projects like Midland Steel's, ease of installation is a major benefit when connecting structures weighing several tons.

"Using their innovation and concrete experience, the versatility of nVent LENTON couplers from A12 to P-Type allowed the majority of the project to be designed using couplers—from the connection in precast columns to the connections on some very deep waffle slab—saving time and saving cost on steel," said Tony Woods, managing director of Midland Steel Reinforcement Supplies.

Finding the right solution for the customer's coupler needs ultimately benefited all parties. Midland Steel and the site construction teams were able to stay on schedule and the facility opened without delay. Although the nVent LENTON products are now set in concrete and out of sight, they will continue to provide essential, structural connections for the life of the new facility.

What Is Modular Construction?

In traditional construction, workers assemble cages at job sites out of loose reinforcing bars (rebar). However, these reinforcement cages can also be assembled offsite—a process called prefabrication, or "prefab," such as the FasterFix solution offered by Midland Steel. When the cages arrive prebuilt, workers can immediately lift the cages into place which speeds up the start of concrete pours and saves time that would otherwise be spent on assembling cages.

In some circumstances, construction teams opt for "precast concrete." In precasting operations, workers pour concrete onto reinforcement cages at a facility away from the job site to produce completed building sections, such as a column, beam or wall panel. The completed sections are then transported to the job site for on-site installation, where workers lock the precast sections together using couplers to provide structural connections between the rebar cages cast into the concrete.

Prefabrication and precasting are both a part of the modular construction process. Modular construction can reduce waste, save time and create added safety for workers since assembly takes place in a controlled environment. The global market for modular construction is **on the rise** as the technology improves and companies continue to realize its benefits.

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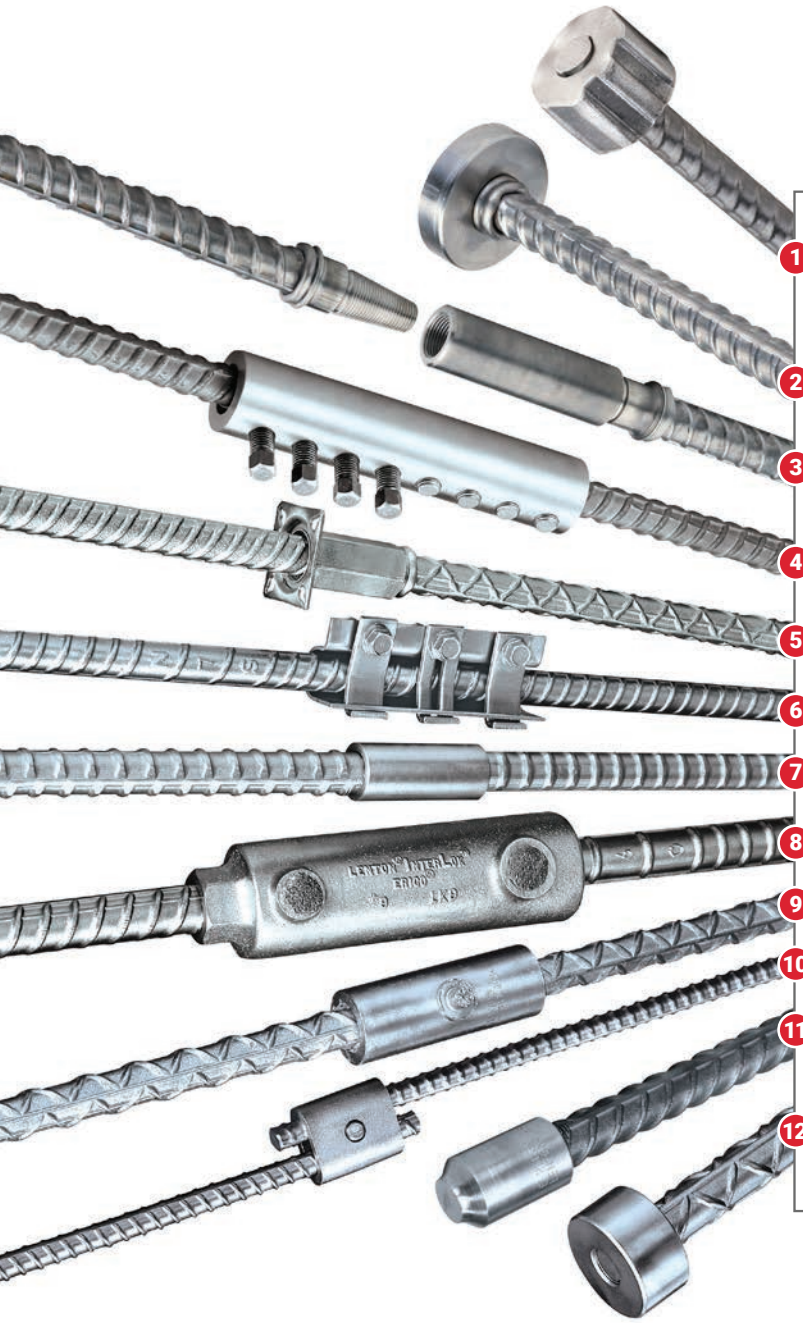
We connect and protect

nVent LENTON Mechanical Rebar Splicing Systems



As a pioneer in the construction industry, nVent LENTON has the experience and resources necessary to help select the rebar system that will meet your job site applications. Whether Cast-in-Place, Precast, or Structural Steel, our products provide solutions for a variety of scenarios including High-Strength Bar, Nuclear, Cryogenic and more.

1. **nVent LENTON Swaged Terminator:** Ideal for High-Volume headed Bar Anchors
2. **nVent LENTON Ultimate Terminators:** Meets ASTM, A970 types A, HA and B
3. **nVent LENTON Ultimate Splicing Systems:** Ideal for High-Strain, Fatigue and Nuclear Performance Requirements
4. **nVent LENTON Connect Shear Bolt Splicing System:** Ideal for in-situ Construction and Remediation
5. **nVent LENTON Form Saver:** Ideal for Segmental Pours
6. **nVent LENTON Speed Sleeve Splices:** Designed Only for Compression Applications
7. **nVent LENTON Taper-Threaded Couplers:** Ideal alternative to conventional lap splices
8. **nVent LENTON Interlok Grout-Filled Precast Splicing System:** Ideal for precast structures
9. **nVent LENTON Cadweld:** Ideal for Curved Rebar in Nuclear Containment Structures
10. **nVent LENTON Quick Wedge:** Ideal for Retrofit Applications
11. **nVent LENTON Weldable Coupler:** Ideal for Composite Construction
12. **nVent LENTON Taper-Threaded Terminators:** Ideal Alternative to Hooked Rebar Anchorage

Worldwide Code Compliance | Quality Engineered Products | Proven Performance | Trusted Experts

nVent LENTON Rebar Splicing

Engineered Products for Every Project

EN 10080, BS4449, AS/NZS 4671, NCH204

Metric Dimensions

Bar Size Metric	Diameter mm	Area mm^2	Weight kg/m
10	10.0	79	0.671
12	12.0	113	0.888
12.5	12.5	123	0.963
14	14.0	154	1.210
16	16.0	200	1.580
18	18.0	254	1.994
20	20.0	314	2.470
22	22.0	380	2.980
24	24.0	452	3.550
25	25.0	491	3.850
28	28.0	616	4.830
30	30.0	707	5.551
32	32.0	804	6.310
34	34.0	908	7.129
36	36.0	1020	7.990
38	38.0	1134	8.872
40	40.0	1257	9.860
50	50.0	1963	15.400

CAN/CSA-G30.18

Metric Dimensions

Bar Size Canada	Diameter mm	Area mm^2	Weight kg/m
10M	11.3	100	0.785
15M	16.0	200	1.580
20M	19.5	300	2.355
25M	25.2	500	3.925
30M	29.9	700	5.495
35M	35.7	1000	7.850
45M	43.7	1500	11.775
55M	56.4	2500	19.625

Worldwide Reinforcing Steel Bar Chart

All dimensions are nominal

ASTM® A615 / A706 / A1035

Metric Dimensions

Bar Size, US ASTM	Diameter mm	Area mm^2	Weight kg/m
#3	9.5	71	0.560
#4	12.7	129	0.994
#5	15.9	199	1.552
#6	19.1	284	2.235
#7	22.2	387	3.042
#8	25.4	510	3.973
#9	28.7	645	5.060
#10	32.3	819	6.404
#11	35.8	1006	7.907
#14	43.0	1452	11.380
#18	57.3	2581	20.240

Imperial Dimensions

Bar Size, US ASTM	Diameter in	Area in^2	Weight lb/ft
#3	0.375	0.11	0.376
#4	0.500	0.20	0.668
#5	0.625	0.31	1.043
#6	0.750	0.44	1.502
#7	0.875	0.60	2.044
#8	1.000	0.79	2.670
#9	1.128	1.00	3.400
#10	1.270	1.27	4.303
#11	1.410	1.56	5.313
#14	1.693	2.25	7.650
#18	2.257	4.00	13.600

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LENTON-FLY-C514W-RebarSplicingBarChart-USEN-2409

nVent LENTON Mechanical Splice Performance Matrix for ASTM® Reinforcing Steel

Grades 60–120 • Plain and Epoxy Coated Bars

Ultimate Tensile Strength Requirement per ACI 318	ASTM A615 & A706 Grade 60		ASTM A615 Grade 75		ASTM A615 & A706 Grade 80		ASTM A615 Grade 100*	ASTM A1035 Grade 100*		ASTM A1035 Grade 120*	
	Type 1 A615 = 75 ksi A706 = 75 ksi	Type 2 A615 = 90 ksi A706 = 80 ksi	Type 1 93.8 ksi	Type 2 100 ksi	Type 1 A615 = 100 ksi A706 = 100 ksi	Type 2 A615 = 105 ksi A706 = 100 ksi	Undefined 115 ksi	Type 1 125 ksi	Type 2 150 ksi	Type 1 150 ksi	Type 2 150 ksi
Standard Couplers	A2	A2	A2	A2	A2	A2	A22	A22/A32K	A32K	A32K	A32K
Standard Transition Couplers	A2	A2	A2	A2	A2	A2	A12	A12**	—	—	—
nVent LENTON Form Saver (FS)†	FS	FS	—	—	—	—	—	—	—	—	—
nVent LENTON Form Saver (SA) Δ	SA	SA	SA	SA	SA	SA	—	—	—	—	—
Position Couplers	P9	P9	P9	P9	P9	P9	P24L	P24L	—	—	—
Weldable Couplers	C2/C3J	C2/C3J	C2/C3J	C2/C3J	C2/C3J	C2/C3J	—	—	—	—	—
nVent LENTON Interlok ◊	LK	LK	LK	LK	LK	LK	—	—	—	—	—
nVent LENTON Quick Wedge	ML	—	—	—	—	—	—	—	—	—	—

Definitions:

Type 1, ACI 318, Section 18.2.7.1(a)- A Type 1 mechanical splice shall develop in tension or compression, as required, at least 1.25fy of the spliced bar. (1.25fy=125% of the specified yield strength).

Type 2, ACI 318, Section 18.2.7.1(b)- A Type 2 mechanical splice shall meet the requirements of Type 1 AND shall be capable of developing the specified tensile strength of the spliced bar (fu).

1 ksi = 1,000 psi.

Notes:

⋆ ACI 318 has not yet fully defined the performance requirements for this type and grade of reinforcing steel.

⋆⋆ nVent LENTON Transition Couplers (A12) only for sizes #8 and larger.

† nVent LENTON Form Saver (FS) is a friction forged reinforcing steel assembly. These assemblies are only available through nVent regional manufacturing centers (RMC).

Δ nVent LENTON Form Saver (SA) is a standard coupler with a mounting plate.

◊ nVent LENTON Interlok performance with HY15LM grout.

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WARNING: nVent products shall be installed and used only as indicated in nVent's product instruction sheets and training materials. Instruction sheets are available at nVent.com/LENTON and from your nVent customer service representative. Improper installation, misuse, misapplication or other failure to completely follow nVent's instructions and warnings may cause product malfunction, property damage, serious bodily injury and death and/or void your warranty.

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