

STAINLESS
CATALOG



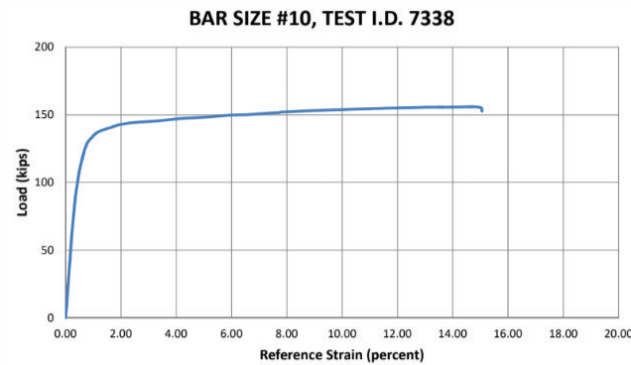
RHINO

MECHANICAL CONNECTIONS

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Tension and Strain Performance

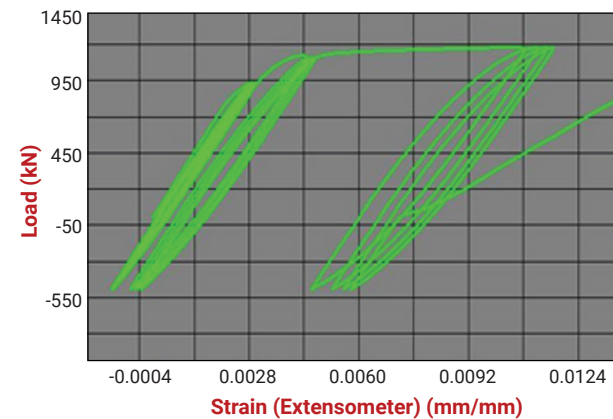
The design of the RHINO stainless steel coupler and threading equipment has demonstrated outstanding tension and strain performance. Full tension of the control bar and strain development in the range of 8% -15% have been continuously demonstrated in both independent and on-site testing.



Test I.D. No.	Bar Size	Bar Area (in ²)	Yield Strength f_{ya} 0.2% Offset Method			Textile Strength f_{ua}				Final Result
			(kips)	(ksi)	(% $f_{y=60}$)	(kips)	(ksi)	(% $f_{y=60}$)	(% $f_{u=90}$)	
7338	10	1.27	111.5	87.8	146%	156.1	122.9	205%	137%	Pass

Cyclic Performance

RHINO Stainless Steel Couplers have been tested and evaluated on the performance of the splice reinforcement following significant inelastic stress reversal fatigue cycles which would simulate a seismic event. This includes a series of elastic stress reversal cycles followed by increasing inelastic stress reversal cycles to 5 times the yield point strain of the reinforcement being tested. Following this completion of the cycles, the test specimen is then pulled to its ultimate strength. RHINO Stainless Steel Mechanical Connections successfully pass this rigorous test, while developing the full strength and ductility of the reinforcement.

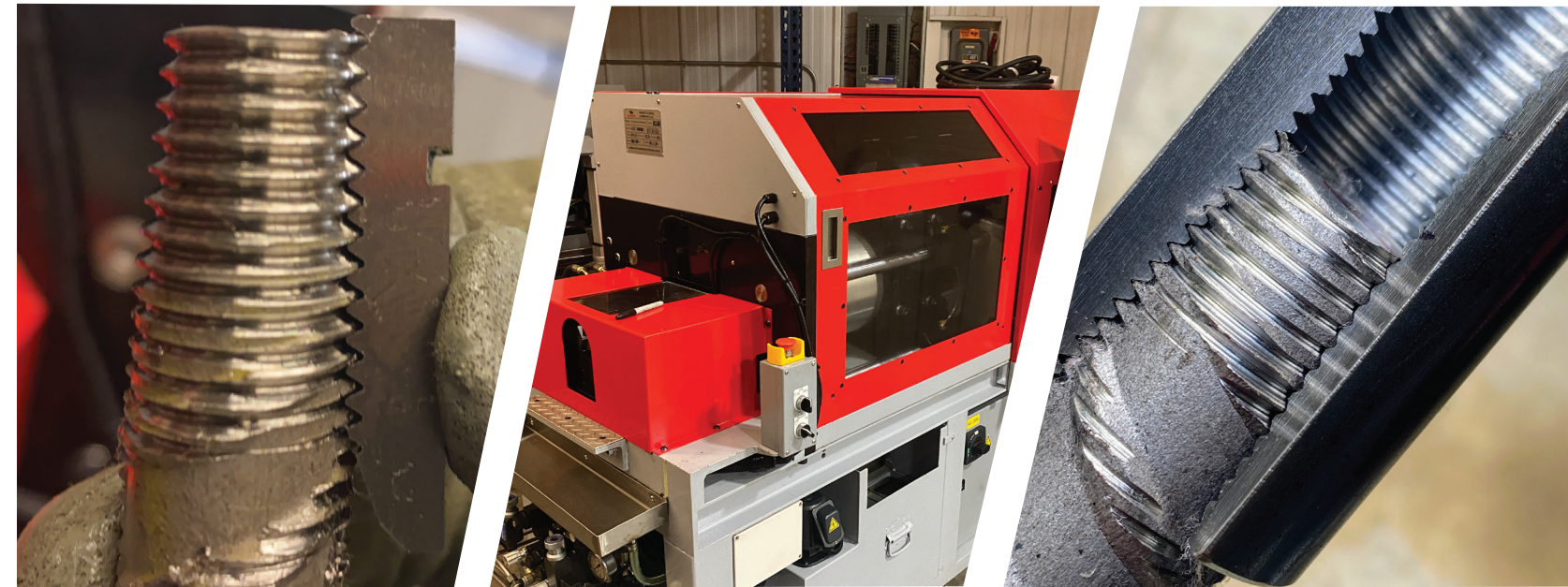


Slip Performance

RHINO's taper threaded coupler is designed for very low slip performance. Slip is the amount of permanent movement within the bar/coupler system and is critical for controlling the amount of cracks in the concrete element. The table below shows excellent performance based on the NYSDOT two stage, multi cycle slip protocol.

Test I.D. No.	Bar Size	Bar Area (in ²)	Stage 1 Slip @ 50% f_y			Stage 2 Slip @ 90% f_y
			First Cycle Slip (in.)	Max Slip (in.)	Ratio of First Cycle Slip to Max Slip (percent)	Max Slip (in.)
7021	4	0.20	0.0018	0.0021	86%	0.0102
7022	5	0.31	0.0019	0.0023	83%	0.0083
7432	6	0.44	0.0079	0.0087	91%	0.0147
7023	7	0.60	0.0025	0.0031	81%	0.0121
7337	10	1.27	0.0040	0.0041	98%	0.0067
8000	11	1.56	0.0082	0.0086	95%	0.0128

RHINO products and equipment are engineered for optimal performance.



4.5-degree tapered system

- RHINO's splicing system is designed around a 4.5-degree taper thread which allows for self-alignment of the rebar into the coupler providing a fast installation.
- The 4.5-degree taper is designed to maximize performance while minimizing material removal during threading process.

Process Consistency

- RHINO's manufacturing process is designed around a servo-controlled threading machine which gives a robust and repeatable process on every thread.
- The repeatability of the computer-controlled threading process delivers a more consistent thread and a longer chaser life.
- Threading machines are equipped with cutting fluid chillers that control the cutting temperatures of stainless-steel rebar to optimized levels for longer chaser life.

Automation

- RHINO Threading equipment is fully automated allowing for faster operation and less operator fatigue while threading rebar.
- Automation provides a better consistent quality product by providing a repeatable, consistent process.

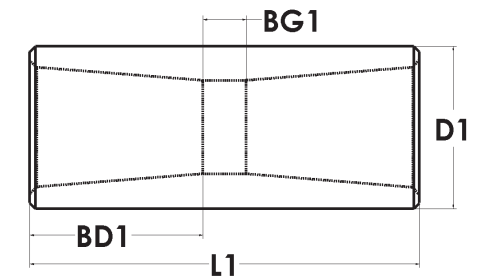
The RHINO SS Series of mechanical couplers is designed to join all grades of ASTM A955 rebar, where one bar is free to rotate. The coupler has machined taper threads at both ends connecting two ends of rebar to make a mechanical splice. This simplifies rebar splicing in areas where steel congestion makes it difficult for long lap splices. The taper thread design allows for quick alignment and engagement of the bar within the coupler. Stainless steel couplers are specified whenever corrosive environmental conditions combine with the need for high load-bearing strength. RHINO Stainless Steel couplers are commonly used when the construction materials may come into contact with de-icing salts, salt water or marine environments.

Features and Benefits

- Can be used in a wide variety of global rebar grades and deformation patterns
- Stainless Steel Material: 2205, 2304 and 316
- Meets or exceeds international building codes including AASHTO, MTO, Department of Transportations, ACI 318 Type 1 & Type 2, BS8110, DIN1045, Hong Kong Building Department Type 2 and many others.
- Taper design allows for quick alignment and eliminates cross threading
- Installs quickly with taper thread
- Slim design frees up space in congested area
- **MADE IN THE USA** - Steel & Couplers

Typical Applications

- Column Bar Splicing
- Bridges & Bridge Decks
- Marine Environments
- Segmental construction



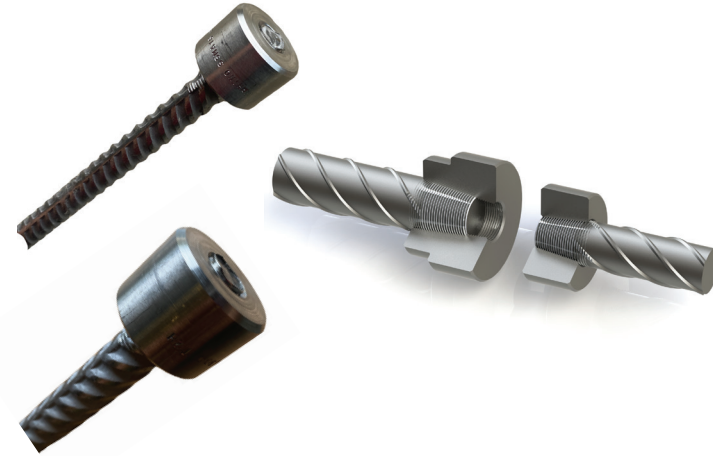
DIMENSIONS ARE FOR REFERENCE ONLY.

Part Number	US Rebar Size	Metric Rebar Size	Canada Rebar Size	L1 (in)	L1 (mm)	D1 (in)	D1 (mm)	BD1 (in)	BD1 (mm)	BG1 (in)	BG1 (mm)	Weight (lbs)	Weight (kg)
SS13	#4	12mm	-	2.19	55	1.0	25	.87	22	.43	11	.17	.08
SS16	#5	16mm	15M	2.50	63	1.0	25	1.10	28	.31	8	.2	.10
SS19	#6	20mm	20M	2.80	71	1.25	32	1.22	31	.31	8	.44	.20
SS22	#7	22mm	-	3.19	81	1.25	32	1.28	33	.31	8	.88	.40
SS25	#8	25mm	25M	3.39	86	1.50	38	1.51	38	.38	10	1.20	.54
SS28	#9	28mm	30M	3.70	94	1.50	38	1.70	43	.31	8	1.40	.63
SS32	#10	32mm	-	4.25	108	1.75	45	1.88	48	.50	13	1.80	.82
SS36	#11	36mm	35M	4.57	116	2.00	51	2.18	55	.21	6	2.20	1.0

RHINO stainless mechanical anchors are used to terminate reinforcing steel as an alternative to conventional hooked bars. The oversized anchor attaches to one or both ends of the reinforcing steel creating a headed bar. By utilizing the proprietary RHINO Taper Threads, which allows for quick alignment and engagement of the rebar, the system is capable of exceeding the ACI, UBC, IBC and ASTM A970 requirements for headed deformed bars. The development lengths and anchorage capacity are determined by the structural engineer in compliance with ACI 318.

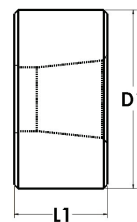
Features and Benefits

- The net bearing area of the head, A_{brg}, meets or exceeds the 4x the nominal rebar area as required by ACI 318, ASTM A970 and ICC ES AC308.
- Replaces hooked bar and reduces rebar congestion
- Exceeds ACI, UBC, A970, IBC, AS3600 building codes
- Fast and simplified installation of rebar
- Designed for 12mm (#4) through 36mm (#11)
- Available in Stainless Steel 2205
- **MADE IN THE USA - Steel & Anchors**

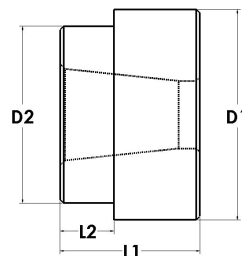


Typical Applications

- End termination of rebar
- Beam or Roof to Column
- Closure Pours
- Shear Reinforcing



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Part Number	US Rebar Size	Metric Rebar Size	Canada Rebar Size	L1 (in)	L1 (mm)	D1 (in)	D1 (mm)	Weight (lbs)	Weight (kg)
SSMA13	#4	12mm	10M	.95	24	1.25	35	.2	.09
SSMA16	#5	16mm	15M	1.10	28	1.50	38	.4	.18
SSMA19	#6	20mm	20M	1.28	33	1.75	48	.8	.36
SSMA22	#7	22mm	-	1.44	37	2.00	51	1.0	.45
SSMA25	#8	25mm	25M	1.61	41	2.25	57	1.3	.59
SSMA28	#9	28mm	30M	1.77	45	2.75	70	2.2	1.00
SSMA32	#10	32mm	-	1.97	50	3.00	76	2.7	1.22
SSMA36	#11	36mm	35M	2.21	56	3.25	83	3.4	1.54

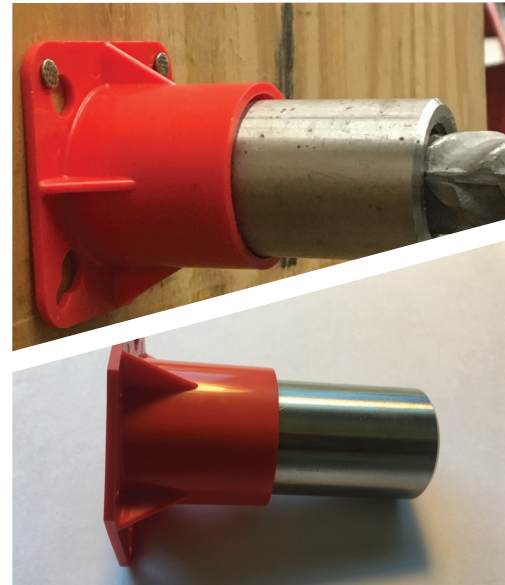
The FMP series is designed to protect the internal threads of the coupler, to permit proper alignment of the coupler system and to allow easy access after pour for reinforced concrete construction in segmental pour applications. After the forms are stripped, the FMP has a plastic tab that can be removed by a screwdriver exposing the contamination-free internal threads.

Features and Benefits

- Designed to keep water, dirt, and concrete slurry out of the coupler during pour.
- Mounting holes allow for easy attachment to forms.
- Plate can be mounted to form prior to assembly to coupler
- After concrete pour and forms stripped, easy twist off tab allows for access to coupler threads
- Allows for proper alignment of coupler/rebar interface
- Designed for specific RHINO Couplers - see chart

Typical Applications

- Segmental Pour Applications
- Bridge Decks
- Highway and Bridge Slabs



Part Number	Coupler	Plate Length (FL1)	Plate Width (FW1)	Plate Height (FH1)	Plate Thickness (FT1)
FMP4	RS13	1.50 in	2.25 in	2.25 in	.090 in
FMP5	SR16, SS13, SS16	1.50 in	2.25 in	2.25 in	.090 in
FMP6	RS19	1.50 in	2.25 in	2.25 in	.090 in
FMP7	RS22, SS19, SS22	1.50 in	2.25 in	2.25 in	.090 in
FMP8	RS25, RS28, SS25, SS28	1.50 in	2.50 in	2.50 in	.090 in
FMP10	RS32, SS32	1.50 in	2.80 in	2.80 in	.090 in
FMP11	RS36, SS36	1.50 in	2.80 in	2.80 in	.090 in

Accessories

Coupler Plugs and Caps - RHINO manufactures both taper threaded screw in, waterproof plugs and push in caps for coupler protection against dirt and debris inside of the coupler.



Rebar Protective Caps - RHINO has available vinyl push-on caps that protect threads from damage during transportation and safety protection against exposed threads at job site.



ABOUT US

We are a manufacturing and marketing company started in 2017 that specializes in superior, engineered steel based mechanical connections for the commercial, concrete construction business. Our vast background includes over 100 years of combined experience within the commercial, concrete construction industry. Our brand is based upon key core values that drive our strategies, policies and processes.

RHINO CORE VALUES

Respect

We strive to develop respect for, and long term relationships with, our employees, suppliers, end users and customers.

High Quality

We take pride in providing high quality and value added products that ensures customer satisfaction.

Integrity

We act with honesty, integrity and truthfulness.

rhiNovation

Our goal is to develop innovative, technical, high quality products through our culture, strategy and work processes. RHINO's experts have developed and engineered its products and processes to set the standard in technical performance.

Opportunity

RHINO believes in the value of opportunity because each person's success enriches us all. We create opportunities every day and make investments in each other that create a wealth of opportunities for our employees, customers, suppliers and end users.