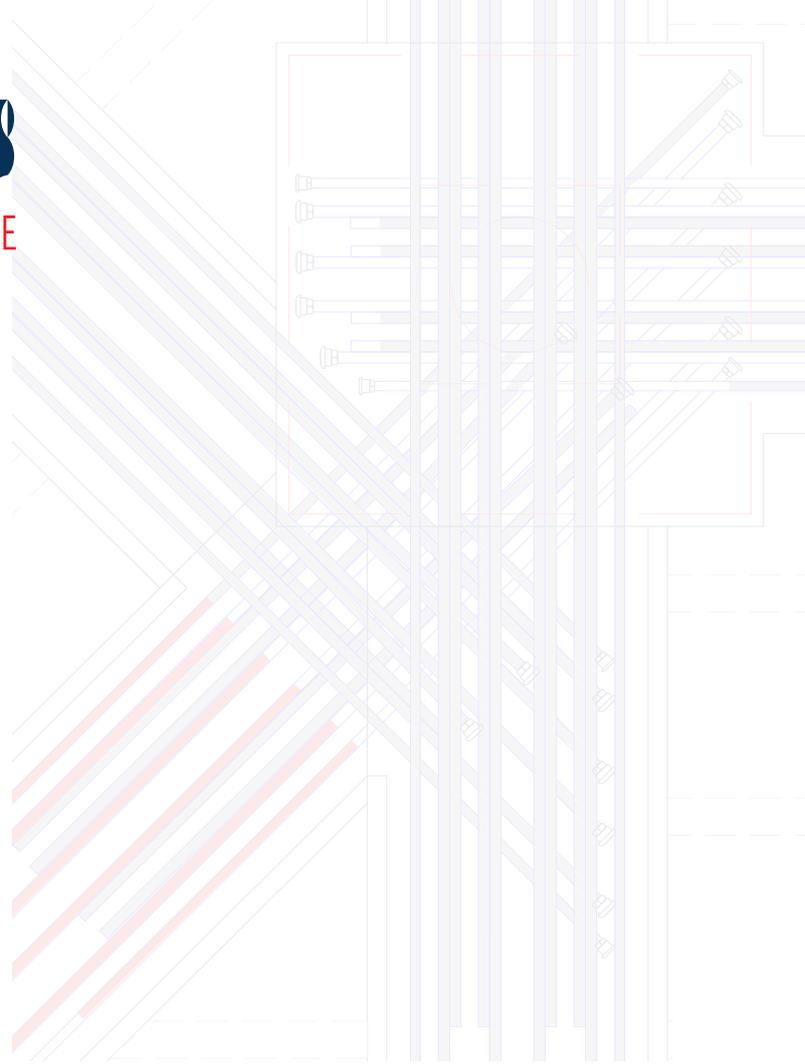




IRON MAN BAR-COUPLER MECHANICAL SPLICE

CATALOGUE

September 2023



**OVERCOME
REINFORCING STEEL
CONGESTION
WITH IMBMS COUPLERS
AND TERMINATORS**



www.imbms.co.nz



INTRODUCTION

Since 1999 more than 125 million Iron Man BMS parallel threaded couplers have been supplied for almost every form of civil and commercial structure imaginable, from Olympic stadiums, nuclear power stations to mass rapid transit systems like the prestigious Singaporean deep tunnel sewage system, the Burj Khalifa in Dubai and Rymans Healthcare's Bob Scott Retirement Village in Wellington, New Zealand.

Features and benefits of the mechanical splice system:

- Overcome steel congestion and reduce steel wastage as lap and hook bars replaced by couplers and terminators
- Superior cyclic performance compared to lap joint as coupler performs as a continuous bar
- Use of couplers significantly saves time thus reducing labour cost for fixing and installation
- IMBMS couplers knuckle design for easy use with any gripping tool
- Allows greater flexibility for designer/engineers
- Improves concrete flow in critical zones
- Parallel Rolled double start thread means only 5 turns for faster fixing
- Can roll thread G300E and G500E deformed and plain from 12mm to 40mm
- Locally tested and compliant to NZS 3101 clause 8.7.5.2 and meets seismic and slip requirements of ISO 15835:2009
- Meets the requirements of NZTA Bridges Manual

THREADING LOCATIONS AND TESTING

SOUTH AUCKLAND

Sizes: 12mm 16mm 20mm 25mm 32mm and 40mm.

Products: couplers, lock nuts, bar & thread end caps and terminators.

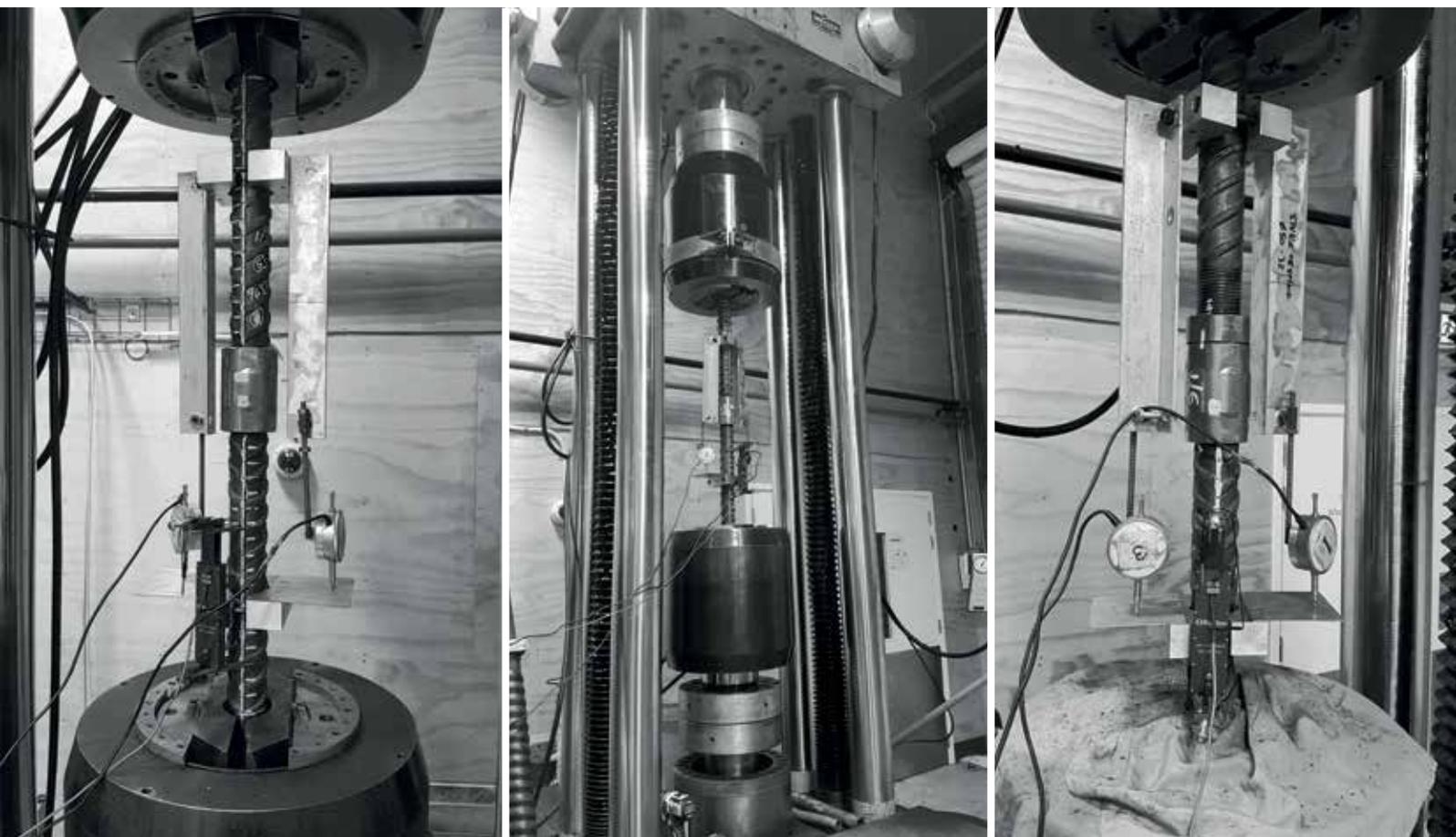
Bar lengths: up to 18 metres (note surcharge applies for bars over 12 metres long).

CHRISTCHURCH

Sizes: 12mm 16mm 20mm 25mm 32mm and 40mm.

Products: couplers, weldable couplers, lock nuts, bar & thread end caps and terminators.

Bar lengths: up to 18 metres (note surcharge applies for bars over 12 metres long).



TESTING

25mm bar and couplers were extensively tested by Holmes Solutions back in 2014.

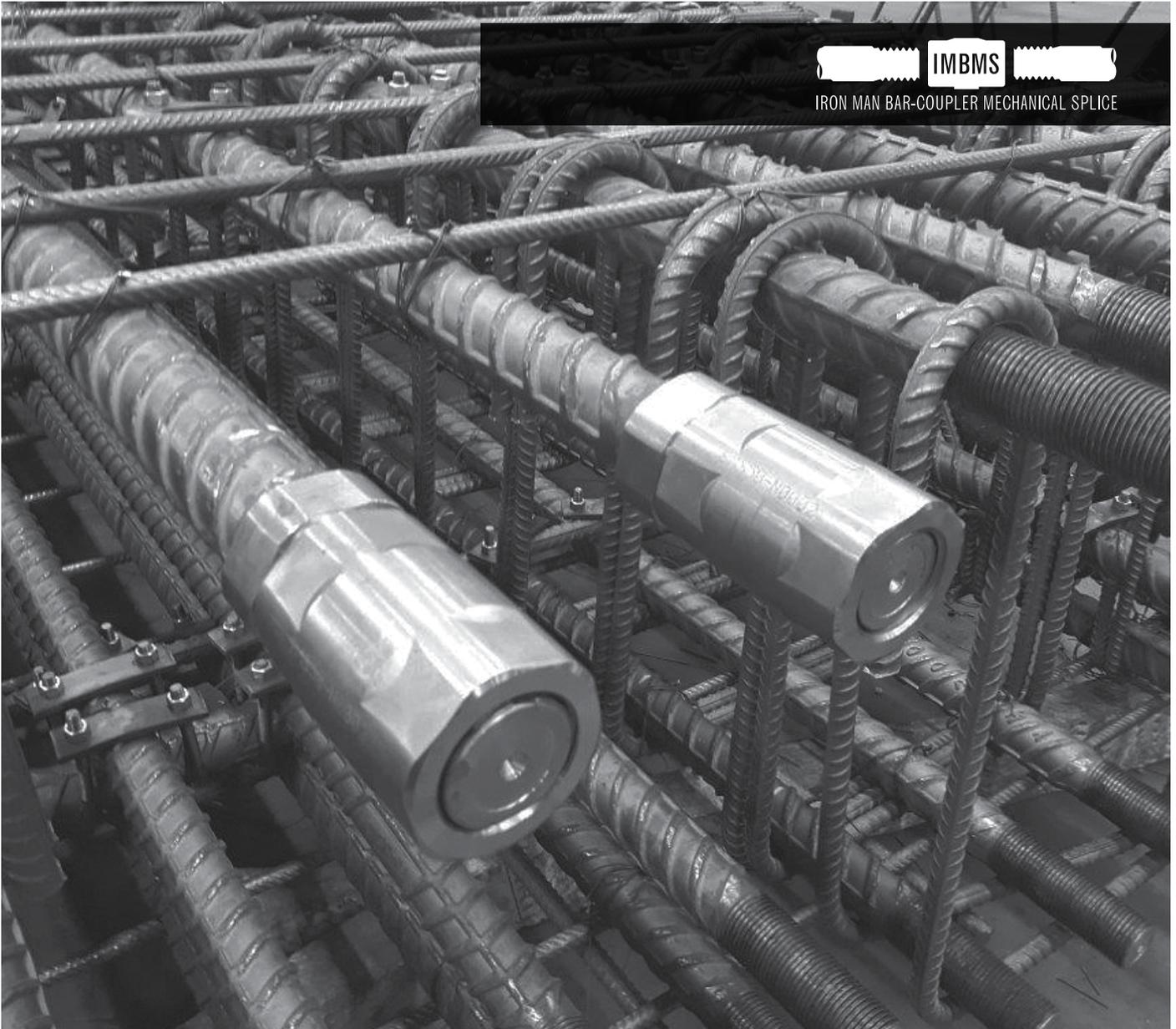
12mm to 40mm bars tested by Opus NZ to ISO15835 slip test, tensile test and low cycle loading test.

a) Test Methods to ISO 15835-2:2009(E), ISO 15630-1:2010, BS EN ISO 6892-1:2009 & AS/NZS 4671:2001

b) To meet the ISO 15835-1:2009(E) Strength and ductility under static forces (clause 5.2) and Slip under static forces (clause 5.3)

c) To meet the ISO 15835-1:2009(E) Properties under low cycle reverse elastic-plastic loading (clause 5.5) for Couplers of category S2 (clause 5.5.2)

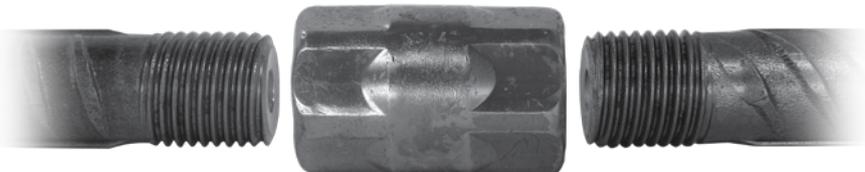
Mode of failure was bar break outside the splice zone.



TESTED AND COMPLIANT
TO ISO15835 BY OPUS



MECHANICALLY SPLICED BY IMBMS AUCKLAND



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IMBMS
IRON MAN BAR-COUPLER MECHANICAL SPLICE

THREADING

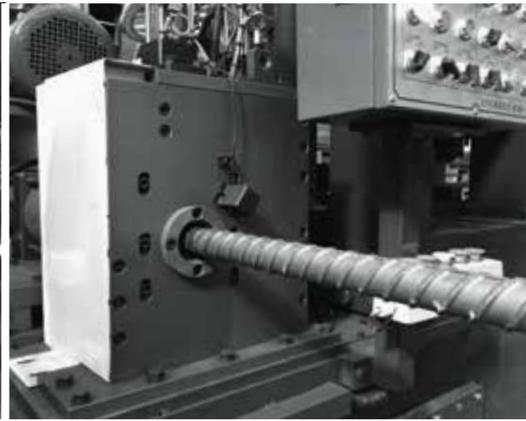
The Cold forming method is essentially simple – the shape of the end of the rebar to be threaded, is modified via a round accurately predetermined sized steel die set. The forming load is minimal and applied transversely to the grain flow of the material, this in effect aligns the grain flow of the ribs and the core diameter. The core diameter and ribs are formed to

an accurate circular shape suitable to thread roll. For a standard thread suitable for the 32mm Type A rebar coupler this takes approximately 10 seconds.

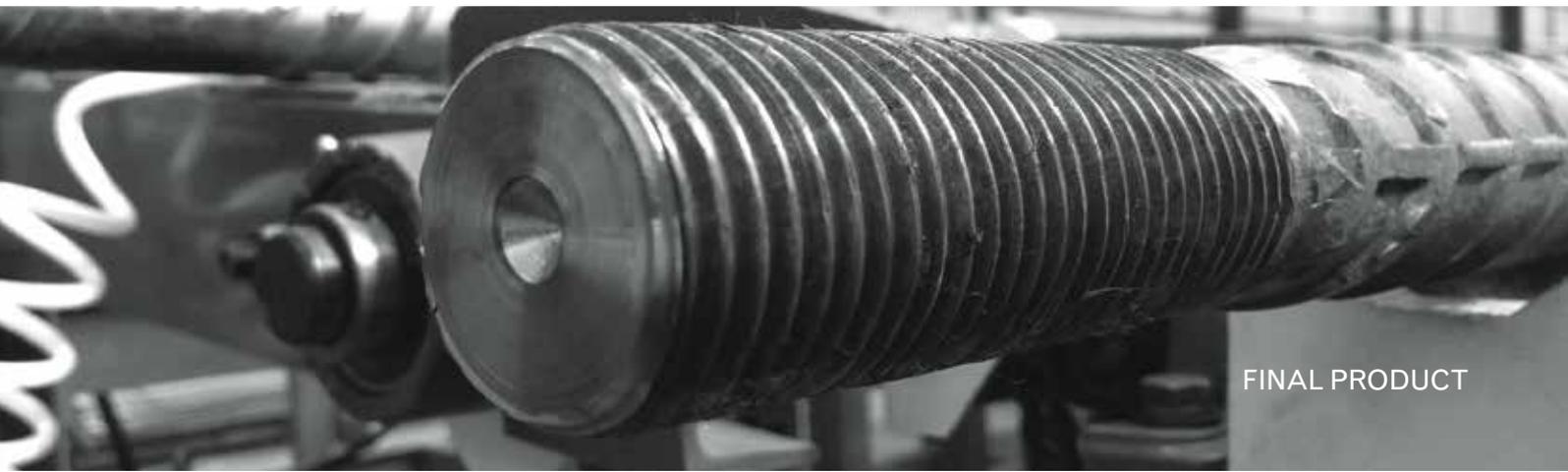
STEP 1



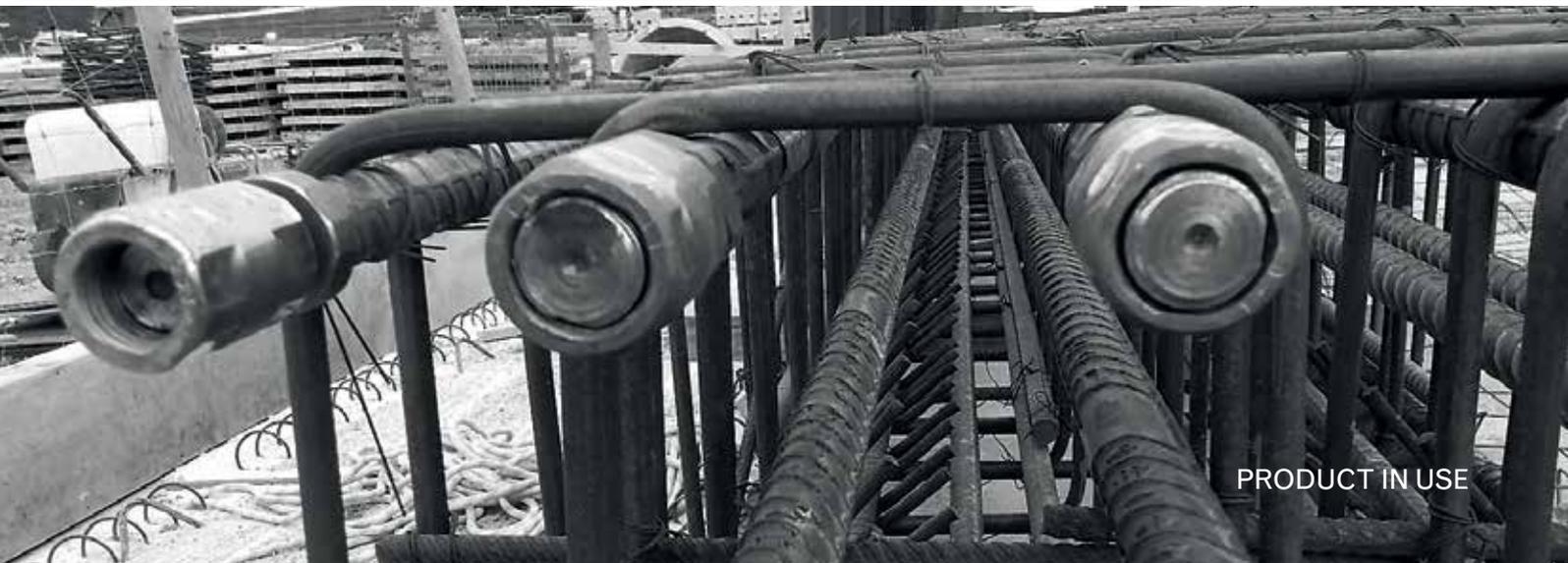
STEP 2



STEP 3



FINAL PRODUCT

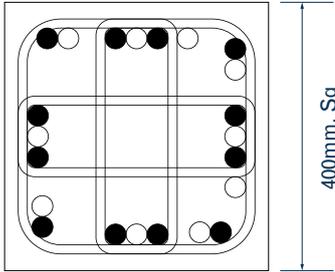


PRODUCT IN USE

APPLICATION OF REBAR COUPLERS

COLUMN REINFORCEMENT

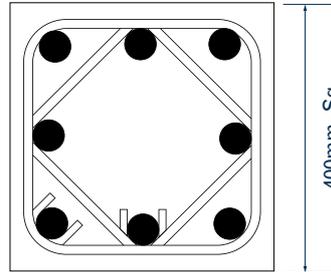
With IMBMS-Bar Couplers



12 No. 25mm Bars
Traditional Lapped Joints

400mm. Sq

ULIMATE LOAD
3470KN

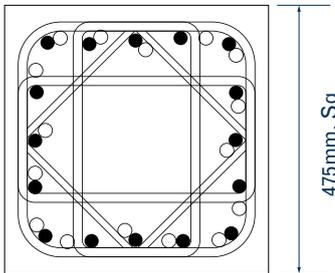


8 No. 40mm Bars

Increase Load carrying capacity and reduce congestion by using 'IRONMAN' BMS Couplers

400mm. Sq

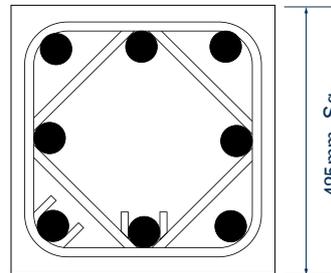
ULIMATE LOAD
4550KN



16 No. 25mm Bars
Traditional Lapped Joints

475mm. Sq

ULIMATE LOAD
4800KN



8 No. 40mm Bars

Reduce the size of columns by using Preshcon 'IRONMAN' BMS Couplers

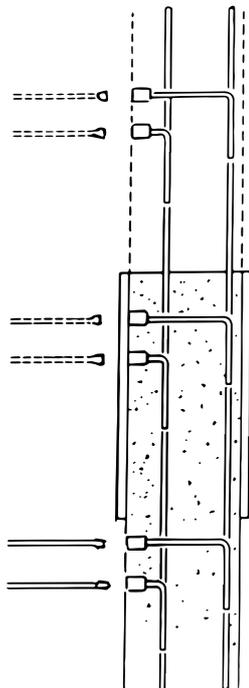
MEANS : 20% MORE USABLE / SALEABLE SPACE

425mm. Sq

ULIMATE LOAD
4800KN

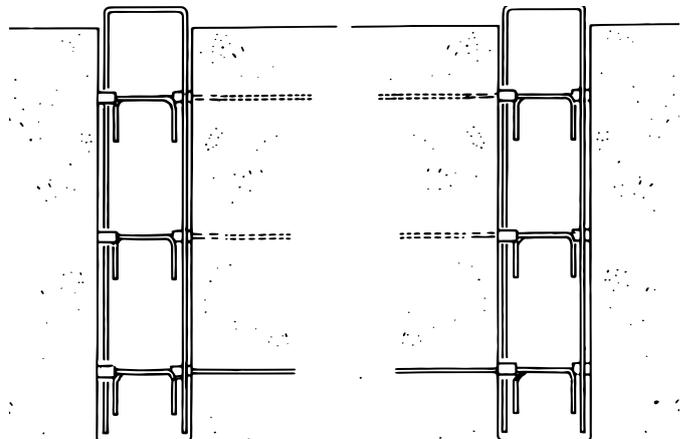
IRONMAN BMS COUPLER SLEEVE

Coupler sleeve embedded in concrete ready to take continuation reinforcement. Enables slip form to pass freely and avoid the need for bent up starter bars.



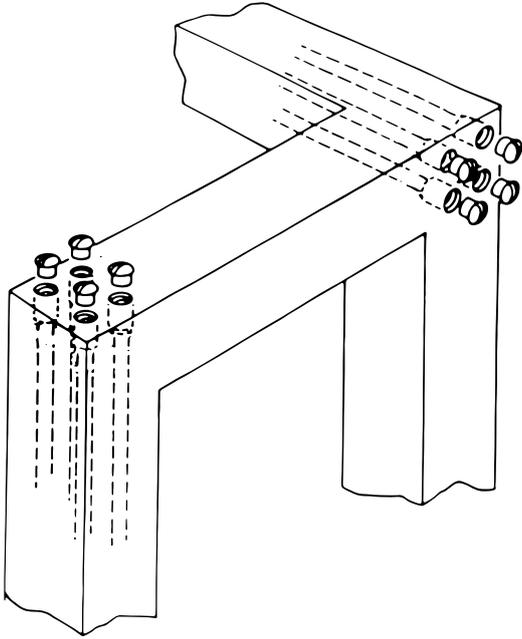
DIAPHRAGM WALL

In diaphragm wall construction couplers eliminate starter bars for intermediate floors to allow prefabricated cages to be dropped easily into the trench.



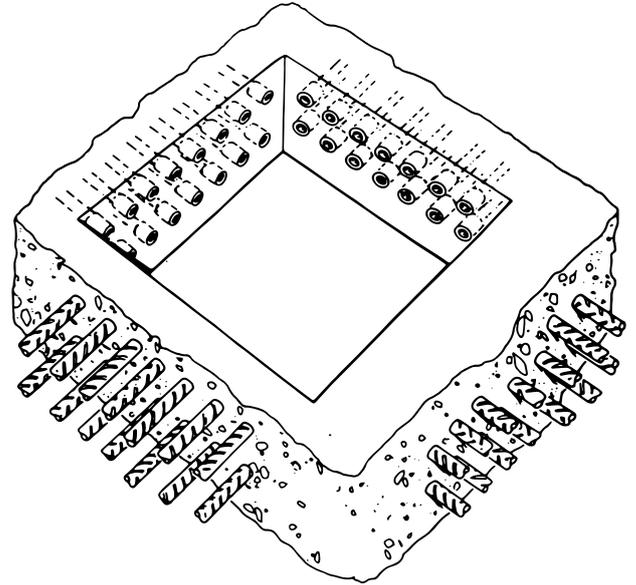
FUTURE BUILDING EXTENSIONS

To permit future building extensions coupler sleeves are cast into the original structure and capped ready to take continuation reinforcement in beams and columns.



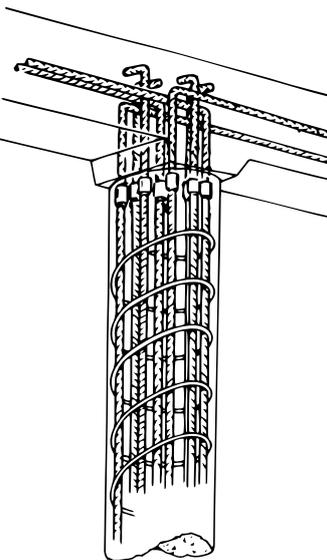
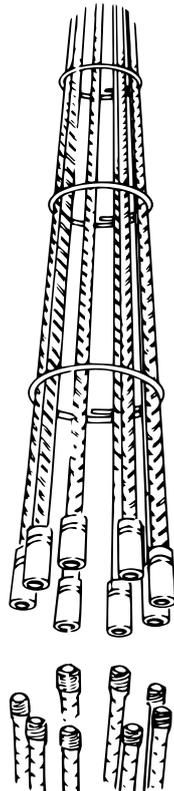
OPENINGS LEFT CLEAR

Openings can be left clear of projecting reinforcement to give access for equipment, tower cranes, etc.



TYPE C

Allows Prefabricated pile cages to be lifted and positioned in the ground without cage separation.



HIGHTENSILE STRENGTH IMBMS-BAR COUPLER

IMBMS-BAR COUPLER

The couplers are designed to provide high tensile strength connections with external ribs or spanner flats, for easy gripping by hand tools; such as spanner, pipe wrench and chain wrench etc.

Protected knuckles – Increase bond strength
The surface of the coupler has hexagonal shape knuckles, increasing bond strength.

Batch marking
All products are marked with 'IMBMS', size and production batch numbers.

Reinforcing ring
The centre section form adds strength to the coupler without increasing diameter. It is suitable for ultra high strength reinforcing steel bars.

Hexagonal seat for gripping tool
Spanner seats are provided at both ends for easy connection by fixing tools.



IMBMS-BAR (NORMAL-TEMPERATURE SWAGED BAR COUPLER)

Attributes:

- Meets NZ 3101
- Meets NZTA Bridge manual specification
- Patent registration No.0316435
- No heat applied, no upsetting, no thread cutting
- Through normal-temperature swaging, original stress-resistance in tension and compression force is ensured
- Concrete placement is easy thanks to the small diameter and short length of the coupler
- Couplers are available for dissimilar sizes on request

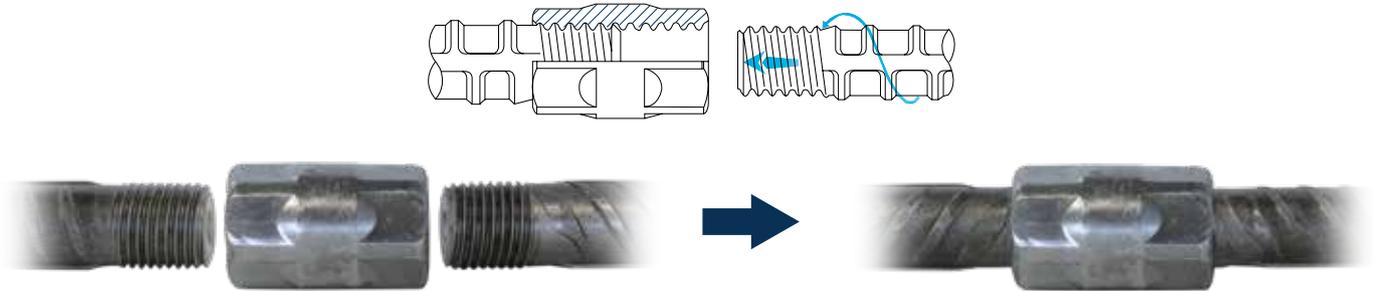
IMBMS-BAR (NORMAL-TEMPERATURE SWAGED BAR COUPLER)

TYPICAL TEST RESULTS-BS 8100 HOT ROLLED BARS BS.4449				
NOMINAL BAR SIZE	YIELD STRESS (N/mm ²)	ULTIMATE STRESS	PERMANENT ELONGATION (0.6fy) mm	FAILURE MODE
40	537	628	0.0721	BAR BREAK
32	526	638	0.0518	BAR BREAK
28	533	653	0.0480	BAR BREAK
25	540	638	0.0014	BAR BREAK
20	505	618	0.0021	BAR BREAK
16	507	621	0.0048	BAR BREAK
12	521	638	0.0040	BAR BREAK

IMBMS-BAR INSTALLATION

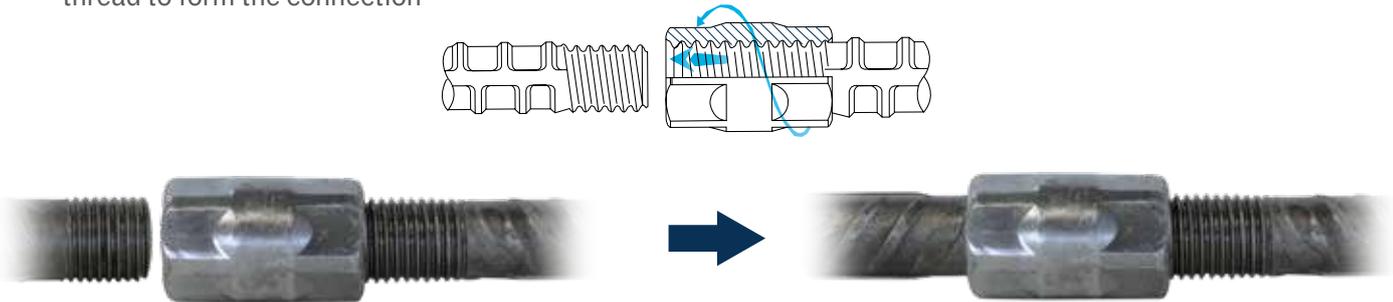
TYPE A

- Used where the continuity bar can be rotated. Final tightening is by wrench, spanner etc.
- Used for P.S.C. box at the top of the bridge: ILM, FCM, MSS method of construction, second application, slip-form construction, etc.



TYPE B

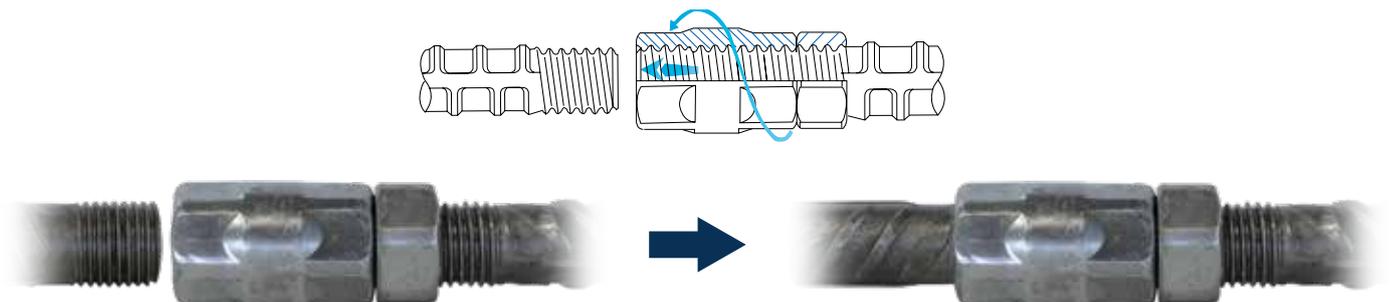
- We extend the bar thread at one side to allow the coupler to screw right on, flush with bar end. On assembly the bar ends are placed against each other and the coupler rotated onto the short thread to form the connection
- Turn the coupler onto the short thread to complete the assembly and tighten the bar with a wrench



Used in applications of larger diameter, long bars. Where bars can be rotated but may be difficult to do so. E.g.: Over 6 metre long 32mm bars (and above) in a horizontal plane.

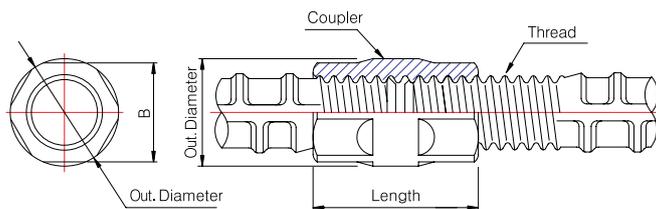
TYPE C

- We extend the bar thread at one side to allow the lock-nut and coupler to screw right on flush with bar end
- To assemble, the bar ends are placed against each other and the coupler rotated onto the short thread to form the connection. Wrench tighten the coupler onto the short bar and rotate the lock nut against the coupler and wrench tight



Used for construction of prefabricated cages, or fixing hooked/cranked bars.

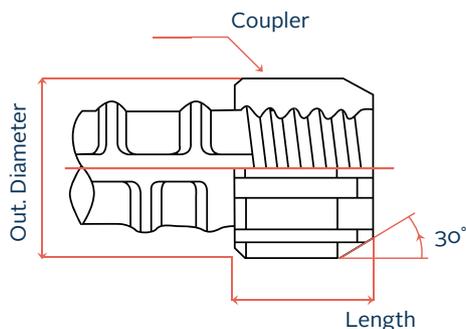
COUPLER SIZE



BS.4449						
NOMINAL BAR SIZE (Ømm)	12	16	20	25(26)	32	40
COUPLER DIAMETER (mm)	19	23	31	38	48	60
HEXAGON-B (mm)	17	21	29	36	46	56
COUPLER LENGTH	30	38	46	58	70	86

WELDABLE COUPLER SIZE

Weldable couplers allow unrestricted and easy placing of re-bar to steel piles, forms, etc.



BS. 4449						
BAR SIZE	12	16	20	25	32	40
COUPLER DIAMETER (mm)	19	23	31	38	48	60
COUPLER LENGTH	15	19	23	29	35	43

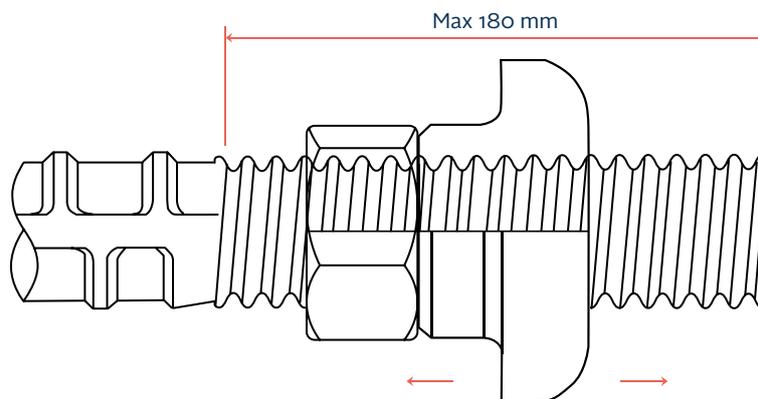
TERMINATOR

LONGITUDINAL RE-BARS



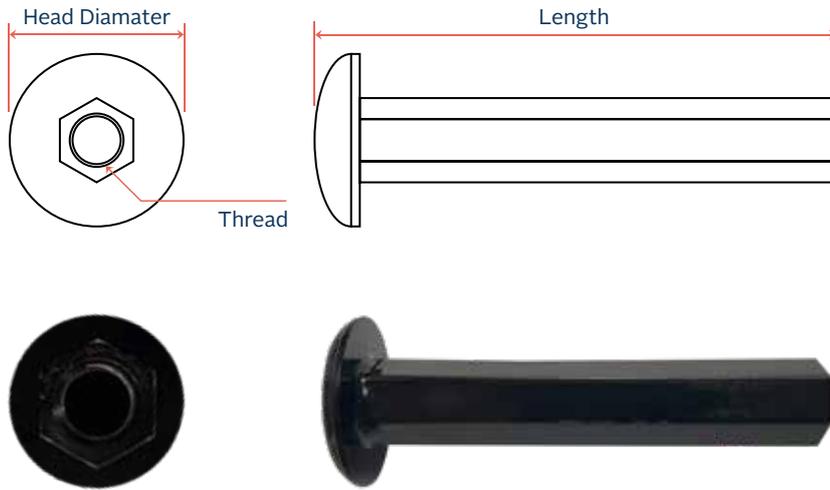
BS.4449								
BAR SIZE		12	16	20	25	28	32	40
LONGITUDINAL RE-BARS	DIAMETER	29	36	45	56	65	72	90
	THICKNESS	6	7	8	9	10	10	18
	H	15	19	23	29	32	35	43

VARIABLE PLACEMENT TERMINATOR



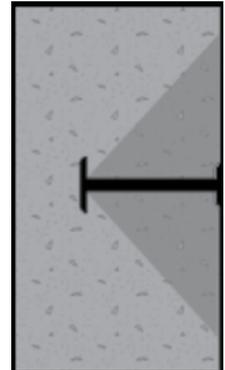
Terminator can be positioned and locked up tight at any location along the 180mm thread.

IMBMS THREADED INSERTS

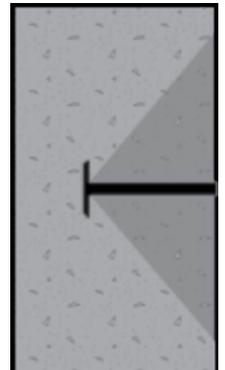


Suitable for 12mm, 16mm & 20mm rebar.

FOR THREADED INSERTS LOCATED WITH NAIL PLATE			
BAR SIZE	12	16	20
INSERT LENGTH (mm)	115	130	150
TOTAL EMBEDMENT DEPTH (mm)	119	133	152
INDIVIDUAL CHARACTERISTIC LOAD $N_{c,k}$ (kN)	91.8	108.5	132.5



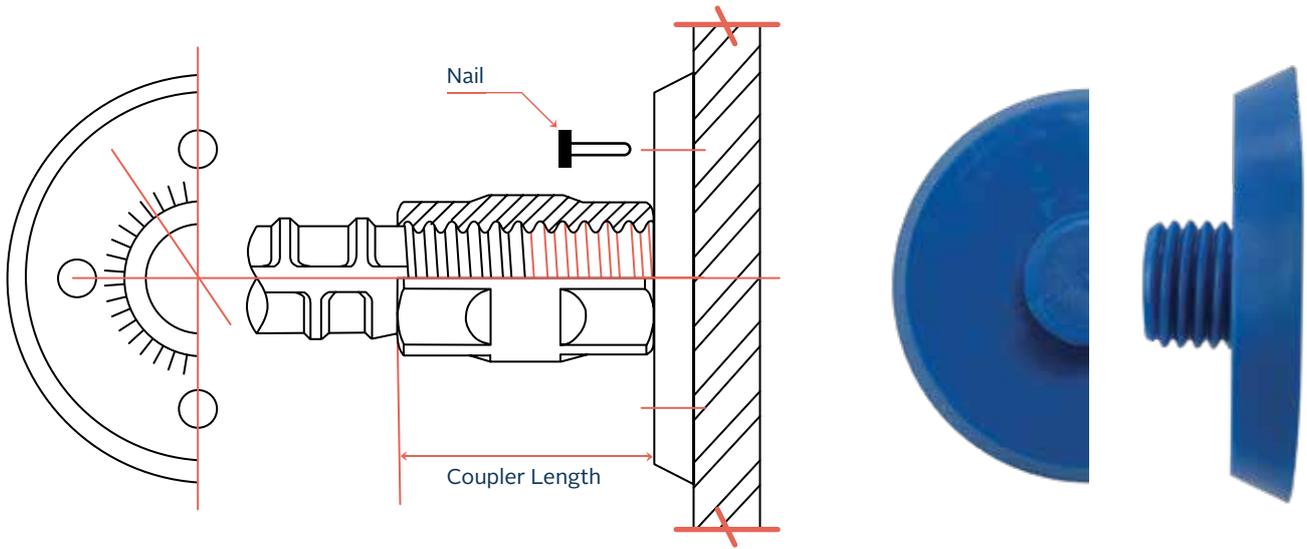
FOR THREADED INSERTS LOCATED WITHOUT NAIL PLATE			
BAR SIZE	12	16	20
INSERT LENGTH (mm)	115	130	150
TOTAL EMBEDMENT DEPTH (mm)	109	123	142
INDIVIDUAL CHARACTERISTIC LOAD $N_{c,k}$ (kN)	80.5	96.5	119.7



Individual Characteristic Load Values stated above are based off 32mpa non-cracked concrete strength

All IMBMS Threaded Inserts are fully tested and compliant with NZ Standards (NZTA Bridge Manual, NZS3101 : 2006 (including amendment 3)). Test reports are available upon request.

IMBMS NAIL PLATES



Suitable for 12mm, 16mm & 20mm Couplers.

Additional information available upon request.

WITH NAIL-PLATE			
BAR SIZE	12	16	20
HEAD DIAMETER (mm)	55	63	63
HEAD DEPTH (mm)	10	8	8
THREAD LENGTH (mm)	14	12	12

IMBMS Nail Plates are designed to suit 12mm, 16mm & 20mm IMBMS Steel Threaded Inserts for Precast Concrete construction. In conjunction with Threaded Inserts, Nail Plates are an easy and effective way to overcome buildability challenges both in the precast yard and on site. Nail plates are fixed to the inside of precast formwork. Once concrete has been poured and the formwork has been removed, the Nail Plates leave a void for IMBMS Threaded Inserts to be installed.



AUCKLAND CITY RAIL LINK PROJECT



Over 10,000 couplers and lock nuts used in stage one.



More information:
<https://www.cityrailink.co.nz/crl-reinforced-by-local-steel-industry>

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 Pakuranga
 Auckland 2140

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www.imbms.co.nz



PART CODE	DESCRIPTION	BAR DIAMETER
12BMS-CPLR	BMS Coupler	12mm
16BMS-CPLR	BMS Coupler	16mm
20BMS-CPLR	BMS Coupler	20mm
25BMS-CPLR	BMS Coupler	25mm
32BMS-CPLR	BMS Coupler	32mm
40BMS-CPLR	BMS Coupler	40mm
12BMS-LOCK	BMS Locknut	12mm
16BMS-LOCK	BMS Locknut	16mm
20BMS-LOCK	BMS Locknut	20mm
25BMS-LOCK	BMS Locknut	25mm
32BMS-LOCK	BMS Locknut	32mm
40BMS-LOCK	BMS Locknut	40mm
12BMS-TRM	BMS Terminator	12mm
16BMS-TRM	BMS Terminator	16mm
20BMS-TRM	BMS Terminator	20mm
25BMS-TRM	BMS Terminator	25mm
32BMS-TRM	BMS Terminator	32mm
40BMS-TRM	BMS Terminator	40mm
12BMS-TI	BMS Threaded Insert	12mm
16BMS-TI	BMS Threaded Insert	16mm
20BMS-TI	BMS Threaded Insert	20mm
12BMS-NP	BMS Nail Plate	12mm
16BMS-NP	BMS Nail Plate	16mm
20BMS-NP	BMS Nail Plate	20mm
12BMS-A	BMS A Type Thread	12mm
16BMS-A	BMS A Type Thread	16mm
20BMS-A	BMS A Type Thread	20mm
25BMS-A	BMS A Type Thread	25mm
32BMS-A	BMS A Type Thread	32mm
40BMS-A	BMS A Type Thread	40mm
12BMS-B	BMS B Type Thread	12mm
16BMS-B	BMS B Type Thread	16mm
20BMS-B	BMS B Type Thread	20mm
25BMS-B	BMS B Type Thread	25mm
32BMS-B	BMS B Type Thread	32mm
40BMS-B	BMS B Type Thread	40mm
12BMS-C	BMS C Type Thread	12mm
16BMS-C	BMS C Type Thread	16mm
20BMS-C	BMS C Type Thread	20mm
25BMS-C	BMS C Type Thread	25mm
32BMS-C	BMS C Type Thread	32mm
40BMS-C	BMS C Type Thread	40mm

