



PERTLESS CO.



REBAR COUPLERS

Construction Industry

What are rebar couplers?

- Rebar couplers are prefabricated elements used to join two rebars at the rebar breaks and transfer the forces between the two of them.

Linkedin



Whatsapp



Lapped joints may not always be the most suitable method for connecting reinforcing bars. Their utilization can prove time-consuming during both the design and installation phases, potentially resulting in increased congestion within the concrete due to the greater volume of rebar utilized.

Key features that make couplers a better alternative for the traditional overlapped method:

- **High Installation Speed of Couplers:** Thread and coupler mechanical connections have a high speed of execution and do not require expert personnel, and cause faster progress of activities in large projects.
- **Lower Cost and Lower Waste of Material:** Since the overlapped length in regulation are 50-60 times the rebar diameter, the cost of buying a coupler and running a thread will be significantly lower for high-sized rebars than the cost of running an overlap.
- **No Need for Expert Staff:** Implementation of thread and coupler is very simple and does not require special expertise.
- **Uniform Quality of Couplers:** Since the coupler parts are prefabricated in factories, these parts usually have a certain and uniform quality.
- **High Strength of Coupler and Thread Against Heavy Loads:** Mechanical joints create a non-relying on concrete rebar connection while overlapped quality of connections are highly dependent on the quality of concrete.

Most significant applications of couplers:

- Reducing Dimensions of Sections
- Mega Structures and Sky Scrappers
- Infrastructures such as Dams and Tunnels
- Very Important Structures such as Hospitals, Airports and Telecom Centers



Content

— Introduction of Pertless Couplers	3
— Pertless Standard Couplers	4
— Installation Method	5
— Technical Information	6
— Types of Threads	6
— Rib Peeling Threading Method	6
— Direct Threading Method	6
— Available Sizes and Technical Data of Rebar Couplers	6
— Midcoupler	6
— Headcoupler	7
— Transition Coupler	8
— Pressing Coupler	8



Introduction of Pertless Couplers:

Pertless couplers are crafted in accordance with ASME B1.13M standards and compliant with esteemed codes such as ACI318, ACI349, UBC1997, and Eurocode2, these couplers epitomize precision and adherence to industry benchmarks.

Each coupler undergoes quality assurance protocols, including thorough testing with gauges to ensure uniformity and consistency across all products. Any coupler failing to meet our quality criteria is promptly excluded from production, guaranteeing a standardized level of excellence. Furthermore, regular tensile testing conducted weekly ensures that our mechanical joints consistently deliver the required strength, earning them the classification of Type 2 mechanical joints in accordance with industry standards.

With Pertless couplers, reliability and performance are assured, making them a preferred choice for demanding construction applications.



Pertless Standard Couplers



▶ Cold Pressing Rebar Couplers



▶ Midcouplers



▶ Headcouplers



▶ Transition Rebar Coupler

Here's a summarized installation process for mechanical joints, specifically for rebars using couplers:

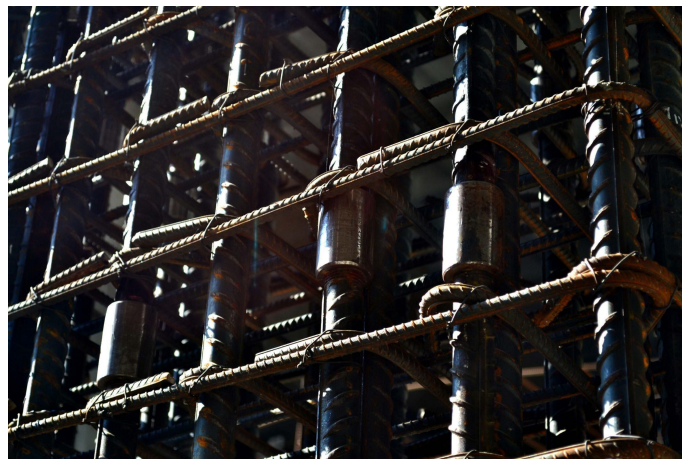
- 1. Thread the Rebars:** Utilize threading machines to thread the heads of each rebar intended for connection.
- 2. Place the Threaded Rebars:** Position the threaded rebars at their designated locations within the structure.
- 3. Install the Prefabricated Couplers:** Place the corresponding prefabricated couplers onto the threads of the rebars. These couplers have internal threads that match the threads on the rebars.
- 4. Add the Upper Rebar:** Once the couplers are in place, add the upper rebar onto the coupler.
- 5. Use a Rebar Coupler Wrench:** Employ a rebar coupler wrench to fasten the connection securely and ensure a precise fit.

This process allows for the efficient and reliable connection of rebars using mechanical couplers, providing structural reinforcement within the construction project.

Pressing Coupler Installation: Pressing couplers are used when reinforcement bars are short, not threaded and there's no overlap distance.

These couplers are blank and do not have threads as well as the rebars therefore the mechanical joint forms when a pressing machine presses the coupler against the connecting bars.

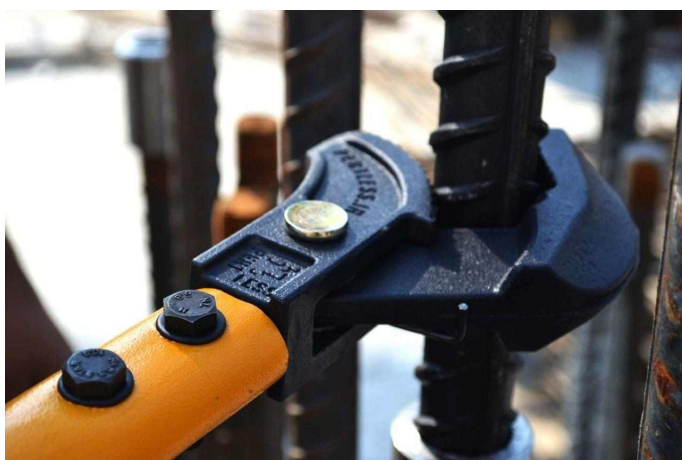
Installation Method



► Mechanical joint in a column



► Threading machine and threads



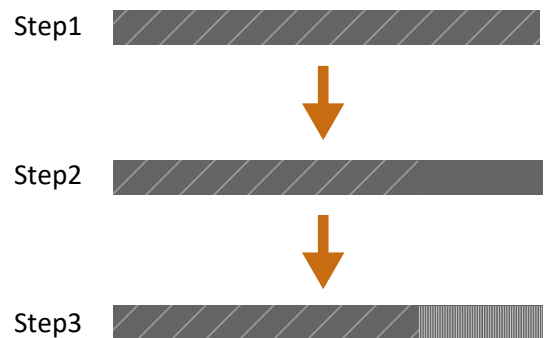
► Rebar coupler wrench

Technical Information

Types of Threads:

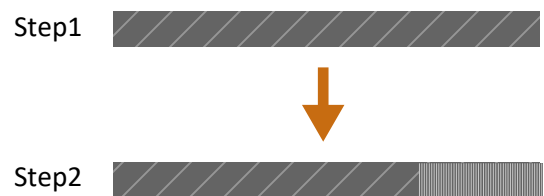
1. Rib Peeling Threading Method:

The rib peeling threading method represents a traditional approach to threading reinforcement bars. In this method, the ribs of the bar are initially cut, followed by the thread creation process through rolling. It is a trusted choice in construction applications where structural integrity is paramount.



2. Direct Threading Method:

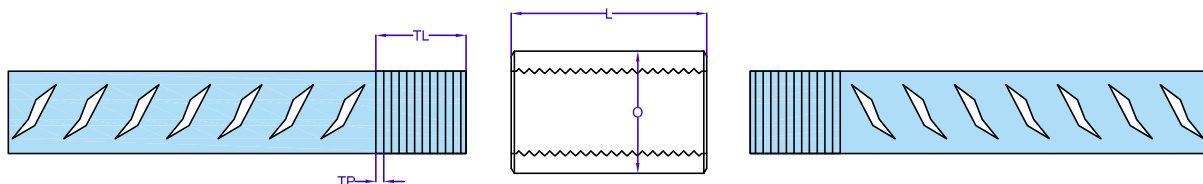
Direct threading of rebars introduces a novel approach to threading, wherein the rib of the rebar is pressed into its core during the threading process. This method utilizes the mass of the ribs along with the bar's core to create the threads, resulting in even a more reliable and stronger connection compared to traditional threading methods.



Available Sizes and Technical Data of Rebar Couplers:

1. Midcouplers:

The midcouplers are the most common type of couplers in the construction sector. It connects two bars of the same size by joining them using the end threads of each bar.

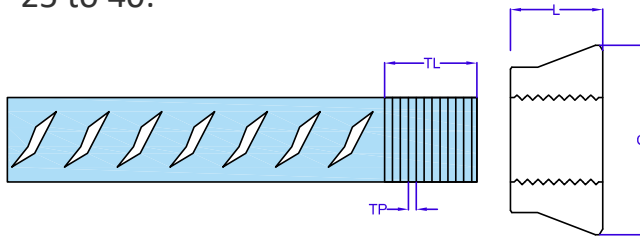


Code	Bar Size	Bar Thread Method	O (mm)	L (mm)	Cross Section (mm ²)	Coupler Weight (g)	Design Load (kN)	TP (mm)	TL (mm)
1616	φ16	Direct/Rib-Peeling	24	40	251.33	90	150.80	2.5	19
1818	φ18	Direct/Rib-Peeling	27	45	318.09	125	190.85	2.5	21
2020	φ20	Direct/Rib-Peeling	30	50	392.70	177	235.62	2.5	23
2222	φ22	Direct/Rib-Peeling	33	54	475.17	202	285.10	2.5	25
2525	φ25	Direct/Rib-Peeling	37.5	60	613.59	317	368.16	3	28
2828	φ28	Direct/Rib-Peeling	42	67	769.69	418	461.81	3	31
3232	φ32	Direct/Rib-Peeling	48	75	1005.31	671	603.19	3	35
3636	φ36	Direct/Rib-Peeling	54	83	1272.35	818	763.41	3	39
4040	φ40	Direct/Rib-Peeling	60	92	1570.80	1117	942.48	3	43

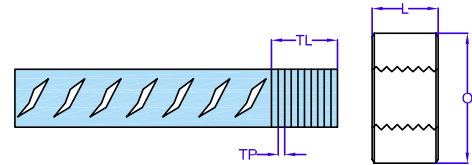
2. Headcouplers:

Headcouplers serve as efficient terminations for reinforcement bars, offering a convenient alternative to traditional hooks. Notably, the design of headcouplers varies between sizes 16 to 22 and those sized 25 and above.

25 to 40:



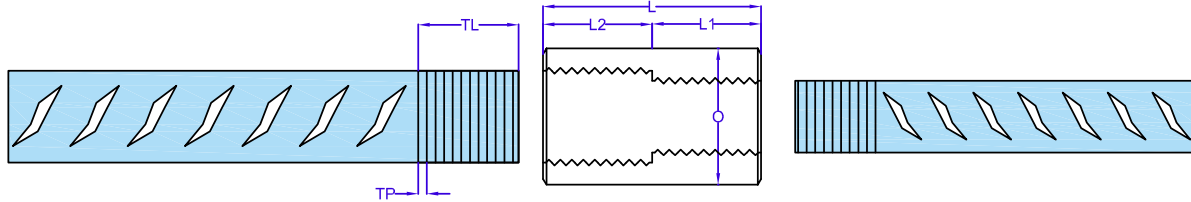
16 to 22:



Code	Bar Size	Bar Thread Method	O (mm)	L (mm)	Cross Section (mm ²)	Coupler Weight (g)	Design Load (kN)	TP (mm)	TL (mm)
16	φ16	Direct/Rib-Peeling	35.9	19	809.88	136	485.93	2.5	19
18	φ18	Direct/Rib-Peeling	40.3	21	1024.21	164	614.52	2.5	21
20	φ20	Direct/Rib-Peeling	44.8	23	1263.67	228.5	758.20	2.5	23
22	φ22	Direct/Rib-Peeling	49.3	25	1528.27	314.75	916.96	2.5	25
25	φ25	Direct/Rib-Peeling	56.0	28	1972.28	250	1183.37	3	28
28	φ28	Direct/Rib-Peeling	62.7	31	2472.85	347	1483.71	3	31
32	φ32	Direct/Rib-Peeling	71.7	35	3228.24	487.3	1936.94	3	35
36	φ36	Direct/Rib-Peeling	80.6	39	4084.16	703	2450.49	3	39
40	φ40	Direct/Rib-Peeling	89.5	43	5040.61	-	3024.36	3	43

3. Transition Couplers:

Transition couplers are indispensable when joining reinforcement bars of differing sizes. These versatile couplers are engineered to connect bars ranging from size 16 to 36 to bars sized 18 to 40.

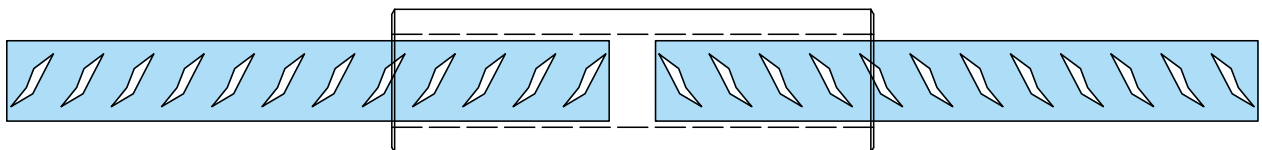


Smaller Bar (X)	φ16	φ18	φ20	φ22	φ25	φ28	φ32	φ36
Bigger Bar (Y)	φ18	φ20	φ22	φ25	φ28	φ32	φ36	φ40
Code	XY							
Bar Thread Method	Direct/Rib-Peeling							
O (mm)	It could be 2mm less than the outer diameter of the larger size midcoupler.							
L (mm)	It is 3mm less than the average length of Midcouplers from two different sizes.							

4. Pressing Couplers:

The pressing coupler is a pipe that covers two rebars end to end, and then this pipe is pressed at several points up to 700 bars using a hydraulic press machine, depending on the size of the rebars. For the execution of this method, the minimum required length of the protruding rebar from the concrete is 25 centimeters. The amount of pressure to be applied for each press and the number of presses for each size are specific and measurable.

Pressing couplers, like other mechanical connections, must adhere to the requirements of mechanical connections stated in the regulations. Pertless standard pressing couplers meet all the requirements of Type 2 mechanical connections.



Disclaimer: The information provided in this datasheet is intended solely as a guide. While every effort has been made to ensure accuracy, it is based on international standards and may vary slightly in practice. We have endeavored to present the data as accurately as possible; however, users should be aware that minor discrepancies may exist.