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INSTALLATION INSTRUCTIONS FOR DOUBLE BARREL ZAP SCREWLOK UNCOATED AND EPOXY COATED COUPLERS ON GRADE 60 REBAR [U.S. METRIC GRADE 420]

Position both rebars within the Double Barrel Zap Screwlok coupler as shown in **Figure 3**. If you are using the coupler to close the end of a continuous spiral rebar, first slide the coupler over the free end of the spiral and continue to slide the coupler around the rebar until the free end is inserted again. Make sure the free end extends through the coupler by at least the amount shown in Figure 1 and Chart 1. Do not under-insert, as shown in Figure 2.

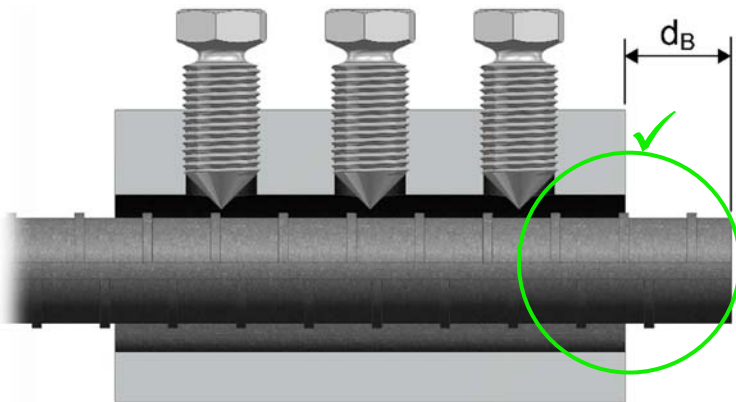


Figure 1. **Correct** Rebar Insertion Depth

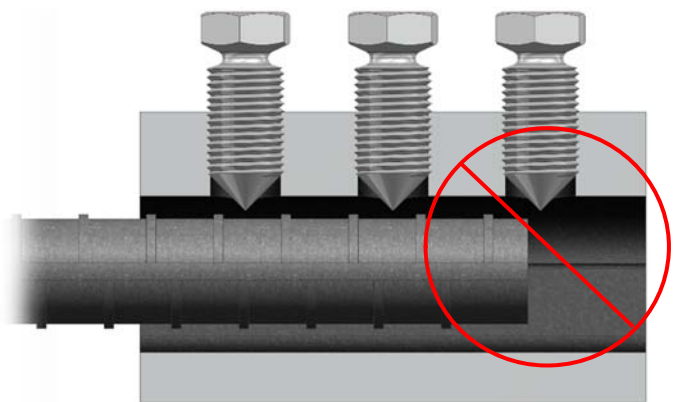


Figure 2. **Incorrect** Rebar Insertion Depth

Using an **impact wrench** and a **socket "S"** per Chart 1, tighten the twist-off screws in the order shown in **Figure 3**. Tighten each screw until the head of the screw **twists off**. See Chart 1 for approximate twist-off torque. Make sure that all screws are tightened down and that all heads have twisted off.

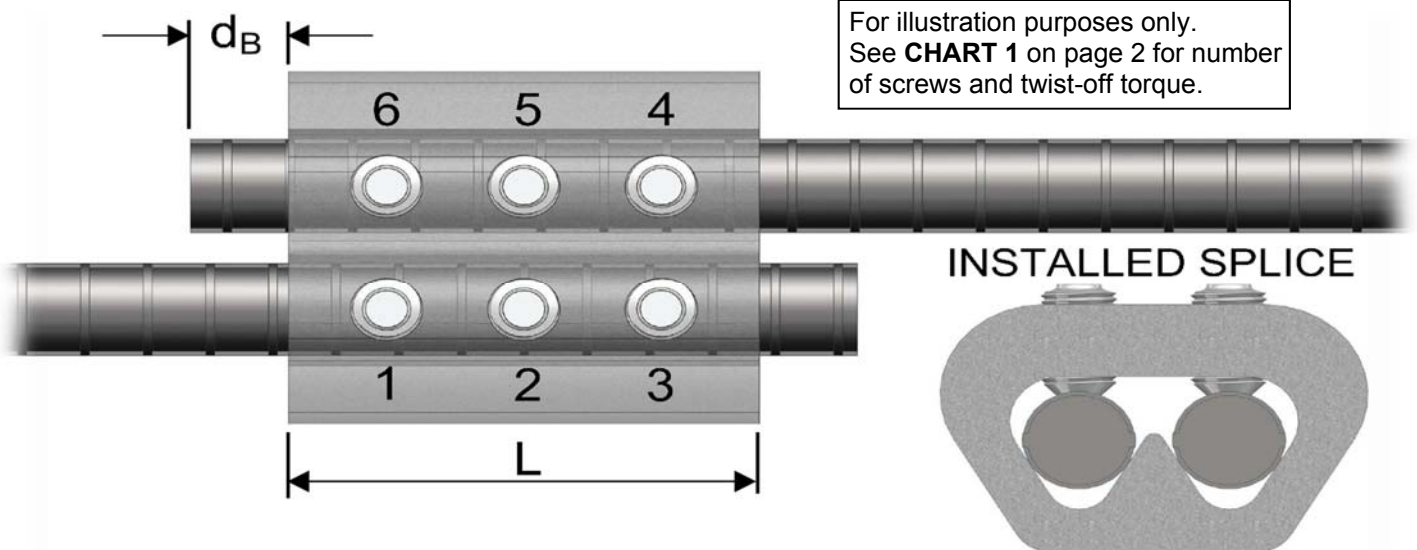


Figure 3. Tightening Order

DO NOT USE THESE CONNECTORS IN CONJUNCTION WITH REBAR WHICH IS LARGER OR SMALLER THAN THE INTENDED BAR SIZE. **KEEP COUPLERS CLEAN AND KEEP THREADS RUST FREE, PER FIGURE 4. STORE COUPLERS IN A CLEAN, DRY PLACE UNTIL READY TO INSTALL. RUST IN THE THREADS PRIOR TO ASSEMBLY, PER FIGURE 5, IS UNACCEPTABLE BECAUSE IT COULD RESULT IN LOWER PERFORMANCE OF THE ASSEMBLED SPLICE.**



Figure 4. Clean **Acceptable** Coupler



Figure 5. **Unacceptable** Rust in Coupler Threads

CHART 1

REBAR SIZE US [metric]	APPROXIMATE COUPLER LENGTH "L" (in.)	MINIMUM REBAR PROJECTION "d _B " (in.)	NUMBER OF SCREWS PER BAR	SOCKET SIZE "S"	AVERAGE SCREW TWIST-OFF TORQUE "T" (ft-lb)	MINIMUM IMPACT WRENCH TORQUE RATING (ft-lb)
#4 [13]	2 1/8	1/2	2	1/2	60	250
#5 [16]	3	5/8	3	1/2	60	250
#6 [19]	3 7/8	3/4	4	1/2	60	250
#7 [22]	5 3/8	7/8	4	5/8	105	500
#8 [25]	6 1/2	1	5	5/8	105	500

▼ Example of suitable impact wrench is Ingersoll Rand, IR 261

CAUTIONS AND SUGGESTIONS

- For **best performance** and **ease of installation**, Barsplice recommends the use of a 3/4 inch drive pneumatic **impact wrench** ▼ and suitable socket. Make sure the impact wrench is rated to achieve at least the minimum impact wrench torque specified in **CHART 1** to avoid stalling. The **air supply** line should have a minimum diameter of 1/2 inch. The air compressor should be large enough to provide **100 psi** (7 bar) gauge pressure & deliver 45 cfm of air flow.
- Do not use** an open-ended wrench or an adjustable wrench because of the risk of rounding-out the hexagon head prior to reaching the torque needed to break off the head.
- Prior to assembly, straighten excessively bent rebar ends so that proper wedge contact is made between rebar and coupler. If necessary, grind off large shear lips that prevent proper insertion of rebar into coupler.
- Replace missing screws immediately with BPI special screws only. **DO NOT ALLOW THREADED HOLES TO RUST.**
- If bars are corroded, removal of rust/corrosion must be performed to the same degree as that required to bond with concrete prior to installing the Zap coupler. Testing of old or severely corroded bars is recommended to ensure the integrity of the adjoining bars and compliance to design requirements. Performance statements of Zap couplers are based upon the use of ASTM **A615 / A706**, Grade 60 reinforcing bar.
- For Epoxy Coated ASTM A775/A775M rebar, use the pre-epoxy coated DOUBLE BARREL ZAP SCREWLOK EPOXY SERIES couplers supplied by Barsplice Products, Inc. Touch-up coating damage and the sheared surfaces of screws with a suitable epoxy patching kit after assembly. **DO NOT APPLY FUSION-BONDED EPOXY POWDER COATINGS TO UNCOATED COUPLERS or HEAT THE COUPLERS FOR THE PURPOSE OF EPOXY COATING. DO NOT HOT-DIP GALVANIZE UNCOATED COUPLERS. DO NOT ALLOW ABRASIVE BLAST MATERIAL TO COME INTO CONTACT WITH UNASSEMBLED THREADS.**
- In all cases, consider your own **personal safety**. Make sure you are securely positioned and that you will not slip or fall during installation.

Please direct all assembly questions to BarSplice Products, Inc.

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INSTALLATION INSTRUCTIONS FOR TRANSITION DOUBLE BARREL ZAP SREWLOK UNCOATED AND EPOXY COATED COUPLERS ON GRADE 60 REBAR [U.S. METRIC GRADE 420]

Position both rebars within the TRANSITION Double Barrel Zap Screwlok coupler as shown in Figure 3. The larger rebar must be placed within the coupler on the **shorter screw length** side (coupler labeled for the larger bar) and the smaller rebar must be placed within the coupler on the longer screw length side (coupler labeled for the smaller bar). Make sure the free end extends through the coupler by at least the amount shown in Figure 1 and Chart 1. Do not under-insert, as shown in Figure 2.

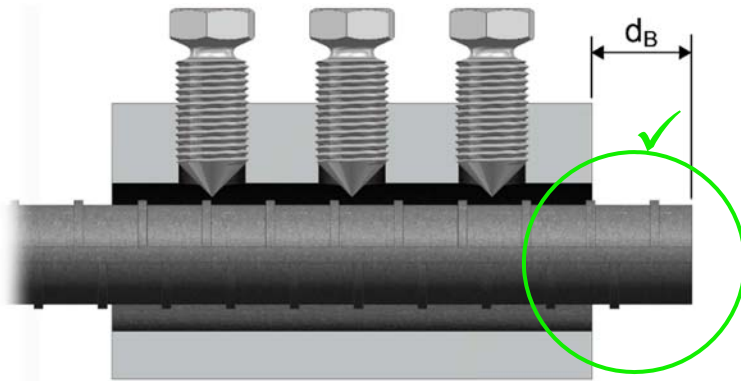


Figure 1. **Correct** Rebar Insertion Depth

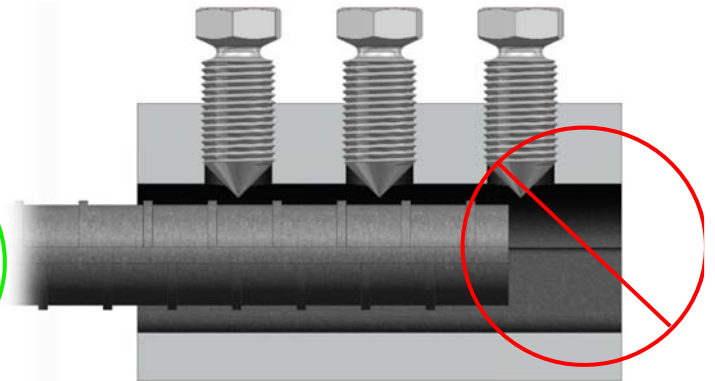


Figure 2. **Incorrect** Rebar Insertion Depth

Using an **impact wrench** and a **socket "S"** per Chart 1, tighten the twist-off screws in the order shown in **Figure 3**. Tighten each screw until the head of the screw **twists off**. See Chart 1 for approximate twist-off torque. Make sure that all screws are tightened down and that all heads have twisted off.

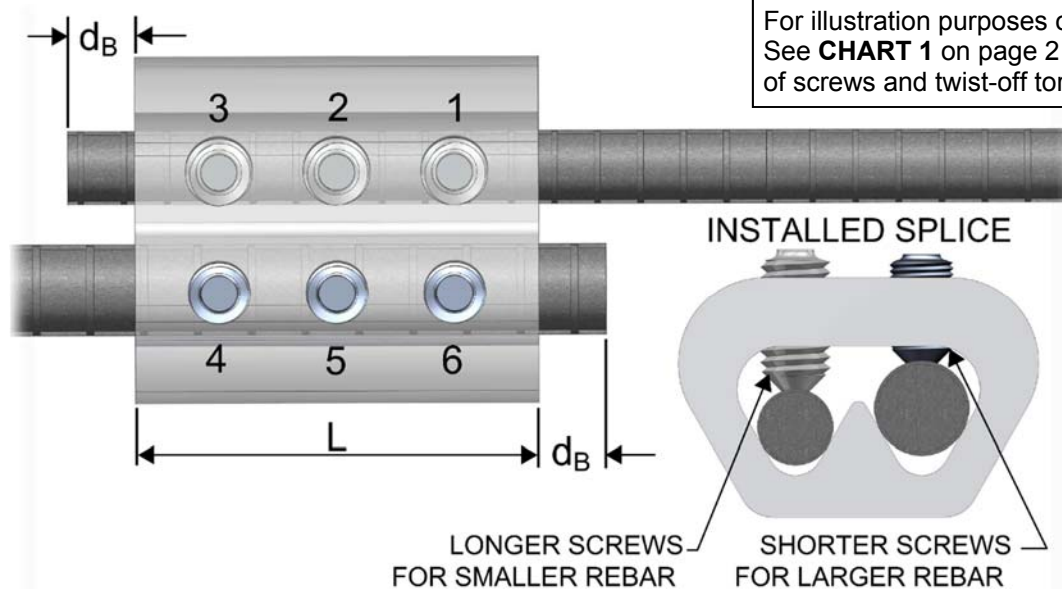


Figure 3. Tightening Order

OTHER THAN THE TRANSITION BAR SIZES SPECIFICALLY LABELED ON THE COUPLERS, DO NOT USE THIS PRODUCT IN CONJUNCTION WITH REBAR WHICH IS LARGER OR SMALLER THAN THE INTENDED BAR SIZE. CONTACT BPI FOR THE APPROPRIATE TRANSITION SPLICES. DO NOT SWITCH SCREWS BETWEEN THE LARGER AND SMALLER SIDES OF THE TRANSITION COUPLER.

KEEP COUPLERS CLEAN AND KEEP THREADS RUST FREE, PER FIGURE 4. STORE COUPLERS IN A CLEAN, DRY PLACE UNTIL READY TO INSTALL. RUST IN THE THREADS PRIOR TO ASSEMBLY, PER FIGURE 5, IS UNACCEPTABLE BECAUSE IT COULD RESULT IN LOWER PERFORMANCE OF THE ASSEMBLED SPLICE.



Figure 4. Clean **Acceptable** Coupler



Figure 5. **Unacceptable** Rust in Coupler Threads

CHART 1

REBAR SIZE US [metric]	APPROXIMATE COUPLER LENGTH "L" (in.)	MINIMUM REBAR PROJECTION "db" (in.)	NUMBER OF SCREWS PER BAR	SOCKET SIZE "S"	AVERAGE SCREW TWIST-OFF TORQUE "T" (ft-lb)	MINIMUM IMPACT WRENCH TORQUE RATING (ft-lb)
#4/3 [13/10]	2 1/8	3/8	2	1/2	60	250
#5/4 [16/13]	3	1/2	3	1/2	60	250
#6/4 [19/13]	3 7/8	5/8	4	1/2	60	250
#6/5 [19/16]	3 7/8	5/8	4	1/2	60	250
#7/5 [22/16]	5 3/8	3/4	4	5/8	105	500
#7/6 [22/19]	5 3/8	3/4	4	5/8	105	500
#8/7 [25/22]	6 1/2	7/8	5	5/8	105	500

▼ Example of suitable impact wrench is Ingersoll Rand, IR 261

CAUTIONS AND SUGGESTIONS

1. For **best performance** and **ease of installation**, Barsplice recommends the use of a $\frac{3}{4}$ inch drive pneumatic **impact wrench** ▼ and suitable socket. Make sure the impact wrench is rated to achieve at least the minimum impact wrench torque specified in **CHART 1** to avoid stalling. The **air supply** line should have a minimum diameter of **$\frac{1}{2}$ inch**. The air compressor should be large enough to provide **100 psi** (7 bar) gauge pressure & deliver 45 cfm of air flow.
2. **Do not use** an open-ended wrench or an adjustable wrench because of the risk of rounding-out the hexagon head prior to reaching the torque needed to break off the head.
3. Prior to assembly, straighten excessively bent rebar ends so that proper wedge contact is made between rebar and coupler. If necessary, grind off large shear lips that prevent proper insertion of rebar into coupler.
4. Replace missing screws immediately with BPI special screws only. **DO NOT ALLOW THREADED HOLES TO RUST.**
5. If bars are corroded, removal of rust/corrosion must be performed to the same degree as that required to bond with concrete prior to installing the Zap coupler. Testing of old or severely corroded bars is recommended to ensure the integrity of the adjoining bars and compliance to design requirements. Performance statements of Zap couplers are based upon the use of ASTM **A615 / A706**, Grade 60 reinforcing bar.
6. For Epoxy Coated ASTM A775/A775M rebar, use the pre-epoxy coated TRANSITION DOUBLE BARREL ZAP SCREWLOK EPOXY SERIES couplers supplied by Barsplice Products, Inc. Touch-up coating damage and the sheared surfaces of screws with a suitable epoxy patching kit after assembly. **DO NOT APPLY FUSION-BONDED EPOXY POWDER COATINGS TO UNCOATED COUPLERS** or **HEAT THE COUPLERS FOR THE PURPOSE OF EPOXY COATING.** **DO NOT HOT-DIP GALVANIZE UNCOATED COUPLERS.** **DO NOT ALLOW ABRASIVE BLAST MATERIAL TO COME INTO CONTACT WITH UNASSEMBLED THREADS.**
7. In all cases, consider your own **personal safety**. Make sure you are securely positioned and that you will not slip or fall during installation.

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