

## INSTALLATION INSTRUCTIONS FOR DOUBLE BARREL ZAP SCREWLOK COUPLERS UNCOATED, EPOXY & GALVANIZED 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 ( $d_B$ ) shown in Figure 1 and Chart 1. Do not under-insert, as shown in Figure 2.

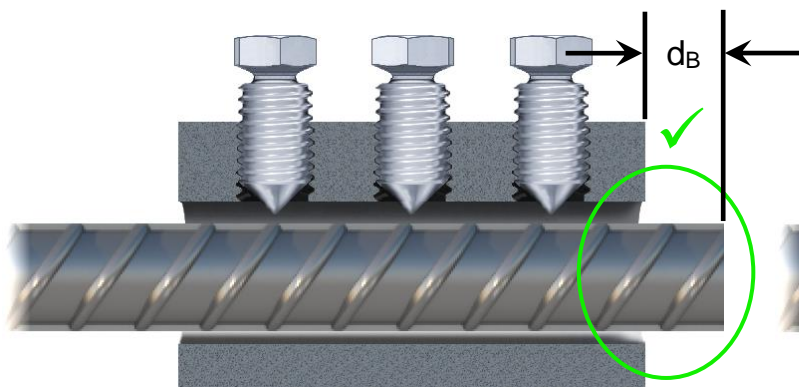


FIGURE 1: **Correct** Rebar Insertion Depth

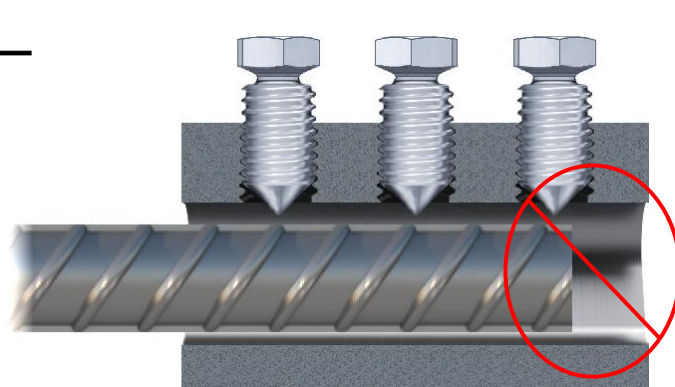


FIGURE 2: **Incorrect** Rebar Insertion Depth

Using an **impact wrench** and a **socket "S"** per Chart 1, on page 2, 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.

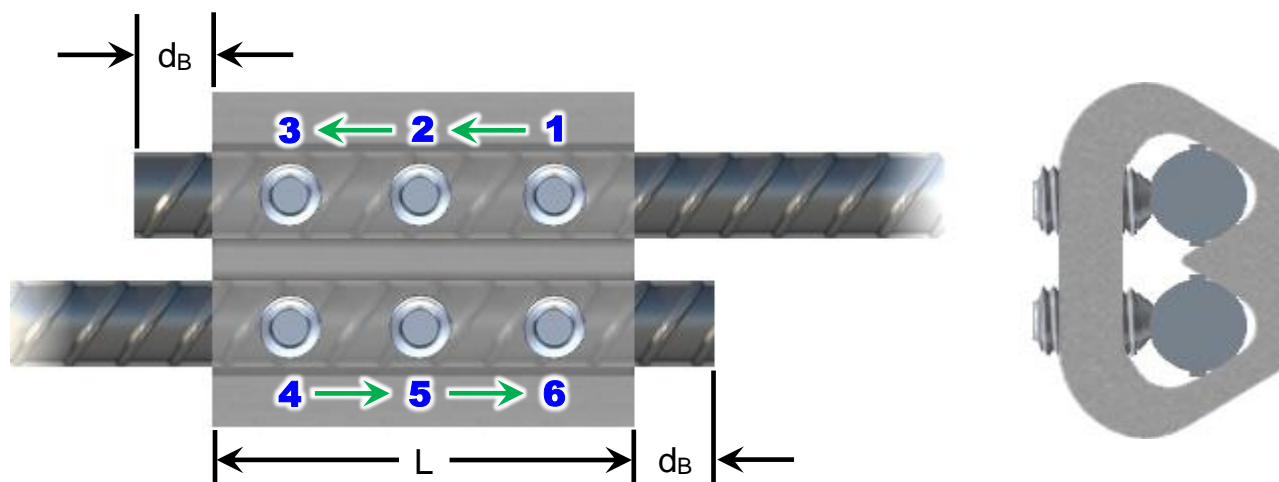


FIGURE 3: **Correct** Tightening Order (#5 shown, other sizes similar)

DO NOT USE THESE COUPLERS IN CONJUNCTION WITH REBAR WHICH IS LARGER OR SMALLER THAN THE INTENDED BAR SIZE. **KEEP COUPLERS CLEAN AND KEEP THREADS RUST FREE, PER FIGURE 5. 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.**

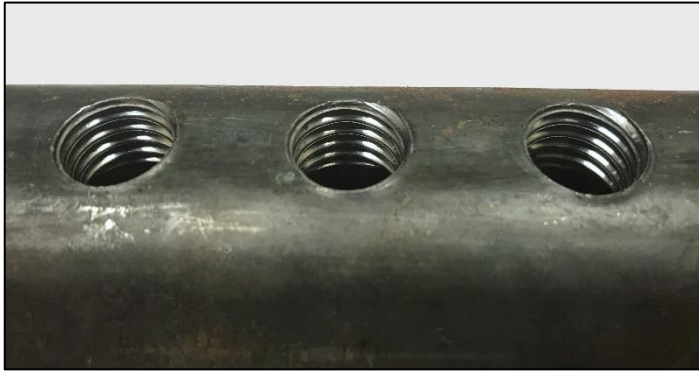


FIGURE 4: Clean **Acceptable** Coupler

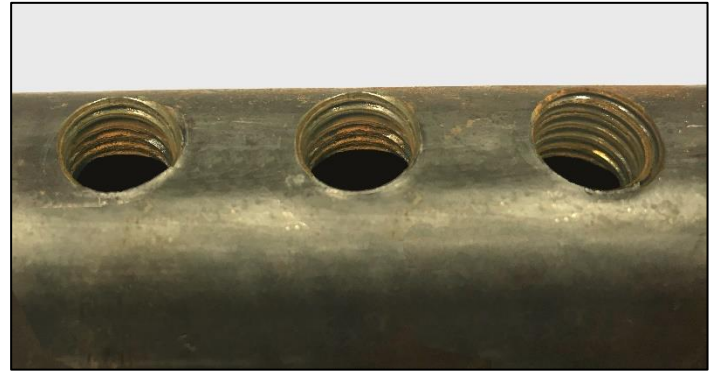


FIGURE 5: **Unacceptable** Rust in Coupler Threads

**CHART 1**

REBAR SIZE US [metric/CAN]	APPROXIMATE COUPLER LENGTH "L" (in.)	MINIMUM REBAR PROJECTION "d <sub>B</sub> " (in.)	NUMBER OF SCREWS PER BAR	IMPACT SOCKET SIZE "S"	AVERAGE SCREW TWIST-OFF TORQUE "T" (ft-lb)	MINIMUM IMPACT WRENCH <b>WORKING</b> TORQUE (ft-lb)
#4 [13/10M]	2 1/8	1/2	2	1/2	60	250
#5 [16/15M]	3	5/8	3	1/2	60	250
#6 [19/20M]	3 7/8	3/4	4	1/2	60	250
#7 [22]	5 3/8	7/8	4	5/8	105	500
#8 [25/25M]	6 1/2	1	5	5/8	105	500

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

**CAUTIONS AND SUGGESTIONS**

1. In all cases, consider your own **personal safety**. Before beginning, make sure the equipment is functioning and in good working order. Ensure that you are securely positioned and that you will not slip or fall during installation.
2. For **best performance** and **ease of installation**, Barsplice recommends the use of a 3/4 inch drive **pneumatic impact wrench** (▼ such as IR 261) and suitable impact socket. Make sure the impact wrench is rated to achieve at least the minimum impact wrench working torque specified in **CHART 1** to avoid stalling. The **air supply** hose and fittings should have a minimum inside diameter of 1/2 **inch**. The towable air compressor should be large enough to provide **100 psi** (7 bar) gauge pressure & deliver 45 cfm of air flow.
3. It is **NOT** recommended to use a battery powered or electric impact wrench of any size, make or model.
4. **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.
5. 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.
6. Replace missing screws immediately with BPI special screws only. **DO NOT ALLOW THREADED HOLES TO RUST.**
7. 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 Double Barrel Zap couplers are based upon the use of ASTM A615 or A706, Grade 60 reinforcing bar.
8. For Epoxy Coated ASTM A775/A775M rebar or Galvanized ASTM A767 rebar, use a matching, pre-coated **DOUBLE BARREL ZAP SCREWLOK** coupler. Touch-up coating damage and the sheared surfaces of screws with a suitable epoxy patching kit or zinc-rich cold galvanizing spray after assembly as required.
9. **DO NOT ATTEMPT TO EPOXY COAT OR HOT-DIP GALVANIZE AN UNCOATED ZAP PRODUCT IN ANY WAY. DO NOT ALLOW ABRASIVE BLAST MATERIAL TO COME INTO CONTACT WITH UNASSEMBLED THREADS.**

Please direct all assembly questions to BarSplice Products, Inc.

## INSTALLATION INSTRUCTIONS FOR TRANSITION DOUBLE BARREL ZAP SCREWLOK COUPLERS UNCOATED, EPOXY & GALVANIZED 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** bar must be placed within the coupler on the **shorter** screw length side and the **smaller** rebar must be placed within the coupler on the **longer** screw length side. (Coupler is labeled for the different bar sizes) Make sure the free end extends through the coupler by at least the amount ( $d_B$ ) shown in Figure 1 and Chart 1. Do not under-insert, as shown in Figure 2.

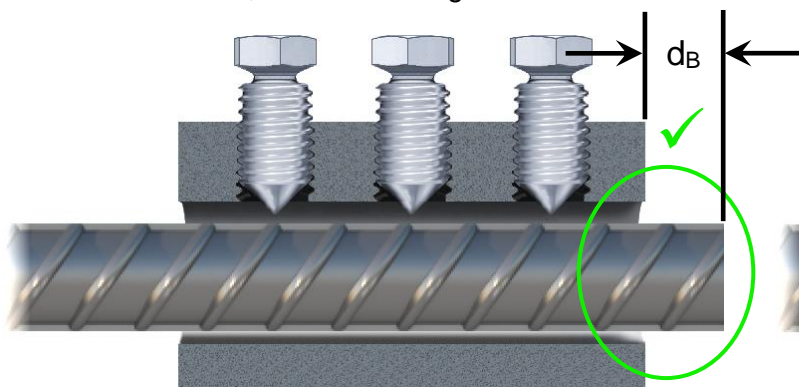


FIGURE 1: **Correct** Rebar Insertion Depth

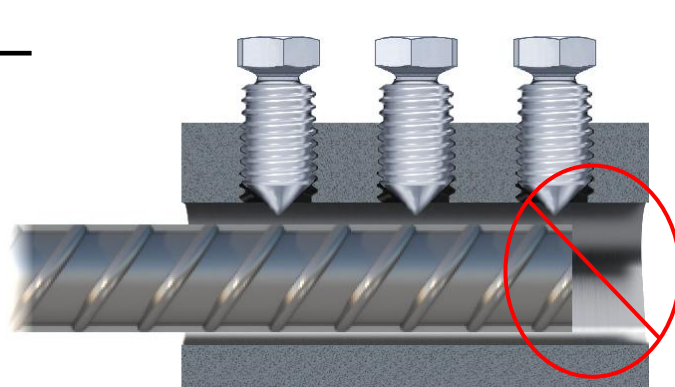


FIGURE 2: **Incorrect** Rebar Insertion Depth

Using an **impact wrench** and a **socket "S"** per Chart 1, on page 2, 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.

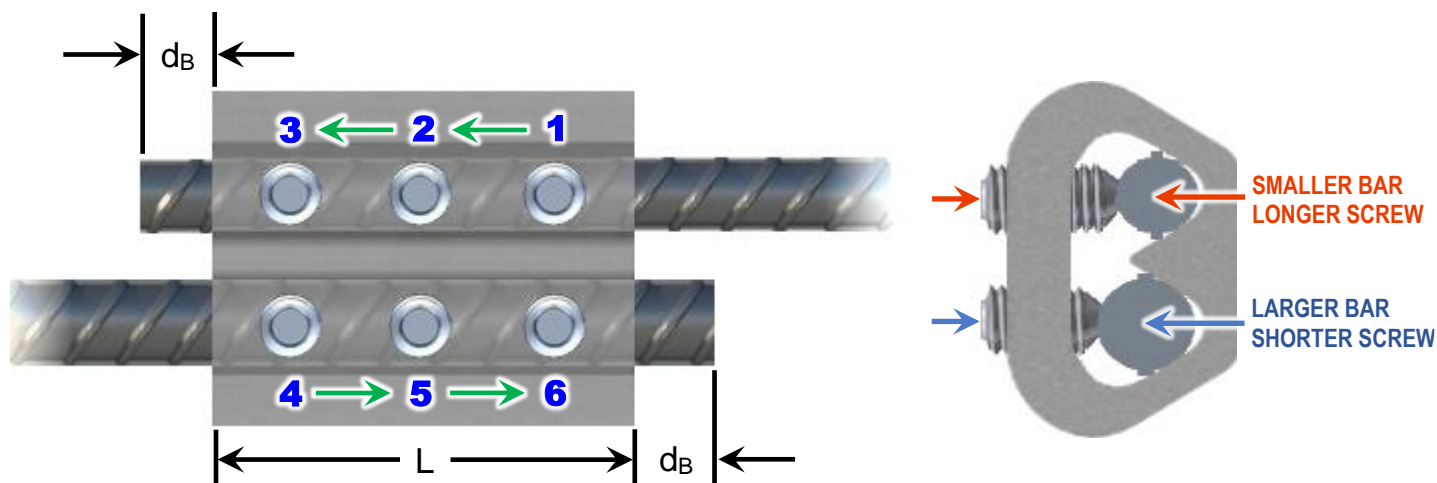


FIGURE 3: **Correct** Tightening Order (#5/4 Transition shown, other sizes similar)

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 5. STORE COUPLERS IN A CLEAN, DRY PLACE UNTIL READY TO INSTALL. RUST IN THE THREADS PRIOR TO ASSEMBLY, PER FIGURE 6, IS UNACCEPTABLE BECAUSE IT COULD RESULT IN LOWER PERFORMANCE OF THE ASSEMBLED SPLICE.

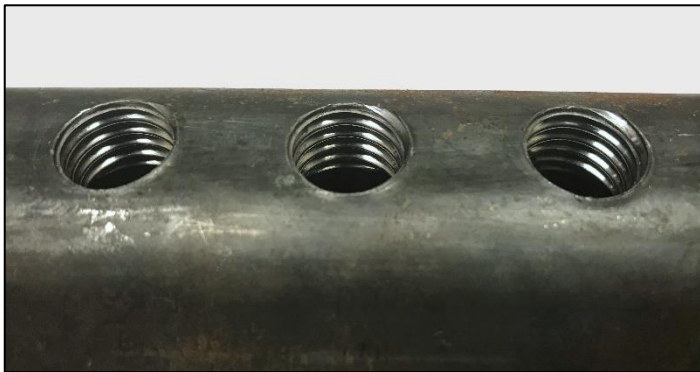


FIGURE 5: Clean **Acceptable** Coupler



FIGURE 6: **Unacceptable** Rust in Coupler Threads

**CHART 1**

REBAR SIZE US [metric]	APPROXIMATE COUPLER LENGTH "L" (in.)	MINIMUM REBAR PROJECTION "d <sub>B</sub> " (in.)	NUMBER OF SCREWS PER BAR	IMPACT SOCKET SIZE "S"	AVERAGE SCREW TWIST-OFF TORQUE "T" (ft-lb)	MINIMUM IMPACT WRENCH ▼ <b>WORKING</b> TORQUE (ft-lb)
#4/3 [12/10]	2 1/8	3/8	2	1/2	60	250
#5/4 [16/12]	3	1/2	3	1/2	60	250
#6/4 [20/12]	3 7/8	5/8	4	1/2	60	250
#6/5 [20/16]	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 [22/20]	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 pneumatic impact wrench is Ingersoll Rand, IR 261

## CAUTIONS AND SUGGESTIONS

1. In all cases, consider your own **personal safety**. Before beginning, make sure the equipment is functioning and in good working order. Ensure that you are securely positioned and that you will not slip or fall during installation.
2. For **best performance** and **ease of installation**, use a high quality  $\frac{3}{4}$  inch drive **pneumatic impact wrench** (▼such as Ingersoll Rand IR 261) and suitable impact socket. Make sure the impact wrench is rated to achieve at least the minimum impact wrench working torque specified in **CHART 1** to avoid stalling. The **air supply** hose and fittings should have a minimum inside diameter of  $\frac{1}{2}$  **inch**. The towable air compressor should be large enough to provide **100 psi** (7 bar) gauge pressure & deliver a minimum air flow at load of **45 cfm**.
3. It is **NOT** recommended to use a battery powered or electric impact wrench of any size, make or model.
4. **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 twist off the head.
5. 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.
6. Replace missing screws immediately with BPI special screws only. **DO NOT ALLOW THREADED HOLES TO RUST.**
7. 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 Double Barrel Zap couplers are based upon the use of ASTM A615 or A706, Grade 60 reinforcing bar.
8. For Epoxy Coated ASTM A775/A775M rebar or Galvanized ASTM A767 rebar, use a matching, pre-coated **TRANSITION DOUBLE BARREL ZAP SCREWLOK** coupler. Touch-up coating damage and the sheared surfaces of screws with a suitable epoxy patching kit or zinc-rich cold galvanizing spray after assembly as required.
9. **DO NOT ATTEMPT TO EPOXY COAT OR HOT-DIP GALVANIZE AN UNCOATED ZAP PRODUCT IN ANY WAY. DO NOT ALLOW ABRASIVE BLAST MATERIAL TO COME INTO CONTACT WITH UNASSEMBLED THREADS.**