

# UNITEC

Unitec US Assembly instruction 04 Rev.01\_en



## Dextra

[www.dextragroup.com](http://www.dextragroup.com)

## Installation procedure

01



Insert the Unitec coupler over the end of the first bar until contact with the center pin. Strongly tighten bolts from center to outside by hand or by a wrench to pre-position the coupler progressively in order to maintain its alignment with the bar.

02



Tighten the bolts, from center to outside, with a power drive (pneumatic wrench) until their heads shear off. (A manual wrench can be sufficient if there are not many couplers to assemble).

03



Insert the second bar into the coupler until contact with the center pin and repeat the operation. Check the bar alignment when tightening the bolts by hand or with a wrench : at a distance of 1 ft, the misalignment should not exceed  $\frac{1}{4}"$  (or not more than 5 mm at a distance of 25 cm).



### Safety tip:

-Wear goggles and ear plugs when using the impact wrench.

### General instruction:

-A visual inspection of the coupler shall be conducted prior to installation.

-Grease shall not be used.

## Alternative Installation procedure

01



Remove the center pin with a punch.

02



Mark the bar engagement length on each bar end, using the data in the table.

Bar size			Coupler Product code	Minimum bar engagement length	
USA & Mexico	Canada	Europe		in	mm
#4	-	12, 12.5	FPUS0400002	2 21/32"	68
#5	15M	14, 16	FPUS0500002	2 21/32"	68
#6	20M	18, 20	FPUS0600002	3 27/32"	98
#7	20M	20, 22	FPUS0700002	3 13/32"	86
#8	25M	24, 25, 26	FPUS0800002	4 9/16"	116
#9	-	28	FPUS0900002	4 1/8"	105
#10	30M	30, 32	FPUS1000002	5 5/16"	135
#11	35M	34, 36	FPUS1100002	6 7/8"	174
#12	-	38, 40	FPUS1200002	8 5/32"	207
#14	45M	43	FPUS1400002	10 23/32"	272
-	-	50	FPUS5000002	12"	304
#18	55M	-	FPUS1800002	12 11/32"	313

03



Slide the Unitec coupler over the first bar. Bring the continuation bar in front of it and slide the Unitec coupler back over it. Position the coupler between the marks and hand tighten the bolts.



04



Tighten the bolts, from center to outside, with a power drive (pneumatic wrench) until their heads shear off. (A manual wrench can be sufficient for small quantities).

## Equipment needed

Either pneumatic impact wrench or electric impact wrench can be applied. The recommended pneumatic impact wrenches and electric impact are listed below. Other brands/model with specification equivalent to those indicated in the list can also be used and the tensile performance of Unitec splices should be determined before starting the job.

Unless an impact wrench is available, a hand wrench can be used instead.



### Pneumatic impact wrench

Bar size	Brand	Model	Square drive	Weight		Air consumption under load		Air inlet thread	Manufacturer's Speed setting	Max Torque (N.m)
			in	lbs	kg	cfm	(L/min)	in		
#4 to #8 12 to 25	Toku*	MI-20P	3/4"	8.6	3.9	39	1,104	3/8"	4	390-785
#4 to #18 12 to 50	Toku*	MI-5000GS	1"	31.2	14.2	66	1,868	1/2"	4	490-2150



The requirement for air flow is 100 psig (7 bar) of operating pressure and 185 cfm of delivered air to the pneumatic impact wrench through a 3/4" (Unitec #4 to #8) or 1" (Unitec #4 to #18) hose.

### Electric impact wrench

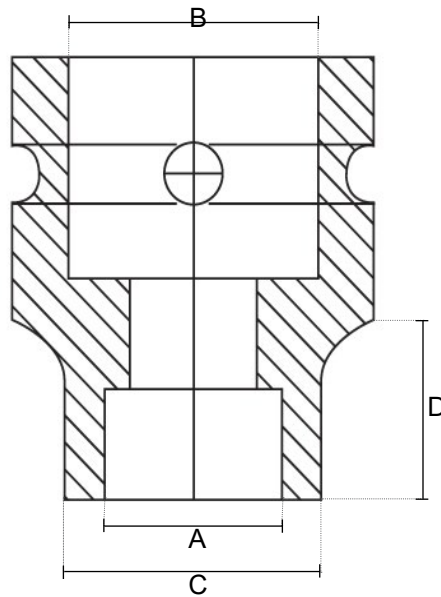
Bar size	Brand	Model	Square drive	Weight		Max Torque (N.m)	Power Supply
			in	lbs	kg		
#4 to #8 12 to 25	Makita*	6906	3/4"	12.3	5.6	588	110 - 240 V
#9 to #14 32 to 40	Hitachi*	WR 25 SE	1"	16.9	7.7	1,000	110 - 240 V



(\*) Remark: Dextra is not the owner of the brands mentioned here. Any protected trademark rights remain entirely exclusive to their respective owners and are only mentioned here as a reference in relation to Dextra products.

## Tooling settings

Bar size			Coupler Product code	Coupler weight		Length	Total number of bolts per coupler	Bolt size	Average torque to shear bolt heads		Air gun socket size			
USA & Mexico	Canada	Europe		lbs	kg				in	ft - lb	Nm	A (mm)	B (mm)	C (mm)
#4	-	12, 12.5	FPUS04000002	2.9	1.3	5 ½"	6	M12	100	140	13	19	26	22
#5	15M	14, 16	FPUS05000002	2.8	1.3	5 ½"	6							
#6	20M	18, 20	FPUS06000002	4.4	2.0	7 ⅞"	8							
#7	20M	20, 22	FPUS07000002	5.3	2.4	7 ⅛"	6	M16	185	250	15	26	26	22
#8	25M	24, 25, 26	FPUS08000002	7.5	3.4	9 ½"	8							
#9	-	28	FPUS09000002	12.5	5.7	8 ⅝"	6							
#10	30M	30, 32	FPUS10000002	17.3	7.9	8"	8	M20	500	680	19	36	36	24
#11	35M	34, 36	FPUS11000002	24.8	11.3	14 ⅙"	10							
#12	-	38, 40	FPUS12000002	31.4	14.3	16 ¾"	12							
#14	45M	43	FPUS14000002	41.1	18.6	21 ⅞"	16	M24	730	990	21	38	38	24
-	-	50	FPUS50000002	52.0	23.6	24 ⅞"	18							
#18	55M	-	FPUS18000002	80.9	36.7	24 ⅜"	16							

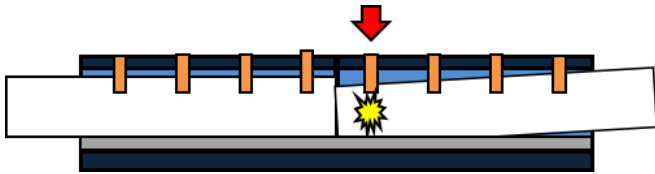


- A - Hexagonal socket dimension
- B - Square drive socket dimension
- C - Socket end max outside diameter
- D - Socket end min outside length

## Treatment of non-conformities

### The Problem:

Final assembly is not straight !



### Possible causes

You did not pre-tighten the bolts

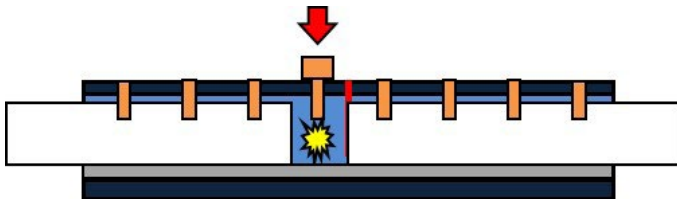
You did not follow the proper tightening sequence (from centre to outside).

### Remedial action

Gas-cut the bar and replace the coupler

### The Problem:

The head of the innermost bolt does not shear off!!



### Possible causes

The bar was not inserted deep enough

*(This should have been noticed during pre-tightening)*

### Remedial action

Gas-cut the bar and replace the coupler



## Treatment of non-conformities

# The Problem:

The head of most bolt does not shear off!

NOTE: In case some heads does not shear off, but the average torque specified on page 5 is reached, it is acceptable to install the coupler.

## Possible causes

Your wrench doesn't deliver enough torque.

## Remedial action

Compare its datasheet to the specifications in our installation instructions, you may need to adjust its speed!

## Possible causes

Your air compressor doesn't deliver enough air flow : the compressor may not be powerful enough, its tank may be too small, or the air hose may be too small.

## Remedial action

Compare these to those specified in our installation instructions

## Possible causes

The air pressure is too low : the compressor may not be powerful enough, the air hose may be too long, or there may be too much moisture in the air of the bar.

## Remedial action

Compare these to those specified in our installation instructions

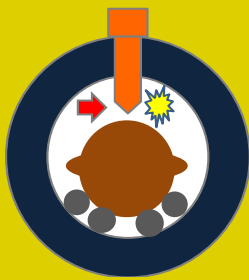
More causes and remedial actions for "head of most bolts did not shear off" next page...

## Treatment of non-conformities

### The Problem:

The head of bolt does not shear off!

#### Possible causes



Too large of a coupler was used for the bar size : if the bar is too small, the bolt will be short, so its head will reach the coupler before its tip touches the bar;

#### Remedial action

Refer to our product datasheet to choose the coupler model matching your rebar size.

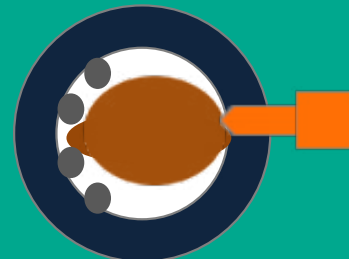
#### Possible causes



The bar is oval, and the bolts are in front of its smallest side, so their tips don't touch the bar.

#### Remedial action

Try turning the coupler so that the bolts are facing the largest side of the bar.





## Treatment of non-conformities

### The Problem:

The bolt turns freely, without penetrating inside the coupler!

#### Possible causes

The female thread in the coupler has been damaged. It could be because of:

- excessive rotary speed
- bolt was cross-threaded in coupler during tightening.

#### Remedial action

- If that was the first bolt, just remove the coupler and use another one.
- If the coupler cannot be removed, there is no other choice than cutting the bar.

### The Other Problem?

Something else?

#### Remedial action

Please fill up the inquiry form on next page and send it to [quality@dextragroup.com](mailto:quality@dextragroup.com)



## Unitec Quality Assessment Form

Date: \_\_\_\_\_

### Where did it occur?

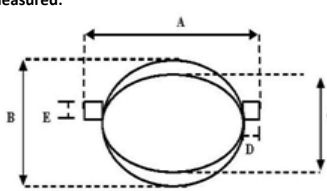
Company name: \_\_\_\_\_

Plant : \_\_\_\_\_

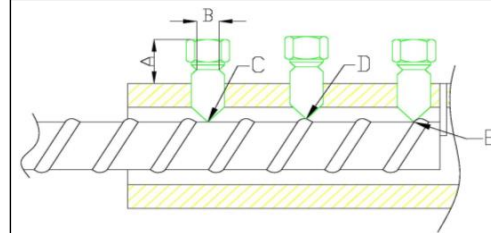
Problem observed & Reported by: \_\_\_\_\_

Project for which the production was done: \_\_\_\_\_

### Details of Production Parameters

Rebar info.	<b>Bar use when the problem occurred:</b>																									
	Dia: _____	Grade: _____	Mill: _____																							
Rebar info.	<b>Actual Bar Diameter Measured:</b>																									
			<table border="1"> <thead> <tr> <th></th> <th># 1</th> <th># 2</th> <th># 3</th> </tr> </thead> <tbody> <tr> <td>A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>B</td> <td></td> <td></td> <td></td> </tr> <tr> <td>C</td> <td></td> <td></td> <td></td> </tr> <tr> <td>D</td> <td></td> <td></td> <td></td> </tr> <tr> <td>E</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		# 1	# 2	# 3	A				B				C				D				E		
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B																										
C																										
D																										
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Operation tools info.	<b>Air compressor</b>		<b>Pneumatic impact wrench</b>																							
	Air flow _____ CFM Operating pressure _____ bar Air hose size _____ inch	Brand _____ Model _____ Speed use _____																								

Coupler info.	<b>Coupler on which the problem occurred:</b>	
	Marking: _____ Outside diameter of coupler _____ mm.      Wall thickness of coupler _____ mm.	
Coupler info.	<b>Product's appearance</b>	
	Stud's welding _____ Rebar's alignment after assembly _____	

Assembly info.	In case of screw did not shear off : Number of screws did not shear off screws _____ pcs.	
	Position A: _____ mm. Position B: _____ mm. Position of screw did not shear off Position C: _____ Pcs Position D: _____ Pcs Position E: _____ Pcs	
		

### Mechanical steel testing report

Samples length: _____ mm.						
Operator name who's prepare the samples: _____						
	Item	Tensile test		Failure mode		
		Load (kN)	Strength (MPa)	Bar		
				Bar break	Bar break inside coupler	Bar Slipped
Control bar	-					
Unitec sample	1					
	2					
	3					

Please send back this form to

[quality@dextragroup.com](mailto:quality@dextragroup.com)

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