

UNITEC

Assembly instruction-01 Rev.07_en



Dextra

Installation procedure

01



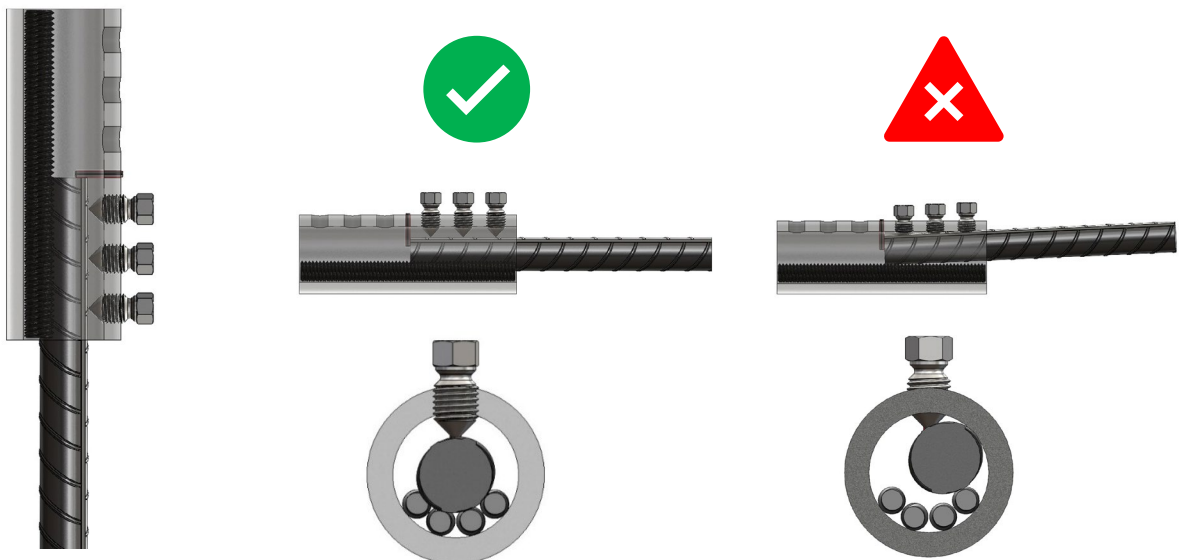
Place the Unitec coupler over the end of the first bar until the bar hits the center pin inside the coupler.

02



Pre-tighten the bolts with a manual wrench from centre to edge (1 to 3) of the coupler to pre-position the bar progressively and maintain its alignment inside the coupler.

03



Visually control the alignment of the bar inside the coupler. It should be properly centered and rest on the centering bars. All bolts shall be in contact with the bar.

Installation procedure

04



Tighten the bolts from centre to edge (from 1 to 3) with an impact wrench in several steps until the heads of the bolts shear off.

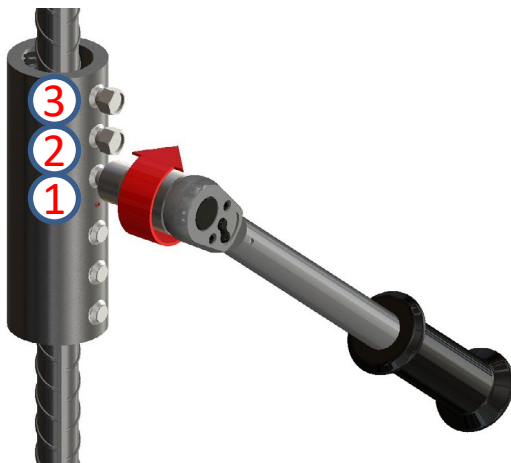
Remark: A manual wrench can be sufficient when only a small amount of couplers needs to be tightened.

05



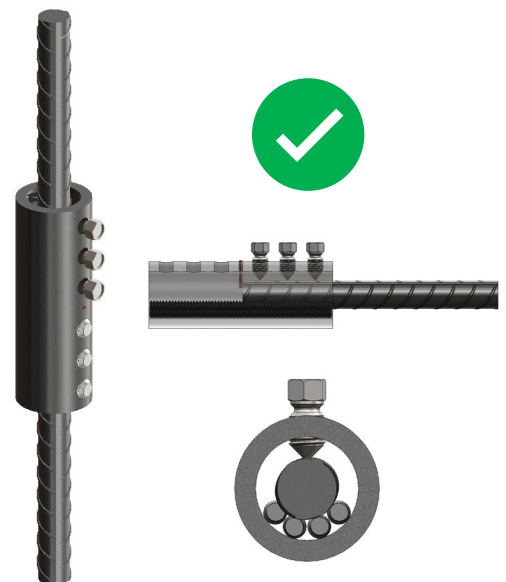
Insert the continuation bar on the other side of the Unitec coupler until it is in contact with the centre pin inside the coupler.

06



Pre-tighten the bolts with a manual wrench from centre to edge (from 1 to 3) of the coupler to pre-position the bar and maintain its alignment inside of the coupler.

07



Visually control the alignment of the bar inside the coupler. It should be properly centered and rest on the centering bars. All bolts shall be in contact with the bar. For proper control please check step 3.

Installation procedure

08



Tighten the bolts from centre to edge (from 1 to 3) with an impact wrench in several steps until the heads of the bolts shear off.

Remark: A manual wrench can be sufficient when only a small amount of couplers needs to be tightened.

Safety tip:

- Proper personal protective equipment (PPE) is required for installation.
- Wear goggles and ear plugs when using the impact wrench.

General instruction:

- Grease shall not be used.

09



Ensure proper alignment of the bar at a distance of 25 cm. The misalignment should not exceed 5 mm (or not more than 1/4" at a distance of 1ft.).

Alternative Installation procedure

01



Remove the center pin with a punch.

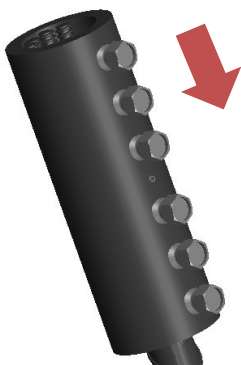
02



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

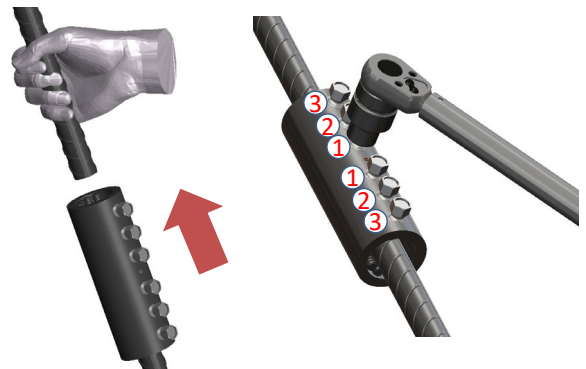
Bar size		Coupler Product code	Minimum bar engagement length
Metric	UK		mm
12, 12.5	12	FPUS0400002	68
14, 16	16	FPUS0500002	68
18, 20	-	FPUS0600002	98
-	20	FPUS0700002	98
22	-	FPUS0700003	116
24, 25, 26	25	FPUS0800002	116
28	-	FPUS0900002	105
30, 32	32	FPUS1000002	135
34, 36	-	FPUS1100002	174
38, 40	40	FPUS1200002	207
50	50	FPUS5000002	304

03



Slide the Unitec coupler all over the first bar.

04



Bring the continuation bar butt-to-butt in front of it and slide the Unitec coupler back over it. Position the coupler between the marks and hand tighten the bolts from centre to edge (from 1 to 3) on both sides.

05

Tighten all bolts, from centre to edge (from 1 to 3), with an impact wrench until their heads shear off. For proper tightening and alignment control follow the instructions given in the Installation procedure from points 3 to 8.

06

Ensure proper alignment of the bar: At a distance of 25 cm from the coupler the misalignment should not exceed 5 mm (or not more than 1/4" at a distance of 1ft.).

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		
12 to 25	Toku*	MI-20P	¾"	8.6	3.9	39	1,104	¾"	4	390-785
12 to 50	Toku*	MI-5000GS	1"	31.2	14.2	66	1,868	½"	4	490-2150



The requirement for air flow is 100 psig (7 bar) of operating pressure and 70 cfm (2m3/min) of delivered air to the pneumatic impact wrench through a ¾" (Unitec 12 to 25) or 1" (Unitec 12 to 50) hose.

Electric impact wrench

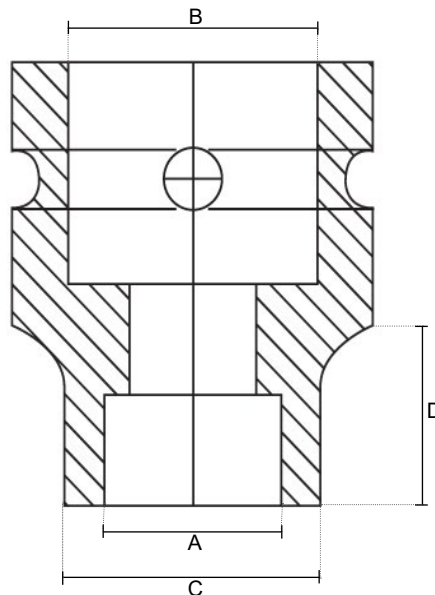
Bar size	Brand	Model	Square drive	Weight		Max Torque	Power Supply
			in	lbs	kg	(N.m)	
12 to 25	Makita*	6906	¾"	12.3	5.6	588	110 - 240 V
32 to 40	Hitachi*	WR 25 SE	1"	16.9	7.7	1,000	110 - 240 V



(* 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 mm	Total number of bolts per coupler	Bolts size	Average torque to shear bolts heads		Air gun socket size			
Metric	UK		lbs	kg				ft - lb	Nm	A (mm)	B (mm)	C (mm)	D (mm)
12, 12.5	12	FPUS0400002	2.9	1.3	140	6							
14, 16	16	FPUS0500002	2.8	1.3	140	6	M12	100	140	13	19	26	22
18, 20	-	FPUS0600002	4.4	2.0	200	8							
-	20	FPUS0700002	4.4	2.0	200	8							
22	-	FPUS0700003	6.7	3.0	240	8	M16	185	250	15	26	26	22
24, 25, 26	25	FPUS0800002	7.5	3.4	240	8							
28	-	FPUS0900002	12.5	5.7	220	6							
30, 32	32	FPUS1000002	17.3	7.9	280	8							
34, 36	-	FPUS1100002	24.8	11.3	360	10	M20	500	680	19	36	36	24
38, 40	40	FPUS1200002	31.4	14.3	425	12							
50	-	FPUS5000002	52.0	23.6	620	18							

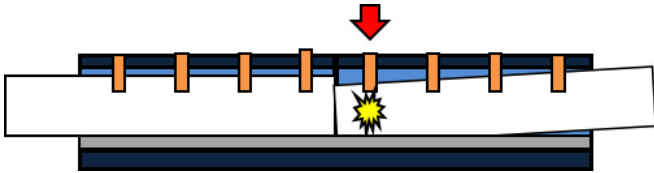


- A - Hexagonal socket dimension
- B - Square drive socket dimension
- C - Socket end max outside diameter
- D - Socket end min outside length

Treatment of non-conformities

The Problem:

Final assembly is not straight !



Possible causes

You did not pre-tighten the bolts.

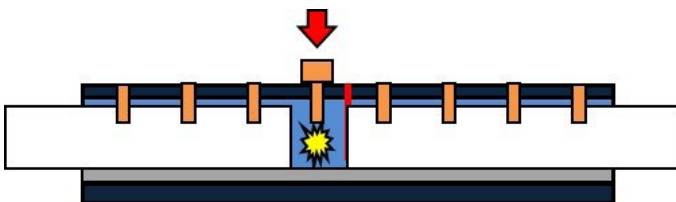
You did not follow the proper tightening sequence (from centre to outside).

Remedial action

Gas-cut the bar and replace the coupler.

The Problem:

The head of the innermost bolts 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.

The Problem:

The head of most bolts 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 wrench doesn't deliver enough torque.

Remedial action

Use a hand wrench to tighten until the head of bolts shears off.

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.

Remedial action

Compare these to those specified in our installation instructions.

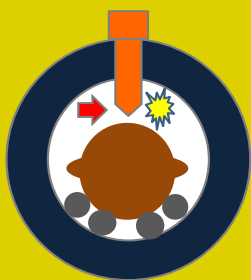
More causes and remedial actions for "head of most bolts did not shear off" next page...

Treatment of non-conformities

The Problem:

The head of most bolts does not shear off!

Possible causes



You use the wrong coupler (Too big) for the size of the bar : if the bar is too small, the bolts will be too 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.

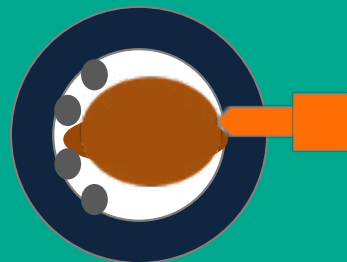
Possible causes



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.



The Problem:

The bolts 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
- the bolting tool was not held straight.

Remedial action

- If that was the first bolts, 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 eles?

Remedial action

Please fill up the inquiry form on next page and send it to quality@dextragroup.com

UNITEC QUALITY ASSESSMENT FORM

Where did it occur? _____

Date: _____

Company name : _____

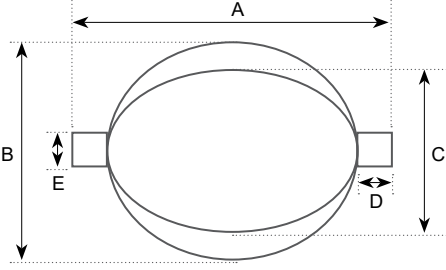
Plant : _____

Problem observed & Reported by : _____

Project for which the production was done : _____

Details of Production Parameters

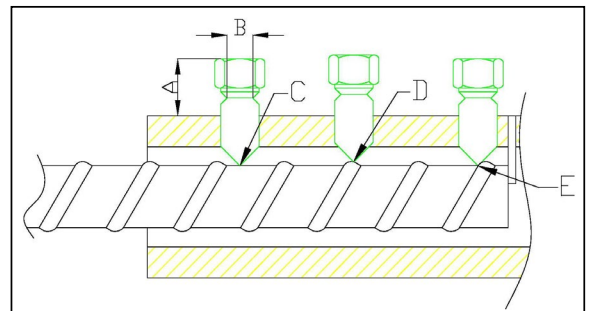
Bar use when the problem occurred :

Rebar info	Dia :	Grade :	Mill :		
			#1	#2	#3
Rebar info			Actual Bar Diameter Measured :		
			A		
			B		
			C		
			D		
		E			

Operation tools info	Air compressor		Pneumatic impact wrench	
Air flow		CFM	Brand	
Operating pressure		bar	Model	
Air hose size		inch	Speed use	

Coupler Info	Coupler on which the problem occurred :		Product's appearance	
Marking :			Stud's welding	
Outside diameter of coupler		mm.	Rebar's alignment after assembly	
Wall thickness of coupler		mm.		

Assembly info	Incase of bolts did not shear off :	
Position A :		mm
Position B :		mm
Location of bolts that did not shear off (indicate with X) :		
Position C :		
Position D :		
Position E :		



Mechanical steel testing report

Samples length : _____ mm Operator name who prepared the sample : _____

	Item	Tensile test		Failure mode		
				Bar		
		Load (kN)	Strength (MPa)	Bar break	Bar break inside coupler	Bar Slipped
Control bar	-					
Unitec sample	1					
	2					
	3					