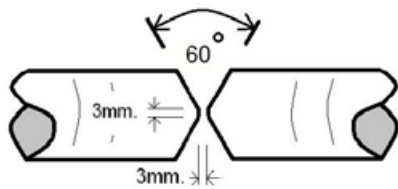


Stub & Stub Turnbuckles

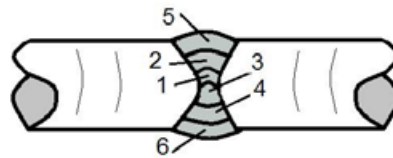
Welding Procedure

Important: Welding should be carried out by a suitably qualified person using the guidelines of AS1554.1: 2014

WPS Number:	TFWP-5 Stub Welding
Code:	Pre-qualified to AS 1554.1, 2014, "Welding of Steel Structures"
Material:	AS 3679.1 Grade 300 Steel
Joint Type:	Double V Butt
Joint Identification:	B-C 3
Welding Position:	Flat 1G
Range Qualified:	W.P.S. covers 10 mm. to 40 mm. Diameters in the Flat 1G position



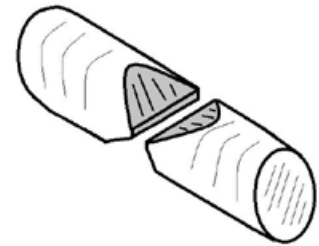
Joint Preparation



Run Position

Preparation

- Remove contaminants from the weld area by grinding and wire brush.
- Preparation method: Grinding and wire brushing.
- Root Face: 2-3 mm., Root Gap: 2-3 mm., Included Angle: 60°
- Align joint and tack components.
- Back-grind first run to expose clean metal.



Welding

Welding Process	Consumable	Consumable Size	Amperage	Voltage	Shielding Gas
MMAW	AS 4855 B E4916 AUH10	3.2 mm	115-130	-	-
GMAW	AS 2717.1 ES4-GC/M-W503AH	0.9 mm	135-165	18-22	Argon + 16-18% CO2
FCAW	AS 2203.1 ETP-GC/Mp-503A.CM1 H10	1.2 mm	135-185	27-31	Argon + 16-18% CO2

N.B. Grind weld ends on completion if required. Do not quench.

Destructive Examination

- One Macro to AS 1554.1 SP requirements on a test bar.

Non-Destructive Examination

- Visual scanning 100%.
- Visual compliance to AS 1554.1 SP requirements.
- N.D.T. as agreed with client.

Procedure prepared by: Ron Mays (Weld. Supv.7152, Weld. Insp.7682) Date: 4/8/13

Stub & Stub Turnbuckles

Care in Use

- Where components are interfaced, they should readily connect and freely articulate, to ensure that loading will be applied in tension.
- Care should be taken to ensure that rigging screws and turnbuckles are not excessively tightened beyond the specified rating in tension.
- Regular inspection is required by a competent person.
- Threads should be protected from corrosion by effective means.
- The Rigging Screw or Turnbuckle should be removed from service if it has a damaged screw thread, distorted body, distorted fitting, nicks, gouges, cracks or corrosion.

Grade

Rigging Screws and Turnbuckles manufactured in accordance with Australian Standard AS 2319 are available in various Grades L, P and S.

Proof Testing

Townley Provides mandatory NATA Test Certificates for proof testing.

Stub End Turnbuckles

- The Working Load Limit (WLL) is only valid if the welder is suitably qualified and the weld procedure provided by Townley Drop Forge Pty Ltd is strictly adhered to.
- Welding shall be carried out by a suitably qualified person using the guidelines of AS1554.1: 2014
- The material to which the stub ends will be welded should be of adequate strength to withstand forces during tension
- The connecting surfaces must be free from contaminants, dirt, oil, paint. etc.
- Before installation and every use, visually inspect the turnbuckle assembly. Discard if there is evidence of corrosion, wear, weld cracks and deformation
- No modification should be made to the assembly
- Do not use under chemical influence such as acids, alkaline solutions and vapours. i.e. in or around pickling baths, hot dip galvanizing plants. etc.
- Do not weld galvanized surfaces

Locking of Threads

Where rigging screws or turnbuckles are to be used in a permanently adjusted position and where a guy is subjected to shock vibration or rope spin it is necessary to prevent the screws from unwinding. Typical methods of locking threads include locknuts, locking plates and wire.

Locknuts, fitted at the ends of the body, are a method of locking, but may not provide positive or reliable locking under all circumstances, such as due to rope spin. Care should be taken to not induce excessive torque during tightening.

Load Rating

Rigging Screws and Turnbuckles in accordance with Australian Standards have a safety factor of 6:1. This safety factor helps to counter possible problems from shock, vibration, fatigue, wear, damage and corrosion. This safety factor must be maintained.

When tested to destruction, components must demonstrate ductility. This is achieved if the failed component achieves at least 15% elongation at break.

Working Load Limit (WLL)

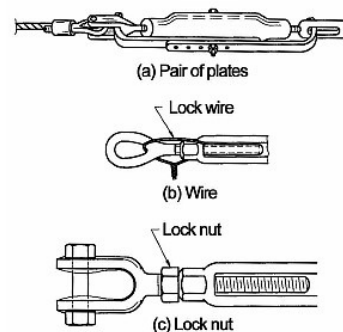
The WLL may be de-rated for particular conditions of use. The strength of components is adversely affected by excessively elevated temperatures. Where the temperatures are likely to exceed 200°C, the following relevant reduction of WLL is advised:

Temperature °C	Temporary reduction of WLL while heated, percent
≤200	No reduction
>200 ≤300	25
>400	Do not use

Marking

Rigging Screws and Turnbuckles to AS 2319 will have the following markings:

- a) Manufacturer's Identification
- b) Nominal size
- c) The Quality Grade i.e. Grade L
- d) WLL in tonnes
- e) Identification Marking to correlate the Rigging Screw or Turnbuckle to the test certificate



Acceptable Methods of Locking