

APPENDIX A



TECHNICAL SPECIFICATION FOR STAINLESS STEEL FITTINGS

MR 161/2018

ENERGY FIJI LIMITED

Revision History & Document Control

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Next Scheduled Revision

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1.0 Introduction

Energy Fiji Limited [EFL] is a sole utility business unit in Fiji responsible for the power production, transmission, distribution and retailing to its valued customers around the Nation. EFL utilizes overhead lines and underground cables with voltage levels of 11000V and 415/240V for its distribution network.

This document outlines the technical requirements for stainless steel fittings for use in EFL's distribution network.

The items covered under this specification are tabulated below.

No.	Stock Code	Item Description (Metric System)
Bolts and Nuts		
1	New Item	M100 x M12 (4 x ½) Stainless Steel Bolt & Nut
2	New Item	M130 x M12 (5 x ½) Stainless Steel Bolt & Nut
3	New Item	M260 x M12 (10 x ½) Stainless Steel Bolt & Nut
4	New Item	M280 x M12 (11 x ½) Stainless Steel Bolt & Nut
5	New Item	M300 x M12 (12 x ½) Stainless Steel Bolt & Nut
6	New Item	M350 x M12 (14 x ½) Stainless Steel Bolt & Nut
7	New Item	M150 x M16 (6 x 5/8) Stainless Steel Bolt & Nut
8	New Item	M200 x M16 (8 x 5/8) Stainless Steel Bolt & Nut
9	New Item	M270 x M16 (10 ½ x 5/8) Stainless Steel Bolt & Nut
10	New Item	M325 x M16 (13 x 5/8) Stainless Steel Bolt & Nut
11	New Item	M350 x M16 (14 x 5/8) Stainless Steel Bolt & Nut
12	New Item	M400 x M16 (16 x 5/8) Stainless Steel Bolt & Nut
13	New Item	M450 x M16 (18 x 5/8) Stainless Steel Bolt & Nut
14	New Item	M500 x M16 (20 x 5/8) Stainless Steel Bolt & Nut
15	New Item	M550 x M16 (22 x 5/8) Stainless Steel Bolt & Nut
Flat Square Washers		
16	New Item	50 x 50 x 3 (12mm) Stainless Steel Flat Square Washer
17	New Item	50 x 50 x 3 (16mm) Stainless Steel Flat Square Washer
Eye Bolts and Nuts		
18	New Item	6 x 5/8 Stainless Steel Eye Bolt

Table 1.1: Items Covered Under this Specification

This Specification covers the general requirements for tenderers to design, manufacture, testing and delivery of stainless steel fittings for Energy Fiji Limited to use on its overhead distribution systems.

Note:

The following are the description of dimensions mentioned in Table 1.1 above:

2.0 References

2.1 Applicable Standards

The tabulated item shall be designed, manufactured and tested in accordance with the latest editions of the Standards specified below and all amendments issued prior to the date of closing of the tenders except where varied by this specification.

AS 1111	ISO metric hexagon commercial bolts and screws
AS 1112	ISO metric hexagon nuts, including thin nuts, slotted nuts and castle nuts
AS 1154	Insulator and conductor fittings for overhead power lines
AS 1199	Sampling procedures for inspection by attributes
AS 1237	Flat metal washers for general engineering purposes
AS 1275	Metric screw threads for fasteners
AS/NZS 1393	Coach screws - Metric series with ISO hexagon heads
AS 1442	Carbon steels and carbon-manganese steels - Hot-rolled bars and semi-finished products
AS 2837	Wrought alloy steels - Stainless steel bars and semi-finished products
AS/NZS 1554	Structural steel welding
AS/NZS 1968	Helical spring lock washers
ISO 31000	Risk Management
AS/NZS ISO 9001	Quality management systems -Requirements

Should inconsistencies be identified between standards and/or this specification, the tenderer shall immediately refer such to the EFL for resolution.

2.2 Applicable Laws

The Bidder warrants (without limiting any other warranties or conditions implied by law) that all Goods have been produced, sold and delivered to EFL in compliance with all applicable laws (including all workplace health and safety and electrical safety legislations and codes of conduct).

3.0 System Conditions

3.1 Environmental Conditions

The stainless steel fittings shall be suitable for installation outdoors and shall be designed to withstand the following service conditions.

Description		Conditions
Atmosphere	:	Saliferous, corrosive and dusty
Ambient Temperature	:	Peak: 40°C 24 Hour Average: 30°C Annual Average: 22°C Minimum: 10°C

Relative Humidity (Average)	:	85%
Rainfall	:	Annual Average: 1900mm
Isokeraunic (Thunder day) level	:	60 thunder days per year
Seismic	:	To a maximum of 7 on the open-ended Richter Scale

Note: Fiji is situated in a region where cyclones are experienced frequently. All plant and equipment shall be designed and constructed to withstand these extreme conditions.

3.2 System Conditions

Nominal Voltage	415V	11kV
System Highest Voltage	660V	12kV
System Frequency	50Hz	50Hz
Number of Phases	3	3
System Earthing	Effectively Earthed	Effectively Earthed
Impulse Withstand Voltage (peak)	-	28kV
Power Frequency Withstand Voltage	15kV	95kV (peak)

4.0 Design and Construction

Item designed and manufactured shall conform with the best practices/procedures in line with compliance to international standards.

4.1 Steel Selection

The steel for the forgings shall be selected from one of the steels listed in Clause 1.4.6.2 of AS 1154.1 for grade 304 or 316 steel, and shall be supplied in the heat treated condition specified.

4.2 Workmanship

Forgings shall be one piece drop forged and accurately finished to the dimensions mentioned in Table 1.1 or AS 1154.1/ AS 4899 as applicable. The finished product should not have any sharp edges or deformation on the outer periphery.

4.3 Bolts, Nuts and Washers

All bolts and nuts shall be threaded in accordance with AS 1111 and AS 1112 respectively. The resulting thread form shall have tolerance class of 6H/8g.

Flat square washers shall be manufactured in accordance with AS 1237 and AS 1968 respectively.

4.4 Welding

Welding shall be in accordance with Parts 1 and 2 of AS 1554 as required.

4.5 Assembly

Where specified, parts shall be assembled before delivery.

4.6 Dimensions and Tolerances

All dimensions and tolerances shall be in accordance with the relevant AS, AS/NZS or IEC Standard if not stated thereof.

4.7 Identification Reference

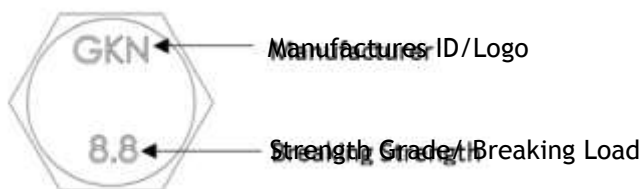
All fittings shall be permanently marked with the appropriate identification reference, batch identification for traceability and the manufacturer's name or trade mark.

4.8 Mechanical Ratings

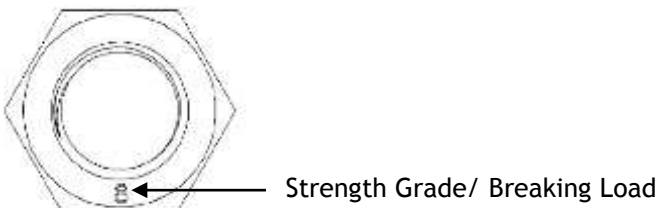
All items shall have mechanical ratings in accordance with the relevant AS, AS/NZS or IEC Standard if not stated thereof.

4.9 Marking

The bolts offered shall have the manufacturer's ID/ logo and strength grade/ breaking load marked permanently on top of the bolt heads as shown below:



The nuts offered shall have the strength grade marked permanently on top of the nut as shown below:



The eye bolt offered shall have the following permanently marked on the eye bolt circumference as shown below:

1. Manufacturers ID/ Logo
2. Strength Grade/ Breaking Load
3. Size of Eye Bolts

Note: The nut for the eye bolt shall follow the same marking as mentioned above for nuts.



Manufactures ID/ Logo; Breaking Load; Size of Eye Bolt

5.0 Quality Assurance

The manufacture shall submit evidence that the design and manufacture of the stainless steel fittings are in accordance with AS/NZS ISO 9001 and shall include the Capability Statement associated with the Quality System Certification.

6.0 Performance and Testing

6.1 General

Ratings and performance requirements are to be as specified in AS 1154.1.

6.2 Type Test Compliance

The fittings shall be type tested in accordance with AS 1154.1 as detailed below in the table:

Item	Category of Test	Criteria for Test	Reference for Test Method
Bolts and Nuts (Including eye Bolts)	Type Test	Mechanical Strength	AS 1154.1 Clause 2.2
		Hardness Test	AS 1154.1 Clause 2.3
	Batch Test	Certificate of Compliance	AS 1442/ AS 2837
		Verification of dimensions	AS 1154.1 Clause 1.6
		Mechanical Test	AS 1154.1 Clause 2.2
Flat Washers	Batch Tests	Verification of dimensions	AS 1154.1 Clause 1.6

Table 6.1: Schedule of Required Tests

In accordance with AS 1154.1, test certificates giving satisfactory results for the appropriate type tests, made on no fewer than three (3) fittings identical in essential details with those offered shall be regarded as evidence of compliance and shall be submitted with the tender.

Copies of original Type Test certificates/ reports shall be included in full in accordance with AS 1154.1 (including all drawings, revisions and test results as stipulated in the applicable standards as specified in this Specification) with the tender. Where company details have changed with regard to the original Type Testing, and the original Type Testing is submitted, these company details changes shall be detailed in the tender submission, for every company change up to the time of submission of tender. Type Test certificates/reports shall be complete and copies of front pages only shall not be acceptable.

EFL requires that all Type Tests (for items offered) are certified by a laboratory accredited by an Accreditation Entity. An Accreditation Entity is a signatory to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), for example; the National Association of Testing Authorities, Australia (NATA). Full accreditation details of the type testing facilities and the accreditation certifying entity and any mutual recognition arrangements with other accreditation entities shall be provided by the Tenderer.

EFL may request repeat of Type Tests to prove compliance to this technical specification where the materials used in the equipment offered and/ or the manufacturing process and/ or the place of manufacture have changed since the equipment offered was originally type tested.

6.3 Batch and Routine Tests

All items offered shall be fully batch and routine tested in accordance with the applicable standards as detailed in Table 6.1 of this Specification.

With each delivery of the items to EFL, a "Certificate of Compliance" is to be supplied. This certificate shall include the following:

- The batch number, name of the Manufacturing Company and the location of manufacture.
- Documented proof that the grade of steel used in the manufacture of the items and components of the items meets all of the requirements specified in this specifications, or where the material grade is not specified, the requirements are as per the relevant Australian Standards.

Batch Test certificates for mechanical properties and dimensions of each item shall be held by the Supplier and provided to EFL within 24 business hours upon request.

6.4 Acceptance Tests

EFL may carry out acceptance tests on an item to prove it conforms to the requirements of this Specification.

6.5 Witnessing of Test

EFL reserves the right to witness all testing. The Supplier shall give the EFL reasonable notice of when testing will be carried out and one (1) EFL engineers to be invited to witness the testing.

Note to tenderers: Type test/acceptance test/Routine tests and any other tests not covered as stated in different clauses of the specification but required as per relevant Standards shall also to be carried out.

7.0 Packaging and Marking

7.1 General

The packaging of items by the bidder must ensure that they are capable of being delivered undamaged giving due consideration to the quantity, distance of transportation and the preferred method of handling at each location during loading and unloading.

Each packaged lot shall be marked with the following information:

- Manufactures Name
- Purchase Order Number □ Contact No.
- Item Description
- Pack Size
- Pack Weight

7.2 Storage

The equipment shall be capable of being stored without deterioration within the temperature range of 10°C to 40°C for no less than 24 months.

8.0 Technical Information to be supplied

The following information shall be supplied with the offer:

- a) Catalogue describing the items and indicating the model number
- b) Constructional features and material used for components
- c) Complete dimensional drawing
- d) Quality assurance certificate as per the applicable standards stated in Clause 5 of this specification
- e) Duly completed schedule of guaranteed technical particulars
- f) Manufacturing experience and list of purchasers
- g) Performance and testing certificates as per Clause 6 (6.1 to 6.3) of this specification

Offers of vendors who fail to furnish above particulars shall be rejected.

9.0 Stock Availability

The bidder is to advise if there will be any consignment stock holding.

The movement of the stainless steel fittings will depend on the EFL's project works and for operation and maintenance purposes.

10.0 Environmental Considerations

Suppliers are required to comment on the environmental soundness of the design and the materials used in the manufacture of the items tendered. In particular, comments should address such issues as recycling and disposal at the end of service life.

11.0 Reliability

Suppliers are required to comment on the reliability of the equipment and the performance of the materials tendered for a service life of 60 years under the specified system and environmental conditions.

Suppliers are invited to submit any proposals which may increase the anticipated service life of the stainless steel fittings.

12.0 Samples

12.1 Production Samples

Samples of items may be required during the tender assessment period.

12.2 Sample Delivery

When samples are required, production samples shall be delivered freight free, suitably packaged and labelled with the following information:

- a) Name of tenderer and this contract no.
- b) Contract Item Numbers
- c) Any supporting data on features or characteristics

The Purchaser may at its discretion either purchase the samples at the tendered price or return the samples to the respective tenderer after the contract has been awarded. Samples shall be supplied within 7 days of official request.

The lead time should be confirmed by the supplier from the time of EFL raising the order.

13.0 Training

Training material in the form of drawings, instructions and/or audio visuals shall be provided for the items accepted under the offer.

This material shall include but is not limited to the following topics:

- Handling
- Storage
- Application
- Installation
- Maintenance
- Environmental performance
- Electrical performance
- Mechanical performance
- Disposal

14.0 Appendix

14.1 Technical Details - Stainless Steel Fittings

All tenderers are required to complete and submit a copy of this form with their bid submissions. A separate schedule is to be provided for each item offered.

Particulars	Response from Tenderer
General	
Place of Manufacture/ origin of Steel used?	
Dimensions of items supplied as per table 1.1?	
Quality assurance certificate provided? (Yes/No)	
Technical information as per Clause 8.0 provided?	
Technical Requirements	
Grade of steel offered for particular item?	
Corrosion protection offered? (Yes/No)	
Life span of corrosion protection? (Years)	
Threading of bolts and nuts as per AS 1111 and AS 1112? (Yes/No)	
Flat square washer manufactured to AS 1237 and AS 1968? (Yes/No)	
Items welded to AS 1554 (Part 1 & 2) where required? (Yes/No)	
Type test compliance to Clause 6.2?	
Type/batch/routine test certificates offered?	

Name of Tenderer: _____

Signature of Tenderer: _____

Date: _____

Submission of Tenders

Two (2) hard copies of the tender bids in sealed envelope shall be deposited in the tender box located at the Supply Chain Office at the EFL Head Office, 2 Marlow Street, Suva, Fiji.

Courier charges for delivery of Tender Document must be paid by the bidders.

This tender closes at 4:00pm, on Wednesday 23rd May, 2018.

Each tender shall be sealed in an envelope with the envelope bearing only the following marking:

Tender- MR 161/2018 – Preferred Supplier for Stainless Steel Bolts & Nuts

The Secretary, Tender Committee

Energy Fiji Limited

Supply Chain Office

Private Mail Bag,

Suva

It must also indicate the name and address of the tenderer on the reverse of the envelope.

All late tenders, unmarked Envelopes and envelopes without bidder's name and address on the reverse of the envelope. (Bids via e-mail or fax will not be considered).

For further information or clarification please contact our Supply Chain Office on phone **(+679) 3224360** or **(+679) 9991587**.

Bidders are requested to submit a:

- **Valid Tax Compliance Certificate**
- **FNPF Compliance Certificate**