

# Electricity Specification 400F1

Issue 3      November 2021

## Fasteners and Washers for Wood Pole Overhead Lines



## Amendment Summary

ISSUE NO. DATE	DESCRIPTION
<b>Issue 3</b>	New Template applied.
<b>November 2021</b>	Prepared by: D M Talbot  Approved by: Policy Approval Panel and signed on its behalf by Steve Cox, Engineering and Technical Director

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## 1 Introduction

This specification comprises general requirements for the Approval and testing of fasteners and washers for wood pole overhead lines employed on the electricity distribution network owned by Electricity North West Limited (Electricity North West). Also included are technical particulars relating to the constructional requirements and a schedule of all fasteners and washers in alphanumeric order ([Appendix A](#)).

## 2 Scope

This specification covers all fasteners and washers required for the construction of overhead lines on wood poles (from LV to 132kV).

## 3 Definitions

<b>ABC</b>	Aerial Bundled Conductor
<b>Approval</b>	Sanction by the Electricity North West Overhead Circuits Manager that specified criteria have been satisfied
<b>Contract</b>	The agreement between Electricity North West and the Contractor for the execution of the Works including therein all documents to which reference may properly be made in order to ascertain the rights and obligations of the parties under the said agreement.
<b>Contractor</b>	The person or person's firm or company, including personal representatives, successors and permitted assigns, who's Tender has been accepted by Electricity North West.
<b>ENA TS</b>	Energy Networks Association Technical Specification.
<b>Specification</b>	The Specifications and schedules (if any) agreed by the parties for the purpose of the Contract.
<b>Sub-Contractor</b>	Any person (other than the Contractor) named in the Contract for any part of the Works or any person to whom any part of the Contract has been sub-let with the consent in writing of the Electricity North West Overhead Circuits Manager, and the legal representatives, successors and assigns of such person.
<b>Supplier</b>	Any person or person's firm or company who supplies goods to Electricity North West or to its Contractor.
<b>Tender</b>	An offer in writing to execute work or supply goods at a fixed price.

**Tenderer**

The person or person's firm or company, including personal representatives, successors and permitted assigns, invited by Electricity North West to submit a Tender.

## 4 General Requirements for Approvals and Testing

### 4.1 Product not to be Changed

No change in the product, packaging or labelling shall be made after Approval has been granted without prior notice to the Electricity North West Overhead Circuits Manager, and receipt of a written agreement to the proposed change from the Electricity North West Overhead Circuits Manager.

### 4.2 Electricity North West Technical Approval

The Tenderer shall submit, with this Tender, proposals for testing which will demonstrate, to the satisfaction of the Electricity North West Overhead Circuits Manager, compliance with this Specification. Such tests shall be carried out without expense to Electricity North West.

Alternatively, technical reports and other data may be submitted that the Tenderer considers will demonstrate, to the satisfaction of the Electricity North West Overhead Circuits Manager, compliance with this Specification. Acceptance of this evidence shall be at the discretion of the Electricity North West Overhead Circuits Manager but will not be unreasonably withheld.

Approval shall be 'factory specific' and is not transferable to another factory without the written Approval of the Electricity North West Overhead Circuits Manager.

The Supplier and product shall comply with all the relevant requirements of Electricity North West documents EPD311 and CP311.

### 4.3 Quality Assurance

The Tenderer shall confirm whether or not Approval is held in accordance with a quality assurance scheme accredited under ISO 9000. If not, the Tenderer shall submit a statement of the quality assurance procedures employed to control the quality of the product, including the performance of Suppliers and Sub-Contractors.

The right is reserved for the repeat of such tests, from time to time, that the Electricity North West Overhead Circuits Manager may deem to be reasonably necessary to demonstrate continued compliance with the Specification.

The Tenderer shall submit, with the Tender, a list of tests and inspections which are carried out on the product prior to despatch which shall demonstrate, to the satisfaction of the Electricity North West Overhead Circuits Manager, fitness for installation and service.

The Tenderer shall provide free of charge to Electricity North West such samples as may, in the opinion of the Electricity North West Overhead Circuits Manager, be reasonably required for inspection and/or retention as quality control samples. The Electricity North West Overhead Circuits Manager will confirm the requirement for samples at the time of Tendering.

The right is reserved for inspections to be made of Tenderer's facilities, from time to time, as deemed reasonably necessary by the Electricity North West Overhead Circuits Manager to ensure compliance with this Specification and any Contract of which it forms a part.

The Tenderer shall submit, with the Tender, such details of product packaging disposal, as will enable Electricity North West to comply with the requirements of BS EN ISO 14001 - Environmental Management Systems.

#### **4.4 Formulation**

The Tenderer shall submit, with the Tender, such details of the formulation and use of the product and associated substances as will enable Electricity North West to comply with the obligations of the Health and Safety at Work Act 1974 and the Control of Substances Hazardous to Health Regulations 2002, in the use, storage and disposal of the product. The Tenderer may stipulate, prior to submission of such information, that it is to remain confidential, and the Electricity North West Overhead Circuits Manager will, if requested, confirm agreement to this prior to receipt of the information.

#### **4.5 Identification Markings**

The Tenderer shall submit, with the Tender, details of markings which it is proposed to apply to the product or packaging to identify manufacturing batches or items. The forms and content of such markings shall be subject to the Approval of the Electricity North West Overhead Circuits Manager and shall in all cases include the Electricity North West approved description and commodity code number.

The Tenderer shall submit, with the Tender, such details of marking gross weight on components, assemblies and packages, as will enable Electricity North West to comply with the Health and Safety Manual Handling Operation Regulations 1992, for components, assemblies and packages supplied with a gross weight over 1kg. The forms and content of such markings shall be subject to the Approval of the Electricity North West Overhead Circuits Manager.

#### **4.6 Minimum Life Expectancy**

The minimum life expectancy of all products covered by this Specification is 75 years.

#### **4.7 Product Conformity**

Preference will be given to those Suppliers who can provide suitable product conformity certification to a recognised or specified standard, or an equivalent certification.

### **5 Requirements for Type and Routine Testing**

The Electricity North West Overhead Circuits Manager shall set out the requirement of the following tests to be carried out by the Supplier at the Supplier's cost.

#### **5.1 Requirement for Type Tests at Suppliers Premises**

These are a series of one-off type tests, which are carried out to ensure the satisfactory performance of the product design, under extremes of operating stresses, and of endurance, as may be appropriate, to be determined by the Electricity North West Overhead Circuits Manager.

These may or may not be destructive tests.

## 5.2 Requirement for Routine Tests at the Supplier's Premises

These tests may be required to be carried out on every individual unit or component, as specified, or at some regular frequency to be determined by the Electricity North West Overhead Circuits Manager.

The results of these tests may be required to be supplied to Electricity North West with each unit purchased or retained for inspection, at a period to be determined by the Electricity North West Overhead Circuits Manager.

## 6 Constructional Requirements

All fasteners and washers covered by this specification are listed in [Appendix A](#).

Fasteners and washers shall conform to all requirements of this specification and ENA TS 43-96 (Fasteners and washers for wood pole overhead lines). Manufacturing tolerances shall be those given in ENA TS 43-96, unless otherwise stated. Note that "washers, round, flat...galvanized" shall comply with BS 4320, Table 3 (Black washers – Normal diameter. Metric series (Form E)).

Bolt, pole step (CC 139387) shall be high tensile steel, grade 8.8.

Steel nails (including staples) shall comply with BS 1202-1: 2002.

All steel items, unless stated otherwise, shall be galvanized to BS EN ISO 1461. Galvanized steelwork shall be free from sharp edges or points left by the galvanization process.

Ties (security, plastic type) shall be manufactured from plastic, nylon, or similar, to meet the requirements for non-metallic ties given in BS EN 50146.

## 7 Documents Referenced

DOCUMENTS REFERENCED	
Health and Safety at Work Etc Act: 1974.	
Control of Substances Hazardous to Health (COSHH) Regulations: 2002.	
Manual Handling Operations Regulation 1992.	
BS EN ISO 9000	Quality management systems

<b>BS EN ISO 1461</b>	Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods.
<b>BS EN ISO 14001: 2004</b>	Environmental Management Systems.
<b>BS EN 50146: 2000</b>	Cable ties for electrical installations.
<b>BS 1202-1: 2002</b>	Specification for nails - Part 1 Steels nails.
<b>BS 4320: 1968</b>	Specification for metal washers for general engineering purposes. Metric series.
<b>ENA TS 43-14</b>	Conductor Fittings and Associated Apparatus for with LV Aerial Bundled Conductors.
<b>ENA TS 43-96</b>	Fasteners and washers for wood pole overhead lines.
<b>CP311</b>	Equipment Approval Policy and Process

## 8 Keywords

None applicable.



## Appendix A – Schedule of all Fasteners and Washers for Wood Pole Overhead Lines

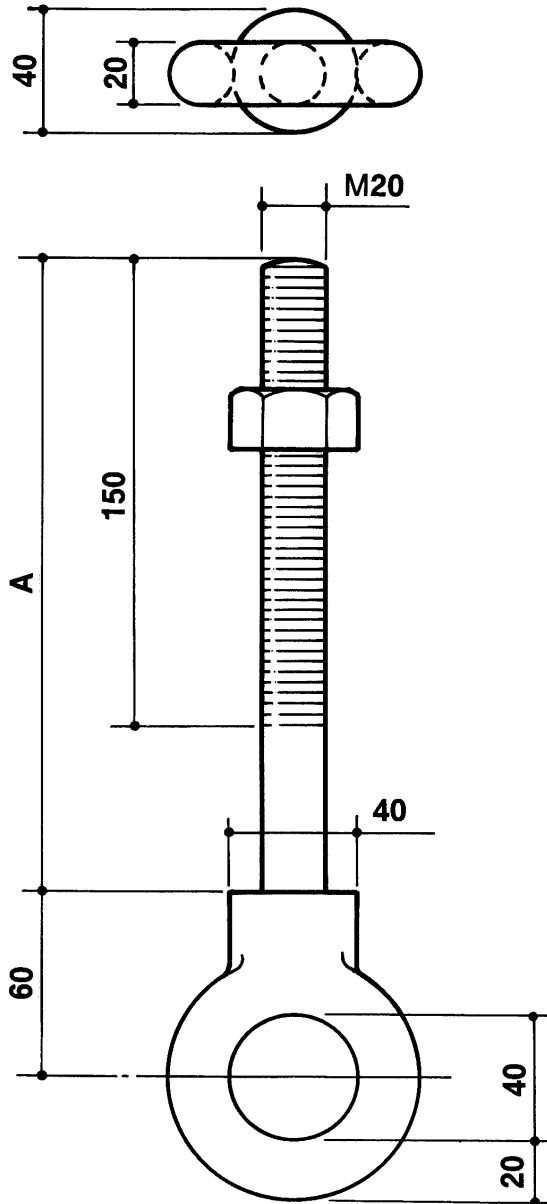
APPROVED DESCRIPTION (FOR PURCHASING AND PRODUCT LABELLING)	CC NO	DRAWING REF
Anti-climbing device, fittings pack {Pack comprises the following galvanized items: Bolt, dome head, M12, 40mm (4 off) Nut, hex, full, M12 (32 off) Nut, hex, half, M12 (8 off) Nut, hex, full, lock, M12 (4 off) Screw, machine, hex head, M12, 40mm (4 off) Screw, machine, hex head, M12, 35mm (8 off) Washer, round, flat, packing, M12, 5mm thick (32 off) Washer, round, flat, M12 (32 off)  Separate bag comprising: screw, machine, hex head, M12, 60mm, high-tensile steel, c/w nuts (16 off)}	133512	Not applicable
Bolt, eye, M20, length 240mm, thread length 150mm, galvanized, c/w hex full nut	109215	I-400F1-FAS-001
Bolt, eye, M20, length 300mm, thread length 150mm, galvanized, c/w hex full nut	109290	I-400F1-FAS-001
Bolt, J, M12, length 100mm, thread length 70mm, gape 20mm, galvanized, c/w hex full nut, hex half nut and flat round washer	133560	I-400F1-FAS-002
Bolt, J, M16, length 175mm, thread length 150mm, gape 25mm, galvanized, c/w hex full nut, hex half nut and flat round washer	109592	I-400F1-FAS-002
Bolt, J, M20, length 130mm, thread length 70mm, gape 20mm, galvanized, c/w hex full nut, hex half nut and flat round washer	109533	I-400F1-FAS-002
Bolt, J, M20, length 170mm, thread length 65mm, gape 20mm, galvanized, c/w hex full nut, hex half nut and flat round washer	109576	I-400F1-FAS-002
Bolt, M12, length 30mm, thread length 30mm, galvanized, c/w hex full nut	107174	Not applicable
Bolt, M12, length 40mm, stainless steel, box of 50	109045	Not applicable

Bolt, M12, length 40mm, stainless steel, c/w hex full nut, two flat round washers and a stainless steel spring washer (pack of 3)	177360	Not applicable
Bolt, M12, length 45mm, thread length 30mm, galvanized, c/w hex full nut	107204	Not applicable
Bolt, M12, length 60mm, thread length 30mm, galvanized, c/w hex full nut	107220	Not applicable
Bolt, M12, length 75mm, thread length 30mm, galvanized, c/w hex full nut	107263	Not applicable
Bolt, M16, length 50mm, thread length 38mm, galvanized, c/w hex full nut	107379	Not applicable
Bolt, M16, length 110mm, thread length 38mm, galvanized, c/w hex full nut	107417	Not applicable
Bolt, M16, length 220mm, thread length 150mm, galvanized, c/w hex full nut	107484	Not applicable
Bolt, M16, length 260mm, thread length 150mm, galvanized, c/w hex full nut	107492	Not applicable
Bolt, M16, length 300mm, thread length 150mm, galvanized, c/w hex full nut	107514	Not applicable
Bolt, M16, length 375mm, thread length 150mm, galvanized, c/w hex full nut	107522	Not applicable
Bolt, M16, length 450mm, thread length 150mm, galvanized, c/w hex full nut	107530	Not applicable
Bolt, M20, length 45mm, thread length 45mm, galvanized, c/w hex full nut	107573	Not applicable
Bolt, M20, length 60mm, thread length 46mm, galvanized, c/w hex full nut	107581	Not applicable
Bolt, M20, length 100mm, thread length 46mm, galvanized, c/w hex full nut	107646	Not applicable
Bolt, M20, length 160mm, thread length 52mm, galvanized, c/w hex full nut	107662	Not applicable

Bolt, M20, length 160mm, thread length 115mm, galvanized, c/w hex full nut	107654	Not applicable
Bolt, M20, length 220mm, thread length 150mm, galvanized, c/w hex full nut	107689	Not applicable
Bolt, M20, length 260mm, thread length 150mm, galvanized, c/w hex full nut	107697	Not applicable
Bolt, M20, length 300mm, thread length 150mm, galvanized, c/w hex full nut	107735	Not applicable
Bolt, M20, length 375mm, thread length 150mm, galvanized, c/w hex full nut	107743	Not applicable
Bolt, M20, length 450mm, thread length 150mm, galvanized, c/w hex full nut	107751	Not applicable
Bolt, M20, length 530mm, thread length 150mm, galvanized, c/w hex full nut	107786	Not applicable
Bolt, M20, length 750mm, thread length 300mm, galvanized, c/w hex full nut	107790	Not applicable
Bolt, M24, length 60mm, thread length 36mm, galvanized, c/w hex full nut	107791	Not applicable
Bolt, M20, pigtail hook, ABC, galvanized (ENA TS 43-14)	107792	Not applicable
Bolt, pole step, M16, length 425mm, thread length 300mm, galvanized, c/w 2 hex full nuts and 2 square curved washers	139387	I-400F1-FAS-012
Bolt, tie rod, M20, length 330mm, thread length 120mm, galvanized, c/w four hex full nuts	133388	I-400F1-FAS-003
Bolt, tie rod, M20, length 450mm, thread length 160mm, galvanized, c/w four hex full nuts	130117	I-400F1-FAS-003
Bolt, tie rod, M20, length 2100mm, thread lengths 750mm and 350mm, galvanized, c/w four hex full nuts	130118	I-400F1-FAS-003
Nail, clout, 3x50mm, galvanized	900162	Not applicable
Nail, clout, 3.75x75mm, galvanized	900173	Not applicable

Nail, screw, drive, 6x60mm, galvanized	991600	I-400F1-FAS-004
Nut, eye, M20, galvanized	122106	I-400F1-FAS-005
Nut, hex, full, M12, galvanized	139289	Not applicable
Nut, hex, full, M12, stainless steel, box of 200	127531	Not applicable
Nut, hex, full, M20, galvanized	990841	Not applicable
Screw, coach, 10x35mm, galvanized	139378	I-400F1-FAS-006
Screw, coach, 10x75mm, galvanized	126810	I-400F1-FAS-006
Screw, coach, 12x100mm, galvanized	139386	I-400F1-FAS-006
Screw, coach, 16x150mm, galvanized	991546	I-400F1-FAS-006
Screw, coach, open-ended hook, length 180mm, thread length 80mm, thread dia 20mm, galvanized	110248	I-400F1-FAS-007
Staple, oval, length 50mm, gape 15mm, wire dia 5mm, galvanized	900171	I-400F1-FAS-008
Staple, oval, length 70mm, gape 25mm, wire dia 6mm, galvanized	133019	I-400F1-FAS-008
Staple, square, length 85mm, gape 44mm, wire dia 8mm, galvanized	900095	I-400F1-FAS-008
Tie, security, length 200mm, width 4.8mm, plastic, pack of 100	299758	Not applicable
Washer, round, flat, 13mm hole, outer dia 24mm, thickness 1.6mm, stainless steel, box of 200	139467	Not applicable
Washer, round, flat, 14mm hole, outer dia 24mm, thickness 2.5mm, galvanized	992968	I-400F1-FAS-009
Washer, round, flat, 18mm hole, outer dia 30mm, thickness 3mm, galvanized	992992	I-400F1-FAS-009
Washer, round, flat, 22mm hole, outer dia 37mm, thickness 3mm, galvanized	993018	I-400F1-FAS-009
Washer, round, flat, 26mm hole, outer dia 44mm, thickness 4mm, galvanized	993019	I-400F1-FAS-009

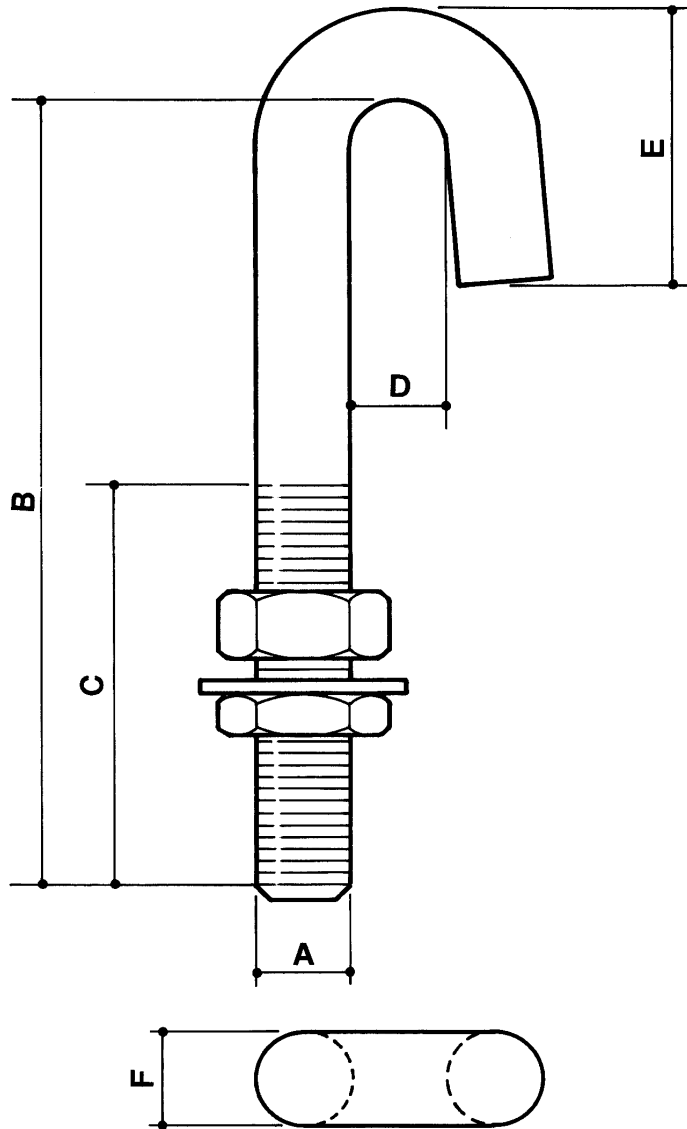
Washer, spring, M12, stainless steel, box of 500	139475	Not applicable
Washer, square, curved, 60x60x6mm, 22mm hole, galvanized	139203	I-400F1-FAS-010
Washer, square, flat, 50x50x2mm, 18mm hole, galvanized	139211	I-400F1-FAS-011
Washer, square, flat, 65x65x3mm, 22mm hole, galvanized	139262	I-400F1-FAS-011
Washer, square, flat, 75x75x6mm, 22mm hole, galvanized	139351	I-400F1-FAS-011
Washer, tapered, square, curved (ENA TS 439607)	139352	Refer to ENA TS 43-96, Drawing 439607



BOLT EYE

scale

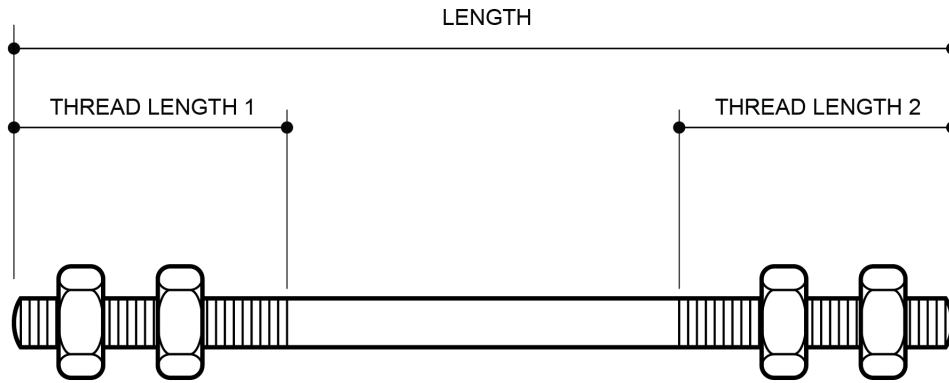
nts



CC NO	A	B	C	D	E	F
109592	M16	175	150	25	45	Ø 16
109533	M20	130	70	20	50	Ø 20
109576	M20	170	65	20	45	Ø 20

BOLT  
J  
C/W HEX FULL NUT, HEX HALF NUT  
AND FLAT ROUND WASHER

scale  
nts



CC NO	BOLT DIA	LENGTH	THREAD LENGTH 1	THREAD LENGTH 2
133388	M20	330	120	120
130117	M20	450	160	160
130118	M20	2100	750	350

Scale:  
nts

BOLT  
TIE ROD  
C/W FOUR HEX FULL NUTS

**Electricity  
north west**

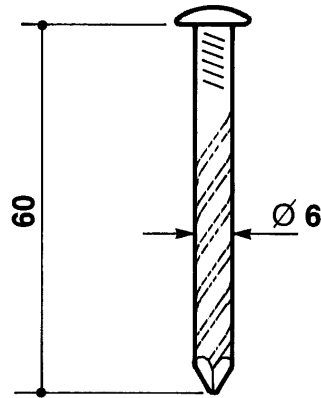
Drawn: JL

Drawing Number:

Approved: DMT 17.06.11

I-400F1-FAS-003-11-1





CC 991600



scale

nts

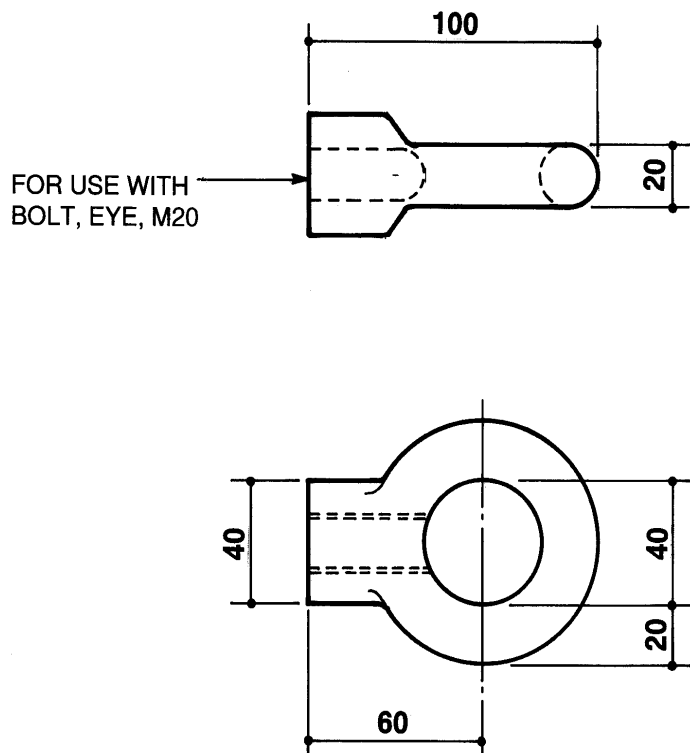
NAIL  
DRIVE SCREW

drawn JS

drawing number

approved RG 30.10.06

I-400F1-FAS-004-11-1



CC 122106



drawn JS

drawing number

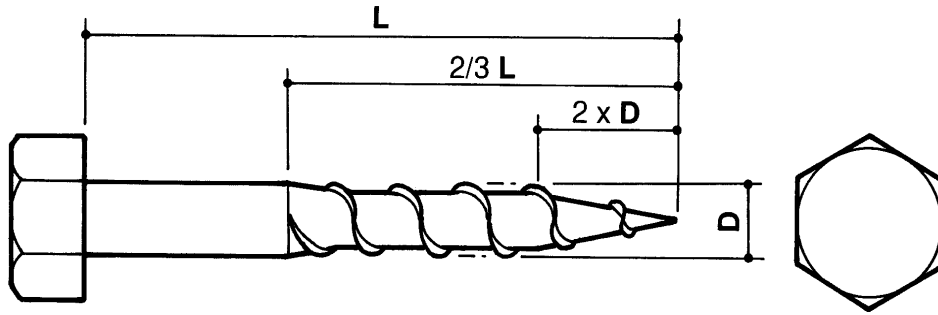
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I-400F1-FAS-005-11-1

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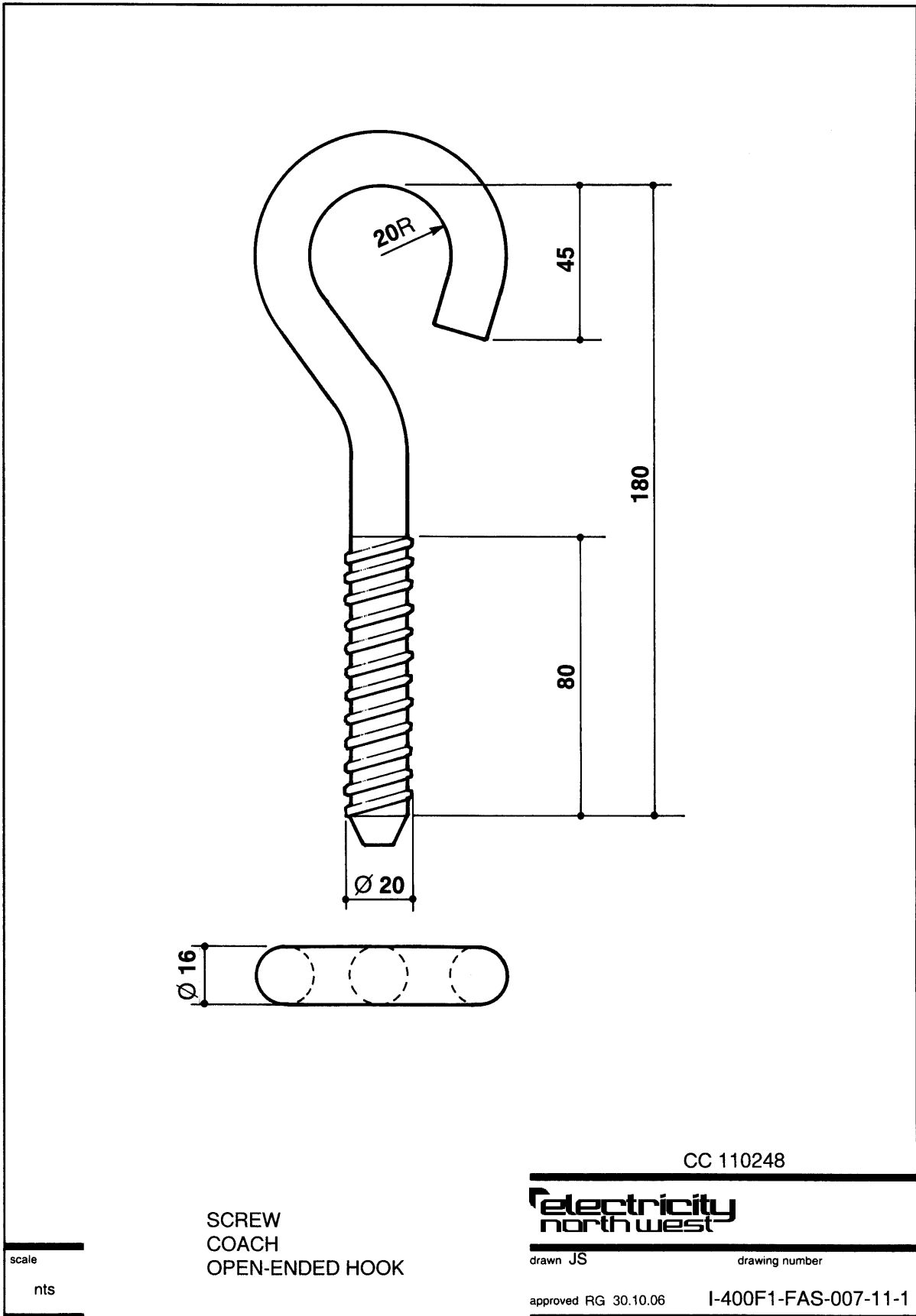
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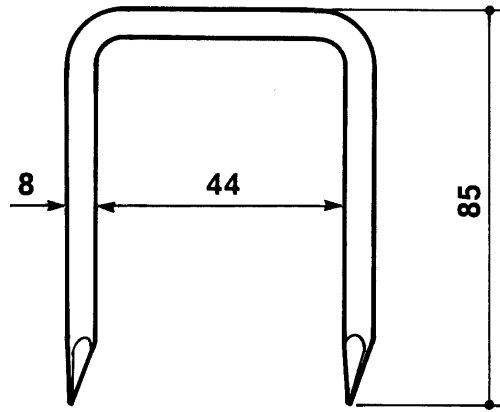
NUT  
EYE



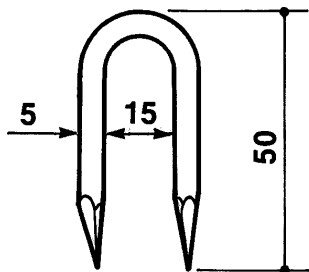
CC NO	D	L	THREAD DEPTH	NOMINAL THREAD / CM
139378	Ø 10	35	1.5	3
126810	Ø 10	75	1.5	3
139386	Ø 12	100	1.8	2.5
991546	Ø 16	150	2.4	2

NOTE  
SCREWS MAY BE SUPPLIED WITH SQUARE HEADS  
IN ACCORDANCE WITH ENATS 43 - 96

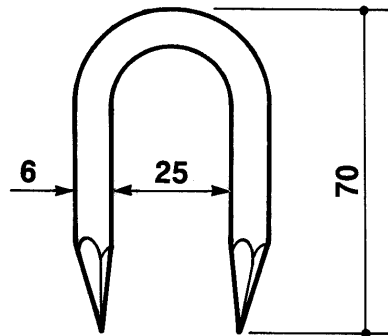




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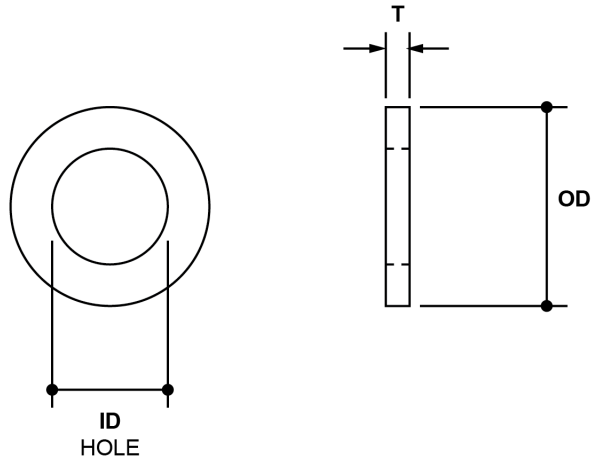


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STAPLES

scale

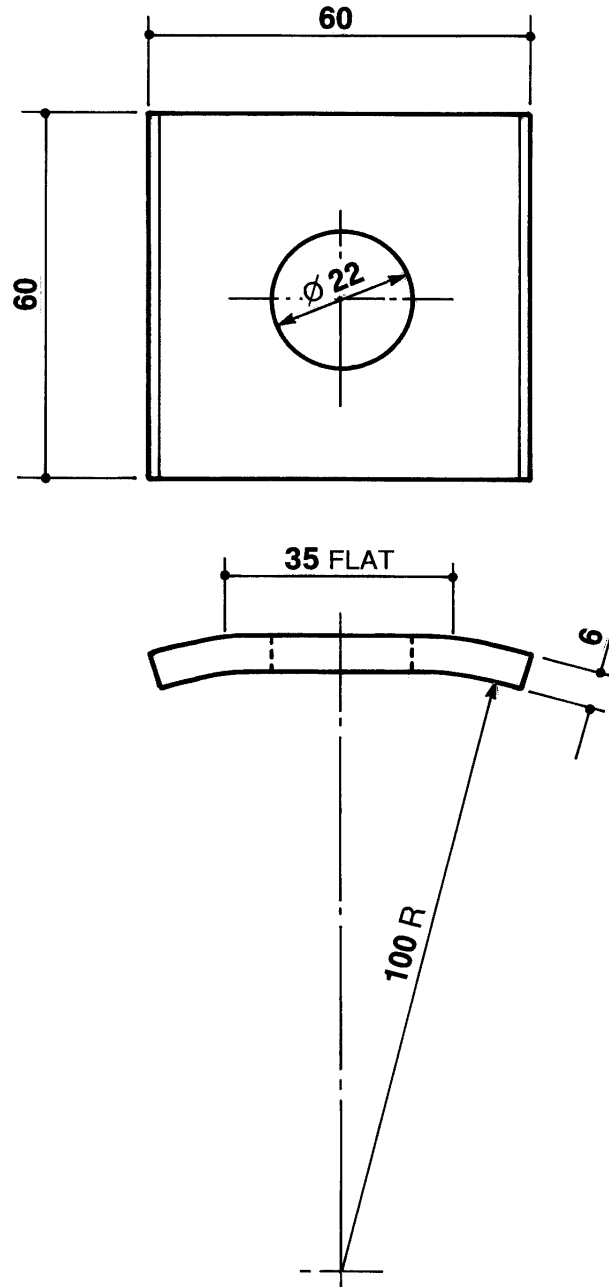
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CC NO	ID	OD	T
992968	14	24	2.5
992992	18	30	3
993018	22	37	3
993019	26	44	4

WASHER  
ROUND  
FLAT

Scale:  
nts

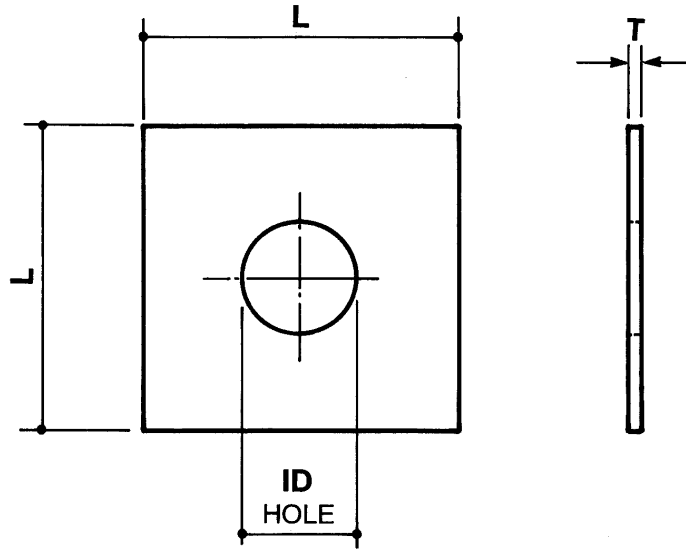


CC 139203

WASHER  
SQUARE  
CURVED

scale

nts



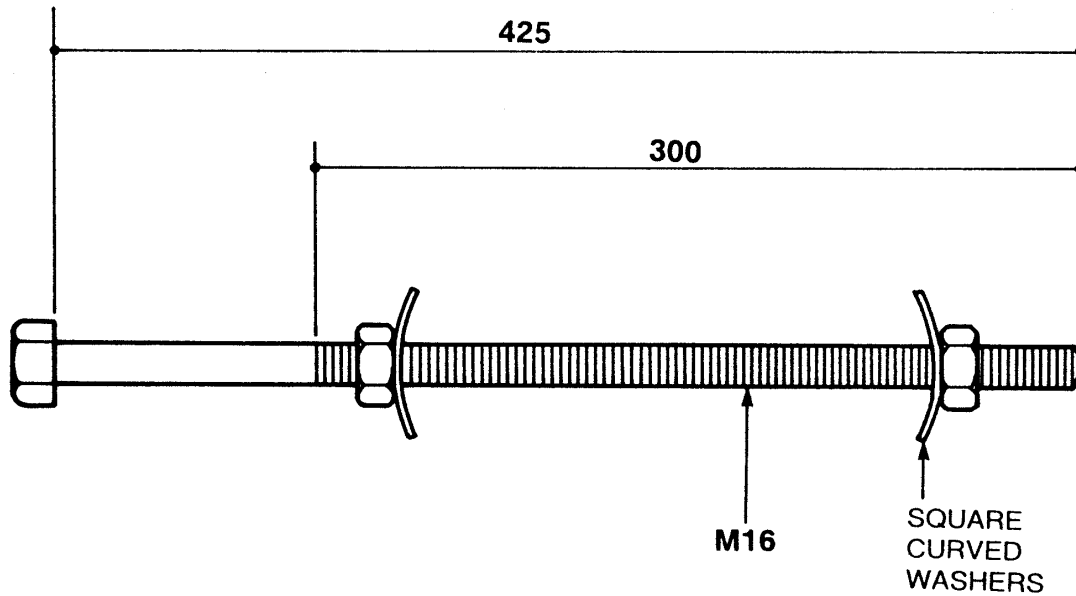
CC NO	L	ID	T
139211	50	18	2
139262	65	22	3
139351	75	22	6

WASHER  
SQUARE  
FLAT

scale

nts





BOLT  
POLE STEP  
M16, LENGTH 425mm,  
THREAD LENGTH 300mm,  
GALVANIZED, C/W 2 HEX FULL NUTS  
AND 2 SQUARE CURVED WASHERS

CC 139387

**Electricity  
north west**

scale

nts

drawn JS

drawing number

approved RG 10.4.08

I-400F1-FAS-012-11-1