

Wheeled Loading Shovel - 434S/435S

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General Information

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Section 1 - General Information

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Introduction

About this Publication

Machine Model and Serial Number

This manual provides information for the following model(s) in the JCB machine range:

434S From machine 1244000

435S: From 2063353 to 2063382.

Using the Service Manual

T11-004
This publication is designed for the benefit of JCB Distributor Service Engineers who are receiving, or have received, training by JCB Technical Training Department.

These personnel should have a sound knowledge of workshop practice, safety procedures, and general techniques associated with the maintenance and repair of hydraulic earthmoving equipment.

The illustrations in this publication are for guidance only. Where the machines differ, the text and/or the illustration will specify.

General warnings in Section 2 are repeated throughout the manual, as well as specific warnings. Read all safety statements regularly, so you do not forget them.

Renewal of oil seals, gaskets, etc., and any component showing obvious signs of wear or damage is expected as a matter of course. It is expected that components will be cleaned and lubricated where appropriate, and that any opened hose or pipe connections will be blanked to prevent excessive loss of hydraulic fluid and ingress of dirt.

Where a torque setting is given as a single figure it may be varied by plus or minus 3%. Torque figures indicated are for dry threads, hence for lubricated threads may be reduced by one third.

The manufacturer's policy is one of continuous improvement. The right to change the specification of the machine without notice is reserved. No responsibility will be accepted for discrepancies which may occur between specifications of the machine and the descriptions contained in this publication.

Finally, please remember above all else safety must come first!

Section Numbering

T11-005
The manual is compiled in sections, the first three are numbered and contain information as follows:

- 1** General Information - includes torque settings and service tools.
- 2** Care and Safety - includes warnings and cautions pertinent to aspects of workshop procedures etc.
- 3** Maintenance - includes service schedules and recommended lubricants for all the machine.

The remaining sections are alphabetically coded and deal with Dismantling, Overhaul etc. of specific components, for example:

- A** Attachments
- B** Body and Framework, etc.

Section contents, technical data, circuit descriptions, operation descriptions etc. are inserted at the beginning of each alphabetically coded section.

Left Side, Right Side

In this manual, 'left' **A** and 'right' **B** mean your left and right when you are seated correctly in the machine.

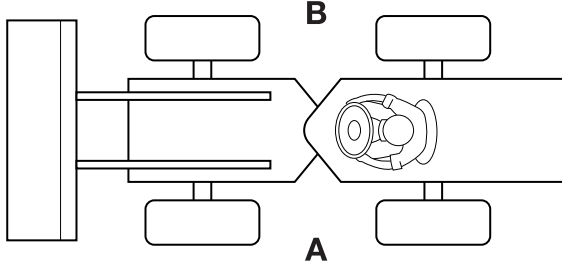


Fig 1.

T033800-1

Cab/Canopy

T1-003_2

This manual frequently makes references to the cab. For instance, 'do not operate the machine without a manual in the cab'. It should be noted that these statements also apply to canopy build machines.

Cross References

T1-004_2

In this publication, page cross references are made by presenting the subject title printed in bold, italic and underlined. It is preceded by the 'go to' symbol. The number of the page upon which the subject begins, is indicated within the brackets. For example: [⇒ Cross References \(1-2\)](#).

Component Location

Note: The illustration(s) show a typical machine model; your machine may look different from the model shown. For example, the 435S has a diesel particulate filter.

| | |
|---|-------------------------------------|
| 1 | Shovel |
| 2 | Loader arms |
| 3 | Beacon |
| 4 | ROPS/FOPS cab |
| 5 | Engine cover |
| 6 | Articulation lock |
| 7 | Heater door |
| 8 | Hydraulic fluid level - sight glass |

| | |
|----|--|
| 9A | Tool box (434S) |
| 9B | Tool box (435S) |
| 10 | Battery isolator switch |
| 11 | Rear grille |
| 12 | Coolant filler cap |
| 13 | Air filter assembly |
| 14 | Hydraulic fluid filter |
| 15 | Fuel filter - suction side |
| 16 | Hydraulic fluid filler cap |
| 17 | Fuel filter - pressure side |
| 18 | Engine oil dipstick |
| 19 | Engine oil filler cap |
| 20 | Exhaust |
| 21 | Radiator |
| 22 | Diesel filler point |
| 23 | Engine oil filter |
| 24 | Transmission oil dipstick/filler point |
| 25 | Coolant header tank |

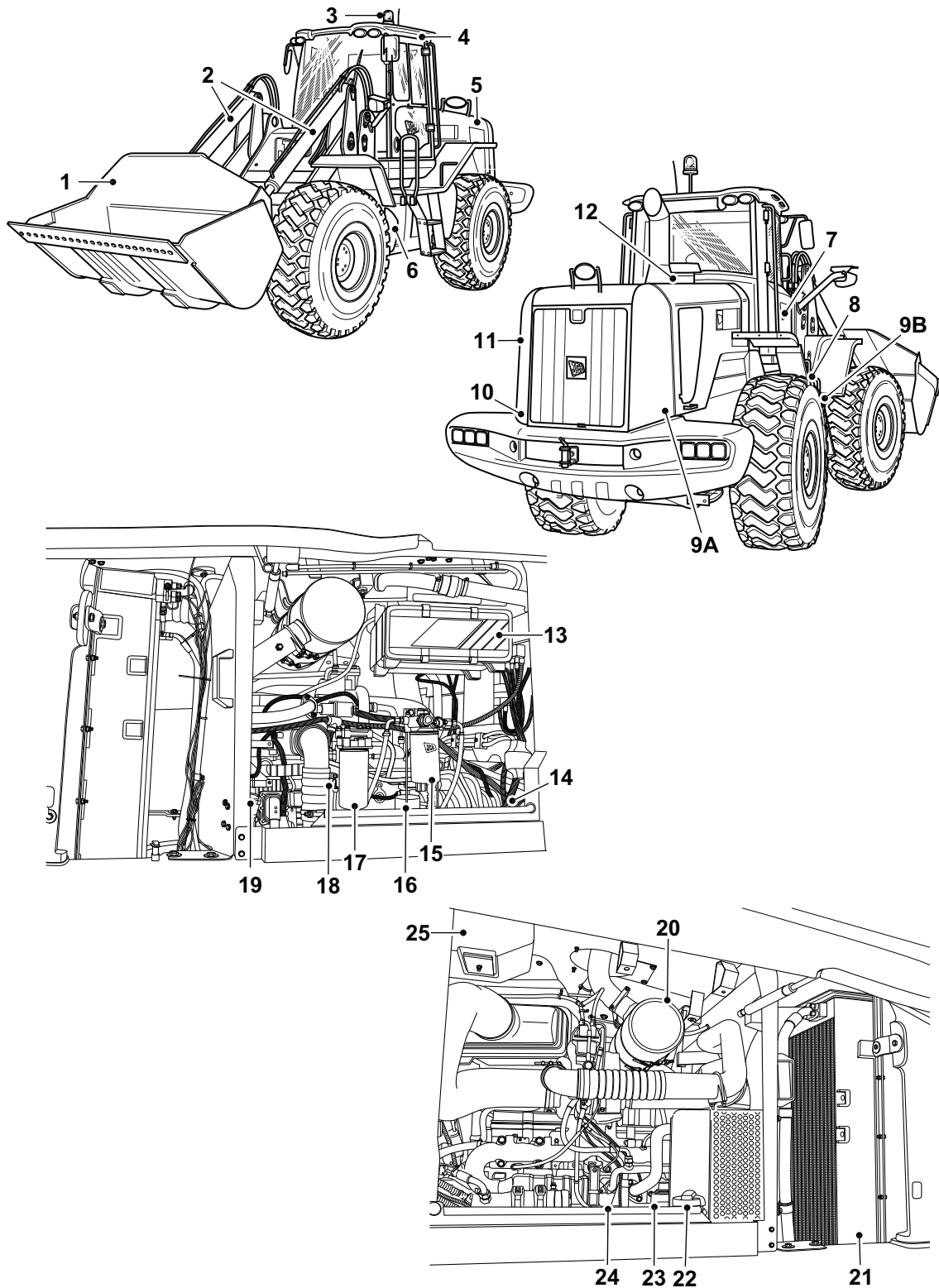


Fig 2.

T066060-10A

Identifying your Machine

434S

Identification Plate

Your machine has an identification plate **3X** mounted on the left hand side of the machine. The serial numbers of the machine and its major units are stamped on the plate.

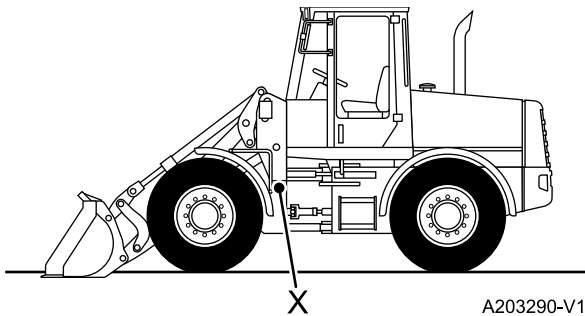


Fig 3.

Explanation of Vehicle Identification Number (VIN)

| | | | | |
|-----|-------|---|---|---------|
| 1 | 2 | 3 | 4 | 5 |
| SLP | 43400 | 6 | E | 1244000 |

- 1 World Manufacturer Identification, SLP = JCB
- 2 Machine Model, 43400 = 434
- 3 Year of Manufacture 6, (W = 1998, X = 1999, Y = 2000, 1 = 2001, 2 = 2002, 3 = 2003, 4 = 2004, 5 = 2005, 6 = 2006, 7 = 2007, etc.)
- 4 Manufacturing Location (E = England)
- 5 Machine Serial Number (1244000)

The serial number of each major unit is also stamped on the unit itself. If a major unit is replaced by a new one, the serial number on the identification plate will be wrong. Either stamp the new number of the unit on the identification plate, or simply stamp out the old number. This will prevent the wrong unit number being quoted when replacement parts are ordered.

The machine and engine serial numbers can help identify exactly the type of equipment you have.

Unit Identification

The engine serial number is stamped on a plate **4Y** which is fastened to the right side of the cylinder block, near the fuel filter.

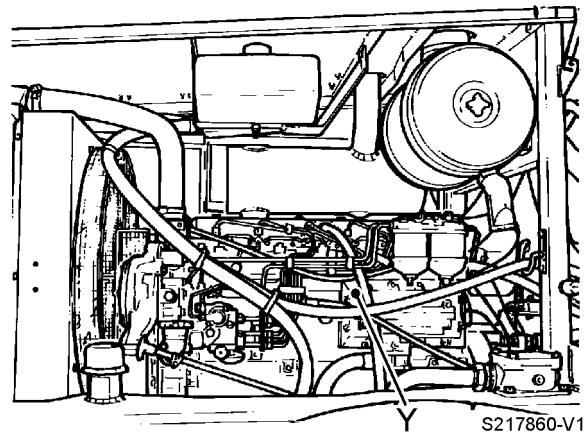


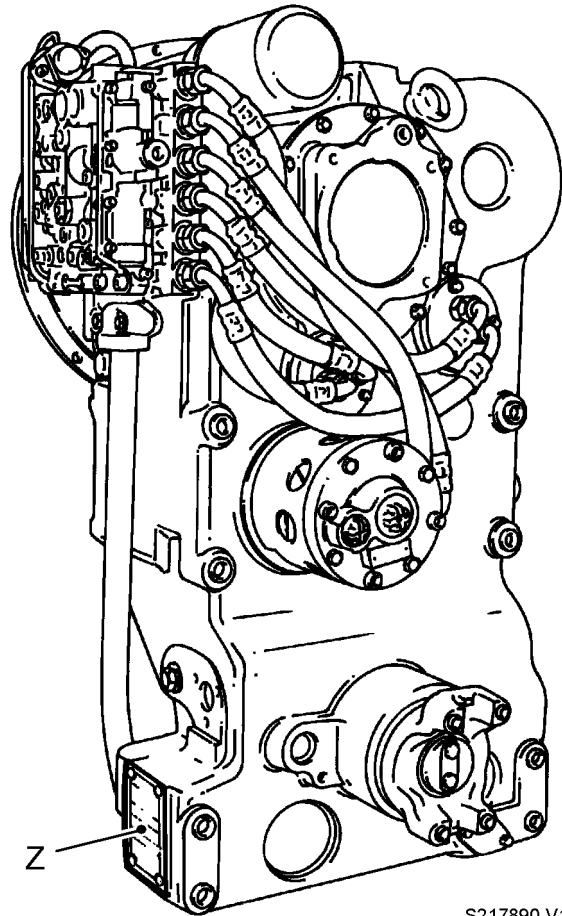
Fig 4.

Typical Engine Identification Number

| 1 | 2 | 3 | 4 | 5 |
|----|-------|---|--------|---|
| YB | 50457 | U | 576887 | 6 |

- 1 Engine Type, YB = 6 cylinder turbo
- 2 Build Number
- 3 Country of Origin
- 4 Engine Sequence Number
- 5 Year of Manufacture

The Transmission serial number is stamped on plate **5Z** as shown.



S217890-V1

Fig 5.

Component Identification Plates

FOPS Data Plate

WARNING

Do not use the machine if the falling objects protection level provided by the structure is not sufficient for the application. Falling objects can cause serious injury.

8-2-8-17

If the machine is used in any application where there is a risk of falling objects then a falling-objects protective structure (FOPS) must be installed. For further information contact your JCB Dealer

The falling objects protection structure (FOPS) is fitted with a dataplate. The dataplate indicates what level protection the structure provides.

There are two levels of FOPS:

- **Level I Impact Protection** - impact strength for protection from small falling objects (e.g. bricks, small concrete blocks, hand tools) encountered in operations such as highway maintenance, landscaping and other construction site services.
- **Level II Impact Protection** - impact strength for protection from heavy falling objects (e.g. trees, rocks) for machines involved in site clearing, overhead demolition or forestry.

ROPS Data Plate

WARNING

Seat Belts

The ROPS/FOPS is designed to give you protection in an accident. If you do not wear your seat belt, you could be thrown out of the machine and crushed. You must wear a seat belt when using the machine. Fasten the seat belt before starting the engine.

0153

Machines built to the ROPS/FOPS standard have a data plate attached to the inside of the cab.

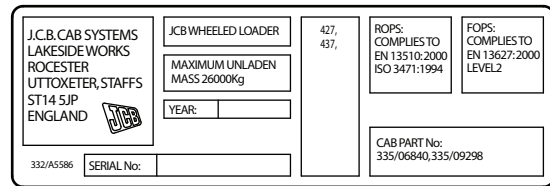


Fig 6. Example

332-A5586-1

435S

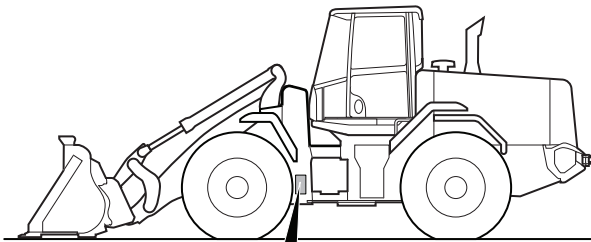
Machine Identification Plate

Your machine has an identification plate mounted as shown. The serial numbers of the machine and its major units are stamped on the plate.

Note: The machine model and build specification is indicated by the PIN. Refer to **Typical Product Identification Number (PIN)**.

The serial number of each major unit is also stamped on the unit itself. If a major unit is replaced by a new one, the serial number on the identification plate will be wrong. Either stamp the new number of the unit on the identification plate, or simply stamp out the old number. This will prevent the wrong unit number being quoted when replacement parts are ordered.

The machine and engine serial numbers can help identify exactly the type of equipment you have.



| | |
|---|-----------------------------------|
| J.C.B. EARTHMOVERS LIMITED LAKESIDE WORKS, ROCESTER UTTOXETER, UNITED KINGDOM ST14 5JP | |
| VIN Vehicle Identification Number | PIN Product Identification Number |
| ENGINE SERIAL NUMBER | FRONT AXLE SERIAL NUMBER |
| TRANSMISSION SERIAL NUMBER | REAR AXLE SERIAL NUMBER |
| WEIGHT kg | YEAR OF CONST. |
| | ENGINE POWER kW @ RPM |
| MACHINE TYPE | HOMOLOGATION No. |

Fig 7.

T033550-2

Typical Product Identification Number

| | | | | | |
|-----|------|---|---|---|---------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| JCB | 435S | Z | O | C | 2063353 |

1 World Manufacturer Identification (3 Digits)

2 Model Number (3 Digits)

3 Loader End Type (1 Digit)

O = HT Loader End

Z = ZX Loader End

4 Designation (1 Digit)

S = Farmmaster

O = Non Farmmaster

I = India

5 Year of Manufacture (1 Digit)

7 = 2007

A = 2010

8 = 2008

B = 2011

9 = 2009

C = 2012

6 Machine Serial Number (8 Digits)

Each machine has a unique serial number.

Torque Settings

Zinc Plated Fasteners and Dacromet Fasteners

T11-002

Introduction

Some external fasteners on JCB machines are manufactured using an improved type of corrosion resistant finish. This type of finish is called Dacromet and replaces the original Zinc and Yellow Plating used on earlier machines.

The two types of fasteners can be readily identified by colour and part number suffix. ⇒ [Table 1. Fastener Types](#) (□ 1-9).

Table 1. Fastener Types

| Fastener Type | Colour | Part No. Suffix |
|-----------------|-----------------------|-----------------------|
| Zinc and Yellow | Golden finish | 'Z' (e.g. 1315/3712Z) |
| Dacromet | Mottled silver finish | 'D' (e.g. 1315/3712D) |

Note: As the Dacromet fasteners have a lower torque setting than the Zinc and Yellow fasteners, the torque figures used must be relevant to the type of fastener.

Note: A Dacromet bolt should not be used in conjunction with a Zinc or Yellow plated nut, as this could change the torque characteristics of the torque setting further. For the same reason, a Dacromet nut should not be used with a Zinc or Yellow plated bolt.

Note: All bolts used on JCB machines are high tensile and must not be replaced by bolts of a lesser tensile specification.

Note: Dacromet bolts, due to their high corrosion resistance are used in areas where rust could occur. Dacromet bolts are only used for external applications. They are not used in applications such as gearbox or engine joint seams or internal applications.

Bolts and Screws

Use the following torque setting tables only where no torque setting is specified in the text.

Note: Dacromet fasteners are lubricated as part of the plating process, do not lubricate.

Torque settings are given for the following conditions:

Condition 1

- Un-lubricated fasteners
- Zinc fasteners
- Yellow plated fasteners

Condition 2

- Zinc flake (Dacromet) fasteners
- Lubricated zinc and yellow plated fasteners
- Where there is a natural lubrication. For example, cast iron components

Verbus Ripp Bolts

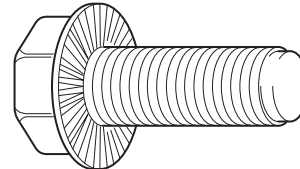


Fig 8.

Torque settings for these bolts are determined by the application. Refer to the relevant procedure for the required settings.



Section 1 - General Information Torque Settings

Zinc Plated Fasteners and Dacromet Fasteners

Table 2. Torque Settings - UNF Grade 'S' Fasteners

| Bolt Size | | Hexagon (A/F) | Condition 1 | | | Condition 2 | | |
|-----------|------|---------------|-------------|-------|--------|-------------|-------|--------|
| in. | mm | in. | Nm | kgf m | lbf ft | Nm | kgf m | lbf ft |
| 1/4 | 6.3 | 7/16 | 11.2 | 1.1 | 8.3 | 10.0 | 1.0 | 7.4 |
| 5/16 | 7.9 | 1/2 | 22.3 | 2.3 | 16.4 | 20.0 | 2.0 | 14.7 |
| 3/8 | 9.5 | 9/16 | 40.0 | 4.1 | 29.5 | 36.0 | 3.7 | 26.5 |
| 7/16 | 11.1 | 5/8 | 64.0 | 6.5 | 47.2 | 57.0 | 5.8 | 42.0 |
| 1/2 | 12.7 | 3/4 | 98.0 | 10.0 | 72.3 | 88.0 | 9.0 | 64.9 |
| 9/16 | 14.3 | 13/16 | 140.0 | 14.3 | 103.2 | 126.0 | 12.8 | 92.9 |
| 5/8 | 15.9 | 15/16 | 196.0 | 20.0 | 144.6 | 177.0 | 18.0 | 130.5 |
| 3/4 | 19.0 | 1 1/8 | 343.0 | 35.0 | 253.0 | 309.0 | 31.5 | 227.9 |
| 7/8 | 22.2 | 1 15/16 | 547.0 | 55.8 | 403.4 | 492.0 | 50.2 | 362.9 |
| 1 | 25.4 | 1 1/2 | 814.0 | 83.0 | 600.4 | 732.0 | 74.6 | 539.9 |
| 1 1/8 | 31.7 | 1 7/8 | 1181.0 | 120.4 | 871.1 | 1063.0 | 108.4 | 784.0 |
| 1 1/4 | 38.1 | 2 1/4 | 1646.0 | 167.8 | 1214.0 | 1481.0 | 151.0 | 1092.3 |

Table 3. Torque Settings - Metric Grade 8.8 Fasteners

| Bolt Size | | Hexagon (A/F) | Condition 1 | | | Condition 2 | | |
|-------------------|----|---------------|-------------|-------|--------|-------------|-------|--------|
| ISO Metric Thread | mm | mm | Nm | kgf m | lbf ft | Nm | kgf m | lbf ft |
| M5 | 5 | 8 | 5.8 | 0.6 | 4.3 | 5.2 | 0.5 | 3.8 |
| M6 | 6 | 10 | 9.9 | 1.0 | 7.3 | 9.0 | 0.9 | 6.6 |
| M8 | 8 | 13 | 24.0 | 2.4 | 17.7 | 22.0 | 2.2 | 16.2 |
| M10 | 10 | 17 | 47.0 | 4.8 | 34.7 | 43.0 | 4.4 | 31.7 |
| M12 | 12 | 19 | 83.0 | 8.5 | 61.2 | 74.0 | 7.5 | 54.6 |
| M16 | 16 | 24 | 205.0 | 20.9 | 151.2 | 184.0 | 18.8 | 135.7 |
| M20 | 20 | 30 | 400.0 | 40.8 | 295.0 | 360.0 | 36.7 | 265.5 |
| M24 | 24 | 36 | 690.0 | 70.4 | 508.9 | 621.0 | 63.3 | 458.0 |
| M30 | 30 | 46 | 1372.0 | 139.9 | 1011.9 | 1235.0 | 125.9 | 910.9 |
| M36 | 36 | 55 | 2399.0 | 244.6 | 1769.4 | 2159.0 | 220.0 | 1592.4 |



Section 1 - General Information Torque Settings

Zinc Plated Fasteners and Dacromet Fasteners

Table 4. Metric Grade 10.9 Fasteners

| Bolt Size | | Hexagon (A/F) | Condition 1 | | | Condition 2 | | |
|-------------------|----|---------------|-------------|-------|--------|-------------|-------|--------|
| ISO Metric Thread | mm | mm | Nm | kgf m | lbf ft | Nm | kgf m | lbf ft |
| M5 | 5 | 8 | 8.1 | 0.8 | 6.0 | 7.3 | 0.7 | 5.4 |
| M6 | 6 | 10 | 13.9 | 1.4 | 10.2 | 12.5 | 1.3 | 9.2 |
| M8 | 8 | 13 | 34.0 | 3.5 | 25.0 | 30.0 | 3.0 | 22.1 |
| M10 | 10 | 17 | 67.0 | 6.8 | 49.4 | 60.0 | 6.1 | 44.2 |
| M12 | 12 | 19 | 116.0 | 11.8 | 85.5 | 104.0 | 10.6 | 76.7 |
| M16 | 16 | 24 | 288.0 | 29.4 | 212.4 | 259.0 | 26.4 | 191.0 |
| M20 | 20 | 30 | 562.0 | 57.3 | 414.5 | 506.0 | 51.6 | 373.2 |
| M24 | 24 | 36 | 971.0 | 99.0 | 716.9 | 874.0 | 89.1 | 644.6 |
| M30 | 30 | 46 | 1930.0 | 196.8 | 1423.5 | 1737.0 | 177.1 | 1281.1 |
| M36 | 36 | 55 | 3374.0 | 344.0 | 2488.5 | 3036.0 | 309.6 | 2239.2 |

Table 5. Metric Grade 12.9 Fasteners

| Bolt Size | | Hexagon (A/F) | Condition 1 | | | Condition 2 | | |
|-------------------|----|---------------|-------------|-------|--------|-------------|-------|--------|
| ISO Metric Thread | mm | mm | Nm | kgf m | lbf ft | Nm | kgf m | lbf ft |
| M5 | 5 | 8 | 9.8 | 1.0 | 7.2 | 8.8 | 0.9 | 6.5 |
| M6 | 6 | 10 | 16.6 | 1.7 | 12.2 | 15.0 | 1.5 | 11.1 |
| M8 | 8 | 13 | 40.0 | 4.1 | 29.5 | 36.0 | 3.7 | 26.5 |
| M10 | 10 | 17 | 80.0 | 8.1 | 59.0 | 72.0 | 7.3 | 53.1 |
| M12 | 12 | 19 | 139.0 | 14.2 | 102.5 | 125.0 | 12.7 | 92.2 |
| M16 | 16 | 24 | 345.0 | 35.2 | 254.4 | 311.0 | 31.7 | 229.4 |
| M20 | 20 | 30 | 674.0 | 68.7 | 497.1 | 607.0 | 61.9 | 447.7 |
| M24 | 24 | 36 | 1165.0 | 118.8 | 859.2 | 1048.0 | 106.9 | 773.0 |
| M30 | 30 | 46 | 2316.0 | 236.2 | 1708.2 | 2084.0 | 212.5 | 1537.1 |
| M36 | 36 | 55 | 4049.0 | 412.9 | 2986.4 | 3644.0 | 371.6 | 2687.7 |



Section 1 - General Information Torque Settings

Zinc Plated Fasteners and Dacromet Fasteners

Table 6. Torque Settings - Rivet Nut Bolts/Screws

| Bolt Size | | Nm | kgf m | lbf ft |
|-------------------|----|------|-------|--------|
| ISO Metric Thread | mm | | | |
| M3 | 3 | 1.2 | 0.1 | 0.9 |
| M4 | 4 | 3.0 | 0.3 | 2.0 |
| M5 | 5 | 6.0 | 0.6 | 4.5 |
| M6 | 6 | 10.0 | 1.0 | 7.5 |
| M8 | 8 | 24.0 | 2.5 | 18.0 |
| M10 | 10 | 48.0 | 4.9 | 35.5 |
| M12 | 12 | 82.0 | 8.4 | 60.5 |

Table 7. Torque Settings - Internal Hexagon Headed Cap Screws (Zinc)

| Bolt Size | | Nm | kgf m | lbf ft |
|-------------------|--|--------|-------|--------|
| ISO Metric Thread | | | | |
| M3 | | 2.0 | 0.2 | 1.5 |
| M4 | | 6.0 | 0.6 | 4.5 |
| M5 | | 11.0 | 1.1 | 8.0 |
| M6 | | 19.0 | 1.9 | 14.0 |
| M8 | | 46.0 | 4.7 | 34.0 |
| M10 | | 91.0 | 9.3 | 67.0 |
| M12 | | 159.0 | 16.2 | 117.0 |
| M16 | | 395.0 | 40.0 | 292.0 |
| M18 | | 550.0 | 56.0 | 406.0 |
| M20 | | 770.0 | 79.0 | 568.0 |
| M24 | | 1332.0 | 136.0 | 983.0 |

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