

## VMS 55

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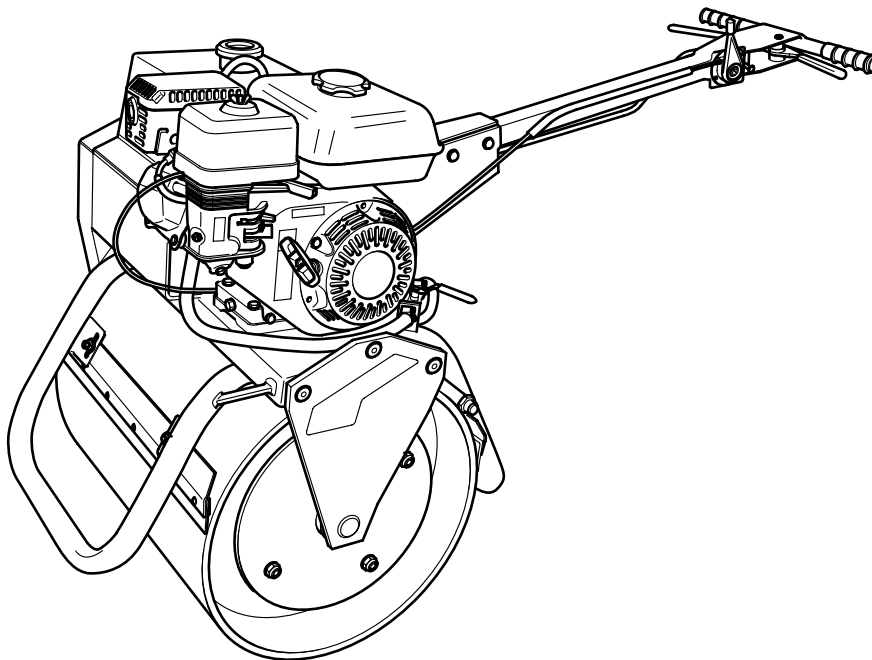
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# Section 1 - General Information

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# Introduction

## About this Manual

### Machine Model and Serial Number

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

- VMS 55 from SN 1401000 to SN 1401999

### 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.

### Units of Measurement

T1-001\_2  
In this publication, the S.I. system of units is used. For example, liquid capacities are given in litres. The Imperial units follow in parentheses ( ) eg 28 litres (6 gal).

### Left Side, Right Side

In this manual, 'left' and 'right' mean your left and right when you are standing behind the machine, holding the hand grips.

### 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*** ( ***1-1*** ).

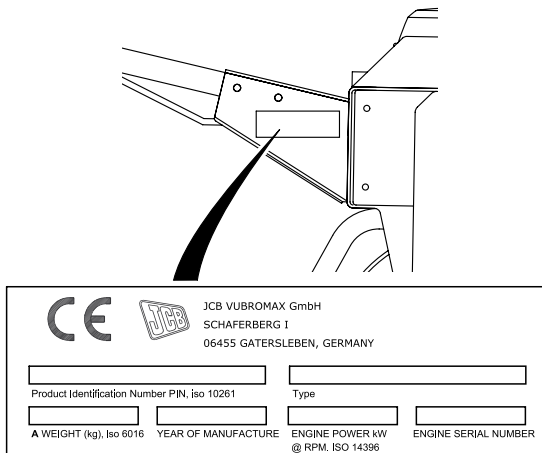
### Identifying Your Machine

#### Machine Identification Plate

Your machine has an identification plate mounted as shown. ⇒ Fig 1. (□ 1-2). The serial numbers of the machine and its major units are stamped on the plate.

The serial number of each major unit is also stamped on the unit itself. ⇒ Fig 2. (□ 1-3). 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.



V015660

Fig 1.

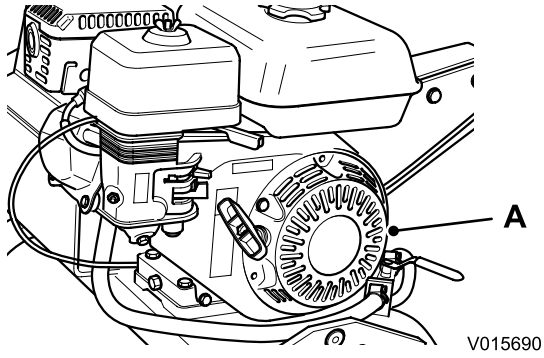
#### Typical Product Identification Number (PIN)

**JBP VMS55 C 7 1410000**  
**1 2 3 4 5**

- 1 World Manufacturer Identification (3 Digits)
- 2 Machine Model (5 Digits)  
VMS55
- 3 Randomly Generated Check Letter (1 Digit)
- 4 Year of Manufacture (1 Digit):  
7 = 2007  
8 = 2008  
9 = 2009
- 5 Machine Serial Number (7 Digits)  
Each machine has a unique serial number.

## Component Identification Plates

### Component Identification Plates



**Fig 2.**

**A** Engine 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](#) (1-5).

**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

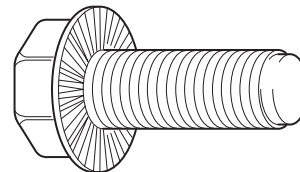


Fig 1.

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



# Section 1 - General Information

## Torque Settings

Vibromax Specific Torque Settings

### Vibromax Specific Torque Settings

Where no special torque data is specified, the following standard torque figures should be applied.

**Table 8. Standard Torque Specifications +/- 10%**

SIZE	GRADE 8.8		GRADE 10.9		GRADE 12.9	
	Nm	lb/ft	Nm	lb/ft	Nm	lb/ft
5mm	5.5	4	7.5	5.5	9	6.6
6mm	9	6.6	12.5	9.2	15	11
8mm	22.5	16.5	31.5	23	36	26.5
10mm	44	32	62	45	75	55
12mm	77.5	57	110	81	130	95
14mm	120	88	170	125	210	155
16mm	190	140	265	195	320	236
18mm	260	192	365	269	435	320
20mm	370	273	520	383	620	457
22mm	500	369	700	516	840	619
24mm	640	471	900	665	1080	796
27mm	950	702	1350	996	1620	1195
30mm	1300	955	1800	1328	2160	1593

**Table 9. Nuts for Tubes and Hoses**

DIAMETER AND PITCH	Nm	lb/ft
16mm X 1.5	20	14.5
18mm X 1.5	35	26
20mm X 1.45	45	33.2
24mm X 1.5	60	44

**Table 10. Fittings, Connections and Plugs**

DIAMETER AND PITCH	Nm	lb/ft
10mm X 1.5	20	14.5
12mm X 1.5	35	26
14mm X 1.5	45	33.2
16mm X 1.5	60	44
18mm X 1.5	70	51
22mm X 1.5	100	73
27mm X 1.5	200	147
33mm X 1.5	280	207
42mm X 1.5	380	281



## Section 1 - General Information Torque Settings

Vibromax Specific Torque Settings

Table 11. Flanges

DIAMETER AND PITCH	Nm	lb/ft
8mm X 1.5	28	21
10mm X 1.5	55	41
12mm X 1.75	90	67
14mm X 2	145	107
15mm X 2	230	170

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