

General Information

Service Manual - Side Engine Loadalls

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Section 1 - General Information

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Introduction

About this Publication

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.

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. Finally, please remember above all else **SAFETY MUST COME FIRST!**

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 & Safety - includes warnings and cautions pertinent to aspects of workshop procedures etc.
- 3 Routine 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. All sections are listed on the front cover.

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.

'Left Hand' and 'Right Hand' are as viewed from the rear of the machine facing forwards.

Applicable Machines

This manual contains topics that relate to JCB side engine Loadall machines with JCB Dieselmex engines and analogue cab instrumentation. → [Fig 1.](#) ([□ 1-1](#))

Serial Numbers 1422000 to 1441999.

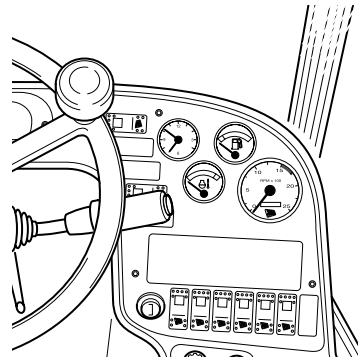









Fig 1.

Schematic Codes

Colour Codes

The following colour coding, used on illustrations to denote various conditions of oil pressure and flow, is standardised throughout JCB Service Publications.

	Red	Full Pressure: Pressure generated from operation of a service. Depending on application this may be anything between neutral circuit pressure and MRV operating pressure.
	Pink	Pressure: Pressure that is above neutral circuit pressure but lower than that denoted by Red.
	Orange	Servo: Oil pressure used in controlling a device (servo).
	Blue	Neural: Neutral circuit pressure.
	Green	Exhaust:
	Light Green	Cavitation: Oil subjected to a partial vacuum due to a drop in pressure (cavitation).
	Yellow	Lock Up: Oil trapped within a chamber or line, preventing movement of components (lock up).

Machine Identification

Machine Identification Plate

The machine has an identification plate mounted as shown. → Fig 2. (□ 1-3). 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 VIN (earlier machines) or PIN (later machines). A detailed description of the VIN/PIN numbering system is included later in this section. → Typical Product Identification Number (PIN) (□ 1-5)

Note: The machine identification plate fitted to European Tractor Type Approved Builds is different to the one shown. → Typical Product Identification Number (PIN) (□ 1-5).

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.

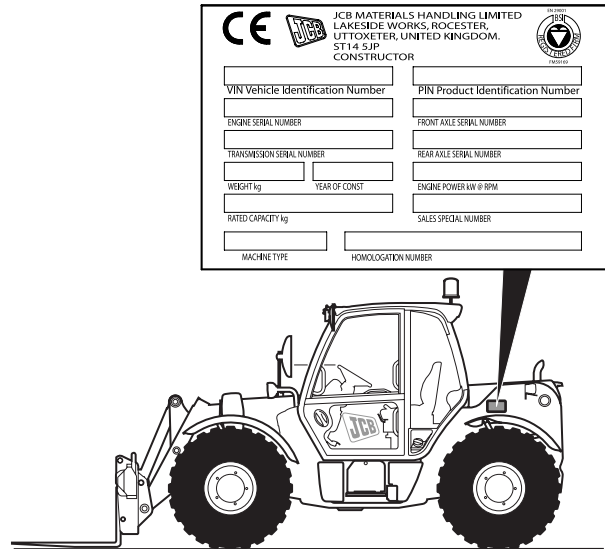


Fig 2.



Typical Vehicle Identification Number (VIN)

SLP 5AA J A 2 E 0123456
1 2 3 4 5 6 7

1 World Manufacturer Identification (3 Digits)

2 Machine Model (3 Digits)

Standard Builds:

5AA = 531-70 5AH = 533-105

5AB = 535-95 5AJ = 535-125

5AC = 536-60 5AK = 535-140

5AD = 541-70 5AL = 540-140

5AF = 540-170

European Tractor Type Approved Builds:

5TA = 531-70 5TC = 536-60

5TB = 541-70 5TD = 535-95

3 Engine Type (1 Digit)

J = JCB Dieselmex (SA Build)

K = JCB Dieselmex (SB Build)

L = JCB Dieselmex (SC Build)

4 Gearbox Model (1 Digit)

E = 3 Speed (PS750) H = 4 Speed (PS760)

F = 3 Speed (PS760) J = 6 Speed (PS760)

G = 4 Speed (PS750)

5 Year of Manufacture:

5 = 2005 7 = 2007

6 = 2006 8 = 2008

6 Manufacturer Location (1 Digit)

E = England

7 Machine Serial Number (7 Digits)

Each machine has a unique serial number.



Section 1 - General Information Machine Identification

Machine Identification Plate

Typical Product Identification Number (PIN)

J	C	B	5	A	A	J	E	C	7	0	1	2	3	4	5	6
1			2			3	4	5	6	7						

7 Machine Serial Number (7 Digits)

Each machine has a unique serial number.

1 World Manufacturer Identification (3 Digits)

2 Machine Model (3 Digits)

Standard Builds:

5AA = 531-70	5AJ = 535-125
5AB = 535-95	5AK = 535-140
5AC = 536-60	5AL = 540-140
5AD = 541-70	5AR = 536-70
5AF = 540-170	
5AH = 533-105	

European Tractor Type Approved Builds:

5TA = 531-70	5TD = 535-95
5TB = 541-70	5TE = 536-70
5TC = 536-60	

3 Engine Type (1 Digit)

JCB Dieselmax (Tier 2):

J = Naturally Aspirated, 63kW (84.5Hp)
K = Turbocharged, 74.2kW (100Hp)
L = Turbocharged and Intercooled, 93kW (125Hp)

4 Gearbox Model (1 Digit)

E = 3 Speed (PS750)	H = 4 Speed (PS760)
F = 3 Speed (PS760)	J = 6 Speed (PS760)
G = 4 Speed (PS750)	M = 4 Speed (SS700)

5 Randomly generated check letter (1 Digit)

6 Year of Manufacture (1 Digit)

7 = 2007	A = 2010
8 = 2008	B = 2011
9 = 2009	C = 2012

European Tractor Type Approved Builds

P5-1003

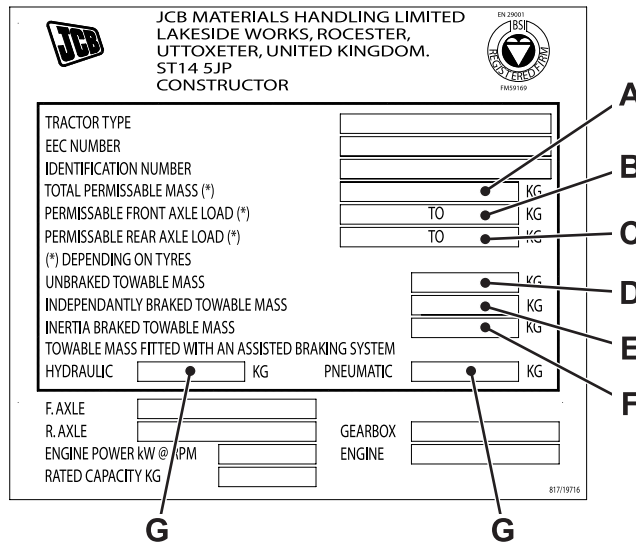


Fig 3.

	531-70	535-95	536-60	536-70	541-70
	kg (lb)	kg (lb)	kg (lb)	kg (lb)	kg (lb)
A Total Permissible Mass	8200 (18073)	8500 (18734)	8200 (18073)	8350 (18403)	8400 (18513)
B Permissible Front Axle Load	From 2400 (5291)	2400 (5291)	2400 (5291)	2400 (5291)	2400 (5291)
	To 6600 (14550)	7300 (16093)	6200 (13668)	7000 (15432)	7000 (15432)
C Permissible Rear Axle Load	From 2400 (5291)	2400 (5291)	2400 (5291)	2400 (5291)	2400 (5291)
	To 6600 (14550)	7300 (16093)	6200 (13668)	7000 (15432)	7000 (15432)
D Unbraked Towable Mass	750 (1653)	750 (1653)	750 (1653)	750 (1653)	750 (1653)
E Independently Braked Towable Mass	6000 (13227)	6000 (13227)	6000 (13227)	6000 (13227)	6000 (13227)
F Inertia Braked Towable Mass	3500 (7716)	3500 (7716)	3500 (7716)	3500 (7716)	3500 (7716)
G Towable Mass Fitted with an Hydraulic/ Pneumatic Assisted Braking System					
10 Tonne Hydraulic Hitch	10000 (22040)	10000 (22040)	10000 (22040)	10000 (22040)	10000 (22040)
Rockinger/Tractor Hitch	17800 (39231)	17100 (37699)	17800 (39231)	17250 (38019)	17200 (37909)

Component Identification Plates

Typical Engine Identification Number

Engine data labels **4A** are located on the cylinder block at position **4C** and rocker cover **4D** (if fitted). The data label contains important engine information and includes the engine identification number **4E**.

A typical engine identification number is explained as follows:

SA 320/40001 U 00001 04
1 2 3 4 5

1 Engine Type

SA = naturally aspirated.

SB = turbocharged.

SC = turbocharged and intercooled.

2 Engine part number

3 Country of manufacture

U = United Kingdom

4 Engine Serial Number

5 Year of Manufacture

The last three parts of the engine identification number are stamped on the cylinder block at position **4B**.

U 00001 04

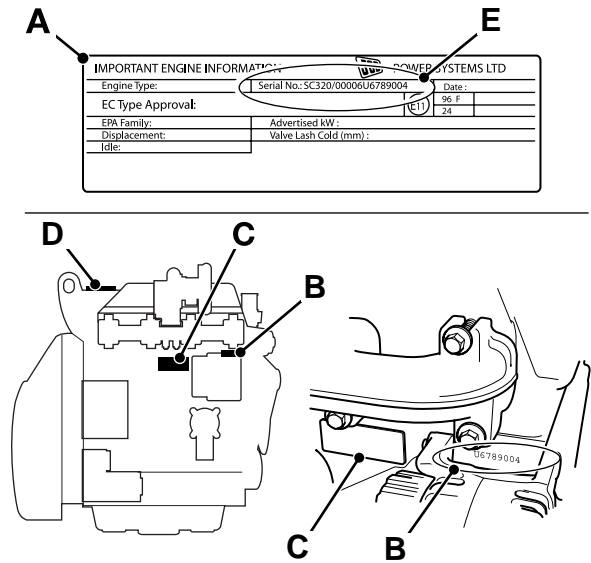


Fig 4. Engine

Transmission Identification Numbers

The transmission components have a serial number stamped on a data plate **A** as shown.

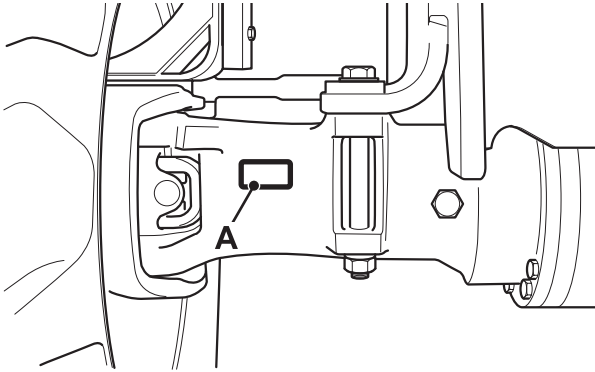


Fig 5. Front Axle

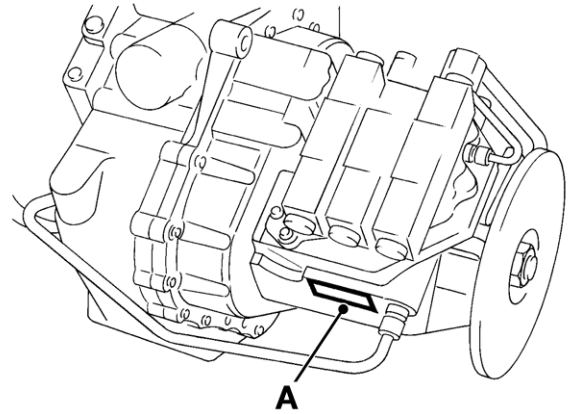


Fig 7. PS750 Powershift Transmission

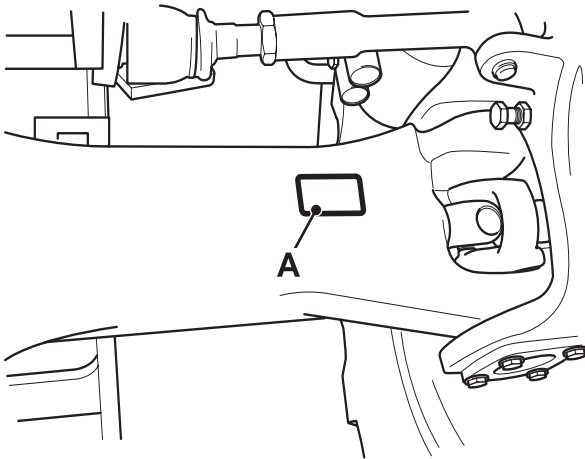


Fig 6. Rear Axle

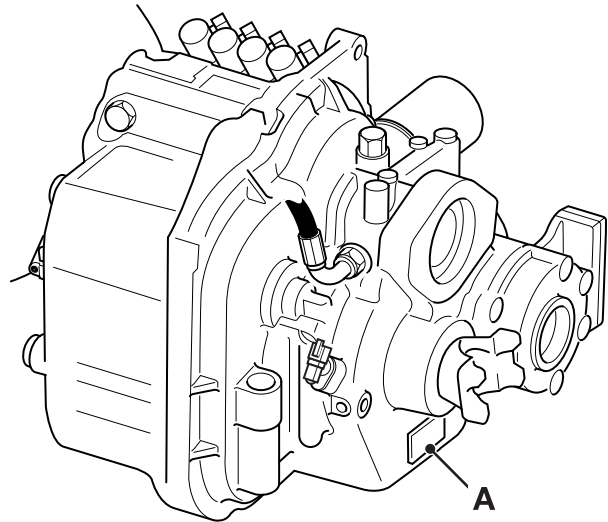


Fig 8. PS760 Powershift Transmission

ROPS/FOPS and OECD Certification Plates

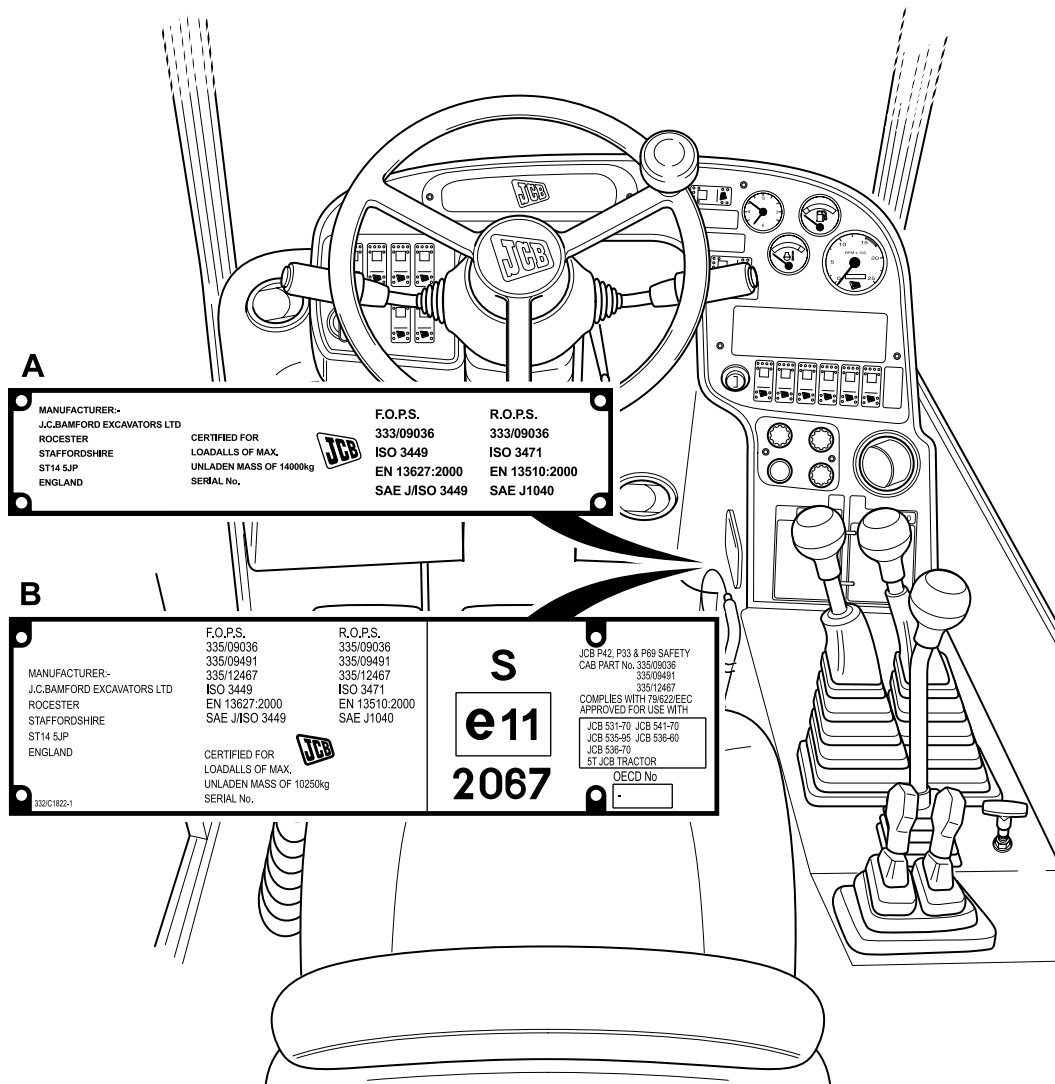


Fig 9.

Machines built to ROPS/FOPS standards have an identification label **A** fitted to the inside of the cab. Machines built to ROPS/FOPS and OECD standards have identification label **B** fitted to the inside of the cab.

Definition of terms:

- ROPS Roll Over Protection Structure
- FOPS Falling Objects Protection Structure
- OECD Organisation for Economic Co-operation and Development.

Fuel

Acceptable and Unacceptable Fuels

Important: No warranty liability whatsoever will be accepted for failure of fuel injection equipment where the failure is attributed to the quality and grade of the fuel used.

CAUTION

Consult your fuel supplier or JCB distributor about the suitability of any fuel you are unsure of.

GEN-9-2

Fuel Specification	Applicable Engines	Service Requirements
EN590 Diesel fuel types - Auto/C0/C1/C2/C3/C4	SA,SB,SC,SD,SE, and SF Engines.	Obey the usual routine maintenance schedules and procedures
BS2869 Class A2		
ASTM D975-91 Class 2, US DF1, US DF2, US DFA		
JIS K2204 (1992) Grades 1, 2, 3 and Special Grade 3		
ASTM D975-91 Class 1DA	SA,SB,SC,SD,SE, and SF Engines. Engines operated with these fuels may have a reduced service life	Obey the usual routine maintenance schedules and procedures. Fuel additives are recommended for use with low sulphur fuels ⇒ Additives (1-12)
MIL T38219 XF63		
NATO F63		
French EN590 (RME5) with 5% maximum		
AVTURFSII, NATO F34, JP8, MIL T83133, DERD 2463, DEF STAN 91-87	SA,SB,SC,SD,SE, and SF Engines. Engines operated with these fuels will have a reduced service life	Obey the usual routine maintenance schedules and procedures. Fuel additives MUST be used ⇒ Additives (1-12)
AVCAT FSII, NATO F44, JP5, MIL T5624, DERD 2452, AVTOR		
NATO F35, JET A1, DEF STAN 91-91, DERD 2494, JP7		
AVCAT, NATO F43 (obsolete), JP5 without additives		
JET A (ASTM D1655)		
ASTM D3699 Kerosene		
B20 Biodiesel - RME content blended with mineral derived diesel (20% maximum) - ASTM D6751, DIN 51606, ISO 14214	SA,SB,SC,SD,SE, and SF Engines. Engines manufactured from 2007 on ONLY⁽¹⁾	YOU MUST obey special routine maintenance schedules and procedures. ⇒ Service Requirements for use of B20 Biodiesel (1-12)



Section 1 - General Information

Fuel

Acceptable and Unacceptable Fuels

Fuel Specification	Applicable Engines	Service Requirements
AVTAG (obsolete)	These fuels are NOT ACCEPTABLE with or without additives. Engines MUST NOT be operated with these fuels	
AVTAG FSII (obsolete), NATO F40, JP4, DERD 2454		
JET B (ASTM D1655)		
BS MA100		
JIS K2203 No.2		
Unmodified vegetable oils		

(1) The year of manufacture is part of the engine serial number. Refer to Typical Engine Identification Number

Acceptable and Unacceptable Fuels

Additives

The additives listed below are advertised as being suitable for bringing the lubricity levels of kerosene/low sulphur fuels up to those of diesel fuels. They must be used as specified by your fuel supplier who will understand the concentration level necessary.

- Elf 2S 1750. Dosage 1000-1500 ppm (0.1 - 0.15%), specifically for Indian Superior Kerosene (SKO) but may be applicable to other fuels.
- Lubrizol 539N. Dosage (on Swedish low sulphur fuel) 250 ppm.
- Paradyne 7505 (from Infineum). Dosage 500 ppm (0.05%).

Note: These products are given as examples only. The information is derived from the manufacturers data. The products are not recommended or endorsed by JCB.

Service Requirements for use of B20 Biodiesel

- The engine oil must be a grade CH4 as minimum specification.
- Do not leave unused B20 biodiesel in the fuel tank for extended periods (top up each day).
- Make sure that 1 in 5 fuel tank fills use standard diesel to EN590 specification, this will help to prevent 'gumming'.
- Make sure regular oil sampling is completed (look for excessive unburnt fuel content, water or wear particles).
- Change the engine oil and filter more frequently (as a minimum half the recommended intervals), or as indicated by oil sampling.
- Change the fuel filters more frequently (as a minimum half the recommended intervals), or if there are engine performance related issues.
- Make sure the fuel is stored correctly, care must be taken to make sure no water enters the machine fuel tank (or the storage tank). Water will encourage micro-bacterial growth.
- Make sure that the fuel pre-filter is drained daily (not every week as currently advised).
- Only JCB engines built after Jan. 2007 are applicable (i.e. engines with 07 on the end of their serial number

and factory filled with CH4 oil) - this is not approved with other manufacturers.

- Use heater kits in low ambient temperature territories.
- The biodiesel must meet the following standards: ASTM D6751, DIN 51606, ISO 14214

Note: If necessary use a test kit to confirm the fuel specification. Testing kits are available (not from JCB currently), use the internet as a source for the kits.

Note: If performance related issues are to be reported to JCB Service, and the engine has been run on biodiesel, then the fuel system must be filled with standard diesel (at least 2 x tank fills) to EN590 specification and relevant stall speeds recorded prior to making the report.

Warranty

JCB have shown a commitment to support the environment by approving the use of biodiesel blended fuels.

Using a B20 blend of biodiesel requires caution and additional servicing of the engine is required. [⇒ Service Requirements for use of B20 Biodiesel \(1-12\)](#).

Failure to follow the additional recommended service requirements may lead to a warranty claim being declined.

Failures resulting by the incorrect use of biodiesels or other fuel additives are not defects of the JCB Dieselmix engine workmanship and therefore will not be supported by JCB Warranty.

Fuel Types

Note: The information that follows does not indicate types of fuel that are acceptable or unacceptable. ⇒ [Acceptable and Unacceptable Fuels \(□ 1-10\)](#).

Any fuel purchased for operation of the JCB Dieselmix engine must be purchased from reputable oil producers/outlets and stored in accordance with the manufacturers recommendations. ⇒ [Effects of Fuel Contaminates \(□ 1-16\)](#)

- 1 Diesel - mineral derived, hydrocarbon fuels to European standard EN590 or equivalent.
- 2 Low Sulphur Diesel - mineral derived, hydrocarbon fuels to EN590 or equivalent. This fuel has totally replaced automotive (road use) diesel in the European Union since October 1996 and has sulphur limited to a maximum of 0.05% by weight.
- 3 Ultra Low Sulphur Diesel - Reformulated mineral derived, hydrocarbon fuels to EN590 or equivalent. Now widely available in the UK, mainland Europe and some parts of the USA. Sulphur limited to a maximum of 0.005% by weight or lower. ⇒ [Sulphur Content \(□ 1-15\)](#)
- 4 Vegetable Oil -unmodified. Certain pure vegetable oils (sunflower oil, rapeseed oil etc.)
- 5 Biodiesel - chemically modified vegetable oil. By chemically modifying vegetable oils, methyl esters of that oil are produced. These are collectively known as "Fatty Acid Methyl Esters" (FAME) or "Vegetable Oil Methyl Esters" (VOME).

Note: Refer also to additional information. ⇒ [Usage and Effects of Fuels \(□ 1-14\)](#).

Usage and Effects of Fuels

Note: The information that follows does not indicate types of fuel that are acceptable or unacceptable. ⇒ [Acceptable and Unacceptable Fuels \(□ 1-10\)](#).

1 Low Sulphur Diesel

In its basic form because of the process of reducing sulphur by removal of sulphur containing compounds (which contribute to mechanical lubrication) an increase in the wear rate of the fuel injection equipment could occur. In view of this, the major fuel producers add suitable lubricity improvers to enable the FIE to run satisfactorily, with no acceleration in wear rate. They must ensure that the lubricity improvers do not themselves create residual deposits that could block the fuel system e.g. filter, injectors etc.

In addition to the lubrication effect there can also be a further reduction in the aromatic content of the fuel which can lead to shrinking/cracking of traditionally nitrile rubber seals throughout the fuel injection equipment that has previously been exposed to higher sulphur level fuels. The major fuel producers tend to maintain the total aromatic content to an acceptable level (15% by volume).

2 Ultra Low Sulphur Diesel

Also known as 'city diesel'. Available throughout the UK and some parts of Europe since March 1999. This fuel has a maximum sulphur content of 0.005% by weight and a further reduction in the natural lubricity and aromatic content than experienced with low sulphur diesel. Major oil producers will add lubrication improvers and also maintain the total aromatic content to an acceptable level.

3 Unmodified Vegetable Oils

Burned in diesel engines neat or used as an extender to mineral derived fuel. When these are subjected to heat in the fuel injection system they form sticky deposits that can be found inside the fuel pump and a hard lacquer in the injectors where exposure to even higher temperatures takes place.

4 Chemically Modified Vegetable Oils (FAME/VOME)

These fuels have been derived from a wide range of vegetable oils and animal fats, resulting in better

stability, viscosity and cetane number than those produced from unmodified vegetable oils, but it is recognised that there are potential problems associated with the finished fuel characteristics. These oils are less stable than mineral oil derived fuels when stored and they will readily degrade producing fatty acids, methanol and water, none of which are desirable in the FIE. These effects are known to be accelerated when the fuel is stored in the presence of air and water together.

An extract 'common statement' from the FIE manufactures specifies that "The fuel injection equipment manufacturers can accept no liability whatsoever for failure attributable to operating their products with fuels for which the products were not designed, and no warranties or representations are made as to the possible effects of running these products with such fuels".

The three most common Fame types are RME - Rapeseed methyl ester (preferred crop in Europe), SME - Soyabean methyl ester (preferred crop in USA). Less common FAME's can be derived from animal fats (e.g. modified beef extracts) and reclaimed cooking oils.

5 B20 Biodiesel

Biodiesel refers to pure fuel (FAME/VOL) before it is blended with diesel fuel ⇒ [Chemically Modified Vegetable Oils \(FAME/VOME\) \(□ 1-14\)](#). When biodiesel is blended with diesel fuel it is referred to as B5, B20 etc., where the number indicates the percentage of biodiesel in the fuel, for example B5 contains 5% biodiesel.

Biodiesel has different characteristics than mineral based fuels in that it is able to mix with water and therefore will have a high water retention capacity - this could lead to seals swelling, fuel system corrosion and seal damage.

Biodiesels will 'cloud' at higher temperatures than mineral based fuels. To explain Cloud Point - the lowest temperature at which fluid can flow and performs its functions is referred to as Pour Point. Just prior to reaching its Pour Point the diesel fluid becomes 'cloudy' due to crystallization of waxy constituents - this is know as Cloud Point. Using diesel at temperature below its cloud point can result

in filter clogging. To prevent this happening pre-heating will be required.

Using B20 biodiesel can result in unburnt fuels accumulating in the engine oil, ultimately this can affect the engine oil efficiency and lead to engine damage (with standard diesel any unburnt fuel evaporates off the lubricating oil). Biodiesels must be stored to exclude water absorption and oxidation.

The natural properties of biodiesel make it a good medium for micro bacterial growth, these microbes can cause fuel system corrosion and early fuel filter blocking. It will be necessary to consult and seek advice from your fuel supplier, the effectiveness of conventional antibacterial additives when used in biodiesel is still being investigated in the fuel industry. A high percentage biodiesel mixture (>20%) can lead to fuel gelling and filter blocking in low temperature operation, it may also effect the power and performance of the engine.

To minimise the risk of engine damage when using a B20 mix, there are additional service requirements. [→ Service Requirements for use of B20 Biodiesel \(1-12\)](#)

If the recommended actions are not taken there may be the following consequences:- low temperature filter clogging- injectors lacquering / sticking- deterioration of seals and rubber hoses- corrosion of metal parts in the fuel system- engine performance problems. These risks will be increased if the fuel has been poorly stored, that is deteriorated through oxidation and / or water absorption.

Sulphur Content

High sulphur content can cause engine wear. (High sulphur fuel is not normally found in North America, Europe or Australia.) If you have to use high sulphur fuel you must change the engine oil more frequently. [→ Table 1. Sulphur Content \(1-15\)](#).

Low sulphur fuels must have the appropriate fuel lubricity additives, these lubricity improvers must not create residual deposits that block the fuel system, e.g. injectors, filters etc. Contact your fuel Supplier.

CAUTION

A combination of water and sulphur will have a corrosive chemical effect on fuel injection equipment. It is essential that water is eradicated from the fuel system when high sulphur fuels are used.

ENG-3-2

Table 1. Sulphur Content

Percentage of sulphur in the fuel (%)	Oil Change Interval
Less than 0.5	Normal
0.5 to 1.0	0.75 of normal
More than 1.0	0.50 of normal

Effects of Fuel Contaminates

The effect of dirt, water and other contaminants in diesel can be disastrous for injection equipment:

- Dirt - A severely damaging contaminant. Finely machined and mated surfaces such as delivery valves and distributor rotors are susceptible to the abrasive nature of dirt particles - increased wear will almost inevitably lead to greater leakage, uneven running and poor fuel delivery.
- Water - water can enter fuel through poor storage or careless handling, and will almost inevitably condense in fuel tanks. The smallest amounts of water can result in effects that are just as disastrous to the fuel injection pump as dirt, causing rapid wear, corrosion and in severe cases, even seizure. It is vitally important that water is prevented from reaching the fuel injection equipment. The filter/water trap must be drained regularly.
- Wax - Wax is precipitated from diesel when the ambient temperature falls below that of the fuel's cloud point, causing a restriction in fuel flow resulting in rough engine running. Special winter fuels may be available for engine operation at temperatures below 0°C (32°F). These fuels have a lower viscosity and limit wax formation.



Section 1 - General Information

Fuel

Acceptable and Unacceptable Fuels

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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 2. Fastener Types](#) (□ 1-18).

Table 2. 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

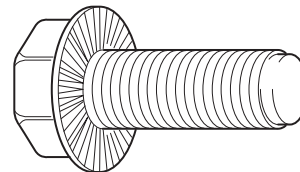


Fig 10.

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 3. 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 4. 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 5. 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 6. 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 7. 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 8. 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

Hydraulic Connections

T11-003

'O' Ring Face Seal System

Adaptors Screwed into Valve Blocks

Adaptor screwed into valve blocks, seal onto an 'O' ring which is compressed into a 45° seat machined into the face of the tapped port.

Table 9. Torque Settings - BSP Adaptors

BSP Adaptor Size	Hexagon (A/F)	Nm	kgf m	lbf ft
	mm			
1/4	19.0	18.0	1.8	13.0
3/8	22.0	31.0	3.2	23.0
1/2	27.0	49.0	5.0	36.0
5/8	30.0	60.0	6.1	44.0
3/4	32.0	81.0	8.2	60.0
1	38.0	129.0	13.1	95.0
1 1/4	50.0	206.0	21.0	152.0

Table 10. Torque Settings - SAE Connections

SAE Tube Size	SAE Port Thread Size	Hexagon (A/F)	Nm	kgf m	lbf ft
		mm			
4	7/16 - 20	15.9	20.0 - 28.0	2.0 - 2.8	16.5 - 18.5
6	9/16 - 18	19.1	46.0 - 54.0	4.7 - 5.5	34.0 - 40.0
8	3/4 - 16	22.2	95.0 - 105.0	9.7 - 10.7	69.0 - 77.0
10	7/8 - 14	27.0	130.0 - 140.0	13.2 - 14.3	96.0 - 104.0
12	1 1/16 - 12	31.8	190.0 - 210.0	19.4 - 21.4	141.0 - 155.0
16	1 5/16 - 12	38.1	290.0 - 310.0	29.6 - 31.6	216.0 - 230.0
20	1 5/8	47.6	280.0 - 380.0	28.5 - 38.7	210.0 - 280.0

Hoses Screwed into Adaptors

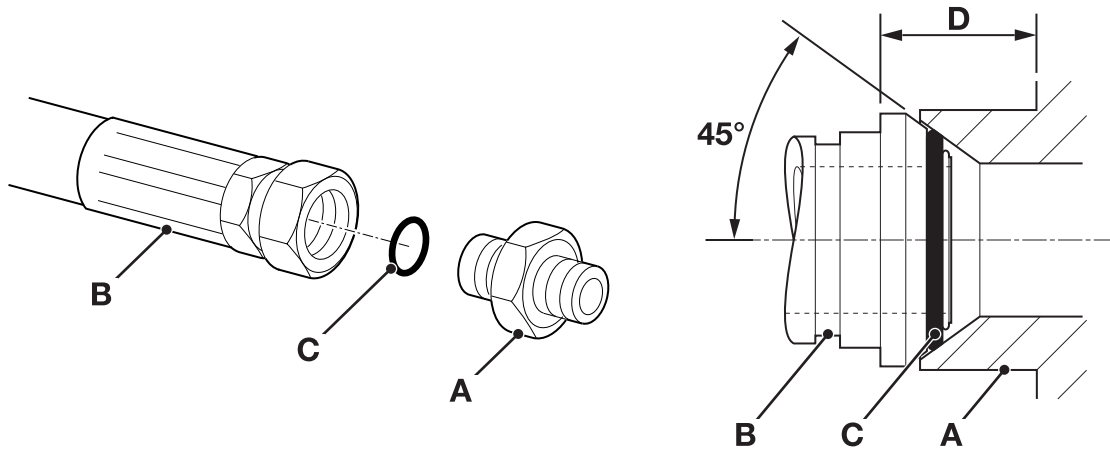


Fig 11.

Hoses 11-B screwed into adaptors 11-A seal onto an 'O' ring 11-C which is compressed into a 45° seat machined into the face of the adaptor port.

Note: Dimension 11-D will vary depending upon the torque applied.

Table 11. BSP Hose - Torque Settings

BSP Hose Size	Hexagon (A/F)	Nm	kgf m	lbf ft
	in.			
1/8		14.0 - 16.00	1.4 - 1.6	10.3 - 11.8
1/4		24.0 - 27.0	2.4 - 2.7	17.7 - 19.9
3/8		33.0 - 40.0	3.4 - 4.1	24.3 - 29.5
1/2		44.0 - 50.0	4.5 - 5.1	32.4 - 36.9
5/8		58.0 - 65.0	5.9 - 6.6	42.8 - 47.9
3/4		84.0 - 92.0	8.6 - 9.4	61.9 - 67.8
1		115.0 - 126.0	11.7 - 12.8	84.8 - 92.9
1 1/4		189.0 - 200.0	19.3 - 20.4	139.4 - 147.5
1 1/2		244.0 - 260.0	24.9 - 26.5	180.0 - 191.8



Section 1 - General Information Torque Settings

Hydraulic Connections

Adaptors into Component Connections with Bonded Washers

Table 12. BSP Adaptors with Bonded Washers - Torque Settings

BSP Size			
in.	Nm	kgf m	lbf ft
1/8	20.0	2.1	15.0
1/4	34.0	3.4	25.0
3/8	75.0	7.6	55.0
1/2	102.0	10.3	75.0
5/8	122.0	12.4	90.0
3/4	183.0	18.7	135.0
1	203.0	20.7	150.0
1 1/4	305.0	31.0	225.0
1 1/2	305.0	31.0	225.0

'Torque Stop' Hose System

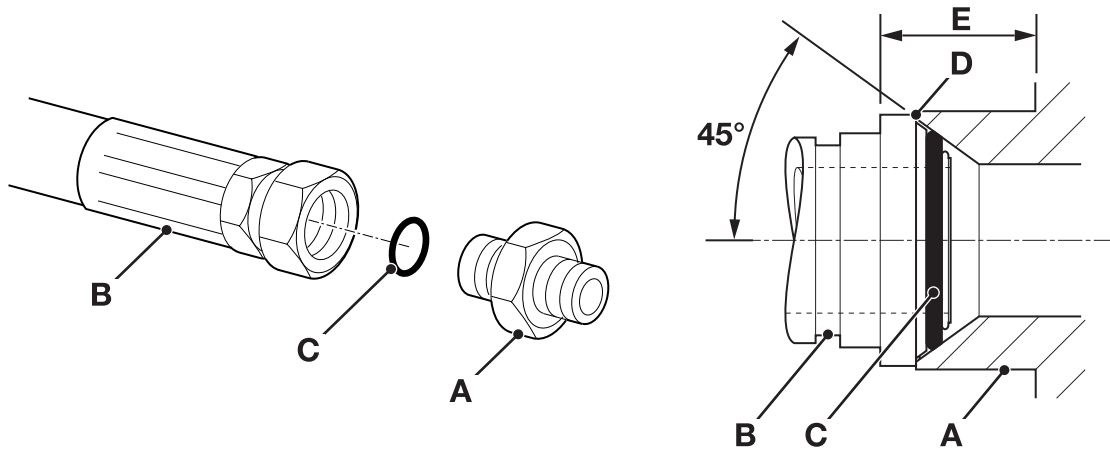


Fig 12.

'Torque Stop' Hoses **12-B** screwed into adaptors **12-A** seal onto an 'O' ring **12-C** which is compressed into a 45° seat machined in the face of the adaptor port. To prevent the 'O' ring being damaged as a result of over tightening, 'Torque

Stop' Hoses have an additional shoulder **12-D**, which acts as a physical stop.

Note: Minimum dimension **12-E** fixed by shoulder **12-D**.

Table 13. BSP 'Torque Stop' Hose - Torque Settings

BSP Hose Size	Hexagon (A/F)	Nm	kgf m	lbf ft
	in.			
1/8		14.0	1.4	10.0
1/4		27.0	2.7	20.0
3/8		40.0	4.1	30.0
1/2		55.0	5.6	40.0
5/8		65.0	6.6	48.0
3/4		95.0	9.7	70.0
1		120.0	12.2	89.0
1 1/4		189.0	19.3	140.0
1 1/2		244.0	24.9	180.0

Service Tools

Numerical List

The tools listed in the table are special tools required for carrying out the procedures described in this manual. These tools are available from JCB Service or, in some instances, can be manufactured locally from the specifications given in this section.

Some tools are supplied as kits or sets. Cross references are given to tables showing the kit contents.

Note: Tools other than those listed will be required. It is expected that such general tools will be available in any well equipped workshop or be available locally from any good tool supplier.

Part Number:	Description:	Tool Detail Reference:
-	AVO Test Kit - see tool detail reference for content	⇒ Fig 31. (□ 1-33)
-	Bonded Washers - see tool detail reference for content	⇒ Fig 46. (□ 1-38)
-	Electrical Repair Kit - see tool detail reference for content	⇒ Fig 34. (□ 1-34)
-	Engine and Transmission Lifting Frame	⇒ Fig 69. (□ 1-46)
-	Female Cone Blanking Plugs - see tool detail reference for content	⇒ Fig 47. (□ 1-39)
-	Female Connectors - see tool detail reference for content	⇒ Fig 50. (□ 1-39)
-	Hydraulic Hand Pump Equipment - see tool detail reference for content	⇒ Fig 51. (□ 1-39)
-	Male Adaptors BSP x BSP - see tool detail reference for content	⇒ Fig 45. (□ 1-38)
-	Male Adaptors BSP x NPT (USA only) - see tool detail reference for content	⇒ Fig 45. (□ 1-38)
-	Male Cone Blanking Caps - see tool detail reference for content	⇒ Fig 49. (□ 1-39)
-	Pressure Test Point `T` Adaptors - see tool detail reference for content	⇒ Fig 41. (□ 1-37)
-	Pressure Test Point Adaptors - see tool detail reference for content	⇒ Fig 42. (□ 1-37)
-	Rivet Nut Tool - see tool detail reference for content	⇒ Fig 13. (□ 1-29)
320/20050	Engine Lifting Bracket Kit	⇒ Fig 68. (□ 1-45)
4104/1310	Hand Cleaner	⇒ Fig 30. (□ 1-32)
460/15708	Flow Test Adaptor (Powershift) - Other components required, see tool detail	⇒ Fig 54. (□ 1-40)
721/10885	Interconnecting Cable - use with 892/01033	⇒ Fig 37. (□ 1-35)
892/00011	Spool Clamp	⇒ Fig 60. (□ 1-42)
892/00229	Flow Meter	⇒ Fig 52. (□ 1-39)
892/00167	Ram Protection Sleeve for 90 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/00180	Seal Fitting Tool - Hydraulic Steer Unit	⇒ Fig 62. (□ 1-43)
892/00181	Replacement Plastic Boss for 892/00180	⇒ Fig 62. (□ 1-43)
892/00253	Hydraulic Pressure Test Kit - see tool detail reference for content	⇒ Fig 40. (□ 1-37)
892/00268	Flow Monitoring Unit - Other components required, see tool detail	⇒ Fig 39. (□ 1-36)
892/00334	Ram Seal Fitting Tool	⇒ Fig 58. (□ 1-41)
892/00812	Drive Coupling Spanner	⇒ Fig 65. (□ 1-43)

Part Number:	Description:	Tool Detail Reference:
892/00822	Splined Bolt Socket	⇒ Fig 64. (□ 1-43)
892/00842	Glass Lifter	⇒ Fig 16. (□ 1-30)
892/00843	Folding Stand for Holding Glass	⇒ Fig 18. (□ 1-30)
892/00844	Long Knife	⇒ Fig 19. (□ 1-30)
892/00845	Cartridge Gun	⇒ Fig 20. (□ 1-30)
892/00846	Glass Extractor (Handles)	⇒ Fig 21. (□ 1-31)
892/00847	Nylon Spatula	⇒ Fig 22. (□ 1-31)
892/00848	Wire Starter	⇒ Fig 23. (□ 1-31)
892/00849	Braided Cutting Wire	⇒ Fig 24. (□ 1-31)
892/00881	Valve Spool Seal Fitting Tool	⇒ Fig 61. (□ 1-42)
892/00905	LMI Test Box	⇒ Fig 33. (□ 1-33)
892/00913	Grease gun attachment - Use where access to the grease nipple is restricted E.g. Axle driveshaft universal joints	⇒ Fig 15. (□ 1-30)
892/00948	Nitrogen Charging Kit (without gauge)	⇒ Fig 55. (□ 1-41)
892/00949	Gauge	⇒ Fig 55. (□ 1-41)
892/00964	Test Point $\frac{1}{8}$ BSP (Powershift)	⇒ Fig 43. (□ 1-38)
892/00965	Test Point $\frac{3}{8}$ BSP (Powershift)	⇒ Fig 44. (□ 1-38)
892/01016	Ram Protection Sleeve for 25 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01017	Ram Protection Sleeve for 30 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01018	Ram Protection Sleeve for 40 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01019	Ram Protection Sleeve for 50 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01020	Ram Protection Sleeve for 50 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01021	Ram Protection Sleeve for 60 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01022	Ram Protection Sleeve for 60 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01023	Ram Protection Sleeve for 65 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01024	Ram Protection Sleeve for 70 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01025	Ram Protection Sleeve for 75 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01026	Ram Protection Sleeve for 80 mm Rod Diameter	⇒ Fig 59. (□ 1-42)
892/01027	Piston Seal Assembly Tool	⇒ Fig 57. (□ 1-41)
892/01033	Electronic Service Tool Kit - also requires 721/10885	⇒ Fig 35. (□ 1-35)
892/01096	Speed Sensor Test Harness (Powershift)	⇒ Fig 36. (□ 1-35)
892/01110	Torque Converter Alignment Tool	⇒ Fig 67. (□ 1-44)
892/01174	Data Link Adaptor Kit	⇒ Fig 38. (□ 1-36)
892/01268	Digital Pressure Gauge 0-400 bar	⇒ Fig 53. (□ 1-40)
892/01271	Hose for Digital Pressure Gauge 892/01268	⇒ Fig 53. (□ 1-40)
926/15500	Rubber Spacer Blocks	⇒ Fig 25. (□ 1-31)
992/01100	Glazing Tool	⇒ Fig 17. (□ 1-30)

Part Number:	Description:	Tool Detail Reference:
992/04000	Torque Multiplier	⇒ Fig 63. (□ 1-43)
992/04800	Flange spanner	⇒ Fig 66. (□ 1-43)
992/09100	Spool Clamp	⇒ Fig 60. (□ 1-42)
992/09300	Hexagon Spanner 55 mm A/F	⇒ Fig 56. (□ 1-41)
992/09400	Hexagon Spanner 65 mm A/F	⇒ Fig 56. (□ 1-41)
992/09500	Hexagon Spanner 75 mm A/F	⇒ Fig 56. (□ 1-41)
992/09600	Hexagon Spanner 85 mm A/F	⇒ Fig 56. (□ 1-41)
992/09700	Hexagon Spanner 95 mm A/F	⇒ Fig 56. (□ 1-41)
992/09800	Hexagon Spanner 105 mm A/F	⇒ Fig 56. (□ 1-41)
992/09900	Hexagon Spanner 115 mm A/F	⇒ Fig 56. (□ 1-41)
992/10000	Hexagon Spanner 125 mm A/F	⇒ Fig 56. (□ 1-41)
992/12300	12V Mobile Oven	⇒ Fig 26. (□ 1-32)
992/12400	24V Static Oven (2 Cartridge)	⇒ Fig 27. (□ 1-32)
992/12600	24V Static Oven (6 Cartridge)	⇒ Fig 27. (□ 1-32)
992/12800	Cut-Out Knife	⇒ Fig 28. (□ 1-32)
992/12801	`L' Blades	⇒ Fig 29. (□ 1-32)
993/68100	Slide Hammer Kit - see tool detail reference for content	⇒ Fig 14. (□ 1-29)
993/85700	Battery Tester	⇒ Fig 32. (□ 1-33)

Tool Detail Reference

- 826/01099 M6 x 16 mm Rivet Nut
- 826/01101 M6 x 19 mm Rivet Nut
- 826/01102 M8 x 18 mm Rivet Nut
- 826/01103 M8 x 21 mm Rivet Nut
- 826/01104 M10 x 23 mm Rivet Nut
- 826/01105 M10 x 26 mm Rivet Nut

Installation Tool Available from:

Bollhoff Fastenings Ltd.

Midacre

The Willenhall Estate

Rose Hill

Willenhall

West Midlands, WV13 2JW

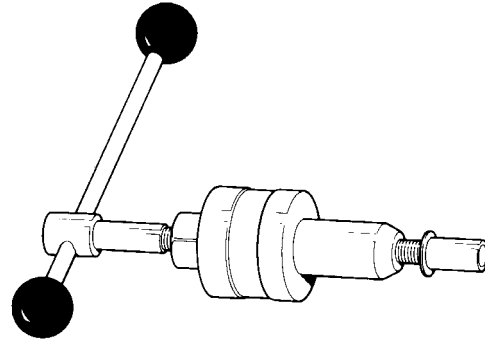


Fig 13. Rivet Nut Tool

- | | |
|--|--|
| <ul style="list-style-type: none"> 1 993/68101 Slide Hammer 2 993/68102 End Stops 3 993/68103 Adaptor - M20 x 5/8" UNF 4 993/68104 Adaptor - M20 x 1" UNF 5 993/68105 Adaptor - M20 x M20 | <ul style="list-style-type: none"> 6 993/68106 Adaptor - M20 x M24 7 993/68107 Bar - M20 x M20 X 800 mm 8 993/68108 Adaptor - M20 x 7/8" UNF 9 993/68109 Adaptor - M20 x M12 10 993/68110 Adaptor - M20 x M16 (Shoulder) 11 993/68111 Adaptor - M20 x 1/2" UNF |
|--|--|

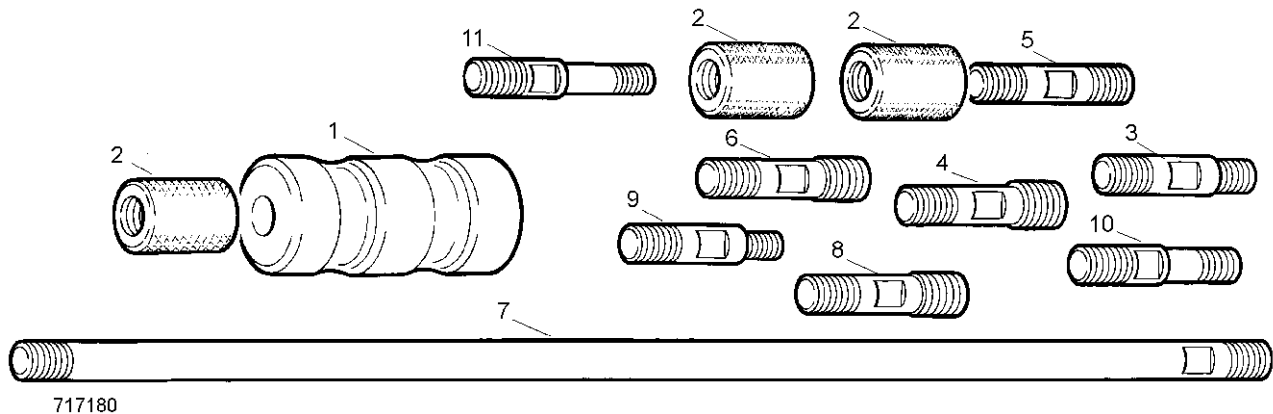


Fig 14. 993/68100 Slide Hammer Kit

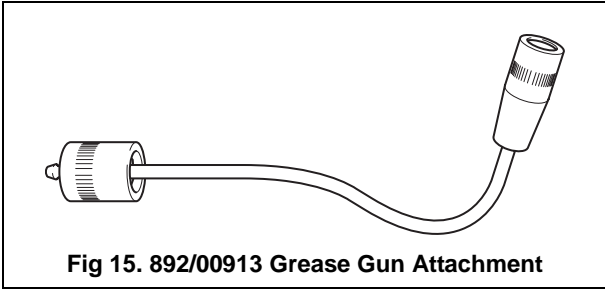


Fig 15. 892/00913 Grease Gun Attachment

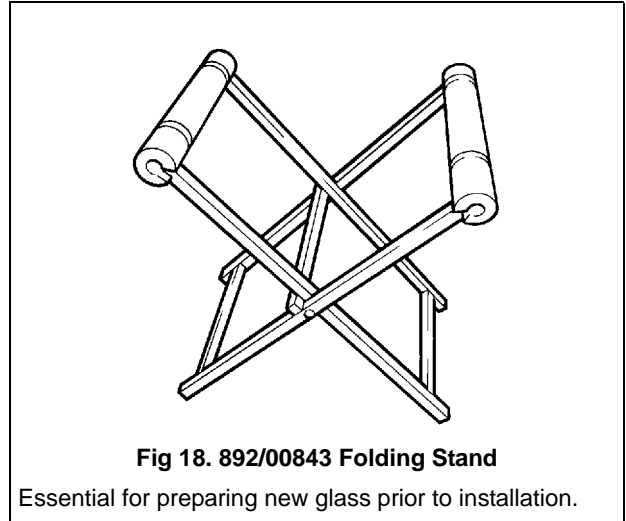


Fig 18. 892/00843 Folding Stand

Essential for preparing new glass prior to installation.

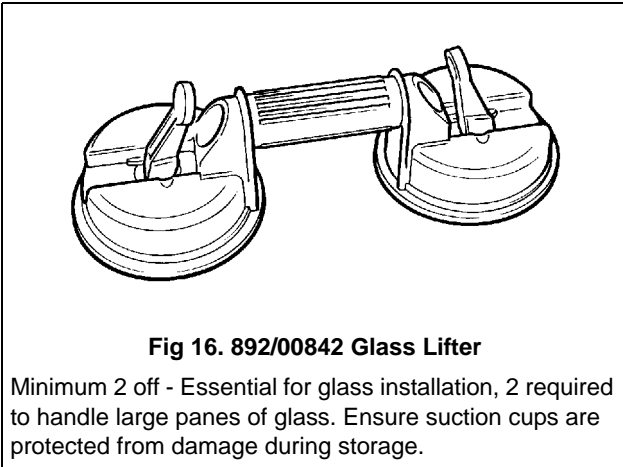


Fig 16. 892/00842 Glass Lifter

Minimum 2 off - Essential for glass installation, 2 required to handle large panes of glass. Ensure suction cups are protected from damage during storage.

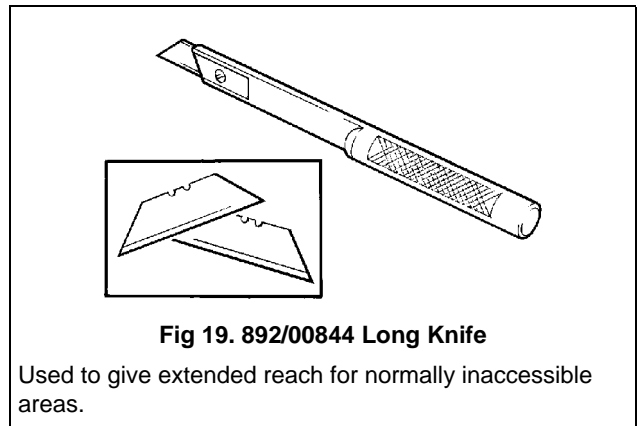


Fig 19. 892/00844 Long Knife

Used to give extended reach for normally inaccessible areas.

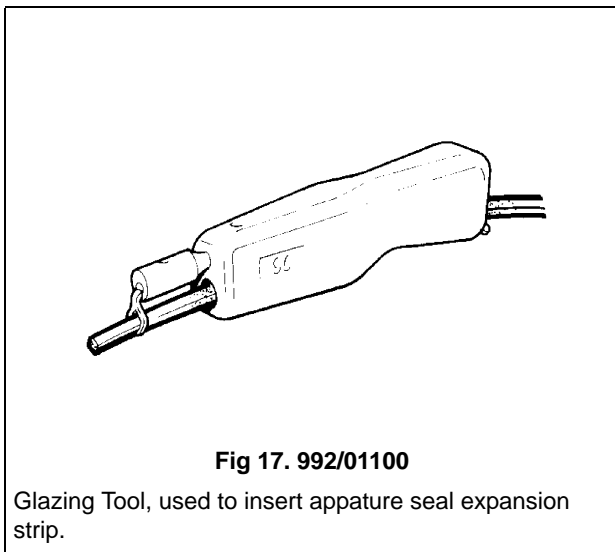


Fig 17. 992/01100

Glazing Tool, used to insert appature seal expansion strip.

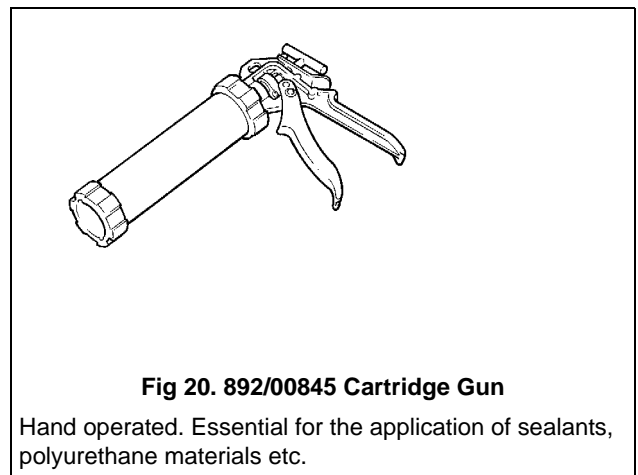


Fig 20. 892/00845 Cartridge Gun

Hand operated. Essential for the application of sealants, polyurethane materials etc.

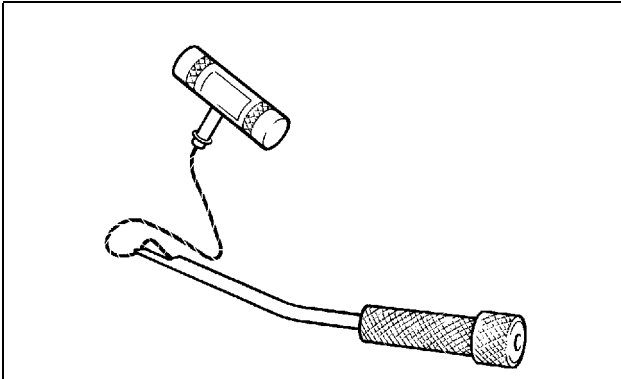


Fig 21. 892/00846 Glass Extractor (Handles)

Used with braided cutting wire → [Fig 24. \(□ 1-31\)](#) to cut out broken glass.

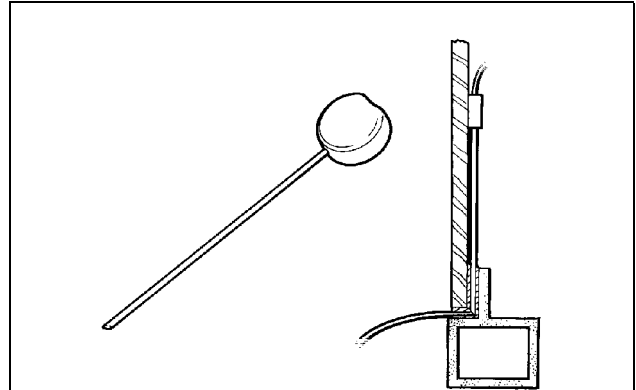


Fig 23. 892/00848 Wire Starter

Used to access braided cutting wire → [Fig 24. \(□ 1-31\)](#) through original polyurethane seal.

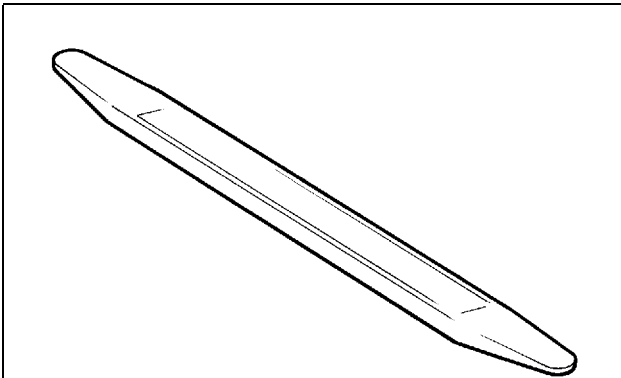


Fig 22. 892/00847 Nylon Spatula

General tool used for smoothing sealants - also used to re-install glass in rubber glazing because metal tools will chip the glass edge.

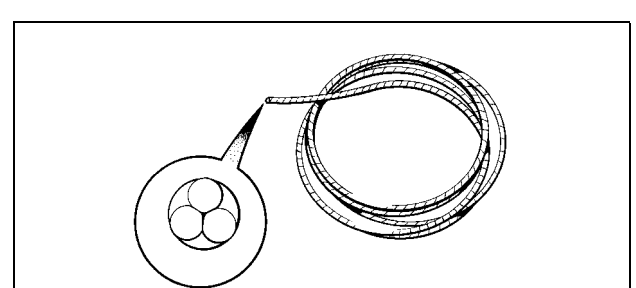


Fig 24. 892/00849 Braided Cutting Wire

Consumable heavy duty cut-out wire used with the glass extraction tool → [Fig 21. \(□ 1-31\)](#), approx. 25 m length.

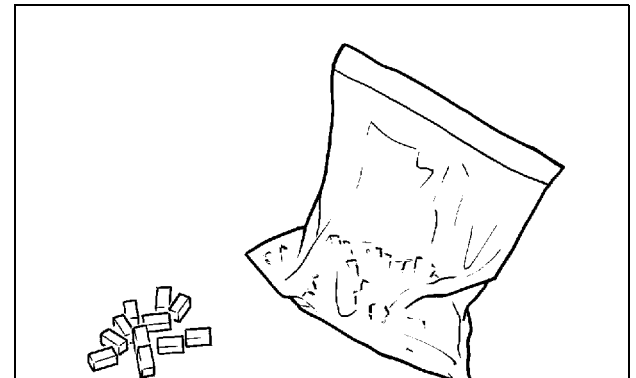


Fig 25. 926/15500 Rubber Spacer Blocks

Used to provide the correct set clearance between glass edge and cab frame. Unit quantity = 500 off.

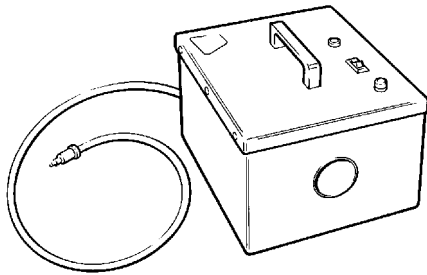


Fig 26. 992/12300 Mobile Oven 12V

1 cartridge capacity. Required to pre-heat adhesive prior to use. It is fitted with a male plug (703/23201) which fits into a female socket (715/04300).

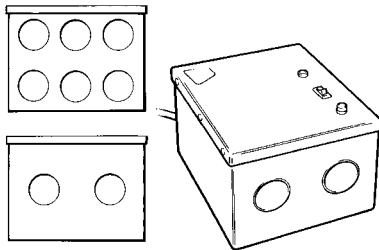


Fig 27. 992/12400, 992/12600 Static Oven 240V

Available with 2 or 6 cartridge capacity. Required to pre-heat adhesive prior to use. No plug supplied. **Note:** 110V models available upon request - contact JCB Technical Service.

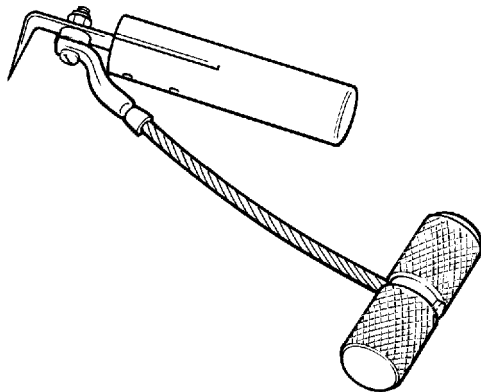


Fig 28. 992/12800 Cut-Out Knife

Used to remove broken glass

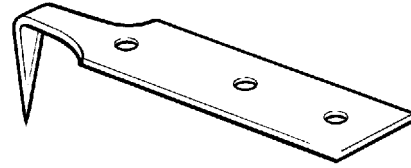


Fig 29. 992/12801 'L' Blades

25 mm (1 in) cut. Replacement blades for cut-out knife
 ⇒ Fig 28. (□ 1-32). Unit quantity = 5 off.

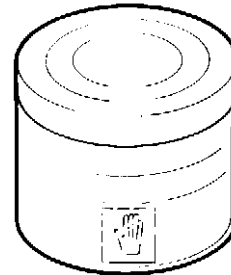


Fig 30. 4104/1310 Hand Cleaner

Special blend for the removal of polyurethane adhesives (454g; 1 lb tub).

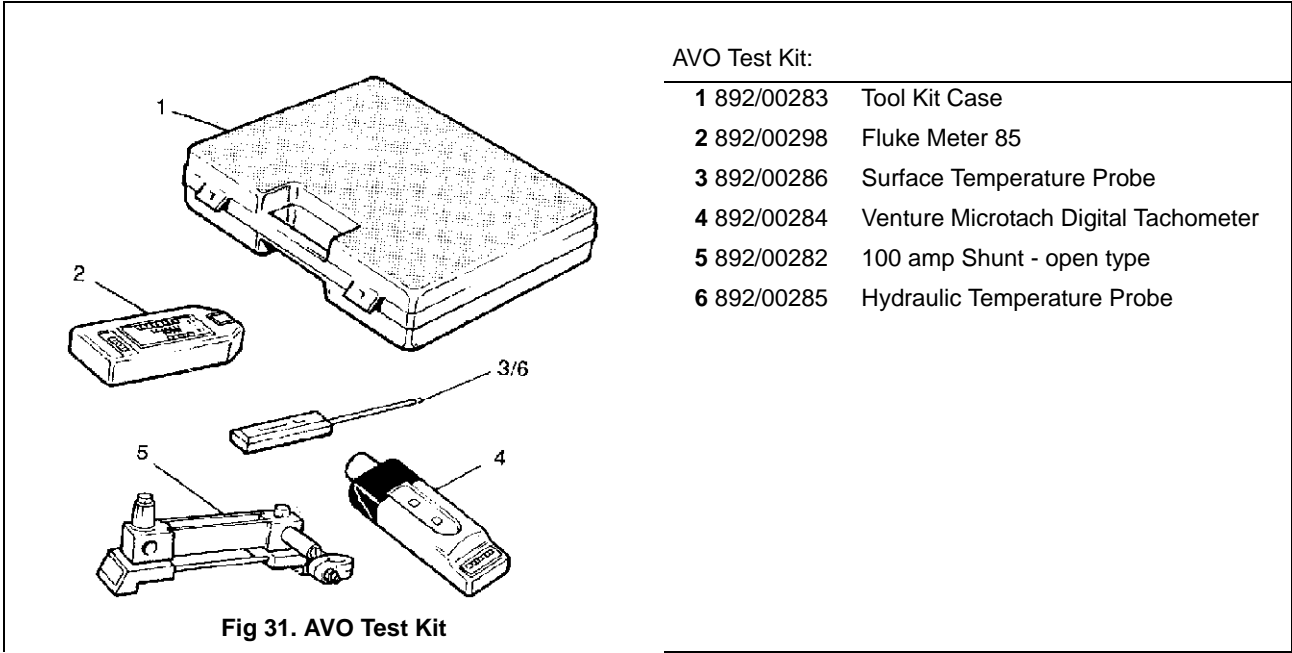


Fig 31. AVO Test Kit

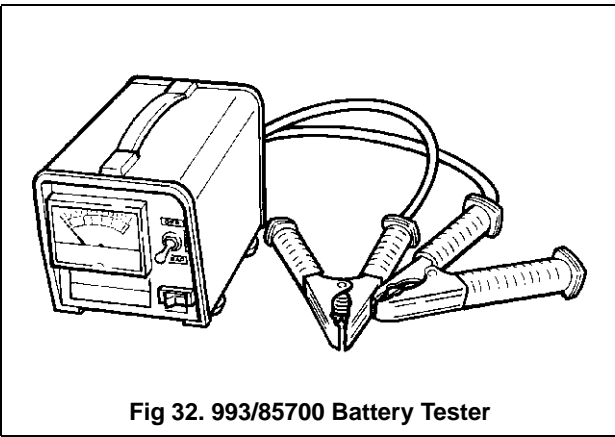


Fig 32. 993/85700 Battery Tester

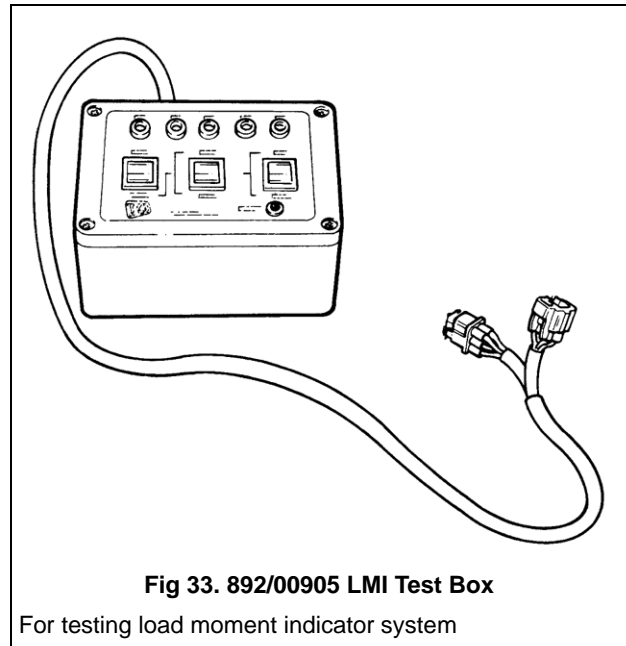


Fig 33. 892/00905 LMI Test Box

For testing load moment indicator system

⇒ Electrical Repair Kit (□ 1-34)		
1		Electrical Repair Kit
2A	7212/0002	2 Way Pin Housing
2B	7212/0004	2 Way Pin Retainer
2C	7212/0003	2 Way Socket Retainer
2D	7212/0001	2 Way Socket Connector
3A	7213/0002	3 Way Pin Housing
3B	7213/0004	3 Way Pin Retainer
3C	7213/0003	3 Way Socket Retainer
3D	7213/0001	3 Way Socket Connector
4A	7213/0006	3 Way Pin Housing (DT)
4B	7213/0008	3 Way Pin Retainer (DT)
4C	7213/0007	3 Way Socket Retainer (DT)
4D	7213/0005	3 Way Socket Connector (DT)
5A	7214/0002	4 Way Pin Housing
5B	7214/0004	4 Way Pin Retainer
5C	7214/0003	4 Way Socket Retainer
5D	7214/0001	4 Way Socket Connector
6A	7216/0002	6 Way Pin Housing
6B	7216/0004	6 Way Pin Retainer
6C	7216/0003	6 Way Socket Retainer
6D	7216/0001	6 Way Socket Connector
7A	7218/0002	8 Way Pin Housing
7B	7218/0004	8 Way Pin Retainer
7C	7218/0003	8 Way Socket Retainer
7D	7218/0001	8 Way Socket Connector
8A	7219/0002	10 Way Pin Housing
8B	7219/0004	10 Way Pin Retainer
8C	7219/0003	10 Way Socket Retainer
8D	7219/0001	10 Way Socket Connector
9A	7219/0006	14 Way Pin Housing
9B	7219/0008	14 Way Pin Retainer
9C	7219/0007	14 Way Socket Retainer
9D	7219/0005	14 Way Socket Connector
10	7210/0001	Dummy Plug
11	7210/0002	Wire Seal (1.4 - 2.2 mm dia.)
12	7210/0003	Wire Seal (2.2 - 2.9 mm dia.)

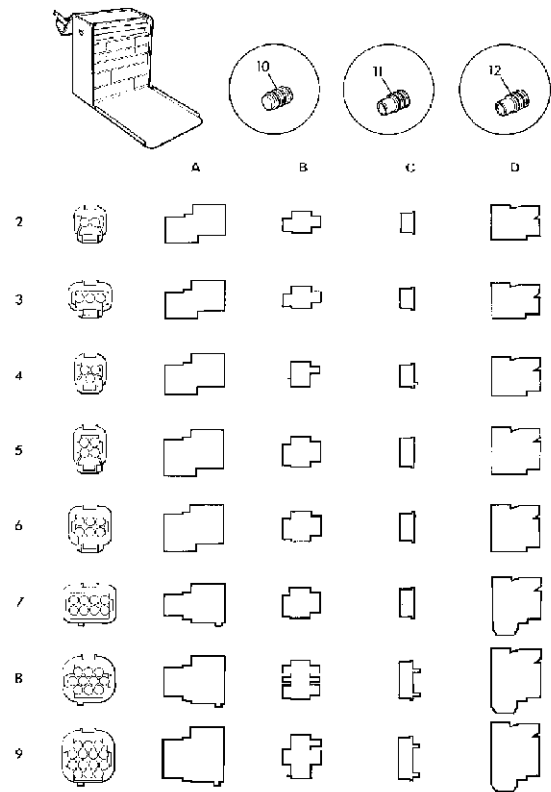
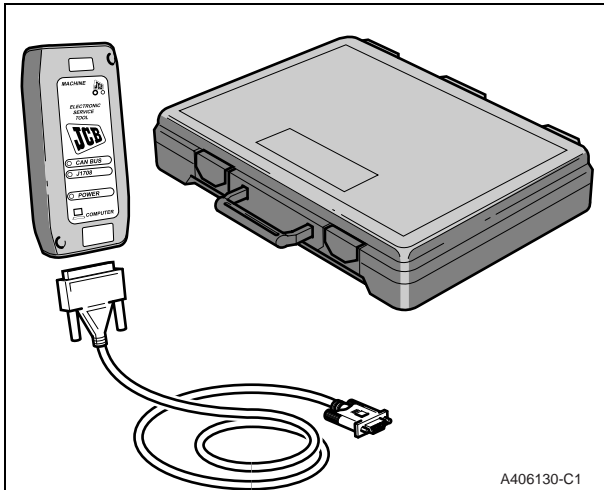


Fig 34. Electrical Repair Kit

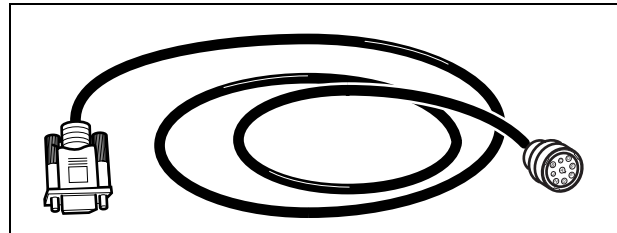


A406130-C1

Fig 35. 892/01033 Electronic Test Kit

Note: Also requires 721/10885 interconnecting cable

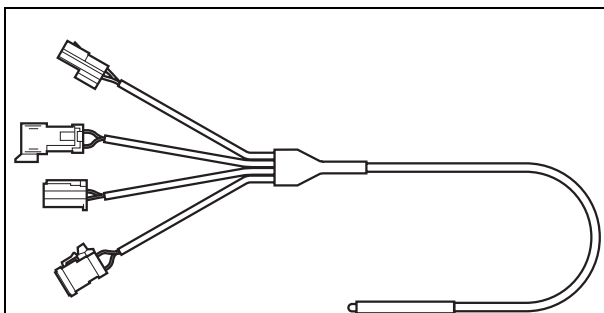
Item	Description
1	Data Link Adaptor (DLA), enables data exchange between the machine ECUs (Electronic Control Units) and laptop PC loaded with the applicable ServiceMaster diagnostics software
2	Interconnecting cable, DLA to laptop PC. Several cables are included to enable compatibility with different PC port types
3	Kit carrying case



A406130-C2

Fig 37. 721/10885 Interconnecting Cable

Use with 892/01033



711300-C1

Fig 36. 892/01096 Speed Sensor Test Harness

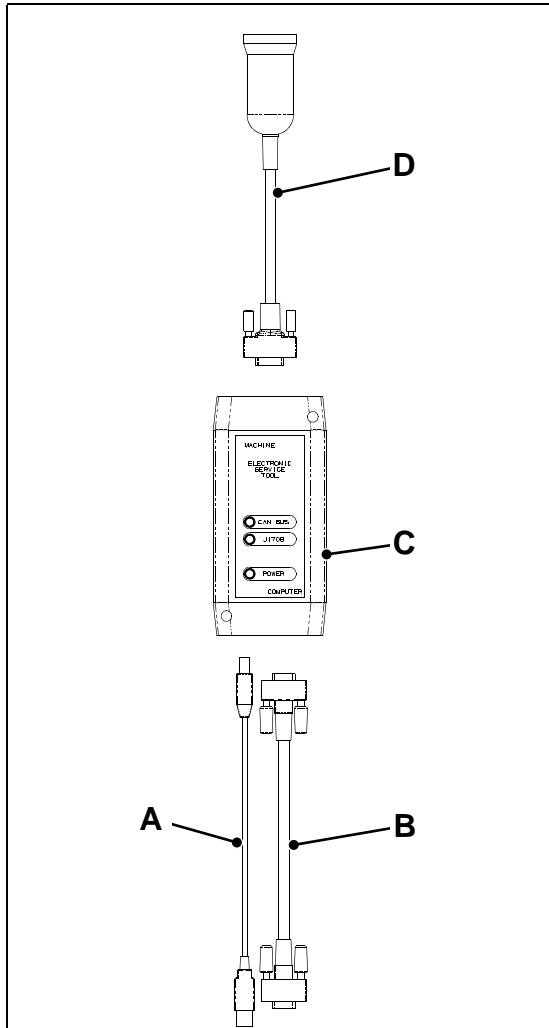


Fig 38. 892/01174 Data Link Adaptor Kit

A	USB PC Cable	718/20235
B	Serial PC Cable	718/20236
C	USB DLA	728/26500
D	Machine Cable	718/20237

Kit 892/01174 (includes items A,B,C and D)

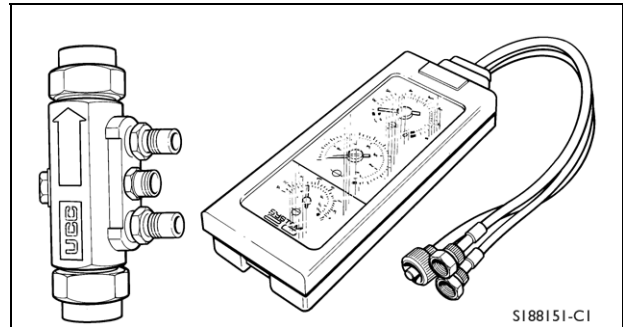


Fig 39. 892/00268 Flow Monitoring Unit

Note: Components listed as follows also required

1406/0021	Sealing washer
1604/0006	Adaptor $\frac{3}{4}$ in M x $\frac{3}{4}$ in M BSP
1604/0008	Adaptor 1 in M x 1 in M BSP
1606/0012	Adaptor 1 in M x $\frac{3}{4}$ in M BSP
1606/0015	Adaptor 1 $\frac{1}{4}$ in M x 1 in M BSP
1612/0006	Adaptor $\frac{3}{4}$ in F x $\frac{3}{4}$ in M BSP
816/20008	Adaptor $\frac{3}{4}$ in F x $\frac{1}{2}$ in M BSP
816/20013	Adaptor $\frac{3}{4}$ in F x 1 in M BSP
892/00078	Connector 1 in F x 1 in F BSP
892/00269	Sensor head 0 - 100 l/min. (0 - 22 UK gal / min.)
892/00270	Load valve
892/00271	Adaptor $\frac{3}{4}$ in F x $\frac{5}{8}$ in M BSP
892/00272	Adaptor $\frac{3}{8}$ in F x $\frac{3}{4}$ in M BSP
892/00273	Sensor head 0 - 380 l per min.
892/00275	Adaptor $\frac{1}{2}$ in F x $\frac{3}{4}$ in M BSP
892/00276	Adaptor $\frac{3}{4}$ in F x $\frac{3}{8}$ in M BSP
892/00277	Adaptor $\frac{3}{8}$ in F x $\frac{3}{4}$ in M BSP
892/00293	Connector pipe
892/00294	Connector pipe

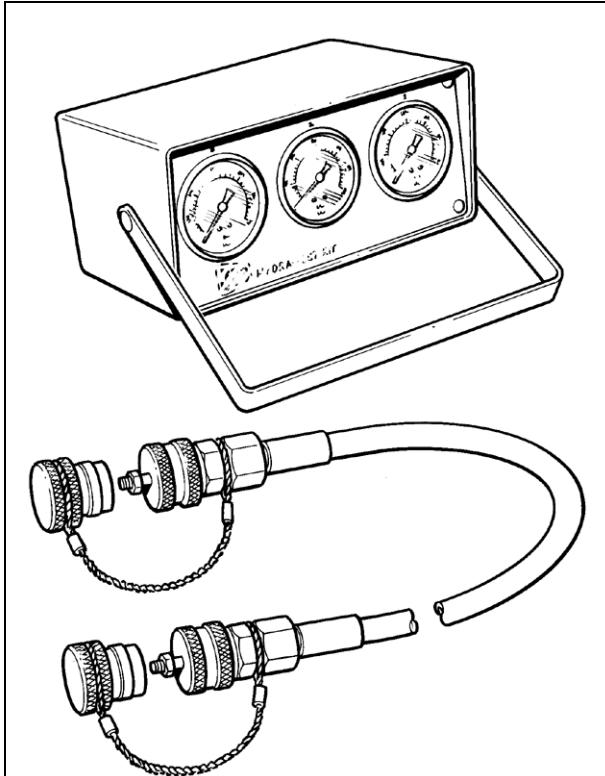


Fig 40. 892/00253 Hydraulic Pressure Test Kit

Item	Description
1	892/00201 Replacement gauge 0 -20 bar (0-300 lbf/in ²)
2	892/00202 Replacement gauge 0 -40 bar (0-600 lbf/in ²)
3	892/00203 Replacement gauge 0 -400 bar (0-6000 lbf/in ²)
4	892/00254 Replacement hose
Note: Components listed as follows also required	
993/69800 Seal kit for 892/00254 (can also be used with probe 892/00706)	
892/00706 Test probe	
892/00347 Connector - hose to gauge	

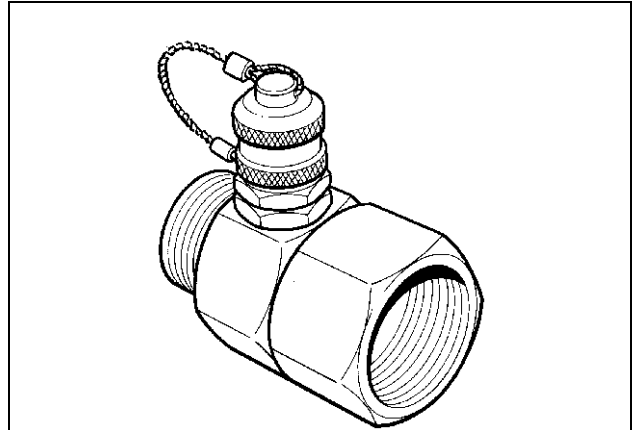


Fig 41. Pressure Test 'T' Adaptors

892/00262	1/4 in M BSP x 1/4 in F BSP x Test Point
816/55038	3/8 in M BSP x 3/8 in F BSP x Test Point
816/55040	1/2 in M BSP x 1/2 in F BSP x Test Point
892/00263	5/8 in M BSP x 5/8 in F BSP x Test Point
892/00264	3/4 in M BSP x 3/4 in F BSP x Test Point
892/00265	1 in M BSP x 1 in F BSP x Test Point

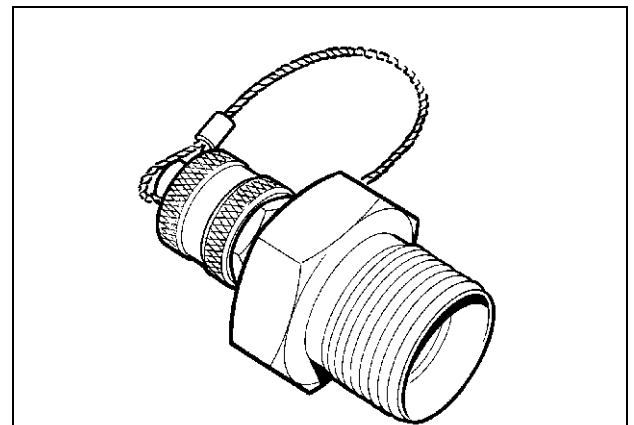


Fig 42. Pressure Test Adaptors

892/00255	1/4 in BSP x Test Point
892/00256	3/8 in BSP x Test Point
892/00257	1/2 in BSP x Test Point
892/00258	5/8 in BSP x Test Point
816/15118	3/4 in BSP x Test Point
892/00259	1 in BSP x Test Point
892/00260	1.1/4 in BSP x Test Point
892/00261	5/8 in UNF x Test Point

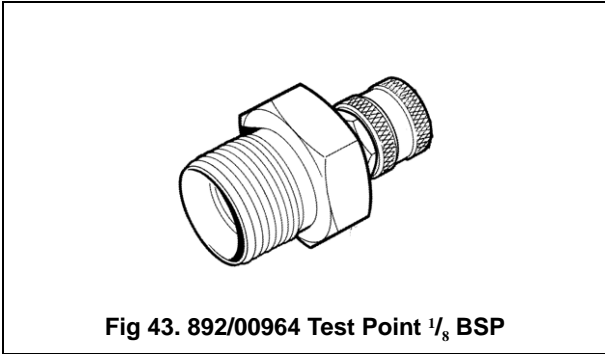


Fig 43. 892/00964 Test Point 1/8 BSP

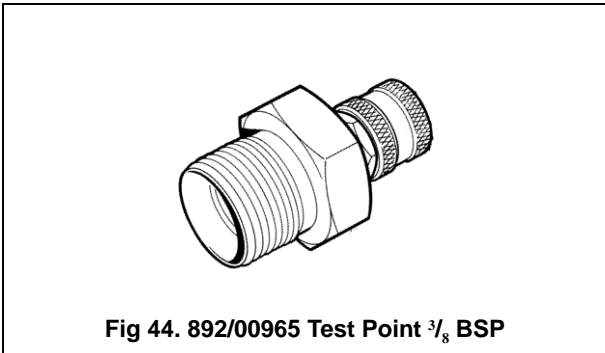


Fig 44. 892/00965 Test Point 3/8 BSP

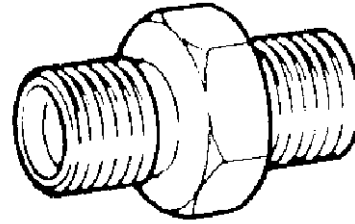


Fig 45. Male Adaptors

Male Adaptors - BSP x NPT (USA only)

816/00439 3/8 in. x 1/4 in.

816/00440 1/2 in. x 1/4 in.

816/15007 3/8 in. x 3/8 in.

816/15008 1/2 in. x 3/8 in.

Male Adaptors - BSP x BSP

1606/0003 3/8 in. x 1/4 in.

1604/0003 3/8 in. x 3/8 in.

892/00071 3/8 in. x 3/8 in. taper

1606/0004 1/2 in. x 1/4 in.

1606/0007 1/2 in. x 3/8 in.

1604/0004 1/2 in. x 1/2 in.

1606/0017 5/8 in. x 1/2 in.

1606/0008 3/4 in. x 3/8 in.

1606/0009 3/4 in. x 1/2 in.

1604/0006 3/4 in. x 3/4 in.

1606/0012 3/4 in. x 1 in.

1606/0014 3/4 in. x 1.1/4 in.

1606/0015 1 in. x 1.1/4 in.



Fig 46. Bonded Washers

1406/0011 1/4 in. BSP

1406/0018 1/2 in. BSP

1406/0014 5/8 in. BSP

1406/0021 3/4 in. BSP

1406/0029 1.1/4 in. BSP

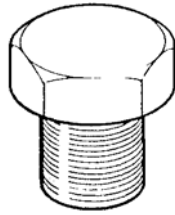


Fig 47. Female Blanking Caps

892/00055	1/4 in. BSP
892/00056	3/8 in. BSP
892/00057	1/2 in. BSP
892/00058	5/8 in. BSP
892/00059	3/4 in. BSP
892/00060	1 in. BSP

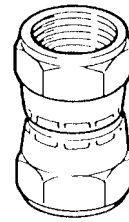


Fig 50. Female Connectors

892/00074	3/8 in. BSP x 3/8 in. BSP
892/00075	1/2 in. BSP x 1/2 in. BSP
892/00076	5/8 in. BSP x 5/8 in. BSP
892/00077	3/4 in. BSP x 3/4 in. BSP

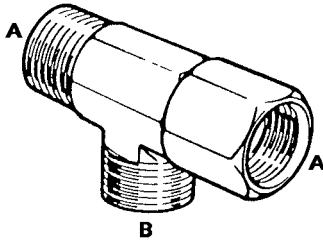


Fig 48. T Adaptors

892/00047	3/8 in. BSP (A) x 1/4 in. BSP (B)
892/00048	1/2 in. BSP (A) x 1/4 in. BSP (B)
892/00049	5/8 in. BSP (A) x 1/4 in. BSP (B)
816/50043	3/4 in. BSP (A) x 1/4 in. BSP (B)
892/00051	1 in. BSP (A) x 1/4 in. BSP (B)
816/50005	1/2 in. BSP (A) x 1/2 in. BSP (B)
816/60096	3/4 in. BSP (A) x 3/4 in. BSP (B)
816/00017	1 in. BSP (A) x 1 in. BSP (B)

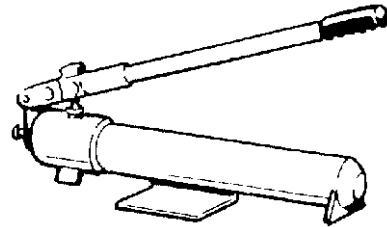


Fig 51. Hand Pump Equipment

892/00223	Hand Pump
892/00137	Micro-bore Hose 1/4 in BSP x 3 metres
892/00274	Adapter 1/4 in M BSP x 3/8 in M BSP Taper
892/00262	1/4 in M BSP x 1/4 in F BSP x Test Point
892/00706	Test Probe
892/00278	Gauge 0 - 40 bar (0 - 600 lbf/in ²)
892/00279	Gauge 0 - 400 bar (0 - 6000 lbf/in ²)

816/00294	1/4 in. BSP
816/00189	3/8 in. BSP
816/00190	1/2 in. BSP
816/00197	5/8 in. BSP
816/00196	3/4 in. BSP
816/00193	1 in. BSP

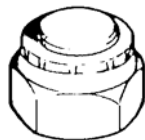
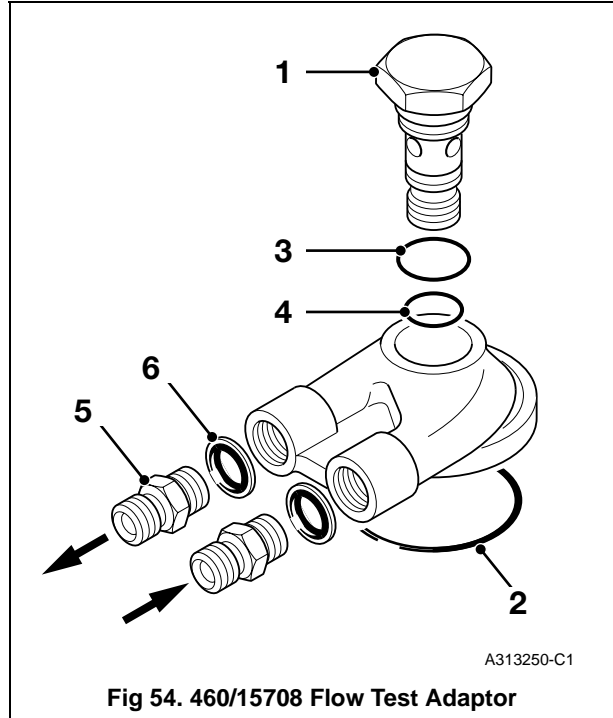
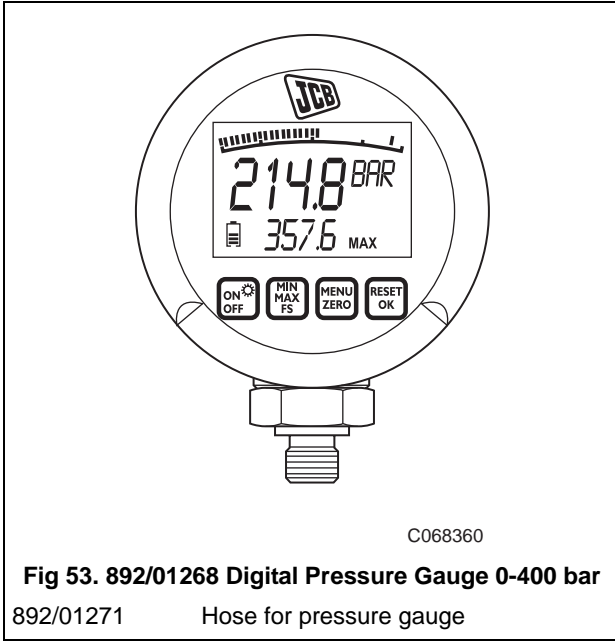


Fig 49. Male Cone Blanking Caps

TBA

Fig 52. 892/00229 Flow Meter



Note: Components listed below also required

Item	Description
1	460/15707 Banjo bolt
2	2401/0222 O-ring
3	2403/0110 O-ring
4	2403/0108 O-ring
5	1604/0004 Adaptor - 2 off
6	1406/0018 Sealing washer - 2 off

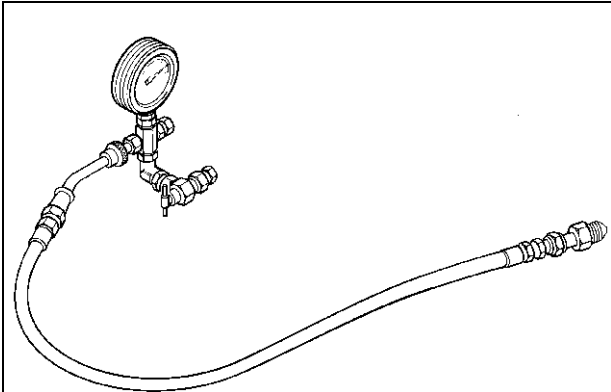


Fig 55. Nitrogen Charging Kit

- 892/00948 Charging Kit (without gauge)
- 892/00949 Gauge

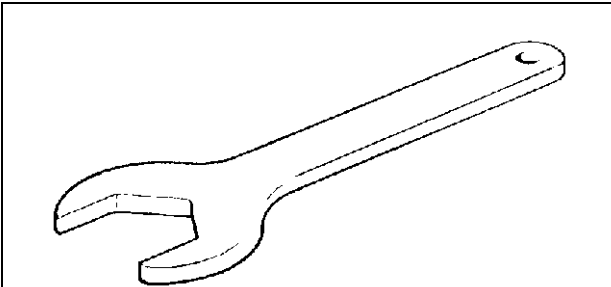


Fig 56. Hexagon Spanners for Ram Pistons and End Caps

- 992/09300 55 mm A/F
- 992/09400 65 mm A/F
- 992/09500 75 mm A/F
- 992/09600 85 mm A/F
- 992/09700 95 mm A/F
- 992/09800 105 mm A/F
- 992/09900 115 mm A/F
- 992/10000 125 mm A/F

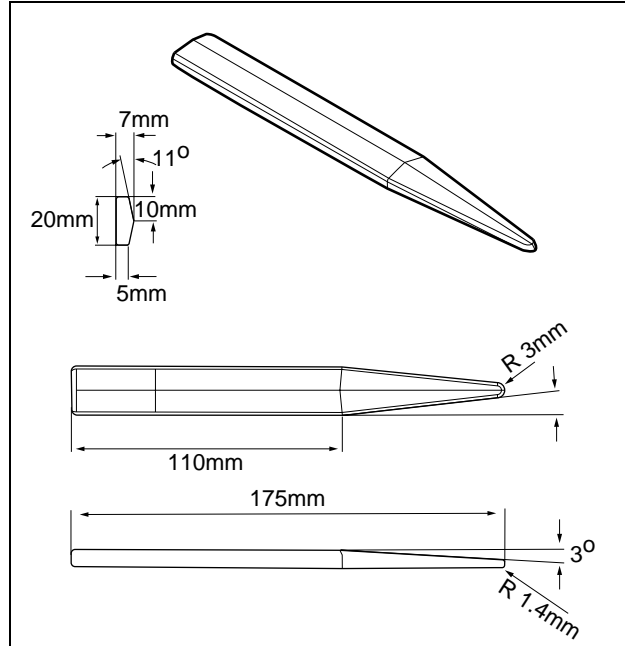


Fig 57. 892/01027 Piston Seal Assembly Tool

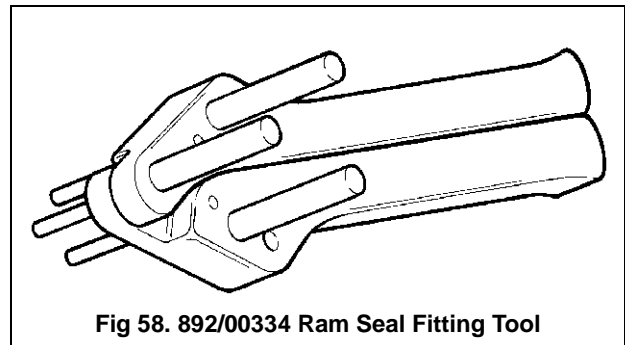


Fig 58. 892/00334 Ram Seal Fitting Tool

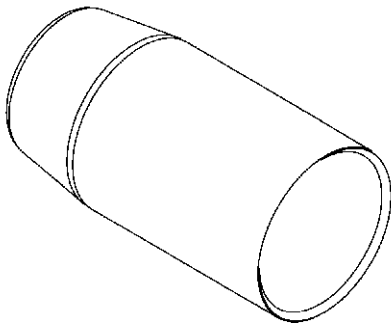


Fig 59. Ram Protection Sleeves

892/01016	For 25 mm Rod Diameter
892/01017	For 30 mm Rod Diameter
892/01018	For 40 mm Rod Diameter
892/01019	For 50 mm Rod Diameter
892/01020	For 50 mm Rod Diameter (slew ram)
892/01021	For 60 mm Rod Diameter
892/01022	For 60 mm Rod Diameter (slew ram)
892/01023	For 65 mm Rod Diameter
892/01024	For 70 mm Rod Diameter
892/01025	For 75 mm Rod Diameter
892/01026	For 80 mm Rod Diameter
892/00167	For 90 mm Rod Diameter

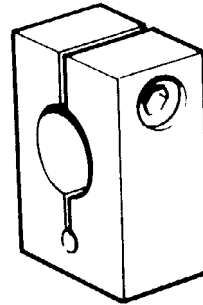
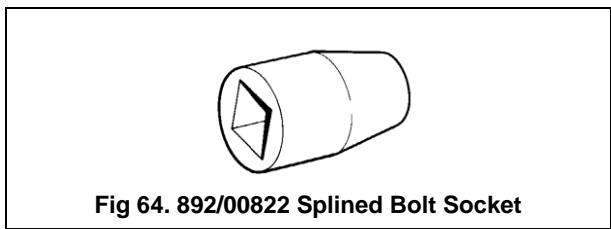
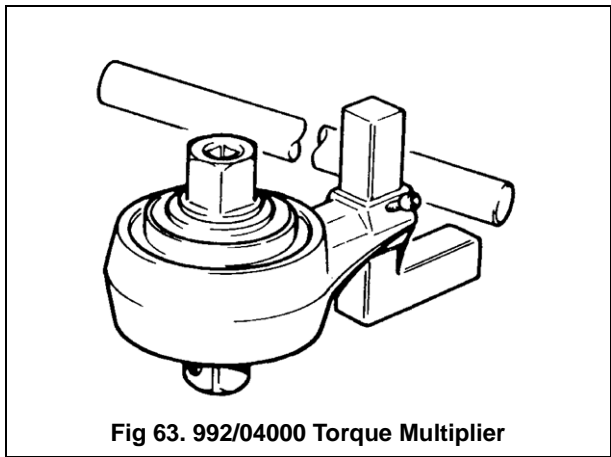
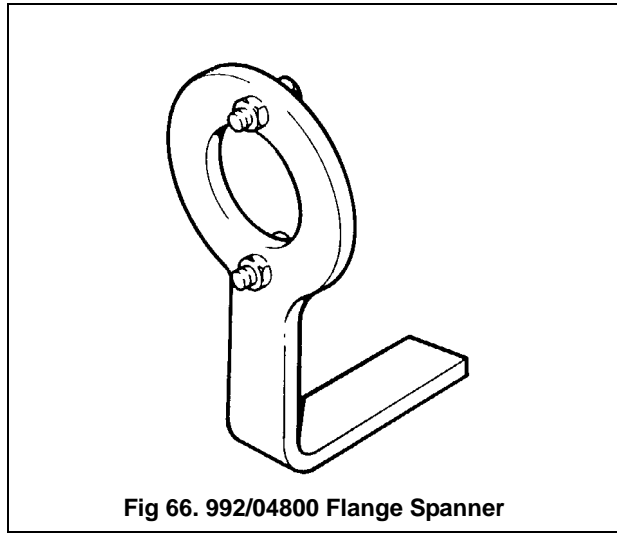
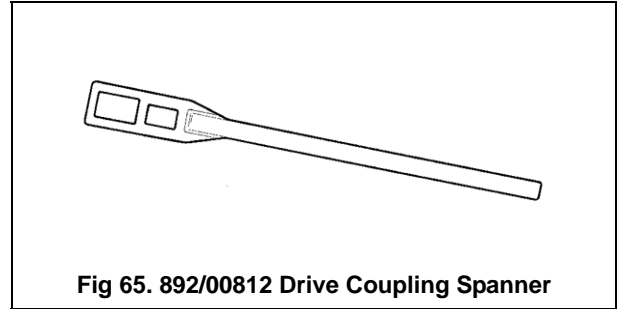
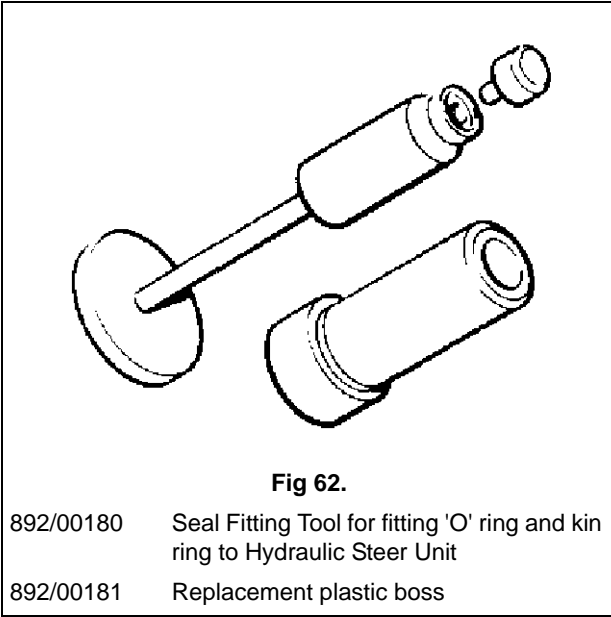


Fig 60. Spool Clamps

992/09100	Spool Clamp
892/00011	Spool Clamp



Fig 61. 892/00881 Valve Spool Seal Fitting Tool



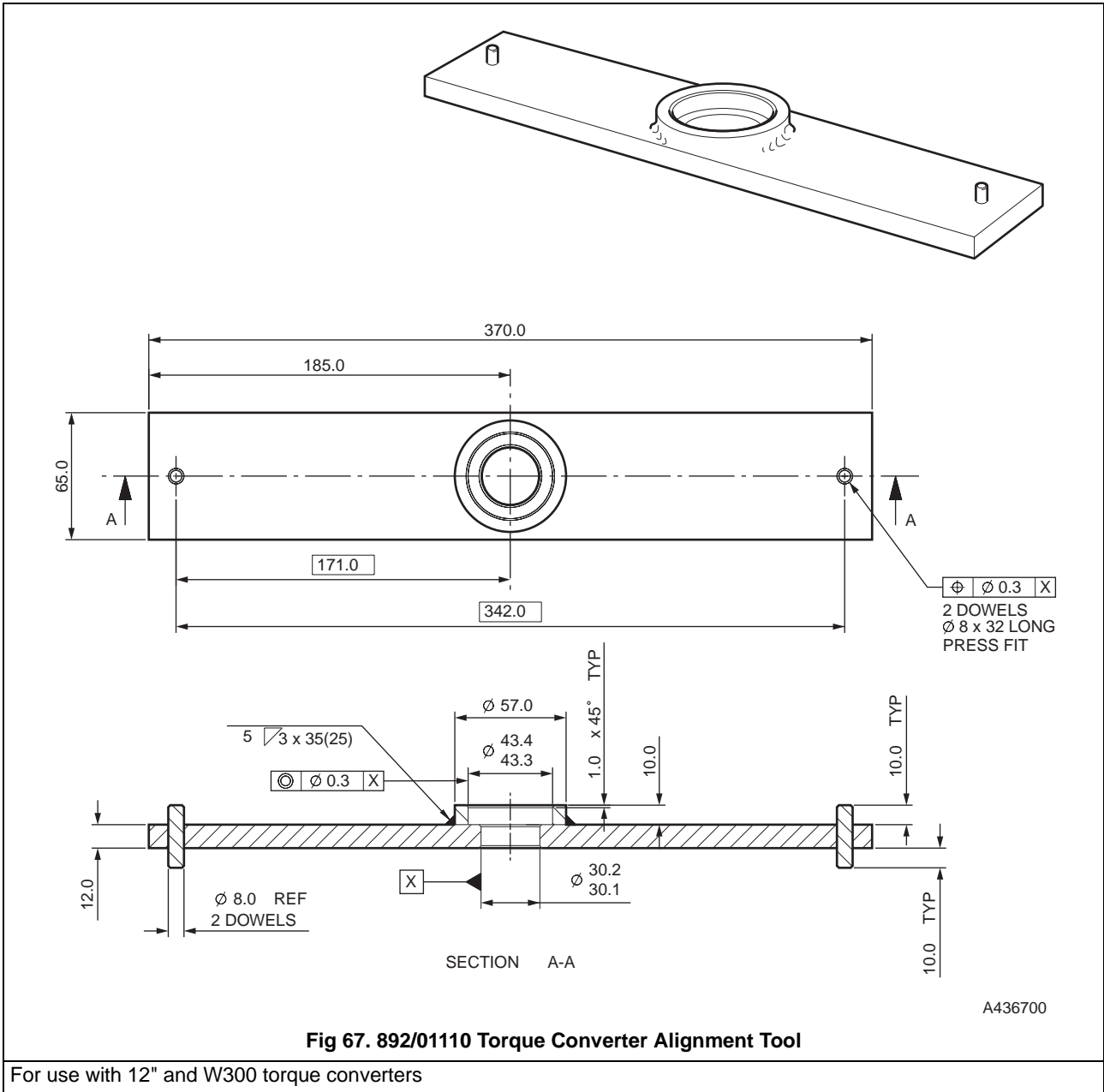


Fig 67. 892/01110 Torque Converter Alignment Tool

For use with 12" and W300 torque converters

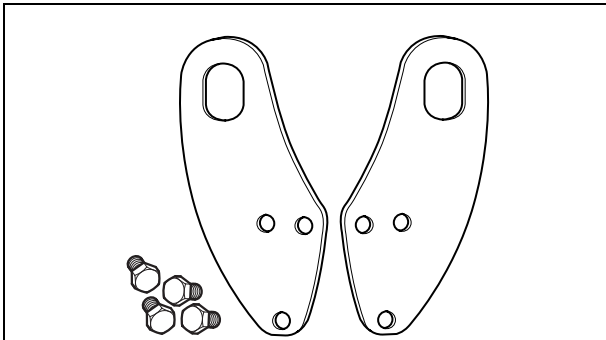


Fig 68. 320/20050 Engine Lifting Bracket Kit

Note: Brackets are designed to lift only the engine. They **MUST NOT** be used to lift the engine and transmission assembly.

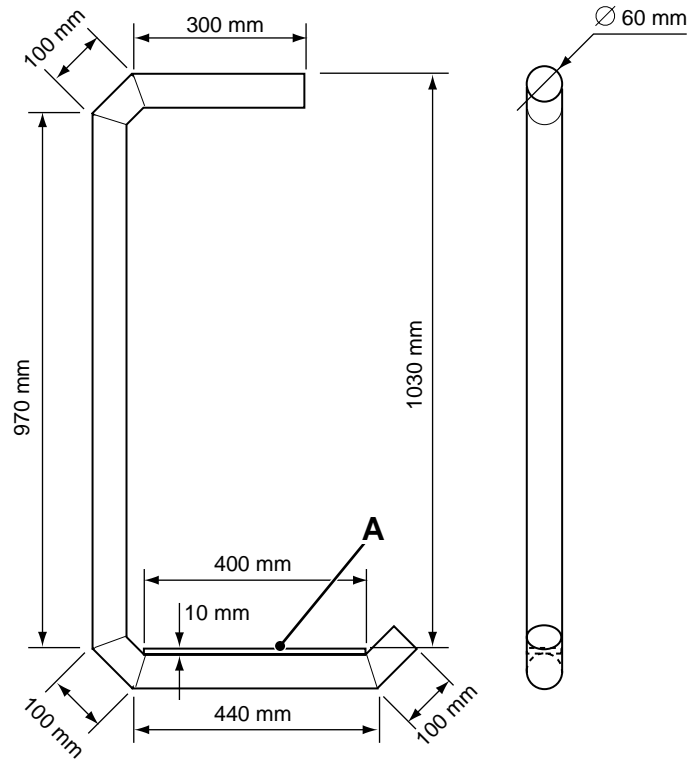


Fig 69. Engine and Transmission Lifting Frame

When removing the engine and transmission assembly suitable lifting equipment must be used. The engine and transmission assembly weighs 1000 kg excluding the main hydraulic pump assembly.

Presently there is no approved lifting frame available from JCB Service.

→ [Fig 69.](#) ([1-46](#)). The drawing shows guide dimensions for fabricating a frame that can be made locally from mild steel bar. The frame should be designed to lift the assembly by supporting the bottom of the engine between the sump and flywheel housing on plate [69-A](#).

Important: Before using such a frame you must make sure it is tested and complies with all local regulations relating to lifting equipment.



Service Aids

Sealing and Retaining Compounds

T11-001_4
Table 14.

Type	Description	Part No.	Quantity
JCB Multi-Gasket	A medium strength sealant suitable for all sizes of gasket flanges, and for hydraulic fittings of 25-65 mm diameter.	4102/1212	50 ml
JCB High Strength Threadlocker	A high strength locking fluid for use with threaded components. Gasketing for all sizes of flange where the strength of the joint is important.	4102/0551	50 ml
JCB Retainer (High Strength)	For all retaining parts which are unlikely to be dismantled.	4101/0601	10 ml
		4101/0651	50 ml
JCB Threadlocker and Sealer	A medium strength locking fluid for sealing and retaining nuts, bolts, and screws up to 50 mm diameter, and for hydraulic fittings up to 25 mm diameter.	4101/0250	10 ml
		4101/0251	50 ml
JCB Threadlocker and Sealer (High Strength)	A high strength locking fluid for sealing and retaining nuts, bolts, and screws up to 50 mm diameter, and for hydraulic fittings up to 25 mm diameter.	4101/0550	10 ml
		4101/0552	200 ml
JCB Threadseal	A medium strength thread sealing compound.	4102/1951	50 ml
JCB Activator	A cleaning primer which speeds the curing rate of anaerobic products.	4104/0251	200 ml (Aerosol)
		4104/0253	1 ltr (Bottle)
JCB Cleaner/Degreaser	For degreasing components prior to use of anaerobic adhesives and sealants.	4104/1557	400 ml (Aerosol)
Direct Glazing Kit	For one pane of glass; comprises of: <ul style="list-style-type: none"> - 1 x Ultra Fast Adhesive (310 ml) - 1 x Active Wipe 205 (30 ml) - 1 x Black Primer 206J (30 ml) - plus applicator nozzle etc. 	993/55700	
Ultra Fast Adhesive	For direct glazing.	4103/2109	310 ml
Active Wipe 205	For direct glazing.	4104/1203	250 ml
Black Primer 206J	For direct glazing.	4201/4906	30 ml
Clear Silicone Sealant	To seal butt jointed glass.	4102/0901	
Plastic to Metal Bonder	To seal plastic to metal joints.	4103/0956	50 g
Black Polyurethane Sealant	To finish exposed edges of laminated glass.	4102/2309	310 ml



Section 1 - General Information

Service Aids

Sealing and Retaining Compounds

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