



# Service Manual

**3DX**

**Backhoe Loader**

Published by

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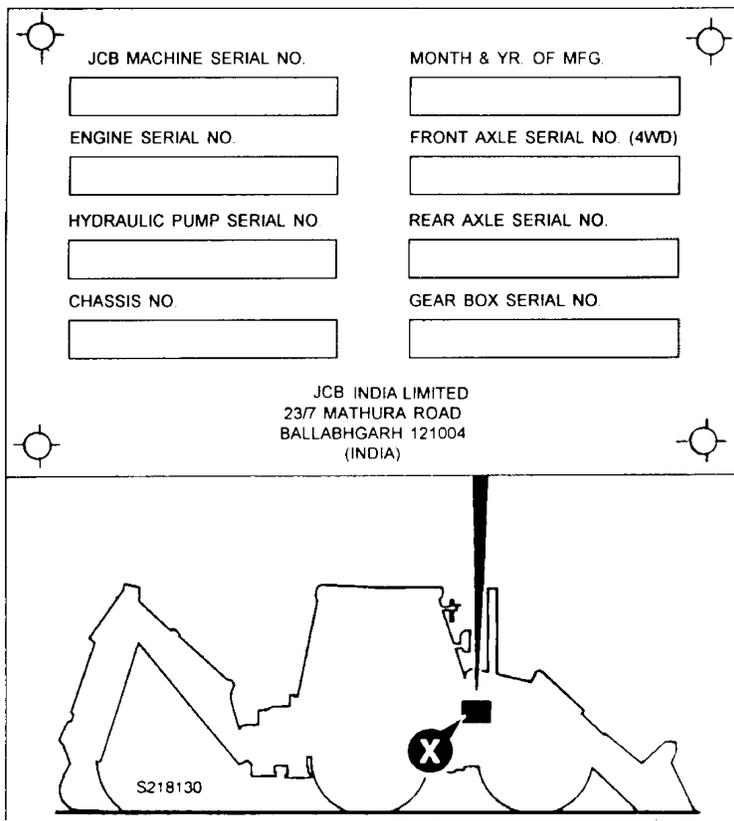
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**Machine Identification Plate**

Your machine has an identification plate **X** mounted on the loader tower as shown. 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. 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 number being quoted when replacement parts are ordered.

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



**Engine Serial Plate**

The engine serial number is stamped on a label which is fastened to the left side of the cylinder block (looking from the rear).

**Rear Axle Serial Plate**

The rear axle serial number is stamped on a plate mounted to the front face of the axle, as shown.



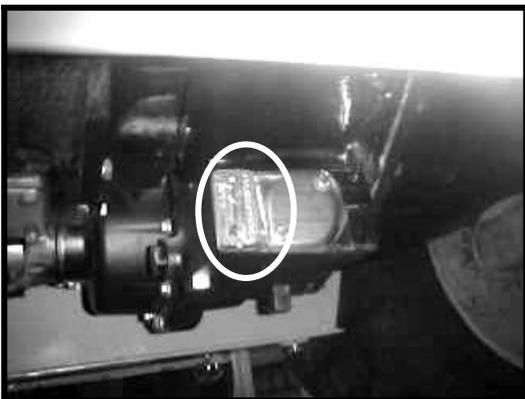
### Front Axle Serial Plate

The front axle serial number is stamped on a plate mounted on the axle.



### Syncro Shuttle Serial Plate

The Syncro Shuttle serial number is stamped on a label which is mounted adjacent to the Suction strainer.



### Torque Settings

Use only where no torque setting is specified in the text. Values are for dry threads and may be within three per cent of the figures stated. For lubricated threads the values should be REDUCED by one third.

#### UNF Grade 'S' Bolts

Bolt Size		Hexagon (A/F) in	Torque Settings		
in	(mm)		Nm	kgf m	lbf ft
1/4	(6.3)	7/16	14	1.4	10
5/16	(7.9)	1/2	28	2.8	20
3/8	(9.5)	9/16	49	5.0	36
7/16	(11.1)	5/8	78	8.0	58
1/2	(12.7)	3/4	117	12.0	87
9/16	(14.3)	13/16	170	17.3	125
5/8	(15.9)	15/16	238	24.3	175
3/4	(19.0)	11/8	407	41.5	300
7/8	(22.2)	15/16	650	66.3	480
1	(25.4)	11/2	970	99.0	715
1 1/4	(31.7)	17/8	1940	198.0	1430
1 1/2	(38.1)	2 1/4	3390	345.0	2500

#### Metric Grade 8.8 Bolts

Bolt Size		Hexagon (A/F) mm	Torque Settings		
(mm)			Nm	kgf m	lbf ft
M5	(5)	8	7	0.7	5
M6	(6)	10	12	1.2	9
M8	(8)	13	28	3.0	21
M10	(10)	17	56	5.7	42
M12	(12)	19	98	10	72
M16	(16)	24	244	25	180
M20	(20)	30	476	48	352
M24	(24)	36	822	84	607
M30	(30)	46	1633	166	1205
M36	(36)	55	2854	291	2105

#### Rivet Nut Bolts/Screws

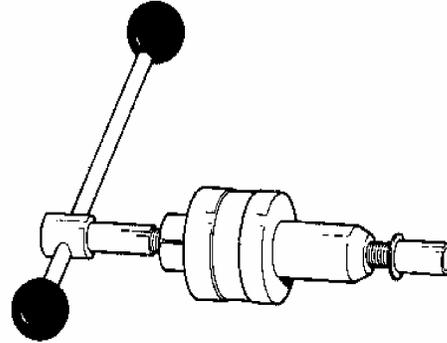
Bolt Size		Torque Settings (for steel rivet nuts)		
(mm)		Nm	kgf m	lbf ft
M3	(3)	1.2	0.12	0.9
M4	(4)	3.0	0.3	2.0
M5	(5)	6.0	0.6	4.5
M6	(6)	10.0	1.0	7.5
M8	(8)	24.0	2.5	18.0
M10	(10)	48.0	4.9	35.5
M12	(12)	82.0	8.4	60.5

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

**Service Tools****Section B – Body & Framework**

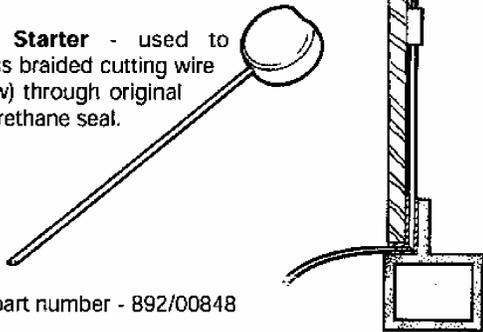
826/01099	M6 x 16mm Rivet Nut
826/01101	M6 x 19mm Rivet Nut
826/01103	M8 x 18mm Rivet Nut
826/01102	M8 x 21mm Rivet Nut
826/01104	M10 x 23mm Rivet Nut
826/01105	M10 x 26mm Rivet Nut

Installation Tool Available from:  
 Boilhoff Fastenings Ltd.  
 Midacre  
 The Willenhall Estate  
 Rose Hill  
 Willenhall  
 West Midlands, WV13 2JW



S261210

**Wire Starter** - used to access braided cutting wire (below) through original polyurethane seal.

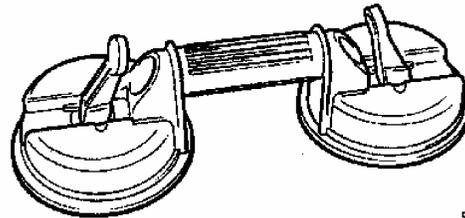


JCB part number - 892/00848

S186310

**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.

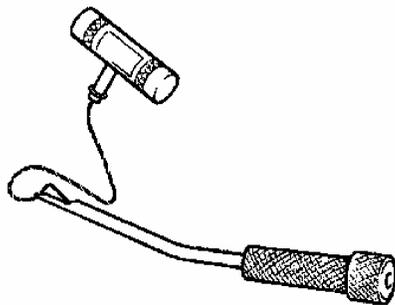
JCB part number - 892/00842



S186300

**Glass Extractor (Handles)** - used with braided cutting wire (below) to cut out broken glass.

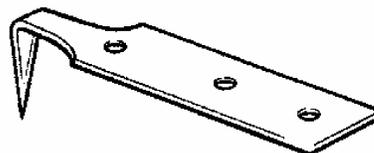
JCB part number - 892/00846



S186320

**'L' Blades** - 25 mm (1 in) cut - replacement blades for cut-out knife (above).

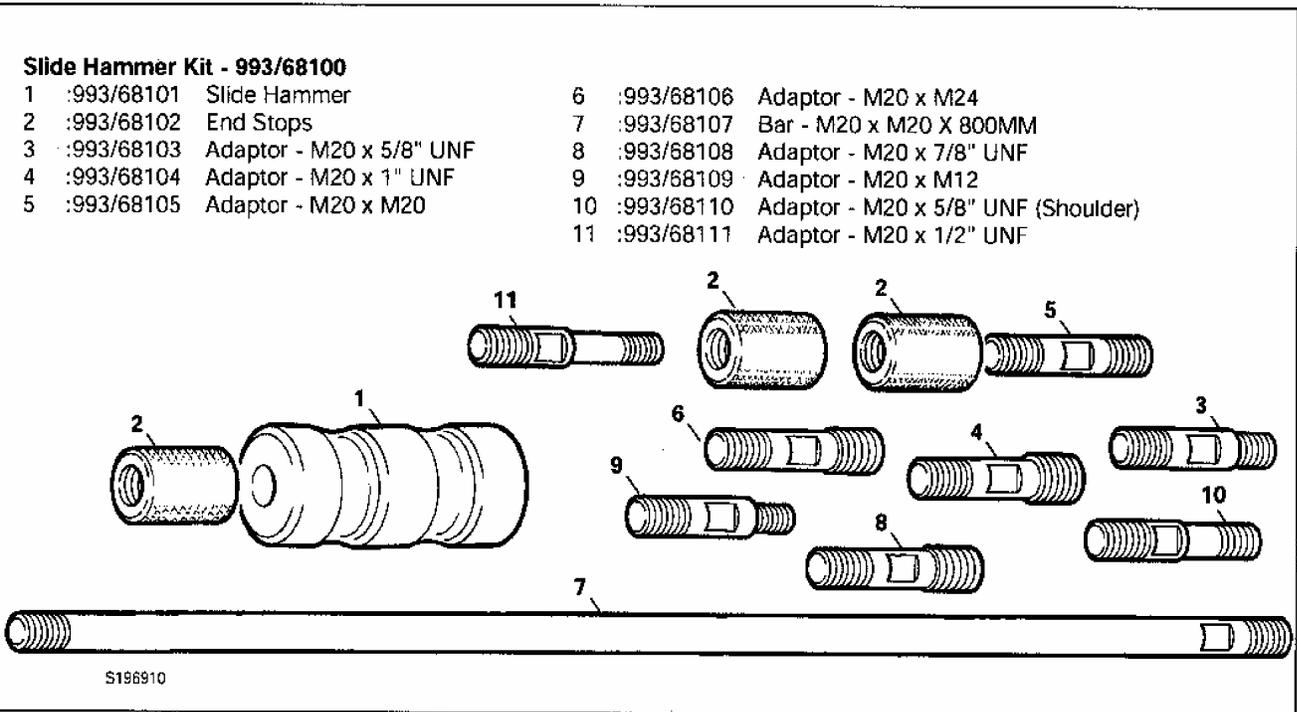
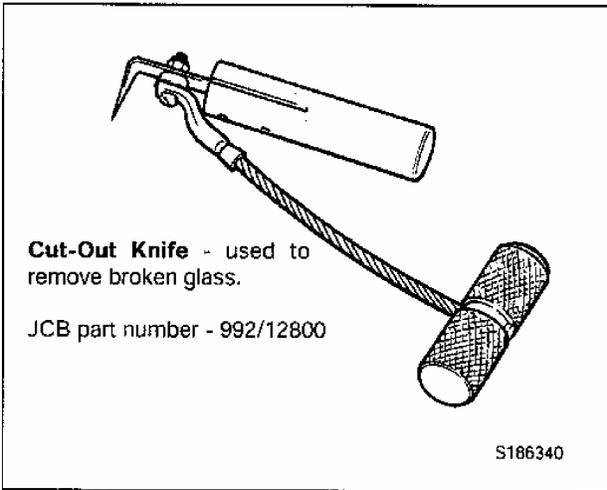
JCB part number - 992/12801 (unit quantity = 5 off)



S186350

Service Tools

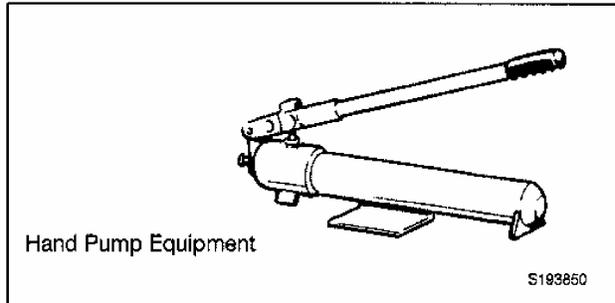
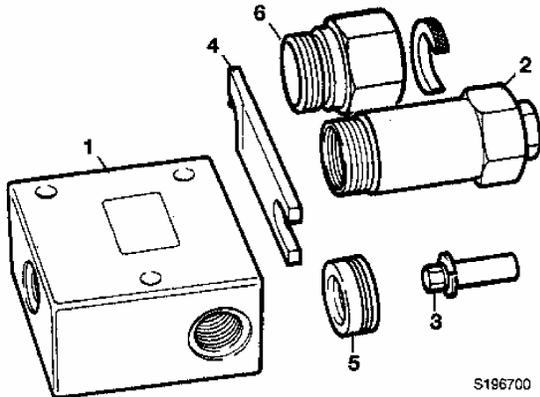
Section B – Body & Framework



**Service Tools**

**Section E – Hydraulics**

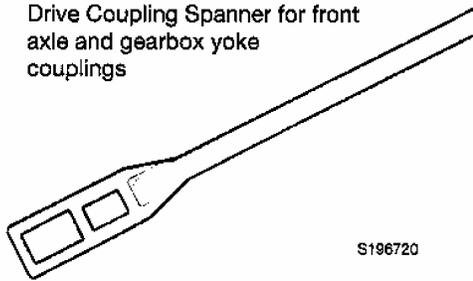
- Components for Valve Block A.R.V. Testing
- 892/00309 A.R.V. Pressure Test Kit
  - 1 : 892/00340 Test Block Body
  - 2 : 892/00341 Setting Body
  - 3 : 993/68300 Adjusting Pin
  - 4 : 892/00343 Spanner
  - 5 : 892/00345 Anti-cavitation Lock Out Bung
  - 6 892/00335 A.R.V. Cartridge Removal Tool



Hand Pump Equipment

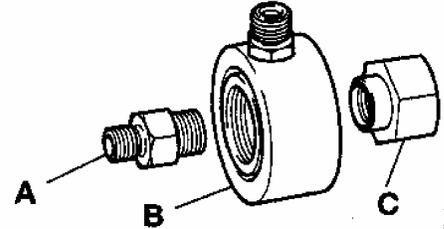
**Service Tools****Section F – Transmission**

892/00812 Drive Coupling Spanner for front axle and gearbox yoke couplings



S196720

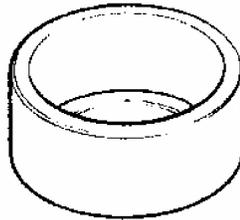
**A** 892/00920 Flow Test Adapter  
**B** 892/00301 Flow Test Adapter  
**C** 892/00302 Flow Test Adapter



S266880

892/00174

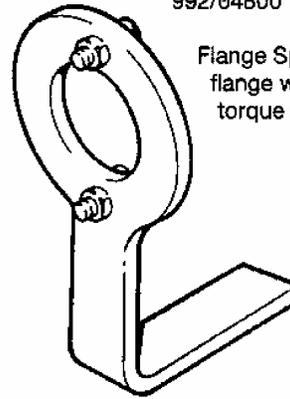
Measuring Cup - Pinion Head Bearing



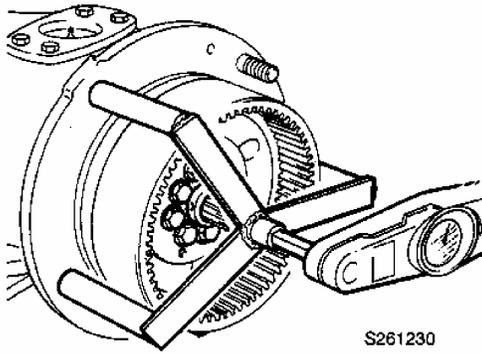
S190770

992/04800

Flange Spanner - for locking pinion flange while pinion nut is slackened or torque set



S197040



S261230

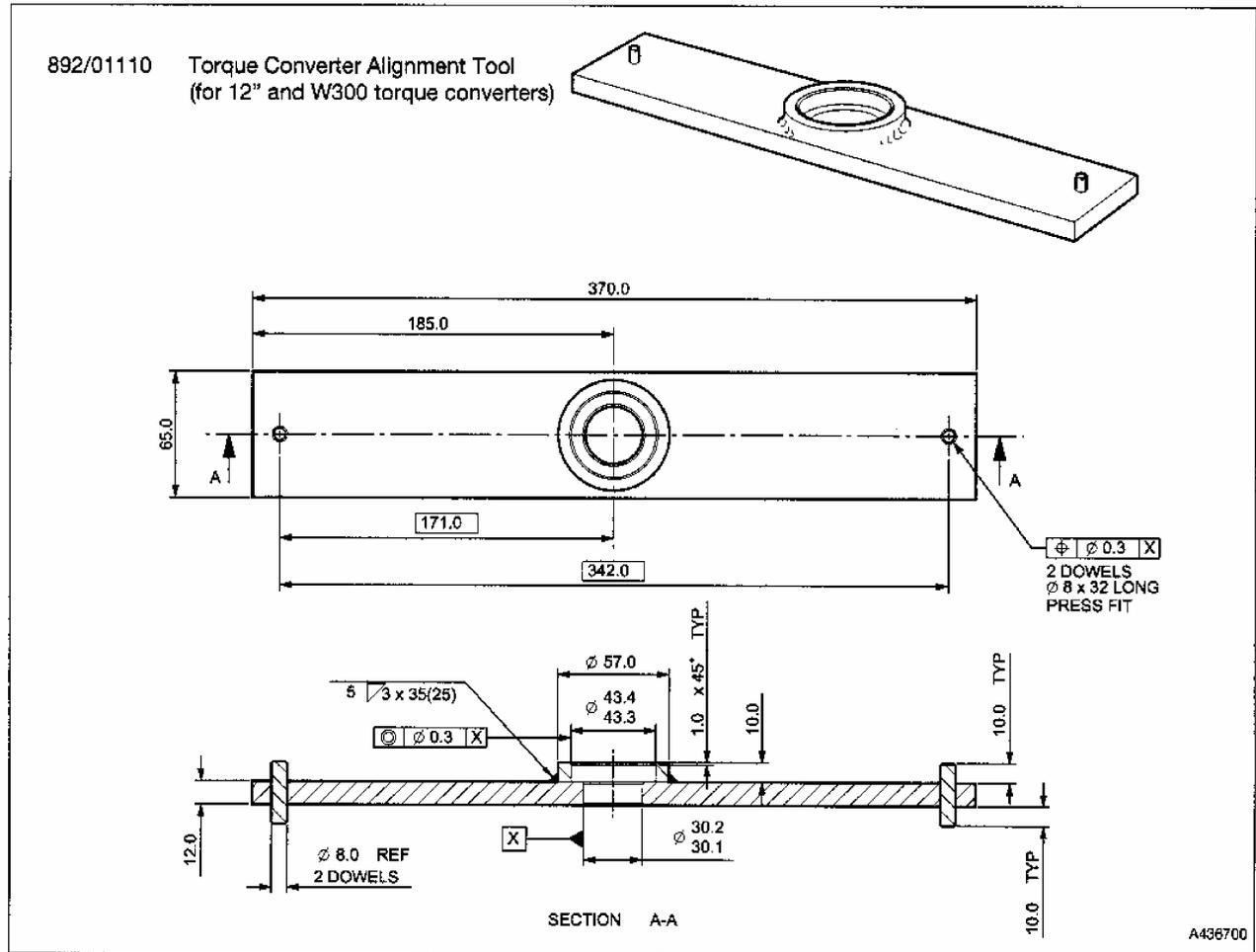
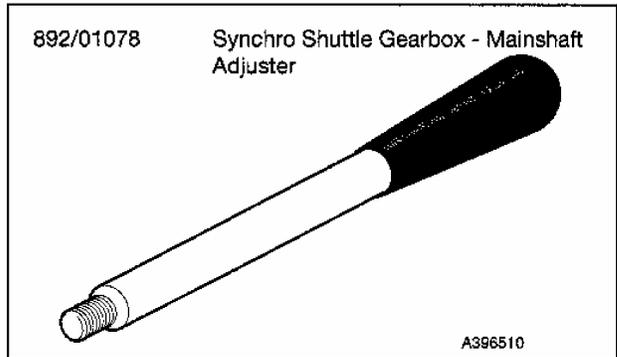
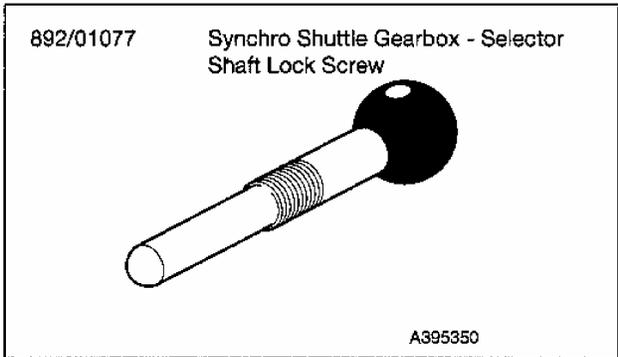
**Torque Measuring Tool for Wheel Hub Seals**

Manufacture locally, procedures in this manual show checking the wheel hub seal using a rolling force. However, the torque can be measured using above locally manufactured tool.

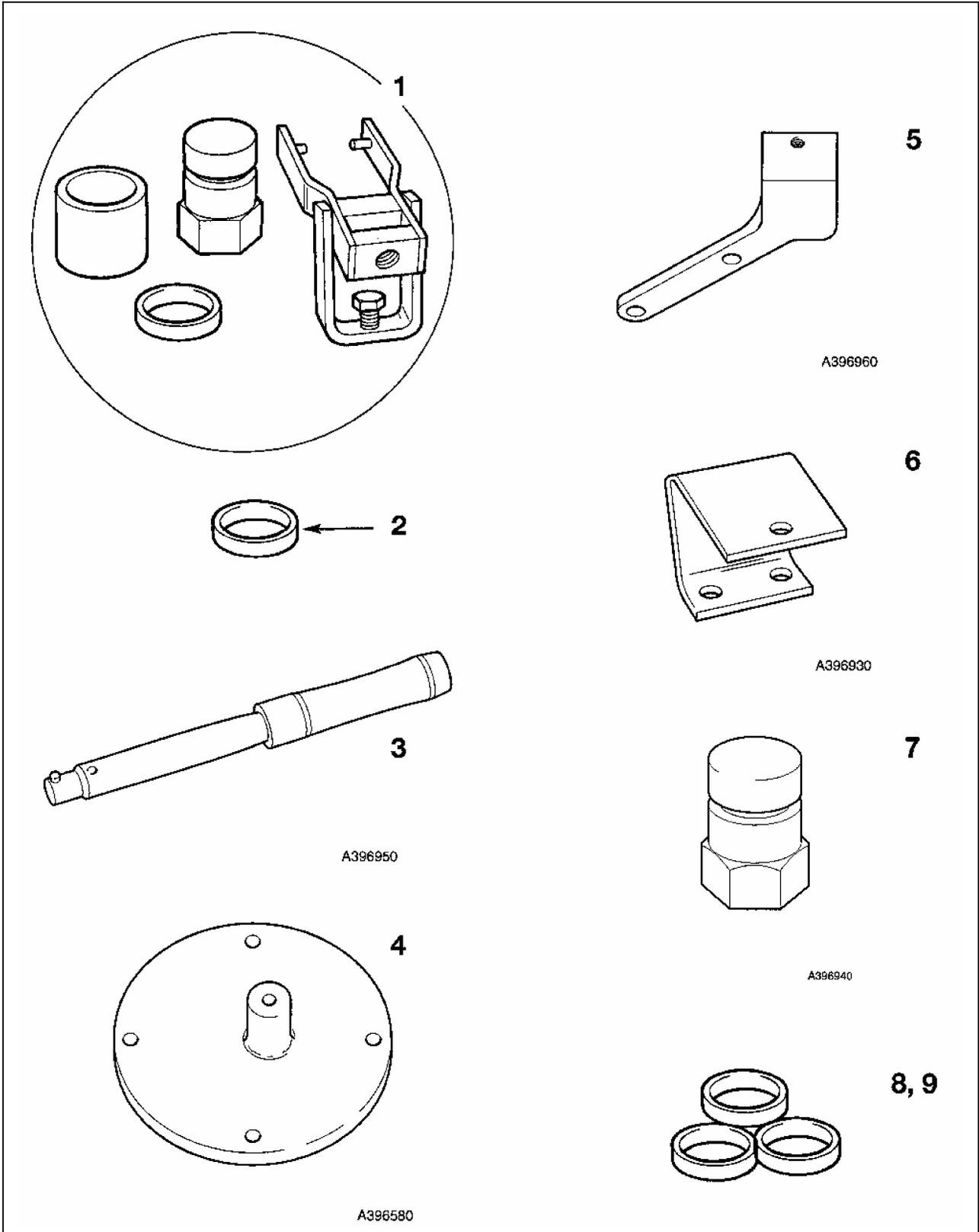
Bearing rolling torque is 12 to 22 Nm (9 to 16 lbf ft) excluding seal drag. Maximum permissible including seal drag is 40 Nm (29.5 lbf ft).

Service Tools

Section F – Transmission



Service Tools  
Section F – Transmission

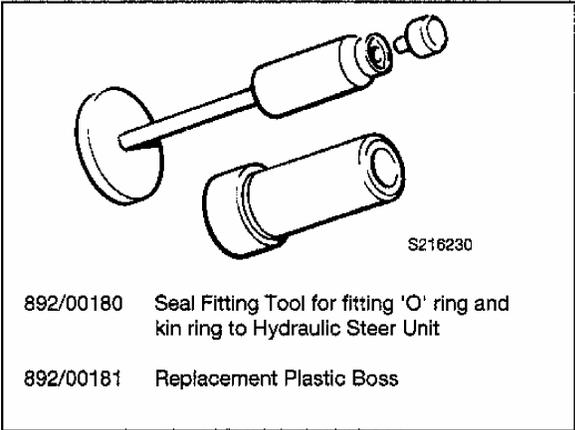


**Service Tools****Section F – Transmission**

Solid Spacer Setting Kit Synchro Shuttle Gearbox, Axles				
1	892/00918	Setting Tool Kit	921/52602	12.800
2	921/52627	Spacer 14.20 Service use	829/30409	12.825
3	993/70111	Breakback Torque Wrench	921/52603	12.850
4	892/01076	Support Bracket - Shuttle Gearbox	829/30410	12.875
			921/52604	12.900
5	892/01075	Support Bracket Rear Axles	829/30411	12.925
			921/52605	12.950
6	997/11000	Support Bracket Front Axles	829/30412	12.975
			921/52606	13.000
7	998/10567	Axle Pinion Shaft Adaptor	829/30413	13.025
8	921/53300	Spacer Kit - Front Axles	921/52607	13.050
			829/30414	13.075
	Comprises of:	Spacer thickness mm	921/52608	13.100
	921/53322	13.550	829/30415	13.125
	921/53323	13.575	921/52609	13.150
	921/53324	13.600	829/30416	13.175
	921/53325	13.625	921/52610	13.200
	921/53301	13.650	829/30417	13.225
	921/53302	13.675	921/52611	13.250
	921/53303	13.700	921/53424	13.275
	921/53304	13.725	921/53425	13.300
	921/53305	13.750	921/53426	13.325
	921/53306	13.775	921/53427	13.350
	921/53307	13.800	921/53428	13.375
	921/53308	13.825	921/53401	13.400
	921/53309	13.850	921/53402	13.425
	921/53310	13.875	921/53403	13.450
	921/53311	13.900	921/53404	13.475
	921/53312	13.925	921/53405	13.500
	921/53313	13.950	921/53406	13.525
	921/53314	13.975	921/53407	13.550
	921/53315	14.000	921/53408	13.575
	921/53316	14.025	921/53409	13.600
	921/53317	14.050	921/53410	13.625
	921/53318	14.075	921/53411	13.650
	921/53319	14.100	921/53412	13.675
	921/53320	14.125	921/53413	13.700
	921/53321	14.150	921/53414	13.725
			921/53415	13.750
9	921/53400	Spacer Kit – Gearbox & Rear Axles	921/53416	13.775
			921/53417	13.800
	Comprises of:	Spacer thickness mm	921/53418	13.825
	921/52628	12.600	921/53419	13.850
	829/30405	12.625	921/53420	13.875
	921/52629	12.650	921/53421	13.900
	829/30406	12.675	921/53422	13.925
	921/52630	12.700	921/53423	13.950
	829/30407	12.725		
	921/52601	12.750		
	829/30408	12.775		
			Note: After using a spacer, obtain a replacement to keep the set complete.	

**Service Tools**

**Section 1 – Steering**



892/00180 Seal Fitting Tool for fitting 'O' ring and kin ring to Hydraulic Steer Unit

892/00181 Replacement Plastic Boss

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### Safety Notices

In this publication and on the machine, there are safety notices. Each notice starts with a signal word. The signal word meanings are given below.

#### **DANGER**

Denotes an extreme hazard exists. If proper precautions are not taken, it is highly probable that the operator (or others) could be killed or seriously injured.

#### **WARNING**

Denotes a hazard exists. If proper precautions are not taken, the operator (or others) could be killed or seriously injured.

#### **CAUTION**

Denotes a reminder of safety practices. Failure to follow these safety practices could result in injury to the operator (or others) and possible damage to the machine.

All construction and agricultural equipment can be hazardous. When a JCB machine is correctly operated and properly maintained, it is a safe machine to work with. But when it is carelessly operated or poorly maintained it can become a danger to you (the operator) and others.

Do not work with the machine until you are sure that you can control it.

Do not start any job until you are sure that you and those around you will be safe.

If you are unsure of anything, about the machine or the job, ask someone who knows. Do not assume anything.

#### ***Remember***

**BE CAREFUL  
BE ALERT  
BE SAFE**

**General Safety****WARNING****Decals**

You can be injured if you do not obey the decal safety instructions. Keep decals clean. Replace unreadable or missing decals with new ones before operating the machine. Make sure replacement parts include warning decals where necessary.

**WARNING****Care and Alertness**

All the time you are working with or on the machine, take care and stay alert. Always be careful. Always be alert for hazards.

**WARNING****Clothing**

You can be injured if you do not wear the proper clothing. Loose clothing can get caught in the machinery. Wear protective clothing to suit the job. Examples of protective clothing are: a hard hat, safety shoes, safety glasses, a well fitting overall, ear-protectors and industrial gloves. Keep cuffs fastened. Do not wear a necktie or scarf. Keep long hair restrained.

**WARNING****Lifting Equipment**

You can be injured if you use faulty lifting equipment. Make sure that lifting equipment is in good condition. Make sure that lifting tackle complies with all local regulations and is suitable for the job. Make sure that lifting equipment is strong enough for the job.

**WARNING****Raised Attachments**

Raised attachments can fall and injure you. Do not walk or work under raised attachments unless they are safely blocked.

## Operating Safety

### WARNING

#### Machine Condition

A defective machine can injure you or others. Do not operate a machine which is defective or has missing parts. Make sure the maintenance procedures in this handbook are completed before using the machine.

### WARNING

#### Controls

You or others can be killed or seriously injured if you operate the control levers from outside the cab. Operate the control levers only when you are correctly seated inside the cab.

### WARNING

#### Machine Limits

Operating the machine beyond its design limits can damage the machine, it can also be dangerous. Do not operate the machine outside its limits. Do not try to upgrade the machine performance with unapproved modifications.

### WARNING

#### ROPS/FOPS Structure

\* The machine is fitted with a Roll Over Protection Structure (ROPS) and a Falling Objects Protection Structure (FOPS). You could be killed or seriously injured if you operate the machine with a damaged or missing ROPS/FOPS. If the ROPS/FOPS has been in an accident, do not use the machine until the structure has been renewed. Modifications and repairs that are not approved by the manufacturer may be dangerous and will invalidate the ROPS/FOPS certification.

### WARNING

#### Exhaust Gases

Breathing the machine exhaust gases can harm and possibly kill you. Do not operate the machine in closed spaces without making sure there is good ventilation. If possible, fit an exhaust extension. If you begin to feel drowsy, stop the machine at once. Get out of the cab into fresh air.

### WARNING

#### Engine/Steering Failure

If the engine or steering fails, stop the machine as quickly as possible. Do not operate the machine until the fault has been corrected.

### WARNING

#### Engine

The engine has rotating parts. Do not open the engine cover while the engine is running. Do not use the machine with the cover open.

**Operating Safety ( Contd.)****WARNING**  
**Entering/Leaving**

Always face the machine when entering and leaving the cab. Use the step(s) and handrails. Make sure the step(s), handrails and your boot soles are clean and dry. Do not jump from the machine. Do not use the machine controls as handholds, use the handrails.

**WARNING**  
**Communications**

Bad communications can cause accidents. Keep people around you informed of what you will be doing. if you will be working with other people, make sure any hand signals that may be used are understood by everybody. Work sites can be noisy, do not rely on spoken commands.

**WARNING**  
**Ramps and Trailers**

Water, mud, ice, grease and oil on ramps or trailers can cause serious accidents. Make sure ramps and trailers are clean before driving onto them. Use extreme caution when driving onto ramps and trailers.

**DANGER**  
**Sparks**

Explosions and fire can be caused by sparks from the exhaust or the electrical system. Do not use the machine in closed areas where there is flammable material, vapour or dust.

**WARNING**

The transmission is in 4 wheel drive until de-selected by hydraulic pressure to 2 wheel drive. If the machine is to be raised and the engine/transmission run, make sure all four wheels are off the ground and supported by axle stands. If only the rear wheels are raised, the machine could still drive through the front axle.

## Maintenance Safety

### WARNING

#### Repairs

Do not try to do repairs or any other type of maintenance work you do not understand. To avoid injury and/or damage get the work done by a specialist engineer.

### WARNING

#### Modifications and Welding

Non-approved modifications can cause injury and damage. Parts of the machine are made from cast iron; welds on cast iron can weaken the structure and break. Do not weld cast iron. Contact your JCB distributor for advice before modifying the machine.

### WARNING

#### Metal Splinters

You can be injured by flying metal splinters when driving metal pins in or out. Use a soft faced hammer or drift to remove and fit metal pins. Always wear safety glasses.

### WARNING

#### Battery

A battery with frozen electrolyte can explode if it is used or charged. Do not use a machine with a frozen battery. To help prevent the battery from freezing, keep the battery fully charged.

### WARNING

#### Battery Gases

Batteries give off explosive gases. Keep flames and sparks away from the battery. Do not smoke close to the battery. Make sure there is good ventilation in closed areas where batteries are being used or charged. Do not check the battery charge by shorting the terminals with metal; use a hydrometer or voltmeter.

### WARNING

#### Battery Terminals

The machine is negatively earthed. Always connect the negative pole of the battery to earth. When connecting the battery, connect the earth (-) lead last. When disconnecting the battery, disconnect the earth (-) lead first.

### WARNING

#### Electrical

Understand the electrical circuit before connecting or disconnecting an electrical component. A wrong connection can cause injury and/or damage.

**Maintenance Safety ( Contd.)****WARNING  
Communications**

Bad communications can cause accidents. If two or more people are working on the machine, make sure each is aware of what the others are doing. Before starting the engine make sure the others are clear of the danger areas; examples of danger areas are: the rotating blades and belt on the engine, the attachments and linkages, and anywhere beneath or behind the machine. People can be killed or injured if these precautions are not taken.

**WARNING  
Petrol**

Do not use petrol in this machine. Do not mix petrol with the diesel fuel; in storage tanks the petrol will rise to the top and form flammable vapours.

**WARNING  
Hydraulic Fluid**

Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic fluid leaks. Do not put your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic fluid. If hydraulic fluid penetrates your skin, get medical help immediately.

**DANGER  
Hydraulic Pressure**

Hydraulic fluid at system pressure can injure you. Before disconnecting or connecting hydraulic hoses, stop the engine and operate the controls to release pressure trapped in the hoses. Make sure the engine cannot be started while the hoses are open.

**WARNING  
Diesel Fuel**

Diesel fuel is flammable; keep naked flames away from the machine. Do not smoke while refueling the machine or working on the engine. Do not refuel with the engine running. There could be a fire and injury if you do not follow these precautions.

**CAUTION  
Rams**

The efficiency of the rams will be affected if they are not kept free of solidified dirt. Clean dirt from around the rams regularly. When leaving or parking the machine, close all rams if possible to reduce the risk of weather corrosion.

**WARNING  
Tyres and Rims**

Over-inflated or over-heated tyres can explode. Follow the instructions in this handbook for inflating the tyres. Do not weld or cut rims. Get a tyre/wheel specialist to do any repair work.

**Maintenance Safety ( Contd.)****WARNING  
Oil**

Oil is toxic. If you swallow any oil, do not induce vomiting, seek medical advice. Used engine oil contains harmful contaminants which can cause skin cancer. Do not handle used engine oil more than necessary. Always use barrier cream or wear gloves to prevent skin contact. Wash skin contaminated with oil thoroughly in warm soapy water. Do not use petrol, diesel fuel or paraffin to clean your skin.

**WARNING  
Soft Ground**

A machine can sink into soft ground. Never work under a machine on soft ground.

**WARNING  
Hot Coolant**

The cooling system is pressurized when the engine is hot. Hot coolant can spray out when you remove the radiator cap. Let the system cool before removing the radiator cap. To remove the cap; turn it to the first notch and let the system pressure escape, then remove the cap.

**WARNING**

\*Always wear safety glasses when dismantling assemblies containing components under pressure from springs. This will protect against eye injury from components accidentally flying out.

**CAUTION  
Cleaning**

Cleaning metal parts with incorrect solvents can cause corrosion. Use only recommended cleaning agents and solvents.

**CAUTION  
'O' rings, Seals and Gaskets**

Badly fitted, damaged or rotted 'O' rings, seals and gaskets can cause leakage and possible accidents. Renew whenever disturbed unless otherwise instructed. Do not use Trichloroethane or paint thinners near 'O' rings and seals.

**WARNING  
Fires**

If your machine is equipped with a fire extinguisher, make sure it is checked regularly. Keep it in the operators cab until you need to use it.

Do not use water to put out a machine fire, you could spread an oil fire or get a shock from an electrical fire. Use carbon dioxide, dry chemical or foam extinguishers. Contact your nearest fire department as quickly as possible. Firefighters should use self contained breathing apparatus.

**Maintenance Safety ( Contd.)****WARNING****Jacking**

A machine can roll off jacks and crush you unless the wheels have been chocked. Always chock the wheels at the opposite end of the machine that is to be jacked. Do not work underneath a machine supported only by jacks. Always support a jacked-up machine on axle stands before working underneath it.

**WARNING****Hydraulic Hoses**

Damaged hoses can cause fatal accidents. Inspect the hoses regularly for:

- Damaged end fittings
- Chafed outer covers
- Ballooned outer covers
- Kinked or crushed hoses
- Embedded armouring in outer covers Displaced end fittings.

**WARNING****Safety Strut**

Raised loader arms can drop suddenly and cause serious injury. Before working under raised loader arms, fit the loader arm safety strut.

**WARNING**

To avoid burning, wear protective gloves when handling hot components. To protect your eyes, wear goggles when using a wire brush to clean components.

**WARNING****JCB Extradig Dipper Lubricant**

JCB Extradig dipper lubricant contains 1.53% lead. The repeated swallowing of very small quantities can cause chronic lead poisoning. Do not smoke or touch food while handling this lubricant. Dispose of waste (rags etc.) in accordance with local regulations.

**WARNING**

A raised and badly supported machine can fall on you. Position the machine on a firm, level surface before raising one end. Ensure the other end is securely chocked. Do not rely solely on the machine hydraulics or jacks to support the machine when working under it.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

**Maintenance Safety ( Contd.)****WARNING**

Waxoyl contains turpentine substitute, which is flammable. Keep flames away when applying Waxoyl. Waxoyl can take a few weeks to dry completely. Keep flames away during the drying period.

Do not weld near the affected area during the drying period. Take the same precautions as for oil to keep Waxoyl off your skin. Do not breathe the fumes. Apply in a well-ventilated area.

**WARNING**

Make the machine safe before working underneath it. Park the machine on level ground, lower the arms. Apply the parking brake, put the transmission in neutral and stop the engine. Chock both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

**WARNING****Fluoroelastomeric Materials**

Certain seals and gaskets on JCB machines contain fluoroelastomeric materials such as Viton, Fluorel and Technoflon. Fluoroelastomeric materials subjected to high temperatures can produce highly corrosive hydrofluoric acid. THIS ACID CAN SEVERELY BURN.

New fluoroelastomeric components at ambient temperature require no special safety precautions.

Used fluoroelastomeric components whose temperatures have not exceeded 300°C require no special safety precautions. If evidence of decomposition (e.g. charring) is found, refer to the next paragraph for safety instructions DO NOT TOUCH COMPONENT OR SURROUNDING AREA.

Used fluoroelastomeric components subjected to temperatures greater than 300°C (e.g. engine fire) must be treated using the following safety procedure. Make sure that heavy duty gloves and special safety glasses are worn:

- 1 Ensure that components have cooled then remove and place material into plastic bags.
- 2 Thoroughly wash contaminated area with 10% calcium hydroxide or other suitable alkali solution, if necessary use wire wool to remove burnt remains.
- 3 Thoroughly wash contaminated area with detergent and water.
- 4 Contain all removed material, gloves etc. used in this operation in sealed plastic bags and dispose of in accordance with Local Authority Regulations.

DO NOT BURN FLUOROELASTOMERIC MATERIALS.

If contamination of skin or eyes occurs, wash the affected area with a continuous supply of clean water or with calcium hydroxide solution for 15-60 minutes. Get medical attention immediately.

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Inspect steelwork for damage. Note damaged paintwork for future repair.

Make sure all pivot pins are correctly in place and secured by their locking devices.

Ensure that the steps and handrails are undamaged and secure.

**Check for broken or cracked window glass. Replace damaged items.**

Check all bucket teeth for damage and security.

Check all lamp lenses for damage.

Inspect the tyres for damage and penetration by sharp objects.

Check that all safety decals are in place and undamaged. Fit new decals where necessary.

Park the machine on firm level ground, engage the parking brake and set the transmission to neutral. Lower the attachments to the ground and stop the engine.

Clean the machine using water and/or steam. Do not allow mud, debris etc to build upon the machine, pay particular attention to the following areas:

- 1 Backhoe hoses passing through mainframe.
- 2 Around twin slew rams.
- 3 Kingpost slide rails.
- 4 Kingpost hose tray and bottom 'shelf'.
- 5 Recess between slew ram and kingpost casting

Stabiliser cavities can become clogged when operating in soft / wet ground conditions. Remove and clean away all debris that may have built up.

Do not allow mud to build up on the engine and transmission. Make sure the radiator grille is not clogged up.

#### **! WARNING**

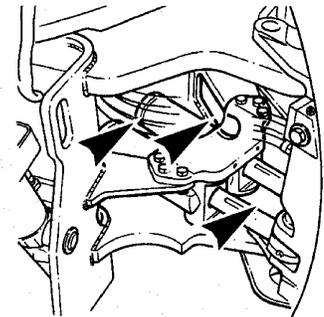
**Airborne particles of light combustible material such as straw, grass, wood shavings, etc. must not be allowed to accumulate within the engine compartment. Please inspect these areas frequently and clean at the beginning of each work shift or more often if required. Before opening the engine cover, ensure that the top is clear of debris.**

Avoid using neat detergent - always dilute detergents as per the manufacturer's recommendations, otherwise damage to the paint finish may occur.

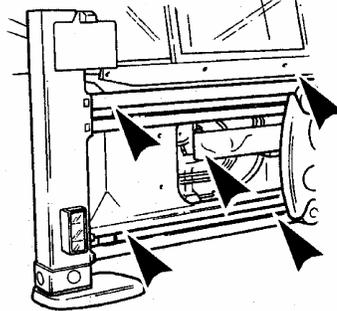
It is important to note that excessive power washing can cause damage to the seals or bearings. Take care during routine machine washing not to direct high power water jets directly at oil seals or universal joints.

**Note:** The machine must always be greased after pressure washing or steam cleaning.

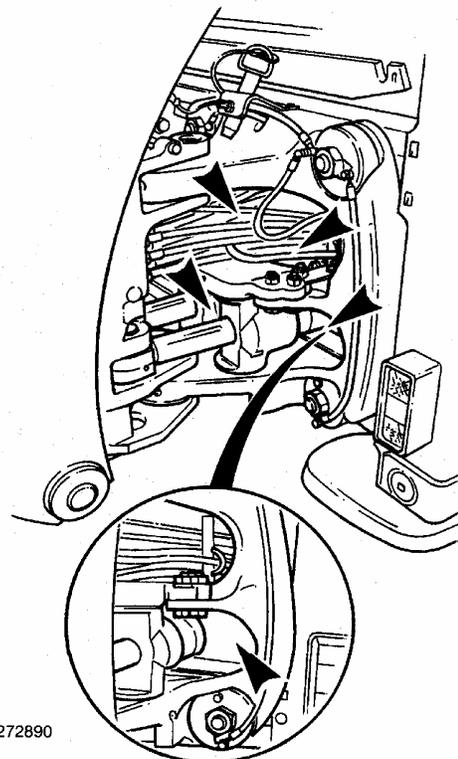
**The illustrations show some of the areas that must be thoroughly cleaned as required.**



S272900



S272880



S272890

### Tyre Inflation

These instructions are for adding air to a tyre which is already inflated. If the tyre has lost all its air pressure, call in a qualified tyre mechanic. The tyre mechanic should use a tyre inflation cage and the correct equipment to do the job.

#### **! WARNING**

**An exploding tyre can kill, inflated tyres can explode if overheated. Do not cut or weld the rims. Use a tyre/wheel specialist for all repair work.**

### Prepare the Wheel

Before you add air to the tyre, make sure it is correctly fitted on the machine or installed in a tyre inflation cage.

### Prepare the Equipment

Use only an air supply system which includes a pressure regulator. Set the regulator no higher than 1.38 bar (20 psi) above the recommended tyre pressure. See Section F, Technical Data for recommended tyres and pressures for your machine.

Use an air hose fitted with a self-locking air chuck and remote shut-off valve.

### Add the Air

Make sure that the air hose is correctly connected to the tyre valve. Clear other people from the area. Stand behind the tread of the tyre while adding the air.

**Inflate the tyre to the recommended pressure. Do not over-inflate.**

### Checking the Wheel Nut Torques

On new machines and whenever a wheel has been removed, check the wheel nut torques every two hours until they stay correct.

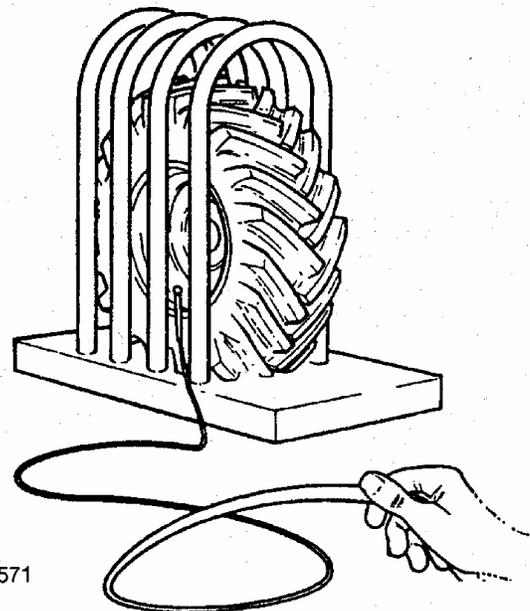
Every day, before starting work, check that the wheel nuts are tight.

The correct torques are shown in the table below.

Front -	Nm	lbf ft
	680	500
Rear -	Nm	lbf ft
	680	500

#### **WARNING**

**If, for whatever reason, a wheel stud is renewed, all the studs for that wheel must be changed as a set, since the remaining studs may have been damaged**



**It is most important that you read and understand this information and the publications referred to. Make sure all your colleagues who are concerned with lubricants read it too.**

### Hygiene

**JCB lubricants are not a health risk when used properly for their intended purposes.**

**However, excessive or prolonged skin contact can remove the natural fats from your skin, causing dryness and irritation.**

Low viscosity oils are more likely to do this, so take special care when handling used oils, which might be diluted with fuel contamination.

Whenever you are handling oil products you should maintain good standards of care and personal and plant hygiene. For details of these precautions we advise you to read the relevant publications issued by your local health authority, plus the following.

### Storage

Always keep lubricants out of the reach of children.

Never store lubricants in open or unlabelled containers.

### Waste Disposal

All waste products should be disposed of in accordance with all the relevant regulations.

The collection and disposal of used oil should be in accordance with any local regulations. Never pour used engine oil into sewers, drains or on the ground.

### Handling

#### New Oil.

There are no special precautions needed for the handling or use of new oil, beside the normal care and hygiene practices.

#### Used Oil.

Used engine crankcase lubricants contain harmful contaminants.

Here are precautions to protect your health when handling used engine oil:

1. Avoid prolonged, excessive or repeated skin contact with used oil.

2. Apply a barrier cream to the skin before handling used oil.
3. Note the following when removing engine oil from skin:
  - a Wash your skin thoroughly with soap and water.
  - b Using a nail brush will help.
  - c Use special hand cleansers to help clean dirty hands.
  - d Never use petrol, diesel fuel, or paraffin for washing.
4. Avoid skin contact with oil soaked clothing.
5. Don't keep oily rags in pockets.
6. Wash dirty clothing before re-use.
7. Throw away oil-soaked shoes.

### First Aid - Oil

#### Eyes.

In the case of eye contact, flush with water for 15 minutes. If irritation persists, get medical attention.

#### Swallowing.

If oil is swallowed do not induce vomiting. Get medical advice.

#### Skin.

In the case of excessive skin contact, wash with soap and water.

### Spillage

Absorb on sand or a locally approved brand of absorbent granules. Scrape up and remove to a chemical disposal area.

### Fires

Extinguish with carbon dioxide, dry chemical or foam. Fire-fighters should use self-contained breathing apparatus.