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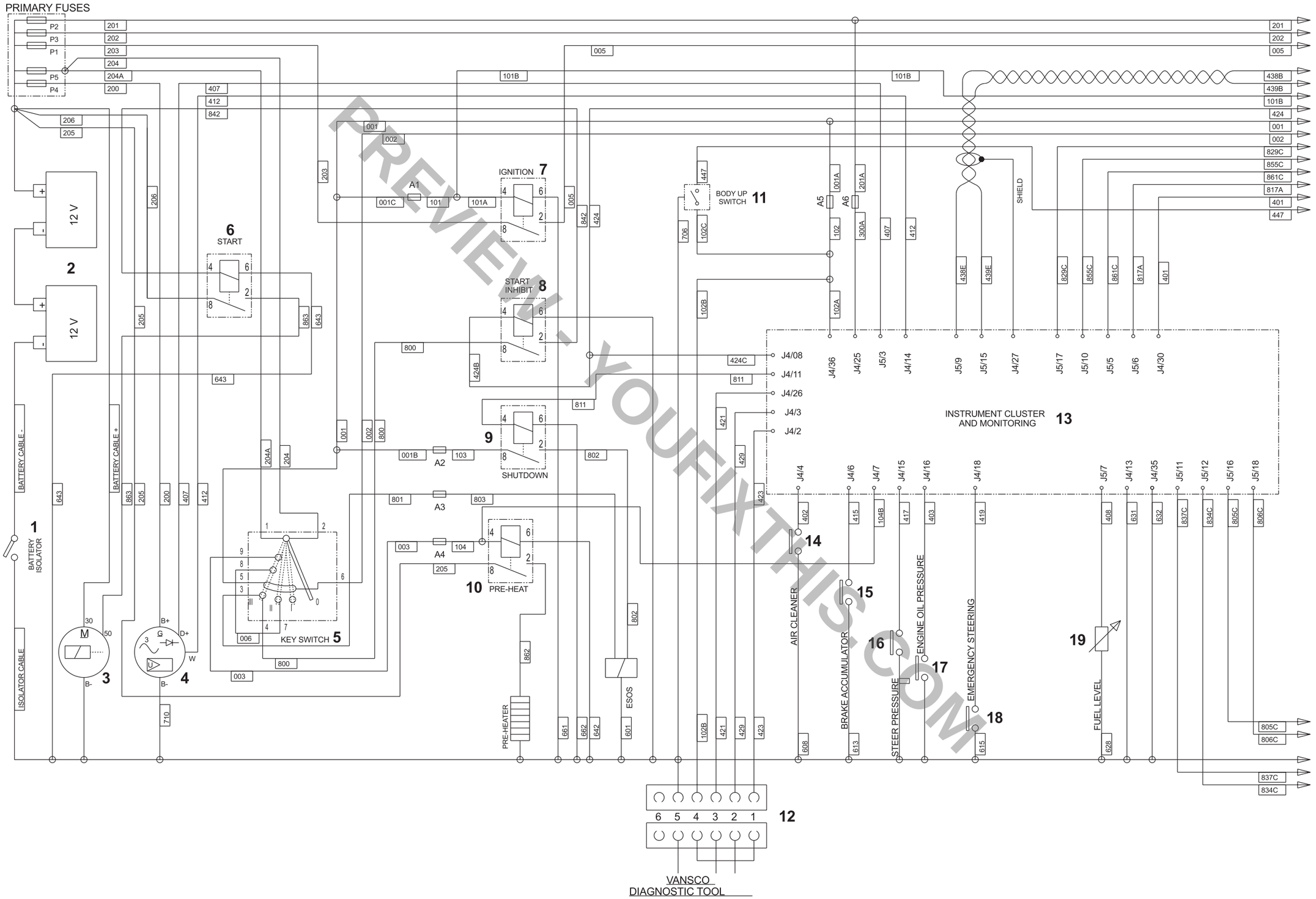
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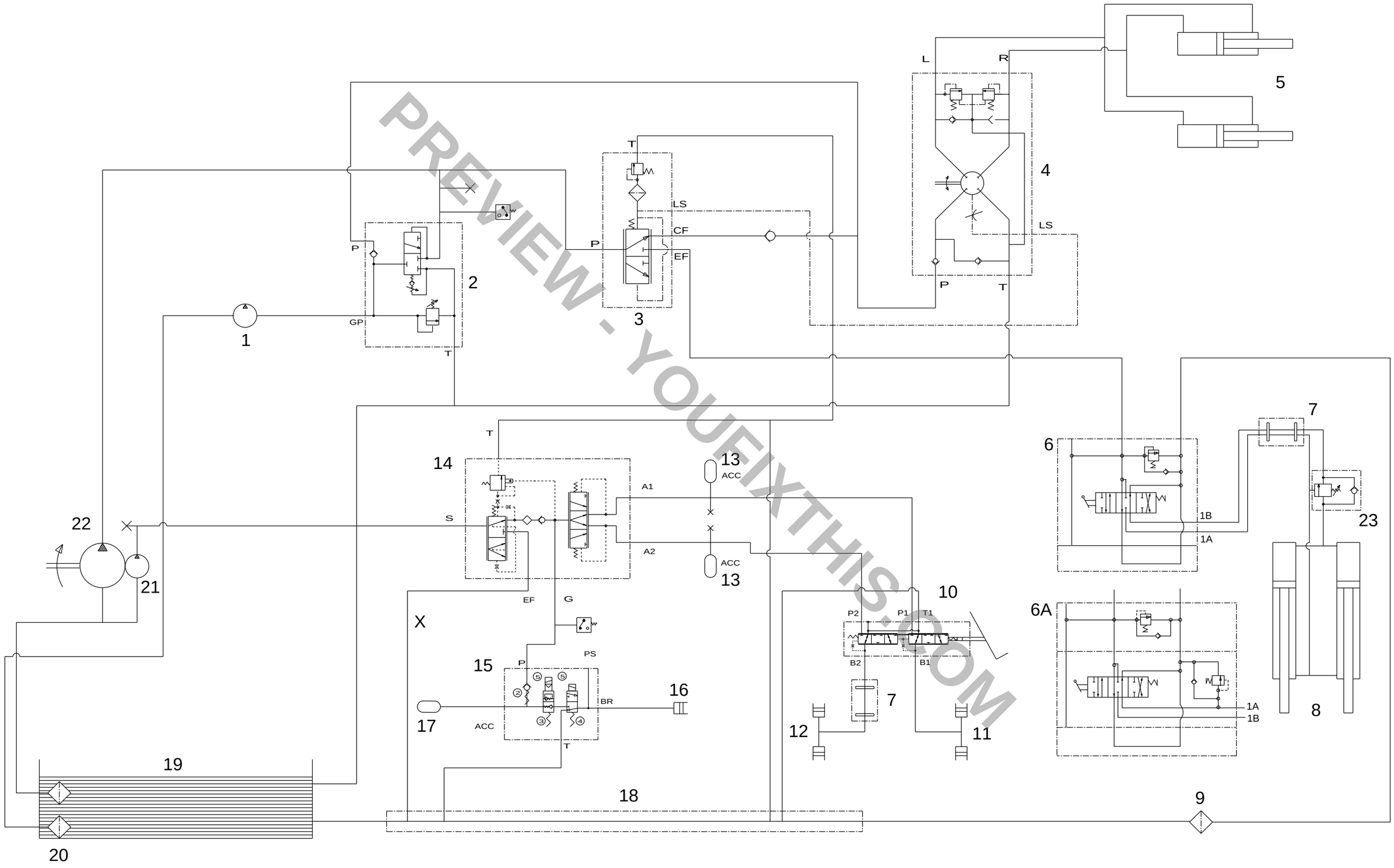
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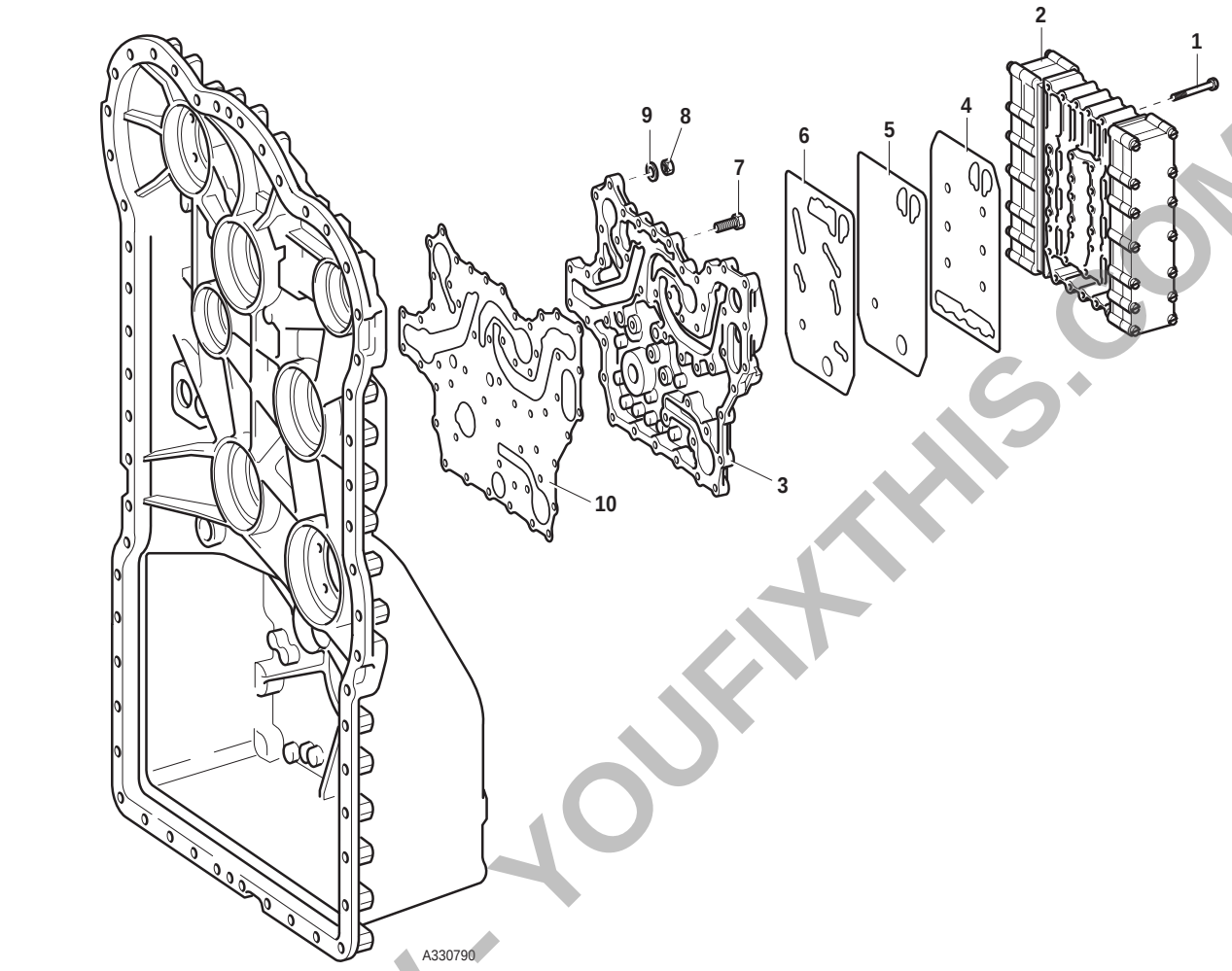


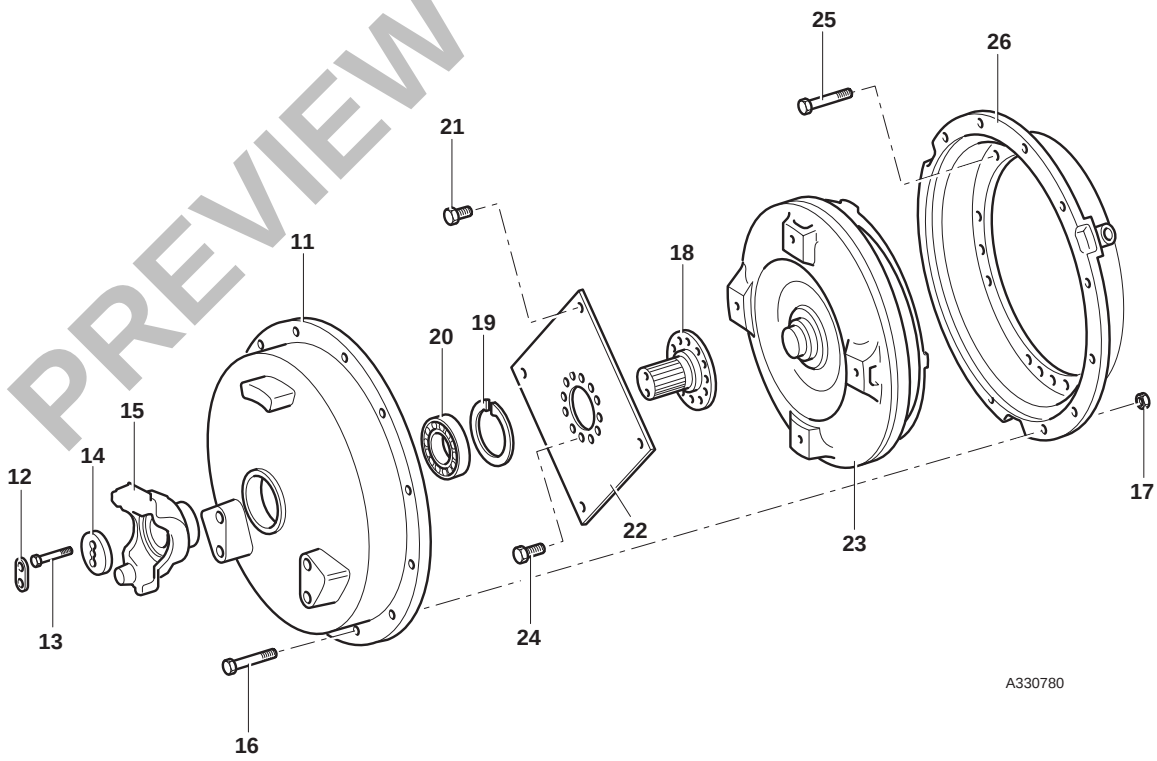
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Dismantling





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Torque Settings

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

UNF Grade 'S' Bolts

Bolt Size in	(mm)	Hexagon (A/F) in	Torque Settings 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	87
9/16	(14.3)	13/16	170	17.3	125
5/8	(15.9)	1 5/16	238	24.3	175
3/4	(19)	1 1/8	407	41.5	300
7/8	(22.2)	1 5/16	650	66.3	480
1	(25.4)	1 1/2	970	99	715
1 1/4	(31.7)	1 7/8	1940	198.0	1430
1 1/2	38.1	2 1/4	3390	345.0	2500

Metric Grade 8.8 Bolts

Bolt Size	(mm)	Hexagon (A/F) mm	Torque Settings 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 (mm)	Torque Settings Nm	kgf m	lbf ft
M3	(3)	1.2	0.12	0.9
M4	(4)	3.0	0.3	2
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	4.9	35.5
M12	(12)	82.0	8.4	60.5

NOTE: All bolts used on JCB equipment are high tensile and must not under any circumstances be replaced with bolts of a lesser tensile specification.

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Error Codes

In the event of a fault developing in the transmission system the Electronic Monitoring System (EMS) will display an error code.

The code will be displayed on the top line of the operators EMS display panel in the format: ZFCB ERROR xx.

Note: TCU = Transmission Control Unit

Fault Code	Fault Detected	Possible Causes	Action
11	Logical error at gear range signal	• Cable from shift lever to TCU is broken • Cable is defective and is contacted to battery voltage or earth • Shift lever is defective	• Check cables from TCU to shift lever • Check signal combinations of shift lever positions for gear range
12	Logical error at direction select signal	• Cable from shift lever to TCU is broken • Cable is defective and is contacted to battery voltage or earth • Shift lever is defective	• Check cables from TCU to shift lever • Check signal combinations of shift lever positions F-N-R
25	Short circuit to battery voltage or open circuit at transmission sump temperature sensor input	• Cable is defective and is contacted to battery voltage • Cable has no connection to TCU • Temperature sensor has an internal defect • Connector pin is contacted to battery voltage or is broken	• Check the cable from the TCU to the sensor • Check the connectors • Check the temperature sensor
26	Short circuit to earth at transmission sump temperature sensor input	• Cable is defective and is contacted to vehicle ground • Temperature sensor has an internal defect • Connector pin is contacted to vehicle ground	• Check the cable from the TCU to the sensor • Check the connectors • Check the temperature sensor
27	Short circuit to battery voltage or open circuit at converter output temperature sensor input	• Cable is defective and is contacted to battery voltage • Cable has no connection to TCU • Temperature sensor has an internal defect • Connector pin is contacted to battery voltage or is broken	• Check the cable from the TCU to the sensor • Check the connectors • Check the temperature sensor
28	Short circuit to earth at converter output temperature sensor input	• Cable is defective and is contacted to vehicle ground • Temperature sensor has an internal defect • Connector pin is contacted to vehicle ground	• Check the cable from the TCU to the sensor • Check the connectors • Check the temperature sensor
31	Short circuit to battery voltage or open circuit at engine speed input	• Cable is defective and is contacted to battery voltage • Cable has no connection to TCU • Speed sensor has an internal defect • Connector pin is contacted to battery voltage or is broken	• Check the cable from the TCU to the sensor • Check the connectors • Check the speed sensor

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Fault Finding

The following fault finding checks can be undertaken without discharging the air conditioning system.

Procedures that require charging or discharging the system are not given in this manual as they require special equipment that is usually held only by trained refrigeration engineers.

The system will not function in very low ambient temperatures, therefore tests should be carried out in a warm environment.

It is essential that an electronic leak detector is used to locate leaks accurately (see **Leak Detecting**). However, if a leak detector is not available an approximate source of leakage can be found by applying soap solution to suspect areas.

⚠ WARNING

When the engine is turning, there are parts rotating in the engine compartment.

Before starting this job make sure that you have no loose clothing (cuffs, ties etc.) which could get caught in rotating parts.

When the engine is turning, keep clear of rotating parts.
2-3-3-10

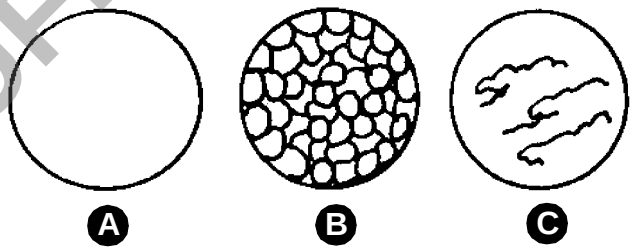
With the engine running, an approximate indication of the condition of the refrigerant can be seen through the sight glass mounted in front of the condenser at the front of the machine.

Sight Glass Indications

Note: The following indications are only valid if the engine is running at maximum speed. At other engine speeds false indications may be given.

A	Clear	No fault is indicated unless the system is unable to provide cool air. The indication then is that the system is either completely discharged of refrigerant or that the temperature control valve is not fully closing.
B	Foam or bubbles	Refrigerant low and in need of charging
C	Clouded/dirty	Desiccant breakdown in the suction accumulator.

Note: Sight glass indications cannot always give a positive identification of a problem. Further diagnosis, preferably by a refrigeration engineer using pressure gauges, is advisable before reaching a definite conclusion.



S201520 A/B/C

General Fault Indications

The system will not function in very low ambient temperature, therefore tests should be carried out in a warm environment. It is recommended that, to locate faults on the system accurately and quickly, an electronic leak detector and a refrigerant pressure gauge should be used.

There are several indications that may help to determine the fault area on a system not working efficiently:

a)	Poor Performance	Low accumulator pressure	Repair or renew accumulator Evacuate and recharge
		Plugged orifice tube	Renew orifice tube Evacuate and recharge
		Condenser coil air flow restricted	Remove debris from around coil using compressed air or low pressure water. DO NOT steam clean.
		System overcharged	Evacuate and recharge
b)	Blower does not operate on all speeds	Blower resistor failed	Renew resistor
c)	Compressor clutch continually cuts out	Condenser coil blockage	Renew debris from around coil/renew condenser
		Overcharging of refrigerant system	Evacuate and recharge system

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ADT 714 Machine (Tier 1 Engine)

Type		B Series, 6 cylinder turbocharged, water cooled.
Bore		102 mm (4 in)
Stroke		120 mm (4.72 in)
Displacement		5.88 Litres (359 cu.in)
Firing Order		1, 5, 3, 6, 2, 4
Power		101 kW @ 2200 rpm
Torque		568 Nm @ 1600 rpm (58 kgf m; 415 lbf ft)

Electrical

Alternator		22SI 24V/70A
Starter Motor	ADT 714 Machine	28MT Type 171
	ADT 718 Machine	37-MT/300

ADT 718 Machine (Tier 1 Engine)

Type	B Series, 6 cylinder turbocharged, water cooled.
Bore	114 mm (4.5 in)
Stroke	135 mm (5.3 in)
Displacement	5.88 Litres (359 cu.in)
Firing Order	1, 5, 3, 6, 2, 4
Power	130 kW @ 2500 rpm
Torque	603 Nm @ 1600 rpm (61.5 kgf m; 445 lbf ft)

Electrical

Alternator	22SI 24V/70A
Starter Motor	28MT Type 171

* ADT 714 and 718 Machine (Tier 2 Engines)

Type	B Series, 6 cylinder turbocharged, charge air cooled.
Bore	114 mm (4.5 in)
Stroke	135 mm (5.3 in)
Displacement	5.88 Litres (359 cu.in)
Firing Order	1, 5, 3, 6, 2, 4
Power (ADT 714 machine)	112 kW (150 bhp) @ 1600 rpm
Power (ADT 718 machine)	129 kW (173 bhp) @ 1300 rpm
Torque (ADT 714 machine)	617 Nm @ 1600 rpm (63 kgf m; 455 lbf ft)
Torque (ADT 718 machine)	786 Nm @ 1300 rpm (80 kgf m; 580 lbf ft)

Electrical

Alternator	21SI 24V/70A
Starter Motor	R4.5 24V 3.7W

For further details, refer to the engine service manual, publication number 9806/1170

Note: New engines **DO NOT** require a running-in period. The engine/machine should be used in a normal work cycle immediately. Glazing of the cylinder bores, resulting in excessive oil consumption, could occur if the engine is gently run-in. Under no circumstances should the engine be allowed to idle for extended periods (e.g. warming up without load).

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A badly maintained machine is a danger to the operator and the people working around him. Make sure that the regular maintenance and lubrication jobs listed in the schedules are done to keep the machine in a safe and efficient working condition.

The schedules are based on machine running hours. Keep a regular check on the hourmeter readings. Do not use a machine which is due for a service. Make sure any defects found during the regular maintenance checks are rectified immediately.

10 Hours - Daily Checks

	Check - Adjust/Replenish as necessary	**Page**
1	Engine oil level	3/14-1
2	Coolant Level	3/15-1
3	Hydraulic fluid level	3/22-1
4	Display panel operation	
5	Axles, transmission, hydraulics and suspension (718 only) for leaks	
6	Machine generally for damage	3/11-1
7	Windscreen washer fluid level	3/25-1

	Drain	**Page**
1	Sedimenter bowl	3/18-3

100 Hours - First Service

Do the daily checks plus:

	Check - Adjust/Replenish as necessary	**Page**
1	Air filter hose security	
2	Engine drive belt tension and condition	3/16-1
3	Air conditioning compressor belt (if fitted)	3/17-1
4	Engine mount security	
5	Wheel nut security	3/26-1
6	Axle mount security	
7	Transmission security	
8	Instrument panel operation	
9	Wiring for chafing	
10	Battery terminals for condition and tightness	
11	Battery charge condition	C/3-3

100 Hours - First Service

12	Body down sensor function (see Note)	
13	Windscreen wiper operation	
14	Cab glazing for correct fit	
15	Doors and Hinges	
16	Tool Kit and Handbook	
17	Locks and Keys	
18	Seat operation	
19	Seat belt operation and security	3/11-1
20	Starter Motor	C/5-1
21	Alternator	C/4-1
22	Cab Switches	
23	Tyre pressures	F/1-1
24	Parking brake operation	3/21-2
25	Radiator matrix	
* 26	Charge air cooler matrix (tier 2 engines)	3/15-3

	Clean	**Page**
1	Axle breathers	

	Lubricate	**Page**
1	Propshafts and universal joints	3/9-3
2	Centre bearing carrier	3/9-4
3	All pivot pins and hinges	3/9-1

	Change	**Page**
1	Fuel filter elements	3/18-2
2	Transmission oil and filter	3/19-2
3	Hydraulic filter element	3/22-2
4	Engine oil and filter	3/14-2
5	Axle differential oil	3/20-1
6	Hub oil	3/20-2

Note: With the body raised the machine should only travel in first gear. All gears should be available when the body is down.

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* General

The tipper body safety support is used to make sure the body cannot be lowered. It is installed when maintenance, cleaning etc. is required on the rear chassis. There are two tipper body safety support systems. Refer to **Fitting the Tipper Body Safety Strut (Early Machines)** or **Fitting and Stowing the Tipper Body Safety Stay (Later Machines)** depending on the system fitted to the machine.

⚠ WARNING

Fitting the body safety strut is a two man job. Do not attempt to fit the body safety strut by yourself.
7-3-1-4

Fitting the Tipper Body Safety Strut (Early Machines)

1 Make sure you have good communication.
The driver and the person who will fit the safety support must be in good communication with each other when this task is done.

2 Make sure the machine is correctly parked.

3 Make sure the articulation lock is installed before you start this procedure. See **Installing the Articulation Lock**.

⚠ WARNING

Before tipping, make sure that there will be enough clearance above the raised body.
0057

⚠ WARNING

Make sure the body is completely empty before fitting the body safety strut.
7-3-1-10

4 Raise the tipper body.
Operate the tipper control lever to raise the tipper body to the required position to let the safety strut **A** be positioned correctly.

⚠ DANGER

Do not power the body onto the body safety strut.
7-3-1-6/1

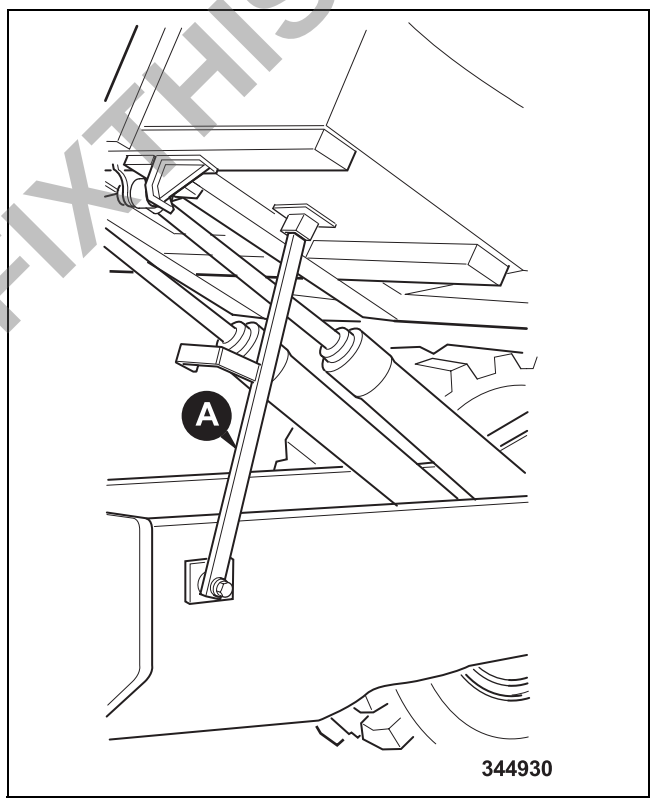
⚠ WARNING

The person fitting the body safety strut must keep his hands well clear from the top of the strut to avoid trapping and losing his fingers.
7-3-1-5

5 Carefully and gradually lower the tipper body until the safety strut **A** is held in position within the strut location area on the tipper body.

6 Make sure the tipper control lever is in the central position with the location collar located.

7 Switch off the engine.



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General Safety

All construction and agricultural equipment can be hazardous. When a JCB Articulated Dumper Truck 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

GEN-1-6

⚠ 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.

INT-1-3-7

⚠ 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.

INT-1-3-6

⚠ WARNING

It is extremely dangerous to operate the machinery when under the influence of alcohol and drugs. Do not consume alcoholic drinks or take drugs before or whilst operating the machine or attachments. Be aware of medicines which can cause drowsiness.

INT-1-3-9

⚠ CAUTION

Obey all laws, work site and local regulations which affect you and your machine.

INT-1-3-3

As well as the warnings in the following pages, specific warnings are given throughout the book. This section is designed to give a safety code for use of the machine generally and for operation and maintenance practices.

⚠ 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.

INT-1-3-5

⚠ WARNING

Raised Equipment

Raised equipment can fall and injure you. Do not walk or work under raised equipment unless safely supported.

13-1-1-6

⚠ 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.

INT-1-3-4

⚠ WARNING

This machine is manufactured in compliance with legislative and other requirements. It should not be altered in any way which could affect or invalidate any of these requirements. For advice consult your JCB distributor. Reference should also be made to Optional Attachments section where applicable.

INT-1-3-10

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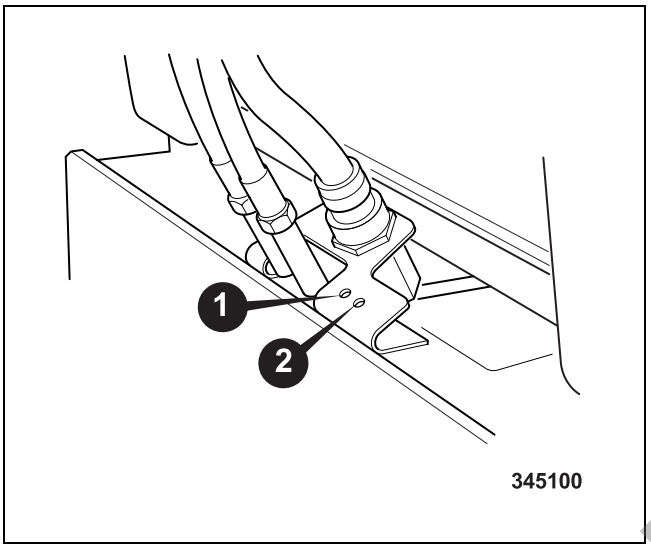
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Centre Bearing Carrier

⚠ WARNING

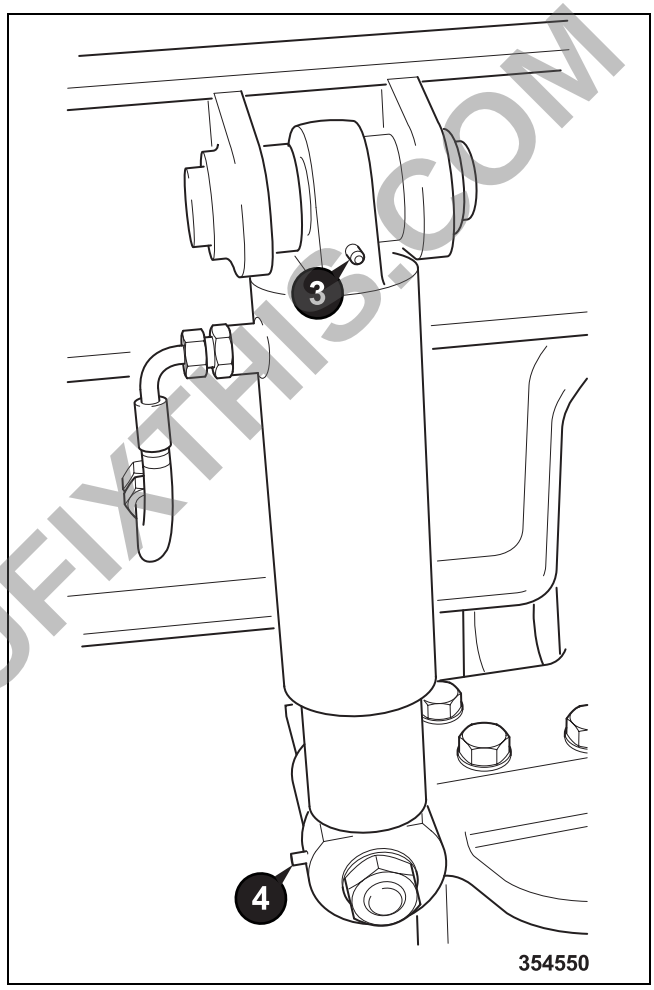
Make sure the articulation safety lock is fitted before greasing the centre bearing carrier.

The centre bearing carrier has two grease points **1** and **2**. These are located on the front of the rear chassis.



* Hydraulic Suspension Cylinder (ADT 718 Machine Only)

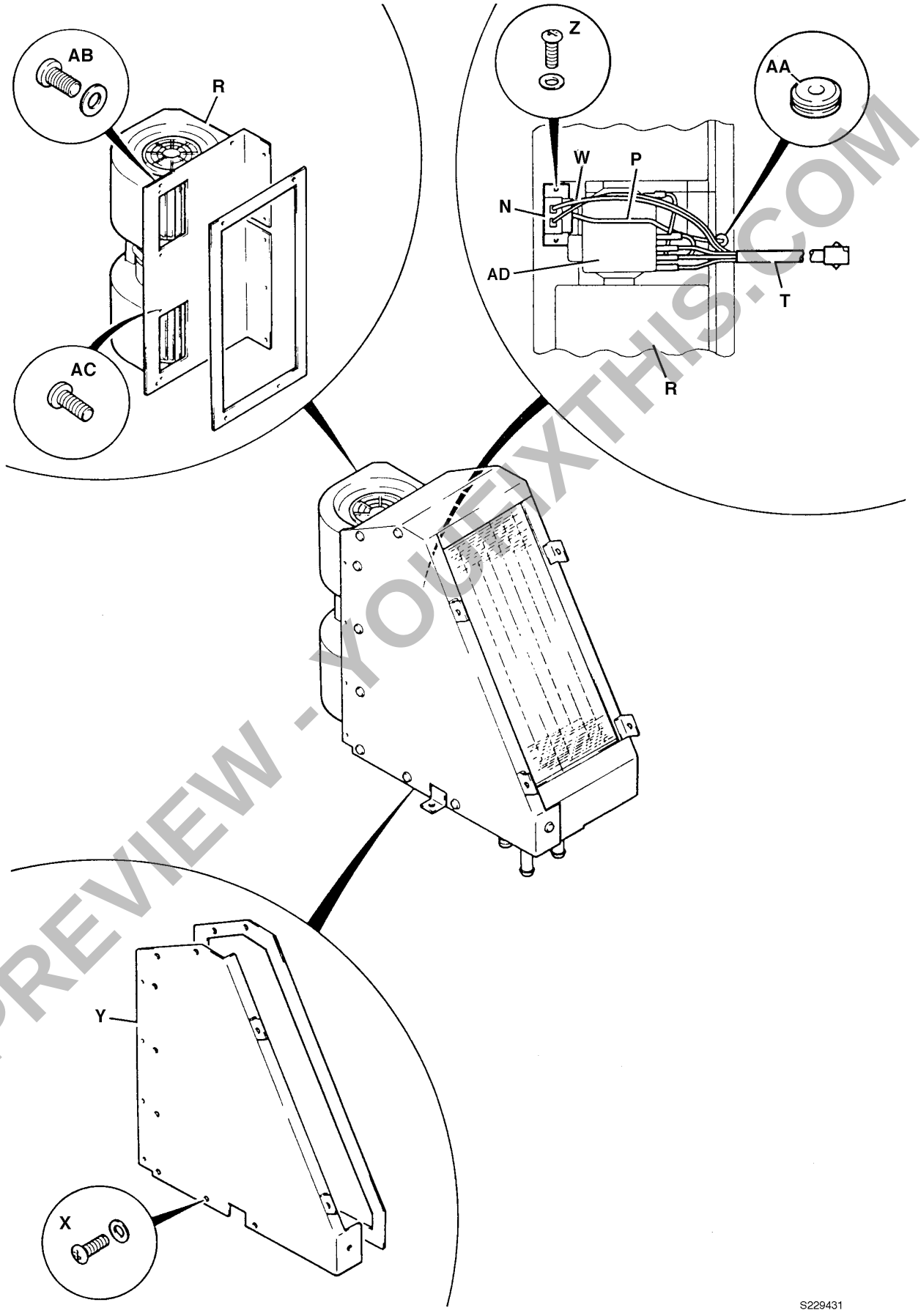
The hydraulic suspension cylinder has two greasing points **3** and **4**.



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Component Removal and Replacement

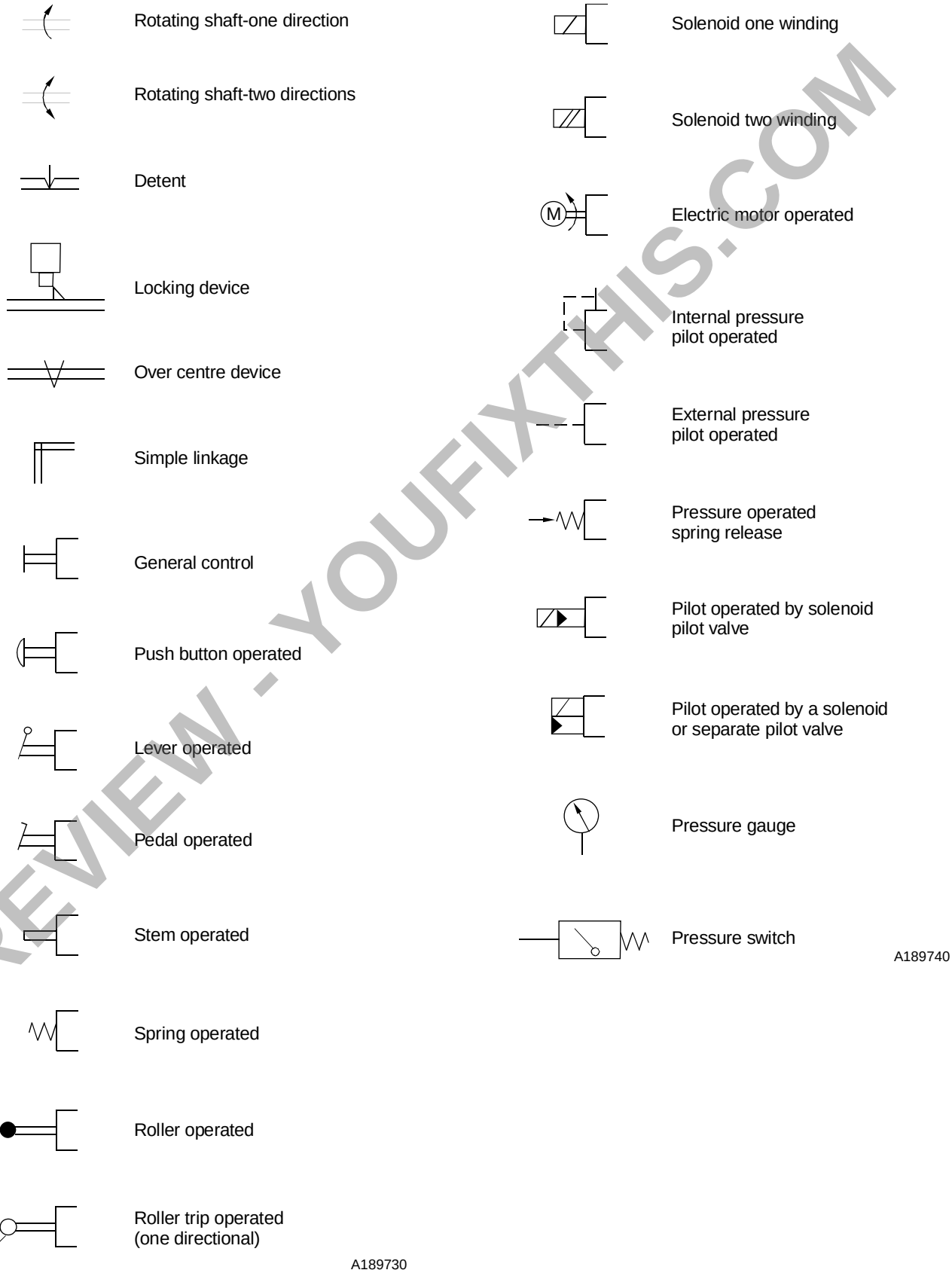


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Introduction to Hydraulic Schematic Symbols (cont'd)

Control Mechanisms



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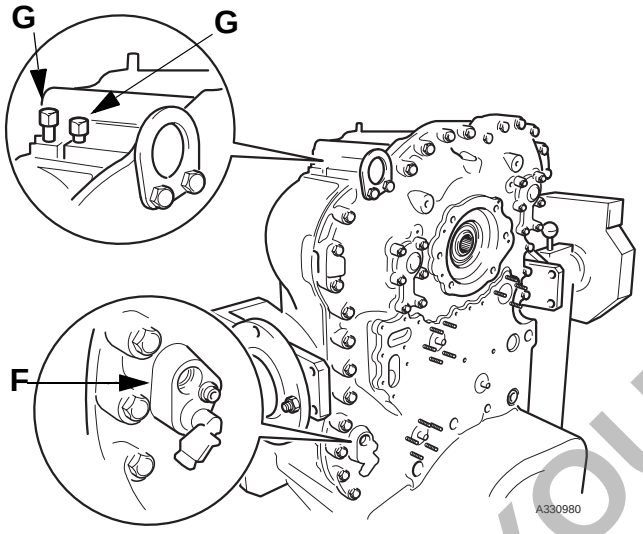
Dismantling (cont'd)

Remove Output Shaft, Input Shaft and Clutches

19 Remove lock plate **1**, screws **2** and retainer disc **3**. Remove seal **4** and pry torque convertor-side drive flange **5** off the shaft. Pry shaft seal **6** out of the housing bore.

Repeat for the opposite drive flange assembly **7**/**8**/**9**/**10**/**11**/**12**.

20 Remove speed sensor **F** as well as both inductive transmitters **G**.

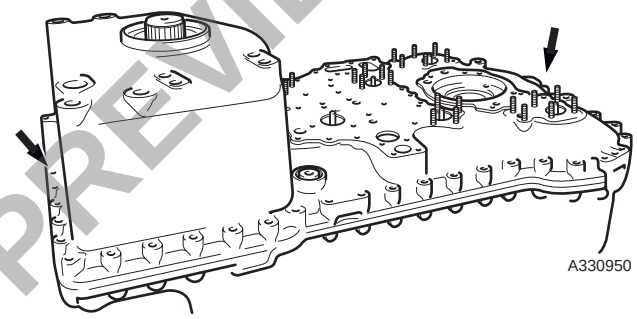


21 Remove nuts **13** and washers **14**. Remove cover **15** and seal **16**.

Repeat for the second cover assembly **18**/**19**/**20**/**21**.

22 Remove screw **23** connection (housing/housing cover)

23 Drive out both cylindrical pins (see arrows below).

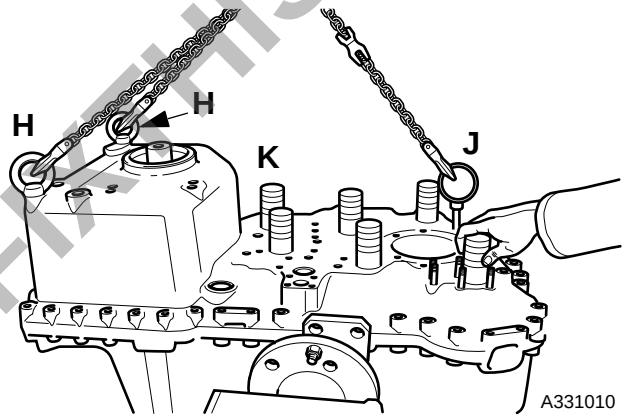


24 To facilitate separation of the housing cover from the transmission gearbox housing, proceed as follows:

a Attach two M20 eyebolts **H** and one M16 eyebolt **J** to the housing cover.

Lift Eye (M20)	892/01015
Lift Eye (M16)	892/01013

b Attach retainers **K** to the threaded studs protruding through the housing cover from the six clutches. As an alternative to the retainers, fit washers and M10 nuts over each stud and tighten firmly.



25 Separate the housing cover along with clutches from the gearbox housing, using lifting device. Fasten housing cover on the assembly jig.

26 Remove socket head screws **24** and remove output shaft assembly **25**/**26**/**27** as well as the two oil collecting plate **28** and **29**.

27 Pull off tapered roller bearing **26**. Remove opposite tapered roller bearing **27** accordingly. Separate oil collecting plates **28** and **29** from output shaft **25**.

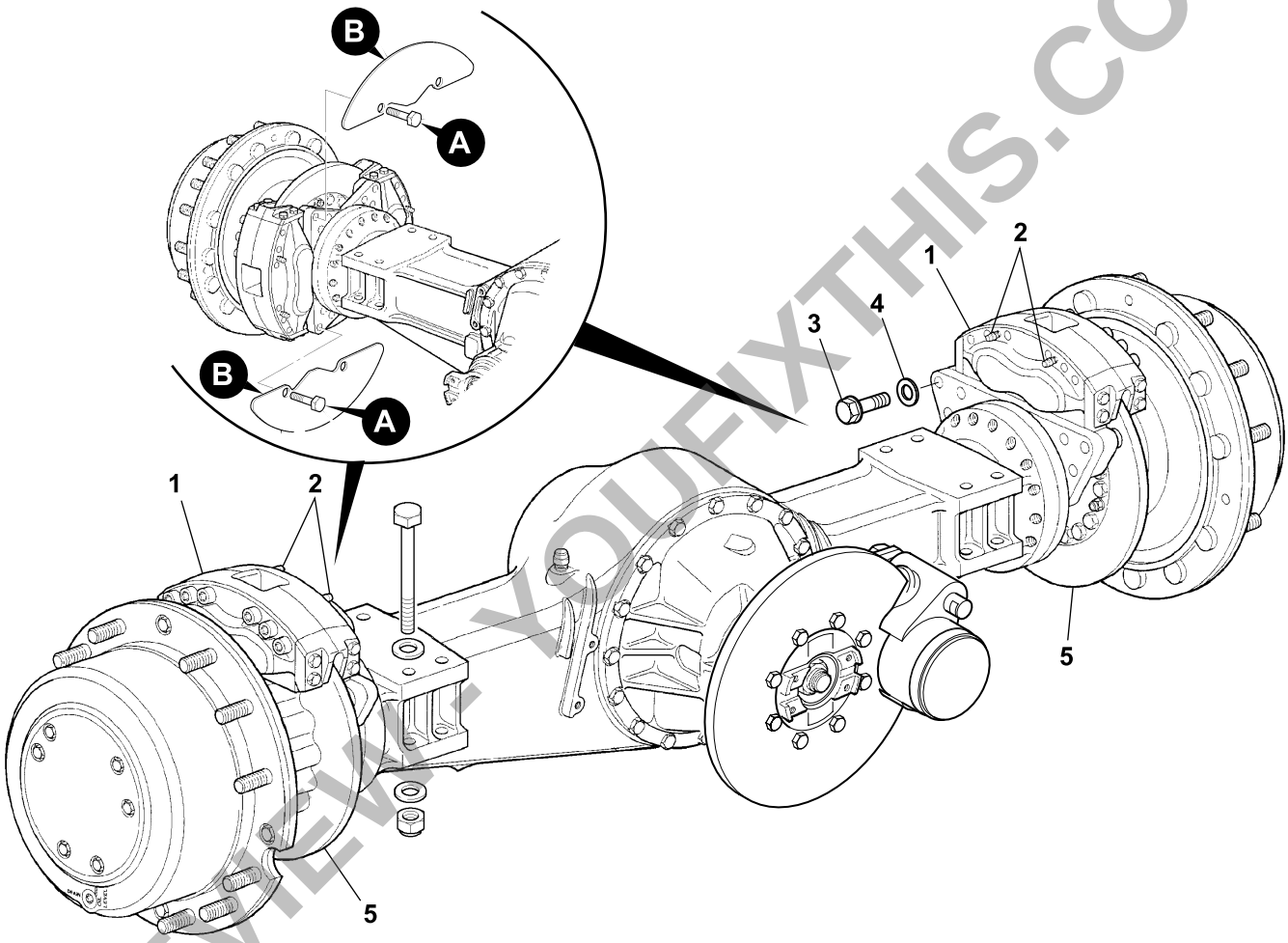
Bearing Tool	892/01004
Bearing Puller	892/01003

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Fault Code	Fault Detected	Possible Causes	Action
75	Short circuit to earth at clutch K2	• Cable/connector is defective and is contacted to vehicle earth • Regulator has an internal defect	• Check the cable from TCU to the gearbox • Check the connectors from TCU to the gearbox • Check the regulator resistance • Check internal wire harness of the gearbox
76	Open circuit at clutch K2	• Cable/connector is defective and has no contact to TCU • Regulator has an internal defect	• Check the cable from TCU to the gearbox • Check the connectors from TCU to the gearbox • Check the regulator resistance • Check internal wire harness of the gearbox
77	Short circuit to battery voltage at clutch K3	• Cable/connector is defective and has contact to battery voltage • Cable/connector is defective and has contact to another regulator output of the TCU • Regulator has an internal defect	• Check the cable from TCU to the gearbox • Check the connectors from TCU to the gearbox • Check the regulator resistance • Check internal wire harness of the gearbox
78	Short circuit to earth at clutch K3	• Cable/connector is defective and is contacted to vehicle earth • Regulator has an internal defect	• Check the cable from TCU to the gearbox • Check the connectors from TCU to the gearbox • Check the regulator resistance • Check internal wire harness of the gearbox
79	Open circuit at clutch K3	• Cable/connector is defective and has no contact to TCU • Regulator has an internal defect	• Check the cable from TCU to the gearbox • Check the connectors from TCU to the gearbox • Check the regulator resistance • Check internal wire harness of the gearbox
81	Short circuit to battery voltage at clutch K4	• Cable/connector is defective and has contact to battery voltage • Cable/connector is defective and has contact to another regulator output of the TCU • Regulator has an internal defect	• Check the cable from TCU to the gearbox • Check the connectors from TCU to the gearbox • Check the regulator resistance • Check internal wire harness of the gearbox
82	Short circuit to earth at clutch K4	• Cable/connector is defective and is contacted to vehicle earth • Regulator has an internal defect	• Check the cable from TCU to the gearbox • Check the connectors from TCU to the gearbox • Check the regulator resistance • Check internal wire harness of the gearbox

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