Service Manual

JCB Robot 190 and 1110

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Harness Data

Wire and Harness Number Identification

TC-900

Introduction

This section details the allocation of wire numbers and the identification of wires in the wiring harness.

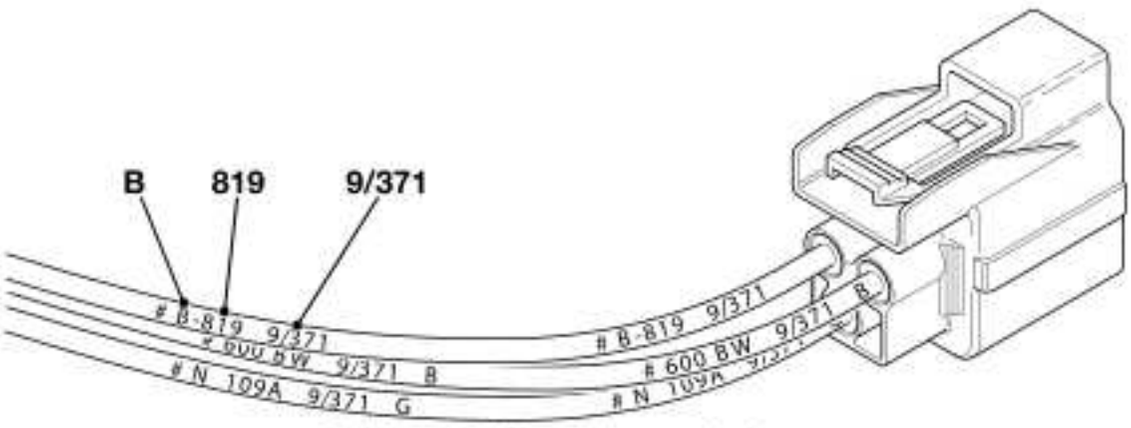


Fig 14. Typical Wire and Harness Number

⇨ *Fig 14. (C-20)* shows a typical connector and wires. Each wire has an individual identification number permanently marked on it, at regular intervals along it's length.

The number stamped on the wire shown in ⇨ *Fig 14. (C-20)* identifies the following:

Table 3. Wire and Harness Number Identification

Ident. No.	Description
B	If applicable - The colour of the flying lead that the harness wire should mate with. For instance, if wire **819** from harness 719/37100 mated with a flying lead coloured black (colour code **B**) then the number printed on the wire would be **B**-819 9/371.
819	The wire's unique identification number. The wire functions and numbers allocated to them are consistent through out the JCB range of products.
9/371	The part number of the harness that the wire originates from. If the harness part number is 719/37100, the number printed on the harness wires will be **9/371** (71 and 00 are common numbers and therefore deleted).

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Technical Data

General Data

Note: *System Cleanliness is to be to ISO 16/13 -* ⇨ *Hydraulic Contamination (E-60)*

Loader Pump - Standard (P3)

Type	Single Gear
Maximum flow at 2200 rev/min and 225 bar (3265 lbf/in²)	79.8 l/min (17.5 UK gal/min, 21 US gal/min)

Loader Pump - High-Flow (P3 and P5)

Type	Tandem gear
Maximum flow at 2200 rev/min	
- Loader Section (P3) at 225 bar (3265 lbf/in²)	79.8 l/min (17.5 UK gal/min, 21 US gal/min)
- High Flow Section (P5) at 220 bar (3190 lbf/in²)	53.1 l/min (11.6 UK gal/min, 14 US gal/min)

Charge Pump (P4)

Type	Single Gear
Maximum flow at 2200 rev/min and 30 bar (435 lbf/in²)	43.5 l/min (9.5 UK gal/min, 11.4 US gal/min)

Transmission Pump (P1 and P2)

Type	Tandem axial piston Series 42
Displacement	41 cc/rev (2.5 in³/rev)
Control	Servo non-feedback proportional.
Charge Pressure (oil temperature at 50° C) variable with engine speed	17 - 18 bar (246 - 261 lbf/in²) at engine idle
	25 - 27 bar (362 - 391 lbf/in²) at max. rev/min
High Pressure 'Loop' Valve Pressure	414 bar (6000 lbf/in²)

Hydraulic Motors - Wheeled Machines

Type	MCR5A Piston
Displacement - single speed motor	470 cc/rev (29 in³/rev)
Displacement - 2 speed motor	565 cc/rev (34 in³/rev)

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compress the disc spring **4** until all screws are correctly torqued.

Table 19. Torque Settings

Item	Nm	kgf m	lbf ft
7	70 -77	7.0 - 7.8	52 - 57
1	14-16	1.4 - 1.6	10 - 12

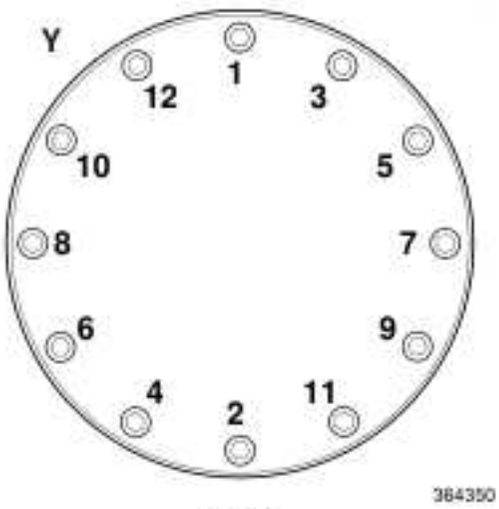


Fig 73.

Dismantling

Refer to *Fig 71. (E-84)*.

Remove the brake assembly (see *Assembly (E-85)*).

Mark the relative positions of the front case **42**, rear case **13** and brake housing **8**.

Remove capscrews **12** and separate the rear case assembly **13** from the sinusoidal cam rotational assembly **15** and set aside in a clean area. Separate the sinusoidal cam rotational assembly from the front case **42**.

Remove and discard 'O' rings **14** and **16**.

Rotating and Rear Casing Assembly

Withdraw the cylinder block **17** from the sinusoidal cam assembly **15**. Remove each piston and roller assembly **18** from the cylinder block. If difficulty is experienced, apply low pressure air to the ports in the cylinder block. Remove the rollers from each piston assembly.

Remove the speed change assembly, items **23** to **26**, from the rear case. 'O' ring **27** is located in the brake housing **8**.

To release distributor **19**, drop the rear case **13** assembly from a height of approximately 8 cm (3 in) onto a wooden surface. Take care not to damage the timing face. Collect the six springs **20**.

Remove stop pin **22** from the rear case. Also remove and discard seal rings **21**.

Flushing Spool Assembly

Note: *If the flushing spool assembly is working correctly it need not be disturbed.*

Remove plug **28** from the rear case **13**. Remove and discard 'O' ring **29**.

Remove spring **30** and washer **31**. Depress spool **32**; this should move freely back and forth.

Remove spool **32** and spring **33**.

Remove plug **34**, spring **36**, together with shim(s) **37**, and flushing relief spool **38**. Check orifice in spool is clear.

Flush the rear case **13** thoroughly.

Front Housing

Support the front case **42** assembly vertically using a suitable support to fit around the shaft.

Using a soft steel drift, remove split ring **39** and washer **40**.

Support the front case on blocks and press shaft **41** out of bearings **43** and **45**.

Remove the cone from bearing **43**. Using a soft steel drift, remove bearing cups **43** and **45** from the front casing.

Remove bearing cone **45** from shaft **41** using a puller. This action may damage the bearing cone, in which case it should be replaced.

Remove and discard shaft seal **44** from front casing **42**.

Reassembling

Thoroughly clean all components. Use new seals and 'O' rings. Lubricate components with engine oil on re-assembly.

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Outer Track Rubber - Tearing/Cuts

Cause:

1 Cuts on the lug are often due to particularly sharp materials such as stones, the problem is particularly evident if using sharp driving techniques on demolition type ground (e.g. stones, debris etc.).

Prevention:

1 The life expectancy of a track is greatly reduced by working on a site where sharp and pointed materials are numerous. Operate the machine with attention to the ground's surface in rough terrain, e.g. demolition sites, rocky ground etc.



Fig 14.

Additional Notes:

You can do less damage by driving slowly on hard surfaces. Small cuts on the lug do not prevent the track from being used. When the cut goes deeper down and reaches the steel cord or the core bar, the track must be repaired. If a lug is pulled out, the track can be used but the grip on muddy surfaces will be greatly reduced.

Outer Track Rubber - Fast Abrasion

Cause:

1 Sharp driving on hard and abrasive surfaces, for example concrete, asphalt etc.

2 Operation on surfaces where the temperature is unusually high, for instance, travelling over freshly laid asphalt.

Prevention:

1 Operate the machine with care, avoid making quick and repeated turns.

2 Do not stay too long on very hot surfaces. On the other hand, the track is safe if you just go across this area.



Fig 15.

Additional Notes:

A track can still be used if the lug is higher than 5mm, otherwise the track must be replaced. Refer also to warranty pro-rata use scale.

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Shovel Tilt

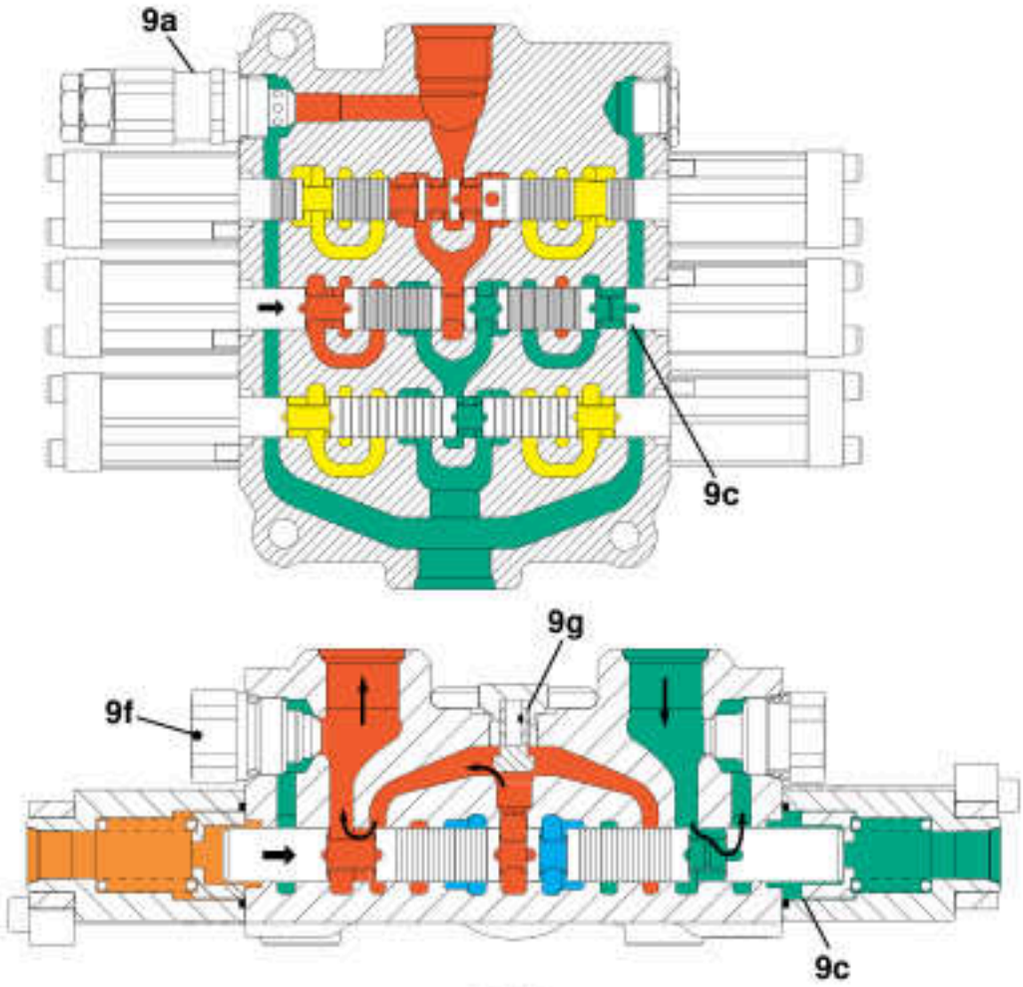


Fig 19.

Fig 19. (E-23) shows the shovel tilt service selected. On servo machines, when the joystick is moved servo oil is supplied to the appropriate end of the tilt spool **9c** which moves to select the service. On manual machines the spool is operated mechanically by movement of the control lever.

The oil entering the valve block flows past the first (lift) spool and is then diverted by the tilt spool **9c** to load hold check valve **9g** which opens only when the supply oil pressure rises above the service line pressure. This prevents unwanted ram movement due to a possible momentary fall in line pressure. The pressurised oil then flows out of the valve block to operate the tilt ram.

Oil returning from the opposite end of the tilt ram enters the valve block and flows past spool **9c** into the exhaust gallery and back to tank.

Main Relief Valve **9a** is preset to open at a specific pressure. As the inlet oil pressure rises to the preset level, e.g. when the ram reaches the end of its travel, the Main Relief Valve opens, dumping excess oil directly into the exhaust gallery.

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