

WOSS 530/2

British Railways Board

Director of Mechanical and Electrical Engineering

Magnetic Level Switches

Mobrey Types

WORKSHOP OVERHAUL STANDARD SPECIFICATION

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MAGNETIC LEVEL SWITCHES

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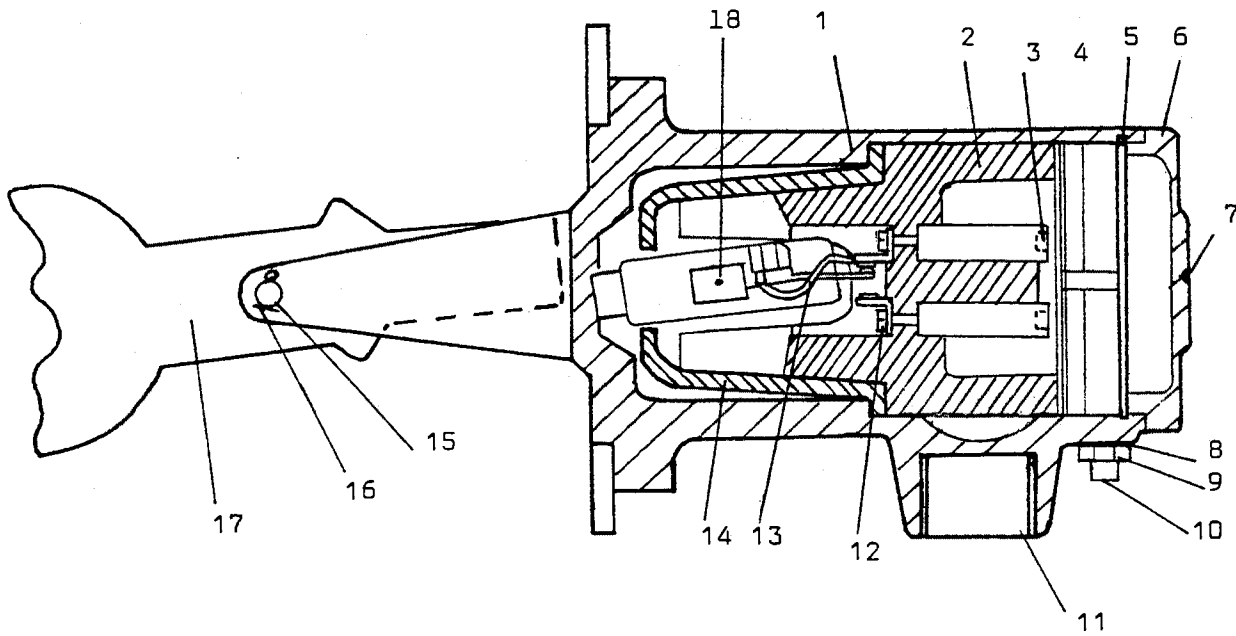
WOSS 100/3 'Inspection Procedures'

SECTION 1 REPAIR PROCEDURE

1. Remove the split pin (16) and discard.
2. Withdraw the pivot pin (15) and discard if worn or bent.
3. Remove the float assembly (17) and discard if it is punctured or contains fluid.
4. Clean the switch body (1) and float assembly externally. Remove any deposits of scale and any metallic particles adhering to the magnet assemblies.
5. Remove the end cover (6) and sealing ring (5).
6. Remove the earth terminal (10).
7. Remove circlip (4) and withdraw the internal switch assembly (2) and shield (14).
8. Renew the switch body if it is fractured or distorted.
9. If the pivot pin holes in the switch body are worn they may be repaired by brazing and re-drilling ($3/16'' \varnothing$).

10. Retap the conduit entry (11) if damaged.
11. Renew the internal switch assembly if it is fractured or if the contacts show signs of burning or if the magnet pivots (18) are worn. Ignore any blackening of the contacts. The contacts are self-wiping silver and require no attention.
12. On SAL12 and SBL12 switch types, renew the internal switch assembly if the braid (13) is frayed or has been burned.
13. If any terminal is loose it is to be tightened as follows:
 - 13.1 Remove the 2 nuts and shakeproof washers and withdraw the moving contact assembly.
 - 13.2 Tighten the appropriate screw (12).
 - 13.3 Refit and secure the moving contact assembly.
14. Wipe clean the shield and the switch body interior. Remove any metallic particles adhering to the switch assembly magnet.
15. Renew the shield (14) if it is fractured.
16. Fit the shield and internal switch assembly into the switch body and fit the circlip.
17. Refit the earth terminal or, if it is missing, fit an OBA or equivalent bolt, washer and nut.
18. Renew any ferrous split pin fitted to the float assembly with non-ferrous types.
19. Fit the float assembly to the switch body with the pivot pin and new non-ferrous split pin(s). See Data Section for correct positioning of any differential adaptors or other attachments.
20. Test the switch in accordance with Section 2.
21. Fit shorting links as follows:

Switch assembly type SAL 12 link B-B
Switch assembly type SBL 12 link A-A
22. Ensure that each terminal is fitted with a 4 BA screw or nut as appropriate.
23. Fit sealing ring and end cover.



- 1 Switch Body
- 2 Internal Switch Assembly
- 3 Terminal Screw 4 BA ch hd x 3/8" non ferrous
or
Terminal nut 4 BA brass
- 4 Circlip
- 5 Sealing ring
- 6 End Cover
- 7 End Cover Screw 4BA csk hd. x 1.1/8" brass
- 8 Shakeproof washer OBA
- 9 Nut OBA
- 10 Earth Terminal
- 11 1" Conduit Entry
- 12 Contact Screw
- 13 Braid (SAL 12 and SBL 12 types)
- 14 Shield
- 15 Pivot Pin
- 16 Split Pin 1/16" \varnothing x 1/2" non ferrous
- 17 Float Assembly
- 18 Magnet Pivot

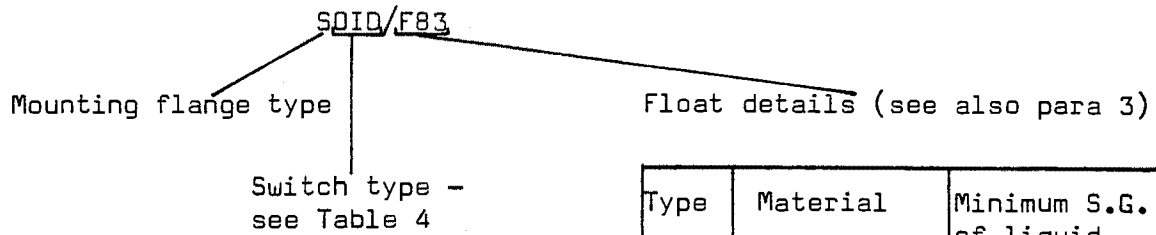
Figure 1 : Magnetic Level Switch Assembly

SECTION 2 TEST SPECIFICATION

1. Place the switch in its normal operating position, i.e. conduit entry down, as shown in Section 1 Figure 1.
2. Disconnect any shorting links from the terminals.
3. Using a continuity tester, ensure that the switch contacts operate in accordance with Data Section, Tables 1 and 2.
4. Measure the insulation resistance between terminals and from each terminal to frame using a 1000 V megger. Minimum acceptable reading 200 M ohms.

SECTION 3 TECHNICAL DATA

1. Construction of Type Numbers



Type	Material	Minimum S.G. of liquid
F02	EN588 .S.S	0.17
F83	321 S.S.	0.7
F103	316 S.S.	*
F164	Monel	0.95

* Specific Gravity rating depends upon length of crank.

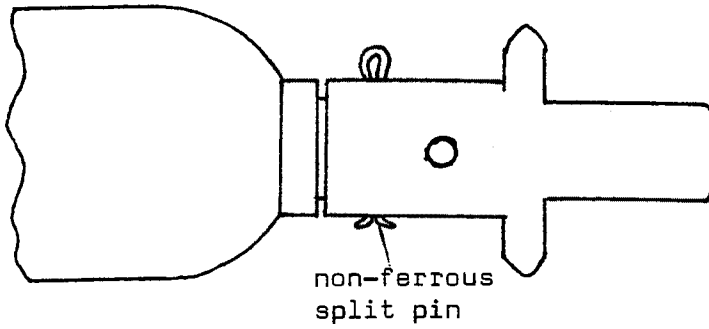
It is intended to standardise on the F83 float in future, and this should be used as stocks of other types are exhausted.

2. Vehicle Classes and Magnetic Level Switch Types

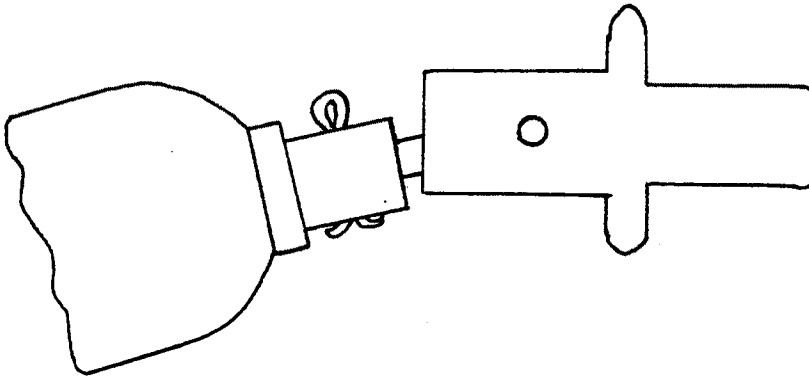
Vehicle	Application	Switch	Float	Other Features
20	WLS	BL 12	F02	-
31	LFR	01	F83	-
	WLR			
37	FLS	AL 12	F02	-
	WLS	BL 12		
43	WLS	BL 12	F02	-
47	LFS	01	F02	-
	WLS			
50	FLS	AL 12	F83	-
	WLS	01D		
56	WLS	AL 12	F83	-
101-141	LW	01	F83	-
210	WLS	BL 12	F83	-
Mk. 3 catering	WLS 1	01	F164	Differential adaptor see 3.4.
	WLS 2			

3. Float Assembly Details

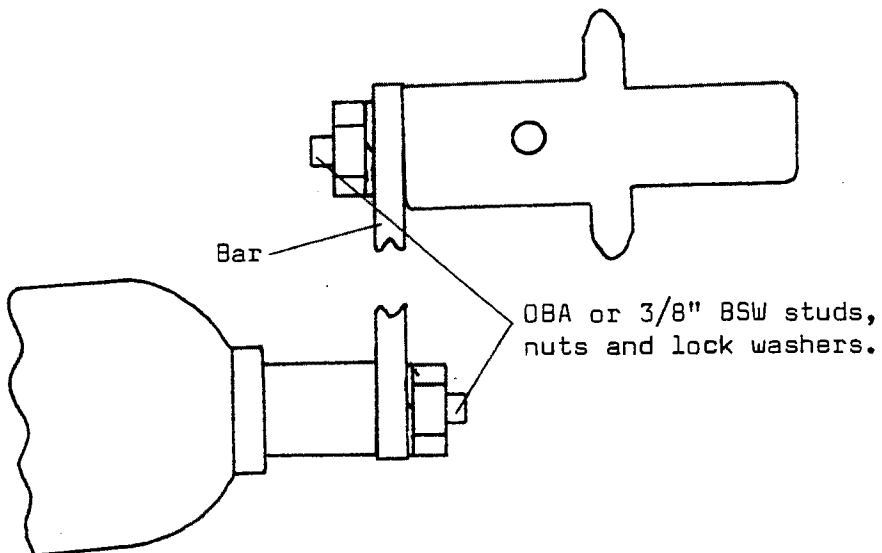
Sketches are shown assuming the switch is in the position shown in Section 1, Figure 1 : i.e. conduit entry downwards.



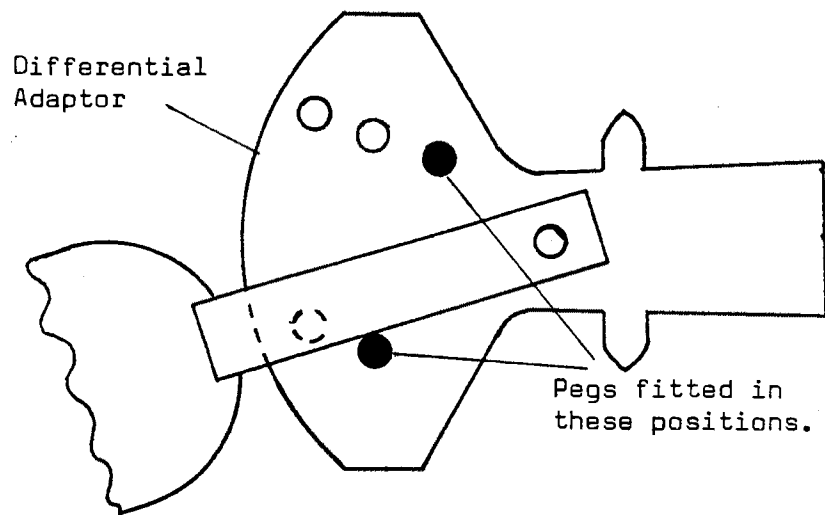
3.1 F02 Float Assembly



3.2 F02 Float with additional pivot arm



3.3 F103 Float with crank bar.



3.4 F164 Float with Differential Adaptor.

TABLE 4 SWITCH ASSEMBLY DETAILS

Switch Assembly Type	Falling Level	Rising Level
01	<p>B B</p> <p>A A</p>	<p>B B</p> <p>A A</p>
AL 12	<p>B B</p> <p>A A</p>	<p>B B</p> <p>A A</p>
BL 12	<p>B B</p> <p>A A</p>	<p>B B</p> <p>A A</p>
01D	<p>B B</p> <p>A A</p>	<p>B B</p> <p>A A</p>

01, AL 12 and BL 12 switch assemblies are obsolescent. The 01D assembly is to be used as stocks of other types are exhausted.

01D Internal switch assembly : Mobrey part no. G3450; BR Cat No. 61/42029.