Electrical Signal Reversers are used in Mechanical transmission (Single wire or Double wire) of Semaphore Signals to establish an electrical control over the operation of the Signal by one or more agencies. Reverser is one of the methods to achieve slotting system.

Types of Reversers

a) Cabin type
b) Post type
c) Post type style 'A'
d) Post type style 'B'

RDSO has standardized only post type style "B" reverser.

Main Parts of Style "B" Reverser

a) An electromagnet having laminated core
b) Armature made of laminations
c) Semaphore arm lever
d) Operating arm lever
e) Spectacle crank
f) Operating crank
g) Coupling lever
h) Support lever and armature roller
i) Lock panel
j) Dash pot
k) Lightening arrestor
l) Terminal block

Electrical Parameters

a) Resistance of electromagnet coil - 600 ohms
b) Normal working voltage (DC) - 10V to12V
c) Normal working current (mA) - 16 to 20
d) Minimum working voltage - 7.5 V DC
e) Minimum working current - 12.5 mA

Performance Test

1. Energise the electromagnet at 10 V supply. Operate the signal lever and see the signal arm is taken "OFF". Ensure that signal arm does not return to "ON" due to any obstruction in transmission line.
2. Cut off the supply of electromagnet, signal should return to "ON" smoothly.
3. Apply external force to lower the signal. It must not come to "OFF" position.
4. Replace the signal lever to normal. Check that arrow on the operating and semaphore lever aligns with the arrow on bridge.
5. Residual magnetism in the core shall be avoided by interchanging the connections to the coil at specified intervals.
6. Replace the signal lever to normal. Ensure that any strain in transmission line must not lower the signal and lock pawl has locked the spectacle lever.

Maintenance

1. To avoid unsafe effect of residual magnetism, change polarity of coil after every six months.
2. Use grafted grease for smooth working of ball bearing.
3. Check all pins, screws, nuts and bolts are tight and have no wear and tear.
4. Keep the contact surfaces clean of dust, oil or grease.
5. Oil all moving parts with light grade oil once in 15 days for smooth working.
6. Check dash pot oil level and oil condition once in a year. The oil level in dashpot shall be 35 mm above from the bottom of sliding cylinder (Insulating oil to IS: 335)
7. Dash pot spring must be checked once in 15 days, replace if necessary.
8. Keep the tension of circuit controller springs and ensure the contacts are made as required.
9. The surface of armature and core shall be cleaned using chamois leather (The sliding bar shall move freely and the locking teeth properly).
10. Verify the position of spectacle lever and operating lever and the arrows on them coincide with corresponding arrows on the Bridge *i.e.* with respect to vertical 60° and 48° respectively.

Trouble shooting Chart

1. Signal fails to go to "OFF" position

Causes	Remedy
Battery connections to coil terminal are break or loose or fuse blown off.	Check battery connections and tighten it, if loose or reconnect it if found broken.
Weak batteries.	Replace it.
Grease, oil or dust on armature and on core.	Clean it properly.
Ball bearing jam and de-shaped.	Remove jamming or replace it.
Operating lever roller jam and de-shaped.	Remove jamming or replace it.
Lever and bridge connection loose.	Check and tight it.
Tension in mechanical transmission is more, causing armature lever to drop from its normal position.	Adjust the tension of mechanical transmission to avoid armature to drop.
Down rod connection infringing each other movement.	Remove infringement by adjustment.
Bridge arrow not aligns with levers arrow.	Adjust such that alignment is proper

2. Signal does not returns to normal position after feed is cut-off in reverser coil.

Causes	Remedy
Residual Magnetism	Change the coil polarity to avoid residual magnetism.
Foreign feed	Check if foreign feed persists, then provide cross protection circuit.
Sliding bar jamming	Clean and do the proper oiling/greasing.

3. Signal can be taken to "OFF" position without releasing control.

Causes	Remedy
Residual Magnetism	Change the coil polarity to avoid residual magnetism.
Foreign feed	Check if foreign feed persists then provide cross protection circuit.
Sliding bar jamming	Clean and do the proper oiling/greasing.

4.Lowered signal returns to "ON" position without putting back control to normal.

Causes	Remedy
Weak Battery	Check and replace the weak battery.
Either fuse or lightening arrestor blown off	Check and replace it.
Weak reverser coil	Check and if found faulty replace it.

Do's & Don'ts

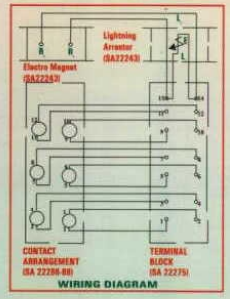
Do's

1. Change the coil polarity at every six months
2. Maintain proper oil in dash pot
3. In normal position bridge arrow aligns with levers arrow.
4. Tight all nuts and bolts and open split pins properly.
5. Oil the sliding bar for its free movement
6. Performance test must be done periodically
7. Locking and sealing arrangement should be proper.

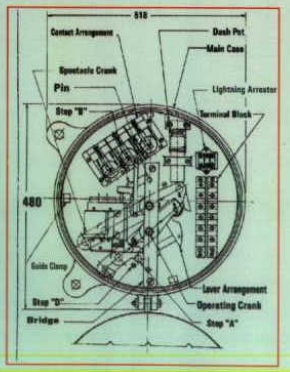
Don'ts

1. Forget to change the polarity
2. Stuck armature with foreign means.
9. Oil the ball bearing, only graphite /grease it.
4. Clean armature or core with emery paper.
5. Over energise the electromagnet
6. Forget to disconnect for any adjustment
7. Forget locking and sealing

Note : There is no basic difference between "UQ" and "LQ" reverser. The reverser fit for UQ signal can be made fit for LQ simply by turning the spectacle crank and operating crank by 180°.



WIRING DIAGRAM



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GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(For Official Use)

Pamphlet on Electrical Signal Reverser

CAMTECH/2000/S/ESR/1.0
MAY - 2000

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