

Justification:
Instruction

(Design)

Private Owner Circular Letter 614 Issue 2

Title

Manufacture of Parabolic Springs

This document is the property of
Network Rail.

It shall not be reproduced in
whole or in part, nor disclosed to
a third party, without the written
permission of the Owner.

© Copyright 2006 Network Rail.

ENDORSEMENT & AUTHORISATION

Endorsed by:

.....
D. Minshull, Senior Standards Engineer



.....
K. Stannard, Vehicle Conformance Engineer

1. INTRODUCTION

POCL 614 Issue 2 details the manufacturing specification for parabolic springs.

2. INSTRUCTION

2.1 Parabolic spring drawings

The Network Rail drawings show the space envelope, interface details, endurance block diagram, load/deflection characteristics and BS EN standards for parabolic springs used on PWRA vehicles. There are two main types of parabolic springs applicable to PWRA vehicles:

a). Two axle wagons (Network Rail Drawing No. RT-C0-2404001)

This is the main type of parabolic spring used on Private Owner wagons and has 3+1 plates with 1400mm eye centres.

b). Bogie wagons (Network Rail Drawing No. RT-C0-2404000)

A smaller number of parabolic springs are 4+1 plate springs with 1200mm eye centres and are used on O&K bogie wagons.

2.2 Fatigue life

In order to ensure that parabolic springs in service have an adequate fatigue life it shall be verified, by testing, that the design life is met. All potential manufacturers shall subject two samples of each type of spring they intend to supply to the cyclic loading endurance block diagram shown on the relevant drawing. They shall also demonstrate that any parabolic springs they intend to supply are at least equal to those currently approved in terms of their performance, quality, finish and fatigue life.

This results of tests and adequate demonstration of suitability shall be sent to the Senior Standards Engineer, PWRA Management Group for approval.

2.3 Surface protection

The surface protection applied to parabolic springs shall be adequate to prevent corrosion reducing the design fatigue life of the spring. The surface protection shall be sufficiently resilient to last the service life of the spring although it is accepted that minor repairs to the surface protection will be occasionally required as a result of mechanical damage.

The surface protection shall not become degraded when encountering the normal types of railway environment found in operational service. The manufacturer shall choose the most suitable paint system, relevant to end users operating conditions at the time that an order is placed e.g. wagons known to operate in a salt-spray environment. Minor repairs to the surface protection shall be able to be carried out at the trackside and with the spring fitted to the vehicles.

2.4 Friction Augmentation

Parabolic springs used in the UK usually require friction augmentation in order to provide adequate damping from track inputs. Where such friction augmentation devices are provided they shall be designed and manufactured such that the friction augmentation does not change the mean value of the load/deflection characteristic when measured on a roller carriage, nor adversely influence the fatigue life of the spring. The drawings for the springs show the required friction damping to be achieved.

3. APPROVED MANUFACTURERS

Parabolic springs shall only be sourced from a manufacturer that has been approved by the Senior Standards Engineer, PWRA Management Group to supply that particular component. See Appendix A for the list of approved parabolic spring manufacturers.

4. SCOPE

This POCL is applicable to all parabolic springs supplied for use on PWRA vehicles that operate on Network Rail controlled infrastructure.

5. IMPLEMENTATION

This document shall be implemented immediately.

In the event of any query arising, or clarification required, please contact:

Senior Standards Engineer
PWRA Management Group
Room 225 Derwent House
rtc Business Park
London Road
Derby
DE24 8UP

See also POCL 613 'Care of Parabolic Springs'.

Appendix A

List of manufacturers approved to supply parabolic springs

Lagen & Sondermann GmbH & Co. KG
Bergkampstr 57
44534 Lünen
Germany

Approved to manufacture and supply the following parabolic springs:

- a). Two axle wagons (Network Rail Drawing No. RT-C0-2404001)
Langen & Sondermann Drawing No. L&S 5.120.25.9 (Formerly FE 339.700.02)

- b). Bogie wagons (Network Rail Drawing No. RT-C0-2404000)
Langen & Sondermann Drawing No. FE 549.200.02