

FRONZ / ONTRACK
APPROVED CODE OF PRACTISE
FOR
HERITAGE NETWORK OPERATORS

Mechanical Supplementary Code
B3.4.2.07
Guide Bars

Issue	Prepared (P), Reviewed (R), Amended (A)	Approved by	Effective Date
1	P McCallum (P)	Heritage Technical Committee	27 June 2006

Reference Material

Source	Description	Date
NZ Railways	Mechanical Branch Code No 56, Issue 3	1/5/1947

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Amendment History

Version	Section	Amendment

Guide Bars

1 Introduction

This Supplementary Code relates to:-

B3.1.1.01 - Mechanical Code Of Practice, Section 3.16.6 - Guide Bars

It contains:-

- NZ Railways Mechanical Branch Code No 56 - Guide Bars; Issue 3 of 1/5/1947

which contains information relevant to the manufacture and maintenance of side and connecting rods. Operators are to use those sections that are relevant to their operation.

NEW ZEALAND GOVERNMENT RAILWAYS MECHANICAL BRANCH	GUIDE BARS	CODE No. 56
		Issue No 3 Date Issued 1/5/47

EXISTING LOCO. CODES TO BE CANCELLED: NONE

(1) MATERIAL AND MANUFACTURE

Guide bars are to be manufactured from steel conforming to group 7 (d) on drawing W16298 (Materials used for Locomotive Work, &c.). All bars are to be machined all over and the wearing surfaces provided with a ground finish.

(2) DIMENSIONS

The following is a table of the nominal dimensions of guide bars

Symbols.- Φ Double guide bars (open type). = Double guide bars (closed type)
 — Single guide bars.

Class of Loco.	Symbol of Guide Bar Arrangement	DOUBLE BAR				SINGLE BAR.		Drawing Nos.
		TOP BAR		BOTTOM BAR.		Thicknes s.	Width	
		Thicknes s.	Width.	Thicknes s.	Width.			
A.409	Φ	Inches 2.25	Inches 6.0	Inches 2.25	Inches 6.0	Inches	Inches	3969.
A Simple	Φ	2.25	4.25	2.25	4.25			W.15552 for locos. Nos. 71, 161, 178, and 399. W.15564 for locos. other than nos. 71, 161, 178 and 399.
A Compound H.P	Φ	2.25	4.0	2.25	4.0			4052, 3633.
L.P	Φ	2.25	4.25	2.25	4.25			4056, 3640.
AA	Φ	2.75	4.5	2.75	4.5			Maker's Print Page 37.
AB	Φ	2.25	4.5	2.25	4.5			W.15331.
B	=	2.0	4.5	2.0	4.5			2186.
BA	Φ	2.25	4.5	2.25	4.5			4986.
BB	Φ	2.25	4.5	2.25	4.5			5722.
C	=	2.25	5.0	2.25	3.75			X.10215.
F	Φ	1.375	3.5	1.375	3.5			Maker's Print.
G	—					3.0	6.0	X.10527.
H	Φ	1.375	3.5	1.375	3.5			Maker's Print.
J, JA	=	2.0	7.5	2.875	5.0			X.12633.
K, KA, KB	=	3.25	9.0	3.5	5.0			X.10694.
Q	Φ	3.0	4.0	3.0	4.0			Maker's Print, page 7.
U	—					2.5	4.5	X.8921.
UB	Φ	3.0	4.0	3.0	4.0			Maker's Print, page 100.
UC	Φ	2.0	4.5	2.0	4.5			Maker's Print, page 71.
W	Φ	2.25	4.0	2.25	4.0			1035.
WA 289, 165	=	2.0	4.5	2.0	4.5			2394.
WA 137, 217, 68	Φ	2.0	4.5	2.0	4.5			2661.

Class of Loco.	Symbol of Guide Bar Arrangement	DOUBLE BAR				SINGLE BAR.		Drawing Nos.
		TOP BAR		BOTTOM BAR.		Thicknes s.	Width	
		Thicknes s.	Width.	Thicknes s.	Width.			
		Inches	Inches	Inches	Inches	Inches	Inches	
WAB	Φ	2.25	4.5	2.25	4.5			W15331
WB	Φ	2.5	3.5	2.5	3.5			Maker's Print, page 61.
WE	=	2.0	4.5	2.0	4.5			2186.
WF	Φ	2.25	4.25	2.25	4.25			3333
WG, WW	Φ	2.25	4.25	2.25	4.25			5801.
X (Inside)	Φ	2.0	5.0	2.0	3.406			4127
(Outside)	Φ	2.0	5.0	2.0	5.0			4127.

(3) LIMITS OF WEAR

The following are the limits to which guide bars are permitted to wear below their nominal thickness

- Bars from 1.375 in. to 2.0 in. in thickness, $\frac{3}{16}$ in.
- Bars over 2.0 in. to 2.5 in. in thickness, $\frac{1}{4}$ in.
- Bars over 2.5 in. to 4.0 in. in thickness, $\frac{3}{8}$ in.

The limit to which any guide bar is permitted to wear below its nominal width is $\frac{1}{4}$ in.

(4) WORKING CLEARANCE BETWEEN GUIDE BARS AND CROSSHEADS

When guide bars are relined, the working clearance between the crosshead slippers and the guide bars must not exceed $\frac{1}{64}$ in., while the working clearance between the crosshead side plates and the guide bars must not exceed $\frac{1}{32}$ in.

(5) LINERS

Only brass or steel liners are to be used for lining guide bars. Solid liners are to be used when possible, but the number of liners used under one bolt must not exceed three.

Liners less than $\frac{1}{32}$ in. in thickness are not to be used.

(6) WELDING

Under no circumstances are the wearing surfaces of guide bars to be welded to compensate for wear, although when necessary, guide bar bolt holes may be plugged and electrically welded when the guide bars are being relined.

(7) MAINTENANCE

Officers in charge of Locomotive Depots must arrange frequent examinations of all guide bars under their control for possible defects. The clearance between crossheads and guide bars must not exceed the approved working limits, and slack must be taken up as soon as it develops.

Crossheads having removable slippers are to be relined when the working clearance exceeds $\frac{1}{8}$ in., and the relining must be executed in such a manner that the piston rod retains its original alignment. Only under unavoidable circumstances are guide bars to be closed by Locomotive Depot staffs to compensate for wear.

Guide bars that have been bent to such an extent that the angle of deflection exceeds 30° , must not be straightened and returned to service. After having been heated to remove minor deflections, guide bars must be normalized in an approved manner.

(8) BOLTS

Guide bar bolts are to be manufactured from steel conforming to Group 7 (e) on drawing W16298, but if this is not available, steel to Group 7 (d) may be used. All guide bar bolts are to be

fitted according to symbol " K ", N.Z.R. Standard Machine Limits (Drg. W15050) and must be provided with lock-nuts and split-pins.

[(9) RE-LINING OF CLOSED TYPE GUIDE BARS

The guide bars on closed type guide bars are to be closed when clearance due to slipper wear exceeds $\frac{1}{8}$ ". The clearance between slippers and guide bars after relining is to 0.015" - 0.020" as specified on drawings X12034 and 12633. This work may be done at Locomotive Depots.]

[C.M.E.'s 24/563 of 13.2.61
C.M.E.'s 53/3/1097 of 11.11.53]