

NEW ZEALAND GOVERNMENT RAILWAYS	AXLEBOX BEARINGS	CODE No. 38
MECHANICAL BRANCH		Page No. 1 of 3 Issue No 1 Date Issued 10/4/78

(1) Axlebox Plain Bearings:

The following list shows the application of plain bearings (or brasses) to car, van and wagon stock

Bearing	Journal Dia.		Axleboxes			Application	
	Ins.	mm	Original	First replacement	Second replacement	Bogie	Class of Stock
Car and Van Bogie Stock:							
Z/X27002/4 *	3¼	83	1293			1656	Vans
Z/X27002/3 *	3¾	95	4395			2794	Cars
Z/X27002/3 *	3¾	95	4395			4274	Cars
Z/X27002/3 *	3¾	95	4395			X8558	Vans
Y/X27002/2	4	102	Y7782			8655	Cars
Y/X27002/2	4	102	Y7782			X7781	Vans
W30866	4	102	X25219			X7781	Vans (Isothermos Box)
Y/X27002/2	4	102	X25178			X26530	Vans
Wagon Bogie Stock:							
Y/X27001/3	3¾	95	3268	X25211		97	R, T, U, Ua, V, Z
Z/X27002/3 *	3¾	95	3268	X25211		97A	Ua, V
Z/X27002/3 *	3¾	95	4395			4274	Ubm
Y/X27002/1	3¾	95	4395			2794	Ug, Uge
Y/X27002/1	4½	114	Y6637	X25367		X3181	Rb, Ua, Ub, Uba, Ubf, Uc, Vb, Z
Y/X27002/1	4½	114	X25214	X25367		X25340	Ub, Uba, Uc, Ud, Vb
Y/X27002/1	4½	114	X25367			X25467	Rb, Ub, Ubc, Ubh, Ubl, Ubp, Uc, V, Vb, Yd, Z
Y/X27002/1	4½	114	X25367			X26463	Ur, Url
Y/X27001/1	4½	114	X25365	X26330		Type 2 X26870	Ud

* Bearings to be machined to correct length

Bearing	Journal Dia.		Axleboxes				Application
	Ins.	mm	Original	First replacement	Second replacement	Third replacement	Class of Stock
Four Wheeled Stock:							
Y/X27001/1	4½	114	X26330				Bc, Bf, Bp, Btk, Bxa, Bxb, Bxc, Bxp
Y/X27001/3	3¼	83	X6634 & X25044	X25216	X25808	X27298	H 711-743
Y/X27001/3	3¼	83	X25044	X25216	X25808	X27298	H 791-820, 866-877
Y/X27011/3	3¼	83,	X25216	X25808	X27298		H 846-862, 885, 979, 1009-1042, 1099-1140, 1445-1473
or 4	3¾	95					H 1243-1441, 1474-1573
Y/X27001/2	4	102	X26330				Hc
Y/X27001/2	4	102	X26330				
Z/X27002/4	3¼	83	3165				
Y/X27001/4	3¼	83		X25212	X25806	X27296	J 2892-3205
Y/X27001/4	3¼	83	X25216	X25808	X27298		J 3334-3615, 3948-4003
Y/X27001/3	3¼	83,	X25216	X25808	X27298		J 4012-4598
or 4	3¾	95					
Y/X27001/3	3¾	95	X25808	X27298			J 5745-5763
Y/X27001/2	4	102	X26330				Jc
Y/X27001/1	4½	114	X26330				Kc, Kp
Y/X27001/2	4	102	X25213	X25818	X27294		La 12858-15875
Y/X27001/2	4	102	X25818	X27294			La 15899-16184
Y/X27001/2	4	102	X25043	X25215	X26330		La 16243-20675
Y/X27001/2	4	102	X25365	X26330			La 20676-24955
Y/X27001/2	4	102	X25818	X27294			La Var. 12901-15420

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Bearing	Journal Dia.		Axleboxes				Application
	Ins.	mm	Original	First replacement	Second replacement	Third replacement	Class of Stock
Four Wheeled Stock: Y/X27001/1	4½	114	X25365	X26330			La in 20676-24955 Group to 204/8176. (Also various in Group 20676-24955)
Y/X27001/1	4½	114	X26330				Lc, Lp
Y/X27001/3	3¾	95	X25044	X25216	X25808	X27298	M 1855 - 1998
Y/X27001/2	4	102	X25215	X26330			Mc 2004-2098
Y/X27001/2	4	102	X25365	X26330			Mc 2099-2400
Y/X27001/2	4	102	X25215	X26330			Mcp 2060, 2071, 2095
Y/X27001/1	4½	114	X26330				Nc, Nf
Y/X27001/3	3¾	95	X25212	X25806			Nr 9000, 9003, 9006-9011
Z/X27002/3	3¾	95	3115				Nr 9001, 9002, 9004, 9005, 9014, 9017, 9019
Y/X27001/2	4	102	X25215	X25365	X26330		Nr 9020-9029
Z/X27002/4	3¾	83	4317				Q Var. 771-1093
Y/X27001/4	3¾	83	X25806	X27296			Q 747-1109. Var 1169-1726
Y/X27001/4	3¾	83	X25216	X25808	X27298		Q 264-270, 1151-1168
Y/X27001/3	3¾	95	X25212	X25806	X27296		Q 1229-1236
Y/X27001/3	3¾	95	X25808	X27298			Q 1239-1562, 110-257
Y/X27001/2	4	102	X25215	X26330			W377-397, 587-878
Y/X27001/2	4	102	X26365	X26330			W 889-1264
Y/X27001/2	4	102	X26365	X26330			Wb
Y/X27001/3	3¾	95	X25216	X25808	X27298		Xa 851-956, 1009-1041, 2001-2343, 2412-2437, 2557, 2580, 2581
Y/X27001/3	3¾	95	X25806	X27296			Xa 2576-2579
Y/X27001/3	3¾	95	X25216	X25808	X27298		Xb
Y/X27001/1	4½	114	X26330				Xc, Xp
Y/X27001/4	3¾	83	3165				} Yb var. 3- 19
Z/X27001/4	3¾	83		X25212	X25806	X27296	
Z/X27002/3	3¾	95	3155				} Yb 131-563, 639-657
Y/X27001/3				X25212	X25806	X27296	
Y/X27001/3	3¾	95	X25216	X25808	X27298		Yb 568-637
Y/X27001/1	4½	114	X26330				Yc Yf

(2) Material for Manufacture of Plain Bearings;

The composition of axlebox plain bearings manufactured in workshops shall be in accordance with Mechanical Branch Code No.60, viz:

- Bearing shells : led bronze to symbol C
- Bearing metal : lead base bearing metal to symbol B

(3) Manufacture of Plain Bearings:

The manufacture of plain bearings as detailed in the latest Workshop Instruction No. D/5 must be rigidly followed.

(4) Fitting Axlebox Plain Bearings:

Directions for the fitting of axlebox plain bearings are detailed in the latest Workshop Instruction No. D6 and these must be adhered to rigidly by both workshops staff concerned and also car and wagon depot and train examining staff involved with wheel changing and attending to hot bearings.

(5) Side Clearance of Axlebox Plain Bearings:

Side clearances between axlebox plain bearings and journal fillets shall conform to the following:

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Type of vehicle	Clearance with new bearing on new journal	Maximum clearance out of workshops after overhaul, lift	Maximum clearance allowed in service [and after specific repair]
4 wheel vehicle with wheel-base less than 13 feet (3.96 metres)	1.5 mm ($\frac{1}{16}$ "	6 mm ($\frac{1}{4}$ "	10 mm ($\frac{3}{8}$ "
Other 4 wheel stock and all bogie vehicles	1.5 mm ($\frac{1}{16}$ "	6 mm ($\frac{1}{4}$ "	13 mm ($\frac{1}{2}$ "

The brass sideplay of short wheel-based (less than 3.96 m) wagons is to be examined at the annual brake examination or during repairs at depots. When clearances are approaching or beyond the 10 mm allowed in service, before being passed out of the depot the clearances must be reduced to less than 6 mm.

(6) Lubrication of Plain Bearings:

See Mechanical Branch Code No.37, Clauses 6, 12 and 14.

(6) Axlebox Roller Bearing:

The following list shows the application of roller bearings to car, van and wagon stock:

Bearing Type	Axlebox	Journal Diameter		Bogie	Application
		ins.	mm		
Car and Wagon Stock:					
SKF 22320 K/C3	X25149		90	X25140	Vans
SKF 23224 CK/C3	W/X26098/1		100	X25140	Cars and Vans
Timken 949XD/932	X25337		100	X25330	Cars and Vans
SKF 22320 K/C3	X25218		100	X25330	Cars and Vans
Timken 949XD/932	X25337		100	X25855	Cars
(KOYO S6317					Cars
(KOYO JC-1-1 (2U110)	X28026		110	X29250	"Silver Star" cars
Wagon Bogie Stock:					
SKF 23224C/C3	W/X26472/1		120	X26463 - Type 1	Rb, T, Uc, Vr, Vs, Yd, Z, Zp
SKF 23224C/C3	W/X26472/1		120	X27396 - Type 1	Ub, Ubh, Ubj, Ubp, Ubs, Uc, Uct, Ucx, Urc, Zp
A.A.R. Standard Package Bearing - Type C with narrow adaptor	W31513	4.691		X27850	Udk, Uk, Uka, Us, Usf, Usk, Zp
SKF 23224C/C3	W/X26472/1		120	X27396 - Type 2	Us, Usk, Usl
Timken 949XD/932	X25337		100	X26446	U1
SKF 22320 K/C3	X25149		90	X25140	Z
SKF 22320 K/C3	X25149		90	X25330	Z
A.A.R. Standard Package Bearing - Type D with narrow adaptor	W31478	5.191		X27800	C
4 Wheel Wagon Stock:					
SKF 23126 M	X27760		110		Ks
	X28103		110		Lpa
SKF 23122 C/C3	X27829		110		Ks, Lpa

(7) Roller Bearing Life:

The rated life of roller bearings depends on speed, loading and mileage run. Railway axlebox bearings are selected to give long life under severe operating conditions, but it is difficult to determine their life precisely owing to variations in the factors mentioned above. Condemning of axlebox roller bearings, therefore, must be considered on wear and condition at each examination.

(8) Inspection, Overhaul and Lubrication of Roller Bearings:

See details in Mechanical Branch Code No.37.

The manufacturers' literature is to be consulted for fitting instructions and limits of wear.