(1) AXLES: Sizes for each Type of Vehicle

Description	Bogie Symbol on Rolling-stock Data Sheet.	Size of Axle Journal.	Axle B.P.
		Inches	
Cars and Vans--			
B.P. X. 25330 with S.X.F. axles-boxes	X	3 ½	X.25148
B.P. X. 25330 with Timken axle-boxes	X	3 7/8	Y.35480
B.P. X. 25140 (S.X.F. axle-boxes)	J	3 ½	X.25148
BY. X. 25855 (Timken axle-boxes)	XX	3 7/8	Y.35480
B.P. 3905	R	4 ½	2855
B.P.X.8558	M	3 ¾	3196
B.P.X.8655	U	4	Z.7904
B.P.X.7781	T	4	Z.7904
B.P. 4274	S	3 ¾	3196
B.P.2794	E and F	3 ¾	3196
B.P.1656	Q	3 ¼	1701
B.P.508	P	3 ¼	1701
Vehicles with other miscellaneous bogies	K	3 ¾	
	V	3 ¾	
	L	3 ¼	
	O	3 ¼	
Four-wheel vans		3 ¼	1701
Wagons--			
G wagons		3 ¼	1701
H and J wagons		3 ¼	1701 Heavier axles under
		3 ¾	3196 heavier wagons
HC and JC wagons		4	3081
K wagons		3 ¾	3196
L wagons with underframes B.P. X. 25810		4	3081
All other L wagons		3 ¾	3196
LA wagons		4	3081
LB wagons		3 ¼	1701
LC wagons		4 ½	2855
M wagons		3 ¾	3196
MA wagons		4	3081
MB wagon		3 ¼	1701
MC wagons		4	3801
N wagons		3 ¼	1701
P wagons numbered 121 and over		3 ¾	3196
P wagons numbered below 119		3 ¼	1701
Q wagons numbered below 1229		3 ¼	1701
Q wagons numbered 1229 and over		3 ¾	3196
W wagons with laminated springs " K" and "O" on Rolling-stock Data Sheet No.4		3 ¾	3196
W wagons with laminated springs "Q," 'T," and "X" on Rolling-stock Data Sheets Nos. 4 and 4/1		4	3801
WA wagons with laminated springs "B" on Rolling-stock Data Sheet No. 4		3 ¼	1701
WA wagons with laminated springs "R" on Rolling-stock Data Sheet No.4/1		3 ¾	3196
X, XA, and XB wagons with laminated springs "B" on Rolling-stock Data Sheet No. 4		3 ¼	1701
X, XA, and XB wagons with laminated springs "K," "O," and "R" on Rolling-stock Data Sheets Nos. 4 and 4/1		3 ¾	3196
XC wagons		4 ½	2855

Description	Bogie Symbol on Rolling-stock Data Sheet.	Size of Axle Journal.	Axle B.P.
		Inches	
YB wagons B.P.s 3282, X.25221 and B.P.2371 with steel extension sides		3 ¾	3196
YB wagons B.P.s 139l and 2371 as built or with wood extension sides (light ballast)		3 ¼	1701
Y wagons		3 ¼	1701
R and RA wagons with semi-wood underframes	A, B	3 ¼ 3 ¾	1701 3196
R wagons with all-steel underframes	A, B	3 ¾	3196
RB wagons	C, CX, HX, YX	4 ½	2855
S wagons	A, B	3 ¼	1701
T wagons	A, B	3 ¼	1701
U wagons with semi-wood underframes	A, B	3 ¼	1701
U wagons with all-steel underframes	A, B	3 ¾	3196
UA wagons except No.561	A, B	3 ¼	1701
UA wagon No.561 (oil fuel)	C	4 ½	2855
UB wagons	C, CX, HX, YX	4 ½	2855
UC wagons	C, CX, HX, YX	4 ½	2855
UD wagons (well)		4 ½	2855
UG wagon	A, B, E, F	3 ¼	1701
V wagons	A, B	3 ¼	1701
V wagons	YX	4 ½	2855
VB wagons	C, CX, HC, HL, HX, YX	4 ½	2855
Z wagons, 50 ft	J, X	3 ½	X. 25148
Z wagons, 50 ft. and 47½ ft	C, HL	4 ½	2855
Z wagons, 50 ft. and 47½ ft	T	4	Z. 7094
Z wagons, 33 ft	A	3 ¾	3196
Z wagons, 30 ft. (steel-underframes)	A	3 ¾	3196
Z wagons, 30 ft. (semi-wood underframes)	A, B	3 ¼	1701
ZP wagons	A	3 ¾	3196

NOTE:- For Rolling-stock Data Sheets see Code Instruction No.12.

(2) AXLE JOURNALS: Last Turning Size of Car and Wagon; Condemning Size of Car and Wagon

Size of Axle Journal	Axle B.P	Last Turning Size	Condemning Size
Inches.		Inches.	Inches.
3 ¼	1701	$3\ ^{1}/_{16}$	3
3 ¾	3196	$3\ ^{3}/_{8}$	$3\ ^{5}/_{16}$
4.	3081	$3\ ^{9}/_{16}$	3 ½
4	Z. 7904	$3\ ^{13}/_{16}$	3 ¾
4 ½	2855 [W. 31181]	4	$3\ ^{15}/_{16}$

When axles (with the exception of ax1es to B.P. 3196 and 2855) reach the condemning size, they are to be taken out of service immediately and condemned. Unserviceable axles to B.P. 3196 may be reconditioned for use under 3¼ in. journal brasses, and those to B.P. 2855 may be reconditioned for use under vehicles requiring 4 in. axles to B.P. 3081.

(3) (a) AXLES: Utilizing Unserviceable 3¾ in. Axles under Vehicles requiring 3¼ in. Axles

Axles to B.P. 3196 with journals reduced to $3\ ^{5}/_{16}$ in. diameter (condemned size) may be utilized under vehicles using axles to BP. 1701 (3¼ in.).

Blue print Y. 35368 is to be worked to in re-turning the axles used for this purpose, and either one of the two methods shown on the blue print may be adopted as found most convenient.

Every axle is to be magnetically tested for defects before being placed into service, and each end of axle is to bear the brand 3¾ in./ 3¼ in.

(b) AXLES: Utilizing Unserviceable 4½ in. Axles under Vehicles requiring 4 in. Axles to B.P. 3081

Axles to BP. 2855 [& W.31181] with journals reduced to $3\ ^{15}/_{16}$ in. diameter (condemned size) may be used under vehicles using axles to B.P. 3081 (4 in.).

B.P. Y. 35368 is to be worked to when re-turning axles, and every axle must be magnetically tested for defects before being placed into service and each end of the axle is to be branded 4½ in./ 4 in.

(4) AXLES: Condemned

All condemned axles removed from rolling-stock are to be deeply branded "X" on the journal with a cold set, and such axles are to be stored away from new and serviceable axles.

(5) AXLES, Material for Turning of

Axles are to be made from steel in accordance with specifications to Group 1 on B.P. W. 16298.

The wheel seats of axles are to be machined smooth and parallel and left free from defects.

A parallel burnished finish is to be produced on the journals, which are to be free from chatter-marks, striation-lines, or other defects.

Where other parts of any axle are turned down, the surface is to be left smooth and free from any abrupt changes in section, either by tool-marks or varying diameters.

(6) AXLES: Standard Centres for Turning

Every axle is to have standard lathe centres to B.P. Y. 20070, and under no circumstances are these centres to be tampered with.

(7) AXLES, Branding of

Every axle is to have the following particulars stamped on the ends, after the journal bearings are finished

ONE END.	OPPOSITE END.
Maker's name	Shop symbol
Maker's number	Year fitted.
W.R.No.	Serial No.
Pressure in tons	Pressure in tons.
Size of journal	Size of journal

[Brands of Da? axles to be located as shown on X.14838 & W16794]

An accurate record of these particulars is to be kept by the officers in charge of this work.

[So that axles may be periodically tested with supersonic flaw detection equipment, the ends must be finally finished with a flat smooth surface after branding. This must be done on all wheelsets fitted under locomotives or vehicles at workshops and on all spare wheelsets sent to depots.]

[C.M.E's 24/563 of 27.5.64]
[C.M.E's 28/286 of 11.5.64]

(8) AXLES, Examination of

Whenever wheels are removed from under locomotives and rolling stock, a thorough examination is to be made to ensure that all axles are sound and straight.

Bent or defective axles must be immediately taken out of service and condemned, and under no consideration are bent axles to be straightened.

(9) AXLES: Building up by Welding; Limit for outside Collars and Journals of

The wear on an outside collar may be corrected by building up with electric welding and the collar re-turned to conform with the original size.

An outside collar is not to be permitted to wear below ¼ in. in thickness.

Should the building-up of the outside collar to its original thickness still leave the journal more than ¼ in. longer than the original length, the axle is to be condemned.

The building-up by electric or gas welding on axles (other than outside collars) is not permitted.

[Code (3) clause (9) third paragraph instructs that axles are to be condemned when jouma1wear exceeds ¼" after the outside of the collar has been built up to full thickness. Where wheel sets are to be fitted with oversize brasses the condemning figure is to be increased to $^{3}/_{8}$". Existing provisions re the condemning of axles worn on the diameter will of course still stand.]

[C.M.E's 05/254 of 22.11.1957.]

(10) AXLES, Reporting Defective

Car and Wagon Inspectors and Locomotive Foremen are to report all axle failures on a Loco. 96 form, and forward same to the District Mechanical Engineer, who will, after noting, forward to the Chief Mechanical Engineer.

Works Managers, Works Foremen, and Stationmasters in Charge are to report any defective axles direct to the Chief

Mechanical Engineer.

(11) AXLES, Examination of Defective

All defective axles are to be forwarded to the nearest Workshops, and the Works Manager or Works Foreman will forward to the Chief Mechanical Engineer and to the District Mechanical Engineer full particulars of the brands on the defective axle together with any other information which he considers may have any hearing on the cause of the failure.

The defective axles will be held at the Workshops until instructions regarding their disposal are received from the Chief Mechanical Engineer. Should these instructions necessitate forwarding the axle for examination or testing, the defective portions are to be out off and stamped with all brands relative to the axle from which they are out.

(12) AXLES: Record of Number condemned and replaced

A return is to be rendered as soon as possible after the 31st March each year, accounting for the number of all axles condemned and renewed during the previous twelve months.

(13) AXLES: Lubricant used for pressing into Wheel-centres

No lubricant other than tallow is to be used on wheel seat when wheels are being pressed on.

For instructions relating to the pressing of axles into wheel centres, see Code Instruction No.4.

(14) AXLES, Storing of

A protective coating of an approved rust preventative is to be applied to all axles that require to be stored.

Where journals are finished, they are to be protected with sacking or other substantial means.

(15) AXLES: Last Turning Size. of Engine-crank; Condemning Size of Engine-crank

Class.	Original Size.	B.P.	Last Turning Size.	Condemning Size.
	Inches.		Inches.	Inches.
A	7	Y. 9057	$6\ ^{19}/_{32}$	6 ½
G	8	X. 10525	$7\ ^{17}/_{32}$	$7\ ^{7}/_{16}$
X	8	4147	$7\ ^{17}/_{32}$	$7\ ^{7}/_{16}$

The bearing fillets are not to be reduced below $^{3}/_{8}$ in. in radius.

[Sizes quoted in this table are superseded by those on drg Y21193 until further notice]

[C.M.E.'s 24/563 of 11.3.48]

(16) AXLES, Cutting Keyways in

Where keys are fitted to engine-axles, the keyways are to be well finished and all corners lightly filleted. Keys should be fitted accurately.

(17) AXLES: Fitted with Roller Bearings

Axles fitted with roller bearings are to be taken out of service and condemned after they have been in service for fifteen years.

[This clause shall be held in abeyance until further notice.]

[C.M.E.'s 24/563 of 30.7.47]

(18) AXLE JOURNALS (other than Roller Bearing): Original Sizes of Engine, Bogie, and Tender

Class	LEAD BOGIE		COUPLED		TRAIL BOGIE		TENDER	
	B.P.	Size	B.P.	Size	B.P.	Size	B.P.	Size
		Inches		Inches		Inches		Inches
A	3651	4.5	3651 Y.9057	D.T 6.5 L. 7.5	3651	4.75	W.15118	3.75
A.409	3651	4.5	3651	6.5	3651	4.75	W.15118	3.75
AA		4.25		D. 7.5 L.T. 7		5		4.25
AB			5924	6.5	5924	4.75	2855	4.5
B	2210	4.25	2210	6.5			2128	3.5
BA	5029	4.25	5029	6.25			W.15118	3.75
BB	5745	4.5	5745	6.25			W.15118	3.75
C	W.15117	4.25	X. 10234	6.25	X. 10237	4.25	W.15118	3.75
EO, EC				5.5				
F			2672	4.5				
G			X. 10525	7.5				

Class	LEAD BOGIE		COUPLED		TRAIL BOGIE		TENDER	
	B.P.	Size	B.P.	Size	B.P.	Size	B.P.	Size
		Inches		Inches		Inches		Inches
H			3957	L. 7 D. 8	3300	4.75		
K			X. 10761	8	X. 10782	6		
Q	3834	4.187	3834	6.5	3834	5.75	3834	3.75
U	3175	4.25	3175	6.5			1633	3.5
UB	[3834]	4.~~25~~[187]		6.5				3.75
UC		4.25		6.5				3.5
W	1015	3.5	1036	6.25	1015	3.5		
WA	1327	3.5	1036	6.25	1327	3.5		
WAB			Y. 6811	7.5	Y. 6811	4.75		
WB		4.25		6		4.25		
WE		4.25		6.5		3.5		
WF	3345	4.25	3345	6.25	3345	4.25		
WG	4773A	4.5	4773A	6.25	4773A	4.5		
WW	4773A	4.5	4773A	6.25	4773A	4.5		
X	4147	4.5	4147	L.D. 8.5 I.T. 7.5	4147	4.75	W.15118	3.75

Note.—L = leading axle D = driving axle I = intermediate axle T = trailing axle

(19) AXLE JOURNALS: Last Turning Size of Engine, Tender, and Bogie; Condemning Size of Engine, Tender, and Bogie

Diameter of Journal	Last Turning Size	Condemning Size	Diameter of Journal	Last Turning Size	Condemning Size
Inches	Inches	Inches	Inches	Inches	Inches
3.5	3.219	3.157	5.75	5.328	5.25
3.75	3.374	3.312	6	5.578	5.5
4.125	3.766	3.688	6.25	5.828	5.75
4.187	3.828	3.75	6.5	6.078	6
4.25	3.86	3.782	6.75	6.328	6.25
4.5	4.078	4	7	6.531	6.438
4.75	4.328	4.25	7.5	7.031	6.938
5	4.578	4.5	8	7.484	7.375
5.5	5.078	5	8.5	7.984	7.875

[Sizes quoted in this table are superseded by those on drg Y21193 until further notice]

[C.M.E.'s 24/563 of 11.3.48]

(20) AXLE JOURNALS: Last Turning Size of Traveling Crane; Condemning Size of Traveling Crane

Diameter of Journal	Last Turning Size	Condemning Size	Diameter of Journal	Last Turning Size	Condemning Size
Inches	Inches	Inches	Inches	Inches	Inches
6.5	6.078	6	4.75	4.328	4.25
6	5.578	5.5	4.25	3.86	3.782
5.5	5.078	5	4	3.641	3.562
5	4.578	4.5	3.5	3.219	3.157

[(21) AXLE JOURNALS: Difference of Journal Diameters

The difference in journal diameters of any one axle after turning shall not exceed $^1/_8$".]

[C.M.E.'s 24/563 of 27 October 1966]

[C.M.E.'s 24/563 of 29 April 1966]

[After overhaul, rolling stock must not be passed out with journals tapered or otherwise out of parallel in excess of $^1/_{32}$" on diameter.]

[24/563 of 3.5.1967]

[(22) ULTRASONIC TESTING

Following the derailment of any locomotive, railcar or electric multiple unit stock, the axles of all derailed wheelsets must be ultrasonically tested for cracks.

It shall be the responsibility of the District Mechanical Engineer on whose Division the derailment occurs to ensure that the ultrasonic testing is carried out as soon as possible after the derailment.]

[24/563 of 23/6/69]